

MINUTES OF THE 48TH MEETING OF THE CENTRAL GEOLOGICAL PROGRAMMING BOARD (CGPB) HELD AT NEW DELHI ON 3RD-4TH FEBRUARY, 2011

- 48.0.00** The 48th meeting of the Central Geological Programming Board (CGPB) was held on 3rd and 4th February 2011 at Vigyan Bhawan, New Delhi. Shri. Dinsha J. Patel, the Hon'ble Union Minister of State (Independent Charge), Ministry of Mines, Govt. of India, graced the opening ceremony on 3rd February 2011. In the absence of Shri S. Vijay Kumar, Secretary to the Govt. of India, Ministry of Mines (MoM), Shri S. K. Srivastava, Additional Secretary, Ministry of Mines (MoM), chaired the meeting. The list of members/participants of the 48th CGPB meeting is given in 'Annexure I'.
- 48.1.00** **INTRODUCTION BY MEMBER SECRETARY, CGPB**
- 48.1.01** Dr. Prabhas Pande, Addl. Director General (PSS-P&M), Geological Survey of India (GSI) and Member Secretary, CGPB expressed his deep sense of gratitude to the Hon'ble Minister for gracing the Inauguration of the 48th CGPB. Thereafter, the Member Secretary introduced the activities of the CGPB that was instituted in 1966 to serve as a bridge for various stakeholders associated with earth science.
- 48.2.00** **WELCOME ADDRESS BY THE DIRECTOR GENERAL**
- Shri A Sundaramoorthy, DG, GSI extended warm welcome to Shri Dinsha J. Patel, Hon'ble Minister of State, Ministry of Mines, Shri S. K Srivastava, AS (Mines), who always proffer positive visions and all the representatives of State and Central Govt., PSUs, academicians, private entrepreneurs, officers of MoM, Press and Media persons.
- 48.3.00** **ADDRESS BY SHRI S K SRIVASTAVA, AS (Mines)**
- 48.3.01** Shri. S.K. Srivastava, AS (Mines) mentioned that the prepared speech of Secretary (Mines) would be circulated amongst all the participants and also stressed that the vision of the Secretary has always been a driving force and his address would serve as guidelines. He pointed out that there has been a major qualitative change in the mode of holding the CGPB meetings with manifold increase in the mandate of CGPB. He commented that there is perceptible metamorphosis in thinking and activity of all State DGMs, PSUs and GSI. He appreciated the active and dynamic Portal of GSI. He impressed upon the importance of the upcoming fields of geoscientific studies in geomorphological mapping, hyperspectral mapping and aeromagnetic mapping, etc. However, he reminded that field survey will ever remain as it is the fundamental and core activity of work to be carried out by GSI. He also stressed not only upon the duration of field stay but the quality of work by the geologists in field. In GSI it is being monitored by Quality Management Cell. He also emphasized that constant monitoring would be required for the clearing of pending progress reports, backlog of chemical analysis of NGCM samples and outsourcing of analysis, acquisition of Ocean Going Research Vessel, operationalisation of helicopter for Heliborne Survey in the areas of

interest. He urged that the planned funds allotted to GSI must be fully utilized to achieve the desired results.

48.4.00 RELEASE OF SEISMOTECTONIC ATLAS

48.4.01 Shri. Dinsha J. Patel, Hon'ble Minister of State (Independent charge), Ministry of Mines, released the digital version (Interactive CD) of the Seismotectonic Atlas of India with details of earthquakes up to 2009. Dr. P. Pande, Member Secretary presented a brief background of the Atlas and mentioned about the growing demands for updating the erstwhile Atlas. With the release of the Atlas, he informed that the digital version is now available free online in Public Domain through the GSI Portal.

48.5.00 ADDRESS OF SHRI DINSHA J. PATEL, HON'BLE MINISTER OF STATE (INDEPENDENT CHARGE), MINISTRY OF MINES

48.5.01 While inaugurating the 48th CGPB meeting, Shri. Dinsha J. Patel, Hon'ble Minister of State for Mines (Independent Charge) expressed his pleasure to be amongst the delegates of the CGPB. Shri Patel outlined the role of CGPB as forming one of the discussion fora of interaction amongst GSI, State Directorates of Geology and Mining, various PSUs, MoM and other stakeholders. He congratulated MoM and GSI for winning the pavilion for the award of "Most Informative Stall" in the Indian Science Congress, Chennai during January 2011 and lauded GSI for successfully participating in Indian Scientific expedition to the South Pole. He hoped that Mission mode in GSI will streamline scientific work in the organization, and public domain of GSI portal would benefit large sections of the stakeholders. He stressed, that the Quality Management Cell created in February 2010 will assist to improve quality of the outputs of GSI. He expressed pleasure that Standard Operating Procedures (SOPs) on various spheres of work are being prepared and encouraged GSI to strive for ISO certification of some of the GSI labs.

Shri Patel expressed his happiness in holding the CGPB meeting twice a year for facilitating greater interaction among the members in eliminating duplication of work and creating an opportunity for collaboration; the latter has generated requisite momentum in energizing the entire mineral sector. Shri Patel impressed upon the implementation of high powered committee recommendations at a fast pace which will usher in landmark changes in GSI. He appreciated GSI for constantly training its personnel to acquire the state of art in geoscientific activity and with the induction of new courses for geologists, geophysicists, chemists and engineers reinvigoration in GSI will take place. He noted with satisfaction that various steps have been taken within GSI to improve its quality work culture and products. He wished the 48th CGPB meeting all success and requested the State Governments and national state level stakeholders to reap the benefits through collaborative projects and the capacity building facilities offered by the GSI.

48.6.00 RELAESE OF THREE PUBLICATONS

48.6.01 Shri. S.K Srivastava, AS (Mines) released three publications viz., 1)

Volume 64, No. 1-4, of Indian Journal of Geoscience (Arsenic Special volume, 2) Miscellaneous publication on Geology and Mineral Wealth of the State of Madhya Pradesh (in Hindi), 3) Paleontologica Indica, special issue dedicated towards fossil discovery of Pleistocene sediments along Narmada Valley of Madhya Pradesh.

48.7.00

CONFIRMATION OF THE MINUTES OF THE 47TH CGPB

48.7.01

The minutes of the 47th CGPB meeting held in New Delhi on 25th & 26th August, 2010, circulated to all the members earlier, was considered accepted and approved with the permission of the House.

48.8.00

ACTIVITIES AND ACHIEVMENTS OF GSI DURING ANNUAL PROGRAMME 2010-12 BY DG, GSI

48.8.01

Shri A. Sundaramoorthy, DG, GSI stated that as per the High Power Committee (HPC) recommendations GSI has started to function in Mission-Region hybrid matrix mode from FS 2010-2012. He highlighted that GSI has extended its foray into different domains of geoscientific activities by initiating the process of procuring geotechnical research vessel, coastal launch vessel, helicopter (Dhruv), etc. for marine and Heliborne Geophysical survey for mineral exploration. GSI is in the mode of procurement of high-end machines for upgrading its laboratories and induction of the state of the art training for its field training centres. He also stated that 6 RTIs (Regional Training Institutes) and FTCs (Field Training Centres) have been established in the said period and added that there is a need to establish at least one FTC in every state. He requested planning commission to increase Plan Outlay for training. He also commented that GSI has decided to prepare SOPs under the aegis of the Quality Management Cell. Almost all the unpublished progress reports up to the FS 2007-08 have been cleared. During the F.Y. 2009-10 (April '09 to March '10) a total of 705 nos. of reports and in the first three quarter of F.Y. 2010-11 (April '10 to December '10) a total of 281 reports were circulated upto F.S.2008-09. As per the dissemination policy, post-2004 progress reports as well as some selected pre-2004 reports are being uploaded on the GSI Portal. About 5251 reports are uploaded in portal for public viewing up to 31.10.2010 as a part of free data dissemination policy. The maps produced by the GSI are the end products of the rigorous work carried out by the scientists of GSI. Thus, GSI has taken up the job of compilation and digitization of geological maps on 1: 50 K scale from the year 2000, and uploading of the 1:50k maps in the portal in the year 2008-09. Up to 10th January 2011, 4665 maps have been uploaded out of a total of around 4900 maps, and thus, more than 95% of the work has been completed which is available in the intranet. GSI has already uploaded various geological map series on different scales in the portal. He requested states to use these data for the benefit of the country. He also emphasized that GSI portal has already earned national reputation in terms of e-governance and is venturing into Phase III in collaboration with NIC.

During the FS 2010-12, GSI is conducting about 28 programmes based on the requests from the States. Geoscientists of several states including Arunachal Pradesh, Andhra Pradesh, West Bengal, Sikkim, J&K, Himachal Pradesh, Madhya Pradesh, Maharashtra, Tamilnadu, Kerala, Karnataka, Haryana, Uttarakhand, etc. have been associated with the scientists of GSI in various collaborative programmes mainly in the field of mineral investigation. GSI has been providing all logistic support and sharing knowledge with the geologists of the states in the field.

During the current field season apart from the collaborative programmes with the states, three programmes were undertaken with other agencies, one with National Remote Sensing Center (NRSC) under NNRMS-SC (G), one with Space Application Center (SAC) on use of Hyperspectral data and another with International Seismic Research (ISR) Gandhinagar on Seismic Hazard Microzonation of Surat town, Gujarat. GSI is working for various engineering projects in several parts of the country, primarily hydroelectric projects, both public and private. GSI is getting requests from the project authorities to take up photogeological mapping, seismotectonic analysis, Local Earthquake Tomography [LET] surveys and other related studies for their hydropower and atomic projects. Follow up actions on two MoU's, one with TAMIN and one with CGWB, have been continued.

Work is currently in progress on the implementation of the Phase-III of the portal, which is being formulated in consultation and collaboration with National Informatics Centre (NIC). A separate 1:50k map service will be in place in the public domain once the Phase-III of the portal is implemented.

Under the project on creation of Geophysical Database, GSI proposes to collate all geophysical data including those generated by the concession holders and digitize them. About 1,00,000 data records are already available in the existing database of Geophysical data repository, in a structured manner, which was generated through various FSP items of GSI. A Geophysical Data Repository (GDR) is going to be developed which can accommodate GSI data, RP/PL data and data from willing third parties.

GSI has changed its practice of resource estimation as per National Mineral Policy (NMP) 2008 Para 6.1. GSI has been collaborating with Indian Bureau of Mines (IBM) for creation of Resource Inventory and Tenement Registry and the resource estimated by GSI is being given in accordance with the latest version of United Nations Framework Classification (UNFC) system. For the ongoing exploration of GSI, the data inputs are being gathered as per the UNFC guidelines. For the mineral exploration programmes completed between 2005 and 2008, for

which reports have been circulated, the resources are being reassessed as per the UNFC System and shall be provided to IBM.

National Geochemical Mapping continues to be a priority programme of GSI. The programme was initiated during the field season 2001-02. The first phase of the programme will have a span upto the XIII Five Year Plan. Out of the total target of 8.13 lakh sq. km. spreading over 1132 toposheets during the first phase, a total of 2.30 lakh sq. km. covering 350 full/part toposheets shall be completed by systematic collection of samples in different parts of the country by FS 2010-12. The rest of the area (including 5.71 lakh sq. km. in mineral prognosticated area) will be covered during XII and XIII Five year Plan periods. During the FS 2010-12, 44 programmes of NGCM have been taken up of which 30 items are new and 14 items have been continued from the previous FS. Upto November 2010, 108 nos. of NGCM reports, have been finalized. Out of these, 79 reports are Progress Reports (less than 40 elements), 29 reports are interim reports (more than 40 elements).

From 29th expedition (2009-10) to Antarctica onwards, NCAOR,Goa has concentrated its efforts in establishing India's third station, 'Bharti' in the Larsemann Hills, East Antarctica. During 2009-10 austral season GSI entered into collaboration with Delhi University to study the marine sediments from offshore of Wilkes Land, East Antarctica. One officer from GSI participated in the Wilkes Land -318 under Integrated Ocean Drilling Programme (IODP) from January to March 2010.

In order to understand the climatic variations in Himalaya vis-à-vis Arctic region, GSI participated in the first three Indian Arctic Expeditions in collaboration with NCAOR and carried out studies related to snow and glacier at Ny-Alesund, Svalbard.

- 48.9.00 PRESENTATION ON SOUTH POLE SCIENTIFIC EXPEDITION BY SHRI RASIK RAVINDRA, DIRECTOR, NCAOR**
- 48.9.01** Shri. Rasik Ravindra, Director, NCAOR made a vivid presentation of the expedition of the eight member team from India including one member from GSI (Shri A.K Swain). This was the maiden attempt by India to hoist National Flag at South Pole on 22.11.2010. During the course of the expedition, the scientists collected samples of ice cores for further studies. He thereafter presented a 5 minutes video clipping of the expedition.
- 48.10.00 REVIEW OF FOLLOW UP ACTIONS ON DECISIONS TAKEN IN THE 47TH CGPB MEETING**
- 48.10.01** The AS (Mines) expressed that the Action taken reports should include follow up decisions and should reflect progress with reference to the earlier CGPB. He expressed that different stakeholders and State Govt's should offer candid observations on various issues. Action taken should be reviewed at regular intervals and particularly during the SGPB

meetings also. He added that concrete results should come out before the next CGPB. In this regard he invited free and frank feedback from different stakeholders on the Agenda items.

[Action: All CGPB Members]

The status of the follow up action on the decisions of the 47th CGPB was subsequently placed before the House by the Member Secretary, CGPB for discussion.

48.10.02 On para 47.6.03, regarding investigation of the Leh cloud burst by GSI for helping distressed people to select rehabilitation areas, Member Secretary informed that immediately after the disaster, a team of GSI scientists was sent for the investigation and the detailed report has already been submitted to State authorities. GSI should check up with the State authorities on the follow up initiated by them on the report.

48.10.03 Regarding para 47.6.04, Shri Vijay Kumar, Secretary, MoM during 47th CGPB meeting had advised for inclusion of 1:50K map service in GSI portal Phase III. Member Secretary commented that GSI is in the process of inclusion of 1:50K map service within Phase III of GSI portal ushering a great contribution to the end users. GSI was advised to work out a firm action plan in a time bound manner for such purposes.

48.10.04 During discussion on para 47.6.07, Chairman mentioned about policy gaps in the existing system such as 1) policy on publications by GSI scientists in scientific journals b) policy on participation in national and international seminars, c) policy on defining areas of specialization and encouraging specialization for the purpose. In this regard, Member Secretary responded that draft of two policy guidelines have been formulated and are being amended/ finalised.

The AS (M) advised to upload the draft policy guidelines in the Portal for obtaining feedback.

[Action: GSI]

48.10.05 On para 47.9.02, regarding special emphasis needed to be given by the States for exploration and mining of offshore resources, Member Secretary replied that guidelines on this have already been formulated at GSI end. Representative of DGM, Andhra Pradesh commented that an action plan for exploration of the mica belt between a stretch of Nellore and Srikakulam and work along the 960 km coastline of A.P. is to be formulated in consultation with GSI. The SGPB meeting of A.P. will be held in February 2011 and the issues will be discussed in the SGPB.

[Action: DGM, A.P /GSI]

Representative of DGM, Karnataka commented that that investigations on bentonite clay and silica in Mangalore and Udipi district has been deferred as per their SGPB meeting proceedings. DGM, Orissa reported that they have taken up two programmes as per the guidelines of AMD which are to be discussed on next SGPB scheduled on 05.02.2011.

Additional Secretary advised to convene SGPB meeting bi-annually to facilitate execution of different investigations. The status on all these activities will be reviewed in the next CGPB.

[Action: All State DGMs]

- 48.10.06** During discussions on para 47.9.03, on the topic of collaboration of GSI with IBM for resource inventory and tenement registry and assessment of resources in UNFC compliant format, AS (Mines) enquired whether IBM has any 'action plan' on tenement registry. GSI data is for freehold, not for leasehold areas. After every 5 year, IBM is required to get the Tenement Registry reviewed. IBM responded that no directives has been issued to convert the resource data of mining leases in UNFC compliant format and the same being mentioned in the minutes of the 47th CGPB meeting. Progress on tenement registry will be reported in the next CGPB meeting.

Representative from CMPDI mentioned that as per IPO, mineral data is to be furnished in JORC for listing. It was discussed that UNFC data is universally available and maintaining two parallel classification systems becomes problematic. The UNFC compliant format is presently not being adopted by CMPDI. Neyveli Lignites follows methodology similar to CMPDI. AS (Mines) advised to resolve the differences between the JORC and UNFC by developing a suitable methodology for conversion of UNFC to JORC. AS (Mines) advised to convene a meeting amongst CMPDI, IBM, Ministry of Coal and GSI, regarding standardization of the classification of UNFC and JORC and to provide the feedback in next CGPB.

[Action: IBM/ CMPDI]

IBM commented that they are issuing violation document in case the UNFC classification is not adhered. IBM representative informed that during inspection IBM impress all the mine/lease holders to follow UNFC and results are always to be converted to UNFC. IBM will report back status in the next CGPB.

FIMI commented that reassessment of iron ore reserve should be evaluated Region wise, in terms of beneficiation techniques/ techno-economic condition. A cut off grade of 35-40% Iron may be considered for reassessment of Iron reserves of the States. FIMI will circulate a paper on this for discussion in the next CGPB meeting.

[Action: IBM/CMPDI/FIMI /MoC/GSI]

- 48.10.07** On collaborative work as per Para 47.9.04, regarding manganese, gold and PGE investigations, DGM, Madhya Pradesh commented that collaborative study with GSI and DGM, MP is underway and phosphorite samples from Jhabua have been submitted for analysis. Dy. DG and HOD, CR responded that the samples have already been sent for analysis.

[Action: GSI]

Dy. D.G., SR commented that PGE bearing samples from Sindhudurg and Solapur Districts showing less than 100 ppb values will be outsourced for analysis. DDG, SR informed that analysis up to ppb level would be available shortly.

[Action: DDG, SR]

DGM, Tamil Nadu informed that they have a collaborative item with GSI in Tasampalayam in Namkhal and Erode district of Tamil Nadu. Samples have been collected and sent to GSI lab. Results of the analysis are to be received. The Dy.D.G., SR stated that ppb level values are to be estimated and therefore analysis is to be outsourced.

[Action: DDG, SR]

GSI commented that communication from J&K about the base metal investigation at Buniyar has not been received. Dy. DG, NR, GSI responded that GSI has also not been able to take up this item due to law and order situation. DGM, J& K requested if GSI can take up Sapphire investigation at Padder Valley, Kishtawar. He stated that as such there is no law and order problem. He further stated the mineralogical details of sapphire bearing samples are not properly understood. Dy. DG, NR agreed to take up an item at Padder Valley in collaboration with DGM, J&K.

[Action: DDG, NR, GSI]

Dr. K. R. Gupta of Geological Society of India requested to re-launch a programme on glaciology in J&K state with the collaborative efforts of GSI and DGM, J&K. AS (Mines) advised DGM, J&K to organize SGPB in near future and invite Geological Society of India to discuss the glaciology programme. Dr. S. K. Wadhawan, Director (Tech), MoM commented that Jammu University is also carrying out glaciological work under DST programme and a concerted discussion is needed to avoid duplication of work. Dy. DG, NR commented that the glaciology training on Hamta glaciers is open for participation in this regard.

The AS (Mines) advised that representative from Geological Society of India should be invited in the next SGPB meeting and different aspects pertaining to the glaciology programme should be discussed at length in the SGPB.

[Action: DGM, J& K]

48.10.08

Para 47.9.05 regarding geological reports of iron, bauxite, limestone, graphite, granite and pyroxenite of Jharkhand State, representatives of DGM, Jharkhand stated that 43 GSI reports have been received at their

end without maps. Dy DG, IT replied that as per the data dissemination policy, geological maps can be provided up to 1:250K scale. Special sanction is required for dissemination of 1:50K maps. Shri. N.Das, Director, PSS-P&M stated that GSI will act on this issue as per the existing data dissemination policy of the department. He further stated that reports can be handed over but larger scale maps cannot be provided.

Dy. DG, ER commented that formalities were not completed from DGM, Jharkhand for providing them the 1:50K maps. AS (Mines) wanted DGM, Jharkhand to give a certification that those maps would not be utilized for commercial purpose. DGM, Jharkhand agreed to give such certificate to that effect. AS (Mines) advised DG, GSI, to resolve this issue. DGM, Jharkhand agreed to complete the formalities. AS (M) also suggested making amendments in the dissemination policy for maps larger than 50K scale may be referred to Ministry of Mines for talking a view.

[Action: DG, GSI/ MoM]

48.10.09 Para 47.9.06 regarding the issue of assessment of low grade iron ore in lease hold and free hold areas, DGM, UP commented that they didn't receive information on this. AS (M) suggested to keep track of the GSI portal in this regard.

[Action: All stake holders]

48.10.10 Para 47.9.09, regarding issue of tenement registry, Member Secretary responded that GSI has already been entrusted with the authentication of reports and data. However GSI does not always receive information on actual number of RPs granted. GSI has however downloaded information on RPs from IBM website. Out of 170 RPs (Relinquished areas), 98 reports have already been uploaded in GSI Portal. Shri M.S. Jairam, Director, Monitoring, GSI, CHQ stated that to streamline the data filing system and for authentication of reports the IBM and the State Government has been requested to provide the following information:

- The details of RPs which have been relinquished by the firm
- A copy of the firm's application along with the grant letter / notification of running and new RP granted by the States to the firms.
- The States should ensure that the firms give coordinates of the area along with the area plotted in the toposheet, work plan and financial commitment.

The AS (M) instructed to hold meetings between firms and State govts. for getting the above information in RP reports. He also advised all the States to put their reports and RP, PL, ML, etc. status on their respective websites. He also highlighted upon the use of portal of GSI, and state

DGMs as a platform of information sharing; DGM, Gujarat and Rajasthan informed that they always put the data in websites.

[Action: State DGMs/All stake holders]

- 48.10.11** On para 47.11.23 & 47.11.24 regarding issues of the 2000MW Subansiri Lower Project on the border of Assam and Arunachal Pradesh, NHPC expressed its compliments to GSI for forwarding comments on geological and seismological issues.

However, NHPC reiterated the need to adopt necessary steps for taking up the paleoseismological and MEQ studies for Tamanthi Project, Myanmar. He requested to take this item on priority basis. AS (Mines) advised GSI to take up this item on priority basis and there should not be delay in the fieldwork as it has been postponed quite a few times in the past due to various reasons. He stated that India - Myanmar project proposal was sent late in the ministry. This is a prioritized item and it should not be taken as a routine way. AS (M) stated that necessary clearance by the MOM has already been accorded.

[Action: GSI]

- 48.10.12** While discussing Para 47.9.14, regarding the issue of model coal mine in the state of Nagaland, AS (Mines) shared his observations regarding lack of a clear cut policy for coal mining in Nagaland. He expressed his reservation that neither GSI nor IBM raised this issue or note of dissent regarding the minutes of the meeting held with Ministry of Environment on 17.06.2010 where the project by project mode of approval regarding density of boreholes (per sq. km)/ borehole diameter and other exploration strategy in the forest area was mentioned. GSI should have raised the pertinent observations in the 17th June, 2010 meeting itself. He added MoEF has not closed discussion on this issue and MoM is once again taking the issue with MoEF. The GSI and IBM officers well acquainted with the issue are to be sent to MoEF for policy formulation. CMPDI did not take part in the meeting of 17-6-2010. He specially mentioned about the need to follow international norm and projected on the need for adopting a generalized rule for mining in place of going for project by project mining rule. Dir[T] should coordinate and resolve this issue with Ministry of Environment and Forests.

He also stated that if there is any compliance from MoEF to be met with, the MECL and CMPDI, should do that. Dr. S. K. Wadhawan, Director (Tech), MoM informed that as conveyed by MOEF, CMPDI had not submitted required environment related progress report to MoEF. AS (Mines) stressed that progress report should have been submitted to MoEF for necessary compliance so that credibility is assured while seeking conditional relaxation from MOEF. This issue should be resolved expeditiously.

[Action: IBM, MoEF, CMPDI, GSI]

48.10.13 The follow up actions on Para 47.9.15 regarding sharing of data between GSI & CGWB, could not be discussed due to absence of representative from CGWB.

48.10.14 Para 47.9.17, regarding the policy guidelines for establishing national drill core libraries, Member Secretary responded that the policy guideline for core library has already been formulated and uploaded in GSI portal.

Representative from Geol. Soc. of India suggested that GSI may take into consideration the Canadian and Australian drill core libraries for this purpose.

Dr. Prabhas Pande, ADG & Member Secretary stated that this is an exclusive effort of GSI and other organizations should also get involved in the growth process of National Drill core Library.

Representative of HZL informed that they had formed a committee on National Core Library in 1988 and opined that besides Regional Libraries there should be National Library. Shri M. S. Jairam, Director, GSI commented that GSI is the nodal agency and other organizations are to contribute drill cores for preservation. He stated that stratigraphic cores from mineralized belts and drill cores from representative mineralized portions are to be preserved. Dr. K.R. Gupta, Geological Society of India envisioned a National Drill core Library combining other Ministries and State Govts. He mentioned about wastage of drill cores derived in State Govt. projects. Representative of DGM, Karnataka informed of their core library at Ingaldhalu as well as NMDC has got their own library. DGM, West Bengal informed that a Core Library is operational in Purulia since 1999. Representative of SCCL agreed to spare the cores for future referencing. Representative of Gujarat commented that they do not have the facility to store their cores.

As per the recommendations of the High Power Committee on national drill core library, it was mentioned by Shri G. S. Jaggi, OIC HPC, MoM that a National Core Library is not designed for mere preservation of cores but it should have facilities of modern research. For Regional library this facility may not be mandatory. He also emphasized on the need for infrastructure development.

AS (Mines) stressed that national core library should be of international standard. The representative from Geological Society of India commented that a look into the Canadian, French and ONGC core libraries would be beneficial in this regard. AS (Mines) stated that GSI may prepare a report on this and submit it to the MoM for consideration. AS (Mines) pointed

out that Core Library activities should form a part of XII Five Year Plan. He also stressed that a team of geoscientists could visit Australia/Canada to ensure that an International standard of core library is developed in India. DGM, West Bengal commented that a uniform guideline should be provided to the States for preservation of drill cores. GSI replied that the guideline is already available in GSI portal. AS (Mines) advised GSI to evolve a clear concept paper on core library including the action plan by next CGPB and there should be substantial progress regarding this by next CGPB. This will include the avenues of coordination of other organizations and in this context the view points of other organizations on this subject with reference to the HPC recommendation should be duly taken care of.

[Action: GSI]

- 48.10.15** Para 47.9.18, on the issue of analysis of drill core samples for PGE from DGM, Manipur, DGM informed that fund has been sanctioned for payment towards analysis. AS (Mines) enquired from GSI and IBM the modus operandi of analysis of samples. IBM replied that sample analysis for NE region is being done by IBM on promotional basis. AS (Mines) added if GSI can take this up as partly non-commercial and partly commercial basis as Manipur, DGM is ready to pay. It was informed that PGE analysis could not be taken up at GSI laboratory, NER because of unavailability of suitable instrument. AS (Mines) advised to divert the sample to GSI, Kolkata, if necessary. The work should be completed in a time bound manner.

[Action: DGM, Manipur / GSI]

GSI, SR agreed to analyse samples from DGM, Karnataka. IBM also agreed to carry out PGE analysis from Nagpur office.

- 48.10.16** Para 47.9.21, on holding SGPB meetings, AS (Mines) advised the State DGMs to convene bi-annual SGPB meetings especially for the mineral rich States. He also enquired about the list of States who had not convened any SGPB so far. The names of Uttarakhand, Bihar, Goa appeared in this list. AS (Mines) advised that Director, Technical, MoM should communicate with the Secretary of the State regarding holding of SGPB meetings for the respective States. If necessary the matter could be taken up with the concerned Chief Secretaries also. GSI commented that even if SGPB are held, the minutes of the meetings of some of the states are not communicated to GSI. The status of the same was provided at page -68 of the agenda paper of the meeting. Dy. DG & HOD, SR commented that RTI Directors have been advised to attend the SGPB meetings. AS (Mines) advised that the Regional Head should be invited to attend SGPB and that Regional Head (HOD) should send intimation to all Mission Heads to be present whenever any SGPB meeting is held. AS (Mines) complimented the states who have convened two SGPB meetings

in 2010.

[Action: All State DGMs/ Director (Tech), MoM/GSI]

- 48.10.17** Discussion on Para 47.10.3 & 47.11.17, regarding resources of lignite not being included in the national inventory of lignite, AS (Mines) enquired about States which are having lignite reserves and have not supplied the data as per the prescribed format. In response to this DGM, Gujarat assured that they would be submitting the data base within a week. AS (Mines) also advised that specific note should come from all the Regions about the information whether full information on resource has come to Mission-IIB. They should also take up for submission of complete information in prescribed format and submit detailed status in next CGPB.
[Action: DGM, Gujarat /Mission -IIB]

- 48.10.18** Para 47.11.16, regarding the future Regional Exploration for coal in already explored CBM awarded blocks that have been handed over/relinquished, Dr. S. Mukherjee, Director, GSI, MIIB informed that a meeting was held with DGH, New Delhi on 23rd and 24th December, 2010. The balance left out potential coal-bearing area (2791 sq km) earmarked for being covered by exploration during the XI Plan by all concerned agencies is likely to be completed by the first year of XII Plan period. It was suggested that, in order to plan and continue coal exploration activity beyond that period, the areas (2647 sq km) blocked/awarded by the DGH for CBM exploration, where CBM exploration has been completed and which have been handed over/relinquished by the exploring agencies, need to be considered for taking up future exploration for coal. The DGH was requested to release such areas/blocks, if any, particularly in the Sohagpur, Sonhat and Satpura coalfields. No representative from DG, Hydrocarbon was present in the meeting. AS (Mines) instructed that DG, GSI will convene a meeting with DG, Hydrocarbon before next CGPB for formulation of guidelines for future exploration for Coal/Lignite in already CBM awarded Blocks and draw up a road map for the same.
[Action: GSI/ DG, Hydrocarbon]

- 48.10.19** Para 47.11.26, regarding issues on hydro-power/river linking project, dimensional stone and monitoring of landslide in which collaborative work with GSI was proposed. Since representative of NIRM was not present, AS (Mines) advised that DG, GSI should call a meeting separately with NIRM before next CGPB and this matter to be discussed in the next CGPB.
[Action: DG, GSI/ NIRM]

48.11.00 REPORTING ON QUALITY MANAGEMENT/CONTROL IN GSI BY QM CELL

- 48.11.01** Shri G. Dasgupta, Director, Q&M Cell,GSI presented an account of the

work done by the QM Cell, GSI as per the recommendation of the High Power Committee (HPC). He informed that the Quality Management of GSI was an RFD [Result Framework Document] issue of MOM and an all out efforts should be undertaken for enhancing the quality of GSI services. He stated that Quality Management cell at DGCO, New Delhi was monitoring the quality of work done by different field parties and laboratories and further improvement in the quality of the GSI services. He gave an account of SOPs that have been prepared and peer reviewed. A draft report on Quality Management prepared for reporting to CGPB was also presented.

AS (Mines) advised that the draft report may be distributed to all the DGMs and also requested DGMs to look into the Q&M report and provide their feedback/comments by 20.02.2011. State Govts. may use the QM report for their own benefit. Regarding SOPs, AS (Mines) also requested State Govts./stakeholders to give their feedback on the uploaded SOP/vetted SOPs in the portal. He also stressed upon refining the SOPs so that these could be introduced in the GSITI programmes for OCGs, etc.

[Action: DGMs and all stake holders / GSI]

48.12.00 PRESENTATION OF BASE PAPER BY CONVENERs

48.12.01 Dy. DG & Head Mission III and his team presented Phase III of GSI portal with a brief account on the improved functionalities of GSI portal. He emphasized on the enhanced features of GSI portal including the online tour approval, leave application, opinion poll, integrated MIS reports, IGCP India portal etc. Dy. DG & HOD Southern Region commented that all DGMs and stakeholders should participate in the opinion polls provided in the Portal. The team demonstrated the pre-launch version of the 1:50K map service which includes up to 29 layers with Enterprise level ArcGIS platform using ArcSD interface in Oracle. Dy. DG and Head Mission III mentioned about the recent release of the publication viz., Seismotectonic Atlas, 17 DRMs in GSI portal. He added that the Phase III of GSI will include an Online Core Business Integrated System and preparation of DPR for implementation of the same is underway.

ISM, Dhanbad enquired about possibility of preparation of potential maps from the 1:50K map service to which GSI replied that, tailor made projects can be taken up and potential maps can be delivered to users on request.

48.12.02 Base document on geoinformatics was presented by Shri Asit Saha, Sr. Geologist, GSI. The Mission III team commented that basically a data warehouse should be developed as GSI acts as a nodal institute for storage/pre-storage and delivery.

48.12.03 AS (Mines) congratulated GSI for winning the silver award for e-governance in the category of Best government portal of 2010. He informed the House that the award will be handed over to GSI by the Hon'ble Governor of Maharashtra on 10th February 2011 at Aurangabad, during the 14th NAAC conference.

48.12.04 Shri Samit Bhattacharya, Dy. DG, Mission-IA presented a base paper on Marine and Coastal Survey. He emphasized on present and future thrust areas about Marine Wing. He mentioned that presently GSI is engaged in Base line data collection viz., geological, geophysical and geochemical data for marine studies. He specially mentioned about the importance of coastal zone and its studies. Amongst the future thrust areas he mentioned about sulphide mineralization in Andaman, geochemical scan for thermogenic hydrocarbons and survey of cobalt rich encrustations. He added that two meetings have been conducted regarding Multi beam bathymetry data sharing for the coastal zone. He also added Naval clearance becomes a prerequisite for carrying out the marine studies and its data sharing.

Shri Rasik Ravindra, NCAOR stressed that between two Govt. departments there should be no secrecy in sharing the data to avoid duplication of work. NCAOR has instruments like multibeam echosounder etc. and there should be standardization of instruments between GSI and NCAOR so that data generated by GSI and NCAOR matches. AS (Mines) advised Member Secretary to look into the base line document and sort out the matter with Ministry of Earth Science. MoES informed that they are concentrating in the research in deep water and impressed upon GSI to take up more work in shallow water since no agency is carrying out work in shallow water. Dr. S.K. Wadhawan, Director (Tech), MOM pointed out that time frame should be given to settle the issue and commented that Ministry is keen on settling the issue of such data sharing. He requested MOES to go through the base line document within the portal and send the comment. Shri G.S. Jaggi, OIC-HPC enquired about the incorporation of coastal data in the base document.

Member secretary declared that survey for marine mineral resource as per National Mineral Policy would be sorted out between GSI and MoES by mutual dialogue. Member secretary also urged that all stake holders to provide their feedback on base documents by February, 2011 so that final version can be submitted to MoM.

[Action: GSI /MoES/ all stake holders]

48.12.05 A base document on aeromagnetic survey was presented by Shri S. G. Gaonkar, Dy. DG, Mission IB. He informed the House that under the national aeromagnetic mapping programme, aeromagnetic survey will

be taken up in two phases. In the initial phase parts of Peninsular India will be investigated. The base document which is uploaded in portal is open for feedback and prioritisation of Heliborne Surveys. GSI opined that integration of aeromagnetic survey with ground truth should be done; airborne data gives instant data and would be complementary to ground survey. Dr. K. R. Gupta, Geological Society of India indicated that there should be prioritization of aeromagnetic survey areas and commented that certain corridors of Himalayas in NW Himalaya, Central Himalaya and syntaxial areas can be taken up. In view of the difficulty of manpower, data interpretation should be carried out in collaboration with the universities. AS (Mines) suggested having private- public partnership in this regard.

Dr. K.R. Gupta, Geological Society of India proposed that bilateral programme for training for data interpretation can be arranged. Dr. S.K. Wadhawan, Director (Tech), MOM pointed out that it could be done under XII Plan period.

DGM, Karnataka commented that they had proposed Sargur and Shimoga schist belts for heliborne survey. Shri S.G. Gaonkar, Dy. DG, Mission-IB assured that more areas would be taken up after detailed discussions with the stakeholders. A road map on all the issues would be presented in the next CGPB after detailed consultations with all stakeholders.

[Action: RSAS,GSI / all stake holders]

48.12.06

A base document on National Centre of Excellence in Geological Research was presented by Shri Mukul Tiwari, Dy. DG, Mission IV. Dr. K.R. Gupta, Geological Society of India suggested that for C¹⁴ and Be-Al isotope study GSI could collaborate with Universities. Shri Tiwari informed that GSI has already procured such instrument for C¹⁴ and in the process of building up of the infrastructure by visiting different labs in the country. AS (Mines) encouraged collaborative studies. DGM, Manipur commented that the GSI Lab at Shillong needs to be upgraded so that more programmes can be taken up in NER. Director, NER replied that there is dearth of manpower, shifting problem and lack of infrastructure. AS (Mines) advised to purchase sufficient instruments for NER instead of surrendering plan outlay of NER for the year 2010-11. He also advised to transfer officials (sanctioned post) from Kolkata to NER Shillong to resolve the issue of manpower shortage in Chemical Labs. He instructed to prepare and submit a concept paper on 'how to develop facilities in North East' which is to be presented at next CGPB. This should indicate modus operandi for full utilisation of NER outlay for 2011-12.

[Action: ADG[PSS]; HOD, NER,GSI]

48.13.00 AGENDA OF 48TH MEETING OF CGPB

48.13.01 The comments of GSI on each of the 'New Agenda items of 48th CGPB' were sequentially placed before the House (also included in the agenda notes of 48th CGPB) by the Member Secretary, CGPB for discussion and follow up actions. Dr. Prabhas Pande, Member Secretary, CGPB requested all the members to go through the status given by GSI for each of the Agenda in the volume "Agenda notes for 48th CGPB". The status note may also kindly be consulted along with the Minutes of the meeting.

Agenda 1 *DMG, Jharkhand is carrying out Geological Exploration and drilling in 6 different Coal Blocks, allotted to PSU's in Jharkhand for preparation of G.R. For proper exploration of these Coal blocks as per guidelines of Ministry of Coal, Govt. of India, State DMG of Jharkhand requires help of Coal exploration experts of GSI.*

(Suggestion : DMG, Jharkhand)

48.13.02 Status given in the Agenda Notes was accepted by DMG, Jharkhand.

Agenda 2 *Jharkhand Government wants to reassess the Iron ore reserve of leasehold area of M/s SAIL and M/s Tata Steel in the light of new threshold value of Iron ore. Lease hold areas of SAIL & Tata Steel are located in West Singhbhum district of the State. The total lease hold areas of M/s SAIL and M/s Tata Steel are 69.62 Km² and 11.61 Km², respectively.*

(Suggestion : DMG, Jharkhand)

48.13.03 DMG, Jharkhand during discussion wanted GSI to carry out the re-assessment of iron ore reserve of leasehold areas. FIMI pointed out that all the iron resources need to be re-assessed. The practice of 45% is to differentiate between ore and waste. It was pointed out that there were legal constraints for carrying out such re-assessment exercise in a leased area. State DGM was advised to resolve the legal issues and thereafter take necessary action on this aspect.

Agenda 3 *Decision to handover hard copy of geological reports related to Jharkhand State was taken in the 47th CGPB Meeting. Accordingly 43 geological reports have been handed over to DMG. But geological maps of all these reports have not been provided. Concern officer should be directed to provide maps of these geological reports, because without map all these reports are not useful for state.*

(Suggestion : DMG, Jharkhand)

48.13.04 As discussed in follow up action of 47th CGPB meeting, AS (Mines) requested DGM Jharkhand to give an undertaking that the maps will not

be used for commercial purpose. DG, GSI may take a view on this and if necessary an amendment may be made in the dissemination policy for supply of map of >50k scale. A proposal can be sent to MoM if necessary.

Agenda 4 *It has been learnt from the discussion made in the 46th meeting of C.G.P.B. that GSI has prepared a draft document on “Impact and Methodology of Systematic and Scientific Mining of Riverbed Materials”. The State of West Bengal has a vast resource of Stone boulders, Sand etc. in the riverbeds of North Bengal districts. Significant portions of the said riverbeds are now under mining activity. It may happen that due to improper methodology adopted in such mining activity, GoWB is losing royalty. Besides, unscientific and unsystematic mining may lead to environmental hazards in the areas.*

Therefore, GSI is being requested to provide a copy of the draft document, as stated above, to DMMWB for taking necessary steps may be taken by the State towards development of systematic and scientific mining of riverbed materials and monitoring of it.

(Suggestion : DMM, West Bengal)

48.13.05 DGM, West Bengal expressed satisfaction with the status given in the ‘Agenda Notes’.

Agenda 5 *The “Mineral Inventory” and “Baseline Data of Mineral Resources” related to the State of West Bengal on strength of its own database is near finalization. We are putting stress on developing a mineral database in 1:4000 scale for the areas of interest since we process RP/PL/ML applications related to State. In this process, we have short listed five districts which are relatively mineral rich. We have located that some information-gaps exist in our database regarding areas left in between, sub-surface data, analytical values etc. GSI is being requested to provide such information to DMMWB in 1:10000 or lower scale level for filling the said information gaps and to formulate suitable prospecting/exploration programme (following the guidelines of UNFC) in the areas which need further study. This is for attracting more investments in the mineral sector.*

The proposal of exchange of information may be made as a collaborative item involving GSI and DMMWB.

(Suggestion : DMM, West Bengal)

48.13.06 AS (Mines) instructed to resolve the issue within one month bilaterally. It is to be discussed in the SGPB meeting and action taken would be reviewed in next CGPB meeting. DMM, West Bengal may take up the issue directly with DG, GSI.

[Action: DMM, W.B / GSI.]

Agenda 6 *DMMWB is working on the feasibility of adopting the new process of lease application (as per the circular of MoM) having georeferenced area demarcation with aid of Satellite Imagery and DGPS survey. We are yet to build up appropriate infrastructure to process such applications. So, we request for having a discussion on this issue to sort out a suitable way.*

(Suggestion : DMM, West Bengal)

48.13.07 AS (Mines) advised DG, GSI to hold a meeting with DMM, W.B. along with IBM and thereafter submit a status note in the next CGPB about the assistance rendered to State Govt in this regard.

[Action: DG, GSI/ DMM, W.B./ IBM]

Agenda 7 *Investigation for Platinum Group Elements (PGE) in collaboration with Geological Survey of India, Kerala Unit.*

As discussed in the 4th meeting of the CGPB Sub Committee II (precious Metals and Minerals) the department proposed to carry out exploration for Platinum Group of Elements (PGE) in the ultramafic Zones of Attapadi in Palaghat, parts of Wayanad and Kannur districts in collaboration with Geological Survey of India, Kerala Unit. The department will associate with the Geological Survey of India in the field activities, provide laboratory facilities and also extend service of the drilling units for detailed work. A Memorandum of Understanding (MoU) between the Department of Mining and Geology and Geological Survey of India will be signed subject to the approval of Government of Kerala.

(Suggestion : DMG, Kerala)

48.13.08 DMG, Kerala expressed satisfaction with the status given in the 'Agenda Notes'.

Agenda 8 *Detailed investigation for Scheelite in Kadirampadi – Chittur and Kadampara areas in Attapadi, Palaghat district.*

As discussed on the 4th meeting of CGPB Sub-Committee III, it is decided to request the Geological Survey of India, Kerala Unit to carry out a follow up investigation for Scheelite in Kadirampadi Chittur and Kadaampara areas in Attapadi where UN assisted erstwhile Kerala Minerals Exploration and Development Project has already recommended for follow up action. The Department will render necessary supporting facilities to the Geological Survey of India.

(Suggestion : DMG, Kerala)

48.13.09 DMG, Kerala expressed satisfaction with the status given in the 'Agenda Notes'.

Geological Survey of India

Agenda 9 *During 47th CGPB meeting at Delhi TAMIN requested the requirement of closed space drilling for PGE exploration at Sittampundi and Mettupalayam belt and it has been requested to send a revised programme detailing the requirements. TAMIN is interested, in carrying out detailed prospecting of these areas and this requires systematic trenching at 50mtrs. interval and drilling at 50 mtrs. Interval for first level and 100 mtrs. interval at second level in Chettiyampalayam block (1.1 Kms), Tasampalaiyam block (2.2 kms) in Sittampundi belt and Solavanur block (1.2 kms) in Mettupalalyam belt to a total trench of 2500 CBM' and drilling of 11600 mtrs. TAMIN also sent Agenda item for discussion in the SGPB meeting to be held on 21.1.2011. It is requested to take up the above issue for discussion.*

(Suggestion : TAMIN)

48.13.10 Dr. K. Ayyasami, Dy. DG, SR, informed that separate meeting would be held with TAMIN. AS (Mines) advised that the issue to be resolved within one months' time.

[Action: Dy. DG, SR, GSI/TAMIN]

Agenda 10 *Heliborne Survey in undivided Koraput district, Orissa.*

Undivided Koraput (presently the districts of Koraput, Rayagada, Nabarangpur & Malkangiri) district of Orissa is rich in mineral resources. But due to remote and inaccessible nature of the area, systematic mineral exploration has not been possible. Therefore, it is proposed that GSI should take up Heliborne Survey in undivided Koraput district and indicate potential areas for further systematic assessment.

(Suggestion : DGM, Orissa)

48.13.11 In the Heliborne system integration of sensors with the aircraft is being carried out. After completion of integration of the sensors and trial flights the Heliborne system will become operational for regular field operations. The proposal for Heliborne survey in undivided Koraput district, Orissa can be sent to RSAS division for consideration in future. The details of the capabilities of the heliborne surveys in the form of a brochure and the required proforma have been uploaded in the GSI portal on 20/09/2010. Hard copy communications have also been sent to different state departments of Mines and Geology by post. The stakeholders were requested to use these proforma and send the details to prioritize the area of survey.

The same advice was given for the Agenda 15, 26 & 30 of DGM, Assam; DGM, Nagaland; Dept. of Commerce & Inds.; Manipur respectively where the CGPB members wanted heliborne survey.

[Action: DGM, Orissa ;DGM, Assam; DGM, Nagaland; Dept. of Commerce & Inds., Manipur]

Agenda 11 *Advance intimation to attend the committee meeting.*

Intimation to attend various CGPB committee meetings are received late. It causes difficulty in undertaking the tour and proper preparation for deliberation. It is proposed that invitation may be issued well in advance i.e. at least one month before the event.

(Suggestion : DG, Orissa)

- 48.13.12** AS (Mines) advised that advance intimation to the CGPB members may be given. Shri S. Bhattacharyya, Dy. DG, Mission-IA pointed out that despite advance intimation, participation in Committee meetings is very poor and participation of the members should be improved.

Agenda 12 & 13 from Orissa - Providing travelling allowances to participants of State Govt. in CGPB committee by Govt. of India-could not be acceded to. Agenda 14 was not taken up due to absence of representative of DGM, Assam.

- Agenda 16** *Consequent to the orders dated 11.02.2010 of the Ministry of Mines, New Delhi notifying the Controller General, IBM as “Administrative Authority” & “Authorized Officer” for the purpose of the Offshore areas Mineral (Development and Regulation) Act, 2002, the Controller General has notified the offshore areas available for grant of exploration license on 07.06.2010 based on information provided by GSI. However, detail information on preliminary geological appraisal made, availability of minerals and exact potential of such offshore areas is a pre-requisite for IBM before notifying areas.*

GSI is requested to immediately provide detail information as above in respect of the already notified offshore blocks and also to ensure submission of such information before forwarding particulars of offshore blocks to be notified in future.

(Suggestion : IBM)

- 48.13.13** IBM expressed satisfaction with the status given in the ‘Agenda Notes’.

- Agenda 17** *A Mining Plan for fresh grant of mining lease has been recently approved by IBM for the first time for Baryte mineral in respect of Village – Gadi Sunkapur, Taluka – Hungund, District – Bagalkot of Karnataka State. The area lies in Survey of India Toposheet No. 56D/4 and is bounded by coordinates Long. 76°11’00” E to 76°11’02” E and Lat. 16°01’20” N to 16°01’28” N. The Baryte deposits of this area are associated with Bhima Formation equivalent to Cuddapah formations of Andhra Pradesh and these deposits are reported for the first time. The total resources and reserves as per UNFC System have been reported as 2,39,448 tonnes with 88 to 92% BaSO₄.*

In view of above, the regional exploration of the adjoining areas

may be taken up.

(Suggestion : IBM)

Agenda 18 *Few exposures / outcrops of Iron ore are observed on either side of National Highway No. 17 (Mumbai-Goa NH) on Goa – Maharashtra Border in Village – Banda, Taluka – Sawantwadi, District – Sindhudurg of Maharashtra State. The area falls in Survey of India Toposheet No. 48E/13. The land is proposed to be handed over to RTO by Maharashtra State Government. This area may be taken up for exploration before utilization of the area for non-mining purpose.*

(Suggestion : IBM)

48.13.14 It was decided that GSI would take up 2 items after detailed consultation of all reports.

[Action: GSI]

Agenda 19 *As per the recent guidelines issued by the GOI, MoEF [F. No. 5-3/2007-FC GOI, MOEF (FC Division) dt: 19th Aug, 2010], which reads ‘Prospecting of any mineral, done under prospecting license granted under MMRD Act, which requires collection/removal of samples from the forest land, would be a stage between survey & investigation and grant of mining lease and as such permission under forest (conservation) Act, 1980 would be required. However, in case of coal, lignite and metallic ores – test drilling up to 20 boreholes of maximum 8” dia per 10 sq. km. and in case of non metallic ores excluding coal and lignite – test drilling up to 16 boreholes of maximum 6.6” dia per 10 sq. km. for prospecting exploration or reconnaissance operations, without felling of trees, shall not attract the provisions of the Act. In all other cases involving more number of drilling of boreholes, prior permission of Central Government under the Act would be required.’*

SCCL is carrying out Detailed Exploration in the blocks where regional/promotional data is available. To conduct Detailed Exploration as per UNFC standards, density of boreholes to be 12 to 15 per sq. km. depending upon the geostructural complexities of the coal deposit. The existing MoEF guidelines would not permit to meet the requirements (Boreholes density) for detailed exploration. Hence modifications are required in the MoEF guidelines, to allow boreholes up to 15 sq. km. area for detailed exploration study.

(Suggestion : SCCL)

48.13.15 SCCL expressed satisfaction with the status given in the ‘Agenda Notes’.

Geological Survey of India

Agenda 20 *It is agreed upon earlier to estimate/classify the coal reserves in India under UNFC. But of late it has been informed that the CIL/CMPDI had gone for JORC code, Australia for all coal reserves in its command areas.*

In this context, it is requested to clarify the methodology of coal reserves classification to be adopted by all other coal producing companies/Exploration agencies in India.

(Suggestion : SCCL)

Agenda 21 *Coal resource estimation in the country is done as per ISP (1957) modified in 1989 by Task Force constituted by CGPB. However, for public listing of any company in stock market, it is required to classify the resources as per JORC Code (Australia) or CIM Code (Canadian) / SAMREC Code (South African), etc. The JRC Code has become most preferred code for reporting of resources in stock exchanges, world wide, and the resources estimated in the area of Coal India Ltd. have been classified as per JORC Code for recent Initial Public Offer (IPO) of shares. As such, coal India Ltd. after classifying its resources as per JORC need not to classify them as per UNFC. There is, however, a need to have experienced competent persons certified by professional bodies who can certify / classify Indian resources as per JORC.*

In India, recognised professional bodies do not exist. CGPB may consider identifying suitable professional bodies in India, e.g. MGMI, for registration as ROPO (Recognised Overseas Professional Organisation). These agencies may accredit its members, with proper experience, for reporting of resources as per JORC.

(Suggestion : CMPDIL)

48.13.16 AS (Mines) emphasized on development of a suitable methodology for conversion of JORC into UNFC. He stated that IBM should take up the matter.

AS (Mines) proposed discussion between IBM and CMPDIL so that conversion issues of JORC and UNFC systems can be suitably resolved and status apprised in the next meeting.

[Action: IBM/CMPDIL]

Agenda 22 *ILRIS project requires Geological reports explored by different agencies i.e. GSI and State Govt. and exploration data of other mining agencies to achieve its objectives, for which NLC has been persuading with GSI since 2005 to obtain GRs of GSI departmental exploration scheme at free of cost through CGPB as well as Sub-Committee meeting and MoM. NLC has requested in this regard, in the recently held 47th CGPB Meeting as well as in the 4th meeting of CGPB Committee-V.*

(Suggestion : NLC)

48.13.17 The issue should be resolved in one month.
[Action: Director (Tech) / NLC/ GSI]

Agenda 23

- a) *Procedures of bill raising and payments should be rationalized. GSI is not paying for the logging charges. It is requested to incorporate the charges.*
- b) *Some basic Geological information should be supplied to CIMFR regarding exploration blocks.*
- c) *It was decided in earlier meetings that GSI is to supply overall sample advice for sectional study which is not being followed till date.*
- d) *MOU/Analysis rate with CMPDIL, GSI is to be revised urgently as it is becoming progressively uneconomic for CIMFR to process and analyse BH coal core at the present system/rate.*

48.13.18 (Suggestion : Central Institute of Mining & Fuel Research (CIMFR) There is a MoU between CMPDI and CIMFR regarding bill raising. CMPDI asked whether GSI would accept the same MoU as done with CIMFR. Director, Mission-IIB (Natural Energy Resource) said that revised rate may be communicated to GSI so that it can be approved and enhanced rate of CIMFR would be given. AS (Mines) advised to sort it out mutually.

[Action : GSI / CIMFR]

48.13.19 Agenda 24 was not discussed.
Agenda 25 *Geological Monuments and Geoparks*

A 'geopark' is a nationally protected area containing a number of geological heritage sites of particular importance, rarity or aesthetic appeal. A 'geopark' achieves its goal through a three-pronged approach, viz. conservation (a 'geopark' seeks to conserve significant geological features, and explore and demonstrate methods for excellence in conservation), education (a 'geopark' organizes activities and provides logistic support to communicate geoscientific knowledge and environmental concepts to the public, through various modes), and tourism (a 'geopark' stimulates economic activity and sustainable development through geotourism, and encourages the creation of local enterprises and cottage industries involved in geotourism and geoproducts). In India, the Geological Survey of India (GSI) has already done the groundwork for the setting up of 'geoparks', by identifying 26 geosites. This has been published in a book titled National Geological Monuments during GSI's 150-year Anniversary celebration in 2001. In addition, the official website also contains a section on 'geotourism', wherein the above information is displayed. Such geosites are indeed the primary ingredients of any prospective 'geopark', which can be set up in India, in the future. But going by the 'geopark' criteria, the above list cannot be termed as a comprehensive

one, but only an indicative one. Several other geosites can be identified along the length and breadth of the country. It is high time that different stakeholders like the GSI, ASI, the Union Ministry of Earth Sciences, the Union Ministry of Tourism and Culture, various other geoscience organizations, state Govts, academicians, professional geologists, NGOs, intelligentsia, as well as all those interested in opening up new frontiers in Indian economy through 'earthly means', coordinate with each other, so that we do not have to wait too long to catch up with a concept.

(Suggestion : GSI)

48.13.20 It was decided that soft copy of the concept on 'Geopark' would be sent to all the States and stakeholders inviting suggestions/ comments. Dr. K. R. Gupta, Geological Society of India requested that role and work plan of each individual participating agencies is to be chalked out in concretizing the work of establishing 'Geopark'. DGM, J&K informed that they had sent a proposal for converting 'Guryul Ravine' into a Geopark. GSI was advised to immediately examine the feasibility of this proposal. ISRO suggested the role of Radar imaging satellite to discover new sites of archaeological importance, hidden under the earth. AS(M) suggested that the theme of Geoparks and National Geological Monuments can be included under the purview of one of the existing CGPB committees.

[Action : GSI / All stake holders]

48.13.21 Agenda 27 was not taken up due to absence of any representative of DGM, Nagaland

Agenda 28 *Geophysical Prospecting for Chromite in Manipur by GSI/MECL:*

A number of chromite occurrences have been located in Manipur within the ultramafic belts of the Ophiolite Suit of rocks on eastern side of the State. The types of chromite are bedded chromite, nodular chromite, disseminated chromite and podiform chromite. The GSI had earlier recommended for planning to set up a small-scale chromite based chemical industry in Manipur. Although no large chromite deposit have not so far been discovered, the possibility for locating large deposits of chromite through proper geophysical prospecting cannot be ruled out. A small but economically viable ferro-chrome plant may be considered if adequate reserve of chromite is proved. This will not only improve the economic condition of the State but also help improve the ferro-chrome supply position in the country.

GSI had earlier carried out large scale mapping (1: 25,000) of the Phangrai, Hangkai and Kwatha Blocks, measuring 30 sq. km. each, and reported metallurgical and refractory grades of chromite deposits from these blocks. GSI also conducted detailed mapping (1:2000) of these block covering 0.83 sq. km, 1.0 sq. km. and 1.3 sq. km. respectively and revealed that selected blocks in Phangrai and Kwatha are prospective for chromite occurrences and estimated probable reserves of 77,000 tonnes (Phangrai Block) and 66,000 tonnes (Kwatha Block) upto one metre depth. The areas for detailed mapping had been selected on the basis of surface chromite occurrences, thickness of ultramafic bodies, possible occurrences of chromites and magnetic anomalies (GSI). Chromites also occur at various altitudes. It thus suggests that there is possibility of chromite pods at greater depths.

In response to earlier request by the State Govt. the GSI had already covered a few prospect areas by geophysical investigations, which was, however, abruptly discontinued. The earlier geophysical investigations by the GSI had lead to the demarcation of the magnetic high anomaly zone, possessing prospect of existence of hidden chromite occurrences, in Hankao area in Ukhrul Dist. Manipur.

This item of investigation was proposed in the 3rd and 4th Meeting of the CGPB Committee VIII (Geology & Mineral Resources of NER). As per minutes of the 3rd meeting, the Convenor informed that this programme may be taken up during F.S. 2012 -13, and the representative of MECL also informed that if feasible MECL can take up drilling work and he requested Manipur Govt. to submit detailed proposal.

It is proposed that detailed geophysical investigation for chromite occurrences by the GSI be taken up in the remaining promising areas in Manipur including Minou-Mangkang area in Chendel district. It is also proposed that drilling work at the selected promising blocks in the Phangrai and Kwatha area be taken up by the MECL on promotional basis to explore chromite occurrence at greater depths.

(Suggestion: Dept. of Commerce & Inds.; Manipur)

48.13.22

Dept. of Commerce & Inds., Manipur required the target areas derived on the basis of Geophysical survey by GSI with a view to locate chromite occurrences. Shri S. G. Gaonkar, Dy. DG, Mission-IB explained that in hilly terrain there would be much noise for geophysical survey and the GM map would not be of much help. However, representative of Manipur wanted any such report of GSI in the concerned area. AS (Mines) suggested that GSI to look for such GP reports, if any and same may be handed over to Manipur. Shri Sarolkar,

Director, NER commented that GSI can take up the item if there is sharing of manpower between GSI and Government of Manipur. MECL agreed to carry out drilling on promotional basis. GSI to coordinate and ensure necessary follow up.

[Action: Dept. of Commerce & Inds., Manipur /GSI/MECL]

Agenda 29 *Lithostratigraphic Mapping of Barail and Surma Sediments in Tamenglong and Churachandpur Dist., Mautpur for locating Coal Occurrences:*

Objective: To locate coal occurrences for exploration.

The State Govt. is attracted by discoveries of a number of Coal deposits in the Barial and Surma Sediments in the neighbouring State of Nagaland where few of the deposits are under mining at present There is reasons to hope for such discoveries in similar sediment existing in Manipur. In view of the importance of coal for local domestic and industrial uses and the depleting forests in meeting fuel requirements and its impact on the eco-system, investigation for coal in the Barail and Surma Sediments occurring in the Tamenglong and Churachandpur District of Manipur is sought to be considered.

This item of investigation was proposed in the 40th and 46th CGPB Meeting and also in the 3rd and 4th meeting of the CGPB Committee VIII. Vide minutes of the 46th CGPB meeting (Para: 46.12.13) GSI proposed to take up collaborative work with DGM, Manipur during the field season 2010-11 and requested the DGM to have a detailed discussion with the Director, GSI located at Dimapur. Accordingly, the proposal was discussed with the Director in the 8th meeting of the SGPB of Manipur held on 31st July, 2010 at Imphal.

The GSI is requested, once again, to take up the item of investigation first in the Churachandpur District of Manipur.

48.13.23 *(Suggestion: Dept. of Commerce & Inds.; Manipur)*
GSI agreed to take up the programme if Manipur Govt. provides two geologists to carry out the work. Manipur Govt. assured the same.
[Action: Dept. of Commerce & Inds.; Manipur/ GSI]

Agenda 31 *Exemption of fees / charge on all training programme conducted by GSI :*

An agenda item proposed for consideration in the 36th & 37th CGPB meeting was :

"The Task Force for the Development of Mineral Industry in the N.E.

States (Report June, 1997) has recommended for providing of on-the-job training to the officers and staff of the State DGMs concerned free of cost through the training facilities available with the GSI and IBM. So far exemption from payment of training fees have been considered case-to-case.

GSI is requested to exempt the State DGMs concerned from payment of the fees in all their training programmes as general rule,”

Though the State Government was not represented in the meeting, the item was taken up. As per the minutes of the above meeting (Para 36. VII.49), the Chairman requested the Planning Commission to favorably consider the request made by the Directorate of Commerce & Industries, Manipur on behalf of the NE States,

However, no further information has so far been received as to whether the above proposal has been accepted by the Ministry of Mines or the GSI. In this connection, it is further submitted that as the State Government has been passing through a critical financial problem, it has not been possible to sponsor Geology & Mining officers and staff to avail of many useful training programmes at the GSI-Training Institute, etc, The IBM's NE Assistance Programme has provided a great relief to the State Government in various areas including training.

It is, therefore, once again requested that the GSI may also impart training to the officers and staff of the NE States without fees / charges and on payment of TA/DA, etc, in the pattern being presently followed by the IBM.

(Suggestion: Dept. of Commerce & Inds.; Manipur)

48.13.24 State Govt. was advised to contact RTI, NER, Shillong for any assistance for the participants. GSI was advised to look into the IBM model and examine the feasibility of applying the same in respect of GSI. This should be resolved within a month's time and necessary action taken for imparting training.

[Action: Dept. of Commerce & Inds., Manipur / GSI.]

Agenda 32 *Geo-environmental Appraisal of Imphal Valley of Manipur for deciphering Arsenic related pollution in the Ground Water (Collaboration Programme with the GSI):*

This programme was taken up by the GSI in collaboration with the State Directorate of Commerce & Industries, Geology & Mining Division (DGM) from 2007-08 Field Season for 2 (two) years in the Imphal valley of Manipur to accommodate the proposal of the State DGM in the

41st meeting of the Central Geological Programming Board.

42 (forty two) ground water samples from tube wells in the depth range of 50 m - 70m had been collected from Thoubal, Wangkhem, Kakching, Lilong, Waikhong, Khoijuman, Nambol, Khoijuman, Irenbam, Phoijing, Hiyangthang, Bomdier and Ningthemchakarong areas. The Arsenic content in the ground water samples from these localities lie above the maximum permissible limit (50ppb) with Ningthemchamakhong area recording the highest Arsenic content of 148 ppb.

The State DGM had agreed to the GSI's proposal for drilling of a few boreholes within Quaternary deposits to facilitate the sampling of aquifer sediments and clayey horizons separating these aquifers as analytical results of these samples would help in determining the causative factors for arsenic contamination in ground water. GSI had suggested to carry out the drilling at six locations, viz. Kakching, Khangabok, Heirok, Hiyangthang, Ishnupur and Kwakta vide GSI's letter No. 28/ENVP/NER, 08 - 09 dated 9th January, 2009,

The drilling programme could not be taken up last year for want of fund. It's implementation will be started during the next FS (Sept/Oct, 2010 -April 2011).

In the 8th meeting of SGPB of Manipur and the 3rd and 4th meeting of the GSI's CGPB Committee VIII, it was proposed to take up the drilling programme by the State DGM in the continuation of the "Collaboration programme with the GSI" as the State - DGM lacks expertise in the field of hydrogeological investigation and core-sampling technique.

GSI is requested, once again, to resume this item of collaboration programme with the State DGM.

In the above 4th Meeting, the Central Ground Water Board was also requested to resume its ground water investigation in the Imphal Valley particularly in the arsenic polluted areas to facilitate mitigation of health hazards in the State. The CGWB is requested, once again, to take-up such the investigation in the arsenic polluted areas.

(Suggestion: Dept. of Commerce & Inds.; Manipur)

48.13.25

Representative of Manipur informed that they had received funds this year only to take up the programme and now they are ready to start the work. AS (Mines) suggested that Manipur Govt. is to do the drilling component of work and follow up work would be done by GSI. Representative of Manipur wanted CGWB to take up some work in that area. GSI to coordinate with CGWB on this.

[Action: Dept. of Commerce & Inds.; Manipur/ GSI/ CGWB]

48.14.00 CONCLUDING REMARKS BY ADDITIONAL SECRETARY (MINES)

- 48.14.01**
1. Follow up Action of CGPB meetings should be initiated immediately. Action in this regard should not wait for the next CGPB meeting. More substantive and specific A.T.R is required to be submitted. GSI should ensure comprehensive action on State items so as to make their involvement in CGPB meetings purposeful.
 2. CGPB meetings to be held in the months of February and August. The SGPB meetings should be structured accordingly. Normal issues should be discussed in the SGPB meetings and decisions should be taken. The issues discussed in SGPB may be highlighted in brief during CGPB meeting. More important issues may be discussed and decisions may be taken in the following CGPB meeting.
 3. Focused attention to be given on the programmes of J&K and NER. Plan outlay and its utilization for NER are to be judiciously monitored in order to ensure the entire utilization of allocated fund.
 4. Quality must be a major criterion of GSI reports. Quality-checks to be ensured before finalizing the reports. The State Governments should send their inputs. SOPs may be followed in the Courses conducted by GSITI.
 5. The conversion issues between JORC and UNFC classification has to be sorted out.
 6. Issues on Core Library have to be sorted out to achieve international standards.
 7. Concept paper on Aeromagnetic survey pertaining to XII five year plan period has to be brought out before the next CGPB.
 8. Problems with Plan outlay and financial support needed from Planning Commission are required to be stipulated properly and GSI should move forward along that direction.
 9. The prestigious e-governance silver award owned by GSI for the year 2010 is a stepping stone for moving forward in future in Phase III Project.

[Action: GSI/ All Stakeholders]

48.15.00 VOTE OF THANKS

48.15.01 Dr. R. G. Vijay, Dy.DG (Chemistry), GSI proposed the vote of thanks.

Annexure I

LIST OF PARTICIPANTS – 48th CGPB

SI.No.	Name	Designation	Department/Organisation
1	Shri S.K.Srivastava	Addl.Secretary	Ministry of Mines
2	Shri A.Sundaramoorthy	Director General (Acting)	Geological Survey of India
3	Dr. Prabhas Pande	Addl.Director General & Member Secretary, CGPB	Geological Survey of India
4	Shri S.K.Nayak	Jt.Secretary	Ministry of Mines
5	Shri G.Srinivas	Jt.Secretary	Ministry of Mines
6	Dr. S.K.Wadhawan	Director (Tech)	Ministry of Mines
7	Shri G.S.Jaggi	Director, IC-HPC	Ministry of Mines
8	Shri P.K.OJha	Jt.Director (Geology)	DGM, Orissa
9	Shri Rajneesh Sharma	Geologist	DGM, HP
10	Shri M.V.Mevada	Geologist	DGM, Gujarat
11	Shri N.M.Pitliya	Addl.Director	DGM, Rajasthan
12	Shri K.S.Rao	Jt.Director	DGM, AP
13	Shri D.R.Veeranna	Addl.Director	DGM, Karnataka
14	Shri J.K.Sinha	Jt. Director	DGM, Manipur
15	Dr.Z.A.Khan	Geophysicist	DGM, UP
16	Shri R.Purushothaman	AGM	TAMIN
17	Shri T.A.Subbiah	Jt.Director	DGM, Tamilnadu
18	Shri G.C.Khanal	Jt.Director	DGM, Sikkim
19	Shri T.Kalden	EE	DHPD, Arunachal Pradesh
20	Shri T.Rajendran	Director	DGM, Kerala
21	Shri A.Prabha Kumar	Dy. Director	DGM, Kerala
22	Shri Vir Singh	Senior Geologist	DGM, Haryana
23	Shri G.D.Prasad	Dy.Director	DGM, Uttarakhand
24	Shri Jayant Kumar Pashine	Jt.Director	DGM, Chhattisgarh
25	Smt.Malabika Jha	Director	DMM, WB
26	Shri Somnath Das	Sr.Geologist	DMM, WB
27	Shri D.K.Bhattacharya	Director	DGM, Meghalaya
28	Dr.E.Laloo	Sr.Geologist	DGM, Meghalaya
29	Shri V.S.Sawakhande	Director	DGM, Maharashtra
30	Shri R.K.Sharma	Director	DGM, MP
31	Shri H.L.Langeh	Geologist	DGM, J&K
32	Shri D.C.Gupta	ARC	Goa Sadan, New Delhi
33	Dr. Jai Prakash Singh	Director	DGM, Jharkhand
34	Shri AK Singh	Geologist	DGM, Jharkhand
35	Shri Koratemjen	AO	DGM, Nagaland
36	Shri S.K.Nandi	JRC	Govt. of Tripura. New Delhi
37	Dr.A.K.Lomas	CMD	MECL
38	Shri VKS Visen	HOD(E)	MECL
39	Shri BP Raturi	Manager(Geology)	MECL
40	Shri Ashu Mathur	Manager(Geology)	MECL
41	Shri SS Bakshi	Director	CWC, MoWR
42	Shri Rajeev Kumar	Director	MoWR
43	Shri Rasik Ravindra	Director	NCAOR

Geological Survey of India

44	Dr. John Kurian P	Scientist (C)	NCAOR
45	Shri AK Bhandari	Director	C-TEMPO
46	Shri S.Kumar	Member	CGWB
47	Dr. AS Rajawat	Head (Geo-science)	SAC, ISRO
48	Shri G.Behera	Dy. Director	NRSC, ISRO
49	Shri L.P.Sonkar	Consultant	Planning Commission
50	Shri RB Tyagi	Dy. Advisor (Minerals)	Planning Commission
51	Shri Rakesh Mathur	RCA	Andamans
52	Shri MV Sahasrabudhe	Reg. Controller of Mines	IBM
53	Shri RH Sawkar	Secretary	Geol Society of India
54	Dr. KR Gupta	Secretary	Geol Society of India
55	Shri N. Ahmad	General Manager	CMPDIL
56	Shri Arun Kalra	Head, Business Dev.	DeBeers India
57	Shri Sanjay Rao	Business Dev. Mgr.	De Beers India
58	Shri RK Purohit		AMD
59	Dr. Indresh Rathore	Sr. Proj. Geoscientist	Rio Tinto
60	Dr. Gopal Dhawan	Executive Director	NHPC
61	Shri Manoj Basu	General Manager	NHPC
62	Shri YS Babu Rao	General Manager	Singareni Collieries Co. Ltd.
63	Dr. A Sinha	Director	CIMFR
64	Shri E Hanumantha Rao	Head (Explo. & Geol.)	NLC
65	Shri AB Chaudhury	Director	MoES
66	Shri G Sakarwal	General Manager	ONGC
67	Shri RS Krishnan	Superintendent	Deptt. of IT, Govt. of NCT of Delhi
68	Shri Atul Asthana	Pr Consultant	Deptt. of IT, Govt. of Delhi
69	Prof. BC Sarkar	HOD (Appl. Geology)	ISMU
70	Shri SBS Chauhan	Advisor	FIMI
71	Dr. K.Ayyasami	Dy. Director General	Geological Survey of India
72	Dr. K.Rajaram	Dy. Director General	Geological Survey of India
73	Dr. R.G.Vijay	Dy. Director General	Geological Survey of India
74	Shri Mukul Tiwari	Dy. Director General	Geological Survey of India
75	Shri VP Sinha	Dy. Director General	Geological Survey of India
76	Shri Sumant Gupta	Dy. Director General	Geological Survey of India
77	Shri S.Bhattacharya	Dy. Director General	Geological Survey of India
78	Shri SG Gaonkar	Dy. Director General	Geological Survey of India
79	Shri Dinesh Kumar	Dy. Director General	Geological Survey of India
80	Shri AK Malaviya	Dy. Director General	Geological Survey of India
81	Shri LS Jain	Dy. Director General	Geological Survey of India
82	Shri Subimal Mukherjee	Director	Geological Survey of India
83	Shri PA Ramesh Babu	Director	Geological Survey of India
84	Dr. Anil Joshi	Director	Geological Survey of India
85	Shri Harbans Singh	Director	Geological Survey of India
86	Shri PB Sarolkar	Director	Geological Survey of India
87	Shri UK Behera	Director	Geological Survey of India
88	Shri Nitish Das	Director	Geological Survey of India
89	Shri Pratip Gupta	Director	Geological Survey of India
90	Shri N.Kutumba Rao	Director	Geological Survey of India
91	Shri SK Chakraborty	Director	Geological Survey of India
92	Dr. VP Mishra	Director	Geological Survey of India
93	Dr. SP Venkata Dasu	Director	Geological Survey of India
94	Shri M Mohan	Director	Geological Survey of India
95	Shri Alok Kumar Mukherjee	Director	Geological Survey of India

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96	Dr. R Kirishnamoorthy	Director	Geological Survey of India
97	Shri M Chakradhar	Director	Geological Survey of India
98	Dr. V. Ganesan	Director	Geological Survey of India
99	Shri K Balasubramanian	Director	Geological Survey of India
100	Shri Auditeya Bhattacharya	Director	Geological Survey of India
101	Shri M Raju	Director	Geological Survey of India
102	Shri P Sarkar	Director	Geological Survey of India
103	Shri M S Jairam	Director	Geological Survey of India
104	Shri Eshwara Basappa	Director	Geological Survey of India
105	Shri M Hariprasad	Director	Geological Survey of India
106	Dr. G Malhotra	Director	Geological Survey of India
107	Shri Partha Singha	Director	Geological Survey of India
108	Shri G Das Gupta	Director	Geological Survey of India
109	Shri Virendra Kumar	Director	Geological Survey of India
110	Shri Sanjiv Sharma	Director	Geological Survey of India
111	Shri B Nageswaran	Director	Geological Survey of India
112	Shri JS David	Director	Geological Survey of India
113	Dr Taraknath Pal	Sr. Geologist	Geological Survey of India
114	Shri A Acharyya	Sr. Geologist	Geological Survey of India
115	Shri R Chakraborty	Sr. Geologist	Geological Survey of India
116	Shri DK Mukhopadhyay	Sr. Geologist	Geological Survey of India
117	Shri Tanay Dutta Gupta	Sr. Geologist	Geological Survey of India
118	Shri Asit Saha	Sr. Geologist	Geological Survey of India
119	Shri Basab Mukhopadhyay	Sr. Geologist	Geological Survey of India
120	Shri M Koshy John	Sr. Geologist	Geological Survey of India
121	Dr. Asutosh Joshi	Sr. Geologist	Geological Survey of India
122	Shri MA Karim	Sr. Geologist	Geological Survey of India
123	Shri SK Bohra	Sr. Geologist	Geological Survey of India
124	Shri MC Upadhyay	Sr. Geologist	Geological Survey of India
125	Shri CK Sengupta	Sr. Geologist	Geological Survey of India
126	Shri Rakesh Kumar	Sr. Geologist	Geological Survey of India
127	Smt Pushplata	Sr. Geologist	Geological Survey of India
128	Dr. Sreemati Gupta	Sr. Geologist	Geological Survey of India
129	Dr. Snigdha Ghatak	Sr. Geologist	Geological Survey of India
130	Shri SN Bhagat	Sr. Geologist	Geological Survey of India
131	Shri Debasish Rout	Sr. Geologist	Geological Survey of India
132	Shri Prem Prakash	Sr. Geologist	Geological Survey of India
133	Smt Nabanita Nandy	Sr. Geologist	Geological Survey of India
134	Sadaf Fatima	Geologist	Geological Survey of India
135	Shri Arindam Dutta	Geologist	Geological Survey of India
136	Shri Ansul Kumar Jaiswal	Geologist	Geological Survey of India
137	Shri Arindam Roy	Geologist	Geological Survey of India
138	Shri V Kumaravel	Geologist	Geological Survey of India
139	Shri Yogesh Sharma		Ministry of Mines
140	Dr. D.K.Gir		Ministry of Mines
141	Shri Rakesh Chaudhury		Ministry of Mines
142	Shri Sushant Pradhan		Ministry of Mines