

**MINUTES OF THE 47<sup>th</sup> MEETING OF THE CENTRAL GEOLOGICAL PROGRAMMING BOARD HELD AT NEW DELHI ON 25<sup>th</sup> -26<sup>th</sup> AUGUST, 2010**

<b>47.0.00</b>	The 47 <sup>th</sup> meeting of the Central Geological Programming Board (CGPB) was held on 25 <sup>th</sup> – 26 <sup>th</sup> August 2010 at the NASC Auditorium, ICAR Complex, Pusa, New Delhi. Simultaneously with the Meeting, an exhibition was organized and the theme of the exhibition was Natural Resource Assessment (Mission-II) of Geological Survey of India and other sister organisations. Shri B.K. Handique, the Hon'ble Union Minister of Mines and DoNER, Government of India could not grace the opening ceremony as well as the inauguration of the Exhibition due to pressing engagements which called for his presence elsewhere. Shri S. Vijay Kumar, Secretary to the Government of India and Chairman, CGPB inaugurated the Exhibition and chaired the meeting. A list of Members / Participants of the 47th meeting of the Central Geological Programming Board is annexed as Annexure – I.
<b>47.1.00</b>	<b>INTRODUCTION BY THE MEMBER SECRETARY, CGPB.</b>
47.1.01	Dr. Prabhas Pande, Deputy Director General (Policy Support System), Geological Survey of India (GSI), CHQ and Member Secretary, CGPB welcomed Shri S. Vijay Kumar, Secretary to the Govt. of India, Ministry of Mines (MoM) and Chairman CGPB; Shri S. K. Srivastava, Additional Secretary, MoM; Shri N. K. Dutta, Director General (Acting), GSI; Shri Jaswant Singh, Senior Deputy Director General, GSI; all the participating members of the CGPB which included representatives from State and Central Government departments, PSUs and Private Entrepreneurs and other participants.
47.1.02	Member Secretary, emphasized on the fact that Central Geological Programming Board had been functioning continuously since 1966 and was instrumental in formulating integrated geological programming of the country. He described the CGPB meeting as the forum for achieving participation of all concerned with the earth science domain activities of the country. It functioned through its Committees, focused on specific sub-domains, and requested all to actively participate and interact during the committee meetings.
<b>47.2.00</b>	<b>WELCOME ADDRESS OF THE DIRECTOR GENERAL, GSI</b>
44.2.01	Shri N. K. Dutta, Director General (Acting), GSI extended warm welcome to Shri S. Vijay Kumar, Secretary, MoM, Govt. of India, and Chairman CGPB; Shri S. K. Srivastava, Additional Secretary, MoM; Shri Jaswant Singh, Senior Deputy Director General, GSI; representatives from State and Central Government departments, PSUs, Academicians and Private Entrepreneurs.
47.2.02	Shri Dutta mentioned about the Exhibition being put up by the GSI and other participating agencies at the annex hall of the meeting which he accredited to the inspirational instance of the Secretary, MoM. He reiterated his special welcome to the Additional Secretary, MoM to his very first CGPB Meeting.

<b>47.3.00</b>	<b>RELEASE OF ANNUAL REPORT OF GSI</b>
47.3.01	Shri S. Vijay Kumar, Secretary, MoM, Govt. of India, and Chairman CGPB released the 'GSI ANNUAL REPORT, 2009-2010' GSI Records, Vol.144, Part 9. In this context Dr. Prabhas Pande, Deputy Director General (PSS), GSI and Member Secretary, CGPB mentioned that GSI had been treading the path recommended by the High Power Committee, set up for strengthening of GSI, and the activities of five Missions and three Support Systems of GSI in 2009-10 (till June, 2010) had been brought out as a publication. He also informed the House that, henceforth, 'GSI ANNUAL REPORT' would be published every year as GSI Records.
<b>47.4.00</b>	<b>ADDRESS OF SHRI B. K. HANDIQUE, HON'BLE MINISTER OF MINES AND DEVELOPMENT OF NORTH EASTERN REGION</b>
47.4.01	Hon'ble Minister of Mines & DoNER, Shri B. K. Handique could not grace the inaugural session of the Meeting, as scheduled earlier, due to pressing engagements elsewhere. He sent his written 'Inaugural Address', which was read by Shri S. K. Srivastava, Additional Secretary, MoM.
47.4.02	Shri Srivastava, at the beginning, mentioned that he joined the MoM 'just in time' and felt happy about the exposure he was going to have through such an important meeting at the very beginning of his present stint in the Ministry. He also expressed his appreciation for the accompanying Exhibition and specifically mentioned about two features, i) the quality and depth of the data presented and ii) the enthusiasm of the participating officers/scientists which had impressed him immensely.
47.4.03	Shri Handique, initiated his written speech by describing GSI a premier Geoscientific Institution which had contributed immensely to Indian Geoscience and augmented national resources. He specifically mentioned the efforts of GSI officers in the <b>recent Leh cloudburst and hoped that their detailed studies would help in selecting sites for the rehabilitation of the distressed people.</b> [Action: GSI]
47.4.04	Shri Handique stated that in the light of 'National Mineral Policy 2008' the operations of Organizations like GSI, IBM and State Directorates of Mining and Geology needed to be strengthened and synergized. GSI's recent efforts in the fields of capacity building of the other stakeholders and Quality Management initiatives were specially appreciated. He hoped that the GSI's programmes would be prioritized in line with the national policy goals and the output of these programmes would meet the highest quality standards so that these might enable unhindered private investment flow in the very crucial mineral sector. He emphasized on the rekindled partnership of GSI with the various Central and State organizations and the role of CGPB in it. Augmenting such partnerships and extending similarly to other stakeholders were the need of the hour, he opined. In this process only, he wished, <b>CGPB could truly turn into 'National Geological Programming Board'</b> . He concluded with the remark that the planned change in FSP format of GSI from XII plan onwards to coincide with the financial year would lead to better planning for the field season and more productive field work.
<b>47.5.00</b>	<b>Release of publications of Northern Region, GSI and Interactive Map CD</b>

	<b>by the Mission-III, GSI</b>
47.5.01	Shri S. Vijay Kumar, Secretary, Ministry of Mines, Govt. of India, and Chairman CGPB, released two publications from Northern Region, GSI, the first one 'Neotectonic and Isoseismal Atlas of North India', GSI Misc. Pub. No.66 and the second one 'A Compilation on Physico-mechanical properties of Soils, Rocks and Aggregates tested in Geotechnical Laboratory' GSI Bulletin Series 'C' No.8. The Secretary, MoM also released the 'Interactive CD containing 1:2 Million Geological Map of India', compiled and prepared by the Mission-III, GSI. It was informed that the CD would be made available free of cost to the users on demand placed to the Mission-III, GSI and the map was also available in the GSI Portal.
<b>47.6.00</b>	<b>ADDRESS OF THE CHAIRMAN, CGPB</b>
47.6.01	Shri S. Vijay Kumar, Secretary, Ministry of Mines, Govt. of India, and Chairman CGPB, while initiating the Chairman's address, took the opportunity to thank the Hon'ble Minister of Mines for his valuable guidance and constant support to the reform and restructuring of GSI. He then laid out the ambit of next two day's discussions as a) the geoscientific activities of GSI in the forthcoming field season, in particular, with the broader canvas b) the measures being taken up at the instance of HPC report to invigorate the geo-scientific studies in the country as a whole.
47.6.02	Shri Vijay Kumar, at the outset, described the accompanying exhibition event as an indicator of the new mood in the geoscientific community to forge closer relationships with GSI. Next time, he promised, the other States and National institutions also would be asked to participate.
47.6.03	The Chairman, then, elaborated on the role of Ministry of Mines in formulating the policy decisions in the field of geo-scientific activities, mineral resources and related environment changes, oncoming climate change threats, and forging of geo-scientific partnership. The implementation of these policies was only possible with the active co-operation of various stakeholders, he opined. Shri Vijay Kumar thanked, especially, NHPC, NIRM, NDMA and TAMIN for their presence in the meeting, as 'Special Invitees' at a short notice and the State DGMs, who agreed to put up their activities in the forum later.
47.6.04	Shri Vijay Kumar elaborated on the aspect of restructuring of GSI, which he thought was gathering momentum. He observed that in the last one year, Missions and Support Systems had got established; integration of Coal, Marine and Airborne with Regions was slowly picking up pace; HR position in GSI was improving with higher rates of induction at JTS level, training & capacity building systems were slowly getting built up, with limited progress in establishing Regional Training Institutes; and GSI Portal, being one of the success stories of GSI and now one of the best among the National geospatial websites, needs for a plan to include NGCM data even at 'progress report' and 'interim report' stages. However, <b>the areas where GSI still need to improve, include, inclusion of 1:50k map service and related work under Phase III of the Portal which was getting delayed; acquisition of Heliborne sensors, Ocean going research vessel as a replacement to</b>

	<p><b>Samudra Manthan, and a new Geotechnical Vessel and Coastal Launch and replacement of TOASS which also were delayed; NGCM ought to have already been made the flagship programme of GSI, he opined. He felt that the new model of Geomorphological mapping programme in collaborative mode was setting up the new paradigm.</b></p> <p>[Action : GSI]</p>
47.6.05	<p>Shri Vijay Kumar then went on setting the tone of the congregation by putting emphasis on intensification of exploration activities for the deficient mineral commodities and finding of ways and means for utilization of low-grade ores. These activities, he explained, would require two basic areas to be overhauled and augmented, a) application of latest technology and b) human resource development efforts for apt application of the technology. He, then, enumerated the steps initiated in GSI, in the wake of the HPC report, in the above two fields and hoped that the processes would gather steam in near future and bear fruits.</p>
47.6.06	<p>He further described GSI as ‘a one-stop reference centre for geo-scientific data’ and in this regard the GSI Portal was being upgraded, aided by continuous encouragement from the Ministry, with huge amount of technical reports, maps and other useful data. He urged the user communities to take full advantage of it and do their bit of value addition. He outlined the huge amount of more data poised to be included in GSI Portal in its Phase-III form. He then reaffirmed the need of balancing the GSI activities between ‘socially beneficial scheme’ and ‘basic research’ and accounted encouragement and promotion of specialization through strengthening and upgradation of GSITI as the step towards that direction. This, coupled with the regular induction of geoscientists in GSI, in his opinion, should be able to achieve the desired goal.</p>
47.6.07	<p>The Chairman then shifted to another very important arena of HPC recommendations – Quality assessment and management. As per him, the issue of ‘Quality’ as an attribute in the abstract would really become a kind of ‘scientific integrity’ in the case of GSI. He believed that a lot had to be done to improve quality in all the processes, services and products, and the new Quality Management Initiative of GSI needed to be internalized in every aspect of GSI, whether it would be its Reports and publications or meeting agenda and papers or the way a conference like the CGPB would be held. He hoped that the recently set up Quality Management Cell and a Quality Management Committee would be able to impart impetus towards that objective and also would help in reassessment of GSI’s capabilities, identify gap areas and suggest measures to improve the quality of services and products. Extending the thoughts logically from the quality of work to publications of scientific articles, he opined that a system based on performances needed to be devised that would nurture academic excellence and encourage the young minds to raise the standard of work and the quality of the output of the institution. <b>He found several policy gaps in the existing system, such as, a) Policy on publications by GSI scientists in Scientific Journals, b) Policy on participation in national and international</b></p>

	<p>seminars, c) <b>Policy on defining areas for specialization and encouraging specialization for the purpose. He reiterated that by framing and implementing these policies the Nation would be directly benefited.</b></p> <p>[Action : GSI]</p>
47.6.08	<p>While mentioning the recent important new initiative, regarding the change in the Field Season Programme, he advised GSI to follow through that in all sincerity. The change in the Field Season Programme from April to March starting from the XII Plan Period had a number of advantages including more field days and better scope for planning (including HR movement during transfer season prior to FSP, etc.), but the change in FSP would really present an opportunity, as per him, to introspect for what we needed to do to improve quality of our field work and how to maximize knowledge and expertise in the process, and he believed that a more open, inclusive and interactive process at Stage Review and Term Review would really be the key to improving the quality of outcomes.</p> <p>[Action : GSI]</p>
47.6.09	<p>The Chairman then took the opportunity of the National forum to inform that the Ministry had recently issued fresh guidelines for processing the cases under MMDR act that envisaged enhanced role of State Governments in carrying out adequate verification of the applicants, the filed PL data to establish mineralization in ML cases and relaxation of the area limits for PL/ML.</p>
47.6.10	<p>He then cited the two recent MoUs signed by GSI with TAMIN and CGWB, exemplifying the newly ushered era of partnerships which, he thought, would definitely result in augmenting mineral and groundwater resources, respectively, in the country. The initiation of International collaboration programmes with the Namibia, Chile, Argentina, Province of Ontario-Canada, China and Mongolia in recent times, as per him, also manifested our commitment to exchange geoscientific inputs with the outer world and reiterated our commitment to furtherance of the limits of scientific knowledge beyond the border of the Nation.</p>
47.6.11	<p>Shri Vijay Kumar concluded with his suggestions regarding the future evolutionary morph of CGPB, in the form of the '<b>National Geological Programming Board</b>', which was also the wish of the Hon'ble Minister. <b>GSI needed to plan for participation and holding of International Seminars, Workshops and Conferences; not only for GSI scientists but also for all stakeholders in geoscience, particularly those who are the regulars of CGPB so far, as it would depict a) the ability to participate and organize as a barometer of GSI's health, b) it would give momentum to the geoscience movement; and last but not the least c) it would really build the geoscientific partnerships that we had all been talking about.</b></p> <p>[Action : GSI]</p>
<b>47.7.00</b>	<p><b>CONFIRMATION OF THE MINUTES OF THE 46<sup>th</sup> MEETING HELD IN NEW DELHI ON 11-12.02.2010</b></p>
47.7.01	<p>The minutes of the 46th CGPB meeting held in New Delhi on 11-12.02.2010,</p>

	already circulated to all members of the Board, was approved.
<b>47.8.00</b>	<b>ADDRESS OF THE DIRECTOR GENERAL, GSI</b>
47.8.01	Shri Niteesh Kumar Dutta, Director General (Acting), GSI initiated his speech by providing historical background of GSI's coming into existence since 1851 and a short account of its early activities. He, then, delved into the present and termed the ensuing FSP as unique in the annals of GSI as it would be for a period of one and a half years for making a switch over from the existing field season period of October-September to April-March with the view to make the F.S. commensurating with the financial year. He mentioned the ongoing reorganization of GSI, in the wake of the HPC report, which manifested in the re-orientation of the GSI into Mission – Region Hybrid Matrix from the Field Season 2009-10, comprising 5 Missions, in turn supported by 3 Support Systems. The programmes would be executed through implementation machinery i.e. the 6 Regions namely: Northern, Eastern, Southern, Western, Central and North Eastern. Thus, the various functions in GSI had been merged into Missions and the execution remained with the Regions. In the new system the Missions would be responsible for planning activities, giving targets to the Regions and State units, coordinating, monitoring of performance and providing sectoral scientific and technical reports. The Support Systems would be responsible for the internal management and supporting the Missions and Regions. The Missions were namely Mission-I Baseline Geoscience Data; Mission-II Natural Resource Assessment; Mission-III Geoinformatics; Mission- IV Fundamental & Multidisciplinary Geoscience and Special Studies and Mission- V Capacity Building & Training. The Support Systems were, S&T Support System; Administrative Support System and Policy Support System.
47.8.02	The Director General (Acting) then mentioned about the GSI's recent foray into geoscience partnerships, such as, the project for National Geomorphological and Lineament Mapping on 1:50,000 scale of three years' duration which was taken up, with GSI and ISRO as the nodal agencies. He reported that the entire work was to be carried out through out-sourcing and 32 partner Institutes under the control of National Remote Sensing Centre (NRSC) as working centers had been selected and so far NRSC had signed MOU with 12 partner Institutes. The partner Institutes had completed interpretation and preparation of 108 nos. of maps. He also mentioned another new field that GSI had opened was the Hyperspectral Survey for mineral exploration. The advent of the Hyperspectral Imaging Systems had helped to generate high resolution (both spectral and spatial) data and was being used for large scale geological and mineral belt mapping. Identification and delineation of hydrothermal alteration zones had long been an important task of field and laboratory scientists. Multispectral remote sensing using Landsat TM/ETM+ data would be useful for recognizing these altered rocks.
47.8.03	Regarding the addition of new technological fronts in GSI arsenal, Shri Dutta referred to the newly acquired Heliborne Survey System where the training of officers on GT-1A Gravimeter, TDEM, Magnetic, Hyperspectral and

	<p>Radiometric systems to be used with the Heliborne Survey System had been successfully completed. The integration of the sensors to the airborne platform were underway and the first Heliborne survey had been planned over a test area, which had already been aerogeophysically surveyed and known for mineralization for testing the response of different sensors. Other fronts of modernization of infrastructural augmentation included one sophisticated Ocean Going Research Vessel (OGRV) in place of R.V. Samudra Manthan and another Geotechnical Research Vessel (GTRV) with drilling capacity upto 30m depth whose procurement process had reached at advanced stage. For OGRV, request for proposals (RFP) had been sent to the ship-builders and the final selection of the shipyard would be done after their submission of the RFP document. For the Geotechnical vessel, agreement with the Foreign Consultant M/s Alion Science and Technology, USA had been finalized.</p>
47.8.04	<p>While enumerating the recent drives in GSI for opening new vistas he, however, raised the issue of shortage of technical manpower less of the order of 43.75% to 63.33%, which had been impeding the growth process. But he hoped that as the Ministry was taking requisite steps for induction of scientific manpower the particular problem would get mitigated in near future. He also mentioned of the regional core libraries being set up at Southern Region - Hyderabad, Eastern Region – Bhubaneshwar, Western Region – Akwali and Northern Region – Lucknow. The cores of erstwhile Coal Wing and AMSE Wing would be preserved in the respective Regional Centres where these erstwhile Wings conducted the investigations. He informed the house that the National Drill Core Repository, GSI, Central Region, Nagpur was inaugurated on 30.6.2010.</p>
47.8.05	<p>The Director General then presented the ‘ACTIVITIES AND ACHIEVEMENTS OF GSI DURING FIELD SEASON 2009-10’, with the following significant highlights.</p>
47.8.06	<p><b>Mission - I</b>  <b>Systematic Surveys</b>  i) Out of the total mappable area of the country, which is 3.146 million sq km, 3.093 million sq km has so far been covered by systematic mapping bringing the total coverage to 98.31%. ii) During the XI plan period, an area of 22,287 sq km has been covered (up to June 2010) under Specialized Thematic Mapping bringing the total coverage to 1,47,795.50 sq. km since the initiation of the programme. iii) In “Geochemical Mapping”, collection of samples from about 297 toposheets will be completed till the end of XI Plan (March 2012) and the samples generated up to September 2010 will be analysed for 59 elements. iv) A total of 1,26,348 sq km area was completed by ground gravity survey and magnetic survey on 1:50,000 scale covering about 112 toposheets (full) and 50 toposheets (part) up to the field season 2008-2009. v) In Airborne Geophysical Surveys a total of 4, 90, 923 line km over an area of 2,86,040 sq. km. was covered upto June 2010 by deploying multi sensor systems. vi) Under Marine &amp; Coastal Survey, GSI has completed seabed mapping of 1,28,480 sq km out of 1,50,000 sq km in 5 km x 2 km grid within Territorial Waters and 18,48,318 sq km out of 18,64,900 sq km in the EEZ</p>

	<p>beyond Territorial Waters on reconnaissance scale of 40 km x 20 km grid. The total EEZ coverage including TW is 19, 76,798 sq km out of a total EEZ area of 20,14,900 sq km.</p>
<p>47.8.07</p>	<p><b>Mission –II</b>  <b>Gold:</b>  i) Exploration for gold in Ajjanahalli Block-C, Tumkur district, Karnataka has given a resource of 0.0995 million tonnes of gold at a cut off of 1 g/t and average grade of 2.17 g/t. On bringing the cut off down to 0.5 g/t the resource is 0.213 million tones at an average grade of 1.45 g/t.  ii) In Delwara West Block, a resource of 1.62 million tonnes of gold ore has been augmented during the FS 2009-10 at cut off grade of 0.2 and 0.5 g/t and 1.0m stoping width. Thus, the total gold ore inferred resource is 43.73 million tonnes with average grade of 1. 87 g/t Au.  iii) In Sindauri East Block, Ranchi district, a total inferred resource of 3.10 million tonnes (333) having an average grade of 1.81 g/t Au at 0.5 g/t cut off has been estimated.  <b>Diamond:</b>  Two kimberlite bodies have been located about 300m south of village Turkandoni in Raichur district, Karnataka through indicator mineral survey followed by geological traverses and pitting.  <b>Iron Ore:</b>  i) In Ghoraburhani- Sagasahi area, Sundergarh district, Orissa. 4.61 million tonnes of indicated iron ore resource (332) with an average grade of 61.97% Fe, at cut off grade of 55% Fe has been estimated. Thus in Ghoraburhani block so far a total of 13.71 million tons of indicated iron ore resource (332) has been estimated.  ii) In Taranagar and Rajpura blocks in parts of Sandur Schist Belt, Bellary district, Karnataka was carried out and rich concentration of Iron ore has been found. iii) In Bayyaram-Nilavantha-Sitanagar area in Khammam district, Andhra Pradesh, ore bodies over a strike length of more than 10km have been identified.  <b>Manganese:</b>  A resource of 0.07 million tonnes (333) of manganese ore with an average grade of 30.44% of Mn, has been estimated so far at 20% Mn cut off grade in Damurda block. In Lasarda-Pacheri-Bolani and Damurda area till date 14.84 million tonnes (333) of manganese ore has been estimated at 20% Mn cut off grade.  <b>Limestone:</b>  In Miniun-ki-Dhani area of Jaisalmer district, Rajasthan a resource of 235.285 million tonnes of SMS grade limestone with 53.54% CaO and a resource of 336.077 million tonnes of cement grade limestone with 50.07% CaO have been assessed.  <b>Coal &amp; Lignite:</b>  An additional inferred resource (333) of 3420.98 million tonnes of coal and 0.51 million tonnes of lignite has been assessed during FS 2009-10 (up to June 2010). The total geological resource of the country stands at 276.8</p>



	billion tonnes as estimated till 01.04.2010 and that of lignite is 39.9 billion tonnes as on 01.04.2010.
47.8.08	The Director General then informed the house that GSI and Tamil Nadu Minerals Ltd. (TAMIN) had signed a MoU in the august presence of Hon'ble Chief Minister, Government of Tamil Nadu and the Secretary, Ministry of Mines, Government of India on 01.07.2010 at Chennai for the exchange of scientific and technical knowledge on exploration and exploitation of Platinum Group of Elements (PGE) and other minerals in Tamil Nadu. Another MoU had been signed by GSI with CGWB on 8th July 2010 on geoscientific data sharing and co-operation in the field of groundwater, subsurface geology and hydrology in presence of Smt. Shanta Sheela Nair, the then Secretary, Ministry of Mines, Shri U.N. Panjiar, Secretary, Water Resources, Government of India and Shri S. Vijay Kumar, the then Special Secretary, Ministry of Mines.
47.8.09	<p><b>Mission- III</b></p> <p><b>Dissemination of Information:</b></p> <p>i) 4298 maps of 1:50K have been uploaded on to the GSI portal till June 30, 2010. ii) Out of 334 sheets of Geological Quadrangle Maps amenable to compilation and dissemination, 292 have been published till date. One Quadrangle map is under printing. 15 more maps are under various stages of scrutiny and finalization. iii) Out of 30 Mineral Belt Maps of Rajasthan compilation of 14 maps has been carried out. Five maps of ER and one map of Andhra Pradesh have been completed and uploaded into portal during FS 2009-10. iv) ERO has published and uploaded sixteen DRMs on to the GSI portal. v) Till date, a total of 26 sheets of EEZ maps, one Entire EEZ map of India and two Territorial Water Maps have been printed. vi) 14 publications have been released that includes 4 unpriced publications, and 16 more publications are in the pipeline. vii) Out of the 32,264 nos. of unpublished reports, more than 4000 reports have been uploaded. viii) The endeavour to build an organizational information infrastructure comprising the GSI NET and the GSI Enterprise Portal is completed. The Information Infrastructure i.e. GSI Net is fully operational in all the offices of GSI located across the country. ix) Creation of theme-based geoscientific database continued in distributed centres during the current field season and forty-one degree sheets are in various stages of completion. ix) Steps have been taken to systematically archive the voluminous geochemical data generated through National Geochemical Mapping programme. Creation of spatial layers and related workflow for migration of NGCM data into portal and display by Map Service has been initiated.</p>
47.8.10	<p><b>Mission – IV</b></p> <p><b>Laboratory Studies, Research and Development:</b></p> <p>i) Petrographic studies in respect of 12 coal samples pertaining to CBM investigation have been carried out during the period in the Coal Petrology Laboratory, Kolkata. Testing for determination of in-situ gas content has been completed in two boreholes in Talchir and Mand-Raigarh Coalfields while the</p>

	<p>same is continuing in one borehole in Ib River Coalfield. ii) Palaeontological and palaeobiological studies for stratigraphic correlation, environmental assessment, palaeogeographic implications etc. have been carried out as part of the research work being carried out by GSI.</p> <p>iii) During the period the Geochronology and Isotope Geology Division took up research projects in Karnataka, Bihar and Orissa and in the caves of Meghalaya for geospeological studies. Besides, processing and analysis of samples for age determination have also been carried out. iv) A MoU has been signed with NCEMP, Allahabad to carry out Petro-mineralogical and high temperature - pressure partial melting experimental studies of CM2 Chondrite. v) In the field of Deep Geology GSI has signed a MoU with DeBeers India Pvt. Ltd. to carry out Magneto Telluric survey over some parts of the Indian Cratons to image the Sub-Continental Lithospheric Mantle.</p> <p><b>Specialized Investigations:</b></p> <p><b>Geotechnical Surveys</b></p> <p>42 items of geotechnical and engineering geological studies through 179 investigations were undertaken related to civil engineering projects for water resource development, communication and miscellaneous projects in almost all the states of the country as well as in neighboring countries.</p> <p><b>Landslide Hazard Studies</b></p> <p>i) GSI is the Nodal Agency for any type of Landslide Investigation in the country and to develop a comprehensive strategy for effective mitigation of Landslide Hazards. GSI assisted NDMA in the preparation of a draft document on the National Disaster Management Guidelines on Landslides. As a responsible nodal agency, immediately after receiving the report of massive disaster in Leh, Jammu &amp; Kashmir due to the cloud burst, the officers of GSI, Northern Region immediately rushed to the area to study the nature of disaster and to report on the event. ii) Landslide Hazard Zonation on Macro scale (1:25,000/50,000) has been carried out and area covered in different river basins of India: 55 955 sq. km, of which 54725 sq. km had been covered up to FS 2008-09 and 1230 sq. km has been covered in FS 2009-10. Along important road corridors: 5174 L. km has been covered of which 5134 L. km had been covered up to FS 2008-09 and 40 L. km has been covered in FS 2009-10. iii) Eleven townships have been covered by Landslide Hazard Zonation on Meso scale (1:5000/10,000). iv) Landslide Inventory of all the old and fresh landslides has been taken up and so far inventory of about 1500 landslides has been completed and their upgradation is under progress. v) So far more than 1000 landslides have been covered by site specific studies of landslides. GSI has undertaken two Research Projects in collaboration with ITC, Netherlands for monitoring of a few conspicuous landslides with or without instrumentation, with a view to develop an Early Warning System for saving lives and property.</p>
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<p><b>Earthquake Geology</b></p> <p>i) The work carried out under the Seismological Monitoring includes detection, recording of earthquakes by the network comprising three Seismic observatories near Gangtok, Agartala, and Itanagar and release of quarterly bulletins and information to the respective regional offices, state administration etc. ii) Three items of active fault mapping and five items of seismic microzonation have been undertaken in addition to other earthquake related studies. iii) The permanent GPS station at Lucknow (established by DST since 1999) is engaged in round the clock monitoring of GPS data. The data are supplied regularly to National GPS Data Centre, Survey of India, Dehradun for further processing/interpretation.</p> <p><b>Environmental Geology &amp; Medical Geology</b></p> <p>Geological Survey of India took up 15 items pertaining to Environmental Geosciences and they include Environmental Geology (3 items), Medical Geology (2 items), Climate Change Impact and Fragile Eco-system (2 items), Glaciology (5 items) and 3 items on Syn-Exploration Baseline Data Generation (SEBDG) on geoenvironmental aspects in connection with exploration for coal.</p> <p><b>Glaciological Studies</b></p> <p>i) The detailed glaciological study on Hamtah glacier in Chenab basin was continued during the summer of 2009, for the ninth consecutive year. The average specific balance of Hamtah glacier was found to be (-) 1.46 m per year and the work would be continued in the current FSP. ii) Studies on identification of signatures of palaeo-glaciation, change in climate, availability of water resources and future scenario in Ganga basin, India, reveal that Chipa, Meola, Jaundar Bamak, Jhajju Bamak and Gangotri glaciers have shown marginally faster recession before eighties as compared to the later period.</p> <p><b>Arctic / Antarctic Studies</b></p> <p>i) GSI was inducted in the Arctic Expedition of National Centre for Antarctic and Ocean Research (NCAOR) in 2008. Since then, the item on parameterization of Glaciers in Northern Hemisphere to variations of Climate-Inter Annual and Intra Annual is being carried out by GSI to understand polar glacier teleconnection and the processes controlling these interactions. Shri Rajesh Asthana, Senior Geologist, GSI has been selected as Voyage Leader of XXIX Indian Antarctic Expedition (IAE). ii) GSI has been pursuing glaciological programme since the very first Antarctic expedition. The observations made during the XXIX Antarctic Expedition have substantiated the recessional trend of the monitored Dakshin Gangotri glacier.</p>
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	<p>The observed recession during FS 2009–10 was 0.76 m. iii) Under the aegis of Integrated Ocean Drilling Program (IODP) one officer from GSI participated in an expedition to Wilkes Land. During this expedition 11 shallow to deep boreholes were drilled from seven different locations extracting a cumulative length of ocean bottom sediments amounting to 2000m.</p>
<p>47.8.11</p>	<p><b>Mission – V</b></p> <p><b>Human Resource Development:</b></p> <p>In the quest to transform the Geological Survey of India Training Institute (GSITI) at Hyderabad into a ‘Centre of Excellence’ for providing high quality cutting edge training/knowledge delivery with state-of-the-art facilities the Institute has embarked on a programme on capacity building covering departmental candidates, officers of various State Governments, students, research scholars and faculties from Universities and geoscientists from the private sector. Six Regional Training Institutes (RTI) have been operationalised at the six Regional Headquarters under GSITI. The Field Training Centres of GSITI located in different parts of the country (FTCs) shall be conducting field based courses on different themes of earth sciences. Three new FTCs at Kothagudem (Andhra Pradesh), Jabalpur (Madhya Pradesh) and Saketi (Himachal Pradesh) have been established to provide training in different aspects of geoscientific studies in the areas known for their geological significance. For the F.S. 2009-10, 62 programmes, in different disciplines, have been taken up. Out of these, 25 courses have been programmed for the Mission Headquarters which include 4 International courses for the participants covered under Indo-Africa Forum Summit, 3 Induction Level (Orientation) courses (one each for Geologists (two batches), Geophysicists and Chemists), 5 Special courses (scientific), 3 other Scientific and Technical courses, 5 Management courses and 5 courses for Training for Trainers (ToTs) by outsourcing in reputed institutes. Out of these, 2 courses are sponsored by ISRO for the benefit of University/Institute teachers, research scholars and geoscientists from other government organizations. GSITI has been given affiliation by Osmania University, Hyderabad for post - P.G. Diploma course in Geoinformatics in Earth Science.</p> <p><b>International Activities</b></p> <p>During the period concerned, eight IGCP projects are in operation. The 35th INC meeting was held at GSI, Kolkata on 28th January 2010. Thirty-six scientists participated in the meeting. Three new IGCP projects were approved in the meeting. GSI continued its interaction with other countries to explore possible bilateral cooperation and collaborative programmes. Several collaborative programmes / MoU’s were signed between India and Canada, the Netherlands, USA, Australia, China, etc. covering mineral exploration, environmental geology, landslide monitoring, research projects, etc.</p>

	<p><b>Other Activities</b></p> <p>GSI took part in different exhibitions / book fairs essentially to interact with and enlighten the general public on various aspects of geoscience.</p> <p><b>Internal Resource Generation</b></p> <p>Several MoUs were signed or are in the offing. GSI has generated Rs. 12,89,24,126.00 +\$ 19.00 during Financial Year 2009-2010.</p>
<p><b>47.9.00</b></p>	<p><b>Review of action taken on minutes of 46<sup>th</sup> meeting of CGPB</b></p>
<p>47.9.01</p>	<p>The status of the follow up action on the decisions of the 46<sup>th</sup> CGPB was sequentially placed before the house by the Member Secretary, CGPB for discussion.</p>
<p>47.9.02</p>	<p>On para 46.3.04 and 46.3.06, regarding special emphasis needed to be given by the States for exploration and mining of offshore resources, representative of Tamil Nadu State Govt stated that the mineral rights of the land were vested with the respective State Governments whereas the mineral rights in the offshore area were vested with the Government of India. In India the Territorial Sea and Exclusive Economic Zones were excluded from the definition of “land”. The Mines and Minerals (Development and Regulation) Act, 1957 had been enacted by the Union of India for the development and regulation of mines and minerals in the land. Government of India enacted the “Offshore Areas Mineral (Development and Regulation) Act, 2002” to provide for the development and regulation of mines and minerals in the territorial waters, continental shelf, exclusive economic zones and other maritime zones of India. This Act applied to all mineral deposits in the offshore including any mineral prescribed in a notification except mineral oil and hydrocarbons. Government of India was the sole administrative as well as the granting authority for any mineral concession in the subject areas, and the State Government was not empowered to entertain application for mineral concessions and receive royalty in respect of minerals in the offshore area. Therefore, the State governments might be delegated with powers to grant mineral concessions and to get a due share of the royalty due to Government of India in respect of the mineral excavated from the offshore area. Representative of Andhra Pradesh also concurred with the view. The representative of Orissa responded that the State is not well equipped with requisite infrastructural facilities to undertake exploration and exploitation in offshore region of its 480 km long coastal stretch. The Karnataka representative stated that during their 44th SGPB meeting, it was requested that GSI Marine Wing may take up studies of offshore sand deposits of West Coast Karnataka. The Secretary, MoM and Chairman, CGPB replied that though IBM was empowered for awarding licenses in offshore areas and the present year’s process of awarding was in progress and off-shore areas remained technically centrally controlled <b>the States should concentrate on beach sands, placer minerals, etc. with the help of GSI and radioactive</b></p>

	<p><b>minerals with the help of AMD.</b> The AMD representative commented here that except monazite, other radioactive mineral concessions were under the purview of States. GSI responded that around thirty-five programmes under Marine and Coastal surveys (Mission –I) had been proposed during F.S. 2010-12.</p> <p>[Action : Concerned States / AMD /GSI]</p>
47.9.03	<p>On para 46.6.07, regarding collaboration of GSI with IBM for resource inventory and Tenement Registry and assessment of resources in UNFC system the Member Secretary responded that <b>GSI had embarked on converting its exploration reports from the FS 1998-99 to 2008-09 to UNFC compliant format and it would be completed by September 2011.</b> The information on UNFC compliant resource categories for the period 2005 onward had been provided to IBM on July 2010 for the National Mineral Inventory. A renewed thrust would be given to this programme to prepare a ‘mineral inventory’ during the XII plan. <b>GSI had also been identified as the nodal agency for archiving of the RP reports and dissemination of the RP report data after the lock in period of two years.</b> The Chairman commented that all exploration reports henceforth would be UNFC compliant format.</p> <p>[Action : GSI]</p> <p>Then AMD raised the issue of the UNFC compliance of the private Lessees’ resources where the Secretary responded that it was IBM’s responsibility. The Maharashtra representative requested the IBM to give directions to Lessees in this regard. <b>In response to that IBM stated that they had issued directives in this regard to convert the resource data of Lessees in the UNFC compliant format.</b></p> <p>[Action : FIMI / IBM]</p>
47.9.04	<p>In relation to 46.7.02 regarding making the CGPB an effective instrument for partnership between GSI and State Departments and holding regular SGPB meetings, the Orissa representative requested GSI, Op. Orissa to take up exploration for PGM over two blocks in the western part of Sukinda Valley in close coordination and due logistic support. Further, there was a proposal to demarcate all the mineral bearing areas of the state where GSI had a greater role to play. DDG, Karnataka responded that Four field programmes were requested to the GSI. Out of four programmes, GSI had taken up two programmes for FS 2009-10 and two programmes for FS 2010-12, respectively. DGM, Maharashtra stated that they were already working in collaboration with GSI for Exploration of Manganese in Nagpur district of Maharashtra. The joint survey for occurrence of Gold &amp; PGE in Solapur &amp; Sindhudurg districts of Maharashtra had also been taken up. The analysis of samples collected from Solapur and Sindhudurg districts of Maharashtra for gold and PGE were submitted to GSI laboratory for analysis. The samples analysed had no traces of gold and the results were submitted to CGPB committee. The results of PGE were still awaited. Proposal for joint venture in Marine Geology in the Coastal areas of Maharashtra had been put forward</p>

	<p>for the next FS 2010-12. DGM, Jharkhand said that programme for exploration had already been submitted to GSI. DGM, Govt. of Himachal Pradesh mentioned that regular SGPB meetings were being held prior to the meeting of the CGPB and minutes of meeting were forwarded to the CGPB Secretariat for further action. It was further submitted that on the request of the State Government two programmes pertaining to Special Thematic mapping &amp; mineral exploration in collaboration with GSI had been approved in the GSI field season 2009-10 and work on the said items had been initiated. DGM, M.P. stated that three Field programmes were taken up in collaboration with GSI as decided in the 43rd SGPB meeting. However, the representative of DGM, MP expressed their desire to receive proper monthly progress report from the GSI. To this the HOD, CR responded that they were providing the secretary's summary and when the final report would be published they would send copy to the State DGM. However, on being insisted about a detail monthly progress report by the DGM, he suggested that <b>the project leader of the concerned project would submit a monthly report stating the achievement of the project during the period along with the extent of involvement of the associated geoscientist of the DGM and a copy of that would be sent to State DGM.</b></p> <p>[Action : GSI, CR]</p> <p>DGM, Chhattisgarh stated that SGPB were held in the month of July-August every year. Field Programme for the year 2010-12 was finalized in 10th SGPB meeting held on 12th August 2010. DMMG, Sikkim stated that it would place request to GSI as and when requirement was felt necessary. One collaboration programme with GSI had already been initiated i.e. Study of Tamze Lake in East Sikkim from F.S 2009-10. Two officers from the department would join GSI during field visit. On analysis of samples of DGM, UP for REE analysis, GSI, NR responded that the samples sent by DGM were analysed and report submitted to DGM, Uttar Pradesh.</p> <p>On the projects suggested by DGM, AP; GSI, SR responded that items under Mission I &amp; II for PGE in Tamil Nadu and Fullerene in Andhra Pradesh were proposed in Southern Region for F.S. 2010-12. On the subject of joint work between DGM and GSI, CGM, Chennai stated that all the four exploration items proposed by Department of Geology and Mining, Tamil Nadu for the field season 2009-10 was taken up by Geological Survey of India. The Department of Geology and Mining, Tamil Nadu had extended two Assistant Geologist's service for the collaborative work of "Investigation of PGE minerals in the ultramafic rocks of Sathyamangalam Group" and the work was under progress. DGM, Tamil Nadu and the state unit of Geological Survey of India were having a good operational relationship in carrying out the investigation programme. The representative of DGM, Jammu &amp; Kashmir, raised the issue of collaboration project on base metal exploration in Buniar, where they reported that work had not been initiated. The Dy DG &amp; HOD, NR responded as curfew was imposed when the scheduled joint traverse was initially planned, and later the GSI's effort to reschedule the</p>
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	<p>work in conjunction with the State DGM did not receive any response. He also requested the <b>DGM to provide the name and phone numbers of the participating geoscientists so that a joint work schedule could be devised. The Secretary, MoM suggested that the DGM could take up the work when ground situation improved under intimation to GSI, NR.</b></p> <p>[Action : DGM, J&amp;K]</p>
47.9.05	<p>On para 46.7.03 regarding bulk uploading of publication and post-2004 reports of GSI in the Portal DGM, Jharkhand stated that as Jharkhand was a new state, none of the reports of GSI was available with state DGM. Therefore, it was being requested to upload the geological report of iron, bauxite, limestone, graphite, granite and pyroxenite on priority basis on GSI PORTAL. The Member Secretary responded as saying that it was decided in the 46th CGPB meeting that uploading of all pre-1990 or 2004 reports would be part of Phase III Project of GSI Portal. However, no request for any specific report (circulated before 2004) had been received from the State Governments, which would be given priority for uploading in GSI Portal. The uploading status of unpublished reports of GSI in portal was elaborated. <b>The Additional Secretary, MoM, suggested that GSI could give the hard copies to the State, to which ADG, ER responded that they would supply the copies as soon as possible. DG, GSI requested the State to make a search in the abovementioned metadata database and let GSI know which reports they would like to receive on priority basis.</b></p> <p>[Action: DGM, Jharkhand &amp; GSI, ER]</p>
47.9.06	<p>Regarding para 46.7.05 and 46.7.06 for assessment of low-grade iron ore (+45%) in leasehold and freehold areas the Secretary, MoM opined that two separate strategies had to be prepared for lease hold and free hold areas. He further pointed out that i) for leasehold areas, IBM to go through the MCDR to see the rule position, the kind of direction that could be issued and how it could be enforced, and ii) with regard to freehold areas, it was for GSI to plan out its programme after reviewing earlier MI Reports and assessing the areas; extent of work to be done and its phasing. To the point no. (ii), the Member Secretary responded by saying that <b>a report was being prepared by GSI in this regard and it would be circulated by September end, 2010.</b></p> <p>[Action: GSI]</p> <p>In response to the suggestion no.(i) of Secretary, the representative of IBM clarified the rule as <b>it was the discretion of Lessee whether it wanted to reassess its area or not and it could get it done so by GSI or MECL, whoever it wanted. MCDR was silent on it and a strategy in this regard needed to be formulated.</b> Nonetheless, he added, IBM had issued letter in this regard to all the Lessees concerned to convert their exploration data to 45% cut off within two years time. At this place, the Additional Secretary intervened and opined that <b>a working group might be formed to deliberate and give report on it.</b></p> <p>[Action: MoM, IBM]</p>



	The Representative of Andhra Pradesh requested to take same kind of measure/devise rule for the mineral Alumina, to which the IBM responded that for taking similar steps for Alumina and Silica, would require time.
47.9.07	In response to Para 46.7.06, on the issue of assessment of low-grade iron ore (+45% Fe) in lease free non-forest areas to augment the iron ore resources, States participated in the discussion. Evaluation of future exploration programme on low-grade iron ore in freehold areas for both fresh as well as reassessment initiated by GSI after assessing the data from the available mineral investigation reports and other relevant documents. Representative of DGM, Jharkhand informed that they had taken forest clearance for initiating the investigation being taken up. ADG & HOD, ER informed that GSI and DGM, Jharkhand have a joint traverse and as a follow-up, GSI would be taking up an item during FS 2010-12. [Action: DGM, Jharkhand/ HOD, ER]
47.9.08	As regards Para 46.7.07, on States to ensure that approval for mining to be accorded in compliance with IBM guidelines, it was informed that for the new mining scheme the States were complying with the IBM guideline except for few. DGM, UP responded in 'action taken report' that they were not aware of new mining scheme of IBM. <b>AS (Mines) instructed IBM to send a directive to the state of U.P.</b> [Action: IBM /DGM, U.P.]
47.9.09	In relation to Para 46.7.08, on the issue of tenement registry GSI was responsible to make a database. GSI needed work plan of leaseholders. DGM, A.P. demanded that the leaseholders must prepare an inventory/report and submit it to IBM/GSI. GSI indicated that they could not authenticate the reports unless work plan has been given by the leaseholders who often submit a sketchy report on which no authentication can be made. <b>AS (Mines) advised that the guidelines for data collection criteria must be reviewed in consultation with HODs and GSI can nominate a nodal officer, posted at Nagpur, who will look after the data dissemination process.</b> [ Action: GSI]
47.9.10	Regarding Para 46.7.10 and 46.7.44, on the issue of slow pace of analysis of NGCM samples, <b>AS (Mines) wanted GSI to expedite the matter of recruitment of chemists on permanent /contractual basis.</b> [ Action: GSI]
47.9.11	On Para 46.7.11, regarding courses carried out for State DGM in the GSITI, it was clarified that in case number of nomination for participants was less than 8, the course was to be dropped with a request to DGM to take part in any of the module of OCG or any other regular courses. For RTI and FTC, GSITI are designing courses exclusively for State DGMs but due to lack of participants, many of the courses were to be dropped or merged with regular courses. On a query from AS (Mines), all the DGMs expressed their satisfaction on the number of courses and quality of the training. AS (Mines) enquired about the reason for not sending requisite nominations from State DGMs. GSITI expressed their readiness to formulate tailor made courses for the state DGMs.

	AS (Mines) suggested that while formulating MOU between GSI and State Govt./stakeholders/geoscience partners, capacity building components must be incorporated as an inbuilt integrated module. DGM, A.P. asked for mineral commodity specific courses. Shri N Das, CHQ outlined proposed 109 courses during FS 2010-2012 out of which average 15 courses from each six of the RTI are designed and each RTI will conduct training on geological mapping and mineral investigation.
47.9.12	On the issue of Para 46.7.13, regarding mining permission and grants to lessees and consequent information to the States, IBM informed that they had already issued Circular on that effect. The Circular unequivocally stated that in case of any change in mining plan by any leaseholders it was to be notified and communicated to the IBM and State Govt. DGM, A.P. illustrated the practice of illegal mining through dumps. IBM also agreed that miners often separate sellable part and non-sellable part amenable to beneficiation and stack those separately. DGM, Karnataka raised that IBM used to give approval for change in mining plan without knowledge of the States. Leaseholders enhance the capacity many fold with a quantum jump in production without having any permission from the State. <b>AS (Mines) instructed IBM to share the latest policy position with all the States.</b> [Action: IBM]
47.9.13	Regarding Para 46.7.21 on strengthening of State DGMs in geochemical mapping, feedback from most of the States had been received. CGM, Gujarat wanted appointment of a specialist for the chemical analysis. <b>AS (Mines) desired that same level of standardisation between all the States must to be ensured. In every MoU with the States there should be inbuilt component of capacity building.</b> [Action: GSI / States]
47.9.14	Regarding Para 46.7.23 and 46.7.27, on the issue of model coalmine in the State of Nagaland, Shri Mondal, Advisor (MOC) mentioned that MMDR act was not applicable in Nagaland and hence MOC has no control in the mining of coal in Nagaland. It was informed that Nagaland was developing its own policy for production of coal. DGM, Nagaland informed that they were formulating the policy seeking assistance from CMPDIL. Shri Mondal advocated that mines safety should be of prime importance in the policy developed by the State and mentioned about remote disposition of coalmines in the forest area of Nagaland. However, he expected that the reports of CMPDIL would be of help both for Nagaland and for Meghalaya. DGM, Meghalaya pointed out that they had framed a policy in tune with National Mineral Policy. DGM, Andhra Pradesh in this regard informed about A.P. Coal Policy and indicated provisions for the tribals where coal exists. AS (Mines) observed that until and unless a clear-cut policy is developed coal mining cannot be taken up in Nagaland. He also advised Director (Tech.), MOM to pursue with MOEF regarding density of borehole / sq. km. as per exploration startegy in the forest area. [Action: DGM, Nagaland /MOC /Director (Tech),MoM]
47.9.15	Pertain to Para 46.7.29 regarding the data sharing between GSI and CGWB,

	<p>the proposal of Ministry of Water Resources for a common repository of data was examined by CTEMPO. It was decided that the committee of CGWB and GSI members must meet together to fix the modalities of action plan as per the MOU for future work.</p> <p>[Action: CGWB/GSI]</p>
47.9.16	<p>In relation to Para 46.7.34 and 46.7.35, on supply of lignite data for the ILRIS Project, CMPDIL mentioned that it was agreed in 2004 that all the reports would be provided by GSI free of cost but due to the latest dissemination policy GSI was unable to provide all the reports and CMPDIL getting only the sponsor/promotional reports of GSI. CMPDIL said that they were interested in getting coal exploration reports of GSI's own programme not the promotional reports only. GSI explained that all the non-promotional coal exploration reports of GSI are available in the GSI portal. However maps with scales larger than 1:50,000 cannot be uploaded in the public domain as per the new data dissemination policy. MOM to suggest the mechanism on transferring larger scale maps from GSI to CMPDIL GSI clarified that the reports with maps larger than 1:50,000 scale could not be provided to CMPDIL due to dissemination policy and once MOM grants permission then only the reports would be handed over to CMPDIL. <b>AS (Mines) advised CMPDIL to write to Ministry of Mines through Ministry of Coal stating that they would not use GSI reports on commercial basis and MOM would take a decision in this matter.</b></p> <p>[Action: CMPDIL/ MoM]</p>
47.9.17	<p>Regarding Para 46.7.47, on the issue of maintaining a systematic core repository by GSI, Shri N Das, CHQ informed about the core repository and core library of GSI and mentioned about the Committee, which was looking after the issues of core sharing by the States. The report of the Committee would come out within December 2010. MECL indicated that they were in touch with GSI regarding the development of repository. Representative of DGM, M.P. mentioned that the State did not have capacity to provide all the cores but partly could provide cores to the GSI library. DGM, A.P. suggested that the leaseholders may be requested to contribute cores to the GSI library.</p> <p>[ Action: GSI / MECL /States]</p>
47.9.18	<p>As regards Para 46.10.23, on the issue of analysis of samples for PGE from the DGM, Manipur, DDG, NER informed that they had not received any samples from the State. IBM also indicated that they were ready to analyse samples if received. <b>AS (Mines) advised Regional HODs to invite the State DGMs stating the capability of GSI in the analysis of samples to give a support to the States. DDG, NER to interact with each individual States of NER inviting proposal of those States for chemical analysis of exploration samples in the Chemical Laboratory of GSI.</b></p> <p>[Action: DDG, NER]</p>
47.9.19	<p>In relation to Para 46.10.46 on the landslide studies in the Nilgiri area, GSI has an item of investigation up to September 2010. There was a proposal for joint work with DGM, Tamil Nadu for an inventory of landslide in the Nilgiri area. <b>AS (Mines) advised that the DGM, Tamil Nadu to be consulted and</b></p>

	<p><b>to be impressed upon to take up the work in right earnest.</b> [Action: DGM, Tamil Nadu /GSI]</p>
47.9.20	<p>On Para 46.10.47 regarding the occurrence of eclogite in NER, <b>DDG, NER was advised to interact with Geological Society of India for the exact location of the eclogite reported.</b> [Action: DDG, NER/Geol.Soc. India]</p>
47.9.21	<p>Regarding Para 46.11.02 pertaining to the holding of SGPB meetings, it was informed that 19 states have conducted SGPB meeting in recent past. The States which have not convened the meeting recently are Arunachal Pradesh, Meghalaya, Goa, Punjab, Uttarakhand, Rajasthan and Tripura. Representative of Meghalaya informed that in view of vacancy in the post of Commissioner of the Department no SGPB would be held in Meghalaya. [Action: All DGMs]</p>
47.9.22	<p>On Para 46.11.03 regarding the base document of the CGPB committees it was advised to resolve all the ambiguities and the documents are to be Peer reviewed by experts. GSI, NR wanted guidelines from CGPB Secretariat on writing base documents. [Action: CGPB Committees / CGPB Secretariat]</p>
47.9.23	<p>In relation to Para 46.11.26 regarding National Geoscience Congress (NGC), Dr. S K Wadhawan, Director (Tech.) MoM intimated the terms of reference for the NGC were being finalized and the first meeting would be held within six months stand. [Action: Director (Tech.) MoM]</p>
47.9.24	<p>Pertaining to Para 46.12.31 on operationalising Heliborne Survey System (HSS) in GSI, AS (Mines) expressed his happiness in observing that GSI is on the verge of running test flights of Heliborne Survey System (HSS) followed by well formulated regular programme during FS 2010-12. There is also scope for inclusion of additional one or two programmes. AS (Mines) elaborated on the criteria for running HSS in specific areas with particular objective e.g., (a) area should have been previously covered by Regional Airborne Survey where detailed data would be required by proving through HSS. The additional data would help targeting new prospects (b) Priority may be given for forest covered areas / areas with insurgency problem etc. He further advised that the thrust might be given to the states of NER where such detailed study was very much needed for the overall development in general and mineral sectors in particular. [Action: GSI] DDG (RSAS) was advised to prepare and circulate a brochure to all the States containing the capability of HSS and the background study requirement for taking up a project of HSS in particular area. States in turn are required to respond with well-planned programmes for HSS with focussed objective. AMD proposed that they were already carrying out data interpretation and GSI might well collaborate with AMD in heliborne data analysis. [Action: DDG (RSAS)/State DGMs / AMD]</p>
<b>47.10.0</b>	<b>PRESENTATION BY STATE DEPARTMENTS</b>
	<b>Presentation by State CGM, Gujarat</b>

47.10.1	<p>On behalf of CGM, Gujarat, Shri G K Pandyan highlighted the activities of CGM in the exploration of lignite, china clay, limestone, manganese, bauxite etc. He presented the work in geochemical mapping which was being carried out in collaboration with GSI. CGM, Gujarat requested GSI to start an office of Marine and Coastal Survey Division in Gujarat and expressed willingness to engage 2 geologists of CGM in the activities of marine. Shri M M Swamy, ADG &amp; Head Mission-I said that GSI would be happy to include CGM officers in marine cruises. Shri S. Bhattacharya, DDG, MCSD mentioned that GSI would be carrying out search for phosphatic sediment off Okha during FS 2010-12 where CGM was invited to participate in the cruise.</p> <p>[Action: GSI / CGM, Gujarat]</p>
47.10.2	<p>On a query, DDG, Mission-V declared that GSI would propose to start one training centre at Gandhinagar. State Govt. would be requested to make the land available, etc. The work schedule would be chalked out after finalizing it in the next TAC meeting.</p> <p>[Action: DDG, Mission-V/ CGM, Gujarat]</p>
47.10.3	<p>Director (TC), NEnR(Mission-IIB) informed about the work of GSI in the lignite field of Gujarat. However, he pointed out that though CGM, Gujarat shows resources of lignite in the committee meeting but the data on resources has not been provided and in turn not included in the national inventory of lignite.</p> <p>[Action: GSI / CGM, Gujarat]</p>
47.10.4	<p>Dr. R. G. Vijay, DDG (Chem.) informed that WR had already analysed 400 XRF analysis of CGM, Gujarat. Chemical personnel from CGM, Gujarat had also been trained in GSITI. Shri V P Sinha, DDG, WR indicated that the GSI suggested for inclusion of CGM geologist in mineral investigation item as a collaboration with GSI. He also assured that GSI would extend all help in starting chemical laboratory of the CGM.</p> <p>[Action: GSI / CGM, Gujarat]</p>
47.10.5	<p><b>AS (Mines) advised GSI to take up the issues on setting up training centre in Gujarat, developing Chemical laboratory of CGM and taking up marine programmes pertaining to Gujarat coast. AS (Mines) showed how the presentation of DGMs had received attention and consequently benefited. He requested more and more DGMs to deliver presentations in CGPB meeting so that they would get more from collaboration.</b></p> <p>[Action: GSI / All DGMs]</p>
	<p><b>Presentation by State DGM, Orissa</b></p>
47.10.6	<p>Shri Panda, Joint Director, DGM made the presentation on the exploration of coal, bauxite, heavy minerals, manganese and iron. He mentioned that 10 items would be taken up by DGM next year. There were 70 geologists in DGM and another 15 would be inducted for which training will be needed. DDG, Mission-V informed that GSITI would start a FTC at Angul or Sukinda.</p>
47.10.7	<p>There was a debate on carrying out 1:50,000 scale geological mapping by State DGMs. Dr. P C Nawani, NIRM pointed out that since geological maps on 1:50,000 scale are already prepared by GSI, there should be no duplication</p>

	<p>of mapping by State DGMs. State DGMs opined that they would prepare the map for targeting an area with particular focus keeping GSI map in background. States thus need to prepare reconnaissance geological map. IBM raised the point on granting PL for small bodies of iron ore in Orissa. IBM impressed upon DGM, Orissa for releasing PL for patches of iron deposits. DGM, A.P. enquired about the cut-off bauxite and laterite grades. DGM, Jharkhand wanted a clarification on carrying out 1:50,000 mapping as per need. <b>AS (Mines) agreed to take up the issues of mapping on 1:50,000 as a separate agenda item in the next 48<sup>th</sup> CGPB meeting.</b></p> <p>[Action: CGPB Secretariat]</p>
<b>47.11.0</b>	<b>AGENDA FOR 47<sup>th</sup> MEETING OF CGPB</b>
47.11.1	<p>The comments of GSI on each of the new agenda items of 47<sup>th</sup> CGPB were sequentially placed before the House (also included in the ‘Agenda Notes’ of 47<sup>th</sup> 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 47<sup>th</sup> CGPB”. The ‘status’ may also kindly be consulted along with Minutes of the meeting.</p>
<b>AGENDA: 1</b>	<p><i>To discuss on the Exploration work carried out by GSI in identifying the Platinum Group of elements in Sittampoondi complex, Mettopalayam and Sathyamangalam areas in Tamil Nadu and also the progress of work carried out in this regard so as to take action by TAMIN in the exploration of the above mineral after studying the economic feasibility.</i></p> <p><b>(Suggestion: TAMIN)</b></p>
<b>AGENDA: 2</b>	<p><i>To discuss about the exploration work carried out by GSI in the Velampatti south block, Narur-Uthangarai Molybdenum belt to trace additional mineralized zones other than the one established earlier since MECL has reported that the Velampatti south block cannot be viable unless further exploration is done and additional F/W load is established. The Government has already spent Rs. 6.84 crores for the exploration and evaluation of the Molybdenum Project.</i></p> <p><b>(Suggestion: TAMIN)</b></p>
<b>AGENDA: 3</b>	<p><i>To discuss about the prospect of Gemstone exploitation in Tamil Nadu based on GSI exploration work carried out since TAMIN wants to diversify its activities in the exploration of Gemstones in Tamil Nadu.</i></p> <p><b>(Suggestion: TAMIN)</b></p>
<b>AGENDA: 4</b>	<p><i>To discuss about the Regional Exploration (RE) done by GSI in the offshore belt of Tamil Nadu based on the notification issued by IBM for obtaining exploration licence since TAMIN is interested in the offshore mineral exploitation also.</i></p> <p><b>(Suggestion: TAMIN)</b></p>
47.11.2	<p>TAMIN had placed four suggestions (as above) of agenda regarding issues on PGE, molybdenum, gemstone and offshore exploration. Dr. Manivashan,</p>

	<p>CMD, TAMIN accepted the comments of GSI given in the agenda papers and highlighted that it was of paramount importance to carry out PGE exploration particularly at Sitampundi and Mettupalayam, which showed encouraging result. He placed a requirement of close spaced drilling for PGE exploration as suggested in Agenda 1. <b>As per MOU the mandate of GSI was to carry out regional exploration. Work of GSI could go up to G2 stage as per UNFC classification.</b> Detailed drilling could further be taken up as a sponsored project. Shri Lomas, CMD, MECL agreed to take up exploration work if needed. Dr. Nathan, GSI explained that GSI would accommodate 1800 m of drilling with 30m and 60m intersections so that the exploration of the block could be upgraded to G2 level. <b>AS (Mines) urged GSI to work in a positive connotation with TAMIN paying due regard to the MOU signed between GSI and TAMIN in presence of Hon'ble Chief Minister, Tamil Nadu. Dr. Manivashan, CMD, TAMIN was requested to send a revised programme detailing the requirements.</b></p> <p style="text-align: right;">[Action: TAMIN/GSI]</p>
<p><b>AGENDA:5</b></p>	<p><i>Training to be imparted to the officers of the Department of Geology and Mining in UNFC classification by Indian Bureau of Mines.</i></p> <p style="text-align: center;"><b>(Suggestion: Commissioner of Geology and Mining, Tamil Nadu)</b></p>
<p>47.11.3</p>	<p>Above Agenda sent to IBM, Nagpur for their comments / instructions, etc. IBM has replied back to CGM, TN.</p>
<p><b>AGENDA: 6</b></p>	<p><i>Jharkhand is endowed with vast mineral resources having 11 % share of nation's mineral production in terms of value. Geological setting, structure and formation of the state indicate the possibilities of occurrences of various new deposits. Geological explorations done by GSI in decades of eighties and nineties also needs revisit, particularly for the minerals like Iron ore, Bauxite, Copper, Limestone and Graphite in light of recently revised threshold value of minerals by the Ministry of Mines, Government of India. <b>It is requested that GSI take up the following programmes in upcoming field season:-</b></i></p> <ol style="list-style-type: none"> <li data-bbox="418 1335 1416 1545">I. <i>Area East Singhbhum and Saraikela district in the vicinity of Singhbhum shear zone has domain of ultra mafic rocks. The geological studies reveal that contact zone of Achaean granite gneiss and ultra mafic have good prospect of PGE. The state Directorate does not have expertise in the exploration of PGE. GSI should take up this exploration on priority basis.</i></li> <li data-bbox="418 1591 1416 1801">II. <i>Under XI Five Year Plan emphasis has been given on exploration of fertilizer group or minerals in which the country is presently not self sufficient. The area lying around Makri, Chandraiya and Bhamathpur localities of Bhabanathpur block of Garhwa district have reported occurrence of phosphorite. <b>Joint Exploration with DGM, Jharkhand is proposed in these areas.</b></i></li> <li data-bbox="418 1850 1416 1875">III. <i>Piezoquartz has wide application in electronics, electrical and applied</i></li> </ol>

	<p><i>industries. A number of intrusive bodies of quartz/quartzite have been reported from various localities in Hazaribagh, Giridih, Simdega and Koderma districts of the state. These intrusive bodies contain Piezoquartz. The state DGM does not have expertise in studies of Piezoquartz, therefore this programme is being proposed for exploration by GSI.</i></p> <p><i>IV. In the state of Jharkhand there are a number of old working mines of Coal under command area of CCL and BCCL. These mines have very good storage capacity of water, which can be utilized for irrigation as well as drilling purpose. By the progress of active mines these bodies have been polluted by over burden dump of coal. Therefore a detailed environmental study is urgently required to reclaim and reutilized water bodies. GSI has excellent track record of environmental studies, which can be of great help in this matter. These studies can be taken up in collaboration with DGM, Jharkhand.</i></p> <p style="text-align: right;"><i>(Suggestion: DGM, Jharkhand)</i></p>
47.11.4	<p>On the agenda of DGM, Jharkhand, GSI announced that 4 items would be taken up during FS 2010-12 in Jharkhand. DGM, Jharkhand demanded that a programme on investigation of fertilizer minerals in Garhwa dist. to be taken up by GSI during ensuing FS. Shri M M Swamy, ADG &amp; HOD, ER informed that the new item was not discussed in the SGPB meeting. AS (Mines) enquired whether DGM would be ready to spare officers for a collaborating work; to which <b>DGM, Jharkhand agreed upon to send geologist for the collaborating work. It was decided that the DGM officers would visit GSI to discuss the modalities on taking up the phosphorite project.</b></p> <p style="text-align: right;">[Action: HOD, ER/ DGM, Jharkhand]</p>
<b>AGENDA: 7</b>	<p><i>The 42<sup>nd</sup> SGPB meeting of Karnataka state was held on 10<sup>th</sup> July, 2010. During a day-long deliberation, it was discussed that a few field programmes were suggested in the earlier 39<sup>th</sup>, 40<sup>th</sup>, &amp; 41<sup>st</sup> SGPB meetings. It was observed that there is no follow up action to carry out such field programmes. Hence the following field programmes are suggested to be included in the current Field programme.</i></p> <ol style="list-style-type: none"> <li><i>1. Deep drilling for assessment of iron ore deposits around Bellary-Hospet sector.</i></li> <li><i>2. Shallow seismic sounding for the occurrence of gold.</i></li> <li><i>3. Regional submarine/under sea study in continental shelf for silica sand and bentonite clay deposit of Dakshina Kannada and Udupi District Coastal area.</i></li> </ol> <p><i>It was discussed in the meeting that GSI has procured new Helicopter for</i></p>



	<p><i>Aeromagnetic survey and intends to take up on trial basis Aeromagnetic survey in parts of Shimoga schist belt in collaboration with DMG.</i></p> <p><i>Hence the following programme is suggested to be included in the coming Field season 2010-12.</i></p> <p><i>4. Heliborne Magnetic survey in parts of Shimoga schist belt.</i></p> <p style="text-align: right;"><i>(Suggestion: DMG, Karnataka)</i></p>
47.11.5	<p>After the deliberations on the issue of DGM, Karnataka, the status given by GSI in the agenda paper was accepted. Further, the suggested bentonite clay item would be taken up in the next FSP (from 2012) in accordance with human resource position.</p>
<b>AGENDA: 8</b>	<p><i>A revised application for getting forest clearance for the investigation of gold in Maruda was forwarded to Minister of Environment and Forest (MOEF), New Delhi on 18.09.2008 with recommendation of the State Government.</i></p> <p style="text-align: right;"><i>(Suggestion: DMG, Kerala)</i></p>
47.11.6	<p>The proposal has to be cleared by the Forest Advisory Committee, New Delhi. The Director of Mining and Geology requests CGPB to take up the matter with MoEF for getting forest clearance at the earliest.</p>
<b>AGENDA: 9</b>	<p><i>Since the state is facing severe scarcity of construction grade sand, Geological Survey of India, Marine Wing, Mangalore was requested to carry out a study of off-shore sand deposits and assess the quality and quantity of sand available in the off-shore of Kerala coast. It is requested that Geological Survey of India complete the investigation and submit the final report at the earliest.</i></p> <p style="text-align: right;"><i>(Suggestion: DMG, Kerala)</i></p>
47.11.7	<p>The sand occurrences were reported in the seabed within and beyond Territorial Waters (TW) during seabed survey by GSI. Following the request of Govt. of Kerala, programmes on offshore sand investigation have been included in the proposals for FS 2010-12 within TW off Shertallai and Ponnani over areas of 180 sq km and 200 sq km respectively on grid of 2 km x 2 km.</p> <ul style="list-style-type: none"> <li>• The investigation of offshore sand is in progress and is being completed block by block.</li> <li>• But the suitability of these sands from construction point of view may need some ore tests like compressive strength test or other parameters specified on grading of sand.</li> <li>• These tests are beyond the capacity of GSI laboratory and hence DGM, Kerala has been requested to explore the possibility of getting these tests done with suitable Institute/Laboratory/NIRM.</li> </ul>
<b>AGENDA: 10</b>	<p><i>Joint exploration programme for PGM in Sukinda Valley by GSI &amp; Directorate of Geology.</i></p> <p><i>It is contemplated that a comprehensive exploration programme may be</i></p>

	<p><i>drawn up for exploration of PGM (Platinum Group of Minerals) in Sukinda Valley in a collaborative mode between Directorate of Geology, Orissa and GSI.</i></p> <p style="text-align: right;"><b>(Suggestion: Directorate of Geology, Orissa)</b></p>
47.11.8	<p>On the issue of PGM exploration jointly by GSI and DGM, Orissa, the DGM pointed out the necessity of training for the new recruits. DDG, Mission-V assured that new recruits of DGM could take up any module of OCG starting on 1<sup>st</sup> October 2010.</p> <p>AS (Mines) instructed Director (Tech.) MOM to write to the DGMs who had not attended the 47<sup>th</sup> CGPB meeting indicating concern of the Ministry for the State and its participation to the CGPB for the sake of the state itself.</p> <p style="text-align: right;">[Action: Director (Tech.) MOM / State DGMs]</p>
<b>AGENDA: 11</b>	<p><i>Joint exploration programme of gold in parts of Keonjhar district by GSI &amp; DG (O).</i></p> <p><i>It is proposed to take up gold exploration in parts of Keonjhar district of Orissa in a collaborative way with GSI where GSI will look after analysis of samples and the Directorate of Geology, Orissa will carryout necessary geological exploration.</i></p> <p style="text-align: right;"><b>(Suggestion: Directorate of Geology, Orissa)</b></p>
47.11.9	<p>Preliminary exploration for gold has been carried out by GSI in Gajpur, Chulia Pahar, Raiguda, Saleikana, Purujora, Sunadeipahar and Dandahuli Pahar areas of Keonjhar district in toposheet nos. 73 G/6&amp;7. The outcome of these investigations is not encouraging. DGM is requested to submit specific proposal for the gold exploration in parts of Keonjhar district to the GSI office in Bhubaneshwar for consideration. As per the proposal a joint field traverse can be planned to assess the technical viability of such work. Consequent upon this, the modalities for any collaborative programme to be included in GSI FS programme can be ascertained.</p>
<b>AGENDA: 12</b>	<p><i>Deep drilling (beyond 300 m) for chromite in Sukinda Valley by GSI to prove additional resource.</i></p> <p><i>It is proposed that GSI should take up deep drilling (beyond 300 m) for chromite in Sukinda Valley to prove additional resource of chromite.</i></p> <p style="text-align: right;"><b>(Suggestion: Directorate of Geology, Orissa)</b></p>
47.11.10	<p>As discussed in the 44th meeting of SGPB the Sate DGM is requested to suggest specific deep drilling (300m vertical depth) proposal in non leasehold / non forest areas in the Sukhinda valley for considering for inclusion in the forthcoming annual programme of GSI.</p> <p style="text-align: right;">[Action: DG, Orissa]</p>
<b>AGENDA: 13</b>	<p><i>Puncturing of BHQ/BHJ by GSI for augmentation of iron ore resources of the state.</i></p> <p><i>To augment the iron ore resource of the state, it is proposed that GSI may take up deep drilling in iron ore deposits, through puncturing of BHQ/BHJ</i></p>

	<p>horizon.</p> <p style="text-align: right;"><b>(Suggestion: Directorate of Geology, Orissa)</b></p>
<b>AGENDA: 14</b>	<p><i>Training of officers of DG (O) in geochemical mapping and structural mapping for capacity building. To take up exploration activity with latest technical know how and for capacity building of Directorate, it is suggested that some officers may be given training in GSI, Training Institutes in geochemical mapping and structural mapping.</i></p> <p style="text-align: right;"><b>(Suggestion: Directorate of Geology, Orissa)</b></p>
47.11.11	<p>The exploration carried out by GSI for iron ore in BIF (BHQ/BHJ) Formation in Horse Shoe belt has so far indicated that iron ore is present in BHQ/BHV up to a vertical depth of 150m.</p> <ul style="list-style-type: none"> <li>• No exploration has been carried out by GSI to ascertain whether there is any possibility of getting iron ore beyond BHQ/BHJ horizon.</li> <li>• Most of the area in horseshoe is falling in the leasehold areas.</li> <li>• GSI has taken up one exploration programme for low grade iron ore in the Horse Shoe Basin for the ensuing field season 2010-11.</li> <li>• At present GSI does not have any proposal to estimate deeper level iron ore resources within or beyond the BHQ/BHJ horizon.</li> <li>• However, if any specific proposals are sent, GSI may explore the feasibility and viability of such proposals as a case-to-case basis.</li> <li>• However, as mentioned in the 42nd SGPB meeting, technical support would be provided by GSI to any agency, which takes up such a programme for puncturing of BHQ/BHJ for augmentation of iron ore resources.</li> </ul> <p>For training &amp; capacity building, DGM, Orissa is requested to go through the calendar of GSITI for F.S. 2010-12. GSI will accommodate.</p>
<b>AGENDA: 15</b>	<p><i>With reference to para 46.12.09, GSI is being requested to provide a copy of the draft document on “ Impact and Methodology of Systematic and Scientific Mining of the Riverbed Materials”, as prepared by GSI, for use of DMM, WB in relation with the assessment of the vast resource of boulders, sand, etc. in the different riverbeds of the districts of North Bengal, many of which are now lease hold areas/ working on permits.</i></p> <p style="text-align: right;"><b>(Suggestion: DMM, WB)</b></p>
<b>AGENDA: 16</b>	<p><i>GSI, ER is being requested to provide their database, if any, on low-grade iron ore in parts of West Bengal. This is to probe into the possibility of taking up suitable methodology for exploring the occurrences. Presence of any other significant element may also be intimated.</i></p> <p style="text-align: right;"><b>(Suggestion: DMM, WB)</b></p>
<b>AGENDA: 17</b>	<p><i>GSI is being requested to design a customized course for the geoscientists of DMM, WB as proposed for the interest of the State. Such courses as proposed may be conducted through RTI, ER or may be in form of on-hand training by</i></p>

	<p>means of involving geoscientists of DMM in regular FSP of GSI, anywhere in India, where investigation on the proposed item of work is being carried out (eg. drilling of coal bearing horizon, study of pollution of water, air etc.) to enable the trainee to get acquainted with the modern machines and techniques of work.</p> <p style="text-align: right;"><b>(Suggestion: DMM, WB)</b></p>
<p><b>AGENDA: 18</b></p>	<p>DMM, WB is currently carrying out developing the database of RP, PL and ML along with geological prospecting information. DMM, WB is till date, not fully equipped with full computerization and a modern laboratory for developing database on GIS platform.</p> <p>So, it is a request to GSI to help DMM, WB in developing the our database by using the facility of GSI's Geodata Centre, at least for some time.</p> <p style="text-align: right;"><b>(Suggestion: DMM, WB)</b></p>
<p><b>AGENDA: 19</b></p>	<p>Proposal to take up a programme on "Microzonation of Landslide Risk Areas in parts of Darjeeling district, West Bengal" in collaboration with DMM, WB for a period of 3 years starting from F.S. 2010-11</p> <p>It is learnt that GSI is carrying out a R&amp;D programme in collaboration with the ITC of the Netherlands on landslide hazard in the areas under Kurseong Sub-division of Darjeeling district. It was also discussed that scope of study for microzonation of landslide hazards risk areas (based on GSI database) was present in parts of Kalimpong and Darjeeling Subdivisions of Darjeeling district, where DMM, WB and GSI can work jointly.</p> <p>Joint investigation team of DMM, WB and GSI can initiate the said collaborative work in parts of Kalimpong Subdivision as follows:</p> <ul style="list-style-type: none"> <li>i) Around Chhobo Basti area</li> <li>ii) Around Sindibung area</li> <li>iii) Along Aigora-Pedong Road</li> </ul> <p>Further to this, the components of the said study have also been formulated which requires about 3 years of time span (may be extended for another two years, depending on the database to be generated).</p> <p>It has been revealed in the 39<sup>th</sup> meeting of SGPAB, WB, held on 27.07.2010 that the Engineering Geology Division of GSI, ER has not included this in their FSP of 2010-11, despite the discussion as stated above.</p> <p>It is requested for inclusion of the above stated programme (in</p>

	<p><i>collaboration with DMM, WB) for F.S. 2010-11 and onwards for a period of three years.</i></p> <p style="text-align: right;"><b>(Suggestion: DMM, WB)</b></p>
47.11.12	<p>In absence of any representative of West Bengal, the AS (Mines) decided that whatever status given by GSI for the said agenda items would be taken as accepted.</p> <ul style="list-style-type: none"> <li>❑ No specific investigation for low-grade iron ore was taken up in parts of Purulia and Bankura districts of W.B. A reconnaissance search was made during mapping in different parts of Bankura district during F.S. 2008-09.</li> <li>❑ A programme for further studies is proposed in F.S. 2012-13 &amp;13-14.</li> <li>❑ GSI carries out landslide study on meso (1:5000/1:10,000 scale) &amp; macroscale (1:25,000/1:50,000), besides site specific study on 1:1000/1:20000 scales</li> <li>❑ However, out of the three areas proposed by DGM, West Bengal, only one area, preferably around along Algora-Pedong Road in Kalimpong Sub-Division can be taken up on meso scale as a collaborative item in the FS: 2010-2012 having one geologist from GSI and one geologist from DGM, West Bengal having GIS knowledge.</li> </ul> <p>After getting confirmation from DGM regarding the site and scale mentioned above, the landslide study for Algora-Pedong Road can be taken up as a collaborative item.</p> <p style="text-align: right;">[Action: DMM, WB / GSI]</p>
<b>AGENDA: 20</b>	<p><b><i>Providing exploration data on Limestone deposits explored by GSI:</i></b>  <i>Providing exploration details/maps/information dossiers on limestone blocks explored by GSI in the states of Tami Nadu, Rajathan &amp; Gujarat for identification of suitable limestone block for mining for NLC's power projects requirement.</i></p> <p style="text-align: right;"><b>(Suggestion: NLCL)</b></p>
<b>AGENDA: 21</b>	<p><b><i>Reservation of Limestone deposits for NLC captive use in Tamil Nadu, Rajathan :</i></b></p> <p><i>As per the advice of the MoE&amp;F, Govt. of India.</i></p> <ul style="list-style-type: none"> <li>• <i>On effective management of fly ash generated in thermal plants.</i></li> </ul> <p><i>NLC proposes to produce cement consuming fly ash generated in its (thermal plants by establishing cement plants in Tamil Nadu and Rajasthan, for which cement grade limestone deposits are required.</i></p> <ul style="list-style-type: none"> <li>• <i>On adoption of Circulated Fluidized Bed Combustion (CFBC) for</i></li> </ul>

	<p style="text-align: center;"><i>minimizing the SO<sub>2</sub> emission :</i></p> <p><i>NLC has already introduced CFBC boilers in its 2x125 MW thermal power stations at Barsinghsar, Bikaner dist. and also for the future expansion projects in Rajasthan and the same will be followed for future power projects in Tamil Nadu. The chemical grade limestone is used as bed material for desulfurisation in the boilers.</i></p> <p><i>To cater to above, NLC proposes to develop captive limestone (chemical &amp; cement grade) mines in Rajasthan and Tamil Nadu for its power plants and proposed cement plants.</i></p> <p><i>Therefore, it is requested that MOC may kindly recommend and forward the above agenda items to CGPB for advising State DGMs of Tamil Nadu &amp; Rajasthan for reservation of suitable limestone deposits having reserve of about 100 million tonnes of each in Tamil Nadu and Rajasthan for NLC's captive use.</i></p> <p style="text-align: right;"><b><i>(Suggestion: NLCL)</i></b></p>
<p>47.11.13</p>	<p>The issues of NLC was discussed and accepted. NLCL can obtain information on exploration details/maps, etc. on limestone blocks explored by GSI in the States of Tamil Nadu, Rajasthan and Gujarat from the unpublished reports.</p> <p>A catalogue of unpublished report is available for sale which can be procured from GSI. The information can also be obtained from GSI Portal.</p> <p>Also, there are economic series Bulletins of GSI which cover information on limestones. GSI is bringing out DID on limestone in near future. In the last ten years GSI has carried out investigation for limestone in the State of Tamil Nadu, Rajasthan and Gujarat. IBM and State Governments have to be approached for the leasehold status and for reserving the area.</p>
<p><b>AGENDA: 22</b></p>	<p><i>As per the recent guidelines issued by the GOI, MoEF, in coal and lignite (non-metallic Ores) - (a) test drilling up to 15 boreholes of maximum 4" dia per 10 sq km for opencast mining and (b) test drilling up to 20 boreholes of maximum 4" dia per 10 sq km for underground mining 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 bore holes, prior permission of Central Government under the Act would be required."</i></p> <p><i>The above modification could resolve Regional exploration to some extent. To take up Detailed Exploration, more number of boreholes is required; say 10-12 boreholes per sq km. Most of the blocks identified for detailed exploration in Godavari Valley Coalfield (GVCF) during the XI Plan and XII plan are falling in forest areas. Repeatedly, SCCL is requesting the Forum for early action.</i></p> <p style="text-align: right;"><b><i>(Suggestion: SCCL)</i></b></p>

<p><b>AGENDA: 23</b></p>	<p><i>MoEF guidelines for diversion of forest land for non-forestry purpose stipulates that in case of coal and lignite (a) test drilling up to 15 boreholes of maximum 4” dia per 10 sq km for opencast mining and (b) test drilling up to 20 boreholes of maximum 4” dia per 10 sq km for underground mining for prospecting exploration or reconnaissance operations, without felling of trees, shall not attract the provisions of the Act. The stipulated borehole density for exploration of coal is highly inadequate to generate data of required confidence level to make major investment decisions, required for large scale capital intensive mining projects. The Working Group on Coal &amp; Lignite for XI Five Year Plan had recommended a borehole density of 15/sq km for OC area and 20/sq km for UG area which may be recommended to the Government.</i></p> <p style="text-align: right;"><b>(Suggestion: CMPDIL)</b></p>
<p>47.11.14</p>	<p>Regarding Agenda 22 and 23, the SCCL raised the issue of forest clearance by MOEF and expressed the pressing need for increase of no. of boreholes for detailed exploration. SCCL wanted that MOM must impress upon MOEF for a pro-exploration rules.</p> <p>AS (Mines) advised that the forest permission can be sought in case to case basis based on requirement of the exploration.</p> <p style="text-align: right;">[Action:MoM / MoEF]</p>
<p><b>AGENDA: 24</b></p>	<p><i>The coal resource estimation in the country is done as per ISP (1957), modified in 1989 by the Task Force constituted by CGPB. Internationally, the most widely accepted resource reporting codes are JORC code (Australian), CIM Code (Canadian) and SAMREC Code (South African). JORC has become the most preferred code for reporting of resources for listing on stock exchanges worldwide as observed recently for IPO of Coal India Ltd. (CIL).</i></p> <p><i>With the opening of coal industry to private players in India, it is becoming necessary that the resources reported as per ISP are also accepted for listing on stock exchanges, both national &amp; international. CGPB may like to deliberate on the issue to evolve suitable mechanism for getting resources reported as per ISP acceptable for listing on stock exchanges, both national &amp; international. Identification of suitable Indian Professional Bodies to be registered as one of ROPO (Recognized Overseas Professional Organizations) and accrediting its member, with proper experience, as “Competent Person” for reporting resources, as per ISP acceptable for listing, may be the most important requirement for this.</i></p> <p style="text-align: right;"><b>(Suggestion: CMPDIL)</b></p>
<p>47.11.15</p>	<p>CMPDIL pointed out that JORC became the most preferred code for reporting the resources in the listing of stock exchanges worldwide. In India coal resource estimation done as per ISP (1957) is yet to be accepted for listing on stock exchanges, both national and international. For merchant bankers resources are to be presented as per international standard like JORC code</p>

	<p>(Australian). Shri M S Jairam, GSI commented that UNFC had been accepted as the reporting system in India. Since India accepted UNFC, stock exchanges should be pursued to accept the Indian system. Mr. Sengupta, IBM suggested that the resource made on the basis of UNFC could well be converted to JORC on case to case basis particularly at the time a company goes for listing in the stock exchange. Company may engage consultant to convert resources done in UNFC to the JORC system. CMPDIL opined that it might not be possible for small companies to engage consultant. <b>AS (Mines) was of the opinion to constitute a working group so as to work out the formalities of stock exchange listing.</b></p> <p style="text-align: right;">[Action: MoM]</p>
<p><b>AGENDA: 25</b></p>	<p><b><i>Future Regional Exploration for Coal/Lignite in already explored CBM Awarded Blocks.</i></b></p> <p><i>In the 3<sup>rd</sup> Meeting of CGPB Committee-V on Energy Minerals &amp; Resources held on 7<sup>th</sup> July, 2010 at Kolkata, GSI informed that the balance left out area earmarked for coal/lignite exploration is likely to be completed by the 1<sup>st</sup> year of XIIth Plan Period.</i></p> <p><i>In order to identify areas for taking up coal/Lignite exploration beyond that period, areas blocked for CBM exploration, with negligible CBM potential, that have been handed over/relinquished by Awardees, need to be made available for regional exploration by National Agencies. The issue was discussed in the meeting of Committee-V and the representative from Directorate General of Hydrocarbons was appraised in this regard.</i></p> <p><i>In this context, the Directorate General of Hydrocarbons may be requested to examine the issue in order to facilitate formulation of exploration programmes by National Agencies during XII Plan period.</i></p> <p style="text-align: right;"><b>(Suggestion: GSI, Natural Energy Resources, M-II)</b></p>
<p>47.11.16</p>	<p>The Directorate General of Hydrocarbons has been requested to examine the issue and put their Comments of GSI. No comments received so far.</p> <p style="text-align: right;">[Action: DG, Hydrocarbon]</p>
<p><b>AGENDA: 26</b></p>	<p><b><i>Supply of Resource Data in respect of Lignite in Gujarat</i></b></p> <p><i>During the course of 48<sup>th</sup> Meeting of the erstwhile Sub-Committee on Energy Minerals (Gr. III of CGPB), held on 6<sup>th</sup> &amp; 7<sup>th</sup> August, 2008 at Dhanbad, Jharkhand, the Chairmen requested Commissioner, CGM, Gujarat to provide the requisite resource database, generated by them, the proper format along with relevant maps, so that it can be incorporated in the National Inventory. No action has been taken in this regard.</i></p> <p><i>In view of the above, CGM, Gujarat may be requested in this meeting to supply all relevant data pertaining to resource of lignite in Gujarat for incorporation in the National Inventory.</i></p>



	<b>(Suggestion: Natural Energy Resources, M-IIB)</b>
47.11.17	<p>The CGM, Gujarat has been requested to supply all relevant data pertaining to resource of lignite in Gujarat for incorporation in the National Inventory. No response received so far.</p> <p style="text-align: right;">[Action: CGM, Gujarat]</p>
<b>AGENDA: 27</b>	<p><i>There is an uneven distribution of the phosphorite resources in the country. Bulk of the deposits namely, Jhamarkotra, Maton, Dakankotra, Khabaria, Ka-Gurha, Sallopat and Jhabua are located within the Aravalli Supergroup which accounts for more than 75% phosphorite resources of the country.</i></p> <p><i>It is observed from the Mining Geological Studies carried out by IBM that the Sallopat Rock Phosphate deposit in Banswara district of Rajasthan of M/s Rajasthan State Mineral Development Corporation is closed since 1990 due to poor grade and uneconomic workability. As this mineral is having immense value, the possibility of its occurrence of high-grade deposits and its extensions towards strike direction outside the lease boundary for new deposits may be explored along with its depth persistence in the interest of the mineral development.</i></p> <p style="text-align: right;"><b>(Suggestion: IBM)</b></p>
47.11.18	<p>GSI is carrying out exploration for phosphorite in the extension areas of known phosphorite occurrences in non leasehold / non forest areas. GSI, Western region has proposed an item “Regional assessment of low grade phosphorite occurrences of Kalinjara, east of Sallopat, Banswara district, Rajasthan (Stage: P-1/ UNFC-G4) for the F.S.- 2010-12, with an objective to delineate and locate new areas of phosphorite bearing dolomite / limestone lenses.</p>
<b>AGENDA: 28</b>	<p><i>The Marine Wing of GSI is one among fully equipped exploration agency which is capable of carrying out exploration for offshore mineral deposit on Indian coasts. Therefore, IBM requests GSI to continue the regional exploration for offshore mineral blocks in all Indian offshore areas. Any new discoveries or identification of mineralized blocks in Indian offshore areas may be informed to IBM along with their location and geological details. The IBM as Administering Authority under Offshore Areas Mineral (Development &amp; Regulation) Act, 2002 will notify any such mineral bearing offshore blocks for grant of exploration licences.</i></p> <p style="text-align: right;"><b>(Suggestion: IBM)</b></p>
47.11.19	<p>GSI would continue to undertake regional exploration for offshore mineral occurrences during the forthcoming field season as proposed in its Annual Programme. On the requests of IBM, the data pertaining to survey till recent past regarding offshore placer mineral exploration has already been provided.</p>

	<p>Any new find or additional resource position as evolves during further survey shall be communicated to IBM following formalities.</p> <p>[Action: MCSD, GSI]</p>
<b>AGENDA: 29</b>	<p><b><i>Investigation of Sensitive Landslide of Sikkim</i></b></p> <p><i>Sikkim is located over adverse geological condition such as thrust, fault environment, heavy rainfall, high degree slopes added upon by human induced factors and therefore landslides are common features of Sikkim due to which vehicular traffic is disrupted with loss of human life and property. GSI has carried out the study of area along major towns and along National Highways on Micro and Meso scales, the reports of which are yet to be published. Other important landslides which need studies immediately are :-</i></p> <p>(i) <i>Bojek Slide along Nayabazar-Sombaria Road in West Sikkim.</i>  (ii) <i>Nabharey Khola Kharga Slide near Yangyang.</i>  (iii) <i>Tsochen Pheri Slide near Barapathing, East Sikkim.</i></p> <p><b><i>(Suggestion: DMMG, Sikkim)</i></b></p>
47.11.20	<p>DMG, Sikkim requested for landslide studies for 3 landslides and indicated that GSI was planning for study of 1 landslide during FS 2010-12 in Sikkim. AS (Mines) advised GSI to take another landslide item as demanded by DMG, Sikkim. It was decided that Tsochen Pheri Slide near Barapathing, East Sikkim will be taken up by GSI and thus there will be two landslide items in Sikkim.</p> <p>[Action: GSI]</p>
<b>AGENDA: 30</b>	<p><b><i>Study of Hydel Dams constructed along Tista and Rangit River and its stability from geological vis-à-vis seismological point of view.</i></b></p> <p><i>Such studies are pre-requisite prior to construction of dams, however, risk assessment studies in due adverse eventuality during dam bursts or during opening of gates in case of floods are required.</i></p> <p><b><i>(Suggestion: DMMG, Sikkim)</i></b></p>
47.11.21	<p>The representative of DMG, Sikkim mentioned that they were not aware of the work of CWC for dam burst analysis in Kalej Khola Hydel Project. AS (Mines) opined that the presence of CWC was very much needed in the 47<sup>th</sup> CGPB meeting and instructed Director, MOM to write to CWC for the importance of CGPB.</p> <p>[Action: CWC / Director (MoM)]</p>
<b>AGENDA: 31</b>	<p><b><i>Studies and Re-habilitation of problematic trouble spots on boarder road alignments of Border Roads Organization along NH 31 A &amp; NS Highway Gangtok-Nathula road.</i></b></p> <p><i>Due to adverse geological, geotechnical, hydrological and slope conditions, maintenance of road without proper geological-geotechnical investigation has become difficult for vehicular traffic movement. Since these roads are</i></p>

	<p><i>vital for security and other purposes, proper studies for re-habilitation are required.</i></p> <p style="text-align: right;"><b>(Suggestion : DMMG, Sikkim)</b></p>
47.11.22	<p>DMMG, Sikkim had given a list of adverse spots on border road alignment along NH-31A and Gangtok-Nathula road. They had pointed out about 47 spots in 9 segments for proper geotechnical work. GSI as per the request from BRO would be taking up 7 trouble spots for landslide studies along NH-31A and North Sikkim Highway during FS 2010-12. Shri M M Swamy, ADG &amp; HOD, ER indicated that the DMMG had given a very long list of trouble spots. AS (Mines) advised DMMG, Sikkim to prioritize the list in consultation with Border Roads to take up the geotechnical work of the spots on the roads which need immediate attention.</p> <p style="text-align: right;">[Action: DMMG, Sikkim]</p>
<b>AGENDA: 32</b>	<p><i>a) The Geological Survey of India was approached for slope stability studies for reservoir/catchment areas of Dibang Multipurpose Project located in Lower Dibang Valley and Upper Dibang valley districts of Arunachal Pradesh vide letter nos. NH/EG/132/08 dt. 15.09.2008, NH/EG/132/09/502 st. 29.05.2009 and NH/EG/132/09/1083 dt. 24.12.2009. Subsequently an estimate of Rs. 16, 51,514/- was raised by GSI &amp; 50% was required to be paid as advance and the same has been released.</i></p> <p><i>b) It was agreed by GSI to complete the work in two field seasons 2009-2010 and 2010-2011 as per agreed scope of work vide letter no. 320/Dibang/NHPC/TCS/GSI/NER/90 dt. 13.01.2010.</i></p> <p style="text-align: right;"><b>(Suggestion: NHPC)</b></p>
<b>AGENDA: 33</b>	<p><b>Tawang Basin Projects</b></p> <p><i>Field visit for updation of report on regional geology for Tawang basin projects has since been completed by GSI. It is now requested to release the final report at the earliest to facilitate clearance of DPR.</i></p> <p style="text-align: right;"><b>(Suggestion: NHPC)</b></p>
<b>AGENDA: 34</b>	<p><b>Tamanthi &amp; Shwezaye, Myanmar</b></p> <p><i>Duirng 46<sup>th</sup> CGPB meeting at Delhi, NHPC requested GSI to take up Neotectonic, Palaeoseismic &amp; MER LET studies for Tamanthi &amp; Shwezaye projects, Myanmar. GSI has already made preliminary visit and considerable progress has been made in this regard.</i></p> <p><i>-- to take up the studies on priority so that Neotectonic and MER LET reports are made available by December, 2010 and March, 2011, respectively to adhere to the time.</i></p> <p style="text-align: right;"><b>(Suggestion: NHPC)</b></p>
47.11.23	<p>On Agenda 32 to 34, regarding the neotectonic, paleoseismic and LET studies for Tamanthi Project, Myanmar, NHPC suggested that GSI should take up the studies on priority basis so as to adhere to the timeline stipulated by the Government of India which envisaged submission of neotectonic and LET report by December, 2010 and March, 2011 respectively. On subsequent discussions, it was resolved that Neotectonic and MEQ studies would first be taken up exclusively for the Tamanthi Dam. The decision is yet to be received</p>

	<p>from the MOM. DGM, Nagaland enquired whether their officers can be associated with GSI in the Tamanthi Project. NHPC explained that Nagaland Government is required to approach Ministry of External Affairs in this regard.</p> <p style="text-align: right;">[Action: GSI / MoM]</p>
<b>AGENDA: 35</b>	<p><i>NHPC is executing a 2000 MW Subansiri Lower Project on Subansiri River on the border of Assam-Arunachal Pradesh. This was earlier known as Subansiri Dam Project and its Feasibility Report was submitted by Brahmaputra Board in association with GSI &amp; CWC in 1983. Later, due to huge submergence in Arunachal Pradesh, the height of the dam was reduced to 116m, however, the site of dam remained the same. After obtaining all necessary mandatory clearances from CEA, CWC, GSI, NCSDP, etc., TEC/CCEA was accorded by Govt. of India in Jan., and Sept., 2002, respectively. However, the construction of the project started in Jan., 2005.</i></p> <p><i>Subsequently, at the instance of Govt. of India / Govt. of Assam, NHPC constituted a Committee of Professionals from Gauhati University, Dibrugarh University and IIT, Guwahati to study downstream impact of the project. The committee has raised certain issues on geological &amp; seismological aspects of the project. Although NHPC has replied to all the queries from time to time, the committee is not convinced. The Committee opined that the dam should not be constructed at the present site as it is located south of MBT. In addition they have raised following major issues.</i></p> <ul style="list-style-type: none"> <li>• <b><i>Location &amp; disposition of Foot Hill Thrust (FHT) w.r.t. Project site.</i></b></li> <li>• <b><i>Clarification regarding Safety &amp; stability of the dam w.r.t. geological and seismotectonic set up around the project area.</i></b></li> </ul> <p><i>In view of above, NHPC desires that GSI being premier organization in the field of Earth Sciences may be associated to resolve above issues raised by the Expert Group.</i></p> <p style="text-align: right;"><b>(Suggestion: NHPC)</b></p>
47.11.24	<p>NHPC wanted GSI to be involved in resolving certain issues of the 2000 MW Subansiri Lower Project on Subansiri river on the border of Assam and Arunachal Pradesh. Dr. P Pande informed that GSI had taken up the geotechnical studies of Subansiri Project few years back and currently was not associated with the said project. AS (Mines) mentioned that there was already an expert group to study downstream impact of the project. He urged <b>NHPC to work out on what additional aspects GSI could contribute in the project.</b></p> <p style="text-align: right;">[Action: NHPC]</p>
<b>AGENDA: 36</b>	<p><i>NIRM proposes to sign a long-term MOU with GSI to help GSI in its training programme as per the Training Calendar prepared by GSI. In the area of rock mechanics in which NIRM is quite strong, specialists from NIRM can impart training to the participants. GSI will transfer a lump sum fee to NIRM for its services. NIRM may also invite some of the geologists to the training</i></p>

	<p><i>programmes conducted by NIRM.</i></p> <p style="text-align: right;"><b>(Suggestion: NIRM)</b></p>
47.11.25	<p>NIRM proposed to impart training in the field of rock mechanics for GSI trainees. GSITI in turn accepted induction of subject expert from NIRM as guest lecturers in the GSITI for training programmes in Engineering Geology. Dr. P C Nawani, NIRM commented that the reply given by the GSI in the agenda note had been well taken and the expert of the NIRM would impart training in GSITI whenever necessary.</p>
<b>AGENDA: 37</b>	<p><i>Hydropower projects and River Linking Projects are the two areas which have been identified for collaboration with GSI. NIRM has excellent facilities and expertise for both laboratory and in-situ investigations. NIRM will extend its full support to GSI wherever physico-mechanical properties of rocks or in-situ stress and deformation moduli and other field tests are to be carried for engineering projects during DPR stage investigations. Wherever required, NIRM can also help in engineering geological, geophysical and geotechnical investigations required for preparation of DPR (Detailed Project Report). In association with GSI, at sites of hydropower projects or any other surface or underground excavations, NIRM is ready to take care of blast design; vibration monitoring and rock mass damage control. All instrumentation work for surface or underground excavations can also be taken up by NIRM.</i></p> <p style="text-align: right;"><b>(Suggestion: NIRM)</b></p>
<b>AGENDA: 38</b>	<p><i>In view of huge potential of dimensional stones, GSI will continue to identify the deposits suitable for dimensional stones and to estimate reserves, whereas NIRM will determine geotechnical properties and suggest quarrying methods for improved recovery and environmental aspects. A comprehensive report can be prepared by two organisations for the benefit of the industry. NIRM plans to open a “Centre of Advance Studies in Dimensional Stones” at KGF.</i></p> <p style="text-align: right;"><b>(Suggestion: NIRM)</b></p>
<b>AGENDA: 39</b>	<p><i>On-line real time monitoring of landslides and other sensitive slopes using slope stability radar and nanoseismic/microseismic methods. NIRM has expertise in these techniques.</i></p> <p style="text-align: right;"><b>(Suggestion: NIRM)</b></p>
47.11.26	<p>Regarding Agenda 37 to 39, NIRM raised the three issues on hydro-power/river linking project, dimensional stone and monitoring of landslide in which collaborative work with GSI was proposed. NIRM agreed that most of the issues were in consonance with the status given by GSI in the agenda notes and proposed that <b>NIRM would sit together with GSI to chalk out well planned programmes. Dr. P.C. Nawani indicated that major inputs might be obtained from GSI and the complementary expertise would be provided by NIRM.</b></p> <p style="text-align: right;">[Action: GSI / NIRM]</p>
<b>AGENDA: 40</b>	<p><b><i>Investigation for Micro seismic Hazard Zonation of Aizawal city, the capital of Mizoram.</i></b></p> <p><i>GSI has informed that the Aizawal City had been taken up for Landslide Hazard Zonation. So it is also felt necessary to conduct investigation for</i></p>

	<p><i>Micro Seismic Hazard Zonation as it is reported that Aizawal City is underlain by various fault line. It is requested for consideration in the ensuing GSI FSP.</i></p> <p style="text-align: right;"><i>(Suggestion: Industries Deptt., Govt. of Mizoram )</i></p>
47.11.27	<p>Industries Department Govt. of Mizoram wanted that GSI to take up seismic hazard zonation of Aizawl city. However, GSI informed that during FS 2010-12 seismic microzonation of Jorhat, Assam was planned in tune with XI five-year plan. AS (Mines) observed that since GSI was going to take up seismic micro-zonation of Jorhat in the coming field season, <b>State DGM, Mizoram might take up micro-zonation of Aizawl on their own with technical guidance from GSI. GSI would certainly help in the capacity building of the officers nominated by Mizoram Govt. in this regard.</b></p> <p style="text-align: right;">[Action: Industries Dept., Mizoram]</p> <p>DGM, Nagaland wanted that an investigation item for Ni, Co, Cr, Pt minerals might be taken up for which State Government will provide Helicopter service, security, etc. to GSI, if needed. <b>Member Secretary, CGPB advised DGM, Nagaland to submit a proposal of heliborne survey system in the identified transect of Nagaland.</b></p> <p style="text-align: right;">[Action DGM, Nagaland]</p>
<b>AGENDA: 41</b>	<p>45<sup>th</sup> meeting of the State Geological Programming Board of Assam was held on 8<sup>th</sup> August 2010 in Guwahati. It is requested that the following field programmes may be taken up by GSI during 2010-11 in Assam either by itself or in association with the State Directorate so that GSI may provide the necessary expertise &amp; guidance undertaking the field programmes. Giving due emphasis on requirement of the energy minerals in the state the field programmes proposed are: -</p> <ol style="list-style-type: none"> <li>(1) Investigation of coal at Abhaypur area in Dibrugarh district of Assam (Toposheet no. 63M/1, 63 M/4 &amp; 63 M/3).</li> <li>(2) Investigation of coal at Sapakhathi area in Sivsagar district of Assam (Toposheet No. 83 I/16 &amp; 83 I/13).</li> <li>(3) Investigation of coal at Singrimari area in Dhubri district of Assam (Toposheet No. 78 G/14).</li> </ol> <p style="text-align: right;"><i>(Suggestion: DGM, Assam )</i></p>
47.11.28	<p>On the issue of investigation of coal in three districts of Assam, DGM, Assam proposed three investigations in the Dibrugarh, Shibsagar and Dhubri districts. DGM, Assam pointed out that they did not receive any fund for promotional drilling of coal. CMPDI explained that the fund was released for promotional programme on monthly performance basis. AS (Mines) enquired whether GSI could take up one promotional item of coal exploration. DGM, Assam insisted that DGM would require technical guidance from GSI for any such project. Director (TC), NER mentioned that GSI already having Singrimari report (Dhubri district) and technical support could always be extended to DGM, Assam. However, work could be taken up subject to ground condition. <b>DG, GSI instructed that DDG, NER and Director (TC) NER to visit Assam and discuss with the officers of DGM, Assam to take</b></p>

	<p><b>up suitable coal project.</b></p> <p>[Action: DDG, NER]  <b>AS (Mines) further instructed that specific proposal for carrying out heliborne survey in the Karbi Anglong district to be submitted by the Govt. of Assam. DDG, RSAS is required to circulate the brochure on capabilities of HSS to all the State Governments within 15 days of the 47 CGPB.</b></p> <p>[ Action: DGM, Assam / DDG, RSAS]</p>
<b>AGENDA: 42</b>	<p><i>State Government has decided to include two additional programmes of re-assessment of iron ore reserve of leasehold area of M/s SAIL and M/s Tata Steel in light of new threshold value of iron ore. M/s SAIL has a number of iron ore mining leases, which are spread over an area of 69.62 sq.km. and Tata Steel has Iron ore mining lease in 1160.36 hectare area in the West Singhbhum district of the state Government has already written a letter to Director General, GSI in the regard.</i></p> <p><b>(Suggestion: DMG, Jharkhand)</b></p>
47.11.29	<p>On the issue of Agenda 42 &amp; Late Receipt Additional Agenda 9, DGM, Jharkhand proposed GSI to take up additional programmes of re-assessment of iron ore reserves in the leasehold area of M/s SAIL and M/s Tata Steel in the light of new threshold value of iron ore. AS (Mines) indicated that working of GSI in the leasehold area was not a settled policy of practice. This was not the issue of using expertise of GSI but it was policy decision. Shri N. Das, CHQ pointed out that during FS 2009-10, GSI took up assignments in Orissa as sponsored by Orissa Mining Corporation (OMC). <b>AS (Mines) suggested that the issue may be examined and the possibility of working GSI in such area might not be closed. However, in such cases MECL could better take up estimation of iron ore in leasehold areas.</b></p> <p>[ Action: GSI / MECL]</p>
<b>Late receipt Additional Agenda 1</b>	<p><b>Lead-Zinc investigation at Buniyar (Uri), district Baramula (DGM, J &amp; K)</b></p> <p><i>---- During the SGPB, it was agreed that a joint venture with GSI will be taken up in FS 20010-11. Accordingly, the state DGM has incorporated the item in their FSP. Hence GSI is requested also to take up the project in FS 2010-11.</i></p>
<b>Late receipt Additional Agenda 2</b>	<p><b>Study of Placer Gold and Regional Geochemical Mapping in Thusgam area of Ladakh (DGM, J &amp; K)</b></p> <p><i>---- Thusgam area of Ladakh has been specified identified as study of placer gold in collaboration with GSI by the SGPB. In SGPB meeting, it was also decided that GSI will carry out Regional Geochemical Mapping on priority basis.</i></p>
<b>Late receipt Additional</b>	<p><b>Sapphire investigation Padder area of Kishtwar (DGM, J &amp; K)</b></p>

<b>Agenda 3</b>	---- Advisor, Planning Commission stated that DGM (J&K) and GSI will carry out further reconnaissance survey for sapphire in Padder area of Kishtawar. DGM (J&K) already left for field. Action of GSI to be informed.
<b>Late receipt Additional Agenda 4</b>	<b>Iron Ore investigation at Muttah, District, Reasi (DGM, J &amp; K)</b>  ---- Reports on Iron Ore investigations carried out by GSI around Muttah area, Dist, Reasi, J&K to be provided to the DGM (J&K) for their detailed exploration work. GSI should also provide guidelines for future investigation in the area
<b>Late receipt Additional Agenda 5</b>	<b>Supply of Data/ reports of geological work conducted by GSI in J&amp;K State. (DGM, J &amp; K)</b>  ---- It is requested to provide all relevant maps/reports of investigations carried out in J&K for Lead/Zinc, Sapphire, Iron-Ore and placer gold deposits.
<b>Late receipt Additional Agenda 6</b>	<b>Mapping of local active faults along Main Boundary Thrusts in J&amp;K (DGM, J &amp; K)</b>  ---- DGM, J&K proposes to take up the active fault mapping of Reasi Thrust /Kishanpur Mandi Thrust as joint venture with GSI. GSI may take up Mapping of local active faults along Main Boundary Thrusts in J&K as a joint venture with DGM,J&K.
<b>Late receipt Additional Agenda 7</b>	<b>Provision of accommodation facilities during GSI meetings (DGM, J &amp; K)</b>  ---- GSI should provide accommodation near the venue for the participants in their meetings for easy stay, better interaction and discussions.
47.11.30	On the request of J&K Government, GSI assured that an item on Sapphire investigation would be taken up if the ground condition became conducive. Lead-Zinc investigation at Buniyar (Uri), district Baramula will be continued during 2010-12 as no work could be done during 2009-10 because of ground condition. GSI was also not having sufficient human resource to take up the NGCM programme at Thusgam. Dr. K. R. Gupta referred about the manifestation of active faults due to 2005 Kashmir earthquake towards south of Main Boundary Fault (MBF). Dr. P Pande, DDG and Member Secretary, CGPB informed that there was no manifestation of reactivation of faults due to the 2005 earthquake in the Jammu & Kashmir State within India. <b>AS (Mines) advised that as far as J &amp; K was concerned, GSI must take up programme with a very positive approach.</b>  [ Action: GSI]
47.11.31	Dr. K R Gupta, Geological Society of India congratulated CGPB and GSI for



	<p>overall positive interaction with the State DGMs regarding collaborative work, capacity building, dissemination of data and extending help for the development of the laboratories. Dr. Gupta was of the opinion that the CGPB should be upgraded to a National Geological Programming Board, which should act as a think tank of geosciences vis-à-vis geoscience policy maker for India and SAARC countries. Dr. Gupta acclaimed GSI for its contribution in the regional core libraries possessing cores, which are national assets. He opined that GSI might explore possibility to set up geochronological laboratories for AI, Be dating in collaboration with the universities possibly during XII Five Year Plan. Dr. S Ghosh, DDG, Mission-IV informed that analysis of short-lived isotope can be done at PRL laboratory and GSI would be able to build such infrastructure as a consortium of national geoscience centre.</p> <p>Shri S Vijay Kumar, Secretary, Ministry of Mines commented that CGPB was basically a programme execution board for GSI with stakeholders. National Geosciences Board would benefit all geoscientific institution providing science policy direction for the nation taking into consideration global advancement in geosciences. The activity of such national board will be similar to National Geoscientific Council.</p>
<b>47.12.0</b>	<b>DISCUSSIONS ON MULTIFARIOUS ISSUES</b>
47.12.1	DGM, A.P. wanted GSI to furnish economic value of the resources given. AS (Mines) envisioned huge capacity building for drawing extractability, feasibility etc. in the known prospect and referred to the draft MMDR act, Section-13.
47.12.2	<p>DGM, Rajasthan pointed out that asbestos mining was banned in India, which was less hazardous whereas manufacturing asbestos was allowed which was rather hazardous. DGM, Rajasthan demanded that the ban of asbestos mining might be lifted in India. Mr. Sharma, FIMI informed that former Secretary (Mines) took a meeting on the issue and supported that asbestos preparation was hazardous whereas asbestos mining was not. <b>MOM informed that the issue was under consideration at the Ministry.</b></p> <p style="text-align: right;">[Action: MoM]</p>
47.12.3	DGM, Rajasthan further insisted that GSI should report the occurrence of industrial minerals to the state DGMs. GSI informed that in all reports of systematic/specialized thematic mapping, the occurrence of industrial minerals are highlighted and State might come to know the occurrence from such reports. Secretary (Mines) opined that in case the State wanted advance information of the industrial mineral resource to notify the area for the States Mineral Development Corporation etc., then GSI might find out a system so that advance information could be percolated to the States. Shri M. M. Swamy, ADG & HOD, ER commented that such information was also propagated through SGPB and CGPB Committee meetings. Shri N Das, CHQ mentioned that such information would also be available from Annual Report / red book of GSI published by GSI during CGPB.

<b>47.13.0</b>	<b>PRESENTATION BY MEMBER SECRETARY ON THE ANNUAL PROGRAMME (FSP) OF GSI FOR 2010-2012 AND APPROVAL OF THE FSP</b>
47.13.1	Dr. P Pande, Member Secretary, CGPB made elaborate presentation on the proposed programme for 2010-12. Secretary, (Mines) regretted that many of the training programmes were dropped during FS 2009-10 due to lack of trainees. He said that the States should be primary beneficiary of the trainings conducted by GSITI and asked DGMs also to suggest for the faculties in the training programmes.
47.13.2	The proposed Annual Programmes of GSI for FSP 2010-12 was approved by Secretary (Mines) with the consent from the House of CGPB.
<b>47.14.0</b>	<b>PRESENTATION BY HEADS OF MISSIONS OF GSI</b>
47.14.1	The Heads of the Missions I, II & III made presentation on the work being done in the respective sectors.
<b>Mission I</b>	<b><i>Baseline Geoscience Data Generation</i></b>
47.14.2	Shri M. M. Swamy, Additional Director General & HOD, ER, GSI and Head of Mission-I gave a detailed account of the activities on Baseline Geoscience Data Generation.
<b>Mission II</b>	<b><i>Natural Resource Assessment</i></b>
47.14.3	Shri K. Rajaram, Deputy Director General and Head of Mission-II gave a detailed presentation of the activities of Mission including resource position of different mineral commodities and important investigations being undertaken.
47.14.4	During discussions IBM pointed out that the coal reserve may be classified as per go area, no-go area, etc. He also indicated that for 10 minerals cut-off has been lowered which is available in the IBM portal.
<b>Mission III</b>	<b><i>Geoinformatics</i></b>
47.14.5	Shri A.K. Malaviya, Deputy Director General, Mission-III and Shri T. K. Chakraborty, Director made apt presentation on the GSI Portal and visions for Phase-III.
47.14.6	Due to time constraint, the presentation of other two Missions could not be held. Those would be presented in the next CGPB meeting.
<b>47.15.0</b>	<b>PRESENTATION BY CONVENERS OF CGPB COMMITTEES (GROUP I to XII)</b>
47.15.1	Due to time constraints, the presentation by conveners of CGPB Committees (Group I to XII) could not be held.
<b>47.16.0</b>	<b>CONCLUDING REMARKS BY SECRETARY (MINES)</b>
	<p>1. Secretary (Mines) compared the change in the scenario of the holding of CGPB in last few years where previously it was a one-day discourse and presently even two days are not sufficient to contain all the discussions. He felt that such zeal re-energizes the activity of MoM vis-à-vis GSI.</p> <p>2. He expressed his satisfaction on the course of discussion in the 47<sup>th</sup> CGPB meeting and felt that decisions had been taken in the expected line of</p>

<p>follow-up.</p> <ol style="list-style-type: none"><li>3. Among highlights of the discussions, issues were focused on the core library, training and capacity building etc. He urged that regional core library should come up in GSI for systematic categorization of the national assets.</li><li>4. The working modalities of Heliborne Survey System might need separate workshop, he felt.</li><li>5. There was sort of restructuring in erstwhile Coal Wing and he expressed his satisfaction over restructuring of Marine, Coal and AMSE took place in the Department and the new functions had already been stabilized and channelized in the new pathway.</li><li>6. He expressed his concern on the backlog of chemical analysis for NGCM samples and urged GSI to update the status as soon as possible.</li><li>7. He felt that GSI had recently been taking up the assignments more goal oriented and focused in the Mission-Region Hybrid Matrix format.</li><li>8. He expressed his concern on the slow pace of progress of GPM and felt the need to substantially step up the progress.</li><li>9. Secretary (Mines) desired more discussion on hyper spectral and national geomorphological mapping. He envisaged outsourcing of some of the components so as to bring faster pace in those activity domains.</li><li>10. Secretary (Mines) appreciated the GSI portal and acclaimed it to be one of the best in India. He hoped that the portal would be near world class as GSI enters into the third phase of Portal development.</li><li>11. Secretary (Mines) envisioned development of the centre of excellence in R &amp; D that would essentially cover the activity domains of Mission-IV. He pointed out the apprehension from many quarters regarding loss of specialization in the core activity.</li><li>12. Secretary (Mines) visualized that GSI must lead the capacity building rather than managing training courses as a mere conductor. RTIs needed to be flourished under the umbrella of the Region, he advised.</li><li>13. He evoked the idea of constituting 'National Geoscience Council' where eminent geoscientists of India would inculcate geoscientific knowledge to be pursued in the country. The Council would not be guided by GSI driven policy, instead, GSI to work as a component of the Council.</li><li>14. Secretary (Mines) ushered a long-term vision to develop Regions of GSI with distinct identity akin to 'Regional GSI' resembling Indian Railways. Each Region of GSI has different pattern of activity with different demand on growth and industrial parameters. Region specific requirements to be taken care of and during XII Plan, budget might directly be allotted to the Regions.</li><li>15. The progress of Mission-II had shown good results. Secretary (Mines) urged that revisit to some of the mineral belts ought to be made by GSI in the background of UNFC compliant resource. He expressed his satisfaction in</li></ol>
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	<p>figuring out Mission-II as a newly evolved domain where geology was being shown in the economic context.</p> <p>16. He pointed out that geology was not only science but has been proven a part of national growth. GSI must be responsible to link geology to the national strategy. GSI also to build larger capabilities in different domains e.g., water budget, consumption and quality, etc. GSI to understand national needs and made its annual programme tailor-made as per the requirements of the nation.</p> <p>17. MoM would support GSI to become a statutory body to grow beyond the constraints of Ministry of Mines. In the ensuing XII Plan, Ministry of Mines would try to obtain statutory status for GSI and subsequently GSI itself would be accountable directly to the Parliament.</p> <p>[Action: GSI / MOM]</p>
<b>47.17.0</b>	<b>VOTE OF THANKS</b>
	Shri Jaswant Singh, Sr. Deputy Director General (STSS), GSI proposed the vote of thanks.

**Members / Participants of the 47<sup>th</sup> meeting of the Central Geological Programming Board held on 25-26 August 2010 at New Delhi**

Sl. No.	Name	Designation	Organisation
1.	Shri S.Vijay Kumar	Secretary (Mines) and Chairman, CGPB	Ministry of Mines
2.	Shri S.K.Srivastava	Addl.Secretary (Mines)	Ministry of Mines
3.	Shri Niteesh Kumar Dutta	Director General (Acting)	Geological Survey of India
4.	Shri Jaswant Singh	ADG (STSS)	Geological Survey of India
5.	Dr.Prabhas Pande	DDG (PSS-P&M) & Member Secretary, CGPB	Geological Survey of India
6.	Dr.S.K.Wadhawan	Director (Tech.)	Ministry of Mines
7.	Shri G.Srinivas	Director	Ministry of Mines
8.	Shri Suresh Kishnani	Director	Ministry of Mines
9.	Shri A.K.Bhandari	Director	C-TEMPO
10.	Shri L.P. Sonkar	Advisor (Minerals)	Planning Commission
11.	Shri R.B.Tyagi	Dy. Advisor (Minerals)	Planning Commission
12.	Shri P.R.Mandal	Advisor (Projects)	Ministry of Coal
13.	Shri S.Kumar	Member	CGWB
14.	Shri C.S.Gundewar	Controller General	IBM
15.	Shri M.Sengupta		IBM
16.	Prof.B.C.Sarkar	HOD	Deptt. of Applied Geology, ISM, Dhanbad
17.	Shri P.S.Parihar	Scientific Officer-H and Additional Director	AMD, Hyderabad
18.	Shri Shoor Bir Singh	Officer Surveyor	Survey of India
19.	Dr.K.R.Gupta	Secretary	Geological Society of India
20.	Dr.A.K.Lomas	CMD	MECL
21.	Shri V.K.S.Visen	HOD (E)	MECL
22.	Shri Yogesh Sharma	Sr.Manager	MECL
23.	Shri S.K.Gupta		MECL
24.	Shri E.Hanumantha Rao	Head of Explo. & Geology	NLC
25.	Shri Y.S.Babu Rao	GM (Exploration)	SCCL
26.	Dr.P.C.Nawani	Director	NIRM
27.	Dr.K.Manivasan	CMD	TAMIN
28.	Shri Asitabha Dutta	Council Member	MGMI
29.	Shri R.K.Sharma	Secy.General	FIMI
30.	Mr.Tony Harding	Exploration Manager	Rio Tinto India Pvt.Ltd.
31.	Shri Ajit Sahu	Principal Geologist	Rio Tinto India Pvt.Ltd.
32.	Smt.Archana Sehgal	Advisor-External Relations	Rio Tinto India Pvt.Ltd.
33.	Dr.R.Bharadwaj	AGM(Expln.)	HCL
34.	Dr.V.M.Mishra	Dy.Manager(Expln.)	HCL
35.	Shri Manoj Basu	GM (Geotech.)	NHPC
36.	Shri Imran Sayeed	Chief(Geology)	NHPC
37.	Shri N.N.Sinha	Secretary (Mines)	DGM, Jharkhand
38.	Shri S.P.Singh		DGM, Jharkhand
39.	Shri Manoj Kumar	Asst.Director	DGM, Jharkhand
40.	Shri Amrendar Ku.Singh	Geologist	DGM, Jharkhand
41.	Dr.G.Madhukar	Jt.Director	DGM, Andhra Pardesh
42.	Shri V.K.Mishra	Dy.Secretary	Deptt. of Mines, Min. Resources & Industries,

			Govt. of Chhattisgarh
43.	Shri Anil Sharma	Dy. Director	DGM, Chhattisgarh
44.	Shri H.K.Druv		DGM, Chhattisgarh
45.	Shri L.C.Bezbarua	Director	DGM, Assam
46.	Shri Jishnu Dutta Goswami		DGM, Assam
47.	Shri Anupam Phukan		DGM, Assam
48.	Shri Viny Vyasa		DGM, Gujarat
49.	Shri G.T.Pandya		DGM, Gujarat
50.	Shri Vir Singh	Sr. Geologist	DGM, Haryana
51.	Shri Rajneesh Sharma	Geologist	Deptt. of Industries & Commerce, HP
52.	Shri H.L.Langeh	I/C Geologist	DGM, J&K
53.	Shri T.Rajendran	Director I/C	DGM, Kerala
54.	Shri S.K.Shah	Suptdg. Geologist	DGM, MP
55.	Shri V.S.Sawakhande	Director	DGM, Maharashtra
56.	Dr.D.K.Bhattacharya	Director	DGM, Meghalaya
57.	Dr.M.K.Sarma	Asst. Director	DGM, Meghalaya
58.	Shri Trilochan Panda	Jt. Director	DGM, Orissa
59.	Shri N.M.Pitliya		DGM, Rajasthan
60.	Shri G.C.Khanal	Jt. Director	DMMG, Sikkim
61.	Shri B.Jayakumar	Jt. Director	DGM, Tamil Nadu
62.	Shri T.A.Subbiah	Jt. Director	DGM, Tamil Nadu
63.	Shri M.E.Shivalinga Murthy	Director	DGM, Karnataka
64.	Shri DHMV Swamy	Sr. Geophysicist	DMG, Karnataka
65.	Dr.B.N.Shankar	Dy. Director	DMG, Karnataka
66.	Shri Koratemjen.AO	O.S.D.	DGM, Nagaland
67.	Shri K.Athomo Lotha	Jt. Director	DGM, Nagaland
68.	Shri M.M. Swamy	Additional Director General	Geological Survey of India
69.	Shri A.Sundaramoorthy	Additional Director General	Geological Survey of India
70.	Shri N.H.Faruqi	Dy. Director General	Geological Survey of India
71.	Shri B.K.Jena	Dy. Director General	Geological Survey of India
72.	Shri Dr.K.Rajaram	Dy. Director General	Geological Survey of India
73.	Dr.K.Ayaasami	Dy. Director General	Geological Survey of India
74.	Shri R. G. Vijay	Dy. Director General	Geological Survey of India
75.	Shri A. K. Sinha	Dy. Director General	Geological Survey of India
76.	Shri A.K.Mathur	Dy. Director General	Geological Survey of India
77.	Shri S.G.Gaonkar	Dy. Director General	Geological Survey of India
78.	Shri V.P.Sinha	Dy. Director General	Geological Survey of India
79.	Dr.S.Ghosh	Dy. Director General	Geological Survey of India
80.	Shri J.N.Ray	Dy. Director General	Geological Survey of India
81.	Shri Dinesh Kumar	Dy. Director General	Geological Survey of India
82.	Dr.N.K.Roy	Dy. Director General	Geological Survey of India
83.	Shri Samit Bhattacharya	Dy. Director General	Geological Survey of India
84.	Shri Sumant Gupta	Dy. Director General	Geological Survey of India
85.	Shri A.K.Malaviya	Dy. Director General	Geological Survey of India
86.	Shri B.Bandyopadhyay	Director (F)	Geological Survey of India
87.	Shri Harsh Gupta	Director	Geological Survey of India
88.	Dr.V.P.Mishra	Director	Geological Survey of India
89.	Shri P.A.Ramesh Babu	Director	Geological Survey of India
90.	Dr.P.Gupta	Director	Geological Survey of India
91.	Shri D.T.Syiemlien	Director (P&A)	Geological Survey of India
92.	Dr.Srinivas Madabhushi	Director	Geological Survey of India
93.	Dr.Subimal Mukherjee	Director	Geological Survey of India
94.	Shri Asim Kumar Saha	Director	Geological Survey of India

95.	Shri N.K.Dhir	Director	Geological Survey of India
96.	Shri M.Mohan	Director	Geological Survey of India
97.	Shri D.M.Mohabey	Director	Geological Survey of India
98.	Dr.H.Sarvothaman	Director	Geological Survey of India
99.	Shri M.Raju	Director	Geological Survey of India
100.	Shri M.S.Jairam	Director	Geological Survey of India
101.	Shri G.Das Gupta	Director	Geological Survey of India
102.	Shri N.Kutumba Rao	Director	Geological Survey of India
103.	Shri Kalyan Mukherjee	Director	Geological Survey of India
104.	Shri S.K.Chakraborty	Director	Geological Survey of India
105.	Dr.Girish Malhotra	Director	Geological Survey of India
106.	Dr.S.P.Venkata Dasu	Director	Geological Survey of India
107.	Shri S.C.Mehrotra	Director	Geological Survey of India
108.	Shri Amitava Bandyopadhyay	Director	Geological Survey of India
109.	Dr.C.R.M.Rao	Director	Geological Survey of India
110.	Shri N.Devaraj	Director	Geological Survey of India
111.	Shri K.K.Nair	Director	Geological Survey of India
112.	Shri T.K.Chakataborty	Director	Geological Survey of India
113.	Shri Virendra Kumar	Director	Geological Survey of India
114.	Shri Sanjiv Kumar	Director	Geological Survey of India
115.	Shri M.S.S.P.Bharadwaj	Controller of Stores	Geological Survey of India
116.	Shri Dr.K.V.Krishnamurthy	Suptd.Geologist	Geological Survey of India
117.	Dr.Anita Roy	Suptd.Geologist	Geological Survey of India
118.	Shri M.Hariprasad	Suptd.Geologist	Geological Survey of India
119.	Shri Auditeya Bhattacharya	Suptd.Geologist	Geological Survey of India
120.	Shri B.Nageswaran	Suptd.Geologist	Geological Survey of India
121.	Shri Nitish Das	Suptd.Geologist	Geological Survey of India
122.	Dr.N.P.Nathan	Suptd.Geologist	Geological Survey of India
123.	Shri Vikram Rai	Suptd.Geologist	Geological Survey of India
124.	Shri M. P. Gaur	Suptd.Geologist	Geological Survey of India
125.	Shri D.K.Mukhopadhyay	Senior Geologist	Geological Survey of India
126.	Shri Anshuman Acharya	Senior Geologist	Geological Survey of India
127.	Shri N.K.Sarkar	Senior Geologist	Geological Survey of India
128.	Shri S.Sekar	Senior Geologist	Geological Survey of India
129.	Shri Amit Kumar Ray	Senior Geologist	Geological Survey of India
130.	Shri Tanay Dutta Gupta	Senior Geologist	Geological Survey of India
131.	Shri K.K.Gangopadhyay	Senior Geologist	Geological Survey of India
132.	Shri Asit Kumar Saha	Senior Geologist	Geological Survey of India
133.	Dr.Subrata Chakraborti	Senior Geologist	Geological Survey of India
134.	Shri T.Vaideswaram	Senior Geologist	Geological Survey of India
135.	Shri G.K.Kesav	Senior Geologist	Geological Survey of India
136.	Shri S.A.D. Kudari	Senior Geologist	Geological Survey of India
137.	Shri Saudipta Chattopadhyay	Senior Geologist	Geological Survey of India
138.	Shri A.Das	Senior Geologist	Geological Survey of India
139.	Shri A. K. Gupta	Senior Geologist	Geological Survey of India
140.	Shri Rakesh Kumar	Senior Geologist	Geological Survey of India
141.	Smt.Sreemati Gupta	Senior Geologist	Geological Survey of India
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143.	Shri S. N. Bhagat	Senior Geologist	Geological Survey of India
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148.	Shri A.K.Lahiri	Sr.Geophysicist	Geological Survey of India
149.	Dr.S.Ravi	Sr.Geologist	Geological Survey of India
150.	Shri G.S.Jaggi	Supdt. Geologist	OSD, IC-HPC, MoM