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DRDO PARTICIPATION AT REPUBLIC DAY PARADE 2023





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DRDO PARTICIPATION AT REPUBLIC DAY PARADE 2023

As part of its mission to create cutting-edge defence systems, the DRDO displayed one tableau and one equipment at the Republic Day Parade on 26 January 2023, at Kartavya Path. The DRDO tableau had the theme 'Securing Nation with Effective Surveillance, Communication, and Neutralising Threats' as its focus. It was divided into four sections. In the first section, sonars like the Ushus-2 for submarines, the Humsa series for ships, and the Low-Frequency Dunking Sonar for Helicopter Launch Surveillance were demonstrated on underwater surveillance platforms.

The D4 counter-drone systems for a real-time search, detection, tracking, and neutralisation of targets, were displayed on Land Surveillance, Communication, and Neutralising platforms in the second section of the tableau.

There were also two units of the Battery Multifunction Radar (BMFR), Missile Launcher Vehicle (MLV), and Quick Reaction Surface-to-Air Missile (QRSAM) Weapon System on exhibit. QRSAM, is an all-weather air defence system, in the Tactical Battle Area. Additionally, the Manpack and Handheld variations of Software Defined Radio, created by DRDO for secure

communication were included.

The Airborne Early Warning and Control System (AEW&C) and the TAPAS BH Medium Altitude Long Endurance (MALE) UAV were included in the third section of the tableau. With its capabilities for electronic warfare, communication, and surveillance, AEW&C is a true force multiplier. The TAPAS BH system satisfies the Intelligence, Surveillance, Target Acquisition, Tracking, and Reconnaissance (ISTAR) needs of the three Services.

In the fourth section, the rear, highlighted DRDO's research initiatives, a semiconductor R&D facility was displayed. This



section also presented cutting-edge technologies in the field of semiconductor, detector, and next-generation sensors.

The DRDO also exhibited actual equipment, the indigenously designed Wheeled Armoured Platform (WhAP), a modular 8X8 wheeled combat platform pulled

by a 70-ton trailer. The WhAP can be modified for use in a variety of missions, including Wheeled Infantry Combat Vehicle, CBRN Vehicle, ATGM Carrier, Light Tank, etc.

The Armoured Personnel Carrier (APC) variant on display included a composite armour

system, a 30 mm turret, and cutting-edge blast protection.

During the parade a large number of additional DRDO-developed systems such as the Arjun MBT, the Akash NG, the Brahmos Missile, the Nag Missile System, and the Short Span Bridge were displayed.

DRDO SIGNED MOU WITH MINISTRY OF POWER FOR EWS IMPLEMENTATION OF HYDRO PROJECTS

DRDO signed a Memorandum of Understanding (MoU) with the Ministry of Power on 27 December 2022 at Shram Shakti Bhawan, New Delhi for 'Implementation of Early Warning Systems (EWS) for Vulnerable Hydro Projects/Powers Stations. The MoU was signed by Dr Samir V Kamat, Secretary Department of Defence (R&D) & Chairman DRDO on behalf of DRDO, and Shri Alok Kumar, Secretary (Power) on behalf of the Ministry of Power. The EWS is an integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication, and preparedness for timely action to reduce disaster risks in advance of hazardous events. The EWS will alert stakeholders in case of natural hazards

like avalanches, landslides, glacial lakes, and other geohazards. The signing of this MoU is a remarkable step towards disaster risk reduction in Hydro Projects in the country, especially in the upper reaches of hilly regions. DRDO's Defence Geoinformatics Research Establishment (DGRE), Chandigarh is mandated to carry out research in these areas.

Separate and specific tasks will be formulated between DRDO and respective project developers in agreement with the broad understanding developed through this MoU. In addition, the DRDO and Ministry of Power will also be working to build mitigation and damage control systems against geo-hazardous disasters in the hills.



DFRL SIGNS LATOT WITH M/s SRM PRODUCTS FOR SURVIVAL & EMERGENCY FLYING RATION TECHNOLOGY

Defence Food Research Laboratory (DFRL), Mysuru, signed the License Agreement on the Transfer of Technology (LAToT) for Survival and Emergency Flying Ration Technology with M/s SRM Products, Mumbai on 16 November 2022. Dr Anil Dutt Semwal, Director, DFRL, and Mr Maurice Periera, from M/s SRM Products, Mumbai, signed the agreement in the presence of Dr R Kumar, Sc 'G' & Associate Director, DFRL, and Dr VA Sajeew Kumar, Sc 'F', Head, FDAPT Division.

Dr M Pal Murugan, Sc 'E', Mr Ayub Khan, Sc 'E' and Mr S Nagaraj and their teams were also present during the occasion.



DFRL developed energy dense soft bar to meet the emergency operational requirement of the Air Force. A pre-requisite for emergency flying ration is that protein and fat content should not be more than 5 per cent to avoid thirstiness in emergencies.

DFRL SIGNS LATOT WITH M/s SREE LPG FOR MRE RATION TECHNOLOGY

Defence Food Research Laboratory (DFRL), Mysuru, signed a License Agreement on the Transfer of Technology (LAToT) for MRE Ration Technology with M/s Sree LPG Pvt Ltd, Mysore. Dr Anil Dutt Semwal, Director, DFRL and Mr Parthanath, Managing Director, M/s Sree LPG Pvt Ltd, Mysore signed the agreement on 17 November 2022.

Dr Johnsy George, Sc 'F'; Mr M Pal Murugan, Sc 'E'; Mr Ayub Khan, Sc 'E' & their teams, Lt Col Yash Joshi, Service Officer;



Mr S Nagaraj; and Mr Sumanth, Director, M/s Sree LPG Pvt Ltd were also present during the occasion.

DFRL SIGNS LATOT WITH M/s MAK INDIA FOR BIODEGRADABLE CUTLERY TECHNOLOGY

Defence Food Research Laboratory (DFRL), Mysuru, signed License Agreement on the Transfer of Technology (LAToT) with M/s Mak India Pvt Ltd, Coimbatore for Biodegradable Cutlery Technology. Dr Anil Dutt Semwal, Director, DFRL, and Mr R Ramesh, General Manager, M/s Mak India Pvt Ltd, Coimbatore, signed the agreement on 21 November 2022.

The inventors Dr V Vasudevan, Sc 'E' & Mrs Janifer Raj Xavier, Sc 'E' and their team; Dr Johnsy George, Sc 'F' & Head (RA); Dr M Pal Murugan, Sc 'E' & Head-Technology Transfer & Exhibition Division; Dr Rudragoud, Sc 'E' & Head (P&C) & Mr S Nagaraj were



present during the occasion. DFRL has developed Biodegradable Cutlery using reinforcement of natural fiber (agro-waste) into

matrix/resin which is a polymer of renewable resources by compression or injection molding process.

DGRE SIGNED MOU FOR JOINT RESEARCH

Defence Geoinformatics Research Establishment (DGRE), Chandigarh, and India Meteorological Department (IMD), Ministry of Earth Sciences signed an MoU to work jointly on R&D related to the mitigation of mountain hazards over the North-West Himalayan region. Dr PK Satyawali, Director, DGRE, and Dr Mrutyunjay Mohapatra, DG (Meteorology), IMD signed the pact at DGRE HQ in Chandigarh on 19 December 2022.

Under the collaboration, a Doppler Weather Radar will be installed at 2840 m Aslin Kashmir which will be the first weather radar in the region. It will help in developing a better understanding of the field of mountain



meteorology and improving the operational mountain weather and avalanche forecast services to all the stakeholders, particularly

to the troops deployed in the snow-bound region in North-West Himalaya at finer spatial and temporal scales.

DRDO CELEBRATES ITS 65TH FOUNDATION DAY

DRDO Day is celebrated every year on 1st January to mark its foundation. This year DRDO observed its 65th Foundation Day. Secretary, Department of Defence R&D and Chairman, DRDO Dr Samir V Kamat along with Director Generals and senior officials of DRDO paid floral tributes at the bust of former President Dr APJ Abdul Kalam, the Missile Man of India, at DRDO Headquarters in New Delhi.

The event, organised to mark the day, also included the release of two books comprising articles on defence technologies, a dictionary on scientific and technical terminology, Stores Manual and Guidelines (SMG-2023), third-anniversary issue of bimonthly bulletin 'InSight' and 'DRDO Technology Foresight'. DRDO Technology Foresight will be shared on the DRDO website so that industry and academia may plan their R&D activities accordingly.

A DRDO Monograph 'Infrared Signatures, Sensors and Technologies' authored by Dr Kamal Nain Chopra, a former DRDO Scientist, was also released by the Chairman DRDO. DRDO calendar-2023 was also released during the occasion. In addition, Secretary, DD R&D and Chairman, DRDO felicitated all the employees who have completed 25 years of their service in DRDO.

In his address to the DRDO fraternity on the occasion, Dr Samir V Kamat congratulated them for achieving several

milestones in 2022, urging them to focus on developing the defence R&D ecosystem in the country and strive to realise Prime Minister Shri Narendra Modi's vision of 'Aatmanirbhar Bharat'.

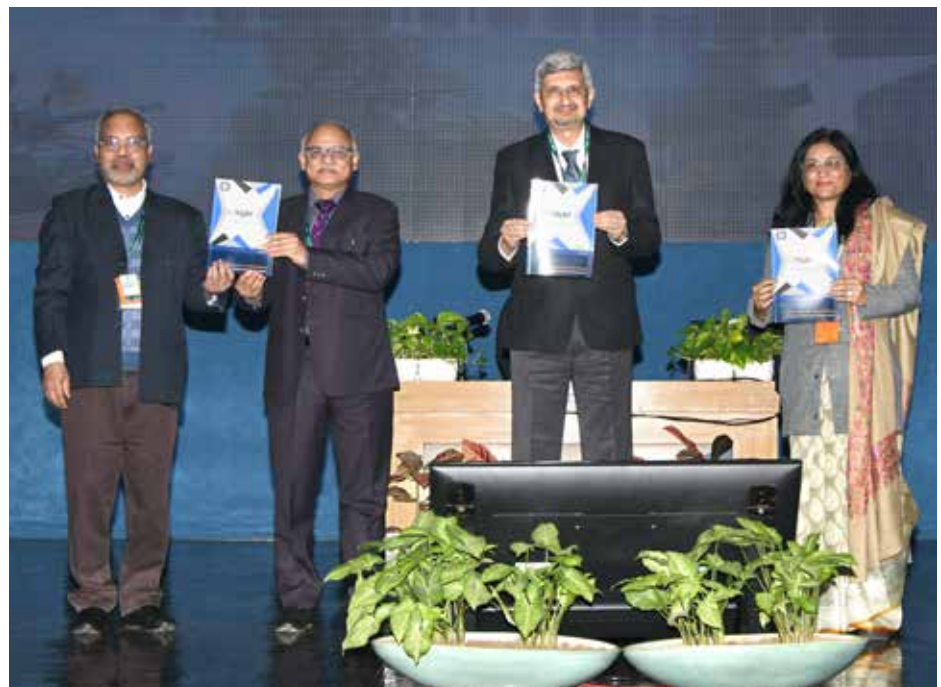
The DRDO Chairman said that several systems developed by DRDO have been delivered, inducted or handed over to the users. Dr Kamat added that the Acceptance of Necessity (AON) has also been accorded by the Defence Procurement Boards and Defence Acquisitions Council for the induction of several DRDO-developed systems.

The DRDO Chairman notified that the Authority Holding Sealed Particulars (AHSP) of the Army version of the Akash Weapon System has been handed over to Missile Systems Quality Assurance Agency. Several major systems have either been completed or

are in the final stages of user evaluation. Dr Kamat stated that several systems are also undergoing developmental trials. The DRDO Chairman said that it is expected that most of the systems under trial will be handed over to the users in the coming year.

Dr Kamat brought out that in the past year, DRDO has signed 145 ToTs. Regarding IP protection, 160 patents were filed and 100 have been granted in 2022.

He mentioned that MoU was also signed between Naval Innovation and Indigenisation Organisation and TDF to work jointly on advanced naval technologies. In addition, he mentioned that the 4th version of the Dare to Dream contest has been launched by the Raksha Mantri. He informed that DRDO has now established a total of 15 DRDO-Industry-Academia Centres of Excellence (DIA-CoEs).



Besides celebration at DRDO HQs, following laboratories also celebrated DRDO Day at their respective places:

DESIDOC, DELHI

Defence Scientific Information & Documentation Centre (DESIDOC), Delhi celebrated DRDO Day with fervor and enthusiasm on 2 January 2023. Dr K Nageswara Rao, Director, DESIDOC gave DRDO Day-cum New Year Day address. He emphasised that the DESIDOC team is dedicated to its vision and working efficiently to achieve its mission. He appreciated the efforts and new projects undertaken by DESIDOC. He also mentioned the roadmap of DESIDOC, new activities, and plans for the laboratory.



ITM, MUSSOORIE

Institute of Technology Management (ITM), Mussoorie celebrated DRDO Day-2023 on 2 January 2023. The celebration commenced with offering floral tribute to Dr APJ Abdul Kalam by all the ITM personnel. Shri SA Katti, Director, ITM addressed the ITM fraternity and appreciated the achievements of ITM during 2022 such as implementation of New Training Policy, various welfare activities like opening of two shops at welfare centre, distribution of tracksuits to all employees on the

occasion of Diamond Jubilee of ITM.



ITR, CHANDIPUR

Integrated Test Range (ITR), Chandipur celebrated its 65th DRDO Day 2023 on 2 January 2023. On the occasion, Shri HK Ratha, Director, ITR briefed about the achievements of ITR during the Year 2022. He highlighted the notable achievements of ITR during the year 2022 like the successful test firing of a record number of missiles despite the busy schedule and infrastructure development programmes taken up such as renovation/expansion of the Mission Control Room, Radar stations, etc.

He inspired the employees to have a shared vision of a world-class test range with state-of-the-art instrumentation and infrastructure along with the expansion of Ranges.



LRDE, BENGALURU

DRDO Day and Electronics & Radar Development Establishment (LRDE) Laboratory

Raising Day were celebrated great enthusiasm on 2 January 2023. Dr P Radhakrishna, OS & Director, LRDE presided over the function. Director addressed the gathering on the occasion and spoke on achievements of LRDE during 2022 and goals for 2023. Address by Dr SV Kamat, Secretary DD (R&D) & Chairman on the occasion of DRDO Day was also live webcasted.



NPOL, KOCHI

Naval Physical & Oceanographic Laboratory (NPOL), Kochi celebrated DRDO Day on 2 January 2023. The programme started with the webcast of the New Year message of Dr Samir V Kamat, Secretary, DD R&D & Chairman, DRDO. Director, NPOL addressed the NPOL fraternity on 3 January 2023, highlighting the significant achievements and progress in the previous year as well as commitments in 2023.



FLAG-OFF OF SARANG QT SYSTEM

Defence Electronics Research Laboratory (DLRL), Hyderabad has indigenously designed and developed an airborne ESM System code-named 'Sarang', for installation onboard the Ka-31 Helicopter of the Indian Navy as part of Programme 'Samudrika'. The system is capable of interception and detection of all types of radars including LPI and exotic radars in the B-K band of operations. The system has an integrated Radar Finger Printing System (RFPS) for fine grain (inter/intra) analysis of the intercepted emitters. The Sarang Engineering Model is realised by DLRL and user evaluation trials are completed onboard Ka-31 Helicopter. The Navy is in the process of placing a production order for 12 Sarang Systems on M/s BEL, Hyderabad.

BEL has successfully realised



Sarang QT System with technical know-how and comprehensive support from DLRL. The factory evaluation of the Sarang QT System is completed successfully and the system is dispatched for installation onboard the Ka-31 Helicopter of the Indian Navy.

The flag-off ceremony was

carried out by Dr BK Das, DG (ECS) at BEL, Hyderabad on 2 December 2022 in presence of Shri N Srinivas Rao, OS & Director, DLRL; Shri K Srinivas, GM-BEL(H); Shri Nikhil Jain GM-BEL (H); Shri PBV Ramamurthy, Sc 'G', RD-RCMA; Shri HV Heemanth Kumar, RD-DGAQA and other senior officers.

NSTL CONDUCTED TWO DAYS BOOK EXHIBITION AT TIRC BUILDING

Naval Science and Technological Laboratory (NSTL), Visakhapatnam organised a book exhibition during 14-15 December at TIRC building, NSTL. The event was inaugurated by Dr Y Sreenivas Rao, OS & Director, NSTL on 14 December 2022. Large number of readers/users of NSTL and Bharat Dynamics Ltd. (BDL) participated in the exhibition. 270 new books were shortlisted and selected for procurement.



CONSTITUTION DAY CELEBRATION

Constitution Day was celebrated at Defence Geoinformatics Research Establishment (DGRE), Chandigarh on 26 November 2022. Dr Amod Kumar, Associate Director, along with all officers and staff participated during the event and collectively read out the preamble of The Constitution of India, and pledged to abide by it. Shri Sachin Kumar, Sc 'E', briefed all the employees of DGRE about the various rights and duties as reflected in the Constitution of India, how everyone is bound by these rules, and about its benefits too.



CELEBRATION OF CONSTITUTION DAY IN IRDE

Instruments Research & Development Establishment (IRDE), Dehradun celebrated Constitution Day on 26 November 2022. In his inaugural address, Dr Ajay Kumar, Director, IRDE highlighted the values of the Indian Constitution and administered the preamble of the

Indian Constitution to the IRDE fraternity.

Constitution Day, also known as 'Samvidhan Divas' is celebrated in our country on 26 November every year to commemorate the adoption of the Constitution of India and to promote Constitution values among citizens. Fundamental

Rights and Fundamental Duties of the citizen of India were displayed in the digital display board of IRDE.

Dr Ajay Kumar urged officers and staff to participate in the online quiz on the Constitution of India.



SWACHHATA PAKHWADA CELEBRATIONS

Swachhata Pakhwada is an initiative envisioned by the Hon'ble Prime Minister for making Swachhata 'everyone's Business'. All Ministries/ Departments are observing Swachhata Pakhwada in the allocated fortnight. The following laboratories of DRDO also celebrated Swachhata Pakhwada at their respective places.

DGRE, CHANDIGARH

Swachhata Pakhwada was organised at the Defence Geoinformatics Research Establishment (DGRE), Chandigarh, RDC Manali (HP), and MMC Sasoma (UT of Ladakh) during 1-15 December 2022. It started with the Swachhata pledge taken by DGRE officials on the first day. This was followed by identifying and cleaning the areas around DGRE premises, a special drive to clean archeological sites of Garden of Silence, Chandigarh, and Mata Hadimba Devi temple premises, Manali (HP) by DGRE officials. Various campaigns were carried out by DGRE to generate information on E-waste and SOP for disposal, use of bicycles and carpooling, to stop the use of plastics, and adhering to 3R (Reduce, Reuse, and Recycle) principles. Teachers and students



(85 Nos) of classes (Xth, XIth, and XIIth) of Swami Sant Dass Public School, Phagwara (Punjab) visited DGRE, Chandigarh on 2 December 2022 with self-made posters on 'Swachh Bharat' and 'DRDO'.

Talk on various 'R&D activities of DGRE, DRDO', and 'Cleanliness-As way of life' were delivered to students.

DRL, TEZPUR

The Swachhata Pakhwada was observed by Defence Research Laboratory (DRL), Tezpur during 1-15 December 2022. The event was launched by Dr DV Kamboj, Director, DRL. Activities such as the swachhata pledge, cleanliness drive within campuses and surroundings, waste disposal, plantation drives, community outreach programme, and cleanliness awareness programme among all stakeholders were observed in different places of Tezpur, such as Tezpur Medical College & Hospital, Tezpur Cancer Centre, Ghoramari PHC, Udmari LP School, etc., to make the society aware of the importance of cleanliness under the banner of 'Swachhata Pakhwada'.



IRDE, DEHRADUN

Instruments Research & Development Establishment (IRDE), Dehradun observed Swachhata Pakhwada from 1-15

December 2022. The programme aimed to ensure the participation of the IRDE fraternity in swachhata activities and to truly transform Swachh Bharat into a citizen's movement. The programme was inaugurated with the swachhata pledge by officers and staff of IRDE. Dr Ajay Kumar, Director IRDE addressed the IRDE fraternity on this occasion. A lecture was delivered by the Chief Guest, Dr Ajay Kumar, Principal Scientist of the Indian Institute of Petroleum (IIP), Dehradun on 2 December 2022 as an awareness drive on Swachhata Pakhwada.

Various events like a cleanliness drive, disposal of e-waste, awareness about stopping single-use plastic, children painting competition, etc., were organised during the programme. Shri Niraj Bhargava, Sc 'G' & Associate Director, IRDE awarded the winners of the events and thanked all officers and staff for active participation.



MTRDC, BENGALURU

Swachhata Pakhwada was celebrated at Microwave Tube Research & Development Centre (MTRDC), Bengaluru during 1-15 December 2022. During the celebration, various activities were

conducted. The celebration was concluded with prize distribution, swachhata pledge, distribution of jute bags to all MTRDC employees and contract persons, and address by Shri G Viswam, OS and Centre-Head, MTRDC. Centre-head mentioned in the address that cleanliness should be part of daily life, not as an event and we should promise to ourselves that we won't litter and educate others not to litter.



NPOL, KOCHI

Swachhta Pakhwada-2022' was Observed during 1-15 December 2022 by Naval Physical and Oceanographic Laboratory (NPOL), Kochi. NPOL observed Swachhata Shapath Day, Awareness Day, Cleanliness Drive Day, Record Management Day, Go Green Drive Day, Community Outreach Day, Social Buzz Day, Competitions Day, Interactive Session Day, and Prize Distribution Day.

On Swachhata Shapath day, employees took Swachhata Shapath under the leadership of Dr K Ajith Kumar, Sc 'G' & Director, NPOL. Two areas were cleaned by NPOL employees on cleanliness drive day. The campus of the Underwater Acoustic

Research Facility (UARF) a unit of NPOL was also cleaned during the Pakhwada. On Record Management Day, 770 records were reviewed, 138 records were identified for retention and 632 records were weeded out. A rally with the participation of NPOL employees and DSC personnel was conducted from the main foyer of this laboratory to the entire technical campus, as part of Swachhata Pakhwada 2022-Community Outreach Day.



NSTL, VISAKHAPATNAM

Naval Science & Technological Laboratory (NSTL), Visakhapatnam, implemented an action plan to ensure greater participation and more effective outcome of the Swachhta Pakhwada. Swachhta pledge was taken by all

employees on 1 December 2022. A cleanliness drive was organised at various locations of residential and technical area in NSTL during 1-15 December 2022. More than 150 participants voluntarily joined for contributing in cleanliness drive keeping in view all the precaution measures such as social distancing, wearing mask, hand gloves, etc. As a part of 'Go Green Drive Day', more than 450 saplings were planted at different locations of NSTL Technical and Residential area.

NSTL team visited Manasu: Girls Care Center and Swadhar Gruha: Shelter for woman during difficult circumstances and distributed cleaning materials. The Swachhta Pakhwada concluded with the distribution of prizes to the winners of various competitions. Sri PVS Ganesh Kumar, Outstanding Scientist & Officiating Director, NSTL gave away the prizes. Jute bags were distributed to employees to encourage not using plastic carry bags. Dr BVSS Krishna Kumar and other senior scientists, officers and staff participated in the valedictory programme.



KARNATAKA RAJYOSTAVA CELEBRATIONS

CAIR, BENGALURU

Centre for AI & Robotics (CAIR), Bengaluru celebrated its Raising Day and Karnataka Rajyostava with a lot of enthusiasm on 22 December 2022. Ms Suma Varughese, OS & DG (MCC), and Shri K Sadashiv Shenoy, Chairman, Karnataka Media Academy were the Chief Guests for CAIR Day and Kannada Rajyostava celebrations, respectively. The event began with the lighting of a lamp followed by an address by Dr Subrata Rakshit, OS & Director, CAIR. He gave a brief of how CAIR progressed over the years in the design & development and delivery of systems and cutting-edge technologies to the users. Ms Varughese addressed the gathering and in her speech, she touched upon the history of



Rajyotsava, and the culture and growth of the Kannada language. She also complemented the efforts of CAIR in the area of AI, Command, Control, and Cyber security. Shri K Sadashiv Shenoy, Chief Guest Karnataka Rajyostava delivered

a talk on Kannada Rajyostava. In his talk, he briefly touched upon the importance of various regional languages and cultures of Karnataka. He emphasised on the need to give more importance to the regional language.

MTRDC, BENGALURU

Microwave Tube Research & Development Centre (MTRDC), Bengaluru celebrated Karnataka Rajyotsava on 7 December 2022. Shri Mahantesh Bilagi, IAS, Chairman, and Managing Director, BESCOM was the Chief Guest of the occasion. Dr Sudhamani, Programme Co-ordinator, welcomed the Chief Guest, Centre Head, and august gathering on the occasion.

The Chief Guest spoke about the struggle behind the unification of Karnataka, Kannada as a classical language and its rich heritage, recipient of the highest number of Jnanapita awards next to Hindi. Shri G Viswam, Centre-Head, MTRDC also addressed the



gathering and spoke about his experience of learning Kannada. He advised them to try to learn the state language wherever they reside. The Chief Guest

was felicitated and a cultural programme by MTRDCian was conducted. In the end, the vote of thanks was proposed by Shri Jayateertha D, Sc 'E'.

ITR CELEBRATES 40TH LAB RAISING DAY

Integrated Test Range (ITR), Chandipur, the premiere Defence R&D Establishment engaged in the test and evaluation of rockets and air-borne systems observed 40 Raising Day on 25 December 2022. Dr BHVS Narayana Murthy, DS & DG (MSS) was present as the Chief Guest during the occasion along with Shri MVKV Prasad, former Director, ITR & ADE; Dr Manickavasagam M, Director, SPIC; Shri DK Joshi, Director, PXE as Distinguished Guest; and Shri HK Ratha, Director, ITR. Other dignitaries present included Mrs B Sucharita, Associate Director; Shri GK Pradhan, Chairman Works Committee; Dr Sukanta Das, Chairman, Raising Day; Shri SC Patra, Vice-Chairman, Raising



Day and Shri CR Mohapatra, Vice Chairman, Works Committee. Mr MK Pal and Shri Jaysankar Bharati conducted the event.

Dr Narayana Murthy lauded the ITR team for conducting many successful goals making the laboratory one of the busiest Test

Ranges. He wished the team to work with more enthusiasm and vigor to bring many more laurels to the laboratory. A Coffee Table Book, a souvenir, and the sixth edition of the trilingual magazine of ITR, UTKARSH were released by the distinguished guests.

NPOL ANNUAL DAY 2022

Naval Physical and Oceanographic Laboratory (NPOL), Kochi celebrated its 70th Annual Day on 9 December 2022. The Chief Guest, Prof. (Dr) KN Madhusoodanan, Vice Chancellor, Cochin University of Science & Technology (CUSAT) in his inaugural address lauded the achievements of the laboratory. He shared his experiences in working with NPOL and highlighted the symbiotic relationship between NPOL, DRDO, and CUSAT for collaborating on R&D activities in the defence sector. Smt Rani Gopakumar, Sc 'G' presented a brief of the function. Dr K Ajith Kumar, Sc 'G' & Director, NPOL presented a detailed account of the achievements of the



organisation in both technical and corporate areas and about the commitments for the future. Shri Wilson K Cherukulath, Sc 'F' & GD (P&A), Shri Abhilash, VO-C, General Secretary, NPOL Civilian Employees Union & Leader, staff side, JCM IV level and Shri

Kishore Kumar K, LF, General Secretary, R&D Employees Union offered felicitations.

Shri Suresh Kumar, S, Secretary, Works Committee, delivered the vote of thanks. The function concluded with a colorful cultural programme.

TECHNOLOGY INTERACTION MEET IN IRDE

Instruments Research & Development Establishment (IRDE), Dehradun organised a Technology Interaction Meet on 5 December 2022. Six industries working in the field of defence technology about the IRDE domain participated in the Meet. The industries were M/s Tata ASL, M/s L&T Defence, M/s Defsys Integrated System, M/s Mistral Solutions Pvt. Ltd., M/s TONBO Imaging, and M/s Analinear. Dr Ajay Kumar, Director, IRDE welcomed all the industries. In his inaugural remark, he emphasised that synergy between DRDO and defence industries will make India towards Aatmanir Bharta in defence technology sector.

The Meet was primarily focused to bring the present capabilities and plan of IRDE for



the development of technologies relevant to electro-optics where a handshake is expected from the industries.

Ms Manish Srivastava, Sc 'F' presented in detail the IRDE-developed products and highlighted the areas where industry mutual support is required in the field

of electro-optical systems. All the industry partners delivered talks highlighting their technical capability and showcasing future projects. They also shared their experiences working with IRDE and gave relevant feedback.

Shri Shabir Ahmed, Sc 'F' was the convenor of the Meet.

INDO-US JTG WORKSHOP ON HUMAN-MACHINE TEAMING

A three-day Indo-US Joint Technical Group (JTG) bilateral workshop on 'Human Machine Teaming' was organised by the Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi during 13-15 December 2022. Dr UK Singh, OS & DG (Life Sciences) inaugurated the workshop. Dr Chandrika Kaushik, OS & DG (Production Coordination & Services Interaction), delivered the special address during the workshop.

The workshop sought to identify potential strategic areas of mutual



interest that would culminate into fruitful scientific collaboration and help synergise both nations' strengths.

Twenty-Two US research delegates from various defence research laboratories of the Department of Defence, USA, participated and presented on the 'Human Machine Teaming' in the workshop. The US delegation was spearheaded by Mr Terence Emmert, Principal Deputy CTO for Mission Capabilities, US Office

of the Undersecretary of Defence.

The Indian delegation, headed by Dr Anil Kumar Mishra, Director, INMAS, constituted speakers and participants from IITs, Services, and DRDO laboratories. Dr Patric Mason & Dr Sushil Chandra were POCs from the US and India sides, respectively. Participants shared their knowledge and expertise to enhance current and future preparedness for challenges in these critical and unconventional areas.

The workshop focused on developing concepts and white papers for India-US collaborations in research areas targeting the Optimisation of the Human-Machine Teaming aspect.

The workshop proved a significant milestone in furthering the bilateral relationship of the USA with India and will give impetus to future scientists' collaboration in medical, chemical, and biological defence.

NATIONAL CONFERENCE ON SUSTAINMENT OF TROOPS IN DIFFERENT TERRAINS

Defence Food Research Laboratory (DFRL), Mysore organised a national conference on 'Futuristic Strategies for Sustainment of Troops in Different Terrains' during 7-9 December 2022. The conference was inaugurated by Dr UK Singh, Director General (Life Sciences) in the presence of Cmde Manoj Sharma, Director, PDCV, NHQ, New Delhi; Dr R Uma Maheswaran, Director, HSFC, ISRO, Bangalore; Dr Anil Dutt Semwal, Director, DFRL. As part of the seminar, Dr Singh launched commercial products developed by DFRL and manufactured by industries such as Biodegradable Cutlery, Biodegradable Packaging Material, and Milk Testing Kit Mark-II. Dr Semwal exchanged License Agreements on Technology Transfer (LAToT) with 4 industries, namely, M/s Mak India, Coimbatore, Beejapuri Pvt Ltd, Gurgaon, Elint Labs Pvt Ltd, Mysore, and M/s Potential Health Care, Hunsur.



Dr UK Singh also inaugurated an exhibition displaying products and technologies by DFRL as well as by industries. The conference focused on R&D needed for optimising and enhancing military performance, military dietary needs and focused nutritional delivery, development of sustainable food packaging, hybrid technology for food

processing, modern methods and strategies for evaluating the safety and quality of food, etc.

Lt Gen Ashok Jindal, AVSM, YSM, Commandant, R&R Hospital, Delhi as a Guest of Honour during the valedictory function gave a lecture on 'Impact of Terrain & Weather on Health and Performance of Troops'. The conference ended with a vote of thanks by Dr R Kumar, Sc 'G'.

AWARENESS PROGRAMME ON PREVENTION OF SEXUAL HARASSMENT AT WORKPLACE

ASL, HYDERABAD

Advanced Systems Laboratory (ASL), Hyderabad organized the 'Awareness Programme on Prevention of Sexual Harassment (POSH) at Workplaces' on 9 December 2022.

Smt Amruta Shivane, Sc, 'G', Chairperson, ICC welcomed the gathering. Smt Usha P Verma, Sc 'G' inaugurated the event and highlighted the importance of this programme. Shri Neil Dubey, Sc, 'F', DOMS appreciated the efforts of ICC in organising the event. Ms K Lakshami Tejaswini, Women's Welfare Officer, and Ms K Jhansi, District Coordinator of Mahila Shakti Kendra, Hyderabad were



the resource persons. They created awareness about how to avoid and tackle serious problems of sexual harassment at workplaces.

CAIR, BENGALURU

Centre for Artificial Intelligence & Robotics (CAIR), Bengaluru organised a workshop on 'The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013' on 2 December 2022. The event was chaired by Dr Subrata Rakshit, OS & Director, CAIR. Dr G Jyothi, Deputy Director, National Institute of Public Cooperation and Child Development, Regional Centre Bangalore was invited to deliver the talk.

Dr Jyothi in her talk explained the need, genesis, and present provisions of the act. The workshop was very interactive and was attended by CAIR employees and auxiliary personnel working at CAIR. Large-size posters regarding



sensitisation about provisions of the act were placed at prominent places from 25 November 2022 to 10 December 2022. The event was well received and appreciated by all attendees.

DFRL, MYSORE

Two days awareness and sensitization programme was conducted on 'The Sexual Harassment of Women at Work Place (Prevention, prohibition, and redressal) Act 2013 POSH' at Defence Food Research Laboratory (DFRL), Mysore during 28-29 November 2022. A lecture was conducted for all the officers and staff. Prof. Indira Ramarao, Former Head, Department of Sociology, University of Mysore, Mysuru, President, of Samruddhi Foundation, an NGO, and her team were invited as the resource personnel. Dr Anil Dutt Semwal Director, DFRL in his address, highlighted the importance of the POSH Act 2013. Dr Shylaja R Sc 'F' Chairperson of Women's Cell, DFRL welcomed and introduced the speaker and her team to the



audience. Prof. Indira Ramarao and her team gave a detailed lecture on the POSH Act 2013 by explaining each section of the Act 2013 with examples of various case studies related to sexual harassment and the measures

to be taken up to prevent sexual harassment at the workplace. The lecture was delivered in Kannada, the local language for the benefit of the unskilled and casual contractual workers to create awareness among them.

NSTL PARTICIPATION IN HINDI TOLIC

As a part of the annual Hindi implementation programme, the Naval Science & Technological Laboratory (NSTL), Visakhapatnam conducted a Hindi Workshop on 27 December 2022 on 'General Hindi Implementation and Fishery Research'. Dr Annada Bhushan Kar, Senior Scientist from the Fishery Survey of India, Visakhapatnam was invited as the Guest speaker. NSTL being an active member of the Town Official Language Implementation Committee (TOLIC), Visakhapatnam participated in a different category of Hindi competitions conducted by TOLIC, Vishakhapatnam during November-December 2022. Many of the NSTL employees won



prizes in various competitions and brought laurels to the laboratory; Shri Mithilesh Kumar, TO 'A' (First-Hindi Quiz); Shri Mithilesh Kumar, TO 'A' (Second-Hindi Translation); Shri Dhiraj Dixit, SA-A, (Consolation-Hindi

Calligraphy); Shri Nitesh Kumar Srivastava, STA 'B' (Consolation-Hindi Translation); Shri Nitesh Kumar Srivastava, STA 'B' (Consolation-Hindi Dictation); and Shri Amit Tirkey, Sc 'F', (Consolation-Hindi Elocution).

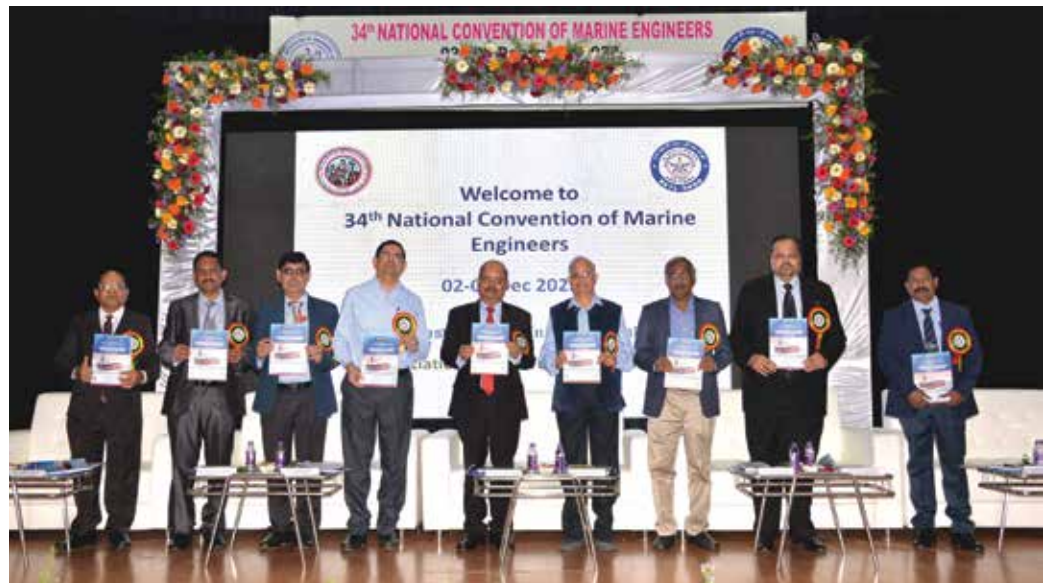
HINDI WORKSHOP AT IRDE

Instruments Research & Development Establishment (IRDE), Dehradun conducted a one-day Hindi Workshop on 15 December 2022 on 'The use of Hindi in Administration, Finance & Stores Related Activities and the Awareness of Rajbhasha Rules'. Dr Ajay Kumar, Director, IRDE inaugurated the workshop. Dr MR Saklani, Deputy Director (Retd), Rajbhasha, Income Tax, Delhi was the Chief Guest in the workshop and delivered the keynote address. A total no of 48 participants attended the workshop.



34TH NATIONAL CONVENTION OF MARINE ENGINEERS AT NSTL

The Institution of Engineers (IEI), India in association with Naval Science & Technological Laboratory (NSTL), Visakhapatnam organised a two-day National Convention of Marine Engineers with the theme 'Contemporary Developments in Maritime Technologies' during 2-3 December 2022. The Convention was attended by a large number of participants from industries, academic institutes, and R&D laboratories across the country. About 34 technical papers were presented in the seminar apart from invited talks by eminent experts. Speaking on the occasion,



Shri PVS Ganesh Kumar, Chairman of Visakhapatnam Local Centre (IEIVLC) highlighted that the seminar is focusing on topics such as green marine environment,

autonomous vehicles, alternative materials, hydrodynamic designs, renewable energy, and deep ocean exploration among others.

Dr Y Sreenivas Rao, OS &

Director, NSTL advised the forum to deliberate on coastal surveillance, coastline security, and methods to reduce marine pollution.

Cdr (Dr) Bhaskar M Bhandarkar, Chairman, Marine Division Board, IEI in his address reminded that Visakhapatnam has a great maritime history and has all the infrastructure to become a global leader in the marine sector. Prof K Venkata Subbaiah, Council member of IEI wished that the deliberations in the seminar will lead to pragmatic approaches to challenges in marine engineering.

Chief Guest, Dr V Bhujanga Rao, Chairman, KIMS Foundation Research Centre & Former Director General (Naval Systems), DRDO delivered Radm TB Bose Memorial Lecture on the theme of the Convention.

He stressed the necessity of adopting Industry-4.0 concepts in both operation and maintenance of maritime assets to meet global competition and he said that nation's economy can be increased by nurturing technological advancements in Marine Engineering. Distinguished Guest, Dr CP Ramanarayanan, Vice

Chancellor, Defence Institute of Advanced Technology (DIAT), Pune, and former Director General (Human Resources), DRDO emphasised the need of using Machine learning techniques to enhance maritime security. Guest of Honour, Dr GA Ramadass, Director, National Institute of Ocean Technology (NIOT), Chennai spoke on the challenges in the design of submersibles. He said that the implementation of government's Blue Economy Policy can be implemented by Marine Engineers.

BASIC FIRST AID LECTURE-CUM-DEMONSTRATION AT DGRE

A lecture-cum-demonstration on 'Basic First Aid' was organised on 21 December 2022 at Defence Geoinformatics Research Establishment (DGRE), Chandigarh to create public awareness on spot first aid to the victim and the best practices to adhere in handling and protecting individual(s) in traumatic conditions of accident that not only saves the life but further prevents harm promoting recovery. Subedar Rohatsh Singh (Retd) from Indian Army explained methods such as assessment of causality, continuous assurance, and call to medical emergency services for the victim about situations, e.g., bleeding, electric



shock, burning, snake/dog/other insects biting, heart attack, brain stroke, seizer disorders, epilepsy, bone fracture, and accident. He gave a demonstration on methods of causality (manual, stretcher, and improvised) for evacuation also. The lecture-cum-

demonstration was coordinated by Dr Vivek Saxena, Sc 'F', Addl Director, Directorate of Reliability and Quality Assurance (DR&QA), DGRE, and his team under the theme 'Safety and Reliability' to the DGRE officials.

COURSE ON 'ADVANCES IN HYDRODYNAMIC DESIGN AND EVALUATION' AT NSTL

Naval Science and Technological Laboratory (NSTL), Visakhapatnam conducted a five-day Continuing Education Programme (CEP) course on 'Advances in Hydrodynamic Design and Evaluation' during 5-9 December 2022. Dr Y Sreenivas Rao, OS & Director, NSTL inaugurated the course and wished that the course would benefit scientists and officers working in the domain of hydrodynamics and associated systems & technologies.

Dr Manu Korulla, Sc 'G' & Course Director, briefed about the need for the course. Dr Ch Suryanaraya, Sc 'G' (Retd) and Former Director of IMU (Cochin) delivered the keynote



address. Twenty-one lectures were delivered by eminent professors from academic institutes like IISc and IITs, Classification societies, and experts from shipyards and

industry on a variety of topics related to the theme of the course. Shri PVS Ganesh Kumar, Sc 'H' attended the valedictory session held on 9 December 2022.

INAUGURATION OF NATIONAL OPEN AIR RANGE, KURNOOL BY HON'BLE PRESIDENT OF INDIA

Hon'ble President of India, Smt Droupadi Murmu inaugurated National Open Air Range (NOAR) established by Defence Electronics Research Laboratory (DLRL), Hyderabad. The inauguration was done in virtual mode from Visakhapatnam as part of Navy Day Celebrations on 4 December 2022 in the gracious presence of Shri Biswa Bhushan Harichandan, Governor of Andhra Pradesh; Shri G Kishan Reddy, Tourism Minister; and Shri Ajay Bhatt, Minister of State for Defence & Tourism.

Dr BK Das, Director General (ECS), DRDO, and Shri N Srinivas Rao, Director, Defence Electronics Research Laboratory (DLRL) graced the inaugural ceremony at Visakhapatnam.

NOAR is a National Asset established by DLRL along with the participation of sister laboratories of DRDO, viz., Center for High Energy Systems and Sciences (CHESS), Electronics and Radar Development Establishment (LRDE), and Chief Construction Engineer, CCE (R&D) South.

Scientists and technical staff

of DLRL, CHESS, and heads of CCE (R&D) South and CCE (R&D) Estates participated in the virtual inaugural event from NOAR, Kurnool. Shri Koteswara Rao, IAS, Collector and District Magistrate, Kurnool District graced the occasion at NOAR, Kurnool.

DLRL fraternity including former Directors, senior scientists, and senior officials of Principal Controller of Defence Accounts (R&D), Hyderabad took part in the telecast of NOAR's inaugural event. After inaugurating the facility in virtual mode, in her



Hon'ble President Smt Droupadi Murmu virtually inaugurating NOAR (DRDO)

address, Hon'ble President Smt Droupadi Murmu said, "National Open Air Range established by Defence Electronics Research Laboratory in Kurnool district is a state-of-the-art facility. I am happy to learn that this facility will serve the purpose of India's Defence preparedness and will be an asset to the Nation."

NOAR is spread over 3000 acres and provides an integrated Open Air Range of up to 7.5 km capable of simulating battlefield emitter scenarios for testing and evaluation of Electronic Warfare Systems (EWS) and High Energy Laser Systems.

NOAR is equipped with radar and communication emitter

simulators, a turntable of capacity 45 tonnes, radars, an integration hanger, transmission towers, electro-optic tracking & laser power measurement system.

Range instrumentation is integrated over a high-speed fiber optic network for command and control operations from Range Control Centre.



FOUNDATION STONE LAYING CEREMONY OF BSL-4 AT DRDE, GWALIOR BY THE PRESIDENT OF INDIA

The foundation stone of the Maximum Microbial Containment Laboratory (MMCL), a Biosafety level-4 Laboratory (BSL-4) was laid by the Hon'ble President of India Smt. Droupadi Murmu on 15 November 2022 through virtual mode. This ambitious project is aimed to establish a state-of-the-art highest biocontainment BSL-4 lab at Maharajpura Campus of DRDE, Gwalior.

The laboratory will enable advanced research on highly pathogenic microbes of biodefence interest. It will be a unique facility in the country supporting biodefence R&D infrastructure about aerobiology, inhalation



challenge of animal, animal and arthropod containment lab (ABSL-4 & ACL-4), tests & evaluation of defence equipment, in addition to research on pathogens of high

consequences. The laboratory is expected to be functional by December 2025 and aimed to serve as the 'National Biodefence Referral Centre'.

INAUGURATION OF NEW TECHNICAL FACILITY

A new technical facility at MTRDC, Bangalore was inaugurated by Dr Samir V Kamath, Secretary, DD R&D and Chairman, DRDO on 18 November 2022. On the occasion, Dr BK Das, DG (ECS), Dr P Radhakrishna, Director, LRDE, Dr Shirish Chaudhary, IFA to DG(ECS), Directors of other sister laboratories, Former Directors of MTRDC and many other dignitaries were present. Smt C Indu, EMO explained the details of new technical facility to the Chairman and dignitaries. The Chairman, DRDO also planted a sapling.

MTRDC Foundation Day was also celebrated on the same day.



Dr P Radhakrishna welcomed all the guests. Shri G Viswam, OS and Centre-head, MTRDC gave a brief about the progress made during the last year and also on plans of MTRDC. Dr BK Das, DG (ECS) mentioned the importance of MTRDC activities for defence. He stressed the timely completion of all the activities. Dr Samir V Kamath, Chairman, DRDO addressed the gathering and appreciated the new

technical facility. He mentioned that this world-class facility should motivate the MTRDCians to achieve new heights. MTRDC day awards for the year 2021, meritorious ward awards, 20 years service commendation award, and Centre-Head's special award were also given. MTRDC Foundation Day celebration was concluded with a vote of thanks by Dr SK Datta, Sc 'H'.



FELLOWSHIP OF INAE

CABS, Bengaluru

Dr K Rajalakshmi Menon, OS & Director, CABS has been inducted as a Fellow of INAE, during the INAE Annual Convention on 16 December 2022 for having played stellar role in the success of Indigenous AEW&C programme. She received the Certificate of Fellow of FNAE from Prof. Indranil Manna, President, INAE Governing Council.



ENGINEER OF THE YEAR AWARD

DMRL, Hyderabad

The Institution of Engineers (India), Telangana State Centre and the Government of Telangana has conferred 'Engineer of the Year Award 2022' to Dr I Balasundar, Sc 'F', DMRL in recognition of his outstanding contributions to the field of Metallurgical and Materials Engineering and for establishing crucial indigenous technologies for the defence and aerospace sector. The award was presented to Dr I Balasundar on the occasion of 55th Engineers day in commemoration of 162nd birthday celebrations of Engineer-Statesman Bharat Ratna Sir Mokshagundam Visvesvaraya.

HIGHER QUALIFICATIONS ACQUIRED DGRE, Chandigarh



Dr Pratik Chaturvedi, Sc 'E', DGRE has been awarded PhD from School of Computing and Electrical Engineering (SCEE), Indian Institute of Technology, Mandi (Himachal Pradesh) on 5 December 2022 for his thesis entitled, 'Evaluating Human Understanding of Landslide Scenarios via Human-In-Loop Simulation Tools'.

EMU, Hyderabad



Shri Shaik Ghouse Mohiddin, Addl. CCE and Estate Manager, EMU (R&D), Hyderabad has been awarded PhD in Mechanical Engineering from Osmania University, Hyderabad, Telangana for his thesis on 'Development, Characterization & Evaluation of Mechanical Properties of AA5083 Composites by Friction Stir Processing'.

NPOL, Kochi



Shri Arun Kumar KP, Sc 'F', Naval Physical and Oceanographic Laboratory, Kochi, has been awarded PhD for his thesis titled, "Underwater Acoustic Communications: Algorithms for Delay-Scale Spread Wideband Channels", in the area of Signal Processing for Communications at the Electrical Communication Engineering Department, Indian Institute of Science (IISc), Bangalore.

NSTL, Visakhapatnam



Shri Y Appa Rao, Sc 'G', Naval Science and Technological Laboratory (NSTL), Visakhapatnam has been conferred with PhD in Mechanical Engineering for the Thesis 'Experimental Evaluation and Numerical Investigations of Mechanical Properties of ETBN and MWCNTS-based CFRP Hybrid Nanocomposites' from Andhra University, Visakhapatnam on 24 November 2022.

ANNUAL SPORT ACTIVITIES AT CAIR

As part of Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru Raising Day celebrations, annual sports events were organised during 9-21 December 2022 by Sports Committee, CAIR. The sports event was inaugurated by Dr Subrata Rakshit, OS & Director, CAIR on 9 December 2022. Total 16 sports events like Chess (Men & Women), Throw Ball (Women), Volley Ball (Men), Marathon & Walkathon (Men & Women), Tennikoit (Women), Carrom (Men & Women), etc. were organised. CAIR employees, research scholars, apprentice trainees, DSC employees, contract employees, and housekeeping staff participated enthusiastically and bagged the prizes.



VISITORS TO DRDO LABS

CAIR, Bengaluru

VAdam MA Hampiholi, AVSM, NM, FOC-IN-C Southern Naval Command and team visited Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru on 15 December 2022. There was a briefing by Dr Rituraj Kumar, Sc 'G' & Officiating Director, CAIR followed by discussion and demonstration of technologies developed by CAIR in the area of command and control technologies for Naval Forces.



VAdam MA Hampiholi, AVSM, NM, FOC-IN-C Southern Naval Command and team during their visit at CAIR, Bengaluru

DEAL, Dehradun

Admiral Karambir Singh, PVSM, AVSM (Retd.), Hon. Advisor to Dept. of Defence (R&D) visited Defence Electronics Applications Laboratory (DEAL), Dehradun on 15 December 2022. Shri LC Mangal, Director, DEAL extended a warm welcome to all the dignitaries. Dr BK Das, DG (ECS) in his opening remarks brought out that DEAL has been actively engaged in developing technological systems/solutions for the Services since last three decades and is presently working in the challenging areas of communication. A technical presentation covering the DEAL products was presented by Shri Pinaki Sen, Sc 'G'.



Admiral Karambir Singh, PVSM, AVSM (Retd.) during his visit at DEAL, Dehradun

DIPR, Delhi

Maj Gen DR Rai, VSM (Additional Directorate General Recruiting) and Brig Kaushik Mukherjee (Deputy Director General Recruiting) visited Defence Institute of Psychological Research (DIPR), Delhi on 30 December 2022. On his maiden visit to the laboratory,



Maj Gen DR Rai, VSM (Additional Directorate General Recruiting) and Brig Kaushik Mukherjee (Deputy Director General Recruiting) interacting with Dr K Ramachandran, OS & Director DIPR and Senior Scientists and Service Officers.

Dr K Ramachandran, OS & Director, DIPR briefed the research work and assignments being carried out by the institute. He appreciated the work being under taken in DIPR and looked forward for more association.

HEMRL, Pune

Air Marshal Surat Singh AVSM VM VSM, DG Air (Ops) visited High Energy Materials Research Laboratory (HEMRL), Pune on 15 December 2022. During the visit, presentations were made by the Senior Scientists on IR Flares, Indigenisation of EAX, Power cartridge, and impulse cartridges, Thermobaric Bomb, CSS for LCA Aircraft and Case-bonded Propellant used in the Air-to-Air Missile.

He interacted with senior scientists of laboratory and discussed on various issues of projects related to IAF. He also visited Exhibition Hall and has shown keen interest in the exhibits and activities of HEMRL.

IRDE, Dehradun

Admiral Karambir Singh, PVSM, AVSM (Retd) and Advisor to Department of Defence R&D along with his team visited Instruments Research & Development Establishment (IRDE), Dehradun on 14 December 2022. He was welcomed by Dr BK Das, OS & DG (ECS) and Dr Ajay Kumar, Director, IRDE. Dr Ajay Kumar presented major R&D initiatives taken by IRDE and technologies developed by IRDE. He also briefed about various products which have been developed and inducted into the Services. Admiral Karambir Singh appreciated the efforts of IRDE in developing state-of-the-



Air Marshal Surat Singh AVSM VM VSM, DG Air (Ops) during his visit at HEMRL, Pune



Admiral Karambir Singh, PVSM, AVSM (Retd) during his visit at IRDE, Dehradun

art systems. A guided tour was conducted to IRDE Diamond Jubilee Gallery. Dr Das explained Admiral Karambir Singh in detail about the features of the Gallery and showed the Technology Area which displays all technology verticals along with future roadmap and systems. Dr Das also explained about the System Area where all the products of

yesteryears have been displayed. Admiral Karambir Singh was overwhelmed watching the Down-the-Memory Lane and Lab WOW moments in the Gallery. He also saw the 'Wall of Honour' and future road map. He wished all the very best to the laboratory towards excellence. Dr Ajay Kumar honored Admiral Karambir Singh with a memento.

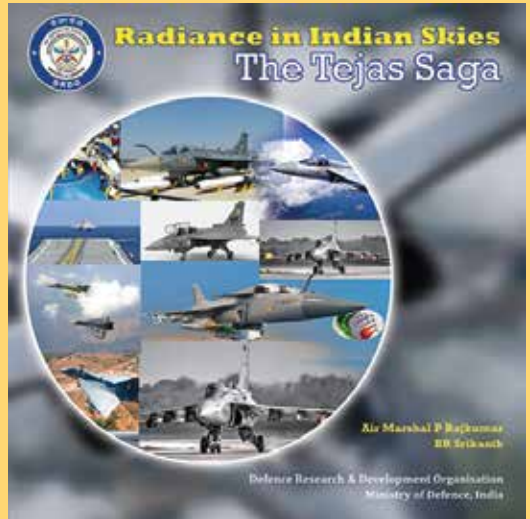


Latest DRDO Monographs For Sale

Radiance in Indian Skies The Tejas Saga

Air Marshal P Rajkumar and BR Srikanth

Development of the Tejas fighter aircraft was independent India's most ambitious aeronautical project. The Aeronautical Development Agency (ADA) was established in 1984 to manage the project. Hindustan Aeronautics Limited (HAL) was the principal partner in the project because it was the only organization in the country which had a design bureau and the infrastructure to manufacture prototypes and serially produce the aircraft. ADA, which was placed under the DRDO, was strongly supported by many DRDO laboratories, in particular, the Aeronautical Development Establishment (ADE) and the National Aerospace Laboratory (NAL) under the Council for Industrial and Scientific Research. It was undoubtedly a mammoth multi-disciplinary effort requiring good project management skills. The grant of Final Operational Clearance (FOC) for the aircraft, development of the trainer version, arrested landing of the Naval version on the carrier and the equipping of two front line fighter squadrons with the Tejas is testimony to the dedication and technical virtuosity of Team LCA, an omnibus term for the many hundreds of men and women who contributed to the success of the project.



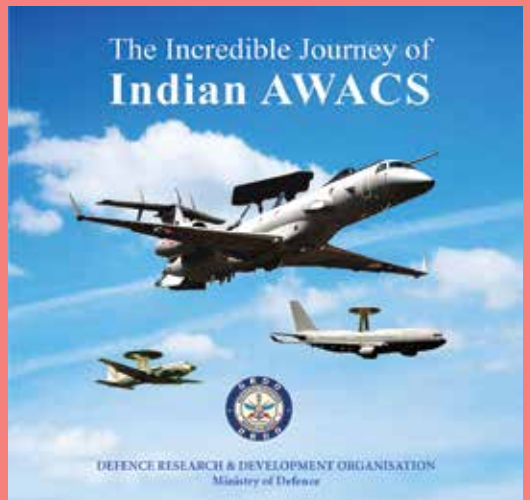
Price: INR ₹ 1400, US \$ 60, UK £ 50

This book is about the inspiring journey of the Tejas from concept to entry into squadron service. A must read book for all Indians.

The Incredible Journey of Indian AWACS

K Ramchand, S Krishnasamy and BR Srikanth

This monograph chronicles the enthusiasm and excitement of the relentless pursuit, which ultimately resulted in India's entry into the exclusive league of nations with a capability to design, develop, and fly the Indian Airborne Early Warning & Control (AEW&C) system. Every chapter mirrors the innumerable hurdles, which were conquered, with key personalities recounting their experience in employing unique skills to achieve the desired results. It chronicles the extraordinary feats of science and engineering in evolving an airborne force-multiplier. It is filled with expressive personal anecdotes about every facet of the project. The high risks endured and decisions involved over three decades, to roll out an advanced eye-in-the-sky have been detailed. It also pays homage to those eight personnel, who laid down their lives during the development of an indigenous AEW&C. This book is an inspiration to next generation of scientists of DRDO, IAF officers and young generations to achieve more and make country strong by self-reliant technologies.



Price: INR ₹ 1100, US \$ 31, UK £ 24

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