

DRDO HANDED OVER 16 LICENSING AGREEMENTS FOR TOT TO 13 INDUSTRIES AT DEFEXPO-2022





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DRDO HANDED OVER 16 LICENSING AGREEMENTS FOR TOT TO 13 INDUSTRIES AT DEFEXPO-2022

Defence Research & Development Organisation (DRDO) handed over 16 Licensing Agreements for the Transfer of Technology (LAToT) for 10 DRDO-developed technologies to 13 industries during the 'Bandhan' ceremony of the 12th edition of DefExpo in Gandhinagar, Gujarat on 20 October 2022. Raksha Mantri Shri Rajnath Singh presided over the ceremony, which saw a total of 451 Memoranda of Understanding (MoU), Transfer of Technology (ToT) agreements, and product launches. Of the 451, there were 345 MoUs, 42 major announcements, 46 product launches, and 18 ToTs. The contribution of Gujarat was 28 MoUs and one product launch. It envisages investment worth Rs 1.5 lakh crore. Indian Air Force (IAF) and Hindustan Aeronautics Limited (HAL) concluded a contract for 70 HTT-

40 indigenous trainer aircraft worth Rs 6,800 crore.

The technologies transferred by DRDO are from the area of electronics, laser technology, armaments, material science, combat vehicles, naval systems, sensors, etc. The products include Handheld Ground Penetrating

Radar (GPR), Unexploded Ordnance Handling Robot (UXOR), Semi-Solid Metal (SSM) Processing Technology for Aluminum Alloys, High Oxidative and Thermal Stability Oil (DMS Hots Oil-I), Nuclear Shielding Pads for Combat Vehicles, 120 mm Tandem Warhead System for Anti-Tank Application, High Energy Material (TNSTAD), Laser-based End Game Fuze, Multi-kW Laser Beam Directing Optical Channel (BDOC), Shakti-EW System.

These high-technology products will provide impetus to the 'Aatmanirbhar Bharat' drive of the nation and boost the defence manufacturing sector through self-reliance, besides enhancing the operational capabilities of the Armed Forces.

Speaking on occasion, Shri Rajnath Singh termed it as the beginning of a new era of





self-reliance, in which a strong and prosperous 'New India' is ready to stand shoulder-to-shoulder with major world powers. Shri Rajnath Singh said that the government is committed to the growth of the public and private sectors to fulfill the twin objectives of promoting self-reliance and increased defence exports. He expressed confidence that the country will achieve the

defence export target of Rs 35,000 crore by 2025. He hoped that the enthusiasm of DefExpo22 would be carried forward in new areas through more collaborations, which will help in advancing India as a leading defence manufacturer and exporter and realising the Government's vision of 2047.

Gujarat Governor Shri Acharya Devvrat, Raksha Rajya Mantri

Shri Ajay Bhatt, Chief of Defence Staff General Anil Chauhan, Chief of the Air Staff Air Chief Marshal VR Chaudhari, Chief of the Naval Staff Admiral R Hari Kumar, Chief of the Army Staff General Manoj Pande, Defence Secretary Dr Ajay Kumar and OSD, Department of Defence Shri Giridhar Aramane were among those who attended the ceremony.

DRDO PARTICIPATION AT DEFEXPO22

Defence Research and Development Organisation (DRDO) participated in DefExpo22 held at Gandhinagar, Gujarat during 18-22 October 2022. Def Expo is the biennial event and is the 12th edition with the theme of this year as 'Path to pride' aligned with 'India at 75' and 'Aatmanirbhar Bharat', encouraging the industry as well as the citizens to join in and contribute towards nation building. It aims to further the narrative of 'Make in India, Make for the World'.

Hon'ble Prime Minister Shri Narendra Modi graced the inaugural ceremony on 19 October 2022 in the presence of Shri Rajnath Singh, Hon'ble Raksha

Mantri; Shri Ajay Bhatt, Hon'ble Raksha Rajya Mantri, Shri Samir V Kamat, Secretary, DDR&D and Chairman, DRDO and other dignitaries. The major theme for this year's DRDO participation was based on the 3D (DRDO, Designed, and Developed) ecosphere which highlighted its strong linkages with both industries as well as academia. Speaking on the occasion, the Prime Minister said it paints a picture of 'New India' and its capabilities whose resolve is being forged at the time of Amrit Kaal. He added that it is an amalgamation of the country's development as well as states' cooperation. "It has the power and dreams of the youth, it has the resolve and capabilities of the youth. It has hopes for the world and opportunities for friendly nations," the Prime Minister said.

At DefExp22, DRDO exhibited numerous static displays, live demonstrations, seminars as well as immersive experience zones spread across three locations including the Mahatma Mandir Convention & Exhibition Centre, Helipad Exhibition Centre, and Sabarmati River Front. The exhibits were segmented into 17 display zones of various classes including Immersive Zones and Experience Zones to showcase 376 products.

The 17 zones are namely Engines & Propulsion, Aerospace & Aeronautics (UAVs, fighter aircraft, aircraft for surveillance, etc.), Sensors, Devices & Advanced Electronics, Naval Weapons & Systems (EW Systems and Sensors), Armoured Vehicles & Land Systems, Armament, Guns & Ammunition, Materials,





Missiles (Cruise, MBRLs, AAM, ATGM & MRSAM), BrahMos, Industry Partners in R&D (17 Partners-3 Start-ups & 14 MSMEs), Soldier Support and Dual-Use Technologies (Soldier Support, Life Sciences Products, Fire Protection, Fire Fighting, Fuel & Energy, Food products, etc.), Experience Zone (Simulator, Virtual Reality, and Audio-Visual), Software AI & Cyber, Academic Zone, Academic Outreach, Industry Outreach, and Public Interface.

Several technologies developed for land-based, naval-based, and air-based systems were showcased through experience zones—a closed-room immersive cinematic experience. In a first, the Advanced Combat Aircraft simulator was also made available to experience, among other augmented, and virtual reality naval, land, and air product simulators. A holographic deck providing a 3D experience of over 30 defence products was present at the hall to gain insights into the intricacies of weapon designs.

The outdoor display included 18 static exhibits (actual products) at the Helipad Exhibition Centre. These included 155 mm X 52 Cal Advanced Towed Artillery Gun System (ATAGS), Wheeled Armoured Platform (WhAP), Laser Fence System (LFS), Prahar Missile, BrahMos Air Version Missile, Rudram-III Missile, Quick Reaction Surface-to-Air Missile (QRSAM), Medium Range Surface-to-Air Missile (MRSAM), IRDE Tableau, Mobile Autonomous Launcher (MAL) for BrahMos, CBRN Infantry Combat Vehicle with Composite Hull (CICV), Advanced Composites

Modular Bridge System (ACMBS), Border Surveillance System (BOSS), CBRN Recce Vehicles, 70T Tank Transporter, Mounted Gun System (MSG), Unmanned Ground Mobile Platform (UGMP).

DRDO also presented a Live Demo as well as a Static Display of equipment at the Sabarmati River Front. Five Live demos of DRDO equipment were put on display, namely—Portable Diver Detection Sonar (PDDS) with Electro-optic System (EOS), Imaging Sonar 'CHITR', Autonomous Survey Vehicle—Inland, Autonomous Survey Vehicle-Coastal (ASV-Coastal) and Weapon Mounted Surface Vehicle.

Six static displays of DRDO equipment presented—Virtual Reality-based Counter Measure Deployment Simulator, TAL Torpedo, Portable Diver Detection Sonar, AIR Independent Propulsion System, Wet End Unit, Counter Drone System for IN-D4 Radar, Soft Kill & Hard Kill System, and Passive IRSS Device.

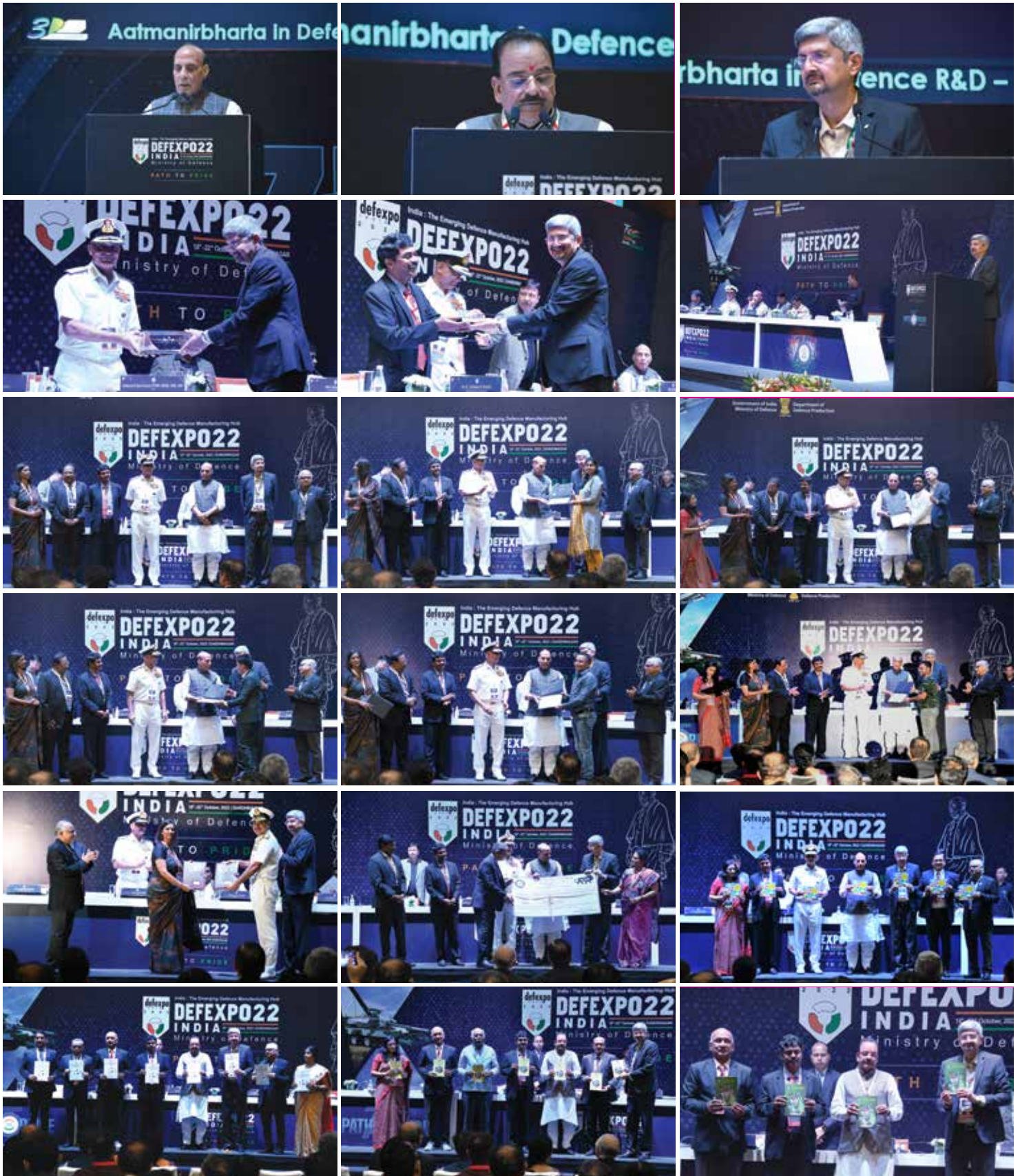
DRDO displayed a wide range of 430 products encompassing strategic and tactical weapon systems, defence equipment, and technologies. It also showcased the advancements in technologies made by its laboratories as well as its partnerships with the industry, in recent years while representing a high level of indigenouslyness in advanced and futuristic defence products and technologies that contribute towards Aatmanirbharta in defence.

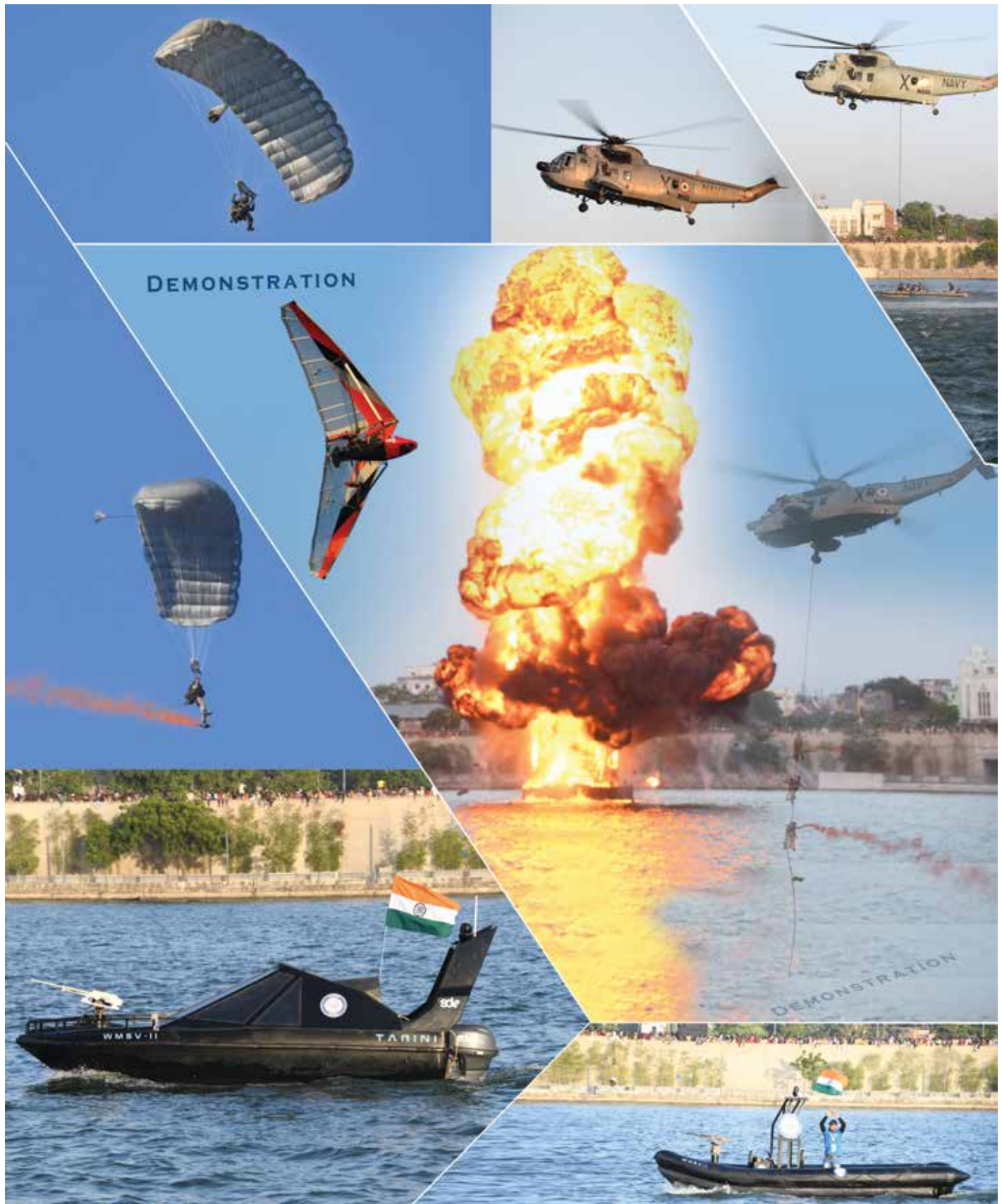
The overall event showcased a wide range of indigenously designed, developed, prototyped, and produced land, naval, aero, and homeland security systems and technologies. In addition, DRDO

also showcased several initiatives to deepen its strategic partnerships with industry, and academia. These included initiatives such as Technology Development Fund (TDF), Dare to Dream, DIA-Centres of Excellence, and other similar schemes to support academia, startups, MSMEs, and large industries to continuously upgrade technology readiness levels of present and futuristic technologies in the country. All these DRDO-led initiatives have led to the operational readiness of many Indian industries, especially in the areas of systems, radars, sonars, missiles, aircraft, etc.

DRDO also conducted a seminar on the theme 'Aatmanirbhar Bharat in Defence R&D: Synergistic Approach' chaired by Hon'ble Raksha Mantri. Winners of third edition of Dare to Dream event were awarded by Hon'ble RM. DRDO exchanged MoU with six IITs and Bharathihar University for establishing new DIA-CoEs in the presence of Hon'ble RM.

A book titled 'Compilation of 8 years major achievements of DRDO, Ministry of Defence (2014-2022)' was released by Shri Rajnath Singh on 19 October 2022. The book contains various achievements of DRDO giving brief descriptions of major launches, flight trials, ToTs, DRDO-industry-academia partnerships, etc. On the occasion, Hon'ble RRM Shri Ajay Bhatt released two DRDO monographs titled 'Research Laboratory-Industry Interactions for Production of Speciality Wrought Aluminium Alloys' by Dr AK Mukhopadhyay and 'Life Sciences Research in Service of Soldier' by Prof. Brahma Singh.







SUCCESSFUL FLIGHT TESTS OF VSHORADS MISSILE

DRDO conducted two successful test flights of a Very Short Range Air Defence System (VSHORADS) missile on 27 September 2022 from a ground-based portable launcher at the Integrated Test Range (ITR), Chandipur, off the coast of Odisha. VSHORADS is a Man-portable Air Defence System (MANPAD) designed and developed indigenously by Research Centre Imarat (RCI), Hyderabad in collaboration with other DRDO laboratories and Indian industry partners.

VSHORADS missile incorporates many novel technologies including miniaturised Reaction Control System (RCS) and integrated avionics, which have been successfully proven during the tests. The missile, meant for neutralising low-altitude aerial threats at short ranges is propelled by a dual-thrust solid motor. The design of the missile including the launcher has been highly optimised to ensure easy portability. Both the flight tests have completely met the mission objectives.

Hon'ble Raksha Mantri, Shri Rajnath Singh complimented and appreciated the efforts of DRDO and industry partners and said that this new missile equipped with modern technologies will give a further technological boost to the Armed Forces. Secretary DDR&D and Chairman DRDO congratulated the entire VSHORADS team for this tremendous success.



DGRE OPERATIONALIZED FIRST AVALANCHE RADAR AT NORTH EAST HIMALAYA OF INDIA

Defence Geoinformatics Research Establishment (DGRE), Chandigarh strives to develop critical technologies for enhancing combat effectiveness and safe movement of troops in all kinds of terrain with a focus on avalanches and landslides in the Indian Himalaya. Snow avalanches in mountains are a direct threat to people and infrastructure during winter. Successful detection of snow avalanches by active sensors at the initial phase of avalanching provides a valuable crucial time of a few seconds which can be utilised to sound alarmed or for effective road closure to save precious human lives. DGRE in coordination with 33 Corps of the Indian Army and an Indian Industry partner has installed and operationalised a state-of-the-art Doppler Avalanche Radar at an altitude of 15000 ft in the forwarding area of North Sikkim during the visit of the project

team with the Director, DGRE on 1 September 2022. It is the first of its kind in India and is capable of monitoring critical avalanche-prone slopes even in inclement weather conditions. It can detect avalanches within a few seconds of its initial and generate various types of alarms thus providing

valuable and timely input to save human lives. In addition, radar operates at distance and thus permits large areas to be monitored without the need to install instruments in dangerous zones. Integrated cameras on the radar mast will help record videos of the event.



RELEASE OF IRDE NEWSLETTER 'DRISHTI'

Dr Ajay Kumar, Director, Instruments Research & Development Establishments (IRDE), Dehradun released the latest issue of the IRDE Newsletter 'DRISHTI' (Detection, Recognition, Identification, Search, Homing and Tracking with Innovation) on 15 August 2022. DRISHTI is a six-monthly publication of IRDE



which comprises all the news related to IRDE's newly developed products, trials, important events,

visits, retirements, etc. During the release of DRISHTI, the Director, IRDE lauded the efforts of the

editorial team of DRISHTI for bringing out the issue on time.

SPECIAL CAMPAIGN ON DISPOSAL OF PENDING MATTERS AND CLEANLINESS DRIVE

The Naval Physical and Oceanographic Laboratory (NPOL), Kochi organised a 'Cleanliness Drive' on 2 October 2022 in commemoration of the birth anniversary of Mahatma Gandhi and as part of the Special Campaign on Disposal of Pending Matters (SCDPM 2.0) and Cleanliness Drive. Following SCDPM 2.0, NPOL identified cleanliness campaign sites, scrap for disposal, old files to be weeded out, spaces to be cleared, etc. The cleanliness Drive on 2 October 2022 was led by Dr K Ajith Kumar, Director, NPOL. In the inaugural address, he highlighted the relevance of a healthy and clean campus which creates a positive



vibe inside the office. He also emphasised the need to take this campaign seriously by keeping the premises clean and rededicating to

the teachings and thought process of Mahatma Gandhi and to take our life forward not only for us but also for our future generations.

GRAND CELEBRATIONS OF MAHATMA GANDHI & LAL BAHADUR SHASTRI JAYANTI AT NSTL

On 2 October 2022, Gandhi Jayanti and Lal Bahadur Shastri Jayanti were celebrated at Naval Science & Technological Laboratory (NSTL), Visakhapatnam in grand manner. On this occasion, Dr Y Sreenivas Rao, Director, NSTL and Chief Guest presented a stipend to 82 poor and needy students and financial assistance to Manasu Orphanage. 'Fit India Freedom Run 3.0' was organised as a part of the celebrations. A flag run was conducted from Manasi Auditorium to NSTL School ground, along with Director, NSTL; Dr Manu Korulla, Chairman, Works Committee; and other senior scientists. Around 150 members participated in the celebration.



DIPAS CELEBRATED 61ST RAISING DAY

Defence Institute of Physiology & Allied Sciences (DIPAS), Delhi celebrated its 61st Raising Day and curtain raiser of Diamond jubilee on 20 September 2022. Dr Rajesh S Gokhale, Secretary DBT graced the occasion as Chief Guest and Dr UK Singh, OS & DG (LS) was the Guest of Honour. Directors of various laboratories, Corporate Directors, former staff & scientists of DIPAS also attended the event. Dr Rajeev Varshney, Director DIPAS welcomed the august gathering and gave an overview of the institute's activities and progress made in different projects and other achievements of DIPAS. Dr Gokhale lauded the



achievements and emphasised the role of biological sciences in promoting health and disease prevention.

DRDO lab-level awards were presented to awardees by the Chief Guest who appreciated their hard work and dedication in their respective field of work. Mementos

were distributed to employees who completed 25 years of service in DRDO. Prizes for various sports activities were also given by the Director, DIPAS. The culmination of the event was marked by colourful cultural programme by research students and staff of the institute.

RAJBHASHA KIRTI PURASKAR TO DRDO'S HINDI MAGAZINE

DRDO's in-house magazine 'Raksha Anusandhan Bharati' for 'A' region was awarded Rajbhasha Kirti Puraskar (Second Prize) on the occasion of the Hindi Diwas-2022 celebration during the All India Official Language Conference in Surat, Gujarat on 14-15 September 2022. On the occasion, Shri Amit Shah, Hon'ble Home Minister, and Shri Nishith Pramanik, Minister of State for Home Affairs presented this award to Dr Ravinder Singh, Director, Parliamentary Affairs, Official Language and Organisation Method. During the conference, DRDO also got an opportunity to organise an exhibition to exhibit

books and magazines. While visiting the stall of DRDO, the Hon'ble Home Minister and other dignitaries appreciated the efforts of DRDO in carrying out the work in Hindi.



HINDI FORTNIGHT CELEBRATIONS- 2022

DPARO&M, DELHI

Hindi Pakhwada was celebrated during 1-15 September 2022 at DRDO HQ. The programme was inaugurated by Dr Ravindra Singh, Director, Directorate of Parliamentary Affairs, Rajbhasha and O&M (DPARO&M) along with Smt Asha Tripathi, Associate Director, Shri Sanjeev Kumar, Joint Director (OL) and Shri Sujit Kumar Mehta, Assistant Director (OL) on 1 September 2022. During Hindi Pakhwada, 16 competitions were organised along with a quiz for drivers.

Hindi Pakhwada Award Distribution Ceremony was organised on 29 September 2022. The ceremony was inaugurated by Dr Samir V Kamat, Secretary, DDR&D and Chairman, DRDO along with Shri Sangam Sinha, DG (R&M), Dr Ravindra Singh, Director, DPARO&M and Smt Asha Tripathi, Associate Director. Dr Samir V Kamat, in his address appealed to all the employees of HQ to fulfill their constitutional obligation by doing maximum official work in Hindi. Shri Sangam Sinha, DG (R&M) also encouraged the personnel, present over there, to work in Hindi. He said that Hindi Pakhwada should be celebrated like festival and the same enthusiasm should be maintained throughout the year.

Dr Ravindra Singh talked about linking the language with employment. The Director, DPARO&M appreciated the meaningful efforts being made to promote the progressive use of Hindi in HQ and subordinate



laboratories/establishments/centres. On the occasion, DRDO in-house magazine 'Raksha Anusandhan Bharti', 15th issue was also released by Dr Kamat.

Certificates were distributed to winners of different competitions organised during Hindi Pakhwada and 10 personnel were also awarded, who did maximum work in Hindi during the year. For doing maximum work in Hindi at HQ, for the year 2021-22, the Official Language Shield was given

to Directorate of Management Services (DMS).

On the occasion, a Kavi Sammelan was also organised. All the poets were honoured with mementoes by Director. During the programme, Manch Sanchalan was done by Shri Sujit Kumar Mehta, Assistant Director (OL) and Smt Arunkamal, Assistant Director (OL) and vote of thanks was given by Shri Sanjeev Kumar, Joint Director (OL).

ITR, CHANDIPUR

Closing ceremony of hindi pakhwada was held at Integrated Test Range (ITR), Chandipur on 29 September 2022. Offg. Director Ms B Sucharita presided over the ceremony. During the pakhwada eight competitions were held in which employees participated with great interest. More than 60 employees participated in the competitions-Noting Drafting, Hindi Knowledge & Grammar, Simple Translation, Hindi Debate, Hindi Essay, Hindi Quiz, etc. The competitions were conducted in a segregated manner between 5 August 2022 till 8 September 2022 due to numerous mission commitments. Winners in the competitions and all participants were awarded with suitable cash prizes.

The programme was organised by Shri PN Panda, Sc 'F', Associate Group Director (HR), HRD Group and Hindi Cell along with his team.

NPOL, KOCHI

Naval Physical and Oceanographic Laboratory (NPOL), Kochi celebrated the Hindi Pakhwada during 14-27 September 2022. Dr K Ajith Kumar, Sc 'G' & Director, NPOL inaugurated the celebration on 14 September 2022 and gave inaugural address. Hindi Diwas messages from Hon'ble Home Minister, Shri Amit Shah and Dr Samir V Kamat, Secretary, DD R&D and Chairman, DRDO, were read on this occasion. Dr Subash Chandra Bose MR, Sc 'G' & Director (Management) and Shri Wilson K Cherukulath, Sc 'F' & Group Director (P&A) gave felicitations. Hindi surprise test was also conducted during the event.

In connection with these celebrations, 13 competitions in Hindi were conducted for NPOL employees. Hindi competition was also conducted for employees

of Underwater Acoustic Research Facility (UARF), Idukki campus of NPOL. The competitions were aimed to promote wider usage of Rajbhasha in the laboratory. As part of the Hindi Pakhwada Celebrations, an Official Language Exhibition was also organised for one day.

All employees were grouped into four houses, viz. N, P, O, and L. Winners of all competitions were awarded with certificates and prize during valedictory function organised on 27 September 2022 by Director, NPOL. 'Hindi Fortnight Rolling Trophy' was presented to the 'N' house which scored maximum points. Shri Ram Lochan Awasthi, Sc 'D' & Hindi Officer presented an overview of fortnight celebrations conducted during the year 2021-22. This was followed by the distribution of prizes with certificates to the children of the employees of NPOL, who have scored highest marks in Hindi language in CBSE



Hindi Pakhwada Celebration at ITR, Chandipur

and State level board examinations conducted in the year. The Hindi Pakhwada Celebration was a grand success due to the larger participation of employees in various competitions. Dr Shiny Nair, Sc 'F' was the Chairperson, Hindi Pakhwada Celebrations Committee.

NSTL, VISAKHAPATNAM

Hindi Pakhwada-2022 was organised at Naval Science & Technological Laboratory (NSTL), Visakhapatnam during 14-30 September 2022. Dr Y Sreenivas Rao, OS & Director, NSTL inaugurated and concluded the celebrations as Chief Guest.

In his speech, Chief Guest said that it is imperative to do the official work in Hindi. He also said that keeping in mind the contribution of Hindi during the freedom struggle, and Indian constitution makers have chosen Hindi with Devnagri script under 343 para of the constitution.

He also expressed his satisfaction over large participation of the employees in the Hindi Pakhwada celebrations and exhorted them to work



Hindi Pakhwada Celebration at NPOL, Kochi

towards making Hindi a true scientific language. During the event, various competitions like essay, story writing, noting & drafting, translation, extempore, poem recitation, crossword, PPT presentation, poster making, and quiz competitions were conducted in Hindi. MANTAVYA—an extempore was conducted in which speech in Hindi was delivered by some senior scientists of the laboratory. Cash awards were distributed to 150 employees in Hindi and non-Hindi categories.

Hindi Pakhwada celebration

Chairperson, Smt M Sujatha, Sc 'F' informed about various events organised during Hindi Pakhwada celebrations and how events were designed to develop proficiency in Hindi language.

Shri Vivek Sharma, Sc 'E' & Hindi Officer told that usage of Hindi has increased in every walk of life now and also in different activities during last few years in the laboratory. He conveyed thanks and congratulated all the participants and entire organising team for making the event successful.



Hindi Pakhwada Celebration at NSTL, Visakhapatnam

XXIX TAMHANKAR MEMORIAL LECTURE AT DMRL

Defence Metallurgical Research Laboratory (DMRL), Hyderabad organised XXIX Tamhankar Memorial Lecture in association with the Indian Institute of Metals (IIM) Hyderabad Chapter on 25 August 2022 to pay tribute to the unique contributions made by Dr RV Tamhankar in establishing and nurturing two important institutions in the country, viz. DMRL and Mishra Dhatu Nigam Limited (MIDHANI). Dr Samir V Kamat, DS & DG (NS&M), now Secretary DDR&D and Chairman DRDO and President, Indian Institute of Metals delivered the lecture on 'Naval Systems and Technologies'. He gave a broad overview of the advanced systems



and technologies along with work going on in the naval laboratories of DRDO. He has emphasised that India has the capability and potential to become AtmaNirbhar in naval systems and technologies.

SCIENCE & TECHNOLOGY TALK AT DLRL

Science & Technology Forum Defence Electronics Research Laboratory (DLRL), Hyderabad organised a technical talk by Prof. (Dr) Srinivasulu Tadisetty, Dean, Faculty of Engineering, Kakatiya University, Warangal and Smt V Viraja, Sc 'G', DLRL on 20 September 2022.

At the onset, Smt Lakshmi, Sc 'F', & Chairperson gave a report on the S&T forum activities.

Guest Prof. (Dr) Srinivasulu Tadisetty, spoke on 'Trends in Radar Technologies—An Overview'. He spoke about new technologies and trends in radars, AESA, and stealth for defence technologies. Smt V Viraja spoke



on 'Cyber Space & Cyber Security with respect to DLRL'. She is also the Information Security Officer and instrumental in implementation of the DRDO information security policies in DLRL. The talks were followed by Q&A session, and the programme concluded with a vote of thanks by Anupriya, TO 'A'.

WORKSHOP ON ITI CERTIFICATION

Defence Metallurgical Research Laboratory (DMRL), Hyderabad organised a one-day workshop on 'ITI Certification' for MTS personnel at Tamhankar Auditorium on 18 August 2022. During the workshop, various aspects related to the career progression scheme were explained by the Principal and Staff of Government ITI College. They highlighted the requirements and challenges expected from MTS personnel for the completion of the ITI Course. MTS personnel in large numbers along with their Group Heads attended the programme.



LECTURE AT GRAPHIC ERA HILL UNIVERSITY, DEHRADUN

Dr Ajay Kumar, Director, Instruments Research & Development Establishment (IRDE), Dehradun delivered a lecture on 'Contemporary Trends in Electro-optical Systems' on 24 August 2022 in an International Conclave on Multidisciplinary Research Possibilities organised by Graphic Era Hill University, Dehradun during 24-26 August 2022. He was invited by the University in the Conclave as Guest of Honour. In his lecture, Dr Ajay Kumar explained in detail about the ongoing research in electro-optical systems. He shared his rich experience in the areas of signal and image processing.



COURSE ON TECHNICAL COMMUNICATION IN THE PRESENT ERA

Defence Information & Documentation Centre (DESIDOC), Delhi organised a CEP course on 'Technical Communication in the Present Era' during 19-21 September 2022. The objective of the course was to bring awareness among the DRDO fraternity about the importance of technical communication, the ways, and the means to achieve it. The course was attended by 18 participants from various DRDO laboratories. The major topics covered were technical writing, publishing metrics, utilisation of the DRDO e-library, DRDO publications, etc. During his address, Dr K Nageswara Rao, Director,



DESIDOC emphasised writing good quality papers. Shri Yogesh Modi, Sc 'E' was the Course Director.

TWO-DAY NATIONAL SEMINAR AT NSTL

Naval Science & Technological Laboratory (NSTL), Visakhapatnam organised a two-day national seminar on 'Electro-chemical Energy Conversion and Storage (ECoS-2022)' during 28-29 September 2022. Dr G Satheesh Reddy, SA to RM was the Chief Guest for the event. Number of eminent personalities of various organisations were invited to deliver keynote address. As part of this seminar, a research facility 'Advanced Batteries R&D Facility' was coroneted by Dr Y Sreenivas Rao, Outstanding Scientist & Director, NSTL on 27 September 2022. The seminar



brought the leading scientists, academicians, researchers from various laboratories, universities, and Armed Forces together to exchange information and share their valuable experiences.

DMRL PARTICIPATION IN SCIENTIFIC AND INDUSTRIAL EXHIBITIONS

Defence Research (DMRL), Hyderabad participated in an exhibition at Research Centre Imarat (RCI), Hyderabad during the study visit of the Public Accounts Committee (2022-2023) on 30 August 2022. Several DMRL developed strategically important products and technologies for the Indian Armed Forces were showcased in the exhibition to the Hon'ble members of the committee to project DMRL's contribution to promoting innovation and self-reliance. The products received encouraging responses from the visitors.



COURSE AT DRDE, GWALIOR

Defence Research and Development Establishment (DRDE), Gwalior organised a Continuing Education Programme (CEP) during 26-30 September 2022 on 'Preparedness and Technological Solutions for Management of Future Pandemics: Lessons Learnt from COVID-19'. A total of 22 officers from various DRDO laboratories, Armed Forces and Paramilitary Forces attended the course. The course was inaugurated by Dr Akshay Nigam, Dean & CEO, GR Medical College, Gwalior. During the 5-days programme, eminent speakers from various National institutes of repute and



senior scientists from DRDE delivered scientific deliberation on recent technological advancement in the field of COVID-19 and its preparedness.

Various domains for management of future pandemics

such as broad spectrum vaccines, proteomics, and gene editing technologies were discussed.

Dr Manmohan Parida, Director, DRDE distributed certificates to participants. Dr PK Dash, Sc 'F' was the Course Director.



AWARDS

Conferment of IIM-Fellowship



The Indian Institute of Metals (IIM), Kolkata gave Dr Partha Ghoshal, Sc 'G' of Defence Metallurgical Research Laboratory (DMRL), Hyderabad a Fellow of the Institute with effect from 1 August 2022.



DRL, TEZPUR

Shri Ananta Saikia, Sc 'E', Defence Research Laboratory (DRL), Tezpur,

has been awarded the degree of PhD under the faculty of Technology in Applied Sciences (Chemical Science) from Guwahati University, Guwahati, Assam for his thesis titled 'Functionalization of some Inorganic Nano Particles and their application for Water Purification'.

NSTL, VISAKHAPATNAM



Shri Arvind Sastry, Sc 'D' of NSTL, Visakhapatnam has been conferred with the Young Scientist Award-2020 in the field of Engineering Sciences by the Telangana Academy of

Sciences. The award was in recognition of his contributions towards the establishment of industrial-scale production of high-strength steel forgings and stampings for use in critical naval applications.

SAG, DELHI



Dr Sumit Kumar, Sc 'F', Scientific Analysis Group (SAG), Delhi, has been awarded PhD from the Department of Electronics and Communication Engineering, Delhi Technological University, Delhi for his thesis entitled, 'Some Security Investigations on Smart Phone Platform'.

DRDO-SOUTH ZONE VOLLEYBALL TOURNAMENT

Defence Food Research Laboratory (DFRL), Mysuru organised DRDO-South Zone Volleyball Tournament during 12-14 October 2022. Total 78 players from various south zone laboratories participated in the tournament. Dr AD Semwal, Director DFRL inaugurated the tournament on 12 October 2022 in the presence of Dr R Kumar, AD, Dr VA Sajeev Kumar Sc 'F', and other senior scientists, officers, and staff from DFRL, CDA, and MES fraternity. A total of 12 matches were played which included 9 league matches, 2 semi-finals, and 1 final match.

The final was won by NPOL, Kochi in straight three among best-of-five sets. The winner and runner-up trophies, medals, and certificates were distributed to



the respective teams by Director, DFRL, in the presence of Shri Dev Kumar Yadav, Sc 'E', and Sports Officer, DFRL.

The coaches, managers, and players appreciated DFRL for organising the tournament in a commendable manner.

VISITORS TO DRDO LABS

DIHAR, LEH

Lt Gen Upendra Dwivedi, AVSM, GOC-in-C, Northern Comd visited Defence Institute of High Altitude Research (DIHAR), Leh on 29 September 2022. He was accompanied by Lt Gen A Sengupta, AVSM, YSM, GOC HQ 14 Corps, and Maj Gen SS Bakshi, Sub Area Cdr of Leh Garrison. Dr OP Chaurasia Director, DIHAR briefed the Lt Gen on various ongoing high altitude agro-animal activities.



DMRL, HYDERABAD

Admiral Karambir Singh (Retd), VSM, AVSM & Hon'ble Adviser, DDR&D visited Defence Metallurgical Research Laboratory (DMRL), Hyderabad on 12 August 2022. The dignitary was received and welcomed by Dr Samir V Kamat, DS & DG (NS&M) and Dr G Madhusudhan Reddy, OS & Director, DMRL. Director, DMRL highlighted the ongoing R&D activities as well as the past achievements of the laboratory.



NMRL, AMBERNATH

* RAdm K Venkatraman, VSM, PD (O&T), HQ, ATPV visited Naval Materials Research Laboratory (NMRL), Ambernath on 21 September 2022. Shri PT Rojatkar, OS & Director NMRL welcomed RAdm K Venkatraman. A presentation on various R&D activities undertaken by NMRL was made by Dr B Basu, Sc 'G'. This was followed by a review of AIP programme by RAdm Venkatraman, VSM. He also reviewed the activities undertaken by NMRL regarding SECRA.



* VAdm V Srinivas, AVSM, NM, IGNS visited NMRL on 8 September 2022. Shri PT Rojatkar, OS & Director, NMRL welcomed VAdm V Srinivas. and Dr B Basu, Sc 'G' gave a brief presentation on NMRL R&D activities and the projects linked with ATVP. Subsequently, presentation on progress of DRDO AIP programme was made by Dr Suman Roy Chaudhury, Sc 'G' (Programme Director) and his team members. Thereafter, IGNS visited AIP land-based prototype site to get into insight of the system.



NSTL, VISAKHAPATNAM

* 25 winners of the Avishkaar-2022 (Bharatiya Vijnana Mandali) visited Naval Science & Technological Laboratory (NSTL), Visakhapatnam on 10 September 2022. During the visit, Dr Y Sreenivas Rao, Director, NSTL interacted with the visitors and gave a brief about NSTL. They visited HSTT, Wind Tunnel/CT, SMB, Battery Division and TALVAR Centre. System-in-charge explained the about the products/technologies/facilities.



* Dr Samir V Kamat, Secretary DD (R&D) & Chairman, DRDO visited NSTL on 11 September 2022. At the outset, Dr Y Sreenivas Rao, Director, NSTL and team welcomed the Chairman. Dr Kamat had interaction with scientists of NSTL. A brief about the ongoing projects, current status and plan of action was presented by respective project teams.

