

# DRDO NEWSLETTER

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**LCA Navy Prototype (NP 1)  
achieves Milestone**

# Visitors to DRDO Laboratories/Establishments

## ADE, Bengaluru

Air Marshal PP Reddy, VM, Chief of Integrated Defence Staff (CISC), visited Kolar Air field on 8 November 2014. Shri P Srikumar, OS, Director, Aeronautical Development Establishment (ADE), briefed the guest about the UAVs developed at ADE. Air Marshal PP Reddy witnessed the flight of Rustom I and taxi trials of Panchi and Rustom II UAVs.

Air Marshal PP Reddy in the Ground Control Station



## ARDE, Pune

Lt Gen SH Kulkarni, PVSM, AVSM, VSM, DGMF, visited Armament Research and Development Establishment (ARDE), Pune, on 29 October 2014. Presentations were given to him on various projects at ARDE related to Mechanised Forces.

Lt Gen Kulkarani (left) being briefed about the project activities at ARDE by Dr KM Rajan, OS, Director, ARDE



## DL, Jodhpur

Lt Gen RM Mittal, Commandant, CME, Pune, visited Defence Laboratory, Jodhpur (DLJ) on 27 November 2014. Dr SR Vadera, OS, Director, DLJ briefed the visitor about Core Competence, Technical Infrastructure, Technical Activities and Achievements of the laboratory. Lt Gen RM Mittal visited various technical facilities of the laboratory and was briefed about the technical activities at DLJ. He took keen interest in the various technical activities being carried out by the scientists of the laboratory specifically in the field of Camouflage and Desert Environment Science and Technology.

Lt Gen Mittal (left) being briefed about a project at DLJ



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## Navy Prototype of LCA tested Successfully

It was a defining moment when light combat aircraft (LCA) Navy Prototype 1 (NP 1), the first indigenously designed and developed 4<sup>th</sup> plus generation combat aircraft designed to operate from the decks of aircraft carriers, took-off majestically from Ski-Jump Facility of Shore-Based Test Facility (SBTF) at INS Hansa in Goa on 20 December 2014. Piloted by Cdre Jaideep Maolankar, Chief Test Pilot, National Flight Test Centre, Bengaluru, the aircraft had a perfect flight with results matching the predicted ones to the letter. The launch was orchestrated by Cdr JD Raturi, Test Director, and Safety Pilot Capt Shivnath Dahiya, and was supported by Gp Capt Anoop Kabadwal, Gp Capt RR Tyagi and Lt Cdr Vivek Pandey. The readiness and availability of aircraft for the event was made possible through the relentless effort of Hindustan Aeronautics Limited, Aircraft Research and Development Centre, under the aegis of Shri PS Roy, the Executive Director.

Dr Avinash Chander, Scientific Advisor to Raksha Mantri (SA to RM), Secretary, Department of Defence Research and Development and DG DRDO congratulated the team LCA Navy and said, "With today's copybook flight of LCA Navy from the land-based ski-jump facility, we see our own indigenous combat aircraft soon flying from the decks of our aircraft carriers." Dr Tamilmani, Distinguish Scientist (DS), DG Aeronautics, DRDO, also lauded the execution of complex task of ski jump of NP 1.

LCA Navy is designed with stronger landing gears to absorb forces exerted by the ski jump ramp during take-off to be airborne within 200 m as against 1000 m required for normal runways. It's special flight control law mode allows hands-free take-off relieving the pilot workload, as the aircraft leaps from the ramp and automatically puts the aircraft in an ascending trajectory. The maiden successful, picture perfect launch of NP 1 from ski jump at SBTF is a testimony to the tremendous efforts put in by scientists and engineers to design the LCA Navy, its simulator (that helps pilots to know well



LCA Navy ski-jumps from Shore-based Test Facility

in advance how the aircraft will behave on ski jump), and the flight test team that timed the whole event to near perfection. The remarkable feat is the culmination of several years of design, flight test, simulation and management efforts of LCA Navy programme team with significant contributions from a number of DRDO laboratories. The teams were ably supported by the certification agency, Centre for Military Airworthiness and Certification (CEMILAC), Bengaluru, and the quality assurance agency, CRI (LCA). INS Hansa, the Naval Air Station, played the perfect host to achieve this significant milestone. The design teams, guided by Shri PS Subramanyam, DS, Programme Director, ensured that all the systems meet the stringent requirements of carrier borne aircraft. Cmde CD Balaji (Retd), Project Director LCA (Navy) and its Chief Designer, has been at the helm of affairs right from the concept phase. The team, led by Dr Amitabh Saraf, indigenously achieved the flight control laws that take care of the problems encountered by a fly-by-wire aircraft undertaking a ski jump launch.

The SBTF has been created to replicate the aircraft carrier with a ski jump for take-off and arresting gear cable for arrested landing by ADA with the participation of the Indian Navy, Goa shipyard, CCE (R&D) West, Pune, Research and Development Establishment (Engg), Pune, and the Russian agencies who provided the design support and specialised equipment.

## Parachute System for Recovery of Mission Crew Capsule tested with GSLV

The successful launch of Geosynchronous Satellite Launch Vehicle (GSLV) Mk 3 by Indian Space Research Organisation (ISRO) from Sriharikota on 19 December 2014 to validate Moon Mission Crew Capsule Recovery system equipped with advanced parachute system designed and developed by Aerial Delivery Research and Development Establishment (ADRDE), an Agra based lab of DRDO, proved the efficacy and reliability of the parachute system. The parachute deployment system functioned perfectly and achieved the required descent rate. ISRO has expressed happiness and thanked ADRDE and DRDO for the support.

ADRDE is the premier DRDO laboratory, one of its kind in the country, specialising in design and development leading to production of para drop systems for a comprehensive range of military applications. A large number of such systems include combat free fall system, heavy drop systems, P 7 and P 16, capable of aerial delivery of payloads up to 7 tons and 16 tons, respectively.



Crew Capsule Recovery System

## 1000 kg Class Indigenous Guided Glide Bomb tested

A 1000 kg class glide bomb designed and developed by DRDO was successfully tested on 19 December 2014 off the coast of Odisha. The bomb, dropped by an Indian Air Force aircraft, was guided by its on-board navigation system and glided nearly 100 km before hitting the target with precision. The flight of the glide bomb was monitored by radars and electro-optic systems stationed at Integrated Test Range (ITR), Chandipore.

Multiple DRDO laboratories, namely, Defence Avionics Research Establishment (DARE), Bengaluru, Armament Research and Development Establishment (ARDE), Pune and Terminal Ballistics Research Laboratory (TBRL), Chandigarh, with Research Centre

Imarat (RCI), Hyderabad as the nodal laboratory, contributed towards development of the bomb. The complete avionics package and navigation system has been designed and developed by RCI.

Dr Avinash Chander, SA to RM congratulated all the team members including the Air Force team who have contributed in the success. "The nation today has capability to design, develop and launch heavy bombs for delivery up to 100 km away with high precision" said Dr Avinash Chander. Dr G Satheesh Reddy, DS, Director, RCI, commenting on the successful test said that country has now become self-reliant in the area of guided precision bombs.

## DRDO wins Thomson Reuters India Innovation Award-2014

DRDO, India's premier military weapon developer, has been once again awarded the prestigious Thomson Reuters India Innovation Award-2014 in category of "Research Institutions". Shri Avinash Kumar, Additional Director, Directorate of Extramural Research and Intellectual Property Rights, DRDO HQ, received the award on behalf of DRDO at a function held in Mumbai on 12 December 2014. The award was adjudged on the basis of patents filed, efficiency and effectiveness of research, the impact of innovations as measured by patent citations and international competitiveness. DRDO had also won the Thomson Reuters India Innovation Award-2011 in the category of "Hi-Tech Academic and Government Institution".



Shri Avinash Kumar (left) receiving the award on behalf of DRDO

DRDO is dedicated towards enhancing self-reliance in defence systems and undertakes design and development of world-class weapon systems and equipment in accordance with the express needs and qualitative requirements of the three services and leading them to production with industry. DRDO has been working in various areas of military technology including aeronautics, armaments, electronics, combat vehicles, engineering systems, instrumentation,

missiles, advanced computing and simulation, special materials, naval systems, life sciences, training and information systems and has generated cutting-edge defence technologies covering various disciplines over the years. The innovation has been integral part of DRDO's R&D efforts, which have led to the current IPR portfolio of around 1600 including patents, copyrights, trademarks and designs. It has also provided ample spin-off benefits to the society by allowing some of its technologies released for civilian applications.

## DIHAR bags National Institutional Award

Defence Institute of High Altitude Research (DIHAR), Leh has been conferred National Institutional Award for the year 2014 by the Ministry of Agriculture, Government of India, for its outstanding contribution in poultry science in high altitude area of Ladakh region at a function held at Central Poultry Development Organisation (CPDO), Chandigarh.

The award was conferred by Prof. (Dr) Ajay Kumar Gahlot, Vice Chancellor, Rajasthan University of Veterinary and Animal Science, Rajasthan, at an exclusive function during National Seminar at CPDO (NR), Chandigarh on 12 December 2014. Dr RB Srivastava, OS, Director, DIHAR received the award.

The award was bestowed in recognition of research & development on Normobaric Hatchery Technology for improving hatchability in high altitude area, setting up of thermally controlled multitier poultry rearing system, which has proved to be an extremely effective poultry rearing in extreme cold climatic conditions of Ladakh, and motivating local poultry farmers into mainstream of development through formation of Ladakh Poultry Farmers Society. The endeavour of DIHAR has boosted poultry farming in Ladakh region considerably, bringing socio-economic development in the region, building strong civil-military affiliation and boosting availability of fresh broiler chicken to Army.

## SA inaugurates National Centre of Cardiology and Internal Medicine in Kyrgyz Republic

Dr Avinash Chander, SA to RM, Secretary, Department of Defence Research and Development and DG, DRDO, inaugurated Computed Tomography Scanner worth \$ 1.2 million donated by the Government of India to National Centre of Cardiology and Internal Medicine (NCCIM), Kyrgyz Republic, on 27 October 2014. Mrs Paiza Usenbaeva, State Secretary of the Ministry of Health, Ms Jumugulova Ainagul, Director, NCCIM and Dr Akapay Sarybaev, Director, Kyrgyz-Indian Mountain Biomedical Research Centre (KIMBMRC), were present during the inaugural function.



Dr Avinash Chander inaugurating the NCCIM

Shri Jayant Khobragade, Ambassador of India to the Kyrgyz Republic, Dr Manas K Mandal, DS, DG (Life Sciences), DRDO, and Dr (Mrs) Shashi Bala Singh, Outstanding Scientist (OS), Director, Defence Institute of Physiology and Allied Sciences (DIPAS), Delhi, were among the eminent persons

from Indian side present during the occasion. NCCIM has been cooperating with DIPAS for a number of years. KIMBMRC was established in 2009 to carry out joint research on high altitude physiology and biochemistry by both the countries.

## RCMA certifies Aviation Turbine Fuel

Aviation turbine fuel (ATF) is single largest and critical consumable in any aircraft for providing propulsive power. It plays significant role in military aircraft and requires stringent evaluation. Centre for Military Airworthiness and Certification (CEMILAC) is entrusted for airworthiness certification of ATF produced by various refineries.

Shri S Jayapal, Chief Executive (Airworthiness), CEMILAC, issued and handed over the Type Approval Certificate to M/s HMEL Refinery for ATF production by utilising state-of-the-art Merox and hydrotreater process. Dr Shirish S Kale, Regional Director, RCMA, Foundry and Forge-Fuel Oil Lubricants (F&F-FOL), handed over technical certificate to Vice President (Refinery), HMEL, at Bathinda on 13 October 2014. Extensive qualification tests for crude oil characterisation, ATF qualification



Shri S Jayapal (left) handing over type approval certificate to representatives of HMEL Ltd

based on physico chemical, performance requirements and its material compatibility, verification of additives compatibility with ATF and effects on service properties before and after doping were ensured. After fulfilling the qualification requirements and successful feedback from IAF, Type Approval was accorded by RCMA (F&F).

## CSI honours Dr G Satheesh Reddy

Dr G Satheesh Reddy, DS, Director, Research Centre Imarat (RCI), Hyderabad, has been given the Honorary Fellowship of the Computer Society of India (CSI) during its Annual Convention and Golden Jubilee Celebrations in Hyderabad on 13 December 2014. Shri KT Rama Rao, hon'ble Minister for Information Technology and Panchayatraj, Government of Telangana, presented the award to Dr Satheesh Reddy.

Dr Reddy received the award for his outstanding contribution to the growth of computers, information technology, and his leadership in designing and developing a wide range of on-board mission computers, navigation computers, and miniaturised high-speed computers based on System-on-Chip for a variety of DRDO-developed missiles including the Agni series. He has also led the development of real-time mission software for missiles and has initiated important development projects, including high-speed avionics, for indigenous missiles.

Established in 1965, CSI takes pride in being the largest and most professionally managed association of and for IT professionals in India. The purposes of the Society are scientific and educational directed towards the advancement of the theory and practice of



Dr Reddy (left) receiving the honorary Fellowship

computer science and IT. The organisation has grown to an enviable size of 73 Chapters and 100,000 strong members consisting of students and professionals with varied backgrounds including software developers, scientists, and academicians.

Dr Reddy is one of the 11 distinguished personalities from India and abroad to receive the prestigious Fellowship. Shri N Chandra Babu Naidu, Shri SM Krishna, Shri Ratan Tata, Prof. Yash Pal and Prof. MGK Menon are among the eminent persons who have been bestowed the Fellowship in the past 22 years.

## IIM confers Life Membership to Dr Arvind Bharti

Indian Institute of Metals (IIM), one of the finest professional bodies of the world, conferred its Life Fellowship to Dr Arvind Bharti, Director, Cluster Coordination, DRDO HQ, on the 52<sup>nd</sup> National Metallurgist Day held on 14 November 2014 at Pune. IIM is devoted to promotion and advancement in the study, practice and research of Metallurgical Science and Technology. Dr Bharti received the Fellowship from Dr RN Patra, Chairman and Managing Director Indian Rare Earth Limited and the President of IIM.



Dr Bharati (left) receiving the Life Fellowship



## Raising Day Celebrations

### DRL, Tezpur

Defence Research Laboratory (DRL), Tezpur, celebrated its 52<sup>nd</sup> Raising Day on 21 November 2014. Dr Vijay Veer, Director, DRL, welcomed the august gathering and delivered the welcome address highlighting the achievements of the laboratory. Prof. (Dr) NC Bhattacharyya, Principal, Tezpur Medical College, Assam, graced the function as the Chief Guest. Laboratory-level DRDO Awards, Certificates and SN Dube Publication Award for two best papers were also distributed on the occasion. A colourful cultural programme was organised to mark the occasion. Prizes were distributed to the winners of sport events and artists of the cultural programme. The programme ended with a community lunch for guest, staff and their families.



Dr Vijay Veer delivering Raising Day address

of the laboratory and outlined the near future activities. He highlighted the unprecedented achievements of the laboratory and its employees in getting several DRDO Awards in a single year and also highlighted the other honours received by the scientists of the laboratory. Dr Gokhale stressed on a more systematic approach to projects, so as to minimise uncertainties during their execution. He ended his address by saying that self-motivation and team spirit among the employees will enable the lab to achieve much more than its mandate.

Prof. Reddy, in his address, praised the past and present achievements of the laboratory. He recounted his past association with DMRL during his tenure as the Vice Chancellor of JNTU, Hyderabad. Prof. Reddy also highlighted the excellent and consistent output of the laboratory in terms of scientific publications.

Dr Gokhale distributed mementoes and certificates to the employees who completed 20 years of dedicated service to the organisation. DRDO laboratory-level Awards, Cash Awards and Awards for sports and cultural events were given by Dr AK Gogia, OS, Associate Director, Dr AK Mukhopadhyay, OS and Dr A Ananda Rao, Sc G.

An entertaining cultural programme was also organised to mark the occasion. Shri A Satyanarayana, Sc D, Co-Chairman Steering Committee, proposed the vote of thanks.

### DMRL, Hyderabad

Defence Metallurgical Research Laboratory (DMRL), Hyderabad, celebrated its 51<sup>st</sup> Raising Day on 21 October 2014. Prof. DN Reddy, Chairman, Recruitment and Assessment Centre (RAC), DRDO, Delhi, was the Chief Guest on the occasion. Dr A Chakraborty, Chairman, Raising Day Steering Committee, gave a rousing welcome to the dignitaries, guests, employees and their families. Dr Amol A Gokhale, DS, Director, DMRL, in his address retraced the recent achievements



Dignitaries on the occasion of Raising Day of DMRL



# डीआरडीओ न्यूज़लेटर

## GTRE, Bengaluru

Gas Turbine Research Establishment (GTRE), Bengaluru, celebrated its 55<sup>th</sup> Raising Day in a befitting manner on 7 November 2014. Dr K Tamilmani, DS, DG (Aero) was the Chief Guest on the occasion. Smt Santhosam Tamilmani and Smt Lakshmi Ramanarayanan, were the Guests of Honour and Ms J Manjula, OS, Director, Defence Avionics Research Establishment (DARE), Bengaluru, was the Special Invitee. Dr CP Ramanarayanan, OS, Director, GTRE, highlighted the achievements of the establishment during last year and said that one must make it a point to attain experience in the fields of material management and administration also.

Dr K Tamilmani, in his address, stressed upon the inescapable need for indigenisation of gas turbine engine. He brought out the need to set-up advanced test facilities within the country and establish excellent industrial relationship to best utilise the available in-house resources. On this occasion, GTRE's Small Turbo Fan Engine was christened 'Manik' and lab-level DRDO awards were given to the meritorious employees.

## MTRDC, Bengaluru

Microwave Tube Research & Development Centre (MTRDC), Bengaluru, celebrated its 30<sup>th</sup> Foundation Day on 30 October 2014. Vice Admiral KR Nair, AVSM,



Dr Nayak (third from left) releasing the MTRDC Product Brochure

VSM, Chief of Materials, was the Chief Guest and Shri MM Handa, Director, Bharat Electronics Limited (BEL), was the Guest of Honour for the celebrations.

Dr Lalit Kumar, OS, Director, MTRDC, welcomed the august gathering and highlighted the major achievements in the year particularly the breakthrough in Multibeam Klystron Technology. Dr KD Nayak, DS, DG (MED, CoS and CS), DRDO, also graced the occasion and released MTRDC Product Brochure.

Vice Admiral Nair in his address appreciated the achievements of MTRDC and stressed upon the indigenisation of the DRDO products and the synergy between MTRDC and BEL. Shri Handa released the 3<sup>rd</sup> volume of compendium of research papers to mark the occasion.



L:R Shri NS Jonathan Joshua, Smt Lakshmi Ramanarayanan, Dr CP Ramanarayanan, Dr K Tamilmani, Smt Santhosam Tamilmani, Ms J Manjula and Shri Ramesh Murthy at the Raising Day inaugural function of GTRE



Dr Nayak presented various laboratory-level DRDO Awards to meritorious personnel and sports awards to the winners of the sports events organised to celebrate the occasion. Meritorious students of MTRDC employees were also awarded. The function concluded with a colourful cultural programme by the employees and their children. Dr Sudhir Kamath, Sc G, proposed the vote of thanks.

## SAG, Delhi

SAG celebrated its 51<sup>st</sup> Raising Day on 21 November 2014. Dr KD Nayak, DS, DG (MED, CoS and CS) was the Chief Guest of the inaugural function. Shri AG Apte, Chairman, National Technical Research Organisation (NTRO), New Delhi, was the Guest of Honour on the occasion. The invitees included Chief Controllers (R&D), DRDO, Directors from sister labs., Corporate Directors, industry partners and members of CPC. Former SAG members also joined in the



Shri Apte inaugurating the Raising Day by lighting the lamp

celebrations. Meritorious employees of SAG were awarded DRDO laboratory-level and cash awards. Sports events were also organised to mark the occasion. The function concluded with a cultural show organised by staff and officers of SAG.

## DIHAR establishes Base Laboratory at Chandigarh

Defence Institute of High Altitude Research (DIHAR), Leh, has established a new base research laboratory at Chandigarh. The laboratory was inaugurated by Dr Manas K Mandal, DS, DG (Life Sciences), DRDO HQ, on 11 December 2014. The laboratory will undertake research in the areas of nanoscience, plant and animal biotechnology, non-conventional energy, biodefence, germplasm conservation and cognitive science.



Dr Mandal (right) and Dr Srivastava inaugurating the base lab of DIHAR

approaches to augment human performance. He also appreciated the achievements of DIHAR and their impact on soldier and society in Ladakh region. Dr Mandal emphasised that meeting the requirements of the soldiers and society at large required not only scientific vision, but the ability and capability of transforming that vision into reality.

In his inaugural address, Dr Manas Mandal apprised that the laboratory would be the first DRDO Centre for young scientists and common centre for Life Sciences Cluster, which would work on interdisciplinary

Giving an overview of laboratory's activities, Dr RB Srivastava, OS, Director, DIHAR, said that the Chandigarh Centre would not only enable research activity round the year, which were hampered in Leh during winters due to the harsh climate and inaccessibility, but also enhance collaboration and interaction with other research and academic institutions in the region.

## Manpower Development Activities

Conferences/Seminars/Symposia/Training Courses/Meetings

### CEP on Technologies for Military Networking

**Centre for Artificial Intelligence and Robotics (CAIR)**, Bengaluru, conducted a course on Technologies for Military Networking—Future Trends under the Continuing Education Programme (CEP) of DRDO during 13-17 October 2014. The CEP was attended by 27 participants including two from BrahMos Aerospace Pvt Ltd and one from SPIC, Delhi.

The course started with an introductory talk by the Course Coordinator, which was followed by the lectures on disadvantaged networks, disruption tolerant networks, software defined networking, ad hoc networking, network dynamics, network management, NW QOS, etc. The course dealt with various aspects of Military and Civilian networks especially the Tactical network and communication Middleware for tactical networks. Demonstration of network management and network simulation tools was also included. Some faculty/mentors suitably augmented their presentations with video to cover the topics being dealt with. Two talks from the industry and one from the academia featured in the CEP.

### CEP on Network Security

**Centre for Artificial Intelligence and Robotics** also organised a CEP on Network Security during 27-31 October 2014. Seventeen participants, including two from Aeronautical Development Establishment (ADE), Bengaluru and Defence Laboratory Jodhpur (DLJ) attended the course. Shri AV Sahadevan, Sc F and Course Coordinator explained the objective of the course, which aimed at providing insight into different aspects of network security to DRDO scientists.

Thirty lectures on Network Security were delivered during the course. The topics covered include: trustworthy computing to build secure networks, guarantees against distributed denial-of-service (DDoS) attacks and defences, secure routing in wired and

wireless networks, secure broadcast authentication and signature, etc. The course was interactive and all the talks were appreciated by the participants.

### Invited Talk on Airworthiness certification of LCA

As part of the Memorandum of Understanding (MoU) between the Ministry of National Defence of the Republic of South Korea and the Ministry of Defence of India concerning the research and development collaboration on Airworthiness Certification Cooperation, Shri M Peter Arun, Sc F, **Centre for Military Airworthiness and Certification (CEMILAC)**, Bengaluru, delivered an invited talk on Airworthiness Certification of the Indian Light Combat Aircraft Tejas for Initial Operation Clearance at International Military Airworthiness Certification Conference 2014 in Seoul, South Korea.

The conference was hosted by the Certification Planning Division of Defence Acquisition Program Administration, the military airworthiness certification authority of the Republic of South Korea. The conference was attended by participants from US, UK, Germany, Italy, Czechoslovakia, Australia, Iraq, Peru, Brazil, Korea and India who shared their experiences about airworthiness certification.



Shri Peter Arun delivering the talk

## National Seminar on Failure Analysis of Aero Materials, Components & Systems

Centre for Military Airworthiness and Certification, Regional Centre for Military Airworthiness (F&F-FOL), Bengaluru and Hindustan Aeronautics Limited (F&F), Bengaluru, jointly organised a National Seminar on Failure Analysis of Aero-Materials, Components and Systems-2014 (FAAMCS-2014) on 10 October 2014 on behalf of Society for Failure Analysis (SFA), Bengaluru Chapter.

Dr CP Ramanarayanan, OS, Director, Gas Turbine Research Establishment (GTRE), Bengaluru, was the Chief Guest of the inaugural function. Shri G Gouda, Chairman, SFA Bengaluru Chapter, spoke about the objectives of the seminar. Prof. Vikram Jayaram, Indian Institute of Science, Bengaluru, delivered the keynote address. Shri DK Venkatesh, GM, HAL (F&F) spoke on need for failure analysis of aero materials and components. Shri P Jayapal, President, SFA Bengaluru Chapter and Chief Executive (A), CEMILAC, appraised the gathering on the functioning of SFA and about its effective utilisation by the engineers, technologists, scientists and others.



Dignitaries at the inaugural function

Six invited talks were delivered by the eminent experts covering the entire spectrum of seminar theme involving design, composites failure, accident investigation, NDT techniques, etc. Shri MS Velpari, AGM (Mfg), HAL (F&F), Convener, FAAMCS-2014 and Secretary, SFA Bangalore Chapter welcomed the gathering. Dr Shirish S Kale, Convener, FAAMCS-2014, Joint Secretary, SFA Bengaluru Chapter and Regional Director, RCMA (F&F-FOL) delivered the vote of thanks. More than 140 delegates from all over India participated in the seminar.

## CEP on Novel Approach on Modern Technologies for AFVs

A CEP on Novel Approach on Modern Technologies for Armoured Fighting Vehicles (AFVs) was conducted by **Combat Vehicles Research and Development Establishment (CVRDE)**, Chennai, from 13-15 October 2014. The aim of the course was to enrich the participants with the future technologies of AFVs. Shri K Loganathan, Sc G, inaugurated the CEP. Twenty-six participants from CVRDE, Military Institute of Training (MILIT), Pune, and sister DRDO establishments attended this course. Experts and eminent scholars in various fields delivered lectures covering various aspects of firepower, mobility, survivability, deployment of future AFVs and system configuration of future AFVs. Faculty from CVRDE, Army, MILIT, Military College of Electronic and Mechanical Engineering (MCEME), Hyderabad, CME, MAG 6, Avadi, Research and Development Establishment (Engg) [R&DE (E)], Pune, BEL, DLJ, DMRL, Hyderabad, Instruments Research and Development Establishment (IRDE), Dehradun, ARDE, Pune, delivered the lectures.

As part of CEP course, participants were taken to Simulator Facility and AFV Assy of CVRDE. Tests were conducted before start and after completion of CEP course to assess the knowledge absorption by the participants. Dr P Sivakumar, OS, Director, CVRDE, gave the valedictory address.

## CEP on Underwater Soldier Support Technologies

Defence Bioengineering and Electromedical Laboratory (DEBEL), Bengaluru, organised a CEP on Underwater Soldier Support Technologies from 10-14 November 2014. Dr VC Padaki, OS, Director, DEBEL, inaugurated the course and delivered the keynote lecture on Brief Overview of Underwater Physics and Physiology. The participants were middle-level officers from various DRDO labs and Indian Navy. The five-day course consisted of 16 sessions, which dealt with various aspects of underwater systems such as submarine systems, simulation studies, quality control of underwater systems, medical emergencies and telemedicine applications, development of submarine



Dr Padaki (first row centre) along with the participants

escape set and issues related to underwater habitation. Lectures were delivered by faculty drawn from DRDO and Services. The Participants were given a detailed exposure to infrastructure and test facilities established at DEBEL for underwater system development.

The valedictory address was delivered by the Course Director Shri GSN Murthy, Sc F. The course was coordinated by Shri Arun Kumar, Sc D.

## Agriculture Development Review Meeting for Ladakh Region

Agriculture development stakeholder's review meeting 2014 for Ladakh region was organised by **Defence Institute of High Altitude Research (DIHAR)**, Leh, on 31 October 2014. About 52 participants from various organizations, viz., Central Arid Zone Research Institute (CAZRI), Jodhpur; Department of Agriculture and Horticulture, Leh; Ladakh Autonomous Hill Development Council (LAHDC), Leh; Sher-e-Kashmir



Presentation being made at the Agriculture Development Review Meeting

University of Agriculture and Technology (SKUAST), Jammu and Kashmir, and DIHAR participated in the meeting.

The emerging issues on prevailing and emerging problems in the field of agriculture being faced in Ladakh region were discussed. DIHAR being the pioneer in the field of agriculture in Ladakh region with its achievements of introducing and growing 101 types of vegetables, agreed upon to share knowledge for agriculture development in Ladakh region.

## Joint Workshop of DLJ and IIT Jodhpur on Stealth

**Defence Laboratory, Jodhpur (DLJ)** and **IIT, Jodhpur**, jointly organised a workshop on Stealth on 9 November 2014. Thirty-seven participants including 21 from DLJ and 16 from IIT Jodhpur attended the workshop. The objectives of the workshop was to acquaint the IIT Faculty with the current work and future work plan of DLJ in the broad area of airborne stealth and to brainstorm on the proposed Center for Advanced Materials and Electromagnetics (CAMEL) to be established at IIT Jodhpur under a joint DRDO-IIT Jodhpur collaboration programme. Director, DLJ and Director, IIT, Jodhpur were present during the workshop.



Workshop on Stealth in progress

## Training on Sigma Mk II

**Defence Laboratory, Jodhpur**, organised training on Sigma Mk II for Air Force officers and other ranks in four batches during 10-21 November 2014. Fifty-six Air Force personnel including 16 officers and 40 other ranks attended the training.

Shri NK Agarwal, Sc F, gave brief introduction about DLJ activities. Shri RK Khatri, Sc E, delivered lecture

on fundamental of camouflage pattern generation and development of software Sigma Mk II. Dr MC Vyas, Sc C, Shri Manish Choudhary, Sc C, and Shri Madhu Sudan, TO B, demonstrated various software modules of Sigma Mk II and imparted hands-on training to the participants.

## Specialisation Course on Nuclear-Biological-Chemical Defence

**Defence Laboratory, Jodhpur**, organised a Nuclear-Biological-Chemical Defence (NBCD) Specialisation Course for Naval Officers during 13-17 October 2014. Dr SR Vadera, OS, Director, DLJ, inaugurated the course. The course was attended by the officers from Indian Navy and Coast Guard from INS Shivali, Lonavla.

The objective of the course was to acquaint the participants with advances in nuclear defence and nuclear emergency management concepts and techniques covering various aspects on fundamental nuclear physics and nuclear radiation units, nuclear radiation detectors and monitors, characteristics and effects of nuclear weapons, biological effects of radiation and operational limits, medical management in radiological emergencies, nuclear hazard prediction models, radiation imaging for engineering visualisations, radiation dosimetry in disaster scenario and decorporation and first aid in nuclear scenario. Practical demo was also given on time, distance and shielding concepts, exploration of radioactivity, nuclear event monitoring system, slide rule and yield calculator, aerial surveillance of radiations using UAV, contamination monitoring systems and decontamination procedures.

Shri GL Baheti, Sc G, and Shri DK Tripathi, Sc F, were the Course Director and Course Coordinator, respectively.



Course on Nuclear-Biological-Chemical Defence in progress

## User Interaction Meet 2014

User Interaction Meet 2014 (UIM 2014) was organised by **Defence Terrain Research Laboratory (DTRL)**, Delhi, on 11 November 2014 at Metcalfe House Complex, Delhi. Dr MR Bhutiyan, Director, DTRL, was the Chief Guest of the event and Smt Chandrika Kaushik, Director, Directorate of Interaction with Services for Buisness (DISB), DRDO, was the Guest of Honour. Dr Bhutiyan briefed about the purpose of holding UIM 2014 and gave an overview of the various activities of DTRL. Around 54 users including representatives from Directorate of Military Intelligence (MI-16), Aviation Research Centre (ARC), Aeronautical Development Establishment (ADE), DLJ, Combat Vehicle Research and Development Establishment (CVRDE), Institute for System Studies and Analyses (ISSA) and Jawaharlal Nehru University (JNU) participated in the event. Dr Sujata Dash, Coordinator, UIM 2014, presented the vote of thanks.



Dr Bhutiyan delivering the inaugural address

## Seminar for Young Scientists

The 23<sup>rd</sup> In-house Seminar for Young Scientists was organised by **Gas Turbine Research Establishment (GTRE)**, Bengaluru, on 16 November 2014. Shri Sanjay Burman, OS, Director, Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru, delivered the invited lecture. Accentuating various attributes of a mission critical project, he laid particular stress on the need to carefully analyses the project requirements and build highly reliable systems. In his message to young scientists, he said one has to introspect into the past to further look into the future and leverage team members with one's strength to attain the organisational goals.

Later, Shri Vignesh Kannan M, Sc C, presented an overview of Hydraulics Control and Fuel Control System of Gas Turbine Engines.



Shri Burman delivering lecture to the young scientists

## Workshop on Aerospace Quality and Reliability

A one-day workshop on Aerospace Quality and Reliability was jointly organised by Society for Aerospace Quality and Reliability (SAQR) and **GTRE**, Bengaluru, on 10 November 2014. Hundred and sixty-one participants from various R&D labs, industries and academia participated in the event. Dr CP Ramanarayanan, OS, Director, GTRE, and President, SAQR, presided over the function. Shri PS Subramanyam, DS, Director, Aeronautical Development Agency (ADA), Bengaluru, was the Chief Guest of the inaugural function. Shri Subramanyam, in his address, said that success in the increasingly competitive industry principally depends on the ability to provide quality product and services. There is an inescapable need to escalate the levels of Quality



Dignitaries releasing the course CD

and Reliability of projects related to Indian military aviation to become a global player.

Dr K Tamilmani, DS, DG (Aero), DRDO, delivered the keynote address and said that quality, reliability and safety are critical values for the aerospace industry. He laid special emphasis on the need for trained professionals in the field of quality and reliability management.

## International Conference on Security Privacy and Applied Cryptography Engineering

**Defence Institute of Advanced Technology** (DIAT), Deemed University, Pune, hosted International Conference on Security, Privacy and Applied Cryptography Engineering-2014 (SPACE-2014) during 18-22 October 2014. The conference brought together the experts and researchers working in the area of Cyber Security. Prof. Adrian Perrig, Eth, Zurich; Prof. Anand Raghunathan, Purdue University, Prof. Peter Schwabe, Radbound University; Prof. Vashek, Masaryk University; Prof. Gabi Siboni, Tel Aviv University and Dr Phuong Ha Nguyen, IIT Kharagpur were the globally renowned distinguished scientists and professors who delivered speeches and keynote talks. The conference was beneficial for the DIAT, especially for its ongoing MTech Programme on Cyber Security, and will establish new projects and collaborative research between DIAT, DRDO and IITs. In all, 18 research papers were presented in the conference.

The conference was co-sponsored by DRDO, BEL, ISRO, DST, NTRO and CSIR. Dr CRS Kumar, and Dr Arun Mishra from Department of Computer Engineering, DIAT, along with the team of volunteers from host institutes were the coordinators for this event.

## HR Coordinators Meeting

**Institute of Nuclear Medicine and Allied Sciences (INMAS)**, Delhi, conducted a brainstorming HR Coordinators meeting of Delhi-based DRDO labs/estts on 27 November 2014 at INMAS. Issues discussed in length included recruitment of JRFs, induction of trainee, mentoring, CEP, special training, targeted training courses, and other common issues and problems. The





Dr Rajiv Vij making presentation in HR Coordinators Meeting

meeting resulted in exchange of ideas, learning from each other and solutions to various problems. The participants were also requested to give inputs for DRDO Young Scientists Meet being organised by INMAS during 2-4 February 2014 at Bhagavantham Auditorium, Metcalfe House, Delhi. It was decided to continue these discussions during next meeting which will be organised at Centre for Fire, Explosive and Environment Safety (CFEES), Delhi. Dr Rajeev Vij, Sc F, INMAS, organised the meeting.

## Training-cum-Awareness programme

**Institute of Nuclear Medicine and Allied Sciences (INMAS)**, Delhi, organised a training-cum-awareness programme on how to effectively access e-resources and how to stop plagiarism on 20 November 2014. The

awareness programme was attended by more than 80 officers, researchers, PhD aspirants and technical staff of INMAS. Representatives from two publishing houses imparted training to the users on Turnitin and iThenticate anti-plagiarism software and JoVE: Scientific Video Journal. The course was organised by Dr Rajeev Vij, Sc F, INMAS.

## Project Management based on Theory of Constraints

**Institute of Technology Management (ITM)**, Mussoorie, conducted a course on Project Management based on Theory of Constraints from 8-10 October 2014, for senior scientists of Laser Science and Technology Centre (LASTEC), Solid State Physics Laboratory (SSPL) and Centre for Fire, Explosives and Environmental Safety (CFEES) at Development Enclave, New Delhi. The objective of the course was to orient the scientists with the advance project management techniques like Project Planning Critical Chain Path Method so that the complex projects can be handled effectively and efficiently. Topics like Project Risk Management, Critical Chain Path Method, Theory of Constraints, etc., were deliberated upon.

The course was inaugurated by Dr G Malakondaiah, DS, CC R&D (HR), Dr (Ms) Chitra Rajagopalan, OS and Director, CFEES and Shri HB Srivastava, Director, LASTEC. Twenty-two scientists attended the course.



Participants of course on Project Management based on Theory of Constraints



## CEP on Microwave Tubes for Defence Systems

A CEP course on Microwave Tubes for Defence Systems was conducted by **Microwave Tube Research and Development Centre (MTRDC)**, Bengaluru, during 27-30 October 2014 for the benefit of officers from three services and system users. The course was aimed at refreshing the knowledge of armed forces personnel on the operating principles of different types of microwave tubes. The topics covered during the course included overview of microwave engineering and microwave sources, technological aspects of linear beam and crossed field devices, high voltage power supplies, fundamental of microwave measurements, Dr Lalit Kumar, OS, Director, MTRDC, inaugurated the course and gave an inaugural lecture on An Amazing world of Microwave and Terawave.

The course concluded with an interactive session chaired by Dr KD Nayak, DS, DG (MED, CoS), Dr Lalit Kumar and Dr KS Bhat, Associate Director, MTRDC. The discussions were carried out on the requirements of microwave tubes and related sub-systems for various services, problems faced related to microwave tubes and life and reliability of microwave tubes.

Forty-four participants from Indian Army, Indian Air Force, Indian Navy, BEL, and sister DRDO laboratories participated in the course. Dr Latha Christie, Sc G, was the Course Director and V Nallasamy, Sc F, was the Course Coordinator.

## CEP on Recent Advances in Underwater Transducers

**Naval Physical and Oceanographic Laboratory (NPOL)**, Kochi, conducted a CEP on Recent Advances in Underwater Transducers during 13-17 October 2014. The course was aimed to throw light on the emerging concepts, techniques and technologies in the area of Underwater Transducers. Thirty-two participants including seven from other DRDO laboratories attended the course.

The topics covered in the course focused on the multidisciplinary advancements in underwater transducer technology which included a wide range of topics like Sonar and transducer design, acoustic measurements, target strength measurements hydrophones-acceleration sensitivity, piezoceramics, magnetostrictive transducers, etc. The faculty consisted of scientists from NPOL, NMRL, ARDE and Centre for Materials for Electronics Technology (CMET), Thrissur. Dr R Ramesh, Sc F, was the Course Coordinator.

## CEP on Emerging Management Tools and Techniques

**Proof and Experimental Establishment, Chandipur**, CEP course on Emerging Management Tools and Techniques during 17-19 November 2014. Twenty-five participants attended the course. Topics like competency mapping, return on training investment, situational awareness, team developmental model,



CEP on Recent Advances in Underwater Transducers





Shri R Appavuraj (left) and Shri SC Narang at the CEP on Emerging Management Tools and Techniques

knowledge management, managing difficult situations, etc., were covered during the course. Shri SC Narang, former Chairman, CEPTAM, shared his vast experience of organisation development. Shri R Appavuraj, OS, Director, PXE distributed certificates to the participants in the valedictory function.

## Hindi Workshops

### ✦ PXE, Chandipur

**Proof and Experimental Establishment (PXE)**, Chandipur, organised 59<sup>th</sup> Hindi Workshop for Technicians from 24-28 November 2014. Dr AK Sannigrahi, Additional Director (Adm), inaugurated the workshop. In his inaugural address, Dr Sannigrahi briefed about the origin and growth of Hindi and the benefits of uses of Hindi. Twenty employees participated in the workshop. The working methodology on Hindi was discussed in detail by Shri SK Ray, Hindi Officer, and Kumari Pooja Singh, Hindi Assistant. Dr Sannigrahi also distributed awards with certificates to the successful participants.

### ✦ RCI, Hyderabad

**Research Centre Imarat (RCI)**, Hyderabad organised 3<sup>rd</sup> Hindi Workshop on 3 December 2014. Shri K Rama Sarma, Sc G and Vice Chairman, Official Language Implementation Committee (OLIC), inaugurated the workshop.

Shri N Venkatesh Sc F, and Member Secretary, OLIC, highlighted various activities of Hindi Cell. Shri Kazim Ahmed, Senior Hindi Assistant, RCI, delivered a lecture on Hindi Grammar and its scope in Hindi implementation for administrative purposes. Shri Madanlal Kasotiya, Sc C, RCI, delivered a lecture on Social Media and its Role in Promotion of Hindi. Shri Pankaj Rawat, Hindi Assistant, proposed the vote of thanks.

## CEP on Network Security

**Scientific Analysis Group (SAG)**, Delhi organised a CEP course on Network Security from 24-28 November 2014 at Metcalfe House, Delhi. The course was inaugurated by Dr G Athithan, OS, Director SAG. In his inaugural address Dr G Athithan stressed on the need to study the basic protocols in networks to provide security against cyber attacks.

Topics on protocols for wired, wireless and ad hoc networks, vulnerabilities in networks, network security technologies, cryptography, network security standards, etc. were covered during the course. In addition to in-house faculty, senior faculty from IIT Delhi, Jadavpur University, National Informatics Centre, and industry, delivered the lectures. The CEP was attended by scientists and officers from DRDO labs, JCB, and Weapons and Electronics System Engineering Establishment. Participants got exposure on theoretical aspects as well as practical aspects of network security practices, monitoring and assessment.



Participants of course on Network Security with Dr Athithan (first row fifth from right)



# डीआरडीओ न्यूज़लैटर

## Vigilance Awareness Week

### DIHAR, Leh

Defence Institute of High Altitude Research (DIHAR), Leh, and its detachments observed Vigilance Awareness Week from 27 October 2014 to 1 November 2014. On this occasion a pledge was administered to the employees of DIHAR. Various activities such as essay competition, poster making, poetry/quotes competition on importance of vigilance and use of IT in combating corruption were conducted. A speech on importance of vigilance and ways to combat corruption was delivered by Dr RB Srivastava, OS, Director DIHAR. All the participants of various activities were also awarded with a certificate of merit by Dr Srivastava.



Vigilance awareness programme at DIHAR

### GTRE, Bengaluru

Gas Turbine Research Establishment, Bengaluru, observed Vigilance Awareness Week commencing from 27 October 2014. On this occasion, pledge was administered to all the officers and staff. An invited talk on Combating Corruption—Technology as an Enabler, was delivered by Smt K Inderjeet Kumar, IDAS, IFA (R&D), Bengaluru, on 30 October 2014. Sensitising the audience about the importance of being vigilant, she brought out that avoidance of corruption is critical and this can be achieved by e-processing all procurement activities. She also cast light upon various guidelines laid by Central Vigilance Commission to combat corruption.



Smt K Inderjeet Kumar delivering the oration

## Quami Ekta Week

Quami Ekta Week is celebrated every year during 19-25 November to foster the spirit of patriotism, communal harmony and national integration. Defence Laboratory, Jodhpur (DLJ), celebrated Quami Ekta Week during 19-25 November 2014. Shri GL Baheti, Officiating Director, DLJ, administered the oath of national integration to officers and staff. During the week, drawing competition for children of different age groups was organised. Thirty-six children of DLJ



employees participated in the competition.

A magic show was organized at DLJ Seminar Hall during the closing ceremony. The programme was attended by the families of DLJ employees with lot of joy and enthusiasm. Chief Guest Mrs Kiran Vadera, first lady of DLJ, gave away the prizes to the children. Dr SR Vadera,

OS, Director, DLJ, distributed the certificates and cash awards to meritorious students of class 10<sup>th</sup> and 12<sup>th</sup> of laboratory employees.



## Personnel News

### Promotion

### Outstanding Scientist

#### HEMRL, Pune



**Dr Manoj Gupta**, Sc G, High Energy Materials Research Laboratory (HEMRL), Pune, has been promoted as Outstanding Scientist.

Dr Manoj Gupta joined HEMRL in January 1985 after completing post-graduation in Organic Chemistry. He obtained his PhD from University of Pune. He has been working in the field of Composite Rocket Propellant since then and has an experience of about 30 years of developing composite propellant for various Rocket and Missile like 122 mm ERR, Pinaka, Trishul, Akash, Nag, LR-SAM, Pinaka Mk-II, Nirbhay, etc. He was instrumental in setting up the only production facility for composite propellant at Ordnance Factory, Itarsi, during 1990-1992. He has many publications in national and international journals and 15 patents to his credit.

Dr Gupta has been awarded DRDO Agni Award for Excellence in Self-Reliance (2011); DRDO Scientist of the year Award (2010) and DRDO Award for Pathbreaking Research/Outstanding Technology Development (2008).

### Appointment

#### Director, LRDE, Bengaluru



**Shri SS Nagaraj**, OS, has assumed the charge of Director, Electronics and Radar Development Establishment (LRDE), Bengaluru, wef 1 December 2014.

Shri SS Nagaraj obtained his engineering degree in Electronics and Communication from Government

BDT College of Engineering, Davanagere, in 1982 and completed Postgraduation in Electronics from KREC, Surathkal, in 1986. He joined LRDE in 1987.

He is working in the field of radar systems and is an expert in the field of modern radars and related technologies. His area of specialisation includes Passive Phased Array Radars, Active Phased Array Radars, Radar Signal Processing and Imaging Radars. He has successfully contributed in design and development of technologically advanced radar systems and their integration with weapon systems which forms essential part of defence against aerial threats.

Shri SS Nagaraj has closely worked with Indian industries, academia and foreign firms and helped in establishing an indigenous technology base for future requirements. As Director, LRDE, he will be engaged in meeting the critical requirements of the services and paramilitary forces in developing radar systems for detection and tracking of targets at short range, medium range and long range to counter external and internal threats.

He is the recipient of the DRDO Technology Group Award (2002), Pathbreaking Research/Outstanding Technology Development (2006), and DRDO Scientist of the Year Award (2008).

### Award

#### IETE-Ram Lal Wadhwa Award



**Dr Lalit Kumar**, OS, Director, MTRDC, Bengaluru, received IETE Ram Lal Wadhwa Award-2014 for his distinguished contributions and leadership towards indigenous design, development and production of modern high power microwave sources, Microwave power

modules and transmitters for defence applications during 57<sup>th</sup> IETE Annual Technical Convention on Skill Development—Indian Scenario held during 27-28 September 2014 at IETE, New Delhi.

## Higher Qualification Achieved

### CEMILAC, Bengaluru

**Shri Shirish S Kale**, Regional Director, Regional Centre for Military Airworthiness (F&F-FOL), Bengaluru, was awarded PhD by the Indian Institute of Technology, Bombay, for the thesis entitled Environmentally Assisted Cracking Behaviour of Alclad Al-Zn-Mg-Cu-Cr Alloy Adhesively Bonded with Carbon Fibre Reinforced Plastic Laminate.

### ISSA, Delhi



**Shri Pramod Kumar Sahoo**, Sc D, Institute for Systems Studies and Analyses (ISSA), was conferred PhD by the Indian Institute of Technology, Delhi, for the thesis titled Extractive Text Summarisation using Random Indexing.

## Scientific Paper Presented

### ASL, Hyderabad



**Smt Pummy Ratna**, Sc D, Advanced Systems Laboratory (ASL), Hyderabad, presented scientific paper titled, Mitigation Technique for High Altitude Electromagnetic Pulse for GPS Receiver in the prestigious Asia-Pacific Microwave Conference-2014 (APMC-2014) held in Sendai, Japan, during 4-7 November 2014. The paper, co-authored by Shri Sachin Jain, Sc D, ASL, was based on EMP mitigation technology for electronic circuit protection.

Smt Ratna also participated in the special session of the conference on Women in Engineering on contribution of women in the field of science and engineering in various countries and discussed the role of Indian lady scientists.

## Brig SK Mazumdar Memorial Young Scientist Award 2014

Late Brig SK Mazumdar, former Director, Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi, is known as father of Nuclear Medicine in India and was a leading authority in thyroidology. To perpetuate his memory his associates and friends formed Brig SK Mazumdar Memorial Trust in December 1984. The trust is engaged in creating opportunities of scientific interaction with outstanding scientific personalities and has also instituted a Young Scientist (below 40 years) Award for the best research paper in the field of life sciences by the scientists of life sciences laboratories of DRDO, non-DRDO institutes and the Services (Medical Units). The Award comprises a running shield and a citation. Brig SK Mazumdar Memorial Young Scientist Award Competition was organised at INMAS on 17 November 2014.

Many young scientists/researchers from AFMC, Pune, Defence Bio-engineering and Electromedical Laboratory (DEBEL), Bengaluru, INMAS, Delhi, Command Hospital (Air Force), Bengaluru, Army Hospital (R&R) Delhi Cantonment, Army Dental Centre (R&R), Delhi Cantonment and Institute of Aerospace Medicine, IAF, Bengaluru, participated in the Competition.



Inaugural session of Young Scientist Award Competition in progress

Dr Jayanth Daniel, Sc D, DEBEL, was adjudged the Best Young Scientist for the year 2014 for his meritorious contribution towards Design and Development of SpO<sub>2</sub> based Wearable Oxygen Controller System by a panel of eminent judges comprising Prof. H Krishna Prasad, AIIMS Delhi, Col HS Sharma, Commanding Officer, Military Dental Centre, Base Hospital, Delhi, Dr Tarun Sekhri, Sc G, Head, Endocrinology and Thyroid Research, INMAS and Dr M Prasanna Reddy, Sc F, Defence Institute of Physiology and Allied Sciences (DIPAS), Delhi. Dr Rajeev Vij, Sc F, Jt Secretary, Brig Mazumdar Memorial Trust, proposed the vote of thanks.

## Sports Round-up

### South Zone Throw ball Tournament

The DRDO South Zone Throw Ball Tournament was organised by the Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru during 27-28 November 2014. The tournament was inaugurated by Shri MV Rao, Sc G, Associate Director, CAIR.

Five teams from DRDO South Zone laboratories participated in the tournament. Team CAIR was crowned with the championship and the team Aeronautical Development Establishment (ADE), Bengaluru, was the runner-up. Shri MV Rao distributed prizes to the winners.



Jubilant players lift the trophy

### DRDO North Zone Badminton Championship

Defence Laboratory, Jodhpur (DLJ), won the Team Championship, Open Singles, and Open Doubles events in the DRDO North Zone Badminton Championship 2014 organised at Defence Research and Development Establishment (DRDE), Gwalior, during 29-31 October 2014. Twelve teams participated in the tournament. Shri Ashwani Sharma won the Open Singles and duo of Lt Col Joji Paul and Shri Nar Singh Yadav won the Open Doubles event. Shri Ashwani Sharma also won the Player of the Tournament Award for his outstanding performance throughout the tournament. Shri Ashwani Sharma, Shri Vishvajeet and Shri Nar Singh Yadav were



Team DLJ with the trophy

also selected to represent the DRDO North Zone team in the national tournament.

### EMU starts Complaint Cell at Timarpur, Delhi

Estate Management Unit (EMU), Delhi, established a Complaint Cell for managing, controlling and executing day-to-day complaints of the residents of DRDO's Timarpur Complex. The Cell was inaugurated by Shri Ajay Singh, Chief Executive (CW&E) on 12 November 2014. This modern complaint cell consists of proper reception room for residents, JCO Office and computer room with biometric attendance system, separate staff room and store room, web-based complaint registration software system to register complaints over telephone and internet. Registration of complaints would be confirmed over SMS and email to residents as well site engineer for immediate attention. The Cell is open 24x7.



EMU complaint cell



# डीआरडीओ न्यूज़लैटर

## Societal Mission

### Blood Donation Camp at DEAL

A voluntary blood donation camp was organised at Defence Electronics Applications Laboratory (DEAL), Dehradun, on 27 November 2014 under the aegis of IMA Blood Bank, Dehradun. The camp was inaugurated by Shri RC Agarwal, OS, Director DEAL. The camp was conducted by Dr PK Pandey, Dr JC Arora and Shri Mohit Chawla. Employees of DEAL participated in the camp with great zeal and enthusiasm. Overall 41 unit of blood was donated by the DEAL employees.



**Forthcoming Event**

## *DRDO Young Scientists Meet 2015*

**2-4 February 2014, Delhi**

Honourable Prime Minister, Shri Narendra Modi, in a recently held DRDO Award ceremony, elucidated active involvement of the young DRDO scientists in defence research so that dynamic and original ideas, and a positive attitude help in indigenisation of cutting-edge defence technologies and enable the country to remain abreast of global technological advancements in the field.

Institute of Nuclear Medicine and Allied Sciences (INMAS), a constituent establishment of DRDO, has been delegated the responsibility of hosting and organising a Young Scientists Meet (YSM 2015) of DRDO from 2-4 February 2015 in Delhi. Around 400 young scientists from DRDO labs/estts across India are expected to attend the meet.

YSM 2015 will provide young scientists an opportunity to interact with Scientific Advisor to Raksha Mantri, Chief Guests, Director Generals and Chief Controllers of DRDO. Besides, there will be lectures/talks by distinguished persons from S&T, armed forces, sports, etc. Out of box ideas on S&T, discussions by the participants on DRDO: Technology Roadmap for future Strategic Requirements, Need of the Hour and where do we Stand, Image Building of DRDO, etc., sports events, team building events, cultural programme and prize distribution would be the other attraction during the meet.

For nominations please contact *Dr Rajeev Vij, Scientist F, Mentor, YSM 2015, INMAS, Delhi.*

