MINE PROFILE

OF

AMLABAD UG MINE

MINE PROFILE

1.0 GENERAL MINE INFORMATION

1.1 MINE / PROJECT

Amlabad UG Mine is located in the Eastern Jharia Area of BCCL, a subsidiary of Coal India Ltd. The mine was started in 1917. The leasehold area of the mine is 386.95Ha. Presently it is not being operated since 29.02.2008, as no second outlet is available any more due to deterioration of the shaft walls/damage to the shaft installation.

Seams XVII, have been worked extensively and mostly exhausted and XVI Top, XVI Middle, XVI Bottom and XVA have also been worked extensively and mostly exhausted mainly by splitting and hydraulic sand stowing or slicing and hydraulic sand stowing by Bord and Pillar method. The mine is actively gassy and is of Degree III gassiness. At the time of discontinuation of workings depillaring (slicing) with stowing was in progress in XVIM seam (approx. 3000Te of coal is remaining) and preparatory work for extracting a sub-panel (approx. 30,000Te of coal) in XVA seam was in progress.

The coal property is highly geologically disturbed with a number of faults, sills and a dyke. All the seams, except seam XIII are affected by pyrolitisation to varying degrees. The coal seams have a general dome shaped disposition with the four existing shafts located at the top of the dome.

Seam XV is partly developed in small patches and seam XIV is also partly developed. Seam XIII is also partly developed and Seams XI/XII have an average thickness of 5.1 m where coal has just been touched by a pair of drifts from XIV seam. The lower seams are virgin. Seams below VIII are mostly pyrolitised.

Production obtained from the mine in the last five years prior to suspension is given below:

YEAR	PRODUCTION (in te)
2003-04	71,255
2004-05	54,845
2005-06	27,335
2006-07	36,349
2007-08(till 29th Feb, 2008)	27,334

1.2 MINE LOCATION

Amlabad Colliery/ Block is situated in Dhanbad district of Jharkhand. The colliery/block is 32 Km from Dhanbad and is connected by fair weather road via bridge on Damodar river near Sudamdih Colliery. The area is also conveniently approached by road via Chas located on National Highway No. 32. The nearest railway station is Talgaria Railway Station on the Bhojudih Mohuda Loop line in Adra-Gomoh Section of South Eastern Railway which is about 9 Km southwest of Amlabad Colliery. The area falls under Toposheet No. 73 I/6 (1:4000) and Sheet No.-5 & 8 of Geological map of Jharia Coalfield.

Location

Latitude	:	$23^0$40’00” N to $23^0$41’30” N
Longitude	:	$86^0$23’30” E to $86^0$23’00” E

1.3 ACCESSIBILITY

Nearest Airport	:	Ranchi (150 Km.)
Nearest Railway Station	:	Talgaria (9 Km), Dhanbad (32 Km)
Approach by Road	:	Via Chas located on National Highway No. 32
Nearest Seaport	:	Kolkata (270 Km.)

1.4 COMMUNICATION

The area is well connected both by rail and road. The colliery/block is connected with Dhanbad by fair weather road via bridge on Damodar river near Sudamdih Colliery and also by road via Chas located on National Highway No. 32. Talgaria Railway Station on the Bhojudih Mohuda Loop line in Adra-Gomoh Section of South Eastern Railway is about 9 Km southwest of Amlabad Colliery.

1.5 MINING BLOCK

It comes under Amlabad Underground Block of Jharia Coalfield.

1.6 MINING LEASE

The lease has been further extended by THE COAL INDIA (REGULATION OF TRANSFERS AND VALIDATION) ACT, 2000

1.7 STATUS OF ENVIRONMENTAL CLEARANCE/ FOREST CLEARANCE

The mine is part of Cluster X group of mines of BCCL and the production capacity is shown as 0 (NIL) within leasehold area. EC for Cluster- X group of mines has been granted by MOEF, Govt. of India for capacity of 2.289MTPA (peak). No Forest clearance has been obtained.

1.8 LAND ACQUISITION STATUS

The existing leasehold boundary of Amlabad Colliery has been shown on surface plan.

The existing land status under different heads in the leasehold area of the mine as per the records from the mine are as mentioned below**.**

Sl. No.	**Particulars**	**Area (Ha)**
1	BCCL land	111.37
2	Forest land	60.16
3	Govt. land	87.84
4	Tenancy land	110.27
5	Railway Land	17.31
	Total (Mine fed data)	386.95

1.9 CLIMATE

The climate is typical monsoon type with maximum precipitation occurring during the period from June to September. The temperature during summer (April to June) rises upto 44^0C while during winter (November to February) the minimum temperature drops to below 10^0C. The maximum rainfall occurs during the period 15th June to 15th September. The average annual rainfall is 1400 mm, with the maximum rainfall on a day being 331 mm.

1.10 TOPOGRAPHY AND DRAINAGE

The ground is gently undulating with north-easterly slope towards the Damodar river. The maximum ground elevation of 163.46m. (Triangulation station T-7) is in the south eastern corner while the lowest topographic contour of 130m above MSL passes along the Damodar river bank in the eastern part of the block. Damodar river flow throughout the year and there is small natural drain near AM-11 north western corner of the block which is perennial.

2.0 *G*EOLOGY

2.1 SCOPE AND LIMITATION

i) Since the upper seams XVIII Top to XV-A are almost exhausted/sterilised within the colliery, the geological details given subsequently is confined to the assessment of XV to VIII seams within the block/mine boundary.

ii) Only Standard Geological Nomenclature has been made use of in this report.

iii) This report is mainly based on the data available in the following reports:

a) GR on Exploration for Coal, Amlabad Block, JCF, June 1980 prepared by MECL.

b) GR on Coal Exploration, Amlabad Block, JCF, March 1995 prepared by MECL.

iv) The updated working plans of different seams supplied by the colliery authorities have been considered for preparing this report. An amount of approximation exists in the superimposition of the surface features on these plans.

v) The extent of pyrolitisation of the coal seams is based on the data obtained from boreholes and is interpretative. In view of the erratic behaviour of the burning pattern of the seams, there is possibility of changes in these zones (pyrolitised zone), if additional data is generated.

vi) Grade lines/isochore lines in the pyrolitised zones have not been drawn and the reserves of coal in these zones have been assessed separately.

vii) Faults with less than 5 m throw have not been interpreted unless there is a positive evidence of their occurrence in mine workings / boreholes data. Existence of such faults in the virgin area of seam is not ruled out.

viii) In the absence of coordinated survey of underground workings with reference to surface features / boreholes, some extent of approximation exits in the superimposition of these workings with surface features on the plans of this report.

2.2 GEOLOGICAL BOUNDARY OF THE MINE / PROJECT

Geological boundary of the mine is as follows:

North : Damodar River
South : Mahal Block
East : Damodar River/Bhowrah Block
West : Parbatpur Block

2.3 DRILLING DETAILS

(a) Total Assessment Area - 3.8 Sq. Km.
(b) Total No. of boreholes - 24
(c) Total Meterage drilled - 14282.75m
(d) Borehole density - 6 BHs /Km^2.

The borehole density within the project area is about 6 BHs. /Sq.Km.

2.4 GEOLOGY OF THE COAL FIELD

The Jharia Coalfield is covered by the lower Gondwana formations, consisting of Talchir formation and Damuda Group of formations. The gondwanas are unconformably overlying the Archeans. The coal bearing Barakars contain 18 major workable coal seams while the immediately overlying Barren Measures are devoid of any workable coal horizons. The youngest, Raniganj formations, are only developed in Mahuda Basin, in the south –western part of the coalfield.

The general stratigraphic sequence of rock formations observed in Jharia coalfield is given below.

TABLE – 1

<table>
<tr><td>Jurassic</td><td colspan="2">Intrusives</td><td>Mica Peridotite and Dolerite</td></tr>
<tr><td rowspan="4">Permian</td><td rowspan="4">Lower Gondwana Group</td><td rowspan="4">Damuda Sub-Group</td><td>Raniganj Formation</td></tr>
<tr><td>Barren Measures</td></tr>
<tr><td>Barakar Formations</td></tr>
<tr><td>Talchir Formation</td></tr>
<tr><td colspan="4">----------Unconformity----------</td></tr>
<tr><td>Archaean</td><td colspan="2"></td><td>Gneisses and Schists</td></tr>
</table>

2.5 GEOLOGY OF THE MINING BLOCK

The Amlabad block is occupied by Barakars in the north and Barren Measures in the south and north-west, under thin soil cover. Talchirs are neither exposed nor have been encountered in any borehole in this block. In one borehole (AM-8) metamorphics, represented by mica-schists, were encountered at 708.35 m depth after Seam II. This is a faulted contact between Barakars and metamorphics. The Barakars are exposed on the bank of the Damodar River to the north of Amlabad Colliery workings.

At places, thin veneer of Barren Measures remains, on the top of these outcrops. Two exposures of thin coal seams were observed along a gully cutting in this area. Barakars are represented by Sandstones, varying in grain size from fine-grained to pebbly, along with shales and carbonaceous horizons. The carbonaceous facies has developed 18 major coal seams designated I to XVIII, in ascending order, along with 4 local correlatable seams. (AM/L-1 to AN/L-4) in a total Barakar thickness of 900 to 950 m. In addition to these correlatable seams a few thin-and impersistent coal bends are also observed above Seam XVIII. In general, the Barakar strata above Seam XVII are predominantly argillaceous while the horizons from XVII to VIII contain almost equal amount of argillaceous and arenaceous material. The strata below Seam VIII are mostly arenaceous, with the sandstones gradually becoming pebbly towards Seam I. Barren Measures occur about 80 to 120 m above Seam XVIII. The Barakar-Barren Measure contact runs almost N-S in the north-western part of the block, assuming an east west trend in the southern part and is faulted (fault F1-F1). The Barren Measures are exposed in the north-western corner of the block near AM-11 and are represented by sandstones, shales, and intercalations of shale and sandstone. The shales and sandstones are ferruginous at places. From the borehole cores, it is observed that the Barren Measures are mostly argillaceous with thick bands of dark grey shales near Barakar-Barren Measure contact. Thin cover of soil and river alluvium are seen in the eastern part of the block. The thickness of soil cover is generally 2 m (AM-1) and at places 8 m (AM-5). Weathered zone extends unto a maximum depth of 17.35 m (AK-13).

2.5.1 DIP AND STRIKE

A domal structure namely the Amlabad dome lies in the north-eastern part of Amlabad Block. The beds show quaquaversal dips around the domal structure and tend to assume normal homoclinal south-westerly trend in the southern part.

In general, the coal Seams follow an arcuate trend conforming to the domal structure in northern part of the block. In the southern and western part of the block the seams assume a general northwest and southeast trend in a curvilinear fashion maintaining the southerly dip.

The average dip amount varies from 15° to 25°.

2.5.2 INCROP/ OUTCROP OF COAL SEAM(S)

Outcrops are scarce in the area. Only two minor coal bands are exposed in a gully cutting near the Damodar river bank at the northern boundary of the block.

2.5.3 COAL SEAM(S)

The existence of 18 major coal horizons along with 4 correlatable local seams in Barakar formations has been proved in Amlabad block. Besides these, a few inconsistent and consequently uncorrelatable, coal bands, having more than 0.50 m thickness, have also been observed, particularly above XVIII seam horizon.

The generalized sequence and thickness of coal seams and intervening parting up is given below:

TABLE – 2

Seam/Parting	Thickness Range (m)		Ash Range (%)	Grade Range	Avg Grade of Mine
	Minimum	Maximum			
XVIII T	1.00	1.70	26.0 – 35.0	W-III - W-IV	**W-II**
XVIII T US	0.70	1.34	20.9 – 29.4	W-I - W-IV	
P	0.68	3			
XVIII T LS	0	1	28.0 – 41.8	W-III - W-V	
P	1	5			
XVIII B	0	3.42	18.8 – 21.8	W-I - W-II	
P	6	27			
AM/L4	0.32	1.55	18.8 – 33.9	W-I - W-IV	
P	44	62			
XVII	2.15	4.92	15.5 – 24.4	S-II - W-III	
P	12	23			
AM/L3	0.23	0.83	14.3 – 36.8	S-I - W-V	
P	80	108			
XVI T	2.68	3.3	20.4 – 25.8	W-I - W-III	
P	22	32			
XVI M	2.45	2.9	20.6 – 32.8	W-I - W-IV	
P	6	15			
XVI B	0.28	1.9	21.9 – 40.1	W-II - W-V	
P	64	90			
XV A	1.2	2.26	20.5 – 28.7	W-I - W-IV	
P	61	74			
XV	2.22	14.20	11.1 – 17.4	W-I- S-II	
P	24	43			

Seam/Parting	Thickness Range (m)		Ash Range (%)	Grade Range	Avg Grade of Mine
	Minimum	Maximum			
XIV	1.04	13.10	13.8 – 24.5	W-II-S-II	
P	15	22			
XIII	1.65	4.69	20.2 – 40.8	W-V-W-II	
P	15	22			
XI/XII	1.30	5.80	17.8 – 43.8	W-V-W-I	**W-II**
P	33	50			
X	0.70	8.65	16.6 -29.0	W-IV-S-II	
P	12.6	28.28			
IX	6.31	9.98	18.6 – 24.0	W-II-W-I	
P	1.15	3.65			
AM/L2	0.25	1.43	10.7 – 29.8	S-I - W-IV	
P	4	10			
AM/L1	0.13	0.75	12.1	S-I	
P	7	21			
VIII	5.74	9.30	22.4 – 28.3	W-IV - W-II	
P	37	54			
VII	0.97	1.65	28.1 – 46.7	W-IV - W-VI	
P	32	47			
VI A	0.75	1.67	19.6 – 30.3	W-I - W-IV	
P	0.50	2			
VI	0.75	3.97	18.7 – 33.0	W-I - W-IV	
P	2	15			
V	1.43	4.45	23.9 – 31.3	W-II - W-IV	
P	54	73			
IV	1.77	7.63	24.8 – 30.7	W-III - W-IV	
P	24	63			
III	4.46	7.48	26.0 – 34.8	W-III - W-IV	
P	50				
II	16.88	20.93	33.0 – 33.8	W-IV	
P	6	9			
I	1.65	2.30	35.4 – 35.6	W-V	

N.B.- S: Steel grade, W: Washery grade, UG: Ungraded.

Name of seam	Thickness (m)			Depth (m)		Area within lease (Km^2)	No. of BH intercepts	Avg Grade of Seam	Avg Grade of Mine
	Min.	Max.	Avg	Min.	Max.				
XV	2.22	14.20	8.85	260	780	3.1	24	S-II	
XIV	1.04	13.10	7.25	295	810	3.09	24	W-II	
XIII	1.65	4.69	2.85	315	830	3.07	24	W-IV	**W-II**
XI/XII	1.30	5.80	3.45	325	860	3.08	24	W-III	
X	0.70	8.65	5.21	345	910	3.03	24	W-I	
IX	6.31	9.98	7.64	375	890	3.01	24	W-II	
VIII	5.74	9.30	6.33	385	860	2.03	15	W-III	

1. In India the ash content forms the basis of grading of coking coal mentioned as follows:

Grade	Ash % Range
Steel Grade-I	Upto 15
Steel Grade-II	> 15 upto 18
Washery Grade-I	> 18 upto 21
Washery Grade-II	> 21 upto 24
Washery Grade-III	> 24 upto 28
Washery Grade-IV	> 28 upto 35
Washery Grade-V	> 35 upto 42
Washery Grade-VI	> 42 upto 49
Ungraded	> 49

2.5.4 FAULTS

Altogether ten faults with throw more than 5 m have been deciphered in the assessment area on the basis of boreholes and mine workings data. However, existence of faults with less than 5 m throw is not ruled out in the virgin area. The details of faults occurring within the area is given in Table-3.

TABLE-3

DETAILS OF FAULTS IN AMLABAD UG MINE

Sl. No.	Fault No.	Location	Trend/ Dip Amount	Max. Throw (m)	Nature & evidence of Fault
1	F_1-F_1	Represents Barakar-Barren Measure contact from NW corner of the block upto western bank of Damodar river.	EW-NW/ 55°-70^0 (southerly to westerly)	150 m	Curvilinear & oblique fault a) Intersected in AM-8, XVIIIT, XVIIIB and AM/L-4 are omitted. b) Intersected in AM-12, XVIIIT, XVIIIB and AM/L-4 are omitted. c) Strata below seam V is disturbed in AM-9A.
	F_{1a}-F_{1a}	Major branch of F_1-F_1 lies between AM-5A and 17 in XV seam and continues further north.	55°-70^0 (southerly to westerly)	120m	Persists in all seams below XIV. a) Encountered in AM-3, seam IV is part faulted. b) Intersected in AM-5A, Seam XV and part of XIV are faulted. c) Intersected in AM-11, Seam VII and the parting is faulted. d) Intersected in AM-18, Seam XI, XII, X and IX are missing.

Sl. No.	Fault No.	Location	Trend/ Dip Amount	Max. Throw (m)	Nature & evidence of Fault
	F_{1b}-F_{1b}	Split section of F_{1a}-$F_{1a,}$ originates between AM-3 and 13 below seam XVII.	60^0 (towards west)	30 m	a) Encountered in AM-3, seam AM/L-1 & 2 are missing.
	F_{1c}-F_{1c}	Starts from seam XV near am-8A and dies out between AM-5A &13.	60^0 (towards south)	40 m	a) Encountered in AM-5A, seam X and parting above it is faulted. b) Intersected in AM-18, Seam VIII is part faulted.
2	F_2-F_2	Runs parallel to F_1-F_1 and is located at the down dip side of F_1-$F_{1.}$	N15°W to N-S to N50°W/ 50° (towards south)	40 m	Curvilinear fault: a) Encountered in AM-1, seam XVA is part faulted along with parting. b) Encountered in AM-3, seam XVII, AM/L-4 and AM/L-3 are missing. c) Encountered in AM-5A, part of Barakar above seam XVIII are omitted. d) Encountered in AM-6, seam XVA is missing along with a part of parting between seams XVA & XV. e) Encountered in AM-7A, seam V, VI & VIA are missing.

Sl. No.	Fault No.	Location	Trend/ Dip Amount	Max. Throw (m)	Nature & evidence of Fault
					f) Encountered in AM-11, seam XVIII B & AM/L-4 are missing. g) Encountered in AM-18, parting between seams XVIII B & XVII is faulted.
3	F_3-F_3	Located down dip side of F_2-F_2 and runs almost parallel to it.	N15°W to N65°W/ 55°-70^0 (Easterly to Northerly)	100 m	Curvilinear fault: a) Encountered in AM-2, AM-3. The Barakar and Barren Measure contact is faulted. b) Encountered in AM-8, seams XVA, XV and XIV are missing. c) Encountered in AM-8, seams XVA, XV and XIV are missing. d) Encountered in AM-9A, seams XVII and lower parting are missing. e) Encountered in AM-11, seams XVIII is part faulted and part of top of Barakars is omitted.

Sl. No.	Fault No.	Location	Trend/ Dip Amount	Max. Throw (m)	Nature & evidence of Fault
	F_{3a}-F_{3a}	Split of F_3-F_3, below seam XVII around AM-15.	45°- 55° (towards East)	75 m	a) Encountered in AM-13, seams XVA is missing. b) Encountered in AM-15, seams XVIII, XI, XXI and X are omitted.
	F_{3b}-F_{3b}	A branch of F_3-F_3.	60° (towards East)	60 m	a) Encountered in AM-13, seams XV and XIV are omitted and seam XIII is part faulted.
	F_{3c}-F_{3c}	A small branch of F3-F3, originates below seam X around AM-12.	70° (towards North)	15 m	a) Encountered in AM-12, seam IX is part faulted along with seam AM/L-1 & 2.
4	F_4-F_4	Occurs north of AM-7 and crosses the eastern block boundary to the south of AM-9A. The offset of the fault lies south of AM-1 & 6.	N30°W to N85°W/ 45°- 65° (easterly)	150 m	Curvilinear fault: a) Encountered in AM-2, seams VII parting below the seam is faulted. b) Encountered in AM-3, 9 and 17. Seams XVI T, XVI M, XVI B and XVA are omitted. c) Encountered in AM-5A. Seams XVI T, XVI M & XVI B are omitted. d) Encountered in AM-11. Seams XVI M & XVI B, XVA & XV are omitted.

Sl. No.	Fault No.	Location	Trend/ Dip Amount	Max. Throw (m)	Nature & evidence of Fault
					e) Encountered in AM-12. Seam VII is omitted.
	F_{4a}-F_{4a}	Split of F_4-F_4, below seam XVA around AM-8 & 13.	60° (towards NE)	35 m	a) Encountered in AM-8 & 13. Seams V, VII & VII are omitted.
	F_{4b}-F_{4b}	Split of F_4-F_4, below seam XVA around AM-8 & 13.	55° (towards NE)	70 m	a) Encountered in AM-8. Seams IX, AM/L-1 &2 are missing & VIII part faulted. a) Encountered in AM-13. Seams III is part faulted.
5	F_5-F_5	Runs across the block from south of AM-7A to north of NCJM 5.	N57°W/ 60^0 (towards south)	148 m	Oblique fault. a) Encountered in AM-1. Seams XVIII T, XVIII B and AM/L-4 are omitted. b) Encountered in AM-6. Seams XVIII T, XVIII B, XVII, AM/L-4 and 3 are omitted.
6	F_6-F_6	Located near the southern end of the block.	N70°W/ 70^0 (towards North)	45 m	Curvilinear fault. a) Encountered in AM-1. Seam XIV and parting below are faulted. b) Encountered in AM-6. Seams XIV and XIII are

Sl. No.	Fault No.	Location	Trend/ Dip Amount	Max. Throw (m)	Nature & evidence of Fault
					omitted. c) Encountered in AM-7A. Seam is omitted. d) Encountered in AM-18. Seam III is faulted.
7	F_7-F_7	Located outside the southern boundary of the block.	N25°W/ 65^0 (towards NE)	65 m	Oblique fault. a) Encountered in AM-6. Seam V and parting below the seam are faulted. b) Encountered in AM-7A. Seams X, IX, AM/L-1&2 and VIII are omitted.
8	F_8-F_8	Runs almost parallel to eastern bank of Damodar river.	N10°W/ 65^0 (towards west)	Downthrown towards west, dip amount not Known.	Oblique fault. Inferred on the basis of mine data.
9	F_9-F_9	Located north of AM-16 running towards eastern boundary of the block.	60^0- (towards North)	25 m	Oblique fault. a) Encountered in AM-10. Parting between seams XVA & XV is faulted. b) The mine working of seam XVI T in Amlabad colliery is stopped against this fault at north eastern corner of the block.

Sl. No.	Fault No.	Location	Trend/ Dip Amount	Max. Throw (m)	Nature & evidence of Fault
10	F_{10}-F_{10}	Located south of Pit-1.	N75°W/ 60^0 (towards north)	10 m	Oblique fault. Inferred on the basis of mine data.
11	F_{11}-F_{11}	Lies north of AM-4 and continue upto AM-12.	N70°W to N20°W / 55^0 (towards north)	110 m	Curvilinear fault. Inferred on the basis of mine data.
12	F_{12}-F_{12}	Located near western bank of river.	NS to NW-SE/ 65^0 (towards west)	40 m	Curvilinear fault. a) Inferred on the basis of mine data. b) Intersected in DD-2 borehole.
13	F_{13}-F_{13}	Located north of AM-2 and 18.	N5°W/ 60^0 (towards NE)	30 m	Oblique fault. a) Encountered in AM-9A. Barakar/Barren Measure contact is faulted. b) Encountered in AM-12. Seam XVI B along with a part of parting between seam XVI B & XVA is faulted.
14	F_{14}-F_{14}	Located beyond western boundary of the block.	N30°W/ 60^0 (towards NE)	35 m	Oblique fault. a) Intersected in AM-3. Seam XV and parting below the seam is faulted.

Sl. No.	Fault No.	Location	Trend/ Dip Amount	Max. Throw (m)	Nature & evidence of Fault
15	F_{15}-F_{15}	Located east of AM-13.	N-S/ 45^0 (towards west)	20 m	Strike fault. a) Intersected in AM-13. Parting between seam XVII and seam XVIII is faulted.
16	F_{16}-F_{16}	Passes from AM-11 to AM-3.	N-S/ Westerly dip	Westerly throw. Amount not known.	Strike fault. Exposed on the ground.
17	F_{17}-F_{17}	Located west of AM-11.	NW-SE/ Dipping NE	North-westerly throw.	Oblique fault. Exposed on the ground.
18	F_{18}-F_{18}	Located south of F_{17}-$F_{17.}$	NW-SE/ Dipping NE	Throw towards NW. Amount not known.	Oblique fault. Exposed on the ground.

2.5.5 OTHER GEOLOGICAL DISTURBANCES

Igneous Intrusion / Pyrolitisation

Coal seams in Amlabad Block are affected by igneous intrusion to various extent. Seam XVIII T US, XVIII T LS, XVIII B, XVII, XVI TOP, XIV, XI/XII, X, IX, VIII are partly pyrolitised where XVI BOT, XV are almost fully pyrolitised in the block. Seam XVI MID, XV-A, XIII are free from any pyrolitisation.

2.5.6 COAL SEAMS INFORMATION

2.5.6.1 Nomenclature

The standard geological nomenclature vis-à-vis colliery nomenclature is given below:

STANDARD VIS-À-VIS COLLIERY NOMENCLATURE

Nomenclature as per MECL	Amlabad Colliery Nomenclature
XVIII (T)	XIX
XVIII (B)	
AM/L-4	L
XVII	XVIII
AM/L-3	L
XVI T	XVII
XVI M	XVI
XVI B	XVI (B)
XV A	XV
XV	XIV
XIV	XIII
XIII	XII

2.5.6.2 Description of Coal Seams

Seam XV: Seam XV lies below XV-A seam at a parting of 60m to 74 m. This is the first thick seam occurring in Amlabad block. It has been partially worked around AM-10 in Amlabad colliery and is referred as seam XIV. The complete thickness of the seam has been intersected in boreholes AM-1, 6, 7A, 9A, 12, 15, 16 and 17. The in-band thickness of the seam ranges between 2.22-14.20. Though it is a thick seam it suffers from partial pyrolitisation in varying degree and at places the coal thickness is reduced to as little as 2.22m (around AM-16 in the north central part of the block). The in-band Ash% of the

seam ranges from 11.1-17.4%, respectively the grade ranges from S-I to S-II. The quality of the seam is good in the entire block and effect of dirt band is negligible on the overall quality of the seam.

Pyrolitisation: Great damage has been caused by partial pyrolitisation to this high-quality seam. Only over a narrow patch in the eastern part of the block around AM-10 & 9A, this seam is unaffected by the intrusive. In the remaining area various sections of the seam are pyrolitised reducing substantially total coal potential of the seam.

Seam XIV: Seam XIV lies below XV seam at a parting of 24m to 43 m. This seam is well developed and serves well as a marker horizon for correlation of seams in the block. The complete thickness of the seam has been intersected in boreholes AM-2, 3, 7A, 9A, 11, 12,15,16,17 and 18. The in-band thickness of the seam ranges between 1.04-13.10. the effective thickness of the seam is considerably reduced due to partial pyrolitisation at places. The seam thickness appears to be increasing towards west. The in-band Ash% of the seam ranges from 13.8-24.5%, respectively the grade ranges from S-I to W-III. The dirt bands are observed in the northern part of the block in this seam

Pyrolitisation: The seam is partially pyrolitised in the eastern and western parts of the block while in the central portion covered by AM-15 & 16 in the north by 18 and in the south it is unaffected. The bottom section of the seam is normally pyrolitised. However, in few cases (AM-3 and 12) pyrolitisation of top section of the seam has been observed while in AM-17 Jhama occurs in the middle of the seam.

Seam XIII: This seam lies below XIV seam at a parting of 14 to 22m and parting shows increasing trend from east to west. This seam is highly banded and is of inferior quality. The complete thickness of the seam has been intersected in boreholes AM-1, 2, 3, 5A, 8,11,12,16 and 18. The in-band thickness of the seam ranges between 1.65-4.69. The seam thickness shows increasing tendency towards south. The in-band Ash% of the seam ranges from 20.2-40.8%, respectively the grade ranges from W-I to W-V.

Pyrolitisation**:** The seam is not pyrolitised in Amlabad block.

Seam XI/XII: This seam lies below seam XIII at a parting of 14 to 21 m. This is a combined seam in Amlabad block. The complete thickness of the seam has been intersected in boreholes AM-1,2,3,5A,6,7A,8,9A,11,12,13,16 and 17. The in-band thickness of the seam ranges between 1.30-5.80. The seam thickness appears to be increasing towards west but around AM-17 it is considerably reduced due to partial pyrolitisation. The in-band Ash% of the seam ranges from 17.8-43.8%, respectively the grade ranges from S-II to W-VI. In area covered by boreholes AM-7A, 8,9A seam is of inferior quality while around AM-3, 5A, 7A &13 it is free of dirt bands.

Pyrolitisation: The seam is partially pyrolitised around AM-8, 12 and 17, where its top section is converted into jhama.

Seam X: This seam lies below seam XI/XII at a parting of 33 to 50m where parting shows increasing tendency towards northwest. In some parts of Jharia coalfield seams X & XI occur as combined seam, but in Amlabad block they occur as two independent seams. The complete thickness of the seam has been intersected in boreholes AM-1, 3, 6, 8, 9A, 11,12,13,16 and 17. The in-band thickness of the seam ranges between 0.70-8.65. The wide variation in the thickness of the seam is due to the erratic partial pyrolitisation of the seam. The in-band Ash% of the seam ranges from 16.6-29.0%, respectively the grade ranges from S-II to W-IV. The sea is free from dirt band in AM-13 while maximum development of dirt bands is observed in AM-8.

Pyrolitisation: The seam is completely pyrolitised in AM-16 while in AM-3, 8, 11 and 17 partial pyrolitisation of the seam is observed.

Seam IX: Seam IX occurs below seam X at a parting of 12 to 28 m where parting shows increasing tendency towards northwest. The complete thickness of the seam has been intersected in boreholes AM-2, 3, 5A, 6, 9A, 11,12,13,16 and 17. The in-band thickness of the seam ranges between 6.31-9.98. The seam is fairly consistent in thickness and quality. The in-band Ash% of the seam ranges from 18.6-24.0%, respectively the grade ranges

from W-I to W-III. At places fairly good number of dirt bands are developed in this seam, but the overall quality is not affected significantly.

Pyrolitisation: The seam is partially pyrolitised in AM-3, 5A, 6 &16.

Seam VIII: Seam VIII occurs below seam local seam AM/L-1 at a parting of 7 to 20m, while parting from seam IX ranges from 40-60m. The complete thickness of the seam has been intersected in boreholes AM-1,2,3,5A,6,9A,11,12,13,15,16 and 17. The in-band thickness of the seam ranges between 5.74-9.30. The thickness of the seam reduces towards north and east. The in-band Ash% of the seam ranges from 22.4-28.3%, respectively the grade ranges from W-II to W-V. The quality of the seam is more or less consistent and the erratic development of dirt bands does not affect the overall quality of the seam.

Pyrolitisation: The seam is completely pyrolitised in AM-13 while it is partly affected in AM-5A, 11, 15 &16.

Seam VII: Seam VII occurs below seam VIII at a parting of 37 to 54 m. This seam is a thin seam and is inferior in quality. The complete thickness of the seam has been intersected in boreholes AM-2, 3, 5A, 6, 7A, 9A, 15, 16 and 18. The in-band thickness of the seam ranges between 0.97-1.65. The in-band Ash% of the seam ranges from 28.1-46.7%, respectively the grade ranges from W-IV to W-VI.

Pyrolitisation: The seam is completely pyrolitised in AM-3 & 15 while it is partly affected in AM-2.

2.5.8 IMMEDIATE ROOF AND FLOOR OF COAL SEAM(S)

Immediate Roof & floor of Coal Seams:

The nature of rocks of immediate roof and floor of different seams are as follows:

Seam	Roof Rock	Floor Rock
XV	The roof of the seam is characterized by carbonaceous shale.	The floor of the seam is characterized by shale or carbonaceous shale, but at places, it is represented by intercalation of shale and sandstone.
XIV	The roof of the seam is carbonaceous shale.	The floor is usually made up of either by carbonaceous shale, shale or argillaceous sandstone.
XIII	The roof of the seam is normally represented by carbonaceous shale but occasionally argillaceous or arenaceous rocks are observed at the immediate roof of the seam.	The floor of the seam is generally carbonaceous shale except in AM-3 & 16 where arenaceous shale is observed.
XI/XII	The roof of the seam in the southern part of block is carbonaceous shale while in the area covered by AM-1,12,13 and 17 shale or sandstone occurs above the seam.	The floor contains of either carbonaceous shale, arenaceous shale or medium grained sandstone.
X	The roof of the seam is normally represented by carbonaceous shale.	The floor contains of either shale or fine-grained sandstone.
IX	The roof of the seam is normally represented by carbonaceous shale and occasionally by shale.	The floor is generally composed of shale.
VIII	The roof of the seam is generally represented by arenaceous shale,	The floor shows varying lithology though in most cases it is shale that

Seam	Roof Rock	Floor Rock
	sometimes grading into intercalations of shale and sandstone.	forms the floor.
VII	The roof of the seam is generally shale or medium grained sandstone. Occasionally carbonaceous shale is also found at the roof of this seam.	The floor of the seam is generally shale but sometimes medium grained sandstone or carbonaceous shale is also noted.

2.5.9 PHYSICO-MECHANICAL PROPERTIES

Not Available

2.5.10 GASSINESS OF COAL SEAM(S)

The gassiness of the seams proposed to be worked at Amlabad Underground Mine (XV to VIII) are as follows:

Sl. No.	Seam	Degree of Gassiness
1	XV	Degree – III
2	XIV	Degree – III
3	XIII	Degree – III
4	XI/XII	Degree – III
5	X	Degree – III
6	IX	Degree – III
7	VIII	Degree - III

Gassiness of Seams as per CMR 1957:

 # "Gassy seam of the first degree" means a coal seam or part thereof lying within the precincts of a mine not being an open cast working whether or not inflammable gas is actually detected in the general body of the air at any place in its working below ground, or when the percentage of the inflammable gas if and when detected, in such general body of air does not exceed 0.1 and the rate of emission of such gas does not exceed one cubic meter per tonne of coal produced.

 # "Gassy seam of the second degree" means coal seam or part thereof lying within the precincts of a mine not being an opencast working in which the percentage of inflammable gas in the general body of air at any place in the workings of the seam is more then 0.1 or the rate of emission of inflammable gas per tonne of coal produced exceeds one cubic metre but does not exceed 10 cubic metres.

 # "Gassy seam of Third degree "means a coal seam or part thereof lying within the precincts of a mine not being an opencast working in which the rate of emission of inflammable gas per tonne of coal produced exceeds 10 cubic metres.

2.6 RESERVES OF COAL

2.6.1 IN-SITU COAL QUALITY

The quality of coal seams in this Geological Note is primarily based on GR on Exploration for Coal, Amlabad Block (Jun.'1980), JCF and Geological Report on Coal Exploration Amlabad Block (Mar.1995) prepared by MECL.

In case of coking coal, Iso-ash lines have been drawn, while in non-coking coal area, UHV / grade lines have been drawn.

Baked coal/Jhama, irrespective of their thickness has been excluded from the seam thickness.

Faulted, part faulted, & worked seam/part worked seam thickness encountered in the boreholes have not been considered for the purpose of quality assessment.

In case of seams, which are pyrolitised in part of the area, the “Full Jhama”, “Part coal-part Jhama” areas have been delineated seam wise tentatively.

2.6.2 RESERVES ESTIMATION CRITERIA

a) The seam wise status of developed, depillared and quarried out areas in addition to virgin patches have been identified on the basis of seam working plan supplied by the concerned Area/Colliery officials. These have been clearly marked on the seam folio plans and floor contour plans of all the seams under consideration, if worked.

b) Goaf & Quarries: These areas have been considered as devoid of coal reserves.

c) Developed Areas: In developed areas, where reserves are standing on pillars & stooks, seam wise dimension of extraction have been decided on the basis of seam working plan made available by Area/Colliery authorities and after detailed discussion with them. The percentage of extraction has been taken as 30 % in standing on pillar and 70 % in stooks.

In case of part coal/part Jhama zone which is a demarcated zone, reserves in this zone may change, if additional data is generated.

The Reserves of Jhama in pyrolitisation zone have not been assessed separately.

The Gross Geological Reserves of coal have been calculated as follows:

Gross Geological Reserves = Area (Sq. Km) x Thickness (m) x Sp.Gr. (in million tones)

The specific gravity of coal has been arrived at by adding 1% of average ash% to 1.28.

2.6.3 GEOLOGICAL RESERVES

A total of 164.83 million tonne of coal resource has been assessed from seam XV to Seam VIII. Out of 164.83 MT, 108.08 MT (65%) resource belongs to prove category. Apart from coal, 32.70 MT jhama has also been reported in the block/mine. *Coal resource of seam above XV are almost exhausted/sterilised, hence resource has not been provided.*

Seam wise Net Geological Reserves is given in Table-5.

Table-5

Net Geological Resource of Coking Coal (In MT)					
SEAM	**Proved**	**Indicated**	**Inferred**	**Total**	**Jhama**
XV	28.84	3.96	5.37	38.17	5.62
XIV	21.08	6.40	2.57	30.05	11.40
XIII	6.99	2.74	1.07	10.80	
XI/XII	9.37	4.58	1.89	15.83	0.53
X	9.83	1.45	1.09	12.37	11.40
IX	18.59	7.15	4.86	30.60	1.58
VIII	13.38	9.70	3.93	27.01	2.17
TOTAL	**108.08**	**35.98**	**20.77**	**164.83**	**32.70**

2.6.4 TENTATIVE EXTRACTABLE RESERVE

LIMITATION AND CONSIDERATION

1	Panel Barrier	20%
2	Trunk route & Barrier (%) against faults, mine boundary, river etc	15-20%
3	Overall extraction in a panel (assuming Bord & Pillar Mining Method)	75%
4	Maximum thickness (m) of extraction in single section	4.5m
5	Minimum thickness (m) of extraction in single section	1.2m
6	Minimum parting (m)between two sections in thick or contiguous seams	3m
7	Jhama and Partly Coal+Jhama area completely excluded due to irratic behaviour/occurrence of jhama in seam.	
8	Extractable Reserve are purely tentative and depends upon Method of Mining & Technology/Mechanisation	

The Amlabad property has been considered to be divided into two sectors by faults for calculation of tentative extractable reserve.

Amlabad	Sector-A	North & Eastern boundary of Leasehold and Fault F3(F3a)-F3
	Sector-B	Fault F1(F1a)-F1 and F2-F2

Tentatative Extractable Reserve (Million Tonne)			
	Sector-A	**Sector-B**	**Total**
Amlabad	12.40	4.19	**16.59**

AMLABAD SEAM WISE/SECTORWISE TENTATIVE EXTRACTABLE RESERVE (MT)			
SEAM	SECTOR-A	SECTOR-B	TOTAL
	RESEVE	RESERVE	
XV	2.15		2.15
XIV	3.51	0.91	4.42
XIII	0.00	0.00	0.00
XI/XII	2.48	1.13	3.61
X	0.75	1.02	1.77
IX	2.44	0.44	2.88
VIII	1.07	0.68	1.76
TOTAL	**12.40**	**4.19**	**16.59**

2.6.5 WATER REGIME

No data on hydrology and hydrogeology is available for the mine

3.0 PRESENT MINING STATUS

3.1 MINE ENTRIES

The particulars of outlets at Amlabad UG Mine are as given below

Shaft/Pit No	Depth (m)	Dia (m)	Sunk upto Seam	Landing at Seam	conveyance	Status of Shaft	Usage/Purpose
1	465	5.47	XIV	XVA, XV,	Tandem cage	Shaft not lined & side spalling used to occur. Man winding discontinued since July 2007.	Intake (with forcing fan) and Man & Material Winding for XVA, XV seam.
2	337	5.47	XVA	XVIT*, XVA	Tandem cage	2 guide ropes dislodged from clamps and fell into shaft on 29.02.2008 probably due to falling rocks from the shaft sides	Return for XVII, XVIT, XVIM, XVIB seams (PV-200 MMV) and Man & material winding for XVA seam.
3	268	5.47	XVIT	XVII*, XVIT	Tandem cage	This was only production pit at the time of discontinuance. Sides of this pit are also reported to have deteriorated.	Intake & production for XVII, XVIT, XVIM, XVIB.
4	458	5.47	XIV	XV with skip loading arrangement at 440 m depth	3.5 te Skips	Totally collapsed in 1998/1999 with damaged side wall and all shaft fitting	Intake for XVA, XV & XIV seams and production from XVA & XV seams.

3.2 MINING METHOD

At present no production activity is going on in the mine. Traditionally the method of mining had been Bord & Pillar, development with coal cutting machine and blasting with explosives and depillaring (slicing/splitting) with hydraulic sand stowing. However, in past, two panels had been worked with ISLW with hydraulic sand stowing.

Systematic support rules under Regulation 108 (1) (bb) of the Coal Mines Regulation 1957.

1. Basis of framing Systematic Support Rules had been the recommendations as recommended in DGMS circular No. 3 of 1993.

2. The rules were applicable to development workings of all seams of Amlabad UG Mine.

3. Support of every development workings within 10 m of face:

3.1 The roof was supported by full column grouted roof bolts of at least 1.5 metres long and diameter 22 mm and generally placed in grid pattern of 1.2 metres.

3.2 The spacing between the adjacent rows of support was not more than 1.20 M. The distance of first row of support from the face was not more than 0.60 M.

4. Support of junction including those immediately out bye of development face:

4.1 Junctions being formed or likely to be formed were supported by full column grouted bolts and placed in grid pattern of 1.2 metres. Additional roof bolts were grouted at the centre of each set of four bolts at the junction so that density of roof bolts was increased by 25%.

5. General Precautions

5.1 Prior to roof bolting, roof and sides were dressed and temporarily supported by props and if necessary, by cogs.

5.2 Where slip planes or other geological disturbances were encountered, the roof bolts were provided at closer interval to give adequate support to either side of the weak plane. Alternatively, W-straps / channels were provided to strengthen the support system.

5.3 A suitable number of indicator props were erected and observed for tendency of bed separation.

6. Monitoring of support performance.

6.1 Anchorage capacity test was conducted at random and for not less than 10% of the installed bolts. The bolts which were subjected to above test were demarcated in underground.

6.2 Testing was always carried out under a properly supported roof with suitably designed anchorage testing equipment. For this purpose, sufficiently long hose such that the testing personnel could take shelter at least two rows away.

6.4 The tests were conducted under direct supervision of a competent person holding Manager's Certificate.

6.5 Record of anchorage test conducted on the bolts with special reference to the location, strength obtained & other details were kept in a bound paged book kept for this purpose and were singed by the persons making the tests & countersigned by the Manager.

7. Miscellaneous.

7.1 Provisions of amended Regulation 109 of the Coal Mines Regulation 1957 in respect of setting of supports were strictly complied with.

7.2 Additional supports were provided as and when necessary both in roof & sides.

7.3 Provisions of Regulations 108 (6) and 110 of the Coal Mines Regulation, 1957 in respect of formulation and implementation of code of standing orders for procurement and supply of support material, erection, maintenance, withdrawal of supports and also deployment and training of workmen and supervisors etc. and DGMS (Tech) circular No. 3 of 1993 and No. 3 of 1996 were strictly complied with.

3.3 STATUS OF MINING (SEAM WISE)

The status of exploitation of different seams at Amlabad Colliery are as follows:

XVII Seam: This seam had been worked by Shaft nos. 2 & 3 and has been exhausted by depillaring with hydraulic sand stowing and isolated by 8 isolation stoppings after explosion in 1955. Only inspection of these stoppings was done at the time of suspension of work. The seam has also been approached by Pit No.1 but there is no landing in this seam at this pit.

XVI Top Seam: This seam had been approached through Shaft Nos. 1, 2 & 3. It has been extensively depillared with stowing in almost the entire property. Reserves are mostly exhausted. Main sump for the mine was situated in this seam.

XVI Middle Seam: This seam had been approached by drifts from XVIT seam at two different locations. Coal evacuation was through Shaft No 3. Nearly exhausted by depillaring with stowing. At the time of discontinuance of operations in Feb, 2008, the last panel was being depillared with stowing.

XVI Bottom Seam: This seam had been approached through drifts from XVI M seam. This seam has been exhausted by splitting and stowing.

XVA Seam: This seam had been accessed through Shaft Nos. 1, 2 & 4. A small part on the northern most part has been caved. Two retreating longwall panels, 100 m x 450 m and 100 m x 250 m were worked with Single Ended Ranging Drum (SERD) shearer and 40 Te individual support hydraulic props and link bars, with hydraulic sand stowing. Coal transportation was by Armoured Face Conveyor (AFC), Stage Loader and Belt Conveyors. Development of these panels was done by conventional coal-cutting-machines, drilling blasting, and conventional haulage. Two panels were stowed after extraction by conventional B&P slicing, four panels were splitted and stowed and the rest of the property (mostly approach roads) is standing on pillars.

XV Seam: This seam has been approached through Shaft Nos. 1 & 4 and has been partly developed in small patches around the pits. However, near the pit bottom area no particular horizon has been followed. Two drifts from XV seam have been driven to XI/XII seam cutting through XIV and XIII seams. Because of heating/fire near the pit bottom in the development workings in Nov., 1981 the pit bottom area is isolated from the rest of the workings by 11 isolation stoppings (with sand packing in-bye of the galleries up to a length of 15m) Spontaneous heating was again detected in 1983-84. Roof control and ventilation was problematic in this seam. The roof coal was friable, flaky and non-homogenous. Roof support at faces was by timber props and wooden cross bars and steel girder goal post support was used in disturbed zones.

XIV Seam: This seam had been approached through Shaft Nos. 1 & 4 and developed by Bord and Pillar method in a limited area around the pits. Restrictions were imposed by the Directorate General of Mines Safety (DGMS) as the workings were approaching within 60 m of waterlogged workings in XV seam and the manpower was diverted to work the small patch left in XVIM seam. Major portion of the property is virgin. Roof control was a problem in this seam too due to the friable, flaky and non-homogenous nature of the roof

coal and the seam is affected by numerous cracks and slips as encountered in actual mining. Roof support was by roof stitching and roof bolting by 1.8 m steel rods at 1.0 m grid pattern. In disturbed areas steel arches were also used. The seam has a high emission of methane.

Seam XIII- This seam had been worked by Shaft Nos. 1 & 4 and partly developed by bord and pillar method. Two drifts driven from XIV seam passes through it and were also connected to XV seam. Pit no. 1 was used for inlet and pit no.2 for outlet.

Seam XI/XII: This seam has an average thickness of 5.1 m where coal has just been touched by a pair of drifts from XIV seam.

The lower seams are virgin. Seams below VIII are mostly pyrolitised.

3.4 VENTILATION

At present, no ventilation arrangement exists in the mine. At the time of suspension of work, two Main Mechanical Ventilators were operational for ventilation of the mine at No 2 Pit and No.1 Pit. The exhaust fan at No.2 Pit was to ventilate the workings of XVI Bottom Seam and above while that at No.1 Pit was to ventilate workings of XVA, XV and XIV Seams. Subsequently the fan at No.1 Pit was converted to forcing fan to comply with the safety stipulations of the Directorate General of Mines Safety (DGMS) that man-winding be conducted through this in in-take air. However, when the mine workings were waterlogged up to XVA Seam, this fan was not required and was dismantled. Pit No. 4 was connected only to workings of XV and XIV seam and it is no more connected to the ventilating system. One MMV has been transferred to other neighbouring mine for its gainful deployment.

3.5 STOWING INSTALLATION

DETAILS OF SAND STOWING ARRANGEMENT

At present, surface stowing installation exists but not in good condition.

Stowing was in operation in XVI M Seam before discontinuance on 29.02.2008. Details of which are as below:

Small Sand Bunker Capacity (In operation at the time of discontinuance of operations)	165 m^3/min
Large Sand Bunker Capacity (Not in use since the last 20 yrs.)	2500 m^3/min
Capacity of water storage tank	1000 m^3
Stowing Rate obtained	The maximum stowing rate obtained was 512 m^3/day
Details of Shaft Range	Mild Steel 200 mm dia, 6 mm thickness, 350 m length upto XVA Seam - also serving XVI T, XVI M.
In Seams	Mild Steel, 6 mm thickness / Cast Iron, 12 mm thickness, 150 mm dia, about 800 m in XVIT & M. Withdrawn from XVA Seam.

3.6 PRESENT POWER SUPPLY AND DISTRIBUTION

Amlabad Substation receives power at 33 KV from D.V.C Patherdih Substation which is around 15km away from there and supply power at 3.3KV.

The total installed transformer capacity of this substation is as under.

(A) 5MVA, 33 / 3.3KV - 2 No.

(B) 3MVA, 3.3 / 11KV - 1 No.

Bhowra power house receives power of 11KV 3 phase line from Amlabad substation through this transformer. The pit top substation receives power at 3.3KV and supply power

at 550V to water filter plant and pump installed near Damodar river for supplying water to water filter plant. Workshop situated near office also receives power at 3.3KV.

In addition to above transformers,

500KVA,3.3/0.415KV,300KVA,3.3/0.415KV and 100KVA,3.3/0.415KV, lighting transformers are installed at different locations in the colony area to cater the loads of colony lighting and office.

3.7 MAGAZINE

There is no operational magazine at Amalabad mine.

3.8 TRANSPORT

3.8.1 PIT TOP LAYOUT

Earlier when the mine was operational, the full skip used to discharge coal into a receiving hopper of 8 te capacity. This hopper was to discharge on to a belt conveyor which discharged on to the depot. The belt was extended to a surface bunker (350 te) and a CHP, which was under construction but not completed. The CHP was to load coal directly on to wagons.

3.8.2 VERTICAL TRANSPORT

At present, no vertical transport arrangement exists in the mine.

Pit No 1: At present it is not in operation and man winding discontinued since July 2007 as shaft was not lined and side spalling used to occur.

Pit No 2: Operations have been discontinued since 29.02.2008 after two guide ropes fell into the shaft.

Pit No 3: This was only production pit at the time of discontinuance but sides of this pit are also reported to have deteriorated.

Pit No 4: It totally collapsed in 1998/1999 with damaged side walls and all shaft fitting. This pit was equipped with a pair of 3.5te skip loading at XV seam from a strata bunker between XVA seam and XV seam. The major components of the winder have been transferred to other neighbouring mines for their gainful deployment.

3.8.3 UNDERGROUND TRANSPORT

At present, no underground transport arrangement exists and the mine is entirely waterlogged. However, at the time of discontinuance of operations in Feb, 2008, underground coal transport was being carried out by a series of tuggers, endless and direct haulages. The same rope haulages used for coal transport were being used for material transport also.

3.9 EXISTING PUMPING SYSTEM

At present, no pumping arrangement exists in the mine.

3.10 EARTHING:

Solidly earthed neutral system is being used for different voltages in this colliery and substation.

3.11 ILLUMINATION:

On the surface Fluorescent lamps, ordinary incandescent lamps are being used for lighting office building and colonies

3.12 STORE FACILITIES:

There is a store in existence.

3.13 COAL HANDLING PLANT

The construction of the Coal Handling Plant was not completed and its construction was stopped in the last stage of finalization and it was not put into operation. However, the CHP was intended to load coal directly into wagons

3.14 CIVIL AMENITIES FOR MINING

There are 457 Nos. of different types of quarters available in the mine. Production from the mine has been suspended long back. The available infrastructure of the mine is given below;

Colliery Office

Colliery Store

Dispensary

Electric Sub Station

Water treatment Plant

Winding Room

3.15 WORKSHOP

There is a small workshop with following items.

Serial No	Items	Number
1	Lathe machine	02
2	Welding machine	01
3	Drill machine	01
4	Sharpener	01
5	Milling machine	01

3.16 MANPOWER

At present, a small number of manpower are available in mine to look after the work of office, 33KV Substation and water filter plant near Damador River bank.

3.17 DETAILS OF QUARTER OF AMLABAD COLLIERY

SL. NO	**NAME OF COLONY**	**NHS**	**LCH**	**ARCH**	**'B' TYPE**	**'C' TYPE**	**'D' TYPE**	**BUNGLOW**	**TOTAL**
1	BHULI COLONY	69	39	12	-	-	02	01	123
2	G.P CAMP COLONY	09	-	122	-	-	-	-	131
3	BAZAR DHOWRA COLONY	-	-	21	-	-	-	-	21
4	STAFF COLONY	65	-	36	08	08	08	02	127
5	PREM NAGAR COLONY	55	-	-	-	-	-	-	55
		198	39	191	08	08	10	03	457

SL NO	NAME OF COLONY	TOTAL QTRS	AUTHORISED	UNAUTHORISED
1	Bhuli Colony	123	69	54
2	G.P. Camp Colony	131	46	85
3	Bazar Dhowra Colony	21	12	09
4	Staff Colony	127	79	48
5	Prem Nagar	55	05	50
	Total	457	211	246

List of Existing Assets

SL NO.	33KV SUB-STATION, AMLABAD COLLIERY	QNTY
1	Jyoti Make, MOCB, 33KV, 400A-In Coming + Outgoing Coupler	05
2	Power Transformer, 5-7.5 MVA, 33KV/3.3KV	02
3	Power Transformer, 3.15 MVA, 11KV/6.6KV/3.3KV	01
4	Lighting Transformer, 200KV, 33KV/415V	01
5	Lighting Transformer, 300KV, 3.3KV/415V	01
6	Asea Breaker, 12KV, 1200A	31
7	Crompton Greaves Breaker, 11KV, 400A	06
8	Diesel Generator Set, 1.1MVA, 11KV	02
9	Oil Filter Machine	01
	PIT-SUB STATION	
10	Power Transformer, 1000KV, 3.3KV/550V	01
11	TSU, 315KVA, 3.3KV/550V	01
12	A/Y Make VCB, 3.3KV, 400A	02
13	Metropolitan Vickers Make OCB, 3.3KV, 400A	04
14	ECE make OCB, 550V, 1200A	01
15	ECE make OCB, 550V, 600A	02
16	A/Y make ACB, 200A, 550V	03
17	250 KVA, 3.3KV/415V, lighting transformer	01
	WORKSHOP	
18	Lathe machine	02
19	Sharpener	01
20	Milling machine	01
21	Drill machine	01
22	Welding machine	01
23	20KVA, 550V/220V, workshop transformer	01
	PIT TOP	
24	Cylindrical type winder set, winder no. 1, complete with electrical	01

25	Bio-conical cylindrical type winder set, winder no. 2, complete with electrical	01
26	Bio-conical cylindrical type winder set, winder no. 3, complete with electrical	01
27	Koepe winder set, winder no. 4, complete with electrical	01
28	300PV MMV Set, NO.2 Pit	01
	COMPRESSOR SET	
29	240HP, KG Khosla Compressor set	01
30	180HP, KG Khosla Compressor set	01
31	120HP, KG Khosla Compressor set	01
	WATER FILTER PLANT	
32	100HP Pump with Electrical Complete set, 550V	02
33	40HP Pump with Electrical Complete set, 550V	02
34	400A, 550V, GEC OCB-Incoming Breaker	01
	TOWNSHIP TRANSFORMER	
35	500KVA, 3.3KV/415V, lighting transformer, CHP Room	01
36	A/Y make OCB, 3.3KV, 400A	01
37	315KVA, 3.3KV/415V, lighting transformer, Sand line	01
38	A/Y make OCB, 3.3KV, 400A	01

Note- As per the information received from the Area, All the electrical, mechanical and civil assets including quarter mentioned in the list of assets of Amlabad Colliery will be handed over to the successful bidder.

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AMLABAD BLOCK (1980)

(GR PLATES)

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BHOWRA BLOCK
MAHAL BLOCK
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AMD-2
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MHL-3
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N.C.D.C. Borehole with Reduced Level (m)
Railway siding
Cart track
Surface contour
Sand Dump
Village boundary
B.C.C.L. Leasehold
Modification (in NW & E) in boundary of Leasehold to define area expired
Sandstone
Shale
Carbonaceous shale
Intercalation Shale and Sandstone
Coal Exposures
Fault with throw (Inferred)
Fault mapped
Strike and dip of the formation
Barren-Measures
Barakars
MINERAL EXPLORATION CORPORATION LIMITED
GEOLOGICAL PLAN
AMLABAD BLOCK
JHARIA COAL FIELD, BIHAR.
R.F - 1:4,000
M.E.C.L.
318/79
PLATE No. III

(3G)

-BHARAT COKING COAL LTD.-
GEOLOGICAL PLAN
OF
-AMLABAD COLLIERY-
-ONE INCH = 330'-

AM-1

R.L. 159.76

AM-2

R.L. 150.66

AM-3

R.L. 148.72

AM-4

R.L. 145.49

AM-5A

R.L. 157.12

AM-6

R.L. 162.75

LEGEND

- Soil / Sub Soil
- Fine grained Sandstone
- Medium grained Sandstone
- Coarse grained Sandstone
- Gritty Sandstone
- Intercalation of Sandstone & Shale
- Argillaceous Sandstone
- Arenaceous Shale
- Carbonaceous Shale
- Shale
- Shaly Coal
- Coal
- Mico-Peridotite
- Jhama
- Reduced Level
- Weathered mantle
- Worked zone
- Core dip
- Fault with designation
- Stickensides
- Fractured, Broken
- Secondary filling

MINERAL EXPLORATION CORPORATION LIMITED

GRAPHIC LITHOLOGS OF BOREHOLES DRILLED IN AMLABAD BLOCK JHARIA COALFIELD, BIHAR.

R.F. - 1:1,000.

PREPARED BY : DEEP PRAKASH, Geologist. M.RAMACHANDRAN, Geologist. S.S.MANNA Sr. Geologist	DRAWN BY : D.V.SUBBARAO, S.D./man L.R.MALLICK D/man(c)
M.E.C.L.	C.M.P.D.I.L.
M.E.C. D.O.No. 319/79	PLATE No. IV-A (B.H.No. AM-1 TO AM-6)

(3)

AM-7A

R.L. 152.76

AM-8

R.L. 152.06

AM-9A

R.L. 141.78

AM-10

R.L. 141.67

AM-11

R.L. 141.58

AM-12

R.L. 140.42

LEGEND

- Soil / Sub Soil.
- Fine grained Sandstone.
- Medium grained Sandstone.
- Coarse grained Sandstone.
- Gritty Sandstone.
- Intercalation of Sandstone & Shale.
- Argillaceous Sandstone.
- Arenaceous Shale.
- Carbonaceous Shale.
- Shale.
- Shaly Coal.
- Coal.
- M.P. Mica-Peridotite.
- Jhama.
- R.L. Reduced Level.
- W.M. Weathered mantle.
- W.Z. Worked zone.
- C.D. Core dip.
- Fault with downthrow side.
- Sl. Slickensides.
- Fr. Br. Fractured, Broken.
- Sc. Secondory filling.

(2)

MINERAL EXPLORATION CORPORATION LIMITED

GRAPHIC LITHOLOGS OF BOREHOLES DRILLED IN AMLABAD BLOCK JHARIA COALFIELD, BIHAR.

R.F. – 1 : 1,000.

PREPARED BY : DEEP PRAKASH, S.L. NAFDE, S.S. MANNA
Geologist Sr.Geologist Sr.Geologist

DRAWN BY : D.V.SUBBA RAO, MALICK
S.D/man D/man (T)

M.E.C.L. C.M.P.D.I.L.

M.E.C. D.O.No. 320/79

PLATE No. IV-B

AM-13

R.L. 150.39

R-20 ohms/divn

SP-5mvs/divn

T.D. 702.00 m.

AM-14

R.L. 142.76

T.D. 158.70

AM-15

R.L. 157.79

SP-3mvs/divn

R-50 ohms/divn

T.D. 710.45 m.

AM-16

R.L. 143.83

R-50 ohms/divn

SP-3mvs/divn

T.D. 712.15 m.

AM-17

R.L. 147.13

SP-3mvs/divn

Barren Measures
Barakars

T.D. 621.30 m.

AM-18

R.L. 157.53

R-20 ohms/divn

Barren Measures
Barakars

T.D. 780.85 m.

LEGEND

- Soil / Sub Soil.
- Fine grained Sandstone.
- Medium grained Sandstone.
- Coarse grained Sandstone.
- Gritty Sandstone.
- Intercalation of Sandstone & Shale.
- Argillaceous Sandstone.
- Arenaceous Shale.
- Carbonaceous Shale.
- Shale.
- Shaly Coal.
- Coal.
- M.P. Mica Peridotite.
- Δ Δ Jhama.
- R.L. Reduced Level.
- W.M. Weathered mantle.
- W.Z. Weathered zone.
- 5° Core dip.
- F1-F6 Fault with designation.
- Sl Slickensides.
- Fr, Br Fractured, Broken.
- Sl Secondary filling.

MINERAL EXPLORATION CORPORATION LIMITED

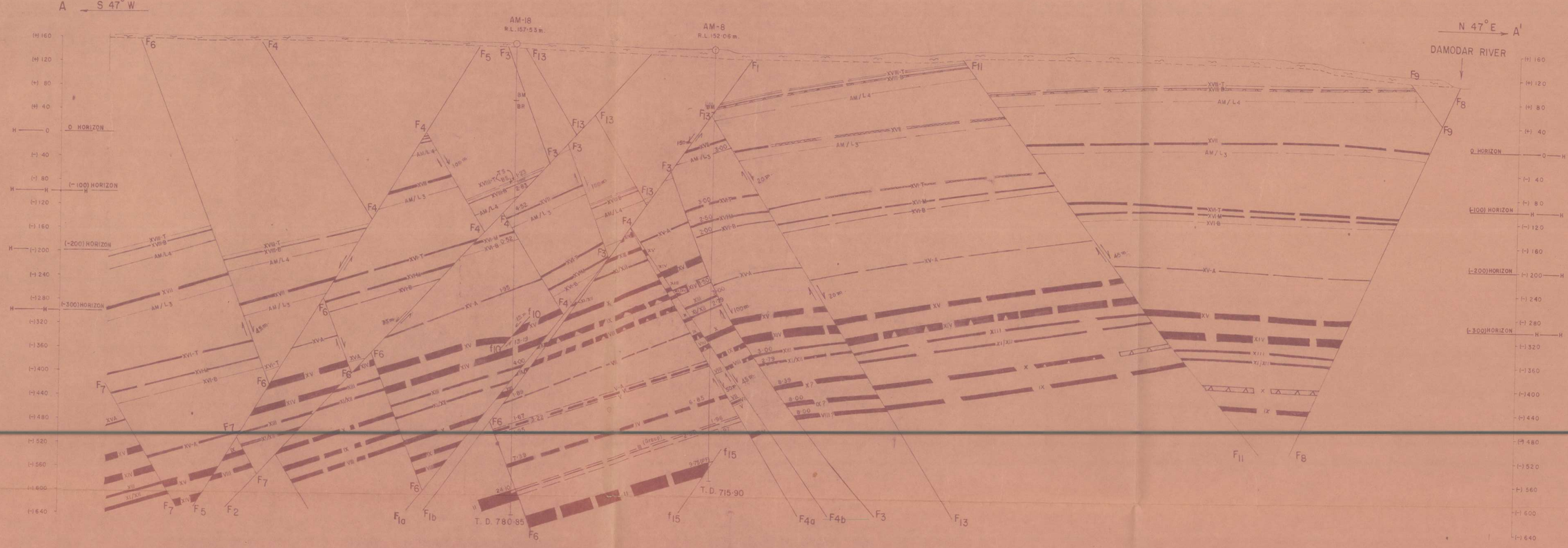
GRAPHIC LITHOLOGS OF BOREHOLES DRILLED IN AMLABAD BLOCK JHARIA COALFIELD, BIHAR.

R.F. – 1 : 1,000.

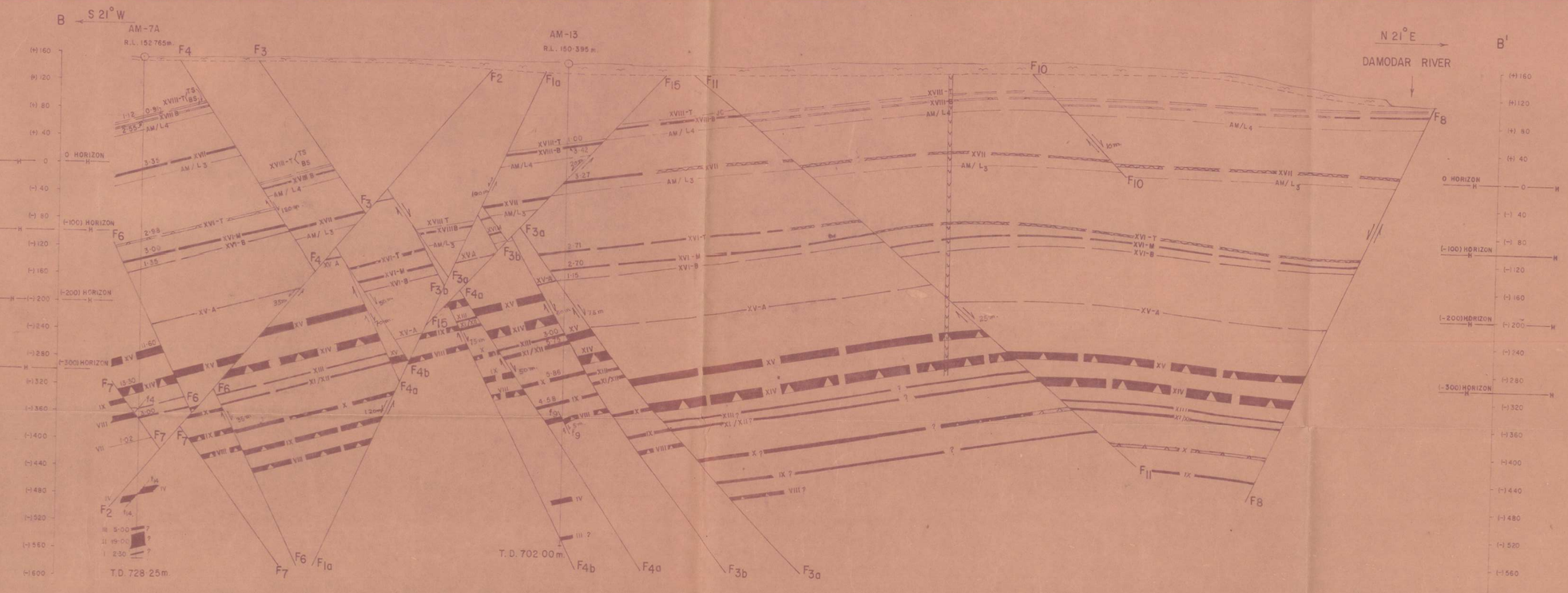
PREPARED BY : DEEP PRAKASH, S.L. NAFDE Geologist, Sr.Geologist.	DRAWN BY : D.V. SUBBA RAO, L.R. MALLICK S.D/man. D/man(C)
M.E.C.L.	C.M.P.D.I.L.
M.E.C. D.O. No. 321/79	PLATE No. IV-C

(1)

SECTION - AA'



SECTION - BB'



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- AM-18 R.L. 157·53 — Borehole drilled by M.E.C. with Reduced Level in metres
- Weathered Mental
- BM / BR — Barren Measure Barakar Contact
- Coal Seam with designation
- /JC — Coal + Jhama Mica-peridotite
- /J — Jhama Mica-peridotite
- Seam worked
- Fault with number
- Dolerite dyke

Note :-

AM/L_2 and AM/L_1 are not shown on the section due to scale restriction.

MINERAL EXPLORATION CORPORATION LIMITED

GEOLOGICAL CROSS-SECTION ALONG AA' & BB'

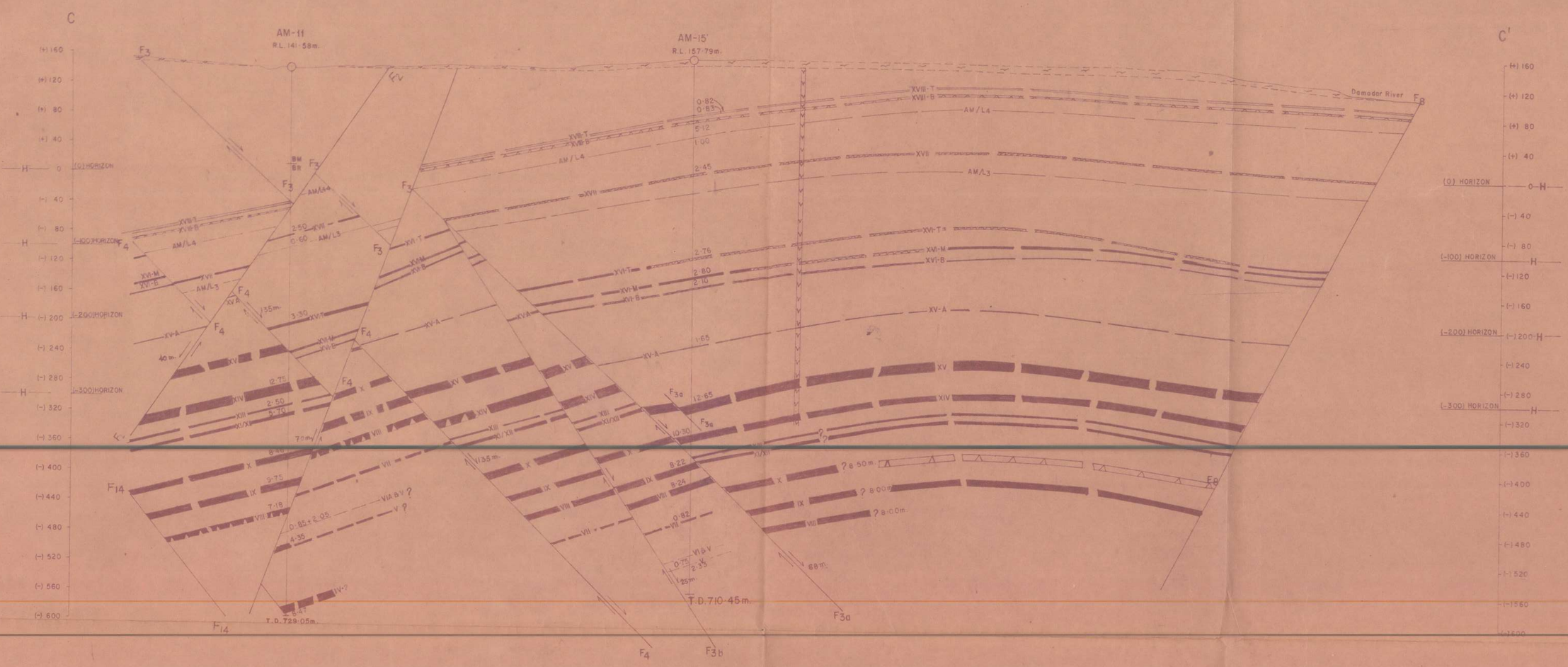
R.F. 1 : 4,000

Prepared by - DEEP PRAKASH, Geologist; V.A. TOTRE, Geologist (Sr); Traced by - S. C. Pandit

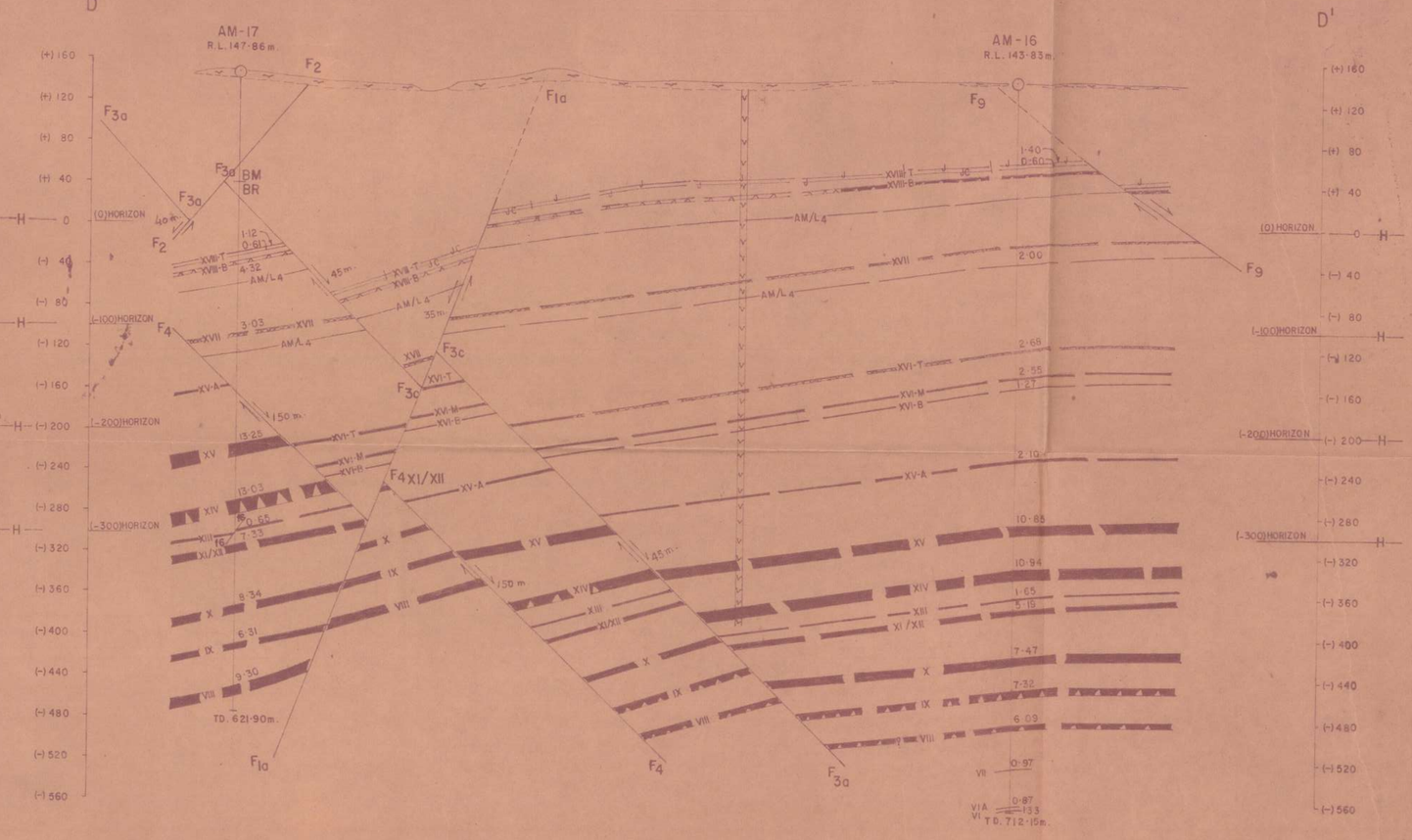
M.E.C.L. C.M.P.D.I.L

M.E.C. D.O. No. 362/79 PLATE No. VIII-A

SECTION - CC'



SECTION - DD'



INDEX

- AM-16 R.L. 143·83 — Borehole drilled by M.E.C. with Reduced Level in metres
- Weathered Mental
- BM / BR — Barren Measure Barakar Contact
- /C — Coal Seam with designation
- /JC — Coal + Jhama Mica-peridotite
- /J — Jhama Mica-peridotite
- Seam worked
- F4 — Fault with number
- Dolerite dyke

Note:-

AM/L2 and AM/L1 are not shown on the section due to scale restriction.

MINERAL EXPLORATION CORPORATION LIMITED

GEOLOGICAL CROSS-SECTION

ALONG CC' & DD'

R.F 1 : 4,000

Prepared by - DEEP PRAKASH, Geologist; V.A. TOTRE, Geologist(Sr.)	Traced by - S. C. Pandit
M.E.C.L.	C.M.P.D.I.L.
M.E.C.D.O.No. 363/79	PLATE No. VIII-B

INDEX

AM-6, R.L. 162.75, F.R.L. (-) 389.28	Borehole with R.L. & F.R.L. in metres
(-) 380	Floor contour with value
40m. 16, F6	Fault with throw and heave zone
Pit-4	Pit
NCJM-5	Borehole drilled by NCDC
Faulted	Seam Faulted
P.F	Part Faulted
	Lease hold boundary
	Exploration block boundary
AM-4, R.L. 145.49	Borehole not drilled upto the seam
	Dolerite Dyke

* As per colliery nomenclature XIV Seam.

MINERAL EXPLORATION CORPORATION LIMITED

FLOOR CONTOUR PLAN OF XV* SEAM
AMLABAD BLOCK
JHARIA COAL FIELD, BIHAR

R.F. – 1:4,000

PREPARED BY. DEEP PRAKASH Geologist, S.L. NAFDE Sr. Geologist

TRACED BY. C.Y. MAHINDRE S/D'man

M.E.C.L. C.M.P.D.I.L.

M.E.C.D.O. No. 355/79 PLATE No. VII H

E 3,800 E 4,200 E 4,600 E 5,000 E 5,400 E 5,800 E 6,200 E 6,610

N 7,400 N 7,000 N 6,600 N 6,200 N 5,800 N 5,400 N 5,000 N 4,600

PARBATPUR BLOCK

BHOWRA BLOCK

MAHAL BLOCK

DAMODAR RIVER

AMLABAD COLLIEARY

AM-17 R.L.147·13 F.R.L.+284·14

AM-14 R.L.142·75

AM-16 R.L.143·83 F.R.L.+341·21

AM-10 R.L.141·67

AM-11 R.L.145·58 F.R.L.+294·61

AM-13 R.L.148·12 F.R.L.(-)265·82

AM-15 R.L.157·79 F.R.L.+354·61

AM-7A R.L.152·76 F.R.L.+335·43

AM-7 R.L.154·21

AM-5 R.L.157·62 F.R.L.+327·23

AM-5A R.L.157·88

AM-13A R.L.150·40 Faulted

AM-4 R.L.145·49

AM-8 R.L.152·06 Faulted

AM-12 R.L.140·42 F.R.L.+288·68

AM-18 R.L.157·53 F.R.L.+363·52

AM-6 R.L.162·75 Faulted

AM-2 R.L.150·66 F.R.L.+313·66

AM-3A R.L.141·78 F.R.L.+272·97

AM-9 R.L.145·01

AM-1 R.L.159·76 Faulted

NCJM-5 R.L.156·90 F.R.L.+445·70

F1a F1b F1c F2 F4 F4a F4b F5 F6 F7 F8 F11 F12 F13 F14 F30

INDEX

AM-18 R.L.157·53 F.R.L.+363·52 — Borehole with R.L. & F.R.L. in metres

+1430 — Floor contour with value

45m F6 F6 — Fault with throw and heave zone

Pit-4 — Pit

NCJM-5 — Borehole drilled by NCDM

Faulted — Seam Faulted

Lease hold boundary

Exploration block boundary

AM-4 R.L.145·49 — Borehole not drilled up to the seam

Dolerite dyke

MINERAL EXPLORATION CORPORATION LIMITED

FLOOR CONTOUR PLAN OF XIV SEAM
AMLABAD BLOCK
JHARIA COAL FIELD, BIHAR

R.F. 1:4,000

PREPARED BY DEEP PRAKASH, Geologist; S.L.NAFDE, Sr.Geologist — TRACED BY C.Y. MAHINDRE S/D'man

M.E.C.L. — C.M.P.D.I.L.

M.E.C.D.O. No. 356/79 — PLATE No. VII I

E 3,800 E 4,200 E 4,600 E 5,000 E 5,400 E 5,800 E 6,200 E 6,600

N 7,400 N 7,000 N 6,600 N 6,200 N 5,800 N 5,400 N 5,000 N 4,600

PARBATPUR BLOCK

BHOWRA BLOCK

MAHAL BLOCK

D A M O D A R R I V E R

AMLABAD COLLIERY

AM-17 R.L. 147·13 F.R.L. (-) 299·56

AM-14 R.L. 142·75

AM-16 R.L. 143·83 F.R.L. (-) 361·71

AM-10 R.L. 141·67

AM-11 R.L. 141·58 F.R.L. (-) 311·61

AM-3 R.L. 148·72 F.R.L. (-) 290·03

AM-15 R.L. 157·79 Faulted

Pits 1 2 3 4

AM-13 R.L. 150·40 F.R.L. (-) 245·16

AM-4 R.L. 145·49

AM-7A R.L. 152·76 Faulted

AM-7 R.L. 154·21

AM-5 R.L. 157·02

AM-5A R.L. 157·12 F.R.L. (-) 250·35

AM-8 R.L. 152·06 F.R.L. (-) 266·66

AM-12 R.L. 140·42 F.R.L. (-) 306·67

AM-18 R.L. 157·53 F.R.L. (-) 389·37

AM-6 R.L. 162·75 Faulted

AM-1 R.L. 159·76 F.R.L. (-) 429·47

AM-2 R.L. 150·66 F.R.L. (-) 340·05

AM-9A R.L. 141·79 Faulted

AM-9 R.L. 145·00

NCJM-5 R.L. 156·30 F.R.L. (-) 464·00

F1a F1b F1c F2 F3 F3a F3b F4 F5 F6 F7 F8 F11 F12 F13 F14 f4 f5 f6

INDEX

- AM-18 / R.L. 157·53 / F.R.L. (-) 389·37 — Borehole with R.L. & F.R.L. in metres
- (-) 1430 — Floor contour with value
- F6 — 45m. F6 — Fault with throw and heave zone
- Pit-4 — Pit
- NCJM-5 — Borehole drilled by NCDC
- Faulted — Seam Faulted
- P.F. — Part Faulted
- Lease hold boundary
- Exploration block boundary
- AM-4 — Borehole not drilled up to the seam

MINERAL EXPLORATION CORPORATION LIMITED

FLOOR CONTOUR PLAN OF XIII SEAM
AMLABAD BLOCK
JHARIA COAL FIELD, BIHAR

R.F. - 1:4,000

PREPARED BY — DEEP PRAKASH, Geologist; S.L. NAFDE, Sr. Geologist

TRACED BY — C.Y. MAHINDRE, S/D'man

M. E. C. L.

C. M. P. D. I. L.

M.E.C.D.O. No. 357/79

PLATE No. VII J

E 3,800 E 4,200 E 4,600 E 5,000 E 5,400 E 5,800 E 6,200 E 6,600

N 7,400 N 7,000 N 6,600 N 6,200 N 5,800 N 5,400 N 5,000 N 4,600

PARBATPUR BLOCK

BHOWRA BLOCK

MAHAL BLOCK

DAMODAR RIVER

AMLABAD COLLIERY

AM-17 R.L. 147·13 F.R.L. H321·45

AM-14 R.L. 142·78

AM-16 R.L. 143·93 F.R.L. H374·85

AM-10 R.L. 141·67

AM-11 R.L. 141·58 F.R.L. H322·41

AM-15 R.L. 157·79 Faulted

AM-3 R.L. 148·72 F.R.L. H298·88

AM-13 R.L. 150·40 F.R.L. H258·31

AM-4 R.L. 145·49

AM-7A R.L. 152·76 F.R.L. H371·78

AM-7 R.L. 154·21

AM-5 R.L. 157·02

AM-5A R.L. 157·12 F.R.L. H264·38

AM-8 R.L. 152·06 F.R.L. H287·27

AM-12 R.L. 140·42 F.R.L. H320·62

AM-18 R.L. 157·53 Faulted

AM-6 R.L. 162·75 F.R.L. H425·55

AM-1 R.L. 159·76 F.R.L. H453·44

AM-2 R.L. 150·66 F.R.L. H364·37

AM-9A R.L. 141·75 F.R.L. H301·42

AM-9 R.L. 145·00

NCJM-5 R.L. 156·90 F.R.L. (-) 469·25

Pits

F1 F1a F1b F1c F2 F3a F3b F4 F4a F4b F5 F6 F7 F8 F11 F12 F13 F14

INDEX

AM-13 R.L. 150·40 F.R.L. H258·31	Borehole with R.L. & F.R.L. in metres
H240 45° F6	Floor contour with value
	Fault with throw and heave zone
Pit-1	Pit
NCJM-5 R.L. 156·90	Borehole drilled by N.C.D.C.
Faulted	Seam faulted
	Lease hold boundary
	Exploration block boundary
AM-4 R.L. 145·49	Borehole not drilled upto the seam

MINERAL EXPLORATION CORPORATION LIMITED

FLOOR CONTOUR PLAN OF XI/XII SEAM
AMLABAD BLOCK
JHARIA COAL FIELD, BIHAR

R.F. - 1:4,000

PREPARED BY.- DEEP PRAKASH, Geologist
S.L.NAFDE, Sr. Geologist

TRACED BY.- CY.MAHINDRE S/D'man

M. E. C. L.

C. M. P.D.I.L.

M.E.C.D.O. No. 358/79

PLATE No. VII K

E 3,800 E 4,200 E 4,600 E 5,000 E 5,400 E 5,800 E 6,200 E 6,600

N 7,400 N 7,000 N 6,600 N 6,200 N 5,800 N 5,400 N 5,000 N 4,600

PARBATPUR BLOCK

BHOWRA BLOCK

MAHAL BLOCK

AMLABAD COLLIERY

D A M O D A R R I V E R

AM-17 R.L. 147·13 F.R.L. H380·20

AM-1 R.L. 142·15

AM-16 R.L. 143·83 F.R.L. H455·91

AM-10 R.L. 141·67

AM-11 R.L. 141·58 F.R.L. H383·74

AM-15 R.L. 157·79 Faulted

AM-3 R.L. 148·72 F.R.L. H455·79

AM-13 R.L. 150·40 F.R.L. H320·42

AM-4 R.L. 145·49

AM-7A R.L. 152·76 Faulted

AM-7 R.L. 154·21

AM-5A R.L. 157·12 Faulted

AM-5 R.L. 157·02

AM-8 R.L. 152·06 F.R.L. H333·73

AM-12 R.L. 140·42 F.R.L. H362·17

AM-18 R.L. 157·53 Faulted

AM-6 R.L. 162·75 F.R.L. H475·00

AM-2 R.L. 150·66 Faulted

AM-9A R.L. 141·78 F.R.L. H342·52

AM-9 R.L. 145·00

AM-1 R.L. 159·76 F.R.L. H502·93

NCJM-5 R.L. 156·90 F.R.L. H515·00

Pits 1 2 3 4

F1a F1b F1c F2 F3a F3b F3c F4 F4a F4b F5 F6 F7 F8 F11 F12 F13 F14

INDEX

- AM-13 / R.L. 150·40 / F.R.L. H320·42 — Borehole with R.L. & F.R.L. in metres
- (H510) — Floor contour with value
- 45m. F6 — Fault with throw and heave zone
- Pit-4 — Pit
- NCJM-5 — Borehole drilled by NCDC
- Faulted — Seam Faulted
- P. F. — Part Faulted
- Lease hold boundary
- Exploration block boundary
- AM-4 / R.L. 145·49 — Borehole not drilled upto the seam

MINERAL EXPLORATION CORPORATION LIMITED

FLOOR CONTOUR PLAN OF X SEAM
AMLABAD BLOCK
JHARIA COAL FIELD, BIHAR

R.F. - 1:4,000

PREPARED BY DEEP PRAKASH, Geologist; S.L. NAFDE, Sr. Geologist

TRACED BY CY. MAHINDRE S/D'man

M. E. C. L. C. M. P. D. I. L.

M.E.C.D.O No. 359/79 PLATE No. VII L

E 3,800 E 4,200 E 4,600 E 5,000 E 5,400 E 5,800 E 6,200 E 6,600

N 7,400 N 7,000 N 6,200 N 5,800 N 5,400 N 5,000 N 4,600

PARBATPUR BLOCK

BHOWRA BLOCK

MAHAL BLOCK

AMLABAD COLLIERY

DAMODAR RIVER

AM-17 R.L.147·13 F.R.L.H414·57

AM-14 R.L.142·75

AM-16 R.L.143·83 F.R.L.H455·91

AM-10 R.L. 141·67

AM-11 R.L. 141·58 F.R.L.H421·76

AM-15 R.L.157·79 F.R.L.H389·11

AM-3 R.L.148·72 F.R.L.H383·73

AM-13 R.L.150·40 F.R.L.H342·28

AM-4 R.L.145·49

AM-7A R.L.152·76 Faulted

AM-7 R.L.154·21

AM-5A R.L.157·12 F.R.L.H316·97

AM-5 R.L.157·02

AM-8 R.L.152·06 Faulted

AM-12 R.L.140·42 Faulted

AM-18 R.L.157·53 Faulted

AM-6 R.L.162·75 F.R.L.H509·30

AM-2 R.L.150·66 F.R.L.H425·54

AM-1A R.L.159·76 F.R.L.H521·35

AM-9A R.L.141·78 F.R.L.H364·77

AM-9 R.L.145·00

NCJM-5 R.L.156·90 F.R.L.H542·30

Pits

F1a F1b F1c F1d F2 F3a F3b F3c F4 F4a F4b F5 F6 F7 F8 F11 F12 F13 F14

INDEX

- AM-13 / R.L. 150·40 / F.R.L. H342·28 — Borehole with R.L. & F.R.L. in metres
- H510 — Floor contour with value
- F6 45m F6 — Fault with throw and heave zone
- Pit-4 — Pit
- NCJM-5 — Borehole drilled by NCDC
- (Faulted) — Seam Faulted
- P.F. — Part Faulted
- Lease hold boundary
- Exploration block boundary
- AM-4 / R.L. 145·49 — Borehole not drilled up to the Seam.

MINERAL EXPLORATION CORPORATION LIMITED

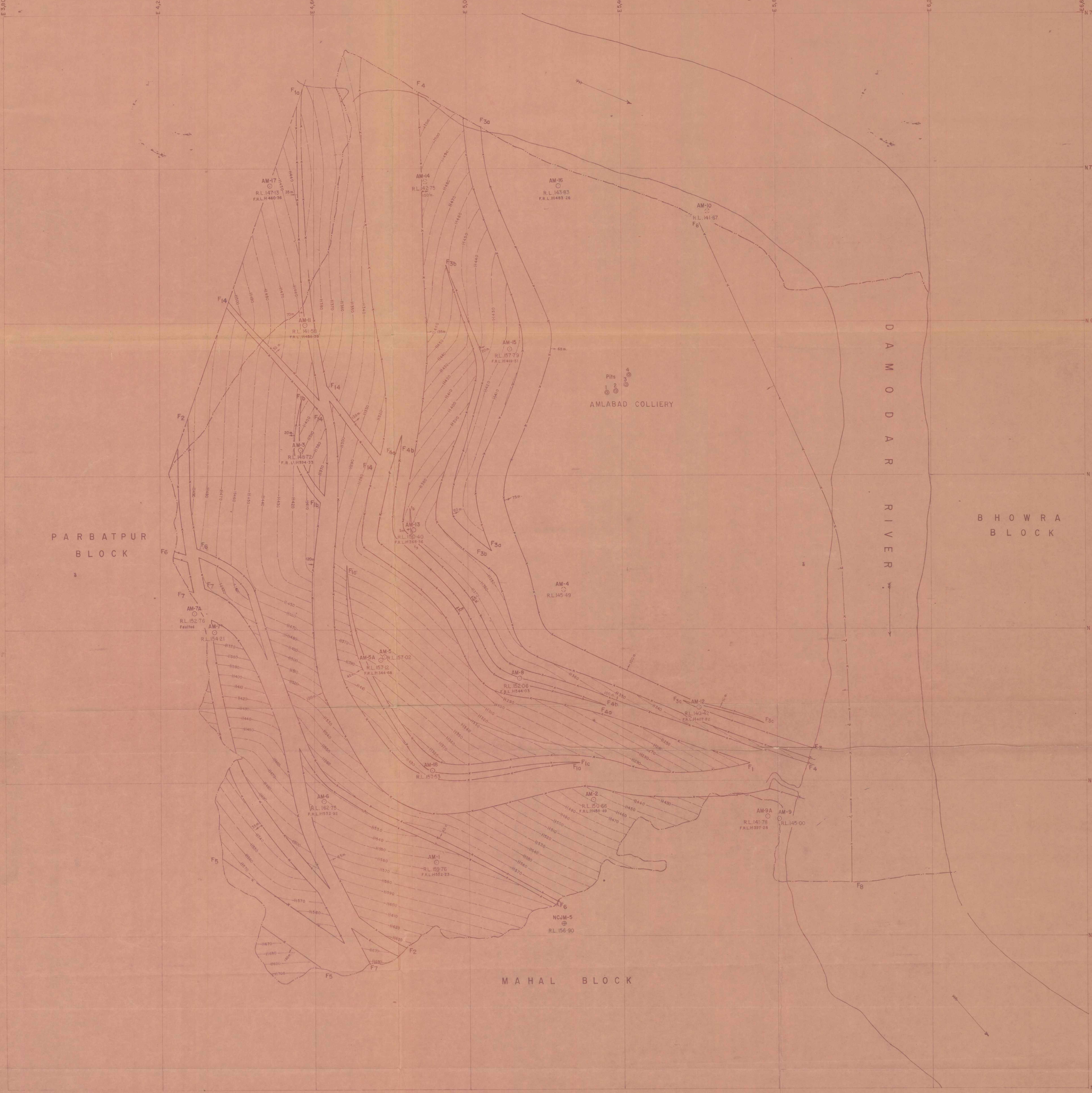
FLOOR CONTOUR PLAN OF IX SEAM
AMLABAD BLOCK
JHARIA COAL FIELD, BIHAR

R.F. - 1:4,000

PREPARED BY. DEEP PRAKASH, Geologist; S.L. NAFDE, Sr. Geologist — TRACED BY. CY. MAHINDRE, S/D'man

M. E. C. L. — C. M. P. D. I. L.

M.E.C.D.O. No. 380/79 — PLATE No. VII M



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Borehole with R.L. & F.R.L. in metres

Borehole not drilled up to the Seam

Floor contour with value

Fault with throw and heave zone

Pit

Borehole drilled by NCDC, Not considered

Exploration block boundary

MINERAL EXPLORATION CORPORATION LIMITED

FLOOR CONTOUR PLAN OF VIII SEAM
AMLABAD BLOCK
JHARIA COAL FIELD, BIHAR

R.F. - 1:4,000

PREPARED BY- DEEP PRAKASH, Geologist; S.L.NAFDE, Sr.Geologist

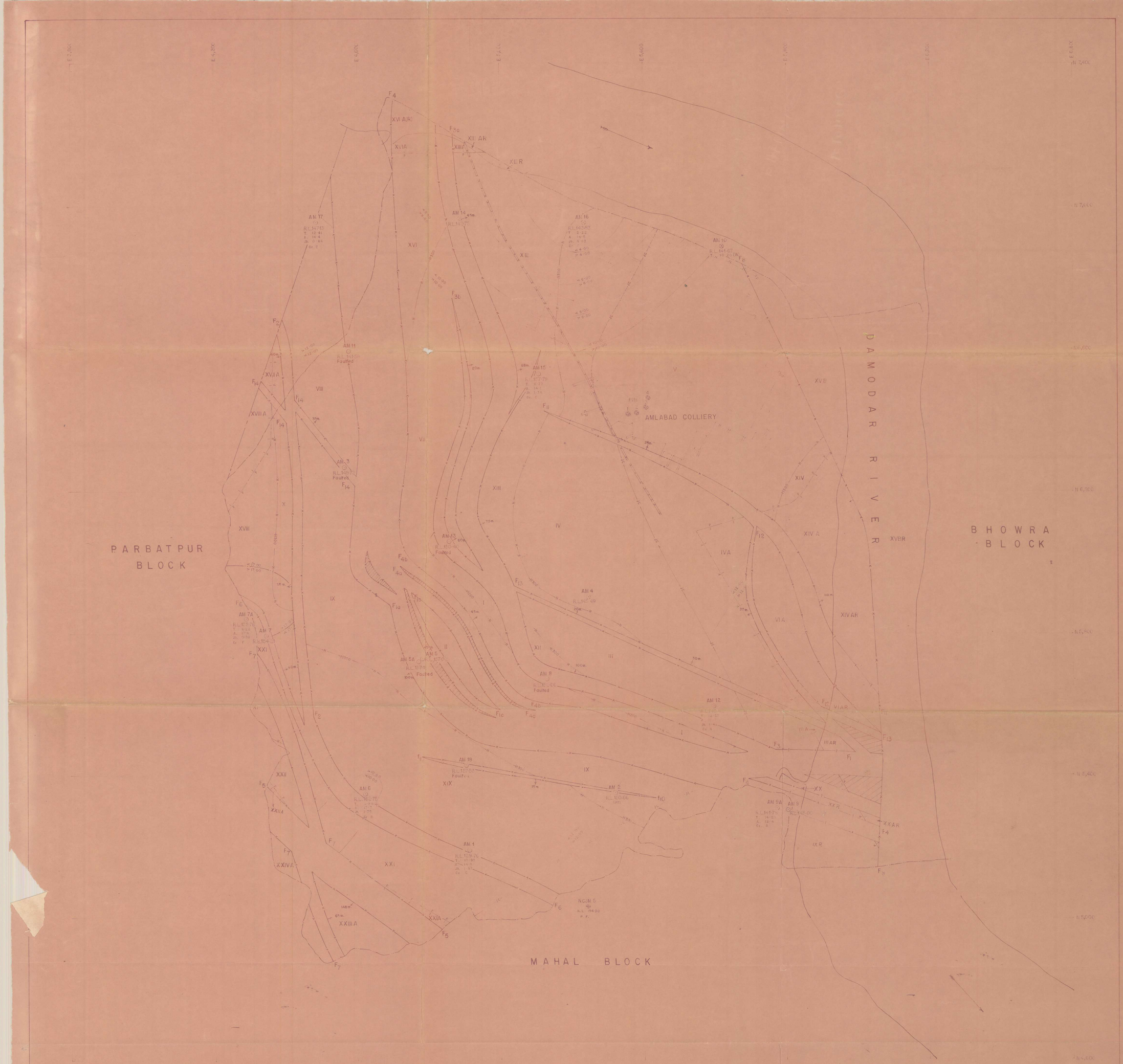
TRACED BY- C.Y. MAHINDRE S/D'man

M.E.C.L.

C.M.P.D.I.L.

M.E.C.D.O. No. 361/78

PLATE No. VII N



INDEX

AM-12 / R.L. 140·42	Borehole with R.L. in metres
NCJM-5 / R.L. 156·90	Borehole drilled by N.C.D.C.
T.	Thickness in metres
A.	Ash %
Jh.	Jhama
<12·00 / >12·00	Isochore with value
<17·00 / >17·00	Iso-ash with value
	Exploration block boundary
	Fault with throw and heave zone
	Horizon line with value
	Partial jhama line
Pit-1	Pit
	Sector boundary with number
	Block boundary
	Working
P.F.	Part faulted
	Reserve not calculated
AM-4	Borehole not drilled upto the Seam
(W)	Seam worked
AM-10 / RL 141·67	Borehole not considered
	Dolerite Dyke
	Exploration Block boundary

Note:-

(1) For area having thickness morethan 12·00m. in eastern part average of isochore & borehole AM-9A & 12 values considered. T= 12·86m.

(2) For area having thickness lessthan 10·00m. around borehole AM-6 average of iso-chore and borehole value considered. T=9·94m.

(3) For area having thickness lessthan 4·00m. around borehole AM-IC average of iso-chore & borehole value considered T= 3·11m.

(4) For Sector [redacted], XV B & XV BR average of borehole AM-9A, 10 & 12 values considered T=12·26m. Sp.gr.1·50m.

*As per colliery nomenclature XIV Seam.

MINERAL EXPLORATION CORPORATION LIMITED

SEAM FOLIO PLAN OF XV* SEAM (In-band)

AMLABAD BLOCK

JHARIA COAL FIELD, BIHAR

R.F. 1:4,000

PREPARED BY.. DEEP PRAKASH Geologist, V.A. TORRE Sr. Geologist — TRACED BY.. C.Y. Nandurkar

M.E.C.L. — C.M.P.D.I.L.

M.E.C.D.C. No. 374/79 — PLATE No. IX K

PARBATPUR BLOCK

BHOWRA BLOCK

MAHAL BLOCK

DAMODAR RIVER

AMLABAD COLLIERY

E 3,800 E 4,200 E 4,600 E 5,000 E 5,400 E 5,800 E 6,200 E 6,600

N 7,400 N 7,000 N 6,600 N 6,200 N 5,800 N 5,400 N 5,000 N 4,600

INDEX

- AM-12 / R.L. 142·42 — Borehole with R.L. in metres
- NCJM-5 — Borehole drilled by NCDC
- T. — Thickness in metres
- A. — Ash %
- Jh. — Jhama
- Gr. — Grade
- Isochore with value
- Area not considered
- F.F. — Seam fact faulted
- Dolerite dyke
- Iso-ash with value
- Horizon line with value
- Partial jhama line
- Fault with throw and heave zone
- Pit
- Sector boundary with number
- Block boundary
- AM-4 — Borehole not drilled upto seam
- Boundary for Proved / Indicated reserves
- Exploration block boundary

NOTE:

1) For area having thickness more than 10·00 m towards north average of isochore and borehole AM-11, 5, 16 & 17 values considered. T= 10·82 m.

2) For area having thickness more than 12·00 m around borehole AM-7A and 18 average of isochore and borehole AM-7A & 18 values considered. T= 12·66 m.

3) For Sector ▬, XIIIB & XIII BR average of borehole AM-9A, 12 and 16 value considered. T= 5·64 m. Sp. gr. 1·5

* As per colliery nomenclature XIII Seam

MINERAL EXPLORATION CORPORATION LIMITED

SEAM FOLIO PLAN OF XIV* SEAM (In-band)
AMLABAD BLOCK
JHARIA COAL FIELD, BIHAR

R.F. - 1:4,000

PREPARED BY: DEEP PRAKASH, Geologist; V.A. TOTHE, Sr. Geologist — TRACED BY: C.Y. MAHINDRE, S/D man

M.E.C.L — C.M.P.D.I.L

M.E.C.D. No. 375/79 — PLATE No. IX-L

INDEX

AM-12 R.L. 140·42	Borehole with R.L. in metres
NCJM-5 R.L. 156·90	Borehole drilled by N.C.D.C.
T.	Thickness in metres
A.	Ash %
Gr.	Grade
4·00 / 4·00	Isochore with value
24·00 / 24·00	Iso-ash with value
N (+) 200	Horizon line with value
F6 45m F6	Fault with throw and heave zone
Pit-1	Pit
(+) 1300 / I	Sector boundary with number
	Block boundary
P / I	Boundary for Proved / Indicated reserves
	Not considered for reserve
P F	Seam Part Faulted
AM-4	Borehole not drilled up to the Seam.
	Exploration Block Boundary

Note:-

(1) For area having thickness less than 2m in north average of AM-16 value considered T-1·83 m. Iso-chore and borehole

(2) For area having thickness more than 4m, average of 4m. Iso-chore and borehole AM-1, 2 and 18 values considered. T=4·43 m.

(3) For Sector Nos. XXB & XXBR average of AM-12 and AM-16 value considered T-2·13 m. Sp.gr 1·50.

MINERAL EXPLORATION CORPORATION LIMITED

SEAM FOLIO PLAN OF XIII SEAM (In-band)
AMLABAD BLOCK
JHARIA COAL FIELD, BIHAR

R.F. 1:4,000

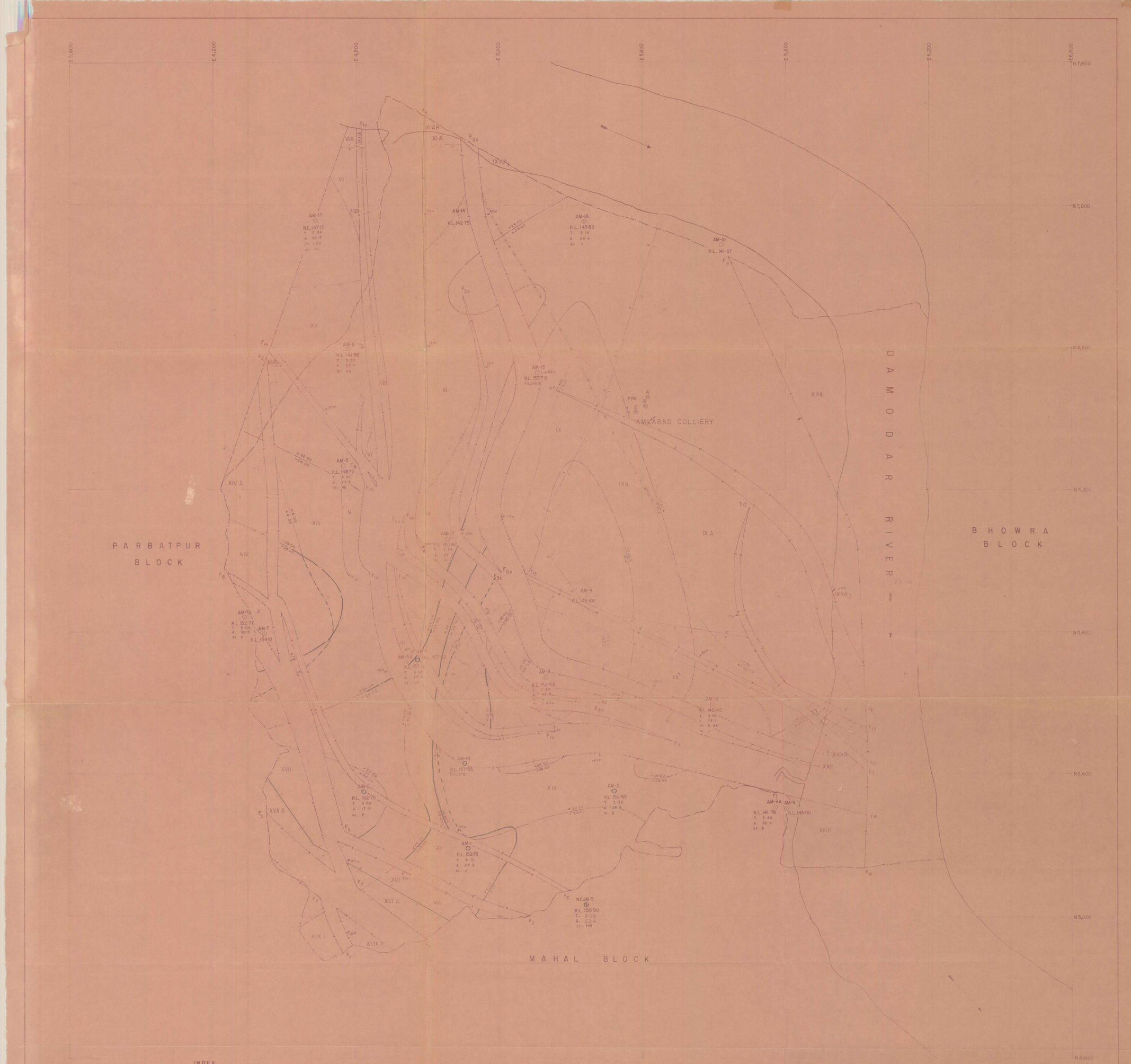
PREPARED BY:- DEEP PRAKASH, Geologist — V.A. TOTRE, Geologist (Sr.)

TRACED BY:- N.L. GHEYI, S/Diman

M.E.C.L. — C.M.P.D.I.L.

M.E.C.D.O. No. 376/79

PLATE No. IX M



INDEX

AM-12 R.L.140.42	Borehole with R.L. in metres
NCJM-5 R.L.156.90	Borehole drilled by N.C.D.C.
T.	Thickness in metres
A.	Ash %
Jh.	Jhama
Gr.	Grade
<4.00 / >4.00	Isochore with value
>24.00 / <24.00	Iso-ash with value
	Horizon line with value
	Fault with throw and heave zone
Pit-1	Pit
	Sector boundary with number
	Block boundary
P / I	Boundary for Proved / Indicated reserves
AM-4 R.L.145.49	Borehole not drilled up to the Seam
JC	Partial Jhama
Faulted	Seam faulted
	Exploration Block boundary

Note :-

(1) For area having thickness greater than 4m average of isochore and boreholes AM-3,9A,6,11,15,16 and 17 values Considered T. 6.09

(2) For area bounded by 2m isochore around borehole AM-8 average of isochore & borehole value Considered T. 1.65m

(3) For area west of 4m iso-chore around AM-7A average of isochore & borehole value Considered T. 3.50m

(4) For Sector [illegible], XXIIR & XXIIBR average & borehole AM-9A,2 & 10 value Considered to 1.75m Sp. gr. 1.50

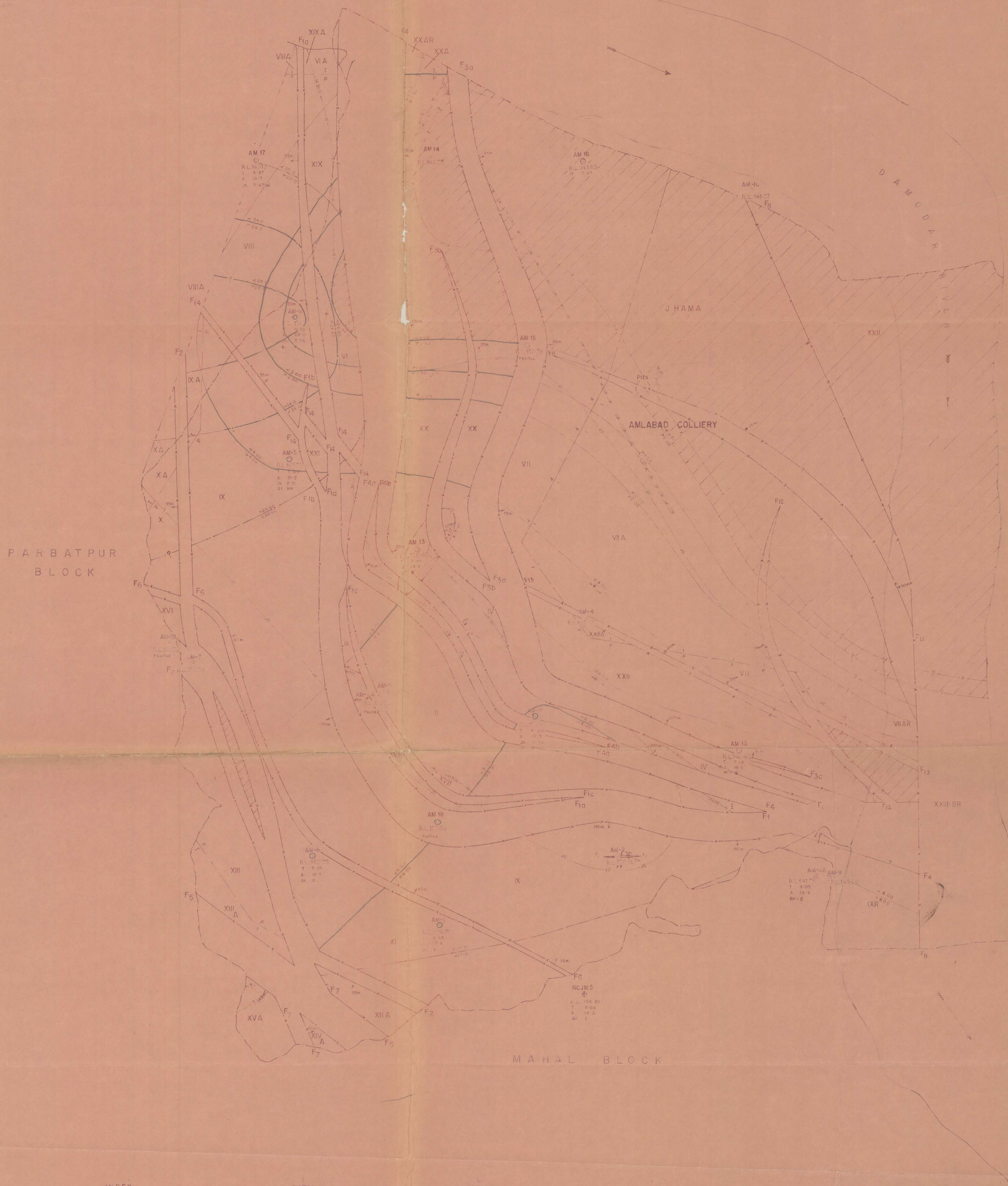
MINERAL EXPLORATION CORPORATION LIMITED

SEAM FOLIO PLAN OF XI/XII SEAM (In-band)
AMLABAD BLOCK
JHARIA COAL FIELD, BIHAR
R.F. - 1:4,000

PREPARED BY. [illegible] TRACED BY. C.Y.MAHINDRE S/D'man

M.E.C.L. C.M.P.D.I.L.

M.E.C.D.G. No. S/1/79 PLATE No. IX N



INDEX

AM-12 / R.L. 1410·42	Borehole with R.L. in metres
NCJM-5 / R.L. 1356·90	Borehole drilled by N.C.D.C.
T	Thickness in metres
A	Ash %
Jh	Jhama
Gr.	Grade
<6·00 / >6·00	Iso-chore with value
>17·00 / <17·00	Iso-ash with value
	Area not considered for reserve
P.F.	Seam part faulted
H—(-200)—	Horizon line with value
—J—	Full jhama line
—JC—	Partial jhama line
F6 45m F6	Fault with throw and heave zone
Pit-1	Pit
H—(1300) I	Sector boundary with number
	Block boundary
AM-4	Borehole not drilled upto the seam
P / I	Boundary for Proved / Indicated reserves
	Exploration Block boundary
	Area not considered for reserved

NOTE

1) For area south of 8·00m isochore, in southern part, average of AM-1, 8, 9A, NCJM-5 and isochore values considered. T= 8·37m

2) For area north of 4·00m isochore, in northen part, average of AM-17 and isochore value considered. T= 4·43m

3) For Sector XXIIB, and XXIII BR average of borehole AM-9A and AM-12 value considered. T= 7·61m, Sp. gr 1·5

4) For area, north of Jhama line and east of Fault F_8 the reserves have not been calculated for Jhama & Coal

MINERAL EXPLORATION CORPORATION LIMITED

SEAM FOLIO PLAN OF X SEAM (In-band)

AMLABAD BLOCK

JHARIA COAL FIELD, BIHAR

R.F. 1:4,000

PREPARED BY DEEP PRAKASH, Geologist
V.A. TOTRE, Sr. Geologist

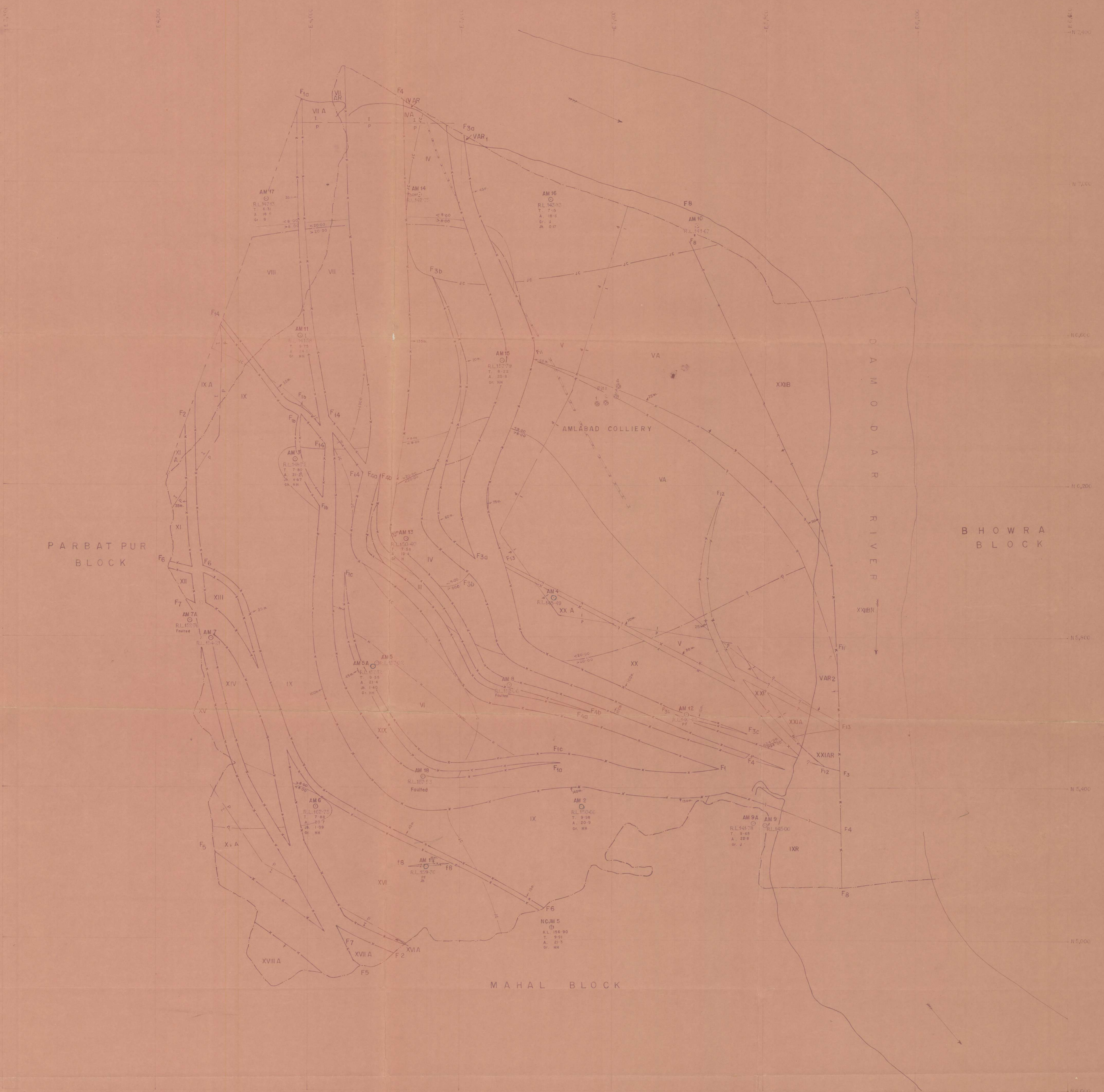
TRACED BY C.Y. MAHINDRE S/Draughtsman

V.A. Thotre
M.E.C.L.

V. P. Singh
C.M.P.D.I.L.

M.E.C.D.C. No. 3/8/73

PLATE No. IX O



INDEX

AM-12 R.L. 140·42	Borehole with R.L. in metres
NCJM-5 R.L. 156·90	Borehole drilled by N.C.D.C.
T	Thickness in metres
A.	Ash %
Jh.	Jhama
Gr.	Grade
PF	Part Faulted
>8·00 <8·00	Iso-chore with value
<20·00 >20·00	Iso-ash with value
	Exploration block boundary
—H—(-)300—	Horizon line with value
—JC—	Partial jhama line
F6 45m. F6	Fault with throw and heave zone
Pit-1	Pit
H-(-)300 I	Sector boundary with number
	Block boundary
AM-4	Borehole not drilled up to the seam
P / I	Boundary for Proved / Indicated reserves
PF	Seam part faulted

NOTE:

1) For area having thickness more than 8·00, average of isochore and borehole AM-2, 5A, 9A, 11, 15 and NCJM-5 values considered. T=9·29 m

2) For area having thickness less than 8·00, average of isochore and borehole AM-3, 13, 16 and 17 value considered T=7·37 m

3) For area around AM-6 within 8·00 isochore, average of isochore and AM-6 value considered. T= 7·94 m

4) For Sectors [redacted], XXIIB and XXIIBR average of AM-9A and AM-16 values considered. T= 8·40 m Sp. gr. 1·50 m

MINERAL EXPLORATION CORPORATION LIMITED

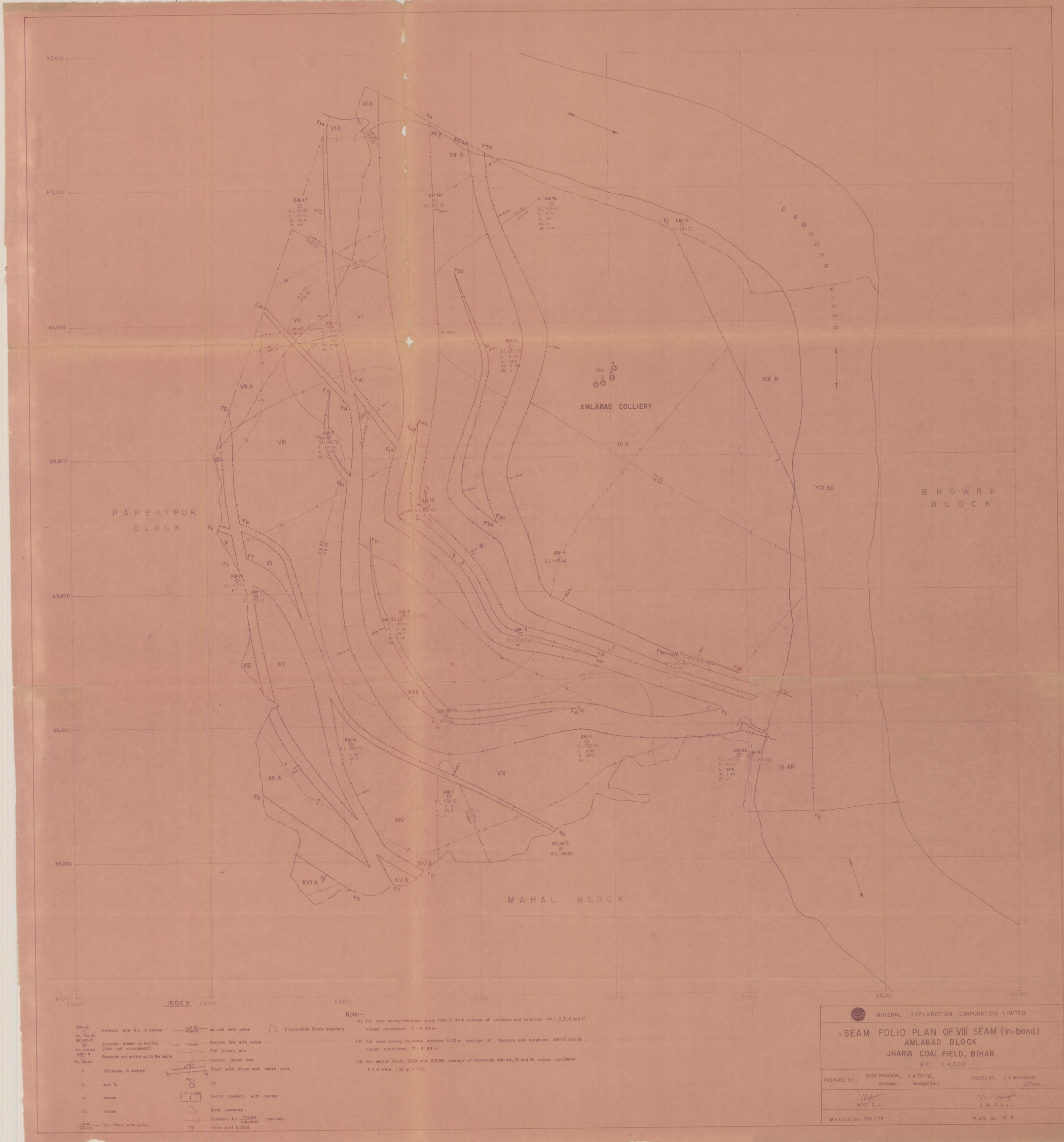
SEAM FOLIO PLAN OF IX SEAM (In-band)
AMLABAD BLOCK
JHARIA COAL FIELD, BIHAR

R.F. 1:4,000

PREPARED BY_ DEEP PRAKASH, Geologist V.A. TOTRE, Geologist (Sr.) TRACED BY_ C. Y. MAHINDRE S/D'man

M.E.C.L. C.M.P.D.I.L.

M.E.C.D.O. No. 379/79 PLATE No. IX - P



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AM-12 ○ R.L. 140·42 — Borehole with R.L. in metres

NCJM-5 ⊕ R.L. 156·90 — Borehole drilled by N.C.D.C. (Data not considered)

AM-4 ○ R.L. 145·49 — Borehole not drilled up to the seam

T. — Thickness in metres

A. — Ash %

Jh. — Jhama

Gr. — Grade

≥28·00 / <28·00 — Iso-chore with value

≥28·00 / <28·00 — Iso-ash with value

+1300 — Horizon line with value

Full Jhama line

Partial Jhama line

F6 — Fault with throw and heave zone

Pit-1 — Pit

I — Sector boundary with number

Block boundary

Boundary for Proved / Indicated reserves

PF — Seam part faulted

Exploration Block boundary

Note:-

(1) For area having thickness more than 8·00 m. average of Isochore and boreholes AM-1,2,3,6 and 17 values considered. T. = 8·44 m.

(2) For area having thickness lessthan 6·00 m. average of Isochore and boreholes AM-15 and 16 values considered. T. = 5·83 m.

(3) For sector IV AR, XIX B and XIX BR average of boreholes AM-9A, 12 and 16 values considered. T. = 6·64 m., Sp. gr. = 1·50

MINERAL EXPLORATION CORPORATION LIMITED

SEAM FOLIO PLAN OF VIII SEAM (In-band)

AMLABAD BLOCK

JHARIA COAL FIELD, BIHAR

R.F. 1:4,000

PREPARED BY — DEEP PRAKASH, Geologist; V.A. TOTRE, Geologist (Sr.)

TRACED BY — C.Y. MAHINDRE S/Oman

M.E.C.L. — C.M.P.D.I.L.

M.E.C.D.O. No. 381/79

PLATE No. IX R

SECTOR-A

SECTOR-B

AMLABAD COLLIERY

PARBATPUR BLOCK

BHOWRA BLOCK

MAHAL BLOCK

DAMODAR RIVER

INDEX

AM-12 R.L.140·42 — Borehole with R.L. in metres

NCJM-5 R.L.156·90 — Borehole drilled by N.C.D.C. (Data not considered)

AM-4 R.L.148·49 — Borehole not drilled up to the seam

T. — Thickness in metres

A. — Ash %

Jh. — Jhama

Gr. — Grade

+8·00 / -8·00 — Iso-chore with value

+8·00 / 428·00 — No-ash with value

+1300 — Horizon line with value

Full Jhama line

Partial Jhama line

F6 — Fault with throw and heave zone

Pit-1 — Pit

I — Sector boundary with number

Block boundary

Boundary for Proved / Indicated reserves

PF — Seam part faulted

Exploration Block boundary

Note:-

(1) For area having thickness more than 8·00 m. average of isochore and boreholes AM-1,2,3,6 and 17 values considered. T = 8·44 m.

(2) For area having thickness lessthan 6·00 m. average of isochore and boreholes AM-15 and 16 values considered. T = 5·83 m.

(3) For sector IV AR, XIX B and XIX BR average of boreholes AM-9A, 12 and 16 values considered. T = 6·64 m., Sp. gr. = 1·50

MINERAL EXPLORATION CORPORATION LIMITED

SEAM FOLIO PLAN OF VIII SEAM (In-band)

AMLABAD BLOCK

JHARIA COAL FIELD, BIHAR

R.F. 1:4,000

PREPARED BY — DEEP PRAKASH, Geologist; V.A. TOTRE, Geologist (Sr.)

TRACED BY — C.Y. MAHINDRE, S/Draftsman

M.E.C.

C.M.P.D.I.L.

M.E.C.D.O. No. 381/79

PLATE No. IX R