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## DRDO PARTICIPATION AT AERO INDIA 2023





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# DRDO PARTICIPATION AT AERO INDIA 2023

With an endeavor to integrate various stakeholders of defence R&D ecosystem in the country, Defence Research & Development Organisation (DRDO) showcased an enriching experience of indigenous defence technologies and systems during the 14th Aero India, held at Bengaluru during 13-17 February 2023. The DRDO displayed a wide range of indigenously-developed products and technologies. Besides displaying its flagship products at the India Pavilion, it provided numerous exhibits, flight displays, and seminars. These included the display of products on Aeronautical Systems, Missiles, Armaments, Electronics, Micro Electronic Devices and Computational Systems, Soldier Support Technologies, Life-sciences, and Naval & Material Science amongst others. The display also showcased the recent advancements made by DRDO in furthering Prime Minister Shri Narendra Modi's vision of 'Aatmanirbhar Bharat'.

The DRDO Pavilion displayed over 330 products categorised into 12 zones namely Combat Aircraft & UAVs, Missiles & Strategic Systems, Engine & Propulsion Systems, Airborne Surveillance Systems, Sensors Electronic Warfare & Communication Systems, Parachute & Drop Systems, Artificial Intelligence

Machine Learning & Cyber Systems, Materials, Land Systems & Munitions, Life Support Services, and Industry & Academia Outreach.

The flagship products in each of 12 Zones were AMCA, LCA Tejas Mk2, TEDBF, ARCHER, TAPAS UAV, Abhyas, Autonomous Stealth Wing



Flying Test Bed from the Combat Aircraft & UAVs Zone; Akash, Astra, QRSAM, Helina, Nag, Pralay from the Missiles & Strategic Systems Zone; FACECU, Gearbox module, Kaveri Dry Engine Prototype, Small Turbo Fan Engine from the Engine & Propulsion Zone; AEW&C-NETRA, AEW&C- MkII, MMMA Aircraft, IFF, AAAU Model from

the Airborne Surveillance Systems Zone; TWIR, BFSR-SR, Bharani, Ashlesha, AATRU, ASPJ Pod, LEOP from the Sensors Electronic Warfare & Communications Systems Zone; Military Combat Parachute System, Brake Parachute, P-16 Heavy Drop System from the Parachute & Drop Systems Zone; Airborne Sonar with Helicopter Model, Air launched Directional Sonobuoy from the Naval Systems Zone; DDCA, INDIGIS, Air Warfare Simulation System, QRNG from Artificial Intelligence Machine Learning & Cyber Systems Zone; FSAPDS, Titanium Alloys from the Materials zone; ASREM, Surveillance ROV, SUMITRA from Land Systems & Munitions Zone; Integrated Life Support System, Helicopter Oxygen System from the Life Support Services Zone and Wankel Rotary Engine, Jet Fuel Starter, Radio Altimeter from the Industry & Academia Outreach Zone. The India Pavilion exhibited five DRDO products. The exhibits were AEW&C Mk-II, AMCA, LCA Tejas Mk2, TEDBF, and Archer (Image intelligence with Weapon Payloads).

The DRDO's participation in the mega show was marked by the flight displays of LCA Tejas, LCA Tejas PV6, NETRA AEW&C, and

TAPAS UAV. The static display also included LCA Tejas NP1/NP5 and NETRA AEW&C. The participation was also marked by the flying debut of the indigenous Medium Altitude Long Endurance class UAV TAPAS-BH (Tactical Aerial Platform for Advanced Surveillance-Beyond Horizon). The TAPAS-BH showcased its capabilities and covered the static as well as aerial displays on the business days and the aerial video live-streamed throughout the venue. TAPAS is DRDO's solution to the tri-services ISTAR requirements. The UAV is capable of operating at altitudes up to 28000 feet, with an endurance of 18 plus hours.

The DRDO also organised two seminars during the event. The 14th Biennial edition of Aero India International Seminar on the theme 'Aerospace and Defence Technologies-Way Forward' was organised by the Centre for Airborne Surveillance (CABS), Bengaluru in association with the Aeronautical Society of India on 12 February 2023. This seminar was a flagship event that was organised as a prequel to Aero India. Many eminent keynote speakers from DRDO, Indian Air

Force, Hindustan Aeronautics Limited (HAL), International Organisations and premier academic institutions participated to provide insights about cutting-edge technologies and advancement in aerospace and defence. The DRDO also felicitated the Indian Women Professionals in Aviation and Aerospace (IWPA) during the seminar.

The second seminar was organised by the Aeronautics Research and Development Board (AR&DB), DRDO on 14 February 2023. It was inaugurated by Raksha Mantri Shri Rajnath Singh. Raksha Rajya Mantri Shri Ajay Bhatt was the Guest of Honour. The topic of the seminar was 'Indigenous Development of Futuristic Aerospace Technologies including Way Forward for Development of Indigenous Aero Engines'. Eminent participants included members of Academia, Indian Private Industry, Start-Ups, PSUs, and DRDO who participated in this seminar.

A host of activities were also conducted during the seminar on 14 February 2023. Health Usage and Monitoring System for MiG-29K, which has been developed through Technology Development

Fund (TDF) was handed over to the Vice Chief of Naval Staff.

Other activities namely handing over of CEMILAC Certificate for CVRDE developed Aircraft Bearings for AMAGB of Tejas; launch of a web portal for System for Advance Manufacturing Assessment and Rating ([www.samar.gov.in](http://www.samar.gov.in)); Releases of DRDO Export Compendium, DRDO Monograph 'Non-Destructive Evaluation of Solid Rockets and Missile Systems, Aeronautics Research and Development Board's Magazine 'Pushpak2022' and DRDO Export Compendium. During the seminar, the DRDO also handed over 16 Licensing Agreements for Transfer of Technology (LAToT) for 11 DRDO developed technologies to 15 industries.

The DRDO's participation at Aero India 2023 was an excellent opportunity for the Indian aerospace community to foster the cause of indigenous development of military systems and technologies with the spirit of self-reliance and national pride. It provided a platform for collaboration and evolve new opportunities to boost export of indigenous defence products.



Release of DRDO Monograph 'Non Destructive Evaluation of Solid Rockets and Missile Systems'



Release of AR&DB's Magazine 'Pushpak2022'









# DESIGN VETTING CONTRACT WITH NAVAL GROUP, FRANCE FOR INTEGRATION AIP WITH P-75 CLASS OF SUBMARINES

Naval Materials Research Laboratory (NMRL), Ambarnath, and Naval Group, France signed an important contract on 23 January 2023 at Mumbai for vetting the design of NMRL-developed Fuel Cell-based Air Independent Propulsion (AIP) for Kalvari-class (P-75) submarines. The AIP has force-multiplier effect on lethality of a diesel-electric submarine as it enhances the submerged endurance of the submarine by several folds. The AIP technology has been successfully developed by NMRL in association with Indian industries. The land-based prototype of AIP has been test evaluated by Indian Navy during the users' trials. During the signing of the contract, NMRL scientists,



officials of the Indian Navy, and representatives from Naval Group

France and France embassy were also present.

## EVENTS

# REPUBLIC DAY CELEBRATIONS

## CAIR, BENGALURU

Center for Artificial Intelligence and Robotics (CAIR), Bengaluru, celebrated 74th Republic Day on 26 January 2023. The event started with flag hoisting by Dr Subrata Rakshit, OS & Director, CAIR followed by singing of the national anthem after which Director, CAIR addressed the gathering. Various awards were also distributed to CAIR employees and their wards.



## ITM, MUSSOORIE

Institute of Technology Management (ITM), Mussoorie celebrated the 74th Republic Day with great enthusiasm & fervor on 26 January 2023. Shri SA Katti, Director, ITM unfurled the National Flag followed by National Anthem. During the occasion, he expressed happiness, heartfelt thanks and congratulated all the employees on 74th Republic Day. He appraised the values of democracy such as liberty, equality, and justice. In his address, he highlighted the achievements of ITM in various aspects and thanked the entire 'Team ITM' for their whole-hearted support in achieving targets within the time schedule. He impressed upon all employees to continue their best efforts to achieve excellence in all their endeavors.



## ITR, CHANDIPUR

The 74th Republic Day was celebrated in Integrated Test Range (ITR), Chandipur premises on 26 January 2023 with the unfurling of the National Flag by Shri HK Ratha, Director, ITR followed by National Anthem sung by ITR personnel. Director in his address appreciated the officers, staff, and their families and contributions made by Military Wing, DSC Jawans, and Home Guard round the clock safeguarding ITR and Missile Complexes. Range Road and Launch Complexes CCTV Surveillance System were inaugurated on the occasion.



## NMRL, AMBERNATH

74th Republic Day was celebrated at Naval Materials Research Laboratory (NMRL), Ambernath on 26 January 2023 with patriotic spirit and enthusiasm. The celebrations commenced with the hoisting of our National Flag by Shri PT Rojatkar, OS & Director, NMRL. Officers and staff of NMRL participated in the celebrations. Children of NMRL employees also participated in the event and presented patriotic songs and poems on this auspicious occasion.



## RAISING DAY CELEBRATIONS AT NMRL

70th Raising Day was celebrated at Naval Materials Research Laboratory (NMRL), Ambernath with immense joy on 5 January 2023. Celebrations were marked with the august presence of Prof. AK Suresh (Retd.), IIT Bombay who graced the occasion as the Chief Guest. In his address, he inspired the NMRL fraternity to achieve greater heights in their mission. Prof. Suresh expressed a sense of great pride in the accomplishments made by NMRL over the years.

Shri PT Rojatar, OS & Director, NMRL addressed the gathering and presented an overview of laboratory's growth and achievements in year 2022. He also highlighted on future research



work needs to be undertaken by NMRL. NMRL annual report 2022 comprising all scientific developments, achievements made in various projects, R&D activities, and other welfare

activities of the laboratory was released on this occasion. Chief Guest felicitated the employees who completed 25 years of service and also distributed certificates to winners of sports events.

## EDITORIAL BOARD MEETING OF DLSJ AT DESIDOC

The *Defence Life Science Journal* (DLSJ) of DRDO is publishing research articles in the disciplines of biotechnology, bio-medicine, bio-engineering, bio-electronics, non-invasive life imaging, pharmacology, toxicology, physiology, NBC warfare, food technology, and psychology. Journal upholds the highest standards of editorial integrity, including disclosure and independent peer review. To further improve the quality of the journal as per international standards, Defence Scientific Information & Documentation Centre (DESIDOC), Delhi organised the '*Defence Life Science Journal* Editorial Board (DLSJ-EB) Meeting' on 20 January 2023.

Dr K Nageswara Rao, Director,



DESIDOC welcomed all DLSJ members and discussed the agenda, and elaborated on the role of the Editorial Board. During the meeting, the members reviewed the policies and processes of the journal and discussed journal promotion, an increase of journal impact, future topics for special

issues and probable Guest Editors, etc. Shri Yogesh Modi, Editor, DLSJ gave a brief presentation about the current status of journal policies, indexing sources, and the Editorial Board. The meeting was concluded with a vote of thanks by Mrs Alka Bansal, Asso. Editor-in-Chief, DLSJ.

## FOOD FESTIVAL-CUM-ART & CRAFTS MELA BY PXE, BALASORE

A food festival-cum-art and craft mela was organised by Proof and Experimental Establishment (PXE), Balasore on 21 January 2023 to discover the hidden talents of women employees of PXE. It was inaugurated by Mrs UD Joshi and Shri DK Joshi, Director, PXE. Working lady employees and wives of employees of PXE participated to show case their talents. Employees of ITR, PXE, EMU, PMU, MES and their families attended the event. People enjoyed wide variety of homemade foods of various states with handmade art & crafts items.



## WORLD QUALITY MONTH CELEBRATIONS AT DSP, HYDERABAD

World Quality Month was celebrated in a ceremonial way at Directorate of Special Projects (DSP), Hyderabad on 25 November 2022. Dr A Swarna Bai, Group Head, QRG welcomed the gathering, followed by her Welcome Address. Dr PSR Srinivasa Sastry, OS & Director, DSP emphasised the significance of quality for space projects and also encouraged to work towards Zero defect and First time right.

On the occasion, Shri HR Nagendra, Former Deputy Director, URSC, ISRO graced the event as Chief Guest and gave the inaugural address on 'Quality Management for Space Systems Balancing Tradition & Trend'.



Guest of Honour Cmde Mayank Pathak, Officiating ADG, SSQAG gave a talk on 'QA Coverage Experience in MSS Cluster' and

Shri CVS Sai Prasad, Sc 'H' Director SQR O/o DG (MSS) gave a Talk on 'DRDO Quality & Reliability Policy Guidelines'.

## WORKSHOP FOR CENTRAL ARMED POLICE FORCES AT DIPR

A workshop for senior officers from Central Armed Police Forces (CAPFs) was organised by the Defence Institute of Psychological Research (DIPR), Delhi on 9 February 2023 to deliberate upon the job requirements for the development of selection system for the Assistant Commandants in CAPFs. Dr K Ramachandran, OS & Director, DIPR delivered the opening address to the participants from CRPF, ITBP, SSB, BSF, and CISF highlighting the significance of the workshop. Dr Arunima Gupta, Sc 'G' & Addl Director, DIPR elaborated upon the genesis and importance of the activities



for evolving psychological requirements in the selection system of Assistant Commandants in CAPFs. The workshop was

conducted successfully and the participants appreciated the interactive sessions with DIPR team members.

## COURSE ON NLP WITH DEEP LEARNING AT CAIR

Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru organised three days Continuing Education Programme (CEP) on 'Natural Language Processing (NLP) with Deep Learning' during 23-25 January 2023. The course was designed with the objective to cover fundamental concepts, recent advances, and future research directions in the area of NLP, largely from the data-driven AI perspective and also from linguistics, and cognitive perspectives. Key topics covered include DNN architectures for NLP, representation learning, low resource NLP, NLP for legal domain, etc. along with fundamentals of linguistics including cognitive linguistics.



The course was organised as a series of tutorial sessions, talks, demonstrations of solutions developed by CAIR, and participant presentations in hybrid mode. Leading researchers, experts from academics, industries, and DRDO delivered the sessions. Keynote sessions were delivered by Dr G

Athithan, DS & DG (MCC) (Retd), Prof. Pushpak Bhattacharyya, IIT Mumbai, and Prof. BN Patnaik, IIT Kanpur (Retd). Professors from IIT Kharagpur, IIT Patna, IIT Hyderabad, IIT Palakkad, Max Planck Institute for Informatics Saarbrücken, BITS Hyderabad, Amrita Vishwa Vidyapeetham and

senior scientists from Microsoft Research, AI4 Bharat and CAIR delivered sessions covering different aspects of NLP. A total of 45 participants from ten DRDO laboratories attended the course. Dr Subrata Rakshit, OS & Director, CAIR delivered the valedictory address.

## NATIONAL SEMINAR ON EMERGING TREND— VEDA 2022

Microwave Tube Research and Development Centre (MTRDC), Bengaluru and Vacuum Electronics & Application Society (VEDAS) jointly organised the National seminar on 'Emerging Trends in Vacuum Electronics Devices & Applications (VEDA -2022)' during 19-21 January 2023 at Bengaluru. The event clubbed together eminent scientists, engineers, and researchers working in the discipline of vacuum electronic devices, and future trends & competing technologies. There were two tutorial sessions covering the areas of present and future trends in THz technologies and directed energy systems with tutors being Prof. Claudio Paoloni, Lancaster University UK, and Dr DV Giri, University of New



Mexico, USA. During inaugural session VEDAS awards Ceremony was held. Dr BK Das, Director General (ECS), graced the event as Chief Guest. A cultural event was organised on 19 January 2023 where participants from Ramana Maharshi school for the

blind mesmerised the gathering. Total 78 nos. of Technical papers were presented over 3 technical sessions and 3 plenary talks were organised for the two days. For the Valedictory ceremony, Dr P Radhakrishna, OS & Director, LRDE was the Chief Guest.

## WORKSHOP FOR HEADS OF TICs AND CORRESPONDENTS OF DRDO NEWSLETTER & TECHNOLOGY FOCUS

Defence Scientific Information & Documentation Centre (DESIDOC), Delhi, and Defence

Laboratory, Jodhpur (DLJ) jointly organised a workshop for Heads of Technical Information Centre

(TIC) and Correspondents of *DRDO Newsletter & Technology Focus* at DL, Jodhpur on 24 February 2023.

The workshop was attended by 44 participants, which are Heads of TICs, DRDO and correspondents of the *DRDO Newsletter* (the monthly news bulletin of DRDO) & *Technology Focus* (the bimonthly technical bulletin of DRDO). Dr K Nageswara Rao, Director, DESIDOC briefed the participants about the purpose and agenda of the workshop.

During the inaugural session, Shri RV Haraprasad, OS & Director, DLJ graced the occasion as Chief Guest. In his address, he appreciated the numerous services provided by DESIDOC. He said, that TIC Heads of DRDO are not merely librarians, but strongly act as an information providers and information disseminators



as and on behalf of DRDO. He stressed that this is high time that we at DRDO should come together to take DRDO to new heights. Smt Anjali Bhatia, Sc 'H' also addressed the participants and

stressed on providing the right information to right users at right time. During the valedictory session, Dr AS Rathore, Sc 'G', DLJ graced the occasion and distributed certificates to the participants.

## WORKSHOP ON WARGAMING & SIMULATION FOR AJNIFM UNDER MIN OF FINANCE

Institute for Systems Studies and Analyses (ISSA), Delhi conducted one day workshop on Wargaming & Simulation for Arun Jaitley National Institute of Financial Management (AJNIFM) on 2 February 2023. The workshop was organised with the objective to give exposure to officers from the Indian Navy in the area of technology/products developed at ISSA for the Indian Armed Forces, particularly, in wargaming & simulation.

Nine officers from Indian Navy participated in the workshop. The workshop was divided into two sessions; Session-I covered an overview of ISSA, an introduction to Modelling and Simulation



followed by a few systems analysis studies. Session II covered

demonstration of naval wargame & decision aid tools.



# SYMPOSIUM ON EMERGING TRENDS IN MILITARY PSYCHOLOGY

Defence Institute of Psychological Research (DIPR), Delhi organised a symposium as part of the 27th International and 58th National Conference of the Indian Academy of Applied Psychology (IAAP) on Psychology and Technology: Shaping the World, at Vigyan Bhawan, New Delhi, during 15-17 February 2023.

Senior scientists from DIPR shared their insights on novel research activities carried out in the area of military psychology. Engaging discussions were held on a range of topics including enhancing well-being through mindfulness, building military



resilience, the role of technology in combat stress management, technology trends in psychological testing and assessment among others.

The Symposium was conducted

successfully and a large number of students, researchers, faculty members, and scientists appreciated the lectures and interactive sessions with DIPR team members.

# RANGE SAFETY AWARENESS PROGRAMME AT PXE

To create alertness and awareness on safety, Proof and Experimental Establishment (PXE), Balasore organises 'Safety Awareness Programme' on regular basis. This time the programme was organised on 17 January 2023 at Ganga Mela Ground, Balaramgadi for trawler association personnel, owners/operators of trawlers and the local villagers to educate them on these dangers to avoid unfortunate accidents which may occur due to their misadventures.

The programme was attended by local residents, owners, and operating staff of trawlers, the President of the Trawler Association Balaramgadi, a representative of the Marine Fisheries Department (Sagar Mitra), Gram Panchayat member,

Senior Officers and Officiating Director of PXE. Audiovisuals of range activities were also displayed for better assimilation.

People were sensitised on the risks involved in venturing inside the range and picking up objects

by senior scientists and military officers of PXE. Security aspects involved in the firing range were also conveyed by Security Officer, PXE. The Medical officer also delivered a talk on local health issues and their remedies.





## APPOINTMENT

### NPOL, Kochi



Shri Sameer Abdul Azeed, Sc 'F', Naval Physical & Oceanographic Laboratory (NPOL) assumed charge as Counsellor (Defence Technology) at Embassy of India, Moscow on 6 January 2023. Prior to that he was Group Director (Technology Management) at NPOL, leading the application of systems engineering processes within the laboratory, and coordinating activities pertaining to perspective planning, technology transfers, and technology collaborations, besides synergising interactions with users and industries for system inductions and exports. He was also the Project Director for Project SPACE, leading the team for establishing a state-of-the-art experimental test facility for sonar systems, one of its kinds in the world.

He did his post-graduation in Industrial Engineering & Management from Indian Institute of Technology (IIT) Kharagpur, winning the Director's Gold Medal for being judged academically best among all post-graduate students of the institute.

At NPOL, he fostered creativity and innovation through development of civilian spin-off technologies including 'Tarangini', a portable device for underwater rescue and diving operations. He led the development of numerous spin-off devices for combating COVID-19 pandemic, in association with local industry. He was a member of High-Level Committee constituted by Govt. of Kerala for monitoring the manufacturing of life saving medical devices for the containment and treatment against COVID-19 in Kerala.

He also served as the editor of 'ASWINI', the Technology Management Journal of NPOL. He is a recipient of several awards, including Indian Institution of Industrial Engg. Award (2013), NITCAA Award (2014), DRDO Young Scientist Award (2014) and DRDO Award for Best Techno-Managerial Services (2019).

## AWARD

### NITTTR-IAAP BEST RESEARCH AWARD

Dr Archana, Sc 'F', Defence Institute of Psychological Research (DIPR), Delhi has been conferred National Institute of Technical Teachers Training and Research Award for the year 2023 in recognition of her sustained research contributions to projects related to Military Psychology at DIPR. She received the award during Indian Academy of Applied Psychology (IAAP) Conference held at Vigyan Bhawan, New Delhi on 17 February 2023.

## HIGHER QUALIFICATIONS ACQUIRED

### ASL, Hyderabad



Shri I Kingston Lesley Jabez, Sc 'F', Advanced Systems Laboratory (ASL), Hyderabad has completed PhD from National Institute of Technology (NIT) Warangal, Telangana, for his thesis entitled 'Study on Sulphur Cured Ethylene Propylene Diene Terpolymer Based Insulation for Large Composite Rocket Motor Casing'.

### CABS, Bengaluru



Shri MR Shankar, Sc 'G', Centre for AirBorne Systems (CABS), Bengaluru has been awarded PhD for his thesis titled 'Multidisciplinary Design Optimisation of Airborne Surveillance System' by Jain (Deemed to be University) on 16 January 2023.



### CSR ACTIVITY AT OLD AGE HOME BY PXE

A visit to Dibya Mandir Old Age Home, Balasore was organised by women's cell, Proof and Experimental Establishment (PXE), Balasore on 7 January 2023, a small step towards bringing smile on the face of our respected elderly citizen. Clothes, utensils, dry food & sanitary items were distributed to the inmates by the members of women's cell, PXE.



### DRDO SOUTH ZONE THROWBALL TOURNAMENT AT CAIR

Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru, organised the DRDO South Zone throw ball tournament exclusively for women during 18-19 January 2023. Total four teams from South Zone participated in the championship. Dr Subrata Rakshit, OS & Director, CAIR inaugurated the tournament on 18 January 2023 and distributed trophies and medals during closing ceremony. The team CAIR,



Bengaluru won the championship and ADE, Bengaluru, was the runner-up in the tournament.

### DRDO NATIONAL VOLLEYBALL TOURNAMENT 2022-23 AT ITR

DRDO National Volleyball Tournament 2022-23 was organised by Integrated Test Range (ITR), Chandipur during 17-19 January 2022. Four Teams from North, South, West, & Central Zone participated in the tournament. Shri HK Ratha, OS & Director, ITR inaugurated the tournament. In his inaugural address, Director, ITR welcomed all the players of four teams participating in the tournament and encouraged the players to play with full of joy and enthusiasm. Central Zone & South Zone Volleyball Team adjudged as winners and runners up, respectively. On the closing day,



Director, ITR presented Certificate and Medals to both Winners and Runners up Team. Shri DK Joshi, Director PXE graced the occasion as Guest of Honour.

The tournament was organised by Shri PN Panda, Chairman, Organising Committee, his team, ITR Sports Committee, and ITR Works Committee.

**VISITORS TO DRDO LABS**

**CAIR, BENGALURU**

\* Air Vice Marshal Rakesh Sinha, AVSM & team visited Centre for Artificial Intelligence and Robotic (CAIR), Bengaluru on 6 January 2023. Dr Rituraj Kumar, Sc ‘G’ & Officiating Director, CAIR gave a briefing followed by discussion and demonstration of technologies developed by CAIR in the area of secure systems and command & control technologies for land forces.



\* Lt Gen BS Raju, UYSM, AVSM, YSM Vice Chief of Army Staff visited Centre for Artificial Intelligence and Robotic (CAIR), Bengaluru on 13 January 2023. There was a briefing by Dr Subrata Rakshit, OS & Director, CAIR followed by discussion and demonstration of technologies developed by CAIR in the area of intelligent systems & robotics and command control land forces and secure systems.



**DIPR, DELHI**

\* Col Ram Chandra Khatri, Military Attache, Embassy of Nepal in Delhi visited Defence Institute of Psychological Research (DIPR), Delhi on 27 January 2023 and witnessed a training demonstration. He was also briefed on the various activities of the laboratory.



## NPOL, KOCHI

\* Rear Admiral Arjun Dev Nair, VSM, ACNS (SR) visited Naval Physical and Oceanographic Laboratory (NPOL), Kochi on 20 January 2023. Dr Ajith Kumar K, Sc 'G' & Director, NPOL welcomed ACNS (SR) and briefed him about an overview on NPOL. R Adm Arjun Dev reviewed UDA and futuristic projects of NPOL.



\* V Adm Sandeep Naithani, AVSM, VSM, Chief of Materiel, Indian Navy visited Naval Physical & Oceanographic Laboratory (NPOL), Kochi on 23 January 2023. Dr Ajith Kumar K, Sc 'G' & Director, NPOL briefed him on the on-going research activities being carried out at NPOL. Detailed presentation was made on the ongoing and proposed UDA and futuristic projects of NPOL by Shri VS Shenoji, Sc 'G' & Associate Director (Electronics), NPOL. Presentation on Improved Hull Mounted Sonars was made by Shri K Mohanan, Sc 'G' & ASD (HMS). The Chief Guest interacted with scientists of NPOL.



*DRDO Newsletter Wishes Its Readers  
A Very Happy, Colourful & Joyous Holi*