Aluminum Refining

IBM explores strategies for managing Red Mud

Smt. Indira Ravindran, (second from right), Director (OD), Mineral Processing Division and her team at the Red Mud ponds in Koraput district, Odisha. The visit was aimed at examining the Bauxite residue disposal sites and find ways to reduce the discharge of deleterious substances from the Aluminium refineries.
Shri S.K. Joshi, Chief Secretary, Govt. of Telangana and Dr K. Rajeshwara Rao, Additional Secretary, Ministry of Mines, Govt. of India with delegates from Central and State Geological Agencies during the Annual Strategic Interaction Meeting (ASIM) held at Hyderabad.

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From Controller General’s Desk

The Economic Survey 2019 pegs GDP growth rate at 7 percent for the FY 2019-20, up from 6.8 percent last year. To achieve this growth rate, Mining Sector should strive hard in its sphere of influence as mineral consumption is expected to grow at a rapid pace in line with higher growth targets. The share of Gross Value Added (GVA) for Mining & Quarrying sector at current prices is 2.4 percent. The National Mineral Policy 2019 proposes industry status to mining activity which shall boost financing mining and acquisition of mineral assets in foreign countries by private sector.

The Mines Ministry organised Annual Strategic Interaction Meet 2019 (ASIM-2019), to facilitate interaction among GSI, IBM and highest echelons of the State Governments. The programme was launched across the country for building greater synergy amongst related Central and State agencies. IBM is also in the process of strengthening its regulatory mechanism by incorporating e-Governance and remote sensing application, An Eye from the Sky through Mining Surveillance System (MSS) and improved assessment of mines via Star Rating System (SRS).

IBM is making progress to launch additional modules under the Mining Tenement System (MTS). The officials of the Ministry, IBM and the National Institute of Smart Government (NISG) are coordinating with Wipro for early completion of MTS. Under the project, ‘Sudoor Drishti’, IBM officials underwent two rounds of training for efficient administration of mineral sector through application of remote sensing, at National Remote Sensing Centre, Hyderabad. It shall ensure smooth, transparent and unbiased operations for mineral regulation and improved vigilance in mines & mineral administration.

On the environment front, our Ministry is working on productive utilisation of Red Mud (an Aluminum refinery residue), by conducting conferences and workshops. Mines Ministry jointly with JNARDDC organised a Workshop, “Waste to Wealth” in New Delhi, to apprise the stakeholders about initiatives and strategies which can be adopted to decrease generation of Red Mud.

A team from Mineral Processing Division of IBM visited the Red Mud ponds and Bauxite mines of NALCO and HINDALCO in Koraput district, Odisha to study the Red Mud sites. The objective and the focus were on enhancing the quality of feed ore used by the Aluminium industry by adopting beneficiation techniques which can help recover the valuable minerals as by-products and co-products.

It would benefit in two ways – less consumption of Caustic Soda in Aluminium refineries; secondly, lesser generation of Red Mud in Aluminum production process – and thereby contributing towards sustainable development of mines.

Dr K. Rajeswara Rao, IAS
Additional Secretary (Mines) & Controller General In-charge
Mineral Exploration & Development

ASIM endeavours for synergy among Central, State agencies

In a bid to bring synergy and coordination between the Central and State Departments involved in mineral exploration and sustainable mineral development, the Ministry of Mines, Government of India initiated the Annual Strategic Interaction Meeting (ASIM) beginning April 2019. Dr K. Rajeswara Rao, Additional Secretary (Mines) & then Controller General (I/c), IBM conceived the idea of interactive meetings as part of appraisal to all the State Governments. The ASIM was organised between 15 and 30 April 2019 across States all over the country.

The idea was to promote interaction between State Governments and the different Central Government agencies involved in Geoscience, Exploration and Mineral Development programmes like GSI, IBM, MECL and related departments. The foremost of such meetings were held in States like Telangana, Andhra Pradesh, Jammu & Kashmir, Jharkhand, Mizoram etc.

In Telangana, the ASIM was held at the office of Chief Secretary Shri S.K. Joshi in Hyderabad on 18 April 2019. Shri Joshi chaired the meeting, while Dr K. Rajeswara Rao was the Chief Guest. In his introductory remark, Dr Rao opined that ASIM would help in proper coordination between different States and Central Departments involved in mineral exploration and development. The Mines Ministry shall extend support to Telangana State in exploration and extraction of limestone, manganese ore, iron ore and coal as per environmental norms, he said.

In his address, Chief Secretary S.K. Joshi said the Department of Mines & Geology should follow the model of Forest Department for expeditious grant of mineral concessions.

The State Government was prepared to extend cooperation to Central agencies for the development of mineral sector in the State. Shri M Sridhar, Additional Director General, GSI, Southern Region and senior officials of GSI were present. Shri Shailendra Kumar, Regional Controller of Mines, IBM, represented the Bureau in the meeting. Similar meetings were held in Jharkhand, Mizoram, Andhra Pradesh and other states, where officers from IBM provided valuable inputs.

Additional Secy (Mines) & CG (I/c) visits IBM HQs

Dr K. Rajeswara Rao, IAS, Additional Secretary (Mines) & then CG (I/c), Indian Bureau of Mines (IBM) visited IBM Headquarters in Nagpur on 10 April 2019. He visited all the Sections of IBM HQ including the office of Director (OD) and interacted with senior officials. He also inspected the cleanliness standards being maintained at the Bureau.

Smt. Indira Ravindran, Director (OD), MP Division, Shri Mantu Biswas, then CCOM In-charge, and Shri P.N. Sharma, COM (P&C) welcomed the Additional Secretary, Dr Rajeswara Rao visited the offices of various Divisional heads and was apprised of the progress of various projects. Each of the Divisional Heads gave a powerpoint presentation about the status of works being carried out in the Bureau under various schemes. Later, Dr Rajeswara Rao addressed the officers and employees at the conference hall. He called upon the officials to deliver their best in speeding up the pending projects of IBM and assured that the Ministry of Mines was working tirelessly to clear the proposals related to various schemes and employee welfare and career progression, he said.

Meetings

In a separate meeting, Smt. Indira Ravindran and Dr Dillip R. Kanungo attended a meeting under the chairmanship of Additional Secretary (Mines) & CG (I/c), IBM at Ministry of Mines, Shastri Bhavan, New Delhi on 10 May, 2019 regarding the issue of utilisation of Bauxite residue/red mud dumps.

The IBM team also held discussions with senior executives of Nalco and Hindalco. Smt. Ravindran also attended another meeting regarding presentation by the CG, IBM on the subject, “Role and Functions of Indian Bureau of Mines – Challenges and Way Forward” made before a High Level Committee on 19 June 2019.
Managing Red Mud
IBM explores support to Bauxite Mines

On a directive from Ministry of Mines, a team headed by Smt. Indira Ravindran, Director (Ore Dressing), Mineral Processing Division of Indian Bureau of Mines (IBM) visited bauxite residue disposal/stacking sites (Red Mud ponds) and bauxite mines of National Aluminium Company Ltd (Nalco) at Damanjodi Panchpatmali and at Tikri and Baphlimali of Utkal Alumina International Ltd (Hindalco Group) in Koraput district, Odisha during 22-27 May, 2019. The visit was aimed at examining the Red Mud sites and drawing of samples for beneficiation or Research & Development studies. The team visited the bauxite mines and Aluminium refineries to have a clear idea of characteristics of feed ores and refining process.

The IBM team made various observations and held technical discussions with senior executives and scientists/engineers of NALCO and HINDALCO on different aspects of Damanjodi and Tikri pertaining to characterisation and beneficiation study for efficient utilisation and mineral conservation. They visited both Red Mud disposal sites and bauxite mines to have a fair idea on quantity, characteristics of feed samples and visited the refineries to know the chemicals/reagents used for generation of different types of leach liquors, slurry and downstream products from the refinery.

The IBM team made various observations and held technical discussions with senior executives and scientists/engineers of NALCO and HINDALCO on different aspects of Damanjodi and Tikri pertaining to characterisation and beneficiation study for efficient utilisation and mineral conservation.

The team observed that there was a lot of scope for providing support to these companies to improve the existing comminution methods, for enhancing the quality of feed ore by adopting/suggesting physical beneficiation techniques which would be vital in recovering the valuable minerals as by-product and co-products. This in turn would be beneficial in two ways i.e. consumption of comparatively less amount of caustic soda in the refinery and generation of lesser amount of red mud.

Workshop on utilisation of Red Mud

In a bid to put to use Aluminum production residue, commonly known as ‘Red Mud’, the Ministry of Mines in association with the Jawaharlal Nehru Aluminium Research Development and Design Centre (JNARDDC) organised an Interactive Workshop called ‘Waste to Wealth’ in New Delhi. Shri Anil G. Mukim, then Secretary (Mines) was the Chief Guest, while Dr K. Rajeswara Rao, Additional Secretary (Mines) and then Controller General (I/c), IBM presided over the programme.

In his address, Shri Anil Mukim asked the stakeholders to work in synergy to find a lasting solution for productive utilisation of red mud. He interacted with the participants and called upon for a coordinated effort to undertake a productive utilisation of Red Mud. The Workshop discussed the status regarding the generation of Red Mud and its safe disposal and utilisation with necessary government support.

The delegates who attended the Workshop included representatives from Ministry of Environment, Forest and Climate Change, CPCB, Odisha State Pollution Control Board, BARC, Indian Bureau of Mines, Ministry of Road Transport, NHAI and BIS, Engineer-in-Chief of Army, top executives from all three primary aluminium producing companies i.e. NALCO, Vedanta and Hindalco and from user industries like cement and ceramic.

Red Mud is a solid waste generated during the aluminium production process. This is an environmental concern due to presence of deleterious matters such as caustic soda and other minerals. Global generation of red mud is about 150 million tonnes and that of India is 9 million tonnes per year. Based on the deliberations, a roadmap is being prepared for effective utilisation of red mud.

Smt. Indira Ravindran (second from right), Director (Ore Dressing), Mineral Processing Division and other senior officials from Indian Bureau of Mines during their visit to the Red Mud ponds or Bauxite residue disposal/stacking sites in Koraput district, Odisha.
MTS Project: Core Committee reviews progress

To look into expediting the launch of additional modules under the Mining Tenement System project, the Coordination Committee and the Core Committee under the Chairmanship of Additional Secretary (Mines) & then CG (I/c), IBM held a meeting to review the progress on 11 & 12 June, 2019 in New Delhi. Shri P.N. Sharma, CCOM (I/c) and Shri G.K. Jangid, RCOM attended the meeting. The representatives from Wipro and NISG were also present.

First, the Coordination Committee reviewed the status and recommendations made to the Core Committee for new milestones. It was apprised that updation activity in Registration module was in progress from applicant ends.

Meanwhile, a review meeting was held on 3 & 4 April 2019 at Wipro, Hyderabad, to take stock of the progress of the Phase I modules. Dr N.K. Singh, then Joint Secretary (Mines) chaired the meeting. S/Shri Amit Saran, Director, Ministry of Mines, P.N. Sharma, COM and G.K. Jangid, RCOM attended the meeting. The representatives from Wipro and NISG were also present.

MSS

Under the Mining Surveillance System (MSS), the robust technology introduced for surveillance of mines, the second round of triggers generation is underway. For the year 2018-19, a total of 52 triggers for major minerals and 130 triggers for minor minerals were generated. All these triggers were sent to the respective State Governments for field verification. So far, the field verifications in respect of 45 major minerals triggers and 104 minor minerals triggers have been completed. Out of these reports, unauthorised mining in 4 major minerals and 8 minor minerals have been confirmed by the States.

IBM explores
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Meetings

Shri Alok Chandra, Economic Advisor, Ministry of Mines coordinated a meeting between IBM and JNARDDC at IBM HQs in Nagpur. The meeting discussed the issues related to beneficiation of low-grade bauxite on pilot scale for the benefit of bauxite mine owners facing depleting quality of ores and to bring synergy between IBM and JNARDDC to address the problem. Smt. Indira Ravindran, Director (Ore Dressing), MP Division, Dr (Smt.) Sandhya M. Lal, CODO and Dr P.K. Jain, CME, IBM attended the meeting. Dr Anupam Agnihotri, Director, Dr S. Puttewar, HoD (Bauxite), Dr Pravin G Bhukte, Principal Scientist, R. Srinivasan, SAO (Administration) and Shri S. B. Wadodkar, Technical Consultant from JNARDDC were present.

In continuation of the proceedings, Smt. Indira Ravindran and Dr (Smt.) Sandhya Lal and Dr D.R. Kanungo, Suptd. Officer (OD) along with senior officers of MPD met Director and senior officers of JNARDDC, Nagpur on 8.4.2019 regarding the scaling up the laboratory studies carried out by JNARDDC on the laterite bauxite from East Coast as Science & Technology project. The meeting concluded that there was need for proper representative sample for laboratory studies.

RMD study covers eight MOIL mines

The Technical Consultancy and Mining Research Division (TC & MR) of IBM carried out a Regional Mineral Development Study (RMDS) 2018-19 for “Estimation of Manganese recoveries and quantitative assessment of the Black/manganiferous dumps for working mines of Nagpur and Bhandara districts of Maharashtra State”. As per the approved annual programme, 2018-19, the RMDS study was completed covering eight manganese ore mines of MOIL Ltd.

The mines covered under the study are Beldongri Mines (12.99 ha), Munsar Mines (108.63 ha), Kandri Mines (83.06 ha), Chikla Mines (150.65 ha), Dongri Buurzur Mines (53.98 ha), Dongri Buurzur Mines (69.5 ha) and Munsar Mines (5.74 ha).

Based on the study, some recommendations were made for improvement of recovery and efficiency of mining operations. Final report was prepared and submitted to MOIL in April 2019.
The employees of Indian Bureau of Mines perform an Aasana on the International Yoga Day organised at the IBM Headquarters in Nagpur. The officials of Modern Mineral Processing Laboratory, Hingna, Nagpur and Regional Ore Dressing Laboratory in Ajmer and officers of IBM Gandhinagar office practicing various yogic postures during the Yoga Day celebrations.

International Yoga Day observed

The Indian Bureau of Mines celebrated the 5th International Yoga Day at the IBM Headquarters in Nagpur and Regional and Zonal offices on 21 June, 2019. The main event was held at the IBM HQ where the officers and staff actively participated in a mass Yoga demonstration event.

Shri V.K. Saxena, Senior Library & Information Assistant (SLIA), who is also a qualified Yoga instructor, guided the programme based on the Common Yoga Protocol for such demonstration. The participants, on the instructions of Shri Saxena performed various yogic postures at the event organised at the premises of IBM HQs.

The Mineral Processing Division also conducted the event at its Modern Mineral Processing Laboratory & Pilot Plant at MIDC, Hingna, where officers and staff of MP Division took part.

Ajmer

At Ajmer office, two Yoga scholars from MDS University, Ajmer taught and demonstrated the Aasanas to the participants. Vedic prayers were recited before and after the programme.

S/ Shri B.L. Kotriwala, RCOM, Basavaraj Karadkal, SO(O), addressed the officials on the importance of Yoga. Shri P. Nagarajan, Administrative Officer conducted the event. Shri Khan, SMG, proposed the vote of thanks.

Shri V.K. Saxena, Senior Library & Information Assistant (SLIA), who is also a qualified Yoga instructor, guided the programme based on the Common Yoga Protocol for such demonstration. The participants, on the instructions of Shri Saxena performed various yogic postures at the event organised at the premises of IBM HQs.
SNIPPETS

Director (OD) attends meetings

Smt. Indira Ravindran, Director (OD), MP Division, IBM attended a meeting with Shri Anil G. Mukim, then Secretary (Mines), Ministry of Mines, New Delhi regarding monitoring Committee’s action plan in respect of BGML on 10 June, 2019. She also attended a meeting with Shri Jayabrata Bose, Adviser (Cost), Department of Expenditure at Ministry of Finance in New Delhi on 11 June, 2019 to decide on the Revision of schedule charges in IBM.

Ministry official visit IBM


Registration under Rule 45

The registration under Rule 45 of MCDR 1988 picked up pace in 2019. About 1274 out of the 1275 working leases were registered in migrated MST platform, as on June, 2019. As regards non-working leases, 2210 leases out of 2565 have been registered. In total, 3484 leases have been registered with IBM. About 108 leases were suspended and another 218 were recommended to the State Governments for termination. So far, 12131 end-users, traders, stockiest and exporters are registered under the Rule.

Academic Excellence

Kum. Ruchika Karoo

Kum. Ruchika Karoo, daughter of Shri G.N. Karoo, Stenographer (Grad II), has excelled in CBSE Class XII examination securing 90.40 per cent. Kum. Ruchika scored 95 in English and Mathematics and passed out from Kendriya Vidyalaya, Vayusena Nagar.

International Yoga

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Goa

Yoga Day was celebrated at IBM’s Goa Regional office, Fatorda, Margao with zeal and enthusiasm. Smt. Kamal Fulari, Chief, Patanjali Mahila Yogapeeth was the Chief Guest. Shri Prem Prakash, Deputy Controller of Mines presided. Shri G.S. Kannan, JMG welcomed the Chief Guests by presenting a sapling.

In her address, Smt. Fulari emphasised on the basic principles of Yoga and importance of Yoga in day-to-day life. Her disciples Smt. Kanchan Lotlikar and Shri Rohan Lotlikar demonstrated the yogic postures which the officers and staff of IBM Goa office imitated. Shri Bharat Kumar Sharma, Stenographer, offered vote of thanks. Shri Bharat Anant Zambauliker conducted the programme.

Similarly, all the Zonal and Regional offices of IBM also hosted Yoga Day programme. Yoga demonstration events were conducted early in the morning across Bengaluru, Gandhinagar, Raipur, Hyderabad, Kolkata, Dehra Dun and Ranchi offices of IBM.

The IBM officials perform various Yogic postures during the International Yoga Day celebrations held in IBM Raipur and Hyderabad office.
World Environment Day celebrated

The offices of Indian Bureau of Mines celebrated the World Environment Day on 5 June 2019, organising various programmes to sensitise the officials on need for Sustainable Development and Environment protection. The events were based on the theme, “Air Pollution and Reducing Air Pollution”.

At IBM Headquarters in Nagpur, the Mineral Processing Division hosted a lecture event at the Mineral Processing Laboratory and Pilot Plant. Dr (Smt.) Sandhya M. Lal, CODO, MP Division, spoke on the occasion and stressed the need for reducing air pollution by planting more trees. Few saplings were planted at the premises of the Pilot plant and the officials were also distributed saplings on the occasion.

Guwahati

The Regional office of IBM in Guwahati conducted various programmes to mark the Environment Day. Shri P.K. Bhattacharjee, Regional Controller of Mines gave a lecture on measures to reduce air pollution in mines. A slogan competition was organised for the employees. The slogan, “Protect trees, if you want to breathe” written by Shri Sujit Sharma, Stenographer, was adjudged the best. Shri Vikash Kumar, UDC, gave a short lecture on air pollution due to traffic congestion in cities and means to reduce it.

Kolkata

The officials of the IBM Kolkata office assembled at the Conference hall to celebrate the World Environment Day. Shri S. Roy, AME, chaired the programme during which all the officials presented their views on reducing air pollution.

Udaipur

The Udaipur office of IBM organised a Workshop to mark the Environment Day. Shri K.K. Tardia, Deputy Controller of Mines presided over the programme. He called upon the employees to be aware of the ill effects of environmental pollution and initiate positive steps to contribute for the betterment of the environment. The theme of the Workshop was based on Air Pollution and all the participants expressed their views on ways and means to reduce air pollution.

S/Shri Pankaj Kulshreshta, AME, Dilip Pawar, Stenographer, Lalit Kumar Nagda, and others were present. The participants took oath for the protection and conservation of environment. Similar programmes were organised in Ajmer, Dehra Dun and Hyderabad Regional offices.
PECHE INTO HISTORY

IBM gets its first Controller General

The first end of the year 1981 saw the creation of the post of Controller General, IBM, Shri D.N. Bhargava, then Controller became the first to be appointed as the Controller General, IBM w.e.f. 1 January, 1982. Shri Bhargava had been the Controller, IBM since 4 August 1973. Under his able leadership, IBM grew manifolds functionally. All credits to his stewardship as he was able to channelise talents of an overwhelming majority of officers and staff and imbibe among them a cooperative and team spirit.

Minerals Beneficiation takes centre stage

Following the widening of the roles and responsibilities of Indian Bureau of Mines, the opening of the Regional Ore Dressing Laboratory was one of the landmark events in 1981. Shri C.S. Swaminathan, then Secretary, Ministry of Steel & Mines inaugurated the Laboratory at Ajmer, which became the first Regional Ore Dressing Laboratory of IBM.

The Ore-dressing research in IBM had begun 25 years ago prior to the establishment of the RODL, Ajmer. Initially, the pilot plant at Nagpur was linked with the exploration programme of IBM. Later, it turned out to be an agency for ore-dressing research for GSI and MECL. Applied research in ore-dressing is one of the important functions of IBM. It was envisaged that the growing mineral industry would increasingly take to beneficiation. Thus, to meet this need, IBM embarked on the project of setting up two Regional Research Laboratories, one each at Ajmer and Bangalore to cater to two different regions.

At the inaugural function, Shri D.N. Bhargava, then Controller said: “The modern, well-staffed ore-dressing laboratory would act as a catalyst for the growth of mining and mineral-based industries in the entire region.” The pilot plant installed was designed for flotation process and has a 0.5 tonne per hour capacity for the flotation circuit. The analytical laboratory for wet chemical analysis was designed to provide good environmental conditions and operating facilities. Whereas, the Mineralogical Laboratory had microscopes of different types such as binocular microscope, ore microscope and petrological microscope. Equipment, such as, isodynamic magnetic separator, heavy liquid density column, refractive index liquids etc. along with supporting facilities for polishing machines and mounting press were commissioned and installed.

Dr P.K. Jain, Chief Mineral Economist, IBM participated in a Symposium on “Resource Efficiency in Aluminum” organised as part of the 30th Foundation day programme of JNARDDC in Nagpur on 29 April 2019. He was one among the panellists called for a panel discussion held during the seminar.

In other engagements, Dr Jain attended a meeting to finalise draft report of Study Group on Revision of Royalty and Dead rent of minerals (other than coal, lignite, sand for stowing and minor minerals) held under the Chairmanship of Dr K. Rajeswara Rao, Additional Secretary (Mines) and CG I/c, IBM on 13 June 2019 at Ministry of Mines, New Delhi. He also attended Additional Secretary’s presentation on Role and Functions of IBM – Strengths and Challenges held on 19 June 2019 at Niti Aayog in New Delhi. He also attended a meeting with Deputy Secretary, Ministry of Mines at IBM HQs in Nagpur.
TECHNICAL UPDATES

Bench-scale beneficiation of copper ore

A Copper-bearing sample from Nanagwas block, District- Sikar, collected by GSI as a part of G-2 exploration was received at Regional Mineral Processing Laboratory, Indian Bureau of Mines, Ajmer for bench-scale beneficiation studies. The aim of the bench scale beneficiation study was to evolve a process for producing a copper concentrate assaying more than 18% Cu with maximum possible recovery.

The sample assayed 0.37% Cu, 4.33%, Fe(T), 2.75% FeO, 3.18% Fe_2O_3, 34.37% SiO_2, 7.79% Al_2O_3, 40.41% Al, 22.88% CaO, 4.23% MgO, 0.17% S(T), 0.42% TiO_2, 1.30% Na_2O, 2.84% K, 17.87% LOI.

Mineralogically, the sample consisted of chalcopyrite, bornite and chalcocite which are copper ore-bearing minerals. Carbonates (Calcite and dolomite) were present in major amounts, Mica (Muscovite and biotite) and quartz are present in subordinate amount, whereas, iron oxides (magnetite, hematite & goethite), tourmaline, amphibole, feldspar, epidote, pyrite, pyrrhotite, rutile and garnet occurred in very minor amount to trace amount.

By employing Flotation test work, a final concentrate that was obtained assayed 34.86% Cu with a recovery of 83.68% and wt% yield of 0.9.

The final result confirms that, the copper bearing sample from Nanagwas block, Sikar (Rajasthan) has potential to produce a metallurgical grade concentrate. However, weight percent yield would be around 0.9% only.

Beneficiation of Manganese Ore

A manganese ore sample from Devada Block, GSI, Camp-Cheepurupalli, Project Manganese, G-2 stage investigation, was received from Geological Survey of India, Vizianagaram dist., Andhra Pradesh at the Modern Mineral Processing Laboratory and Pilot Plant, Indian Bureau of Mines, Nagpur for conducting bench scale beneficiation studies. The objective of the investigation was to produce a manganese concentrate suitable for end industrial uses.

The as received sample assayed 27.68% Mn, 15.47% Fe(T), 10.64% SiO_2, 6.49% Al_2O_3, 2.11% CaO, 1.42% MgO, 0.52% P, 7.10% BaO, 0.05% Na_2O, 0.40% K_2O and 0.09% S.

Mineralogical studies revealed that the as received sample consisted of major amounts of psilomelane and mangalamelane with subordinate amounts of goethite/limonite and subordinate to minor amounts of clay, pyrolusite, cryptomelane and quartz. Minor to very minor amounts of feldspar, lithiophorite, apatite, mica (muscovite) and garnet and traces of jacobsite and managanite were also noticed in the sample.

Mineralogical studies revealed that the as received sample consisted of major amounts of psilomelane and mangalamelane with subordinate amounts of goethite/limonite and subordinate to minor amounts of clay, pyrolusite, cryptomelane and quartz. Minor to very minor amounts of feldspar, lithiophorite, apatite, mica (muscovite) and garnet and traces of jacobsite and managanite were also noticed in the sample.

Beneficiation of Silica Sand

The objective of the investigation was to carry out bench scale beneficiation studies to obtain a silica sand concentrate assaying above 99.0% SiO_2, in the size range of minus 20 plus 150 mesh. The as received sample assayed 95.05% SiO_2, 0.50% Fe_2O_3, 0.11% TiO_2, 1.77% Al_2O_3, 0.18% CaO, 0.11% MgO, 0.05% Cr, 0.41% Na_2O, 0.89% K, and 0.36% LOI.

Mineralogical analysis of the as received sample revealed that the sample consisted of predominant amounts of quartz. Feldspar, clay, pyroxene/amphibole, mica, rutile/ilmenite, goethite/limonite and zircon were present in very minor to trace amount.

In order to obtain silica sand concentrate grade above 99% SiO_2, reverse flotation method was adopted, where the unwanted gangue minerals like iron oxide, mica and feldspar were floated out and the non-float fraction constituted silica sand concentrate.

The non-float silica sand concentrates (minus 72 plus 150 mesh size) obtained assayed 99.22% SiO_2, 0.13% Fe_2O_3, 0.37% Al_2O_3 and 0.03% TiO_2 with SiO_2 recovery of 71.3% (wt. % yield: 68.3). Similarly, the non-float silica sand concentrate (minus 150 plus 500 mesh size) obtained assayed 99.82% SiO_2, 0.09% Fe_2O_3, 0.10% Al_2O_3 and 0.01% TiO_2 with SiO_2 recovery of 14.6% (wt. % yield: 13.9).

Technical Updates/P12
Ambedkar Jayanti celebrated in IBM HQs

The 128th birth anniversary of Dr Babasaheb Ambedkar was organised under the aegis of Dr Babasaheb Ambedkar Samiti on 26 June, 2019 at IBM Headquaters in Nagpur. Dr B.K. Upadhyay, Commissioner of Police, Nagpur was the Chief Guest. Dr Gautam Kamble, Head & Associate Professor, Department of Economics, Dr Ambedkar College was the Guest of Honour. Smt. Indira Ravindran, Director (Ore Dressing), MP Division presided over the programme, while Shri P.N. Sharma, CCOM In-charge was present.

To begin with, Dr B.K. Upadhyay garlanded the portrait of Dr Babasaheb Ambedkar and lighted the traditional lamp.

In his address, the Police Commissioner recalled the contributions of Dr Ambedkar to the making of the Indian Constitution. He provided examples of the Nagpur Police Commissionerate which worked on the basic tenets of Constitution to develop a harmonious relationship with the citizens of Nagpur.

Dr Gautam Kamble spoke of the greatness and vision of Dr Babasaheb B.R. Ambedkar. Dr Gautam Kamble also delivered a talk on Dr Babasaheb Ambedkar and Constitution of India. Smt Indira Ravindran and Shri P.N. Sharma also spoke on the occasion.

Shri Ashok Patel & his troupe rendered

To begin with, Dr B.K. Upadhyay garlanded the portrait of Dr Babasaheb Ambedkar and lighted the traditional lamp.

Bheem Geet. Shri A.A. Gawai, then Assistant Editor compered the programme. Shri Nilesh Mahatme proposed the vote of thanks which was followed by National Anthem. S/Shri D.W. Beck, President of the Samiti, V.M. Rotke, Secretary were present.

Bench scale beneficiation studies on iron ore sample

An iron ore sample from the rock samples of Jumka Pathariposi Block, Sundargarh District, Odisha was received at the Modern Mineral Processing Laboratory and pilot plant, Indian Bureau of Mines, Nagpur through Mineral Exploration Corporation Limited for conducting bench-scale beneficiation studies. The objective of the study was to enrich iron content present in the sample for its further use in iron and steel industries.

The as received sample assayed 60.48% Fe(T), 4.86% SiO₂, 4.07% Al₂O₃, 0.15% TiO₂ and 3.87% LOI. Mineralogical studies revealed that the sample consisted predominantly of hematite with subordinate amounts of goethite/limonite and minor amounts of clay. Very minor to trace amounts of quartz, gibbsite, martitized magnetite, feldspar, mica (muscovite, biotite), ilmenite and pyrite were noticed in the sample. Following beneficiation process route was adopted.

**Process Route:**

(i) Crushing of as received sample to all -6mm size, followed by scrubbing and screening at 0.8 mm and 100# size respectively followed by gravity separation employing tabling of -0.8mm + 100 mesh fraction.

The table tails obtained were ground to all -100 mesh size and mixed with 100% fraction obtained from screening subjected to hydrocyclone.

(ii) A composite concentrate (-6+0.8 mm fraction + table concentrate + hydrocyclone U/F) obtained assayed 62.95% Fe(T), 2.97% SiO₂, 2.88% Al₂O₃ and 3.32% LOI with iron recovery of 92.6% and wt % yield of 87%.

The composite concentrate may find suitable industrial application.
हिंदी अनुभाग

अंतर्राष्ट्रीय योग दिवस पर विशेष आयोजन

योग वायम का ऐसा प्राचीनकालीन प्रकाश है, जिसके माध्यम से न केवल शरीर के अंगों बल्कि मन, मस्तिष्क और आत्मा में संतुलन बनाया जाता है। यही कारण है कि योग से शारीरिक व्यायामों के अलावा मानसिक समस्याओं से भी निवारण पाया जा सकता है। भागवद्गीता भी जीवन शैली में योग के महत्व को समझते हुए भारत सरकार प्रतिवर्ष 21 जून अंतर्राष्ट्रीय योग दिवस के रूप में मनाता है। इस मंच पर स्पष्ट विनिर्देशानुसार इस वर्ष भी भारतीय खान बुधो मुख्यालय, केत्रीय एवं उप-केत्रीय कार्यालय में योग दिवस मनाया गया।

भारतीय खान बुधो, मुख्यालय – भारतीय खान बुधो मुख्यालय के प्रतिक में 21 जून 2019 को योग दिवस से अदरक पर योगासन किए गए। इस अवसर पर सरकार ग्रंथालय एवं सूरजन सहायक श्री श्री लवनजी के संस्कारा व निर्देशन में दूरदूरों के अधिकारियों एवं कर्मचारियों ने विभिन्न आसन किए। साथ ही खान ज्ञान प्रसंसकरण प्रभाग, फोर्ड महल व भी अधिकारियों/कर्मचारियों के लिए योगासन का आयोजन किया गया। उपस्थित प्रशिक्षक ने विभिन्न योगासन एवं उससे शरीर को होने वाले लाभ की जानकारी भी दी।

केलकता पूर्वी ग्रंथालय – केलकता पूर्वी ग्रंथालय में 21 जून को अंतर्राष्ट्रीय योग दिवस का अनुयोजन किया गया। इस अवसर पर सरकार ग्रंथालय खान अभियंता तथा आदर्श एवं संविधान अधिकारियों श्री श्रीराम राजवाडा ने केंद्र योग की श्रीमती अभिमान दास एवं उनकी तीन शिष्याओं का हार्दिक स्वागत किया। इस अवसर पर श्रीमती दास ने योग के महत्त्व पर प्रकाश दाला। उन्होंने बताया कि आज हर दूसरे वक्ते किसी न किसी रोग से गंभीर है और उसपर प्रतिमाह अच्छा-खासा पैसा खर्च कर रहे हैं, किन्तु उनके हंसन प्रतिदिन योग करने के लिए इस खर्च से बचा जा सकता है और हमे किसी दवाके की भी आवश्यकता नहीं पड़ेगी।

तत्पश्चात अभियंता खान ग्रंथालय (पूर्वी) श्री पंकज कुलकर्णी सहित कार्यालय में उपस्थित सभी पदाधिकारियों ने श्रीमती दास की देखभाल में योगासन किया। योगासन के पश्चात श्रीमती पंकज कुलकर्णी ने
गोवा की गृह पत्रिका "प्रयास" राजभाषा को मंत्र

भारतीय खान बूरो मुख्यलय में विभागीय राजभाषा समिति की 110वीं बैठक  में उपस्थित खानिया प्रसंस्करण प्रभाग की निदेशक श्रीमती उपरिवर्न, मुख्य खानिया अर्थशास्त्री एवं राजभाषा अधिकारी दा पी.के.जैन तथा अन्य।

विभागीय राजभाषा समिति की 110वीं बैठक

भारतीय खान बूरो मुख्यलय में विभागीय राजभाषा समिति की 110वीं बैठक का आयोजन माहानिवंतक के समाचार में किया गया। बैठक की अध्यक्षता मुख्यालय प्रसंस्करण प्रभाग की निदेशक श्रीमती उपरिवर्न ने की। इस अवसर पर मुख्य खानिया अर्थशास्त्री एवं राजभाषा अधिकारी दा पी.के.जैन उपस्थित थे।

बैठक में सर्वप्रथम विशेषज्ञ बैठक में लिए गए निर्देशों पर की अनुसूची कार्यालय पर बच्चों की साधन मुख्यालय में हिंदी पारंपरिक प्रतिष्ठान की ली जा रही नियमित कार्यों को श्री जानकारी उपियावर को दी गई। कार्यालय कार्यक्रम में राजभाषा कार्यक्रम समिति की नियमित बैठक लेने पर चयन की गई। बैठक में हिंदी प्रतिष्ठापक के संबंध में जानकारी अनुसूची को दी गई।

पुस्तक 13 से अधिकतम विशेष कार्यक्रम का आयोजन किया गया। योग के संचालन साहायक बहन मुख्यालय के दल के हादसा के लिए।

वैश्विक भाषाओं में विभागीय राजभाषा समिति की अनुसूची पर अधिकारियों एवं कर्मचारियों ने योगदन ने उपस्थित एवं राजभाषा भाषाओं में कार्यरत सभी अधिकारियों एवं कर्मचारियों ने योगदन के अवसर पर प्रातः 7 वक्र तारामाण्डल के समान कहा गया।

1) ज्वान महोत्तिक कार्यालय में योगदन पर आयोजित योगमायामा में भाग लेते अधिकारी/कर्मचारी। 2) ज्वान महोत्तिक कार्यालय में योगदन पर आयोजित योगमायामा में भाग लेते अधिकारी/कर्मचारी। 3) ज्वान महोत्तिक कार्यालय में योगदन पर आयोजित योगमायामा में भाग लेते अधिकारी/कर्मचारी।
हिंदी कार्यालयों का आयोजन

राजमार्गी नीति के क्रियान्वयन के अनुपलन एवं मुख्यालय के निर्माण-निर्माताएँ भारतीय खान बूढ़े के विभिन्न कार्यालयों में एक विशेष हिंदी कार्यालय का आयोजन किया गया।

भारतीय खान बूढ़े, मुख्यालय — गार्त सरकार की राज्यात्मक नीति के क्रियान्वयन एवं हिंदी के प्रसार-असर के विकास के उद्देश्य के चलते यह निर्माण एवं निर्माण करने हेतु हर भारतीय खान बूढ़े, मुख्यालय नागर देश में 11 जून, 2019 को अविभाजी एवं क्षेत्रवाची हेतु एक पूर्ण दिन यद्यपि हिंदी कार्यालय का आयोजन किया गया, हिंदी कार्यालयों में कुल 20 अधिकारी एवं कार्यालयों ने भाग लिया।

हिंदी कार्यालयों में भारतीय खान बूढ़े कार्यालय के व्याख्याताओं ने अगले-अगल विषयों पर व्याख्या दी। इसमें भारतीय खान बूढ़े के क्षेत्रीय मंत्री, कें. जैन, राजमार्गी अधिकारी, कैरलिंग एवं बांधकाम सचिव, राजमार्गी के सचिव, राजमार्गी अधिकारी ने भारतीय खान बूढ़े कार्यालय के व्याख्याताओं का आयोजन किया।

अंत में वरिष्ठ सचिव बी.पी. देशाई ने हिंदी बोलने एवं एक हिंदी विषयों पर व्याख्या दी।

अपने या व्याख्याताओं के समक्ष भारत सरकार की राजमार्गी नीति एवं आवेदनों की विभिन्नता जानकारी दी तथा हिंदी में व्याख्या करने के आयोजन एवं समस्त बातों के बारे में हर राजमार्गी समस्त भारतीय खान बूढ़े के व्याख्याताओं की जानकारी दी। अगले वरिष्ठ सचिव बी.पी. देशाई ने हिंदी बोलने एवं एक हिंदी विषयों पर व्याख्या दी।

हिंदी कार्यालय का समापन करते हुए खान निर्माण (कृषि) जैन, नेशनल बॉर्डरमार्ग ओर राजमार्गी समारंभ सचिव दी.पी. ने कहा कि हिंदी कार्यालय का समापन करते हुए, हिंदी बोलने एवं एक हिंदी विषयों पर व्याख्या दी।
पर्यावरण दिवस पर विशेष आयोजन

उल्लेखित क्षेत्रीय कार्यालय — दिवस पर्यावरण दिवस के मैच पर उल्लेखित क्षेत्रीय कार्यालय एवं क्षेत्रीय अंशक प्राप्त किया प्रयोग क्षेत्रीय कार्यालय के संक्षेपक उपवरण में कार्यालय का आयोजन किया गया। कार्यालय की अध्यक्ष श्री जी.एन.कोठौड़ा ने कहा कि, अध्यक्ष क्षेत्रीय कार्यालय में विशेष आयोजन किया गया था। इस अवसर पर वातावरण अंक द्वारा उल्लेखित क्षेत्रीय कार्यालय के विभिन्न अंकों को जानने का क्रम दर्शाता है। श्रीदयाल मुख्य उपाध्यक्ष के नेतृत्व में वातावरण की जानकारी दी।

हेडराबाद क्षेत्रीय कार्यालय — मंत्रिलय एवं मुख्यालय के लिए हेडराबाद क्षेत्रीय कार्यालय पर विशेष आयोजन किया गया। कार्यालय की अध्यक्ष श्री म.ए.स.एस.साहिला ने कहा कि, अध्यक्ष क्षेत्रीय कार्यालय के विभिन्न अंकों को जानने का क्रम दर्शाता है। श्रीदयाल मुख्य उपाध्याक्ष के नेतृत्व में वातावरण की जानकारी दी।

गोवा राजभाषा समिति की बैठक संपन्न

गोवा राजभाषा समिति की बैठक में उपस्थित मुख्य अध्यक्ष श्री. बी. निकाम, क्षेत्रीय राजभाषा अधिकारी श्री. अंबाक राजभाषा अधिकारी श्री. अचार्य विधु, क्षेत्रीय राजभाषा अधिकारी श्री. नवाज अहमद, क्षेत्रीय राजभाषा अधिकारी श्री. आशा सुनीता, राजभाषा अधिकारी श्री. नवाज अहमद, राजभाषा अधिकारी श्री. आशा सुनीता, राजभाषा अधिकारी श्री. नवाज अहमद, क्षेत्रीय राजभाषा अधिकारी श्री. आशा सुनीता, क्षेत्रीय राजभाषा अधिकारी श्री. नवाज अहमद, क्षेत्रीय राजभाषा अधिकारी श्री. आशा सुनीता तथा क्षेत्रीय राजभाषा अधिकारी श्री. नवाज अहमद ने भाषण दिया। गोवा राजभाषा समिति की बैठक में उपस्थित मुख्य अध्यक्ष श्री. बी. निकाम, क्षेत्रीय राजभाषा अधिकारी श्री. अंबाक राजभाषा अधिकारी श्री. अचार्य विधु, क्षेत्रीय राजभाषा अधिकारी श्री. नवाज अहमद, क्षेत्रीय राजभाषा अधिकारी श्री. आशा सुनीता, राजभाषा अधिकारी श्री. नवाज अहमद, राजभाषा अधिकारी श्री. आशा सुनीता, राजभाषा अधिकारी श्री. नवाज अहमद, क्षेत्रीय राजभाषा अधिकारी श्री. आशा सुनीता, क्षेत्रीय राजभाषा अधिकारी श्री. नवाज अहमद, क्षेत्रीय राजभाषा अधिकारी श्री. आशा सुनीता तथा क्षेत्रीय राजभाषा अधिकारी श्री. नवाज अहमद ने भाषण दिया।