A REPORT ON THE WORKSHOP ON
"THRESHOLD VALUE OF MINERALS FOR CENTRAL STATES"
At NAGPUR ON 30th OCTOBER 2017

1.0 Introduction:

Indian Bureau of Mines is a subordinate department under the Ministry of Mines, Govt. of India and is responsible to ensure Scientific and Systematic mining, Conservation of Minerals, Protection of Environment in 'major' minerals in the country. To ensure the conservation of minerals, Indian Bureau of Mines has initiated various measures, issued guidelines and also carried out Research and Development study for utilization low grade minerals. Recognizing the importance of "Zero Waste Mining", Indian Bureau of Mines is notifying Threshold Value of Minerals (THV) from time to time for important minerals. The threshhold value of minerals has also been defined in the 'Minerals (Evidence of Mineral Contents) Rules, 2015' as: "Threshold Value of minerals" means limit prescribed by the Indian Bureau of Mines from time to time based on the beneficiability and or marketability of a mineral for a given region and a given time, below which a mineral obtained after mining can he discarded as waste."

The 'National Mineral Policy-2008' (NMP-2008) laid great emphasis on conservation and judicious use of the mineral resources of the country. To this effect IBM has always played a proactive role and had fixed the threshold value for fifteen minerals namely apatite & rock phosphate, bauxite, barytes, chromite, china clay/kaolin, fluorite, graphite, gypsum, iron ore, kyanite/ sillimanite, limestone, manganese, magnesite, talc/steatite/soapstone and Wollastonite in 1990 and the first notification of threshold values of minerals was issued by Indian Bureau of Mines in 1990. Subsequently, the threshold values of minerals were reviewed and the threshold value for 12 minerals namely apatite & rock phosphate, bauxite, baryte, chromite, dolomite, fluorite, graphite, iron ore, limestone, magnesite, manganese ore and wollastonite were notified in the year 2009 vide Gazette Notification dated 16th October 2009.

In view of the changing market dynamics and availability of new technologies for upgrading the low grade resources, it is once again proposed to review the threshold value for the following major minerals apatite & rock phosphate, bauxite, chromite, fluorite, graphite, iron ore, limestone, magnesite, manganese ore and wollastonite notified in the year 2009 and add or delete any major minerals to the existing list under provision of rule 12(7) of "Mineral Conservation and Development Rules, 2017" (MCDR, 2017).

Since last notified THV in 2009, many representations have been received from various mining companies and stake holders, requesting Indian Bureau of Mines to review and revise the threshold values of minerals. Against the backdrop, Indian Bureau of Mines has decided to review and revise the threshold value of minerals through a consultation process with all the stakeholders and to organize workshops across the country in order to take stock of the situation and assess the stakeholder's views through deliberations. So far Indian Bureau of Mines has organized 4 such workshops across the country invited various stakeholders for deliberations. The workshops were organized at Goa on 21st July 2017, Ahmedabad on 07/10/2017, Noamundi on 21/08/2017 and in Bhubaneswar on 23/08/2017. In continuation, the 5th such work shop was organized by IBM for central states of Madhya Pradesh, Chhattisgarh and part of Maharashtra and invited stake holders of minerals like iron ore,

manganese limestone and bauxite to discuss the difficulties on the issues. About 102 delegates participated in the aforesaid workshop.

2.0 Inaugural Session

Shri Ranjan Sahai, Controller General, IBM was Chief Guest of the over the function while Shri S.N. Meshram, Additional Director General & HOD, National Mission-II, Geological Survey of India, Nagpur was the guest of honour. Shri K. Thomas, Deputy Director General, MMS Division was also present on the Dias . Shri S.K. Adhikari, Chief Mining Geologist was presiding officer of the workshop on threshold value of minerals. At the outset to mark the inauguration of the workshop, traditional lamp was lightened at the hands of dignitaries. Shri Arun Prasad, Regional Controller of Mines, Indian Bureau of Mines, Nagpur while welcoming the dignitaries and participants, highlighted the importance of threshold value and its role in conservation of minerals in view of National Mineral Policy 2008.

Shri S.K.Adhikari, Chief Mining Geologist, IBM, Nagpur threw light on the evolution of the concept of threshold value since 1990 till the present day. He elaborated the definition of threshold value and also highlighted the importance of revision of threshold value in view of conservation of minerals and its significance in statistics. He apprised the house on the efforts made by IBM on revision of threshold value by public consultation process with the stakeholders and invited comments thereon. He specifically explained the concept of three "E" i.e exploration, exploitation (proper exploitation) and extraction (extraction of elements/metal from the orebody) which is more important for the revision of threshold value. He highlighted the purpose of revision of threshold value in view of judicial use of reserves and conservation of minerals and focused on the various workshops organized by IBM so far.

Shri K. Thomas, Deputy Director General, MMS Division focused on the importance of threshold value to achieve the goals of National Mineral Policy, 2008. He emphasized for requirement of in-depth study to decide the threshold value considering all factors like conservation of minerals and technology available for extraction and exploitation. He appraised the forum that simply reducing the cut of grade is not the point but lot of exercise is needed considering all the related factors.

Shri S.N. Meshram, Additional Director General & HOD, National Mission-II, Geological Survey of India, Nagpur while addressing the gathering focused on the present statutory reforms and place of Sustainable Development Framework vis-à-vis NMP-2008 and brought attention of the house towards "Zero Waste Mining". He highlighted the need of revision of threshold value and requested the forum to actively participate for the discussion to revise the threshold value. He highlighted the expertise and specialization available with IBM to arrive at appropriate decision on the issue. He pointed out the certain difficulties in deciding the threshold value of polymetallic deposits but if evaluation is done the threshold value of polymetallic deposit can also be done. He emphasized to consider the threshold value for UNFC classification. He appreciated the efforts being made by IBM in deciding the threshold value of minerals through consultation method by organizing such workshops.

Shri Ranjan Sahai, Controller General, IBM in his presidential address as Chief Guest highlighted the responsibility given to Indian Bureau of Mines with regards to conservation of minerals. He informed that IBM is very much concern about deciding the threshold value of minerals which is more important for preparation of NMI database. He stressed the need to

adopt technology driven mining and emphasized the need to give more thrust on SDF. He briefed about various major initiatives undertaken by the Govt. of India in the recent regulatory reforms with regards to National Mineral Policy 2008. He informed that the zero waste mining is the tool for taking care of everything with respect to mineral in the country. He informed that threshold value is nothing but a small step for utilizing available resources to extract optimum grade from the mineral based on the marketability in which economic limitation can also be taken care off. He further highlighted the significance of revision of threshold value particularly in respect of iron ore, limestone, manganese etc as the revision in threshold value will increase the lease period of these minerals. He stressed that the ore dressing division of IBM must give more thrust on research and development work for upgradation of threshold value so as to increase the recovery of metal contents. He advised the forum to adopt best technology available in the world in this regard. He hoped that Star Rating evaluation by IBM would be a sort of social certification to operate the mine. He expressed confidence that deliberation of the workshop would be helpful to review and revise the threshold value of mineral required and invited detailed deliberation.

The proceedings of the inaugural session was conducted by Shri Parag Tadlimbekar, Suptdg. Mining Geologist, IBM, while Shri Kewal Krishan Senior Mining Geologist, IBM, proposed the Vote of Thanks for the inauguration session.

3.0 Technical Session

The deliberations of the workshop were organized in four Technical Sessions such as

Technical Session-I

Presentations on:-	**Presented by:-**
• **Manganese Mineral:-**	o M/s MOIL Ltd - by Dr. Manekar G.G. (MS)
• **Iron Ore:-**	o M/s SAIL- by Shri P. Ramesh Babu Dy.GM (G)-(CG) o M/s NMDC LTD -(CG) o Shri. Shri M. Gosawi / Shri Indraneel Dawande, Q.P (MP)
• **Bauxite Mineral:-**	o M/s HINDALCO- by Shri M.K.Nayak, Agent-(CG)
• **Limestone Mineral:-**	o M/s Ambuja Cements ltd - by Shri. R.R. Prasad, GM(M)-(MS) o M/s JK Laxmi Cement- by Shri. B.L.Bhatti, AGM Mines-(CG) o M/s Century Cement by- Shri R.S.P.Bhatia, Sr. GM Mines (CG

Technical session-II:-

Presentations on:-	Presented by:-
• **Limestone Mineral:-**	o M/s Heidelberg Cement India Ltd-(MP) o National Council for Cement and Building Materials, Ballabgarh o M/s Ultra Tech-Sidhi Cement Works -(MP) o M/s Maihar Cements-Century Textiles and Industries Ltd-(MP) o M/s Satna Cements - M/s Birla Corporation -(MP) o M/s Prism Cement Prism Cement Limestone Mine- (MP) o M/s ACC Limited- Kymore Cement Works- (MP) o M/s Shree Cement by Shri M.K.Garg AVP- (CG) o M/s Emami Cement -(CG)

During the technical session various suggestions are received with regards to threshold value of minerals.

Table on proposed threshold value of minerals

Mineral	Company	Proposed Value
LIMESTONE	M/S ACC LIMITED- KYMORE CEMENT WORKS- (MP	NO CHANGE
LIMESTONE	M/S CENTURY CEMENT LIMESTONE MINES BAIKUNTH DIST. RAIPUR (CHHATTISGARH)	36% CAO%
LIMESTONE	M/S EMAMI CEMENT LIMITED	38% CAO%
IRON ORE	MADHAV M GOSAVI AND INDRANEEL DAWANDE(QP)	REDUCE 35%-40% FE
LIMESTONE	M/S JK LAXMI CEMENT	NO REQUIREMENT OF ANY CHANGE IN CAO MGO% INCREASE FROM 4 TO 5-5.5% (MAX)
LIMESTONE	M/S MAIHAR CEMENTS-CENTURY TEXTILES AND INDUSTRIES LTD(MP)	UPTO CAO-36% & MGO-3.0TO 3.3%
LIMESTONE	NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS, BALLABGARH	38% CAO

IRON ORE	M/S NMDC LIMITED	NO CHANGE
IRON ORE	M/S SAIL	NO CHANGE
BAUXITE	M/S HINDALCO	THRESHOLD VALUE OF BAUXITE: T.AL2O3 >=35% AND T.SILICA <=5%. SUB GRADE MINERAL: T.AL2O3 +35 TO -40% AND T.SILICA. <=5% ALUMINOUS LATERITE : T.AL2O3 +20% TO -35% AND T.SILICA >=5%
LIMESTONE	M/S SHREE CEMENT LIMITED	NO CHANGE
LIMESTONE	M/S AMBUJA CEMENTS LTD	REVISED FROM 34 TO 38%
LIMESTONE	M/S SIDHI CEMENT ULTRATECH	MGO CAN BE ENHANCED FROM 4% TO 5% (MAX) RESOURCES SHOULD BE CONSIDERED UPTO A CUT OFF OF 38% CAO, 5% MGO
LIMESTONE	M/S PRISM CEMENT LIMITED	MGO CAN BE ENHANCED FROM 4% TO 5% (MAX)
LIMESTONE	M/S SATNA CEMENT	CONSIDERED UPTO A CUT OFF OF 38% CAO, 5% MGO
MANGANESE	M/S MOIL	NO CHANGE
LIMESTONE	M/S HEIDELBERGCEMENT INDIA LTD	NO CHANGE

4.0 Concluding Session

The concluding session was chaired by Shri Ranjan Sahai, Controller General, IBM alongwith Shri S. K. Adhikari, CMG and Shri Arun Prasad, RCOM, Nagpur Regional Office. In the concluding session, Shri Parag Tadlimbekar, SgMG summarized the deliberation of the day's workshop and requested the participants to submit further suggestion if any with technical analysis and supported by scientific data. All the suggestion will be examined while finalising the revision of threshold value of minerals after the workshop. He further briefed about various suggestions and recommendations received from the stakeholders as incorporated in their presentations in the technical session. This briefing was followed by discussions/clarifications which were suitably addressed by the chairman. Main issues during the discussion are as follows:

1. Shri Jayant Pashine, Additional Director, Govt. of Chhattisgarh raised an issue that 35-36% CaO containing material is being used for construction purpose and if the threshold limit is further lowered, there may be shortage of raw material for construction purposes. He further added that there are stock piles with material having

CaO>34% which, after sampling, got rejected for usage in construction being a major mineral.
CG, IBM clarified that in terms of the provisions of Rule 12(k) of MCR'2016, State Govt., in consultation with Indian bureau of Mines, may grant permission for disposal of the mineral which is of inferior quality and cannot be used for any of the purposes by reason of which use it can be called a mineral other than minor mineral or there is no market for such mineral as a mineral other than minor mineral. He also gave an example of a case of M/s Prism Cement wherein disposal of 8 Lakh T was permitted under the said clause. Thus, suitable proposal may be forwarded to Indian Bureau of Mines in such type of cases.

2. Shri Chandra mentioned that in case of non-captive mines of Limestone, lumps are readily saleable but 0-10 mm size fraction material is non-saleable and dumps having said size fraction are lying at almost every non-captive mine of Limestone. Therefore, he requested that either such size fraction may be notified as 'Minor Mineral' or some relaxation in Royalty for disposal of such material may be granted.
CG, IBM replied that these issues are out of the purview of IBM, therefore, no comments may be made on this issue. But, he suggested that Mining Plans should be prepared more cautiously and these aspects should be reflected in the Mining Plan of the ML area. Size-wise use of mineral may be informed and afterwards, suitable action may be initiated in terms of Rule 12(k) of MCR'2016.

3. Shri Saurabh Jain from M/s Maihar Cements raised an issue pertaining to M. P. state that leases in the Madhya Pradesh are being granted in an irregular shape which in turn affects systematic and scientific development of the deposit whereas in some states like in Rajasthan, ML granted is of regular shape.

4. Shri Pani from M/s Ambuja Cements (Maratha Cement Works) asked that Rule 18 of MCDR'17 suggests carrying out beneficiation studies from a laboratory accredited by National Accreditation Board for Testing and Calibration or an International Organization for Standardization laboratory approved by the Indian Bureau of Mines only. Name of such labs may be provided for carrying out studies in terms of Rule 18.

5. Shri Sanjay Arora from J. K. Lakshmi Cements, Chhattisgarh suggested that in the revision of Threshold values for Limestone, MgO content may be enhanced from 4% to 5% or 5.5% for blended cement but in such case a representation from Indian Bureau of Mines may be sent to Bureau of Indian Standards (BIS) which has notified specification of MgO percentage in the clinker as 6% for all types of cements and it may be recommended to BIS to modify the specification as 6% for OPC and 8% for blended cement like PPC etc.
CG, IBM suggested that a backward calculation for percentage content of MgO is required to be done (from Limestone to Clinker to Cement) and thus an optimum percentage need to be identified prior to making recommendations to BIS in this regards. Therefore, suitable proposal may be sent to IBM in writing and further necessary actions shall be taken by IBM over the suggestions. He also added that while doing this exercise, we need to define 'Minimum Cut-Off' instead of 'Threshold'. Then cut-off and threshold etc. may be defined.

6. Shri S. K. Tiwari from M/s Manikgarh Cements Ltd. Suggested that threshold values for Limestone may be defined for Silica content also as high lime high silica content

needs to be blended with low silica content material for preparation of optimum feed to the plant. Upto 15% Silica containing material can be blended but 15-18% Silica is a problem.

CG, IBM suggested that while considering revision of threshold value for Limestone, Silica content may be thought for but simultaneously we have to see its impact on the resources of Limestone and it should not happen that if threshold limit for Silica is fixed as 18%, resources drop drastically. Therefore, the aspect needs to be taken care of very judiciously.

7. Shri B. K. Pandey, DGM Mines from M/s Anand Mining Corporation informed that Iron ore formation in the Jabalpur Region is different in nature and is Micaceous with faults and dykes. In such areas, Iron ore below the existing threshold value of 45% Fe is saleable to Cement Industry. Therefore, threshold may be lowered to 35% Fe in the region but some relaxation in royalty may be granted as at present rate, royalty and mining cost are being uneconomical.

8. Shri G. P. Chaturvedi, Mines Manager, M/s Pacific Exports urged that some exemption or relaxation may be granted to the industry/mines that are using Iron ore below threshold value as yield is on a lower side and huge investment/expenditure is required for the process.

9. Lastly, Shri M. K. Nayak, GM (Mines), M/s HINDALCO briefed about his proposal as given in his presentation to revise threshold value of Bauxite from present 30% Alumina to 35% Alumina content and 5% reactive silica may be revised to 5% total silica.

   CG, IBM asked Shri Nayak to give the proposal in writing for further considerations. He also queried that M/s BALCO is having shortage of Bauxite; in such case, if threshold is revised to higher side, whether it will be beneficial for the industry? Shri Nayak responded that the plant located at Renukoot can't sustain with the present threshold values and therefore a revision on higher side is required. Over this, CG, IBM asked to carry out R&D works as threshold value of Bauxite that hold good for the country may not be decided for sustaining one plant,.

Shri Kewal Krishan Senior Mining Geologist, IBM presented the Vote of Thanks for concluding session and thanked all the participants and speakers for their valuable contribution and fruitful discussion in the workshop.

The workshop ended with a vote of thank to the chair.

List of participants in Threshold Value Workshop held at Nagpur on 30th October 2017.

Sr. No.	Name & Designation	Organisation/ Mines address
	From Raipur Region	
1.	Jayant Pashine Add. Director	State DGM Chattisgarh
2.	Shri. Sanjay Khare, JT Director	State DGM Chattisgarh
3.	Raman Kumar Jha GM(Mines)	GPIL Raipur
4.	Sunil Kallimani Asstt Mgr(Geo)	NMDC Bacheli Complex
5.	Divyakant Dave Dy Manager - Geo	ACC Ltd
6.	Afroj Ali	BALCO A unit head Vedanta Ltd.
7.	Prakash Chinhara	BALCO
8.	Kundan Singh	BALCO
9.	M K Nayak Agent of Mines.	HINDALCO
10.	K C Chandrakar, Manager- Geo	Ultratech Cement Ltd
11.	Ghanshyam Patel	Mahavir Mineral
12.	Gautam Sarkar	Mahavir Mineral
13.	B L Bhati Sr. G M (Mines)	JK Lakshmi Cement Ltd
14.	Upendra Pandey Manager Mines	CMDC
15.	Deepak Gupta Manager Mines	CMDC
16.	M.K.Garg AVP Mines	Shree cement Ltd
17.	RSP Bhatia GM Mines	Century cement
18.	Shri. Ravindra Choudhary	Ambuja Cement Ltd
19.	Shri. Dinesh Dixit, GM(M)	Emami cement Ltd
20.	Ramesh Babu DGM Geology	BSP_SAIL
21.	S Manoj Kumar Sr Manager Projects	BSP_SAIL

	From Jabalpur Region	
22.	S. K. Paul Chief Geo. (Mines)	M/s Jayaswal Neco Indu. Ltd. ----------
23.	Nitin Wath, Manager (Mines)	M/s Jayaswal Neco Indu. Ltd
24.	Shri. Ajay Pratap Singh, Mnager (M)	M/s NUVOCO Vista Corp
25.	Shri. Shishir Tamrakar, DGM(M)	M/s Century Cements
26.	Shri. Prabodh Singh	M/s NMDC
27.	Shri. Rakesh R.	M/s NMDC
28.	Shri. Anand Shekhar	M/s NMDC
29.	Shri. Mridul Dixit	M/s NMDC
30.	Shri. Nikhil Pashine (QP)	Nagpur
31.	Shri. M.K. Coudhary	M/s APT Sons
32.	P. Ramesh Babu	SAIL-BSP
33.	S. Manoj Kumar	SAIL-BSP
34.	Shailendra Jain	M/s Reliance Cement Co. Ltd.
35.	R.N. Rai, Sr. Vice President	M/s Heidelburg Cement (I) Ltd
36.	R S Shukla, Sr. Manager Geology	M/s Heidelburg Cement India Ltd.
37.	S.K. Rai	M/s Maihar Cement
38.	S.K. Jain	M/s Maihar Cement
39.	G.R Bishnoi	M/s Birla Corp
40.	Anup Patidar, Geologist	M/s Birla Corp-
41.	Mukesh Prasad Chief Manager	M/s ACC Kymore
42.	Jhar- -	M/s Ameta Limestone Mine-
43.	P.K. Mishra, Geologist	M/s KJS Cement-
44.	Ajay Pandey, Geologist	M/s S.N. Sanderson-

45.	Raju Ranjan Manger (Geo)	M/s Jaypee-
46.	Hemant Bhankar Manager (Geo.)	M/s Ultratech Dhar-
47.	Mahesh Srimali Manager (Mines)	M/s Ultratech Dhar-
48.	S.K. Singh DGM (M)	M/s SAIL
49.	H.K. Shahu Dy.Manager (Mines)	M/s SAIL
50.	V.A. Borkar, Agent	M/s AP Trivedi and Sons
51.	Amlendu Mandal , Manager	M/s Pacific Minerals Pvt Ltd
52.	Sudhansu Nayak Geologist	M/s Pacific Minerals Pvt Ltd
53.	P Trivedi Mine owner	M/s JK Minerals
54.	Shri. Birendra B.	M/s Shakambari Minerals
55.	Shri. Pramod Barve	M/s Shakambari Minerals
56.	M. Ganga Prasad Chaturvedi	M/s Pacific Exports
57.	V.K. Pandey Manager (Mines)	M/s Anand Mining
58.	S. Pawar, Manager (Mines)	M/s Nirmala Minerals
59.	Vinod Jain	Kodamkur Iron ore Mine
60.	Vinil Jain	Kodamkur Iron ore Mine
61.	Suhendra	Kodamkur Iron ore Mine
62.	M.M. Gosavi	Kodamkur Iron ore Mine
63.	S.K. Dwivedi, GM (Mines)	M/s MPSMC Ltd
64.	Pryadarshi Tiwari, Manager(Mines)	M/s MPSMC Ltd
65.	R.P. Ghattuwar AGM(M)	M/s HCL
66.	R.D. Baghat CM (Expl)	M/s HCL
67.	S.K. Pathak, Dy. Manager (Geo)	NMDC Ltd, Majhgawan Diamond Mine
68.	Shri. Abhishek Sharma, Agent	Chhindwara mines p ltd

69.	Shri. G.P. Pandey, Sr. Manager (G)	Prism Cement
70.	Shri. K.K.Chandra	N.M. Dubash Stone & Lime Co.Pvt Ltd.
71.	Shri. B.K. Banargee	M/s Ultra Tech sidhi cements
72.	Shri. Vijay Pandole	BJCL
73.	Shri. K.K. Singh	SAIL
74.	M.K. Khatri	Silva Jhansi
75.	Shri. N.K. Sharma	National Counsel for Cement & Building Materials
76.	Shri. Indraneel Dhawande (QP)	Nagpur
77.	Shri. A.Z. Ansari	Krishna Mining & Trad.
78.	Sanjay Kasal	M/s Shakuntala Kasal Mines
79.	Shri. D.S. Reddy, DGM(S)	M/s NMDC Ltd
80.	Shri. Gagan Sial S.	Katni(MP)
81.	Shri. N.K. Hans, DGM	DGM, BHOPAL (MP)
	From Nagpur Region	
82.	S.K.Tiwari, CGM-Mines	Manikgarh Cement
83.	Shri. Shailesh sarpatwar, DGM (M)	-do-
84.	B.K.Shukla,	Pauni Chromite mine
85.	Dr. Manoj Ku. Sahu AGM-Geo& Mining	M/s Lloyds Metals and Energy Ltd.
86.	Subhash Singh Mines Manager	-do-
87.	Rajkumar Agrwal	M/s Eshan Minerals Ltd
88.	Tembhare Dilip	MSMC
89.	Dr.S.K.Sarkar- Sr. Manager (Geology)	MOIL- H.O.
90.	Dr. G.G. Manekar Sr.DGM (Mines-Planning)	MOIL-H.O.
91.	Ram Ratan Uikey Sr. Manager (Mines),	MOIL-Ukwa Mine

92.	Arijit Mitra Manager (Geology)	MOIL- Gumgaon Mine.
93.	Mophi Mili Manager (Geology)	MOIL-H.O.
94.	Shri. Abani Padhya	M/s Ambuja Cement
95.	Shri. Soudip ghosh	M/s UltraTech Cement Ltd
96.	Jagan mohan reddy	M/s UltraTech Cement Ltd
97.	Sandeep singh	M/s ACC
98.	Naveen pala	M/s ACC
99.	Shri. Gopal gundawar	Smt. Deepali gopal gundawar mines
100.	Mohd. Asif	Gahra minerals
101.	P. Maheshwari	Gahra minerals
102.	Shri. Mohan rahangdale (QP)	Nagpur

Distinguished guests sitting on the dais from left Shri S.K.Adhikari, Chief Mining Geologist, IBM, Shri S.N. Meshram, Additional Director General,GSI, Shri Ranjan Sahai, Controller General, IBM, Shri K. Thomas, Deputy Director General, IBM , Shri Arun Prasad, Regional Controller of Mines, IBM Nagpur and Shri Parag Tadlimbekar ,Superintending Mining Geologist, IBM conducting the programme.

Lightening the lamp by the Guests


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Participants present in the workshop