



MINE PROFILE / DATA DOSSIER OF RAJUR PITS COLLIERY

1.0 GENERAL INFORMATION

1.1 LOCATION OF THE MINE

Rajur Pits Colliery is located in Rajur Geological Block under the administrative control of Wani North Area of the WCL, in Wani Tahsil of Yavatmal District of Maharashtra State. The pits of the colliery are situated on the northern side of Rajur Geological Block, whereas the workings of the colliery extend from incrop of Major Seam on the north to 85m - 90m fault on the south.

The present lease area of Rajur Pits Colliery is approximately 742.52 hectares and the area proposed for mining by MDO is also same. The Rajur group of mines fall in three geological blocks viz. G.R. on Rajur area, Chanda-Wardha Valley Coalfield, Dist. Yeotmal – CMPDI, April 1974, G.R. on Exploration for Coal in Rajur Block, Wardha Valley Coalfield - MECL, March 1991 and G.R. on Exploration for Coal in Chinchala Block, Wardha Valley Coalfield - MECL, May 1990. Most of the area of the proposed boundary for MDO operator falls in Rajur Geological Block.

The proposed Rajur Pits Colliery boundary is delineated in the plans appended with this profile as follows:

North : Incrop of Major Seam

South : Rajur Block Leasehold Boundary Line

East : Rajur Block Leasehold Boundary Line

West : Common Boundary between Rajur Pits and Rajur Inclines Mine

The Rajur Block is covered by Survey of India Toposheet NO. 55 L/16 and is bounded by

Latitude : 20° 4' 39" and 20° 7' 22" N

Longitude : 78° 52' 12" and 78° 55' 46" E

1.2 MINE ACCESSIBILITY

Nearest Airport : Nagpur at a distance of around 130 km

Nearest Railway Station : Wani & Majri at a distance of around 9 & 17 km respectively

Approach by Road : 5 km from Wani Town

Nearest Seaport : Vishakhapatnam and Mumbai at a distance of around 810km and 770km respectively.

1.3 HISTORY OF THE MINE / PROJECT

1.3.1 History of mining, mine operators and date of abandonment: -

Rajur Underground Mine was initially opened in 1939 with a pair of shafts and worked till 1956 when it was abandoned due to high make of water. The name of the mine was Kukas Colliery and workings were developed on the strike length of 1.4 km by erstwhile owners. The mine was reopened again by Coal Mines Authority Limited in 1974 after nationalization of Indian coal industry.

New Inclines No. 1 & 2 were started in 1988 to facilitate mining in the central area of the lease, as the extent of the strike development exceeded 4.4 km. Another incline namely Bhandewada Incline has also been driven on the western side near Bhandewada Village. An Airshaft with 68m depth and 4.2m dia. has been sunk near Bhandewada Mine. The dip side extension of the workings vary from 0.5 km - 2.2 km along eastern and central part respectively.

Rajur Geological Block was opened with 3 mines namely Rajur Pits Colliery with two pits (Intake and Return), Rajur Inclines Mine with two inclines (Intake and Return) and Bhandewada Incline Mine with an Intake Incline and a Return Airshaft. Rajur Pits Colliery and Rajur Inclines Mine are having one workable seam namely Major Seam which is about 6m to 11m thickness. Bhandewada Incline Mine is having two workable seams namely Major Seam and Minor Seam with thickness range of about 5.96m to 10.63m and 0.6m to 3.66m respectively.

Major Seam has been worked since 1939 and is standing on pillars developed along the floor of Major Seam. The depth of Major Seam workings varied from 15m to 180m. The height of the development varied from 2.2m to 2.4m with a gallery width of 3.5m to 3.6m. The size of the pillars vary from 20m to 26m and square in shape. The development was on open pillar pattern on a honeycomb fashion though the seam was known to be prone to spontaneous heating. Conventional system of splitting and slicing in conjunction with sand stowing was associated with crushing of stooks and pillars, roof falls and fire hazards in Rajur Pits Colliery thereby limiting the depillaring operation upto single lift only with less than 30% recovery. Even this low recovery by single slice mining caused strata deformation, parting of roof coal and occurrence of fire. The mine was ultimately permitted to extract 3.6m thick bottom section in two rows of pillars leaving one row of pillar as a barrier between them. The level of recovery with the above option dropped below 18% even with hydraulic sand stowing.

Attempts were made to extract the pillars of Major Seam with stowing in Rajur Pits Colliery since 1989. Development without paneling required large number of isolation stoppings before any depillaring is done. Efforts were made to depillar a few panels in conjunction with sand stowing. Pillars were split into two equal parts by driving level split of 4.0m width. The dip slices were 4.2m wide and 3.0m height with a rib of 2.0m against stowed goaf. Second lift could not be extracted due to difficult roof conditions associated with roof falls and subsequent spontaneous heating. The impact of depillaring even with hydraulic stowing was experienced as 2 to 3 pillars showed signs of crushing. The depillaring cycle was very slow because of stowing constraints when the stooks and ribs had to stand for more than the desired period.

In view of the above problems, the depillaring process was modified to partial extraction, working sub-critical panels of two pillars to 3.6m height and leaving a row of pillars as barrier. The pillars were to be left as natural support to improve the efficacy of stowing, minimize the abutment loading and ultimately crushing of the pillars and stooks. The option was likely to minimize the occurrence of fire normally seen with crushed or fallen coal. The level of final recovery with this option was dropped to below 18%.

1.3.2 Reasons of discontinuity:

In the proposed MDO boundary of Rajur Pits Colliery, the Major Seam have been worked by Semi-mechanised Bord & Pillar method which is presently waterlogged. In Major Seam, development has been done from floor of Bottom Section of Major Seam and depillaring was done in 4 districts from floor of Bottom Section of Major Seam.

Due to heavy losses and very less production in Rajur Pits Colliery, the workings of Major Seam were closed on 31.03.2004.

1.4 COMMUNICATION FACILITIES AVAILABLE:

The block is well connected by both road and rail. The mine is approachable from Wani Town (About 5 km) and Wani Town in turn is connected to Nagpur via Warora and Jam Towns.

Wani and Majri railway stations, under Central Railway are at a distance of approximately 9 km and 17 km respectively from the mine. The Wani Township is about 5 km from the mine.

1.5 CLIMATE

The area is characterized by sub-tropical climate. The day temperature during summer months (lasting from March to May) rises to as high as 48° C but winters (November to February) are generally pleasant with minimum temperatures going down to 8° C. The average annual rainfall in the area varies from 800 mm to 1200 mm. The average relative humidity varies from 45% to 60%.

1.6 TOPOGRAPHY AND DRAINAGE:

The Rajur Block forms an undulating plain country, mostly covered by cultivated lands. The general altitude of the area varies from 214.62m to 234.38m. The area in general is traversed by a number of north to north easterly flowing nallahs. However, there is an easterly flowing nallah also in the eastern part of the block. All the nallahs ultimately discharge their water into Wardha River which flows 7 to 9 km away north of Rajur Block.

1.7 STATUS OF MINING LEASE

1.7.1 Lease-hold area:

The present leasehold area of Rajur Pits Colliery is 742.52 hectares (approx.) and the area proposed for mining by MDO is same as the leasehold area.

1.7.2 Land use pattern:

The total lease hold area of Rajur Pits Colliery is approximately 742.52 hectares. The land acquisition status under different heads in the Leasehold Area is given as follows:

Sl. No.	Type of Land	Area (in ha)
1	Tenancy Land	711.61
2	Government Land	18.17
3	Forest Land	12.73
4	Surface Acquired Land (Tenancy Land)	46.63

2.0 GEOLOGY

2.1 GEOLOGY OF THE BLOCK

Rajur Geological Block is located in the northwestern limb of Wardha Valley Coalfield. Major portion of the block is covered by black cotton soil. Few exposures of Lameta rocks are exposed near Bodad Village.

Rocks belonging to the Lower Gondwana formations occur below a cover of Soil, Lameta and Kamthi formations in this area. As deciphered from the sub-surface data of the boreholes as well as considering the data of mine workings, the Geological Succession is given in the following table:

Age	Formation	Lithology	Range of thickness intersected in B.H.	
			Minimum (m)	Maximum (m)
Recent to Sub-recent	Soil	Black clayey soil and sandy soil.	0.50 (MWR-24)	12.20 (R-3)
Cretaceous	Lameta	Cherty Lime Stones, hard Silicated Sandstone.	2.50 (MWR-20)	10.67 ((R-8)
Unconformity				

Age	Formation	Lithology	Range of thickness intersected in B.H.	
			Minimum (m)	Minimum (m)
Lower Triassic to Upper Permian	Kamthi	Yellow, Brown, Red, Yellowish white ferruginous fine to coarse grained sand stone with yellow, pink, variegated clays and occasional grey shale and brown variegated clays.	37.70 (MWR-24)	152.02 (MWR-11)
Unconformity				
Lower Permian	Barakar	<p>Upper Barakar is generally greyish white, white medium to coarse grained sand stone and occasional green sand stone with disseminated garnets and interbedded with shales, carb. shale and thin bands of coal and pyrite.</p> <p>Middle Barakar, the composite coal seam constituting carbonaceous shale and arenaceous shale as bands, generally of thickness less than 1.0m.</p> <p>Major Seam</p> <p>Parting mainly consists of medium to coarse grained sandstone & occasionally intercalations of sand stone & shale.</p> <p>Minor Seam</p>	5.96 (R-7)	10.63 (MWR-26)
			9.65 (MWR-13)	17.55 (MWR-11)
			0.60 (MWR-7)	3.66 (MWR-26)
		Lower Barakar is generally with fine to medium grained garnetiferous sand stone, interbedded with shales and thin bands of coal.	Generally around 1.5m to 2.0m in Chinchala Block.	
Upper Carboniferous Permian	Talchir	Light green to greyish white sand stone with pebbles of Quartz and green	Intersected in R-1 (5.72m)	

2.2 EXPLORATION STATUS

The proposed mine boundary falls in Rajur Geological Block. About 57 boreholes have been drilled by different agencies in these blocks. The summarized details of exploration in these blocks are as follows:

Name of Block	No. of Boreholes	Meterage (m)	Period	Block Area (sq.km.)	Seams intersected
Rajur Geological Block	22 DGM, MS (R-1 to R-9 & R-11 to R-18, DGM-1 & 2, P-3, 4 & 5)	3199.03	1971 - 72	12.48	Major & Minor Seams
	27 MECL (MWR-1 to MWR-27)	5730.70	1988 - 90		
	8 Kukas Colliery (BH-1 to 8)	458.73	-		
TOTAL	57	9388.46		12.48	

Note: The area offered for working by MDO has 22 numbers of exploration boreholes in the area proposed for mining by MDO is 7.425 sq. km. The borehole density comes to 3 BH/sq. km.

2.3 DIP AND STRIKE

The coal bearing formations exhibit a strike of North 35° West – South 35° East in the eastern part. This strike swings further to the north assuming a North 63° West – South 63° East in the western part. The coal seams show a general gradient of 1 in 4 to 1 in 7 (8° to 12° dip).

2.4 INCROP / OUTCROP OF COAL SEAM (S)

Both Major and Minor Seams incrop in the proposed mining boundary.

2.5 COAL SEAMS

02 (two) coal seams viz. Major Seam and Minor Seam are present in Rajur Geological Block. The sequence of coal seam with their thickness, parting and depth in the Mine leasehold area as follows:

Seam / Parting	Seam Thickness (m)	Depth (m)	BHs Intersection	Remarks
Major Seam	5.96 - 10.63	45 – 450 (Approx.)	57	Major Seam in Rajur Pits Mine is developed upto 180m and few panels are depillared. Presently the mine is water logged and abandoned.
Parting	9.65 - 17.55			
Minor Seam	0.60 - 3.66	33 – 450 (Approx.)	57	Minor Seam has not developed a workable thickness and hence not developed in Rajur Pits Mine Area.

Note: The seam thickness, depth and boreholes intersection in the above table has considered the whole of Rajur Geological Block for the purpose of providing an overall view of the status of working of different seams.

2.5.1 Description of Seam in the Mining Area

The mining area is having two seams namely Major Seam and Minor Seam. Only Major Seam is being worked by Rajur Pits Colliery with 2 pits and Minor seam owing to its less thickness is not workable. In the area to be worked by MDO, the Major Seam was split into four sections designated as Section-IV (from floor of Major Seam), Section-III, Section-II and Section-I. The combined seam thickness of Major Seam varies from 8m to 10m. In Rajur Pits Colliery Area, the development and depillaring workings in Major Seam were restricted to only Section-IV with a thickness of 2.2m to 2.4m and width of galleries as 3.5m and has been worked upto a depth of 280m. Other sections of Major Seam are virgin in Rajur Pits Colliery. The workings of Section-IV of Major Seam have been developed in a honeycomb fashion without any panel barriers between the working districts.

2.5.2 Faults

Based on the exploration data, four faults have been encountered within the Rajur Geological Block and many faults which are minor in nature with throw upto 5m have been encountered in the mine.

The following table gives an idea of faults encountered in the geological block:

Fault No.	Strike	Throw	Linear Extension	Nature & evidence
F ₁ - F ₁	N70°W - S70°E to N85°W - S85°E in the eastern and western part and N50°W - S50°E in the central part.	40m to 95m towards SW	5.15 km within the block and likely to continue beyond the block boundaries on either sides.	<ol style="list-style-type: none"> 1. Oblique Fault 2. Intersected in the mine near B.H. MWR-3 in the updip side. 3. Interpreted based on the data of B.H.s MWR-11,13,7 and mine data on the up thrown side and data of MWR-3,10,6 & 12 on the down thrown side located to the dip side of the property.
F ₂ - F ₂	N81°W - S70°E	2m to 10m towards North & likely to increase in the West	0.55 km and may continue in the west	<ol style="list-style-type: none"> 1. Oblique Fault 2. Interpreted based on the data of B.H.s R-16 & MWR-21 on the up thrown side and R-3 & MWC-1 on the down thrown side.
F ₃ - F ₃	N83°W – S83°E	2m to 20m towards North & likely to increase in the West	1.23 km and may continue further in the west	<ol style="list-style-type: none"> 1. Oblique Fault 2. Interpreted based on the data of B.H.s R-8 & MWR-20 on the up thrown side and R-16, MWR-21 & R-2 on the down thrown side. 3. Intersected in borehole MWR-22 on the floor of Minor Seam resulting in reduction of seam thickness.
F ₄ - F ₄	N27°W – S27°E in the western part while in the eastern part swerves to N86°W - S86°E.	2 to 10m towards NE in western part and 10-15m towards North in the eastern part.	2.5 km	<ol style="list-style-type: none"> 1. Oblique Fault 2. Interpreted based on the mine data and data of boreholes MWR-9 & 17 on the upthrown side and MWR-11, 27 & 15 on the downthrown side.

Many faults which are minor in nature with a throw upto 5m which may not have been shown on the Geological Plan may have been encountered in the mine. Details of the lay and disposition of faults can be seen in the geological plan.

2.5.3 Intrusives

The entire area proposed for mining is free of igneous intrusives. However in the dip side of Major Fault (F1-F1), data of igneous intrusives needs to be established.

2.5.4 Other geological disturbances

The mining area is free from other geological disturbances. However, occurrence of minor faults cannot be ruled out.

2.5.5 Immediate roof and floor of coal seam(s)

Immediate Roof and Floor status of Major Seam and Minor Seam in Rajur Geological Block area is as below:

MAJOR SEAM:

- a) Roof : Medium to coarse grained Sandstone and Carbonaceous Shale
- b) Floor : Fine grained Sandstone and Shale

MINOR SEAM:

- a) Roof : Fine to Medium grained Sst., occasionally by Carb. Shale & Shale
- b) Floor : Fine grained Sst. and intercalation of Shale & Sst. and occasionally by Shale

2.6 PHYSICO-MECHANICAL PROPERTIES

The Physico-Mechanical properties have been tested in two boreholes out of which two boreholes (MWC-29 & MWC-31) are lying on the western side of Bhandewada Incline Mine Area and two other boreholes (MWR-1 & MWR-2) are lying on the western side of the Rajur Pits Mine Area. The roof within thickness of 30m was coarse grained sandstone of varying texture with a few horizons of chalk and black clay. The RQD of the formation is invariably below 30 and Compressive Strength below 30 kg/cm². The uniaxial compressive strength of Major Seam is as follows:

- | | | |
|-------------------|---|----------|
| 1. Top Section | = | 12.5 Mpa |
| 2. Middle Section | = | 13.0 Mpa |
| 3. Bottom Section | = | 17.0 Mpa |

CMRI carried out RMR studies in one of the panels, where cable bolting technique was proposed. These results were published in the report titled "Mining of Major Seam at Rajur Colliery" in April 1986. The following are the details of RMR studies:

The rock mass rating for the purpose of support planning was done on the basis of layer thickness, structural features, weatherability, compressive strength and ground water seepage. The thickness of pillar development was upto 2.4m along the floor of Major Seam, mainly coal band under shale as roof. The roof was invariably dry. The RMR of the shale roof was estimated to be around 50, which is in fair category. The shale band of 60 - 65 cm along the roof of Major Seam worked as aquiclude keeping the lower section dry. The RMR of the formation was around 50 till the workings were kept 30 cm below the shale band. The scenario changed drastically as soon as the aquiclude was thinned below 30 cm and cracks & fissures developed in the holes drilled upto sandstone bed. A hole of 32 mm drilled in the roof coal/shale mass started leaking at the rate of 1 gpm as soon as coarse grained sandstone bed was touched. The strength of water charged formation was extremely low within 35 kg/cm². The RMR of the formation was nearly 35. Normal cement grout mix in these holes was frequently washed away resulting in low anchorage.

2.7 PROXIMATE ANALYSIS

Proximate Analysis results in Rajur Geological Block is given in the following table:

Seam / Section	Effective Thickness (m)	Moisture (%)	Ash (%)	U.H.V. (k.Cal./kg)	Grade	Remarks
A) Major Seam (North Western Part):						
Top Section	3.37 - 6.3	7.8 - 8.2	25.08 - 27.38	4056 - 4306	D - E	Largely D
Bottom Section	2.88 - 3.65	6.3 - 8.52	20.70 - 31.70	3656 - 4884	D - E	Largely D
B) Major Seam (Central Part):						
Full Seam	5.56 - 9.89	6.0 - 7.3	24.61 - 31.82	3635 - 4523	D - E	Largely D
C) Major Seam (South Eastern Part):						
Section-IV	0.91 - 2.44	9.2 - 10.3	15.2 - 24.87	5478 - 4198	C - E	Largely D
Section-I	1.18 - 1.68	7.2 - 8.64	22.68 - 29.8	3794 - 4578	D - E	Largely D
Section-I+II	1.47	8.88	30.64	3446	E	
Section-II+III	3.81 - 5.65	7.6 - 7.77	30.07 - 33.1	3283 - 3678	E - F	
Section-I+II+III	6.82	7.23	32.68	3393	E	
D) Minor Seam	0.60 - 3.35	6.1 - 8.73	18.21 - 38.30	2771 - 5182	C - F	Largely D

2.8 OTHER TEST AND ANALYSIS OF MAJOR SEAM

The Major Seam has high pyretic content varying within 0.7% to nearly 4.06%. The sulphur content of Sections-I, II, III & IV varies from 0.3% to 4.06%. There is a history of fire in the mine. The Crossing Point and Ignition Point of the Major Seam were found to be 144.5° C and 209.8° C respectively. The incubation period of Major Seam was estimated to be 6 months.

3.0 COAL RESERVES

The minimum balance Extractable Reserves in Major Seam (Standing on Pillars + Virgin Area) works out to approximately 18.13 Mt. Minor Seam is less than 1.5m thick, hence extractable reserves of this seam have not been estimated.

4.0 GEO-MINING CHARACTERISTICS

4.1.1 Gassiness of coal seam(s)

Degree of gassiness of Major Seam is Degree - I.

4.1.2 Water regime

The Wardha Valley Coalfield formation with well-developed Kampti and Barakar formation and unconformity in between is reported to be highly aquiferous in nature. Towards outcrop, the Kamthis are directly overlying the seams. The moturs containing clay beds are completely missing within the leasehold. The Barakar formation composed of coarse grained sandstone is known to have greater amount of water than is normally the case.

The detailed hydrogeological study of the region has been conducted by UNDP. As per their report, the ground water occurs below the water table in the intergranular pore spaces of sandstone and their secondary porous structures. The interbanded shales/clays act as aquicludes. Generally, secondary porosity plays significant role in the ground water potential of these formations. Ground water exists under both confined and unconfined conditions in the area. The unconfined water table aquifer generally occurs in Kamthis extending down to a depth of 25m below ground level (bgl) whereas the confined/semi-confined aquifer is encountered at greater depths in Kamthis/Barakars.

Depth of water table in unconfined aquifer ranges between 0.50m to 11.30m below ground level in post monsoon season (Oct. 1990) whereas it varies from 1.18m to 15.68m bgl in pre-monsoon period (May/June 1990). The water table fluctuation ranges from 0.72m to 7.55m between post and pre-monsoon seasons. The direction of ground water flow is towards east and north-east with hydraulic gradients ranging from 3.3×10^{-3} to 4.0×10^{-3} , steep hydraulic gradients varying from 1.7×10^{-2} to 3.6×10^{-2} with high depression (elevation ranging from 165m to 190m above MSL) are recorded at the depressurized central part of the mine area which is the induced effect of mine drainage. Gentle gradients arrived for the remaining study area indicate better permeability.

The hydraulic characteristics of different aquifers estimated by pumping tests on tube wells/wellfield and dug wells are summarized in the following table:

Sl. No.	Aquifer Parameters	Kamthis		Barakars (Confined / Semi-confined)	Kamthis + Barakars (Confined / Semi-confined)
		Water table	Semi-confined		
1	Transmissivity (KD)	1.4×10^{-6} m ² /sec (0.12m ² /day)	1.1×10^{-3} m ² /sec (95m ² /day)	0.8×10^{-3} m ² /sec (70m ² /day)	2.0×10^{-3} m ² /sec (160m ² /day)
2	Hydraulic Conductivity (K)	1.8×10^{-7} m ² /sec (0.02m/day)	2.8×10^{-5} m ² /sec (2.4m/day)	1.3×10^{-5} m ² /sec (1.12m/day)	2.0×10^{-5} m ² /sec (1.73m/day)
3	Storage Coefficient (Sy/S)	4 to 10%	1×10^{-5}	1×10^{-5}	1×10^{-5}
4	Water Level	6m bgl	24m bgl	30m bgl	30m bgl

Vertical permeability of the coal seam = 8.0×10^{-9} m/sec.

From the above table, it can be concluded that unconfined aquifer in Kamthis has low ground water potential. On the contrary, the ground water potential of the semi-confined / confined aquifer in Kamthi and Barakars is high and moderate respectively. The water in general is alkaline in nature with pH values from 7.2 to 8.0 and it is of good quality with TDS concentration from 400 to 670 mg/l in surface water and shallow aquifer, whereas mine water is with higher percentage of TDS.

Therefore, water management is one of the prime tasks of Rajur Mine.

4.1.3 Incubation period of coal seam(s)

Incubation period of the Major Seam is approximately 6 months.

4.1.4 Cavability of coal seams

Data of cavability characteristics of coal seams is not available.

4.1.5 Important surface features

- a. Pit No. 1 & 2
- b. Staff and Officer's quarters
- c. Seasonal Nallah
- d. 11 kV H.T. Lines
- e. Forest Land
- f. State Highway Road and Zilla Parishad Road
- g. Colliery Roads
- h. Railway Track

5.0 MAJOR CONSTRAINTS

a) Surface Constraints

1. Pit No. 1 & 2 which are abandoned exists on the surface of the mine.
2. State Highway Road, Zilla Parishad Raod, Colliery Roads, Power Line, Railway Track Line are passing through the Mine area.
3. Forest Land is lying on Rajur Pits Mine area.
4. Seasonal Nallah is passing through the mine area.
5. Staff and Officer's quarters are lying on the mine area.

b) Underground Constraints

1. Lot of pillars have to be left out as safety pillars while depillaring beneath the above said surface features.
2. Gradient of coal seams is steep (1 in 4 to 1 in 7 – in general 1 in 6).
3. The pillars which are standing since long time are water logged.

4. Major Seam is mainly split into four sections in Rajur Pits Colliery. The intervening parting is mostly composed of shale & carb. shale with coal bands except between Sections III & IV, which is sandstone and intercalation of shale and sandstone. This seam is mainly composed of shale, shaly coal, carbonaceous shale & thin bands of shale with dull appearance, high in sulphur, low in rank.
5. In Rajur Pits Colliery, sufficient area has been developed on strike and these water logged pillars have been standing for a long time due to which pillars may be in very bad shape and condition. In this colliery, there are numerous roof falls.
6. The coal seams in Rajur has a high sulphur percentage resulting in spontaneous heating and the colliery has history of fire.
7. The whole of the area is developed in honeycomb pattern leaving no barrier between the panels and this had posed a serious problems for making depillaring panels, which are to be isolated from other parts of workings so that depillaring operation is confined within the panel.
8. Ventilation and Hydraulic Sand Stowing will be a problem in this mine.
9. There is only one major fault with throw of about 85 to 90m between the standing on pillars area and virgin area.
10. Management of roof control will be a problem.
11. Extractable reserves in the virgin property dip side of Major Fault are in Indicated Category and 70% of extractable reserves are considered.
12. Exploratory boreholes are required to prove the virgin property on the dip side of Major Fault which are in Indicated Category

6.0 PRESENT STATUS

6.1 MINE ENTRIES

Rajur Pits Mine is having two mine entries which are shown in the following table:

Mine Entry	Landing at	Depth (m)	Dia (m)	Type of Winder	Purpose	Remarks
Pit No. 1	Major Seam	52	4.2	Electric Winder (65 kW)	Coal / Material winding	Intake
Pit No. 2.	Major Seam	48	4.0	Electric Winder (37 kW)	Men winding	Return

6.2 MINING METHOD

In Rajur Pits Colliery, development on Bord & Pillar method was done in only bottom section i.e., Section-IV of Major Seam and only four panels (A, B, G & H) were depillared in this section in the mine. The property is developed upto the Fault F₁-F₁ but still a virgin patch is there in continuation towards eastern side of the Pits. Also, a very big area is virgin on the dip side till the mine leasehold. The depillaring in the four panels had been done in conjunction with hydraulic sand stowing.

In Rajur Pits Colliery, Minor Seam has less workable thickness and unworkable.

6.3 STATUS OF MINING

Major Seam : Waterlogged and workings are discontinued.
 Minor Seam : Unworkable due to less thickness

6.4 INFRASTRUCTURE AVAILABLE

6.4.1 Land

The leasehold area of Rajur Pits Colliery is 742.50 hectares. Surface Rights of 46.63 hectares of tenancy land is under the possession of WCL.

6.4.2 Roads and culverts

The Rajur Pits Colliery is well connected to Wani Town and Nagpur by all-weather metalled road.

6.4.3 Plants and machinery

In Rajur Pits Colliery, except two pits, headgears (in worn out condition), winders and a surface sub-station, no major plant & machinery are available.

Pit No. 1 (4.2m dia and 52m depth) was used for Intake with coal/material winding purpose and was fitted by single cage. The engine power of this winder and the winding capacity was 65 kW and 600 tpd respectively. Pit No. 2 (4.0m dia and 48m depth) was used as Return with man winding purpose and was fitted with a single cage. The engine power of this winder is 37 kW. Both these existing winders in Pit No. 1 & 2 are very old and can be handed over to MDO.

Pumps are not available in Rajur Pits Colliery.

Main Mechanical Ventilator is not available in Rajur Pits Colliery.

6.4.4 Power supply and distribution

A 11 kV Surface Sub-station exists near Rajur Pits Colliery but this is presently being used for Office, Residential Buildings, Workshop and Water Supply. This Sub-station can be used as power source for Rajur Pits Colliery. Additional transformers and switches will be required according to the requirement of MDO. No underground Sub-station exists in Rajur Pits Colliery.

6.4.5 Coal Handling Plant

Presently, there is no CHP facility available near Rajur Pits Colliery.

6.4.6 Water supply and sewerage

Arrangement of water supply and sewage system is available at the residential and service buildings. The pumps and pipelines used for water supply cannot be handed over to MDO.

6.4.7 Service and Residential Buildings

Presently, some of the buildings and infrastructure are being used for Rajur Incline Colliery till any other arrangements are made. The following infrastructure and old buildings with build-up area is mentioned which can be spared by Rajur Pits Colliery for MDO.

- a) Workshop Building (Presently used by Rajur Inclines) - 537.50 sq.m.
- b) E & M Office (Presently used by Rajur Inclines)

- c) Pit Building - 472.50 sq.m.
- d) VTC Building (abandoned condition) - 242.90 sq.m.
- e) Settling Tank - 900 sq.m.
- f) Canteen (in abandoned condition)
- g) Bathroom Building (in abandoned condition)
- h) Quarters (LCH) (in abandoned condition) - 103 Nos
- i) Double storied Miners quarters (in abandoned condition) - 160 Nos.
- j) 11 kV Substation Building (Presently used by Rajur Inclines)

6.4.8 Railway siding

The mine is having railway siding but not being used for handling the production since 2011.

6.4.9 Present Pumping System

Water is being discharged to surface through the borehole by submersible pumps to maintain water level of Rajur Pits Colliery.

6.4.10 Present Magazine Details

Magazine License No.	-	E/WC/MH/22/37 (E8415)
Explosive Capacity	-	1750 kg
Detonator Capacity	-	44000 Nos.

This magazine is presently being used for Rajur Inclines Mine and cannot be spared for MDO.

6.4.11 Present Manpower Details

Presently, there is no any manpower in Rajur Pits Colliery.

6.4.12 Production from Rajur Pits Colliery

Presently, there is no production in Rajur Pits Colliery as the mine is discontinued since 31st March 2004. The production of 5 years before closing of Rajur Pits Colliery is as follows:

Year 1996-97	-	76255 tonnes
Year 1997-98	-	67025 tonnes
Year 1998-99	-	73078 tonnes
Year 1999-2000	-	80730 tonnes
Year 2000-01	-	21155 tonnes

6.4.13 Average Grade of Coal

The average grade of coal seams of abandoned / discontinued Rajur Pits Mine before closing is 'Grade-D'.

7.0 PLANS

Sl. No.	Description	Scale/R.F.
1	Topographical and Geological plan	1 : 5000
2	Surface Plan	1 : 5000
3	A) Litholog of Boreholes	1 : 500
	B) Litholog of Boreholes	1 : 500
	C) Litholog of Boreholes	1 : 500
4	Working Plan of Major Seam	1 : 5000
5	Seam Folio & Floor Contour Plan of Major Seam	1 : 5000
6	Seam Folio & Floor Contour Plan of Minor Seam	1 : 5000
7	Khasra Plan	NTS

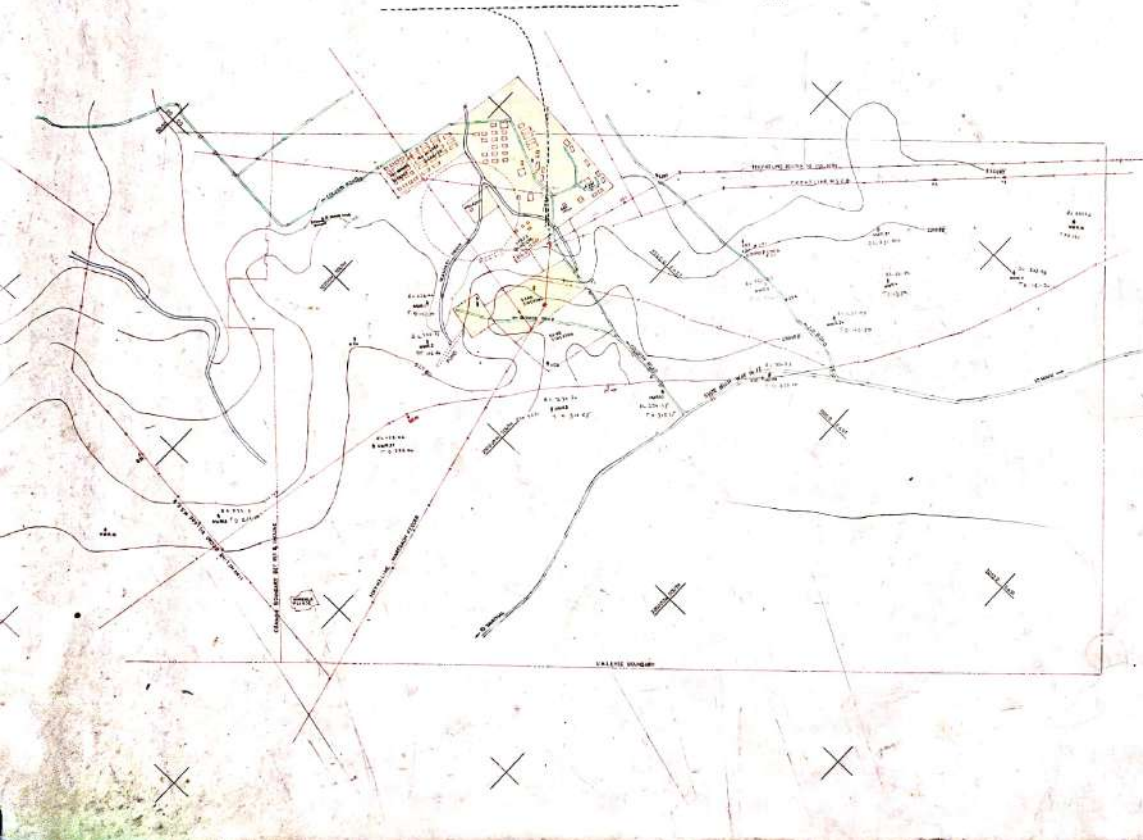
W. C. LTD.
WANI NORTH AREA RAJUR SUB AREA
RAJUR PITS COLLIERY
SURFACE PLAN
SCALE:1:5000

THIS PLAN IS TAKEN FROM M.S. AND M.S. 1972/86
 DATE OF PREPARATION 25.7.86

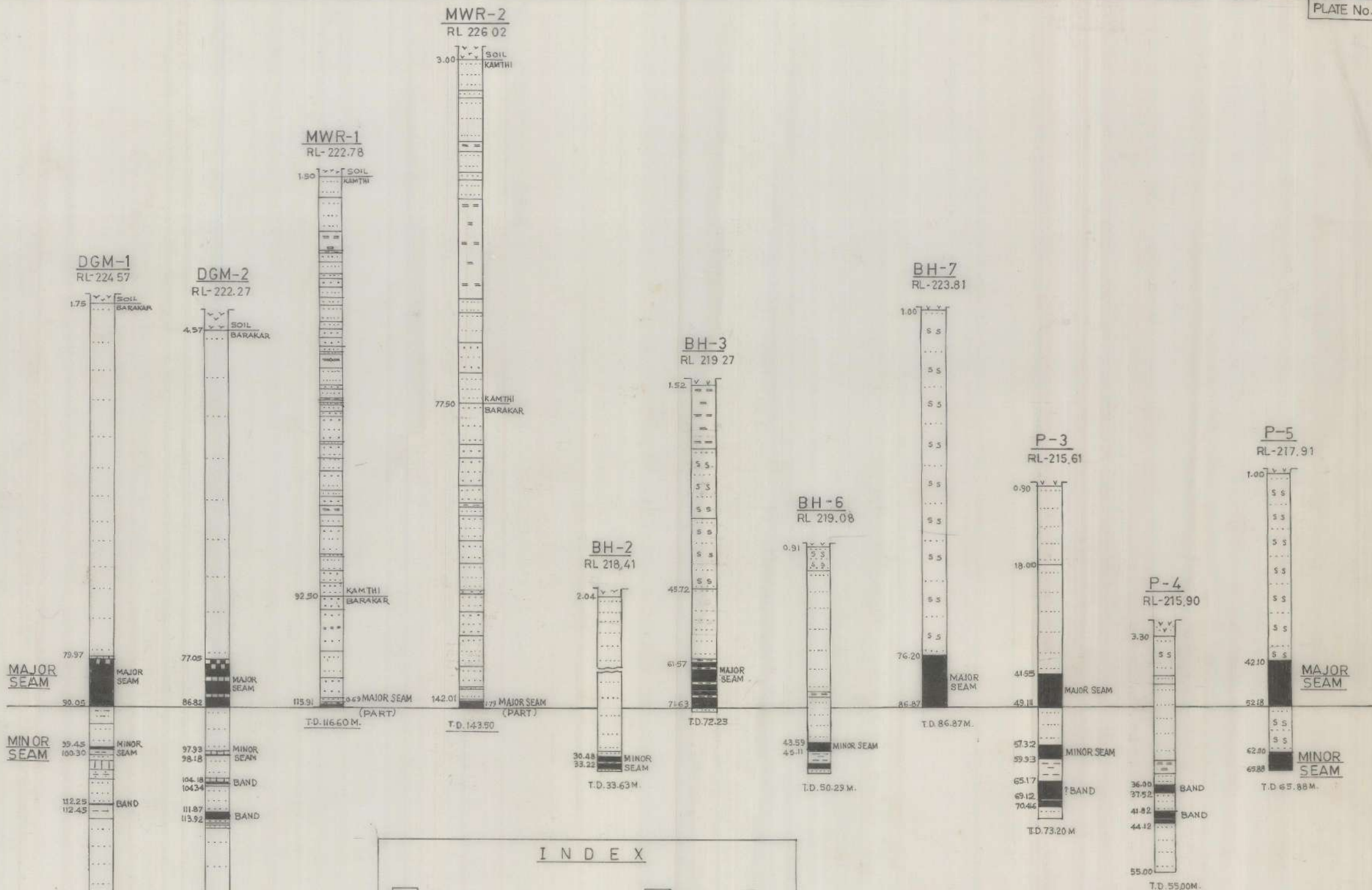
CONVEYANCE CONTRACT

SURVEYOR
 S. S. S.

MANAGER
 S. S. S.



DATE OF SURVEY	SCALE OF SURVEY	APPROXIMATE AREA
1-1-1986	1:5000	1000
1-7-1976	1:5000	1000
1-11-1976	1:5000	1000
7-1-1975	1:5000	1000
1-1-1975	1:5000	1000
1-7-1983	1:5000	1000
1-1-1983	1:5000	1000



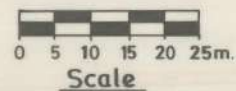
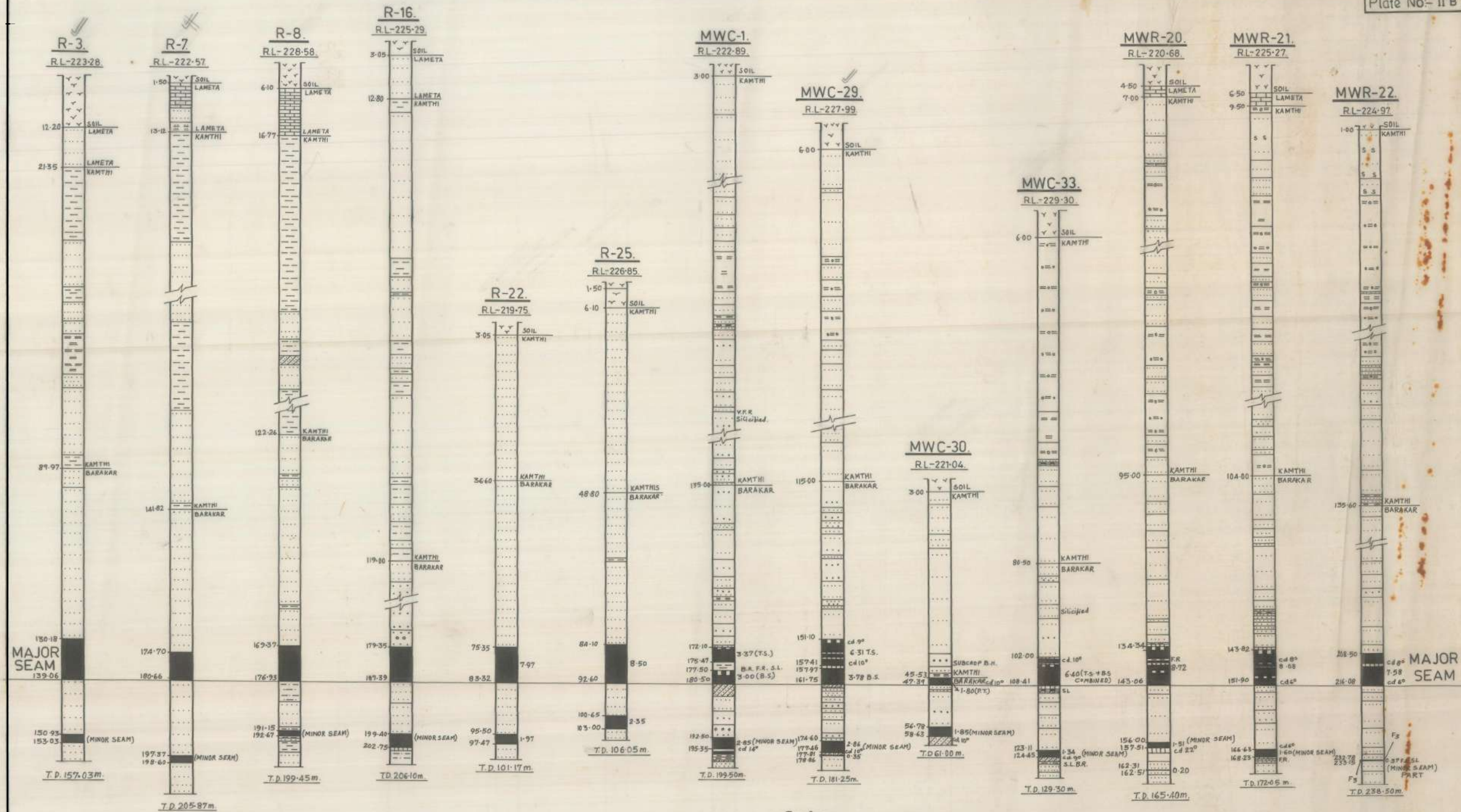
INDEX

- | | |
|------------------------------------|---------------------|
| SOIL | SHALE |
| SANDY SLUDGE | SHALE ARENACEOUS |
| SANDSTONE (cgd) | CLAY |
| SANDSTONE (mgd) | CARBONACEOUS SHALE |
| SANDSTONE (fgd) | SHALY COAL |
| ARGILLACEOUS SANDSTONE | COAL |
| INTERCALATION OF SHALE & SANDSTONE | T.D. TOTAL DEPTH |
| CLAYSTONE | T.S. TOP SECTION |
| | B.S. BOTTOM SECTION |



NOTE:- TRACED FROM DRG NO MECDO-2188/91, 2207/91, 2208/91/MED/NCF

project:- RAJUR U/G MINE		
subject:- LITHOLOG OF BOREHOLES		code:-
customer:- W.C.L.		area:-
superseded by		
C. L. BHAT C.M.E.	S. PRASAD Dy. C.G.	D. K. THAKUR CHD'man
SCALE - 1 : 500		DATE - 14 - 8 - 96
DRG. No.-NS-00		



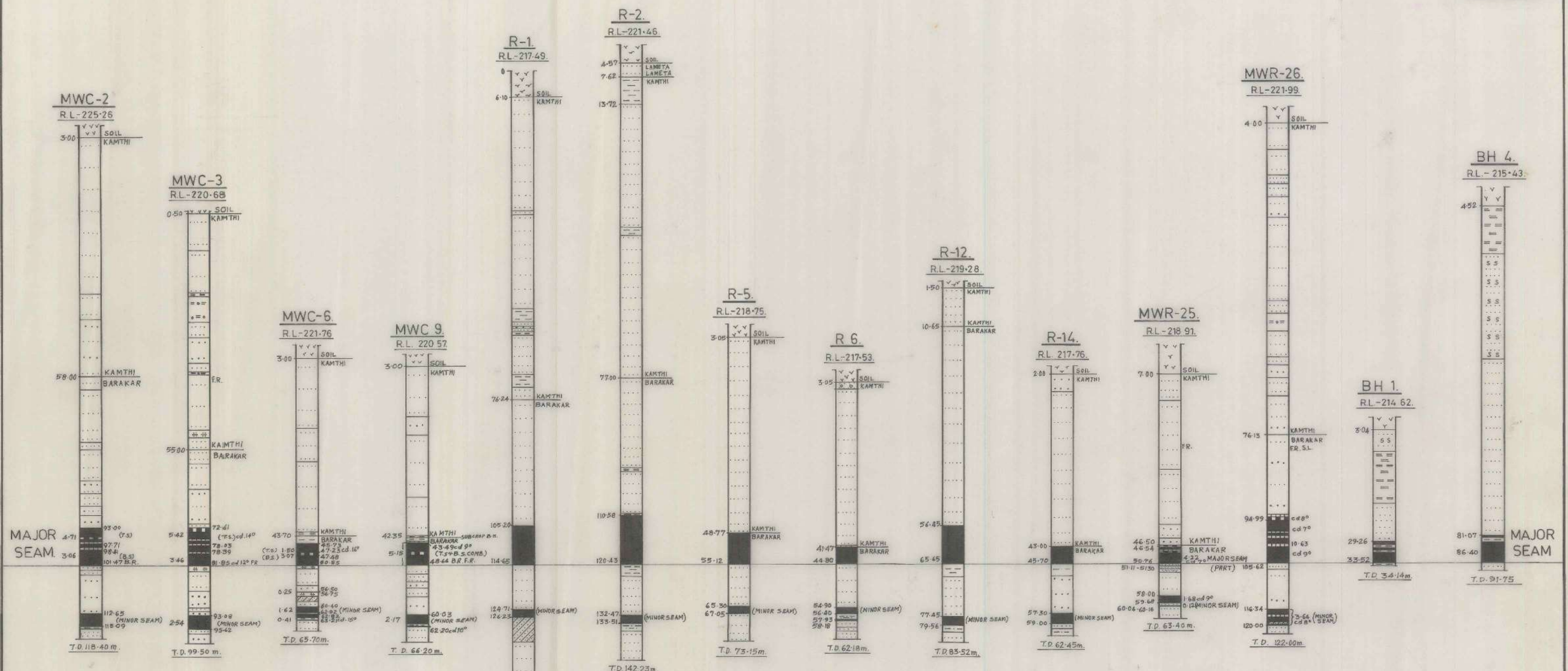
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- Coarse Grained Sandstone.
- Medium Grained Sandstone.
- Fine Grained Sandstone.
- Very Fine Grained Sandstone.
- Very Coarse Grained Sandstone.
- Sandy Sludge.
- Interactions/Interbanding of SST. & Shale.
- Clay.
- Clay Stone.
- Shale.
- Shale Arenaceous.
- Carbonaceous Shale.
- Shaly Coal.
- Coal.
- Limestone (Lameta).

Note:-

Traced from Drg. No.- M.E.C.D.O.No 1959/90/NGP, 1981/90/NGP & 2189/91 2207/91/NGP. Supplied by M.E.C.L.

 Central Mine Planning & Design Institute Ltd, NAGPUR 440014.	
Project :- RAJUR U/G MINE.	
Subject :- LITHOLOG OF BOREHOLES.	
Code :-	
Customer :-	
Area :-	
Superseded by :-	
Supersedes :-	
C.L.Bhat. C.M.E.	S.Prasad. Dy.C.G.
SV.Bachuwar Sr.D/ma	
Scale :- 1:500.	Date :- 21/8/1996. Drg No. :-

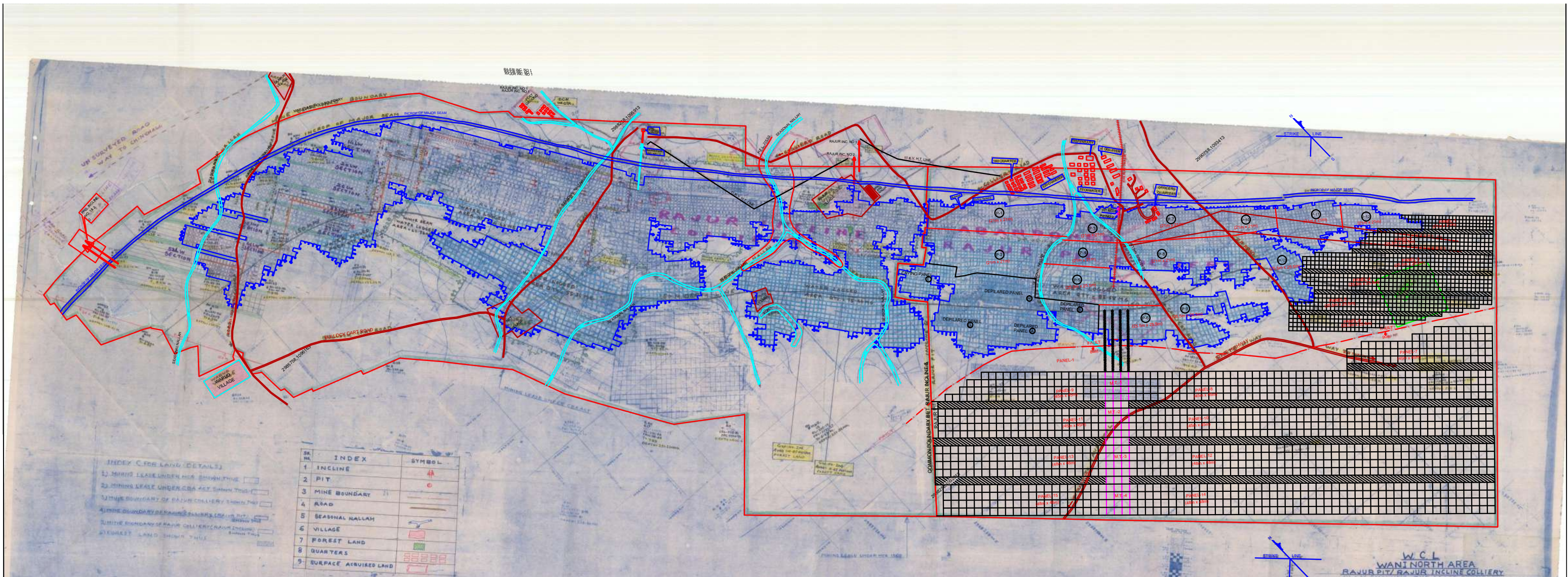


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Note:-
Traced from Drg. No. M.E.C.D.O No 1958/90/NGP, 2189/91/NGP, 2207 & 2208 Supplied by M.E.C.L.

Central Mine Planning & Design Institute Ltd, NAGPUR-440014.		
Project- RAJUR U/G MINE		
Subject- LITHOLOG OF BOREHOLES.		Code:-
		Customer:-
		Area:-
		Superseded:-
		Supersedes:-
C.L. Bhat. C.M.E.	S. Prasad. Dy. C.G.	S. Bachuwar. Sr. D/man.
Scale- 1:500	Date- 16/8/1996	Drg. No:-

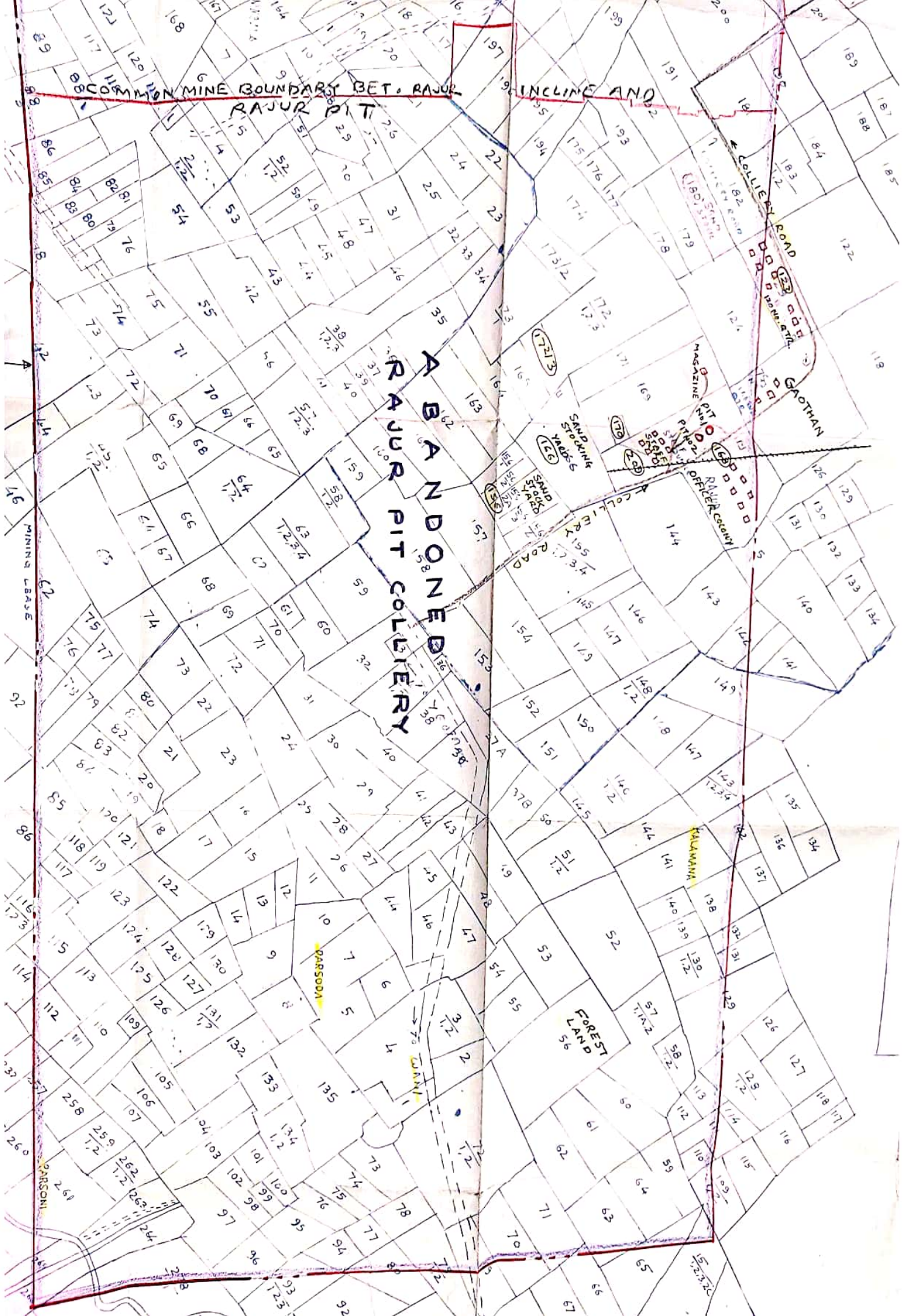


INDEX FOR LAND DETAILS

- 1) MINING LEASE UNDER COA ACT SHOWN THIS
- 2) MINING LEASE UNDER COA ACT SHOWN THIS
- 3) MINE BOUNDARY OF RAJUR COLLIERY SHOWN THIS
- 4) MINE BOUNDARY OF WANI COLLIERY SHOWN THIS
- 5) MINE BOUNDARY OF RAJUR COLLIERY UNDER COA ACT
- 6) STREET LAND SHOWN THIS

SR NO	INDEX	SYMBOL
1	INCLINE	↑
2	PIT	○
3	MINE BOUNDARY	—
4	ROAD	—
5	SEASONAL KALLAH	—
6	VILLAGE	—
7	FOREST LAND	—
8	QUARTERS	—
9	SURFACE ACQUIRED LAND	—

W.C.L
WANI NORTH AREA
RAJUR PIT/RAJUR INCLINE COLLIERY



COMMON MINE BOUNDARY BET. RAJUR INCLINE AND RAJUR PIT

ABANDONED RAJUR PIT COLLIERY

COLLIERY ROAD

GAOTHAN

MACHINE PIT OFFICER QUARTERS

SANDPITS SAND STOCK YARDS

KALAMNA

PARSON

LANNI

FOREST LAND