GEOLOGICAL
ASSESSMENT REPORT

K- Sage Creek 71(3)A

DRILL HOLE LOGS DH 1 to DH 20A

Sage Creek Coal Ltd

Rio Tinto.

00359

(1)

LITHOLOGIC SYMBOLS (CURRENT)

This symbol chart for the new graphic log form, adopted July 1, 1957, is to be used on all logs with numbers including and subsequent to those listed below:

Denver, Colorado	D-896
Casper, Wyoming	CW-882
Billings, Montana	M-432
Calgary, Alberta	C-1006
Regina, Saskatchewan	R-1025

ROCK TYPES

- SIDERITE, bedded
- SANDSTONE
- SILTSTONE
- BENTONITE
- COAL
- SALT
- GYPSUM
- MARLSTONE, limy-dolomitic
- LIMESTONE
- DOLOMITE, primary
- DOLOMITE, secondary
- ANHYDRITE, primary
- ANHYDRITE, secondary
- SHALE, light gray
- SHALE, medium gray
- SHALE, dark gray
- SHALE, black
- COLORED SHALES, light hue
- COLORED SHALES, medium hue
- COLORED SHALES, dark hue
- CLAYSTONE, light gray
- CLAYSTONE, medium gray
- CLAYSTONE, dark gray
- CLAYSTONE, black
- COLORED CLAYSTONE, light hue
- COLORED CLAYSTONE, medium hue
- COLORED CLAYSTONE, dark hue
- GLACIAL TILL
- CONGLOMERATE, example, 40% cht, 40% ls, 10% dol pbl, 10% sgnd
- BRECCIA
- GRANITE WASH!
- IGNEOUS, basic
- IGNEOUS, acidic
- VOLCANIC
- METAMORPHIC

ACCESSORIES THAT CAN BECOME A ROCK TYPE

percentage use of accessory symbols per ten-foot intervals	
0 to 5% = no symbols 5 to 20% = 1 symbol	20 to 40% = 2 symbols 40 to 50% = 3 symbols

- ARKOSIC
- ARGILLACEOUS, disseminated
- DOLOMITIC
- CALCAREOUS
- ANHYDRITIC
- GYPSIFEROUS
- FLOATING SAND GRAIN
- SILTY
- SANDY
- ARGILLITE GRAIN
- CHERT, light and dark
- CHERT, tripolitic
- CHERT, sandy and oolitic
- NODULES, Fe-st
- NODULES, limy
- NODULES, dolomitic
- NODULES, phosphatic
- NODULES, siderite
- SIDERITE PELLETS
- GLAUCONITIC
- SALT CAST or INFILL

TEXTURE

- L — LITHOGRAPHIC
- CX — CRYPTOCRYSTALLINE
- e — EARTHY
- C — CHALKY

MISCELLANEOUS

- KARST TOPOGRAPHY
- VERY POOR SAMPLES (Questionable Interpretation)
- CAVINGS, cannot interpret
- NO SAMPLES

ROCK BUILDERS

percentage use of rock builder symbols per ten-foot intervals	
0 to 20% = F 20 to 50% = 1 symbol	50 to 70% = 2 symbols 70 to 100% = 3 symbols

- ALGAL, nondescript
- ALGAL, encrusting
- ALGAL, oötoid
- ALGAL, coralline
- BIOCLASTIC or FRAGMENTAL
- PSEUDO OÖLITES or PELLETS
- CORAL
- STROMATOPOROID
- BRYOZOA
- FORAMINIFERA
- CRINOID
- OÖLITES
- MOLLUSKS

ACCESSORIES

- MARL, limy
- MARL, dolomitic
- LIMESTONE STREAKS
- DOLOMITE STREAKS
- P — PYRITE
- B — BENTONITIC
- SILICEOUS
- SHALE, laminae
- SIDERITE CEMENT
- S — PLANT SPORES
- MINERAL CRYSTALS
- CALCITE CRYSTALS
- PLANT REMAINS
- FISH REMAINS
- F — FOSSILS

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ABBREVIATIONS OF DEPOSITIONAL ENVIRONMENTS

R — Residual
E — Eolian
G — Glacial
C — Colluvial

FLUVIAL
Ft — Turbulent
Fa — Agitated
Fi — Intermittent
Fq — Quiet
Fb — Bog

LACUSTRINE
Lt — Turbulent
La — Agitated
Li — Intermittent
Lq — Quiet
Lb — Bog
Lp — Penesaline
Ls — Saline
Lh — Hypersaline
Lr — Reef
Lo — Organic

LACUSTRINE STRAND
L̲t — Turbulent
L̲a — Agitated
L̲i — Intermittent
L̲q — Quiet
L̲b — Bog

TRANSITIONAL or STRAND
Tt — Turbulent
Ta — Agitated
Ti — Intermittent
Tq — Quiet
Tb — Bog
Tp — Penesaline
Ts — Saline
Th — Hypersaline

MARINE
Mt — Turbulent
Ma — Agitated
Mi — Intermittent
Mq — Quiet
Me — Euxinic
Mp — Penesaline
Mr — Reef
Ms — Saline
Mh — Hypersaline
Mo — Organic

COMMON ABBREVIATIONS (CURRENT)

This list of abbreviations for the new graphic log form, adopted July 1, 1957, published by the A.A.P.G., September, 1957, Vol. 41, No. 9, pp. 2103-07, will be used on all logs with numbers including and subsequent to those listed below:

Denver, Colorado	D-896
Casper, Wyoming	CW-882
Billings, Montana	M-432
Calgary, Alberta	C-1006
Regina, Saskatchewan	R-1025

@	At
abnt	Abundant
abv	Above
acic	Acicular
aft	After
agg	Aggregate
aglm	Agglomerate
Alg	Algae (al)
alt	Altered (ing)
amb	Amber
amor	Amorphous
Amph	Amphipora
amt	Amount
andes	Andesite (ic)
ang	Angular
anhed	Anhedral
anhy	Anhydrite (ic)
apr	Apparent
aprox	Approximately (ly)
arag	Aragonite
aren	Arenaceous
arg	Argillaceous
argl	Argillite
ark	Arkose (ic)
asph	Asphalt (ic)
av	Average
bar	Barite (ic)
bcm	Become (ing)
bd	Bed
bdd	Bedded
bdg	Bedding
Belm	Belemnites
bent	Bentonite (ic)
bf	Buff
bioc	Bioclastic
biot	Biotite
bit	Bitumen (inous)
bl	Blue (ish)
bldr	Boulder (256 mm +)
blk	Black
blky	Blocky
bnd	Band (ed)
Brac	Brachiopod
brec	Breccia (ed)
bri	Bright
brit	Brittle
brn	Brown
Bry	Bryozoa
btry	Botryoidal
c	Coarse (ly)
¢	Core
calc	Calcite (areous)
carb	Carbonaceous
cbl	Cobble (64-256 mm)
Ceph	Cephalopod
cgl	Conglomerate
Chaet	Chaetetes
chal	Chalcedony
chit	Chitin (ous)
chk	Chalk (y)
choc	Chocolate
cht	Chert
chty	Cherty
c-in-c	Cone-in-cone
clas	Clastic
cln	Clean
clr	Clear
clus	Cluster
cly	Clay (ey)
clyst	Claystone
cmt	Cement (ed)
cncn	Concentric
cntr	Center (ed)
col	Color (ed)
com	Common
conc	Concretion (ionary)
conch	Conchoidal
Cono	Conodont
cons	Considerably
contm	Contaminated
coq	Coquina
Cor	Coral
cpct	Compact
cren	Crenulated
Crin	Crinoid (al)
crm	Cream
crnk	Crinkled
crpxl	Cryptocrystalline
ctc	Contact
ctgs	Cuttings
cvg	Caving
Cyp	Cypridopsis
dd	Dead
deb	Debris
decr	Decrease (ing)
dend	Dendrite (ic)
dia	Diameter
dif	Difference
dism	Disseminated
dk	Dark (er)
dns	Dense (er)
do	Ditto
dol	Dolomite (ic)
dolc	Dolocast (ic)
dolmd	Dolomold (ic)
dolst	Dolostone
drlg	Drilling
drsy	Druse (y)
dtrl	Detrital (us)
Ech	Echinoid
elg	Elongate
elip	Elliptical
Endo	Endothyra
ent	Enlarged
equiv	Equivalent
euhed	Euhedral
evap	Evaporitic
extr	Extrusion (ive)
f	Fine (ly)
fac	Facet (ed)
fau	Fauna
Fvst	Favosites
Fe	Iron-Ferruginous
Fe-st	Ironstone
fib	Fibrous
fig	Figure (d)
fis	Fissile
fl	Fill-filled
flat	Flattened
fld	Feldspar (thic)
flk	Flake
flky	Flaky
flor	Fluorescence
fls	Flesh
flt	Fault (ed)
fltg	Floating
fm	Formation
fnt	Faint (ly)
fol	Foliated
Foram	Foraminifera
fos	Fossil (iferous)
fr	Fair
frac	Fracture (ed)
frag	Fragment (al)
fri	Friable
fros	Frosted
frs	Fresh
Fus	Fusulinid
g	Good
Gast	Gastropod
gil	Gilsonite
gl	Glass (y)
glau	Glauconite (ic)
Glob	Globigerina
glos	Gloss (y)
gn	Green
gns	Gneiss
gr	Grain (ed)
gran	Granular
Grap	Graptolite
grd	Grade (ed)
grdg	Grading
grnl	Granule (2-4 mm)
grnt	Granite
grnt.w	Granite wash
grty	Gritty
gsy	Greasy
gvl	Gravel
gy	Gray
gyp	Gypsum (iferous)
gywk	Graywacke
hd	Hard
hem	Hematite (ic)
hex	Hexagonal
hi	High
hky	Hackly
hrtl	Horizontal
hvy	Heavy
hydc	Hydrocarbon
ig	Igneous
imbd	Imbedded
imp	Impression
incl	Included (sion)
incr	Increase (ing)
ind	Indurated
indst	Indistinct
Inoc	Inoceramus
intbd	Interbedded
intcl	Interclast(s)
intfrag	Interfragmental
intgran	Intergranular
intgwn	Intergrown
intlam	Interlaminated
intpt	Interpretation
intr	Intrusion (ive)
intstl	Interstitial
intv	Interval
intxl	Intercrystalline
invrtb	Invertebrate
ireg	Irregular
irid	Iridescent
jasp	Jasper (oid)
jts	Joints
kao	Kaolin
lam	Laminated
lav	Lavender
lchd	Leached
len	Lentil (cular)
lg	Long
lig	Lignite (ic)
lith	Lithographic
lmn	Limonite (ic)
lmpy	Lumpy
lmy	Limy
lngl	Linguloid
low	Lower
lrg	Large (er)
ls	Limestone
lse	Loose
lstr	Lustre
lt	Light (er)
ltl	Little
m	Medium
magn	Magnetic
mar	Maroon
mas	Massive
mat	Material, matter
mbr	Member
mdst	Mudstone
meta	Metamorphic
msm	Metasomatic ous
mica	Mica (ceous)
micfos	Microfossil (iferous)
mic-mica	Micro-Micaceous
micxl	Microcrystalline
mid	Middle
mky	Milky
mnr	Minor
mnrl	Mineral (ized)
mnut	Minute
mod	Moderate
Mol	Mollusca
mot	Mottled
mrlst	Marlstone
mtx	Matrix
musc	Muscovite
n	No, non
nac	Nacreous
nod	Nodule (ar)
num	Numerous
o	Oil
obj	Object
occ	Occasional
och	Ochre
od	Odor
olv	Olive
ooc	Oolicast (ic)
ool	Oolite (ic)
oom	Oomold (ic)
op	Opaque
org	Organic
orng	Orange
orth	Orthoclase
Ost	Ostracod
ox	Oxidized
p	Poor (ly)
pap	Paper (y)
Para	Paraparchites
pbl	Pebble (4-64 mm)
pbly	Pebbly
pch	Peach
Pdct	Productids
pel	Pellet
perm	Permeability
pet	Petroleum (iferous)
phos	Phosphate (ic)
piso	Pisolite (ic)
pit	Pitted
pk	Pink
plag	Plagioclase
plas	Plastic
Plcy	Pelecypod
pl fos	Plant fossils
plty	Platy
pol	Polish (ed)
por	Porous (sity)
porc	Porcelaneous
pos	Possible (ility)
p-p	Pin point
pred	Predominate (ly)
pres	Preserved (ation)
prim	Primary
pris	Prism (atic)
prly	Pearly
prob	Probable (ly)
prom	Prominent (ly)
psdo	Pseudo
pt	Part (ly)
ptg	Parting
purp	Purple
pyr	Pyrite (ic) (ized)
pyrbit	Pyrobitumen
pyrclas	Pyroclastic
qtz	Quartz
qtzc	Quartzitic
qtzs	Quartzose
qtzt	Quartzite
rad	Radiate (ing)
rd	Round (ed)
reg	Regular
repl	Replaced (ing) (ment)
resd	Residue (al)
rhmb	Rhomb (ic)
rk	Rock
rmn	Remains (nant)
rng	Range (ing)
ro	Rose
rr	Rare
rsns	Resinous
rthy	Earthy
s	Small
sa	Salt
sa-c	Salt cast (ic)
S	Sulphur
sach	Saccharoidal
sal	Salmon
s&p	Salt & pepper
sat	Saturated
sb	Sub
sc	Scales
scat	Scattered
sch	Schist
Scol	Scolecodonts
sd	Sand (1/16-2 mm)
sdy	Sandy
sec	Secondary
sed	Sediment (ary)
sel	Selenite
sft	Soft
sh	Shale
shad	Shadow
shy	Shaly
sid	Siderite (ic)
sil	Silica (eous)
sks	Slickensided
sl	Slight (ly)
slky	Silky
slt	Silt
sltst	Siltstone
slty	Silty
sm	Smooth
sol	Solution
sp	Spot (ted) (ty)
spec	Speck (led)
Spfr	Spirifers
Spg	Sponge
sph	Spherules
sphal	Sphalerite
spic	Spicule (ar)
spl	Sample
splty	Splintery
Spr	Spore
sy-Ca	Sparry calcite
srt	Sort
srtd	Sorted
srtg	Sorting
ss	Sandstone
st	Stone
stn	Stain (ed) (ing)
str	Streak
strat	Strata (ified)
strg	Stringer
stri	Striated
Strom	Stromatoporoid
struc	Structure
styl	Stylolite (ic)
suc	Sucrosic
sug	Sugary
surf	Surface
srct	Sericite
sz	Size
tab	Tabular
Tent	Tentaculites
tex	Texture
tgh	Tough
thk	Thick
thn	Thin
thru	Throughout
tr	Trace
Trilo	Trilobite
trip	Tripoli (ic)
trnsl	Translucent
trnsp	Transparent
Troc	Trochiliscus
tt	Tight (ly)
tub	Tubular
tuf	Tuffaceous
unconf	Unconformity
uncons	Unconsolidated
uni	Uniform
up	Upper
v	Very
var	Variable
vcol	Varicolored
ves	Vesicular
vgt	Varigated
vit	Vitreous
vn	Vein
volc	Volcanics
vps	Very poor samples
vrtb	Vertebrate
vrtl	Vertical
vrvd	Varved
vug	Vug (gy) (ular)
/	With
w	Well
wh	White
wk	Weak
wthr	Weather
wthrd	Weathered
wtr	Water
wvy	Wavy
wxy	Waxy
xbd	Cross-bedded
xbdg	Cross-bedding
xl	Crystal (line)
xlam	Cross-laminated
yel	Yellow
zeo	Zeolite
zn	Zone

RIO TINTO CANADIAN EXPLORATION LIMITED

DIAMOND DRILL RECORD

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

HOLE NO.: SCC #1 | PROPERTY: Sage Creek Coal

LOCATION: Dally Hill | ELEVATION: 5,075' (approx.)

AZIMUTH: | DIP: -60°

TOTAL DEPTH: 555.5' | PROBED DEPTH: 552'

HOLE SIZE: HQ | CORE SIZE: 2½"

DATE STARTED: November 8, 1971 | DATE COMPLETED: December 13, 1970

CONTRACTOR: Boyles Bros.

LOGGED BY: Owen Cullingham | DATE: December 17, 1970
PROBED BY: Roke Oil Enterprises | DATE: December 13, 1970

Interval	Unit Thick. (feet)	Description	∡ of bdg to core	Core Evaluation	Est. Rec.
0.0- 17.0	17.0'	No Core Probably sh/thn coal stringers			0
17.0- 45.5	28.5'	Sh: m dk gy, some slty sections, carb in parts; assoc. py, some pl frags and coalified wood		Broken to good	48
45.5- 47.0	1.5'	Sltst: m gy, arg.		Broken	70
47.0- 50.0	3.0'	Sh: m gy, sl slty		Broken	50
50.0- 52.5	2.5'	Sltst: m gy, sl arg and shy		Broken to fair	50
52.5- 82.0	29.5'	Sh: m to dk gy, some slty sections some py, some pl frags. sl carb. 67.0-77.0: Lost core		No core to fair	28
82.0- 83.0	1.0'	Ss: m gy, v f gr		Broken	60
83.0- 84.0	1.0'	Sltst: m gy		Fair	70
84.0- 93.0	9.0'	Sh: m to m dk gy, sl carb, thn bnds of arg sltst. 85.0-86.0: Brec. zn.		Broken to good	78
93.0-104.0	11.0'	Sltst: m dk gy, arg, hd, some slty bnds, Fe stns 103.3-104.0: Lost Core.		Good	82
104.0-138.8	34.8	Ss: m gy, v f to m gr; gr sz incr downwards; s and p tex som Fe gr, mod srtd r x-bbd hd and mas. 113.6-128.0: Lost Core 129.5-131.0: Lost Core 137.0-138.0: Lost Core		Poor & broken	38

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Interval	Unit Thick (feet)	Description	% of bdg to core	core Evaluation	Est. Rec.
138.8-148.0	9.2	Sh/coaly Sh: dk gy and blk; v carb 140.0-140.4: Arg. coal 140.4-143.0: coaly sh & shy coal 143.0-143.3: drill coal 143.3-146.5: Sh, dk gy 146.5-148.0: Lost core		Broken	65
148.0-160.0	12.0	Sh: m dk gy, slty in parts 153.9-155.0: No core 156.9-158.0: No core		Good to broken and lost	65
160.0-163.0	3.0	Ss: v f gr to sltst sz		Good	97
163.0-181.2	18.2	Sh: lt gy to dk gy, slty & sdy in parts 170.0-171.0: Ss, m gy, f gr 175.0-177.4: Lost Core 179.0-181.2: Lost Core		Broken to good	65
181.2-199.7	18.5	Ss: m gy, f to m gr, c in places s & p tex, x bdd, hd 184.5-189.0: Lost Core		Broken to good	64
199.7-207.0	7.3	LOST CORE		-------	--
207.0-278.5	71.5	Sh: m dk gy to dk gy sl slty & carb in places,/ coalified wd frags & pl rmn 215.8-216.6: Brec zn 219.1-220.0: Ss, m brn slt, fri 248.7-253.7: slst, dk gy, arg 262.0-262.9: Slst, m dk gy, arg 265.9-267.0: Lost Core 275.8-276.0: Coal band, fusain & clarain 276.0-277.0: Lost Core		Good to crumbled	77
278.5-355.0	76.5	COAL/sh ptgs			
		278.5-281.0: v arg, fri, prly /str some py			70
		281.0-283.0: Lost core			0
		283.0-284.4: clarain/vitrain splinters, some dull fusain frags.		Fragmental	70
		284.4-284.6: Sh, dk gy			60
		284.6-286.8: clarain/fusain some vitrain.		Fragmental	50
		286.6-286.8: rusty, dull fusain arg, py, mica		Fragmental	70
		286.8-287.2: Lost Core			0
		287.2-287.5: dk gy-blk carb sh, bnd		Broken	60
		287.5-288.7: mostly clarain, some vitrain, smooth frac, slky/str		Fragmental to broken	70
		288.7-289.1: Lost Core			0
		289.1-290.7: mostly clarain, slty / str, some conch frac		Broken to good	85
		290.7-291.1: mostly clarain, 20% vitrain, thn lam		Good core	95

Interval	Unit Thick. (feet)	Description	% of bdg to core	core Evaluation	Est. Rec.
		291.1-291.5: Lost Core			0
		291.5-292.0: mostly clarain/ fusain splints, py, slks, fault		Good core	100
		292.0-292.6: Lost Core			0
		292.6-293.6: clarain/fusain, bnds & arg splints		Broken	70
		293.6-293.9: mostly vitrain, clean conch frac		Broken	70
		293.9-294.1: claro-fusain, py, dull to prly, / str		Broken	70
		294.1-295.1: claro-fusain, dull prly / str, arg splints, py		Fragmental	70
		295.1-295.8: duro-fusain, earthy to touch, gy, py		Fragmental	70
		295.9-296.0: Lost Core			0
		296.0-296.9: clarain, slty/str		Broken	75
		296.9-297.1: vitrain, vit conch frac		Fragmental	60
		297.1-298.4: mostly clarain, prly / str		Broken	70
		298.4-299.0: mostly clarain/ claro-fusain ptgs, py, sks		Broken	75
		299.0-299.3: dull fusain/clarian		Good core	90
		299.3-299.7: clarain/fusain ptgs		Good core	90
		299.7-300.0: dull fusain, clarian ptgs, vitrain splints, clac fl frac.		Broken to good	80
		300.0-300.7: clarain, slky /str		Good	90
		300.7-300.8: vitrain, conch frac		Good	90
		300.8-301.0: clarain		Good	80
		301.0-301.1: arg coal		Fair core	70
		301.1-301.5: clarain/claro-fusain ptg, Sks		Fair core	75
		301.5-302.0: clarain/claro-fusain bnd, py, cak fl frac		Good	95
		302.0-302.1: durain, gy, earthy		Poor	30
		302.1-303.0: clarain, some vitrain & fusain frags, py		Fragmental	65
		303.0-303.2: Lost Core			0
		303.2-303.9: dull arg claro-fusain py		Fragmental	50
		303.9-304.1: vitrain, conch frac		Broken	50
		304.1-304.7: clarain, smooth frac prly lstr		Poor	30
		304.7-304.8: arg durain, lead gy		Broken	50
		304.8-306.4: clarain		Fragmental	40
		306.4-307.0: claro-fusain, dull to slky lstr		Good	70
		307.0-309.0: clarain/vitrain frags, slky lstr		Poor	35
		309.0-310.1: clarain, slky lstr		Fragmental	65
		310.1-310.3: coaly sh		Broken	40
		310.3-314.5: clarain, prly lstr		Good	90
		314.5-314.6: carb sh, dk gy		Broken	60
		314.6-315.0: durain		Fragmental	60
		315.0-316.4: clarain/vitrain bnds, conch frac		Good	100
		316.4-316.5: fusain, py, cal, fl frac		Good	100
		316.5-316.8: clarain to vitrain		Good	100

Interval	Unit Thick (feet)	Description	% of bdg to core	core Evaluation	Est. Rec.
		316.8-316.9: fusain, py, calc fl frac.		Good	100
		316.9-317.3: clarain to vitrain		Good	100
		317.3-317.6: clarain		Good	100
		317.6-317.9: fusain bnd, arg, brn earthy lstr.		Good	100
		317.9-318.0: clarain		Good	95
		318.0-319.0: arg coal, brn, thn bbd, dull lstr		Broken	80
		319.0-319.5: vitrain		Good	100
		319.5-320.0: claro-fusain, dull to prly lstr.		Good	90
		320.0-320.3: fusain, py		Good	80
		320.3-320.6: arg coal		Good	80
		320.6-321.4: Sh, v dk gy, carb, calc fl frac.		Good	90
		321.4-321.8: arg coal		Good	95
		321.8-322.0: Carb sh		Fragmental	20
		322.0-324.0: clarain, 60%, vitrain in 40% conch frac		Broken	65
		324.0-324.2: fusain		Fair	75
		324.2-325.0: clarain/vitrain ptgs		Broken	75
		325.0-325.1: carb sh, calc fl frac		Fragmental	50
		325.1-327.0: clarain/vitrain and fusain ptgs		Poor, fragmental	30
		327.0-329.5: clarain		Broken	70
		329.5-329.6: carb sh		Broken	30
		329.6-332.0: clarain, slky lstr		Broken	50
		332.0-332.1: vitrain, conch frac		Good	90
		332.1-333.0: clarain		Fragmental	40
		333.0-333.1 durain, lead gy, earthy		Fragmental	20
		333.1-334.0: clarain/fusain frags,		Fragmental	15
		334.0-334.5: clarain, calc fl frac		Fragmental	35
		334.5-335.6: arg coal, brn, slky lstr, py, calc fl frac		Fragmental	55
		335.6-337.6: Lost Core			0
		337.6-337.8: carb sh, m brn gy		Fragmental	20
		337.8-338.3: coaly sh		Broken	70
		338.3-339.6: sl arg coal, slky lstr		Broken	70
		339.6-339.7: clarain, slky lstr		Good	95
		339.7-341.2: fusain, rusty, py, some calc		Good to broken	90
		341.2-342.0: clarain and fusain, slky lstr, calc and py		Fragmental	30
		342.0-342.2: carb sh, dk gy		Fragmental	30
		342.2-342.5: clarain		Fair	70
		342.5-343.0: claro-fusain, py		Fair	70
		343.0-344.0: v arg coal, v slky to earthy		Fair	80
		344.0-345.0: Lost core			0
		345.0-345.5: v arg coal to coaly sh, v slky to touch, heavy talc flks		Good	100
		345.5-346.6: Lost Core			0
		346.6-348.0: v arg coal to coaly sh, slky to touch, talc ptgs		Broken	55
		348.0-349.0: Lost Core			0
		349.0-350.0: coaly sh, slky to touch heavy talc ptgs		Good	90
		350.0-351.0: Lost Core			0
		351.0-352.1: carb sh, v dk gy/ coalified wood inclusions earth lstr, slky to touch		Good	90

Interval	Unit Thick (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
		352.1-354.6: clarain 80%, vitrain 15%, fusain 5%		Fair	75
		354.6-354.8: v arg coal, v slky to touch talc		Broken	90
		354.8-355.0: carb sh/coalified wood rmn		Broken	90
355.0-417.0	62.6	Sh: m to dk gy/some carb ptgs, plant rmns, coal bnds. Coal bands at: 372.1, 0.5' 373.7, 0.3' 375.3, 0.3' 376.2, 0.1' 376.8, 0.6' 382.2, 0.4' 389.6, 0.4' 393.2, 0.2' 393.7, 0.7' 397.6, 2.4' 408.4, 0.2' 409.7, 0.1' 415.0, 1.1'			72
417.6-422.3	4.7	COAL			
		417.6-418.0: shaly coal, py, sks		Good	95
		418.0-419.8: clarain/vitrain, fusain and arg coal ptgs.		Good	80
		419.8-419.9: fusain		Good	100
		419.9-420.8: durain		Good	95
		420.8-420.9: fusain		Good	100
		420.9-421.0: clarain/vitrain ptgs		Good	95
		421.0-421.1: fusain, some arg material		Good	100
		4 421.1-421.6: vitrain/clarin, intrlmn		Good	95
		421.6-422.0: carb sh, v dk gy, coalified plant rmns,		Good	100
		422.0-422.3: claro-vitrain/fusain ptgs, conch frac		Good	90
422.3-423.8	1.8	Sh: dk gy, some carb ptgs		Fair	95
423.8-427.0	3.0	Sltst: m dk gy, arg, grdg to v f gr hd ss		Good	95
427.0-467.2	40.2	Sh: m dk gy/carb ptgs			
		433.6-434.8: sltst to v f gr ss, m gy arg			
		441.3-442.3: carb sh & coaly sh			
		443.0-443.9: Brec zn			
		444.6-445.5: ss, v f to f gr, arg some carb trash			
		445.5-446.0: Ss, f to m gr, s & p tex, hd			
		457.2-457.6: carb sh			
		457.6-457.8: Coal claro-fusain sh splints			
		457.8-460.2: carb sh/coal stringers			
		460.2-460.5: Ss, m gy, f gr, arg hd.			

Interval	Unit Thick. (feet)	Description	% of bdg to core	core Evaluation	Est. Rec.
467.2-494.3	27.1	Ss: m gy, f to m gr, arg, hd, w bdd, some xbdg. Coalified wood & coal ptgs in lower part of section			75
		467.4-467.7: sh, m dk gy			
		468.4-470.0: Brec zn			
		470.0-472.0: Lost Core			
		486.8-488.0: Lost Core			
		489.0-490.0: Lost Core			
494.3-538.0	43.7	COAL:			
		494.3-494.6: clarain, arg, smooth frac		Fragmental to ground	95
		494.6-495.0: 70% clarain, 30% vitrain, intlam		Fragmental	95
		495.0-495.8: clarain, dull to bright		Fragmental	95
		495.8-497.0: Lost Core			0
		497.0-497.3: clarain		Broken	80
		497.3-497.5: durain		Fair	95
		497.5-498.2: clarain, some py		Fair	95
		498.2-498.7: claro-fusain py		Fair	95
		498.7-499.9: clarain/vitrain ptgs conch frac.		Fair	95
		499.9-500.6: claro-fusain, dull gy, py		Broken	95
		500.6-502.0: Lost Core			
		502.0-502.8: claro-fusain, arg, dull		Good	95
		502.8-503.0: coaly sh		Good	100
		503.0-503.4: Lost Core			0
		503.4-504.0: claro-fusain, sl arg		Broken	95
		504.0-504.1: Ss, m gy, f gr, carb		Broken	85
		504.1-504.8: clarain, arg		Broken	95
		504.8-505.0: coaly sh		Good	95
		505.0-505.6: clarain, some py		Broken	90
		505.6-505.8: Sh, dk gy, carb ptgs		Broken	85
		505.8-506.5: Lost Core			0
		506.5-508.0: coaly sh to carb sh dk gy.		Good	90
		508.0-508.5: coal, v arg, plty,py		Fair	80
		508.5-509.0: Lost Core			0
		509.0-509.8: coal, v arg, plty sks		Broken	90
		509.0-510.0: coaly sh/coalified wood		Broken	90
		510.0-511.0: Lost core			0
		511.0-511.5: arg fusain/vitrain ptgs, wood strucs		Broken	90
		511.5-512.5: Lost Core			0
		512.5-513.5: clarain/vitrain, some arg. coal frags		Fragmental	90
		513.0-514.0: Lost core			0
		514.0-514.4: claro-fusain, sl arg		Broken	95
		514.4-514.5: Sh & coaly sh, dk gy to lead gy		Broken	95
		514.5-516.5: Lost Core			0
		516.5-517.0: claro-fusain, arg, py		Broken	80
		517.0-518.5: Lost Core			0
		518.5-518.7: clarain, arg		Broken	70
		518.7-519.0: Sh, carb & coaly, dk gy		Broken	85

Interval	Unit Thick (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
		519.0-519.2: clarain, plty, sks		Broken	90
		519.2-519.7: sh, carb & coaly dk gy		Broken	90
		519.7-522.0: Lost Core			0
		522.0-522.7: frags of clarain/ vitrain		Fragmental	100
		522.7-525.0: Lost Core			0
		525.0-525.9: clarain 70%, vitrain 30%.		Good	100
		525.9-526.5: claro-fusain, arg		Good	100
		526.6-526.6: fusain		Good	95
		526.6-526.8: clarain, smooth frac		Broken	90
		526.8-528.0: claro-fusain arg		Broken	90
		528.0-528.5: Lost Core			0
		528.5-528.8: vitrain 70%, clarain 30%		Good	100
		528.8-529.0: clarain		Broken	100
		529.0-530.4: clarain & vitrain		Broken	90
		530.4-532.6: clarain 70%, vitrain 20%, shale to fusain 10%		Fair	90
		532.6-532.8: clarain		Fair	95
		532.8-533.0: claro-fusain, dull		Fair	95
		533.0-534.8: clarain/vitrain, conch frac, sm to touch		Fair	95
		534.8-534.9: fusain, dull lead gy		Good	100
		534.9-537.5: clarain 80%, vitrain 18%, fusain 2%		Fair	95
		537.5-537.7: claro-fusain, dull		Fragmental	75
		537.7-537.9: vitrain, some slt grs		Good	100
		537.9-538.0: claro-vitrain, shaly to slty, py		Good	95
538.0-555.5	17.5	Ss: m dk gy to m gy, v f to m gr, hd occasionally arg, grows cleaner with depth.		Broken	97
555.5		END OF HOLE.			

RIO TINTO CANADIAN EXPLORATION LIMITED

DIAMOND DRILL RECORD

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

HOLE NO.: SCC #2A

PROPERTY: SAGE CREEK COAL

LOCATION: Dilly Hill

ELEVATION: 5,015' (Approx.)

AZIMUTH: -

DIP: -90°

TOTAL DEPTH: 509'

PROBED DEPTH: -

HOLE SIZE: HQ

CORE SIZE: 2½"

DATE STARTED: January 10, 1971.

DATE COMPLETED: February 5, 1971 (abandoned)

CONTRACTOR: Boyles Bros.

LOGGED BY: Owen Cullingham

DATE: February 6, 1971.

Interval	Unit Thick. (feet)	Description	∠ of bdg to core	Core Evaluation	Est. Rec.
0.0- 99.0	99.0	NO CORE - Tricone Drilled for 99 ft.	-	-	-
99.0-102.8	3.8	Ss m.gy., f gr, fairly clean x bbd, mod sorted, hd.	60°	Fair to gd	100%
		101 -101.7 Sh m gy sl slty			
102.8-149.0	46.2	Sh m to m dk gy - some silky bnds, some ss bnds and some coal strgs. - carb.		Broken to fair	95%
		103.8-104.0 Ss m dk gy, f gr well bdd	60°		
		107.2-107.4 Ss same as above	60°		
		107.8-107.9 Coal bnd prbly cl.			
		108.6-108.7 Ss same as above but more arg.			
		115.0-115.4 Ss same as above-quite arg.			
		119.5-121.0 Sh dk gy - v. carb - coaly sh in part.			
		123.0-123.5 Ss m gy, f gr, arg.			
		129.0-129.6 Sltst h v f gr ss - m gy, mod hard			
		130.8-131 Coaly sh bnd			
		131.0-131.4 Breccia Zone			
		132.5-132.8 Shaly coal bnd - some pyr			
		143.8-145.0 Ss m lt gy f gr ss mod hard, quite arg, coalified pl remn			

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Interval	Unit Thick. (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
149.0-178.2	29.2	Ss m gy, m-c gr - Fe stn - massive - hd - (Middle Kootenay) Fractured - mod. sorted - gd poros. 157.4-157.6 Ss m dk gy, f gr, contains coal (bright) 177.5-177.9 Ss /coal as above.	58°	Fair to gd	90%
178.2-183.7	5.5	Ss m gy to m dk gy, arg, contains coalified pl. remn (wooded structure) - v f gr to f gr	60°	Fair to gd	90%
183.7-189.5	5.8	Ss m gy m gr to coarse gr, massive, fractured - Fe stn - hd - mod sort	55°	Gd	90%
189.5-192.6	3.1	Coal Horizon 189.5-190.1 Coal shiny, smooth fractures, silky to touch prbly clarain, some pyr. 190.1-190.4 Coaly sh dull earthy hd. 190.4-190.8 Coal silky lustre, smooth fractures, laminated prbly clarain. 190.8-191.0 Arg Coal dull lustre laminated 191.0-191.7 Coaly Sh dull - hd 191.7-192.2 Arg Coal dull to shiny hd. 192.2-192.6 Coal shiny lustre, smooth and conchoidal fracturing prbly vitro-clarain 80% cl and 20% vit.	-	Broken to fair	75%
192.6-207.0	14.4	Sh m dk gy pl frag - carb some coalified wd or pl frag. 196.0-199.0 V slty sh to arg sltst m dk gy some coalified pl frag. 199.0-199.5 Ss m gy bm f gr channel fill ss - graded - well sorted - x bdd. 199.5-201.0 V slty sh or arg sltst - m dk gy. 202.6-203.0 Ss m bm gy v f - f gr graded giving bndd effect. Psbl channel fill - well sorted. 205.2-205.6 Ss m bm gy vf - f gr 206.6-207.0 Sh m bm, soft slty	-	Broken to gd	85%

Interval	Unit Thick (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
207.0-233.0	26.0	Ss m gy, m gr, hd, massive mod to well sorted, approached c gr in places	-	Gd core	95%
233.0-241.5	8.5	Sltst m gy, arg, mod hd, some coalified pl frag - coal specks 236 -238 Sh m dk gy, slty.	64°	Broken to fair	90%
241.5-246.5	5.0	Sh m dk to dk gy, slty in places, carb, some coal frag.			
246.5-262.5	16.0	Coal Horizon 246.5-247.0 Coal shiny, smooth and conchoidal fracturing prbly 80% cl and 20% vitr some assoc pyr, sks 247.0-249.0 NO CORE 249.0-249.3 Coaly sh dull - some pyr laminated 249.3-249.7 Coal shiny lustre, smooth fracture, laminated, some assoc pyr, small amnt vitr- 90% clar. 249.7-250.0 Sh dk gy 250.0-250.7 Coal shiny lustre, conchoidal and smooth fractures, some assoc pyr, prbly vitro - clarian - 70% d 30% vitr. 250.7-254.0 NO CORE 254.0-255.4 Coal shiny lustre, mostly clarain 12% fusain and 5% durain. 255.4-258 NO CORE 258.0-258.4 Coaly sh 258.4-260.5 Sh dk gy, carb, pl frag, coaly frag. 260.5-261.0 Coal silky lustre, smooth and conchoidal fract. appears thnly lamin 90% cl - 10% vit, some pyr flakes 261.0-261.6 Sh carb, coalified pl frag 261.6-261.8 Coaly sh 261.8-262.6 Shly coal dull to silky lustre, prbly about 50% ash.	-	Fragmental to broken	35%

Interval	Unit Thick. (feet)	Description	% of bdg to core	core Evaluation	Est. Rec.
262.6-272.5	9.9	Sh dk gy, carb, some coal ptgs to coalified pl remn. 264.0-265.0 Arg sltst m dk to dk gy graded to give bndd effect. 266.6-267.0 Breccia Zone 268.2-268.8 Coaly sh wooded struct in coal. - Heavy prbly 75% ash.	-	Fair to gd	90%
272.5-287.0	14.5	Coal Horizon 272.5-273.4 Shly Coal some pyr in fract sks approx 40% ash. 273.4-273.8 Coal sks, some assoc pyr dull to silky lustre, prbly cl blocky fract sh splints. 273.8-274.2 Sh dk gy, carb, / coal splints. 274.2-274.3 Coal bnd clean coal, wooded struct, conchoidal fract, shiny, vitr. 274.3-275.4 Sh dk gy, carb/coal splints. 275.4-276.0 Coaly sh hvy, coal is shiny, prbly ash content aprox 70%. wd struct. 276.0-276.9 Sh dk gy, carb/coal ptgs sks some pyr in fissures. 276.9-277.8 Shly coal dull, sks, some assoc pyr prbly 40% ash. 277.8-278.5 Coal fairly clean to touch, conchoidal to smooth fracturing, thn to thk laminations glossy to silky lustre some striations due to pl struct - some isolated pyr 60% vitr - 40% clar. 278.5-280.0 NO CORE 280.0-282.5 Coal fairly clean to touch, conchoidal and smooth fracturing, some isol pyr, bright to silky lustre prbly claro vitrain - 60% cl and 40% vitr. 282.5-282.8 Sh bnd dk gr, hvy, coal splints. 282.8-283.1 Coal shiny and bright conchoidal fracturing, woody structure, clean to touch, vitr. 283.1-283.4 Sh bnd dk gy, hvy/ coal splints.	-	Broken to fair	65-70%

Interval	Unit Thick. (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
272.5-287.0	14.5	Coal Horizon - cont'd 283.4-283.5 Coal smooth fracture, laminated, ash content aprox 35% prbly clar. 283.5-283.7 Sh bnd dk gy,/coal splints 283.7-284.0 Coal to shly coal - some pyr shiny to dull in parts brittle vitrain to clarain sh splints. 284.0-284.4 Sh dk gy, bnd, carb. / coal splints. 284.4-287.0 NO CORE			-
287.0-295.5	8.5	Sh dk gy, carb / coal splints formed from coalified pl mat bnd in places, prbly a current feature. - In places approaching coaly sh. 292.0-292.2 Coal bnd brittle shiny, pl struct vitr some pyr.	-	Fair	90%
295.5-345.0	49.5	Sh m dk gy, bnd in places due to slight variation in gr size - approaches slt size in places, slty in places, some pl frag and wd structures, sl coalified and / pyr.	-	Gd	95%
345.0-389.0	44.0	Ss m to m dk gy, grading from v f to f to m gr mod to well sorted, x bdd, hd occas carb ptgs / assoc pyr 345 -345.8 Ss bnd/lenses of sh gradational contacts m, gy bm finely bdd 354.5-355 Sh m dk gy, bnd. 359.6-360 Sh m dk gy, slty, sl carb. 387.0-389.0 Ss m gy, m gr / coal splints left from coalified to d remn.	58° 63	Gd	100%
389.0-464.4	75.4	Sh m dk to dk gy, carb in part, slty in part some / coal splints some pl frag. 389.0-389.6 Sh dk gy, some coal splints in sh. 409.6-410.8 NO CORE 420.6-420.8 Coal Ptg shiny, clean pos vitrain- wd structures. 422.0-423.5 V arg sltst m dk gy hd shows v thn laminations in bdg. 433.0-433.8 Sh m dk gy, pl frag	63°	Broken to good	95%

Interval	Unit Thick. (feet)	Description	% of bdg to core	core Evaluation	Est. Rec.
389.0-464.4	75.4	Sh - Cont'd 445.0-445.8 Coaly sh v dk gy hvy, coal splints and ptgs shiny to dull coal ptgs. 446.0-447.0 Coaly sh / bnd of v arg coal bnd are < 0.1' v dk gy. Coal is dull to shiny. Some coal splints and strg. 447.8-448.0 Coaly sh v dk gy hvy			
464.4-492.0	27.6	Coal Horizon 464.4-464.6 V Arg Coal sks dull gy hvy. 464.6-466.1 Coal thn-thk bnds to laminated, smooth / some conchoidal fract. silkiness lustre. 90% cl 10% vitrain some pyr. 466.1-466.3 Coal v brittle conchoidal fracture, vitrain, clean to touch. 466.3-467.7 Coal arg, dirty to touch fragmental, prbly dirty clarain. sks some pyr. 467.7-468.0 Coal v sl arg, clarian smooth fract, smooth lustre, some pyr sks. 468.0-470.1 NO CORE 470.1-471.2 Ss m lt gy, v f-f gr mostly cavings, some coal frag. Questionable interpretation. 471.2-472.5 NO CORE 472.5-473.0 Coal thn to thk laminated, silky lustre, some assoc pyr, sks prbly v sl arg clarian. 473.0-473.5 Coal fragmental-,arg, poor recovery prbly clar. 473.5-477.0 NO CORE 477.0-478.4 Coal thn-thk lam, arg, sks, some assoc pyr broken, prbly arg durain. 478.4-480.0 Coal v arg, sks, hvy, dull. 480.0-485.0 NO CORE 485.0-488.0 Coal shiny, v soft and crumbly, sks, conchoidal to smooth fract v sl arg fairly clean to touch. Prbly 70% clar and 30% vitrain. sh bnds in middle of intvl.	-	Fragmental to fair	40%

Interval	Unit Thick. (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
464.4-492.0	27.6	Coal Horizon - cont'd 488.0-490.2 NO CORE 490.2-491.0 Coal shiny brittle, clean to touch, striations due to pl fabric. 50% vitr and 50% clarain. 491.0-492.0 NO CORE			
492.0-508.7	16.7	Sh m gy some slky intvls, mod hd. Some pl remn	62°	Fair	80%
508.7-509	0.3	Coal Horizon 508.7-509.0 Coal thn horiz bnds, clean to touch, conchoidal and smooth fracture bright, prbly 60% vitrain and 40% clar sks	-	Broken	65%
		HOLE ABANDONED @ 509.0'			

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.

LSD
SEC
TWP
RGE
W ___ M

COMPANY: SANCO ENERGY CORP. LTD.

WELL: SEC. 21 1

LOCATION: FAIRLEY FIELD

FIELD: FAIRLEY-FAIRLEY

PROVINCE: ALBERTA

Permanent Datum: GROUND LEVEL
Log Measured from: GROUND LEVEL
Well Depths Measured from: KB

Elev.: K.B. ___ D.F. ___ G.L. ___
Ft. Above Perm. Datum

Run No. ONE
Date 13 DEC 70
First Reading 352
Last Reading 0
Footage Logged 352
Depth Reached 353
Bottom Reading 353
Casing Size
Casing Depth
Fluid Type WATER
Liquid Level FULL
Min. Diam. 3 1/2

Operating Time 3 HRS
Truck No. 10
Recorded By A.N.S.
Witnessed By MCELLIGOTT

Form Date Mar. 1, 1972

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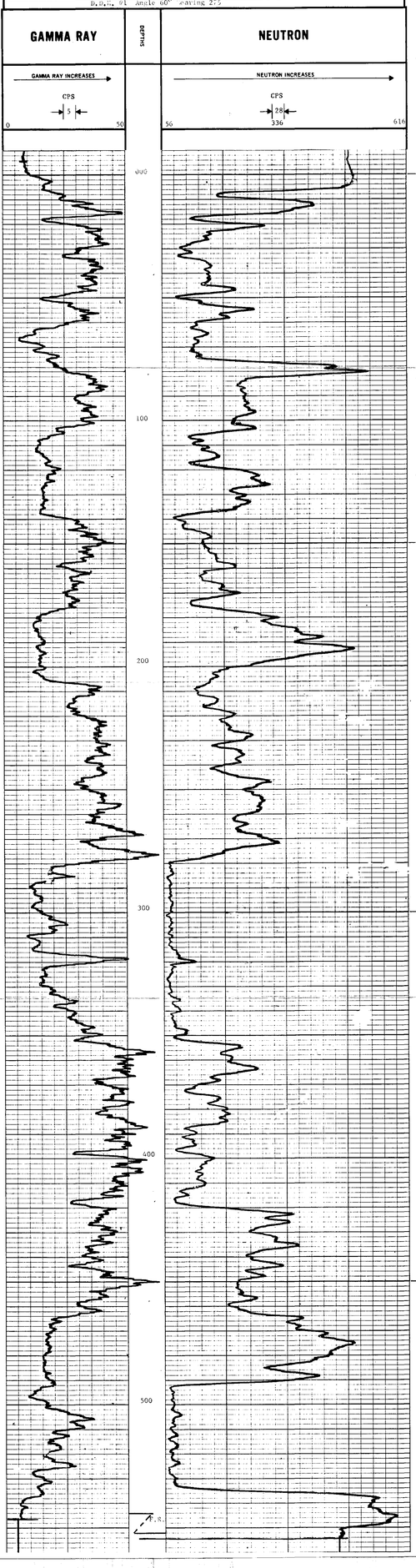
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 3/8	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	1 3/8
TYPE	GEIGER	DETECTOR MODEL NO.	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	8.55 FT	LENGTH	6 INCH
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	606
HOIST TRUCK NO.	10	SPACING	19 INCH
INSTRUMENT TRUCK NO.		TYPE	AmBe
TOOL SERIAL NO.	CGN27U4A78	STRENGTH	7.00×10^6 N/S

LOGGING DATA

GENERAL					GAMMA RAY			NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G R UNITS PER LOG DIV.	T.C SEC	SENS - SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV
1	0	352	11	3	25	0L	5 CPS	3	4.2	2L	28 CPS

REMARKS: NOTE: Hole is 30 degrees from vertical
D.D.H. #1 Angle 60° Bearing 25°



RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

PROPERTY: SAGE CREEK COAL		HOLE NO SCC #1
LOCATION: DALLY HILL		
AZIMUTH:	ELEVATION 5,075' (approx.)	DIP: -60°
TOTAL DEPTH: 555.5'	PROBE DEPTH: 552'	DIP TESTS: -
HOLE SIZE: 3 15/16"	CORE SIZE: 2½" (HQ)	
DATE STARTED: Nov. 8, 1970	AIR: ☐ WATER: ☑	
DATE COMPLETED: Dec. 13, 1970	LOGGED BY: Owen Cullingham	DATE: Dec. 17, 1970
CONTRACTOR: Boyles Bros.	PROBED BY: Roke Oil Enterprises	DATE: Dec. 13, 1970

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PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
							No core - prob. sh / thin coal stringers		
							SH: m. dk. gy to m gy some silty carb in parts. assoc. pyr. some pl. frag. & coalified wood.		
	60'						siltst: m. gy. arg. SH: m, gy, sl, silty siltst: m, gy, arg.		
							SH: m to dk, gy, some silty some pyr. some pl. remn.		
							No CORE - poss. sh as above		
		x		vf	a	m	SH: m to dk gy, sl carb. SS: v.f. gr. m. gy SH: m gy silty		
							SH: m. to m dk gy some v. thin beds of arg. siltst. sl. carb.		
	80'						siltst: m dk, gy, arg. hd. some silty sh beds. Fe stn.		
							No core - prob. sh. or siltst.		
		x		vf-f	a	m	SS: v.f. gr. grdg. down ward into m gr. - m. gy, sup. tex.		
		x		m	a	m	some fe gr. mod. sorted. xbdd. hd & massive		
							No CORE		
		x		f-m	a	m	SS: f-m, gr. arg. No core		
		x		m	a	m	SS: m, gy, m gr. well bdd, massive bd, sup. tex. No core		
							SH: dk, gy, / coaly sh & sh coal ptgs.		
	160'						No core prob. coaly sh & sh.		
							SH: m. dk, gy No core		
							SH: m. dk. gy No core		
							SH: m, dk, gy, silty in parts.		
							SS bnd: at 160'-163', v. f. gr. to silt size.		
							No core SH: dk, gy No core		
		x		f	a	m	SS: m, gy, f, gr, sup. tex. No core		
		x		m	a	m	SS: m, gr, m gy, sup tex. xbdd, hd.		
	200'	x		m-c	a	m	c, gr, in places		
							No core No core		
							SH: m, dk, gy, sl, silty in places carb in places / coalified wd frag. pl. remn. Breccia Zone at 215' soft m. b m sd: - poorly consolidated at 220'		
	250'						siltst: dk, gy, arg.		
							SH: m, dk, to dk gy, some carb. & some silty siltst bnd at 262'		
							No core		
							SH: dk, gy silty sh, to pure sh some carb, ptgs - pl. frag. assoc. pyr. 0.2' coal bnds at 275.8' No core		
							Coal No core		
							COAL HORIZON: Some arg. ptgs. Some areas of lost core		
	300'						some earthy feeling white powdered looks like talc but poss. rock flour from shearing		
							coal is sbs, Mostly clarain - some vitrain & a little durain arg. ptgs. & sh. beds. Occas. fusain bnds. Some assoc. pyr.		
	350'						SH: m to dk gy sh - some carb. ptgs. some coal bnds. some pl. remn.		
							Coal bnds: 0.5' at 372.1'; 0.3' at 373.7' 0.3' at 375.3'; 0.1' at 376.2' 0.6' at 376.8'; 0.4' at 382.2' 0.4' at 389.6'; 0.2' at 393.2' 0.1' at 393.7'; 2.4' at 397.6' 0.2' at 408.4'; 0.1' at 403.7' 1.1' at 415';		
	400'						coal arg. to clean - fusian ptgs.		
							SH: dk, gy		
							siltst: m, dk, gy, arg. appr. arg. v.f. gr. ss.		
							SH: m. dk, gy, some carb. ptgs. & 0.2' coal bnd.		
							siltst: m. dk, gy, arg.		
							SH: m. dk, to dk gy - some carb ptgs. some thn. bnds of f. gr. ss. contains some coal ptgs.		
	450'						Pos. breccia Zone at 443'		
							SS: m. gy. f, gr. arg. ss Breccia zone No core		
							SS: m, gy, f-m gr, - well bd. hd some xbdd.		
							No core		
							SS: No core		
							SS: f-m gr ss, some coaly frag. coalified wd frag.		
	500'						Coal: some shaly coal / some vitrain & a little durain mostly clarain		
							No core		
							Coal: some sh ptgs. some small intervals of no core		
							NO CORE - some coal recovered		
							No core		
							Coal - Some shaly coal - sh ptgs. some bnds of fusain mostly clarain some assoc. pyr.		
	550'						SS: v.f - f gr ss grdg. down ward into f-m gr. ss carb. near top, but fairly clean w. bbo. becomes hd & more sil. vertical fractures		

Total Depth 555.5'

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

PROPERTY: SAGE CREEK COAL			HOLE NO. SCC #2A
LOCATION: DILLY HILL			
AZIMUTH:	ELEVATION: 5,015' (approx.)	DIP: -90°	
TOTAL DEPTH: 509'	PROBE DEPTH: -	DIP TESTS:	
HOLE SIZE: 3 15/16"	CORE SIZE: 2⅛" (HQ)		
DATE STARTED: Jan. 9, 1971	AIR: ☐ WATER: ☒		
DATE COMPLETED: Feb. 5/71 (abandoned)	LOGGED BY: Owen Cullingham	DATE: Jan. 14/71-Feb. 5/71	
CONTRACTOR: Boyles Bros.	PROBED BY: -	DATE: -	

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PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

(L3)

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
	50'						NO CORE - TRICONED TO 99'		
	100'	x		f	a-r	m	ss: m. gy f. gr. fairly clean, x bdd, mod		
		a					sh: m, m dk gy- some silty bnds - some ss bnds some carb sh / coal strgs.		
		e					Breccia zone at 131'		
		e							
	150'	x		m-c	a-r	m-w	ss: m. gy m-c gr. Fe stn massive Mid. Kootenay ss. fractured. Gd poros contains some coali frag brg wd struct.		
		x		m-c	a-r	m-w			
		x		vf-f	a	m	ss: m, gy - m dk gy, arg - coalified pl. remn.		
				m-c	a-r	m-w	ss: m, gy - m dk gy, massive, fract. Fe, stn hd		
							Coal Horizon - some shaly coal inclusions		
	200'						sh. m, dk gy some pl. frag. carb. some coalified wd x pl. frag - some silty x sdy bnds		
				m	a-r	m-w	ss: m gy, m gr hd. massive m-w sorted - app. c. gr. in places		
				m-c	a-r	m-w			
				m					
				m-c	a-r				
				slt			sltst: m. gy. arg. mod. hd. some coalified pl. frag coal specks - sh bnd.		
							SH: m. dk - dk gy, silty in places, carb./coal specks.		
	250'						Coal Horizon: No core at 247' - 249'; 250.7' - 254.0' - sh bnds for 253.4' - 258' total of 4.0'		
							SH: dk, gy, carb. some coal ptgs, x coalified pl. remn. Breccia zone at 266.6'		
							Coal Horizon: No core 278.5' - 280'; 284.4' - 287.0' SH bnds for total of 4.2'		
							SH: dk, gy, carb. / coal / coal splints from coalified pl. remn, bnd. in places (current feature) 82' coal bnd at 202'		
	300'						SH: m. dk, gy, bnd in places, appr. slt size in places giving bnd effect. Some pl. frag. some coalified wd struct. pyr.		
	350'						SS: m to m lt gy grdg. from v.f. - f - m gr. mod. w sorted, x bdd, hd occas. carb. ptgs. x assoc pyr. some sh bnds.		
	400'						SH: m. dk - dk gy, carb in part, silty in part some coal splints - pl. frag.		
	450'								
							Coal Horizon - No Core. 468.0' - 470.1'; 471.2' - 472.5' 473.5' - 477.5'; 480.0' - 485.0' 488.0' - 490.2'; 491.0' - 492.0' ss. cavings at 470.1 - 471.2		
	500'						SH: m, gy, some silty intrl. mod. hd some pl. remn		
							Begin second part of Coal seam		
							Total Depth 509'		
							Hole Abandoned.		
	550'								

RIO TINTO CANADIAN EXPLORATION LIMITED

DIAMOND DRILL RECORD

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

HOLE NO.: SCC #2B

PROPERTY: SAGE CREEK COAL

LOCATION: Dilly Hill

ELEVATION: 5,015' (approx.)

AZIMUTH: -

DIP: -90°

TOTAL DEPTH: 827.5'

PROBED DEPTH: 833'

HOLE SIZE: HQ

CORE SIZE: 2½"

DATE STARTED: February 7, 1971

DATE COMPLETED: March 2, 1971

CONTRACTOR: Boyles Bros.

LOGGED BY: Owen Cullingham

PROBED BY: Roke Oil Enterprises

DATE: March 3, 1971 " "

Interval	Unit Thick. (feet)	Description	∠ of bdg to core	Core Evaluation	Est. Rec.
0.0- 7.0	7.0	NO CORE - OVERBURDEN			
7.0- 22.1	15.1	Sh M gy, mod hd to hd, some brn variation, some sltst. 7.0 - 7.5 Sltst-m gy,Arg, hd. 12.0 - 12.9 Sltst-m gy, arg, hd. 12.9 - 17.3 Sh- m gy bm,bnd soft.	62°	Fair	95%
22.1- 89.2	67.1	Ss M gy/some brn flecks,v f to f gr, well sorted, Fe stn, arg matrix. V sl calc approaches m gr in local areas. 24.3 - 25.4 Sh- m dk gy, mod hd pyr flakes. 26.0 - 26.3 Sh- m gy brn, soft. 27.0 - 30.0 No Core 30.0 - 30.7 Sh m gy brn, soft-mod hd, sl slty. 40.5 - 41.0 No Core 43.8 - 44.6 Ss m gy, f gr/ coal ptgs. 66.5 - 67.0 No Core 73.2 - 74.0 Cavings or pos Breccia zone. 74.0 - 75.2 Sh- m gy, slty, hd. 75.2 - 76.5 No Core 78.5 - 79.3 Sh- m gy, slty to sdy, hd.	58°	Fair to gd	90%

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Interval	Unit Thick (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
22.1- 89.2	67.1	Cont'd. 79.3 - 81.2 Sltst- m gy, arg. 81.2 - 82.0 Sh- m gy, slty, crumbly. 86.7 - 87.0 Sh- m gy, slty, friable.			
89.2-118.0	28.8	Intbd Ss/Sh M gy, ss:sh~2:1, v f to f gr ss while sh is sl slty to v slty. 94.5- 94.7 Sh- m gy brn, soft.	-	Fair to gd	90%
118.0-121.5	3.5	Sh M to m dk gy, some sl slty/ some carb sh. 118.9-120.0 Sh- dk gy, soft v carb, some wd structures. 120.0-121.5 Sltst- m gy sl arg hd.	-	Fair	90%
121.5-125.3	3.8	Ss M gy, f gr, hd, some Fe stn + Fe gr. 124.9-125.3 Ss- m dk gy, coaly flecks.	58°	Fair to gd	90%
125.3-136.7	11.4	Coal Horizon 125.3-125.5 Coaly Sh- blk,some sd gr associated. 125.5-127.0 Coal- blk, shiny, clean to touch, v thn bnds, brittle conch fracturing. Vitrain(90%)Clar(10%) sks. 127.0-129.5 Sh- m dk gy, carb, pl rmn. 129.5-129.7 Coaly Sh- dk gy blk 80% sh/20% coal. 129.7-133.7 Coal- more broken than above coal. Claro-vitrain-thn bnds/smooth to conch fracture. Silkiness lustre.Claro(60%) vitrain(30%)ash(10%) assoc pyr. 133.7-134.5 Coal- very similar to above but/more arg mat.prbly 20% ash. 134.5-136.7 No Core	-	Broken to gd. Fair to gd Fair to gd Fragmental	70% 95% 85% 50%
136.7-164.0	27.3	Sh M gy, sl slty, carb in part. Some pl frag hd. 149.0-150.0 Ss- m gy, f gr, hd some Fe gr & stn. 161.8-163.0 Ss- m gy, f gr hd mod hd, arg coalified wd. remn.	-	Good	95%

Interval	Unit Thick (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
164.0-211.2	47.2	Ss M gy, f gr grading downward into m gr & c gr, hd, mass. Fe stn & Fe gr, fract gd por. Middle Kootenay. 167.8-168.5 Sh- M dk gy, carb, v sl, slty, hd. 169.0-172.0 No Core 173.5-174.0 No Core 199.0-199.6 Ss- m gy, m gr coalified wd struct. Clean coal. 204.0-204.5 Ss- m gy, f gr, arg /coalified pl remn. 208.7-210.5 Ss- m gy, f-m gr/ coalified wd remn.	62°	Good	95%
211.2-212.9	1.7	Coal Horizon 211.2-211.4 Ss- v coaly ss, dk gy, f gr ss. 211.4-211.9 Coal- conch & smooth frac, bright,clean to touch, brittle, bndd, vitrain(60%) clar(40%) sks. 211.9-212.3 Sh- m dk gy, v carb to coaly hvy & mod hd. 212.3-212.9 Coal- shiny lustre to vitreous lustre. Conch & smooth frac bnd fairly clean to touch. Claro-vitrain 1:1, some assoc py 10% ash.	-	Fair to gd	90%
212.9-232.8	19.9	Sh M dk gy, some carb mat,hd slty, pl frag, some coalified wd remn.-approaches sltst in local areas. 222.6-223.5 Ss- m gy, f-m gr, Fe gr & hvy shs, X bdd graded hd. 227.0-228.1 Ss- m gy, f gr. Fe stn,hd bdd, X bdd. 229.3-229.7 Ss- m gy, f-m gr, Fe stn, X bdd. 231.8-232.0 Ss- m gy, f gr, X bdd.	-	Good	95%
232.8-259.5	26.7	Ss M gy, v f-m gr, X bdd, thn bdd, poor-mod sorting, Fe gr & stn. hd. 235.8-236.1 Ss- m brn, gy, f gr, quite arg. 249.7-251.2 Ss- m brn, f gr, quite arg. Hvy Fe stn.	60°	Good	95%
259.5-271.6	12.1	Sh M gy, sl, slty, carb/some coaly ptgs, some coalified pl remn, hd.	60°	Good	95%

Interval	Unit Thick (feet)	Description	% of bdg to core	core Evaluation	Est. Rec.
259.5-271.6	12.1	Cont'd.			
		264.5-265.0 Ss- m gy, f gr, Fe stn, hd, arg.			
271.6-287.2	15.6	Coal Horizon	-	Fair to gd	
		271.6-272.3 Coal- dull but clean to touch, smooth frac, lead gy, claro-durain/some vitrain.			
		272.3-273.0 Coal- shiny, brittle conch & smooth frac. clarain 60%, vitrain 30%, ash 10%.			
		273.0-273.8 Sh- dk gy, carb/coaly frag.			
		273.8-282.2 No Core Mistake in labelling a poss.			
		282.2-282.6 Coal- friable, pyr flakes, smooth frac, dull to vitreous, clarain 80%, ash 20% sks.			
		282.6-282.8 Coal- dull, Pb colour, poss, durain/some clarain - ash content 35%. Sks.			
		282.8-283.0 Coal- dull to shiny lustre, claro-durain /ash content 20%.			
		283.0-284.0 Coal- flaky, wthrd, find lamin, vitreous lustre, assoc. flake pyr, clarain/ash of 20%, sks.			
		284.0-284.2 Coal Dull to vitreous lustre, sks clarain/fusain - some flake pyr.			
		284.2-284.9 Coal- shiny, conch & smooth fract. Thn laminated, bright lustre, prbly claro-vitrain.			
		284.9-285.0 Coal- dull, hvy, arg fusain.			
		285.0-285.2 Carbargillite- shaly coal, ash ~ 50%, pyr flakes, sks.			
		285.2-285.4 Coal- Fine lamin., smooth fract. prbly clar, sks.			
		285.4-285.6 Coal- Close firm text. Pb, gy, dull some smooth fract. claro-Durain-pyr. Durain 70%.			
		285.6-286.6 Sh- M dk gy, carb.			
		286.6-287.2 Coal- Dull, closely packed, sks, dirty to touch, claro-durain, 50% clar, 30% durain, 20% ash.			

Interval	Unit Thick (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
287.2-303.2	16.0	Sh M dk gy, pl fossils, some carb mat some coalified pl material. 287.9-288.1 Coal- arg, shiny/ smooth fract. 300.2-301.0 Coaly Sh- hvy, dull, definite coal ptgs 301.5-302.0 Carbargillite- coaly sh. 50% sh. 302.6-302.9 Carbargillite- coaly sh.	-	Good	95%
303.2-314.1	10.9	Coal Horizon 303.2-303.8 Carbargillite- shaly coal-hvy, assoc pyr sks 303.8-303.9 Coal- smooth fract thn lamin dull to vitreous lustre, 30% sh. 303.9-304.1 Carbargillite- shaly coal, hvy, pyr flakes, sks. 304.1-304.2 Coal- bright, conchoidal and smooth fract, bnd, claro-vitrain. 304.2-305.2 Sh- coaly, hvy, dull, some assoc pyr. 305.2-306.0 Coal- closely packed thinly bnd, bright to vitreous lustre hd, ash ~15% clarian/some durain 306.0-306.4 Coal- chunky, smooth, fracture, assoc pyr, dull to vitreous lustre. clarain-fusain. clarain 60% fusain~30% ash 10% 306.4-307.4 Coal- wthrd dull to vitreous lustre Mostly clarain soft. 307.4-307.7 Carbargillite- coaly shale, assoc pyr. 307.7-308.3 Coal- fragmental for most part clarian, smooth fracture. 308.3-308.4 Coal- fusain bnd, brush blk, assoc pyr sks. 308.4-309.3 Coal- smooth fractures, vitreous lustre, some bright coal/conchoidal fract.-For the most part clarain.	-	Fair to gd	95%

Interval	Unit Thick (feet)	Description	∡ of bdg to core	core Evaluation	Est. Rec.
303.2-314.1	10.9	Cont'd. 309.3-309.5 Carbargillite- coaly sh bnd. 309.5-311.1 Coal- smooth fract. thn laminated, sks minor pyr, mostly clarain/some vitrain 311.1-311.3 Carbargillite- coaly sh bnd sks, assoc pyr. 311.3-312.1 Coal- bright, smooth and conch fract thn lam, flecks of pyr gd coal claro-vitrain. 312.1-314.1 Carbargillite- shaly coal-60% coal 40% sh - sks, assoc pyr.			
314.1-369.0	54.9	Sh dk gy, carb, coaly in places some coal and argillite bnds. 316.2-316.4 Coal- bnd - clean to touch, brittle, shiny lustre, conchoidal frac. 317.0-317.3 Carbargillite- coaly sh. 317.3-317.4 Coal bnd clean to touch, brittle, conchoidal fract. 317.4-317.7 Carbargillite- coaly sh. 317.7-317.8 Coal bnd clean to touch, brittle, conchoidal and smooth fracture. 318.8-319.0 Coal clean to touch, brittle, conchoidal and smooth fract. 319.0-320.5 Carbargillite & sh coaly sh / coal ptgs.	66°	Good	95%
369.0-423.5	54.5	Ss m to m dk gy, grading thru sltst and v f gr to f gr and to m gr - x bdd, mod sorted, hd occas carb material and associated pyr - arg matrix. 377.0-377.8 Sh- slty, hd, pl foss. carb. 378.8-379.3 Sh- dk gy, carb pl fos. 391.8-392.4 Sltst-arg. m dk gy v hd. 412 -412.3 Sh- dk gy slty hd. 418.4-418.7 Ss- m gy, m gr / coal strgs and ptg. 421.3-422.0 Ss- m dk gy, m gr / coal strgs and ptgs.	61°	Good	95%

Interval	Unit Thick (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
423.5-488.4	64.9	Sh m dk gy, v slty @ top of unit becoming pure toward btm of unit, some carb material. 431.6-431.9 m dk gy carb sh / coal ptgs and strgs. 441.4-441.8 m dk gy carb sh / coal ptg and strgs. 475.0-475.4 Carbargillite- coaly sh / coal strgs and ptgs 487.5-488.4 Sh dk gy v carb / coalified pl remn.	66°-58°	Good	95%
488.4-517.5	29.1	Coal Horizon 488.4-488.6 Carbargillite- shaly coal / some assoc pyr. 488.6-488.7 Coal- bright, smooth fracture, thn lam, sks, clarain. 488.7-489.1 Coal- dull - silky lustre, Pb gy in colour closely packed, assoc pyr claro-durain durain aprox 60% sks. 489.1-489.9 Coal- shiny to dull silky lustre, smooth fracture, thn laminar, prbly clarian / fusain wedges, some assoc pyr, sks - ash ~15%. 489.9-490.9 Coal- thnly lam, silky to bright lustre, smooth and conchoidal fract mostly clar / vitrain ptgs clar 70%, vitrain 20% - ash 10%, sks and some minor pyr. 490.9-492.0 Coal- thnly lam to closely packed texture, dull to bright, smooth and conchoidal fract black to Pb gy. Prbly claro-durain / clar 60%, durain 25%, ptrgs of vitrain 10% some assoc pyr - sks. 492.0-493.8 Coal- soft, bright, smooth and conchoidal fracture, thn lamin fairly clean to touch, prbly claro-vitrain - clarain ~60%, vit 30% ash 10%.	-	Good	95%

Interval	Unit Thick. (feet)	Description	% of bdg to core	core Evaluation	Est. Rec.
488.4-517.5	29.1	Coal Horizon - Cont'd 493.8-495.0 Coal- dirty to touch dull / some bright, thn laminated, some v minor pyr sks, clarian / some fusain ~20% ash. 495.0-496.1 Coal- bright, thn laminated, smooth fracture, sks, clarain. ~15% ash. 496.1-496.5 Sh- light, m dk gy brn, carb sks. 496.5-497.0 Coal- clean to touch, bright, thn lam., sks, silkiners lustre, prbly clarain - 15% ash. 497.0-497.3 Coal- dull, dirty to touch, thn bnd to wedge shaped ptgs smooth fracture, clarain / fusain ptgs, sks. 497.3-498.0 Coal- bright, vit. lustre, thn lam smooth fracture, sks, prbly clarain / 15% ash. 498.0-498.5 Coal- dull wthrd, thn laminated, smooth fract, sks, prbly clar / 25% ash. 498.5-499.6 Coal- dull to bright, vitreous lustre, sks, thn lamin to blocky, smooth fracture, prbly clarain / wedges of fusain - 20% ash. 499.6-500.1 Breccia Zone- coal and sh breccia, blk to dk brn. 500.1-501.2 Coal- clean to touch, vitreous lustre, thn lamin, smooth fracture clarain 10% ash 501.2-501.4 Coal- Pb gy, closely knit texture, some minor pyr sks, prbly durain / 10% clarain ash ~15%. 501.4-502.8 Coal- thn lam, smooth fracture, vitreous lustre, clarain / ~15% ash sks. 502.8-503.0 Coal- close text, Pb colour prbly claro-durain. 503.0-504.3 Coal- thn lam, smooth fracture, dull to vitreous lustre, prbly clarain / ash of ~ 20%.	-	Good	95%

Interval	Unit Thick (feet)	Description	∡ of bdg to core	core Evaluation	Est. Rec.
488.4-517.5	29.1	Coal Horizon - Cont'd			
		504.3-505.0 Coal- thn to thk lam bnd vitrain/ clarain conchoidal and smooth fract vitreous to bright lustre. 60% cl - 30% vit.			
		505.0-506.0 Coal- thn laminated vitreous lustre, smooth fracture, some vein pyr and flake pyr sks, mostly clarain / 15% ash.			
		506.0-506.4 Coal- wthrd, dull lamin / wedges of fusain mostly clarain, vitreous to dull lustre ash ~ 25%.			
		506.4-507.2 Carbargillite-shaly coal light, lead gy colour close firm texture, hd, coal - durain / ~ 40% ash content pyr veining.			
		507.2-508.4 Coal- thn laminated dull to vitreous lustre, wthrd slightly, prbly clarain.			
		508.4-510.5 Coal- thn laminated vitreous lustre, smooth fracture, sks clarain.			
		510.5-511.0 Coal- thn to thk lamin smooth frac, dull to vitreous lustre. Prbly clarian /~15% ash.			
		511.0-511.2 Coal- broken and crumbled prbly mostly clarain.			
		511.2-512.0 Coal- thn to thk lamin smooth fract vitreous lustre, soft, mostly clarain			
k		512.0-512.3 Coal- wthrd blocky sl arg dull prbly clarain / some durain, 35% ash.			
		512.3-512.8 Coal- thn to thk lamin smooth fract vitreous lustre, silkiness to touch sks clarain.			
		512.8-513.0 Coal- wthrd, broken arg some fusain wedges~35% ash.			
		513.0-514.8 Coal- thn to thk lamin smooth and conchoidal fract, sks, vitreous to bright lustre 70% clarain / 20% vitrain bnds.			

Interval	Unit Thick. (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
488.4-517.5	29.1	Coal Horizon - Cont'd 514.8-516.0 Coal- vitreous to dull lustre, some Pb gy colour, minor pyr sks bnd to blocky claro-durain. 516.0-516.3 Coal- vitreous lustre, v thn lamin smooth fracture, sks clarain. 516.3-517.0 Coal- vitreous to dull lustre, some Pb gy clarain durain, 60% clarain 30% durain. 517.0-517.1 Coal breccia- / some sh frag. 517.1-517.5 Coal- wthrd and crumbly prbly arg clarain ash ~ 30%.			
517.5-534.0	16.5	Sh m dk gy sl to v carb / some coal ptgs.	64°	Good	95%
534.0-559.1	25.1	Coal Horizon 534 -536.0 Coal- thn lamin to thk lamin smooth fract bright to vitreous lustre clarain / bnds of vitr. 70% cl-20% vit assoc pyr sks. 536.0-536.2 Coal- hd, close text Pb gy colour, some pyr, 50% Durain 30% clarain 20% ash. 536.2-537.1 Coal- thn to thk lam smooth fract bright to vitreous lustre. Mostly clarain / 20% vitrain bnds sks pyr. 537.1-537.2 Carbargillite- bnd of v arg coal pyr. 537.2-537.7 Coal- thn to thk lam smooth fract vitreous lustre, minor pyrite. Mostly clarain. 537.7-538.5 Coal- dull to vit lustre, smooth fracture assoc pyr, Pb gy colour, claro-durain / occ ptgs of vitrain. 538.5-540.5 Coal- vitreous lustre, smooth fracture / occ bnds showing con-choidal fracture. Some cubic shaped Pb gy coal prbly durain, 50% clarain 20% vitrain 20% durain and 10% ash some associated pyr.	-	Fair to gd	93%

Interval	Unit Thick (feet)	Description	% of bdg to core	core Evaluation	Est. Rec.
534.0-559.1	25.1	Coal Horizon - Cont'd			
		540.5-543.0 NO CORE			
		543.0-544.9 Coal- vitreous lustre, thn lam / occasional wedge shaped ptgs of fusain. Mostly clarain, assoc pyr.			
		544.9-545.1 Coal- bnd of fusain gy brn in colour, light, gd poros, pyr sks.			
		545.1-548.0 Coal- thn laminated vitreous to bright lustre, smooth and conchoidal fracture, clean to touch, clarain 70% vitrain 20% ash<10%			
		548.0-548.2 Coal- closely textured, lead gy in colour, durain band, cubic arrangement.			
		548.2-548.7 Coal- thn laminated, vitreous and bright lustre, smooth and conchoidal fracture, clean to touch, sks Mostly clarain / 20% vitrain.			
		548.7-549.2 Coal- wthrd, dull, thn laminated, crumbly. Prbly clarain / 20% ash.			
		549.2-549.5 Coal- thn laminated bright to vitreous lustre, smooth fracture, fairly clean to touch. Mostly clarain.			
		549.5-549.9 Coal- dull lustre, Pb gy colour, close texture prbly durain.			
		549.9-550.4 Coal- vitreous lustre, smooth fracture, mostly clarain / some wedges of fusain (~10%).			
		550.4-550.7 Coal- soft, wthrd, prbly clarain.			
		550.7-551.0 Coal- Pb gy colour close texture, prbly durain.			
		551.0-551.2 Coal- dull wthrd coal, soft and mushy - prbly clarain / 20% ash.			
		551.2-552.0 Coal- fragmental, vitreous and bright lustre, conchoidal and smooth fracture Prbly clarain ~60% vitrain 30%.			

Interval	Unit Thick (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
534.0-559.1	25.1	Coal Horizon - Cont'd 552.0-553.0 Coal- fragmental, soft, wthrd, dull to vitreous lustre, mostly clarain / some vitrain, sks. 553.0-554.1 Coal- hd, thn to thk laminated, vitreous to bright lustre, conchoidal and smooth fracture, sks. Mostly clarain / 20% vitrain. 554.1-554.3 Coal- hd, sks, pyr v prominent, Pb gy to brn colour, close texture, but wedge shaped coal, prbly fusain-durain. 554.3-554.7 Coal- hd, thn to thk lamin. vitreous to bright lustre, smooth and conchoidal fracture, clarain / 20% vitrain bnds. 554.7-555.0 Coal- hd, pyr fairly common sks, fusain and clarain, 50% clarain; 40% fusain. 555.0-556.2 Coal- mod hd, minor pyr, sks smooth fracture, vitreous lustre, some bright coal. 70% cl, 20% vitrain. 556.2-556.4 Carbargillite- shaly coal, hvy close text. durain / 40% ash. 556.4-557.0 Coal- v light, associated pyr, gd poros mostly fusain. 557.0-558.5 Carbargillite- coaly sh pyr - sks. 558.5-559.1 Coal- fragmental, v thn laminated, some minor pyr. Mostly clarain.			
559.1-562.8	3.7	Sh m dk gy, carb, soft grading downward into sltst.	-	Good	95%
562.8-566.5	3.7	Ss m gy, v f gr grading downward into f gr, x bdd, hd, arg matrix, mod sorted. 565.8-566.2 Sh- m dk gy soft.	59°	Good	95%
566.5-700.0	133.5	Sh m dk gy, some carb material 572.0-573.0 Carbargillite- v coaly sh / coal ptgs.	54°	Fair to gd	90%

Interval	Unit Thick (feet)	Description	∡ of bdg to core	core Evaluation	Est. Rec.
566.5-700.0	133.5	Sh - Cont'd 574.6-575.5 Ss- m gy, f gr, fract mod well sorted Fe stn, arg matrix. 600.8-601.0 Sh- dk gy, carb coal strgs. 601.9-602.1 Sh- dk gy, carb / coal strgs. 603.0-605.0 Sh- dk gy, carb / coal strgs. 620.1-620.9 Sh- dk gy, carb / coal strgs. 621.4-622.6 NO CORE 639.1-639.2 Sh- dk gy, v carb / coal strgs. 655.5-655.7 Sh- dk gy, v carb / coal strgs. 659.3-659.5 Coal- clean to touch, bnd and thn lamin clar ~60%, vit 30% ash 10% 659.5-660.5 NO CORE 669.0-669.1 Sh- dk gy, carb / coal strgs. 694.0-694.2 Sh- dk gy, carb / coal strgs. 697.6-698.0 Ss- m gy, v f gr, arg matrix, hd mod sorting. 698.4-698.9 Ss- m gy v f gr arg matrix hd mod sort.	64°	Fair to gd	90%
700 - 717.0	17.0	Sltst m to m dk gy arg matrix ~60% slt gr 40% sh. 710.0-711.0 Sh- m dk gy, sl slty. 713.0-713.9 Sh- m dk gy, slty ~40% slt gr. 715.2-715.6 Sh- m dk gy, slty.	61°	Good	95%
717.0-726.2	9.2	Sh m to m dk gy, slty in part, carb / some coal strgs. 718.4-719.0 Sh- dk gy v carb / coal strgs.	-	Good	95%
726.2-731.1	4.9	Ss m gy, f gr mod well sorted, some arg bnds, arg matrix, hd	60°	Good	95%
731.1-737.5	6.4	Sh m dk gy, slty, some minor carb intvls, hard.	-	Good	95%
737.5-756.0	18.5	Ss m gy, f-m gr poor to mod, sorted, some minor carb material, hd some coal strgs and ptgs. 739.5-741.0 Ss- m dk gy, f gr, hd, / coal ptgs and splints.	62°	Good	95%

Interval	Unit Thick. (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
737.5-756.0	18.5	Ss - Cont'd 741.0-743.7 Ss- m dk gy, v f gr to silt size ss arg to sil matrix, hd. 743.7-744.8 Sltst- m dk gy increasing arg downward. 744.8-746.3 Sh- m dk gy, slty grading back into v f gr ss @ base of interval. 746.3-748.0 Ss- m dk gy v f gr ss hd. 748.0-749.0 Sh- m dk gy, slty hd. 749.0-751.4 Ss- m dk gy, v f gr to silt size gr sl arg hd. 751.4-752.2 Sh- m dk gy slty, hd. 752.2-756.0 Ss- m dk gy, v f gr to silt size gr some arg material hard.	62°	Good	95%
756.0-768.5	12.5	Sh m dk gy, slty in part and carb in part, sks @ 759.5 / assoc pyr.	64°	Good	95%
768.5-808.0	39.5	Coal Horizon 768.5-769.0 Coaly sh - / coal ptgs hvy some sks and pyr. 769.0-770.0 Carbargillite- shaly coal crumbled. 770.0-772.0 NO CORE 772.0-772.6 Coal- gy colour, v fine and crumbly, dirty, claro-fusain / 25% ash. 772.6-774.5 Coal- dull to vitreous lustre, thn lamin smooth fract, clarain for most part / some fusain and ~20% ash. 774.5-774.7 Coal- v soft and crumbly, fine p dr fusain. 774.7-775.1 Coal- soft fine, dull to vitreous lustre, smooth fracture, thn lamin clarain / 25% fusain and 20% ash. 775.1-775.3 Coal- fusain bnd. 775.3-777.6 Coal- fragmental, soft, dull to vitreous lustre, thn lamin, smooth fracture, clarain / some fusain.	-	Fair	35%

Interval	Unit Thick. (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
768.5-808.0	39.5	Coal Horizon - Cont'd 777.6-778.1 Coal- thn lamin smooth and conchoidal fracture, hd, assoc pyr clarain / vitrain bnds and some durain, cl~50%, vit~20%, dur~20% ash~10%. 778.1-778.9 Coal- thn lamin, fairly clean to touch, smooth fract vitreous lustre, minor pyr, mostly clarain. 778.9-779.0 Shaly coal- / sh content of~30%. 779.0-780.0 Coal- thn lamin to tight texture, dull to vitreous lustre clarain / durain 70% cl, 20% dur, 10% ash. 780.0-782.8 Coal- thn lamin shiny to vitreous lustre hd, some assoc pyr wedge shaped ptgs of fusain. Mostly cl / minor vitrain. 782.8-783.0 Coal- v crumbly and fine, dull, prbly fusin / clarain 20% ash. 783.0-784.0 Breccia Zone sh and coal frag. 784.0-787.0 Carbargillite- coaly sh hvy, dull / some bright lustre. 787.0-791.0 NO CORE 791.0-795.0 Coal- fragmental but for most part clarain - thn lamin some fusain and some durain bnds - some assoc. pyr. 795.0-808.0 NO CORE	-	Fair	35%
808.0-827.5	19.5	Ss m gy f gr arg - sil matrix, hd mod-well sorted. 811.0-817.0 NO CORE 821.0-821.5 Cavings of m gy f gr ss. 821.5-823.0 NO CORE	61°	Broken to gd.	60%
827.5		END OF HOLE.			

RIO TINTO CANADIAN EXPLORATION LIMITED

DIAMOND DRILL RECORD

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

HOLE NO.: SCC #3

PROPERTY: Sage Creek Coal

LOCATION: Dilly Hill

ELEVATION: 5,350' (approx)

AZIMUTH:

DIP: -90°

TOTAL DEPTH: 596'

PROBED DEPTH: 592'

HOLE SIZE: HQ

CORE SIZE: 2½"

DATE STARTED: March 7, 1971

DATE COMPLETED: March 30, 1971

CONTRACTOR: Boyles Bros.

LOGGED BY: Owen Cullingham

PROBED BY: Roke Oil Enterprises

DATE: March 31, 1971

Interval	Unit Thick. (feet)	Description	∠ of bdg to core	Core Evaluation	Est. Rec.
0.0- 6.0	6.0	NO CORE			
6.0- 85.0	79.0	SS m.gy. m.gr lc.gr. bnds. v.hd., massive, Fe stn +Fe gr. -fract.- Middle Kootenay mod to well subed. 19.3-23.8 Sh m.dk.gy.mod.hd. some carb material 45.0-46.5 Sh m.bm.gy.slty coal strgs. Festn. 46.5-49.0 Sh m.bm.gy.slty mod. hd. Fe stn. 62.0-63.0 NO CORE 70.0-73.0 NO CORE 74.5-77.0 NO CORE 78.0-80.0 NO CORE 80.0-81.0 Cavings 82.0-85.0 SS m.lt.gy.v.c.gr. Fe stn + Fe gr. Mod sort. Hd.	58°	Broken to good	85%
85.0- 96.0	11.0	Sh m. d.gy.,carb.,mod. hd. 85.0-85.3 Sh m.dk.gy.,bm. soft. 85.3-86.0 NO CORE 87.5-87.9 Sh m.dk.gy. mod.hd. some coal splints. 94.5-96.0 Sh dk.gy. v.carb./ coal stigs.	56	fair to good	

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Interval	Unit Thick. (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
96.0-119.0	23.0	COAL HORIZON			
		96.0-96.3 Coaly Sh dk.gy.to blk. 75% sh.		fair to good	93%
		96.3-97.7 Carbargillite hvy. v.coaly sh. dull/ splints of bright coal			
		97.7-99.0 Coal dull to vitreous lustre, thn laminated. sks. ~ 30% ash. Coal is mostly clarain/some fusain.			
		99.0-99.4 Coal vitreous to bright lustre, thn laminated. 70% clarain, 15% vitrain 5% fusain wedge shaped splints. 10% ash			
		99.4-99.7 Coal vitreous to dull lustre, sl. harder than above clarain/20% ash.			
		99.7-100.7 Coal vitreous to bright lustre. Mostly clarain/ fusain splints + ~5% vitrain. v.thn. laminated.			
		100.7-101.0 Coal dull lustre, pb gy. close texture, Mostly durain /some clarain. - assoc. pyr.			
		101.0-101.2 Coal vitreous to bright lustre, thn lamin. vitrain bnds. Mostly clarain. Some trace pyr.			
		101.2-101.8 Coal bright lustre, polished, sks., thn lamin. conchoided + smooth fract. claro-vitrain.			
		101.8-102.7 Coal soft, friable thn lamin.,vitreous lustre, mostly clarain.			
		102.7-103.0 Coal dull to vitreous lustre. arg. 35% ash.			
		103.0-103.4 Coal vitreous lustre thn lamin. Smooth fracture, soft, mostly clarain.			
		103.4-103.7 Coal bright lustre sks. polished, conchoidal + smooth fract. claw-vitrain.			

Interval	Unit Thick. (feet)	Description	∡ of bdg to core	core Evaluation	Est. Rec.
		103.7-103.9 Coal vitreous to dull lustre, matted texture to thn lamin. clarain ~70%, fusain ~20%, ash ~10%.			
		103.9-104.5 Coal vitreous lustre thn lam., smooth fracture, mostly clarain/~10% vitrain some traces of pyr.			
		104.5-105.6 Coal bright to vitreous lustre, conchoidal & smooth fracture, clean to touch. vitrain ~55% clarain ~40%, ash content ~5%			
		105.6-105.9 Coal vitreous lustre, thn lamin. vitrain bnds, Mostly clarain. v. minor pyr.			
		105.9-106.1 Coal vitreous lustre, thn lamin. sl. arg. ~ 20%			
		106.1-108.5 Coal thn lamin. vitreous lustre, smooth fracture. Mostly clarain/vitr, bnds.			
		108.5-108.8 Coal soft, plasticine texture, wthrd coal.			
		108.8-110.4 Coal soft, vitreous lustre, thn lamin. clarain.			
		110.4-112.5 Coal soft, wthrd, mushy coal, mostly wthrd clarain 30% ash.			
		112.5-115.0 Coal soft sl. wthrd, coal, thn lamin. Mostly clarain/thn bnds of vitrain.			
		115.0-116.0 Coal hd, conchoidal to smooth fracture thn lamin, bright clarain/vitrain + turain 20% vitr. 45% clar, 15% turain 20% ash			
		116.0-116.3 Coal hd, dull to silky lustre, close texture. clarain/turain bnds. some minor pry. ~25% ash.			
		116.3-116.8 carbargillite, arg. coal. hvy, dull.			
		116.8-117.7 Coal dull lustre, arg. coal,			

Interval	Unit Thick. (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
		117.7-118.4 carbargillite coaly sh., hd. hvy, sks, minor pyr. 118.4-118.7 sh v. carb. sh. dull, hvy. 118.7-119.0 Coal smooth to fracture, soft thn lamin. vitreous to dull lustre, v. arg. clarain 40% ash.			
119.0-122.0	3.0	SS m.gy.v.f.gr-f.gr.mod sorted, sil. amt. a. hd. Possibly all cavings	64°	good	95%
122.0-195.0	73.0	Sh mlt-mgy sh. carb. in part /some coalified pl. frag. 133.2-133.8 Sh m.gy.v.sl.slty. hd. 163.4-164.6 Sh m.gy.v.slty. to arg. sltst. hd. 172.0-195.0 Sh to sltst. v. slty sh. to arg. sltst. m.gy. hd.		good	95%
195.0-206.0	11	SS m.gy. slt. size to f. gr. mod well sorted, a, graded beds give bnd effect. Some carb. mat. Arg. matrix to sil matrix. 204.0-205.5 Sh m. gy.slty. carb. prgs. hd. 205.5-206.0 Sltst m.gy.hd. sltst to v.f. gr ss.	66°	fair to gd.	95%
206.0-255.5	49.5	Sh/Sltst m.gy. sl to v. slty sh. to ang. sltst. 213.0-213.8 SS m.gy. f. gr./ coal splints 214.9-215.6 SS m.gy.f. gr./ coal splints 216.0-217.0 SS m.gy.f.gr./ coal splints 255.0-255.5 Sh dk. gy. v. carb. / splints of coal.	62°	fair to gd	95%
255.5-284.4	28.9	COAL HORIZON 255.5-255.7 Carbargillite - shaly coal ~ 50% sh. dull, possibly arg. fusain. 255.7-256.7 Coal v. thn. lamin. smooth fracture, assoc. pyr. vitreous lustre. some conchoidal fract. 70% clar; <5% fusain 5% durain; 20% ash. 256.7-256.8 Coal tight texture pb gy, prbly durain /bnds. of clarain 85% durain, 5% clarain			

Interval	Unit Thick (feet)	Description	% of bdg to core	core Evaluation	Est. Rec.
		256.8-258.5 Coal thn lamin., smooth fractue, vitreous lustre, sks, v. minor assoc. pyr. 80% clar, < 5% vitr, 5% fusain 10% ash			
		258.5-260 NO CORE			
		260.0-261.2 Coal Vitreous lustre waxy texture, v. soft, (possibly wthrd), mostly clarain - mod. arg. highly sheared.			
		261.2-261.9 Coal hd, thn-thk lamin. bright lustre, conchoidal fracture. Vitrain ~20%, clar~70%; ash~10%			
		261.9-262.3 Coal thn-thk bnd, bright to vitreous lustre, condhoidal + smooth fracture, 30% vitrain, 60% clar, 10% ash.			
		262.3-263.0 Coal soft & mushy waxy texture, some coal/conchoidal fract. 60% clarain, 15% vitrain 25%ash			
		263.0-264.0 NO CORE			
		264.0-265.5 Coal Dull, mushy wthrd coal, Prbly clarain.			
		265.5-268. Coal v. thn. lamin vitreous lustre, sks, smooth/some conchoidal fracturing 70% cl. 10% vitr. 20% ash.			
		268.0-269.5 NO CORE			
		269.5-269.9 Coal thn. lamin., vitreous lustre, prtly wthrd. clarain~70%; fusain~5% ash~25%			
		269.9-273.0 NO CORE			
		273.0-273.5 Sltst cavings.m. gy. arg. matrix hd.			
		273.5-277.4 Coal soft & prtly wthrd, musky, Prbly clarain /~10% vitrain & 20% ash			
		277.4-277.5 Coal shaly fusain bnd.			

Interval	Unit Thick. (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
		277.5-278.0 Coal soft & mushy, prbly clarain/ small amnts of vitrain.			
		278.0-279.0 Coal vitreous to bright lustre, thn to thk lamin. conchoidal & smooth fracture, fairly clean to touch, brittle, 50% clar, 40% vitrais, 10% ash - sks.			
		279.0-279.2 Coal vitreous to dull lustre, tight texture, pb.gy.to blk. Mostly durain ~70% clarain ~10%, vitr. ~5%/ 5% ash			
		279.2-279.5 Coal vitreous to bright lustre, thn lamin. smooth/some conchoidal fracture clarain ~60%, vitrain ~20%, ash ~20%			
		279.5-283.3 Coal bright to vitreous lustre, conchoidal & smooth fracture, hd. sks, thn to thk lamin. 20% vitrain 70% clarain, < 10% ash			
		283.3-284.0 Coal dull, v. arg. prbly 40% ash.			
		284.0-284.4 Coal bright to vitreous lustre, conchoidal to smooth fracture, clean to touch, brittle vitrain 15% cl. 75%, ash 10%			
284.4-328.0	43.6	Sh m-mk. gy. slty., carb(sl to v.) hd, - some v.f. gr.ss	60°	fair to gd	90%
328.0-348.0	20.0	COAL HORIZON			
		328.0-328.3 Coaly sh dull, heavy 65% sh.			
		328.3-328.9 Coal hd, bright to vitreous lustre, thn lamin. smooth fracture, sks. Mostly clarain/ bnds of vitrain.			
		328.9-329.0 Carbargillite - dull, shaly coal.			
		329.0-329.7 Coal vitreous lustre, thn, lamin. smooth fracture, clarain ~70%; 15% fusain; 15% ash;			

Interval	Unit Thick (feet)	Description	∠ of bdg to core	core Evaluation	Est. Rec.
		329.7-330.0 Coal dull to vitreous lustre, thn lamin., assoc pyr, clar ~50%, fusain ~20% ash ~30% 330.0-332.0 NO CORE 332.0-334.0 Coal vitreous lustre,/bnds of bright coal Mostly clarain / vitrain bnds. 334.0-342.4 Coal wet & mushy difficult to tell but prbly mostly clarain 342.4-347.0 NO CORE 347.0-347.4 Sh carb, hvy. 347.4-348.0 Carbongillite - musky / 45% ash.			
348.0-432.0	84.0	Sh m. to mdk.gy.carb. some slty areas 375.0-376.0 Sh mdk. gy. soft, coal strgs. 378.0-381.0 Sh dk. gy. mod.hd. carb. sh. 417.0-419.0 Sltst m.gy. hd. arg.	50°	good	95%
432.0-469.5	37.5	SS m. gy., m. gr., a-r, well sorted, arg. matrix silica cmt . massive to thn bdd. some f. gr. intvls. 434.0-437.0 NO CORE 461.0-462.0 SS f.gr. m. gy arg. coal splints 462.5-463.5 SS as above 465.0-467.5 SS as above 469.0-469.5 SS as above			
469.5-471.0	1.5	Sh m.gy., hd, sl. slty, sl. carb. to v. carb. nr base of unit.			
471.0-472.1	1.1	Coal Bnd. 471.0-471.4 Sh /~ < 20% cl/vitr. bnds. minor pyr. 471.0-472.1 Coal mostly cl. / vitrain bnds. minor assoc. pyr.			

Interval	Unit Thick. (feet)	Description	% of bdg to core	core Evaluation	Est. Rec.
472.1-533.0	60.9	Sh m.gy. mod hd., slty to v. slty in local area		good	95%
		493.5-496.0 SS m.gy. f. gr., mod to well sorted bnd, a, hd bdd.			
		499.0-501.0 SS A.A.			
		507.0-508.5 SS A.A.			
		514.0-518.0 SS A.A.			
533.0-582.0	49.0	COAL HORIZON			
		533.0-534.0 NO CORE		fragmental to fair	
		534.0-538.0 Dull to vitreous lustre ~35-40% ash, clarain to durain pyr.			80%.
		538.0-540.0 NO CORE			
		540.0-541.0 Vitreoud lustre, smooth fracture, sko, mostly clarain/ splints of vitrain. ~10% ash			90%
		541.0-542.0 NO CORE			
		542.0-543.5 Vitreous lustre clarain, smooth fracture v. minor pyr.		broken	70%
		543.5-545.6 NO CORE			
		545.6-546.0 Coal dull to vitreous lustre, thn lamin., Pb gy to blk, clarain/some durain.		broken to fair	85%
		546.0-554.5 NO CORE			
		554.5-555.6 Coal light, clarain / bnds of vitrain, thn fairly clean to touch. vitreous to shiny lustre.		broken	80%
		555.6-556.0 Coal hvy /~30% ash, clarain/some fusain bnds, minor pyr.		good	95%
		556.0-558.0 NO CORE			
		558.0-558.5 Coal hvy /~30% ash, clarain/ bnds of fusain minor pyr.		broken to fair	90%
		558.5-559.5 Carbargillite hvy. shaly coal, / mina pyr		good	95%
		559.5-560.5 Sh dk. gy, carb to coaly.		good	95%

Interval	Unit Thick. (feet)		Description	∠ of bdg to core	core Evaluation	Est. Rec.
			560.5-561.5 NO CORE			
			561.5-568.0 Sh dk. gy. brn., coaly, sks,		good	90%
			568.0-569.0 Carbargillite shaly coal, minor pyr, mostly clarain fusain		good	90%
			569.0-570.0 Coal light, thn lamin. smooth fracture, ~ 20% ash. mostly clarain/ mina pyr.		fair to gd	90%
			570.0-571.0 Carbargillite hvy, shaly coal.		good	90%
			571.0-576.5 Coal thn lamin. minor pyr, smooth fracture, mostly clarain/some fusain bnds.		fair	80%
			576.5-582 NO CORE			
582.0-583.0	1.0	Sh	m dk. gy. brn, soft, under clay		broken to fair	95%
583.0-596.0	13.0	SS	m. to m. lt. gy. f.m gr. ss ar, mod to well sorted, sil, hv,	65°	good	95%
596.0			END OF HOLE			

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

(L4)

PROPERTY: SAGE CREEK COAL	HOLE NO. SCC #2B
LOCATION: DILLY HILL	
AZIMUTH:	DIP: -90°
TOTAL DEPTH: 827.5'	DIP TESTS:
HOLE SIZE: 3 15/16"	
DATE STARTED: Feb. 7, 1971	
DATE COMPLETED: Mar. 2, 1971	DATE: Feb. 8 - Mar. 2, 1971
CONTRACTOR: Boyles Bros.	DATE: Mar. 3, 1971

ELEVATION: 5,015' (approx.)
PROBE DEPTH: 834
CORE SIZE: 2¼" (HQ)
AIR: ☐ WATER: ☒
LOGGED BY: Owen Cullingham
PROBED BY: Roke Oil Enterprises

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART — Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
							No core.		
							Sh: m. gy. mod. hd. to hd. - some bn. variation some silty beds.		
				v.f. to f.	a	w	SS: m. gy, bn, flecks Fe, sh. org. matrix. v. sl. calc. approx. m. gr. in local areas. Sh. beds at: 24.3 - 26.4; 26.0 - 26.3; 30.0 - 30.1; 34.2 - 35.2; 78.5 - 79.3; 81.2 - 82.0; 86.7 - 87.0		
	50'			v.f. to f.	a	w	Silst beds at 79.3 - 81.2. SS bed / coal plgs. at 43.8 - 44.6		
					a	w	Intbd: SS : sh. SS: m. gy v.f.-f. (as above) Sh: m. gy. sl. silty to v. silty, hd.		
	100'						Sh. m. mdk. gy. some sl. silty - some carb. remn. pl. frag.		
				f	a	m-w	SS: m. gy. hd., some Fe sh. + Fe ptg. Coal Horizon: - some coaly sh. sh - bnd. at. 127.0 - 128.5 No core		
	150'						Sh: m. gy, sl. silty carb. in part some pl. frag. hd. SS beds at. 148.0 - 150.0; 161.8 - 163.0 m. gy f. gr. hd. to mod. hd. arg. some coalified wd. remn.		
				f	a-r	m-w	SS: m. gy. grdg. fine-med. from f. gr. to m. gr. to c. gr. hd. matrix, some coalified wd. remn. Fe. sh. and Fe gr. trace lgh. pres. Middle sandstone SS bnd. at 167.8 - 168.5 No core at 169.0 - 172.0 + 173.5 - 174.0		
	200'			f-m / m-c	a / a	m-w / mw			
							SS/Sh Horizon - Sh. bnd. at. 211.8 - 211.9		
							Sh: m. dk. gy; some carb. material, hd, silty some pl. frag - some coalified wd. remn approx. silst in some places bd. bnd. at. 222.8 - 223.5; 227.0 - 228.1; 228.5 - 229.1		
	250'			v.f. to m	a	p-m	SS: m. gy, shdd. No. bdd poor mod. sorting Fe sh / Fe gr - hd.		
				v.f. to m	a	p-m	Sh: m. gy. sl. silty carb/ some coaly plgs some coalified pl. remn, hd. SS bnd at. 268.8 - 268.0		
							Coal horizon. Sh bnd. at 273 - 273.8; 275.6 - 276.6 No core 273.8 - 282.6 / poo.		
	300'						Sh. m. dk. gy pl. foss. some carb. material some coalified pl. remn - some carbargillite Coal bnd. at 287.9 - 288.1		
							Coal horizon. Sh bnd. at 304.2 - 305.2 several carbargillite beds		
							Sh: dk. gy carb. coaly in places some coal + carbargillite beds. Coal beds: at 314.2 - 314.4; 317.3 - 317.8; 311.7 - 317.4; 318.8 - 319.0		
	350'								
				v.f. to m	a	m	SS: m. dk. gy, gr. tan silt + v.f. gr. to f. gr. + to m. gr. - shdd. ; hd. accs. carb. material + associated ppr. arg. matrix.		
	400'			m	a	m	Sh beds at. 377.0 - 377.8; 378.2 - 379.3; 391.8 - 392.4; 412.0 - 412.3		
				f to m	a	m	SS coal stgs. at. 418.4 - 418.7; 421.3 - 422.0		
							Sh: m. dk. gy, v. silty at top of unit becoming pure some carb. material		
	450'						Coal Horizon: Sh beds at 454.1 - 456.4 Breccia zone at 473.6 - 500.1		
							Sh: m. dk. gy sl. to v. carb. / tran coal plgs		
	500'						Coal Horizon: No core 500.8 - 512.0		
				v.f. to f.	a-r	m	SH: m. dk. gy. carb. soft, grdg. downward to silst		
							SS: m gy v.f. gr. grading downward to f. gr. hd.		
							Sh. m. dk. gy some carb. material. mod. hd. some carbargillite beds; and some sh / coal stng. Coal beds at. 659.3 - 664.5		
	550'						SS beds at 574.6 - 576.5; 587.6 - 588.0; 592.4 - 593.9 } m. gy. v.f. gr. arg. matrix hd. mod. sort		
							No core at 621.4 - 622.6; 639.5 - 660.5		
	600'								
							Silst: m - m. dk. gy arg. matrix ~ 60% silt gr. to sh sh: beds at 716.0 - 718.0; 713.0 - 713.9; 714.2 - 715.6		
							SS: m - m. dk. gy silty in part carb some coal stng.		
				f	a	m	SS: m. gy some arg. beds arg matrix, hd		
							SH: m. dk. gy; some mod carb. info. hd.		
				f-c	a	p-m	SS: m. gy some mod. carb. material, hd some coal stgs + plgs.		
	750'			f-m	a	p-m	SH: beds at 748.8 - 746.3, 748.0 - 748.8; 751.4 - 752.2		
							SH: m. dk. gy, silty in part, carb in part, carb in part bd at 768.5 / some ppr		
							COAL HORIZON carbargillite (coaly sh) 761.6 - 763.0; 763.0 - 767.0 No core 770.0 - 772.0; 787.0 - 791.0 792.0 - 801.0		
	850'						SS: m. gy, v.f. gr arg to silt, matrix hd. Cavings of SS at 821.0 - 821.5 No core 811.0 - 813.0; 821.5 - 823.0		
							Total Depth 827.5'		

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.
LSD
SEC
TWP
RGE
W 4 M

COMPANY: BARR CREEK COAL CO. LTD.

WELL: EPR BCC NO 33

LOCATION: GILBY WELL

FIELD: FLATTRAY VALLEY

PROVINCE: BRITISH COLUMBIA

Elev.
K.B.
D.F.
G.L.

Permanent Datum: GROUND LEVEL
Log Measured from: GROUND LEVEL
All Depths Measured from: GROUND LEVEL

Date: 7 JAN 71
Total Depth: 833
Depth Logged: 833
Depth Cleaned: 833
Casing Size: 5 1/2 OD
Casing Base: 25
Fluid Type: DRY
Fluid Level: FULL
Max. Temp.: 0 C
Max. Date:

Operating Time: 10
Truck No.:
Recorded By: B.KINCE
Witnessed By: C.GILLESPIE

Gilby Well
Elev. 1 ft. Above Top Gate

Drilling Co. No. 1 EDF

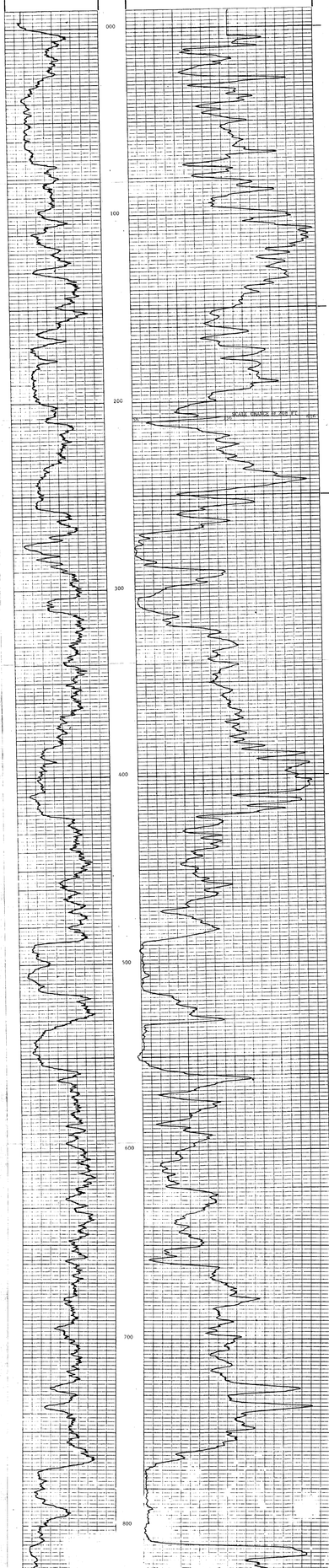
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 3/4	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	1 3/4
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	8.55 FT	LENGTH	6 INCH
		SOURCE MODEL NO	MRC-N-SS-W
GENERAL		SERIAL NO	N 236
HOIST TRUCK NO	10	SPACING	19 1/2CH
INSTRUMENT TRUCK NO		TYPE	Americium
TOOL SERIAL NO	C0027/14C8177	STRENGTH	6.94×10^8 N/S

LOGGING DATA

RUN NO	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC	SENS SETTINGS	GAMMA RAY ZERO DIV. L OR R	GAMMA RAY API G.R UNITS PER LOG DIV.	NEUTRON T.C. SEC	NEUTRON SENS SETTINGS	NEUTRON ZERO DIV. L OR R	NEUTRON API N. UNITS PER LOG DIV.
1	0	208	10	4	25	OL	5 CPS	4	3	1L	40 CPS
	208	833	10	4	25	OL	5 CPS	4	4	2L	28 CPS

REMARKS: VERTICAL HOLE



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ROKE
GAMMA RAY NEUTRON LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

(6)

FILE NO.

LSD
SEC
TWP
RGE
W___M

COMPANY: SAGE CREEK COAL CO. LTD.
WELL: SCC #3
LOCATION: DILLY HILL
FIELD: FLATHEAD VALLEY
PROVINCE: BRITISH COLUMBIA

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART
Expiry Date: Mar. 3, 1972

Permanent Datum: GROUND LEVEL — Elev. ___
Log Measured from: GROUND LEVEL — Ft. Above Perm. Datum
Well Depths Measured from ___

K.B. ___
D.F. ___
G.L. ___

Run No.	ONE
Date	30 MARCH 71
First Reading	592
Last Reading	0
Footage Logged	592
Depth Reached	593
Depth Driller	596
Casing Roke	
Casing Driller	
Fluid Type	AIR/MUD
Liquid Level	66
Min. Diam.	HQ
Operating Time	6 HOURS
Truck No.	10
Recorded By	LARKIN
Witnessed By	CULLINGHAM

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EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	$1\frac{11}{16}$	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	$1\frac{11}{16}$
TYPE	GEIGER	DETECTOR MODEL NO.	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	8.55 FT	LENGTH	6 INCH
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	N256
HOIST TRUCK NO	10	SPACING	19 INCH
INSTRUMENT TRUCK NO		TYPE	AmBe
TOOL SERIAL NO.	CGN27U4A78	STRENGTH	6.70×10^6 N/S

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS. SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	188	10	4	25	0L	5 CPS	4	3	1L	38 CPS
	188	592	10	4	25	0L	5 CPS	4	4	1L	28 CPS

REMARKS: Long 114° 33' 35" Lat. 49° 06' 22"

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES → CPS 5; 0 – 50		NEUTRON INCREASES → CPS 38; 38 – 418 – 798

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L7

PROPERTY:	SAGE CREEK COAL	HOLE NO.	SCC #3
LOCATION:	DILLY HILL		
AZIMUTH:		ELEVATION: 5,350' (approx.)	DIP:
TOTAL DEPTH:	596'	PROBE DEPTH: 592'	DIP TESTS:
HOLE SIZE:	3 15/16"	CORE SIZE: 2⅛" (HQ)	
DATE STARTED:	March 7, 1971	AIR: ☐ WATER: ☒	
DATE COMPLETED:	March 30, 1971	LOGGED BY: Owen Cullingham	DATE: April 2, 1971
CONTRACTOR:	Boyles Bros.	PROBED BY: Roke Oil Enterprises	DATE: March 30, 1971

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PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
							No core		
		x e Y		m-c	a	m-w	SS: m. gy. v. hd m. gr. lc. gr. beds. massive, Fe stn & Fe inclusions in g^ts gr. Fractures Middle Kootenay		
		x e		m-c	a	m-w	SH: ptgs at 19.3'-23.8'; 45.0'-46.5'; 46.5'-49.0'		
	50'	x e		m-c	a	m-w	No core at 62.0'-63.0'; 70.0'-73.0' 74.5'-77.0'; 78.0'-80.0'		
		e					SH: m dk. gy. carb, mod. hd coal splints at: 87.6'-87.9'		
	100'						COAL HORIZON: Few carbargillite beds & sh beds		
		x		vf	a	m	SS: m. gy sil cmt hd, possibly arg.		
		e					SH: m, lt-m, gy carb in part / some coalified pl. frag.		
	150'	e							
		e							
		e e							
		e							
	200'	x		slt to f	a	m	SS: m. gy. slt size to f. gr - graded beds give bnd. appearance, some carb. ptgs. Arg. to. sil matrix.		
		x			a	m			
							SH: m gy. sl. v. silty sh to arg. sltst.		
							SS beds at: 213.0'-213.8' 214.9'-215.6' 216.0'-217.0' 265.0'-255.6'		
	250'								
							COAL HORIZON: shaly coal at: 255.5'-255.7' no core at: 258.5'-260.0' 263.0'-264.0' 268.0'-269.5' 269.9'-273.0'		
	300'						SH: m - m dk, gy, silty, carb (sl to v) hd — few v.f. gr. ss beds		
							COAL HORIZON: sh at 347.0'-347.4' sh coal at: 328.0'-328.3'; 328.9'-329.0' 347.4'-348.0' no core at: 330.0'-332.0'; 342.4'-347.0'		
	350'								
							SH: m to m dk, gy, carb, some silty areas 375.0'-376.0' sh - m, dk, gy, soft coal stgs. 378.0'-381.0' sh: - dk, gy, mod. hd carb. 417.0'-419.0' sltst: m, gy, hd, arg. 429.0'-432.0' sltst: m, gy, hd, arg.		
	400								
				m	a-r	w	SS: m. gy. m gr, a-r, well sorted, arg matrix sil. cmt massive to thin bdd. some intrls of f. gr. ss.		
	450			m	a-r	w			
							SH: underline by 1'-1' coal bed.		
							SH: m gy, mod. hd. silty to v. silty in local areas		
	500'						SS: beds at: 493.5'-496' 498.0'-501.0' 507.0'-508.5' 514.0'-518.0' } m gy. f. gr. m-w sorted bdd. & hd & bdd		
							COAL HORIZON: SH at: 559.5'-560.5'; 561.5'-568.0 coaly SH at: 558.5'-559.5'; 568.0'-569.0 570.0'-571.0'		
	550'								
							NO CORE 533.0'-534.0'; 538.0'-540.0' 591.0'-592.0'; 593.5'-595.6' 546.0'-554.5'; 556.0'-558.0' 560.5'-561.5'; 576.5'-582.0'		
							SH: m dk gy sil. carb. [illegible]		
							SS: m. to m lt gy, f-m gr, ss a-r mod to well sorted, sil, hd		
	600								
							Total Depth 596'		

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L8

PROPERTY: Sage Creek Coal Limited		HOLE NO. S.C.C. #1
LOCATION: Dolly Hill, [illegible]		
AZIMUTH:	ELEVATION: [illegible] (approx.)	DIP:
TOTAL DEPTH: 752'	PROBE DEPTH: 743'	DIP TESTS:
HOLE SIZE: [illegible]	CORE SIZE:	
DATE STARTED: March 2[illegible], 1971	AIR: ☐ WATER: ☐	
DATE COMPLETED: March [illegible], 1971	LOGGED BY: [illegible]	DATE: March 2[illegible], 1971
CONTRACTOR: Hamilton Drilling	PROBED BY: [illegible]	DATE: March 2[illegible], 1971

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
		x		v.f	a	p-m	SS: m. gy/brn. stn. due to oxdtn. of Fe impurities - arg. matrix		
		a					SH: m. gy/brn. stn. due to Fe impurities		
		x		v.f	a	p-m	SS: m. gy. arg. matrix.		
		a					SH: m. gy. sl. slty to v. slty/some sdy sh ptcls. carb. tr. nr base of unit		
	50'	a							
		a							
		a					Coal Horizon: Grnd. prob. mostly clarain / minor amt. of vit. & durain. v. minor amounts of pyr.		
	100'								
							SH: m. gy. soft, v. sl slty, blocky sl. carb.		
		x		v.f-f	a	p	SS: m. gy. v. arg. sl. micro-mica v. sl. carb. hd. some siltst. ptcls.		
							Coal Horizon: Grnd. prob. mostly clarain/minor amt. of vitrain, durain & fusain.		
	150'	x		slt to v.f	a	p-m	Siltst / ss: m. gy, slt. size to v. f. gr. arg. matrix firm scattered carb. flecks, grades to silty sh at base		
		p			a	p.m			
	200'						SH: m. brn. gy. slty, blocky Not as slty below 180' Becomes dk, gy at 185'-195' In part sl. mica, sl carb. becomes v. silty again at base		
		a							
		a							
	250'	f		m to c	a to r	m	SS: m. gy. slty, v. arg. tr. of calcite veinlets tr. of coal		
		a					SH: m. gy. sl. slty, approaches m dk, gy. in local areas v. sl carb. at base of unit		
		a					280'-290' siltst. m. gy, v. arg.		
	300'	a							
		a							
		a							
		x		v.f. to f	a	m	SS: m. gy. brn. flecks due to Fe impurities arg. matrix, few coal ptcls - grades to sh at base of unit		
		a							
	350'	x		v.f.	a	m	340'-345' SH: m. gy. v. sl. slty		
		x		to					
		x		f	a	m			
		a					SH: m. dk. gy. v. sl. slty carb. at base of unit.		
		a							
	400'						Coal Horizon:		
		p		slt					
		x		f	a-r	w	SS: m gy. arg. matrix, but fairly sil. gr. to gr. contact.		
	450'	x							
		x					Grades into v. f. gr. ss toward base of unit		
		x/a		f	a-r	w	Basal Kootenay		
		x					431'-435' siltst: m. dk. gy. v. arg. few gr. appr. v. f. gr. ss. few coal ptcls.		
							465'-470': Intbd: ss/sh. sh. dk, gy, micro-mica		
	500'						Intbd, ss, sh, siltst Passage beds ss:siltst:sh		
							SS: m. lt. gy. brn, v.f.gr to silt size arg. matrix, mod. sorted minor biotite.		
	550'						Siltst: m. gy, arg. micromicaceous hd, blocky		
							SH: dk, gy, micromicaceous, marine		
	600'								
							SH: m. to m dk, gy, in part slty to sdy, sl. to v. micro-mica glauconitic in part		
	650'						Fernie shales		
	700'								
	750'								
							Total Depth 752'		

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L9

PROPERTY:			HOLE NO.
LOCATION:			
AZIMUTH:	ELEVATION:		DIP:
TOTAL DEPTH:	PROBE DEPTH:		DIP TESTS:
HOLE SIZE:	CORE SIZE:		
DATE STARTED:	AIR ☐ WATER ☐		
DATE COMPLETED:	LOGGED BY:		DATE:
CONTRACTOR:	PROBED BY:		DATE:

359 (1)

REGISTERED PROFESSIONAL ENGINEER OF R. C. HART BRITISH COLUMBIA

Expiry Date: Mar. 3, 1973

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
		x		m-c	a	p-m	SS: m gy bm ultbd. fe sh (1mm, some hem)		
							m-c gr / some = granule congl.		
							arg. matrix silica cmt		
		x		m-c	a	p-m			
		p		slt	-	-	Sltst: m gy hd, v arg some sdy intrls		
							out of ultbd zone		
	50	p		slt	-	-			
							coal: 5inch prob high ash		
		p/sh					Intbd sh/sltst.		
							SH: m gy hd, quite silty		
		x		f	a	w	sltst: m gy hd v arg		
							to 75 ss: m dk gy f gr a hd. well sorted		
		p/sh					arg. matrix		
		x		f-c	a	m-w	SS:		
	100						m gy. f-c, gr / some gr = granule		
		x		f-c	a	m-w	congl a arg matrix, sil, cmt		
		x		f-c	a	m-w			
	150	x		f-c	a	m-w			
				f-m	a	m-w			
		v					SH:		
		c					lt gy, v.f. dol		
							170-180 sh a.a / some slt gr.		
		c							
		c							
	200	c							
		c		sf-m	a	p	Intbd ss/sh, sltst 1:1:2		
		c					SS: m. gy, v friable, silty arg		
		c					sh: m. bru gy, silty poikilitic		
							sltst: m. gy, rusty sdy arg. mottled		
		x		sf-m	a	p	SS: m. gy, exp texture, numerous rusty		
							patches (1mm) some disaggregated		
							some aggregates of a gr. sd. arg matrix		
		x		sf-m	a	p			
	250	x		v.f.l	a	m			
		p		slt			sltst: m gy arg. v sdy, sd, blocky carb. matter		
							coal HORIZON: Seams 2+3		
		c					SH: m. gy. soft, carb blocky, silty		
		c		v.f-f	r	w	SS: m. gy, v.f.-fgr. r well sorted, arg		
	300	c		v.f-f	r	w	hd grades downward into sltst, r sl		
							micro mica		
		c					SH: m. gy. sl to v silty at carb		
							trace of sandy plgs, minor iron stone		
		c					blocky, trace of pyr.		
	350	c							
		c							
		p		slt			sltst: m. gy. r arg blocky v.f. gr m		
							local areas		
	400	p		slt					
		c					SH: m. gy, r silty blocky sl micro-mica		
							trace of pl remains		
		c					coal HORIZON		
							Seam 4a		
	450								
		c					SH m. gy, silty in part, some coal frag		
		p					sltst: m gy quite arg = v.f gr sd. in		
							local areas		
		p							
							coal HORIZONT		
							Seam 4b		
	500								
		p		slt			Intbd: sh/sltst 3:2		
							SH: m gy silty, blocky		
		c					sltst: m gy arg. r sl micro mica sd		
							some gr = v.f of ss		
		c							
		p		slt					
	550	c							
		c							
		p		slt					
		a							
		p		slt					
		y		v.f-f	a	w	SS: m gy, v.f-f gr, arg. matrix, a well		
							sorted sd.		
							after 635' f m gr.		
							606'-610' sh m. gy v silty blocky		
	600	y					v sl. micro-mica		
		a		v.f-f	a	w			
		x		v.f-f	a	w			
				f-m	a	w			
	650	y		f-m	a	w			
		y		f-m	a	w			
		x		f-m	a	w			
	700								
		a					SH: m. gy. sdy to silty, some coal		
							pieces. carb towards base of unit.		
		c							
							coal HORIZON		
							Seam #5		
	750								
		y		m	a-r	w	SS: m. lt. gy, m gr. gr to gr contact		
							sil, r min arg matrix, mod		
							hd a-r, well sorted.		
		y		m	a-r	w			
	800								
							Total Depth 796'		

ROKE

OIL ENTERPRISES LTD.
CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.
COMPANY SAUK CREEK COAL CO. LTD.
WELL SCC # 4
LOCATION DITLEV ESTA.
FIELD PLATEAU VALLEY
PROVINCE BRITISH COLUMBIA

LSD. SEC. TWP. RGE. W. M.

Permanent Datum: GROUND LEVEL
Log Measured from: GROUND LEVEL
Drill Measured from: G.L.
Elev.: K.B. D.F. G.L.

Run No.	1
Date	23 March 71
Last Reading	726
Footage Logged	722
Depth Reached	723
Bottom Reading	726
Casing Type	
Casing Depth	
Fluid Level	
Max. Temp.	ALBERTA
Logged Left	133
Min. Open	

Operating Time	
Truck No.	110
Recorded By	LAMOUR
Witnessed By	GUILLEMOUR

359

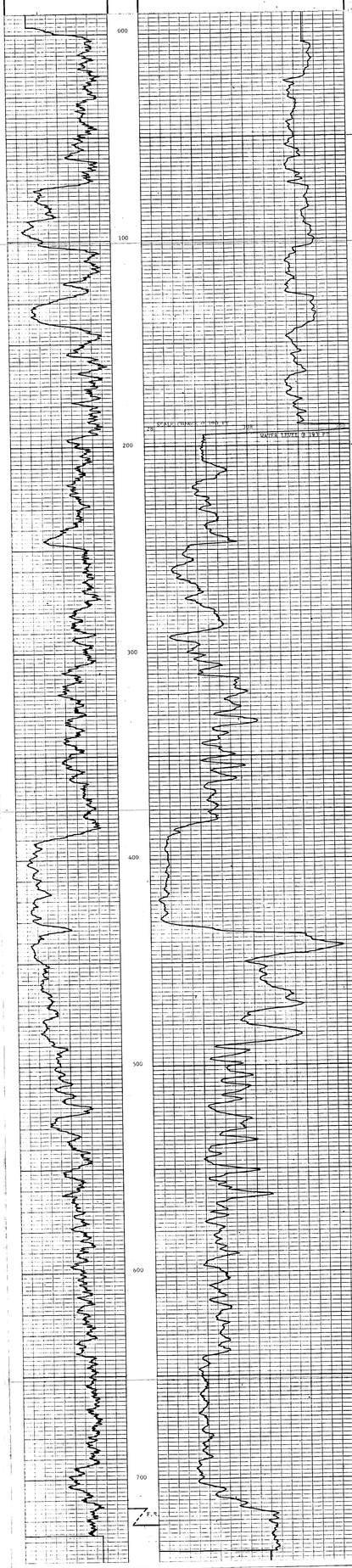
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1¾	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	1¾
TYPE	GEIGER	DETECTOR MODEL NO.	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	8.55 FT	LENGTH	6 INCH
GENERAL		SOURCE MODEL NO.	MRC-N-SS-W
HOIST TRUCK NO.	10	SERIAL NO.	2 250
INSTRUMENT TRUCK NO.		SPACING	19 INCH
TOOL SERIAL NO.	CDN2704A78	TYPE	AmBe
		STRENGTH	6.70×10^6 N/S

LOGGING DATA

GENERAL						GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC	SENS SETTINGS	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	190	10	4	25	OL	5 CPS	4	4	1L	28 CPS
	190	722	10	4	25	OL	5 CPS	4	4	9L	28 CPS

REMARKS Long. 114° 33' 26" Lat. 49° 00' 45"



ROKE

GAMMA RAY NEUTRON LOG

OIL EXPLORATIONS LTD. CALGARY, ALBERTA

FILE NO
LSD
SEC
TWP
RGE
M

COMPANY: SAGE CREEK OIL CO. LTD.
WELL: SCC # 5
LOCATION: 07.33.1 07.1.1
FIELD: PLATEAU VALLEY
PROVINCE: BRITISH COLUMBIA

C-11

Permanent Datum: GROUND LEVEL
Log Measured from: KB
Drilling Measured from: KB

Elev.
Elev.

K.B. 0.0
D.F.

Date: 33 MAY/ 77
First Reading: 276
Last Reading: 276
Feeder Hanged: 276
Depth Reached: 277
Casing Size: 296
Casing Order: 24.7 /ANTER
Liquid Level
Max. Diam.

Operating Time: 6.10/2.5
Truck No.: 10
Recorded By: LAKETA
Witnessed By: CHALMERS/WAY

Run No.: 1
Bit No.: 1
Bit Type: 7 7/8 HARD ROCK
Bit Depth Measured on: KB

Rig Up Time: 1.0
Rig Down Time: 1.0
Log Time: 1.0
Total Time: 3.0

Operator: K. WIRTH
Assistant: P.C. Baker Perm. Exam

Date: 1 JUNE 1977

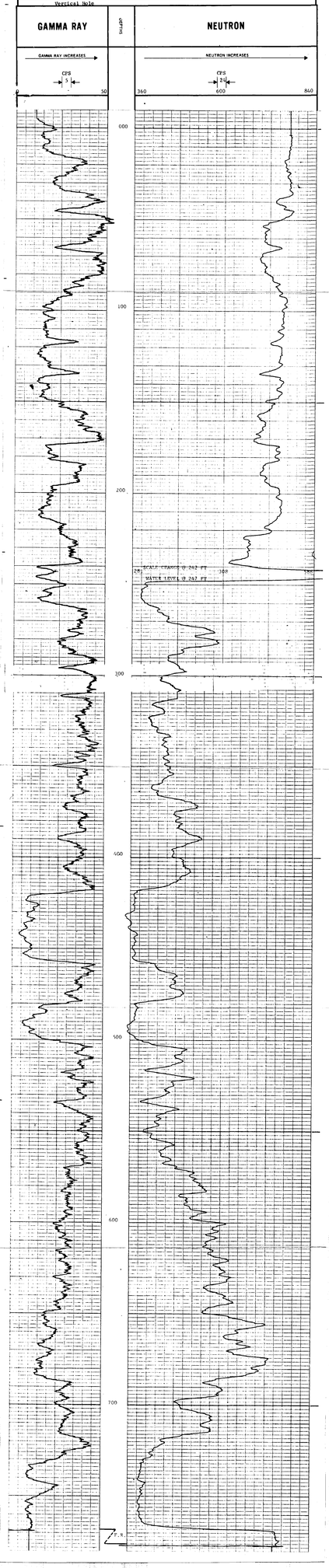
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 3/8	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	1 3/8
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO IN SOURCE	8.55 FT	LENGTH	6 INCH
		SOURCE MODEL NO	MRC-NSS-W
GENERAL		SERIAL NO	3256
HOIST TRUCK NO	10	SPACING	19 INCH
INSTRUMENT TRUCK NO		TYPE	Americ
TOOL SERIAL NO	CGR2704478	STRENGTH	6.70 x10⁶ N/S

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC	SENS SETTINGS	ZERO DIV. L OR R	API GR UNITS PER LOG DIV.	T.C. SEC	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	242	30	4	25	OL	5 CPS	4	4.7	11L	24 CPS
	242	776	10	4	25	OL	5 CPS	4	4	11.	28 CPS

REMARKS Long 110° 33' 31 Lat 49° 0n' 14"
Vertical Hole



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RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L12

PROPERTY:			HOLE NO.:
LOCATION:			
AZIMUTH:	ELEVATION:		DIP:
TOTAL DEPTH:	PROBE DEPTH:		DIP TESTS:
HOLE SIZE:	CORE SIZE:		
DATE STARTED:	AIR: ☐ WATER: ☐		
DATE COMPLETED:	LOGGED BY:		DATE:
CONTRACTOR:	PROBED BY:		DATE:

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART
Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA

Intbd: sltst / sh 2:1
sltst: m brn wthrd v. arg. Fe stn
SH: m brn wthrd. slty Fe stn

SS: m. gy, v. f. gr, a quik, arg. well sorted

SH: m. to m dk gy. some carb. matter partly pulverised
35'- 40' sltst: to v f gr. ss m, gy. arg. Fe stn

SS: m. gy / some brn colour due to Fe impurities & stn, m, gr. / some intv. of c. gr. sd. approaching granule congl. arg. matrix, silica cmt hd & mod. sorted.
105'-110' SS: m. gy, v. f - f gr. & mod. sorted arg. matrix some coal frag.

SH: m. gy, slty some ptcls of dull coal minor pyr.
130'-135' SS: m gy v. f gr. ss arg. matrix & mod. sorted.
145'- 150' SS: m to m dk gy v. f. gr. arg. few coal frag.
170'-180' SH: m. dk, gy sl. carb.

SS: m. gy, v. f - f. gr. & mod. to well sorted arg. matrix, mod. hd.
195'- 255' SS: m gy m-c, gr sil cmt arg. matrix &, mod. sorted
230'- 235' SS: AA but / few coal frag.

Intbd: sh / sltst / ss : 4:2:5
260'- 270' / 290' - 300' } SH: m. gy. sl to v. slty
275' - 280' / 310' - 315' } sltst: m. gy. arg.
270' - 275' / 280' - 290' } SS: m. gy v.f- f. gr. & well sorted hd arg. matrix.
300'-310' SS: m. gy. c. gr. &. mod. sorted siliceous

SH: m. gy slty / some sdy sh intl.

Coal Horizon: Seam: # 2+3 (?)

SH: m. gy. sl. slty partly carb. few coal frag. minor pyr.

Coal Horizon: Seam # 4a

SH: m. gy, slty carb. ptcls. minor pyr.

sltst: m. brn. gy. arg. minor pyr.

Coal Horizon: Seam # 4b
SS: m. gy. brn. arg. matrix. few coal frag. minor pyr.

SH: m. gy. slty to v. slty.

sltst: m. gy v. arg. hd.

SS: m. brn. gy, v. f. gr. & well sorted arg. matrix, coal ptcls.
580'- 600' SS: m. gy. f - m. gr. a. mod. sorted arg. matrix sl. carb. fairly hd.

Intbd: sh / sltst / ss: 2:1:2
SH: m. gy, slty to sdy, some v. f. gr. ss frag.
sltst: m. lt gy. arg.
SS: m. lt. gy. v. f. f gr. & arg. matrix

Coal Horizon: Seam # 5 (?)

SS: m. lt. gy. to m. gy. f-m gr. siliceous v. sl. arg. & well sorted few coal frag.

Basal Kootenay

775'- 780' sltst: m. lt. brn. gy. approaching v. f. gr. ss
780'- 805' SS: m. gy. v. f. gr. arg. matrix, some slty sh. ptcls.

SH: m. to m. dk. gy, slty to sdy, sl. - v. micro - mica
850' 892'- sh: m. gy. grn. glauconitic slty

Fernie shale

Total Depth 892'

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.
LSD SEC TWP RGE M

COMPANY: SAUK CREEK COAL CO., LTD.

WELL: SPC 86

LOCATION: DITLEY WELL

FIELD: PLAINSIDE VALLEY

PROVINCE: ALBERTA

Permanent Datum: GROUND LEVEL
Log Measured from: GROUND LEVEL
Drilling Measured from: GROUND LEVEL

Elev.: K.B. 0.0
D.F.
G.L.

Date: 1-8-86
Run No.: ONE
Depth Driller: 165 FT.
Depth Logger: 165 FT.
Bottom Logged Interval: 165 FT.
Top Log Interval: GROUND
Casing Driller: 8 5/8 @ 10 FT.
Casing Logger: 8 5/8 @ 10 FT.
Bit Size: 7 7/8
Type Fluid in Hole: WATER
Dens.: 8.4
Visc.: 28
pH: 7.5
Fluid Loss: N/A
Source of Sample: FLOWING
Rm @ Meas. Temp.: 1.0 @ 70 F
Rmf @ Meas. Temp.: N/A
Rmc @ Meas. Temp.: N/A
Source: Rmf: N/A Rmc: N/A
Rm @ BHT: 0.8 @ 100 F
Time Since Circ.: 3 HRS.
Max. Rec. Temp.: 100 F
Equipment No.: LA0739
Location: CALGARY
Recorded By: K. STOCKER
Witnessed By: G. ZIEMANN

Equipment Number: LA-172 (DOUGS)
Truck No.: LA-0 (MICK)
Date: 1-8-86

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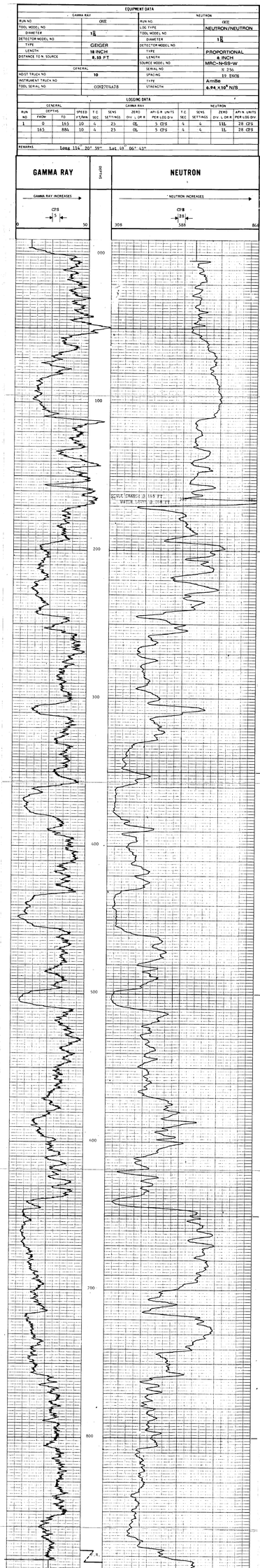
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 3/4	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	1 3/4
TYPE	GEIGER	DETECTOR MODEL NO.	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	8.55 FT	LENGTH	6 INCH
GENERAL		SOURCE MODEL NO.	MRC-NSS-W
HOIST TRUCK NO.	10	SERIAL NO.	X 256
INSTRUMENT TRUCK NO.		SPACING	19 INCH
TOOL SERIAL NO.	03N2705478	TYPE	Americ
		STRENGTH	6.94×10^8 N/S

LOGGING DATA

GENERAL					GAMMA RAY			NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC	SENS SETTINGS	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	165	10	4	25	CL	5 CPS	4	4	11L	28 CPS
	165	886	10	4	25	CL	5 CPS	4	4	1L	28 CPS

REMARKS: Long 114° 20' 59" Lat. 49° 00' 43"



RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L14

PROPERTY: [illegible]		HOLE NO. [illegible]
LOCATION: [illegible]		
AZIMUTH:	ELEVATION: [illegible]	DIP:
TOTAL DEPTH: [illegible]	PROBE DEPTH: [illegible]	DIP TESTS:
HOLE SIZE: [illegible]	CORE SIZE:	
DATE STARTED: [illegible]	AIR: ☐ WATER: ☐	
DATE COMPLETED: [illegible]	LOGGED BY: [illegible]	DATE: [illegible]
CONTRACTOR: [illegible]	PROBED BY: [illegible]	DATE: [illegible]

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
		x		m-c	a	m	55: m. gy. brn (uthrd) m-c gr, arg. matrix a mod. sorted.		
							first 25' showed uthrg.		
							25'-65' m, gy m-c gr. some gr → granule size arg. matrix, a mod. sorted.		
							65'-95' m. gy. f-m gr, a. mod. sorted arg. matrix.		
	50'	x		m-c	a	m			
		x		m-c	a	m	95'-140' m. gy, f gr. a mod. sorted disaggregated.		
		x		f-m	a	m	140'-145' m. gy. f-m gr. a mod. sorted arg. matrix		
		x		f-m	a	m	145'-150' sh m gy v silty hd blocky		
	100'	x		f	a	m	150'-157' ss m gy f-m gr. a arg. matrix silica cmt. m-well sorted		
		x							
		x		f	a	m			
		x		f-m	a	m			
	150'	a							
		x		f-m	a	m-w			
							Coal Horizon: Seam # 2+3		
		a					SH: m, gy sl. silty v. sl. carb few coal frag		
	200'	a							
		a							
		x/a		vf/	a/	m/	Intbd ss/sh/siltst 2 2 1		
		x/a		vf/	a/	w/			
		p		slt			SH: m - m dk gy, silty blocky fairly hd.		
		x		vf-f	a	w			
		p		slt			Siltst: m - m dk gy arg. hd. blocky		
		a							
	250'	x		vf-f	a	w	SS: m - m dk gy vf-f gr, a arg. matrix some calcite infilling minor pyr. hd. well sorted.		
		x		vf-f	a	w			
		p		slt					
		a							
		x		vf-f	a	w			
	300'	p		slt					
		x		vf-f	a	w			
		x		vf-f	a	w			
		a							
		a					SH & Coal m. dk. gy. carb. >50 % coal frag		
		a							
	350'						Coal Horizon: Seam # 4a		
		a					SH: m. gy to m dk gy few coal frag. nr. top of unit, silty in part, minor pyr. carb at base of unit.		
	400'	a							
		a							
							Coal Horizon: Seam # 4b		
		a					SH: m, gy, silty blocky, some coaly sh frag. minor pyr.		
	450'	a							
		a							
		a							
		p		slt			Siltst: m. gy. arg. approaches v. f. gr. ss		
		x		v.f					
		p		slt			475'-480' ss: m brn. gy. v. f. gr. some carb. ptcls. a. arg. matrix mod. to well sorted.		
	500'	p		slt					
		x		v.f	a	w	SS: m. gy. v. f. - c. gr. a mod. to well sorted, arg. matrix, few carb. ptgs.		
		x		v.f.	a	w			
		x		f-m	a	m			
		a							
		x		m	a	m			
		a							
		x		m-c		m-w			
	550'								
		x		m-c	a	m-w			
		x		m-c	a	m-w			
		x		m-c	a	m-w			
		x		v.f.	a	w			
		x		v.f.	a	w			
		a					Intbd: sh / siltst / ss.		
	600'	p		slt					
		p		slt					
		x		v.f.	a	p.m	sh: m, gy, sl silty to v. silty v. sl micro-mica		
		x		v.f.	a	p-m			
		p		slt			Siltst: m, gy, arg. v. sl. micro-mica		
		x		v.f	a	m			
		p		slt					
		a					SS: m. gy v. f. gr. v. arg. a poor to mod. sorted.		
	650'	a							
							Coal Horizon: Seam # 5		
							Sh bnd 665'-670'		
		a					SH: m. dk. gy sl. silty ~ 50% coal frag. few f. gr. ss artels.		
	700'	x		f	a-r	m			
		x		f	a-r	m	SS: m. to m. lt. gy f. gr. mod. sorted a-r, gr to gr. siliceous minor amnt of arg. matrix.		
		x		f	a-r	m			
	750'						Total Depth 736'		

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO
LOG
Run No
TYPE
Ref
M ____ M

COMPANY SAWC CREEK OIL LTD.
WELL SEC 27
LOCATION EDITH HILL
FIELD FRASER VALLEY
PROVINCE ROCKIES COLUMBIA

Permanent Datum GROUND LEVEL
Log Measured from GROUND LEVEL ____ Ft. Above Perm. Datum
All Depths Measured from ____ Elev.: K.B. ____ D.F. ____ G.L. ____

Date Run No. 1 ONE
Date First Reading 1-APRIL-71
Last Reading 1-APRIL-71
Bottom Logged 229
Depth Reached 229
Depth Driller 230
Casing Driller 226
Casing Logged 226
Casing Size 8 5/8"
Fluid Type AIR/WATER
Max. Temp. 228
Max. Press.

Operator's Time
Truck No. 10 3 HOURS
Recorded By LABRIE
Witnessed By CITELLICIGAN

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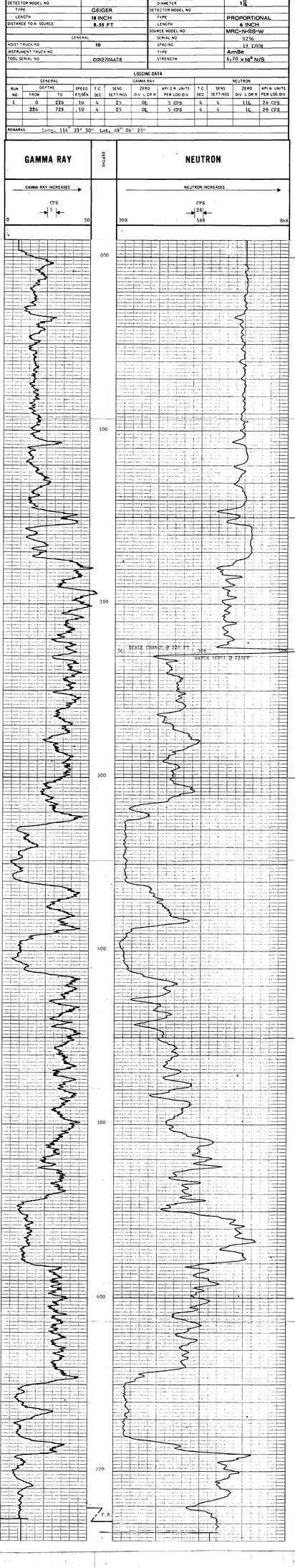
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 3/8	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	1 3/8
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	8.55 FT	LENGTH	6 INCH
		SOURCE MODEL NO	MRC-N-SS-W
GENERAL		SERIAL NO	N256
HOIST TRUCK NO	10	SPACING	10 INCH
INSTRUMENT TRUCK NO		TYPE	AmBe
TOOL SERIAL NO	CC127104478	STRENGTH	6.70 x10⁴ N/S

LOGGING DATA

GENERAL						GAMMA RAY			NEUTRON		
RUN NO	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G R UNITS PER LOG DIV.	T.C. SEC	SENS. SETTINGS	ZERO DIV. L OR R	API N UNITS PER LOG DIV.
1	0	226	10	4	25	OL	5 CPS	4	4	11L	28 CPS
	226	229	10	4	25	OL	5 CPS	4	4	11L	28 CPS

REMARKS Long. 114° 33' 30" Lat. 49° 06' 25"



RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L16

PROPERTY: Sage Creek Coal Limited	HOLE NO: S.C. #8
LOCATION: Dilly Hill, Alberta, 72:068 (approx)	
AZIMUTH:	ELEVATION: 3,550' (approx.) / DIP:
TOTAL DEPTH: 767'	PROBE DEPTH: 766' / DIP TESTS:
HOLE SIZE: 4 7/8"	CORE SIZE:
DATE STARTED: April 2, 1971	AIR: ☐ WATER: ☐
DATE COMPLETED: April 5, 1971	LOGGED BY: [illegible] / DATE: April 6, 1971
CONTRACTOR: Kenting Drilling	PROBED BY: Rio Oil Exploration / DATE: April 5, 1971

359 (1)

PROFESSIONAL ENGINEER BY R. C. HART BRITISH COLUMBIA ENGINEER

Copy Note: Mar. 29 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
		a					SH: m. gy. silty		
		a							
		x		v.f-f	a	m	SS: m. gy. brn. lathed. 1/8 to 1/4 mm. gy, v. f. granule conf. a. mod. sorted. arg. matrix		
		x		f-m	a	m			
							75-80 siltst: m. gy, v. arg.		
	16	x		f-m	a	m			
		x		f-m	a	m			
		x		m to f-m	a	p			
		x							
		p		sil					
		x		v.f	a	m-w			
		x		v.f	a	m-w			
	w	x					lathed: sh, siltst: sh: m. gy. sl. to v. silty siltst: m. brn, gy. sloty, arg. approaches v.f. gr. ss		
		p		sil					
		x					Coal Horizon Seam = 1 (1)		
							SH: m. gy. silty 135-140 clay		
		x		v.f-f	a	p-m	SS: m. gy, v.f. to granular, a, poor to well sorted, arg. matrix.		
	16	x		v.f-f	a	p-m			
		x		v.f-f	a	p-m			
		x		f-m	a	w			
		x		f-m	a	w			
		x		m-gr	a	p-m			
	26	x		m-gr	a	p-m			
		x		m-gr	a	p-m			
		x		m-gr	a	p-m	lathed: sh/ss/siltst: 5:3:1 SH: m. gy, m dk gy. sl, silty, minor pyr. sl. micro, mica. SS: m. gy, v.f. gr. arg. matrix. a mod. sorted. siltst: m. brn. gy approx. v.f. gr. ss. arg. frag.		
		x		sil					
		x		v.f	a	mod			
	36	x		v.f	a	mod			
		x					Coal Horizon: Seams = 2+3		
	36	p					siltst: m brn. gy approaching v.f. gr. ss sl. carb, some coaly frag. quite arg.		
		p							
		x		v.f-f	a	m	SS: m. gy, v.f. to f. gr. a mod. sorted arg. matrix. sl.		
	46	x		v.f-f	a	m			
		x		v.f-f	a	m			
		x		v.f-f	a	m			
		p		sil.			siltst: m. dk. gy. carb. some sdy, sh, ptcls 5% meesite shk qtz ptcls.		
		p		sil.					
		a					SH: m. to m dk. gy some silty sh ptcls. minor pyr. sl. carb. few coal ptcls.		
	56	x							
		c					426-426' siltst. m. dk. gy. arg. minor pyr.		
		a							
		a		sil.					
							Coal Horizon seam = 9a		
	66	x		v.f	a	m	SH: m. dk. gy. carb, coal frag. minor pyr.		
		a					445-450' siltst: m. dk. gy. arg. minor pyr.		
							Coal Horizon: Seam = 9b		
		a					lathed. sh, ss, siltst: 10:1:3		
		76		v.f	a	m	SH: m. dk. gy. carb. few coal ptcls minor pyr. silty in part. blocky		
		a							
	76	p		silt			SS: m. gy v.f. gr. a. mod. to well sorted		
		p		sil					
		a							
		x		v.f.	a	m-w	Siltst: m. gy. arg.		
		x							
		a							
	86	p		silt					
		p		sil					
		a							
		p		silt					
		a							
		p		sil					
		a							
	96								
		a							
		x		v.f.	a	mod	SS: m. gy. v.f. m gr. a mod. to well sorted. arg. matrix gr. to gr.		
							645'-655' m.-c. gr. mod. to well sorted.		
				v.f.	a	m-w			
	106	x		m-c	a	m-w			
		v		m-c	a	m-w			
		a					SH: m. gy. sl silty, sl carb. minor pyr. few coal ptcls.		
	116	a							
		x		v.f-f	a	p-m			
		x		v.f-f	a	p-m			
							Coal Horizon Seam = 5		
		x		f-m	a	w	SS: m. lt gy. f-m gr. a sll sorted gr. to gr. siliceous, c minor arg. matrix		
	126	x		f-m	a	w			
		x		f-m	a	w	Basal Kootenay		
		x		f-m	a	w			
							Total Depth 767'		
	136								

ROKE

GAMMA RAY NEUTRON LOG

FILE NO.

COMPANY: BLACK CREEK COAL CO. LTD.

WELL: SEC 8 B -

LOCATION: DRAY DITCH

FIELD: PLATEAU VALLEY

County: BRITISH COLUMBIA

Permanent Datum: GROUND LEVEL — Elev.
Log Measured from: GROUND LEVEL — ft. Above Perm. Datum
Well Depth Measured from: — G.L.

Date: 3-12-1986
Run No: ONE
First Reading: 765
Last Reading: 0
Logged Interval: 765
Depth Reached: 765
Casing Driller: 765
Casing Logger: 767
Casing Size: 8 INCH
Casing Weight: 24 LB
Casing Shoe: 767
Top of Log: 0
Bottom of Log: 765
Max. Temp.: 14 DEG. C
Operating Time: 3 1/2 HOURS
Truck No: 10
Recorded By: LARCYK
Witnessed By: OTTENHAUS

DOL ENTERPRISES LTD. CALGARY, ALBERTA

Log Scale: 1:50

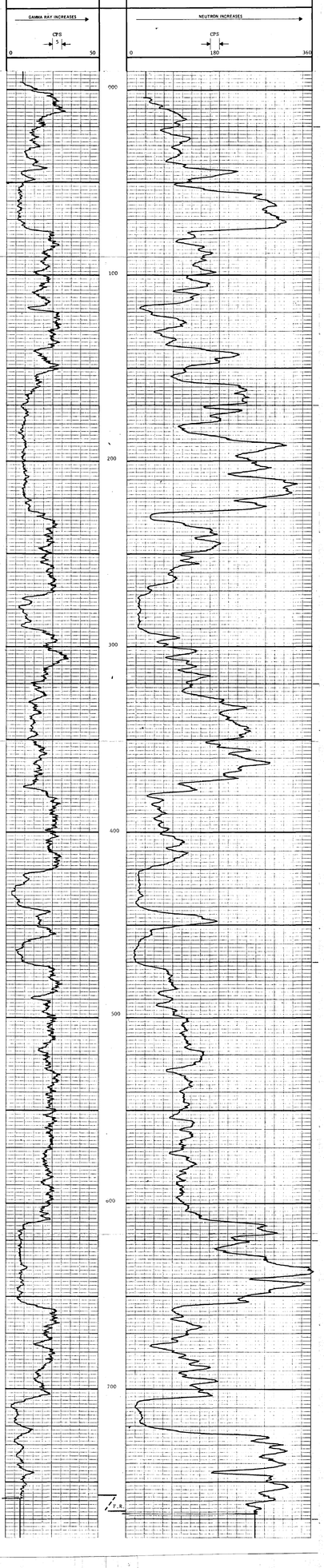
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO.	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 3/4	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	1 3/4
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	8.55 FT	LENGTH	6 INCH
GENERAL		SOURCE MODEL NO	MRC-N-SS-W
HOIST TRUCK NO	10	SERIAL NO	606 1256
INSTRUMENT TRUCK NO		SPACING	19 INCH
TOOL SERIAL NO	0012710A78	TYPE	AmBe
		STRENGTH	6.70×10^6 N/S

LOGGING DATA

GENERAL						GAMMA RAY			NEUTRON		
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC	SENS SETTINGS	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC	SENS. SETTINGS	ZERO DIV. L OR R	API N UNITS PER LOG DIV.
1	0	765	10	4	25	0L	5 CPS	4	6.2	0L	18 CPS

REMARKS: Well Flowing @ 32 gal per min. Logged through drillpipe.



359

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L18

PROPERTY: Sage Creek Coal Limited		HOLE NO. S.C. #5
LOCATION: Dilly Hill, 37) 7[illegible], 70[illegible] (approx.)		
AZIMUTH:	ELEVATION: [illegible] (approx.)	DIP:
TOTAL DEPTH: 535	PROBE DEPTH: [illegible]	DIP TESTS:
HOLE SIZE: 4 7/8"	CORE SIZE:	
DATE STARTED: April 4, 1971	AIR: ☐ WATER: ☐	
DATE COMPLETED: April 5, 1971	LOGGED BY: [illegible]	DATE: April 7, 1971
CONTRACTOR: Keating Drilling	PROBED BY: [illegible]	DATE: April 6, 1971

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
							SH: m. brn. uthrd. m. to m. dk. gy local areas of sl. carb. sl. slty to sdy, minor, pyr. in. local areas. sh: frag. intbd. in brn. clay frist. 25 feet.		
				slt			35'-40' sltst: m. gy. brn. uthrg. few v.f. gr. ss. frag.		
	50'								
				slt slt			55'-65' sltst: m. dk. gy. arg. fairly hd.. 65'-68' coaly sh bnd.		
	100'								
	150'						Coaly Horizon: Seam # 7a		
							SH: m. dk. gy		
							Coal Horizon: # 7b		
	200'						SH: m. gy. slty blocky sdy in local areas sl. carb. in places minor pyr.		
				slt					
		a p a		slt			205'-210' sltst: m, gy, arg. 225'-230' sltst: m, gy, arg.		
	250'	a					255'-260' ss: m, gy, arg. v.f. gr a. arg. matrix p-mod. sorted.		
		a x a		v.f.	a	p-m			
		a							
		x		f-m	a	m-w	ss: m, gy, f-m, gr a mod. to well sorted: arg. matrix.		
	300'			f-m	a	m-w			
		x		f-m	a	m-w			
		x		f-m	a	m-w			
		a					SH: m. gy, sl. carb. sl. slty, blocky		
		a							
	350'	p		slt			Intbd, sh, sltst, ss.		
		p a		slt			sltst: m, gy, arg. approaches v.f. gr. ss		
		x		v.f.	a	p-m			
		a x		v.f. v.f.	a a	p-m p-m	SH: m. gy, slty, v. sl. micro-mica some carb. ptgs. minor, pyr.		
		a							
		a					ss: m. gy, v.f. gr. a, p-m, sorted arg. matrix.		
	400'	p		slt					
		p a		slt					
		a							
	450'						COAL HORIZON: Seam # 5		
		a					SH: m. gy, sl. slty, sl, micro-mica, few f, gr, ss, frag.		
		x		v.f-f	a-r	m	ss: m. gy. v.f. - f. gr. a-r. mod. sorted gr. to gr. sil.		
	500'			v.f-f	a-r	m			
		x		v.f-f	a-r	m	Basal Kootenay		
		x		v.f-f	a-r	m			
	550'						Total Depth 526'		

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.

L.SD
S.IC
T.WP
R.GE
V.
M

COMPANY: SAUK CREEK COAL CO. LTD.

WELL: SEC # 9

LOCATION: DILLY HILL

FIELD: PLATEAU VALLEY

PROVINCE: BRITISH COLUMBIA

Permanent Datum: GROUND LEVEL
Log Measured from: GROUND LEVEL
Well Depth Measured from: Elev. K.B. / Grd. / Ft. Above Perm. Datum / G.L.

Copy Rec'd: [illegible]

L19

Run No	ONE
Date	6 APRIL 71
First Reading	528
Last Reading	530
Depth Logged	529
Depth Reached	535
Casing Bottom	535
Casing Rate	
Casing Driller	
Fluid Type	AIR/WATER
Liquid Level	188
Refn. Diam.	
Operating Time	4 HOURS
Truck No.	10
Recorded By	LARKIN
Witnessed By	CULLINGHAM

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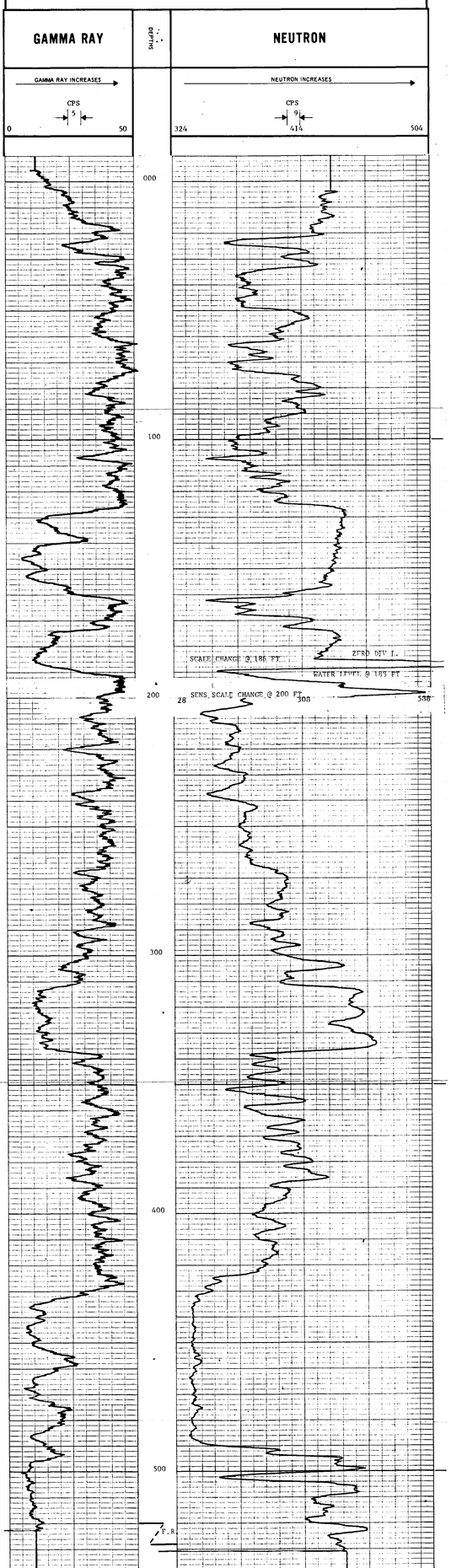
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 11/16	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	1 11/16
TYPE	GEIGER	DETECTOR MODEL NO.	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	8.55 FT	LENGTH	6 INCH
GENERAL		SOURCE MODEL NO.	MRC-N-SS-W
HOIST TRUCK NO	10	SERIAL NO.	N256
INSTRUMENT TRUCK NO		SPACING	19 INCH
TOOL SERIAL NO.	CG3271U4A78	TYPE	AmBe
		STRENGTH	6.70 x10⁵ N/S

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C SEC	SENS SETTINGS	ZERO DIV L OR R	API G R UNITS PER LOG DIV.	T.C. SEC	SENS SETTINGS	ZERO DIV L OR R	API N. UNITS PER LOG DIV
1	0	200	10	4	25	0L	5 CPS	4	12	36L	9 CPS
	200	528	10	4	25	0L	5 CPS	4	4	1L	28 CPS

REMARKS



RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L20

PROPERTY: [illegible]		HOLE NO. [illegible]
LOCATION: [illegible]		
AZIMUTH:	ELEVATION: [illegible] (approx.)	DIP:
TOTAL DEPTH: [illegible]	PROBE DEPTH: [illegible]	DIP TESTS:
HOLE SIZE: [illegible]	CORE SIZE:	
DATE STARTED: [illegible]	AIR: ☐ WATER: ☐	
DATE COMPLETED: [illegible]	LOGGED BY: [illegible]	DATE: [illegible]
CONTRACTOR: [illegible]	PROBED BY: [illegible]	DATE: [illegible]

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PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
		x		f	a	m	SS: m. gy. brn. uthrg. arg. matrix fragments floating in clay matrix		
				f	a	m			
		x		vf-m	a	p			
		c					SH: m. gy. to. m dk. gy, slty v.sl. carb few coaly frag. some f-m, gr. ss. frag. (possibly cavings)		
	50'	c							
		c							
							coal Horizon: Seam # 4a		
	100'								
		c					SH: m. dk. gy. sks.		
		c							
	150'						coal Horizon Seam 4b		
		c					SH: m. gy. sl, slty in, places, blocky		
		c							
	200'	c							
		c							
		c							
		x		vf-f	a	m-w	SS: m, gy, v.f-f. gr. a mod. to well sorted arg. matrix, some carb. ptg. few coaly frag. (poss. cavings)		
	250'			v.f.f	a	mw			
		x							
		p		slt			Sltst: m. dk. gy, arg. approaches v.f. gr ss nr. base of unit		
		p		slt					
		x		v.f-f	a	p-m	SS: m. dk, gy v.f gr. f gr a, p-m sorted arg. matrix.		
		x							
		p		slt			Sltst/sh: m, gy, sl, sdy blocky, calc. veining		
		c							
	300'	x		v.f-f	a	m	SS: m, gy v.f gr. - f gr. a mod. sorted arg. matrix, silica cmt.		
		x							
		x		v.f-f	a	m			
		c					Slt: m, gy, sl. carb. Few coal frag. minor pyr. sl. sdy blocky in places.		
		c							
		x		v.f	a	m-w			
		c					330'-335' ss: m. gy, v.f. gr. a. arg. matrix m-w sorted.		
	350'	c							
		x		v.f	a	p-m	350'-365' ss: m. gy, v.f. gr. a. arg. matrix p-m sorted few m, gy sh. frag.		
		c					360'-367' sh/coal ~ 40 % coal frag.		
							coal Horizon: Seam # 5		
	400'								
		x		v.f	a-r	p	SS m dk, gy, v.f gr. carb. few coal ptcls, poorly sorted a-r, arg. Becomes f.gr. at 410' gr. to gr contact after 430' m-w sorted after 430'		
		x		f	a-r	p-m			
		x		f	a-r	p-m			
		x		f	a-r	m-w			
	450'	x		f	a-r	m-w			
							Total Depth 450'		

ROKE

GAMMA RAY NEUTRON LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

L21

FILE NO.

LSD
SEC
TWP
RGE
W ___ M

COMPANY: SAGE CREEK COAL CO. LTD.

WELL: SCC # 10

LOCATION: DILLY HILL -

FIELD: FLATHEAD VALLEY

PROVINCE: BRITISH COLUMBIA

PROFESSIONAL ENGINEER OF BRITISH COLUMBIA R. C. HART

Expiry Date: Mar 3, 1972

Permanent Datum: GROUND LEVEL Elev. ___ K.B. ___
Log Measured from: GROUND LEVEL Ft. Above Perm. Datum D.F. ___
Well Depths Measured from: ___ G.L. ___

Run No.	ONE		
Date	9 APRIL 71		
First Reading	436		
Last Reading	0		
Footage Logged	436		
Depth Reached	437		
Depth Driller			
Casing Roke			
Casing Driller			
Fluid Type	AIR/WATER		
Liquid Level	18		
Min. Diam.			
Operating Time	4 HOURS		
Truck No.	10		
Recorded By	SUNDERLAND	Witnessed By	CULLINGHAM

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EQUIPMENT DATA

	GAMMA RAY	NEUTRON
RUN NO.	ONE	ONE
LOG. TYPE		NEUTRON/NEUTRON
TOOL MODEL NO		
DIAMETER	1 11/16	1 1/16
DETECTOR MODEL NO	GEIGER	PROPORTIONAL
TYPE	18 INCH	6 INCH
LENGTH	8.35 FT	MRC-N-SS-W
SOURCE MODEL NO		N256
SERIAL NO		19 INCH
SPACING		AmBe
TYPE		6.70 x 10⁴ N/S
STRENGTH		

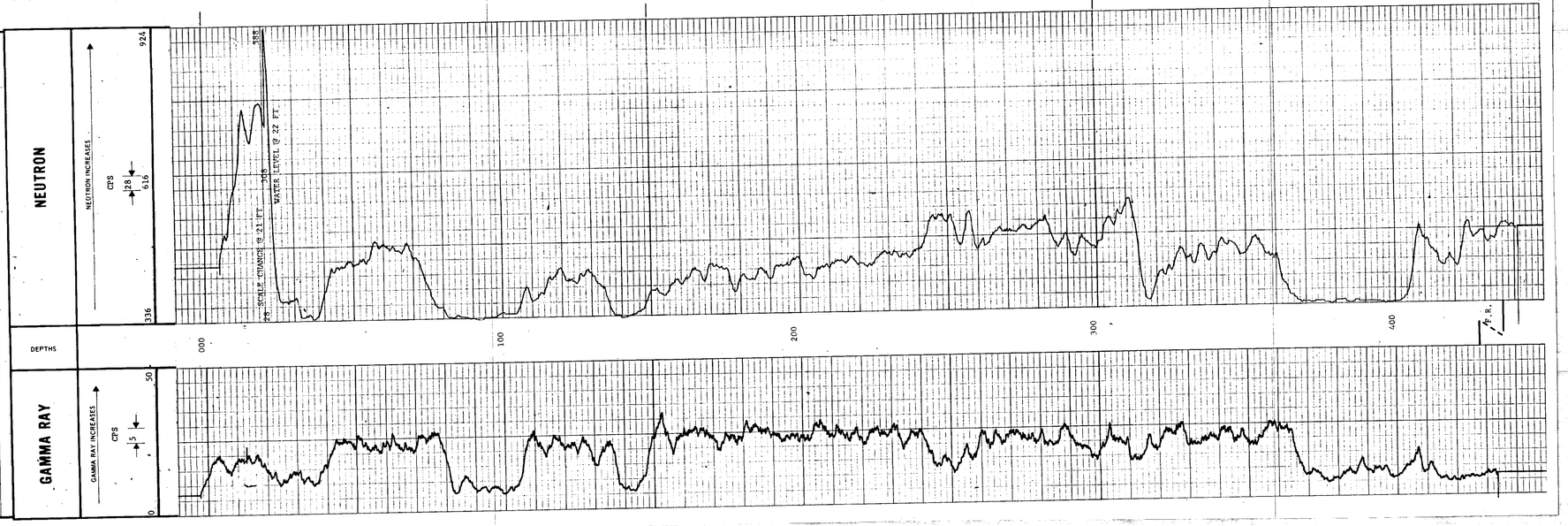
GENERAL

RUN NO.	10
HOIST TRUCK NO	
INSTRUMENT TRUCK NO	C0327U4A78
TOOL SERIAL NO	

LOGGING DATA

GENERAL				GAMMA RAY						NEUTRON			
DEPTHS		SPEED	T.C.	SENS		ZERO	API GR UNITS	T.C.	SENS	ZERO	API N UNITS
RUN NO	FROM	TO	FT/MIN	SEC	SETTINGS	DIV L OR R	PER LOG DIV	SEC	SETTINGS	DIV L OR R	PER LOG DIV
1	0	22	10	4	25	OL	5 CPS	4	4.7	12L	28 CPS
	22	436	10	4	25	OL	5 CPS	4	4.7	1L	28 CPS

REMARKS



RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L22

PROPERTY:		HOLE NO.	
LOCATION:	ELEVATION:	DIP:	
AZIMUTH:	PROBE DEPTH:	DIP TESTS:	
TOTAL DEPTH:	CORE SIZE:		
HOLE SIZE:	AIR ☐ WATER ☐		
DATE STARTED:	LOGGED BY:	DATE:	2
DATE COMPLETED:	PROBED BY:	DATE:	
CONTRACTOR:			

359 (1)

PROFESSIONAL ENGINEER PROVINCE OF ONTARIO R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
		x, x, x		pbl	a-r	m-w	Congl		
							m. gy. bm. wthg. lts stn/. f-m. gr. ss matrix silica cem, bimodal sorting mod. to wll.		
				mod	a-r	m	SS: m gy bm. wthg a-r. arg. matrix m-c. gr. mod. sorted. minor amt of clay.		
		x		m-c	a-r	m	30'-35' congl. AA		
		x, x, x		pbl	a-r	m-w			
							SH: m-gy bm. wthg. m. gy. slty to sdy.		
	40	x		v.f	a	p	40'-50' SS: m gy v.f. gr. v. arg. a. poorly sorted		
		p, x, x		slt. v.f.	a	p	50'-55' sltst. m. gy. arg approaching v.f gr ss		
							55'-60' SS: m. gy v.f. gr. v arg. a. poor sorted		
	80	x		v.f-f	a	m	SS: m bm. gy. v.f. - f. gr. a mod. sorted. arg. matrix		
		x		v.f-f	a	m			
		x		v.f-f	a	m	130'-135' SS: v.f. - a gr. poor sorted		
		x		v.f-c	a	p			
		x		v.f-f	a	m	145'-152 no sample		
	150	x		v.f-f	a	m			
							Coal Horizon Seam # 1		
		x		f-m	a	m	SS m. brn. gy f-m gr. a arg. matrix m sorted		
		x		f-m	a	m			
							SH: m-m dk. gy, slty sl. carb. blocky		
	200						228'-238' SH: dk, gy, carb.		
	250								
	300								
		p		wlt					
		x		v.f.	a	m-w	Interbd: ss / sltst / sh 2:2:1		
		p		slt					
		p		slt					
		x		v.f.	a	m			
	350	x		v.f.	a	m			
		p		slt					
		x		v.f.m	a	m			
		x		v.f.m	a	m			
							Coal Horizon: Seam # 2-3		
		x		v.f.	a	m-w	SH: m. dk. gy. slty to sdy, sl. carb. in places, minor pyr. at top of unit		
	375	x		v.f.	a	m-w			
		p		slt			346'-348' SS: m. gy. v.f. gr. a m-w sorted arg. matrix		
		x		v.f-c	a	m-w	348'-358' SS: m. gy, v.f. gr. a mod. to wll sorted arg. matrix		
							360'-365' sltst. m. gy. arg. hd.		
	400						365'-368' SS: m gy v.f.-f. gr. a. mod. wll sorted arg matrix.		
							370'-372' sltst: m. gy. arg.		
	450								
	500								
		p		slt					
							Coal Horizon: Seam # 4a		
	550						Only sample bagged 507'-512'		
		p		slt			Interbd: sh / sh / sltst		
		x		v.f.	a	m	521'-525' sltst: m. dk. gy. arg approaching v.f. gr. ss		
							526'-530' SS: m. gy brn. arg. matrix		
		x		f	a	m	530'-540' SH: m. dk. gy, sdy n 30% ss frag, few coal frag.		
		x		f	a	m			
	590	x		f	a	m	540'-555' SS m. gy. arg matrix few coal frag		
							Coal Horizon: Seam # 4b		
							560'-562' sh / coal m. dk. gy. some ss frag ~ 40% coal frag		
							SH: m. gy slty to sdy, blocky. few ss frag + few coal frag.		
	650								
		x		v.f.f	a	m	SS: m-gy v.f. to f. gr. a. arg matrix mod. sorted, partly disaggregated.		
		x		v.f.f	a	m			
		x		v.f.f	a	m			
							626'-634' SS: m-c gr		
	700	x		v.f.f	a	m	635'-640' SS: frag. in clay matrix		
				v.f.f	a	m	660'-670' SS: m-c gr		
				v.f.f	a	m	670'-675' sltst. m. brn gy. arg.		
				m-c	a	m			
		x		m-c	a	m	684'-695' SH: m. gy slty / some m. gy. m. gy. ss frag. + ll. arg. - sll.		
		p		slt					
		x		v.f.f	a	m			
		x		v.f.f	a	m	705'-710' SH: m. gy. sdy		
		x		v.f.f	a	m	710'-716 sltst: m. gy. v. arg.		
	750	x		v.f.f	a	m	730'-735' SH: dk gy some ss. frag. + ~ 20% coal frag.		
		x		v.f.f	a	m			
		p		slt					
		x		v.f.f	a	m			
		x		v.f.f	a	m			
	800						Coal Horizon: Seam # 5		
		x		f.m	m-r	m-w	SS: m bm. gy. f-m. gr. a-r. sil gn to gy. minor arg matrix mod. to wll sorted.		
	850	x		f.m	m-r	m-w			
				f.m	m-r	m-w			
		x		f.m	m-r	m-w			
	900						Total Depth 838'		

ROKE

GAMMA RAY NEUTRON LOG

FILE NO
LOG TYPE
RUN NO
DATE
RGE
W — W

COMPANY: BASIN CREEK COAL CO. LTD.
WELL: SEC # 11
LOCATION: DELTA WELL
FIELD: PLATEAU VALLEY
PROVINCE: BRITISH COLUMBIA

Permanent Datum: GROUND LEVEL
Log Measured From: GROUND LEVEL
All Depths Measured From: GROUND LEVEL

Elev.: K.B.
D.F.
G.L.

Run No. ONE
Date 19 APRIL 71
First Reading 816
Last Reading 817
Storage Capacity
Depth Chosen
Casing Size
Casing Bottom
Fluid Type AIR/WATER
Lower Limit 120
Max. Depth

Operating Time
Tape No. 10
Recorded By STEWARTLAND
Witnessed By COLLISTON

359

OIL ENTERPRISES LTD. CALGARY, ALBERTA

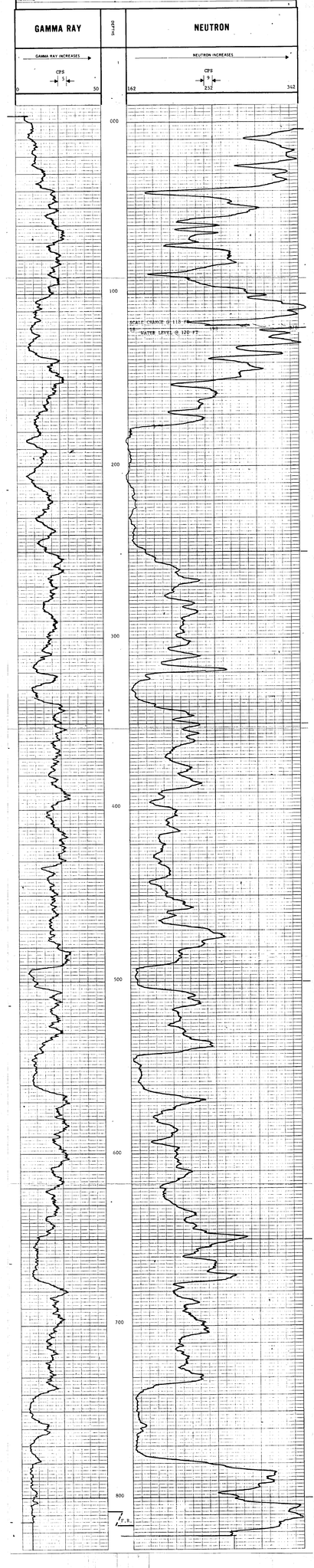
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 3/8	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	1 3/8
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	8.55 FT	LENGTH	6 INCH
GENERAL		SOURCE MODEL NO	MRC-N-SS-W
HOIST TRUCK NO	10	SERIAL NO	8256
INSTRUMENT TRUCK NO		SPACING	18 INCH
TOOL SERIAL NO	CON270UA78	TYPE	AmBe
		STRENGTH	5.70 $\times 10^6$ N/S

LOGGING DATA

GENERAL					GAMMA RAY				NEUTRON			
RUN NO	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC	SENS SETTINGS	ZERO DIV. L OR R	APL/R UNITS PER LOG DIV.	T.C. SEC	SENS SETTINGS	ZERO DIV. L OR R	APL/N UNITS PER LOG DIV.
1	0	118	10	4	25	OL	5 CPS	4	12	18L	9 CPS
	118	816	10	4	25	OL	5 CPS	4	6.2	1L	18 CPS

REMARKS



RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L24

PROPERTY: SAGE CREEK COAL LTD.		HOLE NO. SCC #12
LOCATION: Dilly Hill, 374+90N, 707+60E (Approx.)		
AZIMUTH:	ELEVATION: 5,155'(approx.)	DIP:
TOTAL DEPTH: 740'	PROBE DEPTH: 733'	DIP TESTS:
HOLE SIZE: 4 7/8"	CORE SIZE:	
DATE STARTED: April 9, 1971	AIR ☑ WATER ☐	
DATE COMPLETED: April 13, 1971	LOGGED BY: O. Cullingham	DATE: April 13, 1971
CONTRACTOR: Kenting Drilling	PROBED BY: Roke Oil Enter.	DATE: April 13, 1971

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
		a					sb m sy lcoal splints		
							COAL HORIZON		
		a					SH: m. gy. sl slty to sandy		
		a							
	50'	x							
		x		f-m		m	SS: m. gy. brn. uthrg. m. gy. (Fe in pyrites) v.f. m.gr. a, mod. sorted arg. matrix.		
	100'	x							
							Conglomerate		
		a		slt			SH: m. gy. brn. uthrg. m. gy. slty 105'-110'. Sh sl carb. sts 120'-125' - sltst m. gy. arg.		
		a							
	100'	x							
		x		m	a	m-w	SS: m. gy, f-m.gr. mod.-well sorted a, arg.		
		x							
		a					SH: m. dk. gy, slty.		
	200'	a							
		a					NO sample		
							COAL HORIZON		
		a					SH: m. gy.-m dk gy, slty, coal frag. v.f.gr. ss		
	250'	a							
		a							
		p		slt			sltst: m. gy, arg. blocky some v.f. gr. ss		
		p		slt					
		x		vf gr			SS: m dk gy. arg. matrix		
		a							
	300'	a							
		a		vf.gr vf.gr.			SH: m. gy, slty, blocky arg. sltst: m.gy. arg.		
		a							
	350'						COAL HORIZON: Seam # 4a		
		p		slt			sltst: m. gy. arg. v.f. gr. ss		
		p		slt					
	400'	x		vf gr			SS: m. gr. v.f. gr.		
		a					SH: m. gr. sl. slty.		
		a							
							COAL HORIZON: Seam # 4b		
		a					SH: m. dk, gy, slty, blocky, sl carb. coal particles		
	450'	a							
		a							
		p		slt			sltst: m. gy, arg. ss: slt. v.f. gr. ss.		
		p		slt					
		x		m-c	a	m-w			
	500'								
		x		m-c	a	m-w	SS: m. lt. gy- m.gy, m-c. gr. mod. w. sorted		
		x		m-c	a	m-w			
	550'	x		f-c		p-m			
		x		f-c	a-r	p-m	SS: m. lt. gy, m.gy. m-c gr. mod. w. sorted. gr-gr.		
		x		m-c	a-r	m-w			
		p		slt			sltst: m. gy-arg. matrix hd.		
		p		slt					
		x		v.f.			SS: m. dk. gy. uthrg v.f. gr. arg. sh particles.		
	600'	x		v.f.					
		x		v.f.			605'-610' - sltst: m. dk. gy. v.arg.		
		p		slt					
		x		v.f.			615'-620' - SS: m. dk, gy, few sdy, sh, ptls.		
		a					SH: m. dk, gy, carb. to coaly sh.		
	650'						COAL HORIZON.		
							Coal veined sh.		
		a					SH: dk, gy, v. carb. to coaly		
		a							
							COAL HORIZON		
		p		slt			sltst. dk, gy, v. coaly, arg.		
	700'	x		f-m	a-r	m-w			
		x		f-m	a-r	m-w	SS: m. dk. gy. uthrg. - m. gr. mod. w, sorted a-r, arg. matrix.		
				p	r	w			
		x		f-m	a-r	w			
							Total Depth 740'		

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.

COMPANY: SAVE CREEK COAL CO. LTD.

WELL: SCC # 12

LOCATION: DELAY WELL

FIELD: FLATHEAD VALLEY

PROVINCE: BRITISH COLUMBIA

Elev. Perm. ____ Ft. Above Perm. Datum

Log Measured from: GROUND LEVEL

All Depths Measured from: ____

K.B. ____
D.F. ____
G.L. ____

Date: 1-Dec-1978

Run No: ONE
Date: APRIL 71
Type Reading: 732
Last Reading: 0
Footage Logged: 732
Depth Driller: 733
Depth Logger: ____
Casing Size: ____
Casing Type: ____
Fluid Type: AIR/WATER
Level: 130
Max. Temp.: ____

Operating Time: 1 1/2 HOURS
Equipment No: ____
Recorded By: STOUFFLAND
Witnessed By: GILLSTROM

359 (1)

L-25

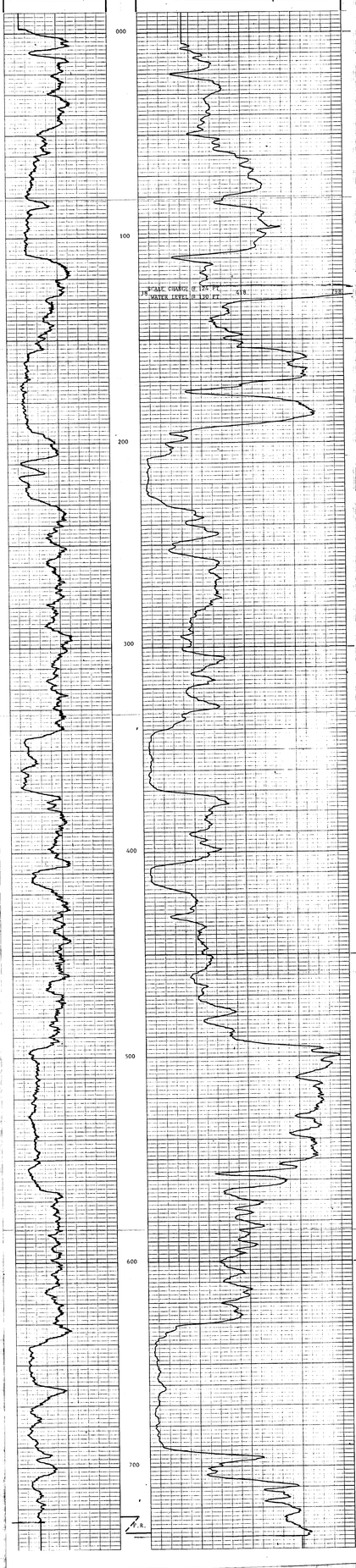
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO	*	LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1¾	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	1¾
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N SOURCE	8.55 FT	LENGTH	6 INCH
GENERAL		SOURCE MODEL NO	MRC-N-SS-W
HOIST TRUCK NO	10	SERIAL NO	N256
INSTRUMENT TRUCK NO		SPACING	19 INCH
TOOL SERIAL NO	CON2704478	TYPE	AmBe
		STRENGTH	6.70×10^6 N/S

LOGGING DATA

GENERAL						GAMMA RAY			NEUTRON		
RUN NO	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T C SEC	SENS SETTINGS	ZERO DIV. L OR R	API GR UNITS PER LOG DIV	T-C SEC	SENS SETTINGS	ZERO DIV. L OR R	API N UNITS PER LOG DIV
1	0	130	10	4	25	OL	5 CPS	4	3	18L	18 CPS
	130	732	10	4	25	OL	5 CPS	4	6.2	1L	18 CPS

REMARKS



RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L26

PROPERTY: SAGE CREEK COAL LTD.			HOLE NO. SCC #13
LOCATION: Dally Hill 303+20N, 679+70E (Approx.)			
AZIMUTH:	ELEVATION: 5,275 (approx.)	DIP:	
TOTAL DEPTH: 495'	PROBE DEPTH: 492'	DIP TESTS:	
HOLE SIZE: 4 7/8"	CORE SIZE:		
DATE STARTED: April 22, 1971	AIR ☒ WATER ☐		
DATE COMPLETED: April 24, 1971	LOGGED BY: O. Cullingham	DATE: April 24, 1971	
CONTRACTOR: Kenting Drilling	PROBED BY: Roke Oil Enter.	DATE: April 24, 1971	

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
		a, a					SH: m. gy. fragments, imbedded in a m. brn clay.		
		x		v.f-f	A-a	p	SS: m. gy, brn to m. gy. (brn. colour due to Fe ultrbrg.) v. f. - f. gr. poor sorted arg, A-a soft, lmnx hem stn.		
	50'	x		v.f-f	A-a	p	50'-55' SH: m. gy, slty		
		a, x		v.f-f	A-a	p			
		a, a					SH: m. gy, hd, v. sdy, calcite infilling of fractures		
		x, x		v.f-f, v.f-f	a, a	m, m	SS: m. dk. gy, v.f-f.gr. a, mod. sort. v. arg.		
	100'	a, a					SH: m. gy, sdy, blocky, v. sl. carb. coal frag. at base of unit		
	150'						COAL HORIZON: Seam # 4a		
							SS: m. gy, sep. texture v.f.-f gr. poor sort. arg. matrix SH: m. dk. gy. soft		
	200'						COAL HORIZON: Seam # 4b		
							SH: m. dk. gy		
							COAL HORIZON: Seam # 4b		
							COAL HORIZON: Seam # 4b		
	250'	a, a					SH: m. gy. v. sl. carb. sdy, few coal frag. slty intrls.		
		a, a, a, a, a					280' - 285' coal shaly 306' - 310' SH: contains ~ 25% coal frag. 320' - 330' SH: contains ~ 25% coal frag.		
	300'	a, a, a, a, a							
		x, a		v.f-f	a	p-m	SS: m. gy. v.f-f gr, a, poor to mod. sorted arg. matrix		
	350'	x, p		v.f.g, slt	a	p-m	346' - 350' sltst: m. gy. arg. well sorted flecks of mica - appr. v.f. gr. ss.		
		a, x, a		f	a	m	SH: m. gy. slty to sdy, few, coal frag. & coal splints. 390' - 395' SS: m. gy. f. gr. mod. sorted a, arg. matrix		
	400'	a, a, a					COAL HORIZON: Seam # 6		
		x, a		m	r	w	SS: off white, m. gr. r. w sort. gr. to gr. sil. orthoquartzite.		
	450'	a, a					SH: dk. gy, carb. some coaly frag. interbedded in clay, minor pyr.		
		x, x, x		m, m-c, m-c	a-r, a-r, a-r	m-w, m-w, m-w	SS: m. to m. lt. gy. m-c. gr. gr. to gr. sl. arg. matrix, siliceous a-r, mod. to well sorted Basal Kootenay Sandstone		
	500'						Total Depth 495'		

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO. L27

COMPANY SAGE CREEK COAL CO. LTD.

WELL BCC # 13

LOCATION DALLY HILL

FIELD FLATHEAD VALLEY

PROVINCE BRITISH COLUMBIA

PROFESSIONAL ENGINEER R. C. HART BRITISH COLUMBIA

Expiry Date Mar. 3, 1972

LSD
SEC
TWP
RGE
W ___ M

Permanent Datum GROUND LEVEL Elev.
Log Measured from GROUND LEVEL Ft. Above Perm. Datum
Well Depths Measured from

K.B.
D.F.
G.L.

Run No.	ONE
Date	24 APRIL 71
First Reading	491
Last Reading	0
Footage Logged	491
Depth Reached	492
Depth Driller	495
Casing Size	
Casing Driller	
Casing Logger	
Fluid Level	AIR/WATER
Liquid Level	32
Min. Diam.	
Operating Time	2 HOURS
Truck No.	359
Recorded By	LARSEN
Witnessed By	COLLINGHAM

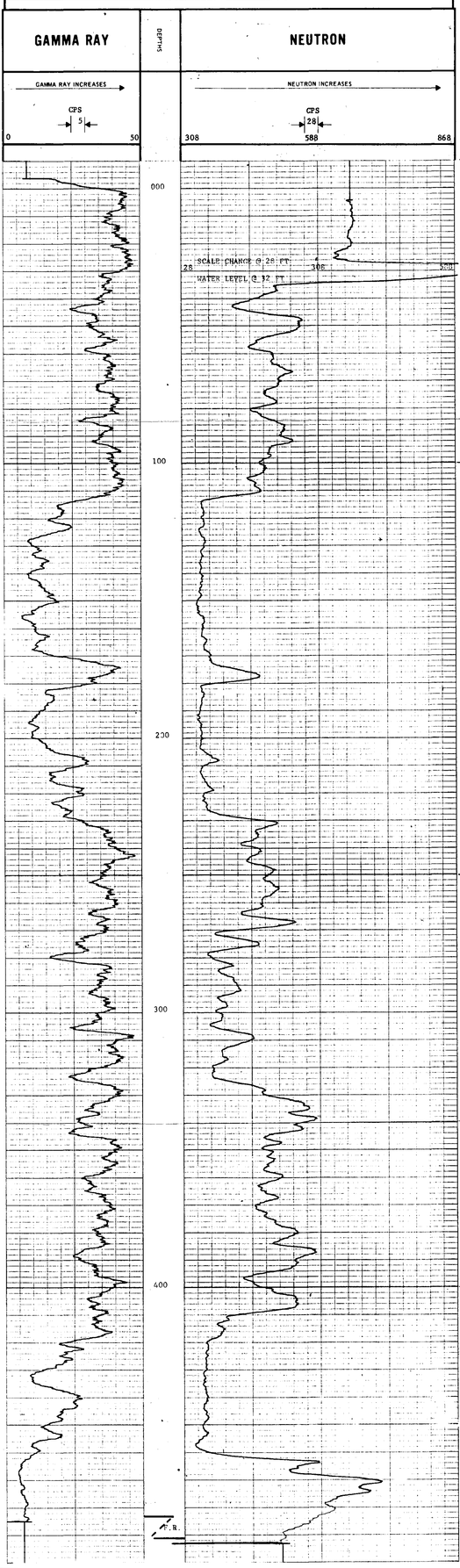
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO.	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	$1\frac{11}{16}$	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	$1\frac{11}{16}$
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N SOURCE	8.55 FT	LENGTH	6 INCH
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO	N256
HOIST TRUCK NO	10	SPACING	19 INCH
INSTRUMENT TRUCK NO		TYPE	AmBe
TOOL SERIAL NO.	CGN27U4A78	STRENGTH	6.90×10^{6} N/S

LOGGING DATA

GENERAL						GAMMA RAY			NEUTRON			
RUN NO	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T C SEC	SENS SETTINGS	ZERO DIV. L OR R	API G R UNITS PER LOG DIV	T C SEC	SENS SETTINGS	ZERO DIV. L OR R	API N UNITS PER LOG DIV
1	0	28	10	4	25	0L	5 CPS	4	4	10L	28 CPS
	28	491	10	4	25	0L	5 CPS	4	4	1L	28 CPS

REMARKS



ROKE

SIDEWALL DENSILOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

L28

FILE NO.

LSD
SEC
TWP
RGE
W ___ M

COMPANY: SAGE CREEK COAL CO. LTD.

WELL: SCC # 13

LOCATION: DALLY HILL

FIELD: FLATHEAD VALLEY

PROVINCE: BRITISH COLUMBIA

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA R. C. HART

Expiry Date: Mar. 3, 1972

Permanent Datum: GROUND LEVEL Elev. ____ K.B. ____
Log Measured from: GROUND LEVEL ____ Ft. Above Perm. Datum D.F. ____
Well Depths Measured from ____ G.L. ____

Run No.	ONE		
Date	24 APRIL 71		
First Reading	469		
Last Reading	0		
Footage Logged	469		
Depth Reached	472		
Depth Driller	495		
Casing Roke			
Casing Driller			
Fluid Type	AIR/WATER		
Liquid Level	32		
Min. Diam.			
Operating Times	3 HOURS		
Truck No.	10		

359 (1)

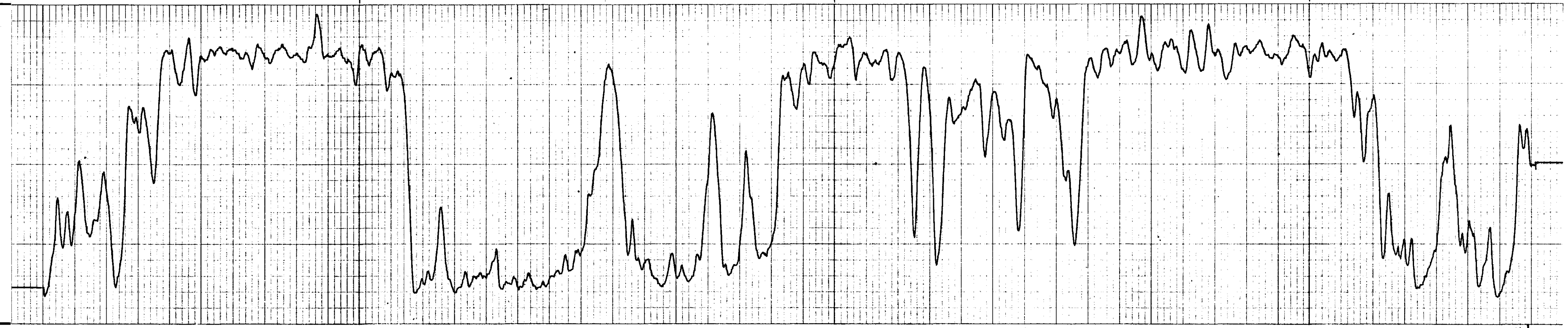
Recorded By: LARKIN Witnessed By: CULLINGHAM

REMARKS: I - 60 E - 104 DESC. - 5.5 FULL GAIN R ON CH #2

SHIFT 2R

SENS - 4.8

DENSITY — COUNTS PER SECOND — CPS 48 | 288 — 48 — 528



DEPTHS: 000 100 200 300 400 E.R.

CALIPER — HOLE DIAMETER (INCHES)

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L29

PROPERTY: SAGE CREEK COAL LTD.			HOLE NO. SCC #14
LOCATION: Dilly Hill, 379+40N, 714+60E (Approx.)			
AZIMUTH:	ELEVATION: 4,925' (Approx.)	DIP:	
TOTAL DEPTH: 641'	PROBE DEPTH: 557'	DIP TESTS:	
HOLE SIZE: 4 7/8"	CORE SIZE:		
DATE STARTED: April 13, 1971	AIR ☒ WATER ☐		
DATE COMPLETED: April 16, 1971	LOGGED BY: W. J. Hennessey	DATE: April 16, 1971	
CONTRACTOR: Kenting Drilling	PROBED BY: Roke Oil Enter.	DATE: April 16, 1971	

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
		x, a, a, p		v.f-f	a		SS: brn uthrg. in tbd. v.f. lf. gr.		
							SH: rusty uthrg. m.gy. slty firm / blocky Abundant plant frag.		
		p		slt			sltst: m.gy. rusty uthrg. limonitic, blocky to firm sl. micro-mica tr. coalified pl. frag.		
		p, p/x		slt, slt/v.f			Int bd., sltst, ss sltst: AA		
		a, a					ss: m. brn. gy. arg. sl. carb. tr. pl. frag.		
	50'	p		slt			SH: dk. gy. slty, coaly firm, blocky, sl micro-mica sltst: m.gy. v.arg. sl. sdy, sl micro-mica, bd blocky tr. leaf imprints.		
		a, x		m	r	w	SS: m. gy, gr. to gr. contact arg. matrix, sl. mica, appears to to be thnly bdd.		
		x		c	a-r	w	siberitic (?) limonitic in places		
				c-v.c	a-r	m	Becomes more sil		
	100'	x		c-v.c	a-r	m			
		x, x		c-g	a-r	m			
		a, a					SH: m. gy, hd, v. slty, m micro-mica in part carb, in part gading to sltst.		
		p, p		slt, slt					
		x		v.f-f	a	m	sltst: m.gy. v. arg. to v.slty sh hd. firm blocky		
	150'	a					SS: m. gy. intbd. / sltst AA		
				f-m	a	m	SH: m. gy. hd. slty minor ss. frag.		
				f-m	a	m	SS: m.gy. hd dense arg. tr. calcite vein, v. sl. calc.		
							SH: m. brn. gy. blocky, v. slty,		
							sltst: m. gy. hd. blocky arg.		
							SH: dk, gy. hd. carb. micro-mica coaly ptgs. Becoming coaly towards coal seams		
	200'						COAL HORIZON: Seam # 2 & 3		
		a							
							SH: m. gy, hd. v. slty, sl. micro-mica blocky, tr. calcite veining. soft toward base of unit.		
	250'	a					255'-260' SH: dk, gy, coaly frag. minor pyr.		
		a					270'-275' SH: dk, gy, coaly frag. rubbly.		
	300'	a							
		a, a							
							COAL HORIZON: Seam # 4a		
		a					SH: dk, gy, slty micro-mica tr. pl. frag.		
	350'								
							COAL HORIZON: Seam # 4b		
		a					SH: m. gy, slty in part, few intbd of v. f gr ss tr. of pyr. tr. calcite veinlets.		
	400'	a							
		a							
	450'	a							
		x		f	a	w	SS: m. gy, hd. dense, compact gr. to gr in part arg. matrix		
				v.f.		w			
				v.f	a	w			
				f-m		m			
				f-m	a	m			
				v.f.		w			
		x		v.f.	a	w			
		a					SH: m. gy, slty, micro-mica, blocky		
		p					sltst: m.gy v. arg. tr. pyr.		
		p					SH: m.gy. blocky, slty		
		a					SS: m. gy, v.f.gr. arg. slt.		
	500'	x		v.f	a	w			
		x, x					SH: m. gy, carb. coaly tr. pyr. 40-60% coal frag.		
		a, a							
							COAL HORIZON: Seam # 5		
		a							
	600'								
		x		v.f-f	a-r	m	SS: off white sup. hd. dense sil. gr. to gr.		
		p		slt.					
		x		f-m	a-r	m	sltst at 630'-635' arg. carb.		
	650'						Total Depth 641'		

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO. 230

COMPANY SAGE CREEK COAL CO. LTD.

WELL SCC # 14

LOCATION DILLY HILL

FIELD FLATHEAD VALLEY

PROVINCE BRITISH COLUMBIA

LSD
SEC
TWP
RGE
W M

Permanent Datum CROWN LEVEL Elev.
Log Measured from CROWN LEVEL Ft. Above Perm. Datum
All Depths Measured from

K.B.
D.F.
G.L.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA R. C. HART

Engr. Reg. No. 1.1992

Run No	ONE
Date	APRIL 21
First Reading	556
Last Reading	0
Footage Logged	556
Depth Reached	557
Depth Logged	
Depth Scale	
Casing Diameter	
Fluid Type	AIR/WATER
Liquid Level	116
Min. Diam.	
Operating Time	2 HOURS
Truck No.	10
Recorded By	SUTHERLAND
Witnessed By	CULLERTON

359 (1)

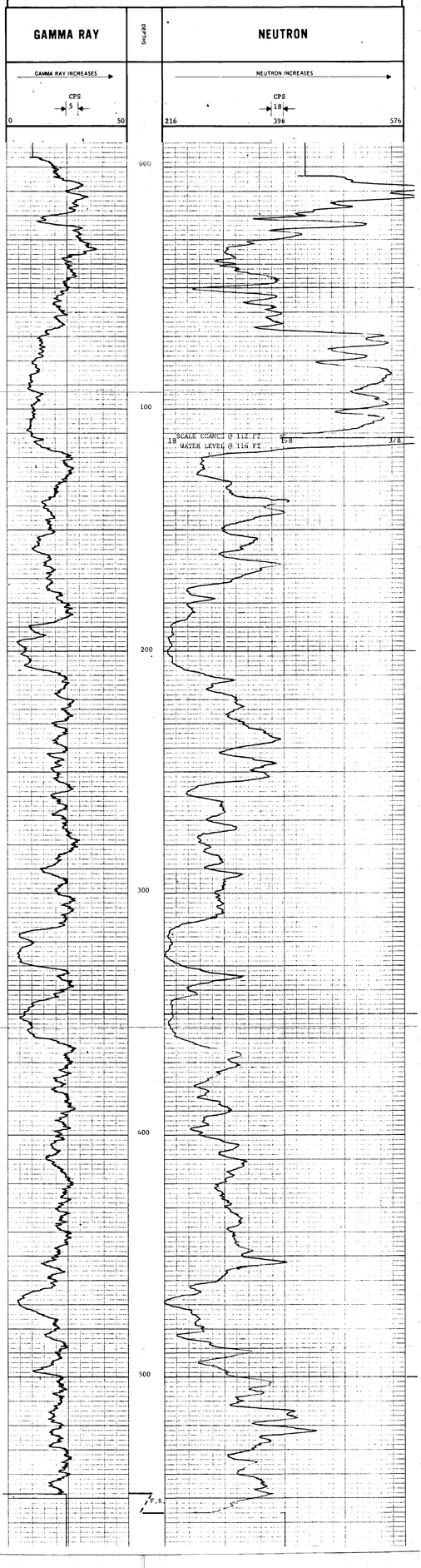
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 11/16	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	1 11/16
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N SOURCE	8.55 FT	LENGTH	6 INCH
		SOURCE MODEL NO	MRC-N-SS-W
GENERAL		SERIAL NO	N256
HOIST TRUCK NO	10	SPACING	19 INCH
INSTRUMENT TRUCK NO		TYPE	AmBe
TOOL SERIAL NO	CGN27U4A78	STRENGTH	6.70 x10⁶ N/S

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C SEC	SENS SETTINGS	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV	T.C SEC	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV
1	0	116	10	4	25	0L	5 CPS	4	6.2	12L	18 CPS
	116	556	10	4	25	0L	5 CPS	4	6.2	1L	18 CPS

REMARKS



RIO TINTO CANADIAN EXPLORATION LIMITED

L31

DRILL & CORE LOG

PROPERTY: SAGE CREEK COAL LTD.		HOLE NO. SCC #15	
LOCATION: DALLY HILL, 294+00N, 677+80E (Approx.)			
AZIMUTH:	ELEVATION: 5,325' (Approx.)	DIP:	
TOTAL DEPTH: 453'	PROBE DEPTH: 445'	DIP TESTS:	
HOLE SIZE: 4 7/8"	CORE SIZE:		
DATE STARTED: April 24, 1971	AIR: ☒ WATER: ☐		
DATE COMPLETED: April 27, 1971	LOGGED BY: O. Cullingham	DATE: April 28, 1971	
CONTRACTOR: Kenting Drilling	PROBED BY: Roke Oil Enter.	DATE: April 28, 1971	

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART
Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
							clay		
		x		m-c	a	m	ss: frag. of m. gy. brn. m-c gr. a-m. sort. arg. matrix inbdd. in clay		
							clay		
		x		f-c	a-r	p			
	50'	x		f-c	a	p	ss: m. gy. brn. uthrg. v. f-c-gr.		
		x		f-c	a	p			
		p							
		x/c		sltc	ar	p	sh: m. dk. gy, carb. to coaly in places sl. slty at top of unit		
		c					55'-60' sltst: m. gy, arg. fractured, Fe stn.		
							60'-65' sh/ss: ss m. gy. brn. uthrg. v. arg.		
		c					78'-79' coal bnd. shaly coal		
	100'						Coal Horizon: seam # 4a		
							sh bnd 132'-136' (interpreted from probe log.)		
	150'								
		a					intbd. sh, ss, sltst: sh: m. gy. : coal splints		
		x		v.f.-f	a	m	ss: m. gy. arg. matrix		
		p		dtt			sltst: m. gy. arg → v. f. gr. ss.		
							COAL HORIZON: seam # 4b.		
		p					Intbd. sh, sltst: ss.		
		c					sh: m. gy, slty to sdy, v. sl. micro-mica - some minor pyr.		
		a							
		x		v.f	a	m	sltst: m. gy, arg. → v. f. gr. ss		
		x		v.f.	a	m			
		c					ss: m. dk. gy. arg.		
		p							
		c							
		x		v.f.	a	m			
		p		slt.			sltst: m. gy, arg. sdy intvls.		
		p		slt					
		x		v.f	a	p-m	ss: m. gy. arg. matrix		
		x		v.f	a	p-m			
	300'	a					sh: m. gy, slty to sdy, few frag. of v. f. gr. ss. coal splints nr. base of unit.		
		a							
		a							
							COAL HORIZON - coal bnds/sh 1:5		
		c					sh: m. gy, slty, blocky, sl. carb. in places, coal splints at base of unit minor pyr. in intvls.		
	300'	c							
		c					306'-310' sltst: m. gy, arg. calcite infilling of fractures.		
		p		slt					
		c					346'-350' ss: m. gy. slt. to f. gr. a p. sort v. arg. matrix.		
							355'-360' ss: AA		
		a							
	400'	x		f	a	p			
		a							
		x		p	a	p			
		c							
	450'						COAL HORIZON: seam # 5		
		x		f-m	a-r	w	ss: m. gy. f-m. gr. a-r, well sort, sil, gr. to gr.		
	453'	x		f-m	a-r	w			
		x							
							Total Depth 453'		

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.

LSD
SEC
TWP
RGE
W ____ M

COMPANY SAGE CREEK COAL CO. LTD.

WELL SCC # 15

LOCATION DALAY HILL

FIELD FLATHEAD VALLEY

PROVINCE BRITISH COLUMBIA

PROFESSIONAL ENGINEER R. C. HART BRITISH COLUMBIA REGISTERED

Equip Date Mar. 3, 1972

Permanent Datum GROUND LEVEL Elev. K.B.
Log Measured from GROUND LEVEL Ft. Above Perm. Datum D.F.
Well Depths Measured from G.L.

Run No	ONE
Date	27 APRIL 73
First Reading	444
Last Reading	0
Footage Logged	444
Depth Reached	445
Depth Driller	453
Casing Shoe	22
Casing Driller	22
Casing Logged	22
Liquid Level	AIR/WATER
Min. Diam.	99
Operating Time	2 HOURS
Truck No	10
Recorded By	LABCIN
Witnessed By	CHILLINGHAM

359

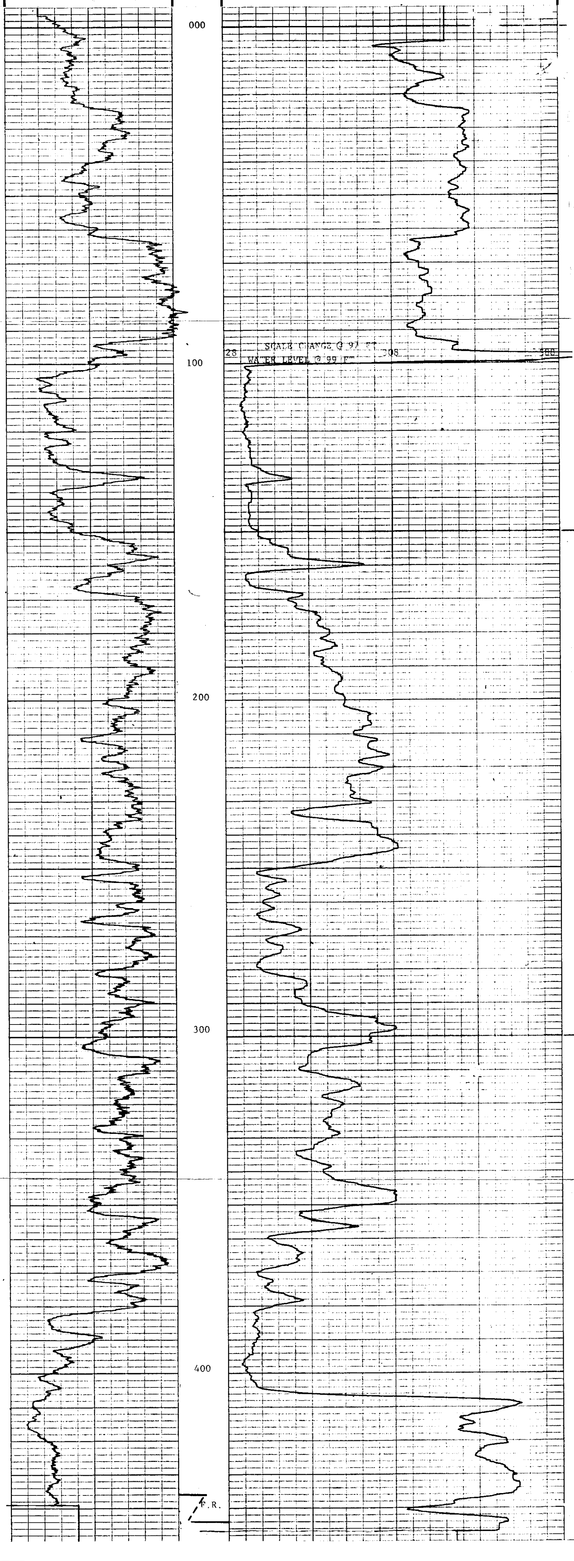
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 11/16	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	1 11/16
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N SOURCE	8.55 FT	LENGTH	6 INCH
		SOURCE MODEL NO	MRC-N-SS-W
GENERAL		SERIAL NO	N256
HOIST TRUCK NO	10	SPACING	19 INCH
INSTRUMENT TRUCK NO		TYPE	AmBe
TOOL SERIAL NO	CGN27U4A78	STRENGTH	6.XX x 10⁶ N/S

LOGGING DATA

GENERAL				GAMMA RAY					NEUTRON				
RUN NO	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T C SEC	SENS SETTINGS	ZERO DIV L OR R	API G R UNITS PER LOG DIV		T C SEC	SENS SETTINGS	ZERO DIV L OR R	API N UNITS PER LOG DIV	
1	0	97	10	4	25	0L	5 CPS		4	4	1L	28 CPS	
	97	444	10	4	25	0L	5 CPS		4	4	1L	28 CPS	

REMARKS Open Hole 22' Casing



ROKE

SIDEWALL DENSILOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

L 33

FILE NO.

LSD
SEC
TWP
RGE
W ___ M

COMPANY: SAGE CREEK COAL CO. LTD.

WELL: SCC # 15

LOCATION: DALLY HILL

FIELD: FLATHEAD VALLEY

PROVINCE: BRITISH COLUMBIA

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA R. C. HART

Expiry Date: Mar. 3, 1972

Permanent Datum: GROUND LEVEL Elev. ____
Log Measured from: GROUND LEVEL ____ Ft. Above Perm. Datum
Well Depths Measured from ____

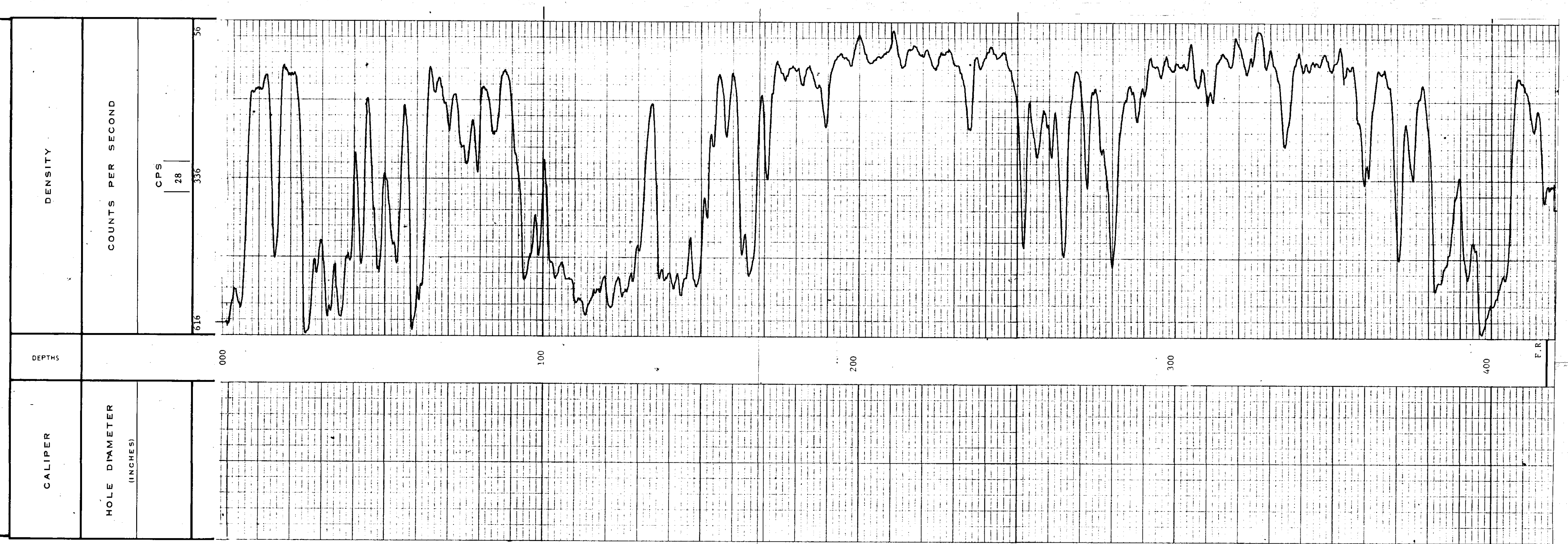
K.B. ____
D.F. ____
G.L. ____

Run No	ONE		
Date	27 APRIL 71		
First Reading	417		
Last Reading	0		
Footage Logged	417		
Depth Reached	420		
Depth Driller	453		
Casing Roke	22		
Casing Driller	22		
Fluid Type	AIR/WATER		
Liquid Level			
Min. Diam.			
Operating Time	2 HOURS		
Truck No	10		

359 (1)

Recorded By: LARKIN
Witnessed By: CULLINGHAM

REMARKS: I 66 E 115 DISC - 5.5 full gain R on CH2
LINE E - 100
SENS 4 SPEED 8 FPM TC 4 CPS 28 ZERO 2R



RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

L 31

PROPERTY: SAGE CREEK COAL LTD.			HOLE NO. SCC #16
LOCATION: Dally Hill, 284+90N, 652+20E (Approx.)			
AZIMUTH:	ELEVATION: 5,775' (Approx.)	DIP:	
TOTAL DEPTH: 215'	PROBE DEPTH: –	DIP TESTS:	
HOLE SIZE: 4 7/8"	CORE SIZE:		
DATE STARTED: April 28, 1971	AIR ☒ WATER ☐		
DATE COMPLETED: April 30, 1971	LOGGED BY: O. Cullingham	DATE: April 30, 1971	
CONTRACTOR: Kenting Drilling	PROBED BY:	DATE:	

NOTE: Hole abandoned at 215' because of caving.

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
							Clay		
							? Disaggregated congl. chert & sh pbls in ss matrix imbedded in clay in part.		
							? Possibly overburden		
	60'								
							Sand & clay Dit plugged constantly and no samples collected to facilitate faster drilling		
	100'						Coal HORIZON		
		a							
		x		f-vc	a-r	p	SH: m. gy, brn, finely grnd. Fe stn.		
		x		f-v.c	a-r	p	SS: m. gy, f-v. c gr. a-r, p sort. arg		
		a							
		x		m-c	a	m	SH: m. gy, sl. carb. sl. silty Fe stn		
							SS: m. brn gy, m-c, gr. a mod. sort arg. few coaly frag. disaggregated in part.		
		x		m-c	a	m			
		a							
	160'								
							SH: m. dk, gy, qivite silty		
		a					SS/SH: SS AA sh AB		
		a							
		x		f-m	a	m	SH: m, gy, sl, silty, few ss frag. Fe stn		
		x		f-m	a	m	SS: m. gy. lmn stn arg. matrix		
		a					SH: m. dk gy, silty blocky, few ss frag.		
		a							
		x		v.f.	a	w	SS m. dk. gy, arg. matrix well sorted.		
	200'						COAL HORIZON		
							Total Depth 215'		

L35

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

PROPERTY: SAGE CREEK COAL LTD.		HOLE NO. SCC #16A
LOCATION: Dally Hill, 284+00N, 651+80E (Approx.)		
AZIMUTH:	ELEVATION: 5,775' (Approx.)	DIP:
TOTAL DEPTH: 198'	PROBE DEPTH: 163'	DIP TESTS:
HOLE SIZE: 4 7/8"	CORE SIZE:	
DATE STARTED: April 30, 1971	AIR ☒ WATER ☐	
DATE COMPLETED: May 3, 1971	LOGGED BY: O. Cullingham	DATE: May 3, 1971
CONTRACTOR: Kenting Drilling	PROBED BY: Roke Oil Enter.	DATE: May 3, 1971

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

NOTE: Hole abandoned at 198' because of caving.

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
							clay - No samples retained		
							? Disagregated congl. chert & sh pbls a ss matrix p. sorted.		
							Possibly overburden imbedded in clay in places		
							clay & sand: No samples due to plugging bit. Kelly have left off to facilitate faster drilling		
	80'								
							? Disaggregated congl. & ss. Fe stn		
		x		v.f	a	m-w	ss: m. brn, gy, Fe stn, coaly		
	100'						COALY HORIZON		
		p					siltst: m. gy, some Fe stn, arg. sdy few coaly frag.		
		a					sh: m. to m dk gy, slty to sdy graveley type ptels, Fe st.		
		a							
		x		v.f	a	m	ss: m. gy. brn. Fe stn, in part disaggregated, few sh frag.		
				f	a	m			
				v.f.f	a	p			
	150'	x		f-m	a-a	m			
		x		f	a	m			
		x		f	a	m			
		a					sh: m. gy, sl. slty to sdy		
		a							
		p					siltst: m, dk, gy, arg. some Fe stn		
		a							
		x		v.f	a	w	sh: m. dk, gy, slty		
		x		v.f	a	w	ss m. dk, gy, arg.		
	190'						COAL HORIZON		
							Total Depth 198'		

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.

LSD
SEC
TWP
RGE
W ___ M

COMPANY SAGE CREEK COAL CO. LTD.
WELL SCC # 16 A
LOCATION DALLY HILL
FIELD FLATHEAD VALLEY
PROVINCE BRITISH COLUMBIA

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

L36

Permanent Datum GROUND LEVEL Elev. ___ K.B. ___
Log Measured from GROUND LEVEL ___ Ft. Above Perm. Datum D.F. ___
Well Depths Measured from ___ G.L. ___

Run No	ONE
Date	3 MAY 71
First Reading	162
Last Reading	0
Footage Logged	162
Depth Reached	163
Depth Driller	198
Casing Roke	
Casing Driller	
Fluid Type	AIR/MUD
Liquid Level	22
Min Diam	
Operating Time	1 1/2 HOURS
Truck No	10
Recorded By	SUNDERLAND
Witnessed By	CULLINGHAM

359 (1)

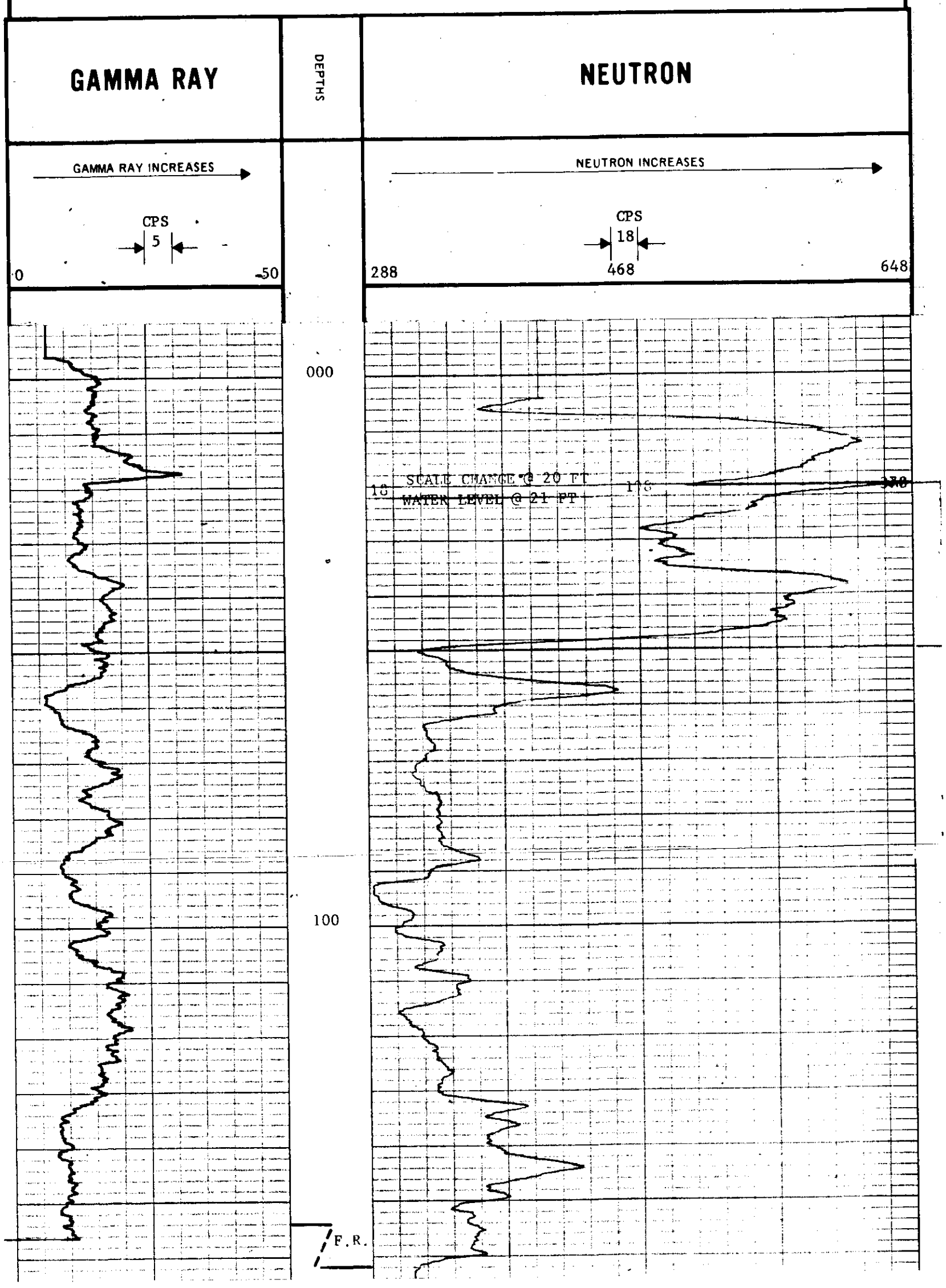
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	$1\frac{11}{16}$	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	$1\frac{11}{16}$
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	8.55 FT	LENGTH	6 INCH
		SOURCE MODEL NO	MRC-N-SS-W
GENERAL		SERIAL NO	N256
HOIST TRUCK NO	10	SPACING	19 INCH
INSTRUMENT TRUCK NO		TYPE	AmBe
TOOL SERIAL NO	CGN27U4A78	STRENGTH	66.94 $\times 10^6$ N/S

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC	SENS SETTINGS	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	20	10	4	25	0L	5 CPS	4	6.2	15L	18 CPS
	20	162	10	4	25	0L	5 CPS	4	6.2	1L	18 CPS

REMARKS Logged through double wall drillpipe.



L 37

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

PROPERTY: SAGE CREEK COAL LTD.		HOLE NO. SCC #17	
LOCATION: Dally Hill, 282+80N, 643+50E (Approx.)			
AZIMUTH:	ELEVATION: 5,860' (Approx	DIP:	
TOTAL DEPTH: 406'	PROBE DEPTH: 395'	DIP TESTS:	
HOLE SIZE: 4 7/8"	CORE SIZE:		
DATE STARTED: May 3, 1971	AIR: ☒ WATER: ☐		
DATE COMPLETED: May 7, 1971	LOGGED BY: O. Cullingham	DATE: May 4, 1971	
CONTRACTOR: Kenting Drilling	PROBED BY: Roke Oil Enter.	DATE: May 7, 1971	

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART
Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
			?				? coal - horizon: no samples taken by drillers.		
	50'						Possibly clay a sd. Bit plugging Kelly hose not attached to facilitate faster drilling		
	100'						ss: m. lt. gy. v.f.-f-gr. a mod. to well sorted minor arg. matrix calc. hd. large frag. ss: lt. gy. v.f gr. a well sorted v. calc. sltst: lt. gy. sl. arg. hd. v. calc. tr. of. calcite (veinlets) ss: lt. gy. v.f. gr. few coal ptels v. minor pyr. a mod. sort calc. sltst: lt. gy. calcite infilling v. calc. some calc arg. bnds. some v.f. gr. ss bnds. Basically a single lithology		
	150'								
	200'								
	250'						Marl band - 80% of sample disappeared in acid		
	300'						v. calc sh band		
	350'						v. calc. sh. band.		
	400'								
							Total Depth 406'		

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.

LSD
SEC
TWP
RGE
W ____ M

COMPANY SAGE CREEK COAL CO. LTD.
WELL SCC # 17
LOCATION DALY HILL
FIELD FLATHEAD VALLEY
PROVINCE BRITISH COLUMBIA

Permanent Datum GROUND LEVEL Elev. ____
Log Measured from GROUND LEVEL ____ Ft. Above Perm. Datum
All Depths Measured from ____

K.B.
D.F.
G.L.

Run No	ONE
Date	7 MAY 71
First Reading	394
Last Reading	0
Footage Logged	394
Depth Reached	395
Depth Driller	406
Casing Bore	36
Casing Driller	36
Fluid Type	AIR/WATER
Liquid Level	57
Min. Diam.	
Operating Time	1 HOUR
Truck No.	10
Received By	LARKIN
Witnessed By	CULLINGHAM

359

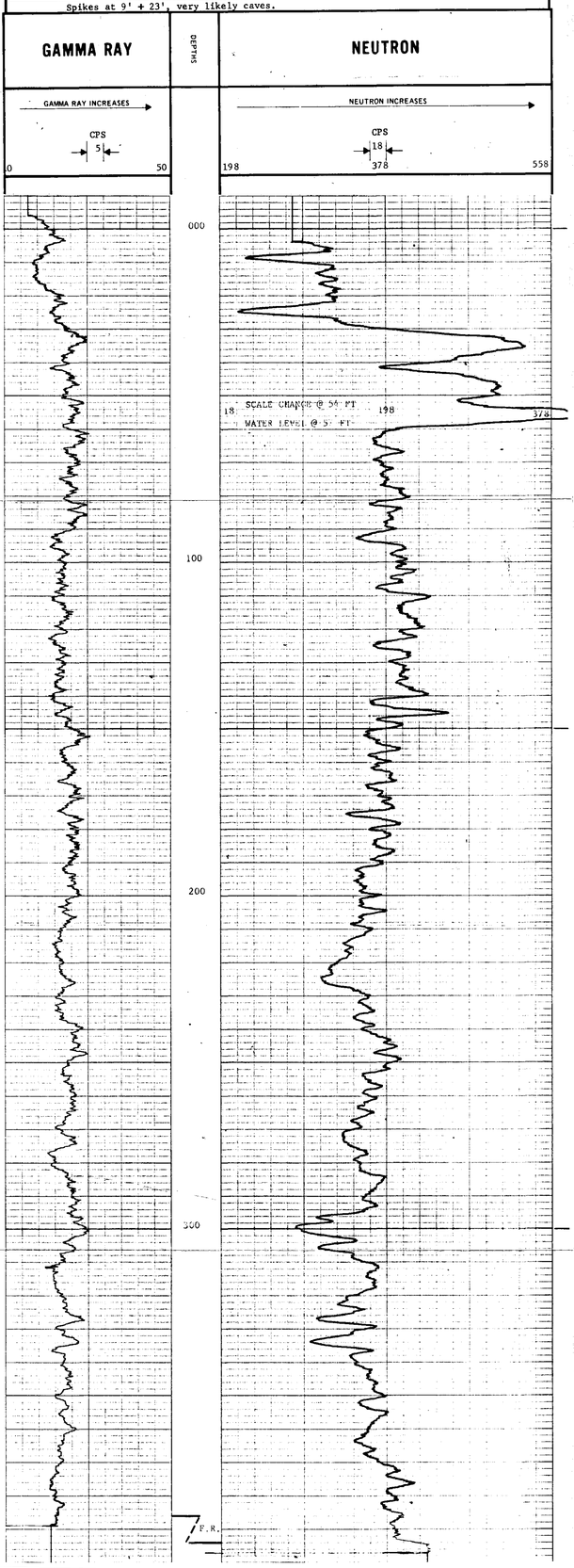
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	$1\frac{11}{16}$	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	$1\frac{11}{16}$
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N SOURCE	8.55 FT	LENGTH	6 INCH
		SOURCE MODEL NO	MRC-N-SS-W
GENERAL		SERIAL NO	N256
HOIST TRUCK NO	10	SPACING	19 INCH
INSTRUMENT TRUCK NO		TYPE	AmBe
TOOL SERIAL NO	CGN27U4A78	STRENGTH	6.70×10^6 N/S

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T C SEC	SENS SETTINGS	ZERO DIV L OR R	API G R UNITS PER LOG DIV	T C SEC	SENS SETTINGS	ZERO DIV L OR R	API N UNITS PER LOG DIV
1	0	54	10	4	25	OL	5 CPS	4	6.2	11L	18 CPS
	54	394	10	4	25	OL	5 CPS	4	6.2	1L	18 CPS

REMARKS Logged through double wall drillpipe.
Spikes at 9' + 23', very likely caves.



RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

359 (1)

PROPERTY: SAGE CREEK COAL LTD.		HOLE NO. SCC #18	
LOCATION: Dally Hill, 274+40N, 648+30E (Approx.)			
AZIMUTH:	ELEVATION: 5,910' (Approx.)	DIP:	
TOTAL DEPTH: 212'	PROBE DEPTH: 95'	DIP TESTS:	L39
HOLE SIZE: 4 7/8"	CORE SIZE:		
DATE STARTED: May 8, 1971	AIR ☒ WATER ☐		
DATE COMPLETED: May 14, 1971	LOGGED BY: O. Cullingham	DATE: May 14, 1971	
CONTRACTOR: Kenting Drilling	PROBED BY: Roke Oil Enter.	DATE: May 14, 1971	

NOTE: Hole abandoned at 212' because of caving, unable to regain bottom.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
		x		c-vc	a-R	p	ss: m.gy. brn Hvy Fe stn, imbedded in clay		
		x		c-vc	a-R	p			
		p		slt			siltst: imbedded in clay Fe stn.		
		e					clay waterlogged gumbo		
		e							
		x		vf-m	a-R	p	ss: v.f-m gr., m.gy brn, Hvy Fe stn imbedded in clay		
		x		f-m	a	p	ss: m, gy, f-m gr, a-R p sort, arg Fe stn		
	50'	x		f-m	a	p			
							Prob. clay + sd. Bit plugging, eally hose removed to facilitate drilling without having to trip to clean bit every 6 min.		
							COAL HORIZON		
	100'	e							
		x		vf-p	a	m	SH: m, gy, brn. soft finely gmd dust.		
		e							
		x		vf-m	a	p	ss: m, gy, Fe stn, m, sort arg.		
							SH: m, gy, soft		
		x		v.f-c	a	p	ss: m, gy, Fe stn, arg. matrix in part disag.		
	150'	x		f-c	a	p			
		x		f-c	a	p			
		p		slt			siltst: m, gy, brn. Fe stn		
		e					SH: m, brn, gy, sdy, Fe stn		
		p					siltst: m, gy, brn, Fe stn arg		
		x		vf-f	a	m	ss: m, gy, some Fe stn, arg.		
		e					SH: m, gy. sdy sd, little Fe stn.		
		x		f-m	a	m	ss: m, gy, arg. matrix, little Fe stn.		
				f-c	a	p			
	200'	x							
		x		m	a	w			
		x		m-c	a	m			
							Total Depth 212'		

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

L-40

FILE NO.

LSD
SEC
TWP
RGE
W ____ M

COMPANY SAGE CREEK COAL CO. LTD.

WELL SCC # 18

LOCATION DALLY HILL

FIELD FLATHEAD VALLEY

PROVINCE BRITISH COLUMBIA

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

Permanent Datum GROUND LEVEL Elev. ____ K.B. ____
Log Measured from GROUND LEVEL ____ Ft. Above Perm. Datum D.F. ____
Well Depths Measured from ____ G.L. ____

Run No.	ONE
Date	14 MAY 71
First Reading	94
Last Reading	0
Footage Logged	94
Depth Reached	95
Depth Driller	212
Casing Roke	
Casing Driller	38
Fluid Type	AIR/WATER
Liquid Level	
Min Diam.	
Operating Time	2 HOURS
Truck No	10
Recorded By	SUNDERLAND
Witnessed By	CULLINGHAM

359 (1)

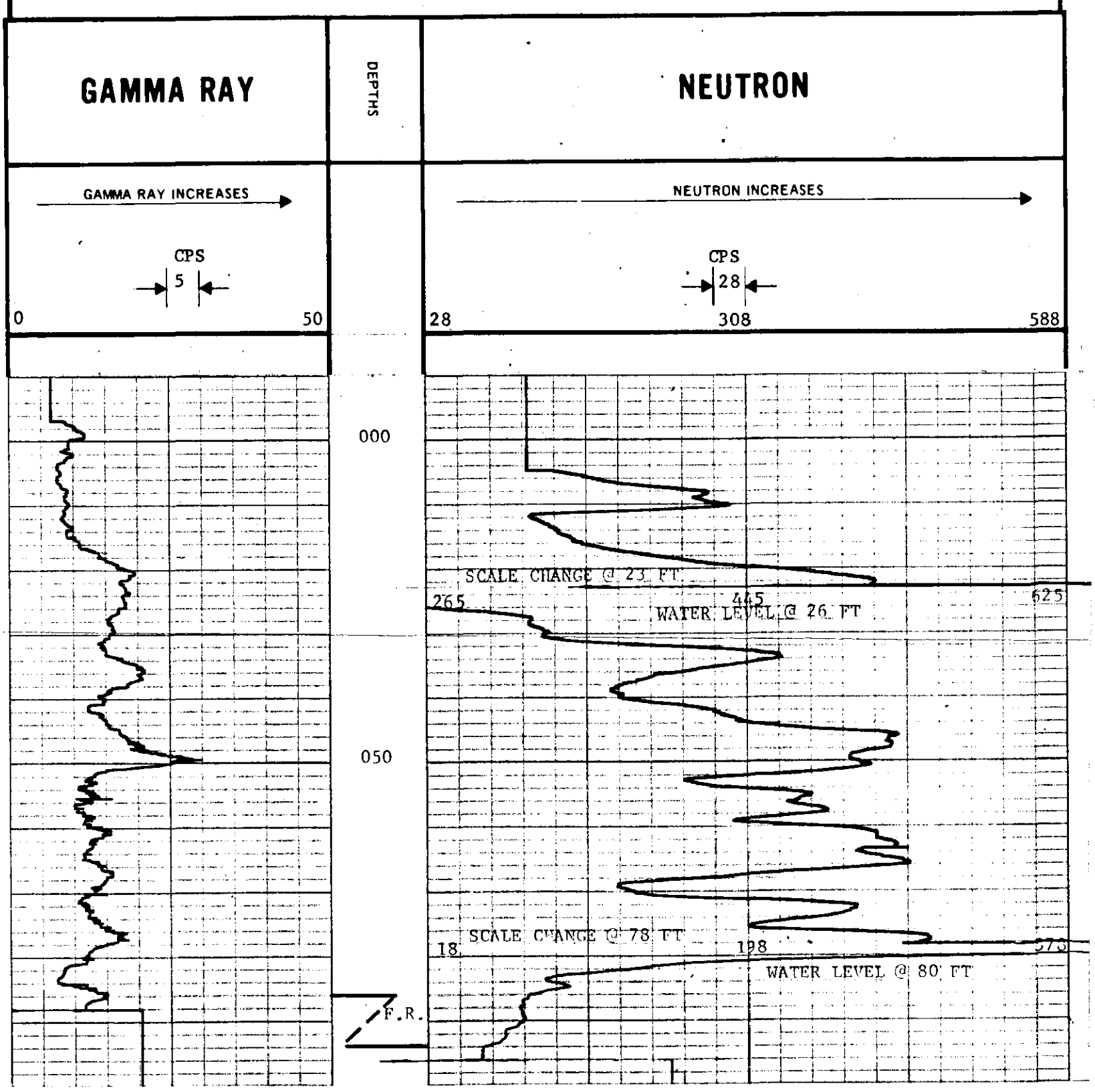
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO.	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	$1\frac{11}{16}$	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	$1\frac{11}{16}$
TYPE	GEIGER	DETECTOR MODEL NO	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	8.55 FT	LENGTH	6 INCH
		SOURCE MODEL NO	MRC-N-SS-W
GENERAL		SERIAL NO	N256
HOIST TRUCK NO	10	SPACING	19 INCH
INSTRUMENT TRUCK NO		TYPE	AmBe
TOOL SERIAL NO	CGN27U4A78	STRENGTH	6.70 $\times 10^6$ N/S

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS. SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	23	10	4	25	0L	5 CPS	4	4.0	1L	28 CPS
	23	78	10	4	25	0L	5 CPS	4	6.2	15L	18 CPS
	78	94	10	4	25	0L	5 CPS	4	6.2	1L	18 CPS

REMARKS Logged through double wall drill pipe.



RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

41

PROPERTY: SAGE CREEK COAL LTD.			HOLE NO. SCC #19
LOCATION: Dally Hill, 294+00N, 686+50E (Approx.)			
AZIMUTH:	ELEVATION: 5,220' (Approx.)	DIP:	
TOTAL DEPTH: 600'	PROBE DEPTH: 592'	DIP TESTS:	
HOLE SIZE: 4 7/8"	CORE SIZE:		
DATE STARTED: May 14, 1971	AIR ☒ WATER ☐		
DATE COMPLETED: May 17, 1971	LOGGED BY: O. Cullingham	DATE: May 18, 1971	
CONTRACTOR: Kenting Drilling	PROBED BY: Roke Oil Enter.	DATE: May 17, 1971	

359 (1)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
		x		f	a	m	SS: m. gy. to rusty (Fe stn) arg. matrix locally imbedded in clay		
				v.f-f	a	m			
				f-m	a	m			
				m	a	m			
				m-c	a	m			
				m-vc	a	p			
				m-vc	a	p			
		x		v.f.	a	w			
	50'	a/x		-/f	-/a	-/m	SH/SS 1:1		
		x		vf-f	a	m	SH: m. dk. gy. hd, silty		
				f	a	m	SS: m. gy, arg. matrix		
							SS: m. gy. brn, disag. v.f.-f grains		
				m-c	a	p-m			
				m	a	m			
		x		f-m	a	p			
		p		slt			siltst: m, gy, v. arg. sl. micro-mica		
	100'	a					SH: m. dk, gy, v. sl. micro-mica, sdy		
		p/a		slt/-			siltst/sh 1:1 siltst - A.A SH - A.A		
		x		v.f	a	w			
		x		v.f			SS: m. gy, arg. matrix some Fe stn. few sh. frag.		
		a							
							SH: m. mdk. gy. sl. carb. coal splints minor pyr.		
		a							
	150'						COAL HORIZON: Seam 2 + 3		
		a					SH: m. gy. soft		
		p		slt					
							siltst: m. gy. arg. blocky		
		p		slt					
		x		v.f	a	w	SS: m. gy, some Fe stn. arg. matrix.		
				v.f-f	a	m-w			
				v.f-m	a	p-m			
	200'	x		m-vc	a	p			
		x		m-c	a	p-m			
				m-c	a	p-m			
		x		f-m	a	w			
				f-m	a	w			
				m-c	a	m			
				m-c	a	m			
				m-c	a	m			
		x		m-c	a	m			
		a							
	250'	p		slt			SH: m. gy, red. brn. Fe stn, mod. hd.		
		a					siltst: m. gy, arg. hd.		
							SH: m. gy. silty in part, sl. carb. soft to mod. hd.		
		a					Coaly SH: dk, gy, soft, coal ptgs.		
							COAL HORIZON: Seam # 4a		
	300'						prob. coal No sample bagged.		
							COAL HORIZON: Seam # 4a		
		p					siltst: m. gy, arg. blocky		
		a					SH: m. gy, silty blocky		
							COAL HORIZON: Seam # 4b		
		x		v.f.	a	m	SS: m. gy, arg. coal splints, minor pyr.		
		p		slt			siltst: m, gy, arg. frag of v. f. gr. ss		
		x		f	a	m-w			
	350'	x		f	a	m-w	SS: m. gy. arg. matrix, minor pyr.		
		a					SH: m. gy, silty blocky, sl, micro-mica		
		a							
		p		slt			siltst: m, gy, sl. arg.		
		x		f	a	m-w	SS: m. gy. arg. matrix, v. sl. calc.		
		a					SH: m. gy. sl, silty, blocky		
	400'	a							
		a					SH: m dk, to dk gy, carb. to v. coaly some coal frag. soft.		
		a							
		a							
		p		slt			SH: m. gy. sl, silty, blocky		
		x		vf-f	a	m-w	siltst: m. gy, arg. mod. hd.		
		a					SS: m. gy, arg. matrix		
	450'	a							
		p					SH: m, gy, quite silty, hd, blocky		
		a					siltst: m, gy, arg. minor pyr. sl. micro-mica		
		a							
		p					SH: m, gy, silty to sdy, hd, blocky		
		p					siltst: m. gy, arg. appr. v.f. gr. ss		
		a					SH: m. gy. silty, blocky		
		x		v.f.	a	m-w	SS: m. gy, arg. matrix		
	500'	x							
		x		v.f	a	m-w			
		a					SH: m. gy, sdy, hd, sl. carb. coalified wd. remn.		
		a							
							COAL HORIZON seam # 5		
		a					SH: m, dk, gy. carb. to coaly		
							COAL HORIZON: seam # 5		
	550'								
		x		f-m	a	m	SS: m. gy. gr. to gr. minor arg. matrix, few coal frag. (prob. from above) hd. sil.		
				f	a	m-w			
				f	a	m-w			
				f	a	m-w			
		x		f	a-r	w	Basal Kootenay SS.		
				f	a-r	w			
				f	a-r	w			
				f-m	a-r	m-w			
				f	r	w			
	600'	x		f	r	w			
							Total Depth 600'		

ROKE

SIDEWALL DENSILOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO.

LSD
SEC
TWP
RGE
W ___ M

COMPANY: SAGE CREEK COAL CO. LTD.

WELL: SCC # 19

LOCATION: DALLY HILL

FIELD: FLATHEAD VALLEY

PROVINCE: BRITISH COLUMBIA

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA R. C. HART

Expiry Date. Mar. 12

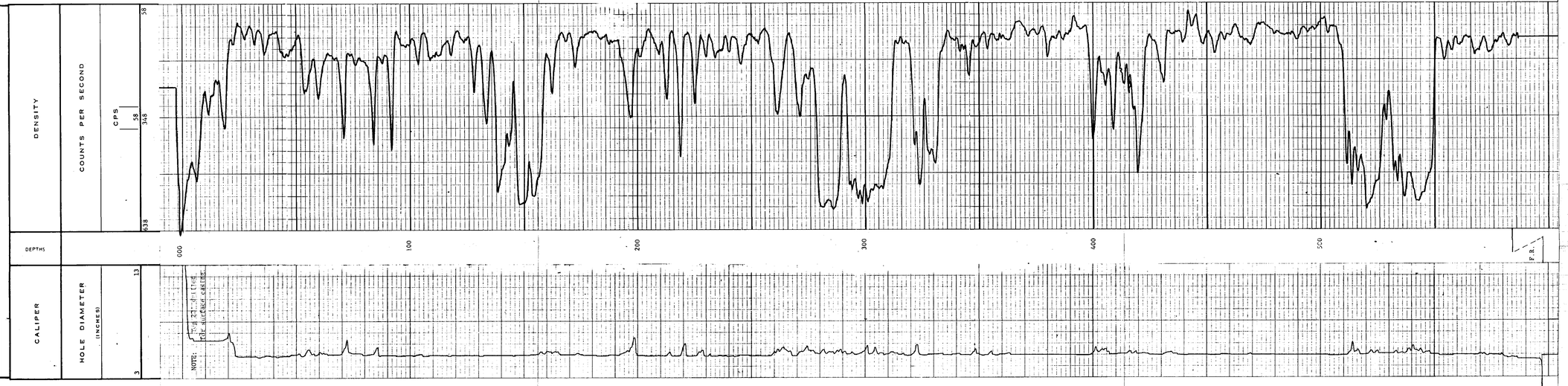
Permanent Datum: GROUND LEVEL Elev. ___ K.B. ___
Log Measured from: GROUND LEVEL ___ Ft. Above Perm. Datum D.F. ___
Well Depths Measured from ___ G.L. ___

Run No	ONE	
Date	17 MAY 71	
First Reading	597	
Last Reading	0	
Footage Logged	597	
Depth Reached	598	
Depth Driller	600	
Casing Roke		
Casing Driller	NIL	
Fluid Type	WATER	
Liquid Level	FLOWING	
Min Diam	4 7/8	
Operating Time	3 HOURS	
Truck No	10	

359

Recorded By: LARKIN Witnessed By: CULLINGHAM

REMARKS: Sens. 3.8 Speed 8 FPM. TC 4. 29 CPS Zero 28. Rev. on CH2
Master E115. I06 Line E100 Disc 5.5 Full Gain



ROKE

GAMMA RAY NEUTRON LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

L42

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W ___ M	
COMPANY	SAGE CREEK COAL CO. LTD.
WELL	SCC # 19
LOCATION	DALLY HILL
FIELD	FLATHEAD VALLEY
PROVINCE	BRITISH COLUMBIA

Expiry Date: Mar. 3, 1972

Permanent Datum GROUND LEVEL Elev. K.B.
Log Measured from GROUND LEVEL Ft. Above Perm. Datum D.F.
Well Depths Measured from G.L.

Run No	ONE		
Date	17 MAY 71		
First Reading	591		
Last Reading	0		
Footage Logged	591		
Depth Reached	592		
Depth Driller	600		
Casing Rake			
Casing Driller	NIL		
Fluid Type	WATER		
Liquid Level	FLOWING		
M/F Diam	4 7/8		
Operating Time	3 HOURS		
Truck No	10		

359

Recorded By LARKIN Witnessed By CULLINGHAM

EQUIPMENT DATA

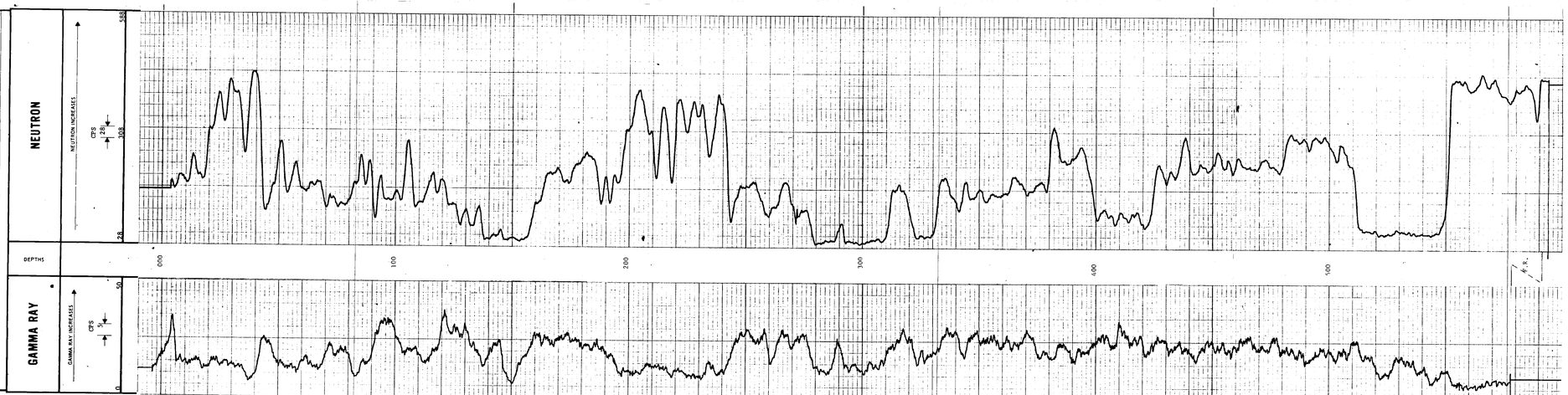
GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO		TOOL MODEL NO	NEUTRON/NEUTRON
DIAMETER	1 3/4	DIAMETER	1 3/4
DETECTOR MODEL NO		DETECTOR MODEL NO	
TYPE	GEIGER	TYPE	PROPORTIONAL
LENGTH	18 INCH	LENGTH	8 INCH
DISTANCE TO SOURCE	8.59 FT	SOURCE MODEL NO	MRC-4000SW
GENERAL		SERIAL NO	1829
SONDE TRUCK NO	10	SPACING	12 INCH
NEUTRON SOURCE NO		TYPE	AmBe
TOOL SERIAL NO	CONSTANTS	STRENGTH	6.0×10^4 N/S

LOGGING DATA

GAMMA RAY		NEUTRON	
ZERO	API GR UNITS	SENS	API N UNITS
DIV. LOW	PER LOG DIV	SETTINGS	PER LOG DIV
7 CPS	10	1 C	20
SPEED	1 C	SEC	4
TIME SEC	10		

GENERAL		
RUN NO	DEPTHS FROM	TO
1	0	591

REMARKS: Log ran in open hole.



RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

359 (1)

PROPERTY: SAGE CREEK COAL LTD.			HOLE NO. SCC #20
LOCATION: Dally Hill, 291+50N, 671+20E (approx.)			
AZIMUTH:	ELEVATION: 5,460' (approx.)	DIP:	
TOTAL DEPTH: 203'	PROBE DEPTH: -	DIP TESTS:	144
HOLE SIZE: 4 7/8"	CORE SIZE:		
DATE STARTED: May 17, 1971	AIR: ☒ WATER: ☐		
DATE COMPLETED: May 20, 1971	LOGGED BY: O. Cullingham	DATE: May 20, 1971	
CONTRACTOR: Kenting Drilling	PROBED BY:	DATE:	

359

NOTE: Hole abandoned at 203' because of caving.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1...

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
							Extremly loose badly brocken up. Possibly all glacial fill.		
							aglomeration of quartzite, sh, ls & chert grx pbls. R to A intervals of gunk (mushy clay)		
	50'						Heavy Fe stn thruout.		
							Some intervals appear to be very badly brocken rock		
	100'								
		x		f	a	m	ss: m. gy. arg. calcite infilling of fractures badly brocken, large chips caving v. sl. micro-mica. Extremly arg.		
				stt. f	a	m			
				f	a	m			
		x		v.f-f	a	m			
	150'	x/a		v.f.	a	m	ss/sh 2:1, ss - A-B, sh, m dk, gy, sl, micro-mica		
		x					ss: m. gy, some Fe stn. arg. sl micro-mica few white to lt. grn orthoquartzite frag. calcite infilling of fractures		
		x							
		x/a		v.f-m	a	m	ss / sh 1:1		
		x/a		v.f.f.	a	m	ss: m. gy, v.f. f gr. arg. matrix		
		x/a		v.f.f.	a	m	sh: m. gy, blocky, slty in part		
		x/a		m.f.f.	a	m			
		a					sh: m. dk, to dk. gy, carb. to coaly some coly frag. ~30% coal frag.		
	200'	a							
		a					Total Depth 203'		

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

359

PROPERTY: SAGE CREEK COAL LTD.			HOLE NO. SCC #20A
LOCATION: Dally Hill, 292+00N, 671+20E (Approx.)			
AZIMUTH:	ELEVATION: 5,460' (Approx.)	DIP:	
TOTAL DEPTH: 336'	PROBE DEPTH: 331'	DIP TESTS:	
HOLE SIZE: 4 7/8"	CORE SIZE:		
DATE STARTED: May 20, 1971	AIR: ☒ WATER: ☐		
DATE COMPLETED: May 25/71	LOGGED BY: O. Cullingham	DATE: May 25, 1971	
CONTRACTOR: Kenting Drilling	PROBED BY: Roke Oil Enter.	DATE: May 25, 1971	

NOTE: Hole abandoned at 336' because of caving. Probe log indicates that coal seam #5 was intercepted at 232' to 283'; no coal cuttings were recovered.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
	50'						no samples collected		
	100'								
	150'	a, e							
		a, e, p, a		v.f.f, v.f.f, slt	a, a	m, m	SH: m. gy, v. sdy, in part sl. micro-mica, SH-SS: 1:1, SH, AR, SS: m, gy, arg. Siltst: m, gy, v. arg. few v.f gr. ss frag		
	200'	a, e					SH: m. dk, gy, sltg to sdy		
		e, e					SH: m, dk, to dk, gy, carb to coaly, soft. coal at 184'-185' coal at 191'-193'		
	250'	x, x, e, e, e, e		vf.f, vf.f	a, a	m, m	SS: m. gy, v.f-f gr. v. arg. graywacke SH: m.gy hd. sdy, v. sl. carb.		
		e, e					SH/coal ~20% coal frag overall dk gy carb. soft, sks, minor pyr. This interval showed seam #5 on the probe logs. No bulk samples of coal recovered		
	300'	e, x, x, x, x		f-m, f, f-m, f-m, f	a, a, a, a, a-r	m, w, w, w, w	SS/SH 3:1 SS R. B. SH-m. dk, gy, sl. carb. coal frag. SS: m.gy, gr to gr, minor arg. matrix large frag. indicating hvy. fract, hd, possibly basal Kootenay.		
		x, x, x, x, x, x, x, x, x		f, f-m, f-m, f, f, f-m, f	a-r, a-r, a-r, a-r, a-r, a-r, a-r	w, m-w, m-w, m-w, m-w, m, m			
	350'						Total Depth 336'		

ROKE

GAMMA RAY NEUTRON LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO.

LSD
SEC
TWP
RGE
W ___ M

COMPANY SAGE CREEK COAL CO. LTD.
WELL SCC # 20A
LOCATION DALLY HILL
FIELD FLATHEAD VALLEY
PROVINCE BRITISH COLUMBIA

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA R. C. HART
Expiry Date: Mar. 3, 1972

Permanent Datum GROUND LEVEL Elev. ___
Log Measured from GROUND LEVEL Ft. Above Perm. Datum
Well Depths Measured from ___

K.B. ___
D.F. ___
G.L. ___

Run No.	ONE
Date	24 MAY 71
First Reading	330
Last Reading	0
Footage Logged	330
Depth Reached	331
Depth Driller	331
Casing Roke	
Casing Driller	143
Fluid Type	WATER
Liquid Level	FULL
Min Diam.	4 7/8
Operating Time	2 1/2 HOURS
Truck No.	10
Recorded By	LARKIN
Witnessed By	CULLINGHAM

L45

359

(1)

EQUIPMENT DATA

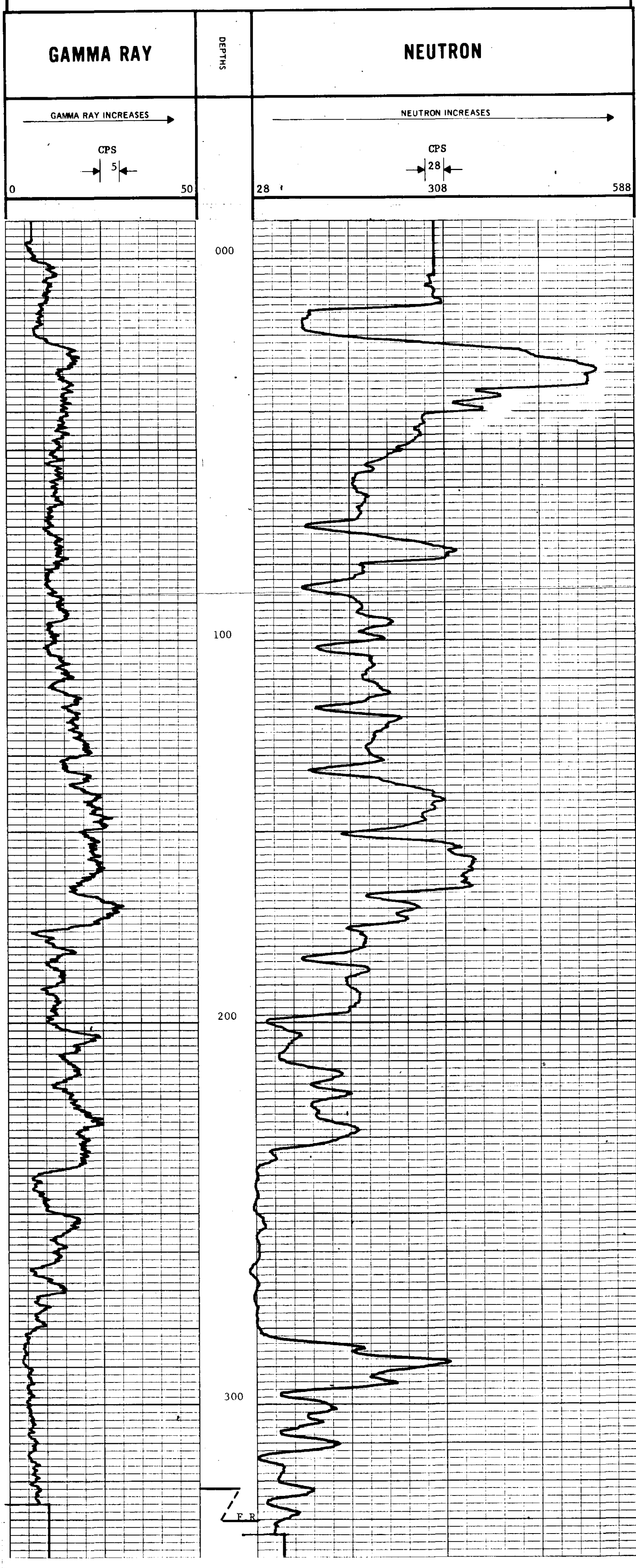
GAMMA RAY	
RUN NO	ONE
TOOL MODEL NO	
DIAMETER	$1\frac{11}{16}$
DETECTOR MODEL NO	
TYPE	GEIGER
LENGTH	18 INCH
DISTANCE TO N. SOURCE	8.55 FT
GENERAL	
HOIST TRUCK NO	10
INSTRUMENT TRUCK NO	
TOOL SERIAL NO	CGN27U4A74

NEUTRON	
RUN NO.	ONE
LOG TYPE	NEUTRON/NEUTRON
TOOL MODEL NO	
DIAMETER	$1\frac{11}{16}$
DETECTOR MODEL NO	
TYPE	PROPORTIONAL
LENGTH	6 INCH
SOURCE MODEL NO	MRC-N-SS-W
SERIAL NO	N256
SPACING	19 INCH
TYPE	AmBe
STRENGTH	6.70×10^6 N/S

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T C SEC	SENS SETTINGS	ZERO DIV. L OR R	API G R UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
1	0	330	10	4	25	0L	5 CPS	4	4	1L	28 CPS

REMARKS Logged through drillpipe.



ROKE

SIDEWALL DENSILOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

L49

FILE NO.

LSD
SEC
TWP
RGE
W ___ M

COMPANY SAGE CREEK COAL CO. LTD.

WELL SCC # 20A

LOCATION DALLY HILL

FIELD FLATHEAD VALLEY

PROVINCE BRITISH COLUMBIA

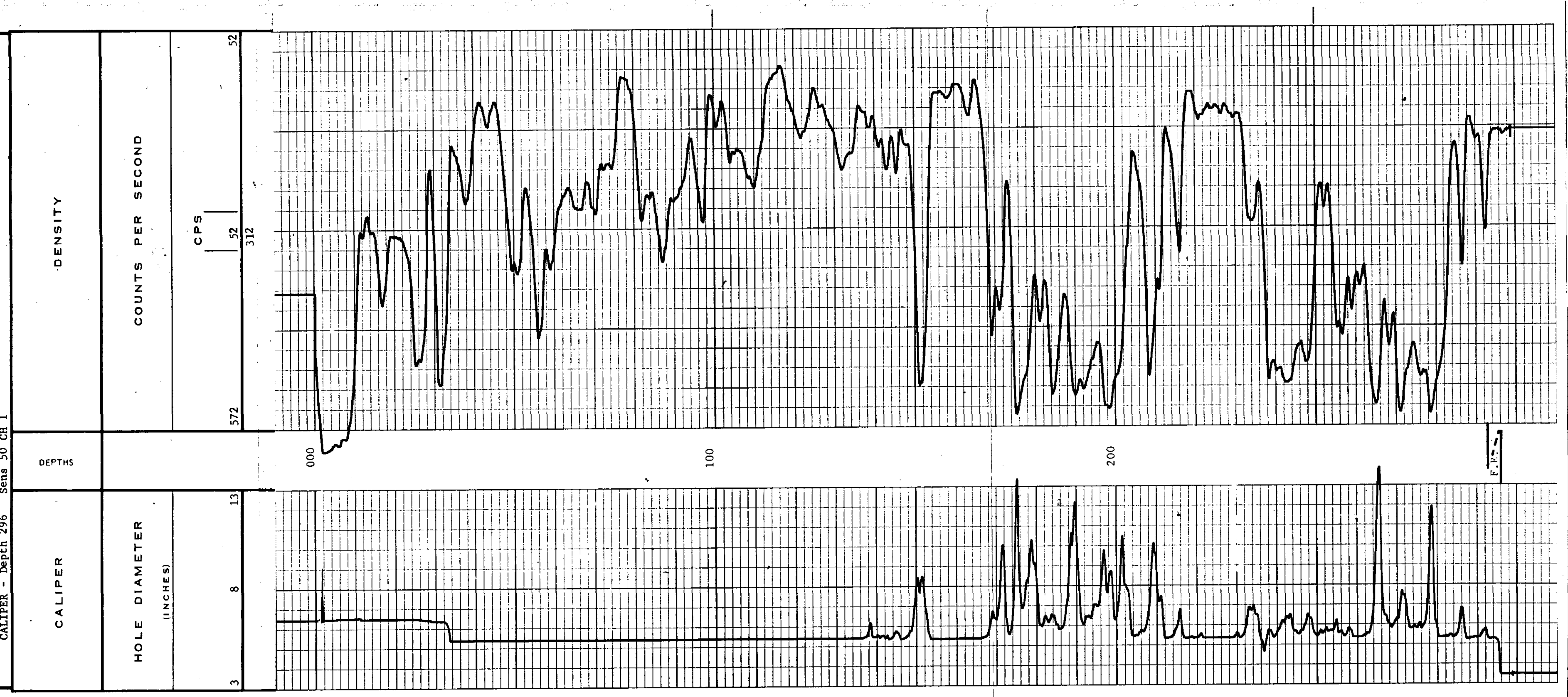
PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. C. HART

Expiry Date: Mar. 3, 1972

Permanent Datum GROUND LEVEL Elev. ____ K.B. ____
Log Measured from GROUND LEVEL ____ Ft. Above Perm. Datum D.F. ____
Well Depths Measured from ____ G.L. ____

Run No.	ONE		
Date	25 MAY 71		
First Reading	293		
Last Reading	0		
Footage Logged	293		
Depth Reached	296		
Depth Driller	336		
Casing Roke			
Casing Driller	143		
Fluid Type	WATER		
Liquid Level	FULL		
Min. Diam.	4 7/8		
Operating Time	2 HOURS		
Truck No.	10		

359

Recorded By LARKIN Witnessed By CULLINGHAM

REMARKS ME 115 Line E 100 DISC 5.5 8 F.P.M.
Sens 4.6 TC 4 26 CPS Zero 2R R on CH 1
CALIPER - Depth 296 Sens 50 CH 1