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JANUARY 2024 | VOLUME 44 | ISSUE 1

DRDO QUALITY CONCLAVE 2023



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Hon'ble Raksha Mantri
Shri Rajnath Singh



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A VERY HAPPY NEW YEAR
2024**



DRDO QUALITY CONCLAVE 2023

The Directorate of Quality Reliability and Safety (DQR&S), DRDO HQrs, organised Quality Conclave on the theme 'Quality Odyssey for Self-reliance in Defence Products' on 29 November 2023 at DRDO HQrs, New Delhi. The Hon'ble Raksha Mantri, Shri Rajnath Singh, graced the occasion as the Chief Guest. The Guest of Honor was Shri Rajesh Kumar Singh, Secretary, Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry, and Shri Jaxay Shah, Chairman, Quality Council of India, was the Keynote Speaker. The conclave was attended by DGs, Directors, Quality Heads of DRDO laboratories, experts from industry, and other stakeholders. It provided a common platform for key stakeholders in the defence domain for sharing their perspectives and deliberate for realising the dual goal of self-reliance and exports. The conclave was held over two sessions, viz. 'Improving Self-reliance & Quality Culture in Defence Manufacturing'

and 'Quality Assurance in Defence & Aerospace'. Experts from industry, government quality assurance agencies, and user services gave their perspectives during the sessions.

The Hon'ble Raksha Mantri emphasised the need for realisation of high-quality military systems that are effective, reliable, and safe to enable our soldiers to successfully accomplish the mission. Dr Samir V Kamat, Secretary, DDR&D & Chairman, DRDO, reaffirmed DRDO's total commitment to delivering quality systems. He requested all the stakeholders to have firm resolve and synergize towards self-reliance in high-quality indigenous military systems. Dr (Smt) Chandrika Kaushik, OS & DG (PC & SI) called for leveraging the Information & Communication Technology (ICT) to build new, faster, and more effective processes to assist in the rapid realisation of high-quality systems. The program concluded with thanks given by Vice Admiral Ranjit Singh, Director, DQR&S, DRDO HQrs, to all dignitaries,

speakers, and delegates for their valuable inputs. He urged DRDO laboratories to strengthen their processes through effective implementation of the DRDO quality and reliability policy.

The Hon'ble Raksha Mantri, Shri Rajnath Singh, also presented System for Advanced Manufacturing Assessment and Ranking (SAMAR) certificates to the representatives of qualified industries. The conclave provided an opportunity for stakeholders to network with experts to create an ecosystem in the country for producing high-quality indigenous systems and implementing standards, policies, and global best practices. The participants brainstormed on various aspects of quality for the defence manufacturing revolution in India for an 'Atmanirbhar Bharat'.

Besides celebrations at DRDO HQrs, following laboratories also organized quality week at their respective laboratories:

ASL, Hyderabad

Advanced Systems Laboratory (ASL), Hyderabad, celebrated World Quality Day on 10 November 2023. During his welcome address, Shri Nakka Sudarshan, Sc 'G' and Technology Director, R&QA, highlighted the importance of quality. Shri BV Papparao, DS & Director, ASL, inaugurated the event and said that continuous learning and accepting the changes are very important for quality and reliability. Smt R Sheena Rani, OS & Programme Director & Associate Director, stressed the automation of quality process for increasing





efficiency and saving the valuable time of the projects. An in-house R&QA half-yearly Quality Bulletin 'Quintessence' was also released on the occasion.



DL, Jodhpur

Defence Laboratory, Jodhpur (DLJ) celebrated World Quality Week 2023 during 6-10 November 2023. Dr Ravi Raja, Sc 'F' & Director, SQR O/o DG (NS&M), delivered a talk on 'Achieving Quality by Design Selection and Maintenance of Launcher Hydraulic System'. Dr Sushma Verma, Sc 'F', DQR&S, DRDO HQrs, Delhi, shared 'DRDO Quality Policy and QRAMS Updates'. Shri Yashpal Chouhan, Sc 'F', DLJ, gave a presentation on 'Lessons Learned from Failure Reporting and Analysis'.



DSP, Hyderabad

World Quality Month was celebrated at Directorate of Special Projects (DSP), Hyderabad on 17 November 2023. Dr A Swarna Bai, Technology Director, R&QA welcomed the gathering, followed by her Welcome Address. Dr Anupam Sharma, OS & Director,

DSP emphasized the significance of Quality for Space projects and also encouraged to work towards Zero defect and First time right.

Smt V Viraja, Sc 'G' & Head, DQA, DLRL graced the event as Chief Guest and gave the Inaugural Address on 'FRACAS: Failure Reporting, Analysis and Corrective Action System'.



IRDE, Dehradun

The World Quality Week was celebrated at the Instruments Research & Development Establishment (IRDE), Dehradun, during 06-10 November 2023. The Chief Guests of the function were Shri Niraj Bhargava, Sc 'H' & Associate Director, IRDE, and Dr Neeraj Pandey, Associate Professor, Graphics Era Deemed University, Dehradun. Addressing the gathering, Shri Niraj Bhargava stressed the importance of quality in life as well as in the organisation. Shri Akash Singh, Sc 'F', and Shri Krishna Murari, Sc 'E', IRDE, also gave talks.



MTRDC, Bengaluru

Microwave Tube Research and Development Centre (MTRDC), Bengaluru, celebrated World Quality Week 2023 during 06-10 November 2023. During the celebration, various competitions like essay, poster, slogan, debate, quiz, and talk were organised. The talk was delivered by Shri C Suresh, Technical Officer 'C'. Both Hindi and English were the acceptable mediums of expression for the competitions and activities. Commendation certificates were distributed to the winners. The participation and enthusiasm of the employees of MTRDC were overwhelming.



NMRL, Ambernath

World Quality Day and Ayurveda Day were celebrated at the Naval Materials Research Laboratory (NMRL), Ambernath, on 10 November 2023. As a part of the celebration, three guest speakers were invited to speak on the subjects relevant to improvement in quality of work and health.





Shri VP Deshmukh, Sc 'G', gave the inaugural address. Shri Mukesh Singh, Sigma Quality International, Mumbai, delivered a lecture and enlightened the participants to follow the best practices for achieving the set targets with quality.

NPOL, Kochi

Naval Physical and Oceanographic Laboratory (NPOL), Kochi, celebrated World Quality Week 2023 during 6-10 November. Dr Ajith Kumar K, OS & Director, NPOL, inaugurated the event and administered the quality pledge. Dr Kochaleema, ASD (QRS), explained the activities planned as a part of the Quality Week celebration. A lecture was organised with the participation



of speakers from industry on 'Qualification Testing of FPGA Systems'. Shri Rahul Arya & Shri Lalith Kumar Rana of CoreEL Technologies (I) Pvt. Ltd. were the guest speakers. Director, NPOL, emphasised the importance of quality assurance processes in all NPOL projects.

NSTL, Visakhapatnam

Directorate of Q&R, NSTL, Visakhapatnam celebrated World Quality Week 2023 during 06-10

November 2023.

The celebrations commenced with a keynote address by the Chief Guest, Dr Abraham Varughese, OS & Director, NSTL. The theme lecture was delivered by Cmde. D Chandra Sekhar, TD-Q&R. A lecture on 'EMI/EMC Solutions' was delivered by Smt Sangeeta Attivill, CTO of the NAI (NSTL) Unit. Shri Anil Kumar Behera, Sc 'F', rendered the concluding remarks.



INNOVATIONS

SUCCESSFUL FLIGHT TRIAL OF AUTONOMOUS FLYING WING TECHNOLOGY DEMONSTRATOR

The DRDO successfully carried out a flight trial of the Autonomous Flying Wing Technology Demonstrator, an indigenous high-speed flying-wing Unmanned Aerial Vehicle (UAV) from the Aeronautical Test Range, Chitradurga on 15 December 2023. The flying demonstration of this autonomous stealth UAV is a testimony to the maturity of the technology readiness levels in the country. With this flight in the tail-less configuration, India has joined the elite club of countries to have mastered the controls for the flying wing technology.

The Aeronautical Development

Establishment (ADE), Bengaluru, designed and developed this UAV. ADE demonstrated the maiden flight of the aircraft in July 2022, followed by six flight trials in various developmental configurations using two in-house manufactured prototypes. These flight tests led to achievements in the development of robust aerodynamic and control systems, integrated real-time and hardware-in-loop simulation, and a state-of-the-art ground control station. The team had optimised the avionic systems, integration, and flight operations for the successful seventh flight in final

configuration. The autonomous landing of this high-speed UAV, without the need for ground radars, infrastructure, or a pilot,





showcased a unique capability demonstration, allowing take-off and landing from any runway with surveyed coordinates. This was possible using onboard sensor data fusion with indigenous satellite-based augmentation using GPS-aided GEO Augmented

Navigation (GAGAN) receivers to improve the accuracy and integrity of GPS navigation.

Raksha Mantri Shri Rajnath Singh complimented DRDO, the Armed Forces, and the industry for the successful flight trial of the system. He stated that the

successful development of such critical technologies indigenously will further strengthen the Armed Forces. Dr Samir V Kamat, Secretary DD R&D & Chairman DRDO, also congratulated the DRDO and the teams associated with the successful flight trial.

DEVELOPMENT OF ANALOG ENSEMBLE SYSTEM FOR REAL TIME WEATHER FORECAST BY DGRE

Defence Geoinformatics Research Establishment (DGRE), Chandigarh, has developed an Analog Ensemble (AE) system for real-time site-specific weather forecasting for the winter period (November to April) over the North-West Himalaya (NWH) of India. The developed AE system utilizes site meteorological observations of previous 20–30 winters from location observatories spread across the Shamshawari Range, Pir Panjal Range, and Great Himalayan Range to predict surface meteorological variables, weather, and quantitative precipitation for short-range (up to 72 hours).

The developed AE system uses limited resources (human, data, and computational hardware), is very time-efficient for producing



Weather forecast @3800m through AE system dated 06th December 2023

weather forecasts, and functions as an independent weather forecast system. Weather forecasts through AE will be instrumental in the mitigation of natural hazards such

as extreme cold air temperatures, heavy snowfall, snow avalanches, landslides, etc. and can be utilized for operational avalanche forecasting.

INDIAN AKASH AIR DEFENCE MISSILE SYSTEM DESTROYS 4 TARGETS SIMULTANEOUSLY

India became the first country to demonstrate the capability of engagement of 04 aerial targets simultaneously at 25Km ranges by command guidance using single

firing unit. The test was conducted by Indian Air Force using Akash weapon System. Akash weapon system is designed & developed by DRDO and produced by BEL/

BDL along with other industries. Current firing was done from the system inducted in Indian Air Force in 2019.



VIGILANCE AWARENESS WEEK

Vigilance Awareness Week is observed every year during the week in which the birthday of Sardar Vallabhbhai Patel (31 October) falls. The theme of this year's Vigilance Awareness Week was 'Say No to Corruption, Commit to the Nation'.

DL, Jodhpur

Vigilance Awareness Week was celebrated during 30 October to 3 November 2023 at the Defence Laboratory, Jodhpur (DLJ). All the officers and staff took a pledge regarding vigilance. A lecture on 'Say No to Corruption: Commit to the Nation' was delivered by Shri Harendra Kumar Mahawar, IPS, IG, Anti-Corruption Bureau, Jodhpur, on the occasion.



IRDE, Dehradun

Instruments Research & Development Establishment (IRDE), Dehradun, observed Vigilance Awareness Week during 30 October 2023 to 05 November 2023 to increase awareness about the perils of corruption. The event commenced with the integrity pledge by all the officers and staff of IRDE on 30 October 2023. Shri Girraj Prasad, Sc 'F' talked about procurement on 31 October 2023. On the occasion, a lecture

was delivered by Dr V Murugesan (IPS), Director Vigilance, Uttarakhand, on 01 November 2023. Various activities, like essay and slogan writing, were also organised during the week.



SFC, Jagdalpur

Vigilance Awareness Week was celebrated at SF Complex (SFC), Jagdalpur during 30 October 2023 to 05 November 2023. Vigilance pledge was taken by all officers and staff on inaugural function. Quiz competitions and

slogan writing competitions were organised as a part of the celebrations. Technical lectures on 'Classification of Document' were given by vigilance officer Shri Amarjeet Kumar, SC 'E'. During closing ceremony, a presentation on 'Recent Intelligence Threats' were delivered by IB in-charge Jagdalpur and also talk on 'Security & Vigilance Concern' were given by OC, unit-667.

Dr MVL Ramesh, Sc 'G' & General Manager, SFC addressed the gathering and emphasized on importance and critical role of SFC. He told to all employees to be vigilant and perform duties without disclosing identity and nature of work of laboratory. He also cautioned regarding increasing trend of cyber threat as it is becoming the easy tool for trapping the defence employees. He also appreciated the efforts by SFC vigilance department in creating vigilance and cyber awareness.





RUN FOR UNITY

DL, Jodhpur

On the Rashtriya Ekta Diwas organised on 31 October 2023, all the officers and staff of the Defence Laboratory, Jodhpur (DLJ) took the Rashtriya Ekta Diwas Pledge. Further, 'Run for Unity' was organised to spread the message of unity in society. The event was led by Shri RV Hara Prasad, Outstanding Scientist & Director, DLJ. During his address, he highlighted the contributions made by the legend Sardar Vallabh Bhai Patel in the freedom struggle and national integration after independence.



ISSA, Delhi

On 31 October 2023, Institute for Systems Studies & Analyses

(ISSA), Delhi, organised 'Run for Unity' from Metcalfe House to Qudasia Bagh, near ISBT Kashmere Gate. It is an 18th-century garden complex with depictions of the Indian freedom struggle movement.

All officers and staff of the laboratory took part in the celebration.

MTRDC, Bengaluru

Microwave Tube Research & Development Centre (MTRDC), Bengaluru, organized 'Run for Unity' on 31 October 2023. All officers and staff enthusiastically participated in the event.



NSTL, Visakhapatnam

Naval Science & Technological Laboratory (NSTL), Visakhapatnam, organised 'Run for Unity' on 31 October 2023 by conducting a 2 km run from Mohapatra Manasi Auditorium through the NSTL residential area and terminating at the same place. Dr Abraham Varughese, OS & Director, NSTL, gave the opening remarks and administered the Rashtriya Ekta Diwas pledge. He highlighted the significance of the day and narrated the contributions of Sri Sardar Vallabhbhai Patel to our great nation.

Around four hundred people, including the regular employees of NSTL, the office of the DG (NS&M), the AO (R&D), DSC personnel, members of NSTL Mahila Kalyan Manch (MKM), children, and teachers from Ramanath Secondary School, enthusiastically participated. People ran with the National Flag and many placards written on Rashtriya Ekta. All participants received specially designed caps.



'Run for Unity at ISSA, Delhi



'Run for Unity at NSTL, Visakhapatnam



RAISING DAY CELEBRATIONS

GTRE, Bengaluru

Gas Turbine Research Establishment (GTRE), Bengaluru celebrated its 62nd Lab Raising Day on 23 November 2023 with great zeal and enthusiasm. Shri T Suvarna Raju, Former Chairman & Managing Director, Hindustan Aeronautics Limited (HAL) was the Chief Guest of the occasion. Shri MZ Siddique, DS & Director General (Aero) was the Distinguished Guest. Dr SV Ramana Murthy, OS & Director, GTRE, presided over the occasion. Directors from sister laboratories, former Directors of GTRE, scientists, and employees also were present on the occasion.

Shri M Sivarama Krishna, Sc 'G', Ass. Director (DMS) delivered the welcome address. Dr Murthy, in his address highlighted various activities, latest initiatives, and achievements of GTRE. Shri Mahesh N, General Secretary, GTRE Employees Union, congratulated and appreciated the efforts made by the employees in indigenous development of Kaveri engine.

Shri Raju, emphasized the synergy of organization to integrate Kaveri engine with Tejas aircraft. He encouraged the indigenous development and narrated the importance of design of the aircraft component. Shri Siddique pointed out the importance of indigenous development of gas turbine aero engine for the nation. He Insisted to develop futuristic technology, which will be useful for the country and develop the engine for naval application as well. On the occasion, annual



technical Hindi Magazine 'Pranod' was released and authors of three best papers were awarded. In addition, various awards and commendation certificates were distributed to the selected GTRE personnel in recognition of their outstanding contribution in the field. Shri P Nazar, convener, proposed the vote of thanks.

DRL, Tezpur

Defence Research Laboratory (DRL), Tezpur, celebrated the 62nd Lab Raising Day on 21 November 2023. Vice Chancellor of Tezpur University, Prof. Shambhu Nath Singh, was the Chief Guest of the event. Dr UK Singh, DS & DG (LS),



was the Distinguished Guest and District Commissioner, Sonitpur, Shri Deba Kumar Mishra was the Guest of Honor. Dr Dev Vrat Kamboj, Director, DRL gave the welcome address and the District Commissioner of Sonitpur while addressing the gathering appreciated DRL's effort in organizing the 'Mentees Programme' under the AROHAN scheme of the Govt. of Assam.

MTRDC, Bengaluru

The Microwave Tube Research & Development Centre (MTRDC), Bengaluru, celebrated its annual day on 17 November 2023. Dr Prahlada Rama Rao, Former Vice Chancellor DIAT, Pune, Former Chief Controller R&D (Aero & SI), was the Chief Guest. Dr Binoy Kumar Das, DS & DG (ECS), was the Guest of Honor. The welcome speeches were delivered by Dr SK Datta, OS, Centre Head, MTRDC, and Shri Gampla Viswam, DS & Director, LRDE & MTRDC.

NPOL, Kochi

Naval Physical & Oceanographic Laboratory



(NPOL), Kochi celebrated its 71st Annual Day on 15 December 2023. Dr S Unnikrishnan Nair, DS & Director, VSSC was the Chief Guest for the event. Dr R Rajesh, Sc 'G' & Chairman, NPOL Annual Day Organising Committee welcomed the gathering and presented an overview of the function. Dr Ajith Kumar K, OS & Director, NPOL presented the report on the achievements of the laboratory in both technical and non-technical areas. Shri Wilson K Cherukulath, Sc 'G' & Chairman, Works Committee & Secretary, Works Committee and General Secretaries of NPOL's Civilian Employees union and NPOL's R&D Employees union also spoke on the occasion. Prizes were distributed for the sports competitions held during the Annual Day. Instrumental music fusion by 'RLV College of Music and Fine Arts' and dance by team 'Arrow' were other highlights.

VRDE, Ahmednagar

Vehicles Research and Development Establishment (VRDE), Ahmednagar enthusiastically celebrated its 53rd Annual Day on 03 December 2023. The event was presided over by Dr SV Gade, DS & DG (ACE). Director, VRDE informed that the hard work and synergic team efforts put in by all the employees has resulted in achieving all the goals set for 2023, like Completion of MGS, WhAP (CRPF), WhAP CBRN, launchers for LRASHM, LRLACM, Agni Prime Rail, and no. of ground support systems for strategic programme. Dr Gade appreciated the achievements of VRDE and emphasized that to meet new challenges, we all should



MTRDC, Bengaluru



NPOL, Kochi



VRDE, Ahmednagar

work for up gradation of skills and try for transformation from product oriented to technology-oriented organisation.



KARNATAKA RAJYOTSAVA CELEBRATION

The Microwave Tube Research & Development Centre (MTRDC), Bengaluru, celebrated State Formation Day, the Karnataka Rajyotsava, on 17 November 2023. Dr Ganesh Bhatt, Retired Principle of MES educational institution, was the Chief Guest of the event. Dr Sudhamani, Programme Co-ordinator, welcomed the Chief Guest, Director, LRDE & MTRDC, Centre Head, MTRDC, and the gathering on the occasion. The Chief Guest spoke about Kannada, the classical language, its rich heritage, and the recipient of the highest number of Jnanapith awards next to Hindi. Dr SK Datta, Centre Head, MTRDC, and Shri G Viswam, Director, LRDE & MTRDC, addressed the gathering. A cultural program was



also organised on the occasion. Shri Srinidhi Katti, a professional flute maestro, mesmerized the audience

with his flute performance. At the end, a vote of thanks was proposed by Shri Jayateertha D, Sc 'E'.

CBRN EXERCISE- PARMANUKAVACH-2023 AT JAISALMER

With the aim to check the readiness of Indian Army for responding to any nuclear eventuality an exercise was conducted by 10 Eng. Bde Secundrabad in collaboration with 475 Eng. Bde Nasirabad at Chelak Nagraja Jaisalmer, Rajasthan during 17-18 October 2023. A team of officers and staff from DL, Jodhpur participated in the exercise at Jaisalmer along with various DLJ developed/inducted nuclear instruments and systems. During the exercise, portal monitor and hand foot contamination monitoring systems were fielded in the exercise and various



hand-held nuclear instruments have been demonstrated in static display. In addition, the

CBRN water purification system MK-II was also displayed during the exercise.



DRDO PARTICIPATION IN BIHAR SCIENTIFIC LITERACY FESTIVAL

The Defence Research & Development Organisation (DRDO) participated in the Bihar Scientific Literacy Cum Health & Wellness Festival held at Patna, Bihar under Patliputra Lok Sabha constituency, during 07-09 December 2023. The event was supported by DAE, ICMR, ISRO, CSIR, MOES, DST, and DRDO. The three-day educational and information dissemination outreach and sensitization event was inaugurated by Shri SK Jha, Zonal Director Education, Patna Zone-A, in the august presence of Dr Krishna Pandey, Sc 'G' & Director, Rajendra Memorial Research Institute of Medical Sciences, Patna, and other dignitaries representing the district and state administration and other



segments of society, scientists and other delegates, media persons, the general public, and students from colleges and schools, teachers, and professors. The event gave

students, especially in schools and colleges, the opportunity to interact with the DRDO scientists and learn more about the DRDO products and technologies.

INTERNATIONAL YEAR OF MILLETS-2023

ITM, Mussoorie

The International Year of Millets 2023 was celebrated at the Institute of Technology Management (ITM), Mussoorie, on 08 December 2023 with great enthusiasm. Shri Sunil Bhandari, TO 'B', in his opening address, enumerated the benefits of millets. Shri Anuj Kumar, Sc 'B', enlightened the audience with the nutritional, economic, and ecological benefits of millets. He emphasized 'Healthy Millets, Healthy People' and urged people to incorporate millets into their

diet. Shri SA Katti, OS & Director, ITM, highlighted in his closing remarks the effectiveness of millets. He walked the audience through the nostalgic lanes of their childhood, when millets were associated with auspicious occasions. Thereupon, a millet-based quiz contest was organized for ITM personnel. The event concluded with a vote of thanks by Gp Capt RK Mansharamani, Gp Head (Tech Coord), followed by a millet-based lunch at the ITM Wet Canteen.



NMRL, Ambernath

The International Year of Millets was celebrated at the Naval Materials Research Laboratory (NMRL), Ambernath, during 01-14 December 2023 with great zeal and enthusiasm. Mrs Swati Thoda, Heartfulness Institute, Panvel,



was invited as a guest speaker on 05 Decemebr 2023. She delivered a lecture on 'Importance of Millets' and focused on the benefits of millets in the diet. Shri PT Rojatkar, OS & Director, NMRL felicitated the speaker. Cooking and poster competitions on millets were also organised on 11 December 2023. NMRL employees and their family members took part in the competition. Over 200 people visited the exhibition where the posters were displayed. The winners were awarded with the prizes and certificates.



SWACHHATA PAKHWADA

DESIDOC, Delhi

The Defence Scientific Information & Documentation Centre (DESIDOC), Delhi, organised a swachhata Pakhwada during 01-15 December 2023. Besides the cleanliness drive during the two-week-long program, a couple of events like poster, slogan, and essay writing competitions were also organized. Dr K Nageswara Rao, Director, DESIDOC, awarded the prizes and commendation certificates to the winners of various events. The all officers and staff of DESIDOC enthusiastically took part in the celebration.



DL, Jodhpur

'Swachhata Pakhwada' was observed at Defence Laboratory, Jodhpur (DLJ) during 01-15 December 2023. Various day-by-day activities such as Awareness Day, Records Management Day, Scrap/Waste Disposal Day, Go Green Drive Day and Community Outreach Day were planned and executed during the pakhawada. An essay competition on 'Swachhata ka Mahatwa' was conducted by the laboratory Govt School of Jodhpur and a rally was organized by depicting banners



and placards to create awareness in the society.

EMU, Hyderabad

swachhata Pakhwada was observed at EMU, Hyderabad, during 01-15 December 2023. As part of special campaign week of Swachhata Pakhwada 2023 and also as part of the International Year of Millets (IYM), 2023, 'Millets Milan' programme was conducted at Estate Nursery, Hyderabad on 08 December 2023.

Directors of Hyderabad station-based laboratories/establishments were invited to grace the occasion. In this connection, mini exposition of millets, millets products, medicinal plants and microgreens was organised. Arboriculture team of EMU (R&D), Hyderabad demonstrated nutritional



and health benefits of each Millet through pictorial presentation. Variety of competitions were conducted at Defence Laboratory School, Kanchanbagh and Kendriya Vidyalaya, Kanchanbagh. Dr Anil Khurana, CCE (R&D) Estates South graced the ceremony and addressed that the children are the ambassadors of the next generation and they should be encouraged for this noble cause.

IRDE, Dehradun

Instruments Research & Development Establishment (IRDE), Dehradun celebrated Swachhata Pakhwada - Swachhata hi Sewa (SHS) 2023 on 01 October 2023 and Special Campaign 3.0 during 02-31 October 2023.

The aim of the event was to ensure the participation of the IRDE fraternity in Swachhata activities and to truly transform Swachh Bharat into a citizen's movement. A plantation drive was conducted by the Swachhata Vigilance Committee (SVC) of IRDE in various locations of office premises on 01 October 2023.

Dr Ajay Kumar, OS & Director, IRDE, and other officers & staff actively participated in the plantation drive. SVC paid tribute to the Father of the Nation on 02 October 2023. Additionally, the officers and staff of IRDE took a Swachhata Pledge to further promote sustainable living and discourage the use of plastic bags.

To spread awareness against single-use plastics and also to

sensitize officers and staff about waste segregation and disposal, a lecture by Shri Anup Nautiyal, a prolific columnist and founder of the 'Social Development for Communities (SDC) Foundation' on 'The Perils of Solid and Plastic Waste Management in Uttarakhand' was also organized.

SFC, Jagdalpur

The 'Swachhata Pakhwada' was observed at SF Complex (SFC), Jagdalpur during 01-15 December 2023. The event was inaugurated on by Dr MVL Ramesh, GM, SFC and Swachhata Shapath was taken by all the employees. EMU, Jagdalpur also participated during the events. A talk on hygiene and sanitation was delivered by Dr Kothar Raja Veda Vyas. Tree plantation and painting competition were conducted at Govt. school Jaitgiri (Bastar) and an awareness rally was organised at tribal village Jaitgiri to promote cleanliness.

The medical camp and millet distribution drive also organised at tribal village Jaitgiri. All the winners are awarded with prize by Dr MVL Ramesh, General Manager, SFC. Dr Ramesh addressed the gathering and emphasised the importance of cleanliness in our life to avoid the disease and improve the living wellbeing.





TRAINING ON DRDO RECORD MANAGEMENT

A two-day training program on DRDO Records Management was organised during 02-03 November 2023 at the Defence Laboratory Jodhpur (DLJ). The training was coordinated by DLJ & DPAROM, DRDO HQrs for the purpose of raising awareness of record management processes, policies, and upkeep of records. A total of 57 participants from various laboratories participated in the event. Shri RV Haraprasad, OS & Director, DLJ, chaired the inaugural program. He emphasised that record management requires an hour for managing the records generated during ongoing project activities for their retrieval, retention, and disposition.



Ms Laxmi, Sc 'F', DLRL, discussed the case study of implementing the record policy at their laboratory. Shri CP Meena, Sc 'E', and Ms. Chanda Anand, AO, DPARO&M,

discussed the fundamentals of record management and their conservation, inspection and setting up of the Departmental Records Room (DDR), RMS demo, and records management cycles.

4TH DRDO-KISAN-JAWAN-VIGYAN MELA 2023

4th DRDO Kisan-Jawan-Vigyan Mela 2023 was organised at Defence Research Laboratory (DRL)-R&D Centre Changbu Tawang on 05 November 2023. Dr MK Verma, Director, ICAR-Central Institute of Temperate Horticulture (CITH), Srinagar, J&K, graced the occasion as the Chief Guest. Shri Kanki Darang, Deputy Commissioner, Tawang, and Brig VS Rajput, SM, Cdr 190 Mtn Bde, were the Guests of Honour.

The Heads of Agriculture and Allied Departments of Tawang District attended as invitees and subject experts. DC, Tawang inaugurated the Mela and set the stage for the Farm Produce Competition, Flower Show & Competition, Self Help Group (SHG) Product



Sale & Competition, Science Exhibition, Science Quiz & Model Competition, and Kisan Gosthi. More than 300 participants,

consisting of farmers, government officials, Army personnel, and SHG members, participated in various events during the mela.



RESERVATION MATTERS WORKSHOP AT DRDL

The Directorate of Personnel (DoP), DRDO HQrs organised a two-day workshop on Reservation matters, Grievances & Complaints Redressal, Conduct of Disciplinary Proceedings and the use of SPARSH during 21-22 September 2023, at Terminal Ballistics Research Laboratory (TBRL), Chandigarh. The representatives of 21 DRDO laboratories from the northern region attended the workshop. The inaugural address was given by Smt Nidhi Sood, Sc 'G' TBRL. The workshop covered a variety of topics like Evolution of Reservation & Constitutional provisions and Preparation/Maintenance of Reservation rosters, CPGRAM, SPARSH.

During the valedictory address, Shri AC Sharma, Sc 'H' & Associate Director, TBRL, spoke about the usefulness of such workshops. Dr Sanjai K Dwivedi, Director,



DoP, stressed in his address the importance of the subject of reservation. He encouraged all participants to maintain DRDO as the role model amongst the Central Government Ministries and to take advantage of the opportunity to

strengthen their knowledge about existing rules and procedures. Shri Naresh Viridi, Addl Director, DoP, delivered the vote-of-thanks. A similar two-day workshop was organised by the Directorate at DRDL, Hyderabad, in May 2023.

DIPAM – 2023 AT DRDL

Defence Research and Development Laboratory (DRDL), Hyderabad, organised DRDL-Industry Partners Associates Meet 2023 on 19 December 2023, focusing on providing a common platform for the industry partners to interact and convey the opportunities that exist for the industry partners to do business with DRDL in the latest technologies that are being developed and also futuristic technologies. The meet was inaugurated by Shri GA Srinivasa Murthy, DS & Director, DRDL. The event was attended by PCDA (R&D), Hyderabad, Shri AV Rao,



IDAS, IFA (R&D), MSS, Shri Ande Poshetty, IDAS, Technology Director, Material Resources, Shri L Srinivasa Rao, Sc 'F'. While addressing the Industry Partners

Director, DRDL said that 'Together We Build a Stronger Nation' and also we become 'Atma Nirbhar Bharat' in terms of defence-related products.



DESIDOC PARTICIPATION IN PANEL DISCUSSION AT DELHI UNIVERSITY

A Panel Discussion on 'Legacy of Professor Padma Shri Prof PN Kaula was organised under the aegis of Centenary Celebrations of Prof PN Kaula (1924-2024) at the Department of LIS, University of Delhi, Delhi. On 15 December 2023, Dr K Nageswara Rao, Director, DESIDOC, along with stalwarts like Prof. Mohinder Pal Singh Satija, GNDU, Prof. Ramesh Chandra Gaur, IGNCA, Prof. Pandey SK Sharma, Usha Mujoo-Munshi, IIC Prof. HN Parshad, BHU, Dr JJ Jagjeevan, IGNOU, took part in the discussion. The discussion was very focused and useful to learn about the



librarianship world of Prof. PN Kaula. On the occasion, a special issue dedicated to Prof. PN Kaula of

the *DESIDOC Journal of Library and Information Technology* (DJLIT) was also released.

SEMINAR ON WIRELESS COMMUNICATION – APPLICABILITY OF 5G/6G IN DEFENCE

In a thoughtfully organized seminar on wireless communication, the Directorate of Systems and Technology Analysis (DSTA) took center stage at IIT-Delhi on 8 December 2023, bringing together a distinguished audience of defence officials, seasoned academicians, and industry leaders. The event explored the practical applications and implications of 5G and 6G technologies in defence. Discussions revolved around critical considerations in adopting 5G and 6G, the role of microchips, strategic implementation within armed forces, industry-academia collaboration, software implications, and challenges faced by the Indian Navy in naval



communication.

The event marked a significant stride in understanding and

harnessing the potential of advanced wireless communication technologies for national security.



COURSE ON KM AT DESIDOC

The Defence Scientific Information & Documentation Centre (DESIDOC), Delhi, organised a Continuing Education Programme (CEP) course on 'Role of Knowledge Management to Augment the Organization's Performance' during 06-08 December 2023. Dr K Nageswara Rao, Director, DESIDOC, inaugurated the course and gave a welcome address. He also gave an overview of knowledge management. Faculties from Delhi University, DTU, and IGDTUW, Delhi, were invited to deliver lectures on a variety of topics related to the core subject area. A practical and hands-on session



on 'Digitization and DRDO's Repositories' was also conducted. Dr Mohd Yousuf Ansari was the

course director, and Shri Vivek Kumar, Sc 'E', was the deputy course coordinator.

DRDO PARTICIPATION IN INTERNATIONAL CONFERENCE AND EXHIBITION ON AEROSPACE & AVIATION IN 2047

Defence Laboratory, Jodhpur (DLJ) participated in the International Conference and Exhibition on 'Aerospace & Aviation in 2047' during 18-19 November 2023 at Delhi. The Aeronautical Society of India (AeSI) hosted the event to celebrate 75 years of excellence in aerospace and aviation.

Hon'ble President of India, Smt Droupadi Murmu inaugurated the event. More than 13 DLJ developed products demonstrated during the exhibition. The conference provided a thought-provoking environment to share knowledge.





4TH APEX COUNCIL MEETING

Directorate of Low Intensity Conflicts (DLIC), DRDO HQrs organised the 4th Apex Council meeting on 06 December 2023 at DRDO Bhawan, New Delhi. The meeting was Chaired by Shri Ajay Kumar Bhalla, IAS, Union Home Secretary and Co-Chaired by Dr Samir V Kamat, Secretary, DD R&D & Chairman DRDO and attended by all members of the Apex Council, viz. DGs from CAPFs (BSF, CRPF, ITBP, SSB, NSG, CISF and Assam Rifles), NDRF, Senior Officials from MHA, IB, NSCS, as well as officers from DRDO HQ including DG MCC, DG LS and DG PC & SI.

Directors of various laboratories joined the meeting through VC.



DGs of CAPFs & NDRF, Additional Director IB discussed the futuristic

operational requirements in combating low intensity conflicts.

TRAINING PROGRAMME AT DIPR

Defence Institute of Psychological Research (DIPR), Delhi conducted a two-week training programme for 34 Service Officers of Indian Army from 04-15 December 2023. The course was inaugurated by Maj Gen KM Adhikari, ADGMS (IS, H & PS). The training focused on orienting officers in basic skills of counseling. These trained officers will further provide psychological services to their troops towards up keeping their mental health and wellness.

During her address, Dr Arunima Gupta, Director, DIPR stressed on the emerging challenges in promoting psychological well-being in armed forces, shared her experiences and complimented the efforts of the organising team.



Various aspects of counseling skills were imparted as a part of the training curriculum including identification of markers and indicators of psychological distress, dealing with grief and trauma & managing issues of marital discord. Issues of alcoholism

and mental health challenges in armed forces were also addressed through case studies and role play exercises. Senior scientists from DIPR and guest faculty from reputed institutes conducted the sessions with a blend of theory and interactive discussions.



Higher Qualification Acquired



DRDO, HQrs

Shri Parimal Kumar, Sc 'G', SA to CISC, HQrs, IDS, has been conferred a PhD by Aligarh Muslim University (in collaboration with All India Management Association-Centre for Management Education, New Delhi) on 21 November 2023, for his thesis titled 'Identification of Critical Success Factors of Indian High-Tech Startups and Development of a Measurement Index for Funding'.



CABS, Bengaluru

Dr Sogunuru Annapurna, Sc 'F', Centre for AirBorne Systems (CABS), Bengaluru, has been awarded a PhD in the Faculty of Mechanical Engineering for her thesis titled 'Design and Analysis of Flow Distribution Through Manifolds in Avionics Cooling', by Jawaharlal Nehru Technological University, Anantapur Ananthapuramu, on 30 September 2023.

Patent Granted

NPOL, Kochi

A Patent No. 418731 for 'Method and Device for Determining the Degradation of Coating of a Substrate' has been granted by the Indian Patent Office to Dr KA Thomas, Sc 'E', and Dr V Natarajan, Sc 'G' (Retd.), of NPOL.

A Patent No. 420695 for 'An Encapsulating Material for Underwater Projector and an Encapsulated Underwater Project' has been granted by the Indian Patent Office to Dr Reji John, Sc 'G' (Retd.), Shri Shivkumar, Sc 'E', Shri Poturaju Prasanth Satyanarayan, Sc 'E'; and Dr MR Subash Chandrabose, Sc 'G' (Retd.), of NPOL.



Best Paper Award

DL, Jodhpur

Dr Shailesh Kumar Yadav, TO 'C', Defence Laboratory, Jodhpur (DLJ) has received best research paper award in the 'Akhil Bhartiya Sanyukta Rajbhasha Vaigyanik Evam Takniki Sangosthi, Delhi Cluster-1' organised by Institute for Systems Studies & Analyses (ISSA), Delhi during 07-08 December 2023.



DRDO NORTH ZONE CARROM TOURNAMENT

The Defence Geoinformatics Research Establishment (DGRE), Chandigarh, hosted the DRDO North Zone Carrom Tournament during 28 November 2023 to 01 December 2023. Dr PK Satyawali, OS & Director, DGRE, inaugurated the event and urged all the players with zeal and enthusiasm. Shri Niranjan Kumar, DESIDOC, won the Men's Singles; Shri Vikas Kharola and Surendra Singh, IRDE, won the Men's Doubles; Ms Supriya Aherwar, JCB, won the Women's Singles; Ms Monica Tondon and Ms Usha Kumari, IRDE, won the Women's Doubles; Shri NK Balodi, DEAL, won the Veterans Single; and Shri Bharat Singh and Shri Bhagat Ram, IRDE, won the Veterans Doubles.



DRDO NORTH ZONE KABADDI TOURNAMENT

The Defence Materials and Stores Research & Development Establishment (DMSRDE), Kanpur, organised DRDO North Zone Kabaddi Tournament 2023 during 06-09 November 2023. Dr Mayank Dwivedi, OS & Director, DMSRDE, was the Chief Guest for the inaugural event of the tournament. Overall, seven teams from sister laboratories, namely TBRL, INMAS, CFEES, DEAL, IRDE, SAG, and host DMSRDE, participated in the tournament. TBRL, Chandigarh, won the tournament by defeating INMAS, Delhi, in the final. Director, DMSRDE congratulated and greeted the winners. Three players from TBRL, two players from INMAS, and one player from



DEAL, IRDE, SAG, CFEES, and DMSRDE were selected and will represent the North Zone during

the DRDO Nationals tournament. Dr Ashish Dubey, Sc 'F' & Sports Officer organised the tournament.



INTRA ZONAL CHESS TOURNAMENT

Naval Materials Research Laboratory (NMRL), Ambernath, organised DRDO intra-zonal chess tournament during 13-15 December 2023. Shri PT Rojatkar, OS & Director, NMRL, inaugurated the tournament. Participants from Western Zone DRDO laboratories, namely HEMRL, ARDE, and NMRL, participated in the tournament. Individual men, women, and team championship competitions were conducted by referees from the Maharashtra Chess Association. The 'Winner Champion Trophy' was conferred upon NMRL Ambernath and the



'Runner Up Trophy' to HEMRL, Pune, by the Director, NMRL, during the closing. The certificates

and medals for the winners and runner-ups in the individual category were also distributed.

North Zone Table Tennis Tournament



Ms Sanjeeta Dhegaya, Sc 'D' represented the Defence Laboratory, Jodhpur (DLJ) Ladies Team in the North Zone Table Tennis Tournament at the Instruments Research & Development Establishment (IRDE), Dehradun, during 17-20 October 2023, and secured the winner position (first position) in women doubles and a gold medal.

EYE CHECK-UP CAMP AT NSTL

The Naval Science & Technological Laboratory (NSTL) Civil Employees Union, in association with Chroma Eye Hospital, Visakhapatnam, organized a free eye check-up camp during 14-15 November 2023. Dr HN Das, Officiating

Director, NSTL, inaugurated the camp and gave a welcome address. Dr GV Krishna Kumar, GDMS, also shared his view on awareness of the eye and other related significance. Dr Praggya Rit Roy and his team of MI Room, NSTL, supervised the camp.



VISITORS TO DRDO LABS

DFRL, Mysuru

* Shri S Somanath, Secretary, Department of Space & Chairman, ISRO, visited Defence Food Research Laboratory (DFRL), Mysuru on 07 December 2023. Dr Anil Dutt Semwal, Director, DFRL provided Chairman, ISRO with a comprehensive briefing on the ongoing R&D activities as well as the projects underway at DFRL. Dr R Kumar, Sc 'G' & PoC for the Gaganyaan Mission from DFRL, made a detailed presentation on space food products and logistics.

* The Parliamentary Standing Committee on Defence undertook an on the spot study visit to DFRL on 31 October 2023 under the Chairmanship of Shri Jual Oram, Hon'ble Member of Parliament (MP), and ten other members. They assessed R&D initiatives, including academic and private Sector collaboration, leading to innovation to equip the Armed Forces with nutritional and physiological well-being and to provide protection from all conceivable operational hazards during the last ten years.

DGRE, Chandigarh

Dr Mayank Sharma, IDAS, Principal Controller of Defence Accounts (PCDA) R&D, Delhi, accompanied by Smt Smitha Walia, Dy CDA (R&D), Chandigarh visited Defence Geoinformatics Research Establishment (DGRE), Chandigarh on 20 November 2023. Dr PK Satyawali, OS & Director, DGRE briefed him of ongoing projects, R&D activities, various operational activities, and support services of DGRE.



Shri S Somanath, Secretary, Department of Space & Chairman, ISRO at DFRL, Mysuru



Members of Parliamentary Standing Committee on Defence at DFRL, Mysuru



Dr Mayank Sharma, IDAS, PCDA, Delhi with his team at DGRE, Chandigarh



DL, Jodhpur

* Dr PS Goel, Former Chairman, Recruitment and Assessment Centre (RAC), Delhi, visited the Defence Laboratory Jodhpur (DLJ) on 28 October 2023.

* Prof. Dipankar Banerjee visited DLJ on 11 December 2023. Shri RV Haraprasad, OS & Director, DLJ gave a brief overview of the laboratory activities. He also discussed highlighted futuristic projects of DLJ as per technology roadmap. Dr Banerjee expressed that DLJ is working on very important and unique domain for the services. He advised that DLJ should focus on signature management in asymmetric/urban/terrorist warfare.

DLIC, DRDO HQrs

Directorate of Low Intensity Conflicts (DLIC), DRDO HQrs organised visit of DRDO scientists to field Head Quarters Assam Rifles, Shillong on 23 November 2023. Maj General DK Singh, ADG Assam Rifles welcomed all scientists to the Head Quarter Assam Rifles. Shri Sangita Rao Achary Addanki, Director, DLIC elaborated on the objective of the visit, viz. to interact with field troops, spread awareness of DRDO developed products for LIC operations and to understand new technological requirements for the troops deployed at field formations.

HEMRL, Pune

Admiral Karambir Singh, PVSM, AVSM (Retd.), Hon. Advisor to the Deptt. of Defence R&D, visited the High Energy Materials Research Laboratory



Dr PS Goel, Former Chairman, RAC, Delhi at DL, Jodhpur



Prof. Dipankar Banerjee during his visit to DL, Jodhpur on 11 December 2023



Visit of DRDO scientists to field Head Quarters Assam Rifles, Shillong



(HEMRL), Pune, on 06 November 2023. During the visit, presentations were made by the senior scientists on the indigenous development of pyro cartridges for u/w articles 2556 and 2600, the indigenous development of Insensitive Munitions (IM) composition for naval warheads, the indigenous development of signal flares (green and red), and the Anti-Sonar Decoy for Kalvery class submarines, etc. He also visited the Multiple Motor Processing Facility (MMPF), displaying exhibits of naval-related projects.

IRDE, Dehradun

Dr S Christopher, former Secretary DDR&D & Chairman DRDO, visited the Instruments Research & Development Establishment (IRDE), Dehradun, on 10 November 2023. Shri Niraj Bhargava, Sc 'H' & Associate Director, IRDE, welcomed Dr Christopher and presented major R&D initiatives taken and technologies developed by the laboratory. Dr Christopher appreciated the efforts of IRDE in developing state-of-



Admiral Karambir Singh, PVSM, AVSM (Retd.) during his visit to HEMRL, Pune

the-art systems. A guided tour was conducted at the IRDE Diamond Jubilee Gallery. Shri Niraj Bhargava explained Dr Christopher in detail about the features of the gallery and showed the technology area, which displays all technology verticals along with

future roadmaps and systems. Shri Bhargava also explained about the system area, where all the products of yesteryear have been displayed. Dr Christopher was overwhelmed watching the Down-the-Memory Lane and Lab WOW moments in the gallery.



Dr S Christopher, former Secretary DDR&D & Chairman DRDO at IRDE, Dehradun

ISSA, Delhi

* Brig Rupinder Singh, Comdt., WARCEN, HQ South Western Comd, and team visited the Institute for Systems Studies & Analyses (ISSA), Delhi, on 12 October 2023, for familiarization with ISSA activities. He was briefed about ISSA's activities, followed by discussion and demonstration of products developed by ISSA in the areas of wargaming, simulation, and system analysis studies.

* Rear Admiral Sanjay Datt, VSM (51017-Y) Commandant, CDM, visited ISSA on 17 October 2023, for familiarization with ISSA activities and collaboration on future activities. He was briefed about ISSA's activities and products developed in the areas of wargaming, simulation, and system analysis studies

* Air Marshal Ashutosh Dixit, AVSM, VM, VSM, Deputy Chief of Air Staff, and team visited ISSA on 22 November 2023, for familiarization with ISSA activities.

LRDE, Bengaluru

Members of the Parliamentary Standing Committee on Defence (SCoD) visited the Electronics & Radar Development Establishment (LRDE), Bengaluru, to review the status of the upgrades to various programs and projects. The delegation led by Shri Jual Oram, Hon'ble MP (Lok Sabha), and Chairman of the Committee visited LRDE on 01 November 2023. The Committee comprised Hon'ble MPs, Lok Sabha Secretariat, and MoD officials. Dr BK Das, DS & DG (ECS), led the interaction between the delegation and the DRDO team.



Brig Rupinder Singh, Comdt., WARCEN, HQ South Western Comd with Director, ISSA



Rear Admiral Sanjay Datt, VSM (51017-Y) Commandant, CDM with team ISSA



Members of the Parliamentary SCoD during their visit at LRDE, Bengaluru



DRDO Journals

Defence Science Journal

<https://publications.drdo.gov.in/ojs/index.php/dsj>

pISSN: 0011-748X; eISSN: 0976-464X; Article Processing Charges (APC): Nil; Open Access Journal

Impact Factor: 0.9 (JCR-2022); Cite Score: 1.4 (Scopus-2022)

Started in 1949, *Defence Science Journal* (DSJ) is a peer-reviewed, multidisciplinary research journal in the area of defence science and technology. Journal feature recent progresses made in the field of defence/military support system and new findings/breakthroughs, etc. Major subject fields covered include: aeronautics, armaments, combat vehicles and engineering, computer sciences, electronics, material sciences, missiles, naval systems, etc. To maintain and improve the quality journal having 23 editorial board members (India - 16, Outside India - 7).



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Defence Life Science Journal

<https://publications.drdo.gov.in/ojs/index.php/dlsj>

pISSN: 2456-379X; eISSN: 2456-0537; Article Processing Charges (APC): Nil; Open Access Journal

Cite Score: 0.9 (Scopus-2022)

Started in 2016, *Defence Life Science Journal* has been conceptualized to cater the needs of scientists, researchers, academicians of life sciences and allied disciplines. Publishes research articles in the disciplines of biotechnology, bio-medicine, bio-engineering, bio-electronics, non-invasive life imaging, pharmacology and toxicology, physiology, NBC warfare, food technology, and psychology. Journal upholds the highest standards of editorial integrity, including disclosure and independent peer review. It is a peer-reviewed, open access, quarterly journal that publishes original research and review papers. The journal is indexed by Scopus, UGC-CARE list, Indian Citation Index.



Print Subscription:

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Institution	Rs 1,500	USD 200	15 % for distributors/vendors; 30 % for individuals

DESIDOC Journal of Library and Information Technology

<https://publications.drdo.gov.in/ojs/index.php/djlit>

pISSN: 0011-748X; eISSN: 0976-464X ; Article Processing Charges (APC): Nil; Open Access Journal

Impact Factor: 0.8 (JCR-2022); Cite Score: 2.0 (Scopus-2022)

Started in 1981, *DESIDOC Journal of Library and Information Technology* (DJLIT) is a peer-reviewed, open access, bi-monthly journal that publishes original research and review papers related to library science and IT applied to library activities, services, and products. It is meant for librarians, documentation and information professionals, researchers, students and others interested in the field. The readers get user experience on the application of IT in libraries and information centers, and analysis of underlying trends and their potential effects. The journal is indexed by major social science indexing/ abstracting national & international databases - Scopus, Web of Science ESCI, ProQuest, LISA, LISTA, J-Gate, WorldCat, Indian Citation Index, etc.



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