

# DRDO

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## SUCCESSFUL MAIDEN FLIGHT TEST OF AKASH PRIME MISSILE



# CONTENTS

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**COVER STORY** ..... 4

Successful Maiden Flight Test of Akash Prime Missile



**EVENTS** ..... 5

Raksha Mantri gives away DRDO Dare to Dream 2.0 & Young Scientists Awards at DRDO Directors' Conclave -2021

## MoD Places Supply Order for 118 MBT Arjun Mk-1A for Indian Army

11



INFRA DEVELOPMENT .....	16
HRD ACTIVITIES .....	17
PERSONNEL NEWS .....	20
VISITS .....	21

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# SUCCESSFUL MAIDEN FLIGHT TEST OF AKASH PRIME MISSILE

**A** new version of the Akash Missile – ‘Akash Prime’ has been successfully flight tested from Integrated Test Range (ITR), Chandipur, Odisha on 27 September 2021. The missile intercepted and destroyed an unmanned aerial target mimicking enemy aircraft, in its maiden flight test after improvements.

In comparison to the existing Akash System, Akash Prime is equipped with an indigenous active Radio Frequency (RF) seeker for improved accuracy. Other improvements also ensure more reliable performance under

low-temperature environments at higher altitudes. A modified ground system of the existing Akash weapon system has been used for the current flight test. The range stations of ITR comprising Radars, Electro-Optical Tracking System (EOTS) and Telemetry stations monitored the missile trajectory and flight parameters.

Raksha Mantri Shri Rajnath Singh has congratulated DRDO, Indian Army, Indian Air Force, Defence Public Sector Undertaking (DPSU) and industry for the successful trials of Akash Prime missile. He stated that the

successful flight test proves the competence of DRDO in the design and development of world-class missile systems.

Secretary DDR&D and Chairman DRDO Dr G Satheesh Reddy congratulated the team for the successful flight trial of the Akash Prime missile. He said that the Akash Prime system will further boost the confidence of the users (Indian Army and Indian Air Force) as the Akash system is already inducted and now getting improved with more lethal missiles.





# RAKSHA MANTRI GIVES AWAY DRDO DARE TO DREAM 2.0 & YOUNG SCIENTISTS AWARDS AT DRDO DIRECTORS' CONCLAVE -2021

The DRDO Directors' Conclave was organised at DRDO Bhawan, New Delhi during 3-4 October 2021. The theme of the conclave was 'Redesigning the Processes to Meet the National Aspirations'. The conclave was attended by Hon'ble Raksha Mantri Shri Rajnath Singh, Vice Chief of all the defence forces- Army, Navy and Air Force, VCs of Gujarat University and DIAT, top officials of DRDO, Industry representatives, etc. Raksha Mantri Shri Rajnath Singh felicitated the winners of the 'Dare to Dream 2.0' Contest of DRDO during the conclave. The Raksha Mantri gave away awards to 40 winners—22 in the individual category and 18 in the Startup category. He also launched 'Dare to Dream 3.0' to promote innovators & startups and provide a platform for the young ignited minds in the country. Dare to Dream is DRDO's pan-India contest to promote Indian academicians, individuals and startups to develop emerging defence and aerospace technologies/systems. DRDO provides technical and financial support to the winners for realisation of their ideas under the Technology Development Fund (TDF) scheme. Shri Rajnath Singh also gave away DRDO Young Scientists

awards for the year 2019. Sixteen DRDO scientists, under the age of 35 years, were awarded for their outstanding contribution in areas of their expertise. Congratulating the winners of 'Dare to Dream' and 'DRDO Young Scientists' awards, Shri Rajnath Singh said, they reflect the energy, enthusiasm and commitment of the youth of the country to create something new. He exuded confidence that the winners in the fields of innovation, design & development will inspire young minds and create path-breaking innovation in the future. The 'Dare to Dream' challenge, he said, represents the vision and mission of the Government as also the mandate of DRDO. Shri Rajnath Singh lauded DRDO for playing a central role in the Government's efforts of

achieving self-reliance in defence manufacturing and contributing immensely in enhancing the capacity & capability of the Armed Forces even in the rapidly changing geopolitical situation. He said the recent contracts and induction of Light Combat Aircraft (LCA) Mk-1A, Main Battle Tank Arjun Mk-1A and Medium Range Surface to Air Missile system are some noteworthy contributions.

"DRDO is not only trying to match the capabilities of technologically advanced countries but is also equally engaged in innovation of new technologies. The new generation programmes of DRDO will upgrade our Armed Forces in future as well," Raksha Mantri hoped.

The Raksha Mantri commended DRDO Young scientists' lab and Advance technology Centres for





working in futuristic technologies such as nano technology, quantum computing, artificial intelligence, unmanned and robotic technologies. Terming it as the new dimension of 'New India', he called for increased R&D efforts in such futuristic technologies.

He stressed the need to develop dual-use technologies which can be beneficial for both Armed Forces, personnel and civilians. He urged all the stakeholders to focus on research & development to provide state-of-the-art equipment to the Armed Forces. This will

help in establishing the country's identity in the international market and achieving the vision of 'Make in India, make for the world', he said.

The following were awarded during the event.

AWARD	AWARDEE
<p><b>BEST PERFORMANCE AWARD 2019</b></p>	<p>Shri M. Chandra Shekar, TO 'C', Defence Metallurgical Research Laboratory (DMRL), Hyderabad; Shri Rajiv Rao, Admin Asstt 'B', Defence Terrain Research Laboratory (DTRL), Delhi; Shri Jamil Ahmed, PS, o/o Director General (TM), HQ, Delhi; Shri V. Chandra Shekar, SAO-II, Advanced Systems Laboratory (ASL), Hyderabad; Shri Mrinal Kanti Singha, PA, Directorate of Planning &amp; Coordination (DP&amp;C), Delhi; Shri S.L. Asokan, Admin Officer, Director General (ECS), Bengaluru; Shri Joginder Singh, TO 'C', Snow &amp; Avalanche Study Establishment (SASE), Chandigarh; Ms Sujatha P. Nair, PA, Directorate of Vigilance &amp; Security (DVS), HQ, Delhi; Shri Kapees Kumar, VO-C, Institute for Systems Studies &amp; Analyses (ISSA), Delhi; Smt Manju L., Stores Asstt 'B', Office of Director General (Aeronautical Systems), Delhi; Shri Khushwant Lal Kothari, SSO-I, Scientific Analysis Group (SAG), Delhi; Shri Jitendra Singh, PA, Office of Director General (NS&amp;M), HQ, Delhi; Shri Shanavas A., TO 'C', Naval Physical &amp; Oceanographic Laboratory (NPOL), Kochi; Shri K. Bharath Bhushan, Stores Officer, o/o Director General (MSS), Hyderabad; Shri Chaman Singh Rana, CAO, Defence Research and Development Laboratory (DRDL), Hyderabad; Shri Jaspreet Singh, TO 'B', Terminal Ballistics Research Laboratory (TBRL), Chandigarh; Shri Ved Prakash, PS, Laser Science &amp; Technology Centre (LASTEC), Delhi; Shri Vijayan V.V., SAO-II, Electronics &amp; Radar Development Establishment (LRDE), Bengaluru; Shri K. Rajender, Account Officer, Defence Electronics Research Laboratory (DLRL), Hyderabad; Shri Ashish Kumar Srivastava, TO 'B', Defence Research &amp; Development Establishment (DRDE), Gwalior; Prasanna Bidesh Dhavalekar, TO 'C', Research &amp; Development Estt (Engrs), Pune; Shri Akshay, Steno 'D', Office of Director General (R&amp;M), HQ, Delhi; Shri V.V. Subrahmanyam, TO 'C', Research Centre Imarat (RCI), Hyderabad; Ms Sumedha Mehta, TO 'B', Recruitment and Assessment Centre (RAC), Delhi; Shri Rajesh Balram Yadav, TO 'B', Armament Research &amp; Development Establishment (ARDE), Pune; Shri Alok Mehta, Sr Security Officer, Joint Cipher Bureau (JCB), Delhi; Shri G.B. Kulkarni, SSO-II, Microwave Tube Research &amp; Development Centre (MTRDC), Bengaluru; Dr Bhargavi R. Gopal, AsstDir(OL), Defence Food Research Laboratory (DFRL), Mysore; Shri N. Siva Rama Suresh, TO 'A', Naval Science &amp; Technological Laboratory (NSTL), Visakhapatnam; Ms Anitha B.K., Sr Admin Asstt., Aeronautical Development Establishment (ADE), Bengaluru; Shri Himanshu Dwivedi, Dy Dir, Directorate of Personnel (DOP), HQ, Delhi; Shri V.V. Mishra, Dy Dir, Directorate of Personnel (DOP), HQ, Delhi</p>



<b>YOUNG SCIENTIST AWARD 2019</b>	<p>Shri P.R. Srikanth, Sc 'D', Research Centre Imarat (RCI), Hyderabad; Shri Pranav Kumar Pandey, Sc 'D', High Energy Materials Research Laboratory (HEMRL), Pune; ShriNaveed Ali, Sc 'D', Defence Research and Development Laboratory (DRDL), Hyderabad; Shri Vadthya Kishore Kumar, Sc'D', Defence Electronics Research Laboratory (DLRL), Hyderabad; Shri B. Bharat Kumar, Sc 'C', Microwave Tube Research &amp; Development Centre (MTRDC), Bengaluru; ShriKirubakaran P., Sc 'D', Gas Turbine Research Establishment (GTRE), Bengaluru; Shri Rajkumar M, Sc 'D', Aeronautical Development Agency (ADA), Bengaluru; Ms Khan Lubna Mohammed Hanif, Sc 'D', Advanced Centre for Energetic Materials (ACEM), Nasik; Shri B.S. Mahaboob Shareef, Sc 'C', Electronics &amp; Radar Development Establishment (LRDE), Bengaluru; Shri Ram Milan Sahani, Sc 'D', Defence Laboratory (DL), Jodhpur; Ms SuchitraChoudhary, Sc 'D', Defence Terrain Research Laboratory (DTRL), Delhi; Ms Anjali Kumari, Sc 'C', Defence Metallurgical Research Laboratory (DMRL), Hyderabad; Shri B.S. Gurav, Sc 'E', Armament Research &amp; Development Establishment (ARDE), Pune; Dr (Ms) Sonika Sharma, Sc 'C', Defence Research Laboratory (DRL), Tezpur; ShriShashank Kumar Gupta, Sc 'D', Terminal Ballistic Research Laboratory (TBRL), Chandigarh; Shri Sagar Bhalchandra Ukrande, Sc 'D', Vehicles Research &amp; Development Establishment (VRDE), Ahmednagar</p>
<b>DRTC AWARD FOR EXCELLENCE IN TECHNICAL PERFORMANCE 2019</b>	<p>Shri Sheik Sirajuddin Ahamad, TO 'A', SF Complex (SFC), Jagdalpur; Shri Lokesh Rai, TO 'A', Defence Institute of Physiology &amp; Allied Sciences (DIPAS), Delhi; Shri S. Sathish Kumar, TO 'B', Combat Vehicles Research and Development Establishment (CVRDE), Chennai; Ms Annie P. Simon, TO 'C', Naval Physical &amp; Oceanographic Laboratory (NPOL), Kochi; Shri Sanjay Kumar, TO 'B', Research Centre Imarat (RCI), Hyderabad; Shri U.V. Chandramouli, TO 'B', Microwave Tube Research &amp; Development Centre (MTRDC), Bengaluru; Ms Veena N., TO 'A', Aeronautical Development Establishment (ADE), Bengaluru; Shri H.P. Ramesha, TO 'C', Centre for Military Airworthiness and Certification (CEMILAC), Bengaluru;</p>
<b>DRTC AWARD FOR EXCELLENCE IN TECHNICAL SUPPORT 2019</b>	<p>Shri Raju Kumar Ranjan, STA 'B', Office of Advisor (Cyber); Shri Nitai Sutradhar, STA 'B', High Energy Materials Research Laboratory (HEMRL), Pune; Shri Zaddu Prabhakar, STA 'B', DRDL; Shri Amal K. Chandran, STA 'B', Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru; Shri Biswajit Behera, STA'B', Defence Avionics Research Establishment (DARE), Bengaluru; ShriMahendra Singh, Tech 'B', Defence Electronics Applications Laboratory (DEAL), Dehradun; ShriShinith K.P., STA 'B', Defence Bioengineering &amp;Electromedical Laboratory (DEBEL), Bengaluru Shri Raja Kishore Mahapatra, STA 'B', Gas Turbine Research Establishment (GTRE), Bengaluru</p>
<b>DRDO LIFE TIME ACHIEVEMENT AWARD 2018</b>	<p>Shri NV Kadam, Sc 'G' (Retired), Defence Research and Development Laboratory (DRDL), Hyderabad</p>



***DRDO Newsletter congratulates all the awardees.***



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On this occasion, three products/systems indigenously developed by DRDO were also handed over to the Armed Forces. These are:

**ARINC818 Video Processing and Switching Module**

The module, developed for the Indian Air Force, was handed over to the Vice Chief of Air Staff Air Marshal Sandeep Singh. It is a state-of-the-art module with high bandwidth, low latency, channel bonding, easy networking and will cater to 5th generation aircraft development programmes.



CP Mohanty. It is used to reduce the height of Ditch-cum-Bund obstacles to enhance the mobility of mechanised infantry during wartime.

A Memorandum of Understanding (MoU) was also exchanged between Prof HA Pandya, Vice-Chancellor, Gujarat University and Secretary Department of Defence R&D and Chairman DRDO Dr G Satheesh Reddy for establishing an Advanced Technology Centre 'Sardar Vallabhbhai Patel Centre for Cyber-Security Research' at Gujarat University for conducting directed research in cyber security. Shri Rajnath Singh also released two policy documents of DRDO - Directed Research Policy and Records Management Policy

2021. Directed Research Policy provides the framework for the establishment of Advanced Technology Centres and Research Cells in academic institutes for focussed research on identified subjects such as futuristic surveillance and defensive and offensive capabilities.

The Records Management Policy aims to further strengthen the records management activities of DRDO. In his address, Dr Reddy talked about the importance and purpose of the Conclave and accentuated the recent notable achievements of DRDO that were inducted into the three Services. He exuded confidence in working together with industry and academia and cited some of the MoUs signed by DRDO with universities and other institutes of national importance for the development of core and advanced technologies.

He also congratulated and exhorted all the DRDO awardees and winners of Dare to Dream 2.0 who have shown exemplary work.



**Sonar Performance Modelling System**

Developed for the Indian Navy, the system was handed over to Vice Chief of Naval Staff Vice Admiral Satish Namdeo Ghormade. It is useful for Indian Naval ships, submarines and under water surveillance stations, etc.



**Bund Blasting Device Mk-II**

The device, developed for the Indian Army, was handed over to the Vice Chief of Army Staff Lt Gen





## MOD PLACES SUPPLY ORDER FOR 118 MBT ARJUN MK-1A FOR INDIAN ARMY

**M**inistry of Defence (MoD) placed an order with Heavy Vehicles Factory (HVF), Avadi, Chennai for the supply of 118 Main Battle Tanks (MBTs) Arjun Mk-1A for the Indian Army on 23 September 2021. The order provided a further boost to the 'Make in India' initiative in defence sector and is a big step towards achieving Aatmanirbhar Bharat. It may be recalled that the Prime Minister had handed over the MBT Arjun Mk-1A to Chief of Army Staff General M M Naravane in Chennai on 14 February 2021.

The state-of-the-art MBT Mk-1A is a new variant of Arjun Tank designed to enhance firepower, mobility and survivability. Infused with 72 new features and more indigenous content from the Mk-1 variant, the tank would ensure effortless mobility in all terrains, besides precise target engagement

during day and night. It has been designed and developed by DRDO by incorporating numerous upgrades on Arjun MBT, the in-service MBT with the Indian Army.

The MK-1A is equipped with accurate and superior firepower, all-terrain mobility and invincible multi-layered protection provided by an array of advanced technology systems. It can take on the enemy during day and night conditions and in both static and dynamic modes.

By these capabilities, this indigenous MBT proves to be at par with any contemporary in its class across the globe. This tank is particularly configured and designed for Indian conditions and hence it is suitable for deployment to protect the frontiers effectively.

This production order to HVF, Avadi opens up a large avenue in defence manufacturing for over

200 Indian vendors including MSMEs, with employment opportunities to around 8,000 people. This will be a flagship project showcasing the indigenous capability in cutting-edge defence technologies.

The MBT Arjun Mk-1A has been designed and developed by the Combat Vehicles Research and Development Establishment (CVRDE), along with other laboratories of DRDO within two years (2010-12). The development activities commenced in June 2010 and the tank was fielded for user trials in June 2012. It took only two years to develop and field the MBT Arjun Mk-1A for user trials from the user requirement.

An Extensive trial evaluation was conducted in various phases covering 7000+ km (both in DRDO and user trials) of the automotive and substantial firing of various ammunitions during 2012-2015.



# ASI CONFERS ARYABHATA AWARD TO SECRETARY DDR&D AND CHAIRMAN DRDO

Secretary DDR&D and Chairman DRDO Dr G Satheesh Reddy have been conferred the prestigious Aryabhata Award by the Astronautical Society of India (ASI) for his outstanding lifetime contribution to the promotion of astronautics in India. The award function was held on 9 October 2021 at UR Rao Satellite Centre Bangalore with participants joining virtually from across the ISRO, DRDO and other academic institutions.

Dr Reddy is a pioneer in the area of R&D of advanced avionics, navigation and missile technologies. He has contributed immensely to strategic and tactical missile systems and helped the country become self-reliant in critical defence technologies. He



is an institution builder and has set up mechanisms to establish robust defence development and production ecosystem. Due to his persistent effort, defence research in academic institutes is accelerating towards higher

technology readiness level. The ASI is engaged in the dissemination of technical and other information related to astronautics by conducting technical meetings, bringing out technical publications and organising exhibitions.

## RAISING DAY CELEBRATIONS

### ARDE, PUNE

It was a momentous occasion for the ARDE family to have Dr G Satheesh Reddy, Secretary DDR&D and Chairman DRDO as the Chief Guest for the ARDE Raising Day-2021. Shri P K Mehta, DS & DG (ACE), Shri AM Datar, former DG (ACE), Shri KPS Murthy, OS & Director HEMRL, Shri PM Kurulkar, OS & Director R&DE(E), Shri S V Gade, OS & Director VRDE and Shri PT Rojatkar, OS & Director NMRL graced the occasion. Dr N Ranjana, Sc 'G' & Director DSTA and





Dr Sanjay Pal, Sc 'G' & Director IT&CS were also present for the function.

Dr V Venkateswara Rao, OS & Director ARDE welcomed the august audience and presented an overview of ARDE's achievements of the previous year and plans for the future. Shri P K Mehta congratulated ARDE for the projects. Dr Reddy appreciated the immense efforts put in by ARDE employees during the challenging pandemic situation, and praised everyone for the excellent project outcomes and social services rendered. He advised that efforts should be channelized for identifying future technologies aligned to our strengths and to ensure that the defined timelines are met to avoid technology obsolescence.

ARDE has brought out two books to commemorate the vanguard Pinaka MBRL System - a Coffee Table Book titled, "Pinaka: The Divine Bow" and memoirs titled, "Pinaka: A Mosaic of Memories". Dr Reddy reviewed the ongoing ARDE projects. He also fired the ARDE developed Small Arms weapons, namely 7.62x51mm LMG and 9mm Machine Pistol at Pashan Ranges.

## DIPR, DELHI

Defence Institute of Psychological Research (DIPR) celebrated its 73rd Raising Day on 3 September 2021. Dr U K Singh, OS & DG (LS) was the Chief Guest for the occasion. Directors from Sister Labs also graced the occasion by their presence.

Dr K Ramachandran, OS & Director DIPR, welcomed the august gathering and highlighted the achievements of the establishment during the year



2020. He thanked one and all on the accomplishment.

Dr Singh, OS & DG (LS) in his address appreciated the effort being made by DIPR and also appreciated the work being conducted by DIPR, and gave suggestions and areas of work to further expand.

## NSTL, VISHAKAPATNAM

Naval Science & Technological Laboratory (NSTL) celebrated its 52 Lab Raising Day on 20 August 2021. NSTL was established on 20 August 1969 with 10 staff members, it has grown manifold with 605 personnel including 176 scientists and has made significant contributions to defence R&D and is recognised as one of the premier labs of DRDO engaged in the development of underwater weapons and systems.

Dr G Satheesh Reddy, Secretary DDR&D & Chairman DRDO was the Chief Guest at the celebrations. Dr Samir V Kamat, DS & DG (NSM) and Dr Y Sreenivas Rao, OS & Director NSTL accompanied him.

Dr GV Krishna Kumar gave a welcome address on the occasion. Shri Ch VSN Murty, President NSTL Civil Employees Union explained the social service activities of NSTL during the COVID-19 pandemic and the vaccination programme, which were done with the cooperation of the members of NSTL Civil Employees Union, JCM-IV, Works Committee and NSTL fraternity. Dr Manu Korulla, Sc 'G' & Chairman Works Committee presented the annual report of the Works Committee.

In his address, Dr Rao explained the genesis of NSTL and how it evolved to the present state-of-the-art premier naval laboratory; detailed the various achievements of the lab over the past year, progress on the innovative technologies to meet futuristic requirements; and gave details of new improvements in the laboratory towards achieving the targets.

Dr Kamat said that NSTL is now in the prime phase of transition and it has to work with more enthusiasm to meet the expectations of the Indian Navy.



On this occasion, High Power Lithium (Li)-Ion Battery Technology is handed over to M/s. Bharat Electronics Limited (BEL), Pune by Dr G Satheesh Reddy. NSTL has successfully established development of high-power Li-ion battery technology for defence applications and set up a pilot plant facility in-house to fabricate cells of various capacities in both pouch and prismatic configurations. In his speech, Chairman DRDO said that NSTL is at the forefront in developing systems for Indian Navy, as per their requirements; he strongly believed that with the efforts of NSTL, India surely get a place in the league of select nations in the field of development of underwater weapons. He expressed happiness over NSTL becoming Technology Leader from the stage of Technology



Follower. Dr S Satyanarayana, former Director NSTL; Admiral Thakre, Director-General ATPV (Advanced Technological Vessel Programme); Sri PVS Ganesh Kumar, OS; Sri BVSS Krishna Kumar, OS; Dr. A Srinivas Kumar,

OS; other scientists, officers; Shri Hemant Bais, Secretary NSTL Civil Employees Union & Works Committee; Sri Ch Chandrasekhar, Vice-President NSTL Civil Employees Union and staff of NSTL were present on the occasion.

## INDEPENDENCE DAY CELEBRATIONS

75th Independence Day was celebrated in ITR premises on 15 August 2021 with the hoisting of the National Flag by Shri H K Ratha, Director ITR. On this occasion, march-past was done by DSC personnel followed by National Anthem sung by all ITR personnel. Director, ITR in his address recalled the sacrifice of freedom fighters for the nation and exhorted all to upkeep the glory of mother India to the top. A tree plantation session was carried out towards the shared vision of Green & Clean ITR. Renovated and Newly constructed Buildings as a part of Infrastructure developmental work were also inaugurated.



## HINDI DIWAS CELEBRATION

Hindi Diwas was celebrated in Integrated Test Range (ITR), Chandipur with full of joy and enthusiasm on 14 September 2021. The programme was inaugurated by Shri H K Ratha, Director, ITR. In his inaugural speech, Director ITR encouraged all to promote Hindi in every field even in day-to-day official works. He appreciated participants for appearing in large numbers in various competitions organised during the Hindi fortnight (1-14 September 2021). Director administered the Rajbhasha Pledge among all the employees on the occasion. Shri JS Bharti, Sc 'D' read out the message of Secretary Dept. of Defence R&D and Chairman DRDO.

During the fortnight various competitions like essay writing,



noting drafting, Knowledge in OL, etc. were organised. Winners in the competitions and all participants were awarded suitable cash prizes.

Due to the prevailing COVID-19 pandemic, the programme was organised maintaining social

distancing and proper face masking.

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

## DIBER REGISTERS PRESENCE IN MAKE IN UTTARAKHAND

**D**IBER was one of the three laboratories under DRDO Contingent which won the "Make in Uttarakhand" event organized during 16-17 September 2021 at Ramnagar, Uttarakhand. DIBER exhibited its major technologies and products in the field of bio-energy, enhancement of livelihood opportunities in border areas of Uttarakhand and herbal medicines. The exhibition-cum-B2B conference was inaugurated by Hon'ble Member of Parliament and Ex-CM of Uttarakhand Shri Tirath Singh Rawat, who had taken a keen interest in DIBER's hydroponics technology and Pine needle-based bio-energy



solutions. Major government entities like DAE, DST, NHPC, North Eastern Railway, KVIC, etc. too participated in the conference.

DRDO's stall saw a high footfall by students and other common visitors on both days of the exhibition.

# INAUGURATION OF WELLNESS CENTRE

Dr B.K. Das, OS & Director, Instruments Research & Development Establishment (IRDE), Dehradun inaugurated the new Wellness Centre named 'Park View' on 28 August 2021 at IRDE VigyanVihar Campus. The Centre is an excellent 10-bedded medical facility in which two beds are configured as ICU and is equipped with all the required and latest medical equipment including Oxygen Concentrator, Bi-level Positive Airway Pressure (BiPAP) machine, ECG Machine and Multi-parameter Monitor. Dr Das dedicated this facility for the welfare of IRDE employees and



their families. This is a proactive measure taken by the lab to manage in the event of a third wave of COVID.

# INAUGURATION OF CSD CANTEEN

Dr B.K. Das, OS & Director, Instruments Research & Development Establishment (IRDE), Dehradun inaugurated the renovated CSD canteen on 28 August 2021 at the IRDE campus. It is a self-service unit run canteen catering the daily needs of the employees. ShriAnandram Birla, IDSE EE GE(I) R&D Dehradun was also present during the inauguration. Dr Das lauded the efforts made by the team for the renovation of the canteen.





## SUMMER INTERNSHIP-2021

As part of the Azadi ka Amrit Mahotsav, Advanced Centre for Energetic Materials (ACEM), Nasik has conducted a Summer Internship programme-2021. Thirteen engineering undergraduate students from different colleges/institutes have undergone a one-month internship programme at ACEM, Nasik from 16 August 2021 to 17 September 2021. The students were from various disciplines such as Aerospace Engineering, Metallurgy and Material Science & Engineering, Safety & Fire Engineering, Computer Science and Electrical & Electronics Engineering. Six scientists of ACEM mentored the students, each student was



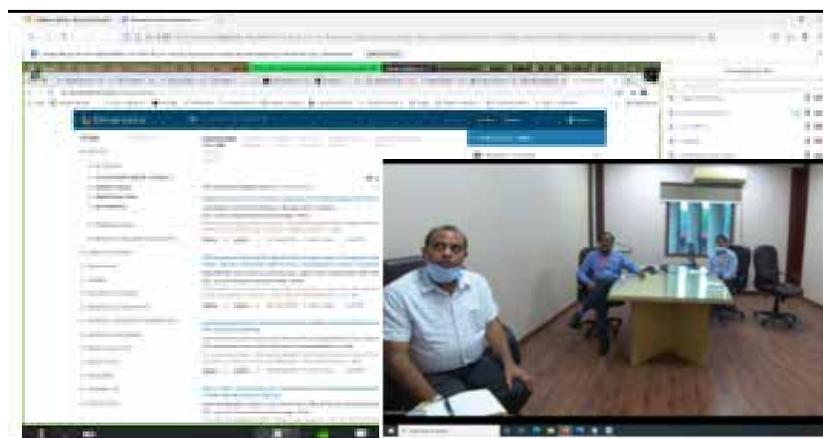
assigned to a project guide as per their discipline. As part of the internship, a general orientation programme was conducted for a week, wherein the students were exposed to research activities

and various divisions at ACEM. A valedictory function was organized on 17 September 2021, Dr SC Bhattacharyya, officiating GM, ACEM felicitated the students.

## WEBINAR ON EVALUATION OF JOURNALS PERFORMANCE AND PUBLICATION STRATEGY

As part of the Azadi ka Amrit Mahotsav, Defence Scientific Information & Documentation Centre (DESIDOC) Delhi in collaboration with Digital Science, Sydney, Australia organised a Webinar on "Evaluation of Journals Performance and Publication Strategy using Dimensions Analytics" on 22 September 2021. The webinar was attended by more than 20 participants from DESIDOC and other DRDO laboratories.

Dr Anthony Dona, Senior Director, Government & Funders APAC, the speaker of the webinar discussed the importance of research metrics in publications and highlighted the variety of methods to visualise and export



bibliometric data including publications, patents, clinical trials, policy documents, and datasets. Dr K Nageswara Rao, Director, DESIDOC spoke on the growth patterns of the DRDO

journal and also analysed a variety of data to deliver a full picture of past, current, and future research.

Shri Yogesh Modi coordinated the event.

# SHORT TERM TRAINING ON INTERNAL AUDIT ACCORDING TO ISO 9001:2015

Short Term Training on “Internal Audit According to ISO 9001:2015” was organised at Proof & Experimental Establishment (PXE), Chandipur on 25 August 2021. Twenty-one participants from PXE, Chandipur attended the course. Topics like Quality Fundamentals, Audit Fundamentals, Improvement Techniques, Internal Audit Practice in PXE and Internal Audit as per ISO 9001:2015, etc. were covered by expert faculties from PXE, Chandipur and ERTL, Kolkata. In the feedback, participants appreciated the way all the topics were handled by the faculty. Sri D K Joshi, Director,

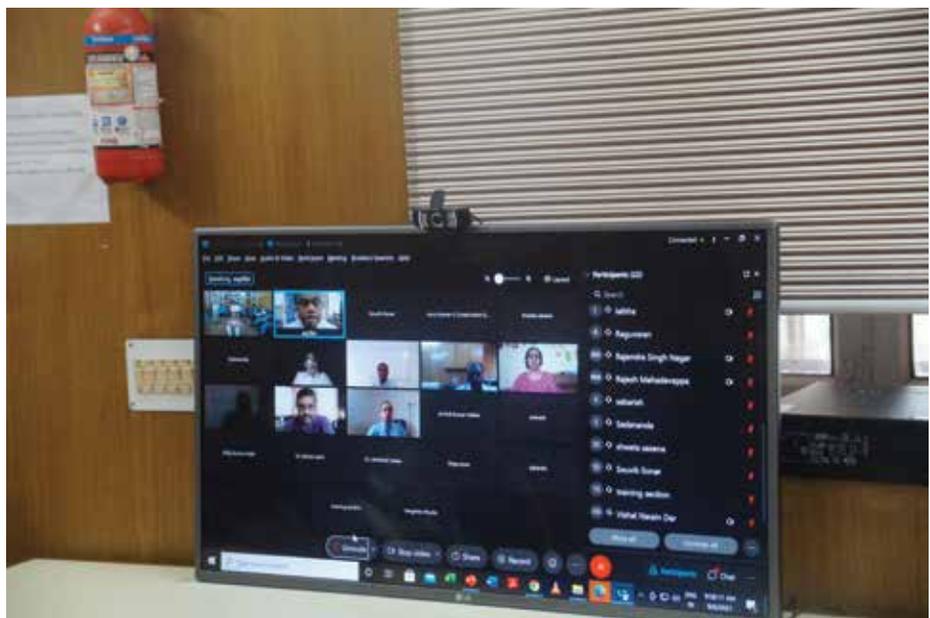


PXE & Chief Guest inaugurated the training programme and emphasised the importance of quality in test and evaluation of armament store. Dr H S Panda, Sc ‘F’ was the Course Director.

# COURSE ON PROJECT MANAGEMENT COMPETENCIES DEVELOPMENT

A five-day online course on Project Management Competencies Development Programme and IPMA Level ‘D’ Certification was jointly conducted by the Institute of Technology Management (ITM), Mussoorie and Project Management Associates (PMA), India during 6-10 September 2021. Twenty-two officers participated in the course.

The objective of the course was to develop broad awareness amongst participants regarding the various methodologies and approaches of project management as per global standards. The course was inaugurated via online mode by Smt. Anita Mohindra Sc





'F' & Officiating Director, ITM.

Dr A Sivathanu Pillai, President PMA & Former CEO & MD, BrahMos Aerospace Pvt Ltd. was the Chief Guest of the occasion. He addressed the participants and shared his experience. Sessions on various topics covering Project, Programme and Portfolio Orientation, Design, Requirements, Objectives and Benefits, Scope, Time (Network Planning Models, Critical Path & PERT), Organization and Information, Quality, Finance (Investment Appraisals), Resources, Procurement and

Partnerships, Plan and Control, Risk and Opportunity, Stakeholders, Change and Transformation, Strategy (Investment Appraisals), Governance, Structure and Process, Compliance, standards and regulations, Power and Interest, Culture and Values, Self-reflection and Self-management, Personal Integrity and reliability, Personal communication, Leadership, Teamwork, Conflict and crisis, Resourcefulness, Change and Transformation, Strategy were delivered by ITM Faculty and PMA faculty. The IPMA Level 'D' Certification

exam was conducted by the PMA Certification body through an online platform on 13 September 2021.

The Course concluded with a valedictory address by Shri Sanjay Tandon, OS & Director ITM. He thanked the course participants for participating in the programme. Shri Vishal Narain Dar, Regional Director (North), PMA also addressed the course participants. Smt. Anita Mohindra gave inputs about the conduct of the course and also delivered the vote of thanks. The feedback responses from the participants were overwhelming.

## WORKSHOP ON FILE MANAGEMENT SYSTEM

Directorate of Parliamentary Affairs, Rajbhasha and Organisation & Methods organised a workshop on "File Management System" during 23-24 September 2021 at DRDO HQ. Smt. Asha Tripathi, SC 'G' welcomed all participants and briefed them about the importance of the File Management System. Dr Ravindra Singh, Director, DPARO&M formally started the workshop and delivered the theme address. Shri Sangam Sinha, OS & DG (R&M) honored the event as the Chief Guest. In his address, Shri Sinha emphasized the importance of the Records Management Workshop and appreciated the initiatives taken by the O&M Division of DPARO&M. Shri R.B. Singh, Ex-Chairman CEPTAM & Outstanding Scientist was the Special Guest for the event. He delivered a special talk on "File Management: The Limbs of Communication System" and appreciated the initiatives of



the O&M Division taken for the last two years.

Total 59 labs/estts/units joined through Video Conferencing and more than 500 personnel including Records Officers and other nominated officers from various labs/estts/units participated in the workshop. Shri Udey Shankar, Archivist, National Archives of India (NAI); Ms. Namita Malik, Deputy Director and Shri Satish Kumar

Tegta, Assistant Director, Defence Headquarter Training Institute (DHTI); and Ms. Gurpreet Kaur, Sc 'E', R&D (E) Pune delivered the lectures on various aspects of File Management and E-Office

Dr K.S. Varaprasad, DS & DG (HR) honored the valedictory session and presented the certificates to the participants. The workshop ended with a vote of thanks by Smt. Asha Tripathi, Sc 'G' and Head, O&M Division.



## APPOINTMENT

### Director, RCI



Shri U. Raja Babu, OS and Programme Director, AD has assumed charge as Director, Research Centre Imarat (RCI),

Dr APJ Abdul Kalam Missile Complex, DRDO, Hyderabad, w.e.f. 23 August 2021.

Shri Raja Babu is widely known for his significant contributions as Programme Director, Area Defence (AD) and technology leadership in the design, development and successful demonstration of ballistic missile defence capabilities. As one of the main architects, he led "Mission Shakti", India's first Anti-Satellite Missile Test (ASAT) demonstrating the space defence capabilities of India based on BMD technologies.

He started his career with Indian Air Force and subsequently joined DRDO in 1995 and played a decisive role in the development and induction of an enhanced range Prithvi missile system.

Presently, as Director and Programme Director, he is spearheading RCI, an avionics laboratory of Dr APJ Abdul Kalam Missile Complex steering the design, development and delivery of avionics and a wide range of missiles and guided weapon systems for defence and aerospace applications in India.

His sustained R&D contributions and have been transformative for indigenisation of critical missile and aerospace technologies and has strengthened

defence industry eco-system in the country.

As a team leader, he has been conferred with Pathbreaking Research and Outstanding Technology Development Award for successfully leading the demonstration of Mission Shakti. Other prestigious awards conferred on Shri Raja Babu includes the Agni Award for Excellence in Self-reliance, DRDO Scientist of the Year Award and PMA Project Leader Award. He is a Fellow of the Institution of Engineers and a Life Member of many professional societies.

## AWARDS

### Engineer of the Year Award-2021

Dr A Venugopal Rao, Sc 'G' of Defence Metallurgical Research Laboratory (DMRL), Hyderabad has been presented "Engineer of the Year Award - 2021" by the Government of Telangana and the Institution of Engineers (India), Telangana State Centre. The award

was presented at 54th Engineers' Day function, in commemoration of the 161st birthday celebrations of Engineer-Statesman Bharat Ratna Sir Mokshagundam Visvesvaraya on 15 September 2021.

## HIGHER QUALIFICATION ACQUIRED



Mohd. Yousof Ansari, Sc 'F', DESIDOC, Delhi has been awarded Ph.D. in Computer Engineering

from Jamia Millia Islamia, New Delhi for the thesis titled "Development of Novel Clustering Approaches for Spatiotemporal Database".



## VISITORS TO DRDO LABS

### ACEM, NASIK

Vice Admiral Sanjay Mahindru, AVSM, NM, Deputy Commander-in-Chief, Strategic Force Command (SFC) visited Advanced Centre for Energetic Materials (ACEM) on 17 September 2021. Dr S C Bhattacharyya, Sc 'G' & Officiating General Manager, briefed him about the activities being carried out by ACEM while emphasising the new energetic propellants being developed at ACEM.

Vice Admiral Sanjay Mahindru interacted with senior officers of the ACEM and SSQAG team and visited important propellant processing facilities. He also witnessed live propellant mixing in the country's biggest gravitational



mixer. He appreciated the work being carried out by ACEM which is critical for the strategic

programmes and was impressed with the knowledge and dedication of the scientists.

### DIHAR, LEH

Hon'ble Governor of Sikkim Shri Ganga Prasad Chaurasia visited Defence Institute of High Altitude Research (DIHAR) on 7 September 2021. He visited the experimental farm of DIHAR and had a detailed interaction with Dr O P Chaurasia, Director DIHAR, and his team of scientist.

He took a special interest in the agro-animal technologies of DIHAR and how the organic concept is being followed in this part of the world. They had a detailed interaction about the scope and potential of practicing organic farming in Ladakh and how Sikkim has faced and overcome various challenges in converting the whole of the state



as organic.

The team shared their learning and experience on high altitude

agriculture and desired frequent exchange visits of experts among Ladakh and Sikkim.

## HEMRL, PUNE

✧ Dr G Satheesh Reddy, Secretary DDR&D and Chairman, DRDO visited High Energy Materials Research Laboratory (HEMRL) on 5 September 2021. During his visit, presentations were made by the senior scientists on High-performance Rocket Propellants, High Explosive Technologies and High-performance Gun Propellant. He visited the indigenously developed ‘Twin Screw Continuous Mixing Facility for composite propellant’ having the capacity of 50 kg/hr with advanced features like online quality control, remote raw material feeding and product collection system. He also visited the Active binder preparation facility for HD 1.1 class of propellant having the capacity of 200 kg per batch with subsystems like rubber shredding, remote addition of nitrate esters and solvent recovery system. Dr Reddy has shown keen interest and appreciated the activities of HEMRL.



**Dr G Satheesh Reddy, Secretary DD R&D & Chairman, DRDO during his visit to HEMRL on 5 September, 2021.**



**Rear Admiral Brijesh Vashishta, Director General, NAI, New Delhi interacting with senior scientists during visit to HEMRL on 31 August 2021.**

✧ Rear Admiral Brijesh Vashishta, Director General, NAI, New Delhi visited the High Energy Materials Research Laboratory (HEMRL) on 31 August 2021. During the visit, presentations were made by the senior scientists on the Life extension of Club Missiles, Naval Flares and Warheads for Naval Missiles. Rear Admiral Brijesh Vashishta interacted with the scientists of the laboratory and discussed various issues.



**Shri KPS Murthy, Outstanding Scientist & Director HEMRL presenting memento to Rear Admiral Brijesh Vashishta, Director General, NAI on 31 August 2021.**

## IRDE, DEHRADUN

\* A Nigerian delegation visited Instruments Research & Development Establishment (IRDE) on 19 August 2021 regarding joint development programme between DRDO and Defence Research & Development Bureau (DRDB), Nigeria on Time Gated Raman Detection (TGRD) system. The delegation was led by the AVM Ubrufih Peter Uzezi, GSS RBS psc (j) ndc MSDS MA FIIPS & Director General, DRDB, Nigeria along with his team. Dr B.K. Das, OS & Director, IRDE welcomed the dignitaries. Both the teams discussed the technical aspects of the TGRD system followed by a demonstration of the product. DRDB delegation appreciated the efforts made by IRDE, DRDO to realise the product in a record time much before PDC. Dr Das briefed the delegates about IRDE products and technologies. AVM Uzezi and his team took a keen interest in the products and technologies developed by IRDE. AVM Uzezi and Dr Das promised to have future collaborations in allied areas.

\* Hon'ble Shri Ajay Bhatt, Minister of State in Ministry of Defence, India visited Instruments Research & Development Establishment (IRDE) on 3 September 2021. Dr B.K. Das, OS & Director and other senior scientists of IRDE welcomed him. Dr Das explained in detail the technologies and systems developed by IRDE. An exhibition of products developed by IRDE was organised during his visit. Hon'ble RRM was highly delighted watching these products. He appreciated the efforts of IRDE in achieving self-reliance in India's defence sector.



AVM Ubrufih Peter Uzezi, DG DRDB, Nigeria taking keen interest in the IRDE products.



Dr B.K. Das, OS & Director, IRDE honouring AVM Ubrufih Peter Uzezi, DG DRDB, Nigeria with a memento.



Dr B.K. Das, OS & Director showing the IRDE product to Hon'ble Shri Ajay Bhatt.



# DARE TO DREAM 3.0

(INNOVATION CONTEST BY DRDO)



*Giving wings to innovations in defence & aerospace*

**"YOU HAVE TO DREAM BEFORE YOUR DREAMS CAN COME TRUE"**  
-DR. KALAM



## BRIEF ON D2D 3.0

A contest to unearth disruptive ideas and concepts in emerging technologies identified by DRDO for enhancing defence capabilities.

## ELIGIBILITY

**Individual Innovators:**  
Should be an Indian citizen above 18 years of age

**Start-ups:** Recognized by DPIIT and with Indian founders

**LAST DATE TO APPLY** — 1st December 2021

## PRIZES FOR DARE TO DREAM 3.0

\*Each challenge area will have up to 3 winners from each category - Individual and Startup.

**1<sup>st</sup>**

- Rs. 5 lakh Individual
- Rs. 10 lakh Startup

**2<sup>nd</sup>**

- Rs. 4 lakh Individual
- Rs. 8 lakh Startup

**3<sup>rd</sup>**

- Rs. 3 lakh Individual
- Rs. 6 lakh Startup

After seeing massive success as part of the second edition of the competition, DRDO has launched the third edition of its innovation contest, 'Dare to Dream 3.0' as a tribute to the visionary, the legendary former President and eminent scientist, Dr APJ Abdul Kalam. Dr Kalam first espoused the vision of self-reliance and India's very own development model. The contest is being launched for promoting research in various fields of emerging technologies to promote both individuals and startups for the creation of innovation in defence and aerospace technologies in the country for realizing the vision of an 'Aatmanirbhar Bharat' given by our Hon'ble Prime Minister Shri Narendra Modi.

Dare to Dream 3.0 is an idea-based open challenge to promote the innovators and startups of the country and enable them to dream big without any limitations, putting their ideas into tangible results. The winners will be declared after a comprehensive evaluation process by two-level committees, i.e., Domain Expert Committee (DEC) and Independent Expert Committee (IEC). Award money of upto INR 10 lakh for startups and INR 5 lakh for individuals will be provided to the respective winners. Select proposals will also be given a chance to actualize their vision and ideas and contribute to the development of a robust defence ecosystem.

For registrations and more details, please visit....

<https://www.drdo.gov.in/>