



DIPR HANDS OVER PROTOTYPE OF TRAINING MANAGEMENT SYSTEM TO ARTRAC

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DIPR HANDS OVER PROTOTYPE OF THE TRAINING MANAGEMENT SYSTEM TO ARTRAC

Defence Institute of Psychological Research (DIPR), Delhi, DRDO's centre of excellence in military psychology, handed over prototype of Organizational Effectiveness and Competence Building Training Management System, SABERA®, to the Army Training Command (ARTRAC) Shimla. Dr Shashi Bala Singh, the then DG (LS), DRDO, handed over the system to Maj Gen Amrit Pal Singh, MGGS (Trg), ARTRAC, on 24 May 2018.

SABERA is a web-based real-time training management system comprising two interfaces—user interface and administrator interface—and is useful both at individual as well as administrator/organizational level. Individual level can be used for assessing individuals in leadership style and behavioural competencies of their strength and the areas they may like to

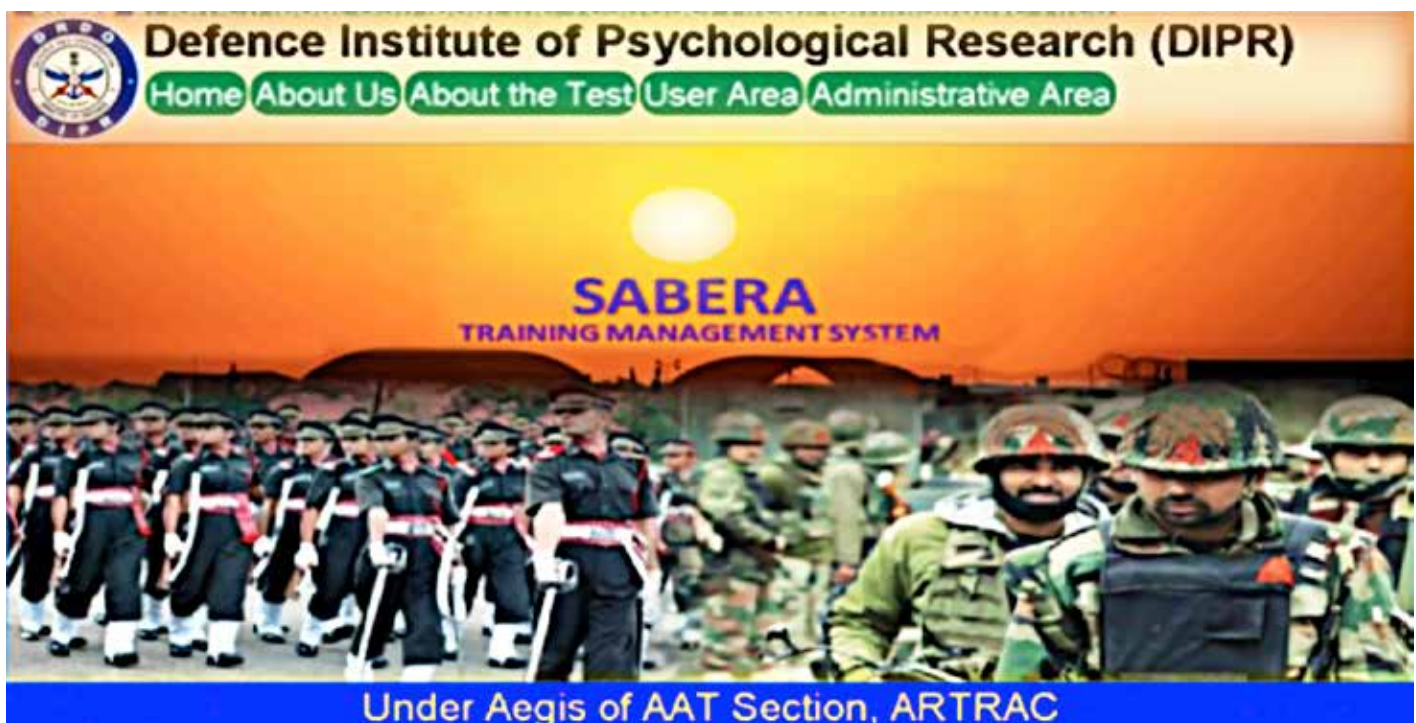
include in their personal development programme. Organizational level is useful for the organization as human resource inventory, a decision-aid in designing customized training programme and as a personalized automated training aid. The system can also be used as HR management system.

The application has gone through rigorous trials at the Cat 'A' training establishments of Indian Army including HQ ARTRAC and was found useful.

DIPR has been engaged in the research related to personnel selection, organisational behaviour, and human factor in a man-machine system, and effects of extreme hostile environmental conditions on the psychological adjustment, efficiency and well-being of the Armed Forces. Institute has developed and handed over a number of systems like Computerized Pilot

Selection System (CPSS); Tests for the Selection of Sharp Shooters; Air Traffic Controller Assessment System; Other Rank Trade Allocation System (ORTAS); Selection System for Officers and Naviks of Indian Coast Guard; Web-based Military Aptitude Test; Comprehensive Battery of Cognitive Abilities (CBCA); Selection Battery for Personnel Below Officers Rank; Army Medical Corps Trade Allocation Battery (AMC-TAB); Psychological Test for induction of Airmen in Indian Air Force; Psychological Screening Test for ITBP Personnel; Indian Navy Entrance Test (INET); Computerized Cognitive Battery for Officer Selection in Indian Coast Guard, etc.

DIPR has also brought out a number of manuals and books for the Armed Forces on how to manage psychological and physiological factors effecting our forces.





DRDO CONDUCTS TECHNOLOGY DEMONSTRATION PROGRAMMES IN NORTH EAST

Defence Research Laboratory (DRL), Tezpur, under DRDO's TD Programme, Arunodaya, conducted a training programme on Processing of Meat and Meat Products, Momos and Fish during 26-27 June 2018 for the self-help groups and women entrepreneurs of Salari (Arunachal Pradesh) region. The training featured demonstration of ready-to-cook chicken momos using a fine combination of minced chicken, vegetables, herbs and spices. Different momo recipes were prepared using

refined flour, wheat flour and multi grain mix. Besides, preservation of local fishes by wet drying techniques was also demonstrated. The training programme was jointly conducted by Defence Food Research Laboratory (DFRL), Mysuru, and DRL, Tezpur.

DRL also organized a workshop on Installation and maintenance of Iron Removal Unit and Water Quality Analysis on 30 June 2018 at HQ 5 Mountain Division, Tenga, Arunachal Pradesh under Arunodaya. Col KS Uppal, CO, 238 Transit Camp, inaugurated

the workshop and briefed about the importance of water purification. DRDO scientists, viz., Dr Rama Dubey, Dr S Chatterjee and Ananta Saikia delivered talks on Installation and maintenance of Iron Removal Unit and Water Quality Analysis by using DRDO's Water Testing Kit, Waste Management Practices and DRDO Biotoilet and DRL Products.

Maj Gen RK Jha, GOC 5 Mtn Div, appreciated DRL for conducting the training programmes.



DRDO CELEBRATES INTERNATIONAL DAY OF YOGA

June 21 is celebrated every year as the International Day of Yoga (IDY) all over the world after unanimous declaration by United Nations General Assembly (UNGA) on 11 December 2014. The idea of IDY was first mooted by the Hon'ble Prime Minister Shri Narendra Modi during his speech in UNGA on 27 September 2014 wherein he stated: "Yoga is an invaluable gift of India's ancient tradition, which is 5000 years old. It embodies unity of mind and body; thought and action; restraint and fulfilment; harmony between man and nature; a holistic approach to health and well-being. It is not about exercise but discover the sense of oneness with yourself, the world and the nature. By changing our lifestyle and creating consciousness, it can help in well-being."

DRDO celebrated 4th IDY with mass yoga programmes, lectures and workshop at its various labs and establishment all over the country. To create awareness about yoga among Delhi-based DRDO labs and DRDO HQ, a yoga session was organised jointly by Defence Institute of Physiology and Allied Sciences (DIPAS) and DROMI in Central Park, DRDO Complex, Timarpur, Delhi, on 21st June during 0700-0800 hr. The session was attended by 430 DRDO employees and their families. As part of IDY, a workshop was also organised jointly by DIPAS and Defence Scientific Information and Documentation Centre (DESIDOC) at Bhagavantham Auditorium, Metcalfe House. Dr Bhuvnesh Kumar, Director, DIPAS and Coordinator IDY Programme for DRDO, in his address, enunciated the importance of the yoga

and encouraged all to adopt yoga in their day-to-day life.

Dr (Mrs) Chitra Rajagopal, DS and DG (SAM & LS), the Chief Guest of the function, in her inaugural address spoke about the significance and benefits of yoga. She elucidated basic philosophy of yoga, its relevance and benefits to health and how to incorporate simple yogic techniques in our daily life. Lectures on yoga and its physiological effects were delivered by Dr Arun Kumar Singh and Ms Shivangi Singh from Mokshayatan Yog Sansthan. Demonstration of yogic asanas was also made on this occasion. The programme concluded with vote of thanks by Dr Alka Suri, Director, DESIDOC. Around 500 persons participated in the workshop.

The following DRDO labs/estts also celebrated IDY at their respective places:

ARDE, Pune

IDY was celebrated at Armament Research and Development Establishment (ARDE) in three parts. A workshop of five days on "Basics of Yog" was arranged from 11 to 15 June 2018. Shri Kishor Ambekar, a reputed Yog Teacher from Ramamani Iyengar Memorial Yog Institute conducted an interactive workshop on yoga. A mass yoga session was performed based on Common Yog Protocol by a large number of employees including Dr KM Rajan, DS and Director, ARDE. This was followed by an informative lecture by Dr Leena Phadke, MD, Chairperson, Coordinator of Central Research Laboratory and Associate Professor from SKNMC, Pune, who spoke on "Yoga and its Benefits" with special emphasis on effects of yoga on functioning of the human brain.



ANURAG, Hyderabad

As part of the celebrations a brief talk and demonstration on Heartfulness Meditation was given by Shri K Santeppa, OS and Associate Director Advanced Numerical Research and Analysis Group (ANURAG). Yoga trainer Shri Ramachandra Chary demonstrated yoga asanas to the ANURAG employees who practiced these simultaneously. The benefits of practicing yoga daily and its effects on the physical, emotional, psychological and spiritual well-being were explained during the yoga session.

CAS, HYDERABAD

Banners were exhibited at various locations in the establishment to popularize the significance of Yoga and imbibe the spirit of nationalism



through the same. The officers and staff of CAS, BDL and SSQAG participated in the programme. The proceedings of the day started with brief introduction regarding significance of yoga by Shri T Srinivas, SO, Director, CAS in his address highlighted the means to achieve excellence in life by combining mental, spiritual, professional and social excellence. Shri Surrender Reddy and Jitender Singh, Yoga Instructors, conducted the yoga session. They shared their experiences and highlighted the benefits of practicing Yoga in management of stress.

DESIDOC, Delhi

Defence Scientific Information and Documentation Centre (DESIDOC), jointly with Defence Institute of Physiology and Allied Sciences

(DIPAS), Delhi, organised one-month Yoga Training Camp from 12 June to 12 July 2018. Dr Alka Suri, Director, DESIDOC and Dr Bhuvnesh Kumar, Director, DIPAS, inaugurated the camp. Dr Rajeev Vij, Sc 'G', Camp Coordinator, elucidated the importance and benefits of yoga in day-to-day life. Dr Alka Suri spoke on the basic philosophy of yoga, its relevance and benefits. Dr Bhuvnesh Kumar, emphasised the role of yogic practices in the development of healthy body, mind and soul.

DIHAR, Leh

A yoga session was organized at Defence Institute of High Altitude Research (DIHAR), on 21 June 2018. Yoga asanas like Suryanamaskar, Anulom-Vilom and Pranayam, etc., were practiced. Havildar Sanjay Kumar of

DIHAR, a well known yoga practitioner, briefed about various postures and the importance of yoga in our daily life. All the DIHAR staff actively participated in the yoga session.

DMRL, Hyderabad

The theme of this year's IDY "Yoga for Peace" was celebrated with gusto. Dr Vikas Kumar, in his address, highlighted the importance of ancient Indian practice of yoga and Patanjali System of Ashtanga yoga. He emphasised yoga's beneficial effects on the mind and body and urged that every employee of DMRL should make it an integral part of their routine and practice it for 15-20 minutes daily. A mass yoga demonstration was carried out by Shri A Jagadeesh and his team from Sanjeevani Wellness Institute of Naturopathy and Yoga (SWINY), Hyderabad, as per common yoga protocol of the Ministry of Ayush, Government of India. Around 150 employees participated in the event.

DRL, Tezpur

Defence Research Laboratory (DRL), celebrated IDY with full zeal. Yoga guru R Pal, Vivekananda Kendra, Tezpur, delivered a talk on the Importance of the Yoga in our daily life followed by yoga session by DRL employees.

ITR, Chandipur

A yoga camp was organised in collaboration with Patanjali, Balasore, where all employees of ITR participated and practiced various yoga asanas. The camp was organised inside ITR technical campus and was inaugurated by Dr BK Das, OS and Director, ITR. In his inaugural address, Dr Das emphasised the importance of practicing yoga to maintain physical, emotional and spiritual health. Yoga Guru Smt Meera Vajpayee and her team members from Patanjali Yoga Committee conducted the yoga session. The occasion was marked by a tree plantation programme for spreading the message of a cleaner, greener and healthier environment.

NMRL, Ambarnath

IDY was celebrated at Naval



Materials Research Laboratory (NMRL), on 21 June 2018 with keen interest. The celebrations commenced with a session conducted in the early hours of the day by a yoga expert. Director, NMRL along with employees and family members took active participation. Two lectures were organized on “Yoga and Ayurveda” and “Yogic Transmission through Heartfulness”. Awareness was aroused among employees that how yoga embodies unity of mind and body, thought and action and brings a holistic approach to health and well being.

Office of DG (Aero), Bengaluru

Smt Cynthia Surya, TO ‘D’, and Smt Sonia Jain, Sc ‘C’, both from ADE were the special invitees and instructors of the yoga session. Smt Surya, briefed the employees about the benefits of practicing yoga and demonstrated simple exercises helpful in relaxing and maintaining good health. The



officers and staff practiced Yoga under their supervision to commemorate the occasion.

SASE, Chandigarh

Yogic exercises like Anuloam-vilom,

Kapalbharti, Sukhasana, Trikonasana, Shavasana were conducted by yoga instructor Shri Snajeev Swantantra. Shri Naresh Kumar, Director SASE, officers and staff participated in all the activities with full enthusiasm.



RAISING DAY CELEBRATIONS

CAS, HYDERABAD

Centre for Advanced Systems (CAS), Hyderabad, celebrated its 3rd Raising Day on 16 June 2018. Dr G Satheesh Reddy, SA to RM and DG (MSS), graced the occasion as the Chief Guest. Dr Avinash Chander, former SA to RM, Secretary, Department of Defence R&D and DG DRDO, was the Guest of Honour. Directors, Programme Directors Project Directors of cluster labs, dignitaries from SSQAG, SFTS, BDL, along with senior scientists of missile cluster were also present. Dr V Venkateswara Rao, OS and Director, CAS, in his welcome address, gave the glimpses of CAS's journey of last three years and highlighted the major achievements of year 2017 and appreciated entire CAS fraternity for their hard work.

Dr G Satheesh Reddy, in his address appreciated the efforts of team CAS and expounded that the institution would be an important centre for integration and testing of strategic systems in the future.

Dr Avinash Chander, congratulated CAS family and recounted how the idea of CAS originated. Dr G Satheesh Reddy along with senior scientists of the missile cluster felicitated Dr Avinash Chander for his contributions in the development of critical missile technologies.

A new Integration Facility was inaugurated by Dr G Satheesh Reddy. The Chief Guest and the Guest of Honour distributed lab-level DRDO Awards to the meritorious employees of CAS, BDL and SSQAG. The function concluded with a cultural programme staged by employees of CAS, BDL, SSQAG along with their wards. Annual Sports Awards and participation prizes for cultural programmes were distributed by Director, CAS.

DEBEL, BENGALURU

Defence Bio-engineering and Electromedical Laboratory (DEBEL), Bengaluru, celebrated



its 37th Foundation Day on 19 June 2018. Prof. Rohini Balakrishnan, Chairperson, Centre for Ecological Sciences, IISc, Bengaluru, was the Chief Guest of the function. Shri MZ Siddique, OS and Director, GTRE, Bengaluru, Rear Admiral PJ Rangachari, Project Director (P&ES), HQ ATVP, New Delhi, Shri Shankariah Mada, Sc 'G', ADA, Bengaluru and former Directors of DEBEL also graced the occasion.

Dr UK Singh, Director, DEBEL, presented the activities and achievements of DEBEL in the year 2017 in the areas related to aero-medical, biomedical, underwater, NBC protective equipment and contributions of the

Society for Biomedical Technology.

The Chief Guest congratulated the officers and staff of DEBEL and commended the lab for its achievements. She delivered an informative lecture on 'Behaviour, Bio-diversity and Biomimetics' and shared its possible applications to defence research.

The Chief Guest presented lab-level DRDO Awards to scientists and staff for their meritorious contributions. Medals were presented to the winners of the sports competitions. A video highlighting the various activities and achievements of DEBEL since 1982 was also screened to reminiscence and cherish the past.



NATIONAL CONFERENCE ON ADVANCES IN ARMAMENT TECHNOLOGY (NCAAT 2018)

Armament Research and Development Establishment (ARDE), Pune, organized the 2nd National Conference on Advances in Armament Technology (NCAAT 2018) during 8-9 June 2018. Dr SK Salwan, Vice Chancellor, Apeejay Stya University was the Chief Guest. Lt Gen PK Shrivastava, AVSM, VSM, DG, Artillery, was the Guest of Honour.

Around 200 delegates from DRDO, representatives from Ordnance Factory Board and Private Industry and students attended the conference. In the inaugural session, Dr KM Rajan, DS and Director, ARDE, and Chairman, Organizing Committee, welcomed the invitees and delegates and gave an overview of the various components of the conference. Shri PK Mehta, DS and DG (ACE), DRDO, expressed his

happiness on the organisation of NCAAT 2018 and highlighted the contributions of the ACE cluster for India's defence. In his keynote address, Dr SK Salwan gave a comprehensive view of the future weapons and warfare scenario. In his address, Lt Gen Shrivastava emphasized the need for focusing on research in Artificial Intelligence and Robotics for weapon system development.

Keynote addresses by Shri AM Datar, former DG (ACE), DRDO, and Lt Gen (Retd.) JP Singh, PVSM, AVSM, brought out the vision for future developments in armament technologies and the direction needed to achieve the aim.

Conference Proceedings, Abstracts and Souvenir were released by the dignitaries. A Coffee Table Book, "Ayudh Yatra: 60 Glorious Years of ARDE" was released by the past Directors and

Dr Rajan. An exhibition showcasing defence products developed by DRDO and private industry was inaugurated by Maj Gen (Retd) D Kapil, VSM, former Director ARDE. Shri AM Datar inaugurated the Poster Exhibition.

A special session on "Make in India" was arranged wherein speakers from private industry presented their initiatives in defence manufacturing.

A panel discussion, chaired by Shri PK Mehta, was also organised on the occasion. The discussion brought out a roadmap for the future.

Around 100 papers were selected for the Conference. The oral and poster presentation sessions received remarkable response and were well appreciated by the attendees. Best paper awards were given for oral and poster presentations.



Release of Conference Proceedings



OFFICE OF THE DG (AERO) CELEBRATES DRDO@60

The Office of the Director General (Aero), Bengaluru celebrated DRDO@60 on 31 May 2018. Dr A Shivathanu Pillai, former Chief Controller, R&D, DRDO was the Chief Guest of the function and Shri HS Shama Sunder, Motivational Speaker, was the Guest of Honour.

Dr A Shivathanu Pillai, in his talk on Futuristic Defence Technologies, enumerated emerging battle scenarios and said that tough challenges posed while travelling unexplored paths needs to be surmounted to realize critical technologies.

Shri Shama Sunder in his address on Happiness said that the path to happiness is in realizing and accepting the fact that life is full of uncertainties.



Dr A Shivathanu Pillai delivering talk on Futuristic Defence Technologies

DRDO PARTICIPATES IN WOMEN EMPOWERMENT 2018 EXHIBITION

Now and Avalanche Study Establishment (SASE), Manali, along with other DRDO labs Defence Institute of High Altitude Research (DIHAR), Leh, and Defence

Institute of Physiology and Allied Sciences (DIPAS), Delhi, participated in the exhibition on 'Women Empowerment 2018' organized by the Prayas Exhibitions, Delhi, during 22-

24 June 2018 at Jammu (J&K). The exhibition was visited by students, scientists, government officials, technocrats, researchers, academicians, etc.



COURSE ON EXPOSURE TO ADMINISTRATIVE PROCEDURES AND REGULATIONS

Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru, conducted a course on “Exposure to Administrative Procedures and Regulations” from 6 to 8 June 2018 under the Continuing Education Program (CEP) of DRDO. The aim of the course was to familiarize the admin personnel with various administrative

regulations promulgated by the Government of India. Shri KVN Rao, JD (Admin), ADE, and Shri SK Srivastava, CAO (Retd), LRDE, delivered lectures on topics like behavioural science, CCS (Conduct) Rules, MACP, NPS, retirement and reservations. While lecture on behavioural science was lauded for highlighting the functional

psychology governing man and management, lectures on reservation rules, NPS and MACP were welcomed for being of universal utility and lucid form of presentation. In-house faculties delivered lectures on best practices in the field of office procedures, service books, CGHS and TA/DA.



COURSE ON COMPUTER NETWORKING FUNDAMENTALS

CAIR conducted a CEP course on “Computer Networking Fundamentals” from 12 to 14 June 2018. Thirty personnel participated in the course. There was a series of presentations and interactive sessions focusing on Fundamentals of Computer Networking and covering various

technologies and the current state-of-the-art in the field of Networking. The coverage, focus and course contents were dealt in with utmost sincerity and expertise. To ensure the quality, some of the best domain experts in their respective fields were roped in. The course covered all the major topics

related to computer networking such as Networking Architectures, Topologies and Protocols, Networking Devices, IPv6-based Networking, Network Simulation Tools, and Network Security among others.



NAVOTKARSH-2018

Defence Scientific Information and Documentation Centre (DESIDOC), organised Navotkarsh-2018 training programme on “Presentation and Interview Facing Skills” during 20-23 June 2018 under the CEP of DRDO. The basic aim of the programme was to train the DRTC personnel to face the assessment boards confidently. Dr Rajeev Vij, Sc ‘G’, Course Coordinator, briefed the participants about the objectives and purpose of the training programme and asked them to

be interactive with the faculty.

Dr Alka Suri, Director, DESIDOC, inaugurated the CEP and elucidated the importance of such need-based courses. She stressed on the need for learning presentation skills. Shri SC Narang, former Chairman, Centre for Personnel Talent Management (CEPTAM), inaugurated the training course and explained the importance of ‘Navotkarsh’ Training Programme. Thirty-eight participants from 14 DRDO labs/estts, who will be

appearing in Assessment Boards 2018 actively participated in the training programme.

Shri SC Narang, Shri Rajesh Aggarwal, Motivational Speaker and Entrepreneur Coach, and faculty from DRDO gave presentations and tips to the participants. A quiz was organised to assess the knowledge acquired by the participants. The top three participants were awarded. Dr Rajeev Vij, distributed the certificates.



COURSE ON PROCUREMENT REGULATIONS

A three-day course on “Govt of India Regulations for Procurement” was organised by the Institute of Technology Management (ITM), Mussoorie, during 11-13 June 2018. The objective of course was to acquaint the Officers with existing and latest changes in procurement policy and to give an insight into the latest procurement platform Govt e-Market

(GeM). Course was inaugurated by Shri Sanjay Tandon, OS and Director ITM who highlighted the importance of materials management and various aspects of procurement procedures.

The topics covered as part of course curriculum were: Principles of Public Procurement, GST, CVC Guidelines, GFR 2017, Delegation of Financial Powers, Govt Policies on Purchases

Preference, INCOTERMS and Banking Instruments, DPP and Role of IFA in Public Procurements.

Dr Mala Iyengar, IDAS IFA (R&D) was the Chief Guest at the valedictory function and distributed course completion certificates to the participants.

The course was attended by twenty-eight participants.



FOUNDATION COURSE IN TECHNOLOGY MANAGEMENT

A five-day 'Foundation Course in Technology Management' for scientist 'B', 'C' and 'D' was conducted by ITM,

from 18 to 22 June 2018. Twenty participants from 12 DRDO labs and three participants from BrahMos

Aerospace attended the course. The objective of the course was to acquaint young scientists about various facets





of Technology Management (TM) for achieving competitive excellence.

Shri Sanjay Tandon, OS and Director ITM inaugurated the course. In his welcome address, Director, ITM, deliberated upon the technology management aspects in projects.

Dr Manik Mukherjee, former Director, DFTM, DRDO HQ, delivered a lecture on Technology Forecasting, Assessment and Evaluation and shared his experiences. Dr Atul Sen, former

Sc ‘G’, in his invited talk, elaborately discussed about the technology planning and strategy/knowledge management.

Shri Patrick D’Silva, OS and Project Director, LRSAM, DRDL Hyderabad, presented a case study on long range surface-to-air missile project, Shri Avinash Kumar, Sc ‘G’, ER&IPR, DRDO HQ, delivered a lecture on Idea Generation, Patent Search and Protection and Dr Vivek Raghav, Sc ‘E’ from DIITM, DRDO HQ, on

Transfer of Technology, Technology Acquisition and Offset.

Lectures on various topics, viz., Introduction to Technology Management, Technology Lifecycle Management, Technology Management, in DRDO Context and Technology Development Models were covered during the course.

DISSEMINATION MEETING ON AVALANCHE FORECAST FEEDBACK

Snow and Avalanche Study Establishment (SASE) organized 19th Dissemination Meeting on 22 June 2018 at RDC, SASE, Chandigarh. The aim of the meeting was to get the feedback from the military and paramilitary forces posted at avalanche prone areas on avalanche and mountain weather forecasting during the winter season 2017-18 and to

discuss a better strategy for mitigation of avalanche threats as well as effective dissemination procedures.

Fourteen participants from DGMO-4, Northern Command, Central Command, Western Command, Eastern Command, 14 Corps, 15 Corps, 16 Corps, Indo Tibetan Border Police (ITBP), and Border Road Organisation (BRO) Project Himank Rohtang,

attended the meeting. Many action points, e.g., up-gradation of avalanche digital cards, avalanche forecast to army commands through AWAN, identification and mapping of avalanche hazard zones in Eastern Command AOR, pre-winter appraisal report before onset of winter, etc., were discussed during the meeting.



HINDI WORKSHOPS

CAIR, BENGALURU

Centre for Artificial Intelligence and Robotics (CAIR) conducted a one-day Hindi Workshop on “Official Language Implementation” on 26 June 2018. The objective of the workshop was to ensure effective implementation of Rajbhasha. Fifteen employees participated in the workshop. Shri MP Damodaran, Deputy Director (OL), Coffee Board, delivered a lecture on “Official Language Implementation: Problems and Solutions”. Issues related to problems faced by the employees while working in Hindi were addressed during the workshop.

OFFICE OF THE DG (AERO), BENGALURU

The Office of Director General (Aero) organized first Rajbhasha workshop for the FY 2018-19 on 29 June 2018. Dr SN Mahesh, Senior Translator, CAIR, was the invited speaker. Dr PN Tengli, Director (Admin) in his address laid emphasis on the need to know and use one common language in the country. He urged one-and-all to promote and propagate the use of Hindi in day-to-day office work. Dr SN Mahesh, in his presentation on ‘An Insight into Official Language’ gave an overview of major languages spoken around the world and where does Hindi stands. He brought out that Hindi language has undergone changes with time and today is in its simplified form. He highlighted various schemes and provisions introduced by the Government to encourage and spread the usage of Rajbhasha.

RCI, HYDERABAD

Research Centre Imarat (RCI) organised first Hindi Workshop for the year 2018-19 on 27 June 2018. Shri T Narasimha Rao, Sc ‘G’,



Hindi Workshop at the Office of the DG Aero



Participants of Hindi Workshop at RCI

Vice Chairman, OLIC, inaugurated the workshop. Shri MK Gupta, Sc ‘F’, Member Secretary, OLIC, stressed on Hindi implementation in all Divisions of the RCI. Shri Kazim Ahmed, Senior Hindi Translator, RCI, delivered a lecture on Hindi Grammar and Shri K

Madanlal, Sc ‘E’, RCI, gave an overview of rules of Hindi Implementation. Shri N Manish, Sc ‘E’, RCI, delivered a lecture on Nature and its Impact on Motivation. Twenty participants attended the workshop.

DESIDOC ORGANISES MEDICAL CAMP

Defence Scientific Information and Documentation Centre (DESIDOC), jointly with Defence Institute of Physiology and Allied Sciences (DIPAS), Delhi, organized a two-day Medical Camp during 12-13 June 2018 to examine Body Composition and Bone Density. Dr Rajeev Vij, Sc 'G', Camp Coordinator, in his welcome address, briefed the participants about the objectives and purpose of the camp.

Dr Bhuvnesh Kumar, Director, DIPAS, in his inaugural address highlighted the benefits of nutritious diet. Dr Alka Suri, Director, DESIDOC, asked the employees to take benefit of the opportunity and participate in the camp. Dr Som Nath Singh, Sc 'F', DIPAS, gave tips on concept of functional food. A total of 126 members of DESIDOC were evaluated for body composition and bone mineral density.



BLOOD DONATION CAMPS CONDUCTED BY ITR

Integrated Test Range, Chandipur, in association with the District Blood Bank Authority, Balasore, conducted Blood Donation Camps at two simultaneous collection centres at ROMI, Balasore and at ITR campus on 20 June 2018. Various organisations such as Balasore District Chemist and Druggist Association, Jivan Jyoti Sangathan (an NGO), Bhadrak, ECHS Polyclinic, District Sainik Sangathan, Continental Hospital, BAPA (a social organisation), Jau Kandehi Bahaghara Utsav Committee, etc., joined hands with ITR as associate partners to make the camp a big success.

This mega event was inaugurated by Dr BK Das, OS and Director, ITR. Dr Minakshi Roy, CDMO, Balasore, graced the occasion as the Guest of Honour. In his inaugural address,





Dr BK Das exhorted ITR employees and their family members to come forward and donate the blood and spread awareness among all towards this noble cause.

Family members of ITR employees, Office of JCDA (R&D) Balasore, volunteers from various organisations and the industrial partners of ITR volunteered to donate blood at collection center at ROMI, Balasore.

ITR employees along with DSC staff, members of ITR Cultural and Environmental Club, and Ladies Wing participated in large numbers and donated blood at the Chandipur Center. Tremendous enthusiasm was observed among the employees of other establishments such as Proof and Experiment Establishment (PXE), Chandipur as they also donated blood at the Chandipur Center. Student trainees

TOP BLOOD DONOR AWARD TO ITR

ITR was awarded the Top Blood Donor Award in Balasore District as an acknowledgment for conducting Blood Donation Camp in 2017 wherein 234 unit of Blood was donated by ITR employees and their family members along with the support staff. Shri Niladri Roy, Director, Management Services, ITR, received the award during a function held on 14 June 2018 on the occasion of World Blood Donor Day. Dr Minakshi Roy, CDMO, Balasore, and Dr BK Upadhyaya, District Blood Bank Officer, were present on the occasion.

ITR has been regularly conducting Blood Donation Camps since last few years. In the year 2016, ITR secured the 3rd position among all organisations who conducted Blood Donation Camps in Balasore.

Dr BK Das, OS and Director ITR, congratulated all the employees of ITR for being part of this noble cause.

and Apprentices also volunteered to take part in the camp.

A total of 428 units of blood was

collected at the camps, which shows the concern that ITR community shares for the society.

INFRA DEVELOPMENT

ITR GETS RENOVATED MISSION CONTROL CENTRE

Dr BK Das, OS and Director, ITR, inaugurated the Renovated Mission Control Centre at ITR on 22 June 2018. The centre comprises an aesthetically and acoustically built hall with state-of-the-art facilities like high-end real time display systems, smart boards, intelligent mission monitoring system along with programmer's bench and ground instrument consoles equipped with fiber-to-desk arrangements. A full-fledged simulated mission environment was demonstrated.

Dr Das also inaugurated a new security system comprising UVSS and blocking bollard. The facility is fully automated.





SOFTWARE DEFINED RADIO FOR NAVY

This column covers the pathbreaking and successful projects and programmes of the DRDO.

Tactical operations require robust communication system having security, jam-proof mechanism, and built-in capability for future updations. However, very few of present systems in use by Indian Services have built-in security, anti-jam features, networking capability and architecture for future functionality enhancements. Most of the current systems in use are narrow band and some of them were procured from foreign sources with Indian add-on security. Considering importance of indigenous communication systems for naval operations, Indian Navy started a project, Integrated Development of Software Defined Radio for Navy (INDES DR), in July 2010 through DRDO's Defence Electronics Applications Laboratory (DEAL) led consortium for development of five different Software Defined Radios (SDRs) form factors (SDR-Naval Communication, SDR-Tactical, SDR-Airborne, SDR-Manpack and SDR-Hand-held) and associated waveforms as per the Navy's requirements. These five-form factors would address needs of Indian Navy for surface, ships, specific air platforms (Dornier) and marines.

The SDRs being developed by DEAL would replace existing single purpose hardware-based communication systems used by the Navy through multi-band, multi-function, multi-role/mission radios having capabilities for software-based re-configurability. These SDRs are able to interoperate with all legacy naval tactical radios and have integrated mission specific waveforms. The most complex and critical waveform is Mobile ad hoc Networking (MANET) having built-in Electronic Counter-Countermeasures (ECCM) capability



SDR form factors (clockwise from top left): SDR Tactical; SDR Naval Communication; SDR Hand-held; SDR Airborne and SDR Manpack

for dynamic networking among naval assets on the move.

SALIENT FEATURES

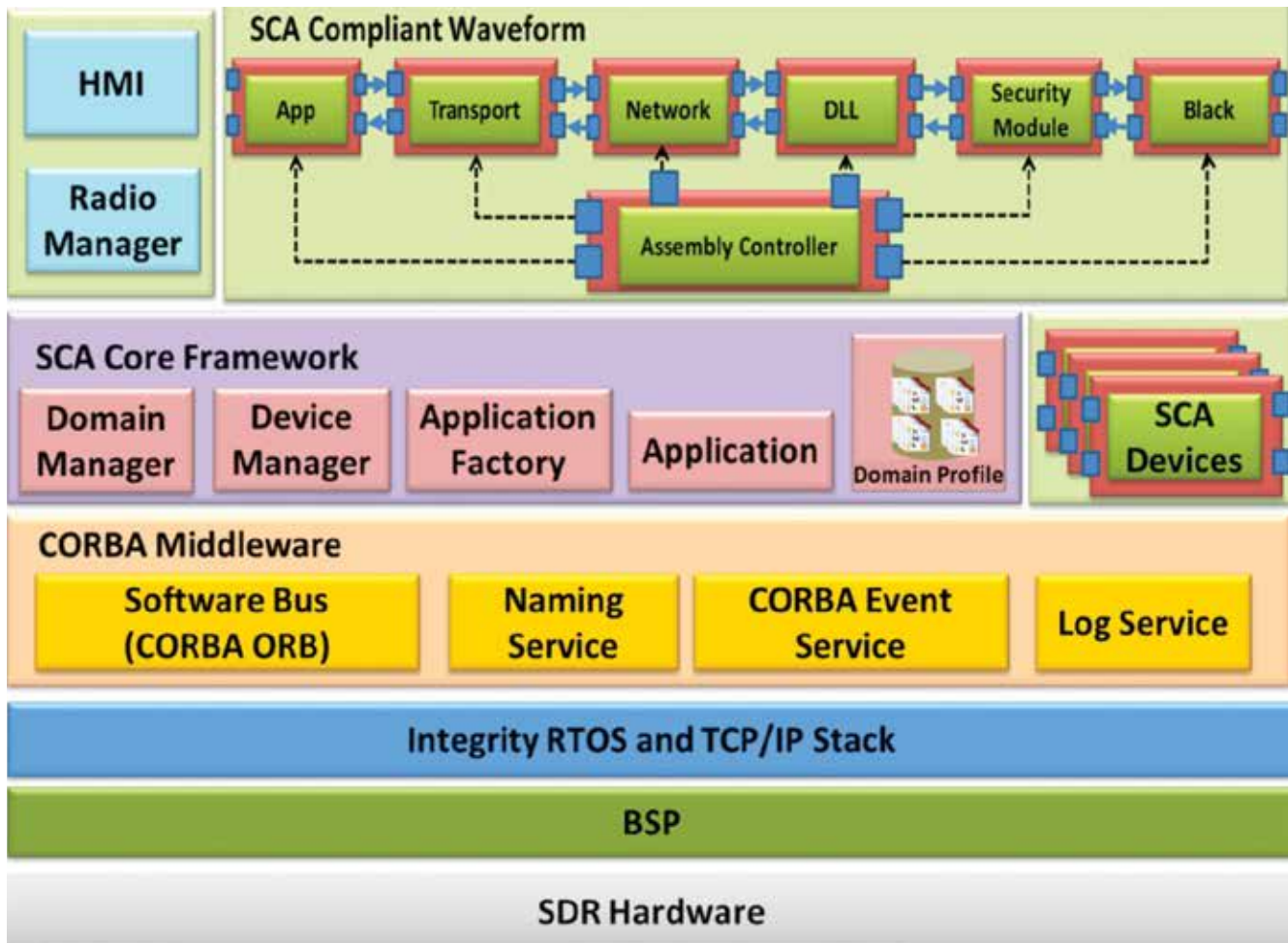
Some of the advanced technologies developed first time in India during the project are:

- * Indigenous software operating environment based on high level abstraction through Software Communication Architecture (SCA) with customization for Indian security evaluations
- * High assurance hardware and software architecture for vehicular platforms with customization for

SWaP constraints of manpack and hand-held SDR

- * ECCM-enabled waveforms having both COMSEC and key-controlled frequency hopping TRANSEC for jam-proof secure communication
- * Wideband RF Front End and High Performance Digital Processing Modules
- * Mobile ad hoc Networking, with integrated ECCM and robust Network Synchronization

Two critical components of radio software environment—SCA Core Framework (SCA CF) and CORBA (Common Object Request Broker



SDR Platform and Waveform Components

Architecture) have been developed indigenously. In addition, the SDR hardware has Software Programmable Digital Processing and RF Modules. An Integrated Graphical Human Machine Interface (HMI) helps in Radio Configuration/Monitoring and a High Level Network Management Software in effective utilization of radio communication resources by external Network Centric Operation (NCO) applications onboard naval ships.

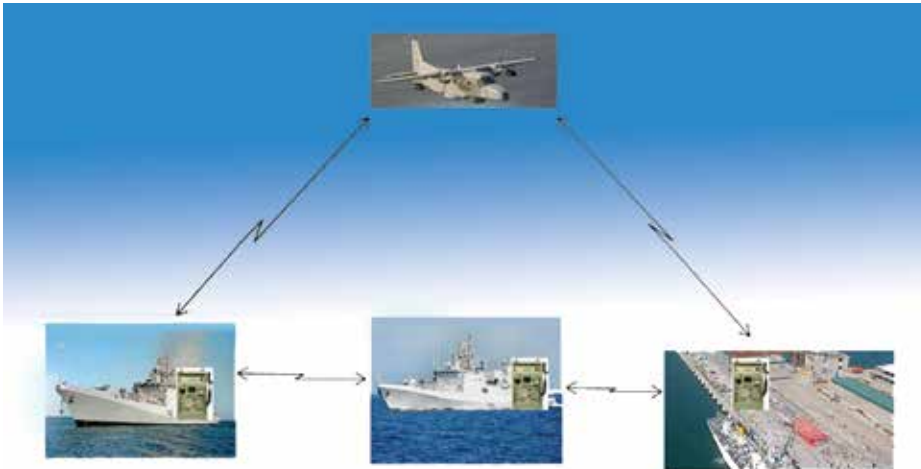
The development activities for all SDR form factors and waveforms have been completed including user-assisted developer trials. The SDR-NC form factor of the project has gone through successful User Evaluation Trials (UET). The Defence Acquisition Council

has accorded approval for procurement of SDR-NCs. SDR-NC consists of three independent RF channels and can be used for ship-to-shore, ship-to-ship, and ship-to-aircraft net radio type communication applications.

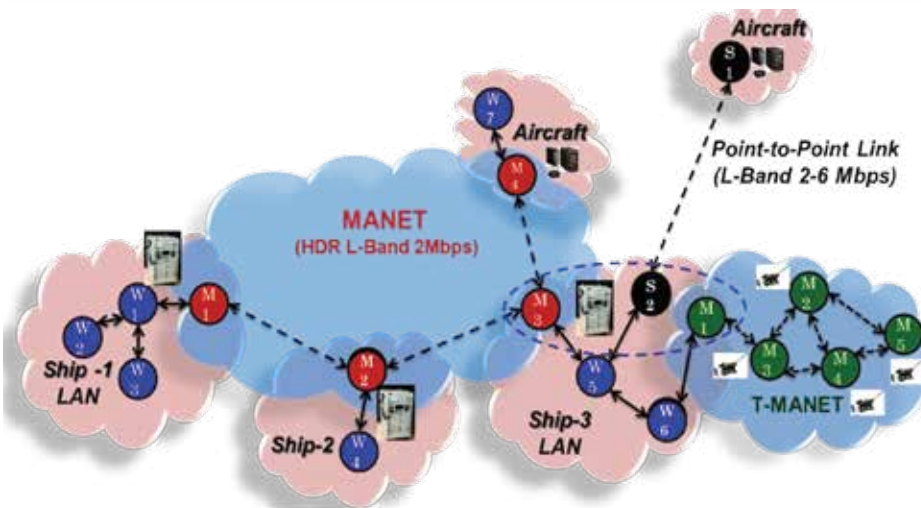
The UET of SDR-TAC and other three radios are at advanced stage of completion. The SDR-TAC, a standard 19" rack-mount radio with configurable four RF channels, is the most versatile SDR required by Navy. Any RF channel in SDR-TAC can be replaced with other RF band modules such as HF, UHF satcom, etc., in future. The radio is integrated with the state-of-the-art networking waveforms in V/UHF and L-band. These waveforms provide simultaneous communication of voice/messages/

image with IP-based data formats, and are capable to provide dynamic network connectivity with automatic relaying (multi-hop communication) feature to nodes, which are directly not in LOS with a radio. The airborne SDR has two V/UHF RF channels, one L band channel, and one HF channel.

Each SDR form factor is a secure reconfigurable communication platform having modular hardware architecture, comprehensive security features and underlying high assurance architecture to provide reliable and secure operation in a networked environment. The Radio hardware and software architecture follows traditional Red-Black separation and various cryptographic data protection



SDR-NC deployment on naval ships and shore establishments



Mobile ad hoc network scenario

mechanisms. Built-in reconfigurability results in flexibility to provide Legacy support, Interoperability (for joint operations) and Upgradeability to new waveforms and features through software. The portable SDRs (manpack and hand-held) have lightweight operating environment for battery operation.

With the indigenous development of SDR, India has come on par with the world for military radio communication. The SDR-NC and SDR-TAC ship-borne radios are contemporary to the similar radios from advanced countries (e.g. Rhode and Schwarz from Germany). The portable radios use latest devices,

software tools and architecture (with specific Indian customizations), which are contemporary to radios of Thales (France) and Harris (USA). The INDESDR radio operating environment and ad hoc networking architecture are contemporary to the best radio operating environment and networking architecture available in the world.

PARTNERS IN DEVELOPMENT

Consortium-based approach was adopted for execution of this technologically complex project. DEAL is the nodal agency for design and development of SDRs form factors and



waveforms with responsibility for system definition, system design, integration and testing. CAIR Bengaluru carried out complete security architecture design and implementation. Weapons and Electronics Systems Engineering Establishment (WESEE), Ministry of Defence, has done work on design and development of legacy, HF and L-band waveforms and also high level network management software. BEL, Bengaluru, is the development-cum-production agency.

CURRENT STATUS AND WAY FORWARD

The ship-borne SDR family will help networking of naval battlefield resources on the move and enhance Indian Navy's operational capability many-fold. SDR Navy would act as a catalyst for indigenous development of SDRs for other service wings and internal security organizations.

DEAL has plan to take forward the SDR activity and develop next generation radios using advancements in devices, hardware design and software tools/practices. Plan for development of next generation radio technology for fighter aircraft, land systems and for special operations are also in the pipeline. After induction, Indian Navy would be able to carry out net-centric operations confidently using indigenous state-of-the-art radios.

VISITORS TO DRDO LABS/ESTTS

ADE, BENGALURU

Air Marshal RKS Bhadauria, PVSM, AVSM, VM, Air officer Commanding-in-Chief, Southern Air Command, visited Aeronautical Development Establishment (ADE) on 26 June 2018. AVM AP Singh, PD (Flight Testing), NTFC, briefed Air Marshal Bhadauria about the recent upgradation on the LCA. Air Marshal also tried out LCA Simulator.

CAIR, BENGALURU

Lt Gen MU Nair, ADG SI, visited Centre for Artificial Intelligence and Robotics (CAIR) on 1st June 2018. There was a briefing by Director, CAIR, followed by discussion and demonstration of technologies developed by CAIR in the area of secure systems.

DIPR, DELHI

Dr Chitra Rajagopal, DS and DG (SAM & LS), DRDO; Lt Gen Satender Singh, AVSM, DG (Rtg) and Maj Gen JK Marwal, ADG (Rtg) visited Defence Institute of Psychological Research (DIPR), on 25 June 2018. The visitors were briefed about the research activities being carried out by DIPR.

DMRL, HYDERABAD

Vice Admiral (Retd) Raman Puri, PVSM, AVSM, VSM and Chairman, Long Term Technology Perspective Plan (LTTPP), visited Defence Metallurgical Research Laboratory (DMRL), on 7 June 2018. Dr Vikas Kumar, OS and Director, DMRL briefed him about the laboratory activities aided by a video show. Dr G Madhusudhan Reddy, OS and Associate Director, presented the achievements of the laboratory and future programmes. An interaction session with senior scientists of the laboratory was also organized. The Vice Admiral took keen interest in various products developed by the laboratory.



Air Marshal RKS Bhadauria being briefed about LCA simulator



Demonstration of secure system solution being given to Lt Gen MU Nair



Armour technologies developed by DMRL being explained to Vice Adm Raman Puri



HEMRL, PUNE

Lt Gen Shamsher Singh, Director General, DGQA and team visited HEMRL on 7 June 2018. Shri KPS Murthy, OS & Director HEMRL, apprised him about the activities of HEMRL. Lt Gen Shamsher Singh, also visited High Explosive, Instrumentation, Mechanical Property Testing Divisions and Quality Control Lab. The visitor showed keen interest in the exhibits and activities of HEMRL.

* Lt Gen PK Srivastava, AVSM, VSM, Director General, Artillery & Colonel Commandant, Regiment of Artillery, along with Maj Gen PR Murali, MG, Arty. SC; Brig. Sameer Gupta, DDG (EQPT), Dte of Artillery; Brig P Kumar, Cdr. (Trial Wing), S of A, and team visited HEMRL on 16 May 2018. Presentations on the projects related to Gun Propellants/Ammunitions were given by the scientists to the visitors.

RCI, HYDERABAD

Shri Sanjay Mitra, IAS, Defence Secretary, Chairman DRDO & Secretary DD R&D, visited RCI on 6 July 2018. He was briefed about the activities of RCI.



Lt Gen Shamsher Singh being welcomed by Shri KPS Murthy



Shri Sanjay Mitra being briefed about the activities of RCI

SIXTH YOUNG SCIENTISTS MEET – 2018

High Energy Materials Research Laboratory (HEMRL), Pune, conducted 6th Young Scientists Meet (YSM-2018) during 25-26 May 2018. The meet was inaugurated by Dr S Christopher, the then Chairman DRDO and Secretary DDR&D. Prof. (Dr) Nitin Karmalkar, Vice Chancellor, Savitribai Phule Pune University, Pune, was the Guest of Honour on the occasion. Shri PK Mehta, DS and DG (ACE) and Shri KPS Murthy, OS and Director, HEMRL, were also present.

The theme for this year's YSM was "DRDO: Marching Towards New India". A poster exhibition from participants was also inaugurated by the Chief Guest. One hundred and



forty-one young scientists from various labs of DRDO participated in the meet. The programme and schedule of the meet facilitated the interaction among young scientists and enhanced the

innovative thinking and team building.

Eight innovative ideas were presented by the young scientists in various sessions during YSM.



PERSONNEL NEWS

APPOINTMENT

DIRECTOR, DTRL



Dr Lokesh Kumar Sinha, Sc 'G', has assumed the charge of Director, Defence Terrain Research Laboratory (DTRL), Delhi, wef 1 June 2018. Dr Sinha

obtained MSc in Geology in 1984 and PhD in 1988 with specialisation in Structural Geology from Banaras Hindu University (BHU), Varanasi, specialisation in spectroscopy from BHU in 1985, and specialisation in remote sensing from Indian Institute of Remote Sensing (IIRS), Dehradun, in 1991.

Dr Sinha joined DRDO on 27 July 1989 as Sc 'B' at DTRL. Since then, he has made significant contributions to several Technology Demonstration and Mission Mode Projects and towards development of technology, processes, and products. He has to his credit development of geo-spatial intelligence keys for identification and mapping on satellite imageries; creation of thermal signatures for various military objects and terrain entities; development of techniques for semi-automatic trafficability map generation; development of texture based identification of trafficability classes, in desertic terrain, for automation in map updation, and development of technologies in identification of man-made materials and natural terrain features using sub-space computed feature stamped hyper-spectral signatures.

He has been awarded Lab-level Scientist of the Year Award (twice) and Technology Group Award (twice) and Award for Outstanding Contributions

in various research activities of the lab in 2017.

He has more than 20 publications in peer-reviewed journals and conferences of repute and two patents on terrain evaluation and projectile-based tools for evaluation of terrain conditions remotely. He has authored chapters in book on Landslide Hazard Zonation Mapping and technical reports on Area Analysis Studies published by Military Intelligence.

He is a member on research panel for various universities and institutes. He is the Fellow of Indian Society of Remote Sensing (ISRS) and is the Vice Chairman of ISRS Delhi Chapter from 2017 till 2020. He is an Academic Council Member, Jawaharlal Nehru University, New Delhi, for 2017-2019. He has been instrumental in development of National Science Plan of Department of Science & Technology for Hyper-spectral Remote Sensing and has headed "Material and Terrain" theme. He is an Organizational member in Hill Area Development Engineering Sectional Committee (CED 56), of Bureau of Indian Standards (BIS).

HIGHER QUALIFICATION ACQUIRED



Shri Subash Chandra Bose MR, Sc 'G', Naval Physical and Oceanographic Laboratory (NPOL), Kochi, has been awarded PhD by Cochin

University of Science and Technology (CUSAT), Kochi, for the thesis entitled "Design and development of deep submergence underwater acoustic transducers."

AWARDS

TOLIC Award

Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi, has been awarded for outstanding Rajbhasha implementation at INMAS during 2017-2018 in the large institution category by Town Official Language Implementation Committee (TOLIC), North Delhi, on 22 June 2018. Dr Anil Kumar Srivastava, Chairman Agriculture Scientists Recruitment Board and TOLIC, North Delhi, awarded various central government institutes for the outstanding contributions in implementing the Official Language in their respective offices. INMAS received award for Best Home Magazine 'Prastuti' and Encouragement Award for Outstanding Rajbhasha Implementation.



Associate Fellow of TAOS



Dr Ashish Pathak, Sc 'D', Defence Materials Research Laboratory (DMRL), Hyderabad, has been admitted as Associate Fellow of Telangana Academy of Sciences (TAOS) in recognition of his contributions to science and technology.



READERS' VIEWS

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DRDO HARNESSING SCIENCE FOR PEACE & SECURITY

CHAPTER 3: OVER TO SYSTEMS DEVELOPMENT (1970–1982)

The article is 30th in the Series of extracts of the monograph, "Defence Research & Development Organisation: 1958-1982", by Shri RP Shenoy, former Director of Electronics and Radar Development Establishment (LRDE).

AIRCRAFT BRAKE PAD & KANCHAN ARMOUR

Way back in the 1970s, a decision had been taken that as a consequence of the work done at the DMRL on a variety of special metals and super alloys required for defence applications, exploitation of the know-how generated by the Laboratory should be taken up. Accordingly a plant for manufacture of these strategic and sophisticated metals and alloys required for electronics, aeronautics, rockets and missiles was proposed to be set-up in the vicinity of the Laboratory. Since the demand picture was not encouraging economically, the proposal was in the process of being put in the cold storage. Professor Menon, in his capacity as Secretary Department of Electronics, was successful in arguing the case for the new enterprise so that in 1973, the Ministry of Defence could register at Hyderabad a new Public Sector Undertaking (PSU) called Mishra Dhatu Nigam Ltd (MIDHANI) with an authorised share capital of Rs 20 crore on a 75 acre site adjacent to the DMRL. The strategic importance of the new PSU could be gauged by the fact that only a few manufacturers in the world had the capability and capacity to supply these products. By establishing the production unit, the Country would not be subjected to the pulls and pressures of the Cold War which otherwise would come into the picture.

With the setting up of MIDHANI, the Scientific Adviser decided that the activities of the DMRL in the future would be towards R&D on other critical and advanced materials like friction

materials, heavy alloys for armaments, steel projectiles, and armour, ultra-high strength low alloy steel, electro-steel castings, titanium and titanium-based alloys, technologies like hot isostatic pressing and so on. He brought in Dr VS Arunachalam who was at the National Aerospace laboratories (NAL) in Bangalore and whom he had known earlier quite closely at the Department of Atomic Energy, to head the Laboratory. The work of DMRL in the next few years comprised mainly of R&D programmes, commissioning of facilities for production of quantities bigger than laboratory-scale and fabricating specific hardware in its support role for the laboratories, such as ARDE, CVRDE, GTRE, DLRL, DRDL, and so on. The faith of the Scientific Adviser in the new Director of DMRL was vindicated when the Indian Air Force informed the Prime Minister that their MIG aircraft fleet would have to be grounded soon due to the irregular and interrupted supply of brake pads for the aircraft from Russia. The nation turned to the Scientific Adviser and to DRDO in this crisis and DMRL rose to the occasion and solved the problem expeditiously and produced the brake pads in numbers in-house for the IAF to test and evaluate their product. These brake pads had better performance in terms of number of landings superior to that obtained with Russian brake pads. At that point, the Russian supply of the brake pad was resumed and they were willing to part with their manufacturing know-how to India. The Scientific Adviser persuaded the Ministry of Defence to turn the Russian offer down.

Instead, DRDO know-how was passed on to HAL for the manufacture of brake pads. Over a period of time all the brake pads needed for the Indian Air Force fleet were manufactured in India based on the DMRL technology.

AIRCRAFT ENGINE DEVELOPMENT

In the early 1970s, GTRE had embarked on research projects in the area of compressor, combustor, turbine, engine control system, heat transfer, and so on, so that the input from these projects would provide valuable data for configuring a viable indigenous propulsion system. In the mean time, the work on the integration of the single-stage transonic compressor with six sub-sonic stages of the Orpheus 703 engine had been completed and the performance level achieved during the static tests in May 1974 proved the reliability, repeatability, and mechanical integrity of the design and gave considerable confidence to the GTRE team to take on the development of a power plant for the military aircraft. As the cost, the generation of skills, acquisition of expertise and the accumulation of data was expensive and time-consuming (tens of crores of rupees and about fifteen years) the Scientific Adviser took the decision to support this activity at GTRE for the development of the GTX engine specially configured to deal with the high ambient temperatures of the tropics.

INDRA RADAR DEVELOPMENT

The feasibility of using moving



target detector for detection of low flying aircraft targets in the presence of heavy ground clutter as a solution was completed shortly after Professor Menon became the Scientific Adviser. A presentation was made to him and he was convinced that this would meet the operational requirements of the Indian Air Force, which had been searching world-wide since 1967 for a radar system with capability to detect moving targets of low cross-section against the background of heavy ground clutter. In his capacity as Chairman of the National Radar Council, he provided a forum for the LRDE scientists to make presentations of the new concept to the top technical officers of the three Services. Initially, there was a high degree of scepticism about the practical realisation of the approach but Professor Menon's backing of LRDE considerably softened the opposition and gave an opportunity for the DRDO to come abreast in surveillance radar technology with the rest of the world. He also ensured that two staff projects were sanctioned to LRDE for undertaking the development of radars for the Indian Air Force and for the Indian Army. He went further and allowed LRDE scientists to explore the possibility of getting critical subsystems, such as the high stability transmitter and the radar data processor outsourced for reducing the uncertainty and for compressing the time for development. The major success in the field of electronics were the self reliant implementation of Plan Adges for the Air Force (led by TIFR and supported by Electronics Commission) and Plan Aren for the Indian Army with the key switch developed in parallel at LRDE and TIFR.

MISSILES DEVELOPMENT

While Professor Menon was in accord with the policies followed by Dr Nag Chaudhuri in respect of the priority for building missile development capability at DRDL, he desired other scientists within the country who had expertise in the fields of rockets and missiles, aerodynamics, propulsion, control and guidance, radar, to critique these activities from a strategic perspective.

Therefore, he constituted a committee in 1974 with Professor Brahm Prakash of the Department of Space as Chairman for the purpose of assessing the progress of development activity, competence generation, infrastructure and facilities build-up. The Review Committee while recommending further release of funds to DRDL, the nodal laboratory, held the view that from the strategic perspective, systems analyses needed to be given greater emphasis in the next phase of the project by DRDL. Accordingly, the activities of development of the existing missiles on a one-to-one basis as well as the strategic build-up of the infrastructure and that of technology development at DRDL were fully backed by the Scientific Adviser during his tenure. He was totally supportive of the technology development programme in liquid fuel propulsion for missiles.

He was also instrumental in effecting a change in the mind set of the Ministry from the narrow perspective of looking at the missile requirements of each Service in isolation to the other (that had resulted in the imports of the individual missile systems for each purpose), to the more strategic perspective of formulating a total picture of the needs of the Country. The Defence Minister then constituted a Missile Policy Committee with Professor Menon as Chairman to analyse and determine the likely needs of the Services in the future and also outline further investments needed to be made by the Government. The Report was a comprehensive document that stated in detail the likely requirements in all classes of missiles, the class of missiles to be developed within the Country, the technologies to be developed and/or acquired from abroad, the needs of production and that of DRDO for such development to be effective. This document would help later in the 1980s in drawing the blue print for the Integrated Guided Missile Development Programme (IGMDP).

PERSONNEL POLICY REFORMS

The personnel policy of DRDO continued to remain inferior to that of the Departments of Space and Atomic

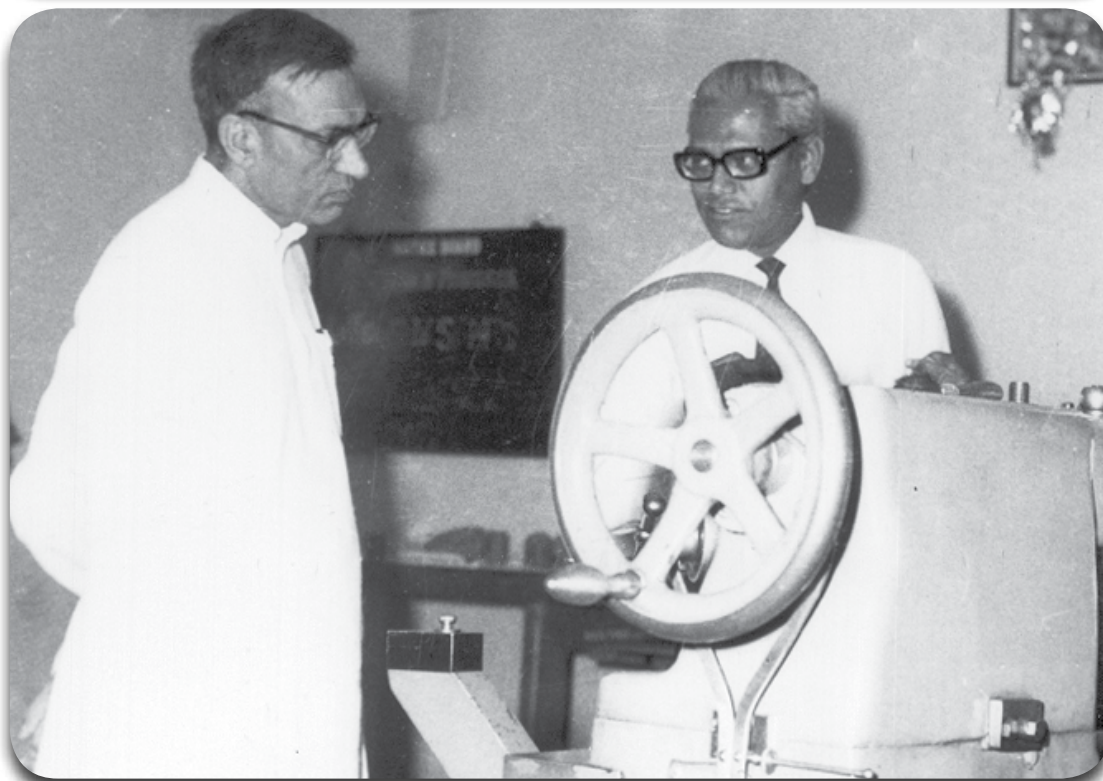
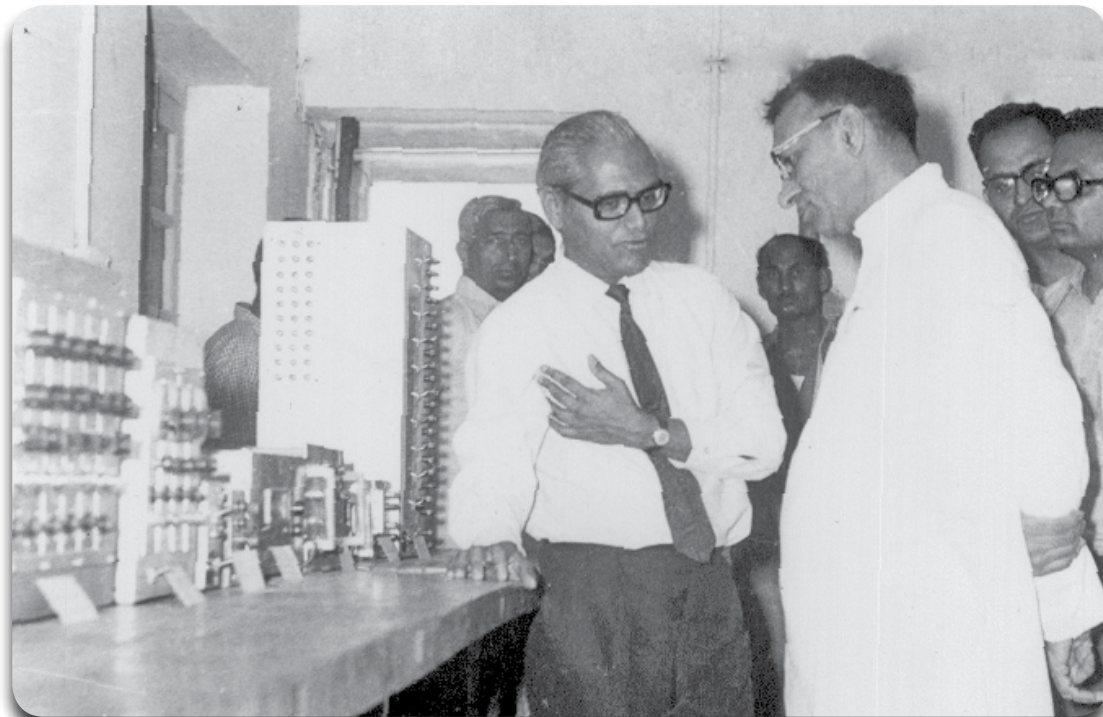
Energy. The combination of small and compact peace establishments (PEs) for the laboratories, the non-periodicity and delays in direct recruitment/departmental promotions, and the increased demand for additional manpower contributed to the problems of unhappiness about poor career prospects, of tension due to highly unequal opportunities, and of high turnover.

The anomaly of a small peace establishment (PE) with a large number of temporary posts created for the duration of the projects undertaken in most of the equipment/hardware-oriented laboratories was generating enormous paper work and taking considerable time and effort of senior persons, both at the laboratories and at the Headquarters. Every time, a project got extended or completed/terminated, the urgency to retain the piloting the papers, either for revision of the peace establishment or for their continuation through finance personnel even within the Ministry of Defence would more often than not hit a road block and the process would have to be started all over again. The Scientific Adviser, realising the frustration of senior scientists, organised a meeting of the senior scientists with the Internal Financial Adviser (IFA) to evolve the concept of core PE for each laboratory and the norms that would be applicable. Guidelines were then issued to the laboratories and each case was argued on file, corrected, and modified, sometimes more than once, before it got the approval of the Government.

In this way, the pool of permanent posts of the DRDS cadre was enlarged and was made to reflect the ground reality so that the acceptance of the Flexible Complementing Scheme would be high among the scientists when a large number of them (larger than ever before) would likely be promoted in the early years of the Scheme.

To be continued...

DOWN THE MEMORY LANE



The then Defence Minister Shri Bansi Lal showing keen interest in DRDO products.