re Sukunka 77 & 78 BC 41

COMPANY BP Canada Ltd - Coal Group
BOREHOLE BP # 41 Sukunka 77
STATE B.C. COUNTRY Canada
Permanent Datum Elev. Ft.
Log measured from Ft. above P.D.
Drilling measured from Ft. above P.D.

S B R DENSITY
DETAIL LOG

fold here

Run No. 1 | Depth/Scale 1:120
Date 26 Sept 77
First Reading 400
Last Reading 60
Interval Measured 340 ft
Casing BPB
Logged Interval 340 ft
Depth Reached 340 ft
Bottom Driller 338.2m
Bottom Logger 102.3m
Max. Rec. Temp. $\frac{3112}{561}$
Equip. No. S46 | Viscosity
Bit Size 1 BK to RD
2 to
Casing Size 1 BK to RD
2 to
Rm @ Meas Temp @ °F
Rmf @ Meas Temp @ °F
Rmc @ Meas Temp @ °F
Time Since Circ. hrs
Max. Rec. Temp. °F
Equip. Location Truck No. V28/72
Recorded By R. Stalnaker
Witnessed By

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No.			
Depth — Driller				
Type Fluid in Hole				
Dens.	Visc.			
ph	Fluid Loss	ml		
Source of Sample				
Rm @ Meas Temp	@ °F	@ °F		
Rmf @ Meas Temp	@ °F	@ °F		
Rmc @ Meas Temp	@ °F	@ °F		
Source Rmf Rmc				
Rm @ BHT	@ °F	@ °F		
Rmf @ BHT	@ °F	@ °F		
Rmc @ BHT	@ °F	@ °F		

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

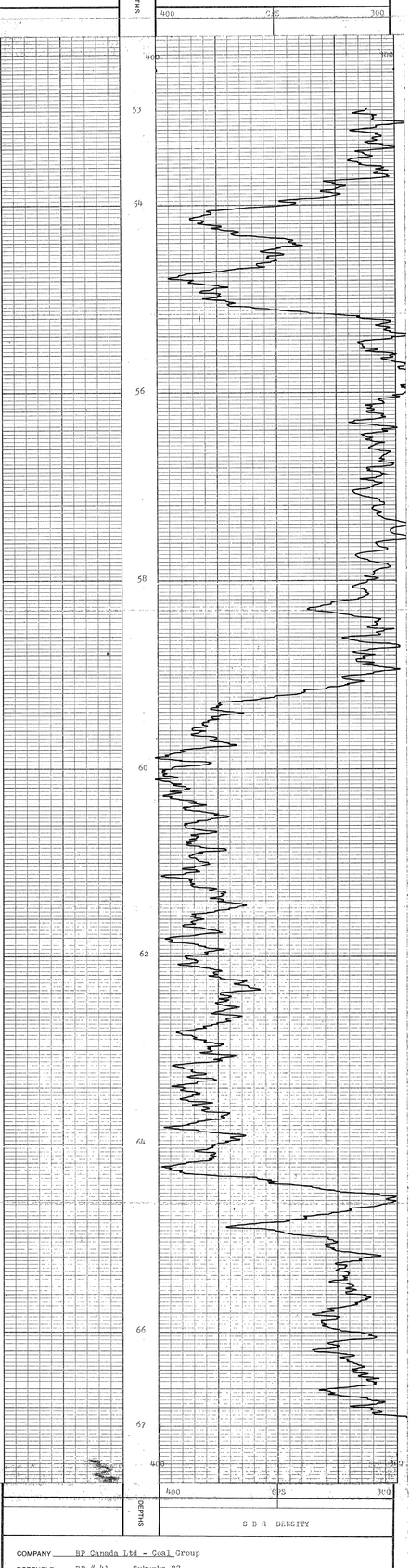
Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	Depths To	Speed ft/min	T.C. sec	Norm.	Scale %	Source Number
SBRD	1 Bot.	21 2	Out	1.0		100	K5567

Hole logged through rods

663



DEPTHS
S B R DENSITY

COMPANY BP Canada Ltd - Coal Group
BOREHOLE BP # 41 Sukunka 77
FIELD
COUNTY B.C. STATE Canada

COMPANY R.F. Canada Ltd - Coal Group
WELL Well #1
FIELD Drumheller
PROVINCE Alberta COUNTRY Canada
LOCATION 2-3-30-20W4
Permanent Datum Ground Level
Log Measured From KB 4.0 Ft. Above Perm. Datum
Drilling Measured From KB Ft. Above Perm. Datum

Run No.	One	Two	Three
Date	3-Feb-84		
Depth-Driller	2000		
Depth-Logger	2000		
Bottom Log Interval	1999		
Top Log Interval	1700		
Casing-Driller	244.5 @ 0	@	@
Casing-Logger	244.5		
Bit Size	200		
Type Fluid in Hole	Gel Chem		
Density	1.14		
Viscosity	50		
pH	9.5		
Fluid Loss	10.4		
Source of Sample	Flow Line		
Rm @ Meas Temp	.25 @ 17	@	@
Rmf @ Meas Temp	.2 @ 17	@	@
Rmc @ Meas Temp	.3 @ 17	@	@
Source Rmf / Rmc	Meas		
Rm @ BHT	@	@	@
Rmf @ BHT	@	@	@
Rmc @ BHT	@	@	@
Circulation Stopped	0600		
Logger on Bottom	0900		
Unit Number	1304		
Witnessed By	Stuart		

Hole Name

REMARKS

Changes in Mud Type or Additional Samples
Time Sample No.
Depth Driller
Type Fluid in Hole

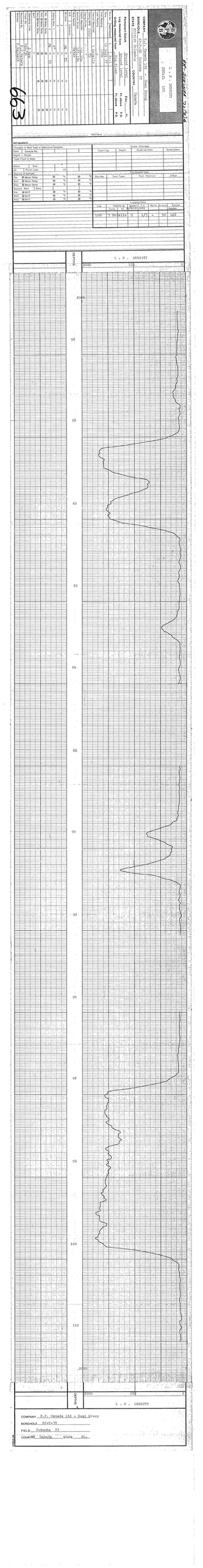
Scale Changes
Type Log | Depth | Scale Up Hole | Scale Down

Equipment Data
Run No. | Tool Type | Tool Number | Location

Logging Data
Log | Depth Driller | Depth Logger | Btm. Log Interval | Top Log Interval | Scale Log Interval
1-CP | 2 754 6111 | 9 | 170 | - | 90 | 162

L. S. DENSITY
2000 CPS

DEPTH



L. S. DENSITY
2000 CPS

COMPANY R.F. Canada Ltd - Coal Group
BOREHOLE Well #1
FIELD Drumheller
COUNTRY Canada STATE Alta.

PC-SUKUNKA 77 (3) A

GAMMA RAY L.S.DENSITY
GENERAL LOG

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP-T-38 Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground level Elev ___ Ft.
Log measured from Ground level Ft.above P.D.
Drilling measured from Rig Floor Ft.above P.D.

Run No.	Depth Scale	1	200:1
Date		14 Sept 77	
First Reading		104.40m	
Last Reading		0	
Interval Measured		104.40m	
Casing BPB		rods TD	
Casing Driller		-	
Depth Reached		104.40m	
Bottom Driller		105.15m	
Mud Nature		Water	
S G	Viscosity	-	
Bit Size 1		NQ to TD	to
2		to	to
3		to	to
Casing Size 1		4" to	to
2		NQ to TD	to
Rm @ Meas Temp.		@	@
Rmf @ Meas Temp.		@	@
Rmc @ Meas Temp.		@	@
BHT		-	
Operating Time		2 hrs	
Truck No.		V 24/34	
Recorded By		P.J.Waters	
Witness		P.Raymant	

663

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REMARKS

Changes in Mud Type or Additional Samples				
Date / Sample No.				
Depth – Driller				
Type Fluid in Hole				
Dens. / Visc.				
ph. / Fluid Loss		ml		
Source of Sample				
Rm @ Meas Temp.	@	°F	@	°F
Rmf @ Meas Temp.	@	°F	@	°F
Rmc @ Meas Temp.	@	°F	@	°F
Source Rmf / Rmc				
Rm @ BHT	@	°F	@	°F
Rmf @ BHT	@	°F	@	°F
Rmc @ BHT	@	°F	@	°F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	Depths m To	Speed m/min	T.C. Sec	Norm	Sonde No.	Source Number
Gamma	104	0	9	2	-	90	-
LSD	104	0	9	1	-	90	LS2

GAMMA RAY	DEPTHS	L.S. DENSITY
0 CPS 60		2400 CPS 0

0 CPS 60	DEPTHS	2400 CPS 0
GAMMA RAY		L.S. DENSITY

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP-T-38
FIELD Sukunka 77
COUNTRY Canada STATE BC.

MY-41485-R

COMPANY B.P. Canada Ltd. + Coal Group

BOREHOLE BP-2-76 BOREHOLE 77

STATE British Columbia COUNTRY Canada

FIELD Sukunka

DISTRICT

N. R. DENSITY

Run No. 1 Date Run 1 Time Run 1 Depth Driller 2000 Depth Logger 2001 Bottom Log Interval 2000 Top Log Interval 1800 Casing Driller 1800 Casing Logger 1800 Bit Size 8 3/4 Type Fluid in Hole Salinity, PPM Cl Density Viscosity Fluid Loss Source of Sample Rm @ Meas Temp Rmf @ Meas Temp Rmc @ Meas Temp Source Rmf Rmc Rm @ BHT Rmf @ BHT Rmc @ BHT Time Since Circ. Max. Rec. Temp. Equip. Location Recorded By Witnessed By

Run No. 1 Date 2-5-76 Depth Driller 2000 Depth Logger 2001 Bottom Log Interval 2000 Top Log Interval 1800 Casing Driller 1800 Casing Logger 1800 Bit Size 8 3/4 Type Fluid in Hole Salinity, PPM Cl Density 9.2 Viscosity 50 Fluid Loss 10 Source of Sample Flow Line Rm @ Meas Temp .4 @ 70 Rmf @ Meas Temp .3 @ 70 Rmc @ Meas Temp .5 @ 70 Source Rmf Rmc Flow Line Rm @ BHT .3 @ 70 Rmf @ BHT .25 @ 70 Rmc @ BHT .5 @ 70 Time Since Circ. 3 HRS Max. Rec. Temp. 70 Equip. Location 2 Recorded By Witnessed By

Run No. 1 Date 2-5-76 Depth Driller 2000 Depth Logger 2001 Bottom Log Interval 2000 Top Log Interval 1800 Casing Driller 1800 Casing Logger 1800 Bit Size 8 3/4 Type Fluid in Hole Salinity, PPM Cl Density 9.2 Viscosity 50 Fluid Loss 10 Source of Sample Flow Line Rm @ Meas Temp .4 @ 70 Rmf @ Meas Temp .3 @ 70 Rmc @ Meas Temp .5 @ 70 Source Rmf Rmc Flow Line Rm @ BHT .3 @ 70 Rmf @ BHT .25 @ 70 Rmc @ BHT .5 @ 70 Time Since Circ. 3 HRS Max. Rec. Temp. 70 Equip. Location 2 Recorded By Witnessed By

Run No. 1 Date 2-5-76 Depth Driller 2000 Depth Logger 2001 Bottom Log Interval 2000 Top Log Interval 1800 Casing Driller 1800 Casing Logger 1800 Bit Size 8 3/4 Type Fluid in Hole Salinity, PPM Cl Density 9.2 Viscosity 50 Fluid Loss 10 Source of Sample Flow Line Rm @ Meas Temp .4 @ 70 Rmf @ Meas Temp .3 @ 70 Rmc @ Meas Temp .5 @ 70 Source Rmf Rmc Flow Line Rm @ BHT .3 @ 70 Rmf @ BHT .25 @ 70 Rmc @ BHT .5 @ 70 Time Since Circ. 3 HRS Max. Rec. Temp. 70 Equip. Location 2 Recorded By Witnessed By

963

Field Name

REMARKS

Changes in Mud Type or Additional Samples

Date Sample No. Depth – Driller Type Fluid in Hole

Date Time Depth – Driller Type Fluid in Hole

Run No. @ Meas Temp @ @ Rmf @ Meas Temp @ @ Rmc @ Meas Temp @ @ Source Rmf Rmc Rm @ BHT @ @ Rmf @ BHT @ @ Rmc @ BHT @ @

Scale Changes

Type Log	Depth	Scale up Hole	Scale Down

Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths Rec'd From	To	Speed I.P.S.	Neutron Source	Source Number
RUN	2000	Surface	21	3	90 MCi

DEPTHS

N. R. DENSITY

1800 CPS 800

1900

56

58

60

62

64

66

68

90

92

94

96

98

100

102

2000

1800 CPS 800

N. R. DENSITY

COMPANY B.P. Canada Ltd + Coal Group

BOREHOLE BP-2-76

FIELD Sukunka 77

COUNTY BC Canada STATE BC

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 28 Sukunka '77

STATE British Columbia

COUNTRY Canada

H.R. DENSITY

DETAIL 1/20

Permanent Datum: Ground Level — Elevation: 3400 ft. A.S.L.

Drilling Measured from: Top of casing — Elevation: 3400 ft. A.S.L.

Log Measured from: Rotary Table — 0 ft. above P.D.

Date Recorded: 8-2-77

Run No. 1

Depth Driller: 2124

Depth Logger: 2124

Bottom Logged Interval: 2124

Top Logged Interval: 3400

Casing Size 1: 9 5/8 @ 80

Casing Size 2: @

Casing Size 3: @

Type Fluid in Hole: Water

Density / Viscosity: @ ft

pH / Fluid Loss: @ ml

Source of Sample: Flow

Rm @ Meas Temp: @ °F

Rmf @ Meas Temp: @ °F

Rmc @ Meas Temp: @ °F

Source: Rmf / Rmc

Rm @ BHT: @ °F

Rmf @ BHT: @ °F

Rmc @ BHT: @ °F

Max Rec Temp: 93 °F

Equipment Location: 93

Recorded By: R. Schunke

Witnessed By: R. Pinkerton

REMARKS

Changes in Mud Type or Additional Samples

Date | Sample No.

Depth - Driller

Type Fluid in Hole

Dens. | Visc.

pH | Fluid Loss

Source of Sample

Rm @ Meas Temp

Rmf @ Meas Temp

Rmc @ Meas Temp

Source: Rmf | Rmc

Rm @ BHT

Rmf @ BHT

Rmc @ BHT

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	Depths To	Speed ft/min	T.C. Sec.	Norm.	Inverse	Source Nor
DEN	3 Details		21	1	-	90	Rm2

H.R. DENSITY

3400 GPI 2200

3400 2200

DEPTH

34 36 38 40 42 44 46 48 50 52 54

CHAN. 1

CHAN. 2

CHAN. 3

CHAN. 4

CHAN. 5

CHAN. 6

CHAN. 7

CHAN. 8

3400 GPI 2200

H. R. DENSITY

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 28 Sukunka '77

STATE British Columbia

COUNTRY Canada

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 28 Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground Level Elev. m. RD.
Log measured from Ground Level m. above P.D.
Drilling measured from RDF 202.46 m. above P.D.

Date	Run No.	Depth Driller	Depth Logger	Bottom Logged Interval	Top Logged Interval	Type Fluid in Hole	Salinity ppm	Density lb/gal	Level	Max. Rec. Temp. deg. F.	Equip. Location
14 Nov 77	ONE	1200	1200	1200	0	WATER			FULL		

Casing Driller 6 5/8" @ 202.46 m
Casing Logger 202.46 m
Bit Size 4 1/2" m
Type Fluid in Hole WATER
Dens. lb/gal Visc. sec
pH Fluid Loss cc
Source of Sample
Rm @ Meas Temp 0.5 @ 21 °F
Rmf @ Meas Temp @ °F
Rmc @ Meas Temp @ °F
Source: Rmf Rmc
Rm @ BHT @ °F
Rmf @ BHT @ °F
Rmc @ BHT @ °F

Equipment Data

Run No.	Tool Type	Tool Position	Other
ONE	GAMMA RAY SONDE		

Logging Data

Log	Depths Recorded From	Depths Recorded To	Speed ft/min	T.C. Sec	Norm.	Sensitivity	Source Strength
Gamma	2 Details	21	2	1.36	119		-
SLSD	2 Details	21	1	0.70	119	M5567	

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No.		
Depth - Driller			
Type Fluid in Hole			
Dens.	Visc.		
pH	Fluid Loss		

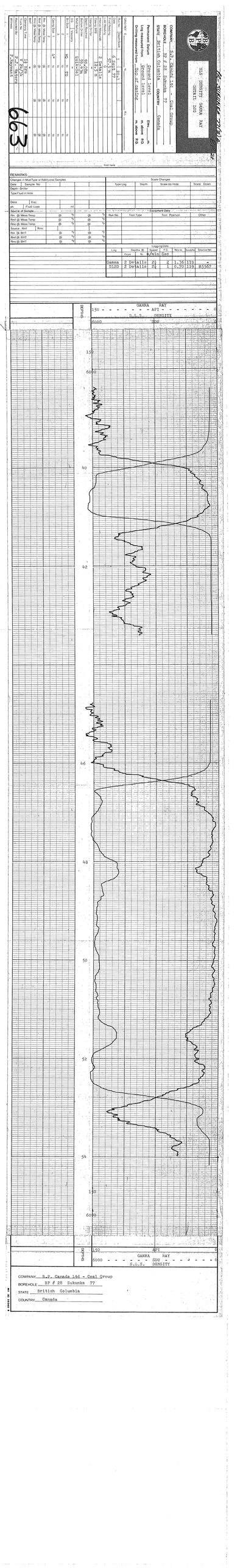
Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Fold here

DEPTHS

GAMMA RAY
150 - - - - - - - API - - - - - - - 0
S.L.S. DENSITY
6000 - - - - - - - lbs/ft³ - - - - - - - 4000



DEPTHS

GAMMA RAY
150 - - - - - - - API - - - - - - - 0
S.L.S. DENSITY
6000 - - - - - - - lbs/ft³ - - - - - - - 4000

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 28 Sukunka 77
STATE British Columbia
COUNTRY Canada

963

B.P. CANADA LTD. COAL GROUP
SUKUNKA PROJECT
BRITISH COLUMBIA

963

COMPANY B.P. Canada Ltd - Coal Group
WELL BP # 26 Sukunka 77
FIELD British Columbia COUNTY Canada

S.B.R. DENSITY CALIPER

DETAILS 100

Permanent Datum: Ground Level — Elev. ... m
Log measured from: Ground Level — ... m above Perm. Datum
Drilling Measured from: K.B. — Elev. ... m

Date: 27-8-77
Run No.: One
Depth-Driller: 2360
Depth-Logger: 2359
Bottom Logged Interval: 2359
Top Logged Interval: 650
Casing-Driller: 650 @ ...
Casing-Logger: 650
Bit Size: 8 3/4"
Type Fluid in Hole: Gel Chem
Density: ...
Viscosity: ...
pH: ...
Fluid Loss: ...
Source of Sample: ...
Rm @ Meas Temp: ... @ ... °F
Rmf @ Meas Temp: ... @ ... °F
Rmc @ Meas Temp: ... @ ... °F
Source: Rmf ... Rmc ...
Rm @ BHT: ... @ ... °F
Rmf @ BHT: ... @ ... °F
Rmc @ BHT: ... @ ... °F
Time Since Circ: ...
Max. Rec. Temp.: ... °F
Equip. Location: ...
Recorded By: ...
Witnessed By: ...

Total Table

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No.	Depth

Depth Driller

Depth Logger

Type Fluid in Hole

Density

Viscosity

Fluid Loss

Source of Sample

Rm @ Meas Temp ... @ ... °F

Rmf @ Meas Temp ... @ ... °F

Rmc @ Meas Temp ... @ ... °F

Source: Rmf ... Rmc ...

Rm @ BHT ... @ ... °F

Rmf @ BHT ... @ ... °F

Rmc @ BHT ... @ ... °F

Hole Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Used

Run No.	Tool Type	Type Position	Other

Logging Data

Log	Depth Driller	Depth Logger	Log Interval	Recrd.	Remarks	Source No.
	From	To				
HRRD	2 Details	22	1	-	110	M 5567
Caliper	Details	22	1	-	119	-

CALIPER

DEPTH

S. B. R. DENSITY

2" 6" 10" 14" 18" 22"

650 CPS 350

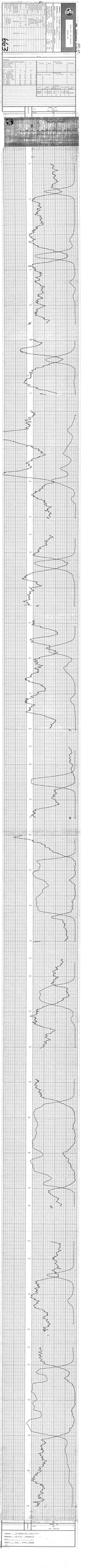
34
36
38
40
42
44
46
48
50
52
54
56

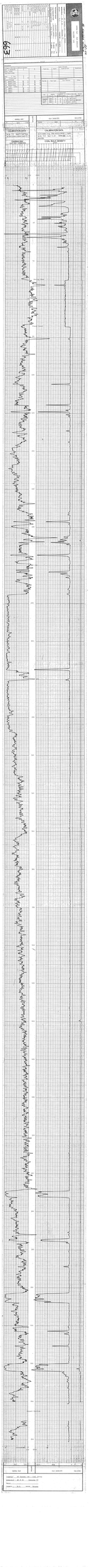
CALIPER

DEPTH

S. B. R. DENSITY

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 26 Sukunka 77
STATE British Columbia
COUNTRY Canada





PR-SUKUNKA 77 (3)A

663

SONIC LOG

BPB

COMPANY: BP Canada Ltd - Coal Group
BOREHOLE: BP # 29 Sukunka 77
STATE: B.C. COUNTRY: Canada

Permanent Datum: Ground Level Elev ____ Ft.
Log measured from: Ground Level ____ Ft. above P.D.
Drilling measured from: Rig Floor ____ Ft. above P.D.

Run No.	1		
Depth Scale	1:200		
Date	22 Sept 77		
First Reading	640m		
Last Reading	80m		
Interval Measured	560m		
Casing BPB	40.8m		
Casing Driller	50.3m		
Depth Reached	641.8m		
Bottom Driller	641.5m		
Mud Nature	Quik-Gel		
S G / Viscosity			
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	4" to 50.3m	to	to
2	to	to	to
Rm @ Meas Temp.	@	@	@
Rmf @ Meas Temp.	@	@	@
Rmc @ Meas Temp	@	@	@
BHT			
Operating Time	8 hrs.		
Truck No	V24/34		
Recorded By	R.Bishop		
Witness			

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REMARKS

Changes in Mud Type or Additional Samples

Date / Sample No.				
Depth — Driller				
Type Fluid in Hole				
Dens / Visc.				
ph / Fluid Loss		ml		
Source of Sample				
Rm @ Meas Temp.	@	°F	@	°F
Rmf @ Meas Temp	@	°F	@	°F
Rmc @ Meas Temp.	@	°F	@	°F
Source Rmf / Rmc				
Rm @ BHT	@	°F	@	°F
Rmf @ BHT	@	°F	@	°F
Rmc @ BHT	@	°F	@	°F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

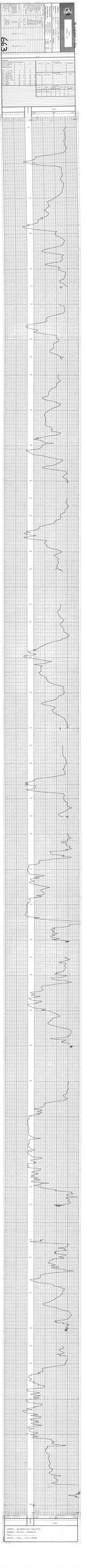
Log	Depths From	Depths To	Speed m/min	T C sec	Norm	Sonde No.	Source Number
Sonic	640	80	9	1			

	DEPTHS	SONIC
		956 CPS 273

	DEPTHS	956 CPS 273
		SONIC

COMPANY: BP Canada Ltd - Coal Group
BOREHOLE: BP # 29 Sukunka 77
FIELD:
COUNTY: B.C. STATE: Canada

MY 41485 R



KR-SUKUNKA 77(3)A.

663

H R DENSITY DETAIL LOG

COMPANY	BP Canada Ltd - Coal Group
BOREHOLE	BP # 29 Sukunka 77
STATE	B.C.
COUNTRY	Canada
Permanent Datum	Ground Level
Elev	Ft.
Log measured from	Ground Level
Ft. above P.D.	
Drilling measured from	Rig Floor
Ft. above P.D.	

Run No.	1		
Depth Scale	1:20		
Date	22 Sept 77		
First Reading	628m		
Last Reading	114m		
Interval Measured	11 details		
Casing BPB	49.8m		
Casing Driller	50.3m		
Depth Reached	641.8m		
Bottom Driller	641.6m		
Mud Nature	Quik-Gel		
S.G.			
Viscosity			
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	4" to 50.3m	to	to
2	to	to	to
3	to	to	to
Rm @ Meas Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp	@	@	@
BHT			
Operating Time	8 hrs.		
Truck No	V24/34		
Recorded By	R.Bishop		
Witness			

fold here

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No		
Depth – Driller			
Type Fluid in Hole			
Dens	Visc		
ph	Fluid Loss	ml	
Source of Sample			
Rm @ Meas Temp.	@ °F	@ °F	
Rmf @ Meas Temp.	@ °F	@ °F	
Rmc @ Meas Temp	@ °F	@ °F	
Source. Rmf	Rmc		
Rm @ BHT	@ °F	@ °F	
Rmf @ BHT	@ °F	@ °F	
Rmc @ BHT	@ °F	@ °F	

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	Depths To	Speed m/min	T C sec	Norm	Sonde No	Source Number
HRD	11	dets.	2¼	1	out	90	HR2

DEPTHS | H R DENSITY | 7400 CPS 4200

DEPTHS | H R DENSITY | 7400 CPS 4200

COMPANY BP Canada Ltd - Coal Group

BOREHOLE BP # 29 Sukunka 77

FIELD

COUNTY B.C. STATE Canada

MY 4148 5 R

RE-SUKUNKA 77(3)A.

663

SBR DENSITY CALIPER DETAIL LOG

BPB

COMPANY: BP Canada Ltd - Coal Group
BOREHOLE: BP # 29 Sukunka 77
STATE: B.C. COUNTRY: Canada

Permanent Datum: Ground Level Elev ___ Ft.
Log measured from: Ground Level ___ Ft. above P.D.
Drilling measured from: Rig Floor ___ Ft. above P.D.

Run No.	1		
Depth Scale	1:20		
Date	22 Sept 77		
First Reading	628m		
Last Reading	114m		
Interval Measured	11 details		
Casing BPB	49.8m		
Casing Driller	50.3m		
Depth Reached	641.8m		
Bottom Driller	641.6m		
Mud Nature	Quik-Gel		
S.G. / Viscosity			
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	4" to 50.3m	to	to
2	to	to	to
Rm @ Meas Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp	@	@	@
BHT			
Operating Time	8 hrs.		
Truck No.	V24/34		
Recorded By	R.Bishop		
Witness			

fold here

REMARKS

Changes in Mud Type or Additional Samples

Date / Sample No		
Depth — Driller		
Type Fluid in Hole		
Dens. / Visc.		
ph / Fluid Loss	ml	ml
Source of Sample		
Rm @ Meas Temp.	@ °F	@ °F
Rmf @ Meas Temp.	@ °F	@ °F
Rmc @ Meas Temp	@ °F	@ °F
Source Rmf / Rmc		
Rm @ BHT	@ °F	@ °F
Rmf @ BHT	@ °F	@ °F
Rmc @ BHT	@ °F	@ °F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	Depths To	Speed m/min	T.C sec	Norm	Sonde No.	Source Number
SBRD	11 dets.		2¼	1	out	119	M5567
Cal.	11 dets.		2¼	1	out	119	

CALIPER — DEPTHS — S B R DENSITY

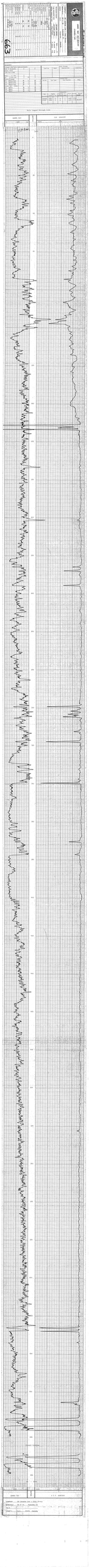
7" 2" — 700 CPS 350

7" 2" — 700 CPS 350

CALIPER — DEPTHS — S B R DENSITY

COMPANY: BP Canada Ltd - Coal Group
BOREHOLE: BP # 29 Sukunka 77
FIELD:
COUNTY: B.C. STATE: Canada

MY 41485 R



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Imperial Oil Resources Limited
Well Data Information Services
Suite 2100, 240 - 4th Avenue S.W.
Calgary, Alberta
T2P 2H8
(403) 237-2626

E99

Company	IMPERIAL OIL RESOURCES
Well	NORMAN 4-29-96-24W4
Field	NORMAN
Province	ALBERTA
Location	4-29-96-24W4
Service Co.	SCHLUMBERGER
Log Date	30-Jan-1973
Run No.	ONE
Depth Driller	1024.0 m
Depth Logger	1024.0 m
Bottom Log Interval	1024.0 m
Top Log Interval	300.0 m
Casing Driller	244.5 mm @ 300.0 m
Casing Logger	244.5 mm @ 300.0 m
Bit Size	222.3 mm
Type Fluid in Hole	GEL CHEM
Density	1.14 g/cm3
Viscosity	50.0 s
Fluid Loss	6.0 cm3/30min
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.22 @ 20.0 degC
Rmf @ Meas. Temp	0.18 @ 20.0 degC
Rmc @ Meas. Temp	0.33 @ 20.0 degC
Source of Rmf / Rmc	MEASURED / MEASURED
Rm @ BHT	0.12 @ 43.0 degC
Time Since Circulation	6.0 hr
Max. Rec. Temp.	43.0 degC
Equipment No.	1305
Location	EDMONTON
Recorded By	R. MCKAY
Witnessed By	J. TRUDEL

Run Services

Service	Top	Bottom
DIL	300.0	1024.0
BHC	300.0	1024.0
FDC	300.0	1024.0
CNL	300.0	1024.0
GR	300.0	1024.0

Borehole Record

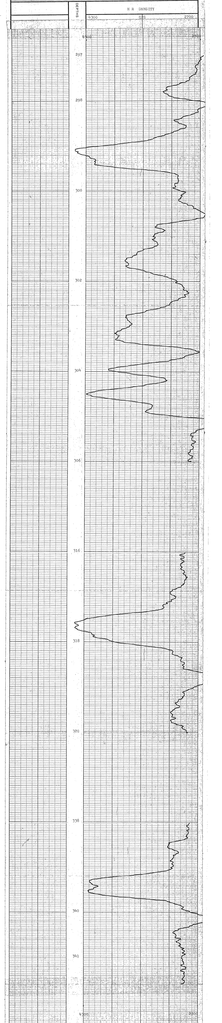
Bit No.	Bit Size	From	To
1	222.3 mm	0.0 m	1024.0 m

Casing Record

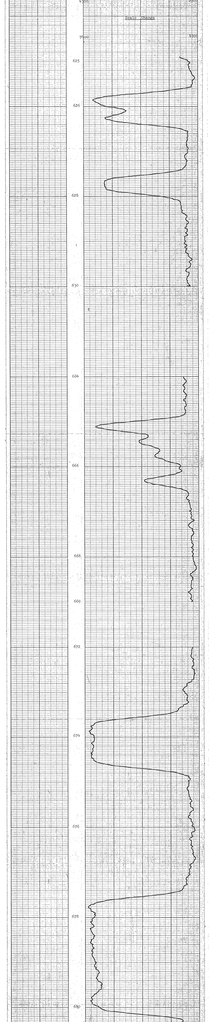
String	Size	Wgt.	Grade	From	To
SURF	244.5 mm	34.0 kg/m	J-55	0.0 m	300.0 m

Gold Lizard Bluejack rock above 7624

D.A. 1606/29



D.A. 1606/30



BP

SUKUNKA 77 (3) A

S B R DENSITY

DETAIL LOG

COMPANY BP Canada Ltd - Coal Group

BOREHOLE BP # 30 Sukunka 77

STATE B.C. COUNTRY Canada

Permanent Datum Ground Level Elev ___ Ft.

Log measured from Ground Level Ft. above P.D.

Drilling measured from Rig Floor Ft. above P.D.

Run No	1		
Depth Scale	1:20		
Date	23 Sept 77		
First Reading	681m		
Last Reading	297m		
Interval Measured	6 details		
Casing BPB			
Casing Driller			
Depth Reached	694.8m		
Bottom Driller	605.2m		
Mud Nature	Quik-Gel		
S.G / Viscosity			
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	HQ to TD	to	to
2	to	to	to
Rm @ Meas Temp.	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp.	@	@	@
BHT			
Operating Time	4 hrs.		
Truck No.	V24/34		
Recorded By	R. Bishop		
Witness			

663

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REMARKS

Changes in Mud Type or Additional Samples			
Date / Sample No			
Depth — Driller			
Type Fluid in Hole			
Dens. / Visc.			
ph / Fluid Loss		ml	
Source of Sample			
Rm @ Meas Temp	@ °F		@ °F
Rmf @ Meas Temp	@ °F		@ °F
Rmc @ Meas Temp.	@ °F		@ °F
Source Rmf / Rmc			
Rm @ BHT	@ °F		@ °F
Rmf @ BHT	@ °F		@ °F
Rmc @ BHT	@ °F		@ °F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	Depths To	Speed m/min	T.C. sec	Norm	Sonde No	Source Number
SBRD	6 dets.		2½	2	out	119	M5567

Hole logged through drill rods

DEPTHS | S B R DENSITY

350 CPS 200

DEPTHS | S B R DENSITY

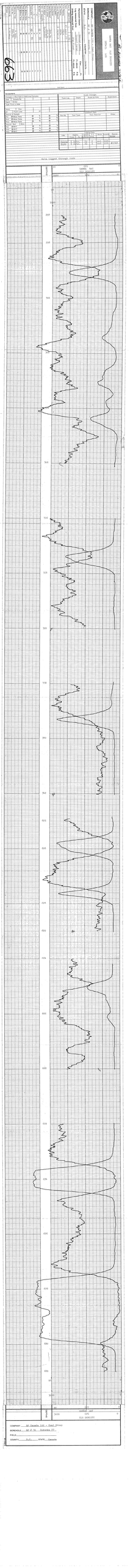
COMPANY BP Canada Ltd - Coal Group

BOREHOLE BP # 30 Sukunka 77

FIELD

COUNTY B.C. STATE Canada

MY 41485 R


Schlumberger
Run One
Date 19-JUL-1983
Depth-Driller 2300.0
Depth-Logger 2300.0
Bottom Logged Interval 2300.0
Top Logged Interval 1000.0
Type Fluid in Hole WATER BASED MUD
Salinity, PPM Cl 1000
Density/Viscosity 9.2 / 40.0
pH / Fluid Loss 9.0 / 6.0
Source of Sample FLOWLINE
Rm @ Meas Temp 0.200 @ 70.0
Rmf @ Meas Temp 0.150 @ 70.0
Rmc @ Meas Temp 0.300 @ 70.0
Source of Rmf / Rmc MEASURED / CALCULATED
Rm @ BHT 0.100 @ 150.0
Time Circulation Stopped 0600
Time Logger on Bottom 1100
Maximum Recorded Temp 150
Equipment Number 0663
Location 05-27-TWP-RGE
Recorded By J. MCKAY
Witnessed By MR. MCKAY
CANADA 982
SEA 16881370
Depth
1000
2300

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP# 2A SUKUNKA 77 (Diversion)

STATE BRITISH COLUMBIA COUNTRY CANADA

S.L.S. DENSITY
S.B.H. DENSITY
DETAIL LOG

Permanent Datum: Ground Level — Elev. ____ m.
Log Measured from: Ground Level — m. above P.D.
Drilling measured from: R.K.B. 2.50m — m. above P.D.

Rig No.	Dechristie
Date	1-Sept-2011
First Reading	322 m
Last Reading	378 m
Last Reading	372 m
Casing Bottom	5 m
Casing Driller	
Casing Logger	322 m
Bit Size	152 mm
Depth - Driller	380 m
Depth - Logger	378 m
Mud Source	Mud Tech
Mud Type	Gel
Mud Viscosity	48 sec
Mud Density	1.04 g/cm³
Fluid Loss	6.0 cc/30 min
Rm @ Meas Temp	0.80 @ 15 °C
Rmf @ Meas Temp	- @ - °C
Rmc @ Meas Temp	- @ - °C
Source of Rmf / Rmc	- / -
Rm @ BHT	0.80 @ 15 °C
Rmf @ BHT	- @ - °C
Rmc @ BHT	- @ - °C
Max. Rec. Temp.	15 °C
Equip. Location	Dawson Creek
Recorded By	P.J. Ikkers
Witnessed By	A. Chowdery

663

SUKUNKA 77 (2A)

fold here

REMARKS T.G.L. add 20 cms. (SLSD)

Changes in Mud Type or Additional Samples

Date	Sample No	Depth - Driller	Depth - Logger	Type Fluid in Hole	Density	Visc	pH	Fluid Loss

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	Depths m To	Speed m/min	T.C.	Norm.	Bore/Mn	Source No
SLSD	378	322	3	1	0.80	119	M5662
sBRD	378	323	3	1	-	119	M5662
Caliper	378	325	3	1	-	119	-

DEPTHS | S.L.S. DENSITY

6000 SDU

COAL BULK DENSITY
g/cc

2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300 3400 3500

2 12 125 13 135 14 145 15 155 16 165 17 175 18 185 19 195 20 205 21 215

4

6

8

6000

374

376

378

6000 S.L.S. DENSITY

CALIPER S.B.H. DENSITY

7 6 5 4 3 2 690 370

372

374

376

2

7 6 5 4 3 2

690 CPS 370

CALIPER | DEPTHS | S.B.H. DENSITY

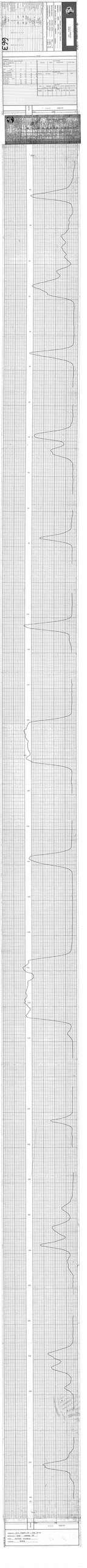
COMPANY B.P. Canada Ltd-Coal Group

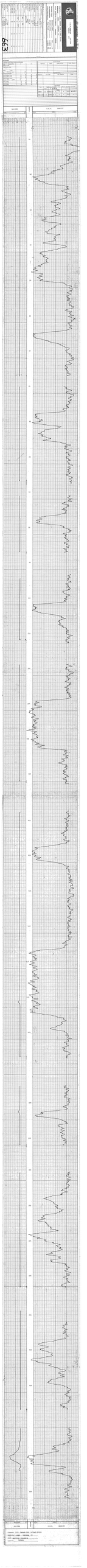
BOREHOLE BP#2A SUKUNKA 77 (Diversion)

STATE BRITISH COLUMBIA

COUNTRY CANADA

IM 01 1496





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RE-SUKUNKA 77(3)A

SBR DENSITY CALIPER DETAIL LOG

BPB

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 16 Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground level Elev. m.
Log measured from Ground level m. above P.D.
Drilling measured from Rig Floor 0.6 m. above P.D.

GRID REF. E N RL

Run No.	1		
Depth Scale	20:1		
Date	31 Aug 77		
First Reading	610 m		
Last Reading	0		
Interval Measured	9 Details		
Casing BPB	39 m		
Casing Driller	130'		
Depth Reached	611 m		
Bottom Driller	611.12 m		
Mud Nature	Quik-Gel		
SG / Viscosity	-		
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	4" to 130'	to	to
2	to	to	to
3			
Rm @ Meas Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp	@	@	@
BHT	-		
Operating Time	5¼ hrs		
Truck No.	RV 28/42		
Recorded By	E.J. Waters		
Witness	P. Raymant		

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REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No.		
Depth – Driller			
Type Fluid in Hole			
Dens	Visc		
ph.	Fluid Loss	ml	
Source of Sample			
Rm @ Meas Temp	@ °F	@ °F	
Rmf @ Meas Temp.	@ °F	@ °F	
Rmc @ Meas Temp	@ °F	@ °F	
Source Rmf	Rmc		
Rm @ BHT	@ °F	@ °F	
Rmf @ BHT	@ °F	@ °F	
Rmc @ BHT	@ °F	@ °F	

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

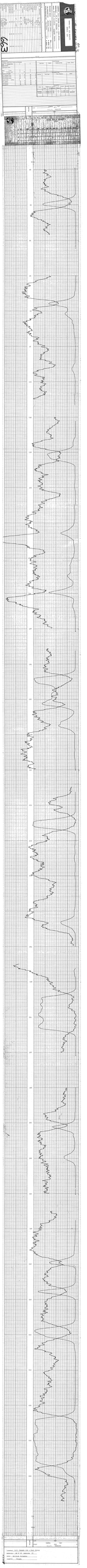
Logging Data

Log	Depths m From	To	Speed m/min	T.C. Sec	Norm	Sonde No.	Source No
SBRD	9 Details		2¼	1	-	119	M5567
Caliper	" " " "		2¼	1	-	119	-

CALIPER	DEPTHS	S.B.R. DENSITY
7" ---- 2"		680 CPS 360

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 16 Sukunka 77
STATE British Columbia
COUNTRY Canada

MY (8) 58360 R



R-SUKUNKA 77 (3) A

S.L.S. DENSITY GAMMA RAY DETAIL LOG

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 17 Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground Level Elev. ___ Ft.
Log measured from Ground Level Ft. above P.D.
Drilling measured from Rig Floor Ft. above P.D.

Run No. | Depth Scale	1 | 20:1			
Date	26 Aug 77			
First Reading	410 m			
Last Reading	0			
Interval Measured	5 Details			
Casing BPB	35m			
Casing Driller	-			
Depth Reached	412 m			
Bottom Driller	411.78 m			
Mud Nature	Quik-Gel			
S.G. | Viscosity	-			
Bit Size 1	HQ to TD	to	to	
2	to	to	to	
3	to	to	to	
Casing Size 1	4" to	to	to	
2	to	to	to	
Rm @ Meas Temp	@	@	@	
Rmf @ Meas Temp	@	@	@	
Rmc @ Meas Temp	@	@	@	
BHT	-			
Operating Time	4½ hrs			
Truck No.	RV 28/42			
Recorded By	P.J. Waters			
Witness	P. Raymant			

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REMARKS

Changes in Mud Type or Additional Samples			
Date | Sample No			
Depth – Driller			
Type Fluid in Hole			
Dens. | Visc.			
ph. | Fluid Loss	ml		
Source of Sample			
Rm @ Meas Temp.	@ °F	@ °F	
Rmf @ Meas Temp	@ °F	@ °F	
Rmc @ Meas Temp.	@ °F	@ °F	
Source: Rmf | Rmc			
Rm @ BHT	@ °F	@ °F	
Rmf @ BHT	@ °F	@ °F	
Rmc @ BHT	@ °F	@ °F	

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	T.C. Sec	Norm	Sonde No.	Source Number
Gamma	5 Details		2¼	2	1.36	119	-
SLSD	5 Details		2¼	1	0.78	119	M5567

	DEPTHS	
	150	GAMMA RAY API 0
	6000	S.L.S. DENSITY SDU 0

	DEPTHS	
	150	API 0
	6000	GAMMA RAY SDU 0
		S.L.S. DENSITY

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 17 Sukunka 77
FIELD British Columbia
COUNTRY Canada STATE ______

MY 4148 R

PR-SUKUNKA 77(3)A.

S.B.R. DENSITY CALIPER DETAIL LOG

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 17 Sukunka 77
STATE British Columbia COUNTRY Canada
Permanent Datum Ground level Elev ___ Ft.
Log measured from Ground level Ft. above P.D.
Drilling measured from Rig Floor Ft. above P.D.

Run No.	1	Depth Scale	20:1
Date	26 Aug 77		
First Reading	410 m		
Last Reading	0		
Interval Measured	410m		
Casing BPB	35 m		
Casing Driller	-		
Depth Reached	412 m		
Bottom Driller	411.78 m		
Mud Nature	Quik-Gel		
S.G. / Viscosity	-		
Bit Size 1	HQ to td	to	to
2	to	to	to
3	to	to	to
Casing Size 1	4" to	to	to
2	to	to	to
Rm @ Meas Temp.	@	@	@
Rmf @ Meas Temp.	@	@	@
Rmc @ Meas Temp.	@	@	@
BHT	-		
Operating Time	4½ hrs.		
Truck No.	RV 28/42		
Recorded By	P.J.Waters		
Witness	P.Raymant		

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REMARKS

Changes in Mud Type or Additional Samples			
Date / Sample No.			
Depth — Driller			
Type Fluid in Hole			
Dens. / Visc			
ph. / Fluid Loss		ml	
Source of Sample			
Rm @ Meas Temp	@ °F	@ °F	
Rmf @ Meas Temp	@ °F	@ °F	
Rmc @ Meas Temp	@ °F	@ °F	
Source Rmf / Rmc			
Rm @ BHT	@ °F	@ °F	
Rmf @ BHT	@ °F	@ °F	
Rmc @ BHT	@ °F	@ °F	

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

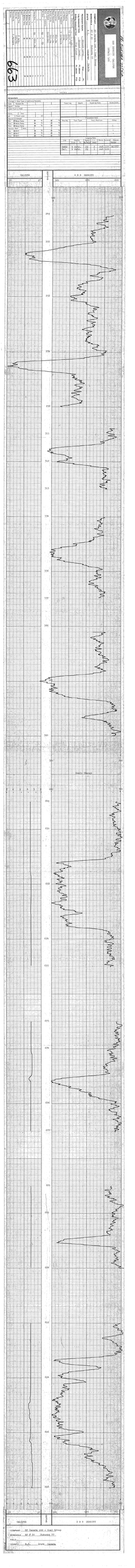
Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	T.C. Sec	Norm.	Sonde No.	Source Number
SBRD	5 Details		2¼	1	-	119	M5567
Caliper	" "	" "	2¼	1	-	119	-

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 17 Sukunka 77
FIELD British Columbia
COUNTRY Canada STATE ___


693
Dual Induction Laterolog
Borehole Compensated Sonic Log Gamma Ray
Compensated Neutron Formation Density Log
Gamma Ray Caliper

PR-SUKUNKA 77(3)A

GAMMA RAY SLS DENSITY
DETAIL LOG

COMPANY BP Canada Ltd - Coal Group
BOREHOLE BP # 20 Sukunka 77
STATE B.C. COUNTRY Canada

Permanent Datum Ground Level Elev ____ Ft.
Log measured from Ground Level Ft. above P.D.
Drilling measured from Rig Floor Ft. above P.D.

Run No. / Depth Scale	1 / 1:20		
Date	19 Sept 77		
First Reading	698m		
Last Reading	249m		
Interval Measured	9 details		
Casing BPB			
Casing Driller	609.6m		
Depth Reached	701.2m		
Bottom Driller	701.9m		
Mud Nature	Quik-Gel		
S.G. / Viscosity			
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	HQ to609.6	to	to
2	to	to	to
Rm @ Meas Temp.	@	@	@
Rmf @ Meas Temp.	@	@	@
Rmc @ Meas Temp.	@	@	@
BHT			
Operating Time	6 hrs.		
Truck No.	V24/34		
Recorded By	P.Waters		
Witness			

663

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REMARKS

Changes in Mud Type or Additional Samples				
Date / Sample No.				
Depth — Driller				
Type Fluid in Hole				
Dens. / Visc				
ph / Fluid Loss		ml		
Source of Sample				
Rm @ Meas Temp	@	°F	@	°F
Rmf @ Meas Temp	@	°F	@	°F
Rmc @ Meas Temp.	@	°F	@	°F
Source: Rmf / Rmc				
Rm @ BHT	@	°F	@	°F
Rmf @ BHT	@	°F	@	°F
Rmc @ BHT	@	°F	@	°F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	Depths To	Speed m/min	T.C sec	Norm.	Sonde No.	Source Number
Gamma	9 dets.		2¼	2	1.36	119	
SLSD	9 dets.		2¼	1	0.80	119	M5567

Hole logged through rods above 618m

	DEPTHS	GAMMA RAY API / SLS DENSITY CPS
		105 — 0
		3000 — 0

	DEPTHS	
		150 API 0
		GAMMA RAY
		6000 SDU 0
		SLS DENSITY

COMPANY BP Canada Ltd - Coal Group
BOREHOLE BP # 20 Sukunka 77
FIELD
COUNTY B.C. STATE Canada

MY 41485 R

Schlumberger

Run No. 1 | Date 3-5-74 | Type Log DENSITY | Depth-Driller 3000 | Depth-Logger 3000 | Bottom Log Interval 3000 | Top Log Interval 2000 | Casing-Driller 13 3/8 @ 2000 | Casing-Logger 2000 | Bit Size 12 1/4 | Type Fluid in Hole SALT GEL | Dens. 10.0 | Visc. 40 | pH 10.5 | Fluid Loss 6.4 | Source of Sample MUD PIT | R_m @ Meas Temp .75 @ 70 | R_mf @ Meas Temp .60 @ 70 | R_mc @ Meas Temp .90 @ 70 | Source R_mf MUD PIT | R_m @ BHT .60 @ 120 | R_mf @ BHT .45 @ 120 | R_mc @ BHT 1.0 @ 120 | Time Since Circ. 6 HRS | Max. Rec. Temp. Deg. F 120 | Equip. No. & Location 3378 3 SALINAS | Recorded By R. SANDERS | Witnessed By [illegible]

Permanent Datum GROUND LEVEL | Elev. 0 | Log Measured From KELLY BUSHING | 12 FT. ABOVE PERM. DATUM | Drilling Measured From KELLY BUSHING

COMPANY 32 QUANTA LTD. - OGDL GROUP | WELL 32 # 30 | FIELD [illegible] | COUNTY SALINAS | STATE CALIFORNIA

Other Services: DIL | BHC | GR

Rig: [illegible]

Field Name: [illegible]

REMARKS: [illegible]

Charges in Mud, Type or Additional Samples: [illegible]

Time | Sample No. | Depth – Driller | Depth – Logger | Type Fluid in Hole | Dens. | Visc. | pH | Fluid Loss | Source of Sample | R_m @ Meas Temp | R_mf @ Meas Temp | R_mc @ Meas Temp | Source R_mf | R_m @ BHT | R_mf @ BHT | R_mc @ BHT

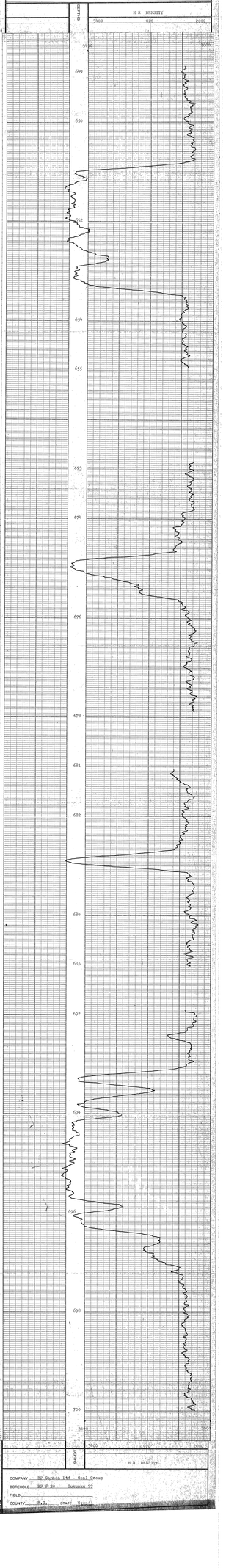
Scale Changes: Type Log | Depth | Scale Up Here | Scale Down Here

Run No. | Tool Type | Tool Position | Other

Equipment Data

Log | Depths Top | Depths Bottom | Logging Data Speed | T.C. | Neutron Source | Density Source

3012 | 9 4510 | 23 | 1 | 051 | 315 | 082



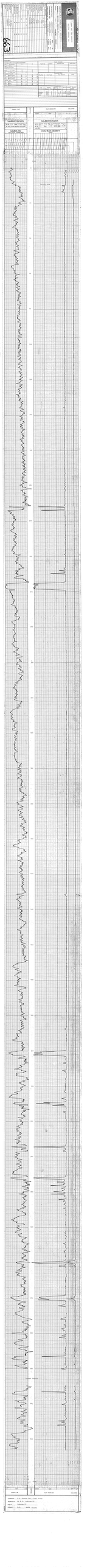
DEPTHS
H R DENSITY
3000
2000

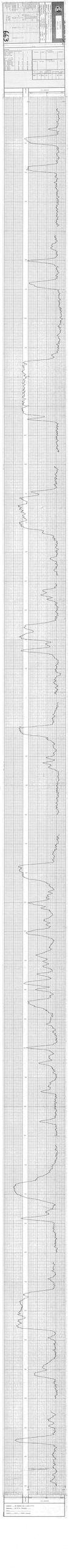
COMPANY 32 Quanta Ltd - Ogdl Group

BOREHOLE 32 # 30 Sukunka 77

FIELD

COUNTY B.C. STATE Canada





BC-SUKUNKA 77(3)A

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COMPANY B.P. Canada Ltd. - Coal Group
BOREHOLE BP # 21 Sukunka 77
STATE B.C. COUNTRY Canada

GAMMA RAY SLS DENSITY
DETAIL LOG

Permanent Datum: Ground Level — Elev ___ Ft.
Log measured from: Ground Level — Ft. above P.D.
Drilling measured from: Rig Floor — Ft. above P.D.

Run No.	1		
Depth Scale	1:20		
Date	27 Sept 77		
First Reading	672m		
Last Reading	189m		
Interval Measured	9 details		
Casing BPB	9.8m		
Casing Driller	10.2m		
Depth Reached	707.3m		
Bottom Driller	707.4m		
Mud Nature	Quik-Gel		
S.G. / Viscosity			
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	4" to	to	to
2	to	to	to
Rm @ Meas Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp	@	@	@
BHT			
Operating Time	10 hrs.		
Truck No.	V24/34		
Recorded By	F. Waters		
Witness			

fold here

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No.		
Depth – Driller			
Type Fluid in Hole			
Dens.	Visc.		
ph.	Fluid Loss	ml	
Source of Sample			
Rm @ Meas Temp	@ °F	@ °F	
Rmf @ Meas Temp	@ °F	@ °F	
Rmc @ Meas Temp	@ °F	@ °F	
Source Rmf	Rmc		
Rm @ BHT	@ °F	@ °F	
Rmf @ BHT	@ °F	@ °F	
Rmc @ BHT	@ °F	@ °F	

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	Depths To	Speed m/min	T.C sec	Norm.	Sonde No	Source Number
Gamma	9 dets		2¼	1	1.36	119	
SLSD	9 dets		2¼	1	0.80	119	M5567

DEPTHS — GAMMA RAY API 150 – 0; SLS DENSITY SDU 6000 – 0

COAL BULK DENSITY grm/cc

Name	
Date of Birth	
Age	
Sex	
Race	
Ethnicity	
Weight	
Height	
Medical Record #	
Referring Physician	
Technician	
Medications	

Test Date	
Test Time	
Duration	
Protocol	
Indication	
Comments	

Resting HR		
Max HR		
Max BP		
Peak METs		
Exercise Time		
Recovery HR		

Stage	Time	Speed	Grade	HR	BP	METs

Lead	Amplitude	Duration	Morphology
I			
II			
III			
aVR			
aVL			
aVF			
V1			
V2			
V3			
V4			
V5			
V6			

Finding	Present	Absent
Normal sinus rhythm		
Atrial fibrillation		
Atrial flutter		
Ventricular tachycardia		
Ventricular fibrillation		
Premature ventricular contractions		
Premature atrial contractions		
Bundle branch block		
Pacemaker		
ST segment depression		
ST segment elevation		
T wave inversion		
Q waves		
Prolonged QT interval		

Impression: _____

Recommendations: _____

Signature: _____ Date: _____

PR-SUKUNKA 77(3)A. BP-21

SONIC DETAIL LOG

COMPANY	BP Canada Ltd - Coal Group			
BOREHOLE	BP # 21 Sukunka			
STATE	B.C.	COUNTRY	Canada	
Permanent Datum	Ground Level		Elev	Ft.
Log measured from	Ground Level		Ft. above	P.D.
Drilling measured from	Rig Floor		Ft. above	P.D.
Run No. | Depth Scale	1 | 1:20			
Date	17 Sept 77			
First Reading	676m			
Last Reading	189m			
Interval Measured	9 details			
Casing BPB	9.8m			
Casing Driller	10.7m			
Depth Reached	707.3m			
Bottom Driller	707.4m			
Mud Nature	Quik-Gel			
S.G. Viscosity				
Bit Size 1	HQ to TD	to	to	
2	to	to	to	
3	to	to	to	
Casing Size 1	4" to	to	to	
2	to	to	to	
Rm @ Meas Temp	@	@	@	
Rmf @ Meas Temp	@	@	@	
Rmc @ Meas Temp	@	@	@	
BHT				
Operating Time	10 hrs			
Truck No	V24/34			
Recorded By	P. Waters			
Witness				

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fold here

REMARKS

Changes in Mud Type or Additional Samples				
Date	Sample No			
Depth – Driller				
Type Fluid in Hole				
Dens.	Visc			
ph.	Fluid Loss	ml		
Source of Sample				
Rm @ Meas Temp		@ °F	@ °F	
Rmf @ Meas Temp.		@ °F	@ °F	
Rmc @ Meas Temp		@ °F	@ °F	
Source Rmf	Rmc			
Rm @ BHT		@ °F	@ °F	
Rmf @ BHT		@ °F	@ °F	
Rmc @ BHT		@ °F	@ °F	

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	To	Speed m/min	T.C sec	Norm.	Sonde No	Source Number
Sonic	9 dets.		5	1			

DEPTHS | SONIC

2000 CPS 0

DEPTHS | 2000 CPS 0

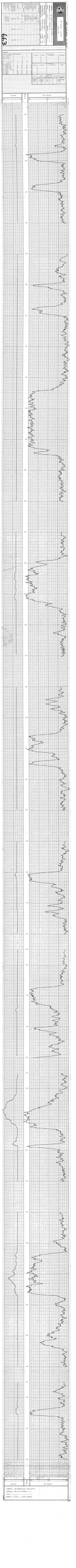
COMPANY BP Canada Ltd - Coal Group

BOREHOLE BP #21 Sukunka

FIELD

COUNTY B.C. STATE Canada

MY 41485 R



663

COMPANY B.P. Canada Ltd. - Coal Group
WELL BP # 22 Sukunka '77
STATE British Columbia COUNTRY Canada

GAMMA RAY | CALIPER | S.L.S. DENSITY

Date Logged: 1st Run 25-Aug-77 | 2nd Run | 3rd Run
Run No. One
Depth Driller 6000 | 6000 | 6000
Depth Logger 6000 | 6000 | 6000
Bottom Log Interval 6000 | 6000 | 6000
Top Log Interval 0 | 0 | 0
Casing Driller 6" @ 0 | 6" @ 0 | 6" @ 0
Casing Logger 6" @ 0 | 6" @ 0 | 6" @ 0
Bit Size 5 7/8" | 5 7/8" | 5 7/8"
Type Fluid in Hole Water | Water | Water
Density 1 | 1 | 1
Viscosity | | |
PH | | |
Fluid Loss | | |
Source of Sample Flowline | Flowline | Flowline
Rm @ Meas Temp | @ °F | @ °F | @ °F
Rmf @ Meas Temp | @ °F | @ °F | @ °F
Rmc @ Meas Temp | @ °F | @ °F | @ °F
Source: Rmf Rmc | | |
Rm @ BHT | @ °F | @ °F | @ °F
Rmf @ BHT | @ °F | @ °F | @ °F
Rmc @ BHT | @ °F | @ °F | @ °F
Time Since Circ. | | |
Max. Rec. Temp. | 72 °F | 72 °F | 72 °F
Equip. Location | Chetwynd | Chetwynd | Chetwynd
Recorded By | R. Masters | R. Masters | R. Masters
Witnessed By | | | |

Run No. One
Bore-Hole Record: Bit From 0 To 6000 Size 5 7/8"
Casing Record: No. 1 Size 6" Weight | From 0 To 6000 | No. | Size | Weight | From | To
Drilling measured from Rig Floor
Elev.: K.B. | D.F. | G.L.
Log measured from Ground Level, 0 ft. above P.D.
Permanent Datum: Ground Level Elev. 0 ft.

REMARKS
Changes in Mud Type or Additives or Samples
Date | Sample No.
Depth | Drlr
Type Fluid in Hole
Dens. | Visc.
pH | Fluid Loss
Source of Sample
Rm @ Meas Temp
Rmf @ Meas Temp
Rmc @ Meas Temp
Source: Rmf | Rmc
Rm @ BHT
Rmf @ BHT
Rmc @ BHT

Tools Changes
Depth | Scale Up Hole | Scale Down

Equipment Data
Run No. | Tool Type | Tool Position | Other

Logging Data
Log | Depths From | To | Speed | T.C. | Norm. | Rselect | Source No.
Gamma 1746 0 0 7 1.0C 110 -
Dsdd 135 1 0 7 1/3.0 2.0 110 M5567
Caliper 135 15 0 3 - 110 -

GAMMA RAY
HOLE SIZE CORRECTION
CALIBRATION DATA
Jig No. 012 Value 40000 Cps
Jig mark shown at above value ±0.1
GAMMA RAY
0 API 150
DEPTHS

S.L.S. DENSITY
CALIPER
6000 SDU 0
CALIBRATION DATA
Jig Cal. date 25 Aug 77 Jig value SD 2.0 D 1.47 gm/cc
Jig No. 011 Scan 0.50 NORM RAT 0.79
6000 SDU 0
COAL BULK DENSITY
gm/cc
2.6 2.4 2.2 2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2
CALIPER
6" 4" 2"
DEPTHS

Casing Shoe
Repeat Section

GAMMA RAY
0 API 150
S.L.S. DENSITY
6000 SDU 0
CALIPER
6" 4" 2"

COMPANY B.P. Canada Ltd. - Coal Group
BOREHOLE BP # 22 Sukunka '77
STATE British Columbia
COUNTRY Canada

Company	B.P. Canada Ltd. - Coal Group
Well	NW & PT Dakota PT
Field	
Province	British Columbia
Country	CANADA
Location	
Service Company	Gearhart Owen
Log Measured From	Ground Level
Permanent Datum	Ground Level
Elevation	0.0 ft above perm. datum
Elevation	KB 0.0 ft DF 0.0 ft GL 0.0 ft
Date	15-Jul-85
Run Number	ONE
Depth Driller	1150.0 m
Depth Logger	1150.0 m
Bottom Logged Interval	1150.0 m
Top Logged Interval	600.0 m
Type Fluid in Hole	Water
Salinity, PPM Cl	
Density	
Level	Full
Max. Rec. Temp.	deg. C
Equipment No. & Location	2303 Calgary
Recorded By	D. Gerbitz
Witnessed By	

GEARHART OWEN

Run No. ONE

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down Hole

Borehole Record

Run No.	Bit No.	From	To
ONE		0.0	1150.0

Casing Record

String	Size	Wgt.	Grade	From	To
Surface Casing	244.5 mm	59.5 kg/m	J55	0.0	119.0
Liner					
Production Casing					

Tool Type: Gamma Density Caliper

Tool No.	Type	Source	Detector
2303	Gamma Density Caliper	25 mCi	1

Mud Type: Water

Density	Viscosity	Fluid Loss	Resistivity	Source of Sample

Rm @ Meas. Temp.

@	@

Rmf @ Meas. Temp.

@	@

Rmc @ Meas. Temp.

@	@

Source of Rmf & Rmc: Meas.

Rm @ BHT

@	@

Time Since Circulation: 3 hrs

Max. Rec. Temp. Recorded: deg. C

Equipment Location: Calgary

Recorded By: D. Gerbitz

Witnessed By:

REMARKS

Changes in Mud Type or Additional Samples

Date: 0 Sample No.:

Depth Driller:

Depth Logger:

Bottom Logged Interval:

Top Logged Interval:

Mixed Water: 0 Kind:

Rm @ Meas. Temp.: @

Source of Sample:

Rm @ Meas. Temp.: @

Rmf @ Meas. Temp.: @

Rmc @ Meas. Temp.: @ Meas.

Rm @ BHT: @

Rmf @ BHT: @

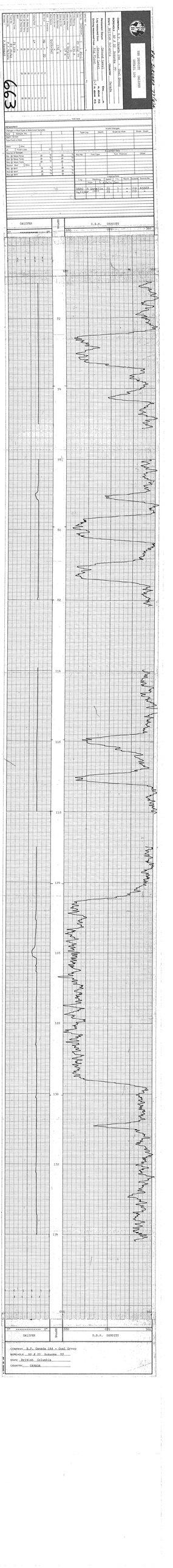
Rmc @ BHT: @

Circulation Stopped: Time Logger On Bottom: Unit Number: Recorded By: Witnessed By:

Run No.	Log	Interval	Scale	Remarks
ONE	Caliper	600.0 to 1150.0	1 : 240	
	Density	600.0 to 1150.0	1 : 240	

CALIPER

D.B.D. DENSITY



CALIPER

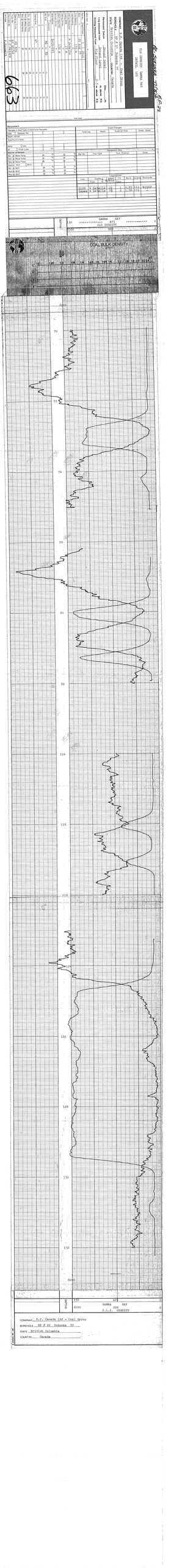
D.B.D. DENSITY

COMPANY B.P. Canada Ltd - Coal Group

WORKAREA NW & PT Dakota PT

STATE British Columbia

COUNTRY CANADA


COMPANY N.P. Canada Ltd - Coal Group
BOREHOLE BP # 22 Dukunda '77
STATE British Columbia
COUNTRY Canada
GAMMA RAY
COAL BULK DENSITY
6000
7000
8000

Property of Schlumberger
Not to be Reproduced

COMPANY B.P. CANADA LTD. - COAL GROUP
WELL BOREHOLE 87-F-22
FIELD
COUNTY
STATE BRITISH COLUMBIA
LOCATION
Other Services
Permanent Datum
Log Measured From
Drilling Measured From
Elev.: K.B.
D.F.
G.L.
Date
Run No.
Depth-Driller
Depth-Logger
Bottom Logged Interval
Top Logged Interval
Type Fluid in Hole
Salinity, PPM Cl
Density
Viscosity
Fluid Loss
Source of Sample
Rm @ Meas. Temp.
Rmf @ Meas. Temp.
Rmc @ Meas. Temp.
Source: Rmf / Rmc
Rm @ BHT
Time Since Circ.
Max. Rec. Temp.
Equip. Location
Recorded By
Witnessed By

Run No. 1 | Bit Size 8 3/4 in | From 0 | To 1003

Casing Driller: Size 7 in | Wgt. 23 | Grade | Type Joint | Depth 0
Casing Logger: Depth 0

Type Fluid in Hole: Water Base Mud
Density 9.0 lb/gal | Viscosity 50 s | Fluid Loss 10 cc | Salinity 1000 ppm Cl
Source of Sample: Flowline
Rm @ Meas. Temp. 0.5 @ 20 °C
Rmf @ Meas. Temp. 0.4 @ 20 °C
Rmc @ Meas. Temp. 0.6 @ 20 °C
Source: Rmf / Rmc: Rmf
Rm @ BHT 0.3 @ 40 °C
Time Since Circ. 24 hrs
Max. Rec. Temp. 40 °C

Equipment Data
Run No. 1 | Tool Type | Tool Position | Other
Log | Interval | Scale/in. | Recorded By | Witnessed By
MSD | 0 to 1003 ft | 1 : 240 | S. DeVaney

REMARKS
Changes in Mud Type or Additional Samples
Rec. No. Source
Rec. No. Source
Type Fluid in Hole

Scale Changes
Type Log | Depth | Scale/Hole | Scale/Prop.
Scale | Depth

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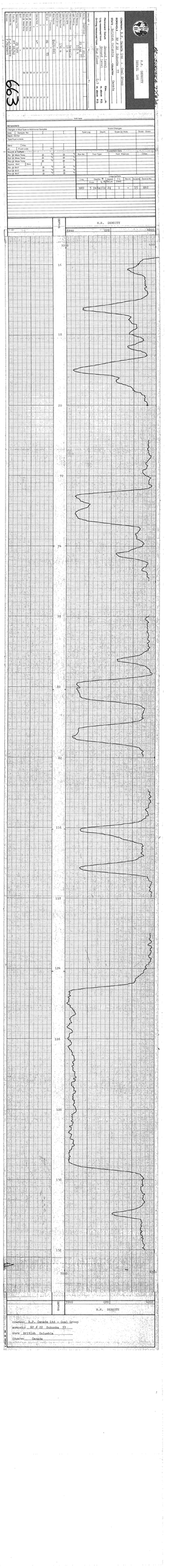

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 23 Sukunka 77

STATE British Columbia COUNTRY Canada

GAMMA RAY SLS DENSITY GENERAL LOG

Permanent Datum | Elev | Ft.

Log measured from | Ground level | Ft. above | P.D.

Drilling measured from | Rig Floor | 4 Ft. above | P.D.

Run No.	Depth Scale	
	1	200

Date	28 Aug 77
First Reading	24.88m
Last Reading	0
Interval Measured	24.88m
Casing Bit	
Casing Driller	
Casing Logged	64'
Bottom Driller	64'
Bottom Logger	64'
Mud Density	26 lbs.
Mud Viscosity	90+
Mud Nature	Quik-Gel
Mud Sample From	-
Rm @ Meas Temp	
Rmf @ Meas Temp	
Rmc @ Meas Temp	
Source of Rmf & Rmc	
Rm @ BHT	
Rmf @ BHT	
Rmc @ BHT	
Time Since Circ.	3 hrs
Max. Rec. Temp.	25°C
Equip. Location	Dawson Creek
Recorded By	P.R. Hasfjord
Witnessed By	P. Raymart

	Bit Size	From	To	Casing Size	From	To
1	12"	KB	TD	8"	KB	64'
2						
3				4½"		8'

12-SUKUNKA 77(3)A-2

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fold here

REMARKS bh caved in below casing - rods inserted to TD.

Changes in Mud Type or Additional Samples

Date	Sample No			
Depth — Driller				
Type Fluid in Hole				
Dens	Visc			
ph	Fluid Loss	ml		
Source of Sample				
Rm @ Meas Temp.		@ °F	@ °F	
Rmf @ Meas Temp.		@ °F	@ °F	
Rmc @ Meas Temp.		@ °F	@ °F	
Source Rmf	Rmc			
Rm @ BHT		@ °F	@ °F	
Rmf @ BHT		@ °F	@ °F	
Rmc @ BHT		@ °F	@ °F	

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

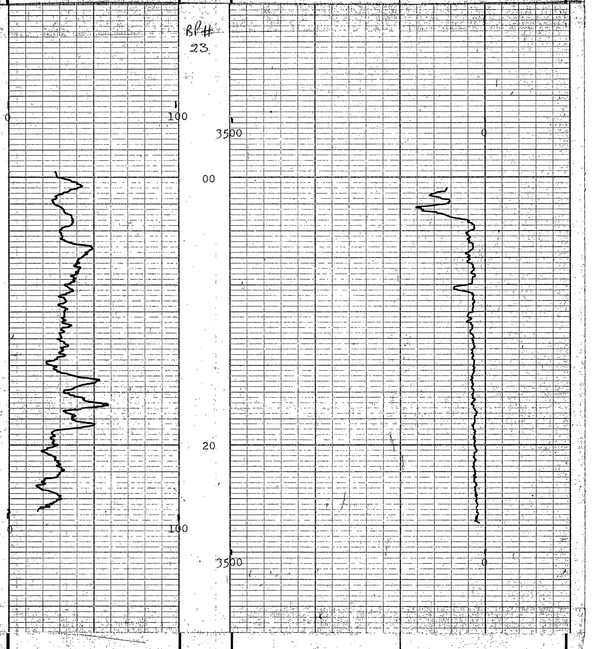
Equipment Data

Run No.	Tool Type	Tool Position	Other
1	CCS	SIDEWALL	-

Logging Data

Log	Depths m From	To	Speed m/min	T.C. Sec	Norm.	Sonde No.	Source Number
Gamma	24.88	0	9	2	-	119	-
SLSD	25.5	1	9	1/3	0.28	119	M5567

GAMMA RAY 0 CPS 100 | DEPTHS | S.L.S. DENSITY 3500 SDU 0



0 CPS 100 GAMMA RAY | DEPTHS | 3500 SDU 0 S.L.S. DENSITY

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 23 Sukunka 77

FIELD British Columbia

COUNTY Canada STATE

PRT-A-74813-B

12-Sukunka-7634

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 24 - Sukunka 77

STATE British Columbia COUNTRY Canada

GAMMA RAY - CALIPER - SDS DENSITY

Permanent Datum _____ Elev. _____ m

Log measured from Ground Level _____ m above P.D.

Drilling measured from Ground Level _____ m above P.D.

Run No. 1 | Elevation | Date 29 Aug 77 | Last Reading 355.5 m | Interval Measured 355.5 m | Casing Bit 355.5 m | Depth Driller 1207 | Depth Reached 1207 | Bottom Driller 1205 | Btm Log Interval 1205 | Top Log Interval 355.5 | Casing Driller 355.5 @ Flush | Casing Logger 355.5 | Bit Size 8 1/2 | Type Fluid HQ | Density 9.0 | Viscosity 40+ | pH | Fluid Loss | Source of Sample | Rm @ Meas Temp | Rmf @ Meas Temp | Rmc @ Meas Temp | Source: Rmf Rmc | Rm @ BHT | Rmf @ BHT | Rmc @ BHT | Time Since Circ. | Max. Rec. Temp. | Equip. Location | Recorded By | Witnessed By

GAMMA RAY - CALIPER - SDS DENSITY

fold here

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No.	Depth - Driller	Type Fluid in Hole	Dens.	Visc.	pH	Fluid Loss	Source of Sample	Rm @ Meas Temp	Rmf @ Meas Temp	Rmc @ Meas Temp	Source: Rmf Rmc	Rm @ BHT	Rmf @ BHT	Rmc @ BHT
									@ °F	@ °F	@ °F		@ °F	@ °F	@ °F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale - Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	Depths To	Speed ft/min	T C	Norm.	Sonde No	Source Nº
gamma	54.4	0	9	2	1.36	119	-
SLSD	55.5	1	9	173	0.77	119	85567
Caliper	55	28	9	1	-	119	-

GAMMA RAY — DEPTHS — S.L.S. DENSITY — CALIPER

0 API 150 | 6000 SDU 0 | 7" --- 2"

CALIBRATION DATA

Jig No. 012 Value 400 @ 4 Dam

Jig mark shown at above value ×0.5

CALIBRATION DATA

Jig Cal. date 25 Aug. 77 value 995 SDU @ 1.4 gm/cc

Jig No 011 Scan 0.50 NORM 995 = 0.79

6000 SDU

GAMMA RAY
HOLE SIZE CORRECTION

COAL BULK DENSITY
gm/cc

Core Crown

0 API 150 | DEPTHS | 6000 SDU 0 | 7" --- 2"

GAMMA RAY — S.L.S. DENSITY — CALIPER

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 24 Sukunka 77

STATE British Columbia

COUNTRY Canada

693

Rotated 90° CW

Schlumberger

COMPANY B.P. CANADA LTD. (OPERATOR)
WELL DOME BEAVER 2 (WELL NAME)
FIELD WILDCAT (FIELD NAME)
COUNTY PEACE RIVER (COUNTY)
PROVINCE ALBERTA (PROVINCE)
LOCATION 2-33-78-15W6 (LOCATION)
OTHER SERVICES BHC-GR, DIL, FDC-CNL-GR (OTHER SERVICES)
PERMANENT DATUM GROUND LEVEL (PERMANENT DATUM)
ELEV. 1,000 FT. (ELEV.)
LOG MEASURED FROM KELLY BUSHING (LOG MEASURED FROM)
DRILLING MEASURED FROM KELLY BUSHING (DRILLING MEASURED FROM)
ELEV. K.B. 1,014 FT. (ELEV. K.B.)
ELEV. D.F. 1,013 FT. (ELEV. D.F.)
ELEV. G.L. 1,000 FT. (ELEV. G.L.)

Date	1-6-77		
Run No.	ONE		
Depth-Driller	9,700 FT.		
Depth-Logger	9,700 FT.		
Bottom Logged Interval	9,700 FT.		
Top Logged Interval	1,000 FT.		
Type Fluid in Hole	GEL CHEM		
Salinity, PPM Cl	1,000		
Density	9.2 LB/GAL		
Viscosity	40 SEC		
Fluid Loss	8.0 C.C.		
Source of Sample	CIRC.		
Rm @ Meas. Temp.	1.0 @ 70 °F	@ °F	@ °F
Rmf @ Meas. Temp.	.75 @ 70 °F	@ °F	@ °F
Rmc @ Meas. Temp.	.90 @ 70 °F	@ °F	@ °F
Source of Rmf/Rmc	CALC.		
Rm @ BHT	.48 @ 170 °F	@ °F	@ °F
Time Since Circ.	12 HRS.		
Max. Rec. Temp.	170 °F		
Equip. Location	3-33-78-15W6		
Recorded By	R. MOORE		
Witnessed By	MR. MOORE		

Run No. ONE

Bit No.	Type	Size	From	To
1	HTC	8 3/4"	1,000 FT.	9,700 FT.

Casing Record

	Size	Wgt.	Grade	From	To
Surface String	9 5/8"	36 LB.	K-55	0 FT.	1,000 FT.
Prod. String					
Liner					
Liner					

Type Log: Depth-Driller 9,700 FT. Depth-Logger 9,700 FT. Bottom Logged Interval 9,700 FT. Top Logged Interval 1,000 FT.

Type Fluid in Hole: GEL CHEM. Salinity, PPM Cl 1,000. Density 9.2 LB/GAL. Viscosity 40 SEC. Fluid Loss 8.0 C.C.

Source of Sample: CIRC.

	Run No.	Time Circ.	Max. Rec. Temp.	Equip. Location	Recorded By	Witnessed By
Rm @ Meas. Temp.	ONE	12 HRS.	170 °F	3-33-78-15W6	R. MOORE	MR. MOORE
Rmf @ Meas. Temp.	1.0 @ 70 °F					
Rmc @ Meas. Temp.	.75 @ 70 °F					
Rm @ BHT	.90 @ 70 °F					
	.48 @ 170 °F					

Bit Record

No.	Type	Size	From	To	Hrs.	Drilling Footage	Cumm. Ftg.
1	HTC	8 3/4"	1,000 FT.	9,700 FT.	74	8,700	8,700

Casing Record

	Size	Wgt.	Grade	From	To
Surface String	9 5/8"	36 LB.	K-55	0 FT.	1,000 FT.
Prod. String					
Liner					
Liner					

W. S. T. 1000 FT

G.R. 1000 FT

9700

9600

9500

9400

9300

9200

9100

9000

8900

8800

8700

8600

8500

8400

8300

8200

8100

8000

7900

7800

7700

7600

7500

7400

7300

7200

7100

7000

6900

6800

6700

6600

6500

6400

6300

6200

6100

6000

5900

5800

5700

5600

5500

5400

5300

5200

5100

5000

4900

4800

4700

4600

4500

4400

4300

4200

4100

4000

3900

3800

3700

3600

3500

3400

3300

3200

3100

3000

2900

2800

2700

2600

2500

2400

2300

2200

2100

2000

1900

1800

1700

1600

1500

1400

1300

1200

1100

1000

900

800

700

600

500

400

300

200

100

0

G.R. 1000 FT

D.I.L. 1000 FT

DEVIATION

D.I.L. 1000 FT

CAL BHC GR 1000 FT

GAMMA RAY

D.I.L. 1000 FT

GAMMA RAY

D.I.L. 1000 FT

GAMMA RAY

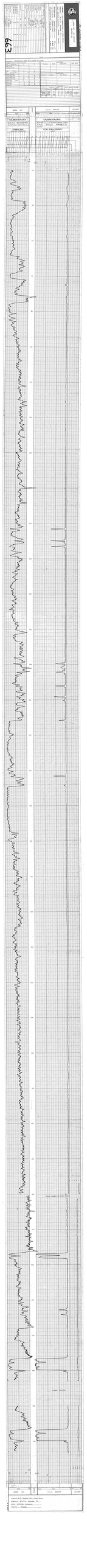
D.I.L. 1000 FT

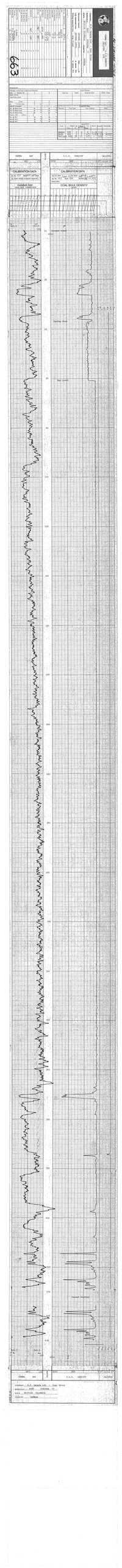
COMPANY B.P. Canada Ltd's Dual Servo
BOROUGH BP 8 Pt Dubonnet 77
STATE British Columbia
COUNTRY Canada

Property of Schlumberger

Property of Baker Hughes Incorporated
Unauthorized Use Prohibited

3299




993
GAMMA RAY
CALIBRATION DATA
CALIBRATION DATA
CORAL BULK DENSITY
Tanjung Tabalar
Sadong Shale
Bau Limestone
Tanjung Tabalar
Sadong Shale
Bau Limestone

COMPANY BP Canada Ltd. - Coal Group

BOREHOLE BP # 98 Sukunka 77

FIELD

COUNTY B.C. STATE Canada

Other Services

Permanent Datum

Elev.

Log Measured from

Drilling Measured from

Run No. 1

Depth-Driller 2134m

Depth-Logger 2134m

Bottom Log Interval 2134m

Top Log Interval 1170m

Casing-Driller 244.5mm @ 1170m

Casing-Logger

Bit Size 222mm

Type Fluid in Hole Gel Chem

Density 1.10

Viscosity 50

pH

Fluid Loss

Source of Sample Flow

Rm @ Meas. Temp. 0.19 @ 20°C

Rmf @ Meas. Temp. 0.14 @ 20°C

Rmc @ Meas. Temp.

Source: Rmf Rmc

Rm @ BHT

Rmf @ BHT

Rmc @ BHT

Time Since Circ. 5 hrs

Max. Rec. Temp. 20°C

Equip. Location Chetwynd

Recorded By Ken Bassett

Witnessed By Mr. Hall

Fold here

REMARKS

Changes in Mud Type or Additional Samples

Date Sample No.

Depth - Driller

Type Fluid in Hole

Viscosity

pH Fluid Loss ml

Source of Sample

Rm @ Meas. Temp. @ °F @ °F

Rmf @ Meas. Temp. @ °F @ °F

Rmc @ Meas. Temp.

Source: Rmf Rmc

Rm @ BHT @ °F @ °F

Rmf @ BHT @ °F @ °F

Rmc @ BHT @ °F @ °F

Scale Changes

Type Log	Depth	Scale Up Here	Scale Down

Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	Depths To	Speed ft/hr	T.C. Mpere	Alpha	Inch/in	Source Number
Gamma	118	0	9	1	1.36	119	
SLSD	119	0	9	0.3	0.79	119	R5507
Cali	118	0	9	0.3	cal	119	

GAMMA RAY

0 API 150

CALIPER

SLS

S L S DENSITY

6000 SDU 0 2" 5"

CALIBRATION DATA

Jig No.012 Value@0 @0 Deals

Jig mark shown at above value ±0.1

GAMMA RAY

HOLE SIZE CORRECTION

CALIBRATION DATA

Jig Cal date 5 Aug. 77 Jig value 2550 SDU @ 1.47 gmcc

Jig No 011 Scale 0.50 NORM Val = 0.79

6000 SDU

COAL BULK DENSITY

gmcc

Repeat Section

663

Re-Surveyed 77 B.C.

GAMMA RAY SLS DENSITY CALIPER

COMPANY BP Canada Ltd - Coal Group

BOREHOLE BP # 98 Sukunka 77

FIELD

COUNTY B.C. STATE Canada

BP-38
PR-SUKUNKA 77 (3)4.

SONIC LOG

COMPANY BP Canada Ltd - Coal Group

BOREHOLE BP # 38 Sukunka 77

STATE B.C. COUNTRY Canada

Permanent Datum	Ground Level	Elev	Ft.
Log measured from	Ground Level	Ft. above	P.D.
Drilling measured from	Rig Floor	Ft. above	P.D.

Run No.	1			
Depth Scale	1:200			
Date	24 Sept 77			
First Reading	44m			
Last Reading	19m			
Interval Measured	25m			
Casing BPB				
Casing Driller	21.3m			
Depth Reached	120.2m			
Bottom Driller	120.7m			
Mud Nature	Quik-Gel			
S.G. / Viscosity				
Bit Size 1	HQ to TD	to		to
2	to	to		to
3	to	to		to
Casing Size 1	4" to 21.3m	to		to
2	to	to		to
Rm @ Meas Temp	@	@		@
Rmf @ Meas Temp.	@	@		@
Rmc @ Meas Temp.	@	@		@
BHT				
Operating Time	2 hrs.			
Truck No.	V24/34			
Recorded By	R. Bishop			
Witness				

fold here

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No.				
Depth — Driller					
Type Fluid in Hole					
Dens	Visc.				
ph.	Fluid Loss		ml		
Source of Sample					
Rm @ Meas Temp.		@ °F		@ °F	
Rmf @ Meas Temp.		@ °F		@ °F	
Rmc @ Meas Temp.		@ °F		@ °F	
Source Rmf	Rmc				
Rm @ BHT		@ °F		@ °F	
Rmf @ BHT		@ °F		@ °F	
Rmc @ BHT		@ °F		@ °F	

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths From	Depths To	Speed m/min	T C. sec	Norm.	Sonde No.	Source Number
Sonic	44	19	9	1			

Sonde would not drop below 45m

SONIC

956 CPS 273

DEPTHS

956

20

40

44

956

273

956 CPS 273

DEPTHS

SONIC

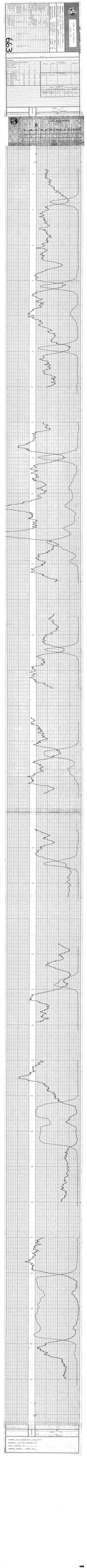
COMPANY BP Canada Ltd - Coal Group

BOREHOLE BP # 38 Sukunka 77

FIELD

COUNTY B.C. STATE Canada

MY 41485



COMPANY B.P. Canada LTD - Coal Group

BOREHOLE BPF 25a Sukunka 77

STATE British Columbia

COUNTRY Canada

S.S.N. DENSITY

SCALE 1:240

963

Well Name: BPF 25a Sukunka 77
Location: Sukunka Valley
Province: British Columbia
Country: Canada
Drilling Contractor: Foothills Drilling
Rig Number: 2
Elevation: KB 1262 m
Ground Level: 1243 m
Log measured from: Ground Level
Permanent Datum: KB
Log Date: 13-Jan-77
Run Number: ONE
Depth Driller: 1262 m
Depth Logger: 1262 m
Bottom Logged Interval: 1262 m
Top Logged Interval: 1243 m
Casing Driller: 1243 m @ 1243 m
Casing Logger: 1243 m
Bit Size: 311 mm
Type Fluid in Hole: Water
Density: 1.0 g/cm3
Viscosity: 0 s
Fluid Loss: 0 ml
Source of Sample: Flowline
Rm @ Meas Temp: 0.2 ohmm @ 20 degC
Rmf @ Meas Temp: 0.2 ohmm @ 20 degC
Rmc @ Meas Temp: 0.2 ohmm @ 20 degC
Source: Rmf Rmc
Rm @ BHT: 0.2 ohmm @ 20 degC
Rmf @ BHT: 0.2 ohmm @ 20 degC
Rmc @ BHT: 0.2 ohmm @ 20 degC
Time Since Circulation: 4 hr
Max Rec Temp: 20 degC
Equipment Number: 2
Location: Fort St. John
Recorded By: Jones
Witnessed By: Mr. Bolton

Tool Strings

Type Log	Depth	Scale Up Hole	Scale Down
SSDD	1262	200	500

Scale Changes

Run No. | Tool Type | Tool Position | Other

Equipment Data

Log Type	Depths Bottom	Depths Top	Equip. No.	Location	Recorded By	Witnessed By
SSDD	1 Initial	24	2		1130	65507

REMARKS

Changes in Mud Type or Additional Samples

Date | Sample No. | Depth

Type Fluid in Hole

Conv. | Rmc

pH | Fluid Loss | ml

Source of Sample

Rm @ Meas Temp | 20 | degC | 20 | degC

Rmf @ Meas Temp | 20 | degC | 20 | degC

Rmc @ Meas Temp | 20 | degC | 20 | degC

Source | Rmf | Rmc

Rm @ BHT | 20 | degC | 20 | degC

Rmf @ BHT | 20 | degC | 20 | degC

Rmc @ BHT | 20 | degC | 20 | degC

Field Notes

Time Since Circulation: 4 hr
Max Rec Temp: 20 degC
Equipment Number: 2
Location: Fort St. John
Recorded By: Jones
Witnessed By: Mr. Bolton

Tool Strings

Type Log	Depth	Scale Up Hole	Scale Down
SSDD	1262	200	500

Scale Changes

Run No. | Tool Type | Tool Position | Other

Equipment Data

Log Type	Depths Bottom	Depths Top	Equip. No.	Location	Recorded By	Witnessed By
SSDD	1 Initial	24	2		1130	65507

REMARKS

Changes in Mud Type or Additional Samples

Date | Sample No. | Depth

Type Fluid in Hole

Conv. | Rmc

pH | Fluid Loss | ml

Source of Sample

Rm @ Meas Temp | 20 | degC | 20 | degC

Rmf @ Meas Temp | 20 | degC | 20 | degC

Rmc @ Meas Temp | 20 | degC | 20 | degC

Source | Rmf | Rmc

Rm @ BHT | 20 | degC | 20 | degC

Rmf @ BHT | 20 | degC | 20 | degC

Rmc @ BHT | 20 | degC | 20 | degC

Field Notes

S.S.N. DENSITY

120 CPS 200

DEPTH

10

12

14

16

44

46

48

50

52

54

56

58

60

62

64

66

68

70

72

74

76

78

80

82

84

86

88

90

92

94

96

98

100

102

104

106

108

110

112

114

116

118

120

122

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 25a Sukunka 77

STATE British Columbia COUNTRY Canada

GAMMA RAY SLS DENSITY
GENERAL LOG

Permanent Datum Ground Level Elev. m.
Log measured from Ground Level m. above P.D.
Drilling measured from Top of casing m. above P.D.

963

fold here

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No.				
Depth—Driller					
Type Fluid in Hole					
Dens	Visc				
pH	Fluid Loss		ml		
Source of Sample					
Rm @ Meas Temp	@ °F	@ °F			
Rmf @ Meas Temp	@ °F	@ °F			
Rmc @ Meas Temp	@ °F	@ °F			
Source Rmf	Rmc				
Rm @ BHT	@ °F	@ °F			
Rmf @ BHT	@ °F	@ °F			
Rmc @ BHT	@ °F	@ °F			

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

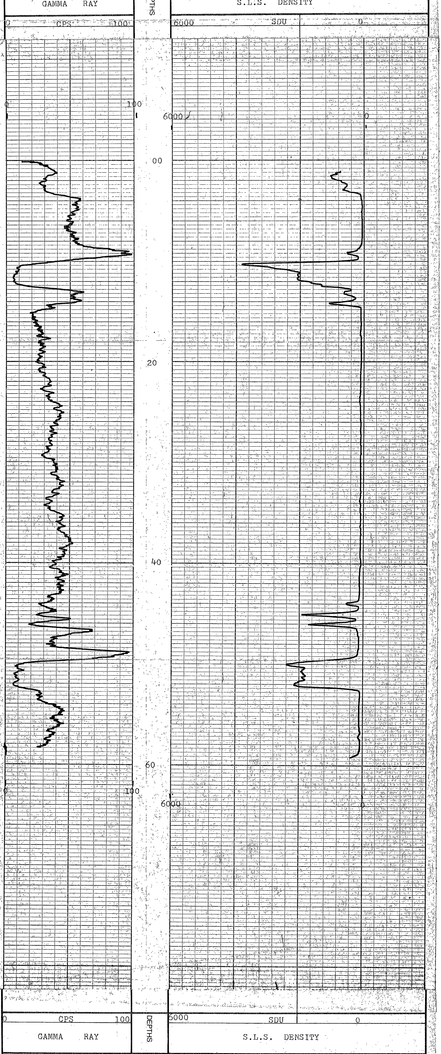
Run No.	Tool Type	Tool Position	Other

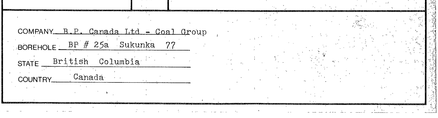
Logging Data

Log	Depths m From	To	Speed m/min	T.C.	Norm	Neutrn	Source No.
Gamma	58.4	0	9	2	-	119	-
SLSD	59.6	1	9	1/3	0.77	119	M5569

Run No.	1	2
Date	20.01.77	25.01.77
Last Reading	2 595.5m	0
First Reading	0	595.5m
Interval Measured	595.5m	
Casing Driller	20"@ 58.4m	
Casing Logger	58.4m	
Depth Reached	595.5m	
Bit Record	Quin-Dia	
Mud Name		
Source Sample		
SG / Viscosity	- -	
PH / Fluid Loss	- -	
Rm @ Meas Temp	@ °F	@ °F
Rmf @ Meas Temp	@ °F	@ °F
Rmc @ Meas Temp	@ °F	@ °F
Source Rmf / Rmc	- -	
Rm @ BHT	@ °F	@ °F
Rmf @ BHT	@ °F	@ °F
Rmc @ BHT	@ °F	@ °F
Time Since Circ.	8½ hrs	2 hrs
Max. Rec. Temp.	87°F @ 570m	
Equip. & Location	2" Sondes	
Recorded By	D. Bowcott	
Witnessed By		

GMC REF E N RL





COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 25a Sukunka 77

STATE British Columbia

COUNTRY Canada

MY 181 55555 4

PR-SUKUNKA 77(3)A

H.R. DENSITY
DETAIL LOG

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 25a Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground level Elev. ____ m.
Log measured from Ground level m. above P.D.
Drilling measured from Top of casing m. above P.D.

GRID REF. E ____ N ____ R.L ____

Run No / Depth Scale	1 / 20:1		
Date	2 Sept 77		
First Reading	59.6 m		
Last Reading	0		
Interval Measured	3 Details		
Casing BPB	TD		
Casing Driller rods	TD		
Depth Reached	60.26 m		
Bottom Driller	59.43 m		
Mud Nature	Quik-Gel		
S.G / Viscosity	–		
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	rods to	to	to
2	to	to	to
Rm @ Meas Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp.	@	@	@
BHT	–		
Operating Time	1½ hrs		
Truck No	RV 28/42		
Recorded By	P.J.Waters		
Witness	P.Raymant		

663

fold here

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No		
Depth–Driller			
Type Fluid in Hole			
Dens / Visc			
ph. / Fluid Loss	ml		
Source of Sample			
Rm @ Meas.Temp.	@ °F	@ °F	@ °F
Rmf @ Meas Temp	@ °F	@ °F	@ °F
Rmc @ Meas Temp.	@ °F	@ °F	@ °F
Source Rmf / Rmc			
Rm @ BHT	@ °F	@ °F	@ °F
Rmf @ BHT	@ °F	@ °F	@ °F
Rmc @ BHT	@ °F	@ °F	@ °F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	T.C. SEC	Norm	Sonde No	Source No
HRD	3 Details		2½	1	-	15	HR2

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 25a Sukunka 77
STATE British Columbia
COUNTRY Canada

MY (8) 58360

COMPANY B.C. Canada Ltd. - Coal Group

WELL 92 F 25A Rotovale 77

FIELD Elkview Coal Property

LOCATION Sec. 25, Tp. 4, Rge. 25, W6M

PROVINCE British Columbia

Other Services: Caliper, Density, Neutron

Permanent Datum: Ground Level

Log Measured from: 10.0 ft. above Perm. Datum

Drilling Measured from: K.B.

Elev.: K.B. 3510 ft.
D.F. ft.
G.L. 3500 ft.

Date: 1-Jun-77
Run No.: ONE
Depth-Driller: 1600
Depth-Logger: 1600
Bottom Logged Interval: 1600
Top Logged Interval: 100
Type Fluid in Hole: WATER
Salinity, PPM Cl: 0
Fluid Level: FULL
Max. Rec. Temp. Deg. F: 70
Equipment No. & Location: 5501 PRINCE GEORGE
Recorded By: R. MOORE
Witnessed By: MR. MOORE

Run No.	Bit From	Bit To	Casing Driller	Casing Logger	Bit Size	Type Fluid in Hole	Density	Viscosity	pH	Fluid Loss	Source of Sample	Rm @ Meas Temp	Rmf @ Meas Temp	Rmc @ Meas Temp	Source of Rmf & Rmc	Rm @ BHT	Rmf @ BHT	Rmc @ BHT	Time Since Circ.	Max. Rec. Temp. Deg. F	Equip. Location	Recorded By	Witnessed By
ONE	0	1600	0	1600	6 3/4	WATER														70	5501 PRINCE GEORGE	R. MOORE	MR. MOORE

Rig: Rig #4

Run No. ONE

Tool Type: GAMMA RAY NEUTRON DENSITY

Tool Position: ECCENTRALIZED

Other: CALIPER

Equipment Data

Run No.	Tool Type	Tool Position	Other
ONE	GAMMA RAY NEUTRON DENSITY	ECCENTRALIZED	CALIPER

Source Changes

Tube Log	Depth	Scale Up Hole	Scale Down

Logging Data

Log	Depths, ft. From	To	Speed, ft/min	Recrd.	Scale/in	Source No.
Gamma	1 Datalth	23	2	1	110	
Size	1 Datalth	23	1	0.77	110	85509

Source of Sample: ---

Rm @ Meas Temp: @ deg F

Rmf @ Meas Temp: @ deg F

Rmc @ Meas Temp: @ deg F

Rm @ BHT: @ deg F

Rmf @ BHT: @ deg F

Rmc @ BHT: @ deg F

Hold here

REMARKS

Changes or Must Purge or Additional Samples:

Date | Sample No.

Mech. Circ.

Tube Fluid in Hole

Elev. 3500

Ft. From Log

API.

SCALE

GAMMA RAY

100 ---------- CPS ---------- 0

Date/Time 1-Jun-77 08:11:17

3500 ---------- SCALE ---------- 0

1600

10

12

14

16

44

46

48

50

52

54

200

3500

SCALE

GAMMA RAY

100 ---------- CPS ---------- 0

Date/Time 1-Jun-77 08:11:17

3500 ---------- SCALE ---------- 0

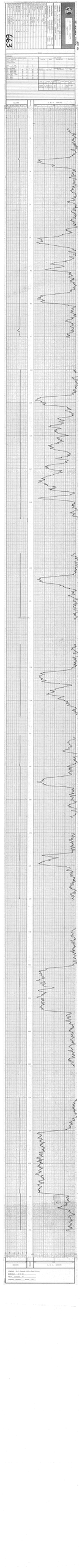
COMPANY B.C. Canada Ltd - Coal Group

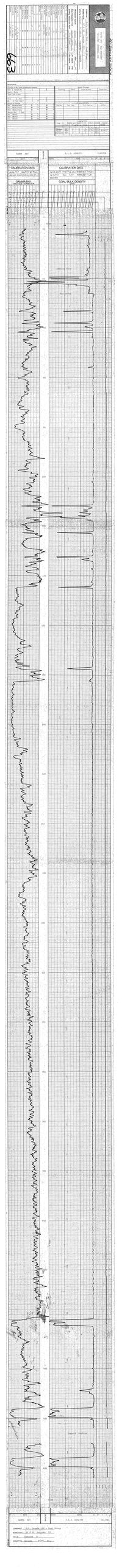
BOREHOLE 92 F 25A Rotovale 77

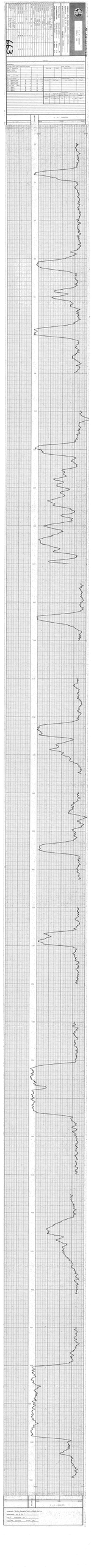
STATE British Columbia

COUNTRY Canada

693




683
Geophysical Consultants
Logging Suite
Gamma Ray
Caliper
Coal Bulk Density
Company
Well
Field
County
State
Location
Other Services
Permanent Datum
Log Measured From
Drilling Measured From
Elev.
Perm. Datum
Elev.
K.B.
D.F.
G.L.
Date
Run No.
Depth-Driller
Depth-Logger
Bottom Logged Interval
Top Logged Interval
Type Fluid in Hole
Salinity
Density
Level
Max. Rec. Temp.
Equip. No. & Location
Recorded By
Witnessed By
RUN NO.
BIT
FROM
TO
CASING
SIZE
WGT.
FROM
TO
BORE HOLE RECORD
CASING RECORD
REMARKS
Run 1 Data
Run 2 Data
Run 3 Data
Gamma Ray Scale
Caliper Scale
Coal Bulk Density Scale
CALIBRATION DATA
CALIBRATION DATA
GAMMA RAY
COAL BULK DENSITY
CALIPER
Main Coal
Squash Member



Re Sukunka 77 (3) A 03-27

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 27 Sukunka 77

STATE British Columbia COUNTRY Canada

GRID REF: E N

Permanent Datum Ground level Elev. m.

Log measured from Ground level m. above P.D.

Drilling measured from Rig Floor m. above P.D.

Run No.	Depth Set	Date
1	200 ft	4 Sept 77
Last Reading	44.4 m	
First Reading	44.4 m	
Interval Measured	44.4 m	0
Casing Bit		
Casing Driller	0	
Depth Reached	45.37 m	
BBR/Bott Driller	45.22 m	
Mud Type	Gel	
Viscosity		
Bit Size 1	HQ to CD	
2	to to	
3	to to	
Casing Size 1	HQ to TD	
2	to to	
Rm @ Meas Temp	@ @	
Rmf @ Meas Temp	@ @	
Rmc @ Meas Temp	@ @	
Operating Time	hrs.	
Truck No	BV 28/42	
Recorded By	P.J. Waters	
Witness	P. Reymart	

GAMMA RAY SLS DENSITY

GENERAL LOG

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fold here

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No.				
Depth - Driller					
Type Fluid in Hole					
Dens	Visc.				
pH	Fluid Loss	ml			
Source of Sample					
Rm @ Meas Temp	@ °F	@ °F			
Rmf @ Meas Temp.	@ °F	@ °F			
Rmc @ Meas Temp.	@ °F	@ °F			
Source Rmf	Rmc				
Rm @ BHT	@ °F	@ °F			
Rmf @ BHT	@ °F	@ °F			
Rmc @ BHT	@ °F	@ °F			

Scale Changes

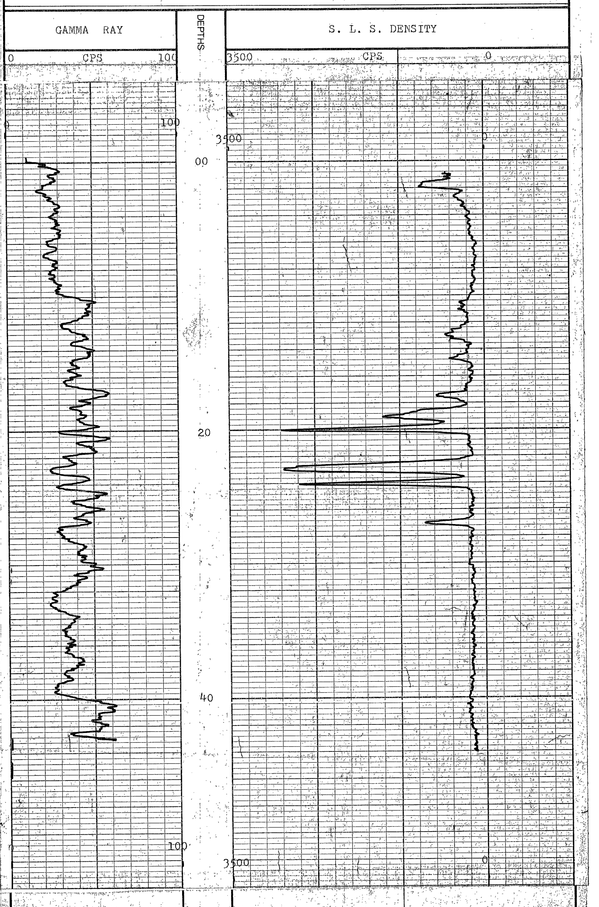
Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	T C Sec	Norm.	Sonde No.	Source No
Gamma	43.2	0	9	2	-	119	-
SLSD	44.4	1	9	1/3	-	119	M5567



COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 27 Sukunka 77

STATE British Columbia

COUNTRY Canada

MT (B) 58360 R

Re-recorded 77/3/14

GAMMA RAY SLS DENSITY CALIPER LOG

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 28 Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground Level Elev. m.
Log measured from Ground Level m. above P.D.
Drilling measured from Jcn. of casing m. above P.D.

Run No. 1
Date 6 Sept 77
First Reading 28011
Last Reading
Interval Measured 57.5m
Interval Logged 57.5m
Casing Size 16.5m
Casing Wgt.
Depth Reached 59.05m
Bottom Driller 59.05m
Bottom Logger 59.13m
Type Log Quick-Look
Bit Size 8½ to 59
Casing Size 9⅝ to 0
Rm @ Meas. Temp. to to
Rmf @ Meas. Temp. to to
Rmc @ Meas. Temp. to to
Source: Rmf Rmc to to
Rm @ BHT @ °F @ °F
Rmf @ BHT @ °F @ °F
Rmc @ BHT @ °F @ °F
Ordering Time
Truck No.
Recorded By W. Wichert
Witnessed By B. Beaumont

fold here

REMARKS

Changes in Mud Type or Additional Samples

Date Sample No.
Depth-Driller
Type Fluid in Hole
Dens. Visc.
pH Fluid Loss ml

Source of Sample

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	T.C. Sec	Norm	Sens/Mv	Source No.
Gamma	57	0	9	2	1.36	119	-
SLSD	58	1	9	1/3	0.70	119	N 5562
Caliper	58	1	9	1	-	119	-

5

GAMMA RAY — DEPTHS — S.L.S. DENSITY — CALIPER

0 API 150 | 6000 SDU 0 | 7" - - - 2"

CALIBRATION DATA

Jig No. 012 Value 100 @ 2 Diam.
Jig mark shown at above value x0.3

CALIBRATION DATA

Jig Cal date 25 Aug 77 Jig value 105 SDU @ 1.4 g/cc
Jig No. 011 Span 0.50 NORM CPS * 0.60
6000 SDU 0

GAMMA RAY
HOLE SIZE CORRECTION

COAL BULK DENSITY
gm/cc

Casing Shoe

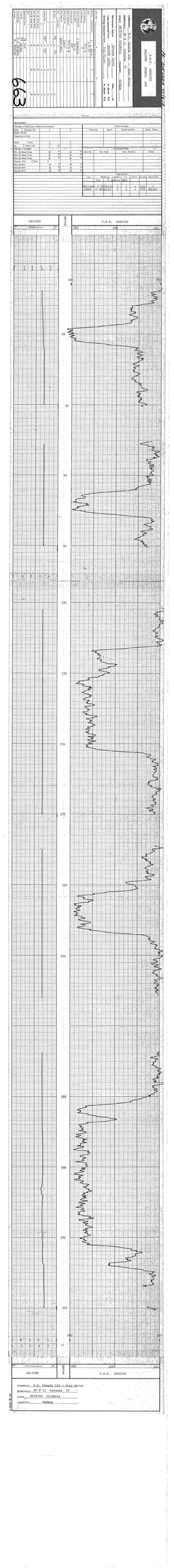
0 API 150 | DEPTHS | 6000 SDU 0 | 7" - - - 2"

GAMMA RAY — S.L.S. DENSITY — CALIPER

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 28 Sukunka 77
STATE British Columbia
COUNTRY Canada

963

MF 16 mm



COMPANY B.P. Canada Ltd. + Coal Group
BOREHOLE 87 F 11 Entrance 77
STATE BRITISH COLUMBIA
COUNTRY CANADA

Schlumberger

GAMMA RAY
DENSITY
CCL

Company: B.C. Hydro Coal Group
Well: BCH 81-11 Township: 77
Field: Borehole: 81-11 Province: Alberta
County: Canada
Location: Other Services:
Permanent Datum: Ground Level Elev.:
Log Measured from: Ft. Above Perm. Datum
Drilling Measured from: Ft. Above Perm. Datum

Date: 1-Dec-81
Run No.: One
Depth-Driller: 1000
Depth-Logger: 1000
Bottom Logged Interval: 1000
Top Logged Interval: 150
Casing-Driller: 150 @ 0
Casing-Logger: 150 @ 0
Bit Size: 6 1/4
Type Fluid in Hole: Water
Density: 8.4
Level: Full
Max. Rec. Temp. Deg. F: 70
Equip. No. & Location: 1 Edmonton
Recorded By: Gamma Y Density
Witnessed By: -

REMARKS

Changes in Mud Type or Additional Chemicals:
Date / Hole Size / From / To
Type Fluid in Hole:
Density / Level:
Max. Rec. Temp. Deg. F: 70
Equip. No. & Location: 1 Edmonton
Recorded By: Gamma Y Density
Witnessed By: -

Run-Tool Description

Run No.	Tool Type	Tool Position	Borehole Record		Casing Record	
			Bit Size	Depth	Size	Depth
1	Gamma Y Density	Eccentered	6 1/4	1000	5	150

Logging Data

Run No.	Date	Time	Depth Driller	Depth Logger	Btm. Log Interval	Top Log Interval
1	1-Dec-81		1000	1000	1000	150

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Borehole Data

Run No.	From	To	Bit Size	Fluid Type	Fluid Density	Fluid Level	Max. Rec. Temp.
1	150	1000	6 1/4	Water	8.4	Full	70

Casing Record

Run No.	From	To	Size	Wt.	Grade	Type Joint	Cmtd. From	Cmtd. To
1	0	150	5					

Tool Data

Run No.	Tool Type	Tool No.	Position	Standoff	Max. Rec. Temp.	Equip. No. & Location	Recorded By	Witnessed By
1	Gamma Y Density	1	Ecc	1	70	1 Edmonton	-	-

Run No. 1 Run No. Run No. Run No.
Run @ Meas. Temp. 20 % % % %
Run @ Meas. Temp. 20 % % % %
Density Matrix 2.65 2.65 2.65 2.65
Density Fluid 1 1 1 1
Run @ BHT 20 % % % %
Run @ BHT 20 % % % %
Run @ BHT 20 % % % %

Interpretation

Log	Depth	Matrix	Fluid	Porosity	Remarks
Gamma Y Density	1000	2.65	1	0.35	

SCALE

GAMMA RAY
150 API 0

150
200
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1000

SCALE

GAMMA RAY
150 API 0

Company: B.C. Hydro Coal Group
Borehole: BCH 81-11 Township: 77
State: British Columbia
Country: Canada

PR-SUKUNKA 77(3)a

S.L.S. DENSITY
DETAIL LOG

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 11 Sukunka 77
STATE BRITISH COLUMBIA COUNTRY CANADA

Permanent Datum Ground level Elev. ___ m.
Log measured from Ground level ___ m. above P.D.
Drilling measured from Rig Floor ___ m. above P.D.

GRID-REF. E ___ N ___ R.L. ___

Run No. / Depth Scale	1 / 20:1		
Date	5.8.77		
First Reading	375 m		
Last Reading	0		
Interval Measured	5 Details		
Casing BPB	19 m		
Casing Driller	65'		
Depth Reached	375.5 m		
Bottom Driller	1240'		
Mud Nature	Quik-Gel		
SG / Viscosity	-		
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	4¼" to 65'	to	to
2	to	to	to
Rm @ Meas.Temp.	@	@	@
Rmf @ Meas.Temp.	@	@	@
Rmc @ Meas.Temp.	@	@	@
BHT	-		
Operating Time	5½ hrs		
Truck No.	RY 28/42		
Recorded By	P.J.Waters		
Witness	A. Bowler		

663

fold here

REMARKS

Changes in Mud Type or Additional Samples			
Date / Sample No			
Depth - Driller			
Type Fluid in Hole			
Dens. / Visc			
ph / Fluid Loss		ml	
Source of Sample			
Rm @ Meas.Temp.	@ °F	@ °F	
Rmf @ Meas.Temp.	@ °F	@ °F	
Rmc @ Meas.Temp.	@ °F	@ °F	
Source Rmf / Rmc			
Rm @ BHT	@ °F	@ °F	
Rmf @ BHT	@ °F	@ °F	
Rmc @ BHT	@ °F	@ °F	

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	T.C. Sec	Norm.	Sonde No	Source No
SLSD	5 DETAILS		3	1	0.71	119	M5567

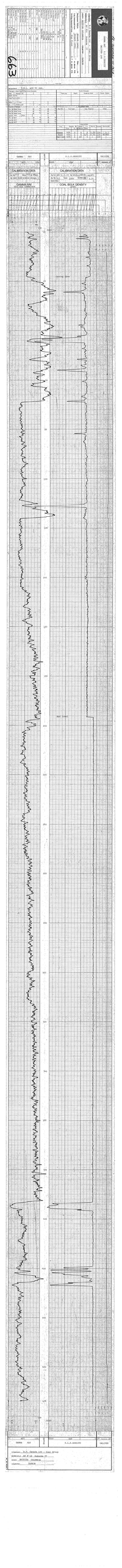
DEPTHS | S.L.S. DENSITY
6000 SDU 0

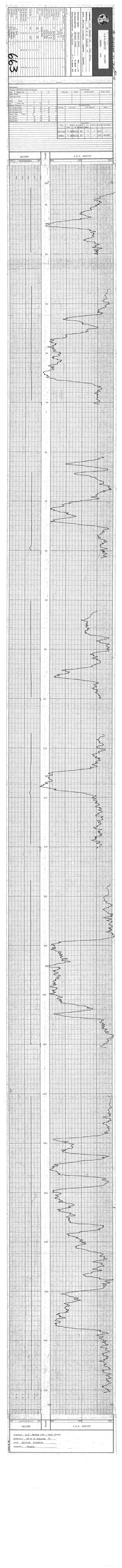
COAL BULK DENSITY
grm/cc

DEPTHS | 6000 SDU 0
S.L.S. DENSITY

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 11 Sukunka 77
STATE BRITISH COLUMBIA
COUNTRY CANADA

MY (8) 58360 R


993
GAMMA RAY
CALIBRATION DATA
GAMMA RAY CALIBRATION
CALIBRATION DATA
COAL BULK DENSITY
Overlay Zone
BAT THREE



Operator: B.P. Canada Ltd. (Gas) Group
Well(s): 16F-K 2d Extension (T)
Area: British Columbia
Country: Canada

Company: B.P. Canada Ltd. c/o Coal Grove
Well: Kenwick BP et al Columbia 77
Field: British Columbia
County: Ontario

R.A. 2000370

R.A. 2000370

Schlumberger

Well Name: Mobil Oil Canada Ltd. et al Norman Wells Proj. Well No. I-25 Field: Norman Wells Location: Lat. 65° 17' 00" N Long. 126° 50' 00" W Permanent Datum: Mean Sea Level Elev.: 0 Log Measured From: K.B. 20 Ft. Above Perm. Datum Drilling Measured From: K.B. Elev.: K.B. 20 G.L. 0

Date: 31-Dec-74 Run No.: ONE Depth-Driller: 1000 Depth-Logger: 1000 Bottom Logged Interval: 1000 Top Logged Interval: 0 Type Fluid in Hole: Gel Chem Salinity, PPM Cl: 1000 Density: 9.2 Level: Full

Max. Rec. Temp. °F: 70 Equip. Location: 1-1 Recorded By: Hall Witnessed By: Mr. Hall

Run	Tool	Type	Serial No.	Position	Depth Driller	Depth Logger	Bottom Logged Interval	Top Logged Interval	Type Fluid in Hole	Salinity PPM Cl	Density	Level	Max. Rec. Temp. °F	Equip. Location	Recorded By	Witnessed By
ONE	DIL	SGD	1	1	1000	1000	1000	0	Gel Chem	1000	9.2	Full	70	1-1	Hall	Mr. Hall
ONE	BHC	SGD	1	1	1000	1000	1000	0	Gel Chem	1000	9.2	Full	70	1-1	Hall	Mr. Hall
ONE	FDC	CNL	1	1	1000	1000	1000	0	Gel Chem	1000	9.2	Full	70	1-1	Hall	Mr. Hall

Casing Record

Run	Bit Size	Type	Size	Wgt.	Grade	From	To
ONE	12 1/4	Surface	9 5/8	36	K-55	0	1000
ONE	8 1/2	Prod.	7	23	N-80	0	1000

Remarks: Logging Equipment: Run No. Tool Type Serial No. Position Hr. Truck No. Engineer(s) Operating Time: Logging Time, Standby Time, Total Time

Run	Tool	Type	Serial No.	Position	Hr.	Truck No.	Engineer(s)	Operating Time: Logging Time	Standby Time	Total Time
ONE	DIL	SGD	1	1	4	1-1	Hall	4	-	4
ONE	BHC	SGD	1	1	4	1-1	Hall	4	-	4
ONE	FDC	CNL	1	1	4	1-1	Hall	4	-	4

Equipment Ratings: Run No. Tool Type Serial No. Position Max. Rec. Temp. °F Max. Operating Time Hrs. Max. Pressure Rating PSI

Run	Tool	Type	Serial No.	Position	Max. Rec. Temp. °F	Max. Operating Time Hrs.	Max. Pressure Rating PSI
ONE	DIL	SGD	1	1	350	24	20000
ONE	BHC	SGD	1	1	350	24	20000
ONE	FDC	CNL	1	1	350	24	20000

Circulation Stopped: Time 0000 Hrs. Date 31-Dec-74

Run	Tool	Type	Serial No.	Position	Time	Date	Recorded By	Witnessed By
ONE	DIL	SGD	1	1	0000 Hrs.	31-Dec-74	Hall	Mr. Hall
ONE	BHC	SGD	1	1	0000 Hrs.	31-Dec-74	Hall	Mr. Hall
ONE	FDC	CNL	1	1	0000 Hrs.	31-Dec-74	Hall	Mr. Hall

R.U.N. ONE

Logged Interval: 1000 To 0

Scale: 5 Inches = 100 Feet

Recorded By: Hall

Witnessed By: Mr. Hall

Schlumberger

COMPANY MOBIL OIL CANADA LTD. ET AL

WELL NORMAN WELLS PROJECT I-25

FIELD NORMAN WELLS

COUNTY/PARISH

STATE NORTHWEST TERRITORIES

LOCATION: Other Services: DIL BHC FDC

Permanent Datum: MEAN SEA LEVEL Elev.: 0

Log Measured From: K.B. 20 Ft. Above Perm. Datum

Drilling Measured From: K.B.

Elev.: K.B. 20 G.L. 0

Date: 31-Dec-74

Run No.: ONE

Depth-Driller: 1000

Depth-Logger: 1000

Bottom Logged Interval: 1000

Top Logged Interval: 0

Type Fluid in Hole: Gel Chem

Salinity, PPM Cl: 1000

Density: 9.2

Level: Full

Max. Rec. Temp. °F: 70

Equip. Location: 1-1

Recorded By: Hall

Witnessed By: Mr. Hall

R.U.N. ONE

Logged Interval: 1000 To 0

Scale: 5 Inches = 100 Feet

Recorded By: Hall

Witnessed By: Mr. Hall

Schlumberger

COMPANY: Mobil Oil Canada Ltd. et al

WELL: NORMAN WELLS PROJECT I-25

FIELD: NORMAN WELLS

COUNTY: REGION

STATE: NORTHWEST TERRITORIES

COMPANY B.P. Canada Ltd. - Coal Group
BOREHOLE BP # 13 Sukunka 77
STATE British Columbia COUNTRY Canada

GAMMA RAY DENSITY
SUKUNKA 77 BP #13

Permanent Datum: Ground Level — Elev. 3,500 ft.
Drilling measured from: K.B. — 5.5 ft. above P.D.
Elev.: K.B. 3505.5 ft. D.F. ft. G.L. 3500 ft.

Run No.	One	Two	Three
Date	3-7-77		
Depth Driller	3301 ft.	ft.	ft.
Depth Logger	3301 ft.	ft.	ft.
Bottom Logged Interval	3300 ft.	ft.	ft.
Top Logged Interval	3000 ft.	ft.	ft.
Type Fluid in Hole	Water		
Salinity, PPM Cl	0		
Density	8.8		
Level	Full		
Max. Rec. Temp. Deg. F.	90		
Equipment Number	3301		
Location	Dawson Creek		
Recorded By	Hanson		
Witnessed By	Mr. Bowen		

REMARKS Details on depth.

Changes in Mud Type or Additional Samples

Date	Sample No.
Depth - Driller	
Type Fluid in Hole	

Scale Changes

Type Log	Depth	Scale Up-Hole	Scale Down

Meas. | Eng. | Wit.

Equipment Data

Run No.	Tool Type	Tool Position	Other

Borehole Record

Run No.	Bit From	Bit To	Size	Casing From	Casing To	Size	Wgt. & Grade
1	0	3301	8 3/4	0	3301	7	23

Rm @ Meas. Temp. — @ — °F — @ —
Rmf @ Meas. Temp. — @ — °F — @ —
Rmc Source Rmf | Rmc — @ — °F — @ —
Rm @ BHT — @ — °F — @ —
Rmf @ BHT — @ — °F — @ —

Logging Speed

Log	Density Window From	To	Gain	Time Const.	Norm.	Scale/Div	Source No.
Gamma	1 Detail	23	2	1.33	110	-	
plsd	1 Detail	23	1	0.66	110	M5507	
shrd	1 Detail	23	2	-	110	M5507	

DEPTHS

S.S.R. DENSITY 360 — 200

320

S.S.R. DENSITY 360 — 200

328

329

326

S.S.R. DENSITY 360 — 200

GAMMA RAY

S.L.S. DENSITY

329

328

324

326

330

GAMMA RAY 0

S.L.S. DENSITY 3500 — 0

DEPTHS

3500 500 0

S.L.S. DENSITY

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 13 Sukunka 77
STATE British Columbia
COUNTRY Canada

963

RE- SUKUNKA 77 (3)(4)

GAMMA RAY S.LS. DENSITY CALIPER LOG

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 13 Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground level Elev. ___ m.
Log measured from Ground level m. above P.D
Drilling measured from Rig Floor m above P.D.

GRID REF E ___ N ___ RL ___

Run No	1		
Depth Scale	200:1		
Date	17 Aug 77		
First Reading	329 m		
Last Reading	0		
Interval Measured	329 m		
Casing BPB.	Rods in bh.		
Casing Driller	1084'		
Depth Reached	329m		
Bottom Driller	1200'		
Mud Nature	Quik-Gel		
SG / Viscosity	-		
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	HQ to 1084'	to	to
2	to	to	to
Rm @ Meas Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp	@	@	@
BHT	-		
Operating Time	2 hrs		
Truck No	RV 28/42		
Recorded By	P.J.Waters		
Witness	P.Raymant		

663

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REMARKS Log required to Bird seam, outside rods if safe.

Changes in Mud Type or Additional Samples				
Date	Sample No			
Depth-Driller				
Type Fluid in Hole				
Dens	Visc			
ph	Fluid Loss	ml		
Source of Sample				
Rm @ Meas Temp	@ °F	@ °F		
Rmf @ Meas Temp	@ °F	@ °F		
Rmc @ Meas Temp	@ °F	@ °F		
Source Rmf	Rmc			
Rm @ BHT	@ °F	@ °F		
Rmf @ BHT	@ °F	@ °F		
Rmc @ BHT	@ °F	@ °F		

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	T.C. Sec	Norm	Sonde No	Source No
Gamma	328	0	9	2	1.33	119	-
SLSD	329	1	9	1/3	0.66	119	M5567
Caliper - in rods.							

DEPTH ERROR AT SURFACE: Please add one metre to all depths.

GAMMA RAY	DEPTHS	S.L.S. DENSITY
0 API 100		3500 SDU 0

0 API 100	DEPTHS	3500 SDU 0
GAMMA RAY		S.L.S. DENSITY

COMPANY B.P. Canada - Coal Group
BOREHOLE BP # 13 Sukunka 77
STATE British Columbia
COUNTRY Canada

MY (8) 58360 R

BPB

GAMMA RAY L.S. DENSITY
GENERAL LOG

PR-SUKUNKA 77(3)A

144

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 14a Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground level Elev ___ Ft.
Log measured from Ground level ___ Ft above P.D.
Drilling measured from Rig Floor 1 Ft. above P.D.

Run No	1			
Depth Scale	200:1			
Date	25 Aug 77			
First Reading	509 m			
Last Reading	0			
Interval Measured	509 m			
Casing BPB	20 m			
Casing Driller	-			
Depth Reached	509.76m			
Bottom Driller	510.33m			
Mud Nature	Quik-Gel			
S G / Viscosity	-			
Bit Size 1	HQ to 505.5	to	to	to
2	BQ to TD	to	to	to
3	to	to	to	to
Casing Size 1	4" to	to	to	to
2	rods to td	HQ to 452.5	BQ to TD	
Rm @ Meas Temp	@	@	@	
Rmf @ Meas Temp	@	@	@	
Rmc @ Meas Temp	@	@	@	
BHT				
Operating Time	4½ hrs			
Truck No	RV 28/42			
Recorded By	P.J.Waters			
Witness	P.Raymant			

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fold here

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No			
Depth — Driller				
Type Fluid in Hole				
Dens	Visc			
ph	Fluid Loss	ml		
Source of Sample				
Rm @ Meas Temp	@ °F	@ °F		
Rmf @ Meas Temp	@ °F	@ °F		
Rmc @ Meas Temp	@ °F	@ °F		
Source Rmf	Rmc			
Rm @ BHT	@ °F	@ °F		
Rmf @ BHT	@ °F	@ °F		
Rmc @ BHT	@ °F	@ °F		

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down
L.S.D.	500m	1300-0	3500-0
L.S.D.	492m	3500-500	1300-0
L.S.D.	164m	6500-2500	3500-500

Equipment Data

Run No	Tool Type	Tool Position	Other
1	Gamma	Free	-

Logging Data

Log	Depths m From	To	Speed m/min	T C Sec	Norm	Sonde No	Source Number
Gamma	509	0	9	2	-	15	-
LSD	509	1	9	1/3	-	15	LS2

HQ Core Barrel still IN borehole - Driller cored thro' it to obtain floor of seam (chamberlain).

GAMMA RAY	DEPTHS	L.S. DENSITY
0 CPS 100		6500 CPS 2500

0 CPS 100	DEPTHS	3500 CPS 0
GAMMA RAY		L.S. DENSITY

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 14a Sukunka 77
FIELD British Columbia
COUNTRY Canada STATE ___

MY 41485 R

PR-SUKUNKA 77 (3)A.

GAMMA RAY DETAIL LOG

BP

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 14a Sukunka 77

STATE British Columbia COUNTRY Canada

Permanent Datum Ground level Elev ___ Ft.

Log measured from Ground level ___ Ft. above P.D.

Drilling measured from Rig Floor 1 Ft. above P.D.

Run No.	1		
Depth Scale	20:1		
Date	25 Aug 77		
First Reading	509 m		
Last Reading	0		
Interval Measured	10 Details		
Casing BPB	20 m		
Casing Driller	-		
Depth Reached	509.76 m		
Bottom Driller	510.33 m		
Mud Nature	Quik-Gel		
S.G. / Viscosity	-		
Bit Size 1	HQ to 505.5m	to	to
2	BQ to TD	to	to
3	to	to	to
Casing Size 1	4" to	to	to
2	to	to	to
Rm @ Meas. Temp.	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp.	@	@	@
BHT	-		
Operating Time	4¼ hrs		
Truck No	RV 28/42		
Recorded By	P.J. Waters		
Witness	P. Raymant		

663

fold here

REMARKS

Changes in Mud Type or Additional Samples			
Date / Sample No.			
Depth — Driller			
Type Fluid in Hole			
Dens / Visc			
ph / Fluid Loss		ml	
Source of Sample			
Rm @ Meas Temp.	@ °F		@ °F
Rmf @ Meas Temp	@ °F		@ °F
Rmc @ Meas Temp.	@ °F		@ °F
Source. Rmf / Rmc			
Rm @ BHT	@ °F		@ °F
Rmf @ BHT	@ °F		@ °F
Rmc @ BHT	@ °F		@ °F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other
1	Gamma	Free	-

Logging Data

Log	Depths m From	To	Speed m/min	T C Sec	Norm	Sonde No	Source Number
Gamma	10 DETAILS		2¼	2	-	15	-

GAMMA Detail in Chamberlain in-correct, perhaps due to HQ core barrel.

	DEPTHS	GAMMA RAY
		100 CPS 0

	DEPTHS	100 CPS 0
		GAMMA RAY

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 14a Sukunka 77

FIELD British Columbia

COUNTRY Canada STATE ___

MY 414 R

H.R. DENSITY DETAIL LOG

PE-SUKUNKA 77 (3)a.

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 14a Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground Level Elev ___ Ft.
Log measured from Ground Level Ft. above P.D.
Drilling measured from Rig Floor 1 Ft. above P.D.

Run No.	1		
Depth Scale	20:1		
Date	25 Aug 77		
First Reading	509 m		
Last Reading	0		
Interval Measured	10 Details		
Casing BPB	-		
Casing Driller	20 m		
Depth Reached	509.76m		
Bottom Driller	510.33m		
Mud Nature	Quik-Gel		
S.G. / Viscosity	-		
Bit Size 1	HQ to 505.5	to	to
2	BQ to TD	to	to
3	to	to	to
Casing Size 1	4" to	to	to
2	to	to	to
Rm @ Meas Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp	@	@	@
BHT	-		
Operating Time	4½ hrs		
Truck No.	RV 28/42		
Recorded By	P.J.Waters		
Witness	P.Raymant		

663

fold here

REMARKS

Changes in Mud Type or Additional Samples				
Date / Sample No				
Depth — Driller				
Type Fluid in Hole				
Dens / Visc.				
ph / Fluid Loss		ml		
Source of Sample				
Rm @ Meas Temp	@	°F	@	°F
Rmf @ Meas Temp.	@	°F	@	°F
Rmc @ Meas Temp	@	°F	@	°F
Source. Rmf / Rmc				
Rm @ BHT	@	°F	@	°F
Rmf @ BHT	@	°F	@	°F
Rmc @ BHT	@	°F	@	°F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down
HRD	500	2000-1000	3000-1000
HRD	450	4000-2400	2000-1000
HRD	170	5100-3500	4000-2400

Equipment Data

Run No	Tool Type	Tool Position	Other
1	Gamma	Free	-

Logging Data

Log	Depths m From	To	Speed m/min	T.C Sec	Norm	Sonde No.	Source Number
HRD	10 DETAILS		2¼	2	-	15	HR2

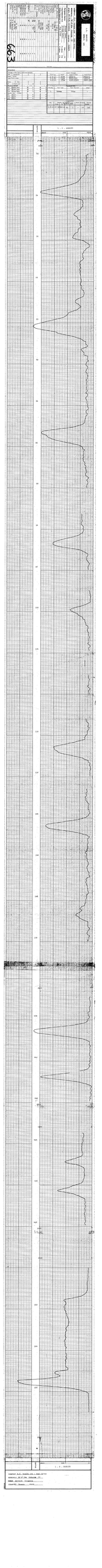
DEPTHS — H.R. DENSITY — 5100 CPS 3500

DEPTHS — 3000 CPS 1000 — H.R.DENSITY

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 14a Sukunka 77
FIELD British Columbia
COUNTRY Canada STATE

MY 4745 R

E699



L. E. SHELTON

GAMMA RAY SLS DENSITY CALIPER LOG

BC-SUKUNKA 77(3)A BP-15

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 15 Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground level Elev. m.
Log measured from Ground level m. above P.D
Drilling measured from Rig Floor m. above P.D.

GRID REF E N RL

Run No	1		
Depth Scale	200:1		
Date	16 Aug 77		
First Reading	549 m		
Last Reading	0		
Interval Measured	549 m		
Casing BPB	7 m		
Casing Driller	7.62 m		
Depth Reached	550.1 m		
Bottom Driller	1475'		
Mud Nature	Quik-Gel		
SG / Viscosity	-		
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	4" to 25'	to	to
2	to	to	to
Rm @ Meas Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp	@	@	@
BHT	-		
Operating Time	5½ hrs		
Truck No	RV 28/42		
Recorded By	P.J. Waters		
Witness	P.Raymant		

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REMARKS

Changes in Mud Type or Additional Samples				
Date	Sample No			
Depth-Driller				
Type Fluid in Hole				
Dens	Visc			
ph	Fluid Loss	ml		
Source of Sample				
Rm @ Meas Temp	@ °F	@ °F		
Rmf @ Meas Temp	@ °F	@ °F		
Rmc @ Meas Temp	@ °F	@ °F		
Source Rmf	Rmc			
Rm @ BHT	@ °F	@ °F		
Rmf @ BHT	@ °F	@ °F		
Rmc @ BHT	@ °F	@ °F		

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	T C Sec	Norm	Sonde No	Source No
Gamma	548	0	9	2	1.36	119	-
SLSD	549	1	9	1/3	0.65	119	M5567
Caliper	549	5	9	1	-	119	-

GAMMA RAY	DEPTHS	S.L.S. DENSITY	CALIPER
0 API 150		6000 SDU 0	7" 2"

CALIBRATION DATA

Jig No 012 Value 400 @2" Diam.
Jig mark shown at above value x0.3

GAMMA RAY
HOLE SIZE CORRECTION

CALIBRATION DATA

Jig Cal. date 31.7.77 Jig value 410 SDU @ 1.46 gr/cc
Jig No. 011 Span 1000 NORM SDU/CPS = 0.71
6000 SDU 0

COAL BULK DENSITY
grm/cc

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 15 Sukunka 77
STATE British Columbia
COUNTRY Canada

PR - SUKUNKA 77 (3)4.

H.R. DENSITY DETAIL LOG

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 15 Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground level Elev. ___ m.
Log measured from Ground level m. above P.D.
Drilling measured from Rig Floor m. above P.D.

GRID REF E ___ N ___ RL ___

Run No / Depth Scale	1 / 20:1		
Date	16 Aug 77		
First Reading	549 m		
Last Reading	0		
Interval Measured	9 Details		
Casing BPB	7 m		
Casing Driller	7.62m		
Depth Reached	550.1 m		
Bottom Driller	1475'		
Mud Nature	Quik-Gel		
SG / Viscosity	-		
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	4" to 25'	to	to
2	to	to	to
Rm @ Meas Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp	@	@	@
BHT	-		
Operating Time	5½ hrs		
Truck No	RV 28/42		
Recorded By	P.J.Waters		
Witness	P.Raymant		

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REMARKS

Changes in Mud Type or Additional Samples		
Date / Sample No.		
Depth – Driller		
Type Fluid in Hole		
Dens / Visc		
ph / Fluid Loss	ml	
Source of Sample		
Rm @ Meas.Temp	@ °F	@ °F
Rmf @ Meas Temp	@ °F	@ °F
Rmc @ Meas Temp	@ °F	@ °F
Source Rmf / Rmc		
Rm @ BHT	@ °F	@ °F
Rmf @ BHT	@ °F	@ °F
Rmc @ BHT	@ °F	@ °F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	T C Sec	Norm	Sonde No	Source No
HRD	9 Details		2½	1	-	15	HR2

DEPTHS | H.R. DENSITY

7200 CPS 4200

7200 CPS 4200

DEPTHS | H.R. DENSITY

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 15 Sukunka 77
STATE British Columbia
COUNTRY Canada

MY (8) 58360 R

PR - SUKUNKA 77 (3)A

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S.B.R. DENSITY CALIPER DETAIL LOG

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 15 Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground level Elev. ___ m.
Log measured from Ground level ___ m. above P.D.
Drilling measured from Rig Floor ___ m. above P.D.

GRID REF E ___ N ___ R.L ___

Run No	Depth Scale	1	20:1
Date		16 Aug 77	
First Reading		549 m	
Last Reading		0	
Interval Measured		9 Details	
Casing BPB		7 m	
Casing Driller		7.62m	
Depth Reached		550.1m	
Bottom Driller		1475'	
Mud Nature		Quik-Gel	
SG	Viscosity	-	
Bit Size 1		HQ to TD	
2		to	
3		to	
Casing Size 1		4" to 25'	
2		to	
Rm @ Meas Temp		@	
Rmf @ Meas Temp		@	
Rmc @ Meas Temp		@	
BHT		•	
Operating Time		5½ hrs	
Truck No		RV 28/42	
Recorded By		P.J.Waters	
Witness		P.Raymant	

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REMARKS

Changes in Mud Type or Additional Samples		
Date / Sample No		
Depth-Driller		
Type Fluid in Hole		
Dens / Visc		
ph / Fluid Loss	ml	
Source of Sample		
Rm @ Meas Temp	@ °F	@ °F
Rmf @ Meas Temp	@ °F	@ °F
Rmc @ Meas Temp	@ °F	@ °F
Source. Rmf / Rmc		
Rm @ BHT	@ °F	@ °F
Rmf @ BHT	@ °F	@ °F
Rmc @ BHT	@ °F	@ °F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

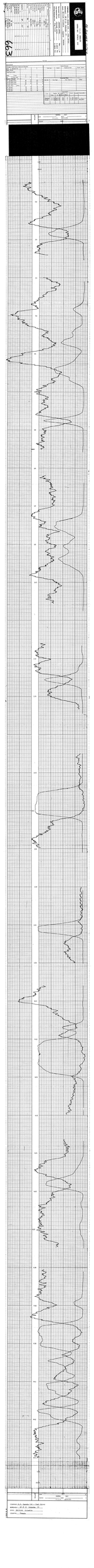
Log	Depths m From	To	Speed m/min	T.C. Sec	Norm	Sonde No	Source No
Caliper	9 Details		2¼	1	-	119	-
SBRD	9 Details		2¼	1	-	119	M5567

CALIPER	DEPTHS	S.B.R. DENSITY
7" ---------- 2"		680 CPS 360

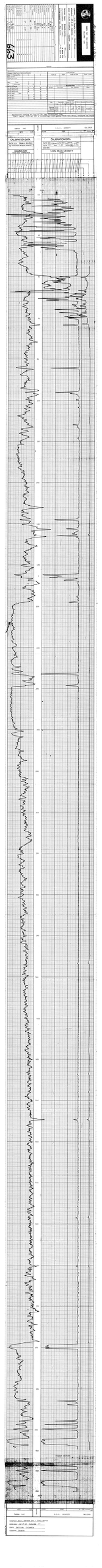
CALIPER	DEPTHS	S.B.R. DENSITY
7" ---------- 2"		680 CPS 360

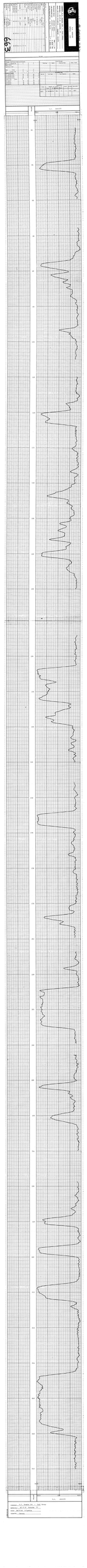
COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 15 Sukunka 77
STATE British Columbia
COUNTRY Canada

MY (8) 58360 R

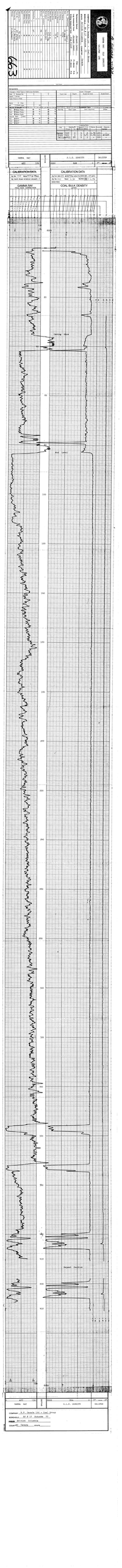


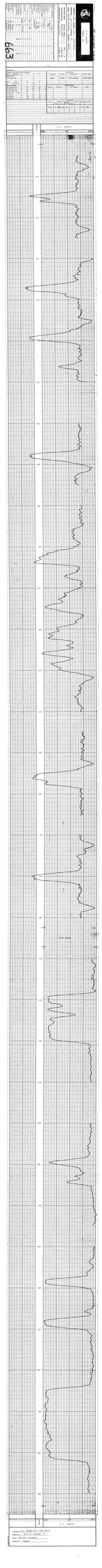
Company R.A. Heaslip Ltd. + Coal Survey
Well No. 17 (P.D. Drawing No.)
Area Bolton, Lancashire
County Lancs. Region

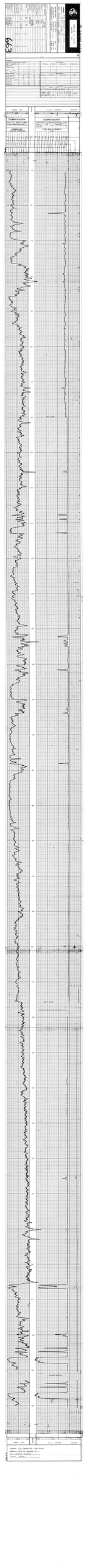




COMPANY: S.J. Canada Ltd. - Coal Group
BOREHOLE: 87 # 19 Hokusula '87
PROV: British Columbia
COUNTY: Canada STATE:


CALIBRATION DATA
GAMMA RAY
CALIBRATION DATA
COAL BULK DENSITY
Mid Leader
Upper Seam
Lower Seam




699
CALIBRATION DATA
CORAL BLUE DENSITY
CORAL BLUE
Gamma Ray
Caliper

PR-SUKUNKA 77(3)A

GAMMA RAY SLS DENSITY DETAIL LOG

COMPANY	B.P. Canada Ltd - Coal Group			
BOREHOLE	BP # 18 Sukunka 77			
STATE	British Columbia	COUNTRY	Canada	
Permanent Datum	Ground level	Elev.	m.	
Log measured from	Ground level		m. above P.D.	
Drilling measured from	Rig Floor		m. above P.D.	
GRID REF E		N		R.L.
Run No.	DepthScale	20:1		
Date	5 Sept 77			
First Reading	680 m			
Last Reading	0			
Interval Measured	8 Details			
Casing BPB rods	471m			
Casing Driller	-			
Depth Reached	681.8m			
Bottom Driller	681.23m			
Mud Nature	Quik-Gel			
SG / Viscosity	-			
Bit Size 1	HQ to TD	to	to	
2	to	to	to	
3	to	to	to	
Casing Size 1	4" to	to	to	
2	rods to 467.87	to	to	
Rm @ Meas Temp	@	@	@	
Rmf @ Meas Temp	@	@	@	
Rmc @ Meas Temp	@	@	@	
BHT	-			
Operating Time	5 3/4 hrs			
Truck No	RV 28/42			
Recorded By	P.J. Waters			
Witness	P.Raymant			

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REMARKS

Changes in Mud Type or Additional Samples				
Date	Sample No			
Depth-Driller				
Type Fluid in Hole				
Dens	Visc			
ph	Fluid Loss	ml		
Source of Sample				
Rm @ Meas Temp	@ °F		@ °F	
Rmf @ Meas Temp	@ °F		@ °F	
Rmc @ Meas Temp	@ °F		@ °F	
Source Rmf	Rmc			
Rm @ BHT	@ °F		@ °F	
Rmf @ BHT	@ °F		@ °F	
Rmc @ BHT	@ °F		@ °F	

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down
SLSD	470m	3500-0 SDU	6000-0

Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	T.C. Sec	Norm	Sonde No	Source No
Gamma	8 Details		2¼	2	1.36	119	-
SLSD	8 Details		2¼	1	0.77	119	M5567

	DEPTHS	
		150 - - - - GAMMA RAY API - - - - 0
		S. L. S. DENSITY 3500 SDU 0

	DEPTHS	
		150 API 0
		6000 - - GAMMA RAY - SDU - - 0
		S. L. S. DENSITY

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 18 Sukunka 77

STATE British Columbia

COUNTRY Canada

MY (8) 58360 R

PR-SUKUNKA 77(3)A

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SBR DENSITY CALIPER DETAIL LOG

COMPANY	B.P. Canada Ltd - Coal Group
BOREHOLE	BP # 18 Sukunka 77
STATE	British Columbia
COUNTRY	Canada
Permanent Datum	Ground level
Elev.	m.
Log measured from	Ground level m. above P.D.
Drilling measured from	Rig Floor m. above P.D.
GRID REF E	N RL

Run No	1		
Depth Scale	20:1		
Date	5 Sept 77		
First Reading	680m		
Last Reading	0		
Interval Measured	8 Details		
Casing BPB	rods 471 m		
Casing Driller	-		
Depth Reached	681.6m		
Bottom Driller	681.23m		
Mud Nature	Quik-Gel		
SG	-		
Viscosity			
Bit Size 1	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	4" to	to	to
2	rods to 467.82	to	to
Rm @ Meas Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp	@	@	@
BHT	-		
Operating Time	5 3/4 hrs		
Truck No.	RV 28/42		
Recorded By	P.J. Waters		
Witness	P. Raymant		

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REMARKS

Changes in Mud Type or Additional Samples			
Date	Sample No.		
Depth – Driller			
Type Fluid in Hole			
Dens.	Visc		
ph	Fluid Loss	ml	
Source of Sample			
Rm @ Meas Temp	@ °F	@ °F	
Rmf @ Meas Temp	@ °F	@ °F	
Rmc @ Meas Temp	@ °F	@ °F	
Source Rmf	Rmc		
Rm @ BHT	@ °F	@ °F	
Rmf @ BHT	@ °F	@ °F	
Rmc @ BHT	@ °F	@ °F	

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down
SBRD	470m	400-220cps	680-360

Equipment Data

Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	TC Sec	Norm	Sonde No	Source No
SBRD	8 Details		2¼	1, 2*	-	119	M5567
Caliper	8 Details		2¼	1	-	119	-

* SBRD has Time Constant of 2 in rods.

CALIPER	DEPTHS	S. B. R. DENSITY
7" – 2"		400 CPS 220

7" – 2"		680 CPS 360
CALIPER	DEPTHS	S.B.R. DENSITY

COMPANY B.P. Canada Ltd - Coal Group

BOREHOLE BP # 18 Sukunka 77

STATE British Columbia

COUNTRY Canada

MY (8) 58360 R

PR-SUKUNKA 77(3)A

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GAMMA RAY SLS DENSITY CALIPER LOG

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 19 Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground Level Elev. ____ m.
Log measured from Ground level ____ m. above P.D.
Drilling measured from Rig Floor 0.3 m. above P.D.

GRID REF. E ____ N ____ R.L. ____

Run No.	1		
Depth Scale	1:200		
Date	4 Sept 77		
First Reading	655m		
Last Reading	0		
Interval Measured	665m		
Casing BPB	22.2m		
Casing Driller	-		
Depth Reached	666.2m		
Bottom Driller	667.21m		
Mud Nature	Quik-Gel		
S.G. / Viscosity	-		
Bit Size	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	4" to	to	to
2	to	to	to
3	to	to	to
Rm @ Meas Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp	@	@	@
BHT	-		
Operating Time	6½ hrs.		
Truck No.	RV 28/42		
Recorded By	E.C. Waters		
Witness	F. Rayment		

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REMARKS

Changes in Mud Type or Additional Samples			
Date / Sample No			
Depth-Driller			
Type Fluid in Hole			
Dens / Visc			
ph / Fluid Loss		ml	
Source of Sample			
Rm @ Meas Temp	@ °F	@ °F	
Rmf @ Meas Temp	@ °F	@ °F	
Rmc @ Meas Temp	@ °F	@ °F	
Source Rmf / Rmc			
Rm @ BHT	@ °F	@ °F	
Rmf @ BHT	@ °F	@ °F	
Rmc @ BHT	@ °F	@ °F	

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No.	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	T C Sec	Norm.	Sonde No	Source No
Gamma	666	0	9	2	1.36	119	-
SLSD	667	1	9	1/3	0.77	119	M5567
Caliper	667	20	9	1	-	119	-

GAMMA RAY	DEPTHS	S.L.S. DENSITY	CALIPER
0 API 150		6000 SDU 0	7" --- 2"

CALIBRATION DATA

Jig No 012 Value 400 @ 2" Diam.
Jig mark shown at above value ±0.3

CALIBRATION DATA

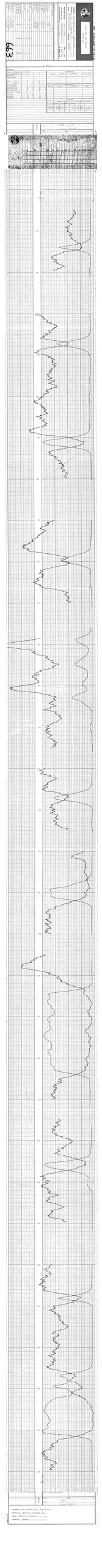
Jig Cal. date 25 Aug 77 Jig value 395 SDU @ 1.47 gr/cc
Jig No 011 Span 0.50 NORM SDU/CPS = 0.79
6000 SDU 0

GAMMA RAY HOLE SIZE CORRECTION

COAL BULK DENSITY grm/cc

GAMMA RAY	DEPTHS	S.L.S. DENSITY	CALIPER
0 API 150		6000 SDU 0	7" --- 2"

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 19 Sukunka 77
STATE British Columbia
COUNTRY Canada



RE-Sukunka 77(3)4

H.R. DENSITY
DETAIL LOG

BPB

COMPANY B.P. Canada Ltd- Coal Group
BOREHOLE BP # 19 Sukunka 77
STATE British Columbia COUNTRY Canada

Permanent Datum Ground level Elev. ____ m.
Log measured from Ground level ____ m. above P.D.
Drilling measured from Rig Floor 0.3m. above P.D.

GRID REF E ____ N ____ RL ____

Run No / Depth Scale	1 / 20:1		
Date	4 Sept 77		
First Reading	666m		
Last Reading	0		
Interval Measured	9 Details		
Casing BPB	22.2m		
Casing Driller	-		
Depth Reached	668.2m		
Bottom Driller	667.21m		
Mud Nature	Quik-Gel		
SG / Viscosity	-		
Bit Size	HQ to TD	to	to
2	to	to	to
3	to	to	to
Casing Size 1	4" to	to	to
2	to	to	to
Rm @ Meas Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas Temp	@	@	@
BHT	-		
Operating Time	6½ hrs		
Truck No	RV 28/42		
Recorded By	E.J. Waters		
Witness	P. Raymant		

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REMARKS

Changes in Mud Type or Additional Samples				
Date / Sample No				
Depth - Driller				
Type Fluid in Hole				
Dens / Visc				
ph / Fluid Loss		ml		
Source of Sample				
Rm @ Meas Temp	@	°F	@	°F
Rmf @ Meas Temp	@	°F	@	°F
Rmc @ Meas Temp	@	°F	@	°F
Source Rmf / Rmc				
Rm @ BHT	@	°F	@	°F
Rmf @ BHT	@	°F	@	°F
Rmc @ BHT	@	°F	@	°F

Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

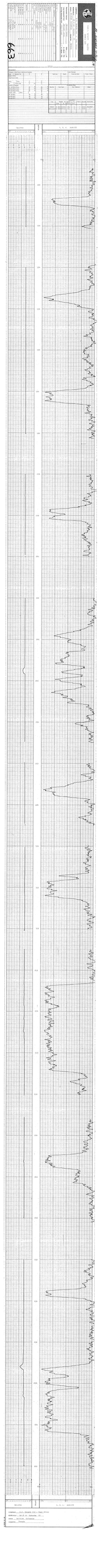
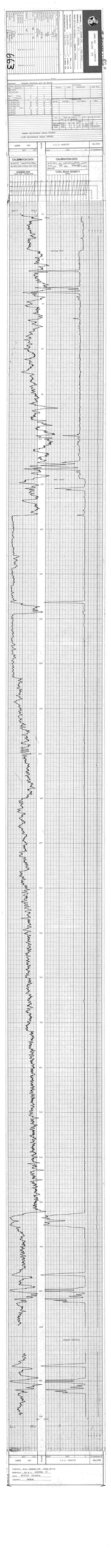
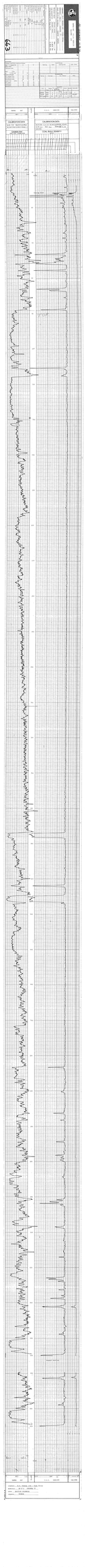
Run No	Tool Type	Tool Position	Other

Logging Data

Log	Depths m From	To	Speed m/min	TC Sec	Norm	Sonde No	Source No
HRD	9 Details		2¼	1	-	15	HR2

DEPTHS | H. R. DENSITY | 7200 CPS 4200

DEPTHS | 7200 CPS 4200 | H. R. DENSITY

COMPANY B.P. Canada Ltd - Coal Group
BOREHOLE BP # 19 Sukunka 77
STATE British Columbia
COUNTRY Canada

MY (8) 58360 R