

**MINUTES OF THE SECOND MEETING OF COMMITTEE - VI OF THE CENTRAL GEOLOGICAL PROGRAMMING BOARD ON MARINE GEOLOGY & EXPLORATION AND COASTAL GEOSCIENCE HELD ON 2<sup>ND</sup> DECEMBER, 2009 AT KOLKATA**

**2.1:** The meeting was held in the Board Room of Shipping Corporation of India, 13, Strand Road, Kolkata 700001. Shri S. Bhattacharyya, Director, Technical Coordination-I and Member Secretary of the Committee-VI of CGPB initiated the meeting by welcoming the distinguished members and invitees from various earth science institutions and State Governments. He observed that representatives from two State Governments out of the nine invited, attended the meeting. The institutions attended the meeting were from MoES, DST, IBM, DGH, ONGC, NCAOR, AMD, SCI, NPOL, NHO, and the State Government representatives from the Geology & Mining Departments of Tamil Nadu and Kerala. Shri M S Nagar, Chairman (Retd.), IREL attended the meeting as a Special Invitee. From GSI, the meeting was attended by Shri U. K. Ray, Additional Director General, M-IA, and Convener of the Committee-VI, Shri P V Sukumaran, Dy Director General, Op: West Coast-I, Marine & Coastal Surveys, Shri S G Gaonkar, Dy Director General (Geophysics), M&CS, Shri N. C. Sarkar, Dy. Director General (Geophysics), M&CS, Shri S. K. De, Director (Geophysics), AMSE, Dr. S. S. Ghosh, Director, Op: WB, ER, Shri Gautam Dasgupta, Director (CGPB), Dr. S. K. Wadhawan, Director (Monitoring), CHQ and the Directors from the Operations/Divisions of Marine & Coastal Surveys. The list of organizations/institutes who had been invited and those who attended are furnished in Annexure I & II. Shri S. Bhattacharyya thereafter requested Shri U K Ray, Additional Director General and Convener to chair the session.

**2.2:** Shri U.K. Ray in his welcome address explained the main role and working pattern of CGPB which is now being held twice in a year (February & September) to coordinate and formulate programmes that are carried out by GSI considering the needs of other institutions particularly the State Governments. He expressed happiness over the outcome of the First meeting where several proposals and suggestions were made which have been taken care while formulating the Annual Programme of FS 2009-10 such as geotechnical investigation off Chitrapu as requested by Government of Karnataka and in Munambam Harbour on request of Kerala Government. One programme on coastal processes being taken up in association with SAC. Sand investigation off Kerala coast is being taken up following the request of DGM, Kerala during the current FS. The request of NPOL for collection of sediment samples is under consideration. While expressing disappointment over the poor response from the State DGMs he stressed on the need of larger participation of the State Government. Shri Ray informed the members about the DO letter received from Additional Secretary, MoM regarding preparation of a base document on the role of Marine and Coastal Surveys and the present and future work plan which needs to be discussed in detail during the 2<sup>nd</sup> meeting of Committee-VI. It is surmised that the document can be refined and enriched through discussion during the meeting of the Committee and the document thus formulated would be presented to the Planning Commission after deliberations in CGPB in Sept 2010 as a future work plan on Marine and Coastal Survey for XII Plan. The draft base document so prepared had been provided to the members through email before the meeting and also in hard copy during the meeting.

**2.3:** Shri S. Bhattacharyya informed that the Minutes of the First meeting of Committee-VI had been circulated and Dr. Chandrasekaran, AMD had suggested some modifications which has been noted and modified accordingly. No further observations were made by any member and the minutes of the First meeting were confirmed. Thereafter, the convener requested the members to give their valued opinion on the draft Base Document.

**2.4:** While speaking about the base document, Dr. S K Das observed that a lot of manpower as well as infrastructural resources will be required to carry out the programmes as indicated in the base document. He said that International Seabed Authority has to be approached for certain investigation earmarked in the International Waters. He also

informed that as per the international convention, any country can have only one site for mining activity. MoES has carried out extensive survey on nickel - cobalt encrustation. He also informed that global earthquake data is available online. The only way to get data from other sources is by data exchange only. The Ministry of Defense has given clearance for marine data exchange to MoES in selected sectors.

**2.5:** While speaking on the aspect of sharing of responsibilities on comprehensive seabed mapping with multibeam echosounder, Dr. S K Das, MoES requested GSI to prepare a draft MOU on the aspect. It has been decided to formulate the draft agreement and finalise the same in near future through deliberation between MoES and GSI. The technicalities of data acquisition and synthesis and sharing of the same (as instruments of different make and different software are being used) will have to be sorted out with the working group of NCAOR, Goa. In this context, it was also felt necessary to clarify whether under the present norm of restricted nature of offshore data generated by GSI can be shared. The issue was discussed in the meeting of Committee-VI and a subcommittee has been formed during the 2nd meeting of Committee-VI to work on the declassification of offshore data by taking up the issue with MoD. MoES has been requested again to provide their "Protocol" for deeper water surveys.

**2.6:** While discussing on the long term programme of Marine & Coastal Survey as projected in the draft document, Dr. Shanmukhappa, the ONGC representative informed that MOU has to be signed for availing the analytical facility for gas hydrate with ONGC. Shri U K Ray informed that so far GSI was carrying out sponsored projects for ONGC. Now time has come to carry out collaborative projects so that GSI can also carry out some of the scientific work for ONGC. He also added that requirement of different offices of ONGC (Mumbai/Chennai/Rajamundry etc.) may be placed through the ONGC Member participating in the Committee-VI Meeting to consider in a comprehensive manner.

**2.7:** Shri P.V. Sukumaran, Deputy Director General, M&CS opined that the base document needs to be developed to avoid any duplication of work. New horizons of research have to be looked into through mutual discussion. He informed about the presentation to the Chief Secretary, Government of Kerala on the status of investigation of construction grade sand being carried out off Kerala coast. Regarding the assessment of environmental impact consequent to the offshore sand mining, he informed that GSI at present does not have the necessary infrastructure to carry out the study and the matter has been referred to Fisheries Survey of India and CMFRI. Shri M S Nagar informed that NIO has the capability to carry out such studies.

**2.8:** Shri G Dasgupta, Director (CGPB) highlighted the necessity of the base document. Welcoming an interaction on the base document about the programme and capabilities of GSI, he expected that the requirement of State Government and other Agencies will be known which can be discussed during the CGPB meeting in September 2010 facilitating formulation of the long term offshore programme of GSI.

**2.9:** Shri U.K. Ray opined that the base document can be fruitfully developed through contribution by all member institutes interacting with GSI. Regarding data sharing, he informed that presently, all offshore data are of classified nature. To achieve the objective of the base document it is highly essential that there should not be any restriction on exchange of offshore data with other member organisations. Regarding availability of infrastructure, he informed the members that GSI is in the process of acquiring an ocean going vessel and a coastal geotechnical vessel capable of drilling upto 30 m in shallow water as close as 6 m isobath. Presently sufficient number of geologists is being recruited by GSI and thus human resource will not be a hindrance for undertaking the programmes as specified in the base document.

**2.10:** Shri S Bhattacharyya informed that no information about the future course of action has been received from MoES after the meeting on hydrothermal sulphide mineralization

around the Mid-Oceanic Ridge held at NCAOR, Goa on 17<sup>th</sup> & 18<sup>th</sup> July 2009 where GSI representative also participated. He also suggested that the exercise of derestricting the data sharing should be a joint responsibility of GSI and MoES as both the organizations are to work together on comprehensive multi-beam bathymetric survey of the EEZ as per the mandate of NMP2008.

**2.11:** Dr. Das informed that after the meeting at Goa, a comprehensive document has been prepared awaiting circulation which would be followed by another meeting where the details including sharing of areas and work vis-a-vis participation of GSI on the study of hydrothermal sulphide mineralization would be worked out. He also informed that NIO is working on the nickel-cobalt encrustation on the Carlsberg Ridge. Dr. Das agreed for the joint responsibility to take up the matter with MoD to facilitate the sharing of bathymetric data to make the comprehensive multi-beam survey of the EEZ as per the mandate of NMP2008 a success. Shri U K Ray observed that since MoES being a Ministry itself, MoES should take a lead role in interacting with Ministry of Defence for de-restricting the sharing of marine data amongst Government Departments.

**2.12:** Dr. S Sengupta, DGH informed that the Government of India is preparing a National Knowledge Hub for data interchange which will consist of several modules. DGH on behalf of the Ministry of Petroleum and Natural Gas has been working to achieve the milestone of setting up of National Data Repository (NDR) at the first phase. Major data classes that have been proposed to put on the NDR are seismic data, gravity and magnetic data, geological and geochemical data, drilling data, well and log data, etc. He gave a presentation about the working of National Knowledge Hub. He opined that the data restriction depends upon the scale of the information required to be disseminated. He informed that it has been decided to deposit all the exploration data into the National Knowledge Hub.

**2.13:** Dr. S K Wadhawan, Director (Monitoring) informed that a lot of data on climate change and glaciology are available with GSI in the Northern Region which can be incorporated in the National Knowledge Hub.

**2.14:** Shri S G Gaonkar, DDG (Geophysics) expressed that a geophysical data repository has to be prepared. GSI is also sharing earthquake data to other organizations from its Jabalpur and Nagpur observatory.

**2.15:** Shri U K Ray suggested forming a Subcommittee with MoES in the lead role for finalization of the base document which will suggest about the collaborative projects to be taken up in future. The committee will also take care of de-restriction on data sharing by taking up the matter with MoD.

**2.16:** Shri M S Nagar congratulated GSI for preparing the draft base document and opined that this has to be further strengthened by clearly reflecting the scientific background of Marine & Coastal Surveys and the expertise available with the organization, the various laboratory facilities available, the nature of job that are being executed on regular basis. He observed that GSI is the mother organization in the field of earth science study. While appreciating the need of collaboration, he also emphasized that GSI's own programme should not be curtailed by allocating more funds for collaborative programmes. GSI may share 30% of its resources for collaborative programmes while it should keep 70% of the resources for its own programme. He also advised to train the young scientists in the marine fields so that they can carry out the long term projects for 30 – 35 years as envisaged in the long term plan for the replacement vessel. Some senior officers of Marine should also interact with universities to guide the students on marine science.

**2.17:** Shri G Dasgupta informed that only 10% of the planned budget is allocated for collaborative project with State DGMS.

**2.18:** Shri P V Sukumaran observed that some specialised aspects besides the routine survey in the shallow and deep water domain should also be included. In response to his observation, Shri Nagar opined that investigation of phosphatic sediment should be undertaken in either domain. Though he pointed out that the many organizations are working on some specialized aspects only, but GSI, being the mother organization, has to cater to a much broader gamut. The main role of GSI is to develop the basic data on mapping and exploration.

**2.19:** Shri U K Ray informed that the document has to be developed with further interaction and to be submitted during September 2010 to CGPB. Shri Nagar informed that in earlier days, similar base document had been prepared by GSI and which led to the diversification of exploration resulting in creation of organizations like ONGC, MEC, IBM etc.

**2.20:** Dr. S Chandrasekaran of AMD and Dr P A Verghese of IBM supported the idea of developing the base document through the advice of the proposed subcommittee. Dr P A Verghese informed that IBM is preparing and updating the land based mineral database but still now they have not made any database for marine minerals. The committee will be helpful in this respect. Dr. P C Basu informed that draft notification on marine mineral database has been prepared and submitted to higher authorities. Shri S Bhattacharyya urged IBM to develop an offshore cell to deal with the mineral data of offshore domain. Shri Nagar opined that IBM should make the marine mineral database.

**2.21:** Dr. S Sengupta gave a presentation on National Gas Hydrate Programme Phase-II where besides the oil producing organizations, IITs, NIO, NIOT and NGRI etc are also the participating members. About the participation of GSI in the programme, he opined that GSI should formally apply to DGH specifying the role to be played by GSI.

**2.22:** Dr. Y Satyanarayana gave a brief account of the investigation conducted by NPOL. NPOL is using low frequency sonar, side scan and multibeam instruments during their investigation off Kochi and Visakhapatnam. The SVP is taken up every month for generation of data for oceanic prediction. NPOL desires to enhance their capabilities to cater the need of other organizations. They require multichannel seismic data, deep core penetrometer data, multibeam echosounder associated with backscatter information, temperature, salinity data, data on internal waves and wave height which can be measured onboard by automatic instruments. NPOL requires sub-bottom sediment information upto 200 m depth. Only ONGC carried out the drilling in the marine domain but they start logging from 500 m b.s.f. Shri N C Sarkar informed that GSI is now carrying out multibeam survey and the collection of backscattering data will also be considered by GSI. Shri Gaonkar informed that GSI is purchasing airborne gravimeter for deployment.

**2.23:** Commander T P Mahato, Joint Director of Hydrography informed that NHO is publishing NHO charts both in hard copy as well as soft copy version. He also informed that there is no embargo on bathymetric data upto a certain density. Shri S Bhattacharyya informed that during the last meeting, the NHO representative had informed that a committee has already been constituted to look into this aspect regarding dissemination of data depending on its density. Commander T P Mahato again said that there is no restriction to share the electronic data which can be used for navigation only and not for any other use.

**2.24:** Shri V. Sivasubramanian, Deputy Director, DGM, TN mentioned that at present no survey is being carried out in the offshore by DGM, Tamil Nadu. Shri D P Sree Kumar, Senior Geologist, DMG, Kerala requested GSI to continue the offshore sand investigation.

**2.25:** Shri S K De, Director (Geophysics), AMSE gave a brief presentation of the aeromagnetic survey off the west coast and also showed that the marine magnetic data matches very well with the airborne data. The compilation showed the presence of a graben like structure off the west coast. The committee recommended for deep seismic survey

over the graben to get more information. Shri M S Nagar opined that the survey being carried out by AMSE and Marine should continue further north and also the bore hole logging data of ONGC should be consulted for corroboration of subsurface geology. He wanted to know if any state government is doing any survey regarding the marine transgression of the coastal region. Shri S Bhattacharyya informed that on request of Marine, AMSE has included offshore survey further north from 12 degree to 16 degree for FS 2009-10. He also informed that one programme on coastal processes is being carried out by M&CS in association with SAC off Dhamara River in Mahanadi delta.

**2.26:** Shri U K Ray proposed constitution of the Subcommittee comprising MoES, DST, DGH, ONGC and GSI. Mr. MS Nagar was also nominated as one of the members of the Subcommittee. The Subcommittee, headed by Dr. S.K. Das of MoES, shall study and refine and develop the base document. Shri P.V. Sukumaran was nominated as the Vice-Chairman of the SubCommittee. Dr. M. Prithviraj proposed the name of Dr. Shiv Kumar, Head, NSDI, DST as one of the members. There will be nominated members from DGH, ONGC and GSI.

**2.27:** Shri U K Ray accepted the proposal of Shri S. Bhattacharyya who pointed out that the Subcommittee so formed will also look into the Points 6 and 8 of the Terms of Reference of the Committee-VI.

**2.28:** Shri A K Barai, Vice President (Tech), SCI said that GSI and SCI has a long standing relationship for three decades for running and maintenance of the three research vessels. There is a lot of constrains to run the old ships but SCI is still carrying out the job earnestly as best as possible.

**2.29:** Agenda items were discussed one by one. The first item on base document was discussed elaborately and a Subcommittee was formed to this effect. In absence of SAC, the agenda of SAC was and status of present study was read out. Shri M S Nagar advised DGM, Tamil Nadu to communicate to GSI their requirements during the formulation of the next Annual Programme. Shri S Bhattacharyya informed Shri V. Sivasubramanian, DGM TN representative that there will be two cruises onboard RV Samudra Kaustubh during March-April 2010 where scientists from DGM, TN can participate observing the formalities to get an idea of marine survey. Shri Nagar welcomed the idea and expressed that once such collaborative programme is initiated, the interaction between the two organisations will further be strengthened. It was also stated that necessary permission has been accorded to INCOIS for installation of AWS onboard research vessels of GSI.

**2.30:** Shri P V Sukumaran stated that the environmental problem expected to arise from offshore mining of the construction grade sand has to be taken care of. He also informed that at present offshore mining technology has not been developed. Shri Nagar informed that at present, sand mining in estuaries are being carried out in Maharashtra and mining license is given by DGM, Maharashtra. About collaborative programmes, it was suggested to write to the member organization about collaboration during the formulation of next FSP. Shri S Bhattacharyya requested the members to provide GSI their annual offshore programmes along with long term rolling plan if possible. Shri U K Ray requested the State Government representative to inform GSI about their coastal programmes. Dr. S K Wadhawan requested all member institutes to prepare their rolling plan for future and submit a copy to GSI. About preparation of a status paper, Shri Nagar requested GSI to provide members the offshore capabilities of GSI to prepare Status Paper (Point 7 of Terms of Reference of Com-VI) on long/short term perspective plans, and creating end-users' specification in view of new developments in NMP 2008.

**2.31:** Dr. S Chandrasekaran, Head, BSOI, AMD wanted to know if any programme is being taken up by GSI to carry out survey upto 2 km offshore from the coast. Shri S Bhattacharyya informed that at present there is no such programme due to lack of manpower though similar survey had been taken up off Orissa coast. This survey is to be

carried out using hired boat during fair weather (December – February) when manpower has to be deployed onboard coastal vessels.

**2.32:** Shri Nagar opined that palaeo beach is the storehouse of heavy minerals. Shri U K Ray mentioned about his recent visit to Chhatrapur, Orissa and explained the occurrences of heavy minerals in dune sands.

**2.33:** A presentation was made on occurrence and mining of diamond and phosphorite off the Namibian coast. Shri P V Sukumaran wanted to know from IBM about the reported diamond occurrences off Nagapattinam, Tamil Nadu. IBM informed that they have no such information on the reported occurrence. Shri S Bhattacharyya inquired if any diamond occurrence was detected by AMD during their investigation for onshore placer minerals. Dr. Chandrasekaran informed that no such occurrence has been reported.

**2.34:** Dr. P C Basu gave a brief presentation on the achievement of cruises SM-208 & 209 of FS 2009-10. Dr. M. Shanmukhappa of ONGC gave a presentation on the R&D activities on gas hydrate being carried out by ONGC. Shri U K Ray requested him to submit a long term (5 year) programme on this aspect.

**2.35:** Shri G Dasgupta opined that the discussion has been very fruitful and will help in framing a long term policy for marine survey.

**2.36:** Shri S Bhattacharyya concluded the meeting with observation that the modalities of interaction with MoES has been chalked out. The draft base document has been discussed in detail and a committee has been formed for further refinement of the draft document.

**2.37:** Shri U K Ray thanked everybody for their active participation making the deliberations lively and fruitful. He stressed on the need of enhanced interaction and wider participation of the members to achieve the goal of CGPB.

**2.38:** The 2<sup>nd</sup> Meeting of the Committee-VI of CGPB was concluded with vote of thanks by Shri S G Gaonkar, Dy Director General (Geophysics).

**LIST OF MEMBERS AND INVITEES WHO WERE REQUESTED TO ATTEND THE  
SECOND MEETING OF THE COMMITTEE-VI OF CGPB HELD ON 02.12.2009**

**Members:**

1. Ministry of Mines, New Delhi (Director Tech Level)\*
2. Ministry of Earth Science, New Delhi (Director Tech Level)
3. Department of Science & Technology (DST), New Delhi (Director Tech Level)
4. Indian Bureau of Mines (IBM), Nagpur
5. Directorate General of Hydrocarbon, New Delhi
6. DGM, Govt of West Bengal\*
7. DGM, Govt of Orissa\*
8. DGM, Govt of Andhra Pradesh\*
9. DGM, Govt of Tamil Nadu
10. DGM, Govt of Kerala
11. DGM, Govt of Karnataka\*
12. DGM, Govt of Maharashtra\*
13. DGM, Govt of Goa\*
14. CGM, Govt of Gujarat\*
15. Oil & Natural Gas Corporation (ONGC), Dehradun
16. National Centre for Antarctic and Ocean Research (NCAOR), Goa;
17. National Institute of Oceanography (NIO), Goa\*
18. Atomic Mineral Directorate for Exploration and Research (AMD), Hyderabad
19. Dy. DG of Operations and Directors of GSI associated with the investigation on Marine Geology & Exploration and Coastal Geoscience, Director (Monitoring) and Director (CGPB), GSI, CHQ.

**Permanent Invitees:**

20. Indian Port Association (IPA), New Delhi\*
21. Shipping Corporation of India (SCI)
22. Indian Navy (IN), New Delhi\*
23. National Physical Oceanographic Laboratory (NPOL), Kochi
24. National Hydrographic Office (NHO), Dehradun
25. Space Application Centre (SAC), Ahmedabad\*
26. Indian National Centre for Ocean Information Services (INCOIS), Hyderabad\*
27. National Institute of Ocean Technology (NIOT), Chennai\*
28. Coastal Erosion Directorate, Central Water Commission, New Delhi\*.
29. Integrated Coastal and Marine Area Management (ICMAM), Chennai\*
30. Central Water and Power Research Station (CWPRS), Pune\*

**Special Invitee:**

31. Shri M S Nagar, Chairman (Retd), IRE.

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\* Members / Invitees who could not attend the meeting

**LIST OF MEMBERS AND INVITEES WHO ATTENDED THE SECOND MEETING OF THE COMMITTEE-VI OF CGPB HELD ON 02.12.2009**

**Convener:** Shri U K Ray, Additional Director General, M-IA, GSI, Kolkata.

**Member Secretary:** Shri S. Bhattacharyya, Director (TC-I), GSI, Kolkata

**Members:**

1. Dr. S K Das, Advisor, MoES, New Delhi
2. Dr. M. Prithviraj, Scientist-F, DST, New Delhi
3. Dr. P A Verghese, Mineral Economist, IBM, Nagpur
4. Dr. Siddhartha Sengupta, Advisor, Geology, Directorate General of Hydrocarbons, Noida
5. Shri V. Sivasubramanian, Deputy Director, CGM, Guindy, Chennai, Tamil Nadu
6. Shri D P Sree Kumar, Senior Geologist, DGM, Government of Kerala, Thiruvananthapuram.
7. Dr. M. Shanmukhappa, General Manager, KDMIPE, ONGC, Dehradun
8. Dr. John Kurién, NCAOR, Vasco-da-Gama, Goa.
9. Dr. S Chandrasekaran, Head, BSOI, AMD, Hyderabad
10. Shri S G Gaonkar, Dy Director General (Geophysics), M&CS,
11. Shri P V Sukumaran, Deputy Director General, Op: West Coast, M&CS, GSI, Mangalore
12. Shri N C Sarkar, Dy Director General (Geophysics), M&CS,
13. Shri S K De, Director (Geophysics), AMSE, GSI, Bangalore
14. Shri A.K. Sen, Director, Op: East Coast-I, M&CS, GSI, Kolkata
15. Shri N M Abdulla, Director, Op: West Coast-I, M&CS, GSI, Mangalore
16. Dr S S Ghosh, Director, Op: WB, ER, GSI, Kolkata
17. Dr S K Wadhawan, Director (Monitoring), CHQ, GSI, Kolkata
18. Shri G Dasgupta, Director (CGPB), GSI, New Delhi

**Permanent Invitees:**

19. Shri A K Barai, Vice President (Tech), SCI, Kolkata
20. Dr. Y Satyanarayana, Scientist F, NPOL, Kochi
21. Commander T P Mahato, Joint Director of hydrography (Op), NHO, Dehradun.

**Special Invitee:**

22. Shri M S Nagar, MD (Retd), IRE, Mangalore

**Other GSI Representatives:**

23. Dr. P C Basu, Director (Geology), Petrology Division, M&CS, GSI, Kolkata
24. Dr. B P Pal, Director (GP), M&CS, GSI, Kolkata.
25. Shri G P Mohapatra, Director (Geology), M&CS, GSI, Kolkata
26. Shri M Hari Prasad, Director (Geology), M&CS, GSI, Kolkata
27. Shri N R Biswas, Senior Geologist, TC-I Division, M&CS, GSI, Kolkata
28. Shri A Lahiri, Senior Geologist, Palaeontology Division, M&CS, GSI, Kolkata
29. Shri Subhasis Roychaudhuri, Junior Geologist, TC-II Division, M&CS, GSI, Kolkata
30. Shri F S Das, Junior Geologist, TCS Division, M&CS, GSI, Kolkata