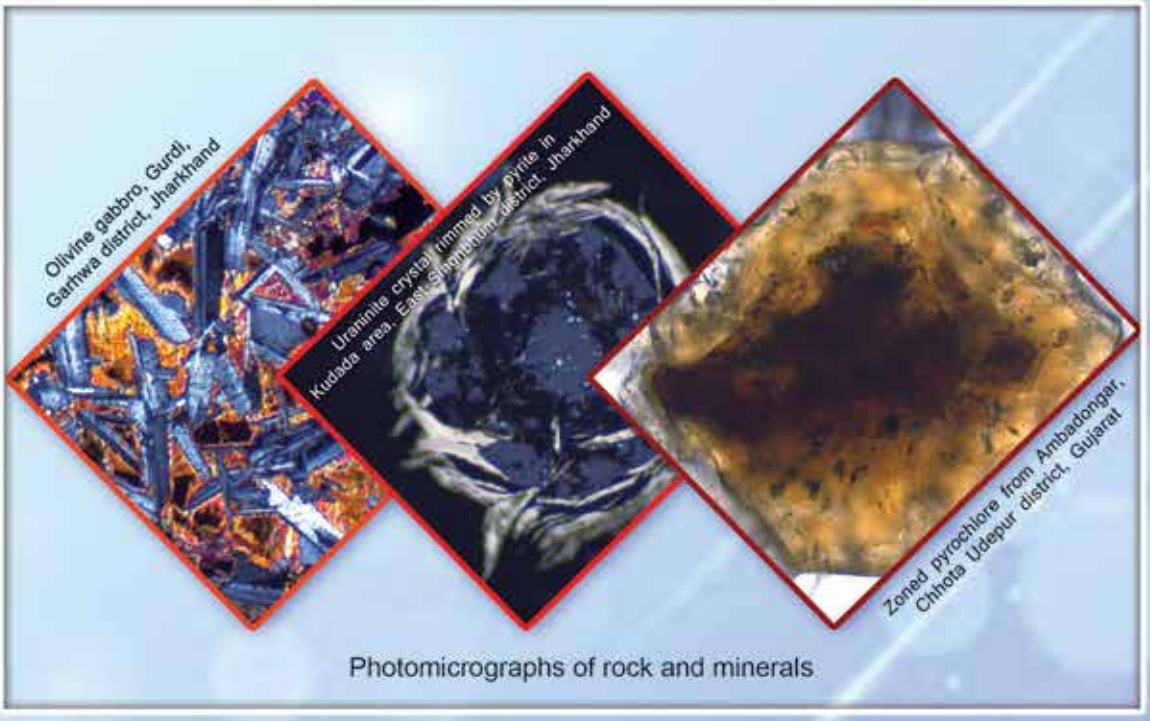
AMD

प ख नि समाचारपत्र NEWS LETTER


Exploration for Uranium by Truck Mounted Hydrostatic Drilling Rig in Tummalapalle area, A.P


Uranium mineralisation (Pitchblende veins) in brecciated limestone, Gogi area, Karnataka


Monazite rich beach placers,Manavalakurichi, Tamil Nadu



Photomicrographs of rock and minerals

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Annual publication of the Atomic Minerals Directorate for Exploration and Research (AMD)

खण्ड 27, जनवरी 2021
Vol. 27, January 2021

निदेशक का संबोधन
MESSAGE FROM DIRECTOR

My Dear Colleagues,

I wish you all a very happy, healthy and prosperous New Year – 2021, through this edition of the AMD – Newsletter. The year 2020, which was dominated by the COVID-19 pandemic, has in fact taught us several lessons and also shown our strength and survival instinct. My heartfelt congratulations to all the personnel for effectively overcoming the difficult time. The innate capacity of our personnel was visible during the lockdown period and each and every one in AMD has contributed their part during the pandemic outburst. However, our crusade against the pandemic is not yet over and I request everyone to strictly follow the safety protocol laid down by the authorities till we all are free from the contagion. I am happy that till date, only few (74) of our personnel were affected by the viral infection and everyone has recovered.

In line with our vision for the next decade, several initiatives were taken, both in the technical and administration fronts during 2020. The salient achievements in the administration front include the initiation of recruitment process for nearly 250 personnel, implementation of CHSS facility in 4 regions, implementation of Hospital Information Management System in Headquarters for the benefit of serving and retired employees, counting of service rendered as casual labourers and implementation of timeline for file disposal in Administration and Accounts wings of AMD, to name a few.

On the technical front, I am happy that we could sustain most of our activities in field and laboratories. In consequence to our commitment to DAE to double the rate of augmentation of uranium resource during the period 2019-20 to 2023-24 and to add similar quantities up to 2030, substantial inputs of geological and geochemical surveys, departmental and contract drilling, ground and heliborne geophysical surveys are being deployed in various potential geological domains of the country. Most of our departmental drilling units are working in double shifts/extended hours for higher productivity in-spite of the prevailing pandemic situation. Substantial input of contract drilling is also envisaged and a clear priority list of areas has been prepared for execution of contract drilling sequentially. Three (03) agencies AMD, NGRI and Geotech (MNC) are simultaneously carrying out heliborne geophysical surveys in various parts of the country during the Annual Programme 2020-21.

I am happy that, in addition to our known uranium production centres, impressive results have emerged in areas like Kudada, Sarangapalli, Jhapar, Loharkar, Geratiyon ki Dhani and Hulkal. Augmentation of uranium resources is envisaged in these areas in the present Annual Programme. Besides, the potential areas like Satpura Gondwana basin, Kotri – Dongargarh belt, Chhattisgarh basin, Siwalik basin, CGGC, Kaladgi basin and eastern extensions of Tummalapalle area are being developed sufficiently for uranium resource augmentation in the next 2-3 years under the vision for 2024-30. In RMRE exploration, substantial addition of REE resources is reported from Ambadongar area. Exploration in Siwana Ring Complex is yielding good results. In BSM exploration, 'Sonic drilling' is continuing in Brahmagiri area and will be extended to adjoining potential areas. In Helium exploration, initial results from Bakreshwar – Tantloi area are encouraging. We are finalising the detailed sampling and analysis protocol for helium in association with BARC, VECC and HWB. Lithium exploration has been taken up in a big way and the initial results in Marlagalla area are encouraging.

Our laboratories have been sufficiently strengthened in manpower. Most of the laboratories are working in double shifts, which will result in higher productivity for opening up of several R & D activities. Several instruments have been added/replaced in the laboratory infrastructure. All the other activities like EGDMS, mineral regulation, trainings, publications, public awareness programmes, Inter and Intra departmental collaborations, MoU with Universities, in-house R&D and BRNS projects, infrastructure development, BARC Training School, geotechnical investigations, cyber security, Rajbhasha implementation etc., are being continued with greater vigour.

I once again thank all the personnel of AMD, particularly those associated with field investigations for their dedication towards achieving the goals of the Directorate. All the important activities of AMD during 2020 have been documented in this edition of the Newsletter. I hope that the readers will have a glimpse of AMD's progress in all the frontiers of its activities.

Jai Hind!

COVID-19 Measures

कोविड-19 महामारी से निपटने के लिए मुख्यालय तथा क्षेत्रीय केंद्रों में उठाए गए कदम
MEASURES TAKEN TO TACKLE COVID-19 PANDEMIC IN HEADQUARTERS AND REGIONAL CENTRES

- All the employees are being thermally screened for body temperature and hand sanitizer is being provided by security staff while entering the office premises. Hand sanitizers have been provided to all the sections/laboratories.
- Automatic Sanitizer Dispenser machines (developed in-house), have been installed in common areas and lifts.
- All the officials have been provided with re-usable and washable masks.
- Frequent touch spots like doors, door handles, lifts, workstations etc., are being sanitized from time to time.
- Large gatherings are being avoided and most of the meetings are being held through video conferencing.
- Disinfectant (sodium hypochlorite) is being sprayed inside the office premises including laboratories periodically.
- UV sterilization machines are being used for sterilizing the files.
- Guidelines for ensuring safe working conditions in line with SOPs of Ministry of Health and Family Welfare were issued from time to time in Headquaters and all Regional/Sectional offices for compliance.




AMD contributed ₹ 48.48 lakhs to PM Cares Fund towards the Mission for fighting Covid-19.

Achievements

उपलब्धियाँ : वार्षिक कार्यक्रम 2019-20
ACHIEVEMENTS: ANNUAL PROGRAMME 2019-20

AMD has accelerated the pace of exploration activities during the Annual Programme 2019-20 by integrated, multi-disciplinary methodology and judicious utilisation of manpower with a focussed approach for augmentation of uranium, thorium, rare metals and rare earth resources. The salient achievements during Annual Programme, concluded in October 2020, are as follows.

- 20,362t in-situ uranium oxide (U_3O_8) has been augmented, which includes 8,410t in Tummalapalle and adjoining blocks, Kadapa district, Andhra Pradesh; 5,533t in Jaduguda North-Baglasai-Mechua, 3,866t in Narwapahar Deep and 75t in Bangurdih, East Singhbhum and Seraikela-Kharsawan districts, Jharkhand; 349t in Rohil and 1,512t in Jahaz, Sikar and Jhunjhunu districts, Rajasthan and 617t in Kanchankayi-Hulkal, Yadgir district, Karnataka. The country's uranium resource has been updated to 3,45,362t in-situ U_3O_8.
- Reconnaissance (5,945 sq km) and detailed (305 sq km) surveys have helped in locating significant uranium anomalies in sandstone of Siwalik Group in Masanbal – Biru- Paniali – Nalti tract, Hamirpur district, Himachal Pradesh; basement granite of Cuddapah Basin in Peddapalle, Pandulakunta, NE of Jinadalakunta and NW of Kottapalle Tanda, Anantapur district, Andhra Pradesh; sericite quartzite and carbon phyllite of Dirang Formation, Lesser Himalaya in Kharka, West Kameng district, Arunachal Pradesh; migmatite of Chhotanagpur Granite Gneiss Complex in Dumarpan, Randah and Kundru-North, Balrampur district, Chhattisgarh and fractured/brecciated basement (Sambalpur) Granite in Jaypur, Bargarh district, Odisha.
- Geochemical surveys (4,563 sq km) carried out in different parts of the country have delineated significant uranium halos along Udesar-Doli-Nerli-Timri tract and Ghuriyala – Ajbawaton ki Dhani – Bhenaniyon ki Dhani - Judiya tract, Jodhpur and Barmer districts, Rajasthan; Talupur - Kalichedu tract, Nellore district, Andhra Pradesh and around Juba, Mahasamund district, Chhattisgarh.
- 1,86,380m (Departmental: 76,702m and Contract: 1,09,678m) drilling was carried out. Significant uranium mineralised intercepts / bands have been identified in boreholes drilled at Anjangira, Sonbhadra district, Uttar Pradesh; Loharkar, Hamirpur district, Himachal Pradesh; Kanchankayi-Hulkal and Gujanal-Ankalgi,

Yadgir and Belagavi districts, Karnataka; Tummalapalle and adjoining blocks (Tummalapalle-I, Motnutalapalle, Kanampalle, Gidankivaripalle, Bakkanagaripalle, Kamaguttapalle), Kadapa district, Andhra Pradesh; Jaduguda (North), Narwapahar Deep, Kudada, Rajdah and Baglasai-Mechua, East Singhbhum district, Jharkhand; Rohil (Central and West), Narsinghpuri, Jahaz, Geratiyon ki Dhani, Ladi ka Bas and Jodhpura-Sefraguwar, Sikar and Jhunjhunu districts, Rajasthan; Umra NE Extension, Udaipur district, Rajasthan; Jhapar and Kurludih, Balrampur district, Chhattisgarh Dharangmau, Betul district, Madhya Pradesh and Sarangapalli, Guntur district, Andhra Pradesh.

- Multi-parametric heliborne geophysical surveys over 36,392 line km have been carried out in parts North Delhi Fold Belt, Rajasthan & Haryana and Chhotanagpur Granite Gneiss Complex, parts of Jharkhand, Uttar Pradesh, Madhya Pradesh and Chhattisgarh.
- Ground geophysical surveys (Regional: 605 sq km and Detailed: 342 sq km) have delineated (i) high chargeability- low magnetic – low resistivity zones towards north of Rajpura (NDFB), Sikar district, Rajasthan; (ii) Great Boundary Fault (GBF), along the contact of Vindhyan sediments with Jahazpur Group and Berach Granite in Barliyas-Motipur-Malikhera area, Bhilwara district, Rajasthan; (iii) low resistivity and high chargeability zone in the east of Kanchankayi and (iv) unconformity contact between Bijli Rhyolite and Bortalao Sandstone and litho-contact between Bortalao Sandstone and Sitagota Basalt in Bijepar-Ramatola area, Gondia district, Maharashtra.
- Reconnaissance (745 sq km) and detailed (7sq km) surveys have been carried out in parts of Chhattisgarh, Madhya Pradesh, Odisha, Rajasthan, Gujarat and Karnataka for RMRE investigations. 2,078 kg columbite-tantalite has been estimated in pegmatites in Mandya district, Karnataka, Jharsuguda district, Odisha and Surajpur district, Chhattisgarh. A total of 2,232 kg columbite-tantalite and 1,620 kg spodumene have been recovered in units of Odisha and Karnataka and 8,005 kg xenotime bearing polymineral concentrate has been produced at Siri River plant, Jashpur district, Chhattisgarh.
- Reconnoitory core drilling (7,988m), on contract, has resulted in delineating spodumene bearing pegmatite bodies over 440m strike length in Allapatna-Marlagalla sector, Mandya district, Karnataka and establishing the continuity of REE mineralisation in microgranite dykes over 750m strike length at deeper level in Bhatikhera, Barmer district, Rajasthan.
- Reconnaissance (307 sq km) and detailed (13 sq km) surveys have resulted in establishing potential heavy mineral zones mainly along the east coast of India. Significant zones of Total Heavy Minerals (THM) concentration have been located in Sana Arjapalli-Agastinuagaon (up to 72%), Ganjam district, Odisha; Beypore (up to 63%), Kozhikode and Kannur districts, Kerala; Metturu-Mela Ganguvada (up to 76%), Srikakulam district, Andhra Pradesh and red sediments of Konnada-Nerallavalasa (up to 38%), Vizianagaram and Visakhapatnam districts, Andhra Pradesh. Sonic drilling, along Brahmagiri coast, Odisha established the persistence of sand column up to 40m with up to 34% THM content. The country's total heavy mineral(s) resources are updated to 1,231.95 million tonne (mt) which includes 12.37 mt of monazite.
- All the laboratories (Physics, Chemistry, XRD, XRF, Petrology, EPMA, Geochronology and Stable isotope) provided effective analytical support to field investigations.
- The Enterprise Level Geospatial Database Management System (U-explore) moved to the O&M phase.
- Accreditation of Chemistry laboratory, Hyderabad by National Accreditation Board for Testing and Calibration Laboratories (NABL) has been renewed till May, 2022 as per the new standard ISO/IEC 17025 : 2017. The scope of accreditation of the laboratory presently includes chemical characterisation of monazite, niobite-tantalite and rock samples using ICP-OES and fluorimetric techniques.
- Research and Development assignments (39 nos.) related to atomic mineral exploration have been continued in different field areas and laboratories.
- BARC Training School (AMD Campus), Hyderabad continued its activites wherein 12 Trainee Scientific Officers (TSO) of the 10th batch (OCES-2019) (10 Geology & 2 Geophysics) completed orientation training on 31-07-2020. 15 Geoscientists of OCES-2017 batch recieved M.Tech degrees from HBNI.
- Presentation and publication of technical papers were continued in conferences and various journals.
- Public awareness programmes were organised in various cities as well as in remote field areas.
- Activities related to Human Resource Development were continued with in-house and external training programmes for staff and officers.
- AMD studentship programme (8 students) and BRNS projects (13 nos.) have been continued.
- 'Swachh Bharat' activities have been carried out at Headquarters, Regional Centres, Sectional Offices and field camps of AMD.

प ख नि में मेरी चार दशकों की यात्रा
MY JOURNEY OF FOUR DECADES IN AMD

ए.के. भट्ट A.K.Bhatt

*Shri **A.K.Bhatt**, obtained M.Sc. (Geology) degree from Hemvati Nandan Bahuguna Garhwal University, Srinagar, Uttarakhand and joined AMD in 1981. He has a vast experience of 39 years and has worked in different parts of the country in various capacities. During the last decade he has contributed immensely as Deputy Regional Director and Regional Director, Southern Region, Bengaluru and Additional Director, Hyderabad. He superannuated after an illustrious service as Additional Director (Operations – I) on 30th June, 2020.*

After completing my postgraduation in Geology from HNB Garhwal University, Srinagar, Uttarakhand in 1980, I joined this esteemed Department on 24th August, 1981 at Hyderabad wherefrom, after a brief stint, I was transferred to Central Region, Nagpur. My first field posting was in Darbha and Gidam-Dantewada areas in Bastar district of the then Madhya Pradesh. Darbha, near Jagdalpur was the talk of town in those days for very high order of radioactivity encountered in orthoquartzites and pebbly conglomerates and the news of this discovery had appeared in almost all the newspapers. Working in Darbha and Gidam-Dantewada areas offered me the first opportunity to interact with tribal people, left untouched from the showups of so called modernness. I was fortunate enough to start my first independent camp in a hut near the entry gate of famous Danteshwari Temple at Dantewada and since then almighty had been very kind to me in offering the opportunities to visit many more places of worships, places of historical importance and places of mythological significance, besides the geologically important places during the course of my field duties in parts of Madhya Pradesh, Gujarat, Rajasthan and in the later part of my career, in parts of Karnataka, Andhra Pradesh and Tamil Nadu. While working in Mount Girnar and Gir Forest areas in Gujarat, trekking through the steep hill of Girnar Igneous Complex for examining the classic magmatic differentiates, camping in a forest hut in middle of Gir Forest and locating radioactive phonolite besides encountering Gir tigers and other wildlife during the course of geological traverses in reserve forest was a lifetime experience. Equally pleasant experience was to visit the Mt. Girnar Temples built over nepheline and sodalite syenite and the famous Junagarh Fort and sitting for hours on miliolitic limestone at Somnath Temple near the sea, experiencing the calmness of sea as well as the turbulence of moving tides. Locating uranium anomalies in Delhi metasediments for the first time in Amba Mata area and along Kui Chitraseni Fault zone in Banaskantha and Sirohi districts provided me the desired professional satisfaction. Famous Ambaji Temple in Gujarat over Ambaji Granite and Mount Abu Temples over Erinpura Granite in Rajasthan situated well within my field areas gave me the solace and strength in my lonely days and will always remain as treasure in my memories. I was fortunate enough to be associated with sub-surface exploration and exploratory mine at Jajawal in Sarguja district of Chhattisgarh that exposed me to the real exploration and provided me the first opportunity of working in the underground mine which every geologist dreams at least once in his lifetime.

I was privileged to work through the entire stretch of Aravalli Fold Belt starting from Nathdwara in the north to Banswara in the south that brought out many new uranium occurrences in the vicinity of old base metal workings. The radioactive slags at Bansro, Dhawaria and Parsola still remain a puzzle to be solved in the vicinity of these old base metal workings. I always believed that a field geologist engaged in search of minerals should be optimistic. The famous Srinath Temple at Nathdwara, Shiva Temple at Eklingpura near Udaipur, Sonar Mata Temple near Salumbar, Hinglaz Mata Temple in Banswara located within the Aravalli Fold Belt always inspired and motivated me with the blessings during the course of field work. Umra, known for very high grade uranium and for the first uranium mine worked by AMD in Udaipur district, outside STB, provided me the opportunity to understand the intricacies of exploration in the highly deformed terrain. In North Delhi Fold Belt of North Rajasthan where I worked over the years, with the emergence of concept of albitite line in the mid 90s, the exploration was intensified in Rohil-Ghateswar area which ultimately led to establish the first metasomatite type uranium deposit at Rohil, besides paving ways for possibilities of proving many more satellite deposits in future. Witnessing the handing over of Rohil uranium deposit to UCIL for mining, with which I was associated and commencement of exploratory mining operations is a lifetime achievement for me.

Journey in AMD would not have been complete without visiting Singhbhum Shear Zone. I got the opportunity to supervise the exploration activities in western and central part of Singhbhum Shear Zone and the major accomplishments included proving a moderate tonnage deposit at Bangurdih and establishing the depth continuity of uranium lode in Banadungri-Singridungari and join it with Narwapahar Lode which resulted in increasing the life of Narwapahar Mine. I consider myself very fortunate

to have got the opportunity to be posted in Southern Region, Bengaluru as Deputy Regional Director and later as Regional Director. Visiting stratabound Tummalapalle Group of deposits, one of the largest tonnage deposits hosted in phosphatic dolostone and supervising deeper exploration in the contiguous areas was a real achievement. The sub-surface exploration in Suldhal-Gujanal area in Kaladgi Basin and the results accrued so far have raised the hope for proving a hydrothermal type uranium deposit close to Badami-basement contact. Proving Kanchankayi deposit in the east of Gogi Uranium Deposit along Gogi-Kurlagere Fault zone was a significant achievement that provided the required impetus for planning exploratory mining in this area.

Based on my experience gained over the years, I consider that North Dehi Fold Belt and Aravalli Fold Belt in Western Indian craton, North and South Cuddapah Basins and Kaladgi and Bhima Basins in Dharwar Craton and Singhbhum Shear zone in Singhbhum Craton will continue to be the potential target areas for exploration, which will augment substantial resources of uranium in the future. Migmatitic terrains and the Proterozoic Basins of Central India, besides Siwalik Basin of Himachal Pradesh and Mahadek Basin in Meghalaya also hold potential for hosting moderate to large tonnage uranium deposits. The recent findings of REEs in carbonatites of Ambadongar in Gujarat, Pakkanadu Carbonatite in Tamil Nadu, alkali granites and rhyolites of Siwana area and Sarnu Carbonatite in Barmer district of Western Rajasthan are significant and necessitate the exploration in other alkaline complexes like Barda and Alech hills in Gujarat and the alkaline bodies emplaced along Dharmapuri Shear Zone in Tamil Nadu. I feel previleged to be associated with Rare Metal exploration in pegmatites of Nagmangla Schist Belt near Marlagalla in Mandya district of Karnataka, where lithium resources in the form of spodumene have been identified in recent years

I conclude my journey of four decades in AMD as very satisfactory, eventful, productive and adventurous that has taken me to the diverse geological domains, to know the different cultures, to learn and understand different Indian languages and local dialects, to visit the different places of spiritual, historical and archaeological importance besides meeting different people. The best part was the environment of working in a team and sense of oneness, the love and affection shown by the seniors and care taken by everyone at the time of need. Staying away from home for these many years, spending time with AMD colleagues and their families and sharing the moments of happiness, joy and even sorrow has brought a feeling of one extended family without which survival seemed, if not difficult, at least charmless. These memories will always be cherished by me and my family.

I wish AMD great success in identifying many more new deposits for sustaining the nuclear power programme and in making India self-reliant in the field of Nuclear Energy.

मध्य भारत की यूरेनियम संभाव्यता
URANIUM POTENTIAL OF CENTRAL INDIA - A REVIEW

सुरेश कुमार Suresh Kumar

Shri **Suresh Kumar** *obtained M.Sc. (Geology) degree from Banaras Hindu University, Varanasi and joined AMD in 1984. He has vast experience of 36 years in atomic minerals exploration and has worked in many parts of the country. During the last decade, he has contributed immensely as Incharge, Southern Cuddapah Basin, Southern Region and Quartz Pebble Conglomerate Investigations, Eastern Region and Deputy Regional Director and Regional Director, Central Region. He superannuated after an illustrious service as Regional Director, Central Region on 31st March, 2020.*

Central India encompasses mainly Bastar Craton bounded between two major lineaments, which experienced several phases of tectonic and magmatic activities resulting in formation of several depositional basins ranging in age from Late Archaean - Palaeoproterozoic to Gondwana period. Six decades of extensive exploration by AMD have established several potential targets for uranium mineralisation of varied types. On the basis of uranium favourability, various geological domains of Central India have been prioritised in this article.

Chhotanagpur Granite Gneiss Complex (CGGC): The CGGC covers over 1,00,000 sq km and several uranium potential blocks have been identified by AMD. Uranium mineralisation is found over small dimensions either in high grade metamorphic facies or in migmatites. Integration of all the available exploration data including heliborne geophysical surveys is required in CGGC for establishing sizeable deposits. Exploration in Central and Northern Sarguja Shear Zone has established small deposits/ occurrences at Jajawal, Devri, Dumhat and Jhapar areas.

Proterozoic basins: Out of the 14 Proterozoic basins in India, 6 basins are located in Central India namely

Indravati, Abujhmar, Ampani, Khairagarh, Sukma and Chhattisgarh. Uranium mineralisation of varied types viz. QPC, unconformity related and structure controlled can be envisaged in these basins. Encouraging results have already been obtained in some of the areas. In Sukma basin of Palaeoproterozoic age, many low grade uranium anomalies over small dimension in ferruginous quartzite have shown indication of mineralisation. The geological setup of Chhattisgarh Basin, which covers an area of over 33,000 sq km, favour unconformity related uranium mineralisation along the lower stratigraphic sequence and post depositional tectonic features. Signatures of radioactivity over an area of 20 sq km in the northern part testify the uranium potential. Sustained exploration programme is suggested in this potential basin. Although, extensive exploration inputs in the Neoproterozoic Indravati basin have not proved sizeable deposits, integration and rejuvenated exploration efforts may be fruitful. In Abujhmar Basin, our exploration efforts are limited owing to the logistic constraints. However, significant potential exists in this basin and exploration can be initiated after R&D studies. The Khairagarh Basin has been extensively studied by AMD and a very large potential exists in this basin. Subsurface exploration in Khairagarh Basin has already established uranium mineralisation at Mogarra, Nalpani, Kolarbhatti, Malharbodhi, Udrichapar, Kholharghat etc. Critical analysis of all the exploration data integrated with heliborne geophysical data will definitely identify high grade and large tonnage uranium deposits.

Satpura Gondwana Basin: The Satpura Gondwana basin has been investigated extensively by AMD in different phases, which resulted in establishing many favourable horizons in the entire stratigraphic sequence. Current exploration in Satpura Basin has established low to medium grade uranium mineralised lenses of varying dimensions. Extensive sedimentological studies and data integration of borehole lithologs and ground and airborne geophysical studies in established areas are suggested to narrow down the targets. Besides Motur Formation, the other Formations like Kamthi and Denwa can also be targetted.

Intra-trappeans: Uranium mineralisation similar to Lalbarra area can be envisaged in the intra-trappeans. However, extensive R&D efforts and data integration are required in this geological domain.

My best wishes to AMD for all its future endeavours.

प ख नि में साहसिक एवं अत्यधिक संतोषप्रद यात्रा के संस्मरण
REMINISCENCES OF AN ADVENTUROUS AND HIGHLY SATISFYING JOURNEY IN AMD

डॉ. राहुल बनर्जी Dr. Rahul Banerjee

Dr. Rahul Banerjee *obtained M.Sc. (Geology) degree from Banaras Hindu University, Varanasi and Ph.D. from RTM Nagpur University, Nagpur and joined AMD in 1984. He has a vast experience of 36 years of working in various domains of mineral exploration in different parts of the country. During last decade he has contributed immensely as Incharge, Palnad Investigations, South Central Region, Head, BARC Training School-AMD Campus & Geochronology & Stable Isotope Group and Deputy Regional Director and Regional Director, North Eastern Region. He superannuated after an illustrious service as Regional Director, North Eastern Region on 31st March, 2020.*

I would like to start reminiscences of my journey in AMD with the memories of my student days in Banaras Hindu University (BHU), Varanasi when strong inclination for research compelled me to decline selection offers from premier organisations including AMD, GSI, ONGC, MECL and CMPDIL. However, after spending over 3 years in research, realisation came to me that delay in joining any job will result in loss of seniority, which is very important for career progression. Thus, I joined AMD on second opportunity on 16th April, 1984 at Nagpur under Shri G.H. Sahastrabuddhe and was immediately posted to one of the most interior parts of Chhattisgarh i.e. Jajawal Prospect in Surguja district. This has given me the golden opportunity to learn uranium prospecting including surveying, mapping, drilling, exploratory mining and ore reserve estimation. With the start of FS 1984-85, the real challenging and lonely journey started without any vehicular support in remote field areas of Surguja having dense forests full of wild animals, sparse tribal population and extremely poor road connectivity. It was a thrilling experience to locate significant uranium occurrences in Jhapar, Belda, Baran River and adjoining areas in migmatitic terrain of Surguja Crystalline Complex. This has also taught me intricacies of tackling challenges associated with exploration independently as well as art of survival under difficult circumstances. I still remember that it used to be nearly 28 km long walk through jungles before dawn to catch the bus to go to Ambikapur for sample submission in Physics Lab. It gives me immense satisfaction and pleasure to know that these areas are now being explored for fracture controlled,

migmatite hosted vein type uranium mineralisation.

First 22 years of my journey in AMD had the distinction of working in different field areas of central, western and southern India mostly alone under a new Incharge every year, which has not only enriched my knowledge about various geological domains of India but also provided opportunity to learn about different cultures and human psychology. During this period, I have discovered significant uranium anomalies and occurrences viz. Malharbodi, Nakti, Jatbhaora, Magardhokra, Gondia district, in Bortalao Sandstone/Bijli Rhyolite of Kotri–Dongargarh Belt; Otavna area, Sindhudurg district in Precambrian granitoids; U & LREE bearing Palaeoproterozoic granite pegmatite at Shahpur-Sujayatpur, Thadisaoli and Kinwat inlier in Nanded district and REE and Nb & Sn bearing radioactive rhyolites at Osham and Alech hills in Rajkot & Junagarh districts, which was always a great motivational factor. During field surveys, I always preferred tent accommodation outside the village, which gave the feeling of freedom and peace of mind, but it also had inherent hazards, being open to wild animals, heavy rains and stormy winds. I still remember the wintery night of FS 1985-86 at Camp Malharbodi when due to heavy rains our Kabul Pal was at the verge of collapse.

I was fortunate enough and thrilled to get posting in ASRS Group during 1995–99, and participated in AGRS survey of Abu Block (1995) from Ahmedabad airbase which helped in delineation of a potential target zones between W of Sindreth to Pasaliya in the environs of Disa-Sirohi-Pali lineament, Sirohi and Jalore districts of Rajasthan. In those days aerial survey was associated with inherent risk and previous history of accidents due to the use of old Dakota aircrafts. Exhausting continuous flying for nearly 6 hours at low altitude where presence of air pockets sometimes made aircraft highly unstable tested our physical and mental endurance. I still remember my highly scary last flight which also happens to be the last flight of Dakota (Air Survey Co., Kolkata) for AGRS surveys when one engine of aircraft failed while climbing Mt. Abu. But I salute the alertness and genius navigation skills of Capt. Singh and Capt. Tripathi who somehow managed to negotiate the Abu peak (hardly 10m gap) with only one functional engine and safely landed the aircraft at Ahmedabad Airport.

Since 2007 onwards I was associated with planning, supervision and execution of exploration activities in Vindhyan, Gondwana and Palnad Basins as Incharge till 2016. Satpura-Gondwana Basin and Northern part of Cuddapah Basin (Palnad and Srisailam sub-Basins) hold special potential for sandstone type and unconformity related fracture-controlled type of uranium mineralisation, respectively. Leading the exploration activities in these geologic domains was a great opportunity to learn techno-administration and decision making. During this period, I could also fulfil my dream of doing doctoral research and was awarded Ph.D. by RTM Nagpur University in 2008.

In 2016, as Head, BARCTS-AMD and GCSI Groups, I was given challenging task to streamline BARC Training School, AMD Campus in accordance with HBNI norms and weeding out of backlog and prioritisation of samples for dating and stable isotope studies depending upon analytical worthiness and importance of the project area. I have immense pleasure of grooming two batches of budding geoscientists through OCES programme and clearing backlog of three batches of M.Tech programme. I am sure that AMD's future is fully secured in the hands of these professionally trained bright geoscientists. In addition, I also acted as Member Secretary of TSC-5 of NRFCC, BRNS and successfully completed the mammoth task of arranging clearance of long pending projects as well as presented "Umbrella Project on Research for Uranium Exploration & Mining" as special invitee in BRNS board meeting at Mumbai giving me satisfaction and immense pleasure.

In the last phase of my 36 years long career, I was entrusted the responsibilities as Regional Director of NER, Shillong in 2018 amidst highly sensitive and fragile socio-political conditions towards uranium exploration and mining which provided a new learning experience in tackling the crisis. Apart from mesmerising natural beauty, NER has got immense potential of uranium and REE mineralisation, especially in the states of Meghalaya, Arunachal Pradesh and Assam. Recent discovery of Laggi Gamlin and Siki uranium occurrences in Khetabari Formation in Arunachal Pradesh has opened up the area for detailed exploration for poly-metallic mineralisation. In addition to involvement in exploration activities, I thoroughly enjoyed the serene beauty of nature, especially the lush green forests, clear blue sky, rains, waterfalls and snow-covered mountains of Northeast India.

I will always remain thankful to almighty and indebted to AMD for providing the golden opportunity to learn various techniques of atomic minerals exploration and encouragement for academic pursuit. I am sure that concerted efforts of highly dedicated young generation scientists trained from BARCTS and highly qualified TSOs will establish several large tonnage and high grade uranium deposits and take AMD to towering heights under the able guidance of highly experienced leaders. Finally, I thank all the colleagues and friends for their direct and indirect support during my long journey in AMD.

सिंहभूम अपरूपण अंचल का पूर्वी भाग: पूर्वी भारत में भविष्य के यूरेनियम संसाधनों के लिए संभाव्य लक्ष्य

EASTERN PART OF SINGHBHUM SHEAR ZONE: A POTENTIAL TARGET FOR FUTURE URANIUM RESOURCE IN EASTERN INDIA

अनिर्बान साहा **Anirban Saha**

*Shri **Anirban Saha** obtained M.Sc. (Geology) degree from University of Calcutta, Kolkata and joined AMD in 1987. He has vast experience of 33 years of working in various domains of mineral exploration in different parts of the country. During the last decade he has contributed immensely as Incharge, Mahadek Basin Investigations, Northeastern Region and Incharge, Singhbhum Shear Zone East Investigations, Deputy Regional Director and Regional Director, Eastern Region. He superannuated after an illustrious service as Regional Director, Eastern Region on 30th September, 2020.*

The arcuate shaped Singhbhum Shear Zone (SSZ) is a zone of intense ductile deformation extending over 200km from Baharagora in the east to Duarpuram in the west, with 1 to 5 km width. This shear zone separates two major geological domains namely, the Archean Singhbhum-Orissa Iron Ore Craton in the south and the North Singhbhum Mobile Belt in the north. The shear zone is very narrow in the eastern part, from Narwapahar the shear zone bifurcates and the northern arm ends at Duarpuram while the southern arm extends upto Lotapahar. In the eastern part (syn Dhanjori sector) the shear zone is bound by fuchsite bearing Dhanjori Quartzite in the south and the kyanite bearing Chaibasa Quartzite in the north.

The SSZ has been the focus of attention since early days for its copper, apatite and magnetite mineralisation and later for uranium mineralisation. Uranium exploration in this belt started during early 1950s and is being continued in different phases and so far, more than 60,000 tonne of uranium oxide has been established from this belt. Uranium mineralisation is by and large confined to the lower part of Chaibasa Formation of Singhbhum Group and partially Dhanjori Group, especially in the eastern sector. However, in Kudada, located south east of Turamdih East deposit, mineralisation is hosted by serpentinite, the status of which is still unknown. The mineralisation is hydrothermal vein type, polymetallic, structurally controlled but lithological and stratigraphic control have also played a major role for ore localisation. In most of the places uranium mineralisation is associated with copper, molybdenum and nickel.

In the present phase of exploration, emphasis was laid on resource augmentation by exploratory drilling in the intervening/ contiguous areas of known deposits of central sector and also to prove new deposits from potential areas of western sector of SSZ. Accordingly, extensive drilling was carried out in Bangurdih, Simulbera - Rangamatia, Gurulpara, Gura, Sankadih, Ukri and Mahalimurup areas. However, except in Bangurdih, mineralisation could not be established in other areas and subsequently exploration activity was stopped in 2019.

The central sector of SSZ, located between Jaduguda in the east to Mohuldih in the west, was the prime target for exploration since early fifties and maximum uranium resource was established from this belt. Drilling is still continuing in Kudada, Garadih, Rajdah, Baglasai- Mechua, Jaduguda North and Bhatin-Nimdih blocks. In this sector, very limited scope is left for future as most of the areas have been tested by subsurface exploration; hence, new potential target areas have to be established in the eastern sector of SSZ where exploration input for uranium mineralisation was very less. However, the area between west of Mohuldih upto Dhadkidih is very promising and can be targetted for exploration.

Matigora to Dhobani, located in the eastern part of SSZ, is well known for copper mineralisation. This 25 km stretch is almost unexplored from uranium point of view, except in Surda and Purnapani areas, where limited shallow series boreholes were drilled. However, the result of the extradepartmental boreholes in Kendadih, Siddheswar, Tamajhuri and Dhobani areas indicate that the area is also promising for uranium mineralisation. Recently one borehole in Kendadih block intercepted significant mineralisation in the footwall side of copper mineralisation. Systematic deep drilling may be planned all along the copper belt to probe the uranium mineralisation in the footwall side of copper mineralisation. Priority must be given to Matigora, Surda, Pathargora, Tamajhuri, Dhobani and Badia blocks where surface signatures as well as results of the extradepartmental/ departmental boreholes are significant. Surda area has been explored by departmental drilling and mineralisation has been probed upto a vertical impact of 200m. However, the drilling was suspended in 2000 due to the priority of other areas. Surda area may be reassessed for further subsurface exploration as mineralisation is still open in the west and downdip directions.

Subsurface exploration along Bagjata-Khejurdari block have identified two important deposits, Bagjata and Kanyaluka and a number of uranium occurrences. However, the area was not thoroughly explored as the exploration activities in this block were suspended since 1980s due to logistic problems. Now it is the right time to take up extensive subsurface exploration all along this belt. Priority must be given to Dalmakocha, Bhalki and Purandungri areas, where earlier boreholes intercepted significant mineralisation. Few deep boreholes may also be planned near Gohala fault.

I am very much confident that systematic subsurface exploration may come up many more uranium deposits from the eastern part of SSZ. I wish AMD all success in the years to come.

वायुवाहित भूभौतिकीय सर्वेक्षणों में प ख नि की पथ प्रदर्शक यात्रा
AMD'S PIONEERING JOURNEY IN AIRBORNE GEOPHYSICAL SURVEYS

डॉ. बी.वी.एस.एन. राजु Dr. B.V.S.N.Raju

Dr. B.V.S.N.Raju *obtained M.Sc.Tech (Applied Geology) and Ph.D. degrees from Andhra University, Visakhapatnam and joined AMD in 1987. He has vast experience of 33 years in mineral exploration in different parts of the country. During last decade he has contributed immensely as Incharge, Airborne Survey and Remote Sensing Group, Hyderabad, North Singhbhum and Gondwana Investigations, Eastern Region and Deputy Regional Director and Regional Director, Northern Region. He superannuated after an illustrious service as Regional Director, Northern Region on 30th June, 2020.*

Airborne geophysical surveys by AMD started in 1955 with inhouse designed and fabricated gamma total count system. The constant research and experimentation by physicists and instrumentation engineers resulted in developing a full-fledged gamma ray spectrometer and magnetometer system. The system was extensively used between 1972 and 1995, on a fixed wing aircraft (DC 3) as a platform. The geophysical sensors used were magnetic and radiometric to identify radiometric anomalies and to demarcate geological structures using magnetic contours. The navigation was visual and control points were marked as fiducial points on photo film in flight path camera. The flight line interval ranged from 2000m to 500m with a flying height of 100m and flying speed of 120km per hour. The hired fixed wing aircraft DC-3 was grounded in 1995. The system was further improved by incorporating advanced electronic components and made into a PC based airborne gamma ray spectrometer and magnetometer system with integrated Global Positioning System (GPS). The data acquisition was done between 2000 to 2002 using National Remote Sensing Agency's (NRSA) Twin Otter Aircraft.

The collected data was successfully utilised in the identification of important uranium provinces and few deposits. Electromagnetic (EM) data helps in identifying concealed EM conductors and conductors which are often associated with minerals formed from hydrothermal activity. Since uranium deposits are also associated with hydrothermal activity, EM data is important for uranium exploration. As a test case in 2002, airborne Time Domain EM, magnetic and GRS system on CASA 212 platform of M/s. Fugro Airborne was used to acquire data over Mohar Cauldron, Jhansi district, Uttar Pradesh. Data was acquired at 250m flight line interval. The capabilities of data processing and modelling software were understood by AMD during the processing of the EM and Magnetic data.

The experience from the interpretation of vast radiometric data and ground surveys guided AMD to acquire high resolution multi sensor data to identify subtle radiometric anomalies and associated concealed geological structures. To acquire high resolution data the sensor is to be flown at lower altitude and lesser sensor speed. This is possible with helicopter borne sensors. As an experiment and to gain experience in heliborne geophysical surveys, AMD utilised National Geophysical Research Institute's (NGRI) geophysical instruments and expertise in low altitude gamma ray spectrometry, magnetic and Frequency Domain Electro Magnetic (FDEM) surveys. The geological structures were identified using FDEM data upto a depth of 150m.

The advent of better data acquisition systems and compatible high-resolution sensors prompted AMD to initiate the heliborne gamma ray spectrometric, magnetic and electromagnetic surveys with associated data processing software on contract basis. As a result, Low Altitude Heliborne Geophysical Surveys were carried out on Eurocopter AS 350 B3 helicopter platform, using M/S Geotech, Canada hardware (VTEM) and software. The VTEM system can resolve EM conductors upto a depth of 400m. Later AMD procured the VTEM system, GRS, magnetometer hardware and associated data processing

software from M/s Geotech and AMD scientists got trained in data acquisition, processing and interpretation. From 2003 onwards AMD routinely acquires quality heliborne geophysical data with 200m flight line interval. Now AMD is a pioneer in India with well experienced team of scientists for planning, execution, maintenance of hardware, data processing, modelling and interpretation. My best wishes to AMD for all its future endeavours.

प ख नि में मेरी यात्रा
MY JOURNEY IN AMD

वी. नटराजन V. Natarajan

*Shri **V. Natarajan** obtained M.Sc. (Geology) and M.Phil (Micropalaeontology) degrees from University of Madras and joined AMD in 1987. He has vast experience of 33 years of working in various domains of mineral exploration in different parts of the country. During the last decade he has contributed immensely as Incharge, Southern Cuddapah Basin Investigations, Southern Region and Deputy Regional Director and Regional Director, Western Region. He superannuated after an illustrious service as Regional Director, Western Region on 30th June, 2020.*

I joined AMD in June 1987 in Northern Region, New Delhi after obtaining M.Sc. & M.Phil. degrees in Geology from University of Madras. During my entire career spanning over 33 years, I was mostly involved in uranium investigations in various important geological domains of the country. During the initial years, I was involved in uranium exploration in Aravalli and North Delhi Fold Belts. Our exploration efforts in the Aravalli Fold Belt led to proving the north eastern extension of the Umra uranium deposit in Udaipur district, Rajasthan.

In Eastern Region, I could contribute to the geological understanding of the eastern margin of Bonai Granite, near Sayamba area, for exploring Quartz Pebble Conglomerate type (QPC) uranium mineralization.

I had a wonderful stay in Southern Region, Bengaluru. I worked in all the major potential geological domains of the Region viz; Southern Cuddapah Basin, Bhima Basin, Kaladgi Basin and Granulite terrain of Tamil Nadu. In Bhima Basin, spectacular breakthrough was made in uranium exploration along the Gogi – Kurlagere Fault zone. Subsequent subsurface exploration has proved a sizeable high grade uranium deposit at Gogi. It is happy to note that exploration is still continuing in the eastern extension areas of Gogi deposit where significant mineralisation is intercepted. In recognition of the important achievement our team bagged the “National Mineral Award -1999” from Government of India. I was also awarded the “S. Narayanasamy Award – 1998” by the Geological Society of India.

In Kaladgi Basin, after the initial discovery of significant uranium mineralisation at Deshnur, the follow up intensive prospecting work led to the establishment of unconformity related uranium mineralisation. This has opened up the entire Kaladgi Basin for integrated exploration programme. Later in the granulite terrain of Tamil Nadu, our work could establish the multi-elemental potential of Dharmapuri Shear Zone, particularly in Rasimalai area. Besides uranium, the area has potential for Nb, Pb, Bi, V, Ga, Rb, Sc, Y, Ba and Sr associated with pink micro-syenite. My stint as Incharge of uranium investigations in Southern Cuddapah Basin, was extremely fruitful in the sense that besides exploration in the deeper parts of the known uranium deposits, our detailed geological and exploration work could establish substantial uranium mineralisation and resources in the eastern extensions of the Tummalapalle uranium deposit, particularly in the Rachakuntapalle East - Gidankivaripalle – Velamvaripalle sector. In addition, significant uranium mineralisation was identified in basement fractures in Kamaguttapalle – Kammapalle sector. All these areas are currently under exploration.

I was transferred to Western Region, Jaipur in 2018. As Deputy Regional Director and later as Regional Director, I had a wonderful stay at Jaipur. I could contribute significantly to the geological understanding of the exploration areas. Our strategy was to develop new areas besides sustaining intensive exploration in the productive areas towards the augmentation of uranium resources. Substantial addition of uranium resources was accomplished in Rohil Central and Rohil West Blocks and in Jahaz Main Block. Extensive exploration has brought out several new areas like Geratiyon Ki Dhani - Ladi Ka Bas, Babeli and Jodhpura - Sefraguar in North Delhi Fold Belt and extensions of Umra - Udaisagar in Aravalli Fold Belt.

Our team of geoscientists in Rare Metal and Rare Earths Investigations Group in Western Region contributed immensely to place the Ambadongar area firmly in the world map of REE resources. Extensive exploration has established the Ambadongar Carbonatite Complex as the largest REE deposit of India. Similarly, in the Siwana Ring Complex of Rajasthan, we are very close to proving a REE deposit.

My journey in AMD came to an end in June, 2020 and the reminiscences of AMD will be forever with me. I extend my best wishes to all the personnel of AMD for achieving greater heights in the coming years.

परमाणु खनिज निदेशालय में मेरी यात्रा
MY JOURNEY IN ATOMIC MINERALS DIRECTORATE

डॉ. एस. एन. चतुर्वेदी Dr. S.N. Chaturvedi

***Dr. S.N. Chaturvedi** obtained M.Sc. (Geology) and Ph.D. degrees from Banaras Hindu University, Varanasi and joined AMD in 1987. He has vast experience of 33 years of working in various geological domains in different parts of the country and in Planning and Management Services Group (PMSG). During the last decade, he has contributed immensely as Member in PMSG and as Head, PMSG, Atomic Minerals Data Centre (AMDC) and Geotechnical Investigations (GI), Hyderabad. He superannuated after an illustrious service as Head, PMSG, AMDC and GI on 30th April, 2020.*

I joined AMD in December, 1987 in the then Central Region, Hyderabad after completing M.Sc. and Ph.D. from Banaras Hindu University, Varanasi. During the initial years I worked in logistically and socio-politically challenging areas of Bastar district, Chhattisgarh, carrying out uranium exploration in Proterozoic Indravati and Abujhmar Basins. Our team could contribute significantly to the geological understanding of these basins which was hitherto unknown, besides bringing out their uranium potential. Presence of komatiite was reported for the first time, beneath the sandstone of Gundul Formation of Mesoproterozoic Abujhmar Group. Large number of extra-departmental bore wells were logged in association with the Public Health Engineering (PHE) Department of Chhattisgarh. Further, as a young professional, I learnt a lot to manage and survive with the local people and administration.

I was transferred to Central Region, Nagpur in 1992. Initially, I carried out exploration for Rare Metal and Rare Earths (RMRE) mineralisation in pegmatitic and riverine placers of Nagpur district, Maharashtra and Surguja district, Chhattisgarh, in which resources of columbite-tantalite and xenotime were proved. I had a very scintillating experience working in the Northeastern Region during 1999-2003, particularly in the deep gorges of Cherrapunjee and Mawsynram Plateaus. I also got an opportunity to contribute in proving the western extension of the Mahadek Basin up to Balphakram Plateau through Jaintia, Khasi and Garo Hills of Meghalaya.

I had a nice experience of working as Technical Secretary to the Regional Director, Central Region in two stints during 1997-99 and 2004 - 2006, which provided vast knowledge in monitoring the progress of exploration programmes and also coordinating the multipronged activities of the region. Later I was also engaged in uranium exploration for Proterozoic sandstone type of uranium mineralisation in Bortalao Formation of Khairagarh Group at Nalpani in Chhattisgarh, where substantial extent of uranium mineralisation was established.

After spending nearly 22 years in various assignments in the then Central Region (presently South Central Region), Central Region (2 stints) and Northeastern Region, I was posted in the Planning and Management Services Group (PMSG), Hyderabad in 2009. PMSG is the nerve center of AMD and working in PMSG is altogether a unique experience, in the sense that it has a role in all the activities of AMD starting from planning, coordination and monitoring of exploration activities for atomic minerals, budget, publications, liaison with inter and intra departments, parliament activities, RTI, atomic minerals resource updates, council meetings, technical meetings, finalising the regulations for atomic minerals, public awareness programmes, etc. The prime objective is to provide assistance to the Director, AMD in successfully executing the exploration programme of the Directorate.

During 2006-07, AMD witnessed several transformations like enhanced targets for heliborne geophysical surveys and contract drilling, procurement of hydrostatic drilling rigs, establishment of BARC Training School (AMD Campus), upgrading the laboratory and infrastructure facilities of AMD, scaling up of Research and Development and BRNS activities. Since I joined PMSG around the same time, I was exposed to a variety of work which was entirely new to me.

I was particularly associated in enlarging the Rare Metal and Rare Earth resource base of the country. Several measures were initiated for the re-establishment of the recovery plant for xenotime at Siri River, Jashpur district, Chhattisgarh. I was closely associated with the exercise of fixing the price for procurement of Nb-Ta minerals from Gramin Co-operative Societies of Bastar tribals through Chhattisgarh Mineral Development Corporation (CMDC) and also selling price of Nb – Ta produced at recovery units of AMD to NFC after discussion with Chief Advisor Cost, Ministry of Finance.

I was entrusted with the responsibility of Head, Planning and Management Services Group in 2017. Besides, the regular work, PMSG has been involved in many other activities such as formulation and execution of 15 year profile (2017 - 2032) for augmentation of atomic minerals

resources, drafting and finalisation of AMCR-2016, issuing of Monazite Test Certificate (MTC) etc. For the canalization of export consignments of BSM, extensive liaison with IREL and DAE was done.

During this period, all the old reports of AMD, since inception in 1949, available in PMSG, were scanned and entered into the database for easy retrieval. The ambitious Enterprise Level Geospatial Database Management System (EGDMS) was successfully implemented. The quality of the periodical reports published by AMD was improved to a large extent. Inter-departmental activities with many organisations namely Geological Survey of India (GSI), State Geological Programming Boards (SGPB), Central Geological Programming Board (CGPB), Oil and Natural Gas Commission (ONGC) Energy Centre and NITI Aayog were actively taken up. I was also actively involved in Rajbhasha activities, for which the honour of "DAE-Rajbhasha Bhushan" was bestowed upon me. All the officials in PMSG and cartography lived up to the expectations and delivered the required output timely. PMSG is an ever evolving Group of AMD and its duties have no bounds.

My journey in AMD has been wonderful and rewarding and I wish all the very best to all the personnel, particularly the young generation of AMD, for scintillating discoveries of atomic minerals in future.

यूरेनियम अन्वेषण में प ख नि के भौतिकी वर्ग की भूमिका
ROLE OF PHYSICS GROUP IN AMD FOR URANIUM EXPLORATION

जी. बी. राउत G.B.Rout

*Shri **G.B.Rout** obtained M.Sc. (Physics) degree from Utkal University, Bhubaneswar and after successfully completing his training from the 29th Batch (Physics) of BARC Training School BARC, Mumbai, joined AMD in 1986. He has a vast experience of 34 years in the field of physics in atomic minerals exploration and has worked in many parts of the country. He has contributed immensely in Instrumental Neutron Activation Analysis, radon emanometry, gamma ray spectrometry and radiometric analysis. He superannuated after an illustrious service as Head, Physics and Instrumentation Groups on 31st August, 2020.*

Atomic Minerals Directorate for Exploration and Research (AMD) is multi-disciplinary organisation. Its main objective is augmentation of uranium, thorium, rare metals and rare earth resources. For survey and exploration of atomic minerals, an integrated methodology like ground survey, jeep borne radiation survey, airborne gamma ray spectrometric and magnetic survey, geochemical, geophysical surveys are utilised. Characteristic property of radioactivity is utilised for identification of uranium and other minerals. Hence, the Physics Group plays a very important role in the exploration of atomic minerals by carrying out gamma ray logging of bore holes, radiometric analysis of geological samples by gamma ray spectrometry using indigenously developed instruments by Instrumentation Group.

I joined this prestigious Organisation in the year 1986. During these 34 years it has undergone many transformations like quantum jump in work output and modernisation of analytical facilities such as alpha spectrometry, DSP based gamma ray spectrometry system, high sensitivity HPGe detector. Uranium isotopic ratio in water sample by Alpha Spectrometry will provide vital information in the initial stage of uranium exploration and Neutron Activation Analysis data will support Geochemical Modelling. From beginning, Physics Group has tirelessly ensured high precision and accuracy in every radiometric analytical data. In this spirit, Physics Group conducts quality control in its own laboratories that provide results at par with international standards. This could only be possible because of the tireless efforts of the physicists. Similarly, the Instrumentation Group under Physics Group has designed, and fabricated Audio-Visual Scintillometer, Differential Spectrometer, Portable Gamma Ray Spectrometer, GM/ Scintillation Bore Hole Logging System and PC based Five Channel Counting System. It also supplies Bulk Uranium Ore Analyser (BUOA) to UCIL along with Standards and Moisture-proof Count Rate Meters.

Recent collaborative work with BARC in development of Neutron Logging System will add new feather to the cap of AMD.

As the saying goes, all good things must come to an end. After 34 years, the curtain fell on my journey in AMD on 31st August, 2020. I am indebted to all those who directly or indirectly helped me to discharge my duties during my career. I consider myself lucky to have got the opportunity to serve this organisation. I will forever be grateful to AMD for providing me with the wonderful opportunities and reposing faith on me.

I also take this opportunity to express my gratitude to each member of Physics Group for contributing whole heartedly to achieve the set goal of the organisation. Working with all of you has been a great pleasure and I wish you all the best in your life and future endeavours.

Independence Day

स्वतंत्रता दिवस समारोह
INDEPENDENCE DAY CELEBRATIONS

The 74th Independence Day was celebrated with great fervour in AMD Headquarters, Regional Centres and in the field camps. The guidelines issued by Ministry of Home Affairs for celebrating Independance Day amid COVID-19 pandemic were strictly followed. Glimpses of the celebrations are presented below:

मुख्यालय Headquarters

On the 74th Independence Day, **Dr. D. K. Sinha,** Director, unfurled the National Flag and received the guard -of-honour in AMD, Hyderabad. In his address, he briefed about the activities and achievements of AMD during the year. He also emphasised upon the dedicated contributions from officers and staff for the growth of the organisation.

क्षेत्रीय मुख्यालय Regional Headquarters

Southern Region, Bengaluru

Eastern Region, Jamshedpur

Central Region, Nagpur

Western Region, Jaipur

North Eastern Region, Shillong

South Central Region, Hyderabad

Camp: Hamirpur Northern Region

Sectional Office, *Thiruvananthapuram*

Annual Day

71 वाँ प ख नि - वार्षिक दिवस समारोह
71ST AMD - ANNUAL DAY CELEBRATIONS

The 71st Annual Day celebrations of AMD were held on 29th July, 2020 at Headquarters, Hyderabad. Shri **L. K. Nanda**, Former Director, AMD and **Dr. A. K Chaturvedi**, Former Additional Director, AMD (virtual mode) graced the occasion as the Chief Guest and Guest of Honour respectively. **Dr. D.K. Sinha**, Director, AMD presided over the function and briefed the audience about the achievements of AMD during the last one year and expressed the desire of better performance in the years to come with the blessings of elders and active involvement of the employees. All the employees of AMD including the Regional Centres and Sectional Offices joined the programme virtually.

In the AMD – Annual Day address, Shri **L.K. Nanda** touched upon the achievements of AMD during the last seven decades and the way forward and extended good wishes to AMD for attaining greater heights in coming years. **Dr. A. K Chaturvedi**, in his address, stressed the need of sustaining the transformations AMD witnessed during the last two decades. Shri **P.S. Parihar**, Former Director, AMD, several retired senior officers and staff graced the occasion through virtual mode. They showered their blessings and greetings on whole AMD family on the occasion.

In Western Region, Jaipur, saplings were planted by retired senior officers on the occasion of AMD – Annual Day.

Best performing drilling units - Rolling Trophy for 2018-19

Mechanical Rig Category

First Prize: RD 60 (3) deployed in Surguja Investigations, Central Region. **Shri G. Nagender**, Incharge, along with his crew members achieved a drilling progress of 2,177m against the target of 1,800m. Congratulations.

Second Prize: RD 60 (4) deployed in Surguja Investigations, Central Region. **Shri C. P. Narayan**, Incharge along with the crew members achieved a progress of 2,071m against the target of 1,900m. Congratulations.

Third Prize: RD 60 (6) deployed in Kaladgi Basin Investigations, Southern Region. **Shri Lingaraj Mahanta**, Incharge along with the crew members achieved a progress of 1,999.45m against the target of 1,500m. Congratulations.

Hydrostatic Rig Category

First Prize: WA IIIC (1) deployed in North Delhi Fold Belt Investigations-I, Western Region. **Shri K.S. Meena**, Incharge along with the crew members achieved a progress of 4,293.45m against the target of 3,900m. Congratulations.

The rolling trophies will be presented in the Annual Day celebrations, 2021

Swachhta Pakhwada

स्वच्छता पखवाड़ा
SWACHHTA PAKHWADA

"Swachhta Pakhwada" was observed during 16-28 February, 2020 in Headquarters, Regional Centres, Sectional Offices and field camps. In Southern Region, a programme was conducted in Government Higher Primary School, Nagarabhavi, Bengaluru to create awareness among school children which included a lecture on cleanliness and quiz competition. Swachhta tools were donated to the school to promote cleaning activity among children. In South Central Region, a lecture on "Tips for Healthy Life" by **Dr. Shalabh Saxena**, Sanjivani Hospital, Nuclear Fuel Complex was arranged.


Headquarters, Hyderabad

Northern Region, New Delhi

Central Region, Nagpur

Southern Region, Bengaluru

North Eastern Region, Shillong

Eastern Region, Jamshedpur

South Central Region, Hyderabad

Western Region, Jaipur

Sectional office,Thiruvananthapuram

Sectional Office, Visakhapatnam

Sectional Office, Visakhapatnam

Graduation Ceremony

स्नातक समारोह
GRADUATION CEREMONY

BARC Training School (BARCTS)-AMD Campus since its inception in 2009 fulfills the requirement of highly skilled Geoscientists in the field of exploration for uranium and other atomic minerals. During this academic year, 12 Trainee Scientific Officers (10 in Geology and 2 in Geophysics discipline) of 10th batch (OCES-2019) graduated from BARCTS-AMD Campus and 15 geosceintists of 8th batch (OCES-2017) were conferred with M. Tech degree through HBNI.

Graduation Ceremony of 10th batch of OCES-2019 was held on 31st July, 2020. **Dr. T.S. Sunil Kumar**, Additional Director (R&D) delivered the welcome address, followed by the presentation of Annual Report of Training School by Dr. A. Ramaraju, Incharge, BARCTS–AMD Campus. **Dr. D.K. Sinha**, Director, AMD addressed the audience and guided the graduating officers on the tasks ahead and the responsibilities for achieving the targets of AMD. Shri **P.S.Parihar,** Former Director, AMD; **Dr. A.K.Rai**, Former Director, AMD; **Dr. R. Mohanty**, Former Additional Director, AMD and all the Regional Directors graced the occasion through virtual mode.

Shri **N. Saibaba**, Former Chief Executive, Nuclear Fuel Complex (NFC) graced the occasion as Chief Guest and addressed the Graduating TSOs. He conferred OCES-certificates to 12 TSOs of 2019 batch and presented Homi Bhabha Medal to the toppers in Geology (Shri **Debayan Sengupta)** and Geophysics (Shri **Ramsevak Singh)** disciplines. He also conferred M. Tech degree to the 15 geoscientists of OCES-2017 batch. The geoscientists of OCES 2017 batch attended the Graduation Ceremony through virtual mode.

On this occasion, a booklet pertaining to the important activities of BARC Training School-AMD Campus was distributed among the dignitaries, TSOs and audience.

आई.आर.ई.एल (इंडिया) लिमिटेड के प्रबंधन प्रशिक्षणार्थियों हेतु अनुस्थापन पाठ्यक्रम
ORIENTATION COURSE FOR MANAGEMENT TRAINEES OF IREL (INDIA) LIMITED

BARC Training School, AMD Campus organised the orientation Course for fifteen (15) Management Trainees of IREL (India) Limited during 20th January, 2020 to 4th March, 2020. The training course was inaugurated by **Dr. D.K. Sinha**, Director, AMD and Shri **Deependra Singh**, Chairman and Managing Director, IREL (India) Limited and **Dr. T. Sreenivas**, Head, Mineral Processing Division, BARC graced the occasion as Chief Guest and Guest of Honour respectively. The training course included class room and laboratory modules at AMD Hyderabad and field module at BSOI, Visakhapatnam.

विश्व पर्यावरण दिवस
WORLD ENVIRONMENT DAY

"World Environment Day" with the focal theme "Time For Nature" was observed with great enthusiasm on 5th June, 2020 in Headquarters, Regional Centres, Sectional Offices and field camps. On the occasion, saplings were planted by the senior officials of AMD. Glimpses of the activities are given below.

Headquarters, Hyderabad


Regional Centres


Southern Region, Bengaluru


Eastern Region, Jamshedpur


North Eastern Region, Shillong


North Eastern Region, Shillong


Central Region, Nagpur


Central Region, Nagpur

अ राजभाषा समाचार

राजभाषा समाचार

प ख नि ने वर्ष 2020 के दौरान राजभाषा कार्यान्वयन के क्षेत्र में कई उपलब्धियां प्रात की, उनमें प्रमुख हैं :

- प ख नि ने इस वर्ष भी नगर राजभाषा कार्यान्वयन समिति-4 की अध्यक्षता की और विभिन्न कार्यक्रमों का आयोजन किया।
- प ख नि मुख्यालय, हैदराबाद को राजभाषा कार्यान्वयन के क्षेत्र में उत्कृष्ट कार्य करने हेतु नगर राजभाषा कार्यान्वयन समिति-4 की इस वर्ष की राजभाषा शील्ड व गृहपत्रिका खनिज भारती को सर्वश्रेष्ठ पत्रिका शील्ड से सम्मानित किया गया।
- मध्यवर्ती क्षेत्र, नागपुर में 17 सितम्बर, 2020 को "परमाणु खनिज अन्वेषणः वर्तमान परिदृश्य एवं भविष्य की संभावनाएं" विषय पर एक दिवसीय वैज्ञानिक संगोष्ठी का आयोजन किया गया।
- स्मारिका अंक-1 का प्रकाशन किया गया।
- दिनांक 10.10.2020 को प ख नि कार्यालय, उत्तरी क्षेत्र, नई दिल्ली का संसदीय राजभाषा निरीक्षण समिति की पहली उपसमिति द्वारा राजभाषायी निरीक्षण किया गया।

मुख्यालय, हैदराबाद

प ख नि मुख्यालय, हैदराबाद में राजभाषा कार्यान्वयन के क्षेत्र में राजभाषा कार्यान्वयन समिति और हिन्दी अनुभाग द्वारा सतत् प्रयास जारी है ताकि दिन प्रतिदिन सरकारी कार्य में कार्यान्वयन सुचारू रूप से आगे बढ़े। इस दिशा में, इस वर्ष आयोजित हिन्दी कार्यशालाओं में 35 अधिकारियों एवं 65 कर्मचारियों को प्रशिक्षित किया गया। हिन्दी शब्द संसाधन प्रशिक्षण में 40 कर्मचारियों को प्रशिक्षित किया गया।

प्रत्येक वर्ष की भांति इस वर्ष भी दिनांक 10.01.2020 को विश्व हिन्दी दिवस का आयोजन किया गया। इस अवसर पर विशेष रूप से प्रसिद्ध हिन्दी साहित्यकार, हैदराबाद की डॉ. अहिल्या मिश्र उपस्थित रहीं। अतिथि वक्ता डॉ. अहिल्या मिश्र ने **'हिन्दी विशिष्टता'** विषय पर अपना व्याख्यान प्रस्तुत किया। स्वागत वचनों में उन्होंने कहा कि विश्व में हिन्दी के प्रचार-प्रसार के लिए जागरूकता पैदा करना तथा हिन्दी को अंतर्राष्ट्रीय भाषा के रूप में पेश करना विश्व हिन्दी दिवस के आयोजन का उद्धेश्य है। विदेशों में भारत के दूतावास में इस दिन को विशेष रूप से मनाते हैं।

नगर राजभाषा कार्यान्वयन समिति - 4 (कें.स.का.) वर्ष 2020 की प्रथम बैठक दिनांक 28.08.2020 को तथा दूसरी बैठक 06.11.2020 को प ख नि हैदराबाद में आयोजित की गई। इसमें सभी केंद्रीय सरकारी कार्यालयों के प्रमुख एवं संबंधित अधिकारियों व कर्मचारियों ने भाग लिया। निदेशक, प ख नि डॉ. दीपक कुमार सिन्हा की अध्यक्षता में यह बैठक सफलतापूर्वक संपन्न हुई। कोविड-19 महामारी के कारण यह बैठक वर्चुअल माध्यम से आयोजित की गई। वर्ष 2020 के दौरान प ख नि मुख्यालय, हैदराबाद को नगर राजभाषा कार्यान्वयन-4 द्वारा उत्कृष्ट कार्य करने हेतु नगर राजभाषा कार्यान्वयन समिति-4 की इस वर्ष की राजभाषा शील्ड व गृहपत्रिका खनिज भारती को सर्वश्रेष्ठ पत्रिका शील्ड से सम्मानित किया गया।

सितंबर माह में हिन्दी सप्ताह का आयोजन किया गया। इस अवसर पर मुख्य अतिथि के रूप में मुख्य संवाददाता- 'डेली हिन्दी मिलाप, हैदराबाद' श्री एफ.एम. सलीम की उपस्थिति प्रेरणादायक रही। विभिन्न प्रतियोगिताओं के सफल आयोजन के साथ 24 प्रतिभागियों को पुरस्कृत किया गया। इस अवसर पर श्वेत पटल लेखन प्रतियोगिता के तहत उत्तम प्रस्तुति के लिए तकनीकी वर्ग में अपर निदेशक (प्रचालन-I) कार्यालय को प्रथम एवं अपर निदेशक (प्रचालन-II) कार्यालय को द्वितीय पुरस्कार से सम्मानित किया गया। गैर तकनीकी वर्ग में सहायक लेखा अधिकारी (पीएफ एवं पेंशन) कार्यालय को प्रथम पुरस्कार एवं मुख्य प्रशासनिक एवं लेखा अधिकारी कार्यालय को द्वितीय पुरस्कार से सम्मानित किया गया। कोविड-19 महामारी के

संदर्भ में केन्द्र सरकार द्वारा जारी दिशा निर्देशानुसार सामाजिक दूरी का पालन करते हुए एक सादे समारोह में हिन्दी सप्ताह समापन समारोह का आयोजन किया गया।

दिनांक 19.10.2020 से 23.10.2020 तक नराकास का हिन्दी अनुवाद प्रशिक्षण कार्यक्रम वर्चुअल माध्यम से आयोजिन किया गया। इस प्रशिक्षण में नराकास-4 के कार्यालयों के कुल 40 अधिकारियों एवं कर्मचारियों ने भाग लिया। केन्द्रीय अनुवाद ब्यूरो, नई दिल्ली द्वारा प्रतिभागियों को प्रशिक्षण प्रदान किया गया। उद्घघाटन समारोह में केन्द्रीय अनुवाद ब्यूरो, नई दिल्ली के निदेशक डॉ. मोहनलाल वाधवानी ने सभी प्रतिभागियों को संबोधित किया।

नराकास सदस्य कार्यालयों द्वारा आयोजित (20.10.2020) हिन्दी निबंध प्रतियोगिता में कुल 34 (हिंदी भाषी-07/हिंदीतर भाषी-27) अधिकारियों/कर्मचारियों ने भाग लिया।

दिनांक 04.11.2020 को वर्चुअल माध्यम से नगर राजभाषा कार्यान्वयन समिति-4, हैदराबाद, के सदस्य कार्यालयों के लिए एक दिवसीय हिन्दी कार्यशाला का सफल आयोजन किया गया। इस हिंदी कार्यशाला में कुल 41 अधिकारियों/कर्मचारियों को प्रशिक्षित किया गया।

उत्तरी क्षेत्र, नई दिल्ली

राजभाषा के प्रति सक्रियता बनाए रखने के उद्देश्य से अनेकानेक कार्यक्रम जैसे विश्व हिन्दी दिवस, हिन्दी कार्यशालाओं का आयोजन, हिन्दी पखवाड़ा इत्यादि का सफल आयोजन किया गया। इस अवसर पर आयोजित विभिन्न प्रतियोगिताओं में सभी

अधिकारियों/कर्मचारियों ने उत्साहपूर्वक भाग लिया। दिनांक 10.10.2020 को परमाणु खनिज अन्वेषण एवं अनुसंधान निदेशालय कार्यालय, उत्तरी क्षेत्र, नई दिल्ली का संसदीय राजभाषा निरीक्षण समिति की पहली उपसमिति द्वारा राजभाषायी निरीक्षण किया गया। संसदीय राजभाषा समिति की ओर से सांसद एवं उपाध्यक्ष माननीय भर्तृहरि महताब, संयोजक प्रो. रामगोपाल यादव, श्री हरनाथ सिंह यादव, श्री श्याम सिंह यादव, श्री एम. मनिस्वामी एवं श्री धर्मेन्द्र कश्यप उपस्थित थे। क्षेत्रीय निदेशक, डॉ. कृष्ण कुमार पाण्डेय ने संसदीय समिति का औपचारिक रूप से स्वागत किया तथा विभाग के अधिकारियों से परिचय कराया

। निदेशालय तथा विभाग की तरफ से डॉ. दीपक कुमार सिन्हा, निदेशक, प ख नि, श्री अचलेश्वर सिंह, संयुक्त निदेशक (राजभाषा), पऊवि, मुंबई एवं श्री एस.आई.जबीउल्ला, सहायक निदेशक (राजभाषा), प ख नि, हैदराबाद उपस्थित थे। संसदीय राजभाषा निरीक्षण समिति ने सुझाव दिया कि किसी भी अधिकारी अथवा कर्मचारी का नाम संक्षिप्त में नहीं लिखा जाना चाहिए।

दक्षिणी क्षेत्र, बेंगलुरु

दक्षिणी क्षेत्र, बेंगलुरु में राजभाषा हिन्दी से संबन्धित अनेक कार्यक्रम आयोजित किए गए। मुख्य रूप से आयोजित कार्यक्रमों में विश्व हिन्दी दिवस, लोकप्रिय व्याख्यान, हिन्दी कार्यशाला एवं हिन्दी पखवाड़ा इत्यादि का सफल आयोजन किया गया। इस अवसर पर आयोजित विभिन्न प्रतियोगिताओं में सभी अधिकारियों/कर्मचारियों ने उत्साहपूर्वक भाग लिया। विश्व हिन्दी दिवस के अवसर पर मुख्य अतिथि के रूप में बेंगलुरु विश्वविद्यालय के हिन्दी विभाग के विभागाध्यक्ष (सेवानिवृत) प्रो. प्रभाशंकर प्रेमी ने अपने भाषण में हिन्दी भाषा की विकास यात्रा एवं विश्व प्रचार से संबन्धित जानकारियों से अवगत कराया। दक्षिणी क्षेत्र के विभिन्न शिविरों जैसे तडिबिड़ी, पंतनगर, एम. सी. पल्ली एवं मर्लागल्ला में भी विश्व हिन्दी दिवस धूमधाम से मनाया गया।

पूर्वी क्षेत्र, जमशेदपुर

पूर्वी क्षेत्र, जमशेदपुर में राजभाषा हिन्दी से संबन्धित अनेक कार्यक्रम आयोजित किए गए। वर्ष 2020 की शुरुआत विश्व हिन्दी दिवस से हुई। तत्पश्चात लोकप्रिय व्याख्यान, हिन्दी कार्यशाला एवं हिन्दी पखवाड़ा इत्यादि का सफल आयोजन किया गया। इस अवसर पर आयोजित विभिन्न प्रतियोगिताओं में सभी अधिकारियों/कर्मचारियों ने उत्साहपूर्वक भाग लिया। शिविर नरवापहाड़ में भी हिन्दी पखवाड़ा का आयोजन किया गया जिसमें सभी अधिकारियों एवं कर्मचारियों ने बढ़ चढ़ कर भाग लिया।

पूर्वोत्तर क्षेत्र, शिलांग

पूर्वोत्तर क्षेत्र, शिलांग में राजभाषा के प्रति सक्रियता बनाए रखने के उद्देश्य से अनेकानेक कार्यक्रम जैसे विश्व हिन्दी दिवस, लोकप्रिय व्याख्यान, हिन्दी कार्यशालाओं का आयोजन, शब्द संसाधन प्रशिक्षण, हिन्दी पखवाड़ा इत्यादि का सफल आयोजन किया गया। इस अवसर पर आयोजित विभिन्न प्रतियोगिताओं में सभी अधिकारियों/कर्मचारियों ने उत्साहपूर्वक भाग लिया। हिंदी पखवाड़ा के समापन समारोह में प्रो. हितेन्द्र मिश्र, हिंदी विभाग, पूर्वोत्तर पर्वतीय विश्वविद्यालय मुख्य अतिथि स्वरूप उपस्थित रहे तथा विभिन्न प्रतियोगिताओं के विजेताओं को अपने कर-कमलों से पुरस्कार प्रदान कर उनका उत्साह बढ़ाया। इसके अतिरिक्त, कार्यालय के कार्मिकों ने नराकास, शिलांग एवं भारतीय भू-वैज्ञानिक सर्वेक्षण द्वारा आयोजित तीन-दिवसीय ई-प्रशिक्षण में भी भाग लिया।

आप अपना भविष्य नही बदल सकते
पर अपनी आदतें बदल सकते हैं।
आपकी बदली हुई आदतें ही आपका भविष्य बदल देंगी।

डॉ. ए.पी.जे. अब्दुल कलाम

पश्चिमी क्षेत्र, जयपुर

पश्चिमी क्षेत्र, जयपुर में राजभाषा के प्रति सक्रियता बनाए रखने के उद्देश्य से अनेकानेक कार्यक्रम जैसे विश्व हिन्दी दिवस, लोकप्रिय व्याख्यान, हिन्दी कार्यशाला, कम्प्यूटर कार्यशाला एवं हिन्दी पखवाड़ा इत्यादि का सफल आयोजन किया गया। इस अवसर पर आयोजित विभिन्न प्रतियोगिताओं में सभी अधिकारियों/कर्मचारियों ने उत्साहपूर्वक भाग लिया। इसी प्रकार, कैंप खंडेला में हिन्दी सप्ताह एवं कैंप अंबाडोंगर, गुजरात में भी हिंदी दिवस समारोह का आयोजन किया गया।

मध्यवर्ती क्षेत्र, नागपुर

17 सितंबर, 2020 को मध्यवर्ती क्षेत्र, नागपुर में एक दिवसीय हिन्दी वैज्ञानिक संगोष्ठी का आयोजन विडिओ कॉन्फरेंस के माध्यम से किया गया। इस संगोष्ठी का मुख्य विषय "मध्य भारत में परमाणु खनिज अन्वेषण: वर्तमान परिदृश्य एवं भविष्य की संभावनाएं" था। इस अवसर पर कुल 25 शोध पत्र प्रस्तुत किए गए। संगोष्ठी में प्रस्तुत सभी शोध-पत्रों का संग्रह 'परमाणु खनिज स्मारिका' के प्रथम अंक के रूप में प्रकाशित हुआ जिसे आईएसएसएन नंबर देना प्रस्तावित है। इसके अलावा राजभाषा के प्रति सक्रियता बनाए रखने के उद्देश्य से अनेकानेक कार्यक्रम जैसे विश्व हिन्दी दिवस, हिन्दी कार्यशालाओं का आयोजन, शब्द संसाधन प्रशिक्षण, हिन्दी पखवाड़ा इत्यादि का सफल आयोजन किया गया। इस अवसर पर आयोजित विभिन्न प्रतियोगिताओं में सभी अधिकारियों/कर्मचारियों ने उत्साहपूर्वक भाग लिया।

दक्षिण मध्यवर्ती क्षेत्र, हैदराबाद

दक्षिण मध्यवर्ती क्षेत्र, हैदराबाद में राजभाषा के प्रति सक्रियता बनाए रखने के उद्देश्य से अनेकानेक कार्यक्रम जैसे विश्व हिन्दी दिवस, लोकप्रिय व्याख्यान, हिन्दी कार्यशाला एवं हिन्दी पखवाड़ा इत्यादि का सफल आयोजन किया गया। इस अवसर पर आयोजित विभिन्न प्रतियोगिताओं में सभी अधिकारियों/कर्मचारियों ने उत्साहपूर्वक भाग लिया। विश्व हिन्दी दिवस के अवसर पर डॉ. कमलेश कुमार, प्रधानाचार्य, परमाणु ऊर्जा केन्द्रीय विद्यालय-2, ई.सी.आई.एल, हैदराबाद की मुख्य अतिथि के रूप में उपस्थिति उत्साहवर्धक रही जिन्होंने हिंदी के समृद्ध, इतिहास एवं अंतर्राष्ट्रीय मंचों पर हिंदी की स्थिति के बारे में विस्तार से चर्चा की। दक्षिण मध्यवर्ती क्षेत्र के शिविर नारायनापुरम में भी हिंदी सप्ताह उत्साहपूर्वक मनाया गया।

संभव की सीमा जानने का
केवल एक ही तरीका है।
असंभव से भी आगे निकल जाना।

स्वामी विवेकानंद

अनुभागीय कार्यालय, तिरुवनंतपुरम

तिरुवनंतपुरम अनुभागीय कार्यालय में विश्व हिंदी दिवस व हिंदी पखवाड़ा हर्षोल्लास से मनाया गया। विश्व हिंदी दिवस व हिंदी पखवाड़ा के दौरान विभिन्न प्रतियोगिताओं का आयोजन किया गया और प्रतियोगिता में विजेता प्रतिभागियों को पुरस्कृत किया गया। राजभाषा विभाग के दिशा निर्देश के अनुक्रम में प्रत्येक तिमाही के लिये अनिवार्य एक कार्यशाला का आयोजन किया गया तथा कार्यशाला में विभिन्न विषयों पर अभ्यास कार्य कराया गया।

अनुभागीय कार्यालय , विशाखापट्टनम

राजभाषा हिन्दी से संबन्धित अनुभागीय कार्यालय, विशाखापट्टनम में अनेक कार्यक्रम आयोजित किए गए। मुख्य रूप से आयोजित कार्यक्रमों में विश्व हिन्दी दिवस एवं हिन्दी पखवाड़ा रहे जिसमें विभिन्न प्रतियोगिताओं में सभी अधिकारियों/कर्मचारियों ने उत्साहपूर्वक भाग लिया एवं पारितोषिक प्राप्त किया।

लहरों से डर कर नौका पार नहीं होती,
कोशिश करने वालों की कभी हार नहीं होती।

सोहन लाल द्विवेदी

Vigilance Awareness

सतर्कता जागरूकता सप्ताह
VIGILANCE AWARENESS WEEK

Vigilance Awareness Week with the focal theme "Vigilant India, Prosperous India" was observed in Headquarters and Regional Centres from 27th October, 2020 to 2nd November, 2020. Integrity Pledge was taken by all the employees of AMD at their respective work places on 27th October, 2020. Slogans and banners were displayed within the AMD premises. In Headquarters, Shri N. Anjani Kumar, Chief Administration and Accounts Officer, delivered lecture on Vigilance Awareness to the officers and staff of National Institute of Agricultural Extension Management (virtual mode) and South Central Region on 2nd November, 2020. In Regional Centres, various programmes such as essay, poster and slogan competitions both in Hindi and English as well as invited and in-house lectures were organised.

Public Awareness

जन जागरूकता कार्यक्रम
PUBLIC AWARENESS PROGRAMMES

Headquarters, Hyderabad

An exhibition on activities of AMD was organised during 3-7 February, 2020 on the occasion of 12th Asia - Pacific Microscopy Conference (APMC-2020) and 40th Annual General Body Meeting of Electron Microscope Society of India held at Hyderabad International Convention Centre, Hyderabad.

Northern Region, New Delhi

Public Awareness Programmes comprising exhibition, quiz, elocution competitions and lectures on atomic energy were conducted in field areas of Northern Region at Kendriya Vidyalaya, Rihand Nagar, Bijpur, Sonbhadra district, Uttar Pradesh and Higher Secondary School, Garli, Kangra district, Himachal Pradesh on 18th February, 2020 and 2nd March, 2020 respectively.

Southern Region, Bengaluru

Southern Region participated in the Science Exhibition as part of 107th Indian Science Congress under the theme “Science and Technology: Rural Development” held at University of Agriculture & Science, GKVK Hebbal, Bengaluru during 3-7 January, 2020. More than 1,000 people comprising students, academicians, researchers and common public visited the AMD stall.

Eastern Region, Jamshedpur

Eastern Region participated in the exhibition organised on 7th January, 2020 on the occasion of Inspire Awards and Science Exhibition at New Peoples Academy, Jamshedpur. The stall comprised display panels of DAE and AMD activities.

A web based Public Awareness Programme was organised by Eastern Region in association with RVS College of Engineering, Jamshedpur on 14th October, 2020. Lectures on “Role of AMD in India’s Nuclear Power Programme”, “Peaceful uses of Atomic Energy” and “Safety aspects of radiation in nuclear industry and debunking of myths related to radiation” were delivered. More than 400 students and faculty members from 11 institutes participated in the programme.

Central Region, Nagpur

As part of Public Awareness Programme, Central Region participated in “Science Expo” held during 16-20 January, 2020 at Raman Science Centre, Nagpur. More than 60,000 people from all walks of life visited the AMD gallery. A lecture on “From Rocks to Reactors” under popular science lecture series was delivered.

राष्ट्रीय विज्ञान दिवस
NATIONAL SCIENCE DAY

National Science Day with the focal theme "Women in Science" was celebrated in AMD Headquarters, Regional Centres, Sectional Headquarters and in various field camps commemorating the legacy of Sir C.V. Raman. Glimpses of the activities are given below.

Headquarters, Hyderabad

National Science Day was celebrated on 28th February, 2020 at AMD, Complex, Hyderabad. Science exhibition, quiz and elocution competitions and a popular lecture by **Ms. Meena Ravichandran**, Senior Scientist, Nuclear Fuel Complex were organised on the occasion. Students and

teachers from various schools of Hyderabad participated in the programme. Film on AMD's exploration programme

was screened, for the benefit of students and teachers. Mineralogy - Petrology - Geochemistry Group, Hyderabad won the "Most innovative display stall" award.

On the occasion of National Science Day celebrations, a scientific balloon for "High altitude space research for astronomy and earth sciences" was released by **Dr. D.K. Sinha**, Director, AMD along with Additional Directors, students and teachers.

Northern Region, New Delhi

National Science Day was celebrated on 28th February, 2020 in Office Complex, New Delhi. Students of Geology department, Ram Lal Anand College participated in quiz

and essay writing competitions. Exhibition and a popular lecture by **Dr. (Smt.) N. Ratnashree**, Director, Nehru Planetarium, New Delhi on "Solar Eclipse and Other Celestial Processes" were arranged on the occasion.

Southern Region, Bengaluru

National Science Day was celebrated on 28th February, 2020 at AMD Complex, Bengaluru. The science exhibition was inaugurated by **Prof. M. Chandra Mohan**, Dean, Faculty of Science & Syndicate Member, Department of Zoology, Bangalore University. About 500 students, teachers and

faculty members from different schools, engineering & science colleges of Bengaluru and Bangalore University visited the exhibition and interacted with the scientists.

A documentary film on the theme “Women in Science” was screened during the exhibition. A quiz competition was also conducted for the students.

Eastern Region, Jamshedpur

National Science Day was celebrated on 28th February, 2020 at AMD Complex, Jamshedpur. A science exhibition and a lecture on ‘Nanoparticles for Environment, Engineering and Nanomedicine’ by **Dr. Brajesh Kumar**, Assistant Professor, Tata College, Chaibasa were arranged. Students and teachers from various schools and colleges in Jamshedpur attended the celebrations.

North Eastern Region, Shillong

National Science Day was celebrated on 28th February, 2020 at AMD Complex Shillong and in different field camps of North Eastern Region. Science exhibition, quiz competition and visit to various laboratories were organised. Students and teachers from various schools and colleges in Shillong attended the celebrations.

Public Awareness Programmes comprising science exhibition, quiz and essay writing competitions were

conducted in field areas namely Nakachari, Jorhat district, Assam; Deosal M.E. School, Deosal, Morigaon District, Assam; Kendriya Vidyalaya, Agartala, Tripura and Ramakrishna Mission Sarada Vidyapith, Khasso, West Kameng district, Arunachal Pradesh.

Western Region, Jaipur

National Science Day was celebrated on 28th February, 2020 at AMD Complex, Jaipur. More than 150 students and faculty from Compucom Institute of Information Technology and Management, SS Jain Subodh PG College, Global Institute of Technology, Apex Institute of Engineering and Technology and Purnima Institute of Engineering, Jaipur participated in the science exhibition and other programmes.

Central Region, Nagpur

National Science Day was celebrated on 28th February, 2020 at AMD Complex, Nagpur and field camps at

Wadrafnagar, Bijpur, Bhaura and Pandikimal. In Nagpur, more than 800 students and teachers from 14 schools attended the celebrations. An exhibition and visit to various laboratories were organised on the occasion.

South Central Region, Hyderabad

National Science Day was celebrated on 28th February, 2020 at AMD, Cherlapally Campus, Hyderabad. Science exhibition, elocution, drawing and essay writing competitions were organised on the occasion. About 80 students and 5 faculty members from Atomic Energy

Central School, St Peters High School and Pudami School, Hyderabad attended the events.

BSOI Sectional Office, Thiruvananthapuram

National Science Day was celebrated at Sectional Office, Thiruvananthapuram. An open exhibition was organised for one week and students and teachers in large numbers from the nearby academic institutions attended the exhibition. Prof. (Smt.) **B. Vijaya Lakshmi**, eminent scientist, academician and Former Councillor, Thiruvananthapuram Corporation, graced the inaugural ceremony on 28th February, 2020 and delivered a lecture on the theme "Women in Science".

BSOI Sectional Office, Visakhapatnam

National Science Day was celebrated at Sectional Office, Visakhapatnam on 28th February, 2020. An open exhibition was organised and students and teachers in large numbers from the nearby academic institutions attended the exhibition.

"....Countries have to provide facilities for its nationals to do front-rank research within the resources which are available. It is equally necessary, having produecd the men who can do research, to organize task oriented projects for the nation's practical problems..."

***Vikram Sarabhai**, Chairman, Atomic Energy Commission (1966-71).*

Medical Facility

प ख नि में नई चिकित्सा सुविधाएं
NEW MEDICAL FACILITIES IN AMD

During 2020, Contributory Health Service Scheme (CHSS) facility has been implemented in 4 Regional Centres viz. Western Region (w.e.f. 1st February), North Eastern Region (w.e.f. 1st September), Central Region (w.e.f. 1st October) and Eastern Region (w.e.f. 1st December).

In Headquarters, Hyderabad, Hospital Information Management System for serving and retired employees has been implemented. In the system, the medicines prescribed by Departmental Medical Officer or Authorised Medical Attendant are forwarded online to the recognised medical dealer by 1600 hrs daily and the medicines are supplied by 1300 hrs on the following day. This has greatly reduced the time and effort required for procurement of medicines. Additionally, consultation of Departmental Medical Officer has been provided at the Security Gate on daily basis for the benefit of serving and retired employees.

Women's Day

अंतर्राष्ट्रीय महिला दिवस समारोह
INTERNATIONAL WOMEN'S DAY CELEBRATIONS

International Women's Day was celebrated in Headquarters on 11th March, 2020. The theme for 2020 was "I am Generation Equality – Realizing Women's Rights". All the women employees and family members participated in the events. In Northeastern Region, Ms. Ralte, Upper Divisional Clerk, Administration Section, delivered a lecture on "Between motherhood and career-where I stand as a wife, mother, home maker and a working mom". In Western Region, Ms. **Sheela Roy**, Principal, St. Xavier College, Jaipur participated as Chief Guest in the Women's Day celebrations, on 12th March. In Eastern Region, various cultural events were organised during Women's Day celebrations.

Picnic

पूर्वी क्षेत्र में पिकनिक तथा सांस्कृतिक गतिविधियाँ
PICNIC AND CULTURAL ACTIVITIES IN EASTERN REGION

A picnic for officers and staff of Eastern Region along with their families was organised at Tumung, East Singhbhum district, Jharkhand on 9th February, 2020.

A rangoli competition for women and children and a cultural show for children residing in the Residential Complex were organised on 15th November, 2020 and 12th December, 2020 respectively in Eastern Region, Jamshedpur.

News

संक्षिप्त समाचार
NEWS IN BRIEF

The Data Centre at AMD, Headquarters, upgraded with modern facilities like access control system, smoke detection, fire alarm, water leakage alarm, CCTV, rodent repellant and work station, was inaugurated by **Dr. D.K. Sinha**, Director, AMD on 21st October, 2020. Shri **Sandeep Hamilton**, Additional Director (Operations-I), Shri **B. Saravanan**, Additional Director (Operations-II), **Dr. T.S. Sunil Kumar**, Additional Director (R&D) and Heads of various Groups were present on the occasion.

Shri **D. Venkateswarlu**, Outstanding Scientist and Regional Director, Bhaba Atomic Research Centre, Visakhapatnam visited AMD, Southern Region, Bengaluru on 22nd February, 2020. Shri **D.K. Choudhury**, Regional Director briefed about the exploration activities carried out in Southern Region. Shri Venkateswarlu visited the various laboratories and rock garden of Southern Region.

Shri **Sanjay Kumar**, Joint Secretary (A&A), Department of Atomic Energy, Mumbai visited AMD, Southern Region, Bengaluru on 25th February, 2020. Shri Mayank Agarwal, Deputy Regional Director briefed him about the exploration activities carried out in Southern Region. Shri Sanjay Kumar visited the various laboratories and rock garden of Southern Region.

Shri **B. Hanumantha**, Driver Gr-I, Southern Region, Bengaluru, performed duties for medical personnel of the State Government for over two months during the Covid – 19 pandemic. Officers and staff of Southern Region felicitated him during the Independence Day celebrations, 2020 and presented him a Covid Warrior Shield.

The Indian Nuclear Society (INS), Mumbai (Hyderabad Chapter) conducted Annual General Meeting (AGM) on 25th November, 2020 at AMD, Hyderabad. Former Chief Executives of NFC, Former Directors of AMD, retired senior scientists and several dignitaries from AMD, NFC and ECIL attended the AGM both in person and through virtual mode. The INS (Hyderabad Chapter) unanimously elected **Dr. D.K. Sinha** as Chairman and **Dr. T.S. Sunil Kumar** as Secretary for two years. On the occasion, **Dr. Madhusudhan Reddy**, Director, Defence Material Research Laboratory, Hyderabad delivered an invited lecture on "Materials for Defence Applications".

Forty (40) Professors / Assistant Professors of Physics and Chemistry disciplines from different Science Colleges in Karnataka, Tamil Nadu and Andhra Pradesh visited AMD, Southern Region, Bengaluru on 5th February, 2020 as part of "Refresher Course on Material Science" by UGC - Human Resource Development Centre, Bangalore University. They visited the various laboratories and rock garden of Southern Region.

Seventeen (17) students/ research scholars and faculty from Department of Earth Sciences, Indian Institute of Technology, Roorkee and fourteen (14) students and faculty of SGB Amravati University, Amravati visited Western Region, Jaipur during 17-19, February, 2020 and 24th February, 2020 respectively. The students and faculty from IIT, Roorkee also visited the exploration sites of AMD, Western Region.

A one-day workshop for Drivers of Western and Northern Regions was conducted at Western Region, Jaipur on 25th February, 2020. Twenty four drivers (12 each) from Western and Northern Regions attended the workshop. Shri **R.K. Choudhary**, District Transport Officer, Transport Department, Government of Rajasthan graced the inauguration ceremony as Chief Guest and delivered a lecture on 'Road Safety and Rules'. A training programme was also arranged at Auto World (M&M authorised workshop) for the participants of the workshop.

The seismic station constructed at AMD Complex, North Eastern Region, Shillong was inaugurated on 13th March, 2020 by Shri **P. P. Marathe**, Associate Director, E&I Group, Bhabha Atomic Research Centre (BARC). **Dr. S. Mukhopadhyay**, Head, Seismology Division, BARC, **Dr. Rahul Banerjee**, the then Regional Director, NER and **Dr. Kamlesh Kumar**, Regional Director, NER were present on the occasion.

"...The radioactive waste management in the Indian Nuclear Programme has continued to ensure that man and environment are not endangered to release of radioactivity ....While we have worked on the basis of 'as low a discharge as possible' as a practical reality, our current efforts are directed towards the concept of limiting discharge activity to the environment ..."

***H.N. Sethna**, Chairman, Atomic Energy Commission (1972-1983) and Secretary, Department of Atomic Energy.*

Excerpts of the address at IAEA General Conference, 1975

प्रतिनियुक्ति DEPUTATION

Dr. D.K. Sinha, Director, AMD attended the 56th meeting of OECD/NEA-IAEA Uranium Group held at Vienna, Austria during 4-6 February, 2020.

निष्पन्नताएँ ACCOMPLISHMENTS

Shri **K.K. Pandey**, Regional Director, Northern Region, New Delhi has been awarded Ph.D. degree in geology by Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur for his research work titled "Mineralogy, geochemistry and geochronology of rare metal pegmatites and associated granites of Jharsuguda district, Orissa". Congratulations!

Shri **Himadri Basu**, Scientific Officer-G, Mineralogy-Petrology-Geochemistry Group, Hyderabad has been awarded Ph.D. degree in Applied Geochemistry by Osmania University, Hyderabad for his research work titled "Geology and geochemistry of the Palaeoproterozoic Gulcheru Formation in the southwestern margin of the Cuddapah basin, A.P ". Congratulations!

Shri **V. Madakkaruppan**, Scientific Officer-E, XRF Laboratory, Central Region, Nagpur has been awarded Ph.D. degree in Chemistry by Gandhigram Rural Institute (Deemed to be University), Tamil Nadu for his research work titled "Characterisation of low grade uranium ore of Narwapahar and studies on its leaching behaviour". Congratulations!

नई भर्तियाँ NEW RECRUITMENTS

वर्ष 2020 के दौरान नए भर्ती/कार्यभार ग्रहण किए निम्नलिखित पदाधिकारियों का प ख नि में स्वागत है। उनके वृत्ति-विकास के लिए शुभकामनाएँ ।

Name (Dr./Mr./Ms.)	Designation	Name (Dr./Mr./Ms.)	Designation
Debayan Sengupta	SO C	Vijay Yadav	SO C
Pushkala, K.	SO C	Shivam Soni	SO C
Jyotiskar Hazarika	SO C	Ram Sevak Singh	SO C
Harshit Varshanay	SO C	Shivam Pandey	SO C
Manish Patel	SO C	Somanatha Reddy, Dr. V.	SO C
Nitin Mishra	SO C	Ankam Harish, Dr.	SO C
Swagat Pradhan	SO C	Dil Bahadur Lama	WORK ASST. A
Rajat Kumar Das	SO C		

श्रद्धांजलि OBITUARY

Dr. Sekhar Basu, Former Chairman, Atomic Energy Commission (AEC) and Secretary, Department of Atomic Energy (DAE) and a well-known national and international nuclear scientist, passed away on 24th September, 2020 at Kolkata. Dr. Basu was the Chairman, AEC and Secretary, DAE during October 2015 to September 2018. He was also the Chairman, Council of Management of AMD during his tenure as Secretary, DAE. Dr. Basu was an extremely competent technologist with ability to integrate multidisciplinary activities and develop multiple state-of–the-art technology systems. He accelerated the pace of nuclear power deployment, uranium exploration and mining, health-care and mega science projects.

AMD pays homage to the departed soul.

सेवानिवृत्ति SUPERANNUATION

S.No/Name (Dr./Mr./Ms.)	Designation
1. Bhatt, A. K.	SO H+
2. Suresh Kumar	SO H
3. Banerjee, Rahul	SO H
4. Chaturvedi, Shree Niwas	SO H
5. Muralidharan, R.	SO H
6. Natarajan, V	SO H
7. Raju, B.V.S.N.	SO H
8. Rout, G.B.	SO H
9. Saha, Anirban	SO H
10. Sahoo, Padmanaba	SO H
11. Srivastava, Sudhir Kumar	SO H
12. Thirupathi, P.V.	SO H
13. Bhagwan S.R. Iyengar	SO G
14. Lakshmanacharyulu, D.K.	SO G
15. Murthy, P.V.V.S.S.	SO G
16. Paul, Asit Kumar	SO G
17. Rajagopal, N	SO G
18. Ravi Kumar, T.V.	SO G
19. Rengarajan, M	SO G
20. Sabot, H.K.	SO G
21. Verma, Anjani Kumar	SO G
22. Vijay Kumar	SO G
23. Yugandhara Rao, A.	SO G
24. Hanumanthappa, D	SO F
25. Murthy, Ch Sadasiva	SO F
26. Sharma, Bidhi Chand	SO F
27. Sharma, Om Prakash	SO F
28. Srinivasa Murthy, P	SO F
29. Tippeswamy, S.	SO F
30. Venkatesh Babu, N	SO F
31. Redhu, Randhir Singh	SO E
32. Amarnath	SO D
33. Sarkar, Anjan Kanti	SA G
34. Muthukrishnan Asary, N.	Tech. Sup. A (Drg)
35. Seshagiri Rao, Y.V.	Tech. Sup. A (Drg)
36. Gopal, G.	SA E
37. Amarnath, S.	Sr. Technician J
38. Nand Lal	Sr. Technician J
39. Rajasekharan Pillai, G.	Sr. Technician J
40. Sundaresan, K.	Sr. Technician J
41. Swer, Hydro Manik	Sr. Technician J
42. Babu Moolya	Sr. Technician H
43. Harsh Lal	Sr. Technician H
44. Hem Raj	Sr. Technician H
45. Kashyap, Bisun Ram	Sr. Technician H
46. Ram Ratan Ram	Sr. Technician H

S.No/Name (Dr./Mr./Ms.)	Designation
47. Ramakrishna, A	Sr. Technician H
48. Sahu, Dilharan Lal	Sr. Technician H
49. Santosh Kumar Pan	Sr. Technician H
50. Selvamariappan, S	Sr. Technician H
51. Singh, Joginder	Sr. Technician H
52. Singh, Ram Awadh	Sr. Technician H
53. Sinha, Alakh Ram	Sr. Technician H
54. Surya Gopal Reddy	Sr. Technician H
55. Venkateshwara Rao, Birrey	Sr. Technician H
56. Vijaya	Sr. Technician H
57. Dutta, Ram Saran	Technician G
58. Jai Chand	Technician G
59. Sahu, Ramesh Kumar	Technician G
60. Gurucharan (Ms.) Rajpal	Jr Translation Officer
61. Saini, D.	Foreman C
62. Raji Ramesh	Steno Grade -I
63. Sharada, K.A.	Steno Grade -I
64. Nirmala Leo	Steno Grade -II
65. Anand Ram	Technician F
66. Bhaskaran, T.	Technician F
67. Das, Basanta Kumar	Technician F
68. Ishwara Sri Ramagudi	Technician F
69. Karunakara Shetty, A.	Technician F
70. Piar Chand	Technician F
71. Sawarkar, R.S.	Technician F
72. Singh, Amar	Technician F
73. Singh, Dariyao Kunjam	Technician F
74. Singh, Dev Nath	Technician F
75. Tek Chand	Technician F
76. Ramaram Narender	Technician D
77. Padmanabhan, N.R.	Technician C
78. Savithri Krishnan, Ms.	Assistant
79. Sajjanapur Sudarshan	Security Officer
80. Sharma, Lakhan Lal	Security Officer
81. Thapa, Yash Bahadur	Security Officer
82. Nanjundaswamy, M.	Despt.Rider. Gr. II
83. Bhaskara Rao, V.V.	Sr. Clerk
84. Shaw, Dilip Kumar	Sr. Clerk
85. Valarmathi, Ms. M.T.	Sr. Clerk
86. Man Chand	Sr. Work Asst. A
87. Balbinder Kaur,	Work Asst. C
88. Darbari Ram	Work Asst. C
89. Ram Saran	Work Asst. C
90. Singh, Piar	Work Asst. C
91. Soren, Gopia	Work Asst. C
92. Amala Das, J.G.	Driver (Spl Grd)

S.No/Name (Dr./Mr./Ms.)	Designation
93. Ramamurthy, S	Driver (Spl Grd)
94. Rangari, Prabhu Abhiman	Driver (Spl Grd)
95. Raphius Marboh	Driver (Spl Grd)
96. Suresh Kumar, H.R.	Driver (Spl Grd)
97. Syed Fahim Ather	Driver (Spl Grd)
98. Bhupen Chandra Rabha	Driver Gr. I
99. Bondre, S.S	Driver Gr. I
100. Fating, M.M.	Driver Gr. I
101. Gurushankara, M.D.	Driver Gr. I
102. Laxman Rao, K.N.	Driver Gr. I
103. Parate, B.D.	Driver Gr. I
104. Ramesh L.G.	Driver Gr. I
105. Rangaswamy, K.S.	Driver Gr. I
106. Ingle, Kishor Pundlik	Driver Gr. II
107. Singh, Kishore	Driver Gr. II
108. Reddy, Hari Krishna	Head Sec. Guard
109. Vibhishan	Head Sec. Guard
110. Anand Singh Bisht	Sr. Sec. Guard
111. Dhan Bahadur Lama	Sr. Sec. Guard
112. Ram Bilas	Sr. Sec. Guard
113. Ram Phal	Sr. Sec. Guard
114. Ramadas	Sr. Sec. Guard
115. Ramesh Chandra Verma	Sr. Sec. Guard
116. Singh, Laxman	Sr. Sec. Guard
117. Desh Raj	Security Guard
118. Krishan Kumar	Security Guard
119. Nakul Pradhan	Security Guard
120. Ratan Lal Murmu	Security Guard
121. Siddaraju, T.M.	Security Guard
122. Sisir Kumar Pramanik	Security Guard

स्वैच्छिक सेवानिवृत्ति VOLUNTARY RETIREMENT

S.No/Name (Dr./Mr./Ms.)	Designation
1. Nayak, Satchidananda	SO H
2. Madhuparna Roy	SO G
3. Rangaswamy, G	SO G
4. Sudha Srinivasan	Asst. Accountant
5. Uma Rajagopalan	Asst. Accountant
6. Mangala Joshi	Steno Grade I
7. Kamalakar Reddy	Driver Gr. I
8. Satyanarayana Babu	Driver Gr. I
9. Ferrison Momin	Work Asst. C
10. C Raju	Work Asst. B

मंगलमय सेवानिवृत जीवन की हार्दिक शुभकामनाएं

श्रद्धांजलि OBITUARY

Name (Dr./Mr./Ms.)	Designation
P Srinivasa Rao	A.A.O
Sultan Singh Khatak	Sr. Technician J
Kumara Swamy, M	Technician F
Panchan Ram	Technician F

Name (Dr./Mr./Ms.)	Designation
Sudha Srinivas	Sr. Clerk
Vinod, M. Shrirame	Driver Gr. I
Dilip, H. Kadu	Security Guard
Kuldeep Chand	Security Guard

Name (Dr./Mr./Ms.)	Designation
Masang Mardi	Security Guard
Dukhiya Hansda	Work Asst. C
Krishna Ram Sharma	Work Asst. B

हम दिवंगत आत्मा की शांति के लिए प्रार्थना करते हैं

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