

Chapter – 1

INTRODUCTION

1.1 PURPOSE OF THE PROJECT

Makum and Dilli-Jeypore are the two major coalfields in Assam. The coal deposits occur in difficult terrain generally forest clad and in high rainfall areas. The quantity of reserve in Makum coalfield is 260.69 million tonnes (as on 1.1.2000, as per G.S.I). Though the reserves of Makum coalfield are small, yet the coal deposits are important by virtue of their location away from major coal deposits and quality. The coal is characterised by low ash percentage, high contents of volatile matter, sulphur, maceral, and show caking propensity. The coal can be blended to manufacture metallurgical coke.

Earlier, in 1986, CMPDI prepared a Feasibility Report for Lekhapani OCP to extract coal in the Tipong west underground block over developed workings. Mineable reserves of 2.67 Mt. had been identified at an average stripping ratio of 5.33 cum/t. This FR was based on a geological appraisal of quarriable potentiality of 60' seam in Lekhapani (Tipong west) area in Makum Coalfield, Assam, of March' 1984. The GR was based on data from only one borehole and other information was also very scanty. The mining never started in this block.

Later, CMPDI prepared a Geological Report on Lekhapani block, a new block in a virgin area west of Tipong west, in November 2000. The opencast mining is being proposed in the new block and the Feasibility Report for Lekhapani OCP is based on this new geological report (June 2007).

Lekhapani OC mine would be producing coal at the rate of 0.25 Mt per annum for another 26 years. The Lekhapani block (covering an area of 1.00 km²) is in the south central part of Makum coalfield (210 km²).

1.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT

Coal mining activities of North Eastern Coalfields, Coal India Limited are at present confined to Makum coalfields in Tinsukia District of Assam. Mining of Coal in

the Makum Coal fields was started by the Assam Railways & Trading Company. The A.R & T. Co. was incorporated on 30/7/1881 and first colliery started was Ledo Colliery, in 1882. The Coal Mines were Nationalized w.e.f. 1/5/1973 under coal Mines(Nationalisation) Act.1973 and the coal Mines in Makum coalfields went under Coal Mines Authority Ltd. Coal India Ltd. was formed in November'1975 and since then the coal mines in the Makum coalfields are being managed by Coal India Ltd.

The Makum coalfield in the Tinsukia district of Assam state is the most important coalfield in the northeastern region of India. The coal deposits occur in difficult terrain generally forest clad and in high rainfall areas. The quantity of reserve in Makum coalfield is 304.87 million tonnes (as on 1.1.2006, as per G.S.I). Though the reserves of Makum coalfield are small, yet the coal deposits are important by virtue of their location away from major coal deposits and its quality. High vitrinite, low ash, strongly caking alongwith high volatile matter and high sulphur characterize the Makum coal. NEC operates 3 underground mines namely, Bargoloi, Tipong and Jeypore and 2 opencast projects namely, Tikak and Tirap.

NEC is administratively directly under Coal India Ltd. It is headed by Chief General Manager.

Name of the proponent : Mr. A.K. Bora

Mailing Address : Chief General Manager,N.E.C.
P.O.Margherita, Dist.-Tinsukia
(Assam), Pin- 786181

Telephone : 03752-220329

1.3 BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION OF THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY

The proposed Lekhapani OCP is located in the south central part of Makum coalfield, Dist : Tinsukia, Assam and is under N.E.C., Coal India Ltd.

Location of mine (s)

P.O. Margherita, Sub-Division:- Margherita., District :- Tinsukia(Assam)

Status of Project : The proposal relates to a New Mine in virgin seams

Site Information (Refer Plate-I.)

(i) Geographical Location

- **Latitude** 27°16'4" to 27°17'6" N
- **Longitude** 95°48'11"to 95°49'32" E
- **Survey of India Topo sheet number** 83M/15
- **Elevation above Mean Sea Level** 280m -520 m
- **Total mining lease area (in ha.)** 235.00 ha

(ii) Dominant nature of terrain:

The area is characterised by rugged hilly terrain with elevations ranging from lower heights in the southern part of the western half of the block (with reference to colliery Bench-mark) to 675.24m in south eastern part. However, the elevation above mean sea level ranges from 280.00m. to 520.00m in the eastern part of the block. In general the ground slope is towards north but it is towards north & south both in central and western parts of the block. The surface contours, floor contours, and RL values of boreholes are with respect to local drainage level (named zero level by NEC). It is 155.24m above mean-sea-level. Therefore, to arrive at values of contours and borehole RL with respect to M.S.L, 155.24m should be deducted from their respective values.

(iii) Communication -

The block is about 30 Km east of Margherita township (Head Quarter of NEC) and about 85 Km south east of Tinsukia (District head quarter). The National Highway No. 38 passes along the northern fringe of Makum coalfield and is 6 Km. north of the block. Dibrugarh-Tinsukia-Ledo broad gauge section of N.F. Railway also passes along the northern fringe of the coalfield. The nearest railway station is Ledo about 15 Km on the broad gauge and Lekhapani on the metre gauge about 6 Km away from the block. The block can be approached from Margherita by NH-38 up-to Lekhapani railway station and then through rugged terrain by unmetalled road after construction of a bridge over Lekhapani river.

(iv) Seismic zone in which ML area falls: The ML falls in Zone- V. No earthquake has been reported in last 10 years.

Benefits at national level

North Eastern Coalfields Limited is facing increasing demand of coal. The coal is relatively of better quality, being characterised by low ash (5-10%), high moisture (2–5%) but high volatile (40-48%) and high sulphur content (2-7%). The coal also exhibit strong caking properties. The coal is also suitable for coal liquefaction. Therefore, these coals have greater market potential than what is exploited at present.

Continuing and augmentation of coal production from the mines of NEC will help to bridge the gap of demand and supply. To meet the growing demand of NEC has planned to increase its production capacity.

DEMAND AND AVAILABILITY OF COAL FROM NEC

The following Table-1.1 shows the demand and availability of coal from NEC.

Table No. 1.1

| YEAR → | 08-09 | 11-12 |
|---------------------------|----------|----------|
| Demand (Mt.) | 2.37 | 4.02 |
| Availability (Mt.) | 1.30 | 1.70 |
| Gap (Mt.) | (-) 1.30 | (-) 2.32 |

JUSTIFICATION

The Tirap and Tikak (also called as Baragolai Hill Top) mines are the only two opencast mines in NEC. The balance reserves at Tirap OC (Phase-I) mine would last for another 1-2 years at the current rate of production. Thus the Tirap OC (Phase-I) mine is nearing its closure. CIL has approved a new opencast project namely Tirap OCP (Phase-II) for an annual capacity of 0.60 Mt. on the dipside of the existing Tirap OCP. Tikak OC mine would be the other OC mine producing coal at the rate of 1.20-1.25 lakh tonne per annum for another 12-15 years.

Physical and Financial Performance of NEC during the last six years

| PARTICULARS | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 |
|--------------------------------------------|---------|---------|---------|---------|---------|---------|
| PHYSICAL PERFORMANCE | | | | | | |
| PRODUCTION (Mt.) | | | | | | |
| (I) Underground | 0.18 | 0.11 | 0.12 | 0.15 | 0.12 | 0.11 |
| (II) Opencast | 0.46 | 0.52 | 0.61 | 0.48 | 0.98 | 0.94 |
| (III) Total | 0.64 | 0.63 | 0.73 | 0.63 | 1.10 | 1.05 |
| OB Removal (Mcum) | 4.74 | 4.63 | 5.12 | 4.79 | 7.50 | 7.87 |
| FINANCIAL PERFORMANCE | | | | | | |
| COST OF PRODUCTION (Rs/t) | | | | | | |
| (I) Underground | 4721.23 | 7988.73 | 7540.29 | 6053.94 | 8480.03 | 8682.52 |
| (II) Opencast | 1141.27 | 1069.09 | 1020.49 | 1364.70 | 1045.64 | 1324.12 |
| (III) Overall | 2147.25 | 2275.02 | 2100.15 | 2473.20 | 1863.26 | 2084.68 |
| SALES REALISATION (Rs/t) | | | | | | |
| (I) Underground | 1266.48 | 1196.64 | 1171.98 | 1310.85 | 1563.78 | 1708.19 |
| (II) Opencast | 1586.46 | 1428.79 | 1539.37 | 1673.71 | 2018.50 | 2318.59 |
| (III) Overall | 1496.55 | 1388.33 | 1478.53 | 1587.93 | 1968.49 | 2255.50 |
| TOTAL PROFIT & LOSS (Rs. Crore) | | | | | | |
| (I) Underground | -62.29 | -74.51 | -77.16 | -70.03 | -83.55 | -75.53 |
| (II) Opencast | 20.31 | 18.70 | 31.68 | 14.74 | 95.11 | 93.43 |
| (III) Overall | -41.98 | -55.81 | -45.48 | -55.29 | 11.56 | 17.90 |

Analysis of the existing status, in respect of NEC mines, reveals that underground mining operations contributed to a loss of Rs. 70.03 crore in 2004-05, Rs. 83.55 crore in 2005-06 and Rs. 75.53 crore in 2006-07. The opencast mining operations have, however, been able to offset some amount of these losses through the profits generated by these operations. In fact, the increase in opencast production in 2005-06 (almost double from the year 2004-05) has resulted into making the NEC profitable after a long time. NEC has thus able to generate a net profit of Rs. 11.56 crore in the year 2005-06 and Rs. 17.90 crore in 2006-07.

The demand of coal as well as overall economics of the northeastern coalfields has therefore necessitated for opening new opencast mines. Therefore, it is proposed to open Lekhapani OCP in the southern limb of Makum Coalfield over the virgin coal seams.

Benefits at Project level

Ever increasing demand of coal from NEC makes it suitable choice for opening of new project.

Lekhapani OC mine would be producing coal at the rate of 0.25 Mt per annum for another 26 years. The proposed project will be able to add to the profits for North eastern coalfields further.

Benefits at local level

The proposed expansion will also bring enhanced socio-economic benefits to the local population of the project area by way of direct and indirect employment, improvement in infrastructure and growth of ancillary facilities.

1.4 SCOPE OF THE STUDY – DETAILS OF REGULATORY SCOPING CARRIED OUT:

Scope of the study – details of regulatory scoping carried out and communicated vide letter no. J-11015/24/2008-IA.I1(M) dated 25.08.08 by MoEF. (As per Terms of Reference discussed on 28th- 30th July 2008 at MoEF, New Delhi)

| Sl. No. | Particulars | Reply with Reference. |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| i | An EIA-EMP Report would be prepared for 0.25 MTPA rated capacity based on the generic structure specified in Appendix III of the EIA Notification 2006. | Content |
| ii | An EIA-EMP Report would be prepared for 0.25 MTPA rated capacity and cover the impacts and management plan for the project specific activities on the environment of the region, and the environmental quality - air, water, land, biotic community-, etc. through collection of data and information, generation of data on impacts including prediction modelling for 0.25 MTPA of coal production based on approval of project/Mining Plan for 0.25 MTPA. Baseline data collection can be for any season except monsoon. | Chapter 3&4 |
| iii | A map specifying locations of the State, District and Project location. | PLATE- I |
| iv | A Study area map of the core zone and 10km area of the buffer clearly delineating the major topographical features such as the land use, surface drainage of rivers/streams/nalas/canals, location of human habitations, major constructions including railways, roads, pipelines, major industries/mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory | PLATE- XV |

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| | corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 Km area of the buffer zone should be given. | |
| v | Land use map (1: 50,000 or 1:100,000) based on a recent satellite imagery of the study area may also be provided with explanatory note of the land use. | PLATE- XIV |
| vi | Map showing the core zone delineating the agricultural land (irrigated and irrigated, uncultivable land (as defined in the revenue records), forest areas (as per records). | Total Core Zone lies in Forest Area |
| vii | Contour map of 3m intervals of the drainage of the core zone alongwith 2 km radius of the buffer zone. Site plan of the mine showing the various proposed breakup of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, CHP, ETP, Stockyard, township/colony (within and adjacent to the ML), undisturbed area and if any, in topography such as existing roads, drains/natural water bodies are to be left undisturbed along with any natural drainage adjoining the lease/project and modification of thereof in terms of construction of embankments/bunds, proposed diversion/rechannelling of the water courses, etc., approach roads, ,major haul roads etc. | PLATE-IX&XX |
| viii | Break up of lease area as per different land uses and their stage of acquisition. | Chapter 2&3 |
| ix | Break-up of lease area as per mining operations. | Chapter 3 |
| x | Impact of changes in the land use due to the start of the combined projects since much of the land being acquired is agricultural land/forest land/grazing land. | Chapter 4 |
| xi | Collection of one-season (non-monsoon) primary base-line data on environmental quality - air (SPM, RPM, SOx and NOx), noise, water (surface and groundwater), soil. | Chapter 3 |
| xii | Map of the study area (core and buffer zone clearly delineating the location of various stations superimposed with location of | PLATE- XVI & XVIII |

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| | habitats, other industries/mines, pouting sources. The number and location of the stations in both core zone should be selected on the basis size or lease area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/nonpolluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water as per ISI standards and CPCB classification wherever applicable. | |
| xiii | Study on the existing flora and fauna in the study area (10 km) carried out by an institution of relevant discipline and the list of flora and fauna duly authenticated separately for the core and buffer zone and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna. If the study area has endangered flora and fauna, or if the project falls within 15 km of an ecologically sensitive area, then a comprehensive Conservation Plan should be prepared and furnished along with comments from the CWLW of the State Govt. | Chapter 3 |
| xiv | Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate .working depth and progressive stage-wise working scheme until end of mine life should be reflected on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. | Chapter 2 |
| xv | Details of mining methods, technology, equipment to be used, etc., rationale for selection of that technology and equipment proposed to be used vis-a-vis the potential impacts. | Chapter 2&5 |
| xvi | Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations | Chapter 4 |

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| | thereon. | |
| xvii | Detailed water balance should be provided. The break up of water requirement for the mine should be given separately. | Chapter 3 |
| xviii | Source of water for use in- mine, sanction of the competent authority in the State Govt. and impacts vis-it-vis the competing users. | Chapter 2 |
| xix | Impact of mining and water abstraction use in mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term modelling studies on. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend or groundwater availability and/or if the area falls within dark/grey zone. | Chapter 4 |
| xx | Impact of blasting, noise and vibrations. | Chapter 4 |
| xxi | Impacts of mining on the AAQ, predictive modelling using the ISCT-3 (Revised) or latest model. | Chapter 4 |
| xxii | Impacts of mineral transportation - within and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop, management plan for maintenance of HEMM, machinery, equipment. Details of various facilities to be provided in terms of parking, rest areas, canteen, and effluents/pollution load from these activities. | |
| xxiii | Details of waste generation -- OB, topsoil - as per the approved calendar programme, and their management shown in figures as well explanatory chapter with tables giving progressive development and mine closure plan, green belt development, backfilling programme and conceptual post mining land use. OB dump heights and terracing should based on slope stability studies with a max of 28° angle as the ultimate slope. Sections of dumps (ultimate) (both longitudinal and cross section) with | Chapter 2&4 Plate- XII |

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| | relation to the adjacent area should be shown. | |
| xxiv | Impact and management of wastes and issues of rehandling and backfilling and progressive mine closure and reclamation. | Chapter 4 |
| xxv | Flow chart of water balance. Treatment of effluents from workshop, township, domestic wastewater, mine water discharge, etc. Details of STP in colony and ETP in mine. Recycling of water to the max. possible extent. | PLATE- XXV |
| xxvi | Occupational health issues. Baseline data on the health of the population and measures for occupational health and safety of the personnel and manpower for the mine. | Chapter 3 |
| xxvii | Disaster Management Plan | Chapter 7 |
| xxviii | Integrating in the Env. Management Plan with measures for minimising use of natural resources - water, land, energy, etc. | Chapter 2&6 |
| xxix | Progressive Green belt and afforestation plan (both in text, figures as well as in tables prepared by MOEF). And selection of species (local) for the afforestation/plantation programme based on original survey/landuse. | Chapter 4 |
| xxx | Conservation Plan for the endangered/endemic flora and fauna found in the study area and for safety of animals visiting/residing in the study area and also those using the study area as a migratory corridor | |
| xxxi | Final Mine closure issues, post mining land use and restoration of land/habitat to pre- mining. | Chapter 4 |
| xxxii | Including cost of EMP (capital and recurring) in the project cost and for progressive and final mine closure plan. | Chapter 9 |
| xxxiii | Details of R&R if any. Detailed R&R Plan with data on the existing socio-economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site | N.A. |

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| | for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc. and costs along with the schedule of the implementation of the R&R Plan. | |
| xxxiv | Public Hearing should cover the details of notices issued in the newspaper, proceedings/minutes of public hearing, the points raised by the general public and commitments made in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided. | |
| xxxv | In built mechanism of self monitoring of compliance of environmental regulations. | Chapter 10 |
| xxxvi | Status of any litigations/ court cases filed/pending on the project. | N.A. |

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| All documents should be properly indexed, page numbered. | Yes |
| Period/ date of data collection should be clearly indicated. | Yes |
| Authenticated English translation of all material provided in Regional languages. | NA |
| After the preparation of the draft EIA-EMP Report as per the aforesaid TOR, the proponent shall get the Public Hearing conducted as prescribed in the EIA Notification 2006 and take necessary action for obtaining environmental clearance under the provisions of the EIA Notification 2006. | Yes |
| The letter/ application for EC should quote the MoEF file No. and also attach a copy of the letter prescribing the TOR. | |
| The copy of the letter received from the Ministry on the TOR prescribed for the project should be attached as an annexure to the final EIA-EMP Report. | Yes |
| The final EIA-EMP report submitted to the Ministry must incorporate | Yes |

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| <p>the issues in TOR and that, raised in Public Hearing. The index of the final EIA-EMP report, must indicate the specific chapter and page no. of the EIA-EMP Report where the specific TOR prescribed by Ministry and the issue raised in the P.H. have been incorporated</p> | |
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