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ENGAGING WITH EXCELLENCE: RAKSHA MANTRI'S INTERACTION WITH DRDO OFFICIALS



DRDO'S TECHNOLOGICAL SPLENDOUR AT REPUBLIC DAY 2025



Raksha Kavach by DRDO



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ENGAGING WITH EXCELLENCE: RAKSHA MANTRI'S INTERACTION WITH DRDO OFFICIALS

Hon'ble Raksha Mantri Shri Rajnath Singh visited DRDO HQs on 2 January 2025 and interacted with senior scientists and officials to mark the 67th Foundation Day of the organisation. Hon'ble Raksha Rajya Mantri Shri Sanjay Seth also attended the meeting. In his address, Shri Rajnath Singh commended DRDO for developing the indigenous capabilities of the country by equipping the Armed Forces with state-of-the-art technologies and equipment and bolstering the defence sector through collaboration with the private sector.

In 2025, being declared as the 'Year of Reforms,' Hon'ble RM asserted that DRDO will play a crucial role in achieving the set objectives. He called upon DRDO to continue moving ahead in sync with the rapidly evolving

technological ecosystem and keep coming out with products that are relevant to the changing times.

He urged the scientists to keep an eye on the products & processes being adopted by the technologically advanced countries and develop niche technologies with the aim to make DRDO one of the strongest R&D organisations in the world. He expressed his view that each laboratory of DRDO should identify 2-3 critical projects, which should be completed by 2025.

Shri Singh called upon DRDO to explore the possibility of including start-ups in its R&D efforts to promote a valuable exchange of ideas and provide an opportunity for the Indian defence sector to come out with innovative technologies according to the changing times. Dr Samir



V Kamat, Secretary, DD R&D & Chairman, briefed Hon'ble RM about the ongoing R&D activities, achievements of DRDO in 2024, various initiatives of DRDO in promoting industry, start-ups & academia, and the roadmap of DRDO for 2025. He said, so far, 1,950 ToTs on DRDO-developed systems have been handed over to Indian industries, of which 256 licensing agreements for ToTs were signed with Indian industries in 2024.





DRDO'S TECHNOLOGICAL SPLENDOUR AT REPUBLIC DAY 2025

Defence Research & Development Organisation (DRDO), with a vision to empower India with cutting-edge technologies and a mission to achieve 'Aatmanirbharta' in defence, displayed some of its path-breaking innovations for national security during the 76th Republic Day Parade at Kartavya Path, New Delhi, on 26 January 2025.

The DRDO Tableau, with the theme 'Raksha Kavach—Multi-layer Protection against Multi-domain Threats,' featured the Quick Reaction Surface-to-Air Missile. Airborne Early Warning

& Control System (AEW&CS); 155 mm/52 Cal Advanced Towed Artillery Gun System (ATAGS); Drone Detect, Deter & Destroy; Satellite-Based Surveillance System Medium Power Radar—Arudhra; Advanced Light Weight Torpedo; Electronic Warfare System—Dharashakti; Laser-based Directed Energy Weapon; Very Short Range Air Defence System; Indigenous Unmanned Aerial System; V/UHF Manpack Software Defined Radio for Land Forces; Indigenous Secure Satellite Phone and UGRAM Assault Rifle.

The tableau posters also showed DRDO's most important

achievements in 2024.

These included the Long Range Hypersonic Anti-Ship Missile, the Light Weight Bulletproof Jacket (ABHED), the Divyastra-Multiple Independently Targetable Re-entry Vehicle, the 'Zorawar' Light Tank, and the Dornier Mid-Life Upgrade with radar, Electronic Warfare System, Software Defined Radio, and Electro-optic (Shyen).

Highlighting its unwavering commitment to precision, self-reliance, and national security, DRDO also displayed the equipment of the Pralay Weapon System—a surface-to-surface tactical missile designed





and developed with state-of-the-art technologies, which adds another layer of strength. Many other DRDO-developed systems—the Nag Missile System, Pinaka, BrahMos, Short Span Bridging System 10 m, and the Akash Weapon System—were displayed in various Armed Forces contingents during the parade.

DRDO is primarily engaged in system definition, design, and development of many state-of-the-art military systems and technologies for realizing the goal of 'Make in India and Make for the World.' DRDO is partnering with all stakeholders of the defence ecosystem, including academia, industry, start-ups, and services, in developing critical systems and to reinforce the spirit of 'Aatmanirbhar Bharat.'





CAIR HANDED OVER INDIGENOUSLY DEVELOPED MIL GIS TECHNOLOGY TO ECIL

The Transfer of Technology (ToT) of the military Geographical Information System (GIS) developed by the Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru, to Electronics Corporation of India Ltd (ECIL) was carried out during 16-19 December 2024 at ECIL Hyderabad.

The technology was handed over in a formal event organised at ECIL. Dr Anesh Kumar Sharma, DS & Director (Technical) of ECIL, received the technology from Dr Narayan Panigrahi, OS, Additional Director (ToT) & Head of GIS Division of CAIR. Dr Sharma highlighted this ToT as a major milestone in ECIL's endeavor to deliver indigenous technology-based systems for Indian armed forces. Smt Kamini Maheswari, OS & Project Director (Pj10 Wpn Cmplx), DRDL, also graced the event.

The CAIR team imparted the hands-on training to the ECIL team using about 20 example programs



demonstrating how the APIs of various libraries of CAIRGIS can be used for the development of GIS-based software applications for the military. A second phase of training has also been planned to handhold ECIL for developing their specific systems using CAIRGIS.

The ToT has earned Rs. 2.8 Cr as a LaToT fee to DRDO. ECIL has now emerged as the fourth ToT partner for CAIR's GIS technology. Previously the ToT

was taken by BEL Bangalore, Microgenesis Techsoft Ltd Bangalore, and MapMyIndia New Delhi. With such a strong base of ToT partners, CAIR has successfully created a capability and capacity in Indian industry for the development and maintenance of GIS-based military systems using homegrown GIS technology. This is a great leap towards geo-spatial atmanirbharata in the Indian technology space with high potential for export.

MOD INKS CONTRACT WITH MDL FOR AIP SYSTEM CONSTRUCTION AND INTEGRATION

Rs 877 crore contract signed with Naval Group, France for integration of Electronic Heavy Weight Torpedo to augment fire power capabilities of Kalvari-Class submarines

Two contracts worth about Rs. 2,867 crore were signed by the Ministry of Defence (MoD). The

first one is for the construction of an Air Independent Propulsion (AIP) plug for the DRDO-

AIP system and its integration onboard Indian submarines. The second one is for the integration



of the Electronic Heavy Weight Torpedo (EHWT) onboard the Kalvari-Class submarines. Hon'ble Defence Secretary Shri Rajesh Kumar Singh signed both contracts in New Delhi on 30 December 2024.

The contract for construction of AIP Plug and its integration was inked with Mazagon Dock

Shipbuilders Limited, Mumbai, worth around Rs 1,990 crore, while the contract for integration of EHWT, being developed by DRDO, was signed with Naval Group, France, at an approx. cost of Rs 877 crore. DRDO is developing the AIP technology indigenously. Construction of AIP-Plug and its integration into the project will

make conventional submarines last longer and make a big contribution to the 'Aatmanirbhar Bharat'. The integration of EHWT will be a collaborative effort by the Indian Navy, DRDO, and Naval Group, France. It would greatly augment the firepower capabilities of Kalvari Class submarines of the Indian Navy.

SAG SIGNS MoU WITH DTU AND IGDTUW, DELHI

Continuing with Policy of Government of India for greater interaction and collaboration between DRDO and Academia, Scientific Analysis Group (SAG), Delhi, has signed Memorandum of Understandings (MoUs) with two more premier universities, namely Delhi Technological University (DTU), Delhi and Indira Gandhi Delhi Technological University for Women (IGDTUW) on 6 December 2024 and 14 January 2025, respectively.

These MoUs will enable the laboratory and these universities to collaborate in R&D activities in areas of mutual interest, which would address multi-disciplinary scientific and technological issues of national relevance. The SAG and these universities will cooperate in joint research projects and manpower training mainly in the areas of cyber & network security, AI/ML, big data analytics, post quantum cryptography & quantum computing/communication, blockchain technology, advance mathematics and cryptology, cloud computing, wireless communication & security, etc.





DRDO CELEBRATES ITS FOUNDATION DAY

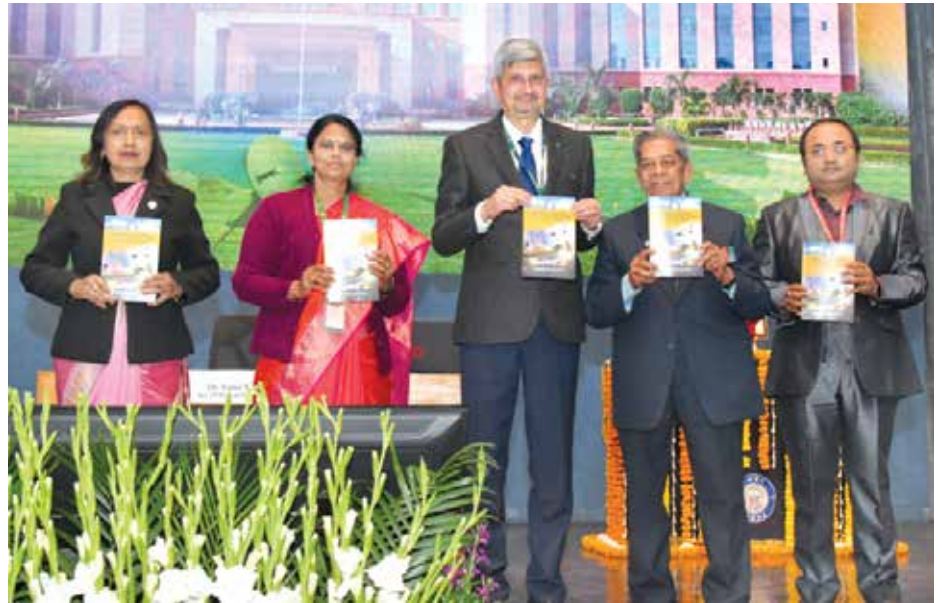
Several systems handed over and Acceptance of Necessity accorded for value of Rs 1.10 lakh crore in 2024: DRDO Chairman

“73 projects worth Rs 275 crore sanctioned in 2024 engaging 266 researchers and 10 new academic institutes”

Dr Samir V Kamat, Secretary, DD R&D & Chairman, DRDO, along with Directors General and senior officials, paid floral tributes to former President and the Missile Man of India, Dr APJ Abdul Kalam, at his bust in DRDO Headquarters, New Delhi, on 3 January 2025. These tributes were paid to mark the 67th Foundation Day of DRDO, which is celebrated on 1st January every year.

During the event, many important DRDO documents were released by the DRDO Chairman. These included an SOP on Product Development, Compilation of various SoPs & Guidelines related to DRDO Personnel, DRDO Transport Policy, Dictionary on scientific and technical terminology, Magazines 'InSight', Biannual Magazine 'Quest' and the January Issue of DRDO Newsletter.

The event marked the release of two DRDO monographs. The first monograph was 'Conceptual Guide to Torpedo System Design and Development,' authored by Dr RVS Subrahmanyam & Dr Y Sreenivas Rao. The second monograph was 'Himalayas to Hyderabad: A Journey from Border Roads to Missiles, Microdrones, and Cyborgs', authored by Lt Gen (Dr) VJ Sundaram & Smt Scharada Dubey. To increase synergy with industry, Chairman DRDO launched the Industry Interaction Group (IIG) initiative on the DRDO



website. The IIG is a proactive and structured framework set up so that businesses can voice any suggestions, concerns, questions, or complaints they may have by meeting with concerned laboratories one-on-one at open houses.

In his address, the DRDO Chairman extended his greetings and said that 2024 was a very good year for the organisation. He stated that DRDO has been conferred with prestigious awards in five categories: Innovation, Technology, One of Its Kind Building & Construction, and Aatmanirbhar for the project DHARASHAKTI-Integrated Electronic Warfare (EW) System, Advanced Light Weight Torpedo (ALWT), Advanced Towed Artillery Gun System (ATAGS), Mission 45

Day, and Quick Reaction Surface to Air Missile (QRSAM) at the 32nd Global Symposium and 6th World Project Management Forum.

The DRDO Chairman also highlighted the DRDO initiatives for enabling industry & engagement of academia in 2024 and said that, so far, 1,950 Transfer of Technologies on DRDO-developed systems have been handed over to the Indian Industries, of which 256 Licensing Agreements for Transfer of Technology (LAToTs) were signed with Indian Industries in 2024. Dr Kamat added that, as of this date, 80 projects are ongoing, with nine projects awarded to industries/MSMEs/start-ups in 2024. 29 project approvals are also in the pipeline and should get sanctioned soon. The PSLV C-58 mission successfully demonstrated a green



propulsion system under the TDF scheme in orbit. Also, an AI tool, 'Divya Drishti,' that integrates face recognition with immutable physiological parameters such as gait and skeleton has been developed.

The DRDO Chairman added that the 15 DRDO Industry Academia Centers of Excellence (DIA-CoEs), which steer translational research activities in nearly 65 identified research verticals, are performing very well. In 2024, 73 projects were sanctioned with a total cost of Rs 275 crore, in which 266 researchers and 10 new academic institutes have been engaged. This makes it a total of 274 sanctioned projects at the cost of Rs 984 crore, engaging 900 researchers and 46 academic institutes.

Besides celebrations at DRDO HQs, the following laboratories of DRDO also celebrated DRDO Day at their respective laboratories:

CVRDE, Chennai

The 67th DRDO Foundation Day was celebrated at the Combat Vehicles Research & Development Establishment (CVRDE), Chennai, on 3 January 2024. The address of Dr Samir V Kamat, Secretary DD R&D & Chairman, DRDO, was web streamed live during the celebrations. After completion of the address, Shri J Rajesh Kumar, OS & Director, CVRDE, along with senior scientists and officers, unveiled the scale-down model of the Light Tank-Zorawar. In the keynote address, the Director, CVRDE, extended his warm wishes to the CVRDE fraternity for the successful new year ahead and emphasized the need for development in the

indigenization of systems/sub-systems/components of AFVs. He also appreciated the project team members for successfully accomplishing the trial activities in the desert terrain and high-altitude conditions.



DESIDOC, Delhi

The Defence Scientific Information & Documentation Centre (DESIDOC), Delhi, celebrated the 67th DRDO Day on January 3, 2025, with enthusiasm and fervor. The celebration commenced with the warm welcoming of newly appointed Director, Ms Kiran Chauhan, Sc 'G' by DESIDOC's officers and staff. The event followed on with the briefing by Dr Mohd Yousuf Ansari, Sc 'G'. He elaborated on the tasks completed and the achievements of DESIDOC during the year 2024. Ms Chauhan also addressed the DESIDOC fraternity. In her address, she spoke about creating and maintaining a healthy work



environment at DESIDOC and also insisted on skill upgrades for DESIDOC employees for better organizational output. The occasion also marked the release of the DESIDOC Calendar 2025.

DMRL, Hyderabad

The Defence Metallurgical Research Laboratory (DMRL), Hyderabad, celebrated the 67th DRDO Day on 3 January 2025 with great enthusiasm. Dr R Balamuralikrishnan, OS & Director, DMRL, gave his address, reflecting the significant achievements and milestones of 2024. He appreciated the relentless efforts and contributions of the employees and encouraged them to remain motivated, maintain a strong product-oriented approach, and simultaneously strengthen the laboratory's scientific foundation.

He emphasized that these efforts are crucial for meeting the decadal roadmap targets and fulfilling DMRL's long-term commitments towards the vision of Viksit Bharat while concurrently focusing on increased Atmanirbharta in the short and medium term. The program concluded with Dr Balamuralikrishnan presenting





commendation certificates to personnel who completed 25 years of dedicated service to DRDO, marking their invaluable contributions to the organization.

DMSRDE, Kanpur

Defence Materials and Stores Research & Development Establishment (DMSRDE), Kanpur, celebrated the 67th DRDO Day on 3 January 2024. The programme started with the live DRONA webcast of the New Year



message of Dr Samir V Kamat, Secretary, DDR&D & Chairman, DRDO followed by targets for year 2025 by all DGs. Dr Mayank Dwivedi, OS & Director, DMSRDE, then delivered the DRDO Day/ New Year Day address.

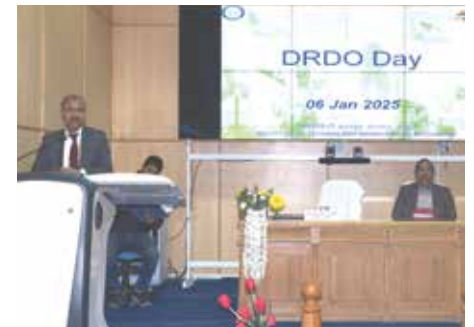
He provided a detailed overview of the notable accomplishments of DMSRDE in the year 2024, as well as the goals set for the year 2025. He stressed orienting the work in line with the global scenario with special emphasis on niche technologies for services.

ITM, Mussoorie

DRDO Day was celebrated on 3 January 2025 at ITM, Mussoorie. The celebration commenced with offering floral tribute to Dr APJ Abdul Kalam by ITM personnel. It was followed by the address of Shri SP Dobhal, Director ITM. He addressed the

gathering and appreciated the work done by ITM during 2024 and the successful conduct of 14 mandatory courses with 369 participants. He highlighted the successful conduct of the National Conference on Technology Management (TECHMA-2024). He also informed ITM about CBC accreditation.

He mentioned that in the year 2025, DRDO is under a reform phase, wherein ITM has a key role to play by providing training to DRDO officials.



RAISING DAY CELEBRATIONS

CAIR Bengaluru

Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru, celebrated its 38th Raising Day on 20 December 2024. Dr Samir V Kamat, Secretary DD R&D & Chairman, DRDO, graced the occasion (over the video conference) as the Chief Guest. The Guest of Honour was Smt Suma Varughese, DS & DG (MED & CoS), and Shri N Sitaram, Fellow INAE, Former CCR&D (ECS); Dr Subrata Rakshit, DS & DG (TM & SAM); Lt. Gen. Rakesh Sharma, PVSM, UYSM, AVSM, VSM (Retd), USI; Dr G Athithan, Retd. DS & DG (MCC); Dr Sudhir Kamath, Director DIA-



RCoE & Retd. OS & DG (MCC); Directors of sister laboratories; Dr Arokiaswamy Velumani, former scientist BARC & founder of Thyrocare Technologies; and Prof. Arindam Gosh, IISc, were the special invitees.

During his address, Dr Rituraj Kumar, OS & Director, CAIR, highlighted the organization's achievements. The Chief Guest and Guest of Honour, while addressing the gathering, praised the laboratory achievements and



brought out their importance in the current scenario.

The laboratory also organized number of sports events during 29 November 2024 to 13 December 2024 as part of Raising Day celebrations.

The day also marked the celebration of Karnataka Rajyotsava. Dr TM Kotresh, OS & Director DEBEL (Retd.) was the Chief Guest of the event. Shri Prasanna Kumar KR, OS & Associate Director, also addressed the gathering.

ECS Cluster

On 14 December 2024, the O/o DG (ECS cluster) celebrated its Raising Day. On the occasion, the Directors of five laboratories, the Heads of two centres, and the Director of the Young Scientist Laboratory DYSL (CT) were present. Shri SP Gomekar Sc 'G' & Director (Admin), welcomed the august gathering and presented in brief the achievements of the cluster during the past year.

On the occasion, the Dr BK Das, DS & DG (ECS), addressed the gathering and acknowledged the contribution of every individual in marching ahead and making the ECS cluster a model cluster of DRDO. He reminded everyone that only with the sincere efforts of every individual, irrespective of the post/cadre, can the goal of self-reliance and Atmanirbhar Bharat can be achieved.

He appreciated the Directors and the Centre Heads of every laboratory and centre for their immense efforts made towards the success of the projects and wished them the best for the success of the ongoing projects. To commemorate the occasion,



an annual magazine of the ECS cluster named *Satrangi* was released containing the articles and contributions from all the seven laboratories of the cluster.

An initiative was taken to rate the performance of the laboratories of the cluster based on certain critical attributes. The best laboratory of the cluster was felicitated with a running trophy, and IRDE, Dehradun, was declared the best laboratory of the calendar year 2024.

The meritorious children of the employees of the office, who have excelled in the class X and class XII exams, were also felicitated by the DS & DG (ECS). The Director (PM), Dr PS Pandian, Sc 'G', presented the vote of thanks.



MTRDC, Bengaluru

The Microwave Tube Research & Development Centre (MTRDC), Bengaluru, celebrated the annual day on 13 December 2024. Dr BK Das, DS & DG (ECS), graced the occasion as the Chief Guest of the event. Shri GA Srinivasa Murthy, DS & Director, DRDL, was the Guest of Honour. At the outset, Shri G Viswam, DS & Director LRDE & MTRDC, welcomed all, and Dr SK Datta, OS & Centre Head MTRDC, briefed the achievements of the Centre for 2024. The product release of the X-band MPM for the BrahMos Seeker was organised on that day. The product was handed over to the users in the presence of the



representatives of the production partner, M/s BEL, Bengaluru. There was also the release of the Rajbhasha Technical home magazine, *Umang*, followed by the award distribution ceremony. At the end, the vote of thanks was proposed by Dr M Santra, OS & Associate Centre Head, MTRDC.

NMRL Raising Day

The 72nd Raising Day was celebrated at the Naval Materials Research Laboratory (NMRL), Ambarnath, with great zeal and enthusiasm on 6 January 2025. Dr Samir V Kamat, Secretary DD R&D & Chairman DRDO, graced the event as the Chief Guest. Shri RV Hara Prasad, DS & DG (NS&M), Dr Manoranjan Patri, Chairman,

CEPTAM, and Directors of various laboratories along with the Director, PM O/o DG NS&M, senior scientists from sister DRDO laboratories, and NMRL employees, attended the event. Shri PT Rojatkar, OS & Director, NMRL, presented an overview of growth and achievements made by

the laboratory in the year 2024. . The NMRL Annual Report 2024, was released on the occasion. The Chief Guest also handed over certificates to lab-level awardees and winners of sports events. The Chief Guest also felicitated the employees who completed 25 years of service at DRDO.



DIA-COE- IIT KANPUR PROJECTS HANDOVER

During IIT Kanpur's 65th Foundation Day celebrations, the Hon'ble Raksha Mantri Shri Rajnath Singh and Dr Sameer V Kamat, Secretary, DDR&D & Chairman, DRDO, graced the occasion. A significant highlight was the formal handing over of six DIA-CoE-IITK projects worth ₹24 crores to Prof. Manindra Agrawal, Director, IIT Kanpur, underscoring the strong collaboration between DRDO and IIT Kanpur in advancing defence research. Furthermore, DIA-CoE IIT Kanpur

actively participated in an exhibition showcasing its cutting-edge research and development

capabilities, further demonstrating the center's commitment to advancing defence technologies.





DRDO PARTICIPATION AT VARIOUS EVENTS

CVRDE PARTICIPATION AT SHAASTRA EXPO 2025

Combat Vehicles Research & Development Establishment (CVRDE), Chennai, participated in Shaastra Expo 2025, organised by IIT-Madras, during 3-7 January 2025.

The exhibition is the annual technical fest of IIT-Madras, and a large number of students, scientists, delegates, and

researchers visited the CVRDE stall. The event is an ideal platform for the student's fraternity, and the technologies showcased in this platform have kindled the young mind's interest.



DRDO PARTICIPATION AT IISF 2024

The 10th India International Science Festival 2024 was held at IIT-Guwahati, during 3 November 2024 to 3 December 2024. DIPAS, DRDL, and ADRDE, participated in the event and DRL was the nodal laboratory for DRDO. The DRDO pavilion attracted significant attention from various dignitaries, including Dr S Somanath, Secretary, DoS &

Chairman ISRO; Dr K Sasikumar, Secretary for Science, Technology & Environment of Tripura; prominent guests; and students from schools and colleges. DRL exhibited its various products during the exhibition. Tabletop models of



advanced missile systems displayed by DRDL were significant points of interaction.

DLJ PARTICIPATION IN PROMETEO-2025

IIT-Jodhpur organised a technical event 'PROMETEO 2025' during 17-19 January 2025 to bring together leading minds in technology, innovation, and entrepreneurship, fostering environment for intellectual exchange and exploration. Defence Laboratory Jodhpur (DLJ), showcased various indigenously developed technologies in the

event. DLJ also organized a quiz competition based on the theme 'Defence Innovation and Technological Advancements' for students of IIT-Jodhpur and visiting students from other institute.



DLJ AND ARDE PARTICIPATION IN 25TH RASHTRA KATHA SHIVIR

25th Rashtra Katha Shivir, was organized during 28 December 2024 to 5 January 2025 at Rajkot, Gujrat. DRDO participated in the event with Defence Laboratory,

Jodhpur (DLJ) as the nodal laboratory and High Energy Materials Research Laboratory (HEMRL), Pune and Armament Research and Development

Establishment (ARDE), Pune, as the participating agency. Total 20 exhibits from DRDO were showcased.



STEEL CUTTING CEREMONY AT L&T HAZIRA

Steel cutting ceremony for Air Independent Propulsion (AIP) system was held at L&T Hazira on 28 December 2024. It represented a key milestone in the pursuit of self-reliance through indigenous technological advancements. The event marked a crucial achievement in the AIP program, heralding the beginning of a critical manufacturing phase and serving as a tangible outcome of extensive research & development efforts at Naval Materials Research Laboratory (NMRL), Ambarnath for this innovative technology. The AIP technology, developed by DRDO for INS Kalvari class of Submarine is being manufactured by M/s L&T Precision Systems and Engg under technology transfer from DRDO. The presence of Dr Samir V Kamat, Secretary



DD R&D & Chairman DRDO at this momentous occasion emphasized the significance of AIP system within the realm of defence technology development. Along with him, Shri RV Hara Prasad, DS & DG (NSM), Shri PT Rojatar, OS & Director NMRL,

Dr Suman Roy Choudhury, Sc 'H', AIP Programme Director, Dr Y Srinivas Rao, former DG (NSM), Dr Varaprasad former DG (HR) and senior officials from DRDO, Naval Group and L&T were also present for the steel cutting ceremony.

WORLD QUALITY WEEK CELEBRATION AT DLRL

Defence Electronics Research Laboratory (DLRL), Hyderabad, celebrated World Quality Week on 20 December 2024, covering the complete gambit of the highest Q&R aspects. Quality, reliability, and safety are hallmarks of any defence system deployed for national security. DLRL is developing world-class EW systems with huge export potential. Quality has always been a cornerstone for such potential systems. All the employees participated in quiz and slogan writing competitions and pledged to uphold quality online. A targeted and in-house-designed course on quality management targeting the future PDs was conducted



along with the Engineering Staff College of India (ESCI). Lectures

were organized quality kits were distributed.



SWACHHTA PAKHWADA CELEBRATIONS

ASL, Hyderabad

Advanced Systems Laboratory (ASL), Hyderabad, observed Swachhta pakhwada from December 1–15, 2024. The campaign included a mass swachhta pledge, Swachhata rally, cleanliness drive, and plantation were also organized. The Swachhta Thematic Paintings competition was conducted for the children of ASL employees. Books on famous scientists were given to all the participants as a token of appreciation.



CASDIC, Bengaluru

Combat Aircraft System Development and Integration Centre (CASDIC), Bengaluru, conducted Swachhta Pakhwada during 1-15 December 2024 under the leadership of Shri Rajeev Marathe, OS & Centre Head, CASDIC. As a part of this, various events including mass swachhta pledge, shramdan activities,



cleanliness drive, plantation drives, campaign on discarding the use of single use plastic, were organized. All the officials of CASDIC, IAF Personnel, IDST, contract employees took part in the celebrations.

DLRL, Hyderabad

Defence Electronics Research Laboratory (DLRL), Hyderabad, celebrated swachhta pakhwada during 1-15 December 2024. All the employees of DLRL participated in the mass swachhta pledge. A plantation drive was organized and about 60 saplings were planted. A selfie booth with swachhta slogans was set up for the employees to take selfies and post them on social media sites to boost swachhta awareness among the general public.

A mass signature campaign was organized and many employees actively participated in the campaign. A video presentation concluded the swachhta pakhwada, highlighting the harmful effects of single-use plastic on the environment.



DMSRDE, Kanpur

Defence Materials and Stores Research & Development Establishment (DMSRDE), Kanpur, organised Swachhta pakhwada during 1-15 December 2024. Besides the cleanliness drive during the two-week-long program, various day-by-day activities such as the swachhta pledge, shramdan, swachhta rally, tree plantation, a selfie booth at Dr APJ Abdul Kalam statue, a signature campaign, a campaign on discarding the use of single-use plastic, and swachhta thematic paintings on the DMSRDE boundary wall were planned and executed during the pakhwada. The event was coordinated by Shri Shilendra Kumar, Sc 'G', Dr Sunil Kumar, Sc 'D' and Shri Shashi Prakash, TO 'B'.



MTRDC, Bengaluru

The Microwave Tube Research & Development Centre (MTRDC), Bengaluru, celebrated swachhta pakhwada from 2 to 15 December 2024. As part of the event, the swachhta pledge was administered at the Centre by Dr SK Datta, OS & Centre Head, MTRDC. Apart from this, there were poster-making and slogan competitions organised at the Centre. The best-maintained sections, one from the technical category and one from the non-technical category, were identified and were awarded during the lab-raising day celebration. A swachhta run was also organised as part of the event.



NPOL, Kochi

The Naval Physical & Oceanographic Laboratory (NPOL), Kochi, observed Swachhta Pakhwada during December 2-16, 2024.

One of the standout activities was the plantation drive at the NPOL Sagar residential campus, inaugurated by Smt Uma Thomas, the MLA of the Thrikkakkara constituency, who emphasized the importance of community involvement in greening initiatives where 30 exotic trees were planted. A key focus was also on raising public awareness about the harmful effects of single-use plastic. Furthermore, a friendly visit to CMFRI, Ernakulam,



to explore innovative waste management solutions. Shri Sijomon PJ, Sc 'F' was the Nodal Officer for the event.

NSTL, Visakhapatnam

The Naval Science & Technological Laboratory (NSTL), Visakhapatnam, celebrated swachhta pakhwada during December 2-17, 2024. During the event, special emphasis was laid on cleaning the unattended sites, building rooftops with a focus on making the campus free of single-

use plastic waste and addressing areas with any kind of water stagnation. A plantation drive and a selfie booth were established, and cotton bags were distributed. Scientists, Chief Security Officer, and other officers; NSTL Civil Employees Union President Sri A Sunil, Joint Secretary Sri Ankit Sharma; Works Committee Members Sri Alok Chand; Sri Balram Kumar; and other staff participated. Lt. Col. Rahul Dixit of the Works & Estate Directorate organized these activities.





COURSE ON EW TECHNOLOGIES FOR SPACE

A Continuing Education Programme (CEP) on 'Electronic Warfare (EW) Technologies for Space' was organized by the Defence Electronics Research Laboratory (DLRL), Hyderabad, during 9-13 December, 2024. The program witnessed enthusiastic participation from senior officers and personnel from the Indian Navy, Indian Air Force, Indian Army, URSC (ISRO), NTRO, ARC, and DRDO laboratories.

The inaugural ceremony was graced by eminent personalities, notably Sri N Srinivas Rao, DS & Director, DLRL, Sri SP Dash, DS



(Retd.) & former Director, DLRL, who served as the esteemed Chief Guest. Besides lectures from eminent faculties and speakers,

the course included significant contributions from industry partners. Dr AK Singh, Sc 'G', was the Course Director.

COURSE ON MID-CAREER TRAINING AUGMENTATION AT ITM

A course on 'Mid Career Training Augmentation (MITRA 4.2)' for newly promoted Scientist 'D' was organized by the Institute of Technology Management (ITM), Mussoorie, and was conducted during 25 November 2024 to 20 December 2024 at ITM. The objective of the course was to orient the newly promoted Scientist 'D' towards project management, technology management, material management, group dynamics & team building, design of experiments, new product development, and various corporate functions of DRDO.

The course was inaugurated by Chief Guest Shri MZ Siddiqui,

former DS & DG (Aero), and Shri SP Dobhal, Director, ITM. Dr Bishwajeet Choubey, Director, CW&E, was the Chief Guest during the valedictory function of the course. Shri Amarnath Kosgi, Sc 'E' was the Course Director of the

course and a total of 24 participants from different clusters of DRDO attended the course.

The Chief Guest gave inaugural address with an overview of the 'Challenges in Development of Aero Engines'.





COURSE ON MODELLING AND SIMULATION TECHNIQUES IN DEFENCE ANALYSES

Institute for System Studies and Analyses (ISSA), Delhi, organised a five-day course on 'Modelling and Simulation Techniques in Defence Analyses' during 2-6 December 2024 with the objective to introduce the participant to mathematical techniques used in studies of defence analyses problems. Twenty-three participants from different DRDO laboratories and BrahMos Aerospace attended the course. Experts from IIT-Delhi, IIIT-Noida, and ISSA delivered lectures followed by four demonstrations on systems analysis and application, modeling and simulation approaches,



optimization techniques for applications, and other related research areas. Dr Vikash Kumar Sharma, Sc 'F' was the Course

Director and Shri Sankalp Kumar Sharma, Sc 'E' was the Deputy Course Director.

SEMINAR ON QUANTUM TECHNOLOGY

The Directorate of Futuristic Technology Management (DFTM), DRDO HQrs, under the leadership of Dr Subrata Rakshit, DG (TM), organized a seminar on 'Quantum Technology' on 27 November 2024 at IIT-Delhi. The event brought together thought leaders from academia, industry, and government to explore India's advancements and roadmap in quantum technologies. Dr Rakshit emphasized quantum technology as a transformative enabler for national security and technological self-reliance. Dr Ranjana, Director, DFTM, stressed the importance of strategic collaboration across research institutions, government, and industry to accelerate the adoption of quantum innovations.

Dr JBV Reddy, representing



the National Quantum Mission, provided an overview of the mission's phased approach to building capabilities in quantum

computing, communication, sensing, and materials, aligning research efforts with strategic national priorities.



COURSE ON SENSOR SYSTEM ANALYSIS AND MODELING AT ISSA

Institute for System Studies and Analyses (ISSA), Delhi, organised a three-day course on 'Sensor System Analysis and Modeling' during 18-20 December 2024 with the objective to introduce the participants to the basis of modeling and simulation of sensors like radar, EW systems, sonar, and satellites.

Eighteen participants from different DRDO laboratories and BrahMos Aerospace attended the course. Experts from IIT-Delhi, BEL (Ghaziabad), and ISSA delivered the lectures. The course was successfully completed



under Course Director Shri Vishal Aggarwal, Sc 'F' and Deputy Course Director Shri Suresh Kumar, Sc 'E'.

CONFERENCE ON HYDROGEN 2025 AT NMRL

Naval Materials Research Laboratory (NMRL), Ambernath, organized a conference, 'Hydrogen 2025' on 7 January 2025. The conference was inaugurated by Hon'ble Padma Bhushan Dr VK Saraswat, Member of NITI Aayog, who was the Chief Guest for the event. Padma Shri Prof. Vedachalam, ISRO, and Shri RV Hara Prasad, DS & DG (NS&M), graced the occasion as Guests of Honour. Dr Manoranjan Patri, Chairman, CEPTAM; VAdm DSP Varma (Retd.); RAdm Ashish Kulkarni, Directors of NSM cluster laboratories, viz. DMSRDE, DLJ & NPOL; and senior scientists of sister DRDO laboratories were the invited guests for conference. Shri PT Rojatkhar, OS & Director, NMRL, welcomed all the guests and participants.



The program featured technical sessions that covered a wide range of presentations and discussions related to hydrogen technology by distinguished speakers from academia, industry, research institutes, and NITI Aayog. The

conference served as an important platform for advancing the development and adoption of hydrogen technologies, fostering collaboration among stakeholders, and shaping the future of hydrogen energy.



WORKSHOP ON ADVANCED WELDING TECHNOLOGIES FOR WARSHIP CONSTRUCTION

The Naval Materials Research Laboratory (NMRL), Ambernath, organized one-day workshop on 'Advanced Welding Technologies for Warship Construction' on 8 January 2025. Shri Sanjeev Singhal, CMD, Mazagon Dock Shipbuilders Limited, graced the occasion as the Chief Guest. Dr Y Sreenivas Rao, former DG (NS&M); senior scientists from sister DRDO laboratories; academia; shipbuilders; support industries; and NMRL employees attended the workshop. Shri PT Rojatkar, OS & Director, NMRL welcomed the Chief Guest and highlighted the importance of welding in structural components. He discussed about the traditional practices and recent trends in the fields of welding technology.

The event featured an



address by Shri Sanjeev Singhal emphasizing the importance of advanced welding practices being followed by shipbuilders, challenges faced in shipbuilding, emerging welding technologies,

quality assurance aspects, etc., in shipbuilding. This conference also included an exhibition of welding technologies. The conference concluded with vote of thanks by Dr B Basu, Sc 'H'.

WORKSHOP ON AWARENESS AND ENHANCEMENT OF WELLNESS FOR IAF PERSONNEL

A workshop on 'Awareness and Enhancement of Wellness amongst IAF Personnel' was organized by O/o Scientific Advisor to Chief of the Air Staff (SA to CAS) during 16-17 December 2024 at Air Force Station, Race Course, New Delhi. The workshop was graced by Air Marshal Tejinder Singh, AVSM, VM, and Deputy Chief of the Air Staff (DCAS) as the Chief Guest. The workshop was designed by Smt Asha Tripathi, SA to CAS, with the objective of giving insights to the participants about their strengths to withstand future





challenges on both personal and professional fronts and to prepare them to develop their own plans and strategies to balance out their internal needs and external demands. It was casted live over AFNET so as to cover all Air Force

Stations. Expert faculties were invited from DIPR, IAF, and Delhi University.

Dr Manas K Mandal, Visiting Professor, IIT Kharagpur, and former DG, DRDO, had given a special lecture on the 'Science

of Happiness'. The valedictory session was chaired by Air Marshal S K Vidhate, AVSM, YSM, VM, and Air Officer-in-Charge of Personnel (AOP). The workshop concluded with a vote of thanks by Smt Tripathi.

COURSE ON LIVE CHEMICAL WARFARE AGENTS AT NAGPUR FOR NDRF RESCUERS

The Chemical Defence Equipment Evaluation Facility (CDEF) at the Defence R&D Establishment (DRDE), Nagpur, has been teaching tri-services, NSG, and SPG advanced training on live chemical agents since July 2022. The goal is to make the country self-sufficient in chemical defence and to be ready for and take countermeasures for chemical emergencies. These courses have trained 550 people so far. The rescuers of NDRF, consisting of various armed forces like SDRF, ITBP, ICG, NDRF, CISF, CRPF, State Police, Indian Army, and BSF, were given a comprehensive



and rigorous training to handle and manage any untoward chemical incident involving Chemical Warfare Agents (CWAs).

The course was inaugurated by Dr Manmohan Parida, OS &

Director, DRDE, and the training module was meticulously designed and executed by CDEF scientists under the leadership of course director Dr Bidhan Chandra Bag, Sc 'G' & OIC-CDEF, Nagpur.

LONG LOGISTICS MANAG. COURSE AT DIBT

The 43rd Long Logistics Management Course was organised by the Defence Institute of Bio-Defence Technology (DIBT), Mysuru, on 16 January 2025. The course was specifically designed to cater to the requirements of logistics officers undergoing the one-year logistics management course at INS Hamla, Mumbai.

A total of 24 officers from the Indian Navy and Indian Coast Guard, along with 14 officers from friendly foreign countries, i.e., Ghana, Sri Lanka, Bangladesh,



Cameroon, Benin, Myanmar, and Tanzania, participated in the program. The course included lecture sessions followed by on-lab demonstrations of DIBT's technologies, products,

equipment, machinery, and field test kits. Dr R Kumar, Sc 'G' and Centre Head, DIBT, inaugurated the course and Dr VA Sajeve Kumar, Sc 'G' was the Course Coordinator.



COURSE ON MECHANICAL STRUCTURES AND SYSTEMS FOR NAVAL APPLICATIONS IN NSTL

A course on 'Mechanical Structures and Systems for Naval Applications' was organized by Naval Science & Technological Laboratory (NSTL), Visakhapatnam, during 9-13 December 2024. Dr Abraham Varughese, OS & Director, NSTL inaugurated the course, Dr HN Das, OS & AD & PD (HEAUV) and Course Director Dr Y Appa Rao, SC 'G' & Group Director (MSD&I) participated. Director, NSTL highlighted the importance of advancement in the mechanical design and design simulations using state-of-the-art software



simulation tools and use of materials such as marine grade materials and composite materials.

The keynote address was delivered by Dr Ajith Kumar, Sc 'H' (Retd), Former Director, NPOL.

COURSES AT VRDE, AHMEDNAGAR

Orientation for Newly Recruited Store Assist. & Admin Assist.

A two-day orientation program was organized for the newly recruited store assistants and admin assistants at the Vehicle Research and Development Establishment (VRDE), Ahmednagar, during December 16-17, 2024. Several sessions provided insight into various topics for a total of 15 individuals. Sessions included organization and



functioning of DRDO, VRDE structure and projects, conduct rules for government employees, leave rules, pay and allowance, LTC & medical reimbursement. An interaction with the director was also arranged. In his address, the Director informed the new recruits about the importance of being honest and taking a scientific approach to the assigned task. He also cautioned them to be vigilant towards the security and cyber security issues.

Lab Classes for MTech (Defence Technology)

As a part of the curriculum, MTech (Defence Technology) lab classes on the subject 'System Warfare Platforms' were conducted at the VRDE during 18-20 December 2024. A total of

21 students from VJTI-Mumbai, DKTE-Ichalkaranji, and MIT-Manipal, Udupi, participated in the classes. The classes exposed the students to various state-of-the-art technologies developed by VRDE in the field of system warfare platforms.

The students had the opportunity to interact and learn with the designers of different warfare platforms such as WhAP, WhAP CBRN, MGS, and various AFVs. They were given exposure to the fundamentals, architecture, and advanced design features of a warfare platform.





CYBER SECURITY AWARENESS MONTH AT DLRL

Defence Electronics Research Laboratory (DLRL), Hyderabad, commemorated Cyber Awareness Month on 18 December 2024, and renowned speaker Mr Ayub Shaikh, Huntmetrics Pvt. Ltd., Hyderabad, gave an insightful presentation on 'Latest Trends in Cyber Security and Incidence Report Management'. In addition, a number of activities were also carried out, like taking an online cyber pledge, creating awareness through the intranet, and also all Cyber Representatives from different DLRL divisions underwent customized training on Cyber Security at the Engineering Staff College of India (ESCI).



AWARENESS PROGRAMME BY DESIDOC AT ARDE

A presentation-cum-demonstration on the digital library on DRONA & e-resources was made by Dr K Nageswara Rao, OS & Director, DESIDOC, Delhi, on 20 December at the Armament Research and Development Establishment (ARDE), Pune. He highlighted the features of the Digital Library that has nearly 10 lakhs of full-text PDFs from various e-resources, viz., books, journals, standards, conference proceedings, etc.

He also mentioned various features and functionalities of this digital library to fulfill the information and research needs of scientists. The presentation was attended by all the scientists Bs,



Cs, & Ds of ARDE. Shri A Raju , OS & Director, ARDE, facilitated him on the occasion.



WORKSHOP ON POSH ACT AT SSPL

The Solid State Physics Laboratory (SSPL), Delhi, organized a one-day workshop on the POSH Act and gender sensitization on 24 December 2024. Dr Meena Mishra, Director, SSPL, signified the importance of the workshop to create a respectful,

healthy, and inclusive workspace for both genders in her address. Delhi High Court Advocate Gauri Singh conducted the interactive workshop with basic awareness of the POSH Act and then examined the participants' sensitization to gender through a Q&A activity.

The event concluded with the felicitation of the speaker by the director, SSPL, and also with the formal introduction of the recently constituted Internal Complaints Committee (ICC). The vote of thanks was presented by Dr Jaya Lohani, Chairperson, ICC-SSPL.

COURSE ON RETIREMENT PLANNING AT DLJ

A training program on 'Retirement Planning' was organized by the Directorate of HRD (DHRD), DRDO HQrs, in association with the Defence Laboratory (DL), Jodhpur, during 6-7 January 2025. A total of 33 officials from various laboratories and establishments of DRDO participated in the program. Expert speakers from DRDO, AIIMS-Jodhpur, JNVU, Jodhpur, and Chartered Accountant delivered lectures on SPARSH, health and



wellness, stress management, lifestyle re-engineering, financial

planning, investment decisions, etc.

WORKSHOP FOR ICs OF DRDO LABS AT ITR

A two-day workshop for presiding officers/members of ICs was jointly organised with Integrated Test Range (ITR), Chandipur and DoP, DRDO HQrs, during 17-18 January 2025. The workshop was inaugurated by Smt U JeyaSanthi, OS & DG (HR), in the presence of Director, ITR, and other dignitaries. The sessions started by an overview of the activities by Sh Sanjai kumar Dwivedi, Director, DOP.

This was followed by sessions on steps for conducting preliminary inquiry by Ms Nishi Srivastava, Addl Dir, Procedure of Conducting inquiry under Rule 14 Of (CCA)



Rules, 1965 by Shri Sandeep Singh, Jt Director, DoP, Important Case

studies by Shri Sampurna Kumar, Dy Director, DoP.



RAJBHASHA CONFERENCE-UNMESH-2025

DRDO HQrs and Research Centre Imarat (RCI), Hyderabad, jointly organized the Second All India Technical Official Language Conference Unmesh-2025 on 'Science for Sustainable Development' during 10-11 January 2025 on the occasion of World Hindi Day. Smt Anshuli Arya, Secretary, Department of Official Language, Ministry of Home Affairs graced the occasion as the Chief Guest. During the inaugural session, a souvenir of the conference was also released.

Dr Samir V kamat, Secretary DDR&D & Chairman DRDO; Shri U Raja Babu, DG (MSS); Shri Anindya Biswas, Director, RCI; Shri Sunil Sharma, Director, DPARO&M and many other esteemed guests graced the event with their presence. As part of



the conference, research papers were invited from major technical organizations/universities in which some of the important names are ISRO, BARC, DAE, ICAR, IARI, IIT, NIT, DTU. A total of 180 papers were received and 42 presentations were made in Hindi as medium and one session

in Telugu language.

Dr MK Gupta 'G' & Shri Chandra Prakash Meena, Sc 'E' as Co-Convenor and Shri Kazim Ahmed, Assistant Director (OL) and Mrs Arunkamal, Assistant Director (OL) as coordinator played a key role in the successful organization of the event.

RAJBHASHA SANGOSHTHI OF SSS CLUSTER

The Soldier Support System (SSS) cluster of DRDO, in association with DRARO&M, DRDO HQrs Delhi, organised its first Sanyukt Rajbhasha Sangoshthi at Defence Research Laboratory (DRL), Tezpur, during 12-13 December 2024 on 'Viksit Bharat Mein Raksha Prodyogiki Ka Yogdan.'. Dr DV Kamboj, Director, DRL, in his welcome address, highlighted the importance of using Hindi for writing scientific articles and encouraged the participants to continue promoting Hindi in their academic and professional endeavors. Prof. Shambhu Nath Singh, Vice Chancellor of Tezpur University, graced the inaugural



session as the Chief Guest. Dr Sunil Sharma, Director, DPARO&M, Shri Arun Chaudhary, Director, DIITM, and Brig. Sujit Upadhyay, Brig. EME 4 Corps also graced the event as the Guests of Honour.

Dr PK Bora, Director, NERIWALM was the Chief Guest during the valedictory function. Eighty participants from DRDO laboratories participated in the event.



HINDI KARYASHALA AT DESIDOC

A Hindi Karyashala was organised by Defence Scientific Information & Documentation Centre (DESIDOC), Delhi, on 17 December 2024. The Karyashala was inaugurated by Dr K Nageswara Rao, OS & Director, DESIDOC. Shri Girish Mishra, Sc 'F', Scientific Analysis Group (SAG), Delhi, was the orator of the Karyashala. He spoke about Blockchain Technology and Crypto Currency-its benefits, implications and precautions to be taken for its use in day-to-day life. The talk was quite informative and was appreciated by one and all. The Karyashala was attended by the employees of DESIDOC.



HINDI KARYASHALA AT NSTL

As part of the Hindi Implementation Program, a Rajbhasha workshop was held at the Naval Science & Technological Laboratory (NSTL), Visakhapatnam, on December 19, 2024, for all cadres. The goal was to get more officers and staff interested in Rajbhasha Hindi and to get rid of any fears they had about using it for work. A lecture was delivered by the invited speaker Shri Ghanshyam Prasad Namdev, Assistant Director, Hindi, Teaching Scheme, Jabalpur, on 'Use of Hindi Software in Computer' in a single session. The trainees also participated in an interactive session.

A total of 120 participants from all cadres participated enthusiastically in the workshop. Shri Vivek Sharma, Sc.F., and



Rajbhasha Adhikari thanked the gathering.



APPOINTMENT

CEO of GAETEC, Hyderabad



Dr G Sai Saravanan, OS & Sc 'H', Solid State Physics Laboratory (SSPL), Delhi, has been appointed as Chief Executive Officer (CEO) of Gallium Arsenide Enabling Technology Centre (GAETEC), Hyderabad, on 1 November 2024. He joined SSPL in 1991 and moved to GAETEC in 2000 to form and head the SSPL MMIC Research Centre (SMRC). Dr Saravanan completed his MSc (Physics) from Bharathidasan University, Tamil Nadu, MTech. in Laser & Electro-optical Engineering from College of Engineering, Anna University, Chennai, and PhD from School of Physics, University of Hyderabad, Hyderabad. He was awarded the 'Outstanding Teamwork Award' from SA to RM in 2001, 'Scientist of the Year' in 2003, 'National Technology Day Oration' in 2010, and 'Technology Group Award' in 2010, and the 'Reviewer

of the Year 2016' award from the Institute of Physics Publishing (IoP), UK, for peer review for the international journal Semiconductor Science and Technology in its year of inception.

Higher Qualifications Acquired



Dr Siddappaji B, Sc 'F', Aeronautical Development Establishment (ADE), Bengaluru, has been awarded a PhD from the Indian Institute of Science, Bengaluru, for the thesis entitled 'Integration of Drones/UAVs into Indian Civil National Air Space System-Regulatory Framework for Commercial usage of Drones'.



Dr S Ramesh Kumar, Sc 'G' of Defence Metallurgical Research Laboratory (DMRL), Hyderabad, has been awarded PhD in Mechanical Engineering by Osmania University, Hyderabad.



Smt Krishnakumar R, Sc 'E', Naval Physical and Oceanographic Laboratory (NPOL), Kochi, has been awarded a PhD under the faculty of Science from Cochin University of Science and Technology for the thesis titled 'Simulation and Experimental Validation of Self-Noise in Piezoelectric Transducers and Enhancement of Performance Characteristics by Broadband Tuning'.



Shri Rajeev R Ashokan, Sc 'E', Naval Physical and Oceanographic Laboratory (NPOL), Kochi, has been awarded a PhD under the faculty of Science from Cochin University of Science and Technology for the thesis titled 'An Investigation on the Design, Fabrication and Characterization of Sensors for Ocean Profiling'.



DLJ WINS FRACAS CHAMPIONSHIP AWARD

Defence Laboratory, Jodhpur (DLJ) has been honoured with the Failure Reporting and Corrective Action System (FRACAS) Championship Award 2024 among the NS&M cluster laboratories. Instituted by the Secretary DDR&D and Chairman DRDO, the award aims to foster a culture of learning through failure analysis and reporting during product development.

Sh VS Sheno, OS & Director, DLJ, received the award from Shri RV Hara Prasad, DS & DG (NS&M) alongside Sh Dinesh Kumar Gupta, Sc 'F' & PD Gaganyaan (DLJ) and Shri Sanjay Kumar Sharma, Sc 'F' & Head Q&R (DLJ), during 66th NS&M CCM held in Visakhapatnam on November 28, 2024.



DLJ was recognized for presenting the best FRACAS case study during the development of the Active Dosimeter 'PERDAA' for ISRO's Gaganyaan mission.

The award underscores DLJ's commitment to continuous improvement through learning from failures during the product development process.

DRDO CENTRAL ZONE VOLLEYBALL TOURNAMENT

Defence Metallurgical Research Laboratory (DMRL), Hyderabad, organized the DRDO Central Zone Volleyball Tournament 2024-25 during 18-20 December 2024. The event witnessed enthusiastic participation from eight teams representing various DRDO laboratories, including DMRL, DRDL, RCI, ASL, DLRL, NSTL, ITR, and PXE. The tournament was inaugurated by Dr R Balamuralikrishnan, OS & Director, DMRL, in the presence of officers, staff, and the participating teams. Dr Om Prakash Parida, Sc 'F' & Chairman, Central Zone Sports Council; Shri Vinod Kumar, Estate Manager, EMU, Kanchanabagh; Dr NV Rama Rao, Sc 'F' & Chairman, DMRL Works Committee; Dr M



Prem Kumar, Sc 'E' & Chairman, DMRL Sports Committee; Shri MC Chennappa Naik, Secretary, DMRL Sports Committee; Shri Anil Burde, Secretary, DMRL Works Committee; and JCM III members from local laboratories and union members from DMRL were present on the occasion.

Team RCI emerged as the tournament champion, while Team DLRL secured the runner-up position. The valedictory function was graced by the Chief Guest, Shri Ramakrishna, who presented trophies and medals to the winning teams, applauding their outstanding performances.



DRDO NORTH ZONE VOLLEYBALL TOURNAMENT

Defence Materials and Stores Research & Development Establishment (DMSRDE), Kanpur, won the DRDO North Zone Volleyball Tournament 2024-25 held at SSPL, Delhi, during 17-19 December 2024. Overall, 13 teams from sister labs, namely TBRL, INMAS, CFEES, DEAL, IRDE, DMSRDE, ISSA, DLJ, ADRDE, DESIDOC, JCB, ITM, and host SSPL, participated in the tournament.

Dr Mayank Dwivedi, OS & Director, DMSRDE, congratulated



and greeted the players of the DEAL, Dehradun, was the runner-up team during the tournament. The

VISITORS TO DRDO LABORATORIES

ARDE, Pune

⌘ Twenty-five officers (including three foreign nationals) of the rank of lieutenant colonel, major, and captain undergoing the Advanced Materials Management (AMM) Course Sr No 53 at the College of Materials Management (CMM), Jabalpur, along with one directing staff member, visited Armament Research and Development Establishment (ARDE), Pune, on 13 December 2024. The visitors were briefed about ARDE, and a presentation on 'Safety Aspects in Explosives and Ammunition Handling' was given. The visit also included a demonstration of small arms and a visit to System Bay.

⌘ Sixteen students of the rank of Sub Inspector and Havaldar undergoing the Advanced Ammunition & Explosives Technician Course Sr No 20 (AAET Sr No 20), along with



Officers from College of Materials Management (CMM), Jabalpur at ARDE, Pune

one directing staff member, visited ARDE on 16 December 2024.

⌘ The visitors were briefed about ARDE, and a presentation on 'Infantry Weapons' was made to them. A visit to the Static Exposition Hall was also arranged during the visit.



Students of AAET Sr No 20, at ARDE, Pune



CAIR, Bengaluru

Vice Admiral Krishna Swaminathan, AVSM, VSM, Vice Chief of Naval Staff (VCNS), visited the Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru, on 24 December 2024. There was a briefing by Dr Rituraj Kumar, OS & Director, CAIR, followed by a discussion and demonstration of various technologies developed by CAIR.



Vice Admiral Krishna Swaminathan during his visit at CAIR, Bengaluru

CVRDE, Chennai

As a part of the 80th Staff Course, a team of 130 Defence officers, including international student officers from Defence Service Staff College, made their maiden visit to Combat Vehicles Research & Development Estt. (CVRDE), Chennai, on January 15, 2025. Shri J Rajesh Kumar, OS & Director CVRDE, and Shri T Panneer Selvam, Sc 'G' & AD, addressed the student officers. During the visit, the Defense Service Staff students had a meeting with senior scientists and understood the progress of technology-intensive projects carried out by CVRDE in the development of Armored Fighting Vehicles (AFVs) for the Indian Army. The visiting students evinced keen interest towards the advanced systems developed by CVRDE and witnessed the in-house (R&D) facilities of CVRDE. The visit was coordinated by Dr Dhanalakshmi S Sc 'G', AD (PC&HR), and the AFV Team.



Officers from Defence Service Staff College, during their maiden visit to CVRDE, Chennai



Rear Admiral K Venkatram exploring DEAL's products during his visit at DEAL, Dehradun

DEAL, Dehradun

⌘ Rear Admiral K Venkatram, ACNS (CS, NCO), VSM, visited the Defence Electronics Applications Laboratory (DEAL), Dehradun,

on December 13, 2024. He was greeted by Ms Neeta Kandpal, Sc 'G' & Officiating Director, along with senior scientists of the laboratory. They gave a presentation that highlighted the history of DEAL,

the developed products, the technological advancements, and the future roadmap. Rear Admiral Venkatram provided insightful inputs for all naval projects. He elaborately discussed



the Joint Services Waveform and showed interest in UCS, HEAUV, and ISR projects of DEAL.

✂ Dr Aarti Dewan Gupta, IDAS, IFA (R&D) ECS, visited the Defence Electronics Applications Laboratory (DEAL), Dehradun, on 16 December 2024. Shri LC Mangal DS & Director DEAL welcomed her, accompanied by members of the Management Council and senior scientists from the laboratory. A presentation was given to her regarding an overview of DEAL projects and the roadmap ahead. After the presentation, IFA (R&D) ECS had an interaction with senior scientists and project directors regarding various aspects of procurement cases/financial cases.

✂ Dr Bishwajeet Choubey, Director, DCWE, accompanied by Dr Anil Khurana, CCE North, visited the DEAL, Dehradun, on 19 December 2024. They were warmly received by Ms Neeta Kandpal, Sc 'G' & Officiating Director, GE (MES), the Estate Manager (EMU), and senior officers from the Works Group. During the visit, the Group Director briefed the Director, DCWE on ongoing projects and proposed critical infrastructure development, including a G+7 building and multi-story parking facility. Dr Choubey and Dr Khurana assured their full support for these initiatives, fostering strong collaboration among DCWE, MES, EMU, and DEAL.

DIBT, Mysuru

✂ Dr Manoranjan Patri, Sc 'H' (Retd) OS & Chairman, CEPTAM, along with Ms Sunita Vadhera, Director, CEPTAM, visited the Defence Institute of Bio-defence



Dr Aarti Dewan Gupta showing interest in DEAL products during her visit at the laboratory



Dr Bishwajeet Choubey with Dr Anil Khurana at DEAL, Dehradun



Dr Manoranjan Patri, Sc 'H' during his visit at DIBT, Mysuru

Technology (DIBT), Mysuru, on 12 December 2024. The distinguished visitors were warmly received by Dr R Kumar, Centre Head, DIBT. Dr Kumar delivered a comprehensive presentation

highlighting the institute's infrastructure, mission, and ongoing R&D activities, including DIBT's significant contributions to the Gaganyaan project of the Human Space Flight Centre

(HFSC) under ISRO. The visitors also engaged in an interactive session with DRTC staff of DFRL.

☞ Lt Gen JK Gera, Commandant, ASC Centre & College, Bengaluru, visited the DIBT, Mysuru, on November 26, 2024. The esteemed visitor was warmly received by Dr R Kumar, Centre Head, and DIBT. Dr Kumar provided Lt Gen JK Gera with an in-depth overview of the institute's infrastructure, mission, and ongoing project activities through a detailed presentation. Lt Gen JK Gera also visited the DIBT exhibition hall, where he showed keen interest in the institute's diverse range of research and development activities. The exhibition highlighted innovative technologies and advancements in food science and bio-defence tailored for defence applications.

DMSRDE, Kanpur

☞ An industrial visit was organised at the Defence Materials and Stores Research & Development Establishment (DMSRDE), Kanpur, on 23 December 2024. One hundred seven senior secondary students, along with their seven faculty members from Government High School, Bithoor, Kanpur, participated in the visit. They were briefed about the various R&D activities being carried out by the laboratory. The students also visited various technical divisions of the establishment. Dr Gobardhan Lal, Sc 'F' and his team coordinated the visit.

☞ One hundred senior secondary students from UP Kirana Seva Samiti Balika Vidyalaya, Kanpur, visited the DMSRDE, Kanpur, on



Lt Gen JK Gera, during his visit at the DIBT, Mysuru



Industrial visit at DMSRDE, Kanpur



Students from UP Kirana Seva Samiti Balika Vidyalaya, Kanpur, at DMSRDE, Kanpur



December 23, 2024. The students, along with their 5 teachers, were briefed about the various R&D activities being carried out by the laboratory. DMSRDE also demonstrated various products and technologies in the field of non-metallic materials to the students. Dr Gobardhan Lal, Sc 'F' and team coordinated the visit.

DRDO HQrs, Delhi

Air Marshal SP Dharkar, PVSM, AVSM, Vice Chief of the Air Staff (VCAS), visited the DRDO Archival and Retrieval System (DARS) facility, located at DRDO HQrs, on 22 November 2024. VCAS expressed keen interest in the state-of-the-art digitization and microfilming technologies in place. The visit was coordinated by the Scientific Advisor to Chief of the Air Staff (SA to CAS), Smt Asha Tripathi, ensuring a smooth and informative experience for the Vice Chief. During his visit, he was briefed by Shri Sunil Sharma, OS & Director DPARO&M, who provided insights into the facility's capability and advancements in including live demonstration. He highlighted the facility's focus on modernizing archival processes as a key area of progress. Mr Saurabh Shukla, Sc 'F' and Mr CP Meena, Sc 'F' also explained the salient features of the server software and microfilming part of the facility.

IRDE, Dehradun

Dr Aarti Dewan Gupta (IDAS), IFA (R&D) in the office of the DG (ECS) cluster, visited the Instruments Research & Development Establishment (IRDE), Dehradun, on 17



Air Marshal SP Dharkar exploring the DARS facility at DRDO HQrs



Dr Aarti Dewan Gupta during his visit at IRDE, Dehradun

December 2024. She was welcomed by Dr Ajay Kumar, OS & Director IRDE. Dr Ajay Kumar presented major R&D initiatives taken by IRDE and technologies developed by IRDE. He also briefed about various products of IRDE that have been developed and inducted into the Services. Dr Aarti appreciated the efforts of IRDE in developing state-of-the-art systems.

ISSA, Delhi

Lt Gen Devendra Sharma, AVSM, SM, GOC-IN-C, HQ (ARTRAC), visited the Institute for Systems Studies & Analyses (ISSA), Delhi, on 20 December 2024. Senior scientists at ISSA briefed about ISSA's projects and activities. This was followed by a demonstration of products developed by ISSA in the area of wargaming and simulation and a

discussion on the way ahead for future army projects.

PXE, Chandipur

Rear Admiral Rupak Barua, DGNAI, from Naval Head Quarters, New Delhi, visited the Proof & Experimental Establishment (PXE), Balasore, during 10-12 December 2024. During the visit, the flag officer interacted with Dr PK Das Gupta, Sc 'G' & Ofg. Director, and senior officers of PXE, where the admiral was briefed about proof and trial activities undertaken at PXE. During the visit, the flag officer witnessed the trial of the indigenously developed 76/62 SRGM proximity fuze. Also, the DGNAI visited technical areas of PXE, i.e., firing points, the Naval Armament Depot, the Weapon Wing, the Naval Proof & Trial Wing, and observation points.

SSPL, Delhi

Deputy Chief of Integrated Defence Staff (PP&FD), Vice Admiral Sanjay Vasayan, AVSM, NM, visited the Solid State Physics Laboratory (SSPL), Delhi (MED, CoS cluster), DRDO, Delhi, on 9 January 2025. Dr Meena Mishra, OS & Director, SSPL, briefed him on key R&D achievements, ongoing projects, & futuristic research initiatives. Deputy Chief complimented the team's efforts and urged the scientific fraternity to remain at the forefront for evolving novel solutions to address the modern-day requirements in the field of semiconductor technologies.



Lt Gen Devendra Sharma, at ISSA, Delhi



Dr PK Das Gupta felicitating Rear Admiral Rupak Barua, during his visit at PXE, Balasore



Vice Admiral Sanjay Vasayan during his visit at SSPL, Delhi



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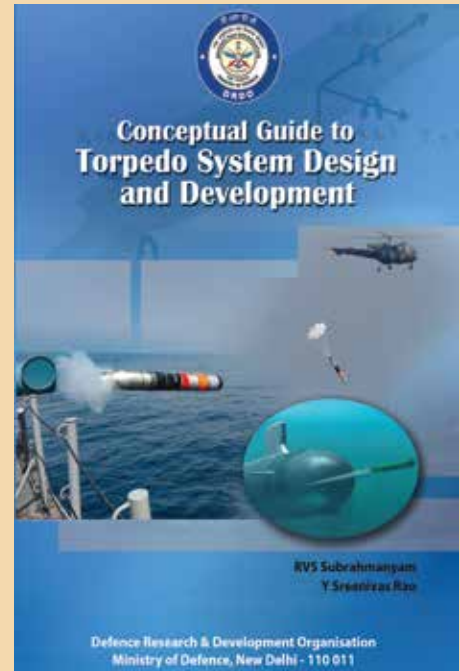
CONCEPTUAL GUIDE TO TORPEDO SYSTEM DESIGN AND DEVELOPMENT DR RVS SUBRAHMANYAM AND DR Y SREENIVAS RAO

This guide explores work flows for modern torpedo design, integrating theory and practice for professionals, researchers, and students. Key topics include hydrodynamics, sensors, power, stability, control, shell design, materials, on board computing, and safety. It addresses exercise and combat torpedoes, aerial deployment from helicopters and aircraft, and safety certification. The guide covers launchers, fire control computers, and testing protocols, emphasizing reliability. With a systems engineering approach, it spans conceptual design to validation, providing insights for designing underwater weapons and equipping readers to contribute to defence and research fields.

About the Authors

Dr RVS Subrahmanyam, retired Scientist 'G' from NSTL, brings nearly four decades of expertise in torpedo systems and underwater technologies. As Head of the Mechanical Engineering Directorate, he led projects on torpedoes, decoys, weapon fire control systems, and aerial delivery systems, significantly advancing NSTL's defence innovations and critical technologies development.

Dr Y Sreenivas Rao, retired DS & former DG (NS & M), has extensive experience in missile and product development. He worked on Prithvi warheads, contributed to missile defence, and led Mission Shakti as Project Director for the Exo Interceptor Missile.



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HIMALAYAS TO HYDERABAD: A JOURNEY FROM BORDER ROADS TO MISSILES, MICRODRONES AND CYBORGS LT GEN (DR) VJ SUNDARAM AND SCHARADA DUBEY

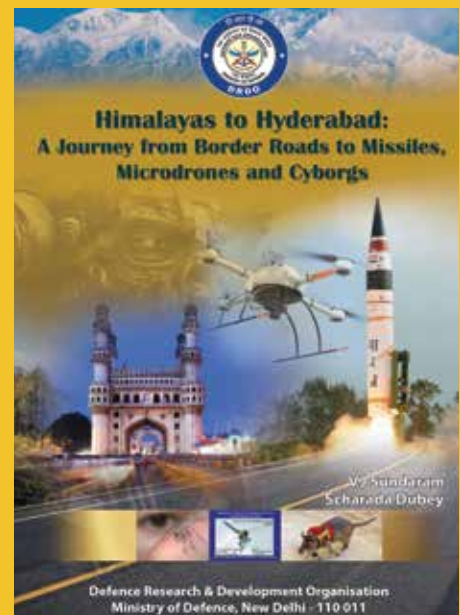
The monograph traces India's journey in strategic road-building since 1959, highlighting Pandit Nehru's priority for Himalayan roads and the 2024 inauguration of the Sela Tunnel by PM Narendra Modi. It explores India's self-reliance in missile development, detailing projects like Prithvi, Agni, Akash, Nag, Brahmos, and Trishul, despite challenges like the Missile Technology Control Regime.

About the Authors

Lt Gen (Dr) VJ Sundaram, BSc and BE (Mech), Mysore University. He joined Army in 1957. In service, he completed post-graduate courses in Electronics and Missiles. He led the design team

for Prithvi and was its first Project Director. He was Mission Director for 50 Prithvi/Dhanush launches from 1988 to 2013. He took over from Dr Kalam as Director of DRDL & RCI and Chairman, Programme Management Board of India's Missile Program. He was Chairman, Committee for Indigenization of Critical Technologies of LCA (1998-2001). He initiated and still nurtures micro drones and cyborgs.

Smt Scharada Dubey, is an accomplished author and communication consultant, having published 19 books, which include profiles of notable Indian figures such as Presidents, Prime Ministers, and social activists.



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