

MINE PROFILE

1.0 GENERAL MINE INFORMATION

1.1 MINE / PROJECT

Loyabad Colliery is located in the central part of Jharia Coalfield. The colliery is under administrative control of Sijua area of BCCL.

The leasehold area of the mine is 499.56 Ha. The coal production from the mine is suspended since 1st April 2009 due to introduction of loader less concept in all the mines of BCCL from April '2009. Prior to suspension of production, Board & Pillar development was going on in VIII/VIIIA seam and a production of about 150 TPD was being obtained. The coal loading at face was effected by miner loaders, loading coal onto coal tubs. The seam gradient at the place of work in VIII/VIIIA seams was steep (about 1 in 4) and introduction of SDLs for coal loading in such a gradient could have posed operational difficulties.

The mine consists of three sections namely North Loyabad, Mid Loyabad and South Loyabad. The North Loyabad section extends from northern boundary of the Mine to the 600' fault on the south. The Mid Loyabad section extends from 600' fault on the north to Main JC Line (Adra-Gomoh Railway Line of SE Railway) on the south and South Loyabad section extends from main JC Line on the north to the southern boundary of the mine on the south.

Within the project boundary in South Loyabad section, upper coal seams (viz XVIA and XVI) have been worked through inclines. These inclines are no longer used for production and due to safety reasons, the incline mouths are sealed. XV seam has been worked through pits of Mid Loyabad. These Pits are no longer used for production and due to safety reasons, the Pit mouths are sealed/filled. XIV, XIII, XII & XI seams in South Loyabad Sections are partly worked on the rise side and mostly virgin on dip side. These seams are worked through 9 Pit, 10 Pit and 11 Pit of Mid Loyabad. These Pits are sealed at surface through concrete works.

Existing Workings of XIV, XIII, XII & XI seams of South Loyabad Section are inaccessible due to collapse of drift from XV seam to XIV seam near 10 Pit and large scale collapse of galleries in different seams.

Production of last 5 years prior to suspension of production on 01.04.2009

YEAR	PRODUCTION (in te)
2004-05	61903
2005-06	67196
2006-07	58824
2007-08	52009
2008-09	56405

1.2 MINE LOCATION

Loyabad Colliery is situated in Dhanbad district of Jharkhand. The colliery is 12 Km from Dhanbad and is connected by NH 18 road. The nearest railway station is Karkend Railway Station on the Bhojudih Mohuda Loop line in Adra-Gomoh Section of South Eastern Railway. The area falls under Toposheet No. F45C5 (1:50000) of Survey of India.

Location

Latitude : 23⁰45'25" N to 23⁰47'18" N

Longitude : 86⁰19'55" E to 86⁰21'39" E

1.3 ACCESSIBILITY

Nearest Airport : Ranchi (150 Km.)

Nearest Railway Station : Karkend (2 Km), Dhanbad (10 Km)

Approach by Road : From Dhanbad via National Highway No. 18(32).

1.4 COMMUNICATION

The area is well connected both by rail and road. The colliery/block is connected with Dhanbad via National Highway 18. Dhanbad Railway Station on the Grand Chord line of the East Central Railway is well connected with a number of major cities. Karkend Railway Station on the Bhojudih Mohuda Loop line in Adra-Gomoh Section of South Eastern Railway is about 2 Kms. southwest of Loyabad Colliery.

1.5 MINING BLOCK

The project area forms part of Pootkee –Balliary Block of Jharia coal field.

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

The mine is part of Cluster V group of mines of BCCL and the production capacity is shown as 0 (NIL) within leasehold area. EC for Cluster- V group of mines has been granted by MOEF, Govt. of India for capacity of 6.311MTPA (peak) and the current status of Environmental Clearance (EC) for the Loyabad Colliery is mentioned below:

S. No	Name	Leasehold Area (Ha)	Production Capacity(N) (MTPA)	Production Capacity(P) (MTPA)	Mine life (Yrs)
1	Loyabad Colliery UG section(Closed for coal production)	499.56	0	0	-

1.8 LAND ACQUISITION/ STATUS

The existing leasehold boundary of Loyabad Colliery has been shown on the Surface Plan. The area of land under the heads of Private Land, Tenancy Land, Government Land, Forest Land and BCCL Land within the Colliery lease hold area has been considered as per the records from the mine/BCCL.

The existing land status under the different heads in the lease hold area of the mine is as under:

Sl. No	Particulars	Total (Acre)
1	BCCL Land	828.9935
2	Tenancy Land	317.5024
3	Railway Land	32.91
4	Government Land	27.67
5	Agreement Land	26.83
	Total	1233.9059

1.9 CLIMATE

Jharia coalfield lies in the sub-humid belt of Jharkhand and the climate is extreme in this region. The average temperature during the summer (April to Middle of June) rises upto 40°C while during winter (Late November to February) the mercury often drops below 10°C. The eastern monsoon usually breaks out during the second fortnight of June. The average annual rainfall in the area is about 140 cm with maximum precipitation during June to October.

1.10 TOPOGRAPHY AND DRAINAGE

The ground is gently undulating with westerly slope towards Sendra Nala which flows southerly along the western boundary of the colliery leasehold. The lowest topographic RL of 178.57m above MSL is found near Borehole LB-06 in the western part of the colliery whereas highest surface RL of 204.03m is found in south eastern corner near borehole LB-16. Sendra Jore (Nala) and Ekka Jore flowing south- westerly in the central part of the colliery provide main drainage. A number of small seasonal nalas and streamlets in the block also drain in these two nalas. These nalas ultimately joins Damodar River which is flowing in west to east direction a few kilometres south and south-west of the block. The Damodar River which traverses along the entire length of the Jharia Coalfield provides the main drainage channel in this region.

2.1 SCOPE AND LIMITATION

1. The scope of the present report is to assess the potentiality of seams XVI Top to IV seams for their extraction by underground method. Seams III and below seams have been intersected in only 3 boreholes and resource of these seams fall in indicated category.
2. The report is mainly based on the data provided in Geological Report on Coal Exploration, Kumari Block, prepared by MECL in 1986 “Geological Report on Coal Exploration”, Pootkee-Bulliary Block, Jharia Coalfield, prepared by MECL in 1988.

3. Exploratory boreholes data of Tata property is unavailable. The Geological description provided in the report is restricted to data available in Loyabad property only.
4. Base plan have been prepared by combining data available from Geological Report on Coal Exploration, Kumari opencast block in Jharia grid and Geological Report on Coal Exploration, Pootkee-Bulliard Block in Jharia grid.
5. The lay and deposition of coal seams is based primarily on the data available in the “Geological report on Exploration for coal in Kumari Open Cast Block” Jharia coalfield, Dhanbad (September, 1986, prepared by MECL), Comprehensive Geological Report on Coal Exploration Pootkee - Bulliard Block and updated mine data provided by colliery authorities. The seam nomenclature is primary based as per Geological report of Kumari Block, and seams from Pootkee Bulliard are correlated with that of Kumari Block.
6. The updated data / mine plans supplied by the colliery authorities have been extensively used for preparing this report.
7. In absence of co-ordinated survey of underground workings with reference to surface features / boreholes some approximation exists in the super imposition of these features on the plan of this report.
8. Faults having less than 5 m throw have not been interpreted unless there is positive evidence of their occurrence in the mine working / borehole data. Possibility of existence of such fault in the area of assessment cannot be ruled out.

2.2 GEOLOGICAL BOUNDARY OF THE MINE / PROJECT

Geological boundary of the mine is as follows:

North: Sendra Bansjora Colliery.

South: Moonidih Colliery.

East: Pootkee and Gopalichak Colliery.

West: Bhelatand Colliery (Tata property) and Kankanee Colliery

2.3 DRILLING DETAILS

- (a) Total Assessment Area - 4.89 Sq. Km. (As per plan)
- (b) Total No. of boreholes - 20
- (c) Total Meterage drilled - 9597.56 m
- (d) Borehole density - 4 BHs /Km².

The borehole density within the project area is about 4 BHs. /Sq.Km (Applicable to Loyabad Mine only)

2.4 GEOLOGY OF THE COAL FIELD

Jharia Coalfield represents one among the several “outlier” of Permo Carboniferous sediments in an Archean Country is one of the major coalfields of the Damodar Valley Coal belt occurring roughly in an E-W alignment.

Jharia Coalfield (JCF), in which the Loyabad-Sijua mine is located, is roughly sickle shaped syncline covering an area of 453 Sq.Km. and the formations occur in the form of basin with its axis extending broadly in the East-West direction and plunging towards west. The southern flank of the coalfield is truncated by a major fault known as boundary fault. The non-coal bearing Talchir formation have an exposure roughly all along the northern, north-western and western boundaries of the basin.

Overlying the Talchir formation are the Barakar formation, which are exposed in the northern, north-eastern half as well as south eastern part of the basin. Barakar is successively overlain by Barren Measures, which are mostly exposed in the central part of the coalfield and devoid of coal seams. The Barren measures is overlain by coal bearing Raniganj formation. The Gondwana rocks are intruded by the post-Gondwana Intrusives (Mica Peridotite and Dolerite). It may be mentioned here that in this coalfield, the Barakar formation is more extensive than the Raniganj formation, which has a limited development.

The rocks of Jharia Coalfield can be broadly grouped into two prominent units viz. Basement Archean Complex and the permo carboniferous sediments comprising the lower member of the Gondwana super group. The contact between the two is marked by a well-established unconformity.

The geological succession of the strata in Jharia Coalfield is given in Table-1.

TABLE – 1
GEOLOGICAL SUCCESSION OF JHARIA COALFIELD

The generalised stratigraphic sequence of rock formation of Jharia Coalfield is as follows:

RECENT / SUB RECENT		SOIL / ALLUVIUM
----- UNCONFORMITY -----		
POST GONDWANA		BASIC INTRUSIVES (Mica Peridotite, Dolerite etc.)
----- UNCONFORMITY -----		
LOWER GONDWANA GROUP	DAMUDA SUB GROUP	RANIGANJ FORMATION BARREN MEASURE FORMATION BARAKAR FORMATION TALCHIR FORMATION
	TALCHIR SUB GROUP	
----- UNCONFORMITY -----		
PRECAMBRIAN	ARCHEANS	

2.5 GEOLOGY OF THE MINING BLOCK

(Coal bearing formations and their general behaviours)

The mine area is occupied by Barakar formation. The area is mostly covered by thin alluvium and sandy soil and good rock exposures are rare. The complete sequence of coal seams of Barakar formation from I to XVIII-B along with local developments are present here. Repetition of incrop has been observed in Loyabad due to faulting. The Barakar formation is extensively developed in the entire area. The Barakars are broadly represented by Pebbly, Coarse to fine grained sandstone, grey shale, carbonaceous shale and coal seams.

2.5.1 DIP AND STRIKE

The general strike of the formation is NW-SE.

The dip direction of the strata is generally SW. The dip of the strata is generally varies from 8° to 11° in larger part of the area (Gradient 1 in 5 to 1 in 7). However, the dip is gentler and the seam has flattened toward south and south east where it is about 4°.

2.5.2 Nomenclature of coal seams with the adjoining block

TABLE – 2

Standard Nomenclature As per this Report	Nomenclature as per GR for Kumari Block (MECL, 1986)	Nomenclature as per GR for Pootkee- Bulliary Block (MECL, 1990)
XVI Top	XVI Top	XVI Top
XVI Bot	XVI Bot	XVI Bot
XVI	XVI	XVI
XV	XV	XV COM
XIV	XIV	XIV
XIII	XIII	XIII
XII	XII	XII
XI	XI	XI
XA	XA	XA
X	X	X
IX	IX	IX
VIIIC	VIIIC	L-3
VIIIA	VIIIA	VIIIC
VIII	VIII	VIII (A+B)
VII	VII	VIII
V/VI	V/VI	VII
IV Top	IV Top	VI
IV Bot	IV Bot	V
IV	IV	V/VI
III	III	III
II Top	II Top	-
II Mid	II Mid	II Bot
II Bot	II Bot	I Top
I Top	I Top	I Bot
I Mid	I Mid	-
I Bot	I Bot	-

2.5.3 Standard Nomenclature of coal seams Vis-À-Vis Colliery Nomenclature

TABLE – 3

Standard Nomenclature As per this Report (Kumari Block MECL, 1986)	Nomenclature as per Loyabad Colliery	Nomenclature as per Sendra-Banasjora Colliery
XVI Top	XVI-A	
XVI Bot	XVI	
XVI		
XV	XV	XV
XIV	XIV	XIV
XIII	XIII	XIII
XII	XII	XII
XI	XI	XI

XA	-	-
X	X	X
IX	-	-
VIII C	-	-
VIII A		IX Spl.
VIII		IX
VII		VIII
V/VI		VII
IV Top		
IV Bot		VI
IV		VI
III		V
II Top		
II Mid		
II Bot		
I Top		
I Mid		
I Bot		

2.5.4 COAL SEAM(S)

As per colliery authority, seams above XVI Top are almost exhausted, scope of the report is confined to seams XVI Top to IV Bottom, hence description of these seams is given below:

XVI Top Seam:

Seam XVI exists as split seams XVI Top and XVI Bottom within the colliery except near boreholes LB-10 and LB-18. Seam XVI Top appears to be free from pyrolitisation. The seam has been fully intersected in 7 boreholes and it shows thickness variation from 0.69m to 2.60 m and its ash varies from 8.8 to 31.5% (S-I to W-IV) and UVM varies from 25.43 to 31.24%.

The roof of seam XVI Top is characterized by shale where s floor of the seam is arenaceous Shale and at places sandstone and coal. The seam is virgin within the colliery.

XVI Bottom Seam

This seam underlies seam XVI Top at a maximum parting of 14 m. Seam XVI Bottom appears to be free from pyrolitisation. The seam has been fully intersected in 6 boreholes and it shows thickness variation from 1.50 m to 2.42m and its ash varies from 16.5 to 29.7% (S-II to W-IV) and UVM varies from 26.89to 29.23%.

The roof of seam XVI Bottom is characterized by shale whereas floor of the seam is intercalation of shale and sandstone. The seam has been heavily worked and goaved within the colliery limit.

XV Seam

This seam underlies seam XV A at a parting of 14 to 37 m. Seam XV appears to be free from pyrolitisation. The seam has been fully intersected in all 11 boreholes and it shows thickness variation from 1.90 m to 6.37 m and its ash varies from 21.2 to 30.8% (W-II to W-IV) and UVM varies from 24.2 to 26.35%.

The roof of seam XV is characterized by carbonaceous shale whereas floor of the seam is shale and intercalation of shale and sandstone. The seam has been worked in part area and virgin in southern portion. The seam has been extensively worked and goaved within the colliery limit in two sections.

XIV Seam:

This seam underlies seam XV at a parting of 35 to 76 m. This seam is severely affected by pyrolitisation. The seam has been fully intersected in 17 boreholes and it shows thickness variation from 6.38 m to 9.40 m, including Jhama + MP. The seam is partly to fully pyrolitized in 7 boreholes. The inband thickness of the seam, in the area, where it is not affected by pyrolitisation varies from 3.05 to 8.95 m and its ash varies from 17.1 to 21.5% (S-II to W-II) and UVM varies from 23.7 to 27.2%.

The roof of seam XIV is characterized by Carbonaceous shale and at places it is intercalation of shale and sandstone, whereas floor of the seam is Carbonaceous shale or Shale and at places sandy shale, intercalation of shale and sandstone. The seam has been worked except southern part of the colliery.

XIII Seam:

This seam underlies seam XIV at a parting of 1 to 11 m. This seam is also severely affected by pyrolitisation. The seam has been fully intersected in 16 boreholes and it show thickness variation from 4.45 m to 6.75 m, including Jhama & MP. The seam is partly to fully pyrolitized in 7 boreholes. The inband thickness of the seam where it is not affected by pyrolitisation varies from 4.45 m to 6.75 m and its inband ash varies from 18.54 to 28.9% (W-I to W-IV), whereas UVM varies from 22.1 to 27.7.

The roof of the seam is mostly Carbonaceous shale followed by Shale, Sandy shale and intercalation of shale and sandstone while floor of the seam is mostly Shale followed by Carbonaceous shale and intercalation of shale and sandstone. The seam has been worked except southern part of the colliery where it is lying virgin.

XII Seam:

This seam underlies seam XIII at a parting of 5 to 25 m. This seam is also affected by pyrolitisation. The full seam has been intersected in 14 no. of boreholes and its thickness varies from 1.40 to 4.50 including Jhama + MP. The seam is partly to fully pyrolitized in 2 boreholes. The inband thickness of the seam in unpyrolitised portion varies from 0.97 m to 4.29 m and inband ash varies from 22 to 27.2 (W-II to W-III) and UVM varies from 20.84 to 24.07%.

The roof and floor of the seam is generally Carbonaceous shale / Shale followed by sandy shale and intercalation of shale and sandstone. The seam has been worked and goaved except southern part of the colliery where it is lying virgin.

XI Seam:

This seam underlies seam XII at a parting of about 3 to 13 m. This seam appears to be not affected by pyrolitisation. The seam has been fully intersected in 16 no. of borehole. The inband thickness of the seam varies from 2.00 m to 5.37 m and its inband ash% varies from 21.6% to 29.4% and UVM varies from 19.1 to 24.5.

The roof of the seam is generally Shale and Carbonaceous shale and occasionally intercalation of shale and sandstone while the floor of the seam is Shale/ Carbonaceous shale and at places sandy shale and intercalation of shale and sandstone. The seam has been worked and goaved except southern part of the colliery where it is lying virgin.

X Seam:

This seam underlies seam XI at a parting of about 20 to 68 m. This seam also appears to be free from pyrolitisation. The seam has been fully intersected in 16 no. of boreholes. The inband thickness of the seam is 3.37 to 8.84 m. The seam is considered both coking and non-coking within the colliery leasehold. and its inband ash% in coking part varies from 23.6 to 33.9 (W-II to W-IV) and UVM varies from 20.8 to 23.2%. GCV in non-coking part ranges from G6 To G7.

The seam has been worked only in a small patch in north western part of the colliery. Roof of the seam is generally gritty sandstone along with fine grained to medium grained sandstone, while the floor of the seam is generally carbonaceous shale / shale and sandy shale at places.

VIII C Seam:

This seam underlies seam X at a parting of about 8 to 20 m. This seam is virgin in complete assessed area. Full seam intersection has been done in 14 no. of boreholes. There is no pyrolitisation of the seam in any borehole of the assessment area. The inband thickness of the seam varies from 0.30 to 1.75 m. The seam is considered both coking and non-coking within the colliery leasehold. Ash% in coking part varies from 31.4% to 39.1% and UVM is about 23%. In non-coking category (UVM < 20%) and its grade is G5 to G8.

The roof the seam is carbonaceous shale / shale and at places it is intercalation of shale and sandstone while the floor is constituted of intercalation of shale and sandstone and sandy shale.

VIII A Seam:

This seam underlies seam VIII C at a parting of about 30 to 70 m. This seam also appears to be free from pyrolitisation. The seam has been fully intersected in 14 no. of boreholes. The inband thickness of the seam is 1.55 to 3.43 m. The seam is considered non-coking within the colliery leasehold its grade ranges from G3 to G7. This seam is virgin in complete assessed area. Roof and floor of the seam is entirely made up of shale and arenaceous shale.

VIII Seam:

This seam underlies seam VIII A at a parting of about 1 to 10 m. This seam also appears to be free from pyrolitisation except in one borehole (LB-4). The seam has been fully intersected in 14 no. of boreholes. The inband thickness of the seam in unpyrolitized part is 1.34 to 5.45 m. The seam is considered non-coking within the colliery leasehold its grade ranges from G5 to G10.

This seam is worked in patches in northern part of the colliery. Roof is composed of sandstone and its variables whereas floor of the seam is made up of shale.

VII Seam:

This seam underlies seam VIII at a parting of about 8 to 24 m. This seam also appears to be free from pyrolytisation except in one borehole (LB-16). The seam has been fully intersected in 14 no. of boreholes. The inband thickness of the seam in unpyrolytized part is 2.62 to 7.25 m. The seam is considered mostly non-coking within the colliery leasehold its grade ranges from G6 TO G14. In small part around borehole KL-3 the seam is considered coking with ash percentage of 33.4% (W-IV) This seam is virgin in complete assessed area. Roof and floor are composed of carbonaceous shale and shale.

V/VI Seam:

This seam underlies seam VII at a parting of about 8 to 38 m. This seam appears to be free from pyrolytisation. The seam has been fully intersected in 13 no. of boreholes. The inband thickness of the seam is 5.00 to 11.97 m. The seam is considered non-coking within the colliery leasehold its grade ranges from G6 to G8. This seam is virgin in complete assessed area. Roof of the seam is made up of carbonaceous shale and floor is composed of shale.

IV Top Seam:

This seam underlies seam V/VI at a parting of about 1 to 26 m. This seam appears to be free from pyrolytisation. The seam has been fully intersected in 9 no. of boreholes. In addition to that the seam exists as Combined seam IV in 04 number of boreholes. The inband thickness of the seam is 1.52 to 8.30 m. The seam is considered non-coking within the colliery leasehold its grade ranges from G6 to G11.

This seam is virgin in complete assessed area. Roof of the seam is made up of carbonaceous shale and floor is composed of Carbonaceous shale or at places shale and sandstone.

IV Bottom Seam:

This split seam underlies seam IV top at a maximum parting of about 4 m. This seam appears to be free from pyrolytisation. The seam has been fully intersected in 8 no. of boreholes. The inband thickness of the seam is 2.50to 7.90 m. The seam is considered non-coking within the colliery leasehold its grade ranges from G5 to G9.

This seam is virgin in complete assessed area. Roof of the seam is made up of carbonaceous shale and intercalation of shale and sandstone whereas floor is composed of medium to gritty sandstone.

The generalised sequence of coal seams and intervening parting is given below (For Loyabad Colliery area only).

TABLE - 4

Seams	Thickness (m)	
	Min.	Max.
XVI TOP	0.69	2.60
P	< 1	14
XVI BOT	0.50	3.00
XVI COMB.	1.73	4.45
P	56	68
XVA	0.35	1.2
P	14	37
XV TOP	2.4	3.24
P	<1	7
XV BOT.	1.95	4.07
XV COMB.	1.35	9.15
P	35	76
XIV	6.38	9.40
P	1	11
XIII	1.7	7.15
P	5	25
XII	1.40	4.50
P	3	13
XI	0.6	6.15
P	17	40
XA	0.38	2.06
P	2	32
X	3.37	8.84
P	1	4
IX	0.15	1.56
P	7	14
VIII C	0.30	1.75
P	26	39
VIII B	0.5	0.95
P	4	28
VIII A	0.54	3.43
P	1	10
VIII	2	6.35
P	8	24
VII	2.62	7.05
P	8	38
V/VI	2.12	14.27
P	1	26

Seams	Thickness (m)	
	Min.	Max.
IV TOP	3.38	10.52
P	<1	4
IV BOT	2.5	12.86
P	30	34
III	4.22	7.12
P	19	31
II TOP	1.99	4.48
P	11	12
II MID	1.39	6.53
P	1	6
II BOT	1.36	2.85
P	12	13
I MID	2.41	2.71
P	-	2
I BOT	-	0.62

TABLE – 5

SEQUENCE AND BRIEF DESCRIPTION OF COAL SEAMS IN THE AREA

Seams	In-band Thickness Range(m) Excluding Jhama	Grade Range	Average Grade	B.H. Inter-section	Remarks (if any)
XVI TOP	0.69-3.00	S-I to W-IV	W-III	8	
XVI BOT	1.50-2.42	S-II to W-IV	W-II	6	
XVI COMB	-	-		-	
XV A	0.58	S-I		1	
XV TOP	-	-		-	
XV BOT	-	-		-	
XV COMB	1.90-6.37	W-II to W-IV	W-III	11	
XIV	3.05-8.95	S-II to W-II	W-I	17	Seam partially to fully pyrolitised in 7 boreholes.
XIII	4.45-6.75	W-I to W-IV	W-II	16	Seam partially to fully pyrolitised in 7 boreholes.
XII	0.97-4.29	W-I to W-III	W-II	14	Seam partially to fully pyrolitised in 2

					boreholes.
XI	2.00-5.37	W-I to W-IV	W-III	16	
X A	0.38-2.06	W-IV to W-V		9	
X	3.37-8.84	W-II to W-IV/ G6-G7	W-IV/G5	16	
IX	0.40-1.56	W-IV to W-V/ G6-G9		9	
VIII C	0.3-1.75	W-IV to W-V/ G5-G8	W-IV/G6	14	
VIII B	-	-		-	
VIII A	1.55-3.43	G3 to G7	G6	14	
VIII	1.16-5.45	G5 to G10	G6	14	Seam partially pyrolitised in 1 borehole.
VII	2.18-7.25	W-IV/ G6-G14	G10	14	Seam partially pyrolitised in 1 borehole.
V/VI	5-11.97	G6-G8	G7	13	
IV TOP	1.52-8.30	G6-G11	G7	9	
IV BOT	2.5-7.90	G5-G9	G7	8	
IV	5.99-12.86	G6-G12	G7	4	
III	4.22-7.12	G9		3	Indicated Zone.
II TOP	0.75-2.16	G6		3	
II MID	5.76-6.53	G7-G8		2	
II BOT	2.23-2.85	G5-G8		2	
I MID	2.41-2.71	G8-G9		2	
I BOT	0.62	G4		1	

Proposed Average Grade of the Mine (South Loyabad Colliery) from seam XIV to X is W-III

N.B.:

S: Steel grade, W: Washery grade, UG: Ungraded.

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

<u>Grade</u>	<u>Ash % Range</u>
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

TABLE – 6(a)

CLEANING POSSIBILITIES OF COAL SEAM AND WASHABILITY RESULT OF B.H. NO. LB-15

Seams	B.H. No.	Depth from Surface (m)	Thick-ness (m)	Raw Coal Ash%	Cleans at 1.50 Sp. gr.		Middlings 1.5 to 1.8 Sp.gr.		Rejects >1.80 Sp.gr.	
					Wt%	Ash%	Wt%	Ash%	Wt%	Ash%
XIV	LB-15	288.90	6.70	27.7	61.4	13.4	13.4	35.0	25.2	58.6
XIII	LB-15	297.35	4.54	20.0	72.3	11.8	16.6	33.0	11.1	53.9
XI	LB-15	333.05	3.35	23.0	67.5	15.2	20.7	32.9	11.8	50.2
X	LB-15	396.85	3.37	37.0	35.5	18.3	30.5	36.8	34.0	56.7

TABLE – 6(b)

COKING PROPERTIES RESULTS OF SEAM ON CLEAN COAL (Sp. gr. 1.50)

Seam	B.H. No.	Coking Properties		
		CI	CT	SI
XIV	LB-15	22	G4	7
XIII	LB-15	24	G4	7
XI	LB-15	22	F	4
X	LB-15	19	F	4

2.5.5 FAULTS

Altogether 17 faults have been deciphered in Loyabad Colliery on the basis of borehole and mine working data. Details of these faults has been given in Table-5.

Sl. No.	Fault No.	Extent & Location	Trend/Dip	Max. Throw (m)	Nature & Evidence
1.	F6-F6	3.84 km extent, in the north eastern part of the block	Generally E-W trending with local swerving, northerly dipping, 45° near surface reducing to 30° at depth	125 m reducing on either side about 25 m in the west and to about 75 m in the east throw reduces with depth	<ol style="list-style-type: none"> 1. major, Curvilinear, strike, sag fault 2. Zone of crushing with silicified sandstone development of siderite concretions 3. Change in strike of bedding near the fault around borehole GP-10 4. Encountered in workings of XVI, XV, XIII, XII, XI, X. 5. Reduction in the strata between seams V/VI and III including omission of part of seam V/VI, seam IV (Top) & IV (Bot) in KL-11. 6. Parting reduction between XIII and III including omission of seams XII to IVB in KL-10 7. Parting reduction below IIM including part omission of IIM and I in SBJ-64 8. Parting reduction in between XI and VVI including omission of X to VII and part of VVI in SBJ-3 9. Parting reduction between IVB and IM and part of IVB and III to IIB in GP-9 10. Parting reduction between seams XI and III including omission of seams X to IV (Bot) in SBJ-58. 11. Parting reduction between seams XV and XI including omission of seams XIV, XIII & XII in KL-05.
2.	F7-F7	0.72 km extent, south of KL-10 and KL-12 in the northern part of the block.	Generally ENE-WSW trending with northerly dip	35m, dying out in the east and merging with F6 in the west.	<ol style="list-style-type: none"> 1. Displacement of outcrops of seams XVI (Top) and XVI (Bot). 2. Encountered in the mine workings of seams XVI (Top), XVI (Bot), XV, XIV, XIII, XII, XI and X. 3. Parting reduction between seams XV and XII including omission of seams XIV and XIII in KL-12. 4. Parting reduction in between seams V/VI and III including omission of the seams IV(Top) and IV (Bot) in SBJ-64.
3.	F8-F8	0.88 km extent, south of KL-05 and SBJ-58, located in the north eastern part of the block.	Generally E-W trending with 35° dip towards north.	12m, reducing in west and merging with F6 on either side.	<ol style="list-style-type: none"> 1. Strike fault. 2. Encountered in the mine workings of seams XVI (Top), XIV & XIII. 3. Parting reduction between seams XV and XIV in SBJ-58. 4. Reduction in strata overlying seam XVA in KL-05.
4.	F9-F9	0.76km. extent, south of KL-05 and SBJ-58, located in	Generally E-W trending	15m, reducing in east, and merging with F6	<ol style="list-style-type: none"> 1. Strike fault. 2. Parting reduction between seams XIII and XII including

Sl. No.	Fault No.	Extent & Location	Trend/Dip	Max. Throw (m)	Nature & Evidence
		the north eastern part of the block.	with 35° dip towards north.	on either side	3. part of seams XIII in SBJ-58. Reduction in the strata between seams XVA and XV including part of seam XV in KL-05.
5.	F10-F10	0.60km. extent, south of SBJ-65 and GP-12 in the eastern part of the block	Generally E-W trending with 70° dip towards north.	15m dying out on either side	1. Oblique sag fault, Swerve in the outcrops of seams XV and XVA. 2. Encountered in the mine workings of seams XV, XIV, XIII, XII, XI and X. 3. Parting reduction in between seams VIII and IV including omission of seams VII and V/VI in SBJ-65 4. Parting reduction in between seams VIII-C and VIII including omission of seams VIII-B, VIII-A and part of seam VIII in GP-12.
6.	F11-F11	0.56km. extent, north of GP-7, in the eastern part of the block.	Generally E-W trending with with 70° dip towards south.	10m, dying out on either side.	1. Curvilinear, oblique, sag fault 2. Encountered in the mine workings of seams XV, XIV, XIII, XI and X. 3. Parting reduction in between seams VIII-C and VII including omission of the seams VIII-B, VIII-A and VIII in GP-7.
7.	F14-F14	Located in the northern part of the block	NW-SE trending with 60° dip towards north easterly	20m	1. Curvilinear fault. 2. Omission of seam XII in LB-20. 3. Encountered in the mine workings of XVI Comb. XV, XIV, XIII, XII and XI seam of Gopalichuk Colliery.
8.	F15-F15	Located in the south eastern part of the block, originated about 100m south east of LB-21 and extends south eastward.	N-S trending with 60° dipping easterly	40m	1. Curvilinear, oblique fault. 2. Parting reduction in between XVA and XV Comb. Seams in LB-12 3. Encountered in mine workings of XVI Top, XV, XIV and XI seam in Pootkee and Bulliary colliery.
9.	F16-F16	Located in the southern part of the block, passing along LB-10	NW-SE trending with 50° south westerly	30m	1. Curvilinear, oblique fault. 2. Roof of XVI Comb. Seam faulted in LB-16. 3. Omission of seam X and XI in PBG-1 4. Floor of XI seam faulted in LB-13 5. Encountered in mine workings of seams XVI Top, and XV in Loyabad colliery.
10.	F17-F17	Small fault located in the southern part of the block.	E-W trending with 75° dip towards south.	5m	1. Parting reduction between XI and XA in LB-3 2. Level difference in the floor contours on either side.
11.	F18-F18	Small fault located in the southern part of the block. Splitting from F19 about 100m south of BG-1 and abutting against fault F16-F16.	Almost E-W trending with 45° dipping southerly.	18m	1. Almost linear, Oblique 2. Encountered in the mine workings of XVI (Top) and XV seam in Loyabad colliery.
12.	F19-F19	Located in the southern part of the block, and	Generally NW-SE trending	44m, increasing southward in Moonidih Block.	1. Curvilinear, Oblique fault 2. Parting reduction in between XVI Bot seam XVA seams in

Sl. No.	Fault No.	Extent & Location	Trend/Dip	Max. Throw (m)	Nature & Evidence
		extended north of LB-2 LB-1 and LB-4	with 70° dip south easterly		LB-3 3. Omission of XVI seam in LB-2 4. Omission of seam XVI and XVA seams in LB-1 5. Encountered in the mine working of XVI Top seam in Loyabad Colliery
13.	F20-F20	Located in the southern part of the block	E-W trending with 60° dip towards south.	5m	1. Linear oblique 2. Reduction in parting between XV Comb. And XIV seams in LB-16.
14.	F21-F21	Splits from F20-F20 about 100m north of LB-16 and extending westward upto about 80m east of LB-4	Generally ENE-WSW with dip of 60° towards south	10m	1. Linear oblique 2. Level difference in floor contours on either side
15.	F22-F22	Located in the southern part of the block	E-W trending with 60° dip towards north	30m	1. Sinuous oblique 2. Omission of VIII group of seams in BG-23 and LB-12 3. Roof of XV Comb. Seam faulted in BG-16 4. Omission of XII seams in JP-1 5. Reduction in parting in between XV Comb. And SIV seams in LB-13 6. Encountered in mine workings of XVI Top and XV seams in Bulliary Colliery.
16.	F23-F23	Located in the southern part of the block and located to VIII group of seams and older seams	NW-SE trending with 60° dip towards east	5m	1. Omission of VI and V seams in LB-15
17.	F24-F24	Located in the south-eastern part of the block	N-S trending with 60° dip towards east	10m	1. Encountered in the mine workings of XV, XIV, XII and XI seams in Pootkee Colliery.

In addition to these faults, existence of other faults having throws less than 5m cannot be ruled out.

2.5.6 OTHER GEOLOGICAL DISTURBANCES

Igneous Intrusion / Pyrolitisation

There is presence of mica-peridotite dyke (3-10m thick) localised in South Loyabad. Mica-peridotite sills are found impregnating extensively into XIII, and XIV seams. XII, VIII and VII seams are also partly pyrolitised presumably by mica-peridotite sills.

2.5.7 Depth:

The depth range (Approx.) in which the seams occur at Loyabad mine are as follows:

Seam	Depth Range (in Metre)
XVI Top	Incrop-235
XVI Bot	Incrop-290
XV	Incrop-390
XIV	10-400
XIII	15-420
XII	30-430
XI	40-460
X	80-510
VIII C	100-520
VIII A	130-550
VIII	140-570
VII	160-600
V/VI	180-640
IV Top	210-645
IV Bot	220-650

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
XVI TOP	The immediate roof of the seam is mainly composed of Shale.	The floor dominantly represented by Arenaceous shale and occasional sandstone and coal.
XVI BOT	The immediate roof is made up of Shale.	The floor is represented by Sandstone/Shale intercalation & subordinate shale.

Seam	Roof Rock	Floor Rock
XV	The roof is made up of carbonaceous shale.	The floor is composed dominantly of Shale & subordinate Sandstone & rare arenaceous shale and intercalation of Sandstone and Shale.
XIV	The roof of seam XIV is characterized by Carbonaceous shale and at places it is intercalation of shale and sandstone.	The floor of the seam is Carbonaceous shale / Shale and at places sandy shale, intercalation of shale and sandstone.
XIII	The roof of the seam is mostly Carbonaceous shale followed by Shale, Sandy shale and intercalation of shale and sandstone. Floor of the seam is mostly Shale followed by Carbonaceous shale and intercalation of shale and sandstone.	Floor of the seam is mostly Shale followed by Carbonaceous shale and intercalation of shale and sandstone.
XII	The roof of the seam is generally Carbonaceous shale / Shale followed by sandy shale and intercalation of shale and sandstone.	The floor of the seam is generally Carbonaceous shale / Shale followed by sandy shale and intercalation of shale and sandstone.
XI	The roof of the seam is generally Shale and Carbonaceous shale and occasionally intercalation of shale and sandstone.	Floor of the seam is Shale/ Carbonaceous shale and at places sandy shale and intercalation of shale and sandstone.
X	Roof of the seam is generally gritty sandstone along with fine grained to medium grained sandstone. Floor of the seam is generally carbonaceous shale / shale and sandy shale at places.	Floor of the seam is generally carbonaceous shale / shale and sandy shale at places.
VIII C	The roof the seam is carbonaceous shale / shale and at places it is intercalation of shale and	Floor is constituted of intercalation of shale and sandstone and sandy shale.

Seam	Roof Rock	Floor Rock
	sandstone. Floor is constituted of intercalation of shale and sandstone and sandy shale.	
VIII A	The roof is almost entirely made up of Shale and Arenaceous Shale with isolated instances of sandstone/shale intercalation and argillaceous sandstone.	The floor is almost entirely made up of Shale and Arenaceous Shale with isolated instances of sandstone/shale intercalation and argillaceous sandstone.
VIII	Sandstone and its variables occurs predominantly at the roof.	Shale is most frequent on the floor.
VII	Roof is made up of Carbonaceous shale & shale in equal proportion. Occasionally, arenaceous shale sandstone and shale sandstone intercalation occur at the roof.	The floor is mainly composed of carbonaceous shale and shale.
V/VI	The majority of the roof consists of Carbonaceous shale	The floor is completely made up of shale
IV TOP	The majority of the roof consists of Carbonaceous shale	The floor is mainly composed of Carbonaceous shale with shale and Sandstone.
IV BOT	The majority of the roof consists of Carbonaceous shale and shale sandstone intercalation.	The floor is mainly composed of Medium to gritty sandstone

2.5.9 PHYSICO-MECHANICAL PROPERTIES

No data on physico-mechanical tests of samples of roof and floor rocks for any of the boreholes is available for the block.

2.5.10 GASSINESS STATUS

No data on gassiness study of the mine available in the concerned GR. However, as per the mine official the gassiness of the Mine is of Degree II.

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, Kumari Block (MECL.'1986), JCF and Geological Report on Coal Exploration Pootkee-Bulliarly Block (MECL.1988).

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

Only the in-band thickness has been considered in coal area for reserve estimation. 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.

Due to unavailability of Gross Calorific Values (GCV) that have been determined in the laboratory, it has been calculated by the following formula (Majumder's formula for low moisture coal).

$$GCV = \frac{165F+136(VM-0.1A)-108M}{1.8} \dots\dots\dots (i)$$

Where:

F = Fixed carbon %, VM = Volatile Matter %

A = Ash %, M = Moisture %

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 tonnes)

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

2.6.3 GEOLOGICAL RESOURCE

Total of 249.56 million tonne of proved net geological resource of coal has been assessed from seam XVI Top to IV Bot in Loyabad Colliery. The details of which is furnished in Table – 6 (A, B &C). Seams below seam IV Bottom fall in indicated category and seams XV-A, X-A, IX and VIII-B are impersistent within the colliery, therefore resource of the mentioned seams has not been estimated.

TABLE – 7A

**SEAM WISE/GRADE WISE NET GEOLOGICAL RESERVE OF COKING COAL
(IN MILLION TONNES)**

Resource of Coking Coal (in Million Tonne) within Colliery Leasehold								
Seam	S-I	S-II	W-I	W-II	W-III	W-IV	UG	Total
XVI T	0.12			0.54	1.75	1.7		4.11
XVI B		0.28		1.5	0.49	0.25		2.52
XV				13.16	9.32	6.65		29.13
XIV		4.2	27.03	2.26				33.49
XIII			13.99	12.09	5.17	1.29		32.54
XII	0.99	0.58	0.95	7.69	6	0.85		17.06
XI			0.41	9.49	11.72	0.8		22.42
X				0.58	9.5	21.65	0.19	31.92
VIII C						0.18	0.12	0.3
TOTAL	1.11	5.06	42.38	47.31	43.95	33.37	0.31	173.49

TABLE – 7B

**SEAM WISE/GRADE WISE NET GEOLOGICAL RESERVE OF NON-COKING COAL
(IN MILLION TONNES)**

Resource of Non-Coking Coal (in Million Tonne) within Colliery Leasehold											
Seam	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	Total
X	1.21	0.20		1.77	0.25						3.43
VIII C				0.05							0.05
VIII A			1.38	1.10	0.12						2.60
VIII			0.07	3.95	1.99						6.01
VII		0.05	0.39	0.39		0.39	0.58	0.45	0.99	0.24	3.48
V/VI				0.04	9.60	1.51					11.15
IV T				1.58	1.40	0.10					3.08
IV B			4.23	20.14	5.56	5.00	3.61	0.00	1.58	0.20	40.32
TOTAL	1.21	0.25	6.07	29.02	18.92	7.00	4.19	0.45	2.57	0.44	70.12

TABLE – 7C

**SUMMERISED NET GEOLOGICAL RESOURCE OF COAL IN LOYABAD COLLIERY
(IN MILLION TONNES)**

Seam	Coking	Non-coking	Total
XVI Top	4.11		4.11
XVI Bot	2.52		2.52
XV	29.13		29.13
XIV	33.49		33.49
XIII	32.54		32.54
XII	17.06		17.06
XI	22.42		22.42
X	31.92	3.43	35.35
VIII-C	0.3	0.05	0.35
VIII-A		2.6	2.6
VIII		6.01	6.01
VII		3.48	3.48
V/VI		11.15	11.15
IV Top		3.08	3.08
IV Bot		40.32	40.32
Total	173.49	70.12	243.61

Note: Since seam X and its underlying seams which are occurring in North Loyabad Part (North/Down thrown side of fault F6-F6 having maximum throw 120m) belongs to Sendra-Bansjora Colliery, resource of the mentioned seams has not been assessed for the North Loyabad Part

TENTATIVE EXTRACTABLE RESERVE IN LOYABAD COLLIERY (MILLION TONE)					
SEAM	NORTH	MID	SOUTH	TOTAL	AVG GRADE
XVI T	0	0	0	0	W-III
XVI BOT AND COMB	0	0	0	0	W-III
XV	0	0	0	0	W-III
XIV	1	1.88	3.08	5.96	W-I
XIII	1.05	2.48	4.27	7.8	W-II
XII	0.37	0	2.9	3.27	W-II
XI	0.8	1.23	4.96	6.99	W-III
X		2.22	9.61	11.83	W-IV/G5
VIIIC		0	0.93	0.93	W-IV/G6
VIIIA		1.67	2.37	4.04	G6
VIII		2.62	3.17	5.79	G6
VII		2.08	3.98	6.06	G10
V/VI		4.78	7.82	12.6	G7
IV TOP		2.33	4.16	6.49	G7
IV BOT AND COMB		3.01	4.1	7.11	G7
TOTAL	3.22	24.3	51.35	78.87	

Limitation & 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 erratic behaviour/occurrence of jhama in seam.	
8	Extractable Reserve are purely tentative and depends upon Method of Mining & Technology/Mechanisation	

Seam proposed for extraction of coal from south Loyabad property of Loyabad Colliery are as follows:

SEAM	TENTATIVE EXTRACTABLE RESERVE FROM SOUTH LOYABAD (MILLION TONE)
XIV	3.08
XIII	4.27
XII	2.9
XI	4.96
X	9.61
Total	24.82

However, all seams up to X are being offered and bidder may choose any seam for extraction according to his technology & method of mining.

3.0 PRESENT MINING STATUS

3.1 MINE ENTRIES

The particulars of outlets/entries at Loyabad UG mine are as given below:

SI No.	Name of Pit/Incline	Driven / Sunk upto	Depth/Length (m)	Dia/Dimension (m)	Status
1	4 Pit	XI seam	103.63	4.04	Filled with earth
2	5 Pit	X seam	163.41	4.26	Half portion covered by iron plate and other half by cage
3	6 Pit	XIV seam	91.51	4.26	Open & partial side wall broken
4	7 Pit	XII seam	95.57	4.11	Covered by RCC
5	8 Pit	XIV seam	90.4	4.42	Filled with earth
6	9 Pit	XV seam	111.94	4.42	Covered by RCC
7	10 Pit	X seam	115.85	4.72	Covered by RCC
8	11 Pit	XV seam	78.36	4.42	Filled with earth
Inclines					
1	5/15, 5A/15 & 5B/15	XV seam			Filled with earth
2	October Incline 1&2	X & XVI seam			Filled with earth
3	8/15, 8A/15, 3/15	XV seam			Filled with earth
4	1/16A, 2/16A, 3/16A, 1/16, 2/16, 3/16, 4/16, 12/16, 13/16	XVI seam			Filled with earth
5	New drift Incline 1&2	XVI & XVIIA seam			Filled with earth
6	Air shaft near Ekra jore	XV seam			Filled with earth
7	Air shaft near 3/16	XVI seam			Filled with earth

3.2 MINING METHOD

At present Loyabad Mine is a closed mine and all activities related to production are suspended since April '2009. Traditionally the method of mining had been Bord & Pillar, development with drilling and blasting with explosives and depillaring (slicing/splitting) with caving or sand stowing along with manual loading of coal onto tubs.

3.3 STATUS OF MINING (SEAM WISE)

Prior to suspension of production, the mine was producing around 150 TPD.

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

SEAM	STATUS OF WORKINGS		
	North Loyabad	Mid. Loyabad	South Loyabad
XVIA	The seam is outcropping along the northern boundary in North Loyabad and has been worked through October inclines in small patch. Since the working is very old, some pillars might have been formed in a limited area but the extent is not known.	The seam does not occur as it has been washed out due to 600 feet up throw fault.	The seam is also outcropping in South Loyabad on the dip side of 10 Pit and has been extensively worked through 1, 2, 3 Inclines and through a pair of reverse drifts called New Drifts. The seam is mostly depillared with caving/stowing up to the 60m Fault in the south. On the further dip side beyond 60m fault, the seam is virgin. At present the inclines and reverse drifts are sealed off. Dip side area is reported to be waterlogged.
XVI	The seam is outcropping along the northern boundary in North Loyabad and has been worked in small patch through October inclines and other Inclines (Hospital Inclines). Since the working is very old, some pillars might have been formed in a limited area but the extent is not known.	The working is very old, some pillars might have been formed in a limited area but the extent is not known.	The seam has been extensively worked through 1, 2, 3 and 4 Inclines and through New Drifts. The seam is mostly depillared with caving/stowing up to the 60m Fault in the south. On the further dip side beyond 60m fault, the seam is virgin. At present the inclines and reverse drifts are sealed off. Dip side area is reported to be waterlogged.
XV	The seam has been approached through a	The seam outcrops just on the dip side of 4 and 5	The south Loyabad property is approached

	<p>number of inclines and has been mostly depillared with caving and partly standing on stooks/pillars. The workings are inaccessible. On the eastern part the working of XV seam are connected with XII seam workings of Mid. Loyabad through a drift. A dam is constructed in the drift. The dam site is accessible from Mid. Loyabad side and workings are reported to be waterlogged. This seam had been worked in two sections (top & bottom) in north and mid loyabad only.</p>	<p>Pits. The seam has been worked in two parts namely on the rise/north side of fault (throw 33.5m) and on the dip/south side of the fault. The seam has been extensively depillared with caving, fully exhausted and quarried out on the north side of the fault along the outcrop region. The south side of the fault has been worked through 9, 10 and 11 Pits. The seam is mostly depillared and partly standing on pillars on the south side of the fault. The XV seam workings of Mid. Loyabad are also connected with XV seam workings of South Loyabad. The workings on the north side of the said fault are also connected with south side workings at seven places. These connections are isolated by erecting 6 dams and 1 door in the connecting galleries.</p>	<p>through 9, 10 and 11 Pits and a material incline located in Mid Loyabad and through a pair of drifts. The seam is mostly depillared with caving/stowing up to the 60m Fault in the south). Only small area on the dip side and small area near the Pits on the rise side are standing on pillars. Beyond 60m fault, only a small area was developed and development discontinued due to adverse geo-mining conditions resulting into collapse of the galleries at many places. Dip side area is reported to be waterlogged.</p>
XIV	<p>The seam has been approached through 7 and 8 Pits and mostly developed and standing on pillars. The XIV seam workings are connected with XIV seam workings of Sendra Bansjora Mine on the north side through one gallery but isolated by a dam. The developed workings are kept waterlogged due to fire in XIV seam in Sendra Bansjora Mine.</p>	<p>The seam has been approached through 4/14 Incline, 4, 5 and 6 Pits. The area is fully developed and partly depillared in patches. The working discontinued due to occurrence of fire in depillared panel near 6 Pit. The fire area has been isolated. The dip side workings near 11 Pit are also kept waterlogged due to occurrence of fire. The water level is controlled by a water dam constructed in the only gallery connecting the 6 Pit working with 10 Pit working. The workings are unapproachable in major part due to collapse of galleries.</p>	<p>The area has been approached through 10 Pit and a pair of drifts from XV seam to XIV seam near pit bottom. The area from 10 Pit to some extent on the south side has been partly developed, partly depillared and rest virgin in the dip side. The dip side area is mostly virgin and affected by pyrolitisation (jhama) and partly free from pyrolitization. The developed area cannot be depillared due to extensive collapse of galleries resulting into loss of the main entries.</p>

XIII	The seam has been approached through 7 Pit, 8 Pit and through drifts from XIV seam. The seam has been developed in patches and in rest of the area the seam is virgin. The developed workings are kept waterlogged due to fire in XIV seam in Sendra Bansjora Mine.	The seam has been approached through 4 Pit and through number of drifts from XIV seam workings. The area is mostly developed and partly depillared in patches. The workings are at present unapproachable and waterlogged. The seam is also affected with fire.	The area has been approached through a number of drifts from XIV seam. The seam has been developed only in small area and is virgin in rest part and in major part the seam has been turned into jhama. The developed workings cannot be depillared due to extensive collapse of galleries. The area is presently unapproachable and waterlogged on the dip side
XII	The seam has been approached through 7 and 8 Pits and mostly developed and partly virgin. The developed workings are waterlogged.	The seam has been approached through 4 and 5 Pits and through a drift from XIV seam workings to XII seam near 6 pit. The area is fully developed and mostly depillared in patches. The workings in major part are at present unapproachable. The XII seam workings are connected to XV seam workings of north Loyabad section through a drift. The XII seam workings of Mid. Loyabad are also connected with XII seam working of south Loyabad.	This seam has been approached through 4, 5 and 10 Pits of Mid Loyabad and through drifts. The seam is partly developed and mostly virgin. XII seam workings are connected to XIV seam working through a pair of drifts on the dip side area. The developed workings are extensively collapsed and waterlogged on the dip side. The seam is presently unapproachable.
XI	The seam is virgin	The seam has been approached through 4 and 5 Pits and through a drift from XIV seam workings to XI seam near 6 pit. XI seam workings are connected to XII seam workings through drifts at various locations. The area is extensively developed and mostly depillared. The dip side workings are extensively collapsed and waterlogged. XI seam Mid Loyabad workings are also connected to XII seam workings of South Loyabad on the west side. The major area of seam is presently unapproachable.	This seam has also been approached through 4, 5 and 10 Pits of Mid Loyabad and through drifts from XV seam to XIV seam and another drifts from XIV seam to XI seam. The seam is partly developed and mostly virgin. The developed workings are collapsed and waterlogged on the dip side. The seam is presently unapproachable.

X	Property of X seam and below has been transferred to Sendra Bansjora Mine. The seam is partly developed and mostly virgin. The developed workings are waterlogged.	The seam has been approached through 5 Pit and through a drift from XI seam workings to X seam near 5 Pit. On the western side X seam workings have been approached from October Inclines (XVI seam). The seam is extensively developed and mostly depillared. The dip side area is presently waterlogged.	The seam is virgin.
VIII/VIIIA	The seam is partly developed and mostly virgin. The developed workings are waterlogged. Property of X seam and below has been transferred to Sendra Bansjora Mine	The seam has been approached through 5 and 6 Pits and subsequently through a pair of drifts from X seam workings to VIII/VIIIA seam near 5 pit. The seam is partly developed and partly virgin. Development was going on through 5 & 6 Pits till April 2009. The development of the seam discontinued due to conversion of this mine to loader less mine from April 2009 (under BCCL's Policy) and overall poor economics of the Mine. The dip side area is waterlogged.	The seam is virgin.

Note:- According to Colliery north Loyabad property from X seam and below has been transferred to Sendra Bansjora Mine (24.10.1997)

3.4 VENTILATION:

At present, there is no ventilation arrangement in the mine.

3.5 STOWING INSTALLATION:

At present, no surface stowing installation exists as it has been filled with earth.

3.6 MAGAZINE:

There is no magazine facility.

3.7 TRANSPORT:

Vertical Transport:

At present, no vertical transport arrangement exists in the mine. Prior to suspension of production from the mine, 5 Pit equipped with electrical winder was used for coal transportation. The major components of the winder has been transferred to neighbouring mine for its gainful deployment.

Underground Transport:

At present, no underground transport arrangement exists in the mine. However, at the time of discontinuance of operations, 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. These haulages have been transferred to other mines for their gainful deployment.

3.8 PUMPING & DRAINAGE:

At present, no pumping arrangement exists in the mine. However, at the time of suspension of production in-seam pumping in X and VIII/VIII A seams was going on through 5 Pit at Mid Loyabad. The pumped out water on the surface was utilised for domestic water supply. At present, there is one submersible pump of 120 HP near Regional Store to meet the domestic requirement. This submersible pump supply water to the water reservoir and from there it is supplied to loyabad 9 No Colony and other colonies.

3.9 POWER SUPPLY AND DISTRIBUTION

3.9.1 Source of Power supply

Power supply is from 132KV Substation Putki to Loyabad Colliery through 50 no feeder 6.6KV at 5 pit Substation and 44 no feeder 6.6KV at Coke plant Substation, 9 no Substation and 3/16 Substation. 132KV substation receives power of 132KV through two different feeder from Putki DVC and Patherdih DVC.

Substations under Loyabad Colliery

- 1) 5 pit Substation
- 2) 4 pit Substation

- 3) 9 pit Substation
- 4) Loyabad Coke Plant Substation
- 5) 3/16 Substation
- 6) Regional Hospital Substation
- 7) 7 no. Substation - (Power supply is from SBRS substation, Sijua Area through Basdeopur feeder 6.6 KV.)

Loyabad Colliery Substation Details

- 1) 5 pit Substation
 - A. Power Transformer
 - i). 1000 KVA, 6.6KV/550Volt 1 nos
(Loyabad Office, Regional store, Workshop, Durga mandhir colony, Bazaar bunker domestic pump supply, 8 no colony)
 - ii). 1000 KVA, 6.6KV/550Volt 1 nos
(3 no Colony, Nichla dhowra, Hospital, Domestic water pump supply)
 - iii). 750 KVA, 6.6KV/550Volt 1 nos
(90 Dhowra, Miya patti, Submersible pump)
 - iv). 500 KVA, 6.6 KV/550Volt 1 nos (6 no. Colony)
 - B. Lighting Transformer
 - i). 200 KVA, 550V/440V 1 nos. (Basjora New colony)
- 2) 4 pit Substation
 - A. Power Transformer
 - i). 300 KVA, 6.6KV/550V 1 nos. (IPS colony)
 - B. Lighting Transformer
 - i). 630 KVA, 6.6KV/440V 2 nos, (4 no colony, howhan patti)
- 3) 9 pit Substation

A. Lighting Transformer

i). 1000KVA, 6.6KV/440V 1 nos.

(20 no siding colony, Gandhi maidan school colony, Nimya Tand)

4) Loyabad Coke Plant Substation

A. Lighting Transformer

i). 1000KVA, 6.6KV/440V 1 nos.

(Coke plant colony, Durga mandir colony, Putki khatal)

ii). 300 KVA, 6.6KV/440V 1 nos. (Coke Plant Laboratory, CISF barrack)

5) 3/16 Substation

A. Power Transformer

i). 750KVA, 6.6KV/550V 1 nos. (Siyalgudi and New drip colony)

6) Regional Hospital Substation

A. Lighting Transformer

i). 1000KVA, 6.6KV/440V 1 nos. (Hospital and nearby colony)

7) 7 no. Substation

A. Power Transformer

i). 1000 KVA, 6.6KV/550Volt 1 nos. (7 no colony)

3.9.2 EARTHING/ILLUMINATION

Restricted earth neutral system and solidly earthed neutral system is being used for different voltages in this colliery. On the surface HPSV lamps, Fluorescent lamps, ordinary incandescent lamps are being used for lighting open area, 5 pit, office building, etc.

3.10 WORKSHOP:

At present, no workshop exists in the mine. Prior to suspension of production from the mine, there was a Workshop near the colliery office which has been handed over to the Bansjora Colliery.

3.11 STORE FACILITIES:

At present a small store exists in the mine near mine office.

3.12 COAL HANDLING PLANT:

There is no surface coal handling arrangement in the mine at present

3.13 CIVIL AMENITIES FOR MINING:

The available infrastructures of the mine are not in good condition. The available infrastructure of the mine is given below;

Colliery Office

Colliery Store

Dispensary

Electric Sub Station

Winding Room

3.14 MANPOWER:

At present, a small number of manpower are available in mine to look after the work of office, Substation and domestic water supply.

Note- As per the information received from the Area/Colliery, electrical, mechanical assets of Loyabad Colliery will not be handed over to the successful bidder. However, colliery office and 1763 quarters (mostly occupied by encroachers) can be handed over to the mine operator.

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VIII-M	X-A	1:8000
VIII-N	X	1:8000
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VIII-P	VIII-C	1:8000
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