

CHAPTER-XI

COAL HANDLING & DESPATCH ARRANGEMENTS

11.1 INTRODUCTION

The total production of K.D. Hesalong OCP has been proposed as 4.50 MTY. Coal Handling Plant has been proposed to handle the entire production of ROM coal produced from the mine.

Presently loading of crushed coal into public railway rakes is performed by means of Front End Loaders at KDH siding. There are four crushing arrangements –

- a) A CHP for 1.5 Mtpa (with roll crusher),
- b) Feeder Breakers nos. 1 & 2,
- c) Feeder Breakers nos. 3 & 4 and
- d) Feeder Breakers nos. 5, 6 & 7 spread over one kilometre length.

Crushed coal from the Feeder Breakers is loaded into trucks by means of Front End Loaders. The trucks carry the coal to discharge it at the railway siding for onward loading of coal into the wagons.

As per approved Project Report (1979) of K.D. Hesalong OCP, a Coal Handling Plant to handle 1.5 Mtpa coal was provided (featured with Crushers, 5000t bunker, railway loading point and wagon hauler for wagon hauling). However, full-fledged CHP could not come up and there is no mechanized railway loading point in existence. The approved Expansion Project Report of K.D. Hesalong OCP (4.5 Mtpa) provided for construction of additional CHP with RLS to handle 3.0 Mtpa. However, approved Revised Project Report (1999) of K.D. Hesalong OCP withdrew the provision of 3.0 Mtpa CHP. Presently, coal is being loaded at KDH siding having Wharf wall arrangement.

A Coal Handling Plant has been proposed to handle the entire production of ROM coal produced from the mine.

The proposed coal handling plant shall have facilities for receiving of ROM coal from rear discharge dumpers, crushing of ROM coal from (-)

1200mm to (-)200 mm size, conveying, storing, reclamation and loading into railway wagons through Rapid Loadout System. The coal handling plant has also been provided with suitable repair & maintenance, communication and other auxiliary facilities to meet the day to day requirement in the plant operation.

11.2 DESIGN PARAMETERS

11.2.1 BASIC DATA

| | | |
|---|---|------------------------------------|
| Production capacity in MTY | - | 4.50 |
| No. of working days / annum | - | 330 |
| No. of working shifts / day | - | 3 |
| Number of effective working hours/day | - | 15 |
| Feed size of R.O.M coal (mm) | - | (-) 1200 |
| Product size in mm | - | (-) 200 |
| Type of unloading dumpers at receiving pit of CHP | - | Rear discharge Dumpers of 50/60 Te |
| Type of loading envisaged | - | Rapid Loadout System |
| Loading hours | - | Round the clock |
| Average Grade of coal | - | E |
| H.G.I. | - | 45-60 |
| Consumer | - | Basket Linkage |
| Mode of Despatch | - | By Railway wagon |
| Life of the mine | - | 25 years |

11.2.2 CHP WORKING SCHEDULE

The coal handling plant will be working in three shifts per day and seven days a week basis with its all units like receiving of ROM coal, crushing, storage in ground bunker and loading into railway wagons.

11.2.3 SYSTEM CAPACITY

The handling capacity of the CHP has been decided to match with the production capacity of the mine. In order to meet the fluctuations of coal output from the mine due to irregularities of despatch / transport system

and seasonal fluctuations, the system capacity of the CHP has been selected as 1200 tph for crushing to storage bunker & 3600 tph for reclaim to Loading point.

11.2.4 **SALIENT FEATURES**

The following factors have been considered in finalising the location and system of proposed CHP:

- Mine boundary
- Mine entry
- Loading arrangement
- Topography
- Availability of space
- Receiving arrangements(size and type of dumpers)
- Power supply and distribution network
- Miscellaneous facilities like dust control system, fire fighting and ventilation system. Plant cleaning and infrastructure for preventive maintenance are also envisaged.
- Necessary Electrical, interlocking, signalling and communication facilities.
- Railway siding (Existing as well as proposed modification)

11.2.5 **SYSTEM DESCRIPTION**

The CHP will have the following functional units as shown in the key plan of CHP. Please refer our drawing no. R 3 / E&M / 002423.

- Receiving Pit and Crushing complex
- Ground storage bunker & Reclamation
- Load-out system
- Dust control system
- Dust suppression system
- Noise control system
- Fire Protection system

- Plant cleaning system
- Plant preventive maintenance
- Weighment

11.2.6 PLANT DESCRIPTION

11.2.6.1 Receiving Pit and Sizer Complex

The Run-Off-Mine coal from the open cast mine / Project shall be received into receiving pit by means of rear discharge dumpers as mentioned earlier. Receiving pits have been provided with sufficient capacity to accommodate payload of two/ three dumpers. The ROM coal will be reclaimed by apron feeder and fed to two nos. of coal Sizers (one standby) each of 1200tph for crushing to specified size of (-) 200 mm. Crushed coal of (-) 200 mm will be collected by the conveyor(1C) of 1400 mm width.

Coal from the conveyor 1C will be carried to a transfer point where a provision has been made to unload / discharge coal on to the tripper conveyor (2C) of 1400 mm width.

11.2.6.2 Storage Bunker and Reclamation system

The tripper conveyor (2C) is being installed over the ground bunker which will uniformly discharge crushed coal from one end to the other end of the bunker with the help of trippers & cascading chute. The ground bunker (above ground) has been provided a storage facility of 15,000te capacity. The bunker shall be constructed of pre-cast concrete slabs sloping at 55 deg. to the horizontal with one slit type opening for plough feeder. Two Plough Feeders, each of 3600tph, have been provided. Out of these two Plough Feeders, one shall be working & the other one shall be standby. Below the slit opening, reclaim conveyor (3C) of 1800mm width is provided to collect coal from the Plough Feeder. The capacity of the reclaim conveyor shall be of 3600 tonnes per hour. Reclaim conveyor from bunker will discharge coal into the loading conveyor (4C) of same width and capacity.

11.2.6.3 Load out system

Loading conveyor will receive coal from the reclaim conveyor and will discharge coal in loading hopper of 400/500t capacity. Rapid Loadout system fitted below the hopper will discharge into pre-weigh hopper to ensure exact pay load into the railway wagons at the rate of 5500tph through swing chute operating over wagons. Rake will be handled at 0.8-1.2 kmph through creep controlled railway locomotive during loading of coal by RLS.

11.2.6.4 Dust Control System

The Dust control system envisages both dust extraction as well as dust suppression system.

Dust Extraction system

The objective of the system is to extract coal dust from various dust generating points, clean the dust laden air by trapping coal particles and finally discharge clean air into the atmosphere so that dust concentration in the CHP premises, even under the critical / worst operating condition.

The dust extraction system envisaged is of wet type. This will include network of suction hoods and ducting connected to a wet wall cyclone for separating dust from the air stream. Air outlet of cyclone collectors will be connected so as to discharge clean air to atmosphere. Collected dust from the cyclone collector shall be disposed off suitably. The wet type extractor is preferred because of its high efficiency and elimination of risks of secondary dusting problem and coal dust explosion.

Dust Suppression System

The objective of this system is to eliminate the air born coal dust or suppress the dust at its source. The system involves confinement of the dust within the dust producing area by a curtain of moisture and wetting the coal dust by direct contact between the particles and droplet of water. Adequate number of precision anti-clog nozzles will be installed at suitable locations for suppressing dust by spraying water mixed with

suppressant. Suitable control for dust suppression shall be provided and the system shall be so inter-locked that it functions only when the conveyor system is operating or the loading operation is on.

11.2.6.5 Noise Control

Noise pollution causes fatigue to operating personals. Provision will therefore be made to keep down the noise level to the extent possible. All machine mountings will have in their foundations anti-vibration pads/sheets for reducing the vibration and thereby noise. All transfer chutes and hoppers shall have wear resistant rubber or ultra high molecular weight plastic / synthetic liners of various thickness as per design requirement and their suitability.

11.2.6.6 Fire Fighting System

Necessary fire fighting system has also envisaged for the plant, which includes fire hydrant tees at strategic locations at equal spacing of 25 to 35 meters with suitable water supply pipe lines. Also portable type fire extinguishers to deal with electrical / oil /ordinary fires shall be provided at all strategic locations in the plant.

11.2.6.7 Plant Cleaning system

To facilitate cleaning at strategic locations ample number of high pressure water servicing points have been envisaged. These service points will be so located that with a 15/20 m long hose, any working area in the plant or equipment working place can be reached. These service points will be provided with quick connecting hose couplings for easy fixing and dismantling of hoses.

To handle discharge from plant effluent and washing of the plant area, sump pumps of suitable design and capacities have also been envisaged where required. Plant effluent shall be discharged through open drain/ pipe.

11.2.6.8 Plant Preventive Maintenance

For effective maintenance of all the equipment, there will be sufficient working space around the equipment/machinery. All the equipment and conveyor discharge drums/transfer points, etc shall have covered and well ventilated housing complete with access stair ways, hand rails, platforms, cross-over ladders, etc as required.

Necessary mono-rails electric hoists and chain pulley blocks at suitable points of adequate capacity will also be provided on respective floors.

11.2.6.9 Weighment

Coal will be loaded into railway wagons by RLS with pre weigh hopper. However, one no. in motion rail Weigh Bridge has also been provided to monitor individual pay load of wagon along with total pay load of the rake.

11.3 ELECTRICALS

The electrical system shall comprise:

- Power reception and distribution system
- Centralized sequence control–cum–interlocking, automation, signaling and instrumentation system
- Illumination of plant and adjacent area
- Centralized welding circuit
- Earthing

11.4 CAPITAL INVESTMENT REQUIREMENT

The details of cost estimate for capital requirement of CHP have been shown in Appendix – A.3.5.0

11.5 DRAWING

A tentative key plan of the proposed coal handling Plant has been given in the drawing no. R3/E&M / 002423.

11.6 RAILWAY SIDING

Presently, two railway lines with wharf wall loading arrangement exist, in which loading of coal being carried out through Front End loaders. It has been proposed to load the coal through RLS. To facilitate RLS with hopper, one additional/ engine escape rail line will be required with necessary arrangements. This RLS would also require provision of Creep-controlled locomotive from the Indian Railways.

The cost estimate for the proposed expansion of Railway siding arrangement has been envisaged in Appendix A.5.

