GOVERNMENT OF INDIA
MINISTRY OF MINES
**********

No.14/4/2009 – Metal IV

New Delhi, the 16.11. 2009

To

1. Secretary,
Ministry of Science & Technology,
Technology Bhawan, New Mehrauli Road, New Delhi-110016.

2. The Advisor (Minerals),
Planning Commission,
Yojana Bhavan,
Sansad Marg, New Delhi.

3. The Director General,
Geological Survey of India
27, Jawaharlal Nehru Road,
Kolkata – 700 019.

4. The Controller General,
Indian Bureau of Mines,
Indira Bhavan, Civil Lines,
Nagpur – 440 001.

5. The Director,
Defence Metallurgical Research Laboratory, P.O. Kanchan Bagh,
Hyderabad.

6. The Director (Material Group),
Bhabha Atomic Research Laboratory, Trombe,
Mumbai – 450 085.

7. The Chairman & MD,
National Aluminium Company Limited,
NALCO Bhavan, P-2, Nayapalli,
Bhubaneswar 751 007.

8. The Director,
Regional Research Laboratory,
Near Habibganj Naka,
Bhopal.

9. Dr. B.B. Dhar,
Former Director, CMRI,
D-20, Pamposh Enclave,

10. Dr. Pradip,
Group Head,
Tata Research Development & Design Centre, 54B Hadapsar Industrial Estate, Pune – 411 013

11. Dr. K. Balasubrahmanian,
Director,
Non-Ferrous Material & Technology Development Centre,
Kanchan Bagh, Hyderabad.

12. Dr. R.N. Gupta,
Ex. Director, NIRM,
C002 Gopalan,
Celestian Greens, Old Madras Road,
Post Office, C.V.Raman Nagar,
Bangalore – 560093.

Subject: 39th meeting of the Standing Scientific Advisory Group[SSAG].

Sir,

I am directed to forward herewith a copy of the Minutes of the 39th meeting of the Standing Scientific Advisory Group [SSAG] held on 5.10.2009 under the Chairmanship of Secretary (Mines), Ministry of Mines for information and necessary action.

Encl: As above.

Yours faithfully,

(Dr. K. Ayyasami)
Director (T)
Te. No. 23384592
Copy with the Minutes of the 38th SSAG meeting to:-

1. Dr. Harsh Vasdhan, Assistant Professor, Department of Mining Engineering, National Institute of Technology, Surathkal, P.O. Srinivasnagar-Pin 575 025, Mangalore, Karnataka.

2. Dr Partha Sarathi Mukerjee, Scientist “G” & Head, IMMT, CSIR, Bhubaneswar-751013, Orissa.

3. Dr. J.L. Gurmain, Scientist “E-II”, Head, IMMT, CSIR, Bhubaneswar-751013, Orissa.

4. Dr. J.Mikhopadhyay, Director, National Institute of Miner’s Health, JNARDDC Campus, Amaravati road, Wadi, Nagpur 440023.

5. Dr. Shubhangi Pingle, Scientist, National Institute of Miner’s Health, JNARDDC Campus, Amaravati road, Wadi Nagpur 440 023.


8. Prof. Dr. P.K. Jena, Chairman, Institute of Advance Technology & Environment (IATES), Plot No. 80-A, 81-A, Lewis Road, Bhubaneswar-751002.

9. Dr. S.D. Singh, Principal Investigator, National Metallurgical Laboratory, Council of Scientific & Industrial Research, Jamshedpur-831007.

10. Prof. S.P. Singh, Prof. & Head, Bundelkhand University, Jhansi

Copy also to:-

(i) Sr. PPS to Secretary(M) (ii) PPS to Addl. Secretary(M) (iii) PS to JS&FA, (iv) Director(T) (v) Shri. A.K. Bhandari, Advisor(TPCC).

( Dr. K. Ayyasami)
Director (T)
Minutes of the 39th Meeting of the Standing Scientific Advisory Group (SSAG) held under the Chairmanship of Secretary (Mines) on 5th October, 2009 in Room No. 320, ‘A’ Wing, Shastri Bhawan, New Delhi

The list of participants is placed at annexure

- The 38th meeting of the Standing Scientific Advisory Group (SSAG) meeting was held on 5th October, 2009 under the Chairmanship of Secretary (Mines) in Shastri Bhawan, New Delhi.

- Smt. Santha Sheela Nair, Secretary (Mines), after formal introduction of the participants, desired that a review of all the completed Science and Technology (S&T) projects for evaluating them in terms of their utility and review of the ongoing projects to assess their progress and utilization of fund should also be taken up. She also desired to know process of selection of new projects.

- Sri S Vijay Kumar, Additional Secretary (Mines) informed that the S&T projects are approved in the areas of survey and exploration, environment, mining, beneficiation, metal production and byproducts. The projects are fully or partially funded by the Ministry of Mines (MoM) with contributions from DST. There has been inadequate publicity about the S&T projects being funded by the Ministry and this has been overcome by advertising in the Ministry's website and also by sending information/letters to various institutes/organizations. He informed that separate regular meetings of Project Evaluation Review Committee (PERC) under SSAG consisting of experts in the respective fields of science and technology are held to review the progress of the ongoing projects and also evaluate new projects and recommend them for further consideration for funding by SSAG. Presently the budget for S&T projects in the Ministry is only Rs. 3 crores during the current financial year. Additional funding during the next financial year will be proposed as per the approved programme.

- The minutes of the 38th SSAG meeting were confirmed.
Agenda: Approval/Sanction of new S&T projects.

Agenda – 1

Project Title:

Experimental investigations for determining rock properties using sound level produced during drilling – National Institute of Technology (NIT), Suratkal, Karnataka.

Dr Harsha Vardhan presented the project. The project aims at investigations of the sound level produced while drilling in rocks having varied properties using sound levels for selecting optimum drilling parameters, designing blast hole patterns and selecting suitable explosives. The present proposal is a successor project to his earlier SCRC project carried out by him in the University.

Dr Balasubramanium was of the opinion that placing the sensors on the surface to collect the signals generated by drilling at depth will be of little use as attenuation of signal through air and other media from depth and the machine sound will hamper the transmission of signals. Prof Gupta was also of similar opinion and said that earlier efforts in the area have not been fruitful. Secretary (Mines) wanted to know as to who will be the beneficiary of the findings of the project and opined that only applied research should be supported by the Ministry. JS & FA enquired if the PI has interacted with the possible users of this data. The PI was advised to reply to the queries raised by the members before the project could be considered for approval.

Agenda – 2

Project Title:

Thermal Plasma dissociation of molybdenite for the production of molybdenum metal, Institute of Metal and Material Technology (IMMT), Bhubaneswar, Orissa.

Dr Jayashankar presented the project. The molybdenum metal produced by conventional method consists of impurities such as Sulphur, Iron, Lead which makes it less attractive for end application. With the application of thermal plasma method it is possible to bring down the above impurities to tolerable limits.

Dr Jayakumar observed that the industry will be the beneficiary of the project. He also indicated that enough Molybdenum ore is available in the country for conducting the
studies. Sri Gundewar, IBM informed that IBM has already conducted beneficiation study of this ore. The important use of the near pure Molybdenum will be in the aerospace industry and in high temperature furnaces. Secretary (Mines) observed that the PI should be able to source the raw material and the developed process should be patented. The project was approved at a cost of Rs. 49.29 lakhs for a period of 3 years. The year-wise summary of expenditure is follows:

<table>
<thead>
<tr>
<th>Budget (Rs. In lakhs)</th>
<th>I year</th>
<th>II year</th>
<th>III year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurring &amp; Overhead</td>
<td>7.27</td>
<td>5.52</td>
<td>5.02</td>
</tr>
<tr>
<td>Equipment</td>
<td>1.49</td>
<td>1.49</td>
<td>1.5</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>2</td>
<td>-</td>
</tr>
</tbody>
</table>

**Agenda – 3**

*Project Title:*

Production of Ferro-nickel from Chromite overburden (COB) and nickel laterite ore by thermal plasma process, IIMT, Bhubaneshwar, Orissa.

The presentation was made by Dr. Chaubey. The budget of Rs 8 lakhs for Standard XRF and Rs 15 lakhs DSC/DTA setup for capital equipments may be deducted and instead, it can be outsourced. The Plasma reactor equipment for Rs. 5 lakhs may be included in the project. The PI was advised to submit the proposal again with the modified version.

**Agenda – 4**

*Project Title:*

Development of a protocol for evaluation of vibration hazard potential of mining equipment, National Institute of Miners’ Health (NIMH), Nagpur.

The project was presented by Sri B B Mondal. During the discussion, Secretary (Mines) was informed that all types of transport machinery in the mines like loaders, dumpers, etc will be used for testing the vibration levels. The tester will be placed at the interface
of machine and the body of the driver. A total of 50 samples from 15 such machines will be used for analysis. Prof Gupta observed that the time limit of 2 years is short to evolve a standard and at least five years of health data of volunteer was desirable. The PI informed that he would take the health and related data of the volunteering individual for five years. Secretary (Mines) desired that at least 5 women volunteers may be included in the sample. The project was approved. The project was approved at a cost of Rs. 23 lakhs for a period of 2 years. The year-wise summary of expenditure is follows:

<table>
<thead>
<tr>
<th>Budget (Rs. In lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Recurring</td>
</tr>
<tr>
<td>6.0</td>
</tr>
<tr>
<td>7.0</td>
</tr>
<tr>
<td>Equipment</td>
</tr>
<tr>
<td>10.00</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>23.0</td>
</tr>
</tbody>
</table>

\textit{Agenda 5}

\textit{Project Title:}

Systematic study of potential biomarker of occupational health \textit{diseases} in Mines, NIMH, Nagpur.

The project was presented by Dr. S. Pingle. PI informed that the target area is stone quarries around Nagpur from where volunteers will be chosen for study. Additional Secretary (Mines) wanted the continuation of the project for a long time based on issues that may arise from time to time and the PI could attempt to accrue a large database on mining population on gender basis and should complete ‘population study’. The project was approved at a cost of Rs. 21.33 lakhs for a period of 3 years. The year-wise summary of expenditure is follows:

<table>
<thead>
<tr>
<th>Budget (Rs. In lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Recurring</td>
</tr>
<tr>
<td>6.16</td>
</tr>
<tr>
<td>5.11</td>
</tr>
<tr>
<td>4.06</td>
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<tr>
<td>Equipment</td>
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<tr>
<td>6.0</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>21.33</td>
</tr>
</tbody>
</table>
Agenda - 6:

**Project title:** Development of rapid analytical procedures for Iron, Manganese and Titanium ores, JNARDDC, Nagpur.

Dr Mohamed Najar presented the project. After the presentation, Secretary (Mines) advised that Iron, Manganese and Titanium ores being widely exploited and may not require use of such methods presently but the metals like Nickel, Chromium and Cobalt may be the subject of future exploration for which Rapid Analysis method should be devised. JNARDDC was asked to submit a revised proposal for Rapid Analytical procedures for Nickel, Chromium and Cobalt.

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Agenda - 7:

**Project Title:**

Establishment of monitoring station for seismic hazard assessment in the mines of Kolar Gold Fields, Karnataka due to frequent rockbursts, NIRM, Kolar.

Dr Srinivasan presented the project. The method includes triaxial geophones as sensors that will be at some depth (after drilling boreholes) and a minimum of 5 such stations will be necessary to collect data. Secretary (Mines) wanted to know as how this project is going to help the general public because it is not predictive and also does not suggest ways for mitigation. In the present form, the project in terms of its outcome can not be entertained. Prof Gupta was of the opinion that most of the shafts and mines in Kolar has been filled with water up to a shallow depth and in case of rock bursts, its effect may be hardly felt in the area. Further, there is no record of intensive rock burst since 2005. After much discussion, it was felt that though the project may have some “academic value”, it may not be useful for hazard mitigation at the site nor for application at any other site. Given the resource crunch, it was felt that the project may not be taken up for funding.

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Agenda - 8:

**Project Title:**

Prof Jana of IATES presented the project and proposed a model for implementation of utilization of water filled mines and also the treatment of water in those mines for industry and public. AS (M) felt that the project appears more like a demonstrative work. It is intended to help the miners and mine owners and that it would be better to have a partnership model for such a project where the private players fund major part of the project. The PI may come back to MoM if he can identify some PSU or Private Company as a major sponsoring agency. The PI was advised that the project is "approved in principle". But for funding, a partnership model is envisaged.

Agenda - 9:

Project Title:

Pilot Scale smelting and prefeasibility studies on Nickel-Chromium-Cobalt bearing magnetite ores from Nagaland for an economically viable plant, NML, Jamshedpur.

It is a project started about 4 years back and is continuing because of the transportation problems in shifting the iron ore to Bhabaneshwar from Nagaland. Now, the entire amount of raw materials have been shifted.

With the availability of large amount of hematite, AS (M) enquired if the exercise on magnetite is worthwhile. Dr Balasubramanian responded that the ore is primarily used for grinding media for coal mine operations. AS (M) suggested that consultation by MECON as a part of the proposal may be dropped. The PI was advised to modify the proposal and submit the fresh proposal omitting "for an economically viable plant" part. The PI has been asked to revise and submit the proposal in accordance with the decisions taken during this SSAG meeting.

Till date NML has received funding from the agencies as follows:

- DST = Rs. 20 lakhs
- MoM = Rs. 10.865 lakhs
- MoS = Rs. 19.34 lakhs

As per the revised estimate submitted by the PI, the additional cost of the project after omitting the Techno-Economic Feasibility study charges during the next 2nd and 3rd years will be Rs. 41.75 lakhs.
The fund contribution by the three ministries will be as follows:

<table>
<thead>
<tr>
<th>Ministry</th>
<th>2nd Year</th>
<th>3rd Year</th>
<th>Total w.r.t. each Ministry</th>
</tr>
</thead>
<tbody>
<tr>
<td>DST</td>
<td>Non-Recurring</td>
<td>Recurring</td>
<td>Non-Recurring</td>
</tr>
<tr>
<td>DST</td>
<td>20.675</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MoM</td>
<td>8.25</td>
<td>1.5</td>
<td>9.75</td>
</tr>
<tr>
<td>MoS</td>
<td>5.36</td>
<td>4.0</td>
<td>9.30</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td></td>
<td>20.93</td>
</tr>
</tbody>
</table>

**Agenda – 10:**

**Project Title:**

Integrated approach for the sustainable development of geological and natural resources in Bundelkhand region, U.P. by Bundelkhand University, Jhansi.

Prof. Singh, the Principal Investigator attended the meeting. However, Secretary (Mines) desired that there should be a separate SSAG meeting to review the completed project. Accordingly, Prof. Singh will be asked to present the completion of the project in the next PERC meeting for technical assessment.
List of Participants of SSAG meeting held on 5.10.2009

1. Ms. Santha Sheela Nair, Secretary (Mines) - In the Chair
2. Shri S. Vijay Kumar, Additional Secretary (Mines)
3. Shri Sanjiv Mittal, JS&FA, MoM
4. Shri A.K. Bhandari, Advisor, TPPC
5. Dr. K. Ayyasami, Director (Technical), MoM
6. Ms. Shubhangi Pingle, NIMH, Nagpur
7. Sh.B.B. Mandal, NIMH, Nagpur
8. Sh.R.K. Minj, NML, Jamshedpur
9. Dr. B.K. Sathapathy, DGM, NALCO
10. Prof. S.P. Singh, Bundelkhand University, Jhansi
11. V.K. Kanchan, Dy.DG, WR, GSI, Jaipur
12. Ms. Hansha Vardhan, NITK, Surathkal
13. Sh. C. Srinivasan, NIRM, Kolar
14. K. Jayasankar, IMMT, Bhubaneswar
15. A.K. Chaubey, IMMT, Bhubaneswar
16. Dr. Mohamed Najar, JNRDDC, Nagpur
17. Sh. C.S. Gundewar, CG, IBM, Nagpur
18. Sh. J.K. Pathak, Scientist-D, DST, Delhi
19. Dr. Ashok Kumar Vaish, NML, Jamshedpur
20. Sh. Bijoy Dash, ED (Prodn.), NALCO
21. Prof. P.K. Jena, Chairman, IATES, Bhubanewsar
22. Dr. R.N. Gupta, Ex-Director, NIRM, KGF, Kolar
23. Dr. J. Mukhopadhyay, Director, JNARDDC, Nagpur
24. Dr. K. Balasubramanian, Director, NFTDC, Hyderabad