DRDO successfully flight tested its latest surface-to-surface missile Prahaar on 21 July 2011 from Launch Complex III, off Chandipur Coast, ITR, Balasore, Orissa. The missile with a range of 150 km, comparable to ATACMS missile of USA, fills the vital gap between multi-barrel rockets and medium-range ballistic missiles. The missile, capable of carrying different types of warheads, will operate as battlefield support system for the Indian Army.

Prahaar, a single-stage solid propulsion system, goes to a height of 35 km before reaching the targets of the range of 150 km in about 250 s. The missile equipped with state-of-the-art high accuracy navigation, guidance, and electro-mechanical actuation systems with latest onboard computers achieved terminal accuracy of less than 10 m.

Prahaar with a payload of 200 kg has a fast reaction time essential for a battlefield tactical missile. It is launched from a road-mobile system, which can carry six missiles at a time, and can be fired in salvo mode in all directions covering the entire azimuth plane.

The missile will provide Indian Army a cost-effective, quick reaction, all weather, all terrain, high accurate battlefield support tactical system. The development of the missile has been carried out by the DRDO scientists in a short span of less than two years with support from Indian industry and quality assurance agency MSQAA.

The flight path of the missile was tracked and monitored by various radar systems and electro-optical systems located along the coast of Orissa. An Indian Naval ship located near target point in Bay of Bengal witnessed the final event.

The launch operations were witnessed by Dr VK Saraswat, Scientific Adviser to Raksha Mantri, Secretary Defence R&D, and DG DRDO, and Lt Gen Vinod Nayanar, AVSM, Director General of Artillery,
Dr VK Saraswat, SA to RM inaugurated the Structural Dynamics Laboratory (SDL) at National Centre for Automotive Testing, Vehicles Research and Development Establishment (VRDE), Ahmednagar, on 29 June 2011. Shri S Sundaresh, DS and CC R&D (ACE), Shri AK Suri, CCE (W), Shri R Shankar, DCV&E, DRDO HQrs; and Dr CP Ramanarayanan, Director, VRDE were also present during this event.

Hon’ble Raksha Mantri Shri AK Antony congratulated the DRDO scientists for the successful maiden launch of the Prahaar.

Salient Features of Prahaar

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>7.3 m</td>
</tr>
<tr>
<td>Diameter</td>
<td>420 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1280 kg</td>
</tr>
<tr>
<td>Target range</td>
<td>150 km</td>
</tr>
</tbody>
</table>

The test equipment of the Laboratory is as under:

Hydraulic actuators: These execute the load cycles on the sample/test piece.

Hydraulic power supply (HPS) and accumulators: HPS supplies the required hydraulic power to the hydraulic actuators for the execution of the load cycles and the accumulators store the hydraulic energy so that it can be used as per the requirement.

Digital controller: It performs functions like waveform generation and provision of closed-loop control. Controller is capable of manipulating external load, displacement, velocity, and acceleration signals into hydraulic actuator response.

Data acquisition system: It acquires the data, tests the sample/actuator, and feeds it back to the digital controller.

Computer system and software: Computer system performs the function of user interface, test execution,
Innovations in digital technology have revolutionised the concept of product engineering and has ushered in a new paradigm of engineering processes for ‘Prototype Development’ through the technique of modelling and simulation. In today’s perspective, with the advent of computing and visualisation technologies, simulation is being used in almost all scientific and technological areas. The modelling and simulation enables the R&D work to accelerate as the performance of the intended product (to be developed) could be predicted with a higher degree of confidence and accuracy. Prior to building any physical prototype for offering to the user, a perfect design is evolved through modelling, simulation, and immersive visualisation (man-in-loop) techniques. This approach in development helps both the designer and the user to have a feel and visualisation of the product and its performance prediction through virtual testing in a design studio. It also facilitates changes in design/shape over an

**Mounting frames and bed plates:** The mounting frames are fixed on the bed plates. Mounting frames hold the actuators while they execute the load cycles.

**Hydraulic hardline and flexible hoses:** These carry the hydraulic oil from the powerpack to the hydraulic actuators.

**Cooling system:** The return oil of the powerpack gets heated up due to work output, and needs to be cooled. Cooling system helps in cooling the return oil.

The SDL will be used for testing of component stiffness, design validation, vehicle component/sub-system acceptance, durability testing, and fatigue.

Types of tests that can be conducted in the Laboratory are:

(i) Quasi-static and low performance dynamic testing

(ii) Dynamic testing

- Can vary from static-to-low performance dynamic testing
- Step-by-step or static deflection testing
- Can vary from low performance-to-high frequency applications
- Cyclic/impulse/complex wave-shape definition/block loading
- File playback of loading

The purpose of these tests is to simulate the actual load conditions in an indoor facility. In the static mode, the maximum static load that the system can withstand may be found out. In the dynamic mode, the structural unit/system is subjected to pre-programmed variable load cycles that can be simulated to actual road conditions. This will ascertain the endurance of the structural unit/system. The equipment will carry out testing in single and bi-axes modes. The anticipated utilisation of this set-up will be around 900 h per year. The Laboratory will cater to the needs of the VRDE project activities and other govt and private sector units located nearby SDL.
Defence Institute of High Altitude Research (DIHAR, erstwhile Field Research Laboratory), Defence Research & Development Organisation, Leh-Ladakh, situated at an altitude of 3,500 m above MSL is celebrating its Golden Jubilee Year (2011-12). Dr VK Saraswat, SA to RM, Secretary Defence R&D, and DG, DRDO opened the Golden Jubilee Year celebrations on 13 July 2011 in the presence of Shri Sonam Dorjey, Executive Councillor (Agriculture), Ladakh Autonomous Hill Development Council (LAHDC); Dr W Selvamurthy, DS & CCR&D (LS & IC); Shri G Elangovan, DS & CC (RM); Brig Ravinder Srivastava, Stn Cdr, HQ 14 Corps; Dr RB Srivastava, Director, DIHAR; Dr G Ilavazhagan, Director of Life Sciences, DRDO HQrs; Air Cdr SP Waghle; Shri Jaspal Singh, DIG, ITBP; Shri Cherring Angchuk, DC, Leh, and many other distinguished guests. On this occasion, Dr Saraswat launched the DIHAR Golden Jubilee movie ‘The High Endeavour’ and released ‘Coffee Table Book’ of DIHAR, brought out in close collaboration with Defence Scientific Information & Documentation Centre (DESIDOC).

He also inaugurated solar powerplant, thermally-controlled Greenhouse, and Solar-powered Hatchery Unit at DIHAR, to utilise the non-conventional energy available in abundant in the region.

Speaking on the occasion, Dr Saraswat highlighted the R&D activities of DIHAR, particularly its contributions in boosting the vegetable supply to the Army, introduction of new fruit crops to diversify the fruit basket, conservation of rare, endangered medicinal plants, low-cost technology for thermal minimal processing, germplasm storage facility at Cheng-La, increase in supply of milk and meat, and introduction of Zanskar ponies as a mode of transport for the Army in the region. He also appreciated the role of DIHAR in popularising the Seabuckthorn, a local berry, rich in vitamin C, its products like Seabuckthorn jam and juice and

Keeping pace with modern trends worldwide, Vehicles Research & Development Establishment (VRDE), a premier laboratory of DRDO, has embarked upon setting up a state-of-the-art Integrated Simulation Laboratory (ISL) for design and development of wheeled and tracked vehicles. The ISL will be first of its kind in India.

The foundation for this unique facility was laid by Dr VK Saraswat, SA to RM, on 29 June 2011 at VRDE.
emphasised the need of international collaborations in Seabuckthorn research. He mentioned the need of good quality school and training institutes in Leh-Ladakh and assured that DRDO will provide the technical support to the local administration for this purpose. Dr Saraswat exhorted DIHAR to play lead role in the transgenic vegetables, development of good fruit varieties, increasing the egg hatchability at Leh and large scale utilisation of solar and other non-conventional energy resources in close collaboration with Armed Forces. He applauded the role of former Directors of DIHAR and specially mentioned that in the past 50 years, DIHAR has graduated from “high altitude farmer to the high altitude technologist”. Dr Saraswat complemented entire team of DIHAR for commendable research activities at the inhospitable and demanding high altitude and anticipated that very soon, DIHAR will be an ‘International Centre for High Altitude Agro-Animal Research’.

Shri Sonam Dorjey, Executive Councillor (Agriculture), LAHDC, lauded DIHAR’s R&D activities which have immensely benefited the local population.

Dr Selvamurthy also appreciated DIHAR’s contributions in the development of agro-animal technologies which had led to an increase in production of fresh vegetables, fruits, milk, and meat. He also commended the local farmers for quickly adopting the technologies developed by DIHAR. He further appreciated the strong collaboration between DIHAR and HQ 14 Corps and mentioned DRDO’s R&D efforts and achievements in high altitudes.

Shri Elangovan accentuated the role of DIHAR in the region. He congratulated and thanked all the scientists and staff of DIHAR for playing a lead role in contributing agro-animal technologies in the region.

Brig Ravinder Srivastava especially mentioned the Institute’s role towards greening of Ladakh region and beautification of Army Units. He appreciated the strong collaboration between DRDO and the Army.

Dr Srivastava, Director, DIHAR, briefed the august gathering about the major R&D contributions of DIHAR. He also mentioned about the DIHAR’s future R&D programmes, especially, establishment of ultra-modern greenhouse in collaboration with Russia, upcoming biotechnology laboratory and poultry parental stock facility at Chandigarh, establishment and operationalisation of detachment at Kargil Sector, and sustainable utilisation of Seabuckthorn under the National Mission on Seabuckthorn.
Naval Research Board Meeting

The meeting of Ocean Environment Panel (OEP) of Naval Research Board (NRB) was organised by Naval Physical and Oceanographic Laboratory (NPOL), Kochi, on 10 June 2011. The meeting was conducted under the Chairmanship of Dr RR Rao, Head, OEP. Shri S Anantha Narayanan, OS and Director, NPOL, welcomed the OEP members and participants. Dr D Srinivasan, former Director, NPOL and also a panel member, graced the occasion. The OEP members, viz., Prof AD Rao, IIT, Delhi; Prof K Murali, IIT, Madras; Dr B Chakraborty, Sc G, NIO; Dr O Vijayakumar, Sc G, NPOL; Dr CVK Prasada Rao, Sc G, NPOL; Capt D Vijay Kumar, DNOM, Delhi; and Cdr Vijay Singh, DD, NRB, the member secretary, as well as senior scientists of NPOL attended the meeting. New research proposals were discussed, evaluated, and recommendations were made in the meeting.

Merit Evening 2011

Naval Physical and Oceanographic Laboratory (NPOL), Kochi, organised a Merit Evening 2011 on 13 June 2011 to felicitate and honour the academic excellence of Bhavan’s Varuna Vidyalaya, sponsored by the Laboratory and supported by the Bharatiya Vidya Bhavan, Kochi Kendra. Dr M Leelavathy, the renowned Malayalam writer, educationist and literary critic, presented merit certificates and mementos to the top scorers of CBSE XII examinations and IIT-JEE rank holders. She lauded the young sparks and appreciated the teachers and parents who acted as crucial driving forces behind their success. She also highlighted the significance of resourcefulness and human values in the moulding of children. Shri S Anantha Narayanan, OS and Director, NPOL and Shri E Raman Kutty, Director, Bharatiya Vidya Bhavan, Kochi Kendra, offered felicitations on the occasion. Dr A Unnikrishnan, Associate Director, welcomed the gathering and Shri Rajasekharan Nair, Group Head (Personnel & Administration) and Chairman, School Management Council, proposed the vote of thanks. This is the 14th time that the Bhavan’s Varuna Vidyalaya achieved 100 per cent results and sustained its indelible image in the academic excellence.

XIX Prof DS Kothari Memorial Oration

In acknowledgement of the great services rendered by Prof DS Kothari to the nation, particularly in laying strong foundation of DRDO, Defence Laboratory, Jodhpur (DLJ) organises oration lecture every year, delivered by eminent scientists of the country. The XIX Prof DS Kothari Memorial Oration this year was organised on 6 July 2011. Dr Kota Harynarayana, Dr DS Kothari DRDO Chair, delivered the oration lecture on ‘Engineering Complex System: Challenges and Opportunities’. Dr PS Goel, Chairman, RAC, Delhi, presided over the function. The faculty members and scientists of various academic and research institutes of Jodhpur also attended the Oration.
Dr Narendra Kumar, Director, DLJ, welcomed the Chief Guest Dr Harinarayana, Dr Goel, and the invitees and attendees. Dr Kumar in his address, recalled Prof Kothari as a great teacher, thinker, and philosopher of scientific knowledge. Dr Goel in his address highlighted the threat perception to the country from neighbours and urged development of strong and cutting-edge technologies in the country in the field of Defence. He also lauded DRDO for developing a number of successful technologies.

Dr Harinarayana in his oration lecture expressed economical and technical growth of the country with reference to international scenario on the subject. He expressed that complex system demands very advanced technologies with constant innovation as the backbone along with adoption of structured systems, and processes and innovations are generated in an organisation where there is a culture that can nurture, encourage, and support innovation. Dr Harinarayana cited some of the technological advancements like thinnest watch in the world (Titan); cheapest car in the world (Nano); cheapest Hepatitis B vaccine by Shanta Biotech; cheapest and fastest cataract surgery by Arvind Eye Hospital and from dirtiest to 2nd cleanest city (Surat) in India.

Dr Harinarayana also awarded Lifetime Achievement Award 2011 to Shri KD Awathare, Sc E and Dr Ashok Kachchwha, TO C for their contributions in the field of science and technology management. The Vikas Puraskar 2011 was awarded to Shri Ajay Jain, Sc E and his team for development of Inflatable PMS Bridge Mock-up.

Dr SR Vadera, Sc G, Chairman Organising Committee of XIX Prof DS Kothari Memorial Oration proposed the vote of thanks.

**MANPOWER DEVELOPMENT ACTIVITIES**

**Training Courses/Seminars**

**DESIDOC, Delhi**

Defence Scientific Information & Documentation Centre (DESIDOC), Delhi, organised a one day Hindi workshop on Aadhaytmik avem Mansik Chintan: Pragatisheel Sansathan ki Anwarey Kunji on 29 July 2011. Dr AL Moorthy, Director, DESIDOC, in his inaugural address emphasised the importance of the inner happiness and mental peace, which motivates for the hard work. Braham Kumari Ranjana from Om Shanti Retreat, Manesar, gave an enlightening talk on the topic.

**DLRL, Hyderabad**

Official Language Implementation Committee (OLIC), DLRL, conducted one day Rajbhasha Workshop on 29 June 2011. Shri HD Kulkarni, Sc G, and Group Director (Management Services), delivered the inaugural address. Shri Naveen Naithani, Lecturer, Hindi Sikshan Yojana, Ministry of
Home Affairs, imparted training to the participants for implementation of Rajbhasha in day-to-day office work. Shri M Prahalada Rao, Sc F, Vice Chairman, OLIC, gave the keynote address. Thirty employees of Admin and Allied Category participated in the workshop.

NPOL, Kochi

Targeted Training on Advanced Nonlinear Mechanics was organised by Naval Physical and Oceanographic Laboratory (NPOL), Kochi at Green Berg Holiday Resorts, Kulamavu, Idukki. The training course was aimed to update the knowledge of participants about the latest concepts and applications of nonlinear mechanics. Shri R Kanakarajan, Associate Director, NPOL, inaugurated the training course. There were 21 participants for the course, including seven from other DRDO laboratories.

The major subjects covered in the course included elements of continuum mechanics, problem-solving methods related to fluid-structure interaction including underwater explosion, composite structures and case studies in the relevant areas of the field. Shri S Anantha Narayanan, Director, NPOL, presided over the valedictory function and distributed course certificates to the participants.

Shri OR Nandagopan, Sc F, was the Course Director.

PXE, Chandipur

A Continuing Education Programme (CEP) on Safety Management in Armament Test and Evaluation was organised by PXE, Chandipur, during 20-24 June 2011. Twenty-six participants from various DRDO labs/estts attended the course. The programme was designed to develop safety awareness among the participants who were involved in dynamic test and evaluation of different armaments. Major thrust in the CEP was on fundamentals of range safety, probable hazard at range, safety criteria at magazine, instrumentation and electrical safety, occupational health and safety, safe operation and maintenance procedure of mechanical equipment, safety concept of weapon system, safety during test and evaluation of armaments, fire safety in explosive area, environmental safety, industrial safety and role of safety in it, safety in ammunition processing, and safety audit norms. These were dealt in detail by experts faculty from PXE, Chandipur; ISPAT Alloys Ltd, Balasore; and Rourkela Steel Plant. Shri PK Dasgupta, Officiating Director, PXE, inaugurated the course. Shri V Anguswamy, Associate Director, PXE, distributed certificates to participants in the valedictory function. The CEP was coordinated by Dr AK Sannigrahi, Sc F, and Mrs S Sen, TO B, was the Course Director.
New Facilities Established

DRDL, Hyderabad

Shri K Tamilmani, DS and CE (A), CEMILAC, Bengaluru, and Shri P Venugopalan, OS and Director, DRDL, Hyderabad, laid the foundation stone on 27 June 2011 for the construction of new office building for Regional Centre for Military Airworthiness (Missiles) in DRDL premises. The new office building is likely to be completed by March 2012.

DLRL, Hyderabad

- Shri SK Gupta, Sc G, Associate Director, inaugurated Data Recovery Centre building, Meghna, on 29 June 2011. Shri G Boopathy, Director; Shri TN Yadagiri Rao, OS and Associate Director and other senior officers of DLRL and MES were also present during the inauguration. Shri Boopathy reiterated the importance of preserving project information and technical data for futuristic research work on the occasion.

Patent Granted

DMRL, Hyderabad

The Indian Patent Office, New Delhi, granted a Patent No. 247901 of ‘An Improved Process for Preparation of Copper-titanium Alloys’ for the invention made by Defence Metallurgical Research Laboratory (DMRL), Hyderabad. The inventors are: Dr Nagarjuna Settivari, Shri Bandaru Rajendra Prasad, and Dr Krishan Kumar Sharma.
PERSONNEL NEWS

Appointments

DARE, Bengaluru

Shri PM Soundar Rajan assumed charge as the Director of Defence Avionics Research Establishment (DARE), Bengaluru, wef 1st August 2011. Shri PM Soundar Rajan graduated from College of Engineering, Guindy, Chennai, in 1973 as an Electronics and Communication Engineer. He obtained his Masters from IISc, Bengaluru, in the same field in 1989.

He commenced his professional career in 1973 at Electronics and Radar Development Establishment (LRDE), Bengaluru. During his tenure at LRDE, he designed and developed digital communication systems. From 1978-1996, he was posted at Aeronautical Development Establishment, Bengaluru, where he contributed to the flight testing and LCA avionics integration activities. He joined DARE in 1996. He contributed towards the development and integration of mission computer and other avionics systems for the Su 30 MK I aircraft under the project Vetrivale.

As the Chief Designer and Project Director of the MiG-27 avionics upgrade, he has successfully upgraded the aircraft which is currently in Squadron Service.

He is the recipient of Agni Award for Excellence in Self-Reliance for the year 2003 and DRDO Performance Excellence Award for the year 2008.

DIHAR, Leh

Dr Ravi Bihari Srivastava, Sc G has been appointed Director, Defence Institute of High Altitude Research, the world’s highest agro-animal institute, wef December 2010. He obtained postgraduation in Botany from Allahabad University and PhD from Kumaon University. Dr Srivastava was instrumental in establishing the Marine Biology Laboratory at Naval Materials Research Laboratory, Ambernath, and thereafter was involved in several strategic research projects related to aerospace materials at Defence Materials, Stores Research & Development Establishment, Kanpur. As Director of Defence Research Laboratory, Tezpur during 2007-2009, he significantly contributed to the wellbeing of the troops in the North-East sector through development of water purification systems for iron and arsenic removal, herbal antimalarials, prophyllactics against black fly bites, microalgae-based biodiesel production systems, etc. During his tenure (2009-2010) as Director of Life Sciences (DLS), DRDO HQrs, he prepared business plan and roadmap on futuristic research areas for the life sciences group of laboratories in DRDO to be implemented through interdisciplinary collaborations between various laboratories. At DIHAR, Dr Srivastava is engaged in devising research and development for augmentation of agro-animal technologies and optimal utilisation of non-conventional energy resources in Ladakh region.

He has authored 18 book chapters, edited books, has more than 60 publications in peer-reviewed journals and 9 patents to his credit. Dr Srivastava has been honoured with several prestigious awards including the DRDO Scientist of the Year Award in recognition to his contributions for the development of bio-resistance coatings for war equipment, evolving new concepts in microbe-metal interactions, and unveiling a new fungal species for biodegradation of polymers.

Superannuation

DARE, Bengaluru

Dr UK Revankar, Director, Defence Avionics Research Establishment (DARE), Bengaluru, superannuated on 31 July 2011. Dr Revankar received his BE in Electronics and Communication Engineering from Karnataka University, Dharwad, in 1972; ME in...
Electrical and Communication Engineering and PhD in Microwaves, both from Indian Institute of Science, Bengaluru, in 1974 and 1996, respectively.

Soon after his postgraduation, he joined Electronics and Radar Development Establishment (LRDE), Bengaluru, in 1974 and contributed significantly in the indigenous design and development of radar systems. In 2006, he joined DARE, as Associate Director and contributed to the indigenous design and development of advanced airborne electronic warfare systems.

He is the recipient of IETE-IRSI (83) Award in the year 1997 and NRDC National Technology Meritorious Award in the year 2005. He is a Fellow of IETE and has presented many papers in international/national conferences and symposia. He is the Principal Inventor of a number of Patents filed and granted on T/R Modules in USA, Europe, and India. He has to his credit 50 research publications in national and international journals/conferences.

**DRDL, Hyderabad**

Dr S Sundarrajan, Outstanding Scientist, and Head Programme Team and Deputy Programme Director, PJ–10, superannuated on 30 June 2011 after 37 years of distinguished service. His career was oriented towards R&D in the area of missiles, which included design, development, and qualification of products for production with detailed applied research.

Dr Sundarrajan joined the National Institute of Technology, Tiruchirapalli, as Director, and will be responsible for increasing R&D efforts and provide national and international linkings to boost the image of higher education in India.

**Directorate of Aeronautics, DRDO HQrs**

Shri Harish Chandra, Director of Aeronautics, DRDO HQrs, superannuated on 31 July 2011. He obtained BSc (Mechanical Engineering) from HBTI, Kanpur and ME (Design) from MNREC, Allahabad. He specialised in mechanical design, hydraulic servo systems, and flight control servo actuation systems. He designed and developed three-degrees of freedom and six-degrees of freedom motion platform systems for pilot flight training simulators of Ajit and Kiran aircraft. These systems were installed and used at various Air Force stations. He also designed and demonstrated an engineering model of compact hydraulic servo actuator for use on unmanned aerial vehicle. Before this appointment, he was Project Director of LCA’s fly-by-wire (digital quadruplica) flight control system. He established different types of hydraulic servo actuator test rigs and supplied to various workcentres. He also guided many indigenous actuator design and development programmes. He is the life member and executive member of AeSI, Bengaluru.

**Higher Qualification Acquired**

Shri Rajesh Kumar Gupta, Sc G, Project Director, A5 and Director ASDAG, ASL, Hyderabad, has been awarded PhD in Mechanical Engineering from JNTU, Hyderabad, for his thesis titled, ‘Non Linear Vibration and Postbuckling of Composite Structures using FEM’.

**ISO 9001: 2008 to DESIDOC**

Defence Scientific Information & Documentation Centre (DESIDOC), a constituent establishment of DRDO, and one of the premier documentation centres in India got ISO 9001: 2008 certification from Standardisation, Testing and Quality Certification (STQC), Department of Information Technology, Government of India.

DESIDOC functions as a premier information resource centre for DRDO scientists based on its library and other...
Visits to DRDO Labs/Estts

CAIR, Bengaluru

- Lt Gen K Surendra Nath, AVSM, VSM, Army Cdr, ARTRAC on 22 July 2011.

CABS, Bengaluru

- Dr A Subhananda Rao, DS and CC R&D (Aero), on 8 July 2011.

- AVM RKS Bhadouria, VM, ACAS (Projects), on 21 July 2011.

AVM RKS Bhadouria, VM, ACAS (Projects) during his visit to CABS.

Demonstration to Lt Gen K Surendra Nath, AVSM, VSM, Army Cdr, ARTRAC by Robotics Group of CAIR.

NSTL, Visakhapatnam

- Parliamentary Standing Committee on Defence on 4 July 2011, as a part of study tour on Self-reliance and Indigenisation.

Parliamentary Standing Committee on Defence interacting with the officers of NSTL.

Dr A Subhananda Rao, DS & CC R&D (Aero) showing keen interest in CABS activities.

ISO certification is an accreditation and recognition to the services that DESIDOC provides in the areas of documentation and information dissemination.