1. KULDA OCP & IT'S LINKAGE

Gopalpur sector of Ib-valley coalfield forms the north western part of Ib River coalfield which is a greenfield area with huge mining potential. Detailed exploration was undertaken by CMPDI to assess the quarriable potentiality of coal seams with primary view of opening up of new mining projects to the extent possible. This sector has high potential for opencast mining operations including the proposed project namely Kulda Opencast Project.

Coal demand from Ib-valley coalfield has increased many fold due to its strategic location with Howrah-Mumbai railway line passing through the coalfield. Coal of this coalfield is suitable for thermal power plants. Many pit head power plants and other coal based plants have come up due to easy availability of coal and water. The southern, western & central India power stations have to depend on Ib valley coalfield for their growth. The Howrah-Mumbai line passes through the coalfield. So coal can move from this coalfield to western India power houses via rail route. Coal to Tamil Nadu Electricity Board is also supplied via rail-cum-sea route through Vishakhapatnam and Haldia ports. Coal can easily move from this coalfield to Eastern India and Northern India as well. Necessary infrastructures like rail and port facilities are being developed/ augmented in the region.

The proximity of Ib-valley coalfield to Hirakud reservoir has generated a lot of opportunities for setting-up super thermal power stations in the vicinity of the coalfield.

Power Houses of Punjab State Electricity Board, Haryana State Electricity Board have also been linked to MCL and will be supplied coal from this coalfield. The New Power houses of TNEB, KPCL, WBPDCL, CESC and DVC are also linked to the coalfield.

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The consumers of MCL are linked to the company and not to any specific coalfield. The actual supply from any coalfield of MCL will depend upon the production and transport logistics. This project will help MCL to meet huge demand from Ib-valley coalfield

2. COAL HANDLING PLANT, WASHING AND MODE OF DESPATCH

2.1 INTRODUCTION

The proposed PR of Kulda Expansion OCP is planned to handle the total production of 15.0 Mty and the same will be enhanced up to 18.75 Mty. Presently, the CHP is having 2 nos. feeder breakers of 200 to 300 tph (approx.) capacity and dispatch the coal through the existing truck loading hoppers to nearby siding. Out of 18.75 Mty of production, blast free raw coal of 10 Mty will feed to proposed Basundhara Washery and rest coal is to be dispatched to Kanika and Sardega sidings as well as road sale also.

2.2 COAL HANDLING ARRANGEMENTS

The coal handling arrangement feeding the raw coal to 10 Mty Basundhara washery and dispatch of washed coal through wagons shall have the following provisions:

- Four numbers of reclaim feeders located at a suitable position near the mine access trench to receive the blast free raw coal to handle 10 Mty capacity.
- The entire 10 Mty raw coal reclaimed by the reclaim feeders and transported up to the proposed Basundhara washery (10 Mty) by sets of belt conveyor C1&C1A, C2&C2A and C3&C3A and feed to Washery complex at a height of 10-15 mtr.
- Out of balance 8.75 Mty of coal, 2 Mty conventionally produced coal will

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be collected by existing feeder breakers and after crushing the same will be dispatched to Kanika and sardega sidings by trucks. Rest 6.75 Mty blast free coal will also be dispatched to Kanika and sardega sidings as well as road sale.

In future, if the capacity of washery will be enhanced, modification of raw coal feeding will be done accordingly to handle 18.75 Mty raw coal.

2.3 BASIC PARAMETERS

The basic parameters considered for the planning of the coal handling plant will be as under:

Capacity (Max.)	18.75 Mty
No. of working days	330
No. of shifts/day	3
No. of hours/shift	8
No. of effective hours of work of CHP/shift	5

2.4 DESCRIPTION OF COAL TRANSPORTATION UPTO WASHERY

FOR 15 MTY WITH INCREMENTAL 3.75 MTY COAL

Conventionally produced around 2 Mty coal brought by dumpers from the quarry shall be unloaded into the existing Feeder breakers circuits and dispatch through the truck loading hoppers to nearby Kanika and sardega sidings.

The blast free coal (by surface miner) brought to the reclaim feeder complex from quarry and stacked on ground. Dozers or Pay loaders are used to channelizing the coal from ground to four numbers of reclaim feeders (0-1000 tph variable capacity each) and the reclaim feeders reclaims the coal and feed into conveyor C1/C1A. The coal reclaimed by the reclaim feeders collected and transported up to the proposed Basundhara washery (10 Mty) and feed at a height of 10-15 meter within the washery premises by the sets of belt conveyors C1&C1A, C2&C2A and C3&C3A of 1500 tph each design capacity.

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To dispatch the balance blast free coal of approximately 6.75 mty, present system of despatch arrangement shall be adopted. The entire 6.75 Mty coal shall be despatched by trucks to Kanika and sardega sidings using the existing road corridor.

Misc. items like dust suppression, firefighting, chutes with liners, tools and tackles etc. will be provided for the proposed coal handling system.

2.5 WASHED COAL TRANSPOTATION THROUGH SILO

The total washed coal from the Basundhara washery (10 Mty) shall be transported upto Silo by conveyors is under the scope of BOMO.

The washed coal from Basundhara washery (10 Mty), shall be loaded into wagons by Rapid loading system (i.e. SILO located on MGR loop near Barpali yard) at the capacity of 5500 tph.

However, the Silo for Basundhara Washery (10 Mty) will be within the Barpali Bulb consisting of 7 loading points. Due to land acquisition issues, the commissioning of the same loading bulb will be delayed.

Recently, 2 number of Silos with RLS near Sardega siding is being designed along with coal transportation system by conveyor. The truck receiving hoppers has been proposed to receive surface miner coal. It is proposed that the coal from Kulda mine will be transported up to truck loading hopper (TRH) by trucks and dispatch through the Silo located at Sardega siding.

2.6 ELECTRICALS

2.6.1 POWER SUPPLY ARRANGEMENT

Power at 6.6 kV for CHP is proposed to be received from the existing feeders of 2X5 MVA, 33/6.6 kV project substation at Kulda OCP through double circuit overhead line. One of the two incoming feeders will normally be kept as stand bye. It is proposed to establish two numbers of 6.6 kV substations in a suitable location near

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CHP and SILO to cater to the power requirement for different equipment of CHP & SILO.

2.6.2 CHP SUBSTATION

For supplying power to different equipment at CHP, two numbers of 6.6 kV substations are required to be installed (one near TH-1 and other substation will be installed near SILO). The 6.6 kV substations -1 & 2 will receive power at 6.6 kV through Double Circuit O.H line such that one feeder is capable of catering to the entire load of the CHP and SILO.

Power shall be fed to 6.6 kV switch panel at substation-1 comprising of 10 nos. of Circuit Breakers (10 nos. of VCB) having 2 nos. of incomer, 1 no. of sectionaliser, 2 nos. of VCB for feeding power to MCC through 6.6/0.415 kV distribution transformers, 1 no. of VCB for feeding power to 63 kVA, 6.6/0.230 kV (L-L) lighting transformer, 2 nos. of outgoing VCB for feeding power to capacitor banks and 2 nos. spare VCB. The similar arrangement has been provided at 6.6 kV substation-2 also.

The reclaim feeders, feeder breakers, firefighting system, dust suppression system, sampling system and other LT loads will receive power at 415 V from MCC of 6.6 kV CHP substation.

All motors above 110 kW shall get power at 6.6 kV. All motors of 110 kW & below shall get power at 415 V. All the lighting loads shall get power at 230V.

All the incoming 6.6 kV panels will be provided with over load, short circuit, and earth fault and earth leakage protection.

All the outgoing panels supplying power to HT motors will be provided with motor protection relay (MPR) and all the panels supplying power to transformer or to any substation or capacitor bank will be provided with over load and short circuit protection

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(i) All the 415V incoming panels will be provided with over load, short circuit and earth leakage protection.

(ii) All the 415 V outgoing panels supplying power to motors will have over load protection along with single phasing protection and short circuit protection.

(iii) All the 415 V outgoing panels supplying power to motors above 45 KW in sequence control will be provided with motor protection relay.

The power factor of the plant has improved to a level above 0.98 lagging at the 6600 volts switch board of 6.6 kV substations. The sufficient capacity of capacitor bank with automatic power factor correction relay have been provided at existing 6.6 kV substations.

The area covered along the conveyors, substation yard, substation building and other areas will be illuminated by light fittings, which will get power from the secondary of 63 kVA, 6.6/0.230 (L-L) kV lighting transformer installed at each 6.6 kV substation.

Proper earthing arrangement for the plant has to be provided as per I.E Rules. As per amended CMR, restricted earthed neutral system has been envisaged for the said installations. An earthing grid shall have to be developed around the periphery of CHP substation as well as along the CHP. In addition all the motors will be earthed through the armoring of the connecting cable.

The control scheme of the CHP along with sequencing shall be done through microprocessor based programmable logic controller (PLC) suitable for industrial control system.

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