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SUPERSONIC MISSILE-ASSISTED RELEASE OF TORPEDO SYSTEM



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- Jodhpur** : Shri DK Tripathi, Defence Laboratory (DL)
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- Kochi** : Smt Letha MM, Naval Physical & Oceanographic Laboratory (NPOL)
- Leh** : Dr Dorjey Angchok, Defence Institute of High Altitude Research (DIHAR)
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Dr Ganesh Shankar Dombe, High Energy Materials Research Laboratory (HEMRL)
- Tezpur** : Dr KS Nakhuru, Defence Research Laboratory (DRL)
- Visakhapatnam** : Smt Jyotsna Rani, Naval Science & Technological Laboratory (NSTL)



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SUPERSONIC MISSILE-ASSISTED RELEASE OF TORPEDO (SMART) SYSTEM

The Supersonic Missile-Assisted Release of Torpedo (SMART) system was successfully flight-tested on 01 May 2024 from Dr APJ Abdul Kalam Island off the coast of Odisha. SMART is a next-generation missile-based lightweight torpedo delivery system designed and developed by the Defence Research and Development Organisation (DRDO) to enhance the anti-submarine warfare capability of the Indian Navy far beyond the conventional range of lightweight torpedoes.

This canister-based missile system consists of several advanced sub-systems, namely a two-stage solid propulsion system, an electromechanical actuator system, a precision inertial navigation system, etc. The system uses an advanced lightweight torpedo as a payload, as well as a parachute-based release system. The ground mobile launcher launched the missile. This test validated several state-of-the-art mechanisms, including symmetric separation, ejection, and velocity control. The Hon'ble Raksha Mantri, Shri Rajnath Singh, complimented the DRDO and the industry partners on the successful flight-test of SMART and said that the system's development will further enhance the strength of the Indian Navy. Dr Samir V Kamat, Secretary, DD R&D & Chairman DRDO lauded the synergistic efforts of the entire SMART team and urged to continue on the path of excellence.





ANTI-ICING TECHNOLOGY FOR GAS TURBINE ENGINES

Icing is a safety-critical issue for aircraft. It occurs when clouds contain liquid water droplets below freezing temperatures. When an aircraft flies through such a cloud, these liquid water droplets freeze on the aircraft surfaces, forming ice. This icing on aircraft surfaces changes the shape of airfoils (aircraft wings, tails, etc.) and causes deterioration of aerodynamic performance, difficulty in aircraft control, loss of flight stability, and ultimately flight crashes. The ice dislodged from aircraft or engine surfaces can damage the engine, cause loss of thrust, and cause engine failure mid-flight. Icing has resulted in numerous fatal accidents in the past. To fly safely in an ambient icing environment, an aircraft and its engine must have ice protection or an anti-icing system.

An anti-icing system prevents ice formation on aircraft or engine surfaces, enabling them to fly safely in an icing environment. There are two different types of anti-icing systems: electrical and hot air-based, respectively. The electrical system uses electricity to provide heat to the icing surfaces, whereas the hot air-based system uses the engine compressor's pressurised hot air to heat the surfaces.

In India, anti-icing technology for aeroengines was not available. The Gas Turbine Research Establishment (GTRE), Bengaluru, had embarked on a technology development project to design and indigenously develop anti-icing technology for aeroengines.

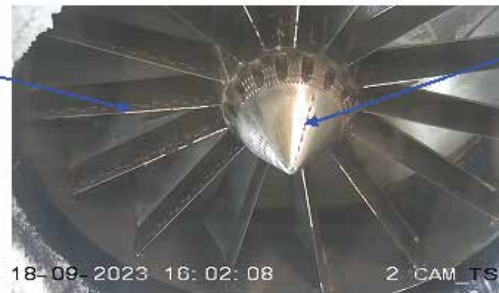
Under the technology development project, GTRE has successfully developed a methodology and capability to design a hot air anti-icing system for state-of-the-art gas turbine engines for manned and unmanned applications. Ice accumulates on the engine inlet casing's struts and bullet nose because these components are exposed to the ambient icing environment. Heating configurations to prevent icing on these components have been designed. Further two test pieces of engine inlet casing have been realised using a combination of both conventional and additive manufacturing for the first time in India in a relatively short duration. Four different anti-icing designs have been incorporated into single test hardware to maximise the

benefits of icing tunnel tests. The design methodology has been validated using test data generated at the M/s CIRA, Italy, icing wind tunnel. GTRE's test hardware successfully showed anti-icing capability under simulated icing cloud conditions. GTRE has complied with all the certification requirements.

GTRE now possesses the capability to design an anti-icing system for any state-of-the-art gas turbine aero engine. The expertise developed can be used for carrying out numerical studies to compute icing characteristics such as the efficiency of water catch (catch coefficient) for aero-engine or aircraft development programs. This technology can be used for military and civil applications in the future.



Without an Anti-icing System



With an Anti-icing System

Inlet Struts

Bullet Nose



LIQUID RAMJET FUEL FOR ADVANCED AIR BREATHING ENGINE

Defence Materials and Stores Research & Development Establishment (DMSRDE), Kanpur, has successfully developed liquid ramjet fuel that can power an advanced air breathing engine. This liquid fuel will not only replace the Russian-imported fuel in the BrahMos missile but is also an important component in developing a completely indigenous long-range supersonic cruise missile. The fuel was tested at the Ramjet Test Bed at DRDL,



Hyderabad, on 08 May 2024. M/s Corporation, Kanpur, are industry partners in the development. BPCL, Noida, and M/s Mineral Oil

HAZARD CLASSIFICATION TRIALS FOR LRSAM AT BORKHEDI, NAGPUR

LRSAM is a long-range surface-to-air missile for the Indian Navy and the Israel Navy that must be evaluated for hazards during storage and transportation.

The missile is an integration of two case-bonded composite propellant rocket motors separated by a pulse separation diaphragm.

The Centre for Fire, Explosive, & Environment Safety (CFEES), Delhi, conducted a super large-scale gap test with the objective of evaluating the hazard classification and determining the TNT equivalence of the LRSAM Rocket Motor. Two trials were conducted at BTR, Borkhedi Nagpur, during 05-06 April 2024.

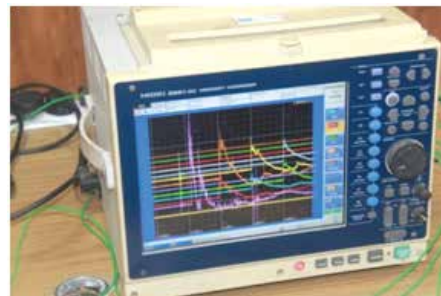
The motor was placed in a vertical position with sensors at various scale distances on two sides to determine the overpressure generated due to the detonation of the booster charge.



LRSAM Test Set up at BTR



Post Trial



Overpressure Data Recorded



Fragments Collected Post Trial

Out of the two trials, one was conducted without a gap and another with a gap to achieve 70k bar pressure with the nozzle in place.

Both trials successfully recorded blast overpressure data up to a distance of 20 meters. The witness plate did not show any dent or perforation.



BLAST FIELD TRIALS FOR OPTIMISATION OF DEBRIS GENERATION IN BURIED EXPLOSIONS

Under sub-project ‘Study of Penetration in Hilly Terrain’, blocking of roads and passages has to be created by buried explosions in weak and unstable hilly terrain near IB/LAC. Blast field trials for optimisation of debris generation in buried explosions were conducted at Yarlung Tri Jn near Mechuka in Arunachal Pradesh during 22–25 April 22–25, 2024.

The terrain of the hills used for trials was heterogeneous in composition and consisted of soil-mix boulders with weathered rock materials amounting to approximately 50% to 70%.

The slopes of the hills were between 70° to 80°. Three blast

trials have been conducted with a Net Explosive Content (NEC) up to 40 kg. Pre and post-trial photographs of the hill along with the passage are as shown in Figure.

The blast field trials on the hills generated debris with a volume of up to 350 cubic meters, which

spread across a 7-meter-wide passage and reached a height of 5 meters. Vehicles and personnel found the passage completely blocked.

The analysis will be used to develop the outcome of the main project by DGRE, Chandigarh.



Passage Before Blast



Post Blast Blockage of Passage

DEMONSTRATION OF VIPERS AUTOMATED SURVEILLANCE SYSTEM

Instruments Research & Development Establishment (IRDE), Dehradun, has developed the Video and Image Processing Enhancement and Recognition System (VIPERS), which is an automated surveillance system based on Artificial Intelligence (AI). The demonstration of the system was conducted for ITBP at Thakung near Pangong Lake at the India-China Border on 20 March 2024 and at Chushul ITBP Base on 21 March 2024.

The VIPERS Intelligence Unit, Thermal Camera, Video Capture Card, Power Supply, and other system peripherals performed well at near -15 degree freezing





temperatures in Thakung and Chushul. The system performed automatic human detection in dark night and early morning conditions. The system could detect humans up to 1150 meters away and generate an alarm automatically.

Pangong Lake and Chushul

are extreme weather situations for humans and machines due to freezing cold temperatures and a lack of oxygen. In these harsh operating environments, the VIPERSAI system can significantly help human operators perform well. Automated detection ranges heavily depend on the thermal

imagers. The selection of the right thermal camera and the fine-tuning of VIPERS intelligence unit performance can deliver excellent results. Shri Jai Prakash Singh, Sc 'G'; Shri Sunjeev Kumar, Technical Officer 'D', and Dr Vaibhav Gupta, Technical Officer 'C', IRDE, coordinated the demonstration.

DEMONSTRATION OF LIDAR SYSTEMS

Instruments Research & Development Establishment (IRDE), Dehradun, successfully developed 'Aerosol LiDAR' and 'Cloud LiDAR' systems, along with other LiDAR systems, under the project 'Development of LiDAR Systems for Detection and Characterization of Clouds and Aerosols'. The performance of the Aerosol LiDAR and Cloud LiDAR (Megh Suchak-3 and Megh Suchak-10) systems was demonstrated to users from Naval HQrs and IMD, Delhi, on 05 March 2024.

Shri Punit Vashisth, Additional Director (LiDAR), welcomed the users and briefed them about the demonstration. The users witnessed the final trials of the engineering systems of



Aerosol LiDAR and Cloud LiDAR (MS-3 and MS-10). During the demonstration, users evaluated and examined all of the received signals and appreciated the performance and features of both systems. They also expressed their

satisfaction with the system's performance of the LiDAR systems and conveyed that these systems are meeting all their required specifications and are suitable or acceptable for installation and further trials at their site

DEVELOPMENT TRIALS OF TARGET ACQUISITION SYSTEM FOR MPATGM

Instrumentation Research & Development Establishment (IRDE), Dehradun, successfully conducted the flight trials of Target Acquisition System (TAS) for Man Portable Anti-Tank Guided Missile (MPATGM) at Pokhran Field Firing Range (PFFR) during 12-

13 April 2024. IRDE has designed TAS for MPATGM.

A TAS is a multi-sensor system consisting of MWIR Thermal Imager, Day Camera and Eye Safe Laser Range Finder. The TAS is mounted on portable launcher and used for day/night surveillance,

target acquisition and firing of missile.

Range evaluation of TAS, as per GSQR, was also conducted as part of the trials. TAS range evaluation trials were conducted during both day and night. The Detection Range (4500 m),



Recognition Range (3500 m), and Identification Range (2500 m) of TAS against front-side tank target as well as broadsided tank target have been successfully achieved.

All the TAS sensors, i.e. Thermal Imager, Day Camera, and LRF were successfully trial evaluated. The performance of Thermal Imager was excellent at all ranges during day and night.

The range achieved by LRF was consistent throughout the trials. The performance of Day Camera was also satisfactory



HANDING OVER OF CLOUD LIDAR SYSTEM TO INDIAN NAVY

Instruments Research & Development Establishment (IRDE), Dehradun, successfully developed Cloud LiDAR (Light Detection And Ranging) system. The System was handed over to Directorate of Naval Oceanology and Meteorology (DNOM) of Indian Navy on 10 April 2024 at IRDE. Dr Ajay Kumar, OS & Director, IRDE handed over the System to Commander Pawanjit Singh, Indian Navy.

Cloud LiDAR is an optical remote sensing system used to measure cloud height, number of cloud layers, thickness, etc. This system has range capability up to 10 km. The system utilises bi-axial trans-receiver configuration in which pulsed NIR laser is emitted at wavelength of 1064 nm. These laser pulses are directly transmitted into

the atmosphere at high repetition rate. A 100 mm Cassegrain telescope is used to collect the backscattered Mie radiation. This optical signal is converted into analog signal by Si-APD detector. A customised DAQ card digitises the backscattered signal and calculates cloud base height,

number of cloud layers and cloud thickness. The complete system is IP66 compliant. The LiDAR measurement unit (payload) is mounted on two axes gimbal system for scanning atmosphere in vertical and horizontal plane with slew rate of 0.1 deg/sec to 20 deg/sec.



DGRE AND NCMRWF SIGN MoU FOR JOINT RESEARCH

The Defence Geoinformatics Research Establishment (DGRE), Chandigarh, and the National Centre for Medium Range Weather Forecasting (NCMRWF), Ministry of Earth Sciences (MoES), have entered into an Memorandum of Understanding (MoU) for joint research in the fields of meteorology and atmospheric sciences.

Dr PK Satyawali, Director, DGRE, and Dr VS Prasad, Head, NCMRWF, signed the pact at DGRE on 20 May 2024 for five



years. As part of the collaborative effort, R&D activities will be carried out to leverage the

enhanced 12 km global model data from NCMRWF for DGRE meso-scale model (WRF) runs.

An extended-range (03 month forecast) snow forecast products from NCMRWF to DGRE for winter appraisal reports, and supply 4 km hourly data for 48 hours to SnowPack will also be carried out. The MoU will aid in WRF model forecast verification for the Western and Northeast regions, improving the operational mountain weather and avalanche forecast services.

MoU SIGNED BETWEEN DMSRDE AND UNIVERSITY OF LUCKNOW

An MoU was signed between the Defence Materials and Stores Research & Development Establishment (DMSRDE), Kanpur and University of Lucknow, Lucknow on 15 May 2024 to foster academic and research cooperation/collaboration for facilitating teaching, research, and training between the two premier institutions.

Dr Mayank Dwivedi, OS & Director, DMSRDE and Prof. Alok Kumar Rai, Vice Chancellor, LU signed the MoU in the presence of senior scientists and senior faculty at Lucknow University. This MoU's areas of collaboration include the exchange of research, scientific, and technical materials;



collaborative research programs in specific fields of interest; a joint PhD program; internship, trainee,

and dissertation programs; and the sharing of instrumentation facilities.



DRDO CELEBRATES NATIONAL TECHNOLOGY DAY 2024

National Technology Day is celebrated on 11 May every year to remember the successful nuclear test conducted by India and recognise & honour the significant contributions of scientists and engineers who have played a crucial role in the country's technological progress.

The day also serves as a reminder of the importance of science and technology in nation-building.

The Defence Research and Development Organisation (DRDO) celebrated National Technology Day 2024 (NTD 2024) on 10 May 2024 at Metcalfe House, Delhi. As part

of the celebrations, lectures and orations were organised in various laboratories and establishments on 10 May 2024. On the occasion, Dr Samir V Kamat, Secretary DD R&D & Chairman DRDO presided over a special function organised by Defence Science Forum (DSF), DRDO, Delhi.

Shri Sudhanshu Mani, former GM of Integral Coach Factory, Chennai, was the Chief Guest of the occasion, and Smt Shalini Kapoor, Chief Technologist for Amazon Web Services, was the Guest of Honour. Shri Mani gave a keynote address on 'Leadership and Innovations in Large Organisations: Some Takeaways

from the Vande Bharat/Train 18 Project'. Smt Kapoor also gave an address, 'Future Trends in AI and Digital Transformations'.

In his address, the Chairman DRDO greeted the scientists and technologists and appealed to them to rededicate themselves to the service of the nation by providing cutting-edge technologies for making the country strong and self-reliant.

Dr UK Singh, Convener, DSF & DG (LS), in his welcome address, brought out the importance of AI in R&D and the need for innovative leadership styles in large organisation like DRDO.





A total of forty-five oration papers were received from various DRDO laboratories and establishments, out of which the best three papers were selected for the presentation. The 'DRDO Technology Spectrum', the compilation of the orations delivered by DRDO scientists, was released during the occasion.

A monograph titled 'Investigations on Failures of Defence Hardware Components: Fundamentals and Case Histories' authored by Dr KP Balan, former Sc 'G', Defence Metallurgical Research Laboratory (DMRL), Hyderabad, was unveiled.

The dignitaries also released the latest issues of DRDO publications published by DESIDOC, viz., *DRDO Newsletter*, *Defence Science Journal*, and the *DESIDOC Journal of Library & Information Technology*.

The Secretary DD R&D & Chairman DRDO presented the Commendation Card and badge to the awardees during the celebration of NTD-2024.



DRDO COMMENDATION CARD DISTRIBUTION CEREMONY

Directorate of Personnel (DoP), DRDO HQrs has introduced a new commendation scheme duly approved by the Secretary DD R&D & Chairman DRDO for felicitating the scientists, technical staff, and other supporting staff of DRDO.

The scheme has been framed with a vision to reinforce a positive organisational culture characterised by appreciation, recognition, and respect for the innovative and breakthrough contributions of the scientific

community. The commendations will be awarded at four levels, namely DRDO Level, HQrs Level, DG Level, and Laboratory Level.

For the first batch of Commendations of DRDO Level, nominations were invited on 22 March 2024 from all laboratories and establishments for recognising their outstanding services rendered in the year 2023. The nominations received were duly scrutinised by the Internal Committee of DoP and placed before the Commendation Committee duly constituted by the

Secretary DD R&D & Chairman DRDO.

On the basis of the recommendations of the committee, a total of 25 nominees (10 DRDS, 10 DRTC, and 5 others) were selected for awarding the Commendations of DRDO Level. In addition, 09 names were also nominated by the Secretary DD R&D & Chairman DRDO for the on-the-spot category of commendation. The recipients of the Commendation Card for the year 2023 are as follows:

**DRDS Cadre**

- 1 Dr Vikas Baburao Thakare, Sc 'G', DRDE
- 2 Shri R Anand, Sc 'G', DLRL
- 3 Smt MR Vijaya Lakshmi, Sc 'F', GTRE
- 4 Smt (Dr) Nidhi Sandal, Sc 'F', INMAS
- 5 Smt Jumi Hazarika Kakoty, Sc 'F', DISB
- 6 Shri Sohan Lal Nitharwal, Sc 'E', SAG
- 7 Shri Sanjaya Kumar Swain, Sc 'E', NSTL
- 8 Shri Palande Sunil Pandurang, Sc 'E', VRDE
- 9 Shri Vutla Pradeep Kumar, Sc 'E', RCI
- 10 Dr Pullabhatla Srikanth, Sc 'D', CCE(R&D) South

DRTC Cadre

- 11 Shri Bharat Ram, TO 'C', DG (ECS)
- 12 Shri M Raghesh Babu, TO 'C', GTRE
- 13 Shri Om Prakash, TO 'C', DIBER
- 14 Shri K Sita Ramachandra Rao, TO 'B', NSTL
- 15 Shri M Srinivasa Rao, TO 'B', ASL
- 16 Shri Pawan Kumar Yadav, TO 'B', CFEES
- 17 Shri Zabiulla AJ, TO 'B', MTRDC
- 18 Shri MG Venugopala, TO 'A', DEBEL
- 19 Shri Avinash KB, TO 'A', CAIR
- 20 Shri Pabitra Kumar Swain, TO 'A', DLRL

Admin, Allied & Others

- 21 Shri Sandeep Singh, Deputy Director, DoP
- 22 Smt Popuri Naga Nirmala, Sr Private Secretary, NSTL
- 23 Shri Brijmohan Singh Chauhan, SSO-II, DYSL-QT
- 24 Shri Niranjan Kumar Mishra, Sr Admin Officer Gr. I, DMRL
- 25 Shri M Balasubramanyam, Accounts Officer, DG (MSS)

On the Spot Commendation

- | | |
|---|---|
| 1 Shri Amit Sharma, Sc 'G' & Dir, DISB | 6 Shri Ranjan Kumar Singh, Sc 'F', DMRL |
| 2 Dr Sumit Goswami, Sc 'G' & Dir, DP&C | 7 Shri Santu Sardar, Sc 'E', DYSL-QT |
| 3 Dr Parimal Kumar, Sc 'G', SA to CISC | 8 Shri Surya Kant, Sc 'D', CFEES |
| 4 Shri Sameer Abdul Aziz, Sc 'F' & TA, HCI MOSCOW | 9 Shri RS Negi, Tech 'B', DRDO HQrs |
| 5 Shri Rohan Sharma, Sc 'F', DRDO HQrs | |

The following laboratories of DRDO also celebrated NTD 2023 at their respective places:

DGRE, Chandigarh

National Technology Day 2024 (NTD 2024) was celebrated at the Defence Geoinformatics Research Establishment (DGRE), Chandigarh, on 10 May 2024. Prof. Baldev Setia, Director of Panjab Engineering College (PEC), Chandigarh, who served as the Chief Guest for the occasion, delivered a comprehensive talk on

'Bridge Failures'. He highlighted the challenges and important technical points, accompanied by his own pictorial evidence, to better understand and consider when planning the designs of such structures. On the occasion, Dr PK Satyawali, Director, DGRE, addressed the gathering about the instrumental role of DRDO in celebrating 'National Technology Day' by making India the sixth member to possess nuclear technology after the US, Russia, the UK, France, and China.



Shri Ashish Dubey, Sc 'E' delivered a technical talk on "The Calibration Procedure and Estimation of Correction Factor for Reducing the Uncertainty in the Accuracy Due to Temperature Variation



Effect on Ultrasonic Snow Depth Sensor Measurement’.

DL, Jodhpur

On 10 May 2024, Defence Laboratory, Jodhpur (DLJ), celebrated NTD 2024 with great enthusiasm, marking the occasion with various events and activities. The event was graced by Shri P Raghavenra Rao, former Sc ‘G’ & Associate Director, CHES, Hyderabad, as the Chief Guest. He delivered a talk on ‘Microwave Engineering Application in Defence Sector’. Dr Pradeep Narayan, Sc ‘F’, Chairman S&T Forum, DLJ, welcomed the gathering and highlighted the significance of the day. Shri RV Haraprasad, OS & Director, DLJ, delivered an inspiring speech. He highlighted the importance of technological innovation in strengthening national security. Shri Mahaveer Prasad, Sc ‘F’, delivered the NTD 2024 oration on ‘Drone-based Gamma Radiation Aerial Surveillance Systems’. He was awarded the DRDO Citation and Medal.

On the occasion, an elocution competition for class 9 to Class 12 school students in Jodhpur, was organised.



DMSRDE, Kanpur

The Defence Materials and Stores Research & Development Establishment (DMSRDE),

Kanpur, celebrated the NTD-2024 on 10 May 2024. To mark the special occasion, Dr Seema Paroha, Director, National Sugar Institute (NSI), Kanpur, was invited as the Chief Guest. In his welcome address, Dr Mayank Dwivedi, Director, DMSRDE, spoke about the importance of Technology Day and its celebration as a festival by the scientific community. The Chief Guest delivered a talk on ‘Technological Advancements in the Sugar Industry’. Mohd Imamuddin, Sc ‘F’, DMSRDE, delivered the NTD oration on ‘Modular, Lightweight, and Flexible Damage Detection System for Remote Monitoring of Bullet Impact’. The event was concluded with a vote of thanks by Dr Himanshu B Baskey, Sc ‘F’.



LRDE, Bengaluru

National Technology Day was celebrated in Electronics and Radar Development Establishment (LRDE), Bengaluru, on 13 May 2024. Shri Gampala Viswam, DS & Director, LRDE, presided over the function. Shri Amit Kumar Verma, Sc ‘E’ delivered the NTD 2024



oration on ‘FPGA as an Enabling Technology for the Design of Modern Radar’. The Director, LRDE felicitated him with a medal and a commendation certificate. Director, LRDE also addressed the gathering.

NMRL, Ambernath

NTD 2024 was celebrated on 14 May 2024 at the Naval Materials Research Laboratory (NMRL), Ambernath. Dr BHVS Narayana Murthy, Vice Chancellor, DIAT, Pune, graced the occasion as the Chief Guest. Dr Chandrakant B Jagtap, Sc ‘F’, delivered the oration on ‘Green Synthesis of 1,2,4-Butane Triol by Biotech Route’. Dr Murthy presented the medal and citation to Dr Jagtap. Dr Murthy, in his address to NMRL scientists and technologists, highlighted the importance of the development of technologies within India for strategic applications to reduce dependency on foreign countries. He also motivated the NMRL scientists to do systematic planning and execution for DRDO projects to ensure timely delivery of the products to the users. Shri PT Rojatar, OS & Director, NMRL, felicitated the Chief Guest.



NPOL, Kochi

Naval Physical and Oceanographic Laboratory (NPOL), Kochi, celebrated



the NTD 2024 on 10 March 2024. Dr Ajith Kumar K, OS & Director, NPOL, inaugurated the programme and addressed the gathering. The NTD oration was delivered by Dr Sooraj K Ambat, Sc 'F' on 'AI Beneath the Waves: Opportunities and Challenges in Underwater Signal Processing'. The talk provided a glimpse of Artificial Intelligence (AI) and



deep learning. The oration focused on the latest developments in the underwater signal processing using AI techniques at NPOL and its applications in different sonar projects.

PXE, Chandipur

NTD 2024 was celebrated at the Proof & Experimental Establishment (PXE), Chandipur, on 13 May 2024. On the occasion, Shri Anjan Saha, Sc 'E', gave an oration on 'Impact of Upper Meteorological Data in Artillery Firing'. Prof. (Dr) Anirban Das, from the University of Engineering & Management, Kolkata, was the Chief Guest on the occasion and gave a talk on 'Perception

and Progress on AI as an R&D Enabler'. Shri Subodha Kumar Nayak, Director, PXE, presided over the function, highlighting the significant technological achievements and contributions in the testing and evaluation of armament systems. All the officers and staff of PXE attended the event.



INTERNATIONAL WOMEN'S DAY 2024 CELEBRATIONS

ASL, Hyderabad

Advanced Systems Laboratory (ASL), Hyderabad, celebrated International Women's Day 2024 (IWD 2024) on 15 April, 2024. Shri BV Papa Rao, Director, ASL, congratulated the entire women fraternity of ASL for their stupendous workmanship in contributing to the success of every mission of DRDO, particularly the recent successful launch of Divyastra (MIRV).

Smt R Sheena Rani, Program Director, Agni, and Chairperson, Women's Cell, stated that women are setting new benchmarks in fields of medicine, science, technology, space, defence and sports.

Dr Ananda Shankar Jayanth, Padma Shri Awardee & Chief

Guest of the occasion, emphasized that today, women's dedication and achievements in varied fields, have set a global platform for building a common ground that brings new dignity and respect to women across the globe.

Smt Saina Nehwal, Guest of Honour, the badminton ace and Pride of Nation and Padma Bhushan Awardee, took the audience on a journey into

memories of struggling childhood to the desire of working as a scientist to accomplishing the national title of Indian Badminton Player and the country's first Olympic medalist with 24 international championships in her name till date.

Smt Durga Padma Latha, First Lady, DG (MSS), and Smt Brinda Mangapuram, First Lady, ASL, also graced the occasion.





CABS, Bengaluru

The Centre for Airborne Systems (CABS), Bengaluru, celebrated IWD 2024 on 02 April 2024. Dr K Rajalakshmi Menon, DS & Director, CABS, addressed the gathering and motivated the women of CABS to invest in each other's lives and excel together in all areas of work. Dr Suman Choudhary, an alternative medicine specialist, was invited to give a talk on the benefits of acupressure and acupuncture.

This year, the women of CABS went a step ahead by wholeheartedly contributing to two needs. The women of CABS collected a donation amount for Government Lower Primary School, Kempapura, Bangalore, Cheshire Homes India, and HAL Airport Road.

During the month of March, various outdoor games were conducted, and medals were given. An art gallery on the theme 'Beti Bachao Beti Pado' was also conducted to showcase the creativity of participants.



DRDE, Gwalior

To embark on IWD 2024, Defence Research and Development Establishment

(DRDE), Gwalior, organised a one-day workshop for all the female employees on 15 March 2024. Ms Nandita Sharma, a renowned entrepreneur, motivational speaker, and founder of Ame Organics was the Chief Guest. At the outset, Dr Uma Pathak, convener of the event welcomed all the dignitaries and audience, and briefed them about the aim and theme of the workshop.

Dr MM Parida, Director, DRDE, congratulated on Women's Day and addressed the gathering, highlighting the strengths of the women workforce and their contributions in the field of S&T.

The session started with fast-track meditation and was focused on the challenges facing working women.

She also led activities aimed at relieving stress and transforming negativity into positivity, such as learning how to initiate conflicts, resolve egos, and transform ideas into innovations. Dr Neeti Jain, coordinator of the event presented the vote of thanks.



LRDE, Bengaluru

IWD 2024 was celebrated at the Electronics & Radar Development Establishment (LRDE), Bengaluru, on 27 March 2024.

Dr Shubha Madhusudhan, Clinical Psychologist & Therapist, and Sister BK Chaya, Zonal Co-

ordinator of SPARC-Brahma Kumaris, were the Chief Guest and Guest of Honour for the event. Shri Gampala Viswam, Director, LRDE, presided over the function. LRDE Management Council members' spouses received special invitations to grace the occasion. The Chief Guests spoke on 'Work-Life Balance and Dimensions of Wellness for a Harmonious Society'.

Later, Director distributed mementos for retiring Senior officers and female employees as part of the celebrations.



MTRDC, Bengaluru

IWD 2024 was celebrated at the MTRDC, Bengaluru on 22 March 2024. Ms Kaiya Arora, Director Postal Services, CPMG, Bengaluru and Ms Angela Nalini Margaret, OS & Director (PM), O/o DG (ECS) graced the occasion as the Chief Guest and the Guest of Honour, respectively.

Rajbhasha House Magazine 'Umang' was released by the Chief Guest.



GOLDEN JUBILEE CELEBRATIONS AT CVRDE

Combat Vehicles Research & Development Establishment (CVRDE), one of the premier establishments of DRDO under the Ministry of Defence, has played a significant role in enhancing the country's self-reliance on cutting-edge defence technologies for the past 50 years. To commemorate this momentous journey, the inaugural event of the Golden Jubilee celebrations was commenced at CVRDE, Chennai, on 16 May 2024.

Dr Samir V Kamat, Secretary DD R&D & Chairman, DRDO, was the Chief Guest, and Prof. Prateek Kishore, OS & DG (ACE), was the Guest of Honour of the event. Other dignitaries, viz., Directors

from DRDO HQrs, laboratories, Army, Navy, Central & State Government officials, and industry partners, also graced the occasion with their presence.

The event started with a traditional welcome dance. During the occasion, eminent veterans highlighted the achievements of CVRDE through a recorded video. While addressing the gathering, the Chief Guest appreciated the CVRDE's efforts to achieve self-reliance in AFV categories and insisted on focusing more on innovations to adapt to the emerging scenario in the defence ecosphere.

During his special address, the Guest of Honour expressed his

gratitude to all the veterans who had greatly contributed to the establishment's success.

Following the golden jubilee celebrations, an exhibition showcased the CVRDE flagship products, explaining the features of each system to the delegates.

The eminent personalities of the Indian Armed Forces, DRDO, and industry partners shared their expert perspectives in a panel discussion on 'Tank Warfare in the 21st Century: The Operational and Technological Requirements', which will help the CVRDE fraternity meet the challenges of the future. All officers and staff of the CVRDE took part in the celebration.





RAISING DAY CELEBRATIONS

DL, Jodhpur

The 65th Laboratory Raising Day of Defence Laboratory, Jodhpur (DLJ) was celebrated on 16 May 2024, with great pleasure and pride. Dr Y Sreenivas Rao, DS & DG (NS&M), graced the occasion as the Chief Guest.

Dr Rao, in his address, appreciated the efforts made by the laboratory in the development of state-of-the-art technologies in strategically important areas. On this momentous occasion, Dr Samir V Kamat, Secretary DD R&D & Chairman DRDO sent a message congratulating the DLJ family for their dedication, perseverance, and contribution to the collective success. In his address, Shri RV Haraprasad, OS & Director, DLJ, highlighted the laboratory's notable achievements and futuristic road map.

The DG (NS&M) distributed commendation cards to meritorious employees and awarded certificates to winners in various sports events. The employees who have completed 25 years of service at DRDO were also felicitated during the event.

INMAS, Delhi

The Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi, celebrated its 63rd Raising Day on 13 February 2024. Dr Samir V Kamat, Secretary, DD R&D & Chairman, DRDO, was the Chief Guest on the occasion. Dr UK Singh, DS & DG (LS), DRDO, was the Guest of Honour and Shri Atul Karwal (IPS), Director General, NDRF, was the special



guest. The other dignitaries from corporate HQs and Directors from Delhi-based laboratories also graced the occasion. The event marked the end of a week filled with scientific, sporting, and cultural activities at the institute. Dr Sudhir Chandna, Director, INMAS, welcomed the guests and highlighted the momentous efforts made by INMAS through the live demonstration and exhibition of the major core capabilities of INMAS in radiation and nuclear emergency preparedness, R&D in radiation countermeasures, radiation decontamination, and allied biomedical technologies

for tactical battlefield operations. Dr Singh emphasised enhancing the involvement of futuristic technologies like AI and space radiation biology in addition to the institute's current R&D activities.

The Chief Guest, Dr Kamat, in his address, appreciated the excellent contribution of INMAS in the field of R&N emergencies management, training, and biomedical research in this niche area related to human health. He also praised INMAS' efforts to develop resilient health infrastructure and technology to manage R&N emergencies in both civilian and military sectors.



DR BR AMBEDKAR JAYANTHI CELEBRATION

Bharat Ratna Dr BR Ambedkar's 133rd Jayanthi was celebrated at the Electronics & Radar Development Establishment (LRDE), Bengaluru, with great enthusiasm on 30 April 2024. Shri B Dayananda, IPS, Commissioner of Police, Bangalore City, was the Chief Guest and Shri Srinivasulu, IFS, Commissioner, Department of Ayush, Govt. of Karnataka, was the Guest of Honour. Shri Gampala Viswam, DS & Director, LRDE, presided over the event. The Chief Guests spoke about the significant contributions of Dr Ambedkar to constitutional provisions made by him to bring social justice, economic, and political



empowerment to the Indian society. The Director addressed the gathering and brought out the importance of the day.

NATIONAL SAFETY WEEK CELEBRATIONS

The 53rd National Safety Week was celebrated at the Microwave Tube Research and Development Centre (MTRDC), Bengaluru, during 4-10 March 2024. Safety pledge was administered by Dr SK Datta, OS & Centre Head, MTRDC on 05 March 2024.

A safety lecture was organised and Shri Susant Kumar, Fire Officer Army (Retd.) & Safety Officer, GTRE, also delivered a lecture on 'Safety and Stress Management During Crisis'.

A hands-on training of the operation of the CO₂-based fire extinguishers and a safety quiz were also conducted for MTRDC employees to instill a spirit of safety with respect to the



workplace. Both officers and staff of the Centre, participated actively. Shri Ashok Kumar, Sc 'B', Shri

Akash Raj, AA 'B', and Shri Mohit Kumar, AA 'A' were the winners for the safety quiz.



FIRE SERVICE WEEK-2024

ACEM, Nasik

Advanced Centre for Energetic Material (ACEM), Nasik observed Fire Service Week 2024 during 14-20 April 2024. The firefighting division personnel provided hands-on training to all employees, teaching them how to operate portable fire extinguishers, understand the variety of fire extinguishers, categorize fires, and utilize the fire accessories available on ACEM premises.

Shri RS Rana, Sc 'E' & HoD, Fire Fighting Division, welcomed the ACEM employees and motivated all employees to maintain fire safety throughout the year. Shri TV Jagadeeswar Rao, GM of ACEM, addressed the gathering and encouraged everyone to follow fire safety measures.

He emphasised significance of fire safety an importance in utilisation of fire safety equipment. He appreciated the MTRDC personnel initiatives to maintain the fire safety in the plant. Shri Punit, Sc 'B', also gave a presentation on 'Fire Safety in Explosive Areas'.

NMRL, Ambernath

Fire Service Week was observed at the Naval Materials Research Laboratory (NMRL), Ambernath, during 14-20 April 2024 to commemorate the memory of brave firefighters who lost their lives during the Dock explosion in Mumbai on 14 April 1944. To spread awareness about safety, a mock drill for a fire emergency was conducted. The safety team, led by Shri Nitin Ahire, Sc 'F', GH (Fire & Safety), safety officers of various



departments of the NMRL, and all officers and staff of the NMRL, actively participated in the mock drill. Attendees also paid homage to the martyrs by observing two minutes of silence.

The fire safety team explained

the reasons for widespread fire incidents, ways to curb them, and the operational handling of fire extinguishers. An essay writing competition was also organised, the winner and runner-up were awarded certificates.





167TH GENERAL COURSE IN FIRE FIGHTING

Skill Development Centre (SDC) Pilkhuwa, a premier training institute of the Centre for Fire Explosive and Environment Safety (CFEES), Delhi, under the aegis of DRDO, conducts various residential fire-fighting courses for the Army, Navy, Air Force, Coast Guard, sister laboratories, and various other government organisations.

The 167th General Course in Fire Fighting, of 12 weeks duration, was inaugurated on 02 April 2024 where a total of 75 participants from the Army, Navy, Air Force, Coast Guards, and other



DRDO laboratories underwent fire-fighting and safety training through theory and practical sessions, including instructional

visits. The participants were evaluated based on two theory/practical examinations, overall conduct/keenness, etc.

SPECIAL TRAINING ON EXPLOSIVE SAFETY

The Centre for Fire Explosive and Environment Safety (CFEES), Delhi, conducted a special training course on 'Explosive Safety' during 22-27 April 2024 with the aim to raise employees' awareness about the safe handling of explosives and give practical exposure through industrial visits to facilities involved in handling explosives. 25 delegates from DRDO and BrahMos Aerospace India Pvt. Ltd. attended the training program.

The course incorporated both theoretical and practical sessions on safety aspects at every critical stage of explosive handling, including design, development, manufacturing, processing, integration, testing, and demilitarisation.

Participants were taken to the Skill Development Centre Pilkhuwa to have practical exposure to state-of-the-art



firefighting and suppression systems and a practical demonstration of the magazine fire protection system. Industrial site visits were made to Economic Explosives Limited, Solar Group, and BrahMos Aerospace Pvt. Ltd. Nagpur, where the participants

had first-hand experience with the safety considerations involved in the real-life handling of explosives.

The participants also observed blast trials at the Blast Test Range, CFEES Site Borkhedi, Nagpur, highlighting safety aspects at every stage.



NATIONAL SYMPOSIUM & INDUSTRY MEET ON EMERGING TECHNOLOGIES IN INFRA-STRUCTURE DEVELOPMENT

A National Symposium and Industry Meet on 'Emerging Technologies in Infrastructure Development', was inaugurated by Shri Giridhar Aramane, Defence Secretary, in New Delhi on 09 May 2024. The two-day event, with the participation from the Armed Forces, academia, industry, and DRDO, aimed to foster dialogue, exchange knowledge, and explore innovative approaches to address the challenges and opportunities presented by emerging technologies in infrastructure development in line with the vision of 'Aatmanirbhar Bharat'.

In his address, Shri Aramane stated that the DRDO is extending support to the private sector in R&D, and together they can come up with new innovations to build faster and better in the times to come. Speaking on the occasion, Dr Samir V Kamat, Secretary, DDR&D & Chairman DRDO emphasised the importance of infrastructure in the development of a nation.



While addressing the participants, Shri Purushottam Bej, DG (R&M), said the symposium, attended by over 500 delegates with five technical sessions, will deliberate upon varying topics on emerging technologies in infrastructure development being expounded by experts from the users, industry, academia, and scientists from DRDO.

The Defence Secretary also inaugurated the industry-

partner exhibition, organised on the sidelines of the event, showcasing the latest technologies and products developed by the various industry partners. The event also included student competitions from IITs, NITs, and other engineering colleges. A symposium souvenir and Research & Development Construction Establishment Work Procedure 2024, were also released during the occasion.

8TH TECHNOLOGY COUNCIL MEETING OF DRDO CAPFS, MHA & NDRF

The Defence Research & Development Organisation (DRDO) organised the 8th Technology Council Meeting in New Delhi on 09 May 2024. The meeting was held to review the

status of the induction of DRDO technologies into the Central Armed Police Forces (CAPFs), Police, and National Disaster Response Force (NDRF) under the Ministry of Home Affairs (MHA).

Various DRDO laboratories from across the country participated in the virtual meeting. The meeting had active participation and was successful in consolidating the progress



achieved. It also laid out a roadmap of activities for the next six months.

An exhibition of various DRDO-developed products was also organised as part of the meeting, where the latest technologies across diverse domains such as weapon systems, communications, internal security, VIP security, sustenance, etc. were showcased.

Smt Chandrika Kaushik, DG (PC&SI), chaired the meeting, which was attended by IGs of BSF, CRPF, ITBP, SSB, NDRF, NSG, Assam Rifles, IB, and Delhi Police. Smt Harcharan Kaur, Advisor, MHA, also participated in the meeting.

Shri Sangita Rao Achary Addanki, Director, Directorate of Low Intensity Conflicts (DLIC), steered the meeting. The DLIC



was the nodal agency responsible for coordinating the meeting.

To aid in the modernisation of central police and paramilitary forces under MHA and the state

police forces, an MoU was signed between DRDO and MHA in 2012 to induct DRDO developed technologies and products into these forces.

INDUSTRY SYNERGY MEET AT BDL, HYDERABAD

The DRDO in collaboration with Quality Council of India (QCI), has developed the 'System for Advanced Manufacturing Assessment and Rating (SAMAR) certification as a benchmark to measure the maturity of defence manufacturing enterprises. The assessment model also provides a roadmap for the defence manufacturing enterprises to gradually enhance their capabilities.

The certification is applicable to all defence manufacturing enterprises, i.e., micro, small, medium, and large enterprises. The Web Portal samar.gov.in was launched by Hon'ble Raksha Mantri on 14 February 2023 at Aero India, Bengaluru.

Bharat Dynamics Limited (BDL) organised an industry



synergy meet on 19 April 2024 at Hyderabad. DQR&S introduced the SAMAR model to the industry partners present in the meeting. DIITM and TDF also participated, presenting ongoing schemes for industry partners. An encouraging

response was received from the industries regarding the SAMAR model.

The industry partner assessment is a major step towards vendor management and ensuring quality in production.

NPOL ORGANISES NATIONAL SYMPOSIUM ON COASTAL OCEANOGRAPHIC STUDIES

Naval Physical and Oceanographic Laboratory (NPOL), Kochi, organised a National Symposium on 'Coastal Oceanographic Studies: Modeling and Observations (COSMOS-2024)' under the perspective of Underwater Domain Awareness (UDA), during 17-19 April 2024 at Kochi.

On 17 April 2024, a pre-symposium workshop on ASW Oceanography was conducted, which was followed by the inaugural function. The symposium was inaugurated by Dr M Ravichandran, Secretary, Ministry of Earth Sciences, and presided over by Dr Samir V Kamat, Secretary DD R&D & Chairman, DRDO.

Dr K Ajith Kumar, Director, NPOL, said that the second edition of COSMOS will be instrumental in planning major oceanographic projects for the future. He expressed his hope



that the symposium, featuring 76 technical papers and participation from 17 major national research institutions, will serve as a platform for all UDA stakeholders to meet the goals of the Government of India's Vision 2047. The occasion marked the release of a book of abstracts.

Keynote addresses were delivered by eminent speakers,

which included Prof. AD Rao & Prof. Rajendar Bahl (IIT Delhi); Dr GVM Gupta (CMLRE, Kochi); Dr Shankar Doraiswamy (NIO, Goa); Prof. Prasad K. Bhaskaran (IIT Kharagpur), Dr DD Ebenezer (Adjunct Faculty CUSAT & OS (Retd.), NPOL Kochi), Dr Suryachandra A Rao (IITM Pune), and Dr T Pankajakshan (NIO, Goa & RC Kochi).

COURSE ON RADIATION BIOLOGY: BASIC CONCEPTS TO CURRENT STATUS

A seven-day course on 'Radiation Biology: Basic Concepts to Current Status' was organised at Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi, during 08-16 April 2024.

The course was inaugurated by Dr Avinash Chandra Pandey, Director, Inter University Accelerator Centre (IUAC), Delhi, in the presence of Dr Sudhir

Chandna, Director, INMAS; Dr BH Pandey, Senior Scientist, BARC Mumbai; Dr Damodar Gupta, Course Director; Dr Ambuj Tripathi (IUAC, Delhi); and Dr Maria D'Souza, Sc 'G', INMAS. The Director IUAC and Director INMAS deliberated on future cooperation in the field of heavy-ion effects.

Subject experts from various

departments of INMAS and IUAC were invited as the faculties.

During the seven-day course, a series of 26 lectures covering various aspects of radiation biology, including radiation physics, chemistry, biological effects of different types of radiation, genomics, proteomics, metabolic changes following exposure to radiation,



mitigation of radiation effects, the needs of different models in radiation biology research, radiation incidents, accidents, medical management of radiation exposures, and late effects of radiation, were discussed in detail along with the introduction of the IUAC High LET radiation biology facility.

In addition, practical hands-on training and technical demonstrations were also organised.



HANDS-ON TRAINING ON BASIC LIFE SUPPORT AND BASIC DISASTER LIFE SUPPORT FOR CBRN DISASTERS

The Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi, conducted a practical workshop on basic life support and basic disaster life support for CBRN disasters.

The three-day training program was inaugurated by Dr Umesh Tiwari, Inspector General (Medical), CRPF, in the presence of Dr Ratnesh Singh Kanwar, Sc 'F', HOD (CRMM) & Course Director; Dy. Inspector General (Medical), CRPF; and Dr Deepak, O/IC Admin Composite Hospital, CRPF.

Dr Tiwari appreciated the effort and delivered the keynote address. Renowned speakers

delivered lectures during the technical sessions. Dr Aruna Kaushik, Sc 'F' took a session on the basics of radiation, and Dr Dhruv Kumar Nishad took a session on radiological and nuclear emergencies, wherein the on-site management of the same was discussed. Other lectures of

the day included chemical warfare by Dr Rashmi Aggarwal and biological warfare by Dr Reena Wilfred.

The training included hands-on skill training on basic life support, cardiac arrest, and post-cardiac arrest care by Dr Babu Palatty of IIEMS.





USER INTERACTION MEET-2024 AT DGRE

The Defence Geoinformatics Research Establishment (DGRE), Chandigarh, organised User Interaction Meet (UIM-24) on 07 May 2024, to understand the critical issues faced by the users while performing various operational duties. Participants included representatives from the Directorate General of Military Operations (DGMO), Directorate of Military Intelligence (MI), Additional Directorate General Border Roads (DGBR), the Indian Air Force (IAF), Headquarters of the Indian Army, including 3 Corps, 4 Corps, 14 Corps, 15 Corps, 16 Corps, 33 Corps, Northern Command, and 9 (I) Mtn Bde, as well as representatives from



the BRO, including 111 RCC and 32 BRTF. The Chief Guest, Prof. Prateek Kishore, OS & DG (ACE), inaugurated the event along with Directors MI-16 and MO-4. Dr PK Satyawali, OS & Director, DGRE, chaired the UIM-24 proceedings, welcomed all the users, and emphasised the synergy between users and DGRE

towards situational awareness and better preparedness against geo-hazards. DGRE presented its technical capabilities in geoinformatics and geo-intelligence technologies, particularly for hilly or mountainous terrain, at UIM. Dr SK Pundir, Sc 'G', Convener of the UIM-24, presented the vote of thanks.

VISIT OF CFEEES DELEGATION AT UNIVERSITY OF PARDUBICE, CZECH REPUBLIC, EU

A delegation of 3 officers Dr Pritam Sangwan, Sc 'E', Dr Bharti, Sc 'E' and Dr Kavita, Sc 'D', Centre for Fire, Explosive, and Environment Safety (CFEES), Delhi, were deputed to the University of Pardubice, Czech Republic, EU, to present oral technical research papers in the '26th International Seminar on New Trends in Research of Energetic Materials (NTREM-2024)' held during 17-19 April 2024 at the Institute of Energetic Materials, Faculty of Chemical Technology, University of Pardubice, Czech Republic, Europe. The visit resulted in an exchange of ideas, a focus on building networks for new research and collaborations, and recent updates on S&T developments



in the fields of research, development, processing, analysis, and applications of all kinds of energetic materials. Many senior scientists, researchers, and well-established experts from

countries such as the USA, the United Kingdom, Russia, Canada, Belgium, Germany, South Africa, Croatia, France, Poland, among others, attended the international event.

VISITORS TO DRDO LABORATORIES

DGRE, Chandigarh

* School students and teaching staff of Army Goodwill School, Partapur, Ladakh, visited DGRE MMC Sasoma on 04 May 2024 on an educational trip. Students were briefed about hazards associated with snow, dangers of avalanches in snow-bound regions of the Indian Himalaya, snow-meteorological data instruments of DGRE and their operational working, AWS, and data transmission for avalanche forecasting to troops.

* Lt Gen. AK Suri, AVSM, DG, & Col. Comdt. Aviation, visited DGRE MMC Sasoma on 12 May 2024. Capt. Sumit Ojha, Officiating OC, DGRE MMC, welcomed him, showed him the DGRE model room, and explained the technical aspects of the DGRE's operation in high-altitude regions of the Indian Himalaya for geohazard mitigation, in addition to the avalanche awareness and safety training provided to troops before induction.

* Maj. Gen. Ravindra Kumar, SM, GOC Leh Sub Area visited MMC Sasoma on 27 April 2024. Capt. Sumit Ojha, Officiating OC, DGRE MMC Sasoma welcomed him and briefed about DGRE's avalanche awareness and safety training imparted to troops of various units undergoing Siachen Battle School (SBS) before induction.

During the visit, he was explained in depth about the working and utilisation of various instruments, installed AWS and its data transmission in generating various avalanche forecasting models used by DGRE in predicting avalanche hazards of Indian Himalaya and further its dissemination to troops deployed in snow-bound regions.



Students visit at DGRE MMC Sasoma (Siachen)



Lt Gen. AK Suri, AVSM, DG & Col. Comdt. Aviation, visit to DGRE MMC Sasoma



Maj. Gen. Ravindra Kumar, SM, GOC Leh Sub Area, visit to DGRE MMC Sasoma



IRDE, Dehradun

Maj. Gen. Praveen Chhabra, VSM, and Inspector General (Operations) in the HQrs of the National Security Guard (NSG) visited the Instruments Research & Development Establishment (IRDE), Dehradun, on 18 March 2024. Dr Ajay Kumar, OS & Director, IRDE, explained the products and technologies of IRDE to Maj. Gen. Chhabra. During his visit, he also visited the IRDE Diamond Jubilee Gallery. Maj. Gen. Chhabra was highly delighted to watch the Gallery. Maj. Gen. Chhabra appreciated the efforts of IRDE in achieving self-reliance in India's defence sector.



Maj. Gen. Praveen Chhabra taking keen interest in IRDE products

ISSA, Delhi

Vice Admiral Sanjay Vatsayan, AVSM, NM visited Institute for Systems Studies & Analyses (ISSA), Delhi, on 16 April 2024 for familiarisation with ISSA's activities. He was briefed about ISSA's system analysis studies and projects related activities. This was followed by demonstration of products developed by ISSA in the area of wargaming & simulation and discussion on the way ahead for future system analyses activities with HQ IDS.



Vice Admiral Sanjay Vatsayan, AVSM, NM, during his visit at ISSA, Delhi

MTRDC, Bengaluru

An industrial visit and demonstration of various facilities of the Microwave Tube Research & Development Centre (MTRDC), Bengaluru, was organised for Air Force personnel from 16 TETRA School, AF, Jalahalli East.

Three directing staff along with 29 airman trainees visited the MTRDC.



Industrial visit by Air Force Personnel at MTRDC, Bengaluru