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DRDO SUCCESSFULLY FLIGHT TESTS MEDIUM RANGE SURFACE-TO-AIR MISSILE





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DRDO SUCCESSFULLY FLIGHT TESTS MEDIUM RANGE SURFACE-TO-AIR MISSILE

Defence Research and Development Organisation (DRDO) conducted two successful flight tests of the Indian Army version of Medium-Range Surface-to-Air Missile (MRSAM) at the Integrated Test Range (ITR), Chandipur off the Coast of Odisha on 27 March 2022. The flight tests were carried out as part of the live firing trials against high-speed aerial targets. The missiles intercepted the aerial targets and destroyed them completely, registering direct hits at both ranges. The first launch was to intercept a medium-altitude long-range target and the second launch was for proving the capability of a low altitude short-range target.

The missile is developed jointly by DRDO and Israel Aerospace Industries (IAI), Israel. The MRSAM army weapon system comprises multi-function radar, a mobile launcher system, and other vehicles. The flight tests were carried out with the weapon system in deliverable configuration. The performance of the weapon system was validated through the flight data captured by range instruments like radars, electro-optical tracking systems, and telemetry deployed by ITR. The flight tests were carried out in the presence of senior officials from DRDO and the Indian Army.

Raksha Mantri Shri Rajnath Singh has congratulated DRDO, the Indian Army, and the industry for the successful flight tests of MRSAM-Army. He said, both the successful tests established the



capability of the weapon system in intercepting targets at critical ranges.

Secretary, Department of Defence R&D and Chairman DRDO, Dr G Satheesh Reddy

complimented the teams involved in the successful flight trial of the Army version of MRSAM and stated that these tests are the major milestones towards an Aatmanirbhar Bharat.

DRDO SUCCESSFULLY FLIGHT TESTS SOLID FUEL DUCTED RAMJET TECHNOLOGY

Defence Research and Development Organisation (DRDO) successfully flight tested the Solid Fuel Ducted Ramjet (SFDR)-booster at the Integrated Test Range (ITR), Chandipur off the Coast of Odisha on 8 April 2022. The test successfully demonstrated the reliable functioning of all critical components involved in the complex missile system and met all the mission objectives.

The SFDR-based propulsion enables the missile to intercept aerial threats at very long range at supersonic speeds. The performance of the system has been confirmed from the data captured by a number of range instruments like telemetry, radar, and electro-optical tracking systems deployed by ITR.

The SFDR has been developed by Defence Research and Development Laboratory (DRDL), Hyderabad in collaboration with other DRDO laboratories such as Research Centre Imarat (RCI),



Hyderabad, and High Energy Materials Research Laboratory (HEMRL), Pune.

Raksha Mantri Shri Rajnath Singh has congratulated DRDO on the successful trial of SFDR. He termed it an important milestone towards the development of critical missile technologies in the

country. Complimenting the teams involved in design, development, and testing, Secretary, Department of Defence R&D and Chairman DRDO, Dr G Satheesh Reddy said, with the successful trial of SFDR, the range of air-to-air missiles can be enhanced.

PINAKA MK-I (ENHANCED) ROCKET SYSTEM FLIGHT-TESTED BY DRDO & INDIAN ARMY

Pinaka Mk-I (Enhanced) Rocket System (EPRS) and Pinaka Area Denial Munition (ADM) rocket systems have been successfully flight-tested by DRDO and the Indian Army at Pokhran Field Firing Ranges. A total of 24 EPRS rockets were fired for

different ranges during 25 March 2022 to 9 April 2022. Required accuracy and consistency were achieved by the rockets meeting all trial objectives satisfactorily.

With these trials, the initial phase of technology absorption of EPRS by the industry has

successfully been completed and the industry partners are ready for user trials/series production of the rocket system. The Pinaka rocket system has been developed by Armament Research and Development Establishment (ARDE), Pune supported by



High Energy Materials Research Laboratory (HEMRL), another Pune-based laboratory of DRDO.

The EPRS is the upgraded version of the Pinaka variant which has been in service with the Indian Army for the last decade. The system has been upgraded with advanced technologies enhancing the range to meet the emerging requirements. After establishing

the performance efficacy of the enhanced range version of Pinaka, the technology was transferred to the industries, viz. Munitions India Limited (MIL) and Economic Explosives Limited, Nagpur. Rockets manufactured by MIL under Transfer of Technology (ToT) from DRDO were flight tested during the campaign. Different variants of munitions

and fuzes which can be used in the Pinaka rocket system were also successfully test evaluated in the Pokhran Field Firing Range.

Secretary Department of Defence R&D and Chairman DRDO, Dr G Satheesh Reddy has congratulated the teams for completing the flight trials of new design rockets based on advanced technologies in record time.

SECOND SUCCESSFUL HIGH-ALTITUDE FLIGHT-TEST OF ANTI-TANK GUIDED MISSILE ‘HELINA’

As part of the ongoing user validation trials, indigenously developed Anti-Tank Guided Missile (ATGM) ‘Helina’ was again successfully flight-tested from Advanced Light Helicopter (ALH) on 12 April 2022.

Teams of Indian Air Force and Indian Army, along with DRDO conducted the trial at the high altitude range. This is the second successful flight-test in successive days.

The trial was carried out for different range and altitude. As per the plan, the missile engaged the simulated tank target accurately. The trials were witnessed by senior Army Commanders and scientists of DRDO. With the flight-test, consistent performance of the complete system, including



Flight testing of Helina (File photo)

Imaging Infra-Red (IIR) seeker, has been established, that will enable the induction of the Helina into the Armed Forces.

Helina is the third generation, fire and forget ATGM that can engage targets both in direct hit

mode as well as top attack mode. The system has all weather day-and-night capability and can defeat battle tanks with conventional armour as well as with explosive reactive armour.

TRANSFER OF TECHNOLOGY FOR IRDE DEVELOPED PRODUCTS

On 7 April 2022, a glittering programme was organised by DRDO towards the release of the third positive indigenisation list and Transfer of Technology (ToT) to the Indian industries by Hon'ble Raksha Mantri Shri Rajnath Singh. This was a landmark policy decision to usher Aatmanirbharta in defence. On the occasion, Dr BK Das, OS & Director, Instruments Research & Development Establishment (IRDE), Dehradun handed over Licensing Agreement for Transfer of Technology (LAToT) document of four technologies developed by IRDE to industries. The technologies were transferred in the presence of Hon'ble Raksha Mantri along with RRM, Chief of Air Force, Chief of Navy, Vice Chief Army, Defence Secretary and Secretary DD R&D and Chairman DRDO Dr G Satheesh Reddy.

The first technology 'Advanced Gunner's Main Sight with Laser Target Designator' was handed over to M/s Bharat Electronics Ltd., Bengaluru. It is a primary engagement sight for the gunner of the Armoured Fighting Vehicle (AFV) with a 5 km recognition range. It is a gyro-stabilised, state-of-the-art sighting system

The second technology 'Counter Drone System' was handed over to M/s Adani Defence Systems and Technologies Ltd., Ahmedabad, M/s ICOMM Tele Ltd., Hyderabad, M/s Astra Microwave Products Ltd., Hyderabad, M/s Larsen & Toubro Ltd., Mumbai and M/s Electronics Corporation of India



Ltd., Hyderabad. It can detect, track and identify airborne drones using multiple sensors, transfer the information to associated systems and enable counter techniques to deny them the intended operation.

The third technology 'Electro-optical Tracking System (EOTS) with EO sensors for Directed Energy Weapon (DEW) was handed over to M/s Motion Dynamics Pvt. Ltd., Hyderabad, and M/s Beneng Design & Manufacturing Pvt. Ltd., Bengaluru. It is an electro-optical stabilised gimbal sighting system integrated with a video tracker which facilitates battlefield surveillance, target acquisition, and auto-tracking during the day as well as night operations.

The fourth technology 'OpTRonic Submarine Periscope'



was handed over to M/s Paras Defence & Space Technologies Ltd., Navi Mumbai. It is capable of providing reconnaissance, surveillance, automatic target detection, identification, tracking of the target, and navigation of vessels. It also provides enhanced operational capability and improved situational awareness.

Congratulating DRDO and the industry, Hon'ble Raksha Mantri said that handing over of ToT agreements to the industry shows the increasing trust of Indian industries in DRDO-developed indigenous technologies which will strengthen the manufacturing ecosystem in defence systems and platforms.

LATOT FOR MRE RATION TECHNOLOGY

Defence Food Research Laboratory (DFRL), Mysuru, signed a License Agreement for Technology Transfer (LAToT) for MRE Ration Technology with M/s Kartar Roller Flour Mills Pvt. Ltd, Jalandhar. Dr Anil Dutt Semwal, Director, DFRL, and Shri Narinder Pal Singh, Director, M/s Kartar Roller Flour Mills Pvt. Ltd, Jalandhar signed the agreements on 24 February 2022 at DFRL, Mysuru.

The inventor, Dr DD Wadikar, Sc 'F', Head-Grain Science & Technology Division and his team, Dr V Vasudevan, Sc 'E', Shri JH Lakshamana, Tech Officer 'B' and their team, and Dr M Pal Murugan Sc 'E', Head-Technology Transfer & Exhibition Division, DFRL were present during the occasion.



The technology is based on three important critical factors; packaging systems, processing schedule, and the requirement of product recipes. The process has been optimised for various products, i.e, Vegetable Pulav, Vegetable Biryani, Chicken Biryani, Mutton Biryani, , etc. for

compositions as well as volume.

DFRL has already transferred this unique technology to many enterprises, i.e., MTR, ITC, Kohinoor, Tasty Bite, Chokhi Dhani Foods, Haldiram, Taste'L Fine Food, Annamalaiyar Foods, etc. for production and large scale supplies in India as well as abroad.

LATOT FOR ENVIRONMENTALLY DEGRADABLE FILMS TECHNOLOGY



Defence Food Research Laboratory (DFRL), Mysuru, signed License Agreement for Technology Transfer (LAToT) for Environmentally Degradable Film Technology with M/s Pyraa Flexipack Pvt Ltd. Dr Anil Dutt Semwal, Director, DFRL and Shri Ashwini Kumar Hemdev, Managing Director, M/s Pyraa Flexipack Pvt Ltd, Nanjangud, Mysuru signed the agreements at DFRL, Mysuru. Dr R Kumar, Sc 'F', the inventor, Head-Food Engineering & Packaging Division, Dr Johnsy George, Sc 'F', Head-

Research Appliances Division and their team (Environmentally Degradable Films), and Dr M Pal Murugan, Sc 'E', Head-Technology Transfer & Exhibition Division, DFRL were present during the occasion. M/s Pyraa Flexipack Pvt Ltd, is one of the largest manufacturing industries in the field of plastic products located in Thandya industrial area, Nanjangud Taluk, Mysuru.

The LDPE-based degradable packaging materials by incorporating a combination of biodegradable and

photodegradable additives into LDPE. The addition of biodegradable additives into LDPE enables the microorganisms in the environment to degrade a portion of the additive. While the photodegradable additives result in chemical oxidation of the polymer chains triggered by UV irradiation or heat exposure. The combined effect of these additives leads to fragmentation and subsequent conversion of visible plastic contaminants into very small fragments, which reduces the environmental waste problems.

LATOTS FOR DIBER DEVELOPED PRODUCTS

Defence Institute of Bio-Energy Research (DIBER), Haldwani has handed over LAToT for two products to the industries. The technology for 'Anti Leucoderma Herbal Product Mark-II' was transferred to Aimil Pharmaceuticals (India) Ltd, New Delhi. The technology transfer document was transferred to the industrial partner on 30 March, 2022. The herbal product is a treatment for leucoderma, a skin

disease characterised by white patches. Aimil Pharmaceuticals (India) Ltd, New Delhi is also an industrial partner for the Mark-I of the product. On 31 March 2022, DIBER also handed over 'Technology for Deriving High-Quality Bio-Diesel from Jatropha' consisting indigenous oil extraction and transesterification sub-technologies for the production of bio-diesel meeting IS:15607 standard to M/s

Equiline Technologies Pvt Ltd, Ghaziabad.

The DIBER-developed technology ensures the production of IS:15607 compliant biodiesel without any pre or post-processing. The LAToTs were handed over by Dr Madhu Bala, Director, DIBER to the officials of the industry in the presence of Dr Devkanta Pahad Singh, Director, PM & SQR, and senior officers of DIBER, Haldwani.



Dr Madhu Bala, Director along with technical team handing over LATOT to M/s Aimil Pharmaceutical India Limited

NATIONAL SCIENCE DAY CELEBRATIONS

ASL, HYDERABAD

Advanced Systems Laboratory (ASL), Hyderabad celebrated National Science Day (NSD) on 28 February 2022. Dr M Rama Manohara Babu, DS & Director, ASL addressed the gathering. Shri Ambaj Kumar Diwakar, Sc 'E', delivered NSD oration on 'New Generation Checkout Systems'. He explained about checkout systems, its evolution and its various generation. Dr Manohara Babu presented Silicon Medal and certificate to Shri Ambaj Kumar Diwakar.



Director, ASL presenting Silicon Medal and certificate to Shri Ambaj Kumar Diwakar

CAIR, BENGALURU

The Centre for Artificial Intelligence & Robotics (CAIR) celebrated NSD on 27 February 2022. The programme started with an address by Dr Subrata Rakshit, OS & Director, CAIR, which was followed by an address by the Chief Guest Dr Vishal Rao on COVID-19. Shri Vikas Sood, Sc 'F' delivered NSD oration on 'A Framework for PetriNet-based Behavioral Modeling and Analysis of Cyber-Physical System of System'. He explained about the cyber-physical system of the system

is achieved as the composition of the dynamic composition of the operational constituents system. He concluded his talk by presenting a generic framework to handle the heterogeneity in the representation of participating constituent systems with varied syntax and semantics and the appearance of multi-level causal loops.



Shri Vikas Sood receiving NSD certificate from Dr Subra Rakshit, Director, CAIR

CAS, HYDERABAD

The Centre for Advanced Systems (CAS), Hyderabad celebrated NSD on 28 February 2022. Shri B Venkata Papa Rao, OS & Director, addressed the gathering with a welcome note and briefed about the history of NSD celebrations. On the occasion, CAS organised an oration on 'Hypersonic Facility for Future Missions' by Shri Sandeep Chattopadhyay, Sc 'G'. The lecture focused on the need for hypersonic test facilities for futuristic hypersonic missions. Director, CAS presented a memento to Shri Sandeep Chattopadhyay, Sc 'G'. The programme was concluded with a vote of thanks by Shri B Venkateswara Rao, Sc 'G', AD, CAS.



Shri B Venkata Papa Rao, OS & Director, CAS

CASDIC, BENGALURU

Combat Aircraft Systems Development & Integration Centre (CASDIC), Bengaluru celebrated NSD on 28 February 2022 with an oration by Shri Baranidharan, Sc 'E'. Dr K Maheswara Reddy, Director DLRL, and Shri CH Durga Prasad, Sc 'G' & Centre Head, CASDIC presided over the function. The oration covered design considerations and the effect of excitations on antenna array for ultra-wideband application in electronic warfare applications.



Shri Baranidharan giving NSD oration

DFRL, MYSORE

National Science Day was celebrated at Defence Food Research Laboratory (DFRL) Mysore, on 28 February 2022. Dr Johnsy Georgy, Sc 'F', Head, Research & Appliances Division

delivered the NSD oration on 'Active and Intelligent Food Packaging Technologies for Combat Rations'. He highlighted the recent development in active and intelligent packaging that enables the packaging to monitor the quality status of food products continuously and share the information with all the stakeholders for ensuring food quality and safety. Dr Anil Dutt Semwal, Sc 'G', Director, DFRL presented the NSD medal and citation to Dr Johnsy Georgy.



Dr Semwal, Director, DFRL presenting NSD certificate to Dr Johnsy Georgy, Sc 'F'

DIBER, HALDWANI

National Science Day-2022 was celebrated with enthusiasm at the Defence Institute of Bio-Energy Research (DIBER), Haldwani. On the occasion, IS:15607 matching bio-diesel was handed over to the Indian Army based on their requirements. The technology for production of IS:15607 compliant bio-diesel from Jatropha seeds was indigenously developed by DIBER and patents have been submitted to secure the technology. It is worthwhile to mention that 20 per cent of blends of bio-diesel produced by DIBER has passed rigorous trials carried out by users under environmentally challenging conditions of deserts (Temp. > 45 °C) and high altitude (altitude:

15,000 ft asl and above; Temp. -20 °C). DIBER has also provided training to jawans of 8 Kumaon for indigenously developing camouflage using Chhaddam technology developed by DIBER.

DIBER also celebrated Open Day on the occasion, allowing intermediate students of a nearby school to visit DIBER. Students interacted with scientists and technical staff of DIBER and were given a guided tour of the high-end research facilities available in DIBER.



School students during their visit and interaction with DIBER scholars

DMRL, HYDERABAD

Defence Metallurgical Research Laboratory (DMRL) celebrated NSD on 28 February 2022. This year the oration was delivered by Dr Amit Bhattacharjee, Sc 'G' on 'Effect of Processing on Grain Size and Texture on Properties of Different Classes of Titanium Alloys'.



Dr Amit Bhattacharjee, Sc 'G' delivering NSD oration

VRDE, AHMEDNAGAR

Vehicles Research & Development Establishment (VRDE), Ahmednagar, celebrated NSD on 28 February 2022 with immense exhilaration. Dr MW Trikande, OS & Offg. Director, VRDE inaugurated the event.

Shri BA Landge, Sc 'F' welcomed the Chief Guest, Dr RS Shinde, OS (Retd), RRCAT, Indore. Dr Shinde delivered a lecture on 'Advancement in Science & Engineering for Sustainable Future Technology in Research & Industry for 21st Century'. He spoke on super permanent and superconducting magnets for future sustainable applications with basic working principle of superconducting maglev, superfast bullet train. He also spoke on other magnetic levitation applications in health, wind turbines, magnetic storage flywheels and future hybrid electric cars. Dr Shinde shared his extensive expertise in the field of scientific education.

On the occasion, Shri Pulkit Garg, Sc 'D' gave a technical presentation on the topic 'Stability Assessment of a Heavy-duty Recovery Vehicle'.

The Offg. Director addressed the gathering on inquisitiveness towards science and why it is always required. The function was concluded with the vote of thanks.



INTERNATIONAL WOMEN'S DAY CELEBRATIONS

ASL, HYDERABAD

Advanced Systems Laboratory (ASL), Hyderabad celebrated International Women's Day (IWD)-2022 during 14-15 March with a two-day workshop on 'Nari-Shakti Shikhar'. Smt R Sheena Rani, Chairperson, Women's Cell welcomed the dignitaries and august gathering. Chief Guest Smt Vanita Datla, Vice Chairperson & MD, ELICO Ltd inaugurated the event on 14 March 2022 and emphasised the need for recruiting more women work force to achieve equal footing in the organisation and suggested that support for women empowerment should start from one's own family. Guest of Honour Smt Padmasri, Deputy Chief Sub-Editor, Eenadu insisted that women should take up challenges in every field and also create opportunities for themselves. Dr M Rama Manohara Babu, DS & Director, ASL expressed gratitude to the dignitaries and conveyed that ASL will stand for 'Break the Bias' theme of the IWD-2022.

The second day workshop was



Director, ASL felicitating Chief Guest Smt Vanita Datla on 14 March 2022

graced by Chief Guests and Guest of Honour Smt A Padmavathy, First Lady, DRDO. She inaugurated the event on 15 March 2022 and in her address she promised unconditional support for all activities of ASL. Chief Guest Ms Tejaswini Manogna, Youth Icon and Miss Earth-India stressed on the need of wellness of employees to meet organisation goals. Guest of Honour Smt Sangeeta Prasad, Soft Skills Trainer and MD, Magnetic Persona suggested that a forum

need to be created to address issues related to work induced stress. Smt M Usha Rani, First Lady, ASL and Smt B Aruna Kumari, First Lady, DG (MSS) graced the occasion. Smt S Shankari proposed vote of thanks.

CAIR, BENGALURU

IWD-2022 was celebrated on 21 March 2022 at Centre for Artificial Intelligence & Robotics (CAIR), bengaluru with zeal and enthusiasm. Smt (Dr) Suma Varughese, OS & DG (MED & CoS) was invited as the Chief Guest for the event. The programme started with a welcome address on stressing the necessity to celebrate IWD that was followed with a talk by Dr Subrata Rakshit, Director, CAIR. In his talk, he motivated all the working women at CAIR and stressed the necessity for inculcating gender equality from childhood. Mrs Varughese gave a motivational talk on the IWD theme of 'Gender Equality Today for Sustainable Tomorrow'



Director, ASL felicitating Chief Guest Smt A Padmavathy on 15 March 2022

stressing that working women should be motivated to come forward with full vigour in taking responsibilities.

CASDIC, BENGALURU

Combat Aircraft System Development & Integration Centre (CASDIC), Bengaluru celebrated IWD on 11 March 2022. Shri CH Durga Prasad, Sc 'G' & Centre Head, CASDIC addressed the women employees, and touched upon various aspects related to women empowerment. A talk was also given by Mrs D Vanitha, Sc 'F' on the achievement of women in various fields. The talk was followed by various activities and events for women employees. Prizes were distributed after the events.

CAS, HYDERABAD

Centre for Advanced Systems (CAS), Hyderabad celebrated IWD on 25 March 2022. The programme was inaugurated by Shri BV Papa Rao, OS & Director, CAS along with Smt M Brinda, Chief Guest and senior officers of CAS. The welcome address was given by Smt Vijaya Kumari, Administrative Officer. Smt M Brinda, 'Divisional Engineer', TS TRANSCO was invited as the Chief Guest. She addressed the gathering on women empowerment.

Shri Papa Rao highlighted the lead role of women and their contribution to the growth of society. Dr Sangeetha Naik, Apollo DRDO was invited as Guest Speaker. Smt I Sarada Devi, Administrative Officer, Chairperson of CAS Women's Cell gave a speech on the cultural, social, political, and economic achievements of women.



Celebrations of IWD-2022 at CAIR, Bengaluru



IWD-2022 celebrations at CASDIC, Bengaluru



CAS, Hyderabad celebrating IWD-2022

DGRE, CHANDIGARH

Defence Geoinformatics Research Establishment (DGRE), Chandigarh celebrated IWD on 8 March 2022. On the occasion, Dr PK Satyawali, Director, DGRE highlighted the role of women participation in mountain geo-hazards and assessment activities of the establishment. Director DGRE, Associate Director, and Technology Directors of the establishment deliberated on the different aspects in building a working culture of the organisation that encourages the women employee to come forward and think out of the box to harvest their full potential.

DIPR, DELHI

Defence Institute of Psychological Research (DIPR), Delhi celebrated IWD on 8 March 2022. The occasion was graced by Dr Manju Popli, Sc 'G', AD and Head, Division of Clinical Research and Medical Management, Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi. The gathering was first welcomed with opening remarks by Dr K Ramachandran, Director, DIPR. He began by honoring his mother, wife, and daughter and the significant role they have played in his life. Citing examples from the epic of Mahabharata and Ramayana, he stated that women have always been empowered and that their characters speak of strength and determination. This year, the key highlight was the speeches given by the male scientists of DIPR. This was followed by the address of Dr Popli, who captivated the audience with her charming presence and



Dr K Ramachandran, Director, DIPR presenting memento to Dr Manju Popli

eloquence. She ignited the spirit of IWD with her ready wit and humor. She concluded her speech by underlining the importance of having own friends, taking a break, and living life to the fullest.

DMRL, HYDERABAD

Defence Metallurgical Research Laboratory (DMRL), Hyderabad celebrated IWD on 8 March 2022. Dr Gita Sharma, Director (R&D), Tapadia Diagnostics, Hyderabad was invited as the Chief Guest for the occasion.

Dr G Madhusudhan Reddy, OS & Director, DMRL; Shri S Ramesh Kumar, Sc 'F' and Chairman, Works Committee; Ms Daisy Priya Tigga, Sc 'C' and Convenor, Women's Cell; Shri K Srikanth Goud, President, DEFMETLAB; Workers National Union and Shri Raju, Vice Chairman, Works Committee along with the Chief Guest were also present on the occasion. Shri Ramesh Kumar welcomed the guests, invitees, and august audience and expressed that women also

have equal responsibility to break the bias and achieve gender equality. Ms Tigga presented the report on women's activities in DMRL. Shri Srikanth Goud and Shri Raju also addressed the audience and spoke about the importance of gender equality. Director, DMRL in his address mentioned that the Ardhanarishwara tatva which is depicted in Puranas itself conveys the unity of opposites in the universe.

INMAS, DELHI

The Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi celebrated IWD on 8 March 2022. Dr Jubilee, Sc 'E', gave lecture focusing on awareness about harassment at workplace. Prof. (Dr) Bijayalaxmi Nanda, Principal, Miranda House, University of Delhi, was invited as the Chief Guest. A sehaj yog meditation session was also held for all the employees by Dr Mithila Bagai, Senior Assistant Professor from Maitreyi College, University of Delhi. Dr AK Mishra Sc 'G' and Director, INMAS shared his thoughts on the occasion by sharing the journey of a noble laureate Francois Arnold (2018 Chemistry) on her pathbreaking contributions to the world of enzymes and how it revolutionised many more scientific domains.

ITM, MUSSOORIE

International Women's Day was celebrated at the Institute of Technology Management (ITM), Mussoorie on 8 March 2022. Mrs Sapna Katti, President MKM addressed the gathering and talked about women empowerment. She quoted references to women's



Dr Gita Sharma, Director (R&D), Tapadia Diagnostics, Hyderabad during IWD-2022 celebrations at DMRL, Hyderabad



IWD-2022 celebrations at INMAS, Delhi



Celebrations of IWD-2022 at ITM, Mussoorie

contribution to mankind since the dawn of civilisation. She further elaborated on the key roles of women in professional and domestic life. Thereafter, Gp Capt

M Subramanian extended warm wishes and motivated all present to achieve more in their respective work areas. An online talk on 'स्त्री: अर्धाग्नी या पूर्णाग्नी' was also delivered by

Dr Jigyasa Kumar. The event was concluded with a vote of thanks by Smt Anita Mohindra, Sc 'F'.

NMRL, AMBERNATH

International Women's Day was celebrated at Naval Materials Research Laboratory (NMRL) with immense zeal and happiness on 9 March 2022. Surg. Rear Admiral Arti Sarin, VSM, Command Medical Officer, HQWNC, Indian Navy graced the occasion as the Chief Guest. She delivered a talk on the topic 'My journey' and shared her experiences. She highlighted the importance of gender equality in the workplace.

Shri PT Rojatkar, OS & Director, NMRL in his address, highlighted the importance of women employees in the overall progress of the organisation. Subsequently, a lecture on 'Stress Management' was delivered by Shri Bharudkar, Manashakti Research Centre, Lonavala.

Summer coats were distributed to women working in the arboriculture department and wet canteen on this occasion.



Surg. Rear Admiral Arti Sarin, VSM, Command Medical Officer, HQWNC, Indian Navy during IWD-2022 celebrations at NMRL, Ambarnath



Women employees of VRDE, Ahmednagar celebrating IWD-2022

VRDE, AHMEDNAGAR

The IWD was celebrated at Vehicles Research and Development Establishment (VRDE), Ahmednagar on 8 March 2022.

A video lecture by Mrs Rajeshwariji Modi (Reiki Grandmaster, Acupressure Therapist and Counsellor) was arranged. The lecture focused on peace of mind, its importance for stress management, and for

maintaining good health in all respects.

Mrs Samina Shaikh, SPS, and Mrs PR Bhagwat, AO were felicitated in a respect to recognise their contribution to social welfare activities.

As members of Seva Samiti, they had contributed in organising medical camps in remote villages, providing aid in the form of uniforms and books to needy

students, distributing tricycles to differently-abled persons, and many such events over 10 years.

The efforts of these ladies made a difference in the lives of many needy people and helped in overcome their challenging life situations. The felicitation of these lady employees for their noble contribution towards social cause, will help in inspiring others also.

NATIONAL SAFETY WEEK-2022

CAIR, BENGALURU

The National Safety Week was observed at the Centre for Artificial Intelligence & Robotics (CAIR), Bengaluru from 4 March 2022 to 11 March 2022. A seminar-cum-workshop was conducted to bring awareness to all employees of CAIR on fire and safety equipment and procedures to operate. Two major activities were focused on during the workshop, awareness of safety and physical demonstration of fire extinguishers, firefighting equipment, and PPE kits. Fire and safety pocket manuals were distributed to CAIR employees.



DGRE, CHANDIGARH

Defence Geoinformatics Research Establishment (DGRE), Chandigarh organised National Safety Week during 4-10 March 2022 with the theme of the year 'Nurture Young Minds—Develop Safety Culture' to enhance the safety awareness among employees at workplace. The inaugural session of the Safety Week was telecasted by Dte of QR&S, DRDO and was attended



by DGRE employees and Service Officers. Shri Thalpathi Raju, Sc 'E' of Terminal Ballistic Research Laboratory (TBRL), Chandigarh delivered a talk on Fire Safety Perspective: DRDO Labs.

DRDL, HYDERABAD

National Safety Day was celebrated at Defence Research and Development Laboratory (DRDL), Hyderabad on 4 March 2022. Given growing health, and food safety concerns, the theme of the event was set as 'Healthy Living—Ayurveda & Pancha Karma Treatment Chronic Disorders' to create awareness of health, safety, and environmental conservation. Dr Kishore Mahindraker, a Specialist in Ayurveda and Panchakarma Treatment was invited as Chief Guest of the event. Other dignitaries present during the event were Dr Kishore Mahindraker; Shri GA Srinivas Murthy, OS & Director, DRDL; Dr CVS Murthy, Associate Director, DRDL; Shri PV Suresh, Tech. Director R&QA; and Shri N Vijay, SEED. A safety and health pledge was also taken by all who attended the event.

Prizes were distributed to the winners of various competitions conducted on the eve of National Safety Day Celebrations-2022.



IRDE, DEHRADUN

Instruments Research & Development Establishment (IRDE) celebrated National Safety Week during 4-10 March 2022. Dr BK Das, OS & Director, IRDE inaugurated the week-long event. Shri SK Rana, Deputy Director, Fire and Emergency services HQ, Uttarakhand delivered a lecture on 9 March 2022 on 'Nurture Young Minds and Develop Fire Safety Culture' to sensitise about fire hazards and mitigation techniques. Shri Rana highlighted the causes of fire hazards and emphasised on do's and don'ts in the event of fire incidents. He also pointed out the precautions to be taken during any fire accident. Dr Das stressed the need to take up the matter of safety very seriously. He requested all employees to adhere to safety norms. A small play was organised by employees of IRDE to show the importance of safety in day-to-day activities. A safety awareness campaign was conducted during this period. A slogan competition on safety and its necessity was also conducted during the safety week. Dr Das awarded best three slogans with prizes. Safety related posters received from National Safety Council were released by Director, IRDE and other senior officials.



NPOL, KOCHI

Naval Physical and Oceanographic Laboratory (NPOL), Kochi celebrated National Safety Day-2022 on 4 March 2022 to promote the safety awareness among the employees in the organization. Postures on safety topics were displayed to strengthen safety awareness at NPOL.

Safety flag was hoisted by the senior most technician. Safety day pledge taking ceremony followed and this was led by Shri Radhakrishnan Nair GS, Sc 'F', Chairman-Safety Committee. Shri S Vijayan Pillai, Sc 'H' & Director NPOL addressed the gathering and highlighted the importance of following safe practices at office. This was followed by a live demonstration and practical



training session by the Fire Safety department of NPOL. Different types of fires, specific extinguishing methods, and precautions to be taken while handling different

types of fire extinguishers were demonstrated. These programmes were well received and helped to enhance the safety awareness in the organisation.

SCIENTIFIC AND INDUSTRIAL EXHIBITIONS

DMRL, HYDERABAD

Defence Metallurgical Research Laboratory (DMRL) participated in Amrit Mahotsav Science Showcase: Roadmap to 2047 – Exhibition at ICMR--National Institute of Nutrition (NIN), Hyderabad during 22-28 February 2022. Hyderabad-based DRDO laboratories—Defence Research and Development Laboratory (DRDL), DMRL, Defence Electronics Research Laboratory (DLRL). Several DMRL products and technologies were showcased in the exhibition to Hon'ble Union Minister of State, Ministry of Home Affairs, Shri G Kishan Reddy, and other dignitaries to project the DMRL's contribution



to promoting innovation and self-reliance. Students from many schools also visited the week-long exhibition. The DMRL products received a very encouraging

response from Hon'ble Minister, students, and other visitors. The event provided an ideal platform for DMRL to showcase its products and technologies.

ACEM, NASIK

Advanced Centre for Energetic Materials (ACEM), Nasik had organised a three-day science exhibition in collaboration with High Energy Materials Research Laboratory (HEMRL), Pune during 22-24 February 2022 at Nasik. The exhibition was based on the theme 'Understanding the World of Solid Rocket Motor'. More than 300 undergraduate students from various science and engineering colleges across Nasik city visited the exhibition. The exhibition was inaugurated by Shri KPS Murthy, GM ACEM and Director, HEMRL.

The exhibition was set up in three parts consisting of video tutorials, a poster gallery, and an informative discussion of divisional work and products. Students got the opportunity to interact with defence scientists and got a glimpse of the processing of solid rocket motors.

Apart from the exhibition, science quizzes, essay writing, slogan writing,



and poster competitions were also organised for ACEM employees. The series of activities culminated on 7 March 2022 when NSD-2022 was celebrated. Eminent scientist Padma Shri Prof GD Yadav from ICT, Mumbai was the Chief Guest

for the occasion. HRD Cell at ACEM led by Shri RS Patil, Joint Director HRD, Ms Lubna Khan, Head, HRD Shri CM Thorat, Technical Officer, Shri Moin Raza, and Shri Sandeep Gupta Senior Technical Assistants coordinated the event.

RAISING DAY CELEBRATIONS

Defence Applications Laboratory (DEAL), Dehradun celebrated its raising day on 23 February 2022 with immense zeal and enthusiasm. To commemorate the occasion, various sports events and games were organised including cricket, football, volleyball, badminton, table tennis, and other field events. A large number of DEAL employees participated in the events.

Dr BK Das, Director, DEAL presented the laboratory-level DRDO awards, cash awards, and sports awards to the meritorious

employees and the winners of the various sports events. DEAL Golden Gallery showcasing the history of DEAL since its inception along with major systems developed by the laboratory was also inaugurated by Dr BK Das. In the evening, a cultural programme

'Kalakriti-2022' with inclusive flavor showcasing the diverse culture of India was presented by the employees. Director, DEAL also participated in the cultural programme with great enthusiasm and motivated the employees through his talk.



Dr BK Das, Director DEAL along with the participants of cultural show 'Kalakriti'

WORKSHOP ON INCREASING EFFICIENCY IN DECISION MAKING: E-OFFICE

Directorate of Parliamentary Affairs, Rajbhasha and Organisation & Methods (DPARO&M) organised a one-day workshop on 'Increasing Efficiency in Decision Making: e-Office' on 16 March 2022 at DRDO HQ.

Dr Ravindra Singh, Director, DPARO&M welcomed the Chief Guest Shri V Srinivas, IAS, Secretary Ministry of Personnel, Public Grievances & Pension and Dr G Satheesh Reddy, Secretary DDR&D and Chairman DRDO. During his inaugural talk on 'Increasing Efficiency in Decision Making: e-Office', he shared his experience on how organisations moved from the phase of digitisation to digital

transformation wherein a series of coordinated work culture and technology shifts transformed an institution's operations.

Expert faculties were: Shri Kapil Kumar Sharma, Sc 'F' and Ms Aradhana Jaiswal, Project Manager from NIC Delhi, Group Captain Thomson George, Indian

Air Force, Ms Gurpreet Kaur, Sc 'E' R&D Engg.(E), Ms Diksha Sethi, Sc 'B', ARDE. This event was coordinated by O&M team, DPARO&M, led by Smt Asha Tripathi, Sc 'G', DPAROM. About 45 DRDO officers and staff from various Directorates of DRDO HQ attended the workshop.



WINTER INTERNSHIP PROGRAMME

As part of the Azadi ka Amrit Mahotsav-an initiative of the Government of India to celebrate and commemorate 75 years of independent India and the glorious history of its people, culture and achievements, ACEM, Nasik has conducted Internship-2021 programme. Sixty seven engineering undergraduate students from different colleges have undergone one-month internship programme at ACEM the students were from various disciplines such as Aerospace Engineering, Mechanical Engineering, Computer Science and & Electronics Engineering. Scientists of ACEM mentored

the students. Each student was assigned to a project guide as per his/her discipline. As part of internship, a general orientation programme was conducted for a week, wherein the students got exposure to research activities and various divisions at ACEM. In all more than 20 projects were

completed. A valedictory function was organised for students. Shri KPS Murthy GM, ACEM, felicitated the students. HRD Cell at ACEM comprising of Shri RS Patil, Ms. Lubna Khan, Shri CM Thorat, Shri Moin Raza and Shri Sandeep Gupta coordinated the event.





HINDI WORKSHOP

Defence Metallurgical Research Laboratory (DMRL), Hyderabad organised a Hindi Workshop on 21 March 2022 for Admin and Store Assistants. The workshop was conducted by Dr Sant Ram Yadav, Deputy Director (Official Language), Central Research Institute for Dryland Agriculture (CRIDA), Hyderabad.



PERSONNEL NEWS

HIGHER QUALIFICATION ACQUIRED



Shri Jai Krishna Mishra, Sc 'F', Advanced Systems Laboratory (ASL), Hyderabad has completed PhD from the National Institute of Technology (NIT) Warangal, Telangana for his thesis 'Development of External Ablative Thermal Protection System for Composite Rocket Motor Case'.



Smt PV Sreena, Sc 'E', ASL, has been conferred PhD from the Indian Institute of Technology (IIT) Bombay, Mumbai, Maharashtra for her thesis entitled 'Suboptimal Non-linear Guidance of a Re-entry Vehicle With NavIC-aided INS Navigation for Precise Interception'.



Dr Shiv kumar Khaple, Sc 'E' has been awarded the degree of PhD in Metallurgical and Materials Engineering with specialisation in 'Effect of Alloying Addition on the Microstructure and Mechanical Properties of FeAl-based Lightweight Steel' from NIT, Warangal.



Shri K Parameshwar, TO 'B' acquired MSc (by Research) Degree in Mechanical Engineering from DIAT, Pune.

AWARDS & RECOGNITIONS



* The Indian Institute of Chemical Engineers conferred the ICI India Ltd. Award for Excellence in Process or Product Development on Dr SC Bhattacharyya, Sc 'G' and Associate Director, ACEM, Nasik. The coveted national award was presented to the scientist during CHEMCON at CSIR-IMMT, Bhubaneswar.

* The paper entitled 'Experimental Study on Surface Integrity of Single Crystal Nickel-based Superalloy under various Machining Processes' authored by Mr Srinivas Rao Nandam, Dr A Venugopal Rao, Dr Amol A Gokhale, and Dr Suhas S Joshi, Defence Metallurgical Research Laboratory (DMRL), Hyderabad has been selected for the Best Paper Award in an international conference, AIMTDR-2021.

Patent

A patent 'Method and Apparatus for Continuous Casting of Metallic Ribbons' (Patent No. 381058) has been granted for which Dr Bhaskar Majumdar, Shri D Arvindha Babu, Shri A V Phanikiran, Shri B Richard Danny, Dr Dilshad Akhtar from DMRL, Hyderabad and Shri M Srinivas from NSTL, Visakhapatnam are named as inventors.

INAUGURATION OF BIOFUEL RESEARCH COMPLEX AT DIBER

Dr UK Singh, OS and Director General (Life Sciences) inaugurated Bio-fuel Research Complex at Defence Institute of Bio-Energy Research (DIBER), Haldwani on 9 February 2021. On the occasion, Dr Madhu Bala, Director, DIBER highlighted that this is the first dedicated laboratory space now created, where the much-required high-end, as well as high-performance equipment, could be housed. The present Bio-fuel Research Complex, spread over approximately 19 Acres, has sufficient space and infrastructure available to support diverse activities including cultivation and breeding of energy crops, biomass processing by physical, chemical, and biological methods, and energy and fuel production. At present, infrastructure is installed for trans-esterification, air blown, and steam-gasification, hydrogenation, bio-methanation, etc. There is sufficient scope for adapting the futuristic bio-energy activities as well.



Dr UK Singh, DS and DG (LS) inaugurating Bio-fuel Research Complex at Haldwani

Dr Singh also visited the analytical laboratory in the complex. A demonstration of DT/TGA was carried out, wherein the DG (LS) had a lengthy discussion with the concerned scientist and his team. Individual scientists also had an opportunity to show their present research and prospective planning to DG (LS). Dr Singh congratulated the DIBER fraternity on the occasion, and also wished

for quality research by DIBER on the occasion. He encouraged scientists to conceive novel research ideas and convert them to products through impactful research projects. An annual report for the year 2021 and a technical booklet on 'Hydroponics Technology of DIBER, DRDO for Increasing Livelihood Opportunity in Border Areas of Uttarakhand' were also released.



Dr UK Singh, DS and DG (LS) releasing Annual Report and Technical Booklet on 'Hydroponics Technology' of DIBER

INAUGURATION OF IRDE TABLEAU

For the first time, Instruments Research & Development Establishment (IRDE) conceptualised a tableau depicting the electro-optic contribution towards all platforms of Armed Forces. The tableau depicts the products of IRDE for Indian Armed Forces. It showcases the presence of IRDE in land, sea, air, and space. Some of the products which are highlighting in the tableau are: Laser Dazzler for Passive Night Sight, Lightweight Laser Target Designator (LLTD), Compact Airborne Multisensor Optronic Payload (CAMOP), Integrated Multi-Function Sight (IMFS), Border Surveillance System (BOSS) and Hyperspectral Payload. It depicts at one place the



Dr BK Das, OS & Director, IRDE along with Shri LC Mangal, OS & Director, DEAL during unveiling of IRDE Tableau

contribution of the laboratory with Solutions for Armed Forces'. It was unveiled on 14 March 2022. The tagline 'One Stop Electro-Optic

INAUGURATION OF AIR COMPRESSOR UNIT AT IRDE

Dr BK Das, OS & Director, Instruments Research & Development Establishment (IRDE), Dehradun inaugurated the facility of Air Compressor Unit for generation of medical oxygen on 28 March 2022 at IRDE. The unit consists of Air Pressurized Unit and Pressure Swing Adsorption (PSA) system. The air in the earth's atmosphere is made up of approximately 78 per cent nitrogen and 21 per cent oxygen. This unit takes air from atmosphere and separates oxygen from it. Firstly, air-pressurised unit compresses air to 5 bars and separates environment impurities like dust, moisture, etc. from atmospheric air. At next stage, the pressure swing adsorption system generates enriched oxygen gas from

ambient air and utilises the ability of a synthetic zeolite molecular sieve to absorb mainly nitrogen. While nitrogen concentrates in the pore system of zeolite, oxygen gas is produced as a product. Finally, more than 90 per cent pure oxygen

is delivered by the system. Oxygen storage tank is also attached with the capacity of one thousand litres for storage of the produced oxygen. Dr Das lauded the efforts of the officers and staff for establishing the facility.



Air Compressor Unit established at IRDE

VISITORS TO DRDO LABS

CAIR, BENGALURU

Vice Adm Rajesh Pendharkar, DG Naval Operations visited Centre for Artificial Intelligence & Robotics (CAIR), Bengaluru on 24 March 2022. There was a briefing by Dr Subrata Rakshit, OS & Director, CAIR followed by discussion and demonstration of technologies developed by CAIR in the area on geographic information system and command & control systems for naval forces.



Vice Adm Rajesh Pendharkar, DG, Naval Operations in discussion with Director, CAIR and other senior scientists

CASDIC, BENGALURU

Dr G Satheesh Reddy, Secretary DD R&D & Chairman DRDO, and Ms J Manjula, DS & DG (ECS) visited Combat Aircraft Systems Development and Integration Centre (CASDIC), Bengaluru on 1 February 2022. Shri CH Durga Prasad, Sc 'G' & Centre Head, CASDIC briefed Chairman, DRDO about the ASPJ Pod development for LCA aircraft and the other activities of CASDIC and also demonstrated the technologies developed at the centre.



Dr G Satheesh Reddy, Secretary DD R&D & Chairman DRDO during his visit at CASDIC

CAS, HYDERABAD

Vice Admiral RB Pandit C-in-C, HQ SFC visited Centre for Advanced Systems (CAS), Hyderabad on 7 February 2022. Shri BV Papa Rao, OS & Director, CAS briefed him on the ongoing production activities of strategic missile system like Agni-V and Agni-I Prime and various major testing facilities. Shri Praveen Tandon, Sc 'G' presented ongoing production activities being carried out at CAS.



Vice Admiral RB Pandit at Centre for Advanced Systems (CAS), Hyderabad

DEAL, DEHRADUN

* Air Marshal BR Krishna PVSM, AVSM, SC, CISC, HQ IDS visited Defence Electronics Applications Laboratory (DEAL), Dehradun on 19 March 2022 along with Major General PK Airy, AVSM, VSM, Dr Chandrika Kaushik, Director DISB, Cmde Manish Tripathi and Gp Capt. Ajay Gupta. Shri LC Mangal, Director DEAL, briefed him about the vision, mission, charter and technology focus area and the products developed by the laboratory. He detailed about the major projects of the laboratory including Software Defined Radios (SDR), Advanced Satcom System and Technologies, Spectrum Management System, NATSAT, Data Links for TAPAS, Astra Mk-II, AEW&CS, MTCS, and CTCS. SDR activities including different form factors, waveform porting and deployment, technological elements and high assurance security architecture were discussed. Air Marshal Krishna stressed about the SDR software element standardisation and creating its expertise among industry and academia. In view of the war induced uncertainty and sanctions, creating fabrication facility for hardware within the country was deliberated.

He was taken for product demonstration including SDR, Multichannel Hub Baseband system, Data Links and Troposcatter Communication Systems. He also planted a sapling in the DEAL campus. He took keen interest in the activities pursued at DEAL, gave valuable suggestions and appreciated the progress made by DEAL in the development of High end Communication and Surveillance Systems.



Air Marshal BR Krishna being briefed about the DEAL developed products by Shri LC Mangal, Director, DEAL

* Air Marshal Narmdeshwar Tiwari, AVSM, VM, Deputy Chief of Air Staff visited DEAL on 14 March 2022. Shri LC Mangal, Director, DEAL welcomed and briefed him about the various ongoing projects and activities of the laboratory.

Director, DEAL apprised Air Marshal Narmdeshwar Tiwari about the technologies and systems being developed by DEAL in the area of SDR, Data Links, GSAT-6 Terminals, and Troposcatter communication systems. He was



Air Marshal Narmdeshwar Tiwari being demonstrated the DEAL developed products

also taken for a laboratory visit and was demonstrated various products developed by DEAL.

DMRL, HYDERABAD

* As a part of Azadi Ka Amrit Mahotsav celebrations, Defence Metallurgical Research Laboratory (DMRL), Hyderabad organised a visit of students from Kendriya Vidyalaya, Kanchanbagh. Dr AK Singh, Sc 'G' and Dr M Phani Surya Kiran, Sc 'E' addressed the students in Tamahankar followed by their visits to a few technical groups of the laboratory.



Dr AK Singh and Dr M Phani Surya Kiran with the students of Kendriya Vidyalaya

* Shri MK Sinha, IPS, Additional DGP, J&K visited ATC, DMRL on 3 March 2022 along with Shri Gurinder Pal Singh, IPS, Additional IG, J&K Police, and Dr SK Jha, CMD, Midhani. They discussed various requirements of their forces and the support that could be rendered by DMRL with Dr G Madhusudhan Reddy, OS & Director, DMRL, and all Associate Directors of DMRL. The delegation was shown the various protective armour products developed by DMRL and also the ballistic range. The visit concluded with a request to have an MoU between Midhani, J&K Police, and DMRL for supporting their specific requirements.



Shri MK Sinha, IPS, Additional DGP, J&K taking keen interest in DMRL products

IRDE, DEHRADUN

Shri SC Narang, former CCR&D (R&M) and Chairman CEPTAM visited Instruments Research & Development Establishment (IRDE) on 15 March 2022. Dr BK Das, OS & Director, and other senior scientists of IRDE welcomed Shri Narang. Shri Narang

visited IRDE Diamond Jubilee Gallery and was overwhelmed watching the technology area, system area, down-the-memory lane, and lab WOW moments in the gallery. Dr Das explained in detail the technologies and systems developed by IRDE.

Shri Narang also saw the IRDE tableau showcasing IRDE presence in sea, land, water, and space. Shri Narang was highly delighted watching these developments. He appreciated the efforts of IRDE in achieving self-reliance in India's defence sector.



Dr BK Das, OS & Director, IRDE facilitating Shri SC Narang, former CC R&D (R&M) and Chairman, CEPTAM during his visit at IRDE, Dehradun

* Air Marshal BR Krishna, PVSM, AVSM, SC, and Chief of Integrated Defence Staff to the Chairman, Chiefs of Staff Committee (CISC) along with his team comprising of Maj Gen PK Airy, AVSM, VSM, Cmde Manish Tripathi, and Gp Capt Ajay Singh visited IRDE on 19 March 2022. He was welcomed by Dr BK Das, OS & Director, IRDE. Dr Das presented the major R&D initiatives taken by IRDE and technologies developed at IRDE towards Atmanirbhar Bharat. He also briefed about various products which have been developed and inducted into the Services. Dr Das also presented future technologies and systems like Infrared Search and Track System (IRST), Missile Approach Warning System (MAWS), and Hyperspectral Technologies along with Optronic Shield and EO Soldier in which IRDE is spearheading the development work. CISC appreciated the efforts



Air Marshal BR Krishna, CISC visiting IRDE Diamond Jubilee Gallery

of IRDE to develop state-of-the-art systems like IRST and MAWS. He also stressed for integrated test facility in the laboratory to cut down the product development cycle.

The number of suggestions evolved out of the discussion. CISC was extremely happy with the products and technologies being developed by the laboratory.