

DRDO NEWSLETTER

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DRDO bags National Intellectual Property Award 2015

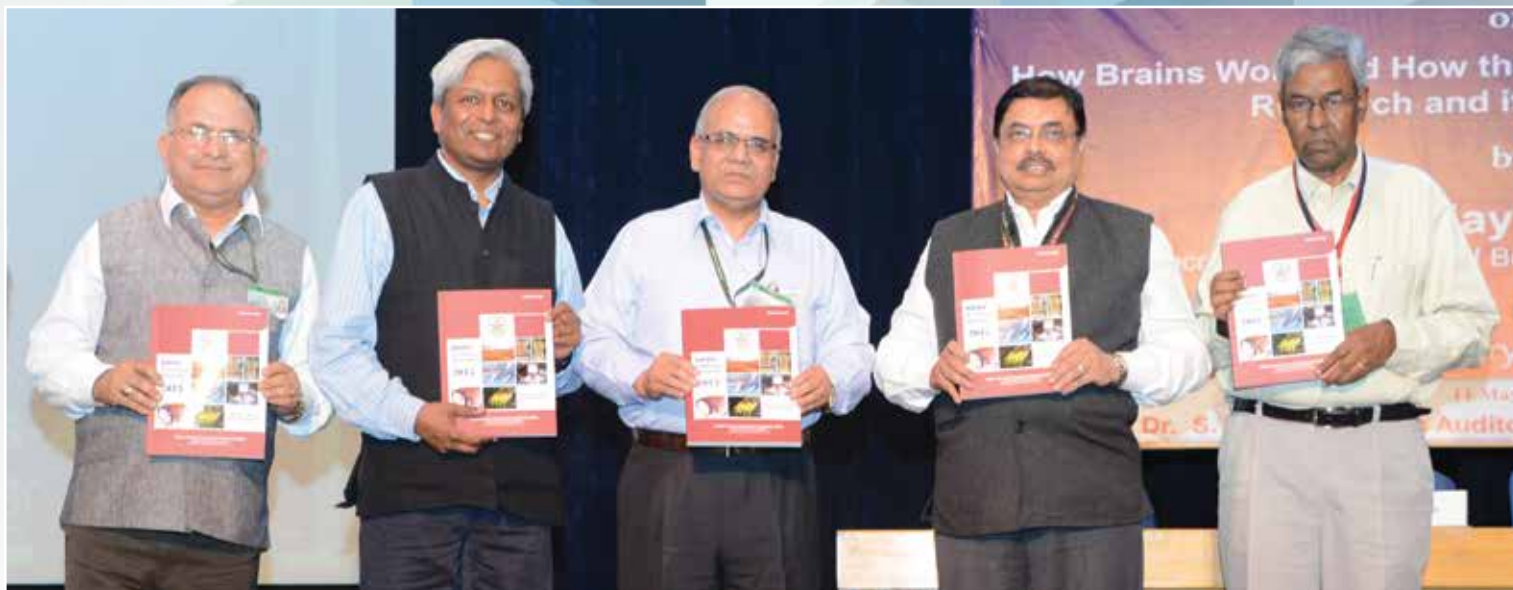
National Technology Day Celebration



L to R: Dr G Athithan, OS, Director, SAG, Dr Sudershan Kumar, DS, CC R&D (PC&SI), Dr K Vijay Raghavan, Secretary, Department of Biotechnology, Dr KD Nayak, DS, DG (MED&CoS), and Dr Satish Kumar, DS, CC R&D (TM) during the inaugural function of National Technology Day (NTD) celebration at Metcalfe House



L to R: Shri Sudhanshu Bhushan, Sc D, DESIDOC, Shri Anand Prakash, Sc C, ISSA, and Shri Gurjeet Singh Walia, Sc D, SAG, receiving the NTD Oration Medal and Certificate from Dr K Vijay Raghavan during the inaugural function of NTD celebration



L to R: Dr Sudershan Kumar, Dr K Vijay Raghavan, Dr Satish Kumar, Dr KD Nayak and Dr G Athithan releasing DRDO Technology Spectrum, a compilation of the NTD Orations presented by scientists in their respective labs, during the inaugural function of NTD celebration

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Cover: Dr Satish Kumar, DS, CC R&D (TM), DRDO, receiving National Intellectual Property Award 2015 from Smt Nirmala Sitharaman, Minister of State (IC) for Commerce and Industry, Government of India

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DRDO bags National Intellectual Property Award 2015

DRDO, has been awarded the prestigious National Intellectual Property Award 2015 in the category "Top R&D Institution/Organisation for Patents". Dr Satish Kumar, Distinguished Scientist (DS), Chief Controller (CC) R&D (TM), DRDO HQ, received the award on behalf of DRDO from Smt Nirmala Sitharaman, hon'ble Minister of State (Independent Charge) for Commerce and Industry, Government of India (GoI), at a function held on 24 April 2015. The National Intellectual Property Awards are given on the basis of several key parameters that include number of patents granted/ filed, growth in IPR portfolio in the last five years, efforts for inculcating IPR culture, contribution towards humanity at large and towards the socio-economic development of the country.

It is notable that DRDO had received Thomson Reuters India Innovation Award twice, in the year 2011 and recently in 2014, based on the size of patent portfolio, success rate, extent of globalisation and influence of innovation.

DRDO is the R&D wing of Ministry of Defence, GoI, with a vision to achieve self-reliance in critical defence technologies and systems, and equipping the armed forces with state-of-the-art weapon systems and equipment. The Organisation has led the design, development and production of state-of-the-art weapon systems, military equipment and soldier-support systems in accordance with requirements laid down by the three Services.

DRDO's pursuit of self-reliance and successful indigenous development and production of strategic systems and platforms have given quantum jump to



Shri Avinash Kumar, Additional Director, Directorate of ER&IPR, DRDO, receiving the National Intellectual Property Award 2015 citation from Smt Nirmala Sitharaman



India's military might, generating effective deterrence and providing crucial leverage. Led to production by DRDO, taking along Indian public and private sector industries, including small and medium enterprises (SMEs), these products and technologies have resulted into overall industrial growth in this crucial segment of defence. Many of these technologies have found civil applications too and are benefiting the society.

DRDO's accomplishments are result of hard work and dedicated efforts of a relatively small workforce comprising about 7500 scientists and about 20,000 technical and support personnel. Innovation and IPR culture is a part of overall corporate culture of DRDO having appropriate institutional mechanism for driving, capturing, protecting and exploiting the innovations made by its scientists.

National Intellectual Property Award 2015 is yet another indicator to the innovation excellence of DRDO scientific community.

New Watercraft for NPOL

An additional facility in the form of a new Indian Register of Shipping (IRS)-class steel boat, Jalaprayog, has been commissioned at Underwater Acoustic Research Facility (UARF), a division of Naval Physical and Oceanographic Laboratory (NPOL), Kochi, at Kulamavu, Idukki. Shri S Kedarnath Shenoy, Director, NPOL inaugurated the new boat. The 9.2 m long, 3.5 m broad and 1.8 m deep boat can carry 10 persons on-board and can cruise at a maximum speed of 7 knots. It will be used as a platform for providing support to various project-related trials of the organisation.



Shri S Kedarnath Shenoy, Director, NPOL, commissioning Jalaprayog

DRDO participates in LAAD—Defence and Security International Expo 2015

Naval Physical and Oceanographic Laboratory, Kochi, participated in Latin America Aerospace and Defence (LAAD)—Defence and Security International Expo 2015 at Rio-de-Janeiro, Brazil, during 14-17 April 2015. The basic aim of this Latin America's premier trade show was to bring together Brazilian and International companies specialising in defence and security arena.

Shri G Chandramouli, OS, Project Director, Akash, Defence Research and Development Laboratory (DRDL), Hyderabad, was part of the Ministry of Defence's



Shri Sameer Abdul Azeez, Sc E, NPOL, Kochi, explaining DRDO products in LAAD Expo

delegation led by Air Marshal BS Dhanoa, AOC-in-C, South Western Air Command, Indian Air Force. Shri Sameer Abdul Azeez, Sc E, NPOL, Kochi, also participated in the expo and demonstrated the NPOL products.

The exhibits included HMS X2, the compact Hull Mounted Sonar System, Underwater Communication System for ships and submarines and Model of Akash missile. The compact nature of HMS X2 sonar was a major attraction and live demonstrations of this product

caught the attention of naval personnel from Africa and Latin America. Besides DRDO, Ordnance Factories Board (OFB), Hindustan Aeronautics Ltd (HAL), Bharat Electronics Ltd (BEL), Bharat Dynamics Ltd (BDL), Mishra Dhatu Nigam Ltd (MIDHANI), Goa Shipyard Ltd (GSL) and Garden Reach Shipbuilders and Engineers Ltd (GRSE) also participated in the expo.

DRDO team interacted with delegations from Brazilian defence services and industries, other foreign countries, and the media.

Raising Day Celebrations

CHES, Hydrabad

Centre for High Energy Systems and Sciences (CHES), Hyderabad, celebrated its 2nd Annual day on 9 April 2015 at Exposition Hall, Research Centre Imarat (RCI), Hyderabad. Dr G Satheesh Reddy, DS, Director, RCI, was the Chief Guest of the function. Shri P Raghvendra Rao, Sc G, Chairman, Organising Committee, welcomed the august gathering and briefed about the various events organised to mark the occasion. Shri Suranjan Pal, OS, Director, CHES, gave a detailed account of the various achievements of CHES in the year 2014.

In his address, Dr Satheesh Reddy emphasised the importance of digital electronic warfare systems (DEWS)

in future warfares and appreciated the work being done by CHES in this field. He also praised the work culture that has been set by CHES and motivated the scientists to keep up the high standards. He presented DRDO Laboratory-level awards to the scientists and staff for their meritorious contributions. Dr Reddy also presented prizes to the winners of various sports and cultural events organised to mark the occasion. Shri JP Singh, Sc G, Chairman Reception Committee, proposed the vote of thanks.

DL, Jodhpur

Defence Laboratory, Jodhpur (DLJ), celebrated its 56th Raising day on 16 May 2015. Shri AK Yadav, Sc G, Chairman Works Committee, welcomed the audience

on the auspicious occasion. A slide show on Defence Laboratory Jodhpur—A Golden Journey down the Memory Lane was presented to show the glimpses of the success stories of the laboratory highlighting the contributions of all directors, officers and staff over the last 56 years.

Dr SR Vadera, OS, Director, DLJ, paid his tribute to the founder of the laboratory Dr DS Kothari, and expressed his gratitude to all former directors, scientists and staff for their outstanding contributions. He elaborated



L to R: Shri PR Rao, Dr GS Reddy, Shri Suranjan Pal and Shri JP Singh during the inaugural function of CHES Raising Day

various scientific and technological development, administration, management and sports activities during the last one year. He also spoke about future technological challenges that laboratory need to work upon.

Dr Vadera also gave various DRDO Laboratory-level awards for the outstanding contributions made by DRDS, DRTC, Admin and Allied category employees of DLJ. Besides, Cash Awards, Commendation Certificates, and mementoes were also presented to the employees who have rendered 25 years of outstanding service in DRDO. A book, Chhadmavarán: Ek Sankshipta Parichay (Camouflage: A Brief Introduction), authored by Smt Saroj Mathur, TO C, was also released on the occasion.



Chhadmavarán: Ek Sankshipta Parichay (Camouflage: A Brief Introduction) being released by Dr SR Vadera (second from right)

Dr Sekaran lays Foundation Stone of CHES's HEL Integration Facility

Dr VG Sekaran, DS, DG, Missiles and Strategic Systems (MSS), DRDO, laid the foundation stone of High Energy Laser (HEL) Integration Facility at the campus of Center for High Energy Systems and Sciences (CHES), Hyderabad. The CHES is mandated to be the centre for the design and development of directed energy system and technology in the country. Shri Suranjan Pal, OS, Director, CHES, Directors of Hyderabad-based sister DRDO laboratories and officers of Chief Construction Engineer (R&D), MES, CDA, also graced the occasion



Dr VG Sekaran, DG (MSS) laying the foundation stone of HEL Integration Facility

PXE re-certified ISO 9001:2008

Proof and Experimental Establishment (PXE), Chandipur, the nation's premier Armament Testing and Evaluation Centre engaged in dynamic evaluation of various armament stores, has been re-certified as ISO 9001:2008 compliance establishment by STQC, Ministry of Communication and Information Technology, GoI. The certificate is valid up to February 2018.

The scope of the certificate is: Proof and evaluation of armament stores through dynamic testing, Acquisition and analysis of data by application of advanced electronics, high speed image processing, RF instrumentations and information technology.



National Technology Day

National Technology Day (NTD) is celebrated all over the India on 11 May every year to commemorate technological breakthroughs by successfully carrying out nuclear tests second time at Pokharan in 1998. The NTD is celebrated as a symbol of quest for scientific inquiry, technological creativity and the translation of that quest in the integration of Science, Society and Industry. This day is also celebrated to honour technological innovations and their successful commercialisation which makes fruits of research reach people at large.

The following DRDO laboratories/establishments also celebrated the NTD by organising technology day orations, special lectures, science exhibitions and other scientific events.

ACEM, Nasik

Shri RK Syal, former Director, DLJ, was the Chief Guest on the occasion. Shri PK Mehta, OS, General Manager, Advanced Centre for Energetic Materials (ACEM), Nasik, in his welcome address highlighted the importance of technology in various fields and urged scientists to implement newer technologies in their area of work to streamline processes with available resources. Shri RK Syal delivered an informative talk on Transfer of Technology in DRDO's Context. Shri TVJ Rao, Sc F, and Shri Trilokinath, Sc C, delivered the NTD orations on development of 5 T Capacity Vertical Planetary Mixer and Development of Solid Rocket Motor for Subsurface Applications, respectively.

ASL, Hyderabad

Advanced Systems Laboratory (ASL), Hyderabad, celebrated NTD with great fervour. Shri Deepak Kumar Mittal, Sc E, delivered NTD Oration on Paradigm Shift in Electrical Integration of Aerospace Vehicles. He demonstrated how changes in conventional methodologies in electrical integration can help to achieve a host of benefits, which are helpful in improving performance of aerospace vehicles. This has been implemented and proven in Agni missile programme.

Dr Tessy Thomas, OS, Director, ASL, presented NTD Medal and Certificate to the orator.



Dr Tessy Thomas, Director, ASL, presenting NTD Oration Certificate to Shri Deepak Kumar Mittal (left)

DESIDOC, Delhi

Shri Sudhanshu Bhushan, Sc D, delivered NTD Oration on Innovation in Scholarly Information and Research Communication Workflow. In his oration, for better communication of scholarly information from its creators, he discussed innovation taking place in the area of research communication workflow from evolutionary and network perspectives. He provided an insight on the innovative tools that changed the research workflow phases; discovery, analysis, writing, publication, outreach, and assessment during the last decade.

DFRL, Mysore

Dr Farhath Khanum, Sc F, delivered NTD oration on Nanotechnology Research in Food and Nutrition: Challenges and Promises. In her talk, she explained potential application of nanotechnology in development of functional food and nutraceutical. She elucidated development of nano emulsions, nano encapsulation techniques, nano biopolymer complex and their use in food science and technology.

An exhibition of technologies and products of DFRL was also organised on the occasion. Students from different colleges and schools and general public visited the exhibition and visualised the achievements of DFRL





Dr HV Batra, Director, DFRL, presenting NTD Oration Certificate to Dr Farhath Khanum

in food processing sector. Various processed food from the laboratory were also served to the general public.

DL, Jodhpur

Addressing on the occasion, Dr SR Vadera, OS, Director, DLJ, emphasised the need to be better aware and confident of our abilities to cross technology barriers so as to become technology leader in the world. Shri Ajay Singh Rathore, Sc F, delivered NTD Oration on Nuclear Radiation Detection and Measurement System.

A technical exhibition featuring products and technologies developed by DLJ, was also organised for the general public. Thirty working science models prepared by students of 11 schools of Jodhpur were also displayed in the exhibition. The best three models were awarded by the Director, DLJ.



Dr SR Vadera, Director, DLJ, interacting with school children in science exhibition organised on National Technology Day

GTRE, Bengaluru

Gas Turbine Research Establishment (GTRE), Bengaluru, celebrated NTD in a felicitous manner. Shri A Manjunath, Sc E, delivered NTD Oration on Manufacturing Technologies for Prototype Fabrication of Expendable Aero Engine for Unmanned Aerial Vehicle Applications. He brought out the processes developed for cold forming of Titanium alloys and welding of critical components made from dissimilar metal combination using electron beam and friction welding. He also highlighted the methods developed for welding inaccessible locations on compressor and radial riveting of combustor.



Shri A Manjunath delivering National Technology Day Oration

HEMRL, Pune

Speaking on the occasion, Dr SN Asthana, OS, Officiating Director, High Energy Materials Research Laboratory (HEMRL), called upon for development of user-friendly ammunition and indigenous products in order to achieve self-sufficiency. Shri RK Tiwari, General Manager, Ordnance Factory, Dehu Road, delivered an invited talk on Managing Sustainable Research and Development. NTD oration was given by Shri RK Kalal, Sc D, on Technique to Measure Heat Flux on Rocket Motor during Static Firings and Data Analysis.

ISSA, Delhi

Shri Anand Prakash, Sc C, delivered NTD Oration on Connectivity Preserving Sensor Node Deployment in Wireless Sensor Network (WSN). He highlighted various sensors and the constraint of energy, processing power and memory in WSN. He brought out the complexity of achieving effective node deployment to achieve maximum coverage in a dynamic WSN considering energy and connectivity of nodes as optimising

parameters. He emphasised various contemporary techniques of optimisation like Ant Colony Optimisation (ACO), SWARM, Teaching Learning-based Optimisation (TLBO), etc., to deal with such kind of problems. The speaker presented Orthogonal TLBO (OTLBO) as an effective optimisation tool and discussed in detail the salient features of this technique and merits of OTLBO over other techniques.

LRDE, Bengaluru

Shri SS Nagaraj, OS, Director, Electronics and Radar Development Establishment (LRDE), inaugurated the celebrations and expounded the importance of the day. Shri Upendra Shankar Pandey, Sc E, delivered NTD Oration on Performance Evaluation of DBF-based Active Array Antenna in Near Field Antenna Test Facility.



Shri US Pandey (right) receiving National Technology Oration Certificate from Shri SS Nagaraj, Director, LRDE

MTRDC, Bengaluru

Shri C Srinivasa Charylu, TO D, delivered NTD Oration on CVD Technique of Carbon Coating on



Shri C Srinivasa Charylu (right) receiving National Technology Oration Certificate from Dr Lalit Kumar, Director, MTRDC

Dielectric Rod. He was awarded NTD Oration Certificate by Dr Lalit Kumar, OS, Director, MTRDC.

NPOL, Kochi

Naval Physical and Oceanographic Laboratory (NPOL), Kochi, celebrated NTD by organising a series of technology-related events. Dr Roshen Jacob, Sc F, delivered the technology day oration on After Fourier Transform...What Next? The oration focused on Fractional Fourier Transform and Wavelet Transform and their applications in Sonar Systems. Shri S Kedarnath Shenoy, Director, NPOL, presented NTD Oration Certificate and Medal to the orator.

As part of the celebration, an invited talk was also organised on Robotic Surgery: Past, Present and Future by Dr TA Kishore, Lead Consultant (Urology) and Transplant Surgeon, Aster Medicity, Kochi. The informative talk was a lucid exposition of the features, benefits and applications of the emerging revolutionary concept of Robotic Surgery with a futuristic outlook.



Dr Roshen Jacob (right) receiving NTD Oration Certificate from Shri S Kedarnath Shenoy, Director, NPOL

R&DE (E), Pune

National Technology Day was celebrated at Research and Development Establishment (Engineers) [R&DE (E)] with scientific fervor. Prof. Rajat Moona, Director General, Centre for Development of Advanced Computing (C-DAC), delivered a talk on Supercomputing: Current Status and Expectations from Next Generation Supercomputing. He explicated the historical, current and future developments of supercomputers in India. He also brought out how supercomputers have changed

the life of people in the near past and how they will in times to come.

Shri Ankit Varshney, Sc C, gave NTD Oration on Coupled Eulerian-Lagrangian Simulation for Capturing Sloshing of Liquids in partially Filled Tanks subjected to Acceleration Fields. Speaking on the occasion, Shri VV Parlikar, Officiating Director, spoke about the relevance of the NTD. He also brought out the importance of supercomputing.



Prof. Rajat Moona, DG, C-DAC delivering talk on National Technology Day at R&DE (E)

SAG, Delhi

Dr G Athithan, OS, Director, Scientific Analysis Group (SAG), Delhi, addressed the SAGians and took

them through the journey of technological feats of ancient world to the current ones. He gave number of motivating examples and exhorted to derive motivation from these. Shri Gurjeet Singh Walia, Sc D, delivered NTD Oration on Binary Code Analysis: Present Practices and Challenges. In his talk he brought out the state-of-the-art techniques for Binary Code Analysis and the tools available for the same. He also highlighted the challenges in this area and proposed a framework for malicious code analysis using discussed techniques.

SASE, Chandigarh

Shri Surinder Singh, Director, Semi-Conductor Laboratory, Mohali, the Chief Guest of the function, delivered presentation on Indigenous Space Technologies and discussed the journey of Indian Space Research Organisation (ISRO) in developing indigenous technology for various satellite launch vehicles and satellite sensors. He discussed the technological bottlenecks of many important indigenous missions of ISRO including 'Chandrayan' and 'Mars Mission'.

Shri Neeraj Sharma, Sc D, presented his technical work on IR Proximity Snow Depth Sensor for Automated Snow Depth Measurement. He discussed the advantages of newly developed IR-based snow depth sensor over old snow depth sensors based on ultrasonic technology.

DMRL organises Eye Check-up Camp

The Works Committee, Defence Metallurgical Research Laboratory (DMRL), Hyderabad, organised a free Eye Check-up camp during 16-18 April 2015 for the benefit of DMRL employees. The camp was organised with the help of Swarup Eye Centre, Chapel Road, Hyderabad, a CGHS empaneled hospital. The camp was inaugurated by Dr Amol A Gokhale, DS and Director, DMRL.

Dr Amol Gokhale, Director, DMRL, getting his eyes checked in Eye Check-up camp at DMRL



Manpower Development Activities

Conferences/Seminars/Symposia/Training Courses/Meetings

Workshop on Characterisation of HEL Beam Propagation

An Indo-US Workshop on Characterisation of HEL Beam Propagation was organised by **Centre for High Energy Systems and Sciences (CHESS)**, Hyderabad, during 21-23 April 2015. The US side comprised distinguished Prof. Dr BN Agarwal from National Post Graduate School (NPS) and Dr (Ms) Sarwat K Chappell. The Indian side was led by Shri Suranjan Pal, OS, Director, CHESS and comprised representatives from sister DRDO labs Instrument Research and Development Establishment (IRDE), Laser Science and Technology Centre (LASTEC) and NPOL, the academia Galgotia College of Engineering and Technology, Jadavpur University and other national institutes like National Atmospheric Research Laboratory. Dr VG Sekeran, DS, DG (MSS), DRDO chaired the concluding session and was given a detailed briefing on the outcome of the workshop.



Workshop on Characterisation of HEL Beam Propagation in progress at CHESS

Special Course on Quality Fundamentals

A special course on Quality Fundamentals was organised jointly by **Defence Electronics Application Laboratory (DEAL)**, Dehradun, **Directorate of Quality Reliability and Safety (DQRS)**, DRDO HQ and **Bharat Electronics Quality Institute**, Bengaluru, during 20-22 April 2015. The course was inaugurated by Shri RC Agarwal, OS, Director, DEAL, and Commodore (Retd)



Faculty-Participants interaction during the special course on Quality Fundamentals at DEAL

SK Patel, Director, DQRS. Thirty participants from DEAL and IRDE attended the course. The course covered quality basics, reliability and maintainability, seven basic QC tools, awareness to ISO 9001:2008, AS 9100 Rev. C and ISO 14001:2004, introduction to six sigma, LEAN and CII Exim business excellence.

CEP on Advances in Non-Destructive Evaluation of Materials: Concepts & Applications

A course on Advances in Non-Destructive Evaluation (NDE) of Materials: Concepts and Applications was conducted under DRDO's Continuing Education Programme (CEP) during 9-11 March 2015 by **Defence Metallurgical Research Laboratory (DMRL)**, Hyderabad. Dr K Gopinath, Sc F, the Course Director, gave a brief introduction about the course. Dr Amol A Gokhale, DS, Director, DMRL, welcomed the participants. Prof. Krishnan Balsubramanian of IIT Madras, delivered the keynote address.

Thirty-one participants from various DRDO laboratories attended the programme. The lectures were delivered by eminent speakers chosen from IIT Madras and IIT Ropar, DRDO and Nuclear Fuel



Dr Amol A Gokhale, Director, DMRL, addressing the participants at CEP on Advances in Non-Destructive Evaluation of Materials: Concepts and Applications at DMRL

Complex, Hyderabad. The course included lectures on various advanced NDE techniques such as Advances in Imaging Technology and Ultrasonics, Infra-red Thermography, Acoustic Emission and Eddy Current, etc. Topics on microstructural characterisation using ultrasonics, NDE of composites and Non-Destructive Testing (NDT) modelling were also covered. The lab visits to DMRL, ASL and DRDL were also organised to enable the participants to have practical glimpses on various NDE techniques and their applications.

Course on DO-178B

A five-day course on DO-178B Guidelines for Airborne Software Development was held at **Gas Turbine Research Establishment (GTRE)**, Bengaluru, commencing from 18 March 2015. The objective of the course was to strengthen the engine control system



Shri Sreelal Sreedhar, Sc G, addressing the participants during the inaugural ceremony of course on DO-178B at GTRE

development team leading to airworthiness certification of critical engine control software. The faculty comprised experts from M/s Pinaka Aerospace Private Limited, certified by CEMILAC, DRDO.

Twenty-two participants were trained for various phases of software development, planning, verification, change control, configuration management, quality assurance, etc.

Workshop on Power Sources Technologies

Research Centre Imarat (RCI), Hyderabad, organised a workshop on Power Sources Technologies pertaining to defence, aero and spin-off to civil applications during 28-29 April 2015. Dr G Satheesh Reddy, DS, Director, RCI, inaugurated the workshop and released the Newsletter, Power DAC—Sleek Power. Dr Reddy suggested that Newsletter should serve as an effective medium of communication between R&D, industry and institutions for development of new battery technology. A number of technical discussions were held on various power source/energy storage systems. A panel discussion was also held under the chairmanship of Prof. AK Shukla, Indian Institute of Science, Bengaluru, on advancements in battery technology and developments of power source system. Shri K Rambabu, Sc G, Technology Director, DSST, RCI, was the Chairman and Dr TS Balasubramanian, Sc E, was the Convenor of the workshop.

Workshop on Creative Problem Solving

A two-day workshop on Creative Problem Solving was organised during 20-21 April 2015 by **Research and Development Establishment (Engineers) [R&DE (E)]**, Pune, for DRTC Cadre. Twenty-eight participants attended the workshop. The participants were introduced to creative thinking tools like brainstorming, reverse brainstorming and mind mapping. The participants were also made aware of tools, which can be used to evaluate and select the appropriate solution such as pros and cons list, force field analysis, cost-benefit analysis and capability feasibility analysis.

Dr S Guruprasad, OS, Director, R&DE (E), gave away the certificates to the participants during the valedictory function.

National Fire Services Week Celebrations

DMRL, Hyderabad

Defence Metallurgical Research Laboratory (DMRL), organised Safety Awareness Campaign Week during 2-4 March 2015. On this occasion, safety badges were distributed to all employees and first aid posters were distributed to all groups of DMRL. Various competitions like essay writing, quiz and poster contest on Safety, Health and Environment were organised in which employees participated enthusiastically. Five lectures on Fire, Electrical, Chemicals, Explosives, and Industrial Safety were delivered by trained safety officers for the benefit and awareness of the employees. An open forum quiz on safety was arranged by Shri R Guruprasad, Sc F, and on the spot prizes were given.

The 44th Annual Safety Day was celebrated on 4 March 2015. Dr SV Kamat, OS, presided over the function. Shri MAH Baig, Sc G, Chairman, Safety Committee, delivered the welcome address and briefly presented the safety related measures undertaken during the last one year. Shri B Narahari, President, DEFMETLAB Workers' National Union and Shri B Malla Reddy, Vice Chairman, Works Committee, also addressed the gathering. Dr Kamat and Shri

Baig distributed the prizes to the winners of various competitions. A popular lecture on Risk Assessment of Workplace Practices by Shri V Rajkumar, Scientist, Safety Engineering Division, Defence Research and Development Laboratory (DRDL), Hyderabad, was also organised to mark the occasion.

On 10 March 2015, a training-cum-demonstration on first aid by Shri Uma Sankar, CEO, Sorig Medica, Hyderabad was conducted covering topics of basic first aid techniques, Cardio Pulmonary Resuscitation (CPR), wounds cuts and bleeding, handling serious injuries and snake/animal bites. Dr Amol A Gokhale, DS, Director, DMRL, along with other officers and staff attended this programme enthusiastically.

ITR, Chandipur

Integrated Test Range (ITR), Chandipur, celebrated National Fire Services Week during 14-20 April 2015. Shri MV Bhaskarachary, Officiating Director, ITR, inaugurated the function and emphasised on the need of Fire Safety Awareness at home and work place. Shri RK Behera, Chairman, Safety and Environmental Committee, ITR, highlighted the up-gradation of the fire safety measures in the Range Technical Area and Launch Complexes. Shri PC Routray, Chairman, Range Safety Council, ITR, highlighted the emergency preparedness and Response by the Fire Safety Group to mitigate any type of emergency during mission and launch campaign period. Training on first aid and fire fighting appliances was given to the employees during the week in all workcentres of ITR and LC-IV, Dhamra.

A lecture session on Fire Safety Management in a Defence Establishment by Prof. SK Pati, Institute of Fire Safety, Cuttack, was also organised. Shri PK Nayak, Officer-in-Charge, Fire Safety, was the Programme Coordinator. Dr SK Sahu presented the vote of thanks.



Dr SV Kamat, Outstanding Scientist, addressing the audience on the occasion of Safety Day celebrations

Dr BR Ambedkar Birth Anniversary Celebrations

CAIR, Bengaluru

Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru, celebrated Dr BR Ambedkar's 124th Jayanthi on 14 April 2015. The function started with a welcome address by Shri Philip Abraham, Sc F. Shri Sanjay Burman, OS, Director, CAIR, also addressed the gathering. This was followed by a documentary film on Indian Constitution.

DMRL, Hyderabad

Defence Metallurgical Research Laboratory (DMRL), Hyderabad, celebrated Baba Saheb Dr BR Ambedkar and Babu Jagjivan Ram Jayanti on 22 April 2015 at Tamhankar Auditorium. Dr Amol A Gokhale, DS, Director, DMRL, was the Chief Guest while Shri Sathish Chandar, Director, AP Collage of Journalism, Hyderabad, was the Guest of Honour. Thirteen-year-old youngest girl Everester M Purna and her fellow S Anand Kumar (17) were the Special Invitees on the occasion.

Shri M Sathyanarayana, President and Shri J Anil Kumar, General Secretary of DMRL SC/ST Employees Welfare Association welcomed the august gathering. Dr G Appa Rao, Sc G, Liaison Officer, DMRL, highlighted the tireless efforts of Dr BR Ambedkar and Babu Jagjivan

Ram to alleviate disparities in the society to accomplish national integrity and prosperity.

Miss Purna and Master Anand Kumar shared their experiences of scaling of the Mount Everest and mentioned the importance of mental courage and dedicated efforts in achieving the targeted goals in life. Dr Amol Gokhale, in his address, chronicled the various facets of life of Dr BR Ambedkar and Babu Jagjivan Ram covering their education, political career and their social contributions to the society. Shri Sathish Chandar gave a lucid speech and elucidated the ideologies of Dr Ambedkar and Babu Jagjivan Ram towards betterment of the social and economical stature of people of India.

GTRE, Bengaluru

Gas Turbine Research Establishment (GTRE), Bengaluru, celebrated the 124th Birth Anniversary of Dr BR Ambedkar on 17 April 2015 in a felicitous manner. Dr CP Ramnarayanan, OS, Director, GTRE, presided over the function. Shri D Thangaraj, IAS (Retd), was the Chief Guest of the occasion and Dr D Raju, IFS, Managing Director, Karnataka Handloom Development Corporation was the Special Guest.

Shri D Thangaraj and Dr D Raju, in their address accentuated how Baba Saheb's initiatives influenced country's socio-economic and political spheres.



Dr Amol A Gokhale (left), Director, DMRL presenting memento to Shri Sathish Chandar, Director, AP Collage of Journalism, Hyderabad, on the occasion of Ambedkar Jayanti



L to R: Shri D Thangaraj, IAS (Retd), Dr CP Ramnarayanan, Director, GTRE, and Dr D Raju, Managing Director, Karnataka Handloom, inaugurating the Ambedkar Jayanti function at GTRE



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Visitors to DRDO Labs/Estts

CAIR, Bengaluru

Major General JS Negi, YSM, VSM, ADG MO (IW), and team visited Centre for Artificial Intelligence and Robotics (CAIR), on 10 April 2015. Shri Sanjay Barman, OS, Director, CAIR, briefed the visitors about the ongoing projects at CAIR. Network and Cyber Security technologies developed by CAIR were also demonstrated to the visitors.



Dr Subrata Rakshit, Sc G, CAIR, giving briefing on technologies developed by CAIR to Maj Gen JS Negi

DEAL, Dehradun

Air Marshal SS Soman, PVSM, AVSM, VM, ADC, AOC-in-C, HQ WAC, visited Defence Electronics Application Laboratory (DEAL), on 5 May 2015. He was apprised of various projects, e.g., Rustom 2, Software Defined Radio, GSAT-6, Integrated Coastal Surveillance System, Troposcatter Communication for IAF, etc.



Air Marshal SS Soman, being briefed about the Software Defined Radio project by Shri RC Agarwal, Director, DEAL

DESIDOC, Delhi

Dr Manas K Mandal, DS, DG (Life Sciences), DRDO, visited Defence Scientific Information and Documentation Centre (DESIDOC), on 18 May 2015. He was taken around the Defence Science Library by Shri Ashok Kumar, Officiating Director, DESIDOC.



Dr Manas Mandal (centre) showing keen interest in books displayed at Defence Science Library, DESIDOC

DMRL, Hyderabad

- ✂ Shri Bandaru Dattatreya, Minister for Labour and Employment (Independent Charge), Government of India, visited DMRL on 5 March 2015.
- ✂ Lt Gen PR Shankar, VSM, Director General, Artillery, visited DMRL on 24 March 2015



Dr Amol A Gokhale (right), Director, DMRL, showing DMRL products and technologies to Lt Gen PR Shankar

