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सेन्ट्रल माईन प्लानिंग एण्ड डिजाईन इन्स्टीच्यूट लिमिटेड
(कोल इंडिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार का एक लोक उपक्रम)
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दि. 25.02.2015
26

सेवा में,
मुख्य वनसंरक्षक (म.प्र.)
छिंदवाड़ा वन मण्डल,
छिंदवाड़ा, मध्य प्रदेश

विषय: Clarification in respect of Clause (i) and (ii) of C-1 of Form-C for forest clearance for detailed exploration for coal in Dhau North Coal Block, PENCH Kanhan Valley Coalfield, Madhya Pradesh.

महाशय,

This has reference to Clauses (i) and (ii) of C-1 of Form-C for forest clearance for detailed exploration for coal in Dhau North Block, PENCH Kanhan Valley coalfield, Madhya Pradesh.

The area of Dhau North Coal Block was initially explored by MECL from November 1984 to February 1986. During this period a total of 16 boreholes (KDN series 15 nos. and PKD-56) with a cumulative meterage of 7178.85 metre were drilled in this block. Therefore it is necessary to prove the resources and thereby continuity of the proposed mines can be planned accordingly.

Salient features of geological report of the block, prepared by MECL are attached herewith this for your kind consideration.

भवदीय,

26.02.15

क्षेत्रीय निर्देशक
सी.एम.पी.डी.आई.
क्षेत्रीय संस्थान-४

कोयला गवेषण हेतू भूवैज्ञानिक प्रतिवेदन

धाऊ उत्तर खण्ड

पेन्च-कन्हान घाटी कोयला क्षेत्र

जिला-छिन्दवाडा, मध्य प्रदेश

Geological Report on Exploration for Coal

Dhau North Block

Pench Kanhan Valley Coal Field

District : Chhindwara

Madhya Pradesh

‘SALIENT FEATURES’



खनिज गवेषण निगम लिमिटेड

(भारत सरकार का उद्यम)

नागपुर

नवम्बर १९८६

Mineral Exploration Corporation Limited

(A Government of India Enterprise)

NAGPUR

NOV. 1986

**GEOLOGICAL REPORT ON EXPLORATION FOR COAL IN
DAU NORTH BLOCK, PENCH-KANHAN VALLEY COALFIELD
DISTRICT : CHHINDWARA, MADHYA PRADESH.**

SALIENT FEATURES

1. Name of the Block : Dhau North Block, PENCH-Kanhana Valley Coalfield, Chhindwara District, Madhya Pradesh.
2. Location : Block with an areal extent of 3.1 sq. km. bounded by latitude 22°13'58" and 22°26'56" and longitude 78°25'18" and 78°26'40" E-Survey of India Toposheet No 55J/8.
3. Objective of exploration : Proving additional reserves of medium coking coal for exploitation either through Nandan Mine-II or by separate inclines depending on the availability of suitable entry.
4. Duration of operation : November 1984 to February 1986.
5. Quantum of work in the block. : (A) SURVEYING :
 - i) Triangulation : 3.1 sq. km.
 - ii) Contouring at 3.1 sq. km
5m interval
 - iii) Determination
of co-ordinates 15 Nos.
& reduced level
Of MECL(B) GEOLOGICAL MAPPING :
Tracing of outcrops
with structural details. 3.1 sq. km.

(ii)

: (C) EXPLORATION DRILLING :

i) No. of boreholes 15 Nos. KDN series & drilled, by MECL PKD-56.

ii) Total meterage 6711.15 + 467.70 m

(D) LOGGING & SAMPLING :

i) core logging : 7178.85 m

ii) Sampling :

(a) Air dried 74.88 m proximate

(b) Overall analysis 3 BHs on 60% RH at 40 C.

(c) Ultimate analysisi & special tests 9 BHs (including BHs of GSI and NCDC)

Seam :	III	IIIT	IIIB	II	I
1) Calorific Value	-	7	1	1	4
2) Coke type	-	7	1	3	6
3) Coking Index	-	9	2	2	5
4) Carbon	-	7	-	1	4
5) Hydrogen	-	7	-	1	4
6) Nitrogen	-	7	-	1	4
7) Total Sulphur	-	7	-	1	4

6. Geology of the block

: The block is monotonously covered by Motur formation.

....

(iii)

7. Range in thickness of the formation :

Formation	Range in thickness (m)	
	Minimum	Maximum
1) Soil	0.35	6.20
2) Basic Intrusives	5.75	55.21
3) Jabalpurs	Not encountered in any of the boreholes.	
4) Moturs	168.39	510.54
5) Barakars :		
i) Upper Barakars	28.50	67.55
ii) Middle coal bearing Barakars	16.24	22.09
iii) Lower Barakars encountered in boreholes.		
6) Talchirs	Not encountered in any of the boreholes.	

8. Structure :

- : 1. Attitude of beds :
- i) Southern part of the block Strike N45°-60°E to S45°-60°W. Gradient 1 in 4.6 to 5 northerly.
 - ii) Northern part of the block. Strike N20°-30°E to S20°-30°W. Gradient 1 in 4.8 northerly.
 - iii) The block is affected by 10 faults. Most of them are strike faults. Faults F1, F2, F3 & F4 are major faults.

(iv)

9. Coal seams : Three coal seams are present in the block. Topmost seam Seam-III is the principal seam being exploited extensively in the region. Seam-III splits towards north east. The top and bottom splits are designated as Seam-IIIT and Seam-III B. Seam-III B & II are not attempted for exploitation in the region while Seam-I is tried at places. The variation in thickness of seams and parting are :

Seam – III	5.71	-	6.31
Parting (III & II)	3.77	-	5.76
Seam-III T	2.79	-	4.62
Parting	0.41	-	3.97
Seam – III B	0.28	-	1.35
Parting	3.47	-	6.73
Seam-II	0.21	-	1.50
Parting	5.01	-	8.04
Seam-I	0.56	-	1.61

10. Quality of coal seams : 1. The coal of seams of Dhau North block are medium coking. All the seams show heat effected along a roughly east-west trending linear zone in the central part of the block.
2. Based on Volatile Matter (Unit Coal) %, the coals of seams are grouped as :
- i) Medium coking coal : VM/UC% exceeding 30.
 - ii) Non coking coal : VM/UC% exceeding 10 but not exceeding 30.
 - iii) Jhama : VM/UC% not exceeding 10.

(v)

3. Synoptic details of quality of Seam III T & I :

A. Medium Coking Coal

	<u>Seam III T</u>	<u>Seam I</u>
Moist %	1.80 – 2.94	1.9 – 3.2
Ash %	19.23 - 23.16	20.9 – 26.08
Volatile matter on unit coal %	33.88 – 37.51	33.9 – 37.0
Carbon%	84.34 – 86.0	86.1 – 86.9
Hydrogen %	5.2 – 5.5	5.1 – 5.6
Nitrogen %	1.8 – 1.9	1.7 – 2.0
Total Sulphur%	0.3 – 0.6	0.4 – 0.8
Calorific Value (KCK)	8455 – 8490	8545 – 8655
Coking Index	10 – 16	10 – 16
Coke Type	C – F	C – D
Grade	WGI-WGIII	WGII-WGIII

B. Non-Coking Coal

Moist %	1.42 – 2.14	2.46
Ash %	20.57 – 38.16	20.85
VM/UC %	10.81 – 29.27	25.16
Grade on Hu	B – E	B

C. Jhama

Moist %	2.24	1.65
Ash %	26.22	39.36
VM/UC %	9.94	5.96

(vi)

4. Washability characteristics of the coals of Dhau North block are expected to be similar to those of Nandan 1.50 Sp. Gr. Fraction on washing :

	Nandan Incline <u>1</u> and <u>2</u>	Dhau North block Seam-III Seam-I	
A. <u>Raw coal</u> :			
Ash %	24.7	17.4 – 27.16	20.9-26.08
VM/UC%	34.4	32.76-37.51	33.9-31.0
CI	14	9-19	10 – 16
CT	D	C-F	C-D

B. Washed coal :

	75mm	75mm
Recovery %	71.62	68.72
Ash %	16.2	15.1
VM/UC %	33.0	34.3
CI	NA	15
CT	D	F

11. Reserves

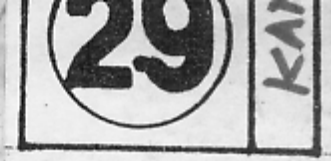
: Net in-situ In-band reserves of 23.717 million tonnes have been assessed for all the seams having thickness 0.5 m and above. Summary of seam-wise proved and indicated reserves of Medium coking coal, Non-coking and Jhama.

(vii)

	Medium-coking (m.t.)	Non-coking (m.t.)	Jhama (m.t.)	Total (m.t.)
<u>Seam - III</u>				
Proved	2.164	0.174	0.084	2.422
Indicated	0.000	0.112	0.095	0.207
Total	2.164	0.286	0.179	2.629
<u>Seam – III T</u>				
Proved	3.751	1.972	1.182	6.905
Indicated	5.326	0.658	0.429	6.413
Total	9.077	2.630	1.611	13.318
<u>Seam – III B</u>				
Proved	0.878	0.393	0.197	1.468
Indicated	1.004	0.197	0.096	1.297
Total	1.882	0.590	0.293	2.765
<u>Seam – II</u>				
Proved	0.668	0.057	0.084	0.809
Indicated	0.795	0.080	0.043	0.918
Total	1.463	0.137	0.127	1.727
<u>Seam-I</u>				
Proved	1.153	0.379	0.285	1.817
Indicated	1.220	0.157	0.084	1.461
Total	2.373	0.536	0.369	3.278
GRAND TOTAL				
Proved	8.614	2.975	1.832	13.421
Indicated	8.345	1.204	0.747	10.296
TOTAL	: 16.959	4.179	2.579	23.717

RI-4/25/46
KAN-29

R14/25/46



कायला गवेषण हेतू भूवैज्ञानिक प्रतिवेदन
धाऊ दक्षिण खण्ड
पेन्च-कन्हान घाटी कोयला क्षेत्र,
जिला - छिन्दवाडा, मध्य प्रदेश

Geological Report on Exploration For Coal
DHAU SOUTH BLOCK
Pench-Kanhan Valley Coal Field,
District : Chhindwara, Madhya Pradesh

खण्ड १
विषयवस्तु
Vol. I
TEXT



खनिज गवेषण निगम लिमिटेड
(भारत सरकार का उद्यम)

नागपुर
नवम्बर १९८५

Mineral Exploration Corporation Limited
(A Government of India Enterprise)

Nagpur
November 1985

GEOLOGICAL REPORT ON EXPLORATION FOR COAL IN
DHAU SOUTH BLOCK, PENCH-KANHAN VALLEY COALFIELD
DISHTRICT : CHHINDWARA, MADHYA PRADESH

SALIENT FEATURES

1. Name of the Block : Dhau South block, Pench-Kanhan Valley Coalfield, Chhindwara District, Madhya Pradesh.
2. Location : Bounded by latitude 22°27'02" N and 22°13'08"N and longitude 78°24'29"E and 18°27'02"E-Survey of India Toposheet No. 55 J/8.
3. Objective of Exploration : Proving additional reserves of medium coking coal to :
 - (a) Supplement the reserves for Nandan workings of Incline-1 & 2, advancing towards west in the eastern part of the block.
 - (b) Locate a suitable entry in the south of the block for opening a new mine for supplementing the production and deployment of man power of the workings of the Incline 29 & 30, which are getting exhausted and workings of Incline-31 & 32 which are since abandoned due to certain constraints in mining.
 - (c) Find out suitable entry north of Nandan fault (i.e. north of Nandan working of Incline- 1 & 2) in north eastern part of the block.

(ii)

4. Duration of operation : February, 1978 to December, 1984
5. Quantum of work in the block : (A) Surveying :
1. Triangulation. : 5.5 Sq. km.
 2. Contouring at 5 m interval. : 5.5 Sq. km.
 3. Determination of of co-ordinates & reduced levels of MECL boreholes. : 74 Nos.
- (B) Geological mapping :
- Tracing of outcrops with structural details. : 5.5 Sq. km.
- (C) Exploratory drilling :
1. No. of bore-holes drilled by MECL. : 74 Nos.
 2. Total meterage : 18,157.80
- (D) Logging and sampling :
1. Core logging : 18,157.80 mts.
 2. Sampling :
 - i. Coal cores sent for analysis (air dried, band-by-band) : 381.74 mts.
 - ii. Overall analysis on 60% RH at 40°C. : 54 BHs.

(iii)

3. Special tests :
(including BHs of
NCDC & GSI)

		<u>Seams</u>	
	III	IIIB	I
i. Calorific Value	31	-	11
ii. Coke type	22	-	6
iii. Caking Index	45	1	17
iv. Carbon	21	1	8
v. Hydrogen	21	1	8
vi. Nitrogen	12	1	7
vii. Total Sulphur	21	1	7
viii. Carbon-di-oxide	16	1	6
ix. Distribution of sulphur.	1	-	-
x. Low temperature carbonization (Grey-king)	4	-	1
xi. Washability test of Seam-III of Borehole PK-4 & 6 and Nandan Colliery.			

(E) Details of data absorbed in this report.

1. Borehole data :

i) BHs of MECL :	74 (PKD & PKN series) 18157.80
ii) BHs of NCDC :	13 (NCKD series) 1987.11
iii) BHs of GSI :	5 (PK series) 1476.66
iv) Total BHs :	92 21621.57

2. Data of the BHs falling outside the block :

(sparingly considered)

i) NCDC	: 10 1964.35 m.
ii) GSI	: 2 651.68 m.
iii) Total	: 12 2616.03 m.

(iv)

3. underground working data as available :

- i) Nandan Incline : 1 & 2.
- ii) Rakhikol Inclines – 29 & 30 and 31 & 32.
- iii) Old working of : Rakhikol (Lhambatta) :

6. Geology of the block : The block is essentially covered by Motur formation.

7. Range in thickness of the formation :

Formation	Range in thickness (m)	
	Minimum	Maximum
1) Soil	0.50 (11 BHs)	6.10 (PK-4)
2) Basic Intrusives	1.10 (PKD-55A)	65.41 (NCKD-36)
3) Jabalpurs	not encountered in any of the boreholes.	
4) Moturs	25.50 (NCKD-57)	403.15 (PKD-63)
5) <u>Barakars</u> :		
i) Upper Barakars	14.05 (PKD-66)	48.05 (PK-14)
ii) Middle Coal bearing Barakars.	14.79 (PK-4)	34.54 (PKD-17)
iii) Lower Barakars	0.15 (PKD-15)	174.28 (PK-4)
6) Talchirs	not encountered in any of the boreholes.	
8. Structure	:	
	1. <u>Attitude of beds</u> :	
	i) <u>North of Nandan fault</u> :	
	Strike N 30° - 40° E-S 30°-40°W with gradient 1 in 4.8 (12°) in the west and swerves to N 60°-75° E-S 60°-75°W with gradient of 1 m 4.3 to 1 in 5 (11°-13°)	

(v)

ii) South of Nandan fault :

Strike N 30°-40°E-S 30°-40°W with gradient of 1 in 4 to 1 in 4.2 (13°-14°) in the west and swerves to N 60°-70°E-S 60°-70°W with gradient of 1 in 4.3 to 1 in 4.7 (12°-13°).

2. The area is affected by a number of faults. Major strike faults viz. Bagdeo fault, F1-F1, Nandan fault F2-F2 and Kanhan fault F3-F3 are of regional significance. The oblique faults are more prevalent. A total of 28 faults are delineated.

9. Coal Seams

: Four coal seams are present in the block. Seam-III occurring at the top is the principal seam being exploited extensively in the region. Seam-I occurring at the bottom is a thin seam developed in most part of the block with thickness 0.5 m and above. Attainment of 0.9 m and above is restricted to south western part of the block. This seam is attempted for exploitation preferentially at places. Seam-IIIB and II occurring in between Seams-III and I are rather very thin with thickness of 0.5 m and above restricted to the eastern part of the block. These seams have not been considered so far for exploitation in the region. The regional variation in thickness of seams and parting are as follows.

(vi)

	<u>East</u>	<u>Middle</u>	<u>West</u>
	Damua-Kalichhapar collieries.	Dhau south block.	Tandsi block.
Seam-III	2.30 – 4.35	2.07 – 6.84	2.17 – 3.86
Parting	0.20 – 4.50	0.25 – 4.06	
Seam – IIIB	0.13 – 1.62	0.05 – 1.31	
Parting	3.25 – 10.86	3.67 – 20.65	6.87 – 13.25
Seam – II	0.23 – 1.19	0.09 – 0.87	0.05 – 1.11
Parting	5.06 – 7.78	3.39 – 8.13	27.15 – 37.31
Seam-I	0.43 – 1.42	0.20 – 1.55	0.36 – 1.91

10. Quality of coal

: 1. The coals of seams of Dhau South block are medium coking. All the seams show heat effect. The zones of heat effect show linear trends.

Heat affected zones are :

Northern half of the block :

On either sides of the faults F20-F20 and F28-F28 in the west and north of fault F2-F2 in the east.

Southern half of the block :

The zone covered by boreholes PKD-9, 45, 50, 10, 46, 16, 47, 36, NCKD-36 and PKD-14 with faults F6-F6, F9-F9, F11-F11, F12-F12 and F7-F7.

Another thin linear zone occurs on either side of fault F10-F10 around borehole PKD-2.

(vii)

- : 2. Based on Volatile Matter (unit coal) %, the coals of seams are grouped as :
- i) VM/UC% exceeding 30 : Medium coking coal.
 - ii) VM/UC% exceeding 22 : Non coking but not exceeding 30 coal.
 - iii) VM/UC% not exceeding 22 : Jhama.

Coals with VM/UC exceeding 30% having ash% more than 35 are also considered as non-coking coal.

(viii)

4. Quality of Medium coking and Non-coking coal :

Particulars (1)	Range		
	From (2)	To (3)	
<u>SEAM – III (In-Band) Medium coking coal.</u>			
<u>(i) 30% VM/UC cut-off. On 60% RH at 40°C.</u>			
Moisture	%	0.89	3.00
Ash	%	18.57	34.5
Volatile Matter	%	22.7	28.97
Fixed Carbon	%	40.88	50.45
Total Sulphur	%	0.14	1.32
Carbon-di-oxide	%	0.01	1.52
<u>On unit coal :</u>			
Volatile Matter	%	30.48	36.17
Carbon	%	85.14	87.93
Hydrogen	%	5.02	5.52
Nitrogen	%	1.72	1.94
Calorific Value (KCK)		8343	8905
Caking Index		9	22
Coke Type		C	G3
<u>Grade</u> : Generally weshery grade-III to II Marginally grading to washery grade-IV.			
<u>Note</u> : Though the VM/UC is more than 30% in PKD-35 and 42, the Ash% is more than 35% so the coal is considered as Non-coking coal.			

(ix)

(1)	(2)	(3)	
<u>SEAM – III : Non-coking coal.</u>			
<u>(ii) 22-30% VM/UC cut-off. On 60% RH at 40°C.</u>			
Moisture	%	1.13	2.27
Ash	%	24.33	32.38
Volatile Matter	%	18.77	24.34
Fixed Carbon	%	35.0	54.63
Total Sulphur	%	1.00	-
Carbon-di-oxide	%	2.92	-
<u>On unit coal :</u>			
Volatile Matter	%	22.89	28.37
Carbon	%	83.05	-
Hydrogen	%	4.79	-
Nitrogen	%	1.86	-
Calorific Value (KCK)		8478	-
Caking Index		(<3)	(22)
Coke Type		E	F

Grade : Generally the grade is C to D.

(x)

(1) (2) (3)

SEAM – I (In-Band) Medium coking coal :

(i) 30% VM/UC cut-off. On 60% RH
at 40°C.

Moisture	%	1.14	2.82
Ash	%	20.07	33.43
Volatile Matter	%	23.33	28.89
Fixed Carbon	%	37.82	50.52
Total Sulphur	%	0.71	1.76
Carbon-di-oxide	%	0.07	0.44

On unit coal :

Volatile Matter	%	30.48	38.09
Carbon	%	86.67	89.08
Hydrogen	%	5.22	5.52
Nitrogen	%	1.63	1.77
Calorific Value (KCK)		8538	8845
Caking Index		12	21
Coke Type		E	G

Grade : Generally the grade is washery grade-III to washery grade-II. Marginally grading to washery grade-IV.

(xi)

(1)	(2)	(3)	
<u>SEAM – I : Non-coking coal :</u>			
<u>(ii) 22 to 30% VM/UC cut-off. On</u>			
<u>60% RH at 40°C.</u>			
Moisture	%	1.2	1.76
Ash	%	20.9	32.7
Volatile Matter	%	18.0	24.6
Fixed Carbon	%	46.4	55.0
Total Sulphur	%	0.76	0.90
Carbon-di-oxide	%	0.44	0.48
<u>On unit coal :</u>			
Volatile Matter	%	23.61	29.9
Carbon	%	88.51	89.35
Hydrogen	%	4.44	4.91
Nitrogen	%	1.78	1.81
Calorific Value (KCK)		8714	8938
Caking Index		7	20
Coke Type		-	-

Grade : Generally the grade is C to D.

5. The washability characteristics of the coal of Dhau south block are expected to be very similar to those of Nandan incline- 1 & 2.

1.50 Specific gravity fraction on washing.

		Nandan Incline <u>1 and 2</u>	<u>Dhau South block</u>	
<u>A. Raw Coal :</u>			<u>Seam - III</u>	<u>Seam-I</u>
Ash	%	24.7	22.42	26.65
VM/UC	%	34.4	30.7-36.70	31.43-38.09
CI		14	9-22	12-20
CT		D	D-G3	E-G
<u>B. Washed Coal.</u>			<u>75 mm</u>	<u>25 mm</u>
Recovery	%		71.62	68.72
Ash	%		16.2	15.1
VM/UC	%		33.0	34.3
CI			NA	15
CT			D	E

11. Reserves :

Net in-situ in-band reserves of 34.669 million tonnes have been assessed with a break up of 28.462 million tonnes (82.09%), 5.026 million tonnes (14.50%) 1.131 million tonnes (3.41%) for Sems-III, I and II respectively for a thickness of 0.5 m and above. The total reserves is made up of 19.208 million tonnes (55.40%) of medium coking coal and 7.293 million tonnes (21.04%) of non-coking coal and 8.168 million tonnes (23.56%) of Jhama.

Sems-III, I and II hold medium coking coal of 15.416 million tonnes (80.26%), 2.880 million tonnes (14.99%) and 0.912 million tonnes (4.75%) respectively.

Sems-III, I and II hold non-coking coal of 5.932 million tonnes (81.34%) 1.186 million tonnes (16.26%) and 0.175 million tonnes (2.40%) respectively.

The synoptic details of net in-situ seam-wise, Mine-wise, depth-wise, grade-wise, sector-wise and thickness-wise reserves are given below :