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REALIZATION AND SUCCESSFUL TRIALS OF CBRN RECONNAISSANCE VEHICLE (WHEELED)



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REALIZATION AND SUCCESSFUL TRIALS OF CBRN RECONNAISSANCE VEHICLE (WHEELED)

Vehicle Research and Development Establishment (VRDE), Ahmednagar has successfully realized and carried out the testing of indigenously designed and developed CBRN Reconnaissance Vehicle (Wheeled) at National Center for Automotive Testing (NCAT), Ahmednagar. Developmental trials, including mobility evaluation, obstacle crossing, compliance testing of CBRN instrumentation, area marking, sample collection, and firing trials of RCWS 7.62 mm, were successfully completed. Chemical,

Biological, Radiological, and Nuclear (CBRN) reconnaissance units carry out surveillance and sampling to detect CBRN contamination.

VRDE, a leading R&D organization tasked with design and development of wheeled combat vehicles, has successfully realized a prototype of wheeled 8x8 vehicle. The design team focused on modularity, scalability, and re-configurability to simplify the development of a family of vehicles based on this platform (ICV, APC, Light tank, CBRN Reconnaissance

Vehicle etc). After number of trials conducted with the participation of Users and incorporation of various suggestions, the platform was found suitable for deployment in paramilitary forces and Indian Army. This vehicle offers great on-road and cross-country mobility in addition to its amphibious capability to negotiate water obstacles.

Based on this development philosophy of 'Family of Vehicles', VRDE designed a 2nd generation 8x8 wheeled platform with upgrades like increased frontal





glacis, pneumatic start, etc., as suggested by the Indian Army during WhAP 8x8 trials. The vehicle configuration with Crew-in-hull layout has been designed ab-intio for CBRN reccee role. This innovative high-mobility platform integrated with cutting-edge CBRN instrumentation [CBRN Reconnaissance Vehicle (Wheeled)] allows CBRN reconnaissance over a vast area and exceeds requirements.

The Automatic Chemical Agent Detection & Alarm (ACADA) detects Chemical Warfare Agents at the point, and the passive IR standoff detector detects hazardous chemical clouds remotely. The UV-fluorescent type Biological Warfare Agent Detection System notifies users when biological warfare agents are detected. RADMAC detects nuclear explosions and radiation fallout. When CBRN event is detected, the NBC filtration system immediately changes from ventilation to NBC filtration mode and maintains set overpressure in the crew compartment.



Picket Driving System integrated on the vehicle is used to place pickets in the ground to mark CBRN-contaminated zones. The control console is the instrumentation's heart, collecting real-time data from multiple systems and sending it to the Command Post.

Reccee software loads map sheets and plots CBRN hazard zones from real-time data.

The remotely operated scooping device in the rear of the vehicle collects contaminated soil and water. A crew vision system with stabilized day and night cameras for 360° situational awareness and RCWS - 7.62 mm PKT is also provided.

Some salient features of the platform are:

- Wheeled 8x8 Configuration
- Integrated Power Pack with 600 hp diesel engine & automatic transmission
- Advanced driveline with Hydro-gas suspension, CTIS and Wheels with Runflat inserts
- Amphibious with hydrojets

- Crew in hull with 7.62 mm PKT RCWS
- Ballistic protection STANAG-II (Modular & Upgradable upto STANAG-IV)
- Blast protection STANAG-III (Modular & Upgradable upto STANAG-IV)
- An instant fire detection and suppression system and HVAC system
- Data communication between the vehicle and the command station HQ using a radio set
- 360° day & night crew vision system for situational awareness

CBRN Instrumentation

- Chemical detectors (ACADA, Portable-ACADA, Chemical Agent Remote Monitoring System)
- BWA detector, radiological and nuclear detector (radiation detection, measurement & control unit, pocket dosimeter, pocket dose rate meter)
- CBRN protection system
- Advanced land navigation system
- Automatic weather station
- Remotely operated scooping device for liquid & soil sample collection
- Picket driving system for CBRN contaminated area marking
- Auxiliary PU with HVAC

Comparison With Contemporary Vehicles

A comparative analysis of wheeled CBRN RVs with



contemporary vehicles is given in Table below. It is evident from the contemporary vehicle comparison that the wheeled CBRN RV has a definite edge over other contemporary vehicles.

Table: Comparison With Contemporary Vehicles

Product Name	Fuchs 2 NBC RS	Stryker M1135 NBC RV	Piranha 3 NBC Reccee	Wheeled CBRN RV
Country of Origin	Germany	USA	Switzerland	India
VEHICLE PLATFORM				
Configuration	6x6	8x8	8x8	8x8
Max Power, hp	425	350	400	600
Weight (CBRN Vehicle), ton	20	19.35	22	21.5
P/W ratio, hp/t	21.25	18.08	18.18	27.90
Max Speed, km/hr	96	96.5	100	101
Gradeability, %	60	60	60	60
Trench Crossing, m	1.2	1.98	2	2
Amphibious capability	Amphibious	Non-amphibious	Amphibious	Amphibious
Ballistic Protection	7.62 mm AP Upgradable upto STANAG Level 4	14.5 mm AP (Frontal) 7.62 mm (all around)	7.62 mm ball (Upgradable up to STANAG Level 4)	7.62 mm AP (Upgradable up to STANAG Level 4)
Blast Protection	--	--	STANAG Level-2 (Under belly)	STANAG Level-3 (Upgradable up to Level 4)
Armament CBRN Vehicle	Model 609 ERWS with M2 Heavy MG	12.7 mm M2 HB MG, 16xSGL 4x4)	12.7 mm FN M2S Heavy MG, 40 mm MK 19 AGL	RCWS 7.62 mm (12.7 mm & SGL Option Available)
CBRN INSTRUMENTATION				
Chemical Hazard Detection System	Mass spectrometer	Chemical Mass Spectrometer & Passive FTIR spectrometer based standoff detector	Gas Chromatograph System for CWA & TIC detection and analysis	Ion-Mobility Spectrometer Type Chemical Detector & Passive IR type Standoff detector
Biological Hazard Detection System	Flame photometry type bio detector	UV fluorescence type bio detector	Biological aerosol detector & collector	UV fluorescence type bio detector
Radiological/ Nuclear Hazard Detection System	Radiological dose measuring meter	Radiological detector	Gamma detection probes, alpha beta particle monitor	GM type Gamma radiation detector
Sample Collection System	Double wheel sampling system	Double wheel sampling system	Double wheel based ground chemical sampling system	Remotely Operated Scooping Device



Table: Trials Conducted on CBRN Reconnaissance Vehicle (Wheeled)

S.N.	Trial	Trial Parameters	Trial Location/Terrain/ Type of Track
1	Soft soil mobility	Sand and mud crossing	Sand & Mud track (NCAT)
2	Mobility and obstacle crossing trials	Max Speed, Highway fuel consumption, Brake Performance (Dynamic Type P Test) TCD, CCD Side Slope, Gradient, Step Climbing, Trench Crossing, Cross country fuel consumption Pass by noise level, Interior noise level, etc.	High speed track (NCAT) Steering pad (NCAT) Obstacle crossing tracks (NCAT) Straight track (NCAT)
3	Amphibious trials	Fording trials Free Board Height, Max Amphibious Speed, etc.	Fording track (NCAT) Gunawadi Lake, Ahmednagar District
4	CBRN Instrumentation trials	Compliance testing of ACADA, BWADS, RADMAC unit, Auto CBRN Protection System, ALNS (Advanced Land Navigation System), Remotely Operated Scooping Device, Central Control Console, Automatic Weather Station, CO ₂ Sensor, Walkie Talkie Radio Set, Auxiliary Power Unit (APU) with Integrated Environment control system, etc. CARMS Picket Driving System	NCAT Lonawala KK Ranges, Ahmednagar
5	Firing trials of RCWS (7.62mm PKT)	100m Range Accuracy, 500 m Range Accuracy, Weapon Operation, Field of Fire, Field of Regard of Sight, Auto Target Tracking, etc.	KK Ranges, Ahmednagar
6	Crew vision system trials	Day & night camera operation of Commander & Driver, Commander Sight DRI, etc.	NCAT

Various laboratories of DRDO like Centre for Artificial Intelligence & Robotics (CAIR) Bengaluru, Defence Laboratory Jodhpur, Defence R&D Establishment (DRDE), Gwalior, R&DE (E)

Pune and Defence Metallurgical Research Laboratory (DMRL) Hyderabad were involved in development of the vehicle. Also, the industry partners involved were M/s Mahindra Defence

Systems Ltd. Prithla for Vehicle Platform, M/s Bharat Electronics Ltd. for CBRN instrumentation & RCWS and M/s Tonbo Imaging India Pvt. Ltd. Bengaluru for Crew Vision System.



MOU SIGNED BETWEEN DMSRDE AND CSJMU, KANPUR

A Memorandum of Understanding (MoU) was signed between the Defence Materials and Stores Research & Development Establishment (DMSRDE), Kanpur, and the School of Basic Sciences & School of Engineering and Technology (UIET), Chhatrapati Shahu Ji Maharaj University (CSJMU), Kanpur, on 29 January 2024 to promote academic and research cooperation and collaboration for facilitating teaching, research, and training between the two premier institutions.

Dr Mayank Dwivedi, OS & Director, DMSRDE, and Prof. Vinay Pathak, Vice Chancellor,



CSJMU, signed the MoU in the presence of senior scientists and senior faculty at CSJMU. The MoU fosters collaborative training

and research programme to provide advancements in scientific knowledge for the benefit of the country and society.

NSTL ENTERED INTO A MOU WITH VIT, CHENNAI

DRDO has initiated many programs to encourage greater participation from industry and academic institutions in pursuit of achieving self-reliance in defence technologies. The concept of enhancing DRDO-industry-academic interactions through the establishment of COEs at various prestigious institutions is being implemented successfully. In view of upskilling the student community and maximizing the research content in projects, the Naval Science & Technological Laboratory (NSTL), Visakhapatnam, has initiated a MoU to collaborate with VIT, Chennai, to exchange information in the fields of smart manufacturing, amphibious

robots, battery management systems, cyber security, AI/ML, underwater communication networks, etc.

The MoU was exchanged between Dr Abraham Varughese, Director, NSTL, and Dr Siva

Kumar, Dean (Sponsored Research, VIT). Dr Y Sreenivas Rao, DS & DG (NS&M) presided over the event along with other dignitaries. Senior scientists, officers, and staff of NSTL also attended the event.





GREEN PROPULSION SYSTEM SUCCESSFULLY DEMONSTRATES IN-ORBIT FUNCTIONALITY

A green propulsion system developed under the Technology Development Fund (TDF) scheme of DRDO successfully demonstrated in-orbit functionality on a payload launched by the PSLV C-58 mission on 01 February 2024.

The project - 1N Class Green Monopropellant Thruster for altitude control and orbit keeping of microsatellite, was sanctioned by Bengaluru-based start-up Bellatrix Aerospace Pvt Ltd (Development Agency).

The telemetry data from the PSLV Orbital Experimental Module (POEM) at Indian

Space Research Organisation (ISRO) Telemetry, Tracking, and Command Network (ISTRAC), Bengaluru, had been validated with ground-level solutions and was found to have exceeded all performance parameters.

This innovative technology has resulted in a non-toxic and environment-friendly propulsion system for low-orbit space. The system consisted of indigenously developed propellant, fill and drain valves, latch valves, solenoid valves, catalyst beds, drive electronics, etc. It is ideal for space missions with high thrust requirements.

The complete project had been carried out by the development agency under the guidance of the Project Monitoring and Mentoring Group of DRDO. It has demonstrated pulsed mode and steady state firing in vacuum, passivation of residual propellant in outer space, propellant realization, and the establishment of filling procedures under the TDF.

It is a flagship program of the Ministry of Defence executed by DRDO under the 'Make in India' initiative to fund innovation in defence and aerospace, especially for start-ups and MSMEs.

DIGITAL FLIGHT CONTROL COMPUTER FOR TEJAS MK1A FLOWN SUCCESSFULLY

In a significant development towards Tejas Mk1A programme, the Digital Fly by Wire Flight Control Computer (DFCC) was integrated in prototype LSP7 and successfully flown on 19 February 2024.

The DFCC has been indigenously developed by the Aeronautical Development Establishment (ADE), Bengaluru for the Tejas-Mk1A.

The DFCC features Quadraplex Power PC-based processor, high speed autonomous state machine-based I/O controller, enhanced computational throughput and complex on-board software complied to DO178C level-A safety requirements. All critical

parameters and performance of the flight controls were found satisfactory. The maiden flight was piloted by Wg Cdr Siddarth Singh KMJ (Retd) of National Flight Test Centre.

Aeronautical Development Agency (ADA), under the aegis of Department of Defence R&D and MoD has successfully type certified Tejas-Light Combat Aircraft (LCA). Indian Air Force has already operationalised Tejas LCA-Mk1.

The improved version of the aircraft, Tejas MK1A features advanced mission computer, high performance Digital Flight Control Computer (DFCC Mk1A), Smart Multi-Function Displays (SMFD),

Advanced Electronically Scanned Array (AESA) Radar, Advanced Self-protection Jammer, Electronic Warfare Suit, etc.

Hon'ble Raksha Mantri Shri Rajnath Singh complimented joint teams from DRDO, IAF, ADA and industries involved in the development and successful flight test of this critical system for Tejas Mk1A and termed it as a major step towards Atmanirbharata with reduced count of special imports.

Secretary DDR&D and Chairman DRDO congratulated the teams involved in the successful flight test which has boosted the confidence towards delivery of Tejas MK1A to IAF in a stipulated time frame.



SUCCESSFUL FLIGHT TRIALS OF HIGH-SPEED EXPENDABLE AERIAL TARGET 'ABHYAS'

Four flight trials of High-speed Expendable Aerial Target (HEAT)—ABHYAS were successfully carried out from the Integrated Test Range (ITR), Chandipur, in Odisha, during 30 January 2024 to 02 February 2024. The trials were conducted with four different mission objectives in a revised robust configuration using a single booster designed by Advanced Systems Laboratory (ASL), Hyderabad, to provide reduced launch acceleration. The objectives like safe release of the booster, launcher clearance, and attaining the required end-of-launch velocity were achieved. During the flight trials, various parameters like required endurance, speed, maneuverability, altitude, and range were successfully validated.

Designed by the Aeronautical Development Establishment (ADE), Bengaluru, ABHYAS offers a realistic threat scenario for the practice of weapon systems. It is designed for autonomous flying with the help of an autopilot indigenously made by the ADE. It has a radar cross section, a visual, and an infrared augmentation system required for weapon practice.

It has a laptop-based ground control system with which the aircraft can be integrated, and pre-flight checks, data recording during the flight, replays after the flight, and post-flight analysis can be carried out. ABHYAS requires minimum logistics and is cost-effective compared to imported equivalents. The systems tested recently were realised through

production agencies Hindustan Aeronautics Limited (HAL) and Larsen & Toubro (L&T) Defence. With identified production agencies, ABHYAS is ready for production. ABHYAS has export potential and can be offered to friendly countries.

Hon'ble Raksha Mantri Shri Rajnath Singh congratulated the DRDO, the Armed Forces, and the industry for the successful flight trial of ABHYAS. He said that the system's development will meet the requirements of aerial targets for the Armed Forces, for aerial targets.

Dr Samir V Kamat, Secretary, DD R&D & Chairman, DRDO, appreciated the efforts of the teams associated with the design, development, and testing of the system.





75TH REPUBLIC DAY CELEBRATION

CAIR, Bengaluru

Center for Artificial Intelligence and Robotics (CAIR), Bengaluru, celebrated 75th Republic Day on 26 January 2024. The event started with unfurling the flag by Shri KP Prasanna Kumar, OS, followed by singing of the national anthem. Various awards were also distributed to CAIR employees.



DMSRDE, Kanpur

Defence Materials and Stores Research & Development Establishment (DMSRDE), Kanpur, celebrated 75th Republic Day with great enthusiasm and fervor on 26 January 2024. Dr Mayank Dwivedi, OS & Director, DMSRDE, unfurled the national flag, followed by the national anthem. He expressed happiness, heartfelt thanks, and congratulated all the employees on the 75th Republic Day. In his address, he highlighted DMSRDE's achievements in various aspects and thanked the DMSRDE employees for their wholehearted support in achieving targets within the time schedule. Certificates of merit and cash prizes were also distributed to the wards of DMSRDE employee wards. On this occasion, the Director, DMSRDE, also planted a peepal sapling in

DMSRDE premises. The event was coordinated by Mohd Imamuddin, Sc 'F'.



IRDE, Dehradun

Instruments Research & Development Establishment (IRDE) celebrated 75th Republic Day on 26th January 2024 with unfurling of the National Flag by Dr BK Das, DS & DG (ECS) followed by National anthem. Dr Ajay Kumar, OS & Director, IRDE addressed the gathering. He expressed happiness, heartfelt thanks and congratulated all the employees on Republic Day. In his address, he highlighted the achievements of IRDE in various aspects and thanked everyone for their whole-hearted support in achieving the targets.

Dr Das, delivered a keynote address and highlighted the importance of our constitution, fundamental duties and responsibilities. He mentioned the achievements of IRDE and appreciated officers and staff for successful completion of projects during 2023.

Dr Das and Dr Ajay Kumar also released the latest issue of IRDE Newsletter 'DRISHTI' (Detection, Recognition, Identification, Search, Homing and Tracking with Innovation).



ITM, Mussoorie

Institute of Technology Management (ITM), Mussoorie, celebrated the 75th Republic Day with great zeal and high spirit on 26 January 2024. Shri SA Katti, OS & Director, ITM, unfurled the national flag, followed by the national anthem. He expressed his deep appreciation for the rich cultural heritage and unity in diversity of the nation. The Director, ITM, venerated the framers of our constitution and the upholders of democracy in the nation. He also commended the contribution made by DRDO and tri-services towards self-reliance in national security. In his concluding remarks, he called upon team ITM to persist with their best efforts and achieve excellence in all their future endeavors.



LRDE, Bengaluru

75th Republic Day was celebrated in LRDE with great enthusiasm on 26 January



2024. Shri Gampala Viswam, DS & Director, LRDE unfurled the National Flag and National Anthem was sung by LRDE personnel and Director addressed the gathering.



MTRDC, Bengaluru

75th Republic Day was celebrated at the Microwave Tube Research & Development Centre (MTRDC), Bengaluru on 26 January 2024. The celebration started with the unfurling of flag by Dr SK Datta, Centre Head, MTRDC, followed by his address to the gathering. All officers and staff of MTRDC participated with great zeal and the celebration was concluded with the national anthem.



NMRL, Ambarnath

75th Republic Day was celebrated at Naval Materials Research Laboratory (NMRL), Ambarnath on 26 January 2024 with patriotic spirit and enthusiasm. The celebrations commenced with unfurling of our national flag by Shri PT Rojatkar,



Republic day Celebrations at NMRL, Ambarnath

OS & Director, NMRL. Director, NMRL wished NMRL employees and their family members a very happy Republic Day. Officers and staff of NMRL participated in the celebrations. Children of NMRL employees also participated in the event and presented patriotic poems, songs & dance on the auspicious occasion.

NSTL, Visakhapatnam

75th Republic Day was celebrated in a grand manner at Naval Science & Technological Laboratory (NSTL), Visakhapatnam. Dr Abharam Varughese, OS & Director, NSTL, unfurled the national flag after receiving a warm welcome from DSC Cadets of 576 Platoon. Speaking on the occasion, Dr Varughese expressed happiness over how NSTL is striving towards making India, in particular Indian Navy, self-reliant through playing vital role in developing state-of-the-art indigenous underwater weapons by utilising technological

advancements.

Chief Security Officer, Navy Officers, DSC Cadets, Members of NSTL Civil Employees Union, Works Committee, and NSTL employees and their families also participated in the event. Patriotic songs by the students of Ramanath Secondary School attracted the audience during the celebrations.





DEPLOYMENT OF ANTI DRONE SYSTEM (D4) DURING REPUBLIC DAY

During the 75th Republic Day Celebration, DRDO deployed Comprehensive Anti Drone System (D4) to provide anti-drone cover at the designated NCR region around the event location. D4 system was installed, integrated with Command and Control Post (CACP) of Delhi Police, participated in all preparatory exercises along with other security agencies and successfully completed the tasks during the Republic Day parade, Beating Retreat and associated events.

The deployment team consisted of teams from LRDE, DLRL, CHES, IRDE, and M/s BEL; Logistics and security arrangements was done by CCE R&D (Delhi), Directorate of Materials Services (DMS), Directorate of Vigilance & Security (DVS) and the overall coordination by team of Directorate of Low Intensity Conflict (DLIC). Dr SV Kamat, Secretary DD R&D & Chairman DRDO and DG (PC&SI) visited the installation site and appreciated the teams for their arduous contributions.



DLIC also organised visit of officers from CRPF, SSB, Bureau of Civil Aviation (BCAS) and

Airport Authority of India (AAI) to showcase the system for their operations.

RAISING DAY CELEBRATIONS

PXE, Chandipur

Proof & Experimental Establishment (PXE), Chandipur, Balasore is a premium armament test range and the oldest laboratory of DRDO. It came into existence on 07 November 1895 and completed 128 years of service to the nation. On 7 November 2023,

Shri DK Joshi, OS & Director, PXE inaugurated the event and presented various prizes to the employees for their significant contributions in their respective area of work. Shri Sushanta Kumar Jena, Technical Officer 'D', received the 'Proof Man of the

year Award' and Hav (Gnr) Vinay Kumar Singh received the 'PXE Sainik Puraskar' for the year 2022. Around 300 retired employees were invited to grace the occasion. The closing ceremony of the event was conducted on 05 December 2023. Dr BK Das, DS & DG (ECS)



graced the occasion as the Chief Guest, Dr SV Gade, DS & DG (ACE) was the Guest of Honour and Shri HK Ratha, OS & Director, ITR was the special invitee.

A plantation program was taken up by the employees of PXE to commemorate its harmonious coexistence with the nature and planted more than 129 saplings. A mega blood donation camp was organised in which 134 units of blood are collected and 06 persons pledged to donate their eyes and 03 persons for organ. Shri RS Mohapatra, Sc 'F', Chairman, organising committee in association with works committee, unions, and employees of PXE organised the event.

UARF, Idukki

Underwater Acoustic Research Facility (UARF), Idukki, a field unit of the Naval Physical and Oceanographic Laboratory (NPOL), Kochi, celebrated its annual day on 29 January 2024. In his inaugural address, the Chief Guest, Dr Ajith Kumar K, Director of NPOL, praised UARF's achievements. Shri Raman Raja Mannan, King of Tribes, and Shri Ninan D, Oorumooppan attended the event.

Shri Shaji Peeter, Sc 'E' & Officer in Charge, UARF, welcomed the gathering and presented a brief on UARF activities.

Shri Jineesh George, Sc 'F' & Group Director (Transducer), highlighted in his presidential address that the UARF facility is being used not only by NPOL and other DRDO laboratories but also by organisations like ISRO, NIOT, etc. Shri Mohanan K, Sc 'G' & Director (Management), Dr AV Ramesh Kumar, Sc 'G'



& Chairman, NPOL Works Committee, Shri Suresh Kumar S, Secretary, NPOL Works Committee, Shri Abhilash, VOC, General Secretary, NPOL Civilian Employees Union & Leader,

staff side, JCM IV level, and Shri Kishore Kumar K, STA & General Secretary, R&D Employees Union offered felicitations. Shri Vinod PR, TO 'B' delivered a vote of thanks.





DRDO'S PARTICIPATION IN RISING UTTAR PRADESH-2024 EXHIBITION AT LUCKNOW

The 5th International Industry & Technology Expo 'Rising Uttar Pradesh-2024' was organised by MSME and Bharti Media & Events Private Limited during 19-21 January 2024, at Lucknow (UP). Defence Materials and Stores Research & Development Establishment (DMSRDE), Kanpur, was the nodal laboratory for organising the DRDO exhibition at the event. DRDE, Gwalior, the Directorate of Technology Development Fund (DTDF), the Directorate of Futuristic Technology Management (DFTM), and the Directorate of Industry Interface and Technology Management



(DIITM) participated in the event. DMSRDE and DRDE displayed their products and technologies.

Dr Gobardhan Lal, Sc 'E' was the coordinator for the event.

DESIDOC'S PARTICIPATION AT G20 LIBRARY SUMMIT

Defence Scientific Information & Documentation Centre (DESIDOC), Delhi participated in G20 Library Summit organized by Pondicherry University during 07-09 February 2024. The theme of the summit was 'Connecting Nations for Knowledge Heritage' and is conducted to bring together library professionals, policymakers, educators, IT professionals and cultural experts from G20 member nations to share knowledge, collaborate, and shape the future of libraries in a rapidly changing world. Dr K Nageswara Rao, Director, DESIDOC chaired a session during the summit. He shared his views on preserving



indigenous knowledge and languages. Mrs Dipti Arora, Technical Officer 'C' received the Best Paper Award for her paper on 'Maximising Research Impact: Strategies for Contributing to

High Impact Scholarly Journals and Review of Impact of DRDO Publications' co-authored with Shri Sudhanshu Bhushan, Sc 'F' and Dr K Nageswara Rao, Director, DESIDOC.



DGRE PARTICIPATION IN AGAM OF HIMACHAL PRADESH EVEREST ASSOCIATION

Defence Geoinformatics Research Establishment (DGRE), Chandigarh, along with Indian Army, Indo-Tibetan Border Police (ITBP), Border Security Force (BSF), and Atal Bihari Vajpayee Institute of Mountaineering and Allied Sports (ABVIMAS) attended Annual General Body Meeting (AGAM) of Himachal Pradesh Everest Association (HPEA) on 21 January 2024 at Chandigarh to discuss various forthcoming expeditions to Mt. Everest. The members discussed the ongoing standards in expedition safety, disaster preparedness and management in the challenging snow landscapes. HPEA stressed on the issues faced



by mountaineers during avalanche safety rescue operations and showed faith in the forecasts and warnings generated by DGRE as crucial factor in deciding such expeditions.

COURSE ON DOCUMENTATION, AWARENESS AND INTERNAL AUDIT AT DEAL

A two-day training program on Documentation, Awareness and Internal Audit as per IS/ISO 9001:2015 was held at Defence Electronics Applications Laboratory (DEAL), Dehradun during 12-13 February 2024. The course was held under the aegis of National Institute of Training for Standardization, Bureau of Indian Standards. The course was inaugurated by Shri Krishan Lal, OS & Officiating Director DEAL. In his inaugural address he stressed the importance of quality throughout the course of project development. The course was conducted by Shri LK Mehta, ex Sc



'F' & Head, HRD, BIS. The course covered basic concepts, quality principles, requirements of ISO 9001:2015, documentation for IS/ISO 9001:2015, auditing concepts

and principles and audit planning and execution. The course was augmented by quiz and tests leading to certification in Inter Quality Auditing.



PRODUCTS SHOWCASED AT IIT ROORKEE

The 2nd International meeting on Energy Storage Devices-2023 (IMESD-2023) and Industry-Academia Conclave was held at the IIT-Roorkee during 7-10 December 2023. The conclave aimed to bring experts and students of energy storage devices from all over the world for rigorous technical discussions and cross-disciplinary interactions. Various industries showcased their innovations and provided attendees a glimpse into the future of technologies.

DRDO Centric exhibition, a focal point of the conference was also arranged in which various DRDO laboratories including NSTL, NMRL, R&D



(E) participated. In the inaugural ceremony, the Chairman Prof. Rajiv Anuja, Director, IIT Ropar explained the importance of

conducting such exhibitions. A brief on DRDO centric exhibition was given by Dr TVSL Satyavani, Sc 'G', NSTL.

DRDO'S PARTICIPATION AT VIKSIT BHARAT SANKALP 2024 AT HARIDWAR

Defence Research & Development Organisation (DRDO) participated in the three day event 'Viksit Bharat Sanklap-2024' during 21-23 February 2024 at Haridwar, Uttarakhand. The event was inaugurated by Shri Naresh Bansal, Member, Rajya Sabha and Shri Ramesh Pokhriyal Nishank, former Union Cabinet Minister for Education. Shri Pushkar Singh Dhama, Hon'ble Chief Minister, Uttarakhand virtually addressed during the inaugural ceremony. Various laboratories/establishments of DRDO, viz. Recruitment And Assessment Centre (RAC), Centre for Personnel Talent Management (CEPTAM), Directorate of Technology Development Fund,



and Armament Research Board (ARMREB) participated in the exhibition, while Defence Scientific Information & Documentation

Centre (DESIDOC) was the nodal laboratory for organising the event. DRDO received the first prize during the event.



COURSES & WORKSHOPS BY DIPR

Military Psychology Symposium

The Defence Institute of Psychological Research (DIPR), Delhi conducted a Military Psychology Symposium on the theme 'Preparing Soldiers for Prospective Challenges' as part of the 28th International and 59th National Conference of Indian Academy of Applied Psychology (IAAP) at Pondicherry University, Pondicherry, during 02-04 February 2024. During the conference, Dr Shilpi Nanglu, Sc 'E', DIPR, was conferred with the National Institute of Technical Teachers Training and Research Award in recognition of her sustained research contributions



at DIPR. She received the award from Shri A Namassivayam, Hon'ble Minister for Home Affairs and Education, Puducherry.

All Services User Interaction Workshop

Defence Institute of Psychological Research (DIPR), Delhi organised an All Services one-day User Interaction Workshop on 'Psychological Training Modules :Translating Potentials into Capabilities' on 07 February 2024. The workshop was attended by the senior representative officers from various Service HQrs, viz. IDS, ARTRAC, AOP, COP and Indian Coast Guard. Directing staffs and instructors from various training academies of all the Services were also among the attendees.

The participants were apprised about the theories and practices



in the field of psychology that may guide, facilitate, energise and optimise military training.

Interactive Meet and Demo of Psychological Products to CISF

An interactive meet and demonstration of psychological products was organised for senior officials of Central Industrial Security Force (CISF) by Defence Institute of Psychological Research

(DIPR), Delhi on 13 February 2023.

Shri Shrikant Kishore, DIG-Ops, Shri Prabodh Chandra, DIG-Tech, other officials from CISF, representative from Directorate

of Low Intensity Conflict (DLIC), DRDO HQrs, senior scientists from DIPR attended the discussions and demonstrations.

Dr Arunima Gupta, Director, DIPR chaired the meeting and



DIPR team presented the overview of the psychological services and solutions designed and developed by the laboratories for the Central Armed Police Forces (CAPFs).

The officials from CISF were apprised about the psychological products of DIPR and they appreciated the efforts of DIPR for conducting the event.



TECHNICAL BOOK EXHIBITION AT CASDIC

A Technical Book Exhibition was organised by Technical Information Centre, during 12th & 13th December 2023 at RPR Auditorium, Combat Aircraft Systems Development & Integration Centre (CASDIC), Bengaluru. The exhibition was inaugurated by Shri BN Lokesh, Sc 'G' & Associate Centre Head. Shri Paranjape Hemant Vasant, Chairperson, Library Committee & Dr K Maheswara Reddy, DS & Former Director of DLRL presided over the function. Exhibition included technical, general, and languages along with wide range of books on diverse subjects.



HEALTH TALK AT NSTL

Mahila Kalyan Munch (MKM), Naval Science & Technological Laboratory (NSTL), Visakhapatnam, is working for the welfare activities of society. They organized a health talk on 'Prevention of Knee Pain & Arthritis on 24 January 2024. Dr Praveen Sodavaru, PGI Chandigarh delivered the talk and gave valuable advice to prevent knee pain and arthritis. Another health talk was organised on 12 February 2024 on 'Spine Spondylitis and its Management'.





UNVEILING OF DR KALAM STATUE & FOUNDATION STONE LAYING OF NEW BUILDING

Dr Samir V Kamat, Secretary, DD R&D & Chairman, DRDO, unveiled the Bharat Ratna Dr APJ Abdul Kalam, the largest brass statue in the world, at the Defence Materials and Stores Research & Development Establishment (DMSRDE), Kanpur, on 21 January 2024. The statue is 6 feet tall and weighs 220 kg. On the occasion, he also laid the foundation stone for the DMSRDE new multi-story building.

To grace the occasion, Dr Jagannath Nayak, OS & Director, CHES, Shri MP Singh, CCE (R&D) Central, Dr KK Gaur, CCE (R&D) North, Shri Arun Chaudhay, Director, DIITM, Shri Sanjay Tandon, Director DIA-CoE, IIT Kanpur, and many other dignitaries were present.



Dr Kamat also interacted with the local media in the auditorium. Chairman, DRDO addressed the gathering and appreciated the efforts of Director, DMSRDE in establishing the Dr Kalam Statue which will motivate the DMSRDE employees. Dr Mayank Dwivedi, OS & Director, DMSRDE, told

his address about the need for a new DMSRDE building as the current buildings are very old. The Director, DMSRDE, felicitated the Chairman, DRDO, with a scale-down replica of the Dr Kalam statue. The event was concluded with a vote of thanks by Dr Kingsuk Miukhopadhyay, Sc 'G'.

FOUNDATION STONE LAYING OF SHORE INTEGRATION FACILITY AT NPOL

Dr Y Sreenivas Rao, DS & DG (NS&M) laid the foundation stone for the Shore Integration Facility (SIF) of Programme Integrated Combat Suite (ICS) for Submarines on 05 February 2024. ICS is the first indigenization attempt being undertaken by DRDO with NPOL as the nodal laboratory. SIF is a unique facility being provisioned in NPOL technical campus where all sub-systems of ICS being developed by NPOL, DEAL, IRDE, DLRL, LRDE, NSTL and RCI will get installed, integrated, and the





functionality of the ICS will be proved. The event was presided over by Shri Prince Joseph, OS & Officiating Director. Shri P

Balakrishnan, OS & Programme Director (ICS), Dr Biswajit Choubey, CCE (R&D) South offered felicitations and Dr Manu

Korulla, Director Civil Works and Estates, DRDO HQrs offered felicitations through intranet VC.

CREATION OF BAL BHAVAN AT NMRL

A creche/day care facility 'NMRL Bal Bhavan' has been created for the children's of Naval Materials Research Laboratory (NMRL), Ambarnath employees for the age group of six months to six years at NMRL. Shri PT Rojatkar, OS & Director, NMRL, inaugurated the Bal Bhavan on 25 January 2024. Bal Bhavan is well equipped with various facilities and amenities required for the daycare of children. This was the initiative of the Welfare Group under the guidance of the Director, NMRL.



FIRST ALL INDIA TECHNICAL RAJBHASHA CONFERENCE AT CHENNAI

DRDO HQrs and Combat Vehicles Research & Development Establishment (CVRDE), Chennai jointly organized the first All India Technical Rajbhasha Conference on 'Disruptive Technologies and New Prospects' during 10-11 January 2024 on the occasion of World Hindi Day. Smt Anshuli Arya, Secretary, Department of Official Language, MHA, graced the occasion as the Chief Guest. A souvenir of the conference was released by Smt Arya; Shri SV Gade, DG (ACE); Shri Parshottam Bej, DG (R&M); Dr Ravindra Singh, Director, Parliamentary Affairs, Rajbhasha and Organization & Methods; Shri J Rajesh, Director, CVRDE; Shri S Madi, Sc 'F'; Shri



Chandra Prakash Meena, Sc 'E'.

Research papers were invited from major technical organizations like ISRO, BARC, DAE, ICAR,

IARI, IIT, NIT, DTU, etc. A total of 39 presentations were presented in 6 sessions in Hindi as medium and 1 session in Tamil language.



3RD ALL INDIA JOINT RAJBHASHA S&T SEMINAR AT NSTL

The vibrant city of Vishakhapatnam played host to the two day 3rd All India Joint Rajbhasha S&T Seminar at Naval Science & Technological Laboratory (NSTL), during 01-02 February 2024. Dr Y Sreenivas Rao, DS & DG (NS&M), was the Chief Guest of the occasion. The event was honored by the presence of Distinguished Guest Shri PJ Neware, INAS, Chief General Manager, NAD, Visakhapatnam, and Dr Ravindra Singh, OS & Director-Rajbhasha, as the Guest of Honor.



UTKARSH 2024 AT CAIR, BENGALURU

For the last several years, All India Rajbhasha Technical Seminar is continuously being organized by various laboratories of DRDO, the main objective of which is to share new achievements and research in the field of science and technology among the employees and officers of DRDO through Rajbhasha Hindi.

Centre for Artificial Intelligence and Robotics, Bengaluru was entrusted with the responsibility of organizing the All India Rajbhasha Technical Seminar 'Utkarsh 2024' on 19th January 2024. A total of 47 research papers were received in this seminar which were divided into a total of eight sessions.

Dr Ravindra Singh, Director, Directorate of Parliamentary Affairs, Rajbhasha and Organization & Methods, and Dr Anil Kumar Singh, former Director DLRL, Hyderabad, were



the Chief Guest and the Guest of Honor. Shri Sanjeev Gupta, Sc 'G' & Chairman, Utkarsh-2024, presented the welcome address and Mrs Usha Kumari, Sc 'F' & Vice-Chairperson, OLIC presented the outline of the seminar.

Dr Rituraj Kumar, OS &

Director, CAIR appreciated the efforts of all the authors of the seminar in his address.

The inaugural ceremony was conducted by Shri Saurabh Mandal, Sc 'F' and Dr Mahesh SN, Assistant Director (OL) proposed the vote of thanks.



D&H SECHERON AWARD 2023

The D&H Secheron Award 2023 was conferred on the Naval Materials Research Laboratory (NMRL), Ambernath team comprising Shri A Gourav Rao, Shri Aanad Prakash Singh, Shri G Mahanta, Shri M Mohape, Shri DS Gowtam and Shri VP Deshmukh for the best paper presented during the National Welding Seminar 2023 on 'Development of Friction Stir Welding for High Entropy Alloys'. The award was presented during the International Congress-2024 organised by the Indian Institute of Welding in association with the International Institute of Welding, Bengaluru on 22 January 2024.



HIGHER QUALIFICATION ACQUIRED



Shri Manoj G, Sc 'E', Naval Physical and Oceanographic Laboratory (NPOL), Kochi, has been awarded a PhD under the faculty of technology from Cochin University of Science and Technology for his thesis titled, 'Coupling and Decoupling Schemes for High Power AC DC and Data Transmission Over Long Single Core Coaxial Cable for Airborne Sonar Applications'

SOUTH ZONE AND NATIONAL CHESS TOURNAMENT 2023-2024 AT CAIR

Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru, organized the DRDO South Zone Chess Tournament during 08-10 January 2024 and DRDO National Chess Tournament during 17-19 January 2024.

A total of eight teams (ADE, CABS, GTRE, CVRDE, CEMILAC, ADA and CAIR) participated in the south zone championship. The team ADA and ADE were the winners and runners, respectively

in zonal men championship and ADE and CAIR were the winners and runners, respectively in zonal women championship.

In the National Chess tournament four zones (North, Central, West and South)





participated. In both men and women championship, the North zone and the South zone teams were the winners and runners, respectively.

Dr Rituraj Kumar, OS & Director, CAIR, inaugurated the tournaments. Shri KR Parsanna

Kumar, OS and Mr Philip Abraham, Sc 'G' distributed certificates, medals, and trophies during closing ceremony.



SOUTH ZONE FOOTBALL TOURNAMENT AT NPOL

DRDO South Zone football tournament was conducted at Naval Physical and Oceanographic Laboratory (NPOL), Kochi, during 22-24 January 2024. The tournament was conducted on league basis and four teams, viz. NPOL, Aeronautical Development

Establishment (ADE), Electronics & Radar Development Establishment (LRDE), and Combat Vehicles Research and Development Establishment (CVRDE) participated in it. LRDE, Bengaluru and ADE, Bengaluru secured the winners & runners up

position, respectively. Shri Prince Joseph, OS & Officiating Director, NPOL graced the inaugural function and valedictory function of the tournament. Sports committee, NPOL along with Works committee of NPOL coordinated the event.





VISIT OF AIR VICE MARSHAL PS GANGOPADHYAY, ASST COAS (ENGG. B)

Air Vice Marshal PS Gangopadhyay, Asst Chief of Air Staff, (Engg. B) Air HQrs visited Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru, on 16 January 2024. There was a briefing by Dr Rituraj Kumar, OS & Director, CAIR followed by discussion and demonstration of various technologies developed by CAIR in the area of Intelligent Systems and Robotics.



VISITORS AT DESIDOC, DELHI

Twenty two students along with two professors from Department of Library & Information Science (LIS), Karnataka University, Dharwad visited Defence Scientific Information & Documentation Centre (DESIDOC), Delhi on 09 February 2024. The purpose of their visit was to gain insights into the operations and resources available at DESIDOC.

The students were given the opportunity to explore the Defence Science Library within DESIDOC to delve into a wealth of information related to defence sciences and technologies. Additionally, they visited the Publications Division, which provided them with valuable exposure to the publishing processes and publications produced by DESIDOC.

Dr Yousuf Ansari, Sc 'F' addressed the students and emphasised on creating an atmosphere of openness and

collaboration between academia and scientific organisations.

The students were also shown films on DRDO and DESIDOC activities. Mrs Alka Bansal, Sc 'F' and Group Head, HRD, addressed

the visiting students, sharing her expertise and experiences in the field.

The coordination of the visit was managed by Shri Tapesh Sinha, Sc 'F'.





VISIT OF DG, ITBP AT DGRE

IPS Rahul Rasgotra, Director General (DG), Indo-Tibetan Border Police (ITBP), a paramilitary force tasked to guard the India-China line of Actual control visited Defence Geoinformatics Research Establishment (DGRE), Chandigarh on 07th Feb 2024. He was accompanied by IPS Ashok Tewari, Inspector General (IG), Western Command, ITBP and IPS Sanjay Kumar Gunjyal, IG, North West Frontier, ITBP.

Dr PK Satyawali, OS & Director, DGRE welcomed DG (ITBP) and briefed him of DGRE operational activities and support services to the users, ongoing R&D activities to address the issues faced by troops during their deployment in snow bound regions of Himalaya. DG (ITBP) looked for similar



support to ITBP personnel who are deployed in snow bound regions and facing avalanche danger during winter months.

He also interacted with DGRE team consisting Associate Directors and Technical Divisional Heads.

VISIT OF DG (ACE) AT DGRE

Prof. Prateek Kishore, OS & DG(ACE), Pune visited Defence Geoinformatics Research Establishment (DGRE), Chandigarh on 05 February 2024. Dr PK Satyawali, Director, DGRE welcomed OS & DG(ACE) and congratulated him for taking over as Director General of Armament & Combat Engineering Systems (ACE) Cluster of DRDO. Director, DGRE briefed him on the ongoing projects, R&D activities, Operational activities, ongoing MoU's and support services given to users. DG(ACE) then interacted with Associate Directors and Technical Divisional Heads of DGRE regarding technology roadmap of DGRE and futuristic strategic projects.





DY INSPECTOR GENERAL, RAF VISITS DIPR

Shri M.A. Mazed Rizwan, Dy Inspector General (DIG), Rapid Action Force (RAF) along with other senior officials visited the

Defence Institute of Psychological Research (DIPR), Delhi on 30 January 2024. He interacted with Dr Arunima Gupta, Director

DIPR, other senior scientists and discussed about the psychological services and products relevant for RAF.



VISIT OF REAR ADM TO NMRL

Rear Adm Deepak Kumar Goswami, Admiral Superintendent, Naval Dockyard, Mumbai, visited the Naval Materials Research Laboratory (NMRL), Ambarnath, on 24 January 2024.

Shri PT Rojatkar, OS & Director, NMRL, welcomes Rear Adm Deepak Kumar Goswami. The visit was aimed at deciding the infrastructure facilities required at Naval Dockyards in India for supporting P-75 submarines integrated with DRDO developed Air Independent Propulsion (AIP) system. Following this, the dignitary visited the land-based prototype (LBP) of the AIP system.



RADM JANAK BEVLI, VSM ACNS (AIR) VISITED NSTL

Rear Adm. Janak Bevli, VSM ACNS (AIR), visited the Naval Science & Technological Laboratory (NSTL), Visakhapatnam, on 23 January 2024. Dr Abraham Varughese, OS & Director, NSTL, and his team welcomed him. He interacted with all senior scientists at NSTL and discussed NSTL activities and facilities. He visited the product display center and other test facilities.



VADM KALIDOSS, DG ATVP VISITED NSTL

VAdm (Retd) Srinivas Kalidoss, DG ATVP, visited the Naval Science & Technological Laboratory (NSTL), Visakhapatnam, on 25

January 2024. Dr Abraham Varughese, Director, NSTL, and his team welcomed him.

He interacted with all senior

scientists at NSTL and discussed NSTL facilities. He visited test facilities and the product display center.

