RISK ASSESSMENT

Risk assessment has been carried out for the proposed reopening of Jhillingburu II mine and based on the same, disaster management plan has been prepared .

During the operation of the open-cast mine, following risks have been identified.

- Failure of slope in the pits.
- Failure of slope of external dumps
- Fly rock from blasting operations
- Surface fire (oil, electricity).
- Possible Danger due to handling of explosives

1 Failure of Slope in the pits

Regular inspection of various physical parameters of the ground mass like unit-axial compressive strength, triaxial compressive strength, cohesion, angle of friction, specific gravity of the rock, water pressure etc. shall be carried out. The mine will be designed based on the above considerations with sufficient safety margins to eliminate any chances of slope failure in the pit. Besides, all the discontinuities will be plotted in stereo plots to find out the chances of any planer failure, or wedge failure. Factor of safety will be determined against overall slope failure as well as against individual bench slope by circular failure, planer failure and wedge failure. Besides determining factor of safety the slopes will be monitored at regular intervals to check for any possible failure. Being hill top deposit, storm water does not accumulate in the lease area and therefore hydrostatic pressure remains at a low level. However the well-developed drainage system within the lease area will minimize the hydrostatic pressure during rainy season.

2 Failure of Slope of External Dumps

The slopes of external dumps shall be planned at an overall angle of less than 28° with individual lifts at less than 37°. As the dumps attain final position, the slopes will be terraced and proper vegetation will be laid which will cause binding of the soil preventing any slope failure. Retaining walls will be built all-around the external dumps which will have weep holes for passage of storm water to join garland drains.

3 Fly Rock from Blasting

The optimum blast design has been worked out on the basis of trial blasting studies. All precautions related to control of fly rock will be taken during the blasting operations. All precautions related to control of fly rock, as prescribed by Director General of Mines safety (DGMS), will be taken during the blasting operations. Safety zone of 300m as per statutes will be maintained.

4 Surface Fire

In Jhillingburu II Mine, there will be no provision to store HSD. HSD required for equipment used at the mine will be supplied in fuel browsers from adjoining Durgaiburu mine, where it is received and stored in two storage tanks centrally. Spillage of oil (HSD) and resultant fire constitutes a potential risk. However, the quantity of the maximum HSD which can spill is not much and can be easily controlled.

Sufficient nos. of portable fire-extinguishers and sand buckets will be provided in the mine office to take care of any electrical fire. The distribution and selection of extinguishers shall be done in accordance with the requirements of Bureau of Indian Standards (BIS): 2190-92.

In addition a centralized fire-fighting station is being set-up at Durgaiburu Mine. The fire station shall be provided with fire tender, trailer pumps, safety equipment etc. There will be a control room in which micro-processor based fire alarm panel shall be located to indicate and monitor the fire condition in various premises including adjoining Durgaiburu, Jhillingburu-I and Topailore mines. The fire station shall have a u/g static water tank to meet the water requirement of fire tenders.

As soon as any fire is reported the shift-in-charge shall assume the function of disaster controller. In case of serious fire and depending on the gravity of the situation, the Mines Manager may be summoned to assume charge. Personnel trained in dealing with fires will be summoned. Meanwhile the hospital will be informed to standby to handle casualties. The fire area will be cordoned off till the fire is fully extinguished and remain so until all wreckage and debris is cleared away.

5 Danger due to Handling of Explosives

An explosive magazine of capacity 50 t is already in operation at adjoining Durgaiburu mine lease which will also cater to the needs of Jhillingburu II Mine. Adequate safety zones have been provided as per statutory requirements while locating the magazine. The magazine has been constructed as per plans approved by Deptt. of Explosives. The operating procedures of the magazine also strictly follow the Deptt. of Explosives guidelines.

All workers have been informed that in case of any fire, whosever notices the fire will sound the alarm and inform the shift-in-charge. The shift-in-charge will inform security personnel and arrange to evacuate all personnel, except those who are required for fire fighting, from the area. The fire brigade shall be summoned to deal with the emergency. The hospital will be informed to standby to handle casualties.

6 Pit Safety Committee

A Pit Safety Committee (PSC) shall be constituted at Jhillingburu II mine once the mine becomes operational. The PSC shall be headed by the Mines Manager. The Senior Manager (Safety) shall act as the Secretary of the PSC.

The functions of the PSC shall be as follows:

- Visit various working areas of the mine (mine pits, workshop, loading area etc.) regularly (at least once a month) and meet the workers to discuss matters regarding safety and invite their suggestions on the same.
- Review all accidents (including minor ones) reported since the last visit and suggest measures to prevent recurrence of the same.
- Enquire into all serious accidents that are referred to PSC by the Mines Manager for enquiry.
- Discuss recommendations of Inspector of Mines on matters of safety and DGMS violations placed by the Mines Manager before the PSC for information and necessary action.
- Take active part in organizing and observing Mines Safety Week.
- Undertake publicity and propaganda work at the mine for creating safety consciousness amongst the workers.