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**GEOLOGICAL NOTE
ON
COAL EXPLORATION
BHASKARPARA BLOCK
JHILIMILI COALFIELD
DIST. SURGUJA (M.P.)**

**OCTOBER 1999
REGIONAL INSTITUTE - V
BILASPUR - 495006**



CMPDI

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SALIENT FEATURES

1. **Name of the Block** : Bhaskarpara Block, Jhilimilli Coalfield, Dist. Surguja(MP)
2. **Area of the Block** : 9.2 sq.km.
3. **Location** : This is the easternmost member of the Jhilimilli CF & falls in Survey of India Toposheet No.64 J/11 & 64 I/15.
Latitude-23°20'50"-23°22'30"
Longitude-82°45'00"-82°48'50"
4. **Objective** : (i) Structural set up of the block in respect of Seam II, Seam II, Seam IVB, Seam IVA & Seam V based on the data generated from NCBP,JB,JG & JBSG series of boreholes.
(ii) Quality studies of all the seams in the block
(iii) Workability of all the seams in the block
(iv)Assessment of reserves of all the seams.
5. **Quantum of Work** : (i) Study of correlation & interpretation of all the seams in 102 boreholes as follows:

<u>Expl.Agency</u>	<u>No.of bhs.</u>	<u>Meterage</u>
NCDC(NCBP)	69	8554.52
MECL(JB&JG)	19	1910.55
SECL(Contractual JBSG)	20	1120.00
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Total	108	11585.07
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6. Geology

Age	Formation	Lithology
Recent/Sub Recent	Soil/Alluvium	Sandy & clayey soil
Upper Cretaceous	Basic Intrusives	Dolerite sills/dykes
~~~~~Unconformity~~~~~		
Lower Permian	Barakar	Medium to coarse grained sandtones with shale & coal seams (5 seams)
	Talchirs	Fine grained sandstone with greenish and Khaki colour with shales
~~~~~Unconformity~~~~~		
Archeans	Metamorphic	Granite & gneisses

7. Structure of the Block

- (i) Strike- The strike of the coal bearing formations is E-W with local undulations
- (ii) Dip- The dip of the coal seam is 9 to 10° in the eastern & central part while it is 2 to 3° in the southern & south western part of the block
- (iii) Faults- A total of 6 normal faults have been interpreted. The trend of the faults are largely E-W with broad swing towards north in some cases. Fault F1 is the boundary fault & forms the northern boundary of the block.

8. Coal seam sequence & Partings:

Sequence of seams/parting	Range of seam thickness		Range of parting thickness	
	Min.	Max.	Min.	Max.
Seam V	0.4 (NCBP-67)	4.57 (NCBP-83)		
Parting			7.20 (NCBP-67)	15.10 (JG-30)
Seam IVA	0.61 (NCBP-24,80)	2.00 (NCBP-68)		
Parting			0.50 (NCBP-67)	4.74 (NCBP-68)
Seam IVB	0.31 (NCBP-82)	1.98 (JB-9)		
Parting			71.49 (NCBP-77)	111.61 (JG-30)
III	0.09 (JB-11)	2.43 (NCBP-19)		
Parting			2.50 (JB-4)	14.20 (NCBP-32)
II/(Top)/Comp.	0.31 (NCBP-50)	3.51 (NCBP-66)		
Parting			0.44 (NCBP-64)	6.65 (NCBP-33)
Seam II(Bot.)	0.05 (NCBP-32)	1.34 (JB-2)		

9. Quality				On 60% RH & 40°C/equilibrated			
Seam name	M%	A%	VM%	GCV K.cal./kg.	UHV K.cal./kg.	Grade	No.of boreholes
V	4.7-6.1	31.2-37.3	22.5-25.1		3049-3863	F-E	11
IVA	4.1-5.8	23.7-25.4	25.4-26.6	5140-5635 (6 bhs.)	2856-4843	F-D	19
IVB	4.5-6.5	17.0-28.4	23.6-30.0	5445-6250 (7 bhs.)	4360-5823	D-B	21
III	3.9-6.4	9.6-19.6	28.1-31.8	6235-6655 (12 bhs.)	5152-6789	C-A	33
II(Top)/ Composite	-6.8	12.8-34.5	20.9-31.0	5250-6560 (9 bhs.)	3449-6264	E-A	61 boreholes

10. Reserves : A total of 46.91mt of reserves have been estimated as follows:

Summarised statement of seam-wise reserves

Seam	Proved		Indicated		Total	
	Area	Res	Area	Reserves	Area	Reserves
Seam V	1.47	7.49	-	-	1.47	7.49
Seam IVA	2.32	4.01	-	-	2.32	4.01
Seam IVB	2.14	3.18	-	-	2.14	3.18
Seam III	5.98	8.7	0.08	0.07	6.06	8.77
Seam II (Top)	5.71	12.33	0.22	0.62	5.93	12.85
Seam II Composite	2.4	8.63	0.61	1.98	3.01	10.61
Total		44.34		2.57		46.91

Summarised statement of Thickness-wise and grade-wise reserves

Seam	Thickness (m)	Grade						Total
		A	B	C	D	E	F	
Proved								
Seam V	0.9-1.2	-	-	-	-	0.06	-	0.06
	1.2-5.00					7.14	0.29	7.43
Total V	0.90-5.00	-	-	-	-	7.2	0.29	7.49

Seam	Thickness (m)	Grade						Total
		A	B	C	D	E	F	
Seam IVA	0.9-1.2	-	-	-	1.30	0.25	0.30	1.85
	1.2-2.00				0.90	0.65	0.60	2.15
Total IVA	0.9-2.0	-	-	-	2.21	0.9	0.9	4
Seam IVB	0.5-0.9	-	0.04	0.03		-	-	0.07
	0.9-1.2		0.41	1.70	0.10			2.21
	1.2-2.00		0.32	0.49	0.09			0.90
Total IVB	0.50-2.0	-	0.77	2.22	0.19	-	-	3.18
Seam III	0.5-0.9	0.99	1.06	0.05	-	-	-	2.10
	0.9-1.2	0.86	0.70	0.11				1.67
	1.20-2.50	0.33	4.25	0.35				4.93
Total III	0.50-2.50	2.18	6.01	0.51				8.7
Seam II(Top)	0.5-0.9		0.17	0.20	-	-	-	0.37
	0.9-1.2		0.19	0.25	0.19	0.08		0.71
	1.2-2.5	0.14	1.63	2.62	4.81	2.05		11.25
Total II(T)	0.50-2.50	0.14	1.99	3.07	5	2.13		12.33
Seam II(Comp.)	1.2-4.0	-	-	2.22	6.41	-	-	8.63
Total proved		2.32	8.77	8.02	13.81	10.23	1.19	44.34
Indicated								
Seam III	0.50-0.90		0.04	0.03	-	-	-	0.07
Seam II(Top)	1.2-2.50		-	-	0.52	-	-	0.52
Seam II(Comp.)	1.50-3.00		-	-	1.98	-	-	1.98
Total Indicated	0.04		0.04	0.03	2.5			2.57
Total(Proved+ Indicated)		2.36	8.8	10.52	13.81	10.23	1.19	46.91

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- Annexure IA Statement showing the boreholes not considered in the present note
- Annexure II Statement showing seam-wise & borehole-wise distribution of dirt bands in Bhaskarpara Block
- Annexure III Statement showing proximate analysis on 60% RH & 40°C/equilibrated, GCV, UHV & grade of different coal seams in boreholes of Bhaskarpara Block
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SECRET

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CHAPTER I

1.0 INTRODUCTION

1.01.00 Background

1.01.01 In the light of the geological note of Bhaskarpara Block prepared by MECL the workability of Seam II top/composite was studied for projecting mine plan in the seam.

1.01.02 The main constraints in projecting the mine plan was viewed as follows:

- (a) Incrop of Seam II/Composite was not proved
- (b) Surface contouring of the block was not available
- (c) Structural set up of the block submitted by MECL in the note required to be proved by confirmatory boreholes.
- (d) Delineate a intrusive body in the incrop zone of SeamII(Top) which was likely to hamper the drivage of the incline.

1.01.03 SECL was asked to take up drilling of 24 Nos. of boreholes with a total of 1200m and surface contouring of Bhaskarpara Block.

1.01.04 As a follow up action SECL took up drilling work and surface contouring work of the block by engaging private contractors.

1.01.05 At the same time CMPDI,RI-V took up magnetic survey for actual delineation of dyke in the incrop regions of Seam II (Top).

1.01.06 A geological note to suit the need of the mine planners was submitted in June'94 incorporating all the data generated in 18 boreholes (JBSG series) drilled by SECL, surface contour plan provided by SECL & delineation of dyke carried out by CMPDI RI-V on the basis of which PR of Bhaskarpara U/G was prepared.

1.01.07 Presently final RPR is under preparation by the Mine Planners. It is the requirement of the Mine Planners to prepare a comprehensive geological documentation which will form the basis of the preparation of RPR.

1.02 OBJECTIVE

1.02.01 The preparation of this geological note has been taken up with the following objective.

- (a) Structural set up of the block in respect of all the seams viz. Seam II, Seam III, Seam IVA, IVB and Seam V based on the data generated in borehole of NCBP series drilled by NCDC, JB series drilled by MEC, JBSG series drilled by SECL & a few boreholes of JG series drilled bu MECL.

- (b) Quality studies of all the seams in the block
- (c) Workability of all the seams in the block
- (d) Assessment of reserves of the seams

1.03.00 **Block Boundary**

1.03.01 Bhaskarpara constitutes the eastern most member of the Jhilimili CF and its boundaries has been taken the same as considered in the GN submitted by MECL. The boundary is described as follows:

- North : Boundary fault
- South : Incrop of Seam II & III
- East : Incrop of Seam II
- West : Line passing in between boreholes JG-47 & NCBP-3 & JG-29 & NCBP-13

1.04.00 **Previous Work**

1.04.01 During the forties the area around Bhaskarpara was prospected by M/s Dalchand Bahadur Singh & Co. for which the data are not available.

1.04.02 NCDC during 1962-64 carried out exploration in the Bhaskarpara Block. A total of 71 boreholes (NCBP series) were drilled with a total of 8745.62m of drilling. Out of 71 bhs., 2 boreholes NCBP-48 & 97 (Total 191.10m) have been considered in adjacent Girijapur Block. Thus 69 boreholes of NCBP series have been considered in the report.

1.04.03 Six boreholes NCBP-23,29,46,85,86 & 88 have not encountered any correlatable coal horizon and are falling outside the area of interpretation. So these locations are not shown in the plan. An account of these 8 boreholes are given in Annexure IA.

1.04.04 MECL during the period, from Aug.'86 to Nov.'86 drilled 17 boreholes (JB series) covering an area of about 8.5 sq.km. with a total of 1573.35m. Two boreholes JG-30 & JG-50 involving 337.20m of drilling have also been drilled in Bhaskarpara block.

1.05.00 **Present work**

1.05.01 SECL has drilled 20 boreholes of JBSG series involving a total of 1120m by engaging private contractors.

1.05.02 Surface contouring of the Bhaskarpara Block was also completed by SECL by engaging private contractors.

1.05.03 Geophysical prospecting to delineate the dyke in Bhaskarpara Block was taken up by CMPDI,RI-V.

1.06.00 **Location & Accessibility**

1.06.01 Bhaskarpara Block is situated in the eastern continuity of Girijapur Block, Jhilimili CF Dist.Surguja(MP) & lies between Latitude 23°20'50" -23°22'30" & longitude 82°45'00" - 82°48'50"

The block falls in the Survey of India Topo sheet No.64 I/11 & 64/I/15.

1.06.02 The Bhaskarpara Block is approachable by 11 km long fair weather road from Surajpur located on the State Highway 14 connecting Ambikapur & Manendragarh. The nearby village Badsara & Bhaskarpara are also connected by fair weather road with village Patna through which the State Highway 14 passes.

1.06.03 The Katora Railway station on Bijuri-Karonji railway line of the SE Railway is the nearest railway station to the block which is about 12km away.

1.07.00 **Physigraphy & Drainage**

1.07.01 The general elevation of the block varies from 530m to 597m above mean sea level. The average elevation of the block is around 565m above MSL. The southern part of the block is mainly plain country comprising of rich paddy fields. The northern part is however undulating terrain occupied by sandstone ridges.

1.07.02 The Manikpara nala with north easterly flow drains to join Gokanai nala in the north & Kolna nala with south easterly flow drains into Rehar river in the east. These two seasonal nala alongwith their feeders control the drainage pattern of the block.

1.8.0 **Climate**

1.08.01 The average rainfall is around 1500mm out of which 80% is during the monsoon months. July to Sept. "Tropic of Cancer" passes just north of Jhilimilli CF. The area experiences temperate climate. The highest temperature during May-June goes upto 46°C during the day time while in winter the temperature reads 3° to 4° during the night.

1.09.00 **Scope**

1.09.01 The data generated from a total of 102 boreholes have been utilised for the present interpretation. The agency-wise borehole details are as follows:

NCBP series NCDC 63 Nos.: 2 to 6, 8 to 13, 16, 17, 19 to 22, 24 to 28, 30 to 33, 38, 40, 42, 43, 50, 52 to 56, 58 to 68, 70 to 84 & 87

JB series MECL 17 Nos.: 1 to 17

JG series MECL 2 Nos. 30 & 50

JBSG series SECL 20 Nos. 1 to 20

- 1.09.02 The extent of dyke proved by magnetic survey has been incorporated in the note.
- 1.09.03 The band by band analysis data for the boreholes available have been utilised to equilibrate & calculate the UHV & grade for drawing the seamfolio plan of the individual seams.
- 1.09.04 The lithologs of the boreholes (JBSG series) 1 to 20 drilled by SECL is incorporated in the note
- 1.10.00 **Limitations**
- 1.10.01 The borehole lithology, lithologs & seam structures of the NCBP, JB & JG series of boreholes drilled by NCDC & MECL respectively are included in the reports published by the respective agencies so they are not included in this note.
- 1.10.02 The borehole location plan as submitted by SECL has been taken as the base plan for all interpretation.
- 1.10.03 Remarkable changes have been noted in the reduced level provided by SECL in case of JB series of boreholes drilled by MZCL and some of the NCBP series of boreholes. These are given below:

Table 1.01: Difference of Reduced Levels, Bhaskarpara Block.
 Borehole No. R.Ls.(m) as per report R.L.(m) communicated by SECL

Borehole No.	R.Ls.(m) as per report	R.L.(m) communicated by SECL
JB-2	563.69	563.69
JB-3	560.26	562.38
JB-4	583.93	585.60
JB-5	571.70	573.81
JB-6	550.62	552.71
JB-7	568.11	570.24
JB-8	549.54	551.08
JB-9	580.75	582.77
JB-11	562.00	564.13
JB-12	593.86	595.84
JB-13	551.86	554.12
JB-14	544.80	546.80
JB-15	563.78	566.49
JB-16	557.50	557.50
JB-17	554.68	544.68
NCBP-4	560.93	562.46

Borehole No.	R.Ls.(m) as per report	R.L.(m) communicated by SECL
NCBP-12	572.39	573.49
NCBP-31	560.33	561.00
NCBP-32	568.00	569.65
NCBP-50	556.40	558.10
NCBP-64	567.61	568.94
NCBP-65	569.84	571.25
NCBP-78	584.34	586.12

- 1.10.04 The location of JBSG-16 needs checking so the data encountered in this borehole have not been considered for interpretation.
- 1.10.05 Analysis for none of the JBSG series of boreholes are available. The detailed lithology of these boreholes have not been supplied by SECL & have not included in the report.
- 1.10.06 The same line of split of Seam II as worked out by MECL has been considered in the present interpretation of Seam II

CHAPTER II

GEOLOGY

2.01.00 Regional Geology

2.01.01 The geological succession of Jhilimilli CF are given below:

Table 2.01: Regional Geological Succession in Jhilimilli CF

Age	Formation	Rock type
Upper Eocene/Lower Eocene	Decoan Trap	Dolerite sills
Upper Triassic	Mahadeva	Coarse to Medium grained highly ferruginous sandstone red shales
~~~~~Unconformity~~~~~		
Lower Permian	Barakar	Medium to coarse grained occasionally gritty sandstone with shales & coal seams
Upper Carboniferous Lower Permian	Talchirs	Medium to fine grained sandstone needle shales & tellites
~~~~~Unconformity~~~~~		
Pre-cambrian		Granite, gneisses, chlorite-Schist, Quarzite.

2.02.00 Geology of Bhaskarpara Block

2.02.01 The sedimentary sequence encountered in Bhaskarpara Block belong to the lower Gondwana group.

2.02.02 The surface evidences of dolerite dyke was observed as float (rubble of dolerite pieces) near borehole JB-13 & NCBP-26.

2.02.03 The Geological succession of the block as given by GSI is as follows:

Table 2.02: Geological succession of Bhaskarpara Block

Age	Formation	Lithology
Recent/Sub Recent	Soil/Alluvium	Sandy & clayey soil
Upper Cretaceous	Basic Intrusives	Dolerite sills/dykes
~~~~~Unconformity~~~~~		
Lower Permian	Barakar	Medium to coarse grained sandstone with coal seams (5 seams)
	Talchirs	Fine grained sandstone with greenish and red colour with shales
~~~~~Unconformity~~~~~		
Archeans	Metamorphic	Granite & gneisses

2.03.00 **Archeans**

2.03.01 The Archeans form the basement complex. These are not exposed in the block. They are present only in the northern & north-eastern part of the block beyond fault F1.

2.04.00 **Talchirs**

2.04.01 The Talchirs overlies the Archeans & do not crop out within the block. The Talchirs have been encountered in boreholes NCBP-2,3,4,5,6,21,23, 25,30,43, 54,68,70,71,74,84 & 86.

2.05.00 **Barakars**

2.05.01 The Barakars overlie the Talchirs conformably. The entire area comprises of Barakars with thin cover of soil. The Barakar consists mainly of sandstone, shale, calc. shale & coal seams. The sandstone show all gradations of grain sizes but in general they are medium to coarse grained, gritty nature.

2.06.00 **Basic Intrusives**

2.06.01 Major part of the area is devoid of intrusives activity. In the southern part of the block a dolerite dyke could be identified in the following boreholes:

Borehole No.	Intrusive		Thick(m)
	From(m)	To(m)	
JB-13	9.05	20.00	10.95+
NCBP-26	6.31	19.50	12.19+
JBSG-1	7.50	40.00	32.50+
JBSG-11	9.00	28.00	19.00+
JBSG-12	9.50	29.00	9.50
JBSG-20	10.00	15.70	5.70+

2.07.00 **Soil and weathered mantle**

2.07.01 The soil within the block is mostly of residual type, derived out of Barakar & contain sandy & clayey materials.

2.07.02 The weathering effects of sandstones are found even upto a depth of about 48.00m in Bhaskarpara block.

2.08.00 **Thickness of formation**

2.08.01 The details of the thickness range of different formations as encountered in the boreholes drilled in Bhaskarpara Block is given in the table below:

Table 2.03: Thickness range of formations

Formation	Minimum	Maximum
Soil	0.00/0.20	1200(JBSG-18)
Weathered zone	0.91(NCBP-22)	42.98 (NCBP-58)
Barakars	42.98 (NCBP-68)	202.99 (NCBP-71)
Talchir	-	-

2.09.00 **Structure**

2.09.01 The structure of the block is based on the data generated in 102 boreholes drilled by different exploration agencies. The seam correlation, FRL etc. of the different coal seams encountered in boreholes of Bhaskarpara bloci is given in Annexure-I.

2.09.02 The structure of the block has been attempted by drawing floor contour plan of Seam V, IVA, IVB, III & II Top/Composite. the structure so deciphered are depicted in plate Nos. III, IV, V, VI & VII by drawing geological cross sections only AA', BB' & CC' axis as given in Plate No. VIII.

2.09.03 The study of the floor contour plans reveal that the general strike of the coal bearing formation is roughly E-W with local undulations and a broad synclinal structure in the south western part of the block which is very prominent in Seam II and Seam III.

2.09.04 The dip of the coal seams as noticed in floor contour plans varies from 9 to 10° in the eastern & central part to 2 to 3° in the southern & south western part of the block.

2.09.05 The block has been interpreted to be affected by six faults. The major trend of the faults are E-W. The faults have been deciphered on the basis of their borehole intersections, the seam level difference observed on either side of the fault.

2.09.06 From the study of borehole data of NCBP-21,25,30,43, it appears that there are a number of faults sympathetic to F1 resulting in the contact of Barakars in the south of F1 with Talchirs/metamorphic in the north of fault F1. To explain the occurrence of different formations on such a fault without number have been shown in geological cross section AA' & BB' to justify the data encountered in boreholes NCBP-30 & 25 respectively but not shown in any of the plates. The fault F1 has been taken as the boundary for all interpretation.

2.09.07 The detailed account of the faults as interpreted in the Bhaskarpara block is given below

Table: Details of the faults interpreted in Bhaskarpara Block

Fault	Location of the fault	Trend/Direction/ Amount of throw	Evidence of fault
F ₁ -F ₁	North of borehole JG-30, NCBP-19,27,80,78,67,38 forming the northern boundary of the block	Running in E-W direction downthrowing southerly Throw 65m to 220m	a. Level difference on either side of the fault b. Absence of about 220m of strata in NCBP-68 c. Absence of Seam II & III in NCBP-68
F ₂ F ₂	Located between boreholes NCBP-79,28,70 & NCBP-78,65 & 74	Running NW-SE to W-E Downthrowing northerly. Throw 20m to 65m	a. Absence of about Seam II & III in NCBP-71 b. Absence of 65m of strata in NCBP-74 c. Difference of FRLs on either side of fault
F ₃ F ₃	Located between boreholes JB-15, NCBP-83,20,75 & NCBP-27,58 , 64, 40	Running NW-SE Downthrowing southerly Throw 30 to 50m	a. Absence of Seam III:JB-12 b. Parting between seam IVB & II is reduced by around 50m in JB-12 c. Difference of FRLs on both either side of fault
F ₄ F ₄	Located between boreholes NCBP-33,55,53,54, 16 & JB-10,NCBP-52,17,60, 7:	Running almost E-W Downthrowing northerly Throw: 0 to 55m	a. Omission of Seam III in JB-8 & 7 b. Difference of FRLs on either side of the fault
F ₅ F ₅	Located between NCBP-16,48 & JG-50	Running E-W Downthrowing southerly Throw 0 to 10m	a. Difference of FRLs on either side of the fault
F ₆ F ₆	Located between the E-W dyke & NCBP-6,71,63, 73	Running E-W Downthrowing southerly Throw 0 to 20m	Difference of FRLs on either side of fault

GEOPHYSICAL PROSPECTING

CHAPTER III

INTRODUCTION

3.01.00 Occurrence of Dyke

3.01.01 Borehole numbers NCBP-26, JB-13 & JBSG-1,11,12 & 30 drilled in Bhaskarpara Block indicated the presence of dyke in the incrop region of Seam II.

3.01.02 The presence of dolerite dyke was identified in the form of float near boreholes JB-13 & NCBP-26 and also in nala course in the south eastern part.

3.01.03 The trend and thickness of the dyke encountered in the boreholes could not be understood properly.

3.01.04 It became very necessary to delineate the dyke because of its interfering the mine planning of the seam II (top) particularly to placement of the incline.

3.01.05 So it was decided to delineate the dyke by geophysical means. Accordingly magnetic survey was taken up during the second week of Oct.'95 to find out extension/trend/thickness etc. of the dyke & also to identify presence of any other concealed dyke in the block.

3.02.00 Magnetic Survey

3.02.01 For delineating the trend of dyke encountered in some of the boreholes and scanning the area to find out the likely presence of any other concealed dyke within the block boundary, magnetic survey was carried out over 9 profiles. Based on the surface indication of the dyke in the eastern part of the area, available borehole data and surface study of the area, it has been revealed that the dyke is trending approximately in east-west direction in the area. Therefore, all the profile lines have been laid approximately in north-south direction. The location of the profiles are shown in Plate VII and the respective length of the profile lines are given in Table 3.01 below:

Table 3.01: Length of the magnetic survey profile lines in Bhaskarpara Block

Sl.No.	Profile No.	Linear extent of profile line (in km.)
1	P-1	1.05
2	P-2	0.80
3	P-3	0.60
4	P-4	1.10
5	P-5	0.80
6	P-6	0.60
7	P-7	0.65
8	P-8	0.9
9	P-9	0.4

INSTRUMENT USED

The Digital Fluxgate Magnetometer of SCINTREX model MFD-4, Canada make, was used for field measurements. The instrument is Tripod mounted and measures the vertical component of the Earth's magnetic field to a sensitivity of 1 "Gamma", when used with a Tripod. The accuracy of the instrument reduces to 5 "Gamma" when held in hand. The unit "Gamma" is a standard unit used for measuring the magnetic field of the earth.

DATA ACQUISITION

Before starting the magnetic survey a local base station was established in the area near borehole NCBP-4 drilled by NCDC, which lies on profile No.P-1. The location of base station is shown in Plate-VII. Over this station magnetic observations were taken at every 2 to 3 hrs. interval and end of the survey work for the day to study the nature of Diurnal Variation.

Magnetic observations were taken at every 5m station interval along each profile. This was reduced to 2.5m wherever the presence of dyke was suspected and also where sufficient variation in magnetic readings were observed. The distance between one station to another station is 10m over each profile line.

DATA REDUCTION

(i) Normal corrections.

The normal corrections are applicable to a wider area which are attributed to the variations in geomagnetic intensity across the Latitude and Longitude using National and International contour maps for the regional values of F, H and Z i.e. the Resultant, Horizontal and Vertical components of the geomagnetic field. The area under investigation being small, normal corrections have not been considered.

(ii) Secular variations

The secular variations are long term geomagnetic field variations that are monitored continuously at various geomagnetic field observatories around the globe. These corrections are not applicable in this case as the duration of the survey work was very short.

(iii) Diurnal Corrections

These corrections are applied for time dependent variations in the geomagnetic field. If the geomagnetic field at any point is to be monitored continuously, it could be found that the geomagnetic field intensity changes in magnitude by tens of Gammas during a normal "Quiet day", while a change of hundreds of Gammas is to be expected on a "Disturbed day", associated with the sun spot activity.

In present study only the Diurnal corrections were applied by taking Magnetic observations at every 2 to 3 hrs. interval on 10th to 13th October '95 during the survey work at base station. Table 3.02 enlists the fluctuations in the magnetic field at the base station.

Table 3.02: Values of magnetic field intensity at the base station

Sl.No.	Date	Time	Magnetic field intensity at the base station(in Gammas)
1	10.10.95	11:55 hrs.	24713
2	10.10.95	13:25 hrs.	24690
3	11.10.95	08:20 hrs	24705
4	11.10.95	10:40hrs.	24710
5	11.10.9.5	13.30 hrs.	24680
6	11.10.95	16:25 hrs.	24695
7	12.10.95	08:45 hrs.	24685
8	12.10.95	11:30 hrs.	24730
9	12.10.95	14:20 hrs.	24710
10	12.10.95	16:40 hrs.	24695
11	13.10.95	08:25 hrs.	24685
12	13.10.95	11:15 hrs.	24670
13	13.10.95	13:40 hrs.	24705
14	13.10.95	14:10 hrs	24715

The difference in magnitude of the geomagnetic field between two successive readings at the base station was distributed proportionately along the time scale among all the intervening observations at the picket position taken along the profile lines assuming that the change in magnitude has been linear in time. These corrections depending upon the sign were subtracted/added to the individual observations.

After obtaining the corrected readings, the corrected observations were plotted on a linear graph sheet with abscissa as the observation points (picket positions) in the scale 1:2000 and ordinate as magnetic intensity, in Gammas, in the scale 1cm equalling 200 gammas along the respective profile line. The plotted data is shown in fig. 3.01 to 3.09.

RESULTS & DISCUSSION

The trend of the interpreted dyke has been obtained by joining the locations of the station positions having the maximum magnetic intensity along each of the profile lines over the plan. The processed data in the final form are shown in fig. 3.01 to 3.09. The thickness of the dyke over various profile lines has been calculated from

the magnetic data curves. The trend and the interpreted thickness of the dyke over various profiles has been demarcated in Plate VII. In general the level of background magnetic field intensity is recorded around 24600 gamma in the southern side of the dyke and around 24700 gamma in the northern side of the dyke. The profile-wise findings of the survey are as follows:

Profile P-1

The zero station of this profile is at borehole No.NCBP-4. The profile is extended in north-south direction on either side of the borehole. A dyke has been interpreted over this profile from station No.26.0 to 27.2 of thickness 12m. The maximum magnetic field intensity over the dyke has been recorded 27955 gamma at station No.26.5. The processed and plotted data of this profile is shown in Fig.3.01.

Profile P-2

The zero station is located in the southern side of the profile line. A dyke has been interpreted over this profile from station 21.6 to 24.0 indicating a thickness of 24m. The maximum magnetic field intensity over the dyke has been recorded 29062 gamma at station No.23.0. The processed and plotted data of this profile is shown in Fig.3.02.

Profile P-3

The zero station is located in the southern side of the profile line. A dyke has been interpreted over this profile from station NO.23.0 to 25.8 of thickness 28m. The maximum magnetic field intensity over the dyke has been recorded 28357 at station 23.5. The processed and plotted data of this profile is shown in Fig3.03.

Profile P-4

The zero station is located in the northern side of the profile line. A dyke has been interpreted over this profile from station 68.8 to 72.2 of thickness 32m. The maximum magnetic field intensity over the dyke has been recorded 28284 gamma at station 70.0. The processed and plotted field data of this profile is shown in Fig.3.04.

Profile P-5

The zero station is located in the northern side of the profile line. A dyke of thickness 28m has been interpreted from station No.48.2 to 51.0 over this profile. The maximum magnetic field intensity over the dyke has been recorded 27103 gamma at station 49.25. The processed and plotted field data of this profile is shown in Fig.3.05

Profile P-6

The zero station position is located in the northern side of the profile line. A dyke of thickness 12m has been interpreted from station No.14.8 to 16.0 over this profile. The maximum magnetic field intensity over the dyke has been recorded

28710 gamma at station 15.5. The processed and plotted field data of this profile is shown in Fig.3.06.

Profile P-7

The zero station position of this profile is located near borehole No.NCBP-61. A dyke of thickness 32m has been interpreted from station No.24.8 south to 28.0 south over this profile. The maximum magnetic field intensity over the dyke has been recorded 25478 gamma at station 25.5. The processed and plotted field data of this profile is shown in Fig.3.07.

Profile P-8

The zero station of this profile is located on borehole No.NCBP-50. A dyke of thickness 22m has been interpreted from station 0.2 south to 2.4 south over this profile. The maximum magnetic field intensity over the dyke has been recorded 25207 gamma at station 1.5 south. The processed and plotted field data of this profile is shown in Fig.3.08.

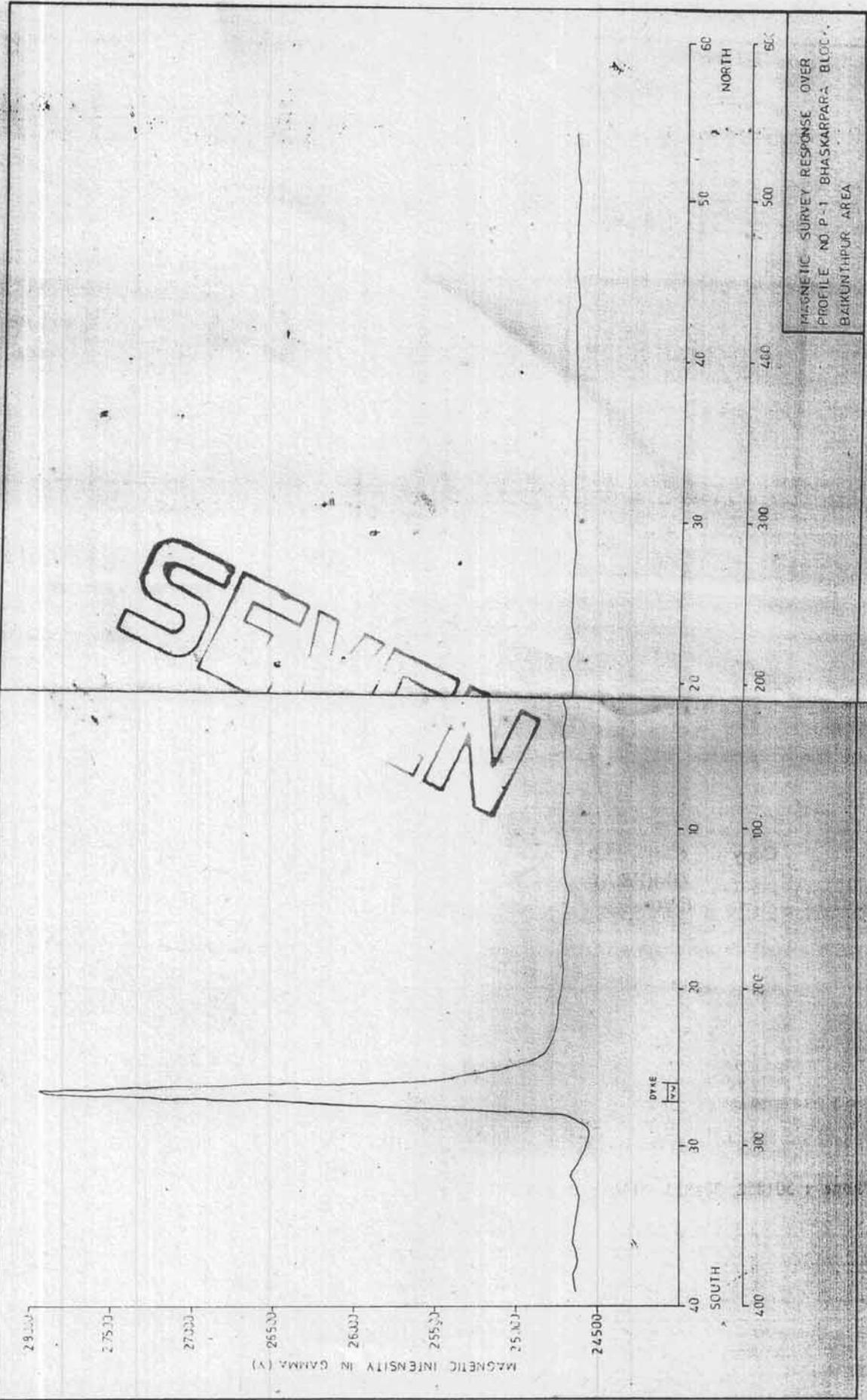
Profile P-9

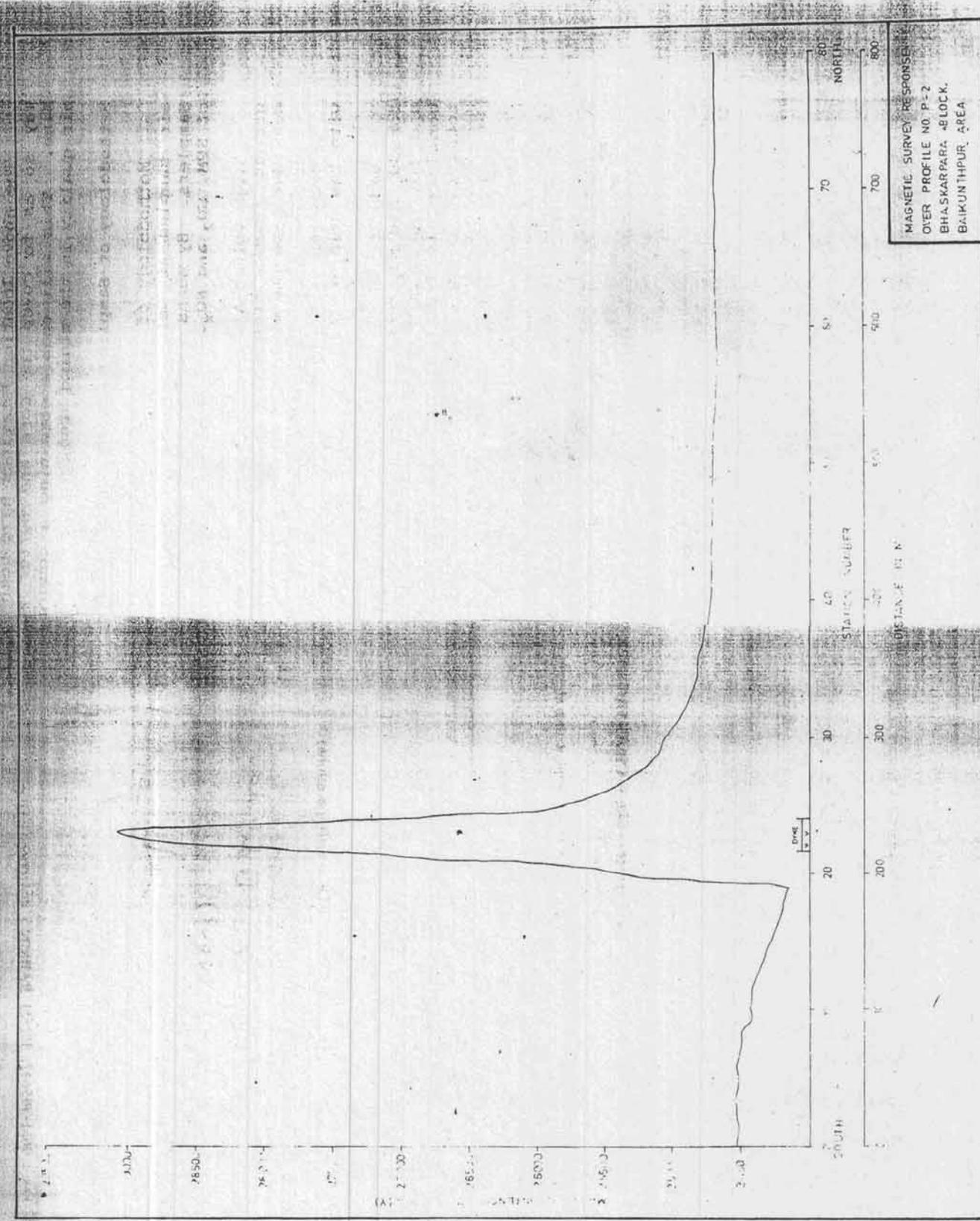
The zero station position is located in the northern side of the profile line. A dyke of thickness 12m has been interpreted from station 9.0 to 10.2 over this profile. The maximum magnetic field intensity over the dyke has been recorded 25777 gamma at station 9.75. The processed and plotted field data of this profile is shown in Fig.3.09. The summarised results of the survey are given in table 3.03

Table 3.03: Summarised results of the magnetic survey

Profile No.	Max.magnetic Intensity		Magnetic anomaly over the dyke		Thickness of dyke in metres.
	Value in Gamma	Observed at pkt.No.	From Pkt.No.	To Pkt.No.	
P-1	27955	26.50	26.0South	27.2 south	12.0
P-2	29062	23.00	21.6	24.0	24.0
P-3	28357	23.50	23.0	25.8	28.0
P-4	28284	70.00	68.8	72.2	32.0
P-5	27103	49.25	43.2	51.0	28.0
P-6	28710	15.50	14.8	16.0	12.0
P-7	25478	25.50	24.8 south	28.0 south	32.0
P-8	25207	1.50	00.2 South	02.4 South	22.0
P-9	25777	9.75	9.0	10.2	12.0

Note: The distance between one station to another station is 10m.





MAGNETIC SURVEY RESPONSE
 OVER PROFILE NO. P-2
 BHASKARPUR 4 BLOCK,
 BAIKUNTHPUR AREA

23200
28500
25100
27500
27000
25500
25000
25500
25000
24500

MAGNETIC INTENSITY IN GAUSS (G)

NEW
SUN

0
20
40
60

0
100
200
300
400
500
600

0
10
20
30
40
50
60

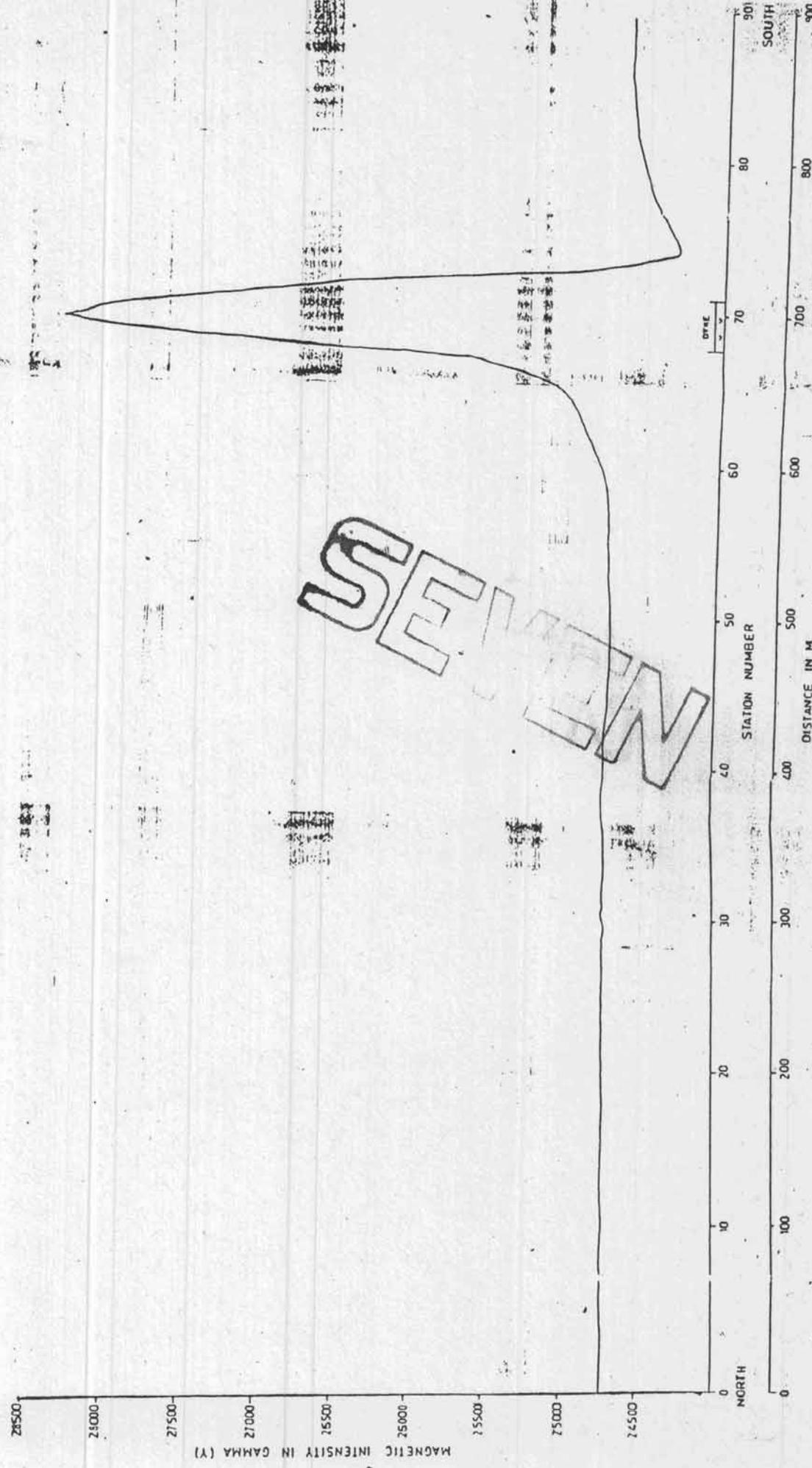
0
100
200
300
400
500
600

SOUTH NORTH

STATION NUMBER

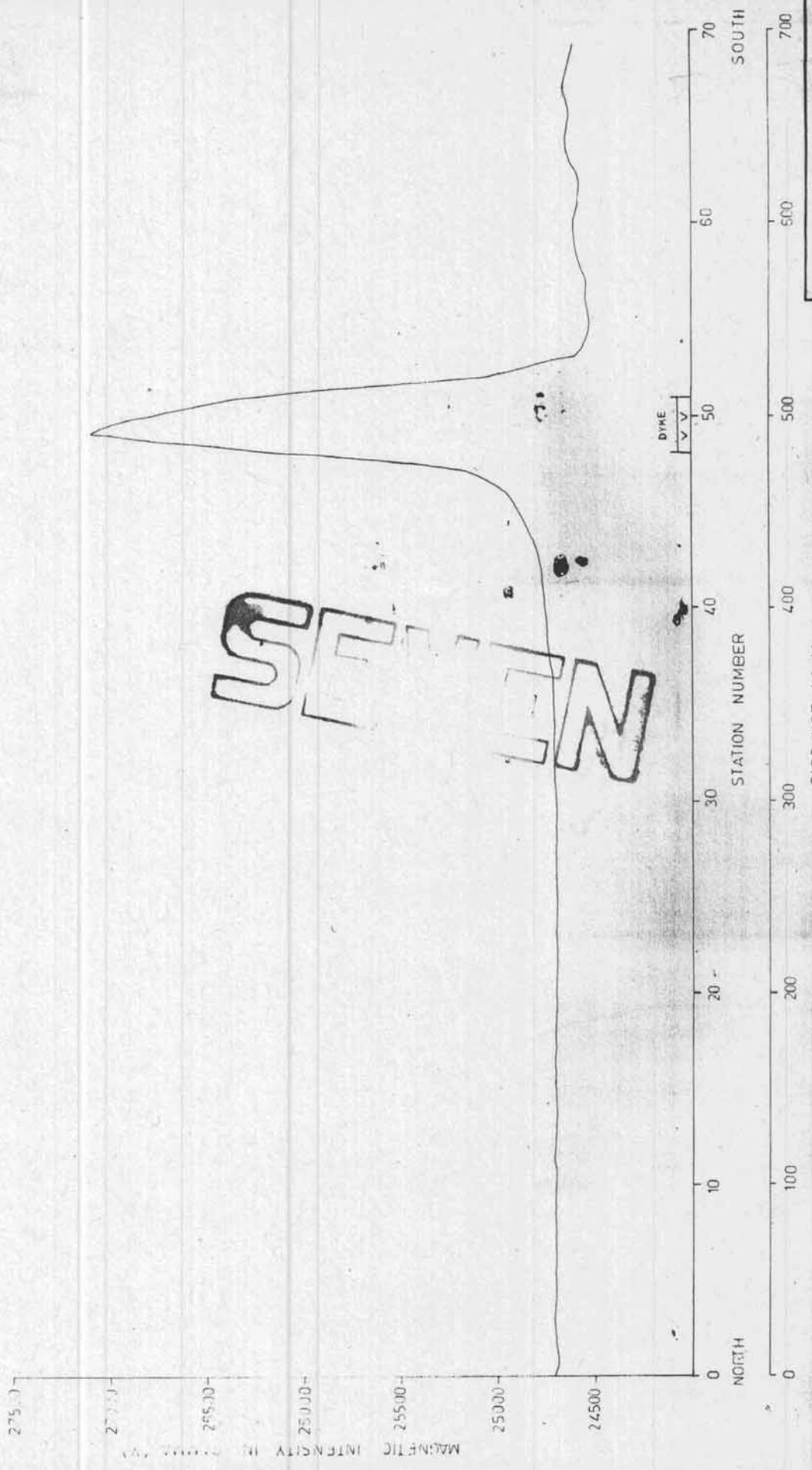
DISTANCE IN M

MAGNETIC SURVEY RESPONSE OVER
PROFILE NO. P-3 BHASKARPARA
BLOCK, BAIKUNTHPUR AREA



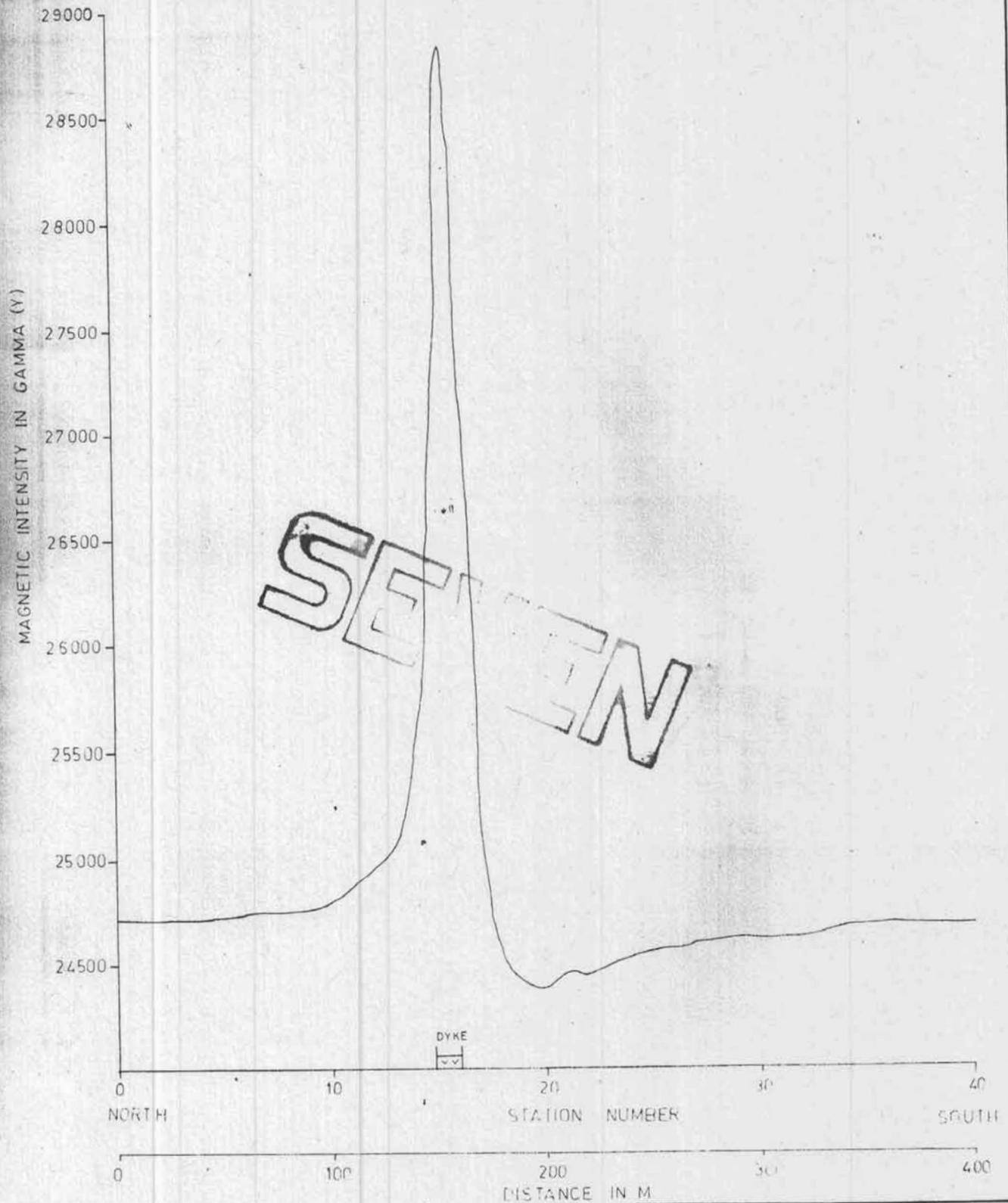
MAGNETIC SURVEY RESPONSE OVER
 PROFILE NO. P-4 BHASKARPARA, BLOC
 BAIKUNTHPUR AREA

Fig-304

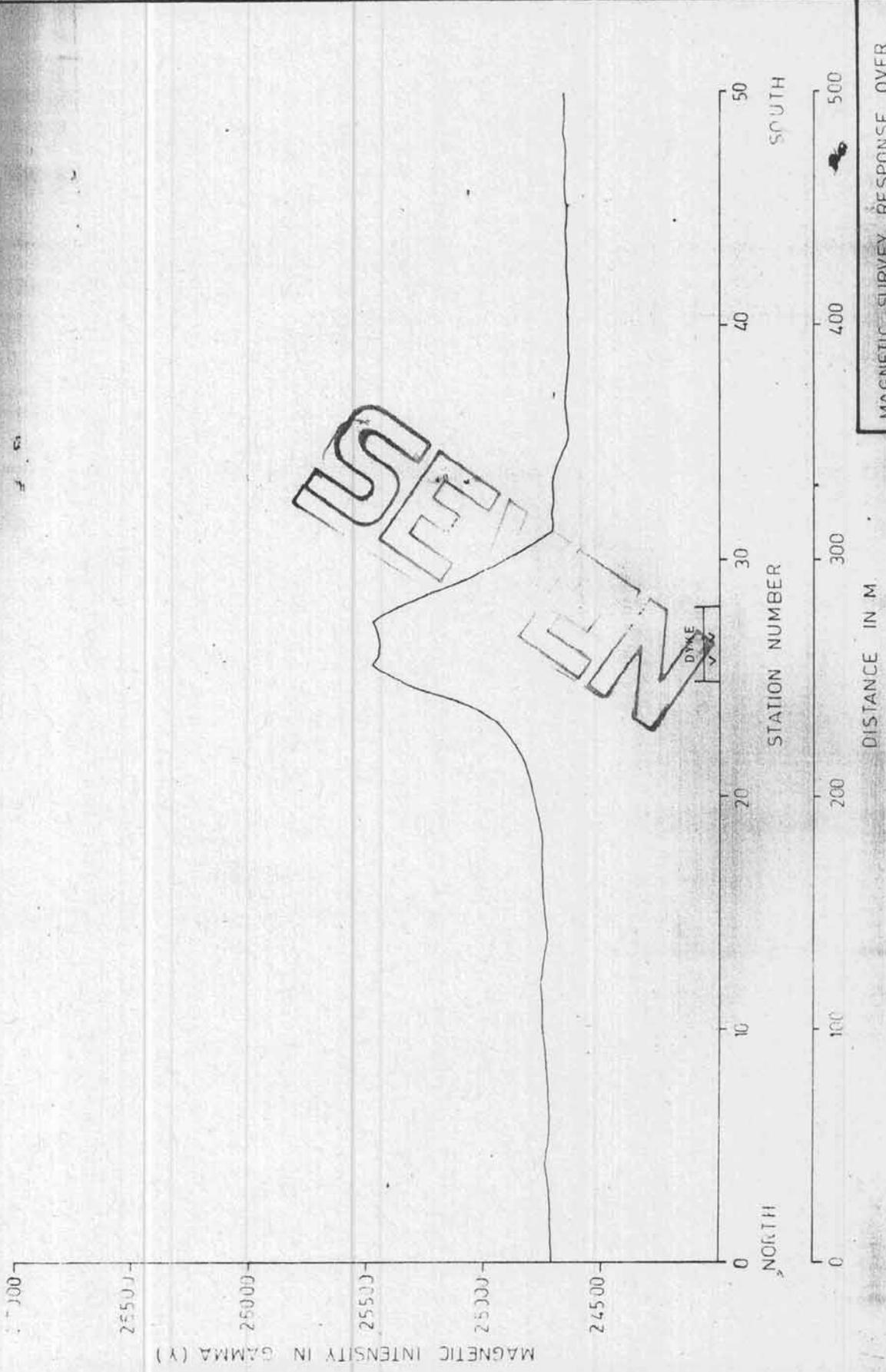


MAGNETIC SURVEY RESPONSE OVER
 PROFILE NO. P-5 BHASKARPARA
 BLOCK, BAIKUNTHPUR AREA.

Fig- 3-05



MAGNETIC SURVEY RESPONSE OVER
 PROFILE NO P-40 BHASKARFARA BLOCK,
 BAIKUNTHI AREA



MAGNETIC SURVEY RESPONSE OVER
 PROFILE NO P-7 BHASKARIPARA BLOCK.
 BAIKUNTHPUR AREA

Fig-3-07

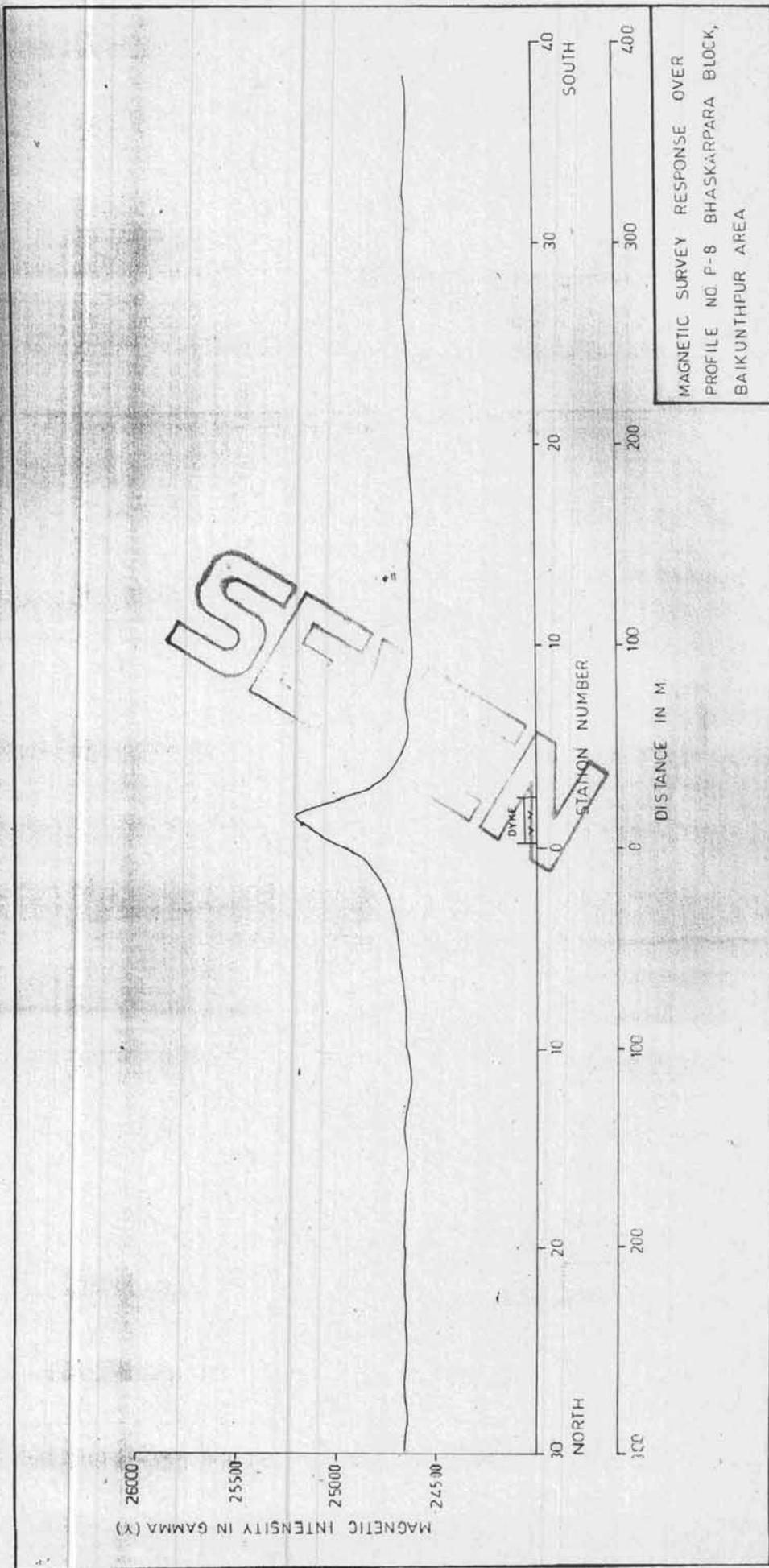


Fig-3 08

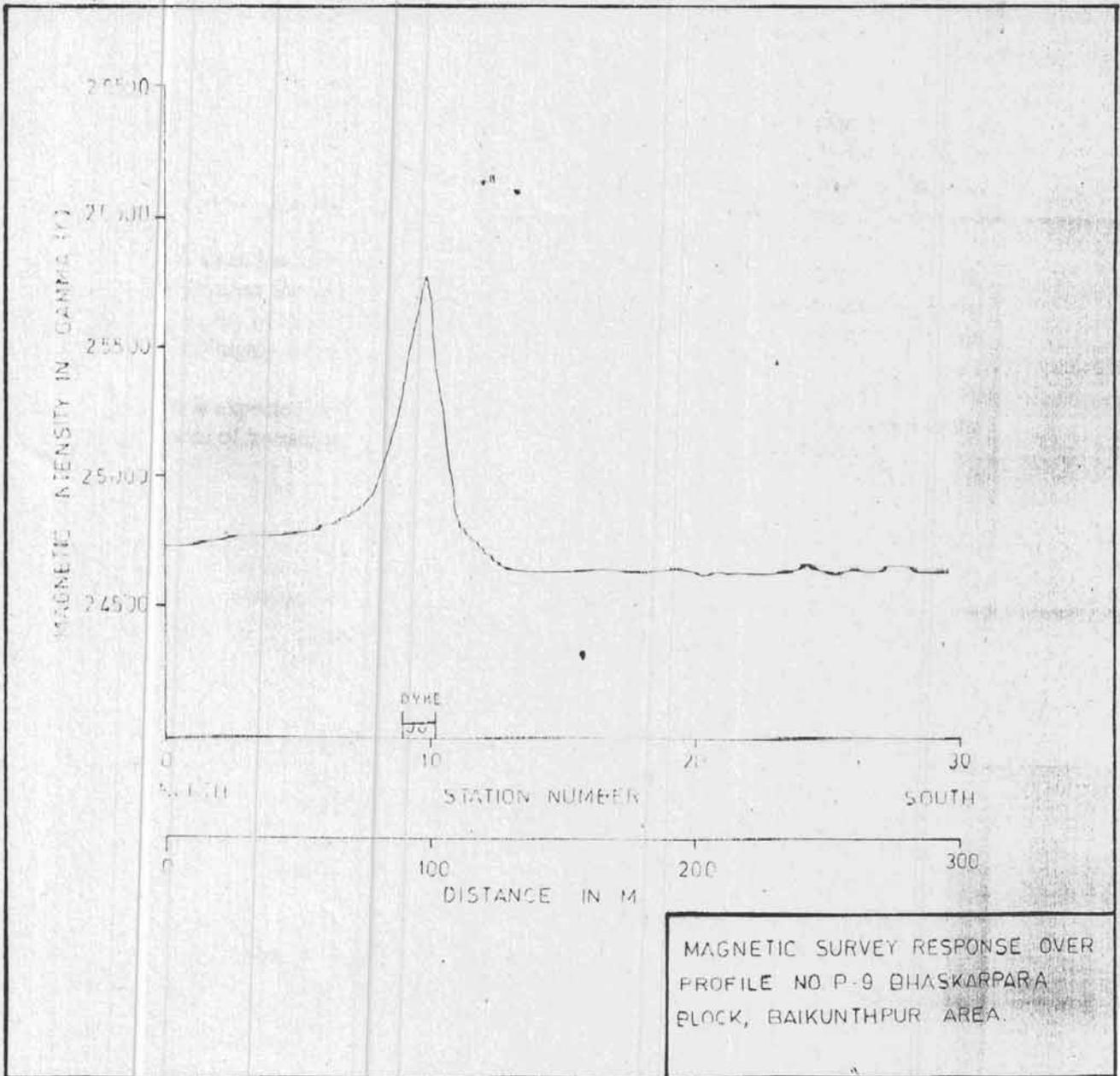


Fig-3.09

CONCLUSION

The anomaly pattern that can be theoretically expected over a dyke has been observed on each of the profile lines. On the basis of the results obtained it can be concluded that:

- (1) The identified dyke is running all through the area striking more or less east-west direction.
- (2) A minor swing in the trend of the dyke has been observed in the western part of the area lying between profile No.P-6 and P-9.
- (3) The thickness of the dyke is found to be maximum of 32m over profiles P-4 and P-7 in eastern part and minimum of 12m over profiles P-1, P-6 & P-9 in the western part of the area of investigation. However, the thickness of the dyke over other profiles varies between 12m to 32m.
- (4) A dyke has been reported in borehole Nos. JBSG-12 & 20 drilled in the area. However the magnetic survey data does not show any magnetic anomaly in the vicinity of these borehole. This may be due to the fact that the dyke is very thin and highly weathered.

It is expected that no other dyke of considerable magnitude is present within the area of investigation subject to the limitations of the magnetic survey.

CHAPTER IV

4.00.00 DESCRIPTION OF COAL SEAMS

4.01.00 General

4.01.01 The data of 102 boreholes drilled by different exploration agencies in Bhaskarpara block reveal the presence of seven correlatable coal seams viz. V, IVA, IVB, III, II(Top)/Composite, II(Bot.) & I occurring in descending order. The Seam II Bot. & I are generally impersistent & unworkable. So these two coal seams are not considered in the description.

4.01.02 The correlation of coal seams, their thickness range & range of intervening parting between the coal seams of Bhaskarpara Block is furnished in the table below:

Table 4.01 : Sequence of coal seams, Bhaskarpara Block

Sequence of seams/parting	Range of seam thickness		Range of parting thickness	
	Min.	Max.	Min.	Max.
Seam V	0.4 (NCBP-67)	4.57 (NCBP-83)		
Parting			7.20 (NCBP-67)	15.10 (JG-30)
Seam IVA	0.61 (NCBP-24,80)	2.00 (NCBP-68)		
Parting			0.50 (NCBP-67)	4.74 (NCBP-68)
Seam IVB	0.31 (NCBP-82)	1.98 (JB-9)		
Parting			71.49 (NCBP-77)	111.61 (JG-30)
III	0.09 (JB-11)	2.43 (NCBP-19)		
Parting			2.50 (JB-4)	14.20 (NCBP-32)
II(Top)/Comp.	0.31 (NCBP-50)	3.51 (NCBP-66)		
Parting			0.44 (NCBP-64)	6.65 (NCBP-33)
Seam II(Bot.)	0.05 (NCBP-32)	1.34 (JB-2)		

4.01.03 A systematic analysis of the different coal seams encountered in NCBP series of boreholes was carried out & are included in the description of different coal seams in the GR of Bhaskarpara Block published by CMPDI in 1974. No

additional quality data have subsequently been generated excepting the band by band analysis of the coal seams encountered in JB series of boreholes drilled by MECL.

4.01.04 The distribution of dirt bands in the seams encountered in different boreholes in Bhaskarpara Block are given in Annexure II.

4.01.05 The UHV values of the different seams encountered in NCBP series of boreholes have been worked out directly from the proximate analysis on 60 % RH & 40°C for which data are available. The UHV for the other boreholes have been equilibrated from the band by band analysis of the respective seams encountered in different boreholes. The proximate analysis on 60% RH & 40°C/ equilibrated basis, GCV, UHV & grade of different seams encountered in boreholes drilled in Bhaskarpara Block are given in Annexure III. All the proximate analysis data are given 'Including combustible band'

The seam maps of Seam V, IVA, IVB, III & II(Top) Composite have been drawn & shown in plates IX, X, XI, XII & XIII respectively.

4.02.00 Seam

4.02.01 This is the topmost seam occurring in the area & its occurrence is restricted in the northern part of the block. This occurs in two scattered patches one on the eastern part (NCBP-32, 38, 65, 67, 71, 78, JB-9 & the other on the western part NCBP-19, 77, 83, JB-12, 15, JBSG-16, JG-30).

4.02.02 This overlies the Seam IVA after a parting varying from 7.20m in NCBP-67 to 15.10m in JG-30. However, the parting between these two seams varies from 10.05m in borehole NCBP-71 to 14.88m in borehole NCBP-38 in the eastern part & from 10.62m in borehole JB015 to 15.10m in borehole JG-30 in the western part.

4.02.03 The seam has been encountered in a total of 15 boreholes out of which 8 boreholes fall in the eastern part & 7 boreholes in the western part. The thickness of the seam varies from 149m in borehole NCBP-38 to 4.04m in borehole JB-9 in the eastern part & 1.67m in borehole NCBP-77 to 4.57m in borehole NCBP-83 in the western part.

4.02.04 The minimum & maximum depth of occurrence is 12.12m in borehole JBSG-15 & 52.22m in borehole NCBP-77 & 51.16m in borehole JB-12 in the western part respectively.

4.02.05 The seam is totally free from band 1m & above. 1 to 2 combustible bands of thickness below 0.30m are found in most of the boreholes while combustible band above 0.30m has been found only in one borehole NCBP-83. The seam is almost free from any non-combustible band excepting in 3 boreholes NCBP-32, 78 & JG-30 in which only one band varying in thickness from 0.16m to 0.20m has been found.

- 4.02.06 The lithology of the column between soil & roof of Seam V is medium to coarse grained gritty sandstone with subordinate shale & carb.shale. The nature of parting with Seam IV A is generally medium to coarse grained occasionally fine grained sandstone with shale & carb.shale bands.
- 4.02.07 The seam has been encountered in 15 boreholes. The band by band analysis are available for 11 boreholes. Proximate analysis data on 60% RH & 40°C are available for 7 boreholes. The band by band data of the rest 4 boreholes have been equilibrated to get the UHV & grade. The range of moisture, ash, UHV & grade are given below

	Minimum	Maximum
M%	4.7	6.1
A%	31.2	37.3
VM%	22.5	25.1
UHV K.cal./kg.	3049	3,863
Grade	F	E
GCV K.cal./kg	NA	NA

- 4.03.00 **Seam IVA**
- 4.03.01 This is the second youngest coal horizon occurring in the block and its occurrence is restricted in the northern part.
- 4.03.02 This overlies Seam IVB after a parting varying from 0.50m in NCBP-67 to 9.74m in NCBP-68.
- 4.03.03 The seam has been encountered in a total of 22 boreholes. The thickness of the seam varies from 0.61m in NCBP-24 & 80 to 2.00m in NCBP-68.
- 4.03.04 The minimum depth of occurrence of the seam is 6.85m in NCBP-24 and the maximum depth of occurrence has been noted to be 63.94m in JG-30.
- 4.03.05 The seam is practically free from any band. Only one carb.shale band each in NCBP-68 & 70 of thickness 0.11 & 0.05m respectively have been found to occur in the block.
- 4.03.06 The lithology of the floor of the seam is generally fine to medium grained sandstone.
- 4.03.07 Out of the 22 boreholes in which the seam has been encountered, analysis is not available for 3 boreholes. Data on 60% RH & 40°C are available for 7 boreholes of NCBP series. The data have been equilibrated for the balance 12 boreholes to get the UHV and grade. The generalised range of moisture, ash, UHV etc. are given below

	<u>Minimum</u>	<u>Maximum</u>
M%	4.1 (NCBP-32& 38)	5.8 (JB-12,NCBP-77,67)
A%	23.7 (NCBP-24)	39.1 (NCBP-19)
VM%	25.4 (NCBP-78)	26.6 (NCBP-38)
UHV K.cal./kg.	2856 (NCBP-79)	4843
Grade	F	D
GCV K.cal./kg	5140 (NCBP-52)	5635 (NCBP-79)

4.04.00 Seam IVB

4.04.01 Seam IVB occurs below seam IVB and above Seam III. Its occurrence is restricted to the northern part of the block.

4.04.02 The parting between this seam & Seam III varies from 71.49m NCBP-77 to 111.61m in JG-30.

4.04.03 The seam has been encountered in total of 24 boreholes. The thickness of the seam varies from 0.31m in NCBP-82 to 1.98m in JB-9.

4.04.04 The minimum depth of occurrence of the seam is 7.31m in NCBP-82 to 68.10m in JG-30.

4.04.05 This seam is totally free from any band. A solitary non-combustible band of 0.06m has been found to occur in NCBP-67.

4.04.06 The floor of the seam is generally fine to medium grained sandstone with subordinate shales, carb.shale & interbanding of shale & sandstone.

4.04.07 Out of 24 boreholes in which the seam has been encountered, analysis are not available for 3 boreholes. The analysis on 60 % RH & 40°C are available for 15 boreholes. The band by band data for balance 6 boreholes are equilibrated to get the UHV & grade. The generalised range of moisture, ash, VM, UHV grade are given below:

	<u>Minimum</u>	<u>Maximum</u>
M%	4.5 (NCBP-17)	6.5 (NCBP-81)
A%	17.0 (JB-15)	28.4 (NCBP-17)
VM%	23.6 (NCBP-19)	30.0 (NCBP-32)
UHV K.cal./kg.	4360 (NCBP17)	5823 (NCBP-77)
Grade	D	B
GCV K.cal./kg	5445 (NCBP-17)	6250 (NCBP-71)

4.05.00 Seam III

4.05.01 This seam occurs below SeamIVB and lies above Seam II/Composite. This seam occurs in the whole block.

4.05.02 The parting of this seam with underlying Seam II varies from 2.50m in JB-4 to 14.20m in NCBP-32.

4.05.03 A brief account of occurrence of this seam in 102 boreholes considered for the preparation of this report is given below:

(a)	No. of boreholes encountered	61
(b)	Missing due to effect of fault	(NCBP-68,71,JB-7,8&12)
(c)	Encountered dyke	3(NCBP-26,JB-13 JBSG-1)
(d)	Updip side	18 (NCBP-5,9,21,30,40, 42,43,76,87,JB-1,2 JBSG-3,4,5,6,11,13& 14)
(e)	Not developed	14 (NCBP-17,54,62,74,81, JBSG-1,2,7,8,9,17,18,19 & 20)
(f)	Not deepened upto desired depth	2(NCBP-80 & JBSG-12)

The thickness of the seam varies from 0.09m in JB-11 to 2.43m in NCBP-19.

4.05.04 The minimum depth of occurrence of this seam is 6.70m in NCBP-72 to 182.88m in JG-30.

4.05.05 The seam is practically free from any dirt band. One band of carb. shale varying in thickness from 0.05m to 0.16m has been found to occur in four boreholes NCBP-16,72,75 & 84.

4.05.06 The lithology of the floor is mostly fine to medium grained sandstone with occasional shale & sandstone interbanding.

4.05.07 Out of 61 boreholes in which the seam has been encountered, band by band analysis is not available for 18 boreholes. Proximate analysis on 60 % RH & 40°C are available for 25 boreholes. The band by band data of balance 18 boreholes have been equilibrated to get the UHV & grade of the seam. The generalised moisture, ash, VM, UHV & grade ranges are given below:

<u>Minimum</u>	<u>Maximum</u>	
M%	3.9(JG-30)	6.4(NCBP-12)
A%	9.6(JB-14)	19.6(NCBP-75)
VM%	28.1(JG-30)	31.8(NCBP-33)
UHV K.cal./kg.	5152(NCBP-75)	6789(JB-14)
Grade	C	A
GCV K.Cal./kg.	6235(NCBP-38)	6655(NCBP-79)

4.06.00 Seam II(Top)/Composite

4.06.01 This is the main workable coal horizon in the block. The seam occur as two split sections in a greater part of the block and they are named as SeamII(T) & Seam II(Bot.). the Seam II (Bot.) is impersistent & of unworkable thickness in most part of the area. The two seams combine on the eastern side to form Seam II (Composite). The line of split has been worked out by MECL and is shown in Plate No XIII

4.06.02 A brief account of the occurrence of this seam in 102 boreholes considered for the preparation of this report is given below:

(a)	No. of boreholes	82
(b)	Missing due to effect of fault	3(NCBP-68,71 & 74)
(c)	Encountered dyke	3(NCBP-26,JB-13 & JBSG-1)
(d)	Updip side	10(NCBP-5,21,42,43,76,JB-1, JBSG-5,11,13,14)
(e)	Not deepened upto desired depth	4(NCBP-38,80, JBSG-12 & 20)

The thickness of the seam varies from 0.31m in NCBP-54 to 3.51m in NCBP-66.

4.06.03 The minimum depth of occurrence of the seam is 11.61m in NCBP-40 and the maximum depth of occurrence of the seam is 188.75m in JG-30.

4.06.04 The seam is generally free from dirt band. some boreholes have got 1 to 2 dirt bands ranging in thickness from 0.06m to 0.28m. There is combustible dirt band above 0.30m in one borehole (NCBP-28-thick.0.37m). One non-combustible dirt band of 0.22m is recorded in JB-12.

4.06.05 The floor of the seam is mostly fine to medium grained sandstone with occasional interbanding of shales.

4.06.06 Out of 82 boreholes in which the seam has been encountered analysis is not available for 21 boreholes. Proximate analysis on 60 % RH & 40°C are available for 31 boreholes. The band by band data of balance 30 boreholes have been equilibrated to get the UHV & grade. The generalised moisture, ash, VM,UHV & grade ranges of this seam are given below:

	<u>Minimum</u>	<u>Maximum</u>
M%	4.0 (NCBP-31 & JB-12)	6.8 (NCBP-59)
A%	12.8 (NCBP13)	34.5 (NCBP-28)
VM%	20.9 (NCBP-28)	31.0 (NCBP-56)
UHV K.cal./kg.	3449 (NCBP-28)	6264 (NCBP-61 & 13)
Grade	E	A
GCV K.cal./kg.	5220 (NCBP-16)	6560 (NCBP-13)

4.07.00 Long flame characteristics

4.07.04 The stipulations laid down for long flame B-5 & B-4 category of high volatile non-coking coals are as follows:

Category	On 60% RH & 40°C	Unit Coal basis
	Moisture% range	VM% range
		GCV K.cal./kg range
B-5	7 to 14	>32
B-4	3 to 7	>32
		7500-8060
		8060-8440

4.07.02 Seam V

The GCV on 60 % RH & 40°C are not available for this seam. So the long flame characteristics of this seam have not been determined.

4.07.03 Seam IVA

The data required for the determination of long flame characteristics of this seam are available for 6 boreholes. The details are given below:

B.H.NO.	From (M)	To (M)	Thick (M)	On 60%	On unit coal		Long flame group
				RH & 40°C	basis		
				M%	VM%	GCV K.cal./kg	
NCBP-32	54.16	55.22	1.36	4.1	35.0	8305	B-4
35NCBP-38	43.80	45.30	1.50	4.1	35.6	8345	B-4
NCBP-52	8.23	9.55	1.32	5.5	36.5	8325	B-4
NCBP-71	40.48	41.82	1.34	5.0	36.4	8370	B-4
NCBP-78	51.35	52.73	1.38	4.4	34.1	8400	B-4
NCBP-79	7.31	8.47	1.17	5.1	36.2	8340	B-4

A comparison of the data of the seam with the laid down stipulations given above shows that the seam IVA encountered in all the six boreholes behave as B-4 category of long flame coal.

4.07.04 Seam IVB

The data required for the determination of long flame characteristics of this seam are available for 7 boreholes. The details are as given below:

B.H.No.	From (m)	To (m)	Thick (m)	On 60%	On Unit Coal		Long Flame Group
				RH & 40°C	Basis	GCV	
				M%	VM%	K.cal./kg	
NCBP-17	15.78	16.56	1.78	4.5	35.6	8475	B-4
35NCBP-19	55.78	56.80	1.02	4.9	37.8	8390	B-4
NCBP-32	57.96	59.58	1.62	4.6	37.2	8210	B-4
NCBP-38	47.10	48.82	1.42	5.5	36.8	8275	B-4
NCBP-52	12.22	13.31	1.09	6	36.6	8005	B-5
NCBP-71	44.21	45.91	1.70	5.8	36.9	8300	B-4
NCBP-79	12.34	13.71	1.37	5.3	37.7	8345	B-4

A comparison of the data of this seam with the laid down stipulation given above shows that Seam IVB encountered in all the seven boreholes behave as B-4 category of long flame coal.

4.07.05 Seam III

The data required for the determination of long flame characteristics of this seam are available for 12 boreholes. The details are as given below:

B.H.No.	From (m)	To (m)	Thick (m)	On 60%	On Unit Coal		Long Flame Group
				RH & 40°C	Basis	GCV	
				M%	VM%	K.cal./kg	
NCBP-3	55.37	57.47	2.10	6.1	37.6	8265	B-4
35NCBP-10	93.32	95.20	1.88	5.1	35.0	8185	B-4
NCBP-12	62.22	63.22	1.00	6.4	36.9	8115	B-4
NCBP-19	160.07	162.50	2.43	4.2	35.3	8335	B-4
NCBP-22	42.52	43.74	1.22	5.5	36.9	8125	B-4
NCBP-24	99.50	100.89	1.39	5.0	35.6	8270	B-4

B.H.No.	From (m)	To (m)	Thick (m)	On 60% RH & 40°C		On Unit Coal Basis	Long Flame Group
				M%	VM%		
NCBP-38	139.80	141.76	1.96	3.7	35.5	8235	B-4
NCBP-52	116.69	118.72	2.03	5.5	35.2	8245	B-4
NCBP-55	74.70	76.18	1.48	5.2	35.8	8180	B-4
NCBP-59	81.10	82.90	1.80	6.3	34.4	8215	B-4
NCBP-78	151.11	151.77	0.66	4.3	35.9	8380	B-4
NCBP-79	109.51	110.11	0.60	5.0	35.4	8225	B-4

A comparison of the data of this seam with the laid down stipulation given above shows that Seam III encountered in all the twelve boreholes behave like B-4 category of long flame coal.

4.07.06

Seam II

The data required for the determination of long flame characteristics of this seam are available for 9 boreholes. The details are as given below:

B.H.No.	From (m)	To (m)	Thick (m)	On 60% RH & 40°C		On Unit Coal Basis	Long Flame Group
				M%	VM%		
NCBP-2	56.55	57.91	1.36	5.2	35.8	8145	B-4
NCBP-12	77.07	78.79	1.72	6.0	33.4	8195	B-4
NCBP-13	39.32	40.74	1.42	6.3	37.1	8240	B-4
NCBP-16	92.14	93.81	1.67	4.2	44.4	8295	B-4
NCBP-17	155.01	154.42	1.41	4.2	32.7	8220	B-4
NCBP-20	108.22	110.48	2.26	4.9	33.5	8295	B-4
NCBP-22	52.7	53.82	1.12	5.4	34.4	8090	B-4
NCBP-31	110.08	112.52	2.44	4.0	34.1	8255	B-4
NCBP-79	122.33	123.07	0.74	5.2	34.7	8310	B-4

a comparison of the data of this seam with the laid down stipulation given above shows that Seam II encountered in all the nine boreholes behave as B-4 category of long flame coal.

CHAPTER V

5.0.0 Reserves

5.01.00 General

5.01.01 Reserves for all the coal seams viz. Seam V,IVA, IVB,III & (Top)/Composite have been calculated.

5.02.00 Basic assumptions

5.02.01 The following basic considerations have been taken for estimation of reserves:

- (i) For coal of grade C & above minimum thickness considered for the purpose of reserve calculation is 0.50m. For coal below Grade 'C' the minimum thickness of 0.90m have been considered.
- (ii) The reserve in the incrop have been calculated by considering half of the incrop area of the seams.
- (iii) Reserve of Seam III in the zone of non development have not been calculated.
- (iv) Area falling within the heave zone have not been considered for reserve calculation.
- (v) All the reserves of Seam V,IVA & IVB have been grouped under Proved category.
- (vi) The reserves of all the seams in Sector V have been grouped under Indicated category due to inadequate data.
- (vii) All the reserves are presented sector-wise, thickness-wise and grade-wise.

5.03.00 Methodology of Reserves calculation

5.03.01 The isochore line considered for calculation of reserves of Seam II & III are 0.50m, 0.90m, 1.20m, 1.50m, 2.00m & 2.50m.

The isochore line considered for the calculation of reserve of Seam IVB, IVA & V are 0.90m, 1.20m, 1.50m & 2.00m.

5.03.02 The grade of the seam is based on the UHV calculated on the basis of the formula

$$UHV = 8900 - 138(A+M)$$

Where A= Ash% } On 60% RH & 40°C
M= Moisture% }

5.03.03 A uniform specific gravity for each grade has been considered for all the seams. It is given below:

<u>Grade</u>	<u>Sp.Gr.</u>
A	1.40
B	1.42
C	1.47
D	1.52
E	1.58
F	1.67

5.04.00 **Sectors of Reserve Calculation**

5.04.01 For the presentation of the reserves of coal seams, the block has been divided into 5 sectors as follows:

- Sector I North- Fault F1
East - Incrop of seams
South- Fault F2
West- Fault F2
- Sector II North- Fault F1
East - Fault F2
South - Incrop of seams
West - Fault F3
- Sector III North -Fault F1
East - Fault F3
South -Fault F4
West - Boundary between Bhaskarpara & Girijapur
- Sector IV North -Fault F4
East - Fault F4 & F6
South -Fault F6, Incrop of seams, dyke
West - Boundary between Bhaskarpara & Girijapur
- Sector V North- Fault F6
East - Incrop of seams
South- Incrop of seams
West - Incrop of seams

5.05.00 **Presentation of Reserves**

5.05.01 The reserves of seam V, IVA & IVB are grouped under Proved category.

5.05.02 All the reserves of Sector V are grouped under Indicated category because of inadequate data.

5.05.03 All the reserves are presented seam-wise, thickness-wise & grade-wise in Annexure IV.

5.05.04 A summarised statement of the reserves of the seams of Bhaskarpara Block are given below:

Table 5.01: Summarised statement of seam-wise reserves

Seam	(Area in sq.km., reserves in mt)					
	Proved		Indicated		Total	
	Area	Res	Area	Reserves	Area	Reserves
Seam V	1.47	7.49	-	-	1.47	7.49
Seam IVA	2.32	4.01	-	-	2.32	4.01
Seam IVB	2.14	3.18	-	-	2.14	3.18
Seam III	5.98	8.70	0.08	0.07	6.06	8.77
Seam II (Top)	5.71	12.33	0.22	0.52	5.93	12.85
Seam II Composite	2.40	8.63	0.61	1.98	3.01	10.61
Total		44.34		2.57		46.91

From the above table it is seen that

- (i) Out of a total of 46.91mt of coal reserves, 44.33mt are under proved category and 2.57mt are under indicated category.
- (ii) Seam II covers maximum area of 8.94 sq.km. followed by Seam III, 6.06sq.km., Seam IVA 2.32 sq.km., Seam IVB 2.14 sq.km. & Seam V 1.47 sq.km.

5.05.04 A summarised statement of thickness-wise & grade-wise reserves of each seam is given below:

Table 5.02: Summarised statement of Thickness-wise & Grade-wise Reserves

Seam	Thickness (m)	Grade						Total
		A	B	C	D	E	F	
		Proved						
Seam V	0.9-1.2	-	-	-	-	0.06	-	0.06
	1.2-5.00	-	-	-	-	7.14	0.29	7.43
Total V	0.90-5.00	-	-	-	-	7.2	0.29	7.49

Seam	Thickness (m)	Grade						Total
		A	B	C	D	E	F	
Seam IVA	0.9-1.2	-	-	-	1.30	0.25	0.30	1.85
	1.2-2.00	-	-	-	0.90	0.65	0.60	2.15
Total IVA	0.9-2.0	-	-	-	2.21	0.90	0.90	4.00
Seam IVB	0.5-0.9	-	0.04	0.03	-	-	-	0.07
	0.9-1.2	-	0.41	1.70	0.10	-	-	2.21
	1.2-2.00	-	0.32	0.49	0.09	-	-	0.90
Total IVB	0.50-2.0	-	0.77	2.22	0.19	-	-	3.18
Seam III	0.5-0.9	0.99	1.06	0.05	-	-	-	2.10
	0.9-1.2	0.86	0.70	0.11	-	-	-	1.67
	1.20-2.50	0.33	4.25	0.35	-	-	-	4.93
Total III	0.50-2.50	2.18	6.01	0.51	-	-	-	8.70
Seam II(Top)	0.5-0.9	-	0.17	0.20	-	-	-	0.37
	0.9-1.2	-	0.19	0.25	0.19	0.08	-	0.71
	1.2-2.5	0.14	1.63	2.62	4.81	2.05	-	11.25
Total II(T)	0.50-2.50	0.14	1.99	3.07	5.00	2.13	-	12.33
Seam II(Comp.)	1.2-4.0	-	-	2.22	6.41	-	-	8.63
Total proved		2.32	8.77	8.02	13.81	10.23	1.19	44.34
Indicated								
Seam III	0.50-0.90	-	0.04	0.03	-	-	-	0.07
Seam II(Top)	1.2-2.50	-	-	-	0.52	-	-	0.52
Seam II(Comp.)	1.50-3.00	-	-	-	1.98	-	-	1.98
Total Indicated	0.04	-	0.04	0.03	2.50	-	-	2.57
Total(Proved+ Indicated)		2.36	8.80	10.52	13.81	10.23	1.19	46.91

From the above table it is seen that:

- (i) Out of a total of 44.34mt of proved reserves, 35.49 mt are within A to D grade.
- (ii) Most of the reserves of Seam V & IVA varies within grade D to F while that of Seam IVB varies within grade B to D.

CHAPTER VI

6.00.00 Conclusion

6.01.01 The preparation of this geological note has been taken up as per the requirement of the Mine Planners.

6.01.2 Exploration in this block has been done in different years by different agencies. First NCDC worked during the year 1962-64 & completed the major part of the exploration & submitted a report. MECL did only 17 boreholes in 1986 & submitted a revised report.

6.01.03 When the mine planning of the main workable coal seam-II was taken up, the drawbacks as noted in the introduction of Chapter I were felt & exploration work in the 3rd phase including surface contouring, magnetic survey for the delineation of dyke had to be taken up.

6.01.04 SECL took up the exploration & contouring in the block by engaging private contractors & provided the print each of the borehole location plan, surface contour plan & borehole litholog of the boreholes completed.

6.01.05 MECL prepared the basic plan by approximately superimposing the boreholes drilled by NCDC and SECL provided a plan of boreholes which forms the base plan of the present interpretation is not in total conformation with the plans submitted by MECL in their GR. Besides there are variations in RLs of certain boreholes provided presently by SECL, as given in 1.10.03

6.01.06 A total of 46.91 mt of reserves have been estimated. The reserves of all the coal seams in Sector V have been grouped under indicated category due to inadequate data.

6.01.07 Out of 46.91mt, 35.49mt of coal reserves are of superior grade long flame. The balance 11.42mt is grouped under E&F grade which is mostly the reserves of Seam V & IVA. The longflame characteristics of seam V could not be determined due to non-availability of data.

ANNEXURE-IA

STATEMENT SHOWING THE BOREHOLES NOT CONSIDERED IN THE
PRESENT NOTE

- NCBP-23 Location-2440' (744m) north of NCBP-21. No correlatable coal horizon. Talchir encountered at 92.66m TD-95.10m
- NCBP-29 Location- 2600'(792.00m) north of NCBP-23. No coal seam upto 240.79m. Borehole suspended at 240.74m
- NCBP-46 Location- Near Deripara village. No correlatable coal seam. Talchir at 99.06m. TD-100.58 m.
- NCBP-48 Location- About 1320' (402m) west of NCBP-16. Borehole considered-Girijapur Block. TD-107.59m
- NCBP-85 Location- About 2340' (713m) north of NCBP-25. No correlatable coal horizon. TD-128.93m
- NCBP-86 Location-About 2620'(798.57m) north of NCBP-30. No correlatable coal horizon. Talchir at 225.55m. TD-228.60 m.
- NCBP-88 Location-About 3800' (1158.24m) 56° W of NCBP-5. Talchir at 86.79m. TD-88.39m
- NCBP-97 Location- About 1140'(347.47m) west of NCBP-13. Considered in Girijapur Block. TD-83.51m.

ANNEXURE 1

Correlation of coal seams in boreholes drilled in Bhaskarpara Block.

	NCBP-2	NCBP-3	NCBP-4	NCBP-5	NCBP-6	NCBP-8	NCBP-9	NCBP-10	NCBP-11	NCBP-12	NCBP-13	NCBP-16	NCBP-17	NCBP-19	NCBP-20	
R.L	559.99	569.04	562.46	557.05	560.73	558.90	553.44	574.51	551.94	573.49	566.52	583.64	557.40	573.79	584.64	
SEAM-V																
FROM (m)															35.21	
TC(m)															39.49	
THICK(m)															4.28	
PARTING(m)															12.45	
FRL (m)															534.30	
RRLL(m)															538.58	
SEAM-IVA																
FROM (m)													13.26	51.94		
TC(m)													13.97	53.34		
THICK(m)													0.71	1.40		
PARTING(m)													1.31	2.44		
FRL (m)													543.43	520.45		
RRLL(m)													544.14	521.85		
SEAM-IVB	UD	UD	UD	UD	UD	UD	UD	UD								
FROM (m)													15.28	55.78		
TC(m)													16.56	58.80		
THICK(m)													1.28	1.02		
PARTING(m)														105.70		
FRL (m)													540.84	516.99		
RRLL(m)													542.12	518.01		
SEAM-III							UD							ND		
FROM (m)	51.24	55.37	30.48		17.50	22.44		93.32	117.35	62.22	29.08	86.84			160.07	102.64
TC(m)	53.18	57.47	31.01		18.31	23.16		95.20	118.26	63.22	30.01	88.21			162.50	103.40
THICK(m)	1.94	2.10	0.53		0.81	0.72		1.88	0.91	1.00	0.93	1.37			2.43	0.76
PARTING(m)	3.37	6.54	10.44		11.05	10.37		5.38	4.52	13.85	9.31	3.93			5.45	-4.82
FRL (m)	508.81	511.57	531.45		542.42	535.44		479.31	433.68	510.27	536.51	495.43			411.29	461.24
RRLL(m)	508.75	513.67	531.98		543.23	536.46		481.19	434.59	511.27	537.44	496.80			413.72	462.00
SEAM-IIT/COM				UD												
FROM (m)	56.55	64.01	41.45		29.36	33.53	12.88	100.58	122.78	77.07	39.32	92.14	133.01	167.95	108.22	
TC(m)	57.91	65.38	42.63		31.67	35.63	14.68	101.85	123.47	78.79	40.74	93.81	134.42	169.32	110.48	
THICK(m)	1.36	1.37	1.18		2.31	2.10	1.70	1.27	0.69	1.72	1.42	1.67	1.41	1.37	2.26	
PARTING(m)																
FRL (m)	502.08	503.66	519.83		529.06	523.27	538.76	472.66	428.47	494.70	525.78	489.83	422.98	404.47	454.16	
RRLL(m)	503.44	505.03	521.01		531.37	525.37	540.46	473.93	429.16	496.42	527.20	491.50	424.39	405.84	456.42	
TOTAL DEPTH	188.67	200.86	181.36	133.20	168.05	108.68	54.86	112.78	147.22	100.60	46.33	128.32	186.23	171.83	121.92	

*Borehole/Seam analysis not available.

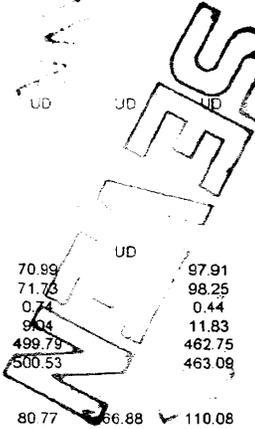
ND - Not developed.

NDIB - Not drilled below.

UP - Up dip

F - Seam faulted.

	NCBP-21	NCBP-22	NCBP-24	NCBP-25	NCBP-26	NCBP-27	NCBP-28	NCBP-30	NCBP-31	NCBP-32	NCBP-33	NCBP-38	NCBP-40	NCBP-42	NCBP-43
R.L.	548.13	564.49	564.34	543.08	548.10	550.64	571.52	547.05	561.00	569.65	573.61	560.55	552.07	529.11	545.65
SEAM-V			UD					UD							
FROM (m)										39.04		27.43			
TO(m)										42.67		28.92			
THICK(m)										3.63		1.49			
PARTING(m)										11.49		14.88			
FRL (m)										526.98		531.63			
RRL(m)										530.61		533.12			
										548.50					
SEAM-IVA								UD							
FROM (m)			6.85							54.16		43.80			
TO(m)			7.46							55.52		45.30			
THICK(m)			0.61							1.36		1.50			
PARTING(m)			2.53							2.44		2.10			
FRL (m)			556.88							534.13		515.25			
RRL(m)			557.49							535.49		516.75			
SEAM-IVB	NO	UD		UD	NO	UD	UD	UD	UD		UD		UD	NO	NO
FROM (m)	C		9.99		C					57.96		47.40	O	C	C
TO(m)	O		10.56		O					59.58		48.82	A	O	O
THICK(m)	A		0.57		A					1.62		1.42	L	A	A
PARTING(m)	L		90.33		L					93.51		92.04		L	L
FRL (m)			553.78							510.07		511.73			
RRL(m)			554.35							511.69		513.15			
SEAM-III								UD					UD		
FROM (m)		42.52	99.50	50.29		101.98	70.99		97.91	152.26	102.09	139.80			
TO(m)		43.74	100.89	50.80		102.72	71.73		98.25	153.19	103.00	141.76			
THICK(m)		1.22	1.39	0.51		0.74	0.74		0.44	0.83	0.91	1.96			
PARTING(m)		8.96	12.69	11.12		9.65	9.04		11.83	14.20	4.48				
FRL (m)		520.75	463.45	492.28		447.92	499.79		462.75	416.46	470.61	418.79			
RRL(m)		521.97	464.84	492.79		448.66	500.53		463.09	417.39	471.52	420.75			
SEAM-IIT/COM															
FROM (m)		52.70	113.58	61.92		112.37	80.77	66.88	110.08	167.39	107.48	N	11.61		
TO(m)		53.82	114.43	62.43		113.69	83.06	67.59	112.52	168.15	109.15	D	13.08		
THICK(m)		1.12	0.85	0.51		1.32	2.29	0.71	2.44	0.76	1.67	B	1.48		
PARTING(m)															
FRL (m)		510.67	449.91	480.65		436.95	488.46	479.46	448.48	401.50	464.46		536.99		
RRL(m)		511.79	450.76	481.16		438.27	490.75		450.92	402.26	466.13		540.46		
TOTAL DEPTH	57.05	71.63	154.23	108.20	19.90	197.71	91.44	146.25	138.68	187.76	151.94	159.71	35.05	104.00	58.25



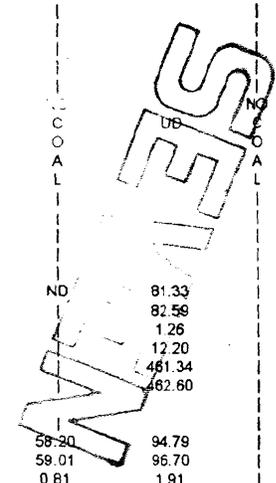
*Borehole/Seam
 ND - Not developed
 NDB - Not drilled
 UP - Up dip
 F - Seam faulted

	NCBP-50	NCBP-52	NCBP-53	NCBP-54	NCBP-55	NCBP-56	NCBP-58	NCBP-59	NCBP-60	NCBP-61	NCBP-62	NCBP-63	NCBP-64	NCBP-65	NCBP-66
R.L.	558.10	550.19	560.70	570.22	584.41	582.84	569.00	558.36	565.84	558.31	560.02	554.12	568.94	571.25	557.78
SEAM-V	UD														
FROM (m)															17.07
TO (m)															19.43
THICK (m)															2.36
PARTING (m)															9.57
FRL (m)															551.82
RRL (m)															554.18
SEAM-IVA															
FROM (m)		8.23													29.00
TO (m)		9.55													30.86
THICK (m)		1.32													1.86
PARTING (m)		2.67													3.00
FRL (m)		540.64													540.39
RRL (m)		541.96													542.25
SEAM-IVB	UD		UD		UD										
FROM (m)		12.22													33.86
TO (m)		13.31													35.16
THICK (m)		1.09													1.30
PARTING (m)		105.41													102.15
FRL (m)		536.88													536.09
RRL (m)		537.97													537.39
SEAM-II				ND							ND				
FROM (m)	23.27	116.69	50.44		74.70	25.76	69.63	91.10	60.58	47.15		21.44	42.72	136.32	35.55
TO (m)	24.65	118.72	51.05		76.18	26.57	69.78	82.90	61.09	48.01		22.10	43.58	137.31	36.19
THICK (m)	1.38	2.03	0.61		1.48	0.81	0.43	1.80	0.51	0.86		0.68	0.86	0.99	0.64
PARTING (m)	4.25	3.64	6.82		5.85	11.01	9.67	3.60	12.10	6.66		4.72	7.71	12.39	7.87
FRL (m)	533.45	431.47	509.65		488.25	536.27	488.74	485.46	504.75	510.30		512.72	525.36	433.94	521.59
RRL (m)	534.83	433.50	510.26		489.71	537.08	500.37	487.26	505.26	511.16		513.38	526.22	434.93	522.23
SEAM-III/COM															
FROM (m)	28.90	122.36	67.87	57.91	82.01	37.58	78.33	86.50	73.19	54.67	34.50	31.82	51.29	149.70	44.06
TO (m)	29.95	124.41	69.83	58.22	83.95	39.44	79.17	88.18	74.67	56.11	35.99	32.81	53.40	152.27	47.57
THICK (m)	1.05	2.05	1.96	0.31	1.94	1.86	0.84	1.68	1.48	1.44	1.49	0.99	2.11	2.57	3.51
PARTING (m)															
FRL (m)	528.15	425.78	500.87	512.00	480.46	523.40	489.83	480.18	491.17	502.20	524.03	522.01	515.54	418.98	510.21
RRL (m)	529.20	427.83	502.83	512.31	482.40	525.26	490.67	481.86	482.65	503.64	525.52	523.00	517.65	421.55	513.72
TOTAL DEPTH	39.78	132.89	154.84	176.31	97.79	47.24	103.94	97.84	96.01	75.90	56.69	51.82	66.14	174.95	64.62

*Borehole/Seam
 ND - Not drilled
 NDB - Not drilled
 UP - Up dip
 F - Seam fault

	NCBP-66	NCBP-67	NCBP-68	NCBP-70	NCBP-71	NCBP-72	NCBP-73	NCBP-74	NCBP-75	NCBP-76	NCBP-77*	NCBP-78	NCBP-79	NCBP-80	NCBP-81
R.L.	557.78	550.82	539.09	562.83	568.01	551.04	553.43	543.93	543.93	546.12	571.71	586.12	559.71	553.82	546.60
SEAM-V			UD										UD	UD	UD
FROM (m)		51.82			26.72						10.67	37.63			
TO(m)		52.22			30.43						12.34	41.19			
THICK(m)		0.40			3.71						1.67	3.56			
PARTING(m)		7.20			10.05						10.91	10.16			
FRL (m)		488.40			537.58						559.37	544.93			
RRL(m)		488.80			541.29						561.04	548.49			
SEAM-IVA															
FROM (m)		59.42	20.64		40.48						23.25	51.35	7.31	24.40	9.90
TO(m)		60.20	22.64		41.82						24.16	52.73	8.47	25.01	11.50
THICK(m)		0.78	2.00		1.34						0.91	1.38	1.16	0.61	1.60
PARTING(m)		0.50	4.74		2.40						3.27	2.48	3.87	2.08	4.04
FRL (m)		490.42	516.45		526.19						547.55	533.39	551.24	528.81	535.10
RRL(m)		491.20	518.45		527.53						548.46	534.77	552.40	529.42	536.70
SEAM-IVB	UD			UD		UD	UD								
FROM (m)		60.70	27.36		44.22						27.43	55.21	12.34	27.09	15.54
TO(m)		61.72	28.55		45.91						28.46	55.82	13.71	27.75	16.50
THICK(m)		1.02	1.17		1.70						1.03	0.61	1.37	0.66	0.96
PARTING(m)		94.97	-28.55		-45.91						71.49	95.95	96.40		
FRL (m)		488.90	510.54		522.10						543.25	530.30	546.00	526.07	530.10
RRL(m)		489.92	511.71		523.79						544.28	530.91	547.37	526.73	531.06
SEAM-III			F		F									NDB	ND
FROM (m)	35.55	156.29		18.47		6.70	22.94	ND	81.33		99.59	151.11	109.51		
TO(m)	36.19	156.69		19.50		6.86	23.60		82.59		99.95	151.77	110.11		
THICK(m)	0.64	0.40		1.03		0.16	0.66		1.26		0.36	0.66	0.60		
PARTING(m)	7.87			12.68		11.43	11.08		12.20		12.40	11.30	12.22		
FRL (m)	521.59	393.93		543.33		544.18	529.83		461.34		471.76	434.35	449.60		
RRL(m)	522.23	394.33		544.36		544.34	530.49		462.60		472.12	435.01	450.20		
SEAM-IIT/COM			F		F									NDB	
FROM (m)	44.06	171.15		32.38		18.29	34.68	58.20	94.79		112.35	163.07	122.33		123.29
TO(m)	47.57	172.21		34.75		20.61	37.33	59.01	96.70		113.83	163.73	123.07		125.16
THICK(m)	3.51	1.06		2.37		2.32	2.65	0.81	1.91		1.48	0.66	0.74		1.87
PARTING(m)								Part (floor faulted)							
FRL (m)	510.21	378.41		528.08		530.43	516.10	484.92	447.23		457.88	422.39	436.64		421.44
RRL(m)	513.72	379.47		530.45		532.75	518.75		449.14		459.36	423.05	437.38		423.31
TOTAL DEPTH	64.62	216.41	50.60	157.28	212.74	57.91	62.48	133.30	105.15	54.00	185.93	190.80	148.44	124.30	155.45

*Borehole/Seam
 ND - Not developed
 NDB - Not drilled
 UP - Up dip
 F - Seam faulted



	NCBP-82	NCBP-83	NCBP-84	NCBP-87	JB-1	JB-2	JB-3	JB-4	JB-5	JB-6	JB-7	JB-8	JB-9	JB-10	JB-11	
R.L	554.92	543.82	545.56	562.17	561.12	563.69	562.38	585.60	573.81	552.71	570.24	551.08	582.77	557.16	564.13	
SEAM-V																
FROM (m)		21.79													36.52	
TO(m)		26.36													40.56	
THICK(m)		4.57													4.04	
PARTING(m)		12.42													10.23	
FRL (m)		517.46													542.21	
RRL(m)		522.03													546.25	
SEAM-IVA	UD															
FROM (m)		38.78													50.79	
TO(m)		39.80													52.41	
THICK(m)		1.02													1.62	
PARTING(m)		??													3.69	
FRL (m)		504.02													530.36	
RRL(m)		505.04													531.98	
SEAM-IVB			UD				UD	UD	UD	UD	UD				UD	UD
FROM (m)	7.31	42.92													56.10	
TO(m)	7.62	43.84													58.08	
THICK(m)	0.31	0.92													1.98	
PARTING(m)	92.96	104.98													94.76	
FRL (m)	547.30	499.98													524.69	
RRL(m)	547.61	500.90													526.67	
SEAM-III						UD						F	F			
FROM (m)	100.17	147.82	56.58				28.58	99.67	67.02	70.63				152.01	102.32	44.41
TO(m)	100.58	148.82	58.09				30.33	101.80	68.30	73.05				152.84	102.47	44.50
THICK(m)	0.41	1.00	1.51				1.75	2.13	1.28	2.42				0.83	0.15	0.09
PARTING(m)	11.53	6.51	8.89				2.73	2.50	3.35	4.72				11.15	7.29	5.88
FRL (m)	454.34	395.00	487.47				522.05	483.80	505.51	479.66				429.93	454.69	519.63
RRL(m)	454.75	396.00	488.98				533.80	485.93	506.79	482.08				430.76	454.84	519.72
SEAM-HIT/COM																
FROM (m)	112.11	155.33	66.98	34.95	UD	16.66	33.08	104.30	71.65	77.77	50.32	79.05	163.99	109.76	50.38	
TO(m)	114.00	157.51	68.96	35.41		18.00	34.87	106.64	72.81	79.80	51.42	79.85	164.97	111.05	52.25	
THICK(m)	1.89	2.18	1.98	0.46		1.34	1.81	2.34	1.16	2.03	1.10	0.80	0.98	1.29	1.87	
PARTING(m)																
FRL (m)	440.92	386.31	476.60	526.76		545.69	527.51	478.96	501.00	472.91	518.82	471.23	417.80	446.11	511.88	
RRL(m)	442.81	388.49	478.58			547.03	529.32	481.30	502.16	474.94	519.92	472.03	418.78	447.40	513.75	
TOTAL DEPTH	144.48	168.55	196.60	142.04	74.00	35.00	46.00	116.30	81.00	92.00	81.35	131.00	173.10	131.00	62.00	

*Borehole/Seam
 ND - Not developed
 NDB - Not drilled
 UP - Up dip
 F - Seam faulted

	JB-12	JB-13	JB-14	JB-15	JB-16	JB-17	JBSG-1	JBSG-2	JBSG-3	JBSG-4	JBSG-5	JBSG-6	JBSG-7	JBSG-8	JBSG-9
R.L.	595.84	554.12	546.80	566.49	557.50	544.68	549.33	550.77	544.01	554.62	559.73	545.62	557.85	546.47	537.35
SEAM-V															
FROM (m)	47.00			32.00											
TO(m)	51.16			35.59											
THICK(m)	4.16			3.59											
PARTING(m)	10.62			11.69											
FRL (m)	544.68			530.90											
RRL(m)	548.84			534.49											
SEAM-IVA															
FROM (m)	61.78			47.28											
TO(m)	62.95			48.77											
THICK(m)	1.17			1.49											
PARTING(m)	4.54			3.70											
FRL (m)	532.89			517.72											
RRL(m)	534.06			519.21											
SEAM-IVB			UD		UD	UD									
FROM (m)	67.49			52.47											
TO(m)	68.84			53.37											
THICK(m)	1.35			0.90											
PARTING(m)	-68.84			107.76											
FRL (m)	527.00			513.12											
RRL(m)	528.35			514.02											
SEAM-III	F						ND	ND	UD	UD	UD	ND	ND	ND	
FROM (m)			26.18	160.18	36.39	96.10									
TO(m)			26.92	161.13	36.88	96.64									
THICK(m)			0.74	0.95	0.49	0.54									
PARTING(m)			9.44	7.39	10.37	13.41									
FRL (m)			519.88	405.36	520.62	448.04									
RRL(m)			520.62	406.31	521.11	448.58									
SEAM-III/COM											UD				
FROM (m)	121.74		36.36	168.52	47.25	110.05	44.00	30.86	32.85	30.00		45.06	45.91	34.50	
TO(m)	123.91		39.52	170.77	49.67	111.72	46.82	32.06	36.00	32.65		48.00	47.71	36.20	
THICK(m)	2.17		3.16	2.25	2.42	1.67	2.82	1.14	3.15	2.65		2.94	1.80	1.70	
PARTING(m)															
FRL (m)	471.93		507.28	395.72	507.83	432.96	503.95	512.01	518.62	527.08		509.85	498.76	501.15	
RRL(m)	474.10		510.44	397.97	510.25	434.63	506.77	513.15	521.77	529.73		512.79	500.56	502.85	
TOTAL DEPTH	133.00	20.00	44.20	178.30	56.00	119.10	40.00	51.25	35.50	39.00	36.00	37.00	51.00	52.00	48.00

SEAM-III

*Borehole/Seam
 ND - Not developed
 NDB-Not drilled
 UP - Up dip
 F - Seam faulted

	JBSG-10	JBSG-11	JBSG-12	JBSG-13	JBSG-14	JBSG-15	JBSG-16	JBSG-17	JBSG-18	JBSG-19	JBSG-20	JG-30	JG-50
R.L	566.40	532.05	556.41	552.69	551.40	573.54	553.26	562.45	551.80	564.45	565.40	605.07	566.23
SEAM-V													
FROM (m)						9.97	20.43					44.54	
TO(m)						12.12	23.29					48.84	
THICK(m)						2.15	2.86					4.3	
PARTING(m)						11.34	12.34					15.10	
FRL (m)						561.42	529.97					556.23	
RRL(m)						563.57	532.83					560.53	
SEAM-IVA													
FROM (m)						23.46	35.63					63.94	
TO(m)						25.00	36.50					64.92	
THICK(m)						1.54	0.87					0.98	
PARTING(m)						3.89	4.93					3.18	
FRL (m)						548.54	516.78					540.15	
RRL(m)						550.08	517.83					541.13	
SEAM-IVB													
FROM (m)						28.89	41.43	UD	UD	UD	UD	88.10	UD
TO(m)						29.92	42.51					89.30	
THICK(m)						1.03	1.06					1.2	
PARTING(m)						102.07	100.98					111.61	
FRL (m)						543.62	510.75					535.77	
RRL(m)						544.65	511.83					536.97	
SEAM-III													
FROM (m)	96.92					131.07	142.00	ND	ND	ND	ND	180.91	66.17
TO(m)	97.46					131.99	143.49					182.88	67.14
THICK(m)	0.54					0.92	1.49					1.97	0.97
PARTING(m)	9.24					11.24	7.51					5.24	493.82
FRL (m)	468.94					441.55	409.77					422.19	499.09
RRL(m)	469.48					442.47	411.26					424.16	500.06
SEAM-IIT/COM													
FROM (m)	106.70	UD	NDB	UD	UD	143.23	151.00	43.59	42.97	91.80	NDB	188.12	70.71
TO(m)	107.54					145.84	152.51	45.00	44.64	93.49		188.75	71.87
THICK(m)	0.84					2.61	1.51	1.41	1.67	1.69		0.63	1.16
PARTING(m)													
FRL (m)	458.86					427.70	400.75	517.45	507.16	470.96		416.32	494.36
RRL(m)	459.70					430.31	402.26	518.86	508.83	472.65		416.95	495.52
TOTAL DEPTH	120.00	28.00	29.00	27.00	29.00	182.00	159.50	51.00	48.00	102.00	15.70	227.55	109.65

* Borehole/Seam
 ND - Not develop
 NDB-Not drilled I
 UP - Up dip
 F - Seam faultec

ANNEXURE-II/1

Statement showing seam-wise and borehole-wise distribution of dirt bands,
Bhaskarpara Block

Bh.No.	From	To	Thick.	Combustible		Non-Combustible		Effective Thickness
				<30cm.		>30cm.		
				No.	Total	No.	Total	

SEAM-VBOREHOLES DRILLED BY NDCDC

NCBP-19	35.21	39.49	4.28	2	0.44			4.28
NCBP-32	39.04	42.67	3.63	1	0.11		1	0.19
NCBP-38	27.43	28.92	1.49					1.49
NCBP-65	17.07	19.43	2.36	1	0.19			2.36
NCBP-67	51.82	52.22	0.40					0.40
NCBP-71	26.72	30.43	3.71	1	0.30			3.71
NCBP-77	10.67	12.34	1.67					1.67
NCBP-78	37.63	41.19	3.56	1	0.09		1	0.20
NCBP-83	21.79	26.36	4.57			1	0.32	4.57

BOREHOLES DRILLED BY MECL

JB-9	36.52	40.56	4.04	2	0.41			4.04
JB-12	47.00	51.16	4.16	2	0.26			4.16
JB-15	32.00	35.59	3.59	1	0.28			3.59

BOREHOLES DRILLED BY SECL

JBSG-15	9.97	12.12	2.15					2.15
JBSG-16	20.43	23.29	2.86					2.86
JG-30	44.54	48.84	4.30				1	0.16

SEAM-IVABOREHOLES DRILLED BY NDCDC

NCBP-17	13.26	13.97	0.71					0.71
NCBP-19	51.94	53.34	1.40					1.40
NCBP-24	6.85	7.46	0.61					0.61
NCBP-32	54.16	55.52	1.36					1.36
NCBP-38	43.80	45.30	1.50					1.50
NCBP-52	8.23	9.55	1.32					1.32
NCBP-65	29.00	30.86	1.86					1.86
NCBP-67	59.42	60.20	0.78					0.78
NCBP-68	20.64	22.64	2.00	1	0.11			2.00
NCBP-71	40.48	41.82	1.34					1.34
NCBP-77	23.25	24.16	0.91					0.91
NCBP-78	51.35	52.73	1.38	1	0.05			1.38
NCBP-79	7.31	8.47	1.16					1.16
NCBP-80	24.40	25.01	0.61					0.61
NCBP-81	9.90	11.50	1.60					1.60

Statement showing seam-wise and borehole-wise distribution of dirt bands,
Bhaskarpara Block

Bh.No.	From	To	Thick.	Combustible		Non-Combustible		Effective Thickness
				<30cm.		>30cm.		
				No.	Total	No.	Total	

BOREHOLES DRILLED BY MECL

JB-9	50.79	52.41	1.62					1.62
JB-12	61.78	62.95	1.17					1.17
JB-15	47.28	48.77	1.49					1.49

BOREHOLES DRILLED BY SECL

JBSG-15	23.46	25.00	1.54					1.54
JBSG-16	35.63	36.50	0.87					0.87
JG-30	63.94	64.92	0.98					0.98

SEAM-IVB

BOREHOLES DRILLED BY NCDC

NCBP-11	9.11	10.36	1.25 (Carb.shale)					1.25 (Carb.shale)
NCBP-17	15.28	16.56	1.28					1.28
NCBP-19	55.78	56.80	1.02					1.02
NCBP-24	9.99	10.56	0.57					0.57
NCBP-32	57.96	59.58	1.62					1.62
NCBP-38	47.40	48.82	1.42					1.42
NCBP-52	12.22	13.31	1.09					1.09
NCBP-65	33.86	35.16	1.30					1.30
NCBP-67	60.70	61.72	1.02			1	0.06	1.02
NCBP-68	27.38	28.55	1.17					1.17
NCBP-71	44.21	45.91	1.70					1.70
NCBP-77	27.43	28.46	1.03					1.03
NCBP-78	55.21	55.82	0.61					0.61
NCBP-79	12.34	13.71	1.37					1.37
NCBP-80	27.09	27.75	0.66					0.66
NCBP-81	15.54	16.50	0.96					0.96
NCBP-82	7.31	7.62	0.31					0.31
NCBP-83	42.92	43.84	0.92					0.92

BOREHOLES DRILLED BY MECL

JB-9	56.10	58.08	1.98					1.98
JB-12	67.49	68.84	1.35					1.35
JB-15	52.47	53.37	0.90					0.90
JG-30	68.10	69.30	1.20					1.20

Bh.No.	From	To	Thick.	Combustible		Non-Combustible		Effective Thickness
				<30cm.		>30cm.		
				No.	Total	No.	Total	
BOREHOLES DRILLED BY SECL								
JBSG-15	28.89	29.92	1.03					1.03
JBSG-16	41.43	42.51	1.08					1.08
SEAM-III								
BOREHOLES DRILLED BY NCDG								
NCBP-2	51.24	53.18	1.94					1.94
NCBP-3	55.37	57.47	2.10					2.10
NCBP-4	30.48	31.01	0.53					0.53
NCBP-6	17.50	18.31	0.81					0.81
NCBP-8	22.44	23.16	0.72					0.72
NCBP-9	U.D.							0.00
NCBP-10	93.32	95.20	1.88					1.88
NCBP-11	117.35	118.26	0.91					0.91
NCBP-12	62.22	63.22	1.00					1.00
NCBP-13	29.08	30.01	0.93					0.93
NCBP-16	86.84	88.21	1.37	1	0.05			1.37
NCBP-17	U.D.							0.00
NCBP-19	160.97	162.50	2.43					2.43
NCBP-20	102.64	103.40	0.76					0.76
NCBP-22	42.52	43.74	1.22					1.22
NCBP-24	99.50	100.89	1.39					1.39
NCBP-25	50.29	50.80	0.51					0.51
NCBP-27	101.98	102.72	0.74					0.74
NCBP-28	70.99	71.73	0.74					0.74
NCBP-31	97.81	98.25	0.44					0.44
NCBP-32	152.26	153.19	0.93					0.93
NCBP-33	102.09	103.00	0.91					0.91
NCBP-38	139.80	141.76	1.96					1.96
NCBP-40	U.D.							0.00
NCBP-48	94.20	95.90	1.70					1.70
NCBP-50	23.27	24.65	1.38					1.38
NCBP-52	116.69	118.72	2.03					2.03
NCBP-53	50.44	51.05	0.61					0.61
NCBP-54	N.D.							0.00
NCBP-55	74.70	76.18	1.48					1.48
NCBP-56	25.76	26.57	0.81					0.81
NCBP-58	68.83	69.26	0.43					0.43
NCBP-59	81.10	82.90	1.80					1.80
NCBP-60	60.58	61.09	0.51					0.51
NCBP-61	47.15	48.01	0.86					0.86
NCBP-62	N.D.							0.00
NCBP-63	21.44	22.10	0.66					0.66
NCBP-64	42.72	43.58	0.86					0.86
NCBP-65	136.32	137.31	0.99					0.99

Bh.No.	From	To	Thick.	Combustible		Non-Combustible		Effective Thickness
				<30cm.		>30cm.		
				No.	Total	No.	Total	
NCBP-66	35.55	36.19	0.64					0.64
NCBP-67	156.29	156.69	0.40					0.40
NCBP-70	18.47	19.50	1.03					1.03
NCBP-72	6.70	6.86	0.16	1	0.16			0.16
NCBP-73	22.94	23.60	0.66					0.66
NCBP-75	81.33	82.59	1.26	1	0.07			1.26
NCBP-77	99.59	99.95	0.36					0.36
NCBP-78	151.11	151.77	0.66					0.66
NCBP-79	109.51	110.11	0.60					0.60
NCBP-81	N.D.							0.00
NCBP-82	100.17	100.58	0.41					0.41
NCBP-83	147.82	148.82	1.00					1.00
NCBP-84	56.58	58.09	1.51	1	0.07			1.51

BOREHOLES DRILLED BY MECL

JB-3	28.58	30.33	1.75					1.75
JB-4	99.67	101.80	2.13					2.13
JB-5	67.02	68.30	1.28					1.28
JB-6	70.63	73.05	2.42					2.42
JB-9	152.01	152.84	0.83					0.83
JB-10	102.32	102.47	0.15					0.15
JB-11	44.41	44.50	0.09					0.09
JB-14	26.18	26.92	0.74					0.74
JB-15	160.18	161.13	0.95					0.95
JB-16	36.39	36.88	0.49					0.49
JB-17	96.10	96.64	0.54					0.54

BOREHOLES DRILLED BY SECL

JBSG-10	96.92	97.46	0.54					0.54
JBSG-15	131.07	131.99	0.92					0.92
JBSG-16	142.00	143.49	1.49					1.49
JG-30	180.91	182.88	1.97					1.97
JG-50	66.17	67.14	0.97					0.97

SEAM-II

BOREHOLES DRILLED BY NDCD

NCBP-2	56.55	57.91	1.36					1.36
NCBP-3	64.01	65.38	1.37					1.37
NCBP-4	41.45	42.63	1.18					1.18
NCBP-6	29.36	31.67	2.31					2.31
NCBP-8	33.53	35.63	2.10					2.10
NCBP-9	12.98	14.68	1.70					1.70
NCBP-10	100.58	101.85	1.27	1	0.17			1.27
NCBP-11	122.78	123.47	0.69					0.69

Bh.No.	From	To	Thick.	Combustible		Non-Combustible		Effective Thickness
				<30cm.		>30cm.		
				No.	Total	No.	Total	
NCBP-11	122.78	123.47	0.69					0.69
NCBP-12	77.07	78.79	1.72					1.72
NCBP-13	39.32	40.74	1.42					1.42
NCBP-16	92.14	93.81	1.67					1.67
NCBP-17	133.01	134.42	1.41					1.41
NCBP-19	167.95	169.32	1.37					1.37
NCBP-20	108.22	110.48	2.26					2.26
NCBP-22	52.70	53.82	1.12					1.12
NCBP-24	113.58	114.43	0.85					0.85
NCBP-25	61.92	62.43	0.51	1	0.09			0.51
NCBP-27	112.37	113.69	1.32					1.32
NCBP-28	80.77	83.06	2.29	1	0.08	1	0.37	2.29
NCBP-30	66.88	67.59	0.71					0.71
NCBP-31	110.08	112.52	2.44	2	0.14			2.44
NCBP-32	167.39	168.15	0.76					0.76
NCBP-33	107.48	109.15	1.67	1	0.28			1.67
NCBP-40	11.61	13.08	1.47	1	0.10			1.47
NCBP-48	100.67	102.20	1.53					1.53
NCBP-50	28.90	29.95	1.05					1.05
NCBP-52	122.36	124.41	2.05					2.05
NCBP-53	57.87	59.83	1.96					1.96
NCBP-54	57.91	58.22	0.31					0.31
NCBP-55	82.01	83.95	1.94	1	0.06			1.94
NCBP-56	37.58	39.44	1.86					1.86
NCBP-58	78.33	79.17	0.84					0.84
NCBP-59	86.50	88.18	1.68					1.68
NCBP-60	73.19	74.67	1.48					1.48
NCBP-61	54.67	56.11	1.44					1.44
NCBP-62	34.50	35.99	1.49					1.49
NCBP-63	31.82	32.81	0.99					0.99
NCBP-64	51.29	53.40	2.11					2.11
NCBP-65	149.70	152.27	2.57	2	0.22			2.57
NCBP-66	44.06	47.57	3.51					3.51
NCBP-67	171.15	172.21	1.06	2	0.20			1.06
NCBP-70	32.38	34.75	2.37	1	0.10			2.37
NCBP-72	18.29	20.61	2.32					2.32
NCBP-73	34.68	37.33	2.65					2.65
NCBP-75	94.79	96.70	1.91					1.91
NCBP-77	112.35	113.83	1.48					1.48
NCBP-78	163.07	163.73	0.66					0.66
NCBP-79	122.33	123.07	0.74					0.74
NCBP-81	123.29	125.16	1.87					1.87
NCBP-82	112.11	114.00	1.89					1.89
NCBP-83	155.33	157.51	2.18	1	0.24			2.18
NCBP-84	66.98	68.96	1.98					1.98
NCBP-87	34.95	35.41	0.46					0.46

Bh.No.	From	To	Thick.	Combustible		Non-Combustible		Effective Thickness
				<30cm.		>30cm.		
				No.	Total	No.	Total	
BOREHOLES DRILLED BY MECL								
JB-2	16.66	18.00	1.34					1.34
JB-3	33.06	34.87	1.81					1.81
JB-4	104.30	106.64	2.34					2.34
JB-5	71.65	72.81	1.16					1.16
JB-6	77.77	79.80	2.03					2.03
JB-7	50.32	51.42	1.10					1.10
JB-8	79.05	79.85	0.80					0.80
JB-9	163.99	164.97	0.98					0.98
JB-10	109.76	111.05	1.29					1.29
JB-11	50.38	52.25	1.87					1.87
JB-12	121.74	123.91	2.17			1	0.16	2.17
JB-14	36.36	39.52	3.16	1	0.27			3.16
JB-15	168.52	170.77	2.25	1	0.06			2.25
JB-16	47.25	49.67	2.42					2.42
JB-17	110.05	111.72	1.67					1.67
BOREHOLES DRILLED BY SECL								
JBSG-2	44.00	46.82	2.82					2.82
JBSG-3	30.86	32.00	1.14					1.14
JBSG-4	32.85	36.00	3.15					3.15
JBSG-5	30.00	32.65	2.65					2.65
JBSG-7	45.06	48.00	2.94					2.94
JBSG-8	45.91	47.71	1.80					1.80
JBSG-9	34.50	36.20	1.70					1.70
JBSG-10	106.70	107.54	0.84					0.84
JBSG-15	143.23	145.84	2.61					2.61
JBSG-16	151.00	152.51	1.51					1.51
JBSG-17	43.59	45.00	1.41					1.41
JBSG-18	42.97	44.64	1.67					1.67
JBSG-19	91.80	93.49	1.69					1.69
JG-30	188.12	188.75	0.63					0.63
JG-50	70.71	71.87	1.16					1.16

Bh.No.	From	To	Thick.	Proximate analysis on				UHV K.cal./kg.	GRADE
				60% RH & 40 C					
				M%	A%	VM%	GCV K.cal./kg.		
SEAM-IVB									
NCBP011	9.11	10.36	1.25	Not analysed					
NCBP-17	15.28	16.56	1.28	4.5	28.4	25.7	5445	4360	D
NCBP-19	55.78	56.80	1.02	4.9	23.1	23.6	5820	5036	C
NCBP-24*	9.99	10.56	0.57	4.9	24.5			4843	D
NCBP-32	57.96	59.58	1.62	4.6	17.9	30.0	6215	5795	B
NCBP-38	47.40	48.82	1.42	5.5	21.8	27.6	5715	5133	C
NCBP-52	12.22	13.31	1.09	6.0	17.2	25.2	6160	5698	B
NCBP-65	33.86	35.16	1.30	5.5	17.2	29.6		5767	B
NCBP-67*	60.70	61.72	1.02	4.7	26.7			4567	D
NCBP-68*	27.38	28.55	1.17	5.0	21.5			5243	C
NCBP-71	44.21	45.91	1.70	5.8	17.2	29.5	6250	5726	B
NCBP-77*	27.43	28.46	1.03	5.4	16.9			5823	B
NCBP-78*	55.21	55.82	0.61	5.4	17.1			5795	B
NCBP-79	12.34	13.71	1.37	5.3	18.6	29.9	6195	5602	B
NCBP-80	27.09	27.75	0.66	3.2	17.2	30.7			
NCBP-81	15.54	16.49	0.95	6.5	15.9	28.2		5809	B
JB-9	56.10	58.08	1.98	5.3	17.9			5698	B
JB-12	67.49	68.84	1.35	5.3	18.5			5616	B
JB-15	52.47	53.37	0.90	5.4	17.0			5809	B
JBSG-15	28.89	29.92	1.03	Not analysed					
JBSG-16	41.43	42.51	1.08	Not analysed					
JG030	68.10	69.00	1.20	5.5	21.8	26.2		5133	C
SEAM-III									
NCBP-2	51.24	53.18	1.94	5.8	13.8	29.6		6195	B
NCBP-3	55.37	57.47	2.10	6.1	14.4	30.8	6450	6071	B
NCBP-4*	30.48	31.01	0.53	6.1	11.5			6471	A
NCBP-6*	17.50	18.31	0.81	6.1	11.7			6444	A
NCBP-8*	22.44	23.16	0.72	6.2	10.6			6582	A
NCBP-10	93.32	95.20	1.88	5.1	16.0	29.4	6290	5988	B
NCBP-11	117.35	118.26	0.91	Not analysed					
NCBP-12	62.22	63.22	1.00	6.4	11.2	31.1	6600	6471	A
NCBP-13	29.08	30.01	0.93	5.7	15.5			5974	B
NCBP-16	86.84	88.21	1.37	4.5	18.3	32.6		5754	B
NCBP-19	160.07	162.50	2.43	4.2	15.6	29.5	6630	6168	B
NCBP-20*	102.64	103.40	0.76	5.8	15.0			6030	B
NCBP-22	42.52	43.74	1.22	5.5	11.9	31.2	6615	6499	A
NCBP-24	99.50	100.89	1.39	5.0	16.2	29.1	6380	5974	B
NCBP-25	50.29	50.80	0.51	Not analysed					
NCBP-27	101.98	102.72	0.74	Not analysed					
NCBP-28*	70.99	71.73	0.74	4.9	17.0			5878	B
NCBP-31	97.81	98.25	0.44	Not analysed					
NCBP-32*	152.26	153.19	0.93	4.2	17.1			5961	B
NCBP-33	102.09	103.00	0.91	4.6	16.9	31.8		5933	B

Bh.No.	From	To	Thick.	Proximate analysis on			UHV	GRADE	
				60% RH & 40 C					K.cal./kg.
				M%	A%	VM% GCV			
				K.cal./kg.					
NCBP-38	139.80	141.76	1.96	3.7	18.7	28.8	6235	5809	B
NCBP-48	94.20	95.90	1.70	5.1	16.0	29.9		5988	B
NCBP-50	23.27	24.65	1.38	4.4	14.4	29.2		6306	A
NCBP-52	116.69	118.72	2.03	5.5	14.8	29.0	6450	6099	B
NCBP-53*	50.44	51.05	0.61	6.2	11.3			6485	A
NCBP-55	74.70	76.18	1.48	5.2	13.0	30.0	6585	6388	A
NCBP-56*	25.76	26.57	0.81	5.7	12.8			6347	A
NCBP-58*	68.83	69.26	0.43	5.8	11.4			6526	A
NCBP-59	81.10	82.90	1.80	6.3	14.2	28.3	6415	6071	B
NCBP-60	60.58	61.09	0.51	Not analysed					
NCBP-61*	47.15	48.01	0.86	5.3	14.8			6126	B
NCBP-63	21.44	22.10	0.66	Not analysed					
NCBP-64*	42.72	43.58	0.86	5.4	12.8			6388	A
NCBP-65*	136.32	137.31	0.99	5.5	16.3			5892	B
NCBP-66*	35.55	36.19	0.64	5.4	13.2			6333	A
NCBP-67	156.29	156.69	0.40	Not analysed					
NCBP-70	18.47	19.50	1.03	6.2	10.6	30.7		6582	A
NCBP-72	6.70	6.86	0.16	Not analysed					
NCBP-73	22.94	23.60	0.66	Not analysed					
NCBP-75	81.55	82.59	1.26	5.6	19.8	28.2		5422	C
NCBP-77	99.59	99.95	0.36	Not analysed					
NCBP-78	151.11	151.77	0.66	4.3	16.5	29.5	6500	6030	B
NCBP-79	109.51	110.11	0.60	5.0	12.8	30.7	6655	6444	A
NCBP-82	100.17	100.58	0.41	Not analysed					
NCBP-83	147.82	148.82	1.00	4.3	15.6			6154	B
NCBP-84	56.58	58.09	1.51	3.9	16.5			6085	B
JB-3*	28.58	30.33	1.75	5.5	14.4			6154	B
JB-4*	99.67	101.80	2.13	5.0	13.7			6319	A
JB-5*	67.02	68.30	1.28	5.7	16.3			5864	B
JB-6*	70.63	73.05	2.42	4.7	15.5			6112	B
JB-9*	152.01	152.84	0.83	4.1	21.7			5340	C
JB-10	102.32	102.47	0.15	Not analysed					
JB-11*	44.41	44.50	0.09	Not analysed					
JB-14*	26.18	26.92	0.74	5.7	9.6			6789	A
JB-15*	160.18	161.13	0.95	4.7	12.9			6471	A
JB-16	36.39	36.88	0.49	Not analysed					
JB-17	96.10	96.64	0.54	Not analysed					
JBSG-10	96.92	97.46	0.54	Not analysed					
JBSG-15	131.07	131.99	0.92	Not analysed					
JBSG-16	142.00	143.49	1.49	Not analysed					
JG030	180.91	182.88	1.97	5.1	17.5	28.1		5781	B
JG050	66.17	67.14	0.97	3.9	12.2	31.5		6678	A

Bh.No.	From	To	Thick.	Proximate analysis on			UHV	GRADE	
				60% RH & 40 C					
				M%	A%	VM% GCV	K.cal./kg.		
							K.cal./kg.		
SEAM-II/TOP/COMPOSITE									
NCBP-2	56.55	57.91	1.36	5.2	18.6	29.4	6350	5616	B
NCBP-3	64.01	65.38	1.37	6.3	13.3	30.7		6195	B
NCBP-4	41.45	42.63	1.18	5.6	18.2	27.6		5616	B
NCBP-6	29.36	31.67	2.31	6.5	25.5	27.4		4484	D
NCBP-8*	33.53	35.63	2.10	5.9	30.3			3904	E
NCBP-9	12.98	14.68	1.70	Not analysed					
NCBP-10	100.58	101.86	1.27	5.3	22.8	29.7		5022	C
NCBP-11	122.78	123.47	0.69	Not analysed					
NCBP-12	77.07	78.79	1.72	6.0	18.1	27.2	6185	5574	C
NCBP-13	39.32	40.74	1.42	6.3	12.8	32.8	6560	6264	A
NCBP-16	92.14	93.81	1.67	4.2	29.9	21.5	5220	4194	E
NCBP-17	133.01	134.42	1.41	4.2	29.7	23.1	5270	4222	D
NCBP-19*	167.96	169.82	1.37	4.9	25.9			4650	D
NCBP-20	108.22	110.48	2.26	4.9	28.5			4291	D
NCBP-22	52.70	53.62	1.12	5.4	15.7			5988	B
NCBP-24*	113.58	114.45	0.85	6.1	13.5			6195	B
NCBP-25	61.92	62.43	0.51	3.0	50.5			1517	G
NCBP-27	112.37	113.69	1.32	Not analysed					
NCBP-28	80.77	83.06	2.29	5.0	34.5	20.9		3449	E
NCBP-30	66.88	67.59	0.71	Not analysed					
NCBP-31	110.08	112.52	2.44	4.0	27.2	27.7	6115	4594	D
NCBP-32	167.39	168.15	0.76	Not analysed					
NCBP-33	107.48	109.15	1.67	4.5	19.0	26.8		5657	B
NCBP-40*	11.61	13.08	1.47	6.5	21.8			4995	C
NCBP-50*	28.90	29.95	1.05	4.9	24.9			4788	D
NCBP-52*	122.36	124.41	2.05	4.7	28.7			4291	D
NCBP-53	57.87	59.83	1.96	6.0	22.7			4939	D
NCBP-54*	57.91	58.22	0.31	6.3	15.1			5947	B
NCBP-55	82.01	83.95	1.94	4.4	26.7			4608	D
NCBP-56	37.58	39.44	1.86	5.9	31.0			3808	E
NCBP-58*	78.33	79.17	0.84	5.6	20.4			5312	C
NCBP-59	86.50	88.18	1.68	6.8	13.4	27.1	6410	6112	B
NCBP-60*	73.19	74.67	1.48	5.9	15.7			5919	B
NCBP-61	54.67	56.11	1.44	6.4	12.7	28.6		6264	A
NCBP-62	34.50	35.99	1.49	5.3	20.9	26.8		5284	C
NCBP-63	31.82	32.81	0.99	6.5	14.5	28.4		6002	B
NCBP-64	51.29	53.40	2.11	5.2	29.1	22.9		4167	E
NCBP-65	149.70	152.27	2.57	4.3	25.3	28.3		4815	D
NCBP-66	44.06	47.57	3.51	6.1	26.0	25.3		4470	D
NCBP-67*	171.15	172.21	1.06	4.4	25.0			4843	D
NCBP-70*	32.38	34.75	2.37	4.1	26.3			4705	D
NCBP-72	18.29	20.61	2.32	6.1	28.5			4125	E
NCBP-73	34.68	37.33	2.65	5.4	21.6	26.0		5174	C

Bh.No.	From	To	Thick.	Proximate analysis on			UHV	GRADE
				60% RH & 40 C				
				M%	A%	VM% GCV	K.cal./kg.	
NCBP-75*	94.79	96.70	1.91	5.4	22.8		5008	C
NCBP-77*	112.35	113.83	1.48	5.0	18.6		5643	B
NCBP-78*	163.07	163.73	0.66	4.4	34.5		3532	E
NCBP-79	122.33	123.07	0.74	5.2	19.2	27.5	6120	C
NCBP-81	123.29	125.16	1.87	4.4	32.8	28.0	3766	E
NCBP-82*	112.11	114.00	1.89	4.5	31.1		3987	E
NCBP-83*	155.33	157.51	2.18	4.5	32.0		3863	E
NCBP-84*	66.98	68.96	1.98	4.1	25.8		4774	D
JB-2	16.66	18.00	1.34	4.9	13.2	29.7	-	
JB-3*	33.06	34.87	1.81	5.8	18.3		5574	C
JB-4*	104.30	106.64	2.34	4.1	30.7		4098	E
JB-5*	71.65	72.81	1.16	5.6	22.5		5022	C
JB-6*	77.77	79.80	2.03	4.3	28.1		4429	D
JB-7*	50.32	51.42	1.10	5.8	24.9		4663	D
JB-8*	79.05	79.85	0.80	5.1	15.5		6057	B
JB-9*	163.09	162.97	0.98	6.1	21.9		5036	C
JB-10*	109.76	111.09	1.29	4.2	28.9		4332	D
JB-11*	50.88	52.25	1.87	5.5	24.3		4788	D
JB-12*	121.74	123.91	2.17	4.0	31.9		3946	E
JB-14*	36.36	39.52	3.16	5.3	22.5		5064	C
JB-15*	168.52	170.77	2.25	4.1	30.6		4111	E
JB-16*	47.25	49.67	2.42	5.5	25.9		4567	D
JB-17	110.05	111.72	1.67	Not analysed				
JBSG-2	44.00	46.82	2.82	Not analysed				
JBSG-3	30.86	32.00	1.14	Not analysed				
JBSG-4	32.85	36.00	3.15	Not analysed				
JBSG-5	30.00	32.65	2.65	Not analysed				
JBSG-7	45.06	48.00	2.94	Not analysed				
JBSG-8	45.91	47.71	1.80	Not analysed				
JBSG-9	34.50	36.20	1.70	Not analysed				
JBSG-10	106.70	107.54	0.84	Not analysed				
JBSG-15	143.23	145.84	2.61	Not analysed				
JBSG-16	151.00	152.51	1.51					
JBSG-17	43.59	45.00	1.41					
JBSG-18	42.97	44.64	1.67					
JBSG-19	91.80	93.49	1.69					
JG030	188.12	188.75	0.63					
JG50	70.71	71.87	1.16	4.8	28.1	23.4	4360	D

*Equilibrated

PARTICULARS	THICKNESS AVG.		A		B		C		D		E		F		G		UG RES.	TOTAL RES.
	THICK	AREA	RES.	AREA	RES.	AREA	RES.	AREA	RES.	AREA	RES.	AREA	RES.	AREA	RES.			
	1.00																	
SUB-TOTAL(I)									0.01140	0.01560							0.01140	0.01560
SUB-TOTAL(2)									0.01140	0.01560							0.01140	0.01560
SUB-TOTAL(SECTOR-II)									0.01140	0.01560							0.01140	0.01560
a. SECTOR -II									0.10038	0.15338							0.10038	0.15338
1. EFFECTIVE RESERVES																		
0.9 - 1.2 1.05									0.10240	0.14709	0.14340	0.21411	0.19328	0.30502			0.43908	0.65622
1.2 - 1.5 1.36										0.23188	0.44476	0.29488	0.59833				0.52856	1.04309
1.5 - 2.0 1.75										0.00784	0.01961						0.00784	0.01951
SUB-TOTAL(1)									0.10240	0.14709	0.38292	0.67838	0.48816	0.90335			0.97348	1.72882
2. BLOCKED RESERVES (i)INCROP AREA																		
		1.1	1.10									0.01712	0.02678				0.01712	0.02678
SUB-TOTAL(I)												0.01712	0.02678				0.01712	0.02678
SUB-TOTAL(2)												0.01712	0.02678				0.01712	0.02678
SUB-TOTAL(SECTOR-III)												0.01712	0.02678				0.01712	0.02678
GRAND TOTAL									0.10240	0.14709	0.40604	0.70516	0.48816	0.90335			0.99060	1.75560
A. SEAM IV B									1.33750	2.18718	0.48465	0.88728	0.48816	0.90335			2.31061	3.69778
1. PROVED																		
a. SECTOR -I																		
1. EFFECTIVE RESERVES																		
0.5 - 0.9 0.70				0.03408	0.03049												0.03408	0.03049
0.9 - 1.2 1.06				0.06620	0.08883	0.33448	0.46484	0.05376	0.07722								0.45444	0.63089
1.2 - 1.5 1.35				0.04128	0.07122	0.15152	0.27062	0.01984	0.03684								0.21264	0.37848
1.5 - 2.0 1.75				0.08288	0.18536	0.04816	0.11150										0.13104	0.29686
SUB-TOTAL(1)				0.22444	0.37590	0.53416	0.84676	0.07360	0.11386								0.83220	1.33652
2. BLOCKED RESERVES (i)INCROP AREA																		
		1.15	1.15			0.00400	0.00609										0.00400	0.00609
SUB-TOTAL(I)						0.00400	0.00609										0.00400	0.00609
SUB-TOTAL(2)						0.00400	0.00609										0.00400	0.00609
SUB-TOTAL(SECTOR-IV)						0.22444	0.37590	0.53816	0.85265	0.07360	0.11386						0.83620	1.34261
b. SECTOR -II																		
1. EFFECTIVE RESERVES																		
0.5 - 0.9 0.70				0.01568	0.01403	0.03720	0.08889										0.04688	0.04282
0.9 - 1.2 1.06				0.01600	0.02147			0.00208	0.00298								0.01808	0.02446
1.2 - 1.5 1.36				0.01984	0.03423	0.00720	0.01286										0.02704	0.04709
SUB-TOTAL(1)				0.05152	0.06973	0.03840	0.04175	0.00208	0.00298								0.09200	0.11447
2. BLOCKED RESERVES (i)INCROP AREA																		
		1.00		0.00536	0.00685												0.00536	0.00685
SUB-TOTAL(I)				0.00536	0.00685												0.00536	0.00685
SUB-TOTAL(2)				0.00536	0.00685												0.00536	0.00685
SUB-TOTAL(SECTOR-IV)				0.05688	0.07658	0.03840	0.04175	0.00208	0.00298								0.09736	0.12132
a. SECTOR -III																		
1. EFFECTIVE RESERVES																		
0.9 - 1.2 1.05				0.21472	0.28813	0.86912	1.20734	0.01456	0.02091								1.09840	1.51638
1.2 - 1.5 1.35				0.01600	0.02760	0.05120	0.09145	0.03056	0.05644								0.09776	0.17549
SUB-TOTAL(1)				0.23072	0.31573	0.92032	1.29879	0.04512	0.07735								1.19616	1.69187
2. BLOCKED RESERVES (i)INCROP AREA																		
		1.05	1.05			0.01504	0.02089										0.01504	0.02089
SUB-TOTAL(I)						0.01504	0.02089										0.01504	0.02089
SUB-TOTAL(2)						0.01504	0.02089										0.01504	0.02089
SUB-TOTAL(SECTOR-IV)				0.23072	0.31573	0.93536	1.31968	0.04512	0.07735								1.21120	1.71276

PARTICULARS	THICKNESS AVG	A	B	C	D	E	F	G	UG	TOTAL
TOTAL SEAM III	THICKNESS	RES.	AREA	RES.	AREA	RES.	AREA	RES.	AREA	RES.
A SEAM III										
1. PROVIDED										
4. SECTOR I										
1. EFFECTIVE RESERVES										
0.5 - 0.9	0.70	0.00480	0.00423	0.21104	0.18660	0.04632	0.04253	0.26176	0.22566	0.15936
0.9 - 1.2	1.05	0.01294	0.01672	0.10446	0.14020	0.04274	0.05585	0.15936	0.27159	0.17218
1.2 - 1.5	1.35	0.00976	0.01860	0.11424	0.18710	0.04816	0.05602	0.16980	0.29812	0.16980
1.5 - 2.0	1.75	0.00800	0.01784	0.11888	0.26588	0.04302	0.08980			
SUB-TOTAL (1)		0.03520	0.05816	0.54664	0.78188	0.17934	0.28633	0.75316	1.13400	
2. BLOCKED RESERVES										
(i) UNDER 15m HARD COVER LINE										
1.5 - 2.0	1.75	0.00784	0.01728	0.04416	0.00086			0.05200	0.01626	0.05200
SUB-TOTAL (1)		0.00784	0.01728	0.04416	0.00086			0.05200	0.01626	
(ii) MINOR AREA										
1.8 - 1.80			0.00304	0.00622				0.00304	0.00622	
SUB-TOTAL (1)		0.00784	0.01728	0.04720	0.00772			0.00304	0.00622	
SUB-TOTAL (2)		0.00304	0.01248	0.05294	0.79116	0.17934	0.29633	0.81522	1.15047	
b. SECTOR I										
1. PROVIDED										
1. EFFECTIVE RESERVES										
0.5 - 0.9	0.70	0.19588	0.17258	0.57780	0.51672			0.77328	0.68831	0.01076
0.9 - 1.2	1.05	0.00140	0.00185	0.00936	0.01258			0.09408	0.16232	0.09408
1.2 - 1.5	1.35							0.87812	0.86804	
SUB-TOTAL (1)		0.19728	0.17444	0.58716	0.52930			0.87812	0.86804	
2. BLOCKED RESERVES										
(i) UNDER 15m HARD COVER LINE										
0.5 - 0.9	0.70	0.08692	0.07576	0.02060	0.01661			0.10672	0.09439	0.03740
0.9 - 1.2	1.05	0.02700	0.03572	0.00540	0.00725			0.03740	0.04297	0.13612
SUB-TOTAL (1)		0.11392	0.11148	0.02600	0.02386			0.14412	0.13736	
(ii) MINOR AREA										
1.00	0.08240	0.07862						0.08240	0.07862	
SUB-TOTAL (1)		0.08240	0.07862					0.08240	0.07862	
SUB-TOTAL (2)		0.17832	0.19012	0.02620	0.03086			0.20152	0.15898	
SUB-TOTAL (SECTOR-I)		0.37240	0.36496	0.10724	0.17174			1.07984	1.02802	
a. SECTOR II										
1. EFFECTIVE RESERVES										
0.5 - 0.9	0.70	0.16144	0.14238	0.18032	0.13448			0.31176	0.27687	0.48840
0.9 - 1.2	1.05	0.23040	0.30482	0.22940	0.30341			0.48840	0.66542	0.23020
1.2 - 1.5	1.35	0.00300	0.00510	0.18312	0.33318			0.22376	0.35044	0.50160
1.5 - 2.0	1.75			0.22376	0.50044			0.27184	0.50044	0.27184
SUB-TOTAL (1)		0.39464	0.45231	1.06544	2.05350			1.53996	2.62467	1.53996
SUB-TOTAL (SECTOR II)		0.39464	0.45231	1.06544	2.05350			1.53996	2.62467	
p. SECTOR III										
1. EFFECTIVE RESERVES										
0.5 - 0.9	0.70	0.38624	0.35125	0.15632	0.13894			0.65456	0.49109	0.37088
0.9 - 1.2	1.05	0.20784	0.27487	0.15952	0.21448			0.37088	0.49392	0.28324
1.2 - 1.5	1.35	0.02128	0.02820	0.21712	0.37480			0.28324	0.51758	0.50160
1.5 - 2.0	1.75	0.01058	0.02328	0.49104	1.08821			0.50160	1.12148	0.07900
SUB-TOTAL (1)		0.63594	0.67599	0.98160	2.21742			1.83104	3.62407	0.21546
SUB-TOTAL (SECTOR III)		0.63594	0.67599	0.98160	2.21742			1.83104	3.62407	

PARTICULARS	THICKNESS AVG.	THICKNESS	A RES.	B AREA	C RES.	D AREA	E RES.	F AREA	G RES.	H AREA	I RES.	J AREA	K RES.	L AREA	M RES.	N AREA	O RES.	P AREA	UG RES.	UG AREA	TOTAL RES.	TOTAL AREA
d. SECTOR -IV																						
1. EFFECTIVE RESERVES																						
1.2 -	1.5	1.35	0.08272	0.14071	0.34386	0.58326	0.28580	0.51063	0.06576	0.12145	0.07200	0.17017	0.77624	1.38605								
1.5 -	2.0	1.75			0.37196	0.83189	0.38721	0.88721	0.38721	0.88721	0.38721	0.88721	1.2252	2.84442								
2.0 -	2.5	2.25					0.01712	0.05096	0.28120	0.86631	0.07440	0.23804	0.38272	1.18531								
SUB-TOTAL(I)																						
2. BLOCKED RESERVES																						
(UNDER 15m HARD COVER LINE																						
1.2 -	1.5	1.35			0.00068	0.00117	0.11552	0.20692					0.11820	0.20749								
1.5 -	2.0	1.75			0.08768	0.15137	0.19400	0.44916	0.00784	0.01677			0.28852	0.61830								
2.0 -	2.5	2.25					0.00832	0.01881	0.08216	0.25289	0.04624	0.14784	0.13472	0.41984								
SUB-TOTAL(I)																						
(ANCHOR AREA																						
1.5 -	1.8	1.65			0.08336	0.15254	0.31584	0.67428	0.09000	0.27166	0.04624	0.14784	0.52044	1.24643								
SUB-TOTAL(I)																						
SUB-TOTAL(II)																						
SUB-TOTAL(III)																						
TOTAL(1.2m PROVIDED)																						
TOTAL(1.2m PROVIDED)																						

RESERVES FOR LESS THAN 1.2m THICKNESS OF COAL SEAMS

A SEAM II TOP SECTION

1. PROVED

a. SECTOR -I

1. EFFECTIVE RESERVES

0.9 -	1.2	1.05			0.00608	0.00645	0.03437	0.04937					0.04045	0.05782								
SUB-TOTAL(I)																						
SUB-TOTAL(II)																						
SUB-TOTAL(III)																						
SUB-TOTAL(IV)																						

c. SECTOR -II

1. EFFECTIVE RESERVES

0.9 -	1.2	1.05			0.00564	0.00641	0.02896	0.04023	0.09668	0.13887	0.05424	0.08099	0.00564	0.00641								
SUB-TOTAL(I)																						
SUB-TOTAL(II)																						
SUB-TOTAL(III)																						
SUB-TOTAL(IV)																						

d. SECTOR -IV

1. EFFECTIVE RESERVES

0.9 -	1.2	1.05			0.02976	0.03983	0.02790	0.03876					0.05766	0.07669								
SUB-TOTAL(I)																						
SUB-TOTAL(II)																						
SUB-TOTAL(III)																						
SUB-TOTAL(IV)																						
SUB-TOTAL(V)																						
TOTAL(<1.2m PROVIDED)																						
GRAND TOTAL PROVIDED																						

PARTICULARS	THICKNESS AVG.			A		B		C		D		E		F		G		UG		TOTAL		
	THICK	AREA	RES.	RES.	AREA	RES.	AREA	RES.	AREA	RES.	AREA	RES.	AREA	RES.	AREA	RES.	AREA	RES.	AREA	RES.	AREA	RES.
B. INDICATED																						
a. SECTOR -V																						
1. EFFECTIVE RESERVES																						
	1.2 -	1.5	1.35					0.02816	0.05030											0.02816	0.05030	
SUB-TOTAL(1)								0.02816	0.05030											0.02816	0.05030	
2. BLOCKED RESERVES																						
(i) UNDER 15m HARD COVER LINE																						
	1.5 -	2.0	1.75					0.18304	0.42378											0.18304	0.42378	
SUB-TOTAL(i)								0.18304	0.42378											0.18304	0.42378	
(ii) INCROP AREA																						
	2.0 -	2.5	2.25					0.01338	0.03977											0.01338	0.03977	
SUB-TOTAL(ii)								0.01338	0.03977											0.01338	0.03977	
SUB-TOTAL(2)								0.19640	0.46355											0.19640	0.46355	
SUB-TOTAL(SECTOR-V)								0.22456	0.51385											0.22456	0.51385	
TOTAL (INDICATED)								0.22456	0.51385											0.22456	0.51385	
TOTAL (PROVED+INDICATED)	0.08272	0.14071	1.13400	1.99313	1.85238	3.58817	3.04028	4.99685	0.78912	2.13617										5.63598	12.35413	
A. SEAM II COMBINED SECTION																						
I. PROVED																						
a. SECTOR -I																						
1. EFFECTIVE RESERVES																						
	1.2 -	1.5	1.36							0.20224	0.37350									0.20224	0.37350	
	1.5 -	2.0	1.75							0.17328	0.41483									0.17328	0.41483	
	2.0 -	2.5	2.25							0.13440	0.41368									0.13440	0.41368	
	2.5 -	3.0	2.75							0.05152	0.19382									0.05152	0.19382	
SUB-TOTAL(1)										0.56144	1.39583									0.56144	1.39583	
2. BLOCKED RESERVES																						
(i) UNDER 15m HARD COVER LINE																						
	1.2 -	1.5	1.36							0.04400	0.08128									0.04400	0.08128	
	1.5 -	2.0	1.75							0.07104	0.17007									0.07104	0.17007	
SUB-TOTAL(i)										0.11504	0.25135									0.11504	0.25135	
(ii) INCROP AREA																						
	1.5 -	1.8	1.65							0.00636	0.01210									0.00636	0.01210	
SUB-TOTAL(ii)										0.00636	0.01210									0.00636	0.01210	
SUB-TOTAL(2)										0.12040	0.26343									0.12040	0.26343	
SUB-TOTAL(SECTOR-I)										0.68184	1.65926									0.68184	1.65926	
b. SECTOR -II																						
1. EFFECTIVE RESERVES																						
	2.0 -	2.5	2.26							0.04416	0.13592									0.04416	0.13592	
	2.5 -	3.0	2.75							0.12840	0.47652									0.12840	0.47652	
	3.0 -	3.5	3.25							0.62240	2.78719									0.62240	2.78719	
	3.5 -	4.0	3.75							0.16040	0.77155									0.16040	0.77155	
SUB-TOTAL(1)										0.94336	4.15018									0.94336	4.15018	
2. BLOCKED RESERVES																						
(i) UNDER 15m HARD COVERLINE																						
	1.2 -	1.8	1.36					0.00088	0.00657	0.00224	0.00414									0.00692	0.01071	
	1.5 -	2.0	1.75					0.00384	0.00689	0.03636	0.06466									0.03920	0.09354	
	2.0 -	2.5	2.25					0.00100	0.00298	0.01968	0.06058									0.02068	0.06356	
SUB-TOTAL(i)								0.00662	0.01844	0.05728	0.14937									0.06660	0.16781	
(ii) INCROP AREA																						
	1.5 -	1.8	1.65							0.01280	0.02889									0.01280	0.02889	
SUB-TOTAL(ii)										0.01280	0.02889									0.01280	0.02889	
SUB-TOTAL(2)								0.00852	0.01844	0.07008	0.17826									0.07860	0.19670	
SUB-TOTAL(SECTOR-II)								0.00852	0.01844	1.01344	4.32844									1.02196	4.34638	
c. SECTOR -IV																						
1. EFFECTIVE RESERVES																						
	2.5 -	3.0	2.75					0.52387	1.90587	0.00678	0.02174									0.52965	1.92771	

PARTICULARS	THICKNESS AVG.		A		B		C		D		E		F		G		UG		TOTAL	
	3.0 -	3.5 -	THICK AREA	RES	THICK AREA	RES	THICK AREA	RES	THICK AREA	RES	THICK AREA	RES	THICK AREA	RES	THICK AREA	RES	THICK AREA	RES	THICK AREA	RES
SUB-TOTAL(1)	3.0 -	3.5 -	3.29	3.29	4.0	3.76	0.00979	0.04197	0.03854	0.17971	0.00650	0.41589	0.00720	0.01667	0.00880	0.02670	0.04496	0.16377	0.01200	0.05190
2. BLOCKED RESERVES	1.5 -	2.0 -	1.75	1.75	2.0 -	2.25	0.00436	0.15775	0.00180	0.00802	0.07136	0.25222	0.00160	0.00802	0.07136	0.25222	0.00160	0.00802	0.07136	0.25222
(1) UNDER 15m HARD COVER LINE	2.0 -	2.5 -	2.25	2.25	3.0 -	2.75	0.04336	0.15775	0.00180	0.00802	0.07136	0.25222	0.00160	0.00802	0.07136	0.25222	0.00160	0.00802	0.07136	0.25222
	3.0 -	3.5 -	3.25	3.25			0.01200	0.05190												
SUB-TOTAL(2)							0.07136	0.25222	0.00160	0.00802	0.07136	0.25222	0.00160	0.00802	0.07136	0.25222	0.00160	0.00802	0.07136	0.25222
SUB-TOTAL(3)							0.60489	2.20016	0.08010	0.42181	0.61351	2.21860	1.78538	6.40961						
TOTAL (PROVED)							0.61351	2.21860	1.78538	6.40961										
B. INDICATED																				
D. SECTOR 'A'																				
1. EFFECTIVE RESERVES	1.5 -	2.0 -	1.75	1.75	2.0 -	2.25	0.02208	0.06573	0.17040	0.61896	0.23644	0.78608	0.04336	0.10039	0.02208	0.06573	0.17040	0.61896	0.23644	0.78608
2. BLOCKED RESERVES	2.0 -	2.5 -	2.25	2.25	3.0 -	2.75														
(1) UNDER 15m HARD COVER LINE	1.5 -	2.0 -	1.75	1.75	2.0 -	2.25	0.07408	0.17151	0.03328	0.09907	0.23440	0.85281	0.07408	0.17151	0.03328	0.09907	0.23440	0.85281	0.07408	0.17151
	2.0 -	2.5 -	2.25	2.25	3.0 -	2.75	0.034178	1.12339												
SUB-TOTAL(1)							0.03296	0.07195	0.03296	0.07195	0.03296	0.07195	0.03296	0.07195	0.03296	0.07195	0.03296	0.07195	0.03296	0.07195
(1) UNDER AREA	1.5 -	1.8 -	1.65	1.65			0.31472	1.19534	0.61056	1.86142	1.22407	4.70902	1.78538	6.40961	0.31472	1.19534	0.61056	1.86142	1.22407	4.70902
SUB-TOTAL(2)							0.31472	1.19534	0.61056	1.86142	1.22407	4.70902	1.78538	6.40961	0.31472	1.19534	0.61056	1.86142	1.22407	4.70902
SUB-TOTAL(3)							0.00272	0.14071	1.13400	1.98313	3.07895	7.78979	3.86564	11.40866	0.00272	0.14071	1.13400	1.98313	3.07895	7.78979
TOTAL (COMBINED) (PROVED-INDICATED)							0.00272	0.14071	1.13400	1.98313	3.07895	7.78979	3.86564	11.40866	0.00272	0.14071	1.13400	1.98313	3.07895	7.78979
TOTAL SEAM (1 TOP+COMBINED)							0.00272	0.14071	1.13400	1.98313	3.07895	7.78979	3.86564	11.40866	0.00272	0.14071	1.13400	1.98313	3.07895	7.78979