

**Minutes of the Third meeting of the CGPB committee Group-VII on Airborne surveys and Remote sensing held at RSAS (AMSE Wing), GSI, Bangalore on 29<sup>th</sup> July 2010.**

03.01.00 **Introduction**

The third meeting of the CGPB committee Group-VII on Airborne Surveys and Remote sensing was held on 29<sup>th</sup>. July 2010 under the Chairmanship of Dr. Arvind Kumar Sinha, Deputy Director General & HOD AMSE Wing and Convener of the committee.

**The following members and special invitees were present in the meeting.**

03.02.00 **S/Shri/Smt/Dr.**

1. A.K Sinha, Dy Director General and **Convener**
2. S.P. Venkata Dasu, Director (CT) and **Member Secretary**

**Representatives of Geological Survey of India**

3. M.M. Swamy, Additional Director General, GSI, Kolkata
4. S.G. Gaonkar, Dy. Director General, RSAS, GSI
5. A.K. Das, Dy. Director General, RSAS, GSI
6. Rajendra Sharma, Director (GP), RSAS, GSI, Bangalore
7. A.H. Chaurasia, Director, CR, GSI
8. R.G. Verma, Director, WR, GSI
9. S. Kannan, Director (G), GSI, RSAS, GSI, Bangalore
10. A. Thiruvengadam, Director (G), GSI, RSAS, GSI, Bangalore
11. Venkataswamy, Director (G), RSAS, GSI, Bangalore
12. R. Dharuman, Director (G), RSAS, GSI, Bangalore
13. M. Prem Kumar, Supdt. Geophysicist (GPI), RSAS, GSI, Bangalore
14. A.K. Saxena, Supdt. Geologist, Op. Gujarath, WR, GSI
15. D. Mohan Raj, Supdt. Geologist, RSAS, GSI
16. D. Chakraborty, Sr Geologist, CHQ, GSI
17. N.K. Sarkar, Sr. Geologist, CHQ, GSI,
18. A.B. Ekka, Geologist, CHQ, GSI,
19. S.K. Vayangankar, Geologist(Sr.), RSAS, Bangalore
20. G. Sitharam, Sr. Geologist (RSAS, GSI, Bangalore
21. K. Chandrashekar, Sr. Geologist RSAS, GSI, Bangalore

**Representatives of Central Govt. organizations:**

23. A.K. Chaturvedi, In-charge, ABS & RS, AMD
24. R.N. Selvan, Sr. Mining Geologist, IBM
25. T.M. Hunse, Regional Director, CGWB, Bangalore
26. K. M. Najeeb, Regional Director, CGWB, Bangalore
27. D.S. Mitra, ONGC, Dehradun
28. D.K. Rawat, Chief Geophysicist, DGH, Noida
29. V. Shreedhara, Scientist, K.S.R.C., Bangalore

**Representatives of State DGMs**

30. G. Madhukar, Jt. Director, DGM, Govt. of Andhra Pradesh
31. Sailesh Verma, Asstt. Geologist, DGM, Govt. of Chhattisgarh
32. N.K. Hans, Dy. Director, Geology & Mining, Govt. of M.P., Bhopal

**Representatives from Private agencies:**

33. Anand Kumar, Geophysicist, De Beers
34. Nirmal Kumar Senapati, CAIRN Energy

**Welcome by the Member Secretary:**

- 03.03.00 Dr. S. P. Venkata Dasu, Director (CT) and Member Secretary welcomed all the committee members and invitees from GSI and other organizations for the third meeting of the CGPB committee Gr.-VII on Airborne Surveys and Remote Sensing. He invited all the representatives of the member organizations and requested them to share their valuable experience and knowledge in the field of Airborne surveys and Remote Sensing. He requested the convener of the committee Dr. A. K. Sinha, Dy DG, RSAS to conduct the proceedings.

**Opening Remarks:**

- 03.04.00 Dr. A. K. Sinha, Deputy Director General and Convener of the committee heartily welcomed all the members of the committee of CGPB Group-VII, which includes Airborne Surveys and Remote Sensing. He welcomed Shri M.M. Swamy, Additional Director General, GSI, & HOD, Mission-I, and expressed his happiness that his suggestions and guidance will be very useful. He said that the CGPB meetings are held twice in a year now and this has helped to make it more vibrant in exchanging ideas and constructive suggestions. He looked forward for meaningful and fruitful discussions during the deliberations. He requested the members to respond overwhelmingly and participate in meaningful discussions and effective interactions. He said that the recommendations/suggestions would go a long way in formulating and guiding future programmes.
- 03.04.01 Shri M.M. Swamy, Additional Director General, welcomed all the members and expressed his happiness to be present in the meeting. He explained the basic concept of the present CGPB committee meetings before the main CGPB to have suggestions from the members so that the proposals already submitted can be modified according to the needs and priorities. This will also avoid repetitions or overlapping in the work. He also stressed that strategies can be worked out so that all earth science organizations in the country could utilize the data generated by GSI in the national interest. He said that the state govt. departments have a major role and requested them to hold the SGPB meetings twice and also put forth their requirements. He also suggested to have more collaborative programmes. Expressing his happiness about the work carried out by the RSAS he said that generation of quality data from the newly introduced Hyperspectral mapping programme is the need of the hour.
- 03.04.02 The Convener, Shri A.K. Sinha, said that the coming Field Season would be of one and half years duration starting from October 2010 to March 2012. Hence the working season will be for longer duration and requested that programmes may be suggested accordingly.

Convener observed that during last meeting the issue of RP/PI reports was discussed and state DGM`s were requested to make available list of all the available reports.

He informed that a list of RP/PL licenses available with IBM has been uploaded on IBM portal and requested DGM`s to check up the list and inform discrepancies if any to IBM and GSI. If the RP licenses are not executed in time or the reports are not submitted in time, he urged the concerned DGMs to take appropriate action against the defaulters. He requested for proper

monitoring and see whether the RP is executed and report submitted in time or not. He expressed that the reports submitted by some of the RP/PL holders are not up to the mark.

(Action: All the state DGMs)

03.05.00 **Approval of the minutes of the previous meeting**

03.05.01 Dr. Sinha said that, no comments are received on the minutes circulated regarding the second CGPB Committee (Group-VII) held on 18.12.2009. The members duly approved the minutes.

03.06.00 **Discussions on Base Document:**

03.06.01 Convener, Dr. Sinha, said that, the importance of preparation of the base document has been discussed in the previous meeting and draft of the base document is put in the GSI Website. It is also incorporated in the present material circulated to all the members present. He briefly explained the points given in the Base Paper. He said that the paper gives details of the work done by the GSI and also the future plans of programmes to be undertaken by GSI. He invited comments/suggestions for addition in the main document so that the finalized base document can be presented in the main CGPB meeting to be held at Delhi on the 25/26<sup>th</sup> of Aug. He said that the comments from some of the organizations have been received where areas of interest have been suggested for taking up the aerogeophysical surveys. He said that the suggestions will be included in the future plans. He also said collaborative programme may be taken up in these areas.

03.06.02 Dr. T.M. Hunse, Regional Director, CGWB, said that recently MOU has been signed between GSI and CGWB for collaborative work and sharing of the data which will further facilitate undertaking collaborative programmes..

03.06.03 Dr. Najeeb, CGWB wanted to know whether any aerogeophysical data is available over Ganga valley, where the CGWB has taken up deep Resistivity survey for ground water. The convener suggested to use the data available with RSAS from the Ganga valley survey carried out for Oil India. Shri M.M.Swamy also expressed similar view and invited the CGWB representative to CHQ for collecting the available data that could help in the survey.

03.06.04 Dr. Chaturvedi, AMD, said that the targets shown for the aerogeophysical surveys in the base document circulated are on higher side and may be unrealistic. He opined that the potential areas should be given priority and targets for fixed wing air craft survey and the heliborne surveys should be segregated. The heliborne will have less coverage which may be around 25,000 line.km. for one season as per their experience compared to the fixed wing aircraft survey and also is more expensive. Hence, areas which require magnetic and radiometric data may be covered by fixed wing survey and where EM is required by heliborne survey. Hence separate targets should be identified for the fixed wing and the heliborne surveys.

03.06.05 Shri A.K. Chaturvedi, opined that issue of sharing of all type of digital and analog data is very important because it avoids duplication of work, which saves time, and money This has been discussed during several previous

meetings and a High Power committee under the chairman ship of Secretary Min. of Mines is sized with this matter. So far no concrete result could be achieved therefore he requested that this should also be included if the Base Paper. All the other members present from Govt and private organizations expressed similar views.

03.06.06

Expressing the similar view the Convener, said this is under active consideration of MOM and soon meeting of High Power Committee will be convened. He also said that due to the absence of representative from both MOD and DGCA in this meeting no fruitful discussion are possible.

03.06.07

De Beers representative wanted to know the details of aerogeophysical data. Sri Kannan, Director, told that it is available on GSI portal and also in the aerogeophysical map catalogue which has been published recently which is available free of cost.

03.06.08

Shri A.K. Das, Deputy Director General (GP), RSAS, gave a brief account of the Hyperspectral mapping, data collection, interpretations, its advantages and limitations. He said that before any collaborative programmes are initiated, trainings should be organized as it is a new field taken up in GSI. Shri A.K.Chaturvedi said that although a lot of work in this field has been done in many countries it is a new field in our country. He expressed the need of taking up the programmes for capacity building in this field by organizing training programmes.

03.06.09

Convener suggested that a proposal can be sent to the GSITI, to include and arrange for a suitable training programme in Hyperspectral mapping, so that skilled man power can be developed gradually.

Convener said that the discussions on the base paper have been very useful and the suggestions given by all the members will be incorporated.

03.07.00

**Review of the work:**

Convener requested members from GSI and other govt. organizations and private agencies to present the work carried out by their organizations and give their views and suggestions on the proposed work to be taken up by GSI.

03.07.01

M. Prem Kumar, Supdt. Geophysicist (GPI), RSAS, GSI, Bangalore gave a brief presentation on heliborne survey instrument system which has been procured by GSI recently and explained the function of each system. He said that the multisensor heliborne survey system would comprise of (i) TDEM system for detecting any conductive bodies up to a depth of about 250 m. (ii) Total-field cesium magnetometer with towed bird system to delineate magnetic bodies like iron ore, kimberlite bodies, geological structures and basin structure. (iii) Multi channel GRS – for locating atomic minerals and also delineation of formational boundaries (iv) GPS-INS controled scalar gravimeter – for acquiring gravity data and (v) Spectro-radiometer for sensing hyperspectral signatures, which will provide surface geological information.

03.07.02

A.K. Chaturvedi, In-charge, ABS & RS, AMD presented the type heliborne survey system that is being used in AMD, since 2008. He said the AMD has carried out heliborne survey for the radioactive minerals in parts of Rajasthan and Central India, Cuddapah basin in AP and Kaladgi basin in Karnataka. He hoped that since now GSI has also acquired the system and will be using the

same AMD's experience will be useful to them. He explained the details of the heliborne surveys carried out and results obtained in Rajasthan area.

- 03.07.03 Shri D.K. Rawat, Chief Geophysicist, Directorate General Hydrocarbons said that DGH is proposing the survey work in Cuddapah basin, AP, Nagaland, northern parts of UP and Jharkhand, to locate target areas for hydrocarbons. He said that all the data collected by any agency for Hydrocarbons is being compiled in a repository which can be assessed by any user agency.
- 03.07.04 Dr. D.S. Mitra, ONGC, Dehradun, said that any organizations can approach for the data.
- 03.07.05 Shri R.N. Selvan, Sr. Mining Geologist, IBM, said that in recent days satellite imagery data is used for monitoring the mining activity, particularly the boundaries of lease areas, to find out if there is any illegal mining. The Convener wanted to know whether IBM is corresponding with any DGMs for non submission of RP/PL reports and felt need for more effective monitoring. Shri R.N. Selvan, said that they correspond with the concerned DGMs to deal with defaulters.
- 03.07.06 Dr. G. Madhukar, Jt. Director, DGM, Govt. of Andhra Pradesh, said that some of the RP holders simply block RP areas without carrying out any work and some times the same area is blocked for different minerals by different lease holders. Thus large areas are held under RP in Andhra Pradesh and are preventing governmental / other agencies to investigate in those areas. He requested the committee to take steps to sort out the problems.
- 03.07.07 Dr. V. Shreedhara, Scientist, K.S.R.C., Bangalore, presented the work that is being carried out by the Karnataka State Remote Sensing Center. He said that they are taking ISRO sponsored projects and Mining information system in Bellary, Karnataka and Chhattisgarh. He said digitization of entire Karnataka mining lease areas is completed. Apart from this, geomorphological mapping of coastal districts is taken up on priority basis.
- 03.07.08 Convenor briefly explained about the National Geomorphological and Lineament programme under NNMRS project and said that so far no maps have been provided to GSI. This will result in delay in completing the project as per schedule. He said as per the information available these maps will be available in smaller numbers after October 2010. He wanted to know the status of the maps in KSRC. Shri Shreedhara said they have completed 10 maps which will be handed over after field checks. He said that in the absence of mentors work is getting delayed.ner institutes for external quality checking although almost one field season is over.
- 03.07.09 Shri N.K. Hans, Dy. Director, Geology & Mining, Govt. of M.P., Bhopal, said that geochemical mapping is being carried out in Jhabua, district, M.P. in collaboration with GSI.
- 03.07.10 Shri Sailesh Verma, Asstt.Geologist, DGM, Govt. of Chhattisgarh, gave a brief account of work being carried out in Chhattisgarh.
- 03.07.11 Shri D. Chakraborty, Sr Geologist, Remote Sensing Division, CHQ, GSI, presented the Hyperspectral data collection carried out in Hutti-Muski area, Raichur Dist., Karnataka for locating zones of alteration. He said field work has

been completed which included collection of samples from the alteration zones, XRD analysis and generation of spectral profile by spectrometer.

- 03.07.12 A.K. Saxena, Supdt. Geologist, Op. Gujarath, WR, GSI explained the work being carried out on Hyperspectral Mapping in Ambaji, Shivrajpur, Dadali area, Banaskantha District, Gujarat and Khandia-Shivrajpur area Vadodara and panchmahal areas, Gujarat, and in the Santrampur-Jhalod areas in Rajasthan.
- 03.07.13 Shri Rajendra Sharma, Director (GP) presented the work done through TOASS system and explained the status of Heliborne survey work. He also mentioned about the interpretation work being carried out in different areas. The Convenor said that the Govt. of Karnataka wanted heliborne aerogeophysical surveys data over Nuggihalli area. It was conveyed to the Karnataka State DGM that this area has been selected for test flights for Heliborne Surveys.
- 03.07.14 Shri R.G. Verma, Director, WR, Jaipur presented the work carried out on Geomorphological Mapping in parts of Rajasthan and Gujarat in connection with lineament mapping and areas prone for earthquake like Jamnagar. He said that they have so collected and digitized all the legacy geomorphological data available .
- 03.07.15 Dr. H.S.M. Prakash, Suptg. Geologist, NER presented the work being carried out by the PGRS division for Hydrel Projects in Mizoram, Hydrel projects in Dibang area and Siang Hydrel Projects.
- 03.07.16 Shri A. Thiruvengadam, Director, PGRS, RSAS, Bangalroe briefed about the work being carried out in Bangalore-Penukonda areas, which is the continuation of last year's work and said that 26 target blocks are delineated and field checked.
- 03.07.17 Shri A.H. Chaurasia, Director, CR, GSI presented the work carried out on inter-trappean areas and geomorphological mapping w legacy data.
- 03.07.18 Shri S. Kannan, Director, M&C, RSAS presented the work being carried out by his division regarding monitoring of RP/PL data and said that 419 reports are available out of which 111 are of relinquished reports which are available for consultation. He said the quality of the data is not up to the mark and requested the concerned representatives to take note of it and also reminded the concerned DMGs to pursue the matter.
- 03.08.00 **Concluding Remarks**
- 03.08.01 Shri N.K. Sarkar, Sr. Geologist (PPM), CHQ, GSI, requested for suggestions from the members for forwarding the same to PPM and said that whatever discussions held here and the highlights may be forwarded to CHQ for necessary action.
- 03.08.02 Shri S.G. Gaonkar, Dy.DG summarizing the discussions said that the meeting was fruitful and suggestions received from the sister organizations will be taken care while formulating future programmes. He requested all the members to suggest areas for heliborne surveys as well as fixed wing surveys which can be taken up by GSI. The proposals will also be included in the Base Document and also to add in the programme for next five years. He stressed that

proposals should be specific, with well defined objectives adequate reasons for the surveys and keeping in mind the nature of the terrain.

Regarding sharing of digital data, he said that the issue is of prime importance and is being taken up by the MOM. He also appraised the different processes involved in the Hyperspectral Mapping and emphasized the importance of training involved.

- 03.08.03 Shri M.M. Swamy, Addl. D.G, GSI said that GSI should come out with quality data while carrying out Heliborne survey. He also suggested that Hyperspectral data collection should be done properly and it should be a model for future programmes. He stressed the point that apart from data collection, data processing is also important. Regarding Geomorphological Mapping he said that we should put pressure on Regional Remote Sensing Centers to finalize the maps for quality checking. He said that reasonable amount of the target set should be completed during this one and half year FSP.
- 03.08.04 Shri A.K. Das, Dy. DG, RSAS, in his observations said that GSI told that the problem of sharing of data should be resolved amongst us and the Government.  
Regarding Hyperspectral data, he said that it is only a tool and we should know the limitations apart from the advantages before giving any rosy picture. We should be trained properly. He mentioned that we have just started and yet to see the efficacy of the method in mineral exploration. He also emphasized the need of training so that this field could be developed and fully utilized in near future.
- 03.08.05 The Convenor thanked Shri A.K. Das for giving a brief account of Hyper spectral Mapping. Sri. Das is due to retire from service on superannuation on the 31<sup>st</sup> July and the house conveyed its thanks for his fruitful participation in the CGPB in the past.  
Summarising the day's deliberations, the Convenor said that the meeting was fruitful and requested the members to give their inputs that can be used for formulation of GSI Field Season Programme.
- 03.08.06 Shri Rajendra Sharma, Director (GP) proposed the Vote of Thanks to all the participating members of various organizations and to the officers of RSAS for the active participation, fruitful discussions and their co-operation in conducting the meeting.