

## **Geological Survey of India**

### **Minutes of the 3<sup>rd</sup> meeting of CGPB Committee IX - Geoscientific Investigations, held on 23<sup>rd</sup> July 2010 in the Conference Room of V.K.S. Vardan Auditorium, GSI, Lucknow**

The 3<sup>rd</sup> meeting of the reconstituted Central Geological Programming Board (CGPB), -Committee Group-IX on Geoscientific Investigations (geotechnical investigations, natural hazards, climate change, environmental geology, shallow subsurface geology and subsurface hydrology) was held on , 23<sup>rd</sup> July 2010 at the conference room of the V. K. S. Vardan Auditorium in the Vasundhara Complex of the Geological Survey of India, Northern Region, Lucknow under the Chairmanship of Shri Sumant Gupta, Convener & Deputy Director General, Northern Region, GSI. Dr. S.C. Gulati, Dy. Director General, Chemistry, N.R., Geological Survey of India was also present to provide valuable suggestions to the group. Dr. S.V. Dharm Rao, Joint Advisor, National Disaster Management Authority (NDMA) was also present there as the Invited Guest.

Following members, permanent invitees of outside organisations and officials of the GSI NR, Lucknow attended the meeting:

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Shri Sumant Gupta	Dy. Director General, & Convener	GSI, NR, Lucknow
Shri.S.C. Gulati	Dy.Director General (Chem)	GSI, NR, Lucknow
Shri M. Raju	Director Monitoring –III GSI,PPM	CHQ Kolkata.
Shri Harsh Gupta,	Director & Member Secretary, Earthquake Geol. Div.,	GSI, NR, Lucknow
Shri V.P.Mishra	Director, Technical Coordination-I	GSI,NR Lucknow
Shri S.P.Nim	Director, Technical Coordination-II	GSI,NR Lucknow
Shri.Rajeev Srivastava	Director	GSI, NR., Lucknow
Shri.S.S. Srivastava	Director, PGRS Divn,	GSI. ER, Kolkata
Shri A.K.Saha	Director	GSI. ER, Kolkata
Shri.Shekhar Sarkar	Director, Landslide	GSI, CR, Pune
Shri.T.S.Pangtey	Director, Engg.Geol. -I	GSI, Chandigarh
Shri.Sanjiv Sharma	Director, LHIM &EPE	GSI, N.Delhi
Shri N.K.Dhir	Director	GSI,NER,Shillong
Shri.Zafiruddin Iqbal	Director, EQG.Divn.	GSI, WR, Jaipur
Shri. Prabal Rakshit	Director	GSI, WR.Jaipur
Shri.S.K.Ghildyal	Director, Himlayan Geology	GSI, NR, Lucknow
Shri. S.V. Kumar	Director, RTI	GSI NR, Lucknow
Shri. G.K.Gupta	Director, Petrology Divn	GSI, Lucknow
Shri.Dinkar Srivastava	Director, PGRS Divn.	GSI,NR, Lucknow
Shri. M.P.Srivastava	Director, E.G.Divn.	GSI, CR, Nagpur
Shri. Anil Mehrotra	Director, E.G. Divn.	GSI , NR, Lucknow
Shri. Raghubir Singh	Director, E.G.Op. J&K	GSI NR, Lucknow
Shri V.N.Parcheta	Director (C), Chemical Division,	GSI, NR. Lucknow
Dr. G.C.Srivastava	Director ©, Chemical Division	GSI, NR. Lucknow
Shri A.K.Johari	Director, Drilling Division	GSI, NR. Lucknow
Shri Kumud Sharma	Director, E. G. Div., UP&UK	GSI, NR. Lucknow
Shri A.U. Khan	Director, Project Quaternary Geology, O.P.U.P.	GSI, NR. Lucknow.
Shri Deonath	Director, STM Project,Op U.P&UK	GSI, NR, Lucknow
Dr. P.C.Bandhopadya	Director, M&C Divn.	GSI, NR. Lucknow

#### **NDMA**

Dr. C.V.Dhrama Rao Jt. Advisor, NDMA,1 Safdarjung Encalve N.Delhi

#### **NEC**

Shri.U.K.Mishra Director, NEC Shillong

#### **CGWB**

Dr.K.P.Biswas Regional Director, CGWB, Lucknow  
Dr. D.S. Pandey Scientist-D CGWB, NR, Lucknow  
Dr. B.C.Joshi Scientist-B CGWB, NR, Lucknow

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### **NRSC/ISRO**

Shri. G.C.Behera Dy.Director, NRSC/ISRO, Balanagar

### **DGM J&K**

Shri.Nisar Ahmad Geologist DGM, Jammu & Kashmir

### **GSI**

Shri K.C.Jain	Sr.Geologist, Tech. Coord. Divn., Op UP & UK	GSI, NR, Lucknow
Shri Abhinandan Srivastava	Sr. Geologist, Glaciology Division	GSI, NR, Lucknow
Shri Prem Prakash	Sr. Geologist, CGPB Secretariat	GSI, New Delhi
Shri G.C.Kandpal,	Sr. Geologist, Earthquake Geol.Divn.	GSI,NR, Lucknow
Shri K.C.Joshi	Sr. Geologist, Earthquake Geol.Divn.	GSI,NR, Lucknow
Shri R.J.Singh	Sr. Geologist, RTI.	GSI, NR, Lucknow
Shri S.K.KarSr.	Sr.Geologist, Tech. Coord.	GSI, NR, Lucknow
Shri J.M. Gautam	Sr. Geologist, EG. Divn.	GSI, CR, Shillong
Shri Rajendra Kumar	Sr.Geologist, Tech.Coord.Divn	GSI, NR, Lucknow.
Shri P.K.Yadav	Sr.Geologist, Tech.Coord.Divn	GSI, NR, Lucknow
Shri Rajnish Misra	Asstt. Geologist, Earthquake Geology Divn.	GSI, NR, Lucknow

Shri Harsh Gupta, Member Secretary, Director Earthquake Geology Division, GSI, N.R., Lucknow began the proceedings by welcoming invited guests and the members of the Committee. He then requested the Chairman to address the meeting.

- 1.0 Chairman, Shri Sumant Gupta, welcomed the members. In his address, and while dwelling on the significance of such a conference he expressed serious concern over the thin attendance of the members especially representatives from different organizations, who had been repeatedly and painstakingly invited by the organizers.
- 1.1 He observed that unless the meeting is attended by the designated members of the committee its ultimate aim can not be achieved. In order to improve the attendance he further mooted an idea of holding a seminar on the themes, which are similar to those of CGPB Group IX. He then requested the Member Secretary to start the proceedings as per the agenda.
- 1.2 The Member Secretary then spelt out the Agenda of the meeting, which was also given in the booklet prepared by compiling the information sent by different members regarding their present and future activities. While explaining the Agenda, he made a presentation on the wide gamut of information gathered for the preparation of the Base Document for CGPB committee-IX. Further he laid special emphasis on the need for getting members' views on their respective fields of specialisations to be considered while preparing said document.

## **2.0 Confirmation of the minutes**

2.1 Minutes of the 2<sup>nd</sup> meeting held on 14<sup>th</sup> December 2009 were placed before the House. The house confirmed the minutes unanimously.

## **3.0 Follow up action on the recommendations of the 2<sup>nd</sup> meeting.**

3.1 Regarding a query on para 6.0 of the minutes of last meeting wherein Shri G. C. Srivastava, Director, Chemical Division, GSI, NR, Lucknow was entrusted with the work of standardisation of the methodology to analyse Arsenic(As<sup>3+</sup>/ As<sup>5+</sup>), he informed that the work had been accomplished and the report on it had been submitted.

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- 3.2 On the same subject this was also informed by M/s. V. N. Pracheta and G. C. Srivastava, Directors, Chemical Division, GSI, NR, Lucknow that the Ion-Chromotograph, the instrument used for the analysis of the Arsenic ( $As^{3+}/As^{5+}$ ) is available at the Marine Wing of the GSI at Kolkata and the same can be used at present level of the demand of such analyses.
- 3.3 Regarding para 8.1 of the minutes of last meeting, Mr. K.P. Biswas, Director, CGWB informed that a MOU had been signed by the GSI and his organization at Faridabad.
- 3.4 Dr. C.V. Dharm Rao, Joint Advisor, NDMA raised the concern that the GSI reports on landslide studies are not available to public.
- 3.5 Mr. Sanjiv Sharma, Director, LHIM &EPE, GSI Delhi ... informed that all the reports that are being received at his end are being forwarded to the NDMA.
- 3.5 Dr. Dharm Rao said that these reports generally do not have any concrete plan of action for its mitigation.
- 3.6 On this he was informed that the reports do contain mitigation measures, though it may not be always possible to contain the slides because of the several constraints.
- 3.7 On a related enquiry, Shri Sanjiv Sharma replied that all the reported landslide events are immediately put on the GSI Portal.
- 3.8 Dr. U.K. Misra, Director, NEC suggested that the work of other organizations working in the same fields in different parts of the country should also be incorporated so that a complete picture of the status of the work in certain theme in the country could emerge.
- 3.9 Dr. G.C. Behera, Dy. Director, NRSC suggested that GSI should come up with a complete picture of the landslide inventory, risk assessment for landslide and hazard assessment of landslide of the country. He further informed that it is only with the GSI's help that they were able to take up the huge work of National Geomorphological Mapping (NGM) programme.
- 3.10 Mr. Sanjiv Sharma informed that work in this direction has already begun. However, in order to complete the vast data base; the lack of work force in this particular field proves to be a bottleneck.
- 3.11 Shri S. Gupta said that a list of all the agencies including various Institutions, NGOs or State Governments who are working in the field of Landslide Hazard Zonation on Macro, Meso or Micro levels, should be prepared which will help in expediting the coverage of the full country for the landslide hazard zonation studies.
- 3.12 Representatives from NDMA, NRSC and NEC were requested to provide the list of such organizations.  
(Action Dr. Dharm Rao, DR. Behra, Dr. U.K. Misra)
- 3.13 Dr. U.K. Misra told that he will provide the list of workers / agencies working in Microzonation field in NE Region and requested that GSI should contact them for information.
- 3.14 Mr. S. Sarkar, Director, GSI said that repetition of same work on landslides by different agencies, in the same area was a cause of concern and should in case be avoided.
- 3.15 Shri S. Gupta Chairman opined formation of subgroups for specialised work in expediting this work under a national programme.
- 3.16 Dr. Dharm Rao cautioned that there should not be any duplication of policy/work programme being taken up by this committee with others.
- 3.17 Mr. Sanjiv Sharma told that about 1500 and odd slide incidences data was available from Uttarakhand Region.
- 3.18 Dr. Dharm Rao suggested that instead of bigger forums like this committee, smaller subgroups or task forces dealing in different fields like landslides, earthquakes, etc. shall have better coordination among their workers/members.

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**4.0 Presentations**

- 4.1 Dr. Pandey, CGWB made a presentation regarding their department's activities for 2010-11 and also the progress of work done during October 2009-March 2010. He also informed that a MOU had been signed between CGWB and the GSI.
- 4.2 Dr. Biswas, Director, CGWB proposed to have a collaboration with GSI for the analysis of the mineral assemblage and also possibly the isotope studies for bore-hole samples collected by CGWB, especially for minerals like Arsenic, as they have a limited capability in this field.
- 4.3 Shri S.K. Kar, Senior Geologist informed that the Selenium occurrence in water reduces the harmful effects of the As. Accordingly he suggested that while doing the As analysis Se content should also be assayed.
- 4.4 Shri S. Gupta asked the members to give suggestions for the base document for the groundwater studies.
- 4.5 Dr. Biswas informed that the dynamic groundwater resource estimation for all the states is already over.
- 4.6 Dr. Behera informed that hydro-geomorphological mapping on 1:50,000 scale along with the well information has been prepared for 10 states. This map indicates the spatial distribution and water rechargeability of the aquifers.
- 4.7 Shri S. Gupta asked the members to give suggestions for the base document for the Climate change studies.
- 4.8 Dr. Behera informed that only piece-meal studies have been done by them in this field and their work is not comprehensive type.
- 4.9 Dr. Dharm Rao said that even NDMA has attempted only informal studies in this field.
- 4.10 Mr. Prabal Rakshit, Director, GSI, Jaipur informed that the Sambhar lake sediments had been sampled to know its spore pollen content, which may give clues to the possible climate change. In addition, he told that calcrete studies have also been taken up for similar ends.
- 4.11 Shri Harsh Gupta at this point asked the members for their views regarding holding a seminar on the topics broadly covered by CGPB Group IX. The Member Secretary, placed a proposal for holding a three day National Seminar, on Geoscience and Natural Hazard -A Multidisciplinary Approach, under the aegis of CGPB Group IX, which could be organized by The Geological Survey of India at Lucknow between February March 2012. He told that such a platform could bring other organisations to actively participate in deliberations more fruitfully. He suggested that for this a formal approval of the CGPB committee could be obtained.
- 4.12 Dr. Dharm Rao responded that if the seminar could involve the SAARC and other countries too it would enhance the utility of the seminar.
- 4.13 Dr. Behera on the invitation of the Member Secretary gave an oral presentation on the ongoing and future activities of NRSC, which included developing technical manuals, imparting training to other organisations, etc besides geomorphological and related mapping. During this he again exhorted the GSI to take up National level project for landslide mapping, landslide inventory, and landslide hazard and risk mapping.
- 4.14 Mr. M. Raju, Director, Landslide Monitoring, CHQ, Kolkata suggested to mark landslide incidences on the maps being prepared under National Geomorphological Mapping programme.
- 4.15 Dr. Behera said that there should be some reasonable time frame for completing the landslide hazard zonation of the country. He further inquired whether this work could be completed in say 5 years.
- 4.16 Mr. M. Raju said that the area is too big and keeping the quality of work maintained and with present level of resources it is too big a task..
- 4.17 Dr. Nissar Ahmad from DGM, Jammu & Kashmir in his presentation informed about the activities of the department including geotechnical studies of land subsidence around Zonreshi area, slope stability studies of limestone mine at Bajnar Khrew and Neotectonics, Geomorphology and Seismic Hazard Assessment of Vishau Basin.
- 4.18 He also wanted to know whether training on landslide hazard zonation mapping could be given in J&K.

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The Chairman advised him to visit GSI Portal for information on training programmes.

- 4.19 Mr. M. P. Srivastava, Director, Engineering Geology Division, GSI, CR, Nagpur gave a detailed power point presentation on the thirteen projects taken up during Oct. 2009-March 2010.
- 4.20 Mr. Zafiruddin Iqbal, Director, Earthquake Geology Division, WR., Jaipur gave a power point presentation on the work done by the Engineering Geology Division, W.R.,GSI, Jaipur.
- 4.21 Mr. Kumud Sharma, Director, Engineering Geology Division, Op: UP&UK, N.R., GSI, Lucknow gave a power point presentation on the work done by the Engineering Geology Division, UP&UK, N.R.,GSI, Lucknow.
- 4.22 Mr. J.M. Gautam, Senior Geologist presented the work of Engineering Geology Division, GSI, NER. He also informed that the law and order problem makes it difficult to complete the projects. On this Mr. M. Raju told that nothing in writing regarding this problem has been reported to the CHQ.
- 4.23 Mr. Shekhar Sarkar Director, Project Landslide, CR, Op: Maharashtra, GSI gave a short presentation of the work carried out. He also suggested that the duration of CGPB Group IX meeting should be of two days – second day may be used for the finalisation of the minutes and getting it signed by the participants.
- 4.24 Mr. N.K Dhir, Director, T.C.NER presented the work done by the Project Landslide Hazard Zonation, which included landslide hazard zonation of a 24 km stretch from Gangtok along Gangtok- Nathula road and preparation of landslide inventory.
- 4.25 Mr T. S. Pangtey Director, Engineering Geology Division, GSI, Chandigarh made a power point presentation on the geotechnical investigation.
- 4.26 Mr. Anil Mehrotra, Director, Project Landslide Hazard Zonation, NR, GSI, Lucknow gave a power point presentation of the work done, which included landslide hazard zonation exercises on Kangra-Dharamsha la-Dalhousie-Sinhuta road, Bageshwar road, Surbee landslide study and development of an early warning system for the geotechnical monitoring of Sher ka Danda slide in Nainital.
- 4.27 Mr. Zafiruddin Iqbal, Director, Earthquake Geology Division, WR., Jaipur gave a power point presentation on the ‘Seismic Microzonation of Bharuch’.
- 4.28 Mr. A. Saha, Director, Earthquake Geology Division, ER, Kolkata gave a power point presentation of the highlights of the items being carried out by the division.
- 4.29 Mr. Prabal Rakshit, Director presented the work on the Calcrete Study for palaeo-climate.
- 4.30 Mr. S. Gupta, Convener at the end summed up the proceedings of the meeting.
- 4.31 The meeting ended with a Vote of Thanks proposed by Shri Harsh Gupta, Member Secretary & Director, Earthquake Geology Division, GSI, NR, Lucknow.

## **Highlights and Recommendations of the 2<sup>nd</sup> CGPB Committee**

Long overdue work on standardisation of the methodology to analyse Arsenic( $As^{3+}$ /  $As^{5+}$ ), has been accomplished and the report on it has been submitted.

Members were requested to give their views on their respective fields of specialisations for incorporation in the Base Document for the Mission IV. Before that, the Member Secretary enumerated different aspects of the themes of the document and spelt out the challenges in its preparation.

Representatives from NDMA, NRSA and NEC were requested to provide the list of agencies including various Institutions, NGOs or State Governments who are working in the field of landslide hazard Zonation – Macro, Meso or Micro levels, which will help in expediting the coverage of the full country for the landslide hazard zonation studies.

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It was also proposed to superimpose landslide incidence data on the National Geomorphological Maps being prepared by the GSI and NRSA in collaboration.

The CGWB proposed to have collaboration with GSI for the analysis of the mineral assemblage in the bore-hole samples collected by the organisation, especially for minerals like Arsenic, as they have a limited capability in this field.

Indian Railways should be made permanent member of the CGPB Group IX committee.

The committee proposed to hold a seminar at Lucknow in Feb-March 2011 on different themes of the CGPB Group IX committee.

CGWB, Lucknow expressed to get help from GSI in identification of the Arsenic bearing source minerals