GOVERNMENT OF INDIA
MINISTRY OF MINES

No.14/24/2012 – Metal IV New Delhi, the 22.11.2012

To

1. Dr. Amalendu Sinha,
   Director,
   Central institute of Mining & Fuel Research,
   Dhanbad, Jharkhand.

2. Dr. Pradip,
   Group Head,
   Tata Research Development & Design Centre, 54B Hadapsar Industrial Estate, Pune – 411 01:

3. Prof. D. Acharya,
   Director,
   IIT, Kharagpur.

4. Prof. D.C.Panigrahi,
   Director,
   Indian School of Mines University Barwa Road, Dhanbad-826004

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

6. Prof. B.K.Mishra,
   Director,
   Institute of Minerals & Materials Technology, Bhubaneswar.

Subject: 11th Project Evaluation and Review Committee (PERC) meeting of
Standing Scientific Advisory Group [SSAG].

Sir,

I am directed to forward a copy of the Minutes of the 11th meeting of
the Project Evaluation & Review Committee Standing (PERC) of Standing
Scientific Advisory Group (SSAG) held on 2.11.2012 under the Chairmanship
of Dr. (Smt.) Vinita Aggarwal, Economic Adviser, Ministry of Mines for
information and necessary action.

Yours faithfully,

(Gurprit Singh Jaggii)
Director(T)
Copy: (With the request that the revised proposals, wherever applicable, should be submitted by 5th December, 2012).


3. Dr. Subroto S.Nandi, Sr. Research Officer (OH) and Principal Investigator, Jawaharlal Nehru Aluminium Research Development and Design Centre, Wadi, Amaravati Road, Nagpur-440023

4. Dr. Sagar Pal, Assistant Professor, Deptt. Of Applied Chemistry, Indian School of Mines, Dhanbad-826084- Jharkhand


6. Dr. Sarang Dhatrak, Sr. Research Officer (OH) and Principal Investigator, Jawaharlal Nehru Aluminium Research Development and Design Centre, Wadi, Amaravati Road, Nagpur-440023

7. Dr. Indra Narayan Bhattacharya, Senior Principal Scientist & Head, Hydro & Electrometallurgy Deptt. CSIR, Institute of Mineral & Material Technology, Bhubaneswar-751013

8. Dr. Mohamed Najar P.A., Scientist-III, Principal Investigator, Jawaharlal Nehru Aluminium Research Development and Design Centre, Wadi, Amaravati Road, Nagpur-440023.

9. Dr. S.P. Puttewar, Scientist-IV and Principal Investigator, Jawaharlal Nehru Aluminium Research Development and Design Centre, Wadi, Amaravati Road, Nagpur-440023.

10. Shri Bibhuti Bhusan Mandal, Assistant Director, Principal Investigator, Jawaharlal Nehru Aluminium Research Development and Design Centre, Wadi, Amaravati Road, Nagpur-440023.

11. Dr. Shbhangi Pingle, Sr. Research Officer, Principal Investigator, Jawaharlal Nehru Aluminium Research Development and Design Centre, Wadi, Amaravati Road, Nagpur-440023.


15. Dr. Rabi Bhusan, Project Investigator, (Scientist-I) and Principal Investigator, National Institute of Rock, Mechanics Champion Reefs, Kolar Gold Fields, Karnataka-563117.
17. Mr. Rajendra J Sharma, Scientist-IV and Project Investigator, Jawaharlal Nehru Aluminium Research Development and Design Centre, Wadi, Amaravati Road, Nagpur-440023.

18. R.N. Chouhan, Scientist-III and Principal Investigator, Jawaharlal Nehru Aluminium Research Development and Design Centre, Wadi, Amaravati Road, Nagpur-440023.

19. Shri V.N.S.U. Viswanath Ammu, Scientist-II and Principal Investigator, Jawaharlal Nehru Aluminium Research Development and Design Centre, Wadi, Amaravati Road, Nagpur-440023.

20. Mrs. Suchita Rai, Scientist-III and Principal Investigator, Jawaharlal Nehru Aluminium Research Development and Design Centre, Wadi, Amaravati Road, Nagpur-440023.


22. Shri V. Venkteshwaraulu, Director, National Institute of Mines Health, JRNADDC complex, Wadi, Amaravati Road, Nagpur-440023.

Copy also to:-

(i) PS to (EA), (ii) Director (T) (iii) Director (IF)

(Gurprit Singh Jaggi) Director (T)
MINUTES OF THE ELEVENTH MEETING OF PROJECT EVALUATION AND REVIEW COMMITTEE (PERC) OF STANDING SCIENTIFIC ADVISORY GROUP (SSAG) SCHEDULED FOR 2\textsuperscript{nd} NOVEMBER, 2012 at 10.30 A.M. IN MINISTRY OF MINES, NEW DELHI.

The 11\textsuperscript{th} PERC meeting was held on 2\textsuperscript{nd} November 12 in Shastri Bhawan, New Delhi under the Chairpersonship of Dr. Vinita Aggarwal, Economic Advisor. The meeting was attended by Mr Chandramani Sharma, Director (Finance), Ministry of Mines, Dr. K.Balasubramaniam, Director, NFTDC, Dr. A. Sinha, Director, CMFRI and Shri Gurprit Singh Jaggi, Director (Technical) & Member Secretary, Ministry of Mines. Other members were given permission of leave.

Welcoming the members the Chairperson made certain general observations for improving the quality of the project proposals under the scheme. It was emphasised that all project proposals should clearly outline the outcomes expected and the manner in which the findings would be applied in field. Thereafter, the 11\textsuperscript{th} PERC considered following projects and gave its recommendations which are as follows:

AGENDA ITEM No. 1: New Projects.

1. **Recovery of Copper and other metal values from Copper discards**
   
   Dr Bisweswar Das, IMMT, Bhubaneswar. Total Cost: Rs. 84 lakhs, Duration: 3 years. (1st year component ₹ 41 lakhs)

   The emphasis of the proposal is to develop a flow sheet with beneficiation and hydrometallurgical processes to extract the Copper and other metals such as Ni, Mo etc. The proposal per se is useful in that the proposed study may lead to the development of process which may help in recovery of copper and other valuable metals from waste generated at Copper smelting and refining activities. Given the facilities already available with IMMT, this project can be executed using the existing facilities of IMMT. Furthermore, the participation of the Copper industries for funding should have been explored.

   Recommendation: Given the facilities already available at IMMT, this project can be done using the existing facilities of IMMT. Not Recommended.

2. **Design & Development of an air Jig for the beneficiation of low grade ores**
   
   Dr Shiva Kumar, IMMT, Bhubaneswar. Total Cost: Rs. 94.17 lakhs Duration: 3 years. (1st year component ₹ 81.89 lakhs)

   The air jiggling process is presently being utilized primarily in coal beneficiation. An attempt is being proposed in this project to develop the air jiggling process methodology for beneficiation of metalliferous ores and fines.

   Recommendation: A proof of concept is required before the proposal can be considered. Not Recommended.
3. Prevalence of silicosis in Stone Mines of Karauli District and its impact on Sustainable Development of mining, Dr S Nandi, NIMH, Total Cost: Rs. 112.25 lakhs, Duration: 3 years. (1st year component ₹ 59.42 lakhs)

NIMH was approached after detection of higher incidence in this area of silicosis in Stone Mines by ARAVALI an NGO in Rajasthan. Project envisages to determine the dust exposure profile and prevalence of silicosis on a larger scale with control groups and elucidate the mining dust related impact vis-a-vis normal population in the same area not engaged in the same occupation. Primary data will be generated for developing standard guidelines for regulation and develop intervention methods. The study may help in developing prevention and control strategies and mitigation measures for intervention for implementation.

Recommendation: Combine this project proposal with Project proposal at St.No.24 (below) and resubmit revised proposal for consideration.

4. Binary Grafting of Acryl amide and acrylic acid on to starch development and application of a novel polymeric flocculants for treatment of mining and industrial waste water, Indian School of Mines, Dhanbad Total Cost: Rs. 50.76 lakh, Duration: 3 years. (1st year component ₹ 43.98 lakhs)

The present methods in vogue for treatment of mining and industrial waste water are not cost effective; The project envisages developing modified starch which may have usefulness as a flocculant for the treatment of industrial effluents and industrial wastewaters and sewage sludge's. The main aim is to develop flocculant which is environmentally and economically viable.

Recommendation: Not Recommended.

5. Beneficiation of low grade iron ore and tailings by selective flocculation, Indian School of Mines, Dhanbad, Total Cost: Rs. 42.60 lakh, Duration: 3 years. (1st year component ₹ 33 lakhs)

The aim of the project is to develop a process flow sheet for beneficiation of low grade iron ore. The bulk of the project cost is for equipment- laser particle size analyzer for which low cost alternatives are available.

Recommendation: The cost of the Project may be reduced by consideration of (a) outsourcing of particle size analysis or (b) lower cost particle size analyzer. Resubmit the project with lower cost.

6. Effect of Manganese exposure on Health status of women workers in manganese mines, National Institute of Miners’ Health, Nagpur: Total Cost-Rs. 65.40 lakhs, Duration- 2 years. (1st year component ₹ 49.70 lakhs)

The expected output of this project is very specific to an industry and region.

Recommendation: Manganese Ore India Ltd may be approached for funding the project. Not Recommended.
7. Prevalence of asbestos related disorders among miners and nearby population, National Institute of Mines; Health, Nagpur. Total Cost: Rs. 62.40 lakhs, Duration: 3 years. (1st year component Rs. 35.30 lakhs)

Many studies have been carried out by National Institute of Occupational Health, Indian Institute of Toxicology Research, DGMS and Directorate General, Factory Advice Service and Labour Institute.

Recommendation: Not recommended.

8. Processing of bayer liquor for the extraction of gallium metal values—Technology development and demonstration, Institute of Minerals & Materials Technology, Bhubaneswar. Total Cost: Rs. 93.38 lakhs (Approx.), Duration: 3 years. (1st year component Rs. 78.60 lakhs)

Previously studies on extracting gallium from bayer liquor has been carried out by NALCO. At this stage it will be appropriate to analyse the results of all the previous studies carried out on the subject before launching new project.

Recommendation: Director, IMMT and Director NFTDC will review and submit a fresh proposal.


The development of portable analytical kit for field analyses of bauxite will help immensely in borehole sample analyses at site, proper blending can be carried out for preparing consignments for the alumina plant. Bauxite quality determination at mine site.

Recommendation: Recommended with reduced outlay, to rework and resubmit project with reduced outlay.


The research may lead to develop mitigation measures such as modification or isolation of noise source so as to bring noise levels in and around the mining complexes within statutory limits; the study will also lead to develop a standard framework for noise mapping in India.

Recommendation: Recommended.

11. Up gradation & Utilization of Laterite of East and West coast deposits, Jawaharlal Nehru Aluminium Research Development and Design Centre, Nagpur. Total Cost :Rs. 47.00 lakhs, Duration : 3 years. (1st year component Rs. 30.20 lakhs)
The large tracts of laterite exist in both East and West coasts areas of India with high silica and iron contents. The proposed research may lead to the development of beneficiation process to upgrade such laterites so that they can be utilized for aluminium extraction.
Recommendation: Recommended.

12. Process Development for production of low soda (Na2O)hydrate in Bayer Circuit, , Jawaharlal Nehru Aluminium Research Development and Design Centre, Nagpur. Total Cost: Rs. 33.80 lakhs, Duration - 2 years. (1st year component ₹ 26.40 lakhs)

The project execution may lead to Process development for production of Low soda Al2O3.

Recommendation: Recommended, with reduced project outlay, submit within three weeks.

13. Simulation of Metal flow in porthole dies for extrusion of Aluminum, Jawaharlal Nehru Aluminium Research Development and Design Centre, Nagpur. Total Cost :Rs. 64.00 lakhs Duration : 3 years. (1st year component ₹ 39.60 lakhs).

Many studies of similar nature have been carried out.

Recommendation: Not Recommended

14. Development of super thermal aluminum (STAL) conductor for Indian power sector, , Jawaharlal Nehru Aluminium Research Development and Design Centre, Nagpur. Total Cost :Rs. 625.02 lakhs Duration : 3 years. (1st year component ₹ 491.04 lakhs)

The project envisages to develop Super Thermal Aluminium Conductor with high ampacity, optimum thermal and mechanical properties with careful selection of alloy additions and thermo-mechanical treatments. However, the project proposal envisages building an industrial scale plant which at this stage is not required. The entire project proposal requires rethink and reworking.

Recommendation: JNARDDC to interact with NFTDC and come up with appropriate methodology. The modified project proposal to be submitted and considered in next PERC.

15. Effective recovery of metallic aluminum from low grade dross using eddy current separation (ECS) and mathematical model, Jawaharlal Nehru Aluminium Research Development and Design Centre, Nagpur. Total Cost :Rs. 45.02 lakhs Duration : 2 years. (1st year component ₹ 28.76 lakhs)

Recommendation: Director, JNARDDC will confirm before the SSAG Meeting that the project is a fresh proposal and similar work has not been taken up earlier.

16. Development of subsidence prediction model for multi-level workings in underground mines, National Institute of Rock Mechanics (NIRM). Total Cost :Rs. 68.30 lakhs, Duration: 3 years. (1st year component ₹ 51 lakhs)
The project envisages to develop subsidence prediction model for multi-level workings in underground mining.

**Recommendation:** The prediction model likely to be developed as an outcome of the project shall be appropriate in coal mining sector rather than metalliferous and as a first step the proposal be submitted to Ministry of Coal for funding. Not Recommended.

17. **Assessment and mitigation of flyrock in surface mines, National Institute of Rock Mechanics (NIRM).** Total Cost: Rs. 158.95 Lakhs. Duration: 3 years. (1st year component ₹ 94.55 lakhs)

The project aims to develop physical and numerical modeling to obtain predictions and possibilities of a fly rock and its empirical validation. The outcome of this exercise is twin fold: Model is expected to reduce the expensive trial blasts. There is prima facie value in pursuing this project. However, it is necessary to understand the reliability of modeling and validation and the full utilization of the equipment and software.

**Recommendation:** Further thought has to be exercised and the proposal may be reframed and resubmitted in the next PERC.

18. **Development of technique for assessment of reclaimed land and structures under settling environment, National Institute of Rock Mechanics (NIRM).** Total Cost: Rs. 137.00 Lakhs. Duration: 3 years. (1st year component ₹ 55 lakhs)

This project envisages development of capability for assessment of settling and stability of structures on such reclaimed land and structures under settling environment. There is need for such techniques developed for reclaimed mine lands, metro rail projects, oil and gas industry and other foundation requirements to obviate settling problems and issues. The methodology so developed will also help in revenue generation in the future, for the institute.

**Recommendation:** Recommended.

19. **Estimation of seismic hazard in and around the mined out areas of Kolar Gold Fields, National Institute of Rock Mechanics (NIRM).** Total Cost: Rs. 63.57 lakhs. Duration: 3 years. (1st year component ₹ 56.71 lakhs)

The aim of this project is to do surveillance on 3 x 8 km with 8 channel for monitoring occurrence of seismic events. The study may lead to the identification of the seismic intense area. Reporting of seismic activities on occurrence to other agencies such as IMD, NDMS and the local government should be done right from the beginning of the project.

**Recommendation:** Recommended.

20. **Augmentation of facilities for material testing laboratory, National Institute of Rock Mechanics (NIRM).** Total Cost: Rs. 35.00 lakhs. Duration: 1 year. (1st year component ₹ 35.00 lakhs)

The proposal is only for infrastructure and upgradation of equipments for testing. The tests are used by companies by NALCO, HCL on payment basis. The objectives of the project are not that of R & D.
21. Setup of advance petrological laboratory, National Institute of Rock Mechanics (NIRM). Total Cost: Rs. 310.60 Lakhs, Duration: 2 years. (1st year component ₹ 301.80 lakhs)

The proposal is only for infrastructure and upgrading of equipments for testing. The tests are used by companies by NALCO, HCL on payment basis. The objectives of the project are not R & D.

Recommendation: Not recommended.

22. Evaluation of Biomarkers for early detection of Noise induced hearing Loss, National Institute of Miners Health, Nagpur. Total Cost :Rs. 104.36 lakhs, Duration : 3 years. (1st year component ₹ 69.87 lakhs)

The main source of biomarker in form of proteins (about 15 that are present) in the inner ear when it is damaged are due to noise exposure. The noise spectrum exposure is to be measured. The expected outcome is the development of biomarker kits for asymptomatic pre screening of the populace.

Recommendation: Project Proposal to be recast and submit in 3 weeks.

23. Development of National Database on Occupational Health in Mines and Preparation of status Report, National Institute of Miners Health, Nagpur. Total Cost :Rs.177.60 lakhs Duration : 3 years. (1st year component ₹ 107.20 lakhs)

A comprehensive data base of mine activity, geography, hazard vs health issues are to be mapped. This has to eventually become NIMH core and running activity.

Recommendation: Project proposal requires rework and resubmit in 3 weeks.

24. Multicentric Study of dust related Disorders in Stone Mines and Development of Sustainable Preventive Study, National Institute of Miners Health, Nagpur. Total Cost: Rs. 468.40 lakhs, Duration: 3 years. (1st year component ₹ 316.01 lakhs)

A systematic epidemiological data generation on many mining sectors, including granite, wherein dust prevalence is a hazard. To develop comprehensive guidelines; awareness creation by doing translational work in terms of setting of working camps for implementation of intervention measures and studying their efficacy. Collaboration with DGMS.

Only JRF/SRF, RA and Scientists on fixed terms are allowed as project specific staff. A matrix mapping of the scientists and medical officers and knowledge domain on one hand vs project load capacity on the other to be carried out.

Recommendation: Recommended for revision and resubmission within 3 weeks combining at SI.No. 3. The project will develop and bring out guidelines and the project has to be in active collaboration with DGMS with funding on equal proportion basis.

Agenda Item No. 2. - Project which could not be considered in 9th PERC
Estimation of seismic Hazard in and around the mined out areas of Kolar Gold fields, National Institute of Rock Mechanics, Champion Reefs, Kolar Gold Fields. (Revised) Total Cost: Rs. 50.17 lakhs (Approx.), Duration: 3 years.

Not taken up as Agenda Item 1 at Sl.No. 19 considered above which is a similar project.