K SAGE CREEK 76(1)A





SAGE CREEK COAL LIMITED

Report on Field Investigations June to October 1976

November 1976 O. Cullingham

MINING RECORDER **RECEIVED** and **RECORDED** (AY 3 v 1977 M.R. #..... VICTORIA, B. C.

00371(4)

TABLE OF CONTENTS

	Page
Introduction	1
Conclusions	3
Location and Access	4
Drilling	4
Drill Hole 76D01	5
Drill Hole 76D02	6
Drill Hole 76D03	6
Drill Hole 76D04	7
Drill Hole 76D05	7
Drill Hole 76D06	7
Bulk Sampling	10
Adit 73-5a-S	10
Adit 72-4-N	10
Adit 72-2-N	11
Environmental Studies & Rehabilitation	12

Tables

Table 1	Analytical Results of Coal Seam Composite Samples	FOR FURTHER ANALYTICAL DATA, REFER TO CONFIDENTIAL COAL ANALYSIS
Table II	Deviation Surveys	FILE

Table III Location and Elevations of Drill Holes of the 1976 Drilling Program

APPENDICES

APPENDIX A	Lithological Drill Hole Reports - 1976
APPENDIX B	Tabulation of Field Test Results Carried out on Coal Samples Intersected in Diamond Drilling. FOR ANALYSIS DATA, REFERTO CONFIDENTIAL COAL ANALYSIS FILE.
APPENDIX C	Tabulation of Laboratory Test Results Carried Out on Coal Samples Intersected in Diamond Drilling
APPENDIX D	Tabulation of Field Test Results Carried Out on Channel Samples from Crosscuts in Adits
APPENDIX E	Gamma Ray/Neutron Logs Sidewall Density and Caliper Logs Focused Beam Logs
APPENDIX F	Diamond Drill Hole Columnar Sections and Detailed Coal Bed Lithology

MAPS_AND ILLUSTRATIONS

Dwg. L 2692	Property Plan	Bar	Scale
Dwg.G.2751-1	Adit 72-2-N Seam 2, Tape and Compass Plan Stratigraphic Profile	2	
Dwg.G.2751-2	Adit 72-4-N Seams 4U and 4L Tape and Compass Plan		
Dwg.G.2751-3	Adit 73-5a-S Seam 5 Tape and Compass Plan		

INTRODUCTION

Following the completion and evaluation of all exploratory works to the end of 1975, it was apparent that two anomalous areas existed which required further investigation. The two areas were:

- An apparent N-S trend of depressed F.S.I.'s running through the centre of North Hill.
- The apparent dissimilarity of washability results performed on bulk samples from seam 2 (from Adit 73-2 S) and core recovered from seam 2 in several diamond drill holes on South Hill.

It was agreed that diamond drilling would be the most economical and reliable method to investigate and explain the anomalies. Six holes were proposed and drilled: three holes on the North Hill, all drilled to the basal sandstone, and three on the South Hill, all terminated after intersecting seam 2. A total of 2,976 feet was drilled.

In addition, a bulk sampling programme was carried out to determine the following:

 The washability of seam 5 on South Hill excluding the parting separating seam 5U from seam 5L. (In all previous samples of Seam 5 from South Hill the parting was included in the sample). 2. The washability and coal qaulities of a blend of Seam 2, Seam 4U and Seam 4L only. The necessity of this was brought about by a decision to look at a mining plan to open pit Seams 2 and 4 only, at a production rate of 1.5 million long tons of clean coal per year.

Adit 73-5A-S on South Hill was re-entered for the purpose of obtaining samples of Seam 5U and Seam 5L and Adits 72-2-N and 72-4-N on North Hill were re-entered to obtain samples of Seam 2, Seam 4U and Seam 4L.

The diamond drilling contract was awarded to Connors Drilling Limited of Vancouver. The rig was a skid-mounted Longyear 28, equipped with wireline equipment to recover H.Q. core (2 25/32" diameter).

The bulk sampling contract was awarded to Trina Maree Mining Limited of Blairmore, Alberta. All excavation and bulk sampling was carried out using hand equipment (picks and shovels) air pick and wheelbarrow. A total of 213 feet of drifting and crosscutting was carried out and 67 long tons of sample extracted. The support facilities contract (camp and catering, bulldozing and rehabilitation) was awarded to McMeekin Construction Limited of Rocky Mountain House, Alberta. McMeekin provided one D-7 Caterpillar tractor to construct drill sites and access roads and to carry out rehabilitation.

-2-

CONCLUSIONS

-3-

The following conclusions have been drawn from the 1976 drilling program:

- Test results from holes 76D01, 76D02, and 76D03 indicate normal F.S.I. values for all seams on North Hill. Therefore, there is no low F.S.I. zone. Its apparent presence was due to poor quality F.S.I. data derived from previous rotary hole samples.
- 2. Washability test results from holes 75D04, 75D05, and 75D06 corroborate the washability test results from the adit samples. Therefore, the washability results of the adit samples are reliable data.



(

•

1 9498 AN 23 19497 CL 377 9385 17130 CL 392 1 8726 49[°]05' CL 404 S. 112/2 CL 409 0. 1884. CL 38 CL 389 CL 386 CL 380-17846 0 CL 401 17135 CL 378 CL 37: CL 390 27133 1 8588 11951 CL 399 CL 406{ CL 407 11949 CL 385 CL 302 17844 11841 QL 403 CL 384 CL 383 CL 397 6 17002 11718 W) MILES K-SAGE CREEK 76(2)A RIO TINTO CANADIAN EXPLORATION LTD. SAGE CREEK COAL LIMITED - B.C.

PROPERTY PLAN

0 C. / E. S. DWG. L 2692 FEB. 1975

LOCATION AND ACCESS

The Sage Creek Coal property lies in lower Flathead Valley in southeastern British Columbia. The centre of activity is some 6 air miles north of the border near the concluence of Howell and Cabin Creeks. Geographically this location lies at 490°06' north latitude, 1140°34' west longtitude (N.T.S.: 82-G-1,2). The centre of the property is 35 air miles southeast of the town of Fernie, B.C.; the nearest settlement where supplies and services are available.

Access to the property from Fernie is via paved Provincial Highway No. 3 to Morrissey and from there via gravel surfaced B. C. Forest Development Roads along Lodgepole and Harvey Creeks and Flathead Valley. An alternate route into the property is south from Highway No. 3, east of Michel, B.C., along the Flathead Road. The Flathead Road continues across the International Boundary to Columbia Falls, Montana. The nearest railway to the property is CP's line in Crows Nest Pass area and in Elk Valley at Morrissey. Electrical power is available in Elk Valley and the Crows Nest Pass area.

DRILLING

The drilling programme commenced July 22 with the mobilization of the drilling equipment to the property and was concluded September 24 with the completion of hole 76D06.

-4-

Holes 76D01, 76D02 and 76D03 were drilled on the North Hill to investigate the apparent depressed F.S.I. zone and holes 76D04, 76D05 and 76D06 were drilled on the South Hill to investigate the dissimilarity in washability results of Seam 2.

Drill Hole 76D01

This hole was drilled approximately 40 feet north from hole 74-41 and close to the centre of the apparent depressed F.S.I. zone. The purpose of the hole was to provide coal core samples of all three economic coal seams to compare with rotary chip samples recovered from hole 74-41.

Hole 76D01 intersected what appears to be a normal sequence of stratigraphy to Seam 5 and generally correlated well with hole 74-41; however, minor variations in intersected thicknesses were observed. The more noticeable of these are the apparent thinning of Seam 2 from 37 ft. (hole 74-41) to 24.5 ft. (hole 76D01) and the apparent thickening of the parting separating Seam 4U and Seam 4L from 22.5 ft. (hole 74-41) to 42.0 ft. (Hole 76D01). In the writers opinion variations of this nature are not unexpected and are readily explained by depositional variations and localized steepening and flattening of dip.

Of more concern is the apparent thinning of Seam 5 from 67.5 ft. (hole 74-41) to 28.5 ft. (hole 76D01). The thinning appears to affect only the lower bench of the seam, Seam 5 lower. Seam 5 lower is abnormally thick in hole 74-41

-5-

(41.5 ft.) and abnormally thin in hole 76D01 (4.0 ft.) with respect to surrounding holes SCC5, SCC11, 74-42, 74-45, 75D02 and 75D03. The thickness in these holes varies from 11.0 ft. to 20.0 ft. and averages 15.0 ft. A plausible explanation - and the one adopted by the writer - for this apparent thickening and thinning in such close proximity is "pinch and swell".

Drill Hole 76D02

This hole was drilled to investigate the apparent depressed F.S.I. zone at its north end in the centre of the zone. The hole intersected what appears to be a normal section of stratigraphy to the basal sandstone. An apparent thinning of the interval between Seam 2 and Seam 4U is, in part, compensated by a thickening of the strata between Seam 4L and Seam 5 and between No. 1 Horizon and Seam 2. The thinning appears to be depositional.

Drill Hole 76D03

This hole was drilled to investigate the apparent depressed F.S.I. zone at its south end in the centre of the zone. The hole intersects what appears to be a normal section of stratigraphy to the basal sandstone.

Test results from all three holes indicate normal F.S.I. values for all three seams. It would appear that the depressed F.S.I. zone, indicated by the rotary drill results, was caused by poor recovery of rotary chip samples. (See tabulation of analytical results Table 1).

-6-

Hole Number	Sean	Start Ft.	End Ft.	Thick Ft.	Core Recovery %	Raw C Analy Ash	oal sìs FSI
760-01	2	359.5	383.7	29.2	86	32.2	4.0
76D-01 ·	40	539.0	551 .1	12.1	95	22.8	2.5
760-01	4L	592.3	610.0	17.7	38	29.4	3.0
76D-01	50	824.0	840.0	16.0	69.5	23.2	3.0
760-01	5L	846.0	848.0	2.0	65	23.7	5.5
760-02	2	269.0	237.8	18.8	76	17.0	5.5
760-02	40	342.3	376.5	34.2	91	20.2	3.0
760-02	4L	388.7	400.0	11.3	73	26.2	1.5
760-02	50 + L	637.0	686.0	49.0	79	28.0	2.0
760-03	2	127	135.8	8.8	71	19.5	6.0
760-03	40	359.2	394.1	34.9	100	22.0	2.5
760-03	4L	407.2	422.65	21.15	96	26.1	2.5
760-03	50	610.8	635.0	24.2	95	33.1	2.5
76D-03	51.	644.15	658.5	14.35	95	31.2	3.0
76D-04	2	327	346.3	19.3	92	30.6	5.0
760-05	2	172	185.1	13.1	96 •	21.6	6.5
760-06	2	108	120.3	12.3	87	21.3	5.5

SAGE CREEK PROJECT ANALYTICAL RESULTS OF COAL SEAM COMPOSITE SAMPLES 1976 DRILLING PROGRAM

TABLE - 1

)

All holes were logged open hole with Gamma Ray/Neutron, Sidewall Density, Caliper and Focused Beam Logs. (Appendix E). Three Sperry-Sun single-shot deviation surveys were run in each of the holes and the results are tabulated in Table II.

Drill Hole 76D04

This hole was drilled approximately 650 feet southeast from Adit 73-2-S; its proximity to the adit was designed to obtain a reliable correlation between the drill hole and the adit. The hole intersected a normal section of stratigraphy to the base of Seam 2. Immediately below Seam 2, extensive downhole caving caused the hole to be abandoned a few feet short of its planned depth. No open hole logs were obtained.

Drill Hole 76D05

This hole was drilled approximately 500 feet south from hole SCC19. The hole intersected what appears to be a normal section of stratigraphy to the base of Seam 2.

Drill Hole 76D06

This hole was drilled approximately 400 feet south from hole 74-06. The hole intersected what appears to be a normal section of stratigraphy to the base of Seam 2.

Washability tests results from all three holes corroborate the washability test results from adit 73-2-S.

-7-

TABLE II

	DEVIATION SURVEYS														
· · · · ·	RU	N NO.1		RUN NO.2	RUN	NO.3									
Hole	Depth	Dip & Dir.	Depth	Dip & Dir.	Depth	Dip & Dir.									
76 ₀ 01	250'	0.7 ⁰ @ 286 ⁰	500'	2.0 ⁰ @ 276 ⁰	850'	3.0 ⁰ @ 295 ⁰									
76 ₀ 02	250'	3.5 ⁰ @ 310 ⁰	500'	4.5 ⁰ @ 298 ⁰	7001	4.5°@ 302°									
76 ₀ 03	200'	2.3 ⁰ @ 282 ⁰	450'	4.8 ⁰ @ 276 ⁰	660'	6.8 ⁰ @ 282 ⁰									
76 ₀ 04	N/A														
76 ₀ 05	200'	1.0 ⁰ @ 355 ⁰													
76 _D 06	145'	1.0 ⁰ @ 153 ⁰													
]	I	1	1.		ł									

Rio Algom Mines Limited, Engineering Department, Toronto, Canada.

Page

Holes 76D05 and 76D06 were logged open hole with Gamma Ray/ Neutron, Sidewall Density and Caliper probes. (Appendix E). A Sperry-Sun single-shot deviation survey was run in each of the holes and the results are tabulated in Table II. Hole 76D04 was logged through H.Q. drill rods with Gamma Ray/Neutron and Sidewall Density probes only. (Appendix E).

All holes were logged visually and detailed lithology logs are attached as Appendix <u>A</u> at the back of this report.

Columnar sections of all holes were drawn at 1"=40' and coal sequences expanded to 1"=2'. Reductions of these drawings are attached as Appendix F.

The co-ordinates of all drill holes were located by tape and compass only and elevations taken from the property base map at 1" = 200' with a 5' contour interval. The table of co-ordinates precedes Appendix <u>A</u> as Table III.

The coal seams and horizons intersected by the drill holes were sampled on the basis of lithology usually in increments of less than 2.0 feet. Channel samples of approximately 100 gm. were cut from the core for field tests and the rest of the samples were sent to Coal Science and Minerals Testing Limited a division of Birtley Engineering Limited - in Calgary.

The field tests carried out on the channel samples were:

- (i) Raw Coal F.S.I.
- (ii) Float/Sink at 1.5 s.g.
- (iii) F.S.I. of float sample
- (iv) F.S.I. of sink sample

The results of the tests are tabulated at the back of this report in Appendix B.

-8-

The samples sent to Calgary were tested for raw ash, raw coal F.S.I. and specific gravity (dry basis). Composite samples of each coal seam were tested for washability. The laboratory test results are attached to this report as Appendix <u>C</u>.

BULK SAMPLING

The bulk sampling of Seam 5 on the South Hill was carried out from June 22 to June 28, 1976, and the bulk sampling of Seam 4 and Seam 2 on the North Hill were carried out from September 20 to October 7, 1976.

Adit 73-5a-S

This adit was re-entered to extract separate bulk samples of Seam 5U, Seam 5L and the parting separating the seams. The samples were extracted from the south wall of the crosscut excavated in 1975. A total of 30 long tons was extracted as follows:

Seam 5U	12	long	tons
Seam 5L	12	long	tons
Separating	Parting 6	long	tons

The attached tape and compass plan of the adit at 1" - 20' indicates the location of the bulk sample points relative to previous sample points. (Drawing DWG. G.2751-3).

-9-

Adit 72-4-N

This adit was re-entered to extract bulk samples of Seam 4U and Seam 4L for further blending tests with Seam 2. The adit was advanced a further 20 feet along strike in each of the seams from the cross-cuts driven in 1975. New crosscuts were driven and bulk samples extracted from the north walls. Twelve long tons were extracted from each of Seam 4U and Seam 4L. The adit extensions and crosscuts are plotted on the attached tape and compass plan of the adit at 1" = 20'. (Drawing DWG.G.2751-2). Seam 4U was measured as 31.9' and Seam 4L was measured as 19.0'. Channel samples in 2 foot increments were taken across the true thickness of each seam. The samples were subjected to raw F.S.I. determinations and F.S.I. determinations on the float and sink fractions at 1.5 s.g. F.S.I. tests were also made on raw and float/sink composite samples. The results of the tests are recorded in Appendix D at the back of this report.

Adit 72-2-N

This adit was re-entered to extract a bulk sample of Seam 2 for further blending tests with Seam 4U and Seam 4L. The adit was advanced a further 20 ft. along strike from the crosscut driven in 1975 and a new crosscut was driven. The crosscut was extended from previous years to expose coal bands above and below the main seam. A bulk sample of 12 long tons was extracted from the north wall of the crosscut from the main seam. Two special samples, each of

-10-

approximately 1/2 long ton, were extracted from the coal bands and the separating shale partings above and below the main seam.

The adit extension and the crosscut are plotted on the attached tape and compass plan at l'' = 20'. (Drawing DWG. G.2751-1). The main seam was measured as 11.0' and the total thickness of stratigraphy as exposed in the crosscut was measured as 17.6' (Section and profile of crosscut; (Drawing DWG. G.2751-1). Channel samples at approximate 2 foot increments were taken across the true thickness of the exposure in the crosscut. The samples were subjected to raw F.S.I. determinations and F.S.I. determinations on the float and sink fractions at 1.5 s.g. F.S.I. tests were also make on composites of the samples. The results of the tests are recorded in Appendix <u>D</u> at the back of this report.

The bulk samples from all seams transported to Coal Science and Minerals Testing Limited in Calgary - a division of Birtley Engineering Limited - where washability tests were carried out. Results of the testing are reported in other reports.

ENVIRONMENTAL STUDIES AND REHABILITATION

Environmental Studies

Environmental studies and monitoring continued throughout the season and are scheduled to continue through the winter. The studies have mainly revolved around Fish Population Studies, Water Quality, Hydrology and Weather Monitoring. Details of the Environmental programme and results there-from are beyond the scope of this report and will be discussed in separate reports.

Rehabilitation

Rehabilitation of all surface workings was carried out in compliance with guidelines laid down by the Reclamation Branch of the Department of Mines and Petroleum Resources. The rehabilitation was carried out continuously during the drilling and bulk sampling programmes and was completed by the end of the latter. The rehabilitation of drill sites, access roads, trenches and adit sites was inspected by two representatives of the Department of Mines and Petroleum Resources on September 30th. Both expressed satisfaction for the way in which the clean-up was performed.

Owen Cullingham

CERTIFICATE OF QUALIFICATION

I, Owen Robert Cullingham, hereby certify as follows:

 That I am a geologist and reside at #8, 475 Bramalea Road, Brampton, Ontario L6T 2X2.

2. That I graduated in 1968 from The University of Calgary with a B.A. degree in History and Economics and in 1971 also from The University of Calgary with a B.Sc. degree in Geology.

3. That I have been practicing as an exploration geologist since 1970 with Rio Tinto Canadian Exploration Limited. I have been mainly concerned with coal exploration in Western Canada.

Owen Cullingham



.

00371(2)











00371(1)

CARLSON Recorded By		Truck No.	Operating Time			Rm (e) °F		Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run, No,	1 + <u>1</u> 	Welt Depths Mansurer From	Log Measured from	Permanent Datum	PROVI		FIELD	WM LOCAT	TWP WELL	LSD	FILE NO. COMP		スピフ	フクマ	
Witnessed B		36	2 HOURS					HQ	62	GEL		53	864	863	862	0	862	12 AUGUST 1976	ONE		RIG FLOOR	RIG FLOOR	GROUND LEVEL	NCE BRITISH CO		FLATHEAD		76-D-0-1		ANY SAGE CREED	DIL ENTERPRISES			
Y CULLINGHAM																						Ft. Above Perm. Datun	Elev.	OLUMBIA			L			COAL	LTD, CALGARY		SAMMA RAY NEUT	
																			•		G.L.	- SC	K.B.	DENS-CAL, FBL, DEV	Other Services:			E			ALBEHTA		RON LOG	
																E	QL	JIP	MENT DATA															
GAMMA RAY																				<u></u>	NEU	TRO	N		 									
	RUN NO. ONE											RUN NO. ONE				PON	-																	

(-1)

			UAMMA	TAT	·		NEUTRON											
RUN N	0.				ONE	RL	IN NO.			ONE								
TOOL	MODEL NO.					u	G TYPE		N	EUTRON/N	IEUTRON							
DIA	METER			11		то	OL MODEL NO.											
DETEC	TOR MODEL	NO.					DIAMETER			ᄖ								
ТҮР	ε			SC	INTILLATI	ON DE	TECTOR MODEL NO).										
LEN	GTĤ			4	INCH		TYPE		P	PROPORTIONAL								
DISTAN	NCE TO N. SO	DURCE		6.	8 FT.		LENGTH			6 INCH	1							
		····				so	URCE MODEL NO.		M	RC-N-SS-W								
			GENERA	Ļ			SERIAL NO.			265								
HOIST	TRUCK NO.						SPACING		:	17 INCH								
INSTRU	JMENT TRU	CK NO.			36		ТҮРЕ		A	AmBe								
TOOLS	ERIAL NO.			1	25002		STRENGTH			3 CURIES								
					L	.OGGING	DATA		·									
	G	ENERAL				GAMMA P	IAY	Т	•	NEUTRON								
RUN	DE	PTHS	SPEED	T.C.	SENS	ZERO	API G. R. UNITS	т. с.	SENS	ZERO	API N. UNITS							
NO.	FROM	то	FT/MIN	SEC.	SETTINGS	DIV. L OR	R PER LOG DIV.	SEC.	SETTINGS	DIV. LOR R	PER LOG DIV.							
. 1	0	62	12	4	100	. 0	16	3	1000	5 L	340							
2	62	862	12	4	100	0	16	3	500	1 L	170							
			T			1					[
					·													

REMARKS

1 · :

۰. ..: 1.18.200 GAMMA RAY :

DEPTHS

NEUTRON

۰.

NEUTRON INCREASES

GAMMA RAY INCREASES

API |340| 160 5100 1700 8500 ÷. : 4.4. ++ i. t 000 ¥ 1 .i...



	CULLINGHAM	Witnessed By	Recorded By CARLSON
		36	Truck No.
		2 2/3 HOURS	Operating Time
		-	
		HQ	Min. Diam.
		62	L iquid Level
		GEL	F luid Type
			Casing Driller
		53	Casing Roke
	- -	864	Depth Driller
		863	Depth Reached
		8 60	Footage Logged
		0	Last Reading
		860	First Reading
		12 AUGUST 1976	Date
		ONE	Run. No.
CSC	Ft. Above Perm, Datum	LIG FLOOR	Log Measured from
K.B.	Elev	ROUND LEVEL	Permanent Datum
GRN, FBL, DEV	JMBIA	ICE BRITISH COLI	PROVIN
Other Services:	•	4	
		FLATHEAD	FIELD
	L	ION	
			T WP
	J	· 76-D-0-1	SEC
$(\mathcal{L}\mathcal{J})$	JAC	NY SAGE CREEK	FILE NO. COMPA
ALBERTA	ID. CALGARY,	IL ENTERPRISES LI	0
	CALIPER		
NSILOG	DEWALL DEN		DOK
]))))
			-5



ŀ		
+		
-		
ŀ		
-		
- F		
· ·	ļ	
ĺ		
· · · ·		
	700	
1		
ļ		······································
	•	
	800	
	800	
	800	
	800	
	800	
	800	
	800	
	800	
	800	
	800	
	800	
	800	
	800	
•	800	
· ·	800	
	800	
· · ·	800	
· · ·	800 FR	
· ·	800 FR	
	800 FR	

										т Л	":• •	к.,*	· · · ·				-		2 m					an a	ن ب ا: 		an a	1	" i [
Recorded By C	Truck No.	Operating Time		Rm OD OF .		Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.	Well Depths Measure	Log Measured from	Permanent Datum	¥ у	•		RGE	SEC	FILE NO.			
CARLISON Witnessed E	36	1 HOUR		12.50 @ 77	•	рн	72	GEL		53	864	863	788	72	860 .	12 AUGUST 1976	ONE	rom RIG FLOOR	RIG FLOOR	GROUND LEVEL	PROVINCE BRITISH CC	•	FIELD FLATHEAD	LOCATION	WELL 76-D-0-1	COMPANY SAGE CREEK	OIL ENTERPRISES		
CULLI NGHAM															•				Ft. Above Perm. Detum	Elev.	LUMBIA				N	COAL	LTD. CALGARY,	FOCUSED BEAM LO	
													- - - - - -					G.L.	SG	K.B.	GRN, DENS-CAL, DEA	Other Services:	· ·	8	6.7		ALBERTA	đ ,	

Remarks	SONDE GEO	OMETRIC FACT	OR .329	PROTO	TYPE	3			
	GROUND FI	ISH READING	- 65 OHM	S					
	WATER SAL	MPLE TAKEN F	ROM MUD	TANK		·			
·								•	
				T					
			Ę				. •		
			t.						•
								•	
)		400 0		0			1000		2000
								1	
		· ·							
		1							
						·		•	
•									
			•		1.				
		· · · · ·	,						,
				·					
				N. 4					
								-	ч. - Г
·		<u></u>			<u>.</u>	<u></u>	<u> </u>		معدده هو الروز ال الــــــــــــــــــــــــــــــــــ
				···· •			. :		
					+			······	
				· · _ · _ · · _ · · - · ·				· · · · · · · · · · · · · · · · · · ·	
					+	= =			
					· · · · · · · · · · · · · · · · · · ·				
								· · · · · · · · · · · · · · · · · · ·	
			000			·			
				· · · · · · · · · · · · · · · · · · ·				·	
								- · · · · · · · · · · · · · · · · · · ·	,
					······			· · · · · · · · · · · · · · · · · · ·	
		· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · /		a ang atao at		
	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	·			n an a faran dari a agaar in bernan Tana aya dari kara aya seri	
		·····						······································	
				· · · · · · · · · · · · · · · · · · ·				an a can an a A A can a can an a	na na sana ang sana sa
	· · · · · · · · ·							· · · · · · · · · · · · · · · · · · ·	
	.								
an a		·····		· · · · · · · · · · · · · · · · · · ·					
		· · · · · · · · · · · · · · · · · · ·						······································	· · · · · · · · · ·
·····				······································				· · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
								· · · · · · · · · · · ·	······
								· · · · · · ·	
1 N 1				-	· · · · · ·		1		



	400		
	400		
		>	
>			a and a second
	-		····
	-		
	-		
2			
			· · · · · · · · · · · · · · · · · · ·
	-		
	-1		
	500		
	-		·····
			· · · · · · · · · · · · · · · · · · ·
	_		
	-		
	-		· · · · · · · · · · · · · · · · · · ·
			· · · · · · · · · · · · · · · · · · ·
	_1		
			, _ , _ , _ , _ , _ , _ , _ , _ ,
	-		
	a ,		
	- 1		
			······
	-		·
5	600		
	 .		
5			
	·		
	· · · ·		
			<u>∔</u> ↓ ↓ ↓ ↓

Recorded By CA		Truck No.	Operating Time			Rm @ 0F		Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.	Well Depths Measured	Log Measured from	Permanent Detum		· · ·		W M	FIGE	SEC	FILE NO.				フラフ	
RLSON W		36	2 HOU				-	DH	06	MUD/WA		24	712	711	710	0	710	24 AUGUS	ONE	from RIG FLOOR	RIG FLOOR	GROUND LEVE	PROVINCE BRIT		FIELD FLAT	LOCATION		WELL 76-D	COMPANY SAGE					
itnessed By			R S							TER								T 1976				F	ISH COLUMB		TOP MOUNT			02	CREEK COA		PRISES LTD		GAM	:
CULLINGHAM																					Ft. Above Perm. Datum	Elev.	IA		AIN		6	J	L COMPANY		CALGARY		MA RAY NEUTR	
		,							ι.											GL.	86	K.B.	DENS-CAL, FBL, I	Other Services:		· · ·					ALBERTA		ON LOG	
									<u> </u>					Ĺ	 								Я											■ −1
			·						64								:0(ЛР	ME	NT (TA	۱ 				N	FLITE						-
RL	JN. P	NQ.					•							0	NE					RUN	NQ									(ONE			
то	OL	мо	DEL	<u>. NC</u>),					-		,	. 1	1						106	ΤY	PE_							NE	UTRO)N/N	IEUT	RON	-
			TER R M								<u></u>		11	<u>a</u>	<u> </u>					100	<u>ң м</u> Пі А	<u>OD</u> MF	TER	10,					,	112	5		. <u></u>	┨
	ТҮГ	ΡE										S	CIN	TI	LL/	TI	ON			DET	ECT	OR	MQ	DEL	NQ,							.,		
	LEN	NGT	H								-	·	4	<u>IN</u>	ET					· · · ·	TYF	E		<u> </u>					PR	0POH 6 I	NC	NAL I	·	+
	SIA	NCE		<u>) N. (</u>	SUL	JHC	E	<u> </u>								•				sou	RCE	M		LNO		-			MR	C-N-S	S-W			1
									G		RA	L									SEP	IAI	L NC),					<u> </u>		256			-
нс	DIST	TR	UCK	<u>(NO</u>						-					26						SPA	CIN	IG			<u>.</u>	<u>-</u>		Am	17 Be	.INC	H		-
	<u>STR</u> OL	<u>UME</u> SER	<u>ENT</u> IIAL	TRU	JCK),							12	<u>50</u>	02					<u>tyf</u> Stf	E EN	GTH							3 (URI	ES		
																																		4
<u> </u>				=	CF			•							<u></u>	<u> </u>		UG o	GI			Γ Α			- T		•			NEUT	RON	<u></u>	<u></u>	-
RL	JN			D	EPT	CHS			s	PEE	D	T,	C.	I	SE	NS			ZE	RO	A	יו G	3. R.	UNI	TS	т. с.	s	ENS		ZERO)	ΑΡΙ	N. UNIT	ſS
N	<u>o.</u>		FRO	DM		<i>6</i> .	то	•	F	т/N		SE	C.	s	ЕТТ	ING	is	DI	V. L	OR R		PER	LO	G DI	<u>v.</u>	SEC.	SE	TTIN	GS	DIV. L	OR F	PER	LOG DI	4
2	!	+	0 8	4	+	·	84 71	.0	╉	 1	2	4	<u>}</u>	-	1	<u>.00</u> 00			0 0				<u>1</u> 1	<u>6</u>	\rightarrow	3]	<u>1000</u> 500		<u>5</u> 1			40 70	-
	_	1	<u> </u>											Ì.																¥]
RE	EMA	RKS	<u> </u>															,-																4
			G	AM	M/	4 F	λ.	Y						DEPTHS											NE	UTF	RON	<u></u>						-
┢──		GAI	мм	A R	AY		CRI	EAS	ES			┢									_			NEU	TRO	N IN	CRE	ASES			÷			1
				, , ,	-•	16	 ∎-	_	-	- >	60					.	700									40				<u></u>		•		
F		-i-i-i-i	4,78) -			•				1	00	┝		:		.	/00	7 						-		198			<u></u>			<u>.</u>	830	<u></u>

addition of the second s

· • ·

n de la companya de la construction de la construcción de la construcción de la construcción de la construcción

		Truck No.	Operating Time				Min. Diam.	- Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	Eirst Readinn	Date	Run, No.	Well Depths Measure	Log Measured from	Permanent Datum			•		SEC	FILE NO.					a.
ARLSON		36	2 HOURS				BQ	90	MUD/WATER		24	712	711	708	0	708	24 AUGUST 1976	ONE	d from RTG FLOOR	RIG FLOOR	GROUND LEVEL	PROVINCE BRITISH COI		FIELD FLAT TOP NO	LOCATION	WELL 76-D0 2	COMPANY SAGE CREEK		OIL ENTERDRISES			
CTITIL TINGHAM																				Ft. Above Perm. Datum C	Elev.	JUMBIA		UNTAIN			COAL COMPANY		I TD CALGARY		IDEWALL DENSI	
hys. 1						BAI											GA	MM	A RA		8	DEV, GEN, FBL	ther Services:			SI	DEWAI		ALBERTA	DG	LOG	
F	RUN NO. 1 2					нs т 70 70	°0 8 8		SF	PEEC 7/MII 12		т.с зес. С/		SET PEI		GS			ERO L OR I		PE	G.R.		TS V.	T.C. SEC. 3	SET SETT 100				R(CPS/ D	÷
	RE	EMA	RKS																			DI C/	ENS	LTY	TOOL	SERI	AL N	0, 4	20			
	4		6		8	}	- -		1	.0			DEPTHS	1:	2								(DIA 14	C	TER -	ER	ES)					
				GAN	и м / Аг		AY	•		•			•			·						•			•					•	· · ·	
			<u></u>						· ,													·	B	IUL (Gl	K DEI RAMS/	NSITY CC)						• •

111

,

1

•

••••

_ {	i			
	k +			
İ				
	····			
V			2010 - Alban -	· · · · · · · · · · · · · · · · · · ·
	· · · · · · · · · · · · · · · · · · ·			
				+
· • · · · · · · · · · · · · · · · · · ·				+
		P		+
			600	
· • 1				
;	n a na com te la colara la na composita nome a data la f			
:				h
•••				► - +
				► ⊨
				
 	·····			↓ ↓
				
				┢╼╾┝╴
,				
•	k			
	↓ - , - , - , - , - , - , - , - , - , - 			+ • · · + · · ·
	<u> </u>			
	[
_	· · · ·			
T	+ ·++ · · · · · ·			
{				
- } -				
- { - {				
- - - - - - - - - - - - - - - - - - -				
			1 57	
			FR	
			FR_	
			FR	
			FR_	
			FR	

i.

Recorded By	Truck No.	Operating Time		Rm @ ⁰ F	Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.	Well Depths Meaner	Log Measured from	Permanent Datum		•	i.	W N	RGE	SEC	FILE NO.		•		
CARLSON							MU	6						24 /		ed from <u>K.U.; K</u> I	NIC FI	GROUNI	PROVINCE BY			LOCATION		WELL 76	COMPANY SA		OIL EN	T	
Witnessed By	6	HOUR		13.33 @ 77		8	D/WATER		4	12		0	/08	WGUST 1976	NE	JUUX	OOR) LEVEL	TTISH COLIMB		AT TOP MOUNT			-D0 2	GE CREEK COAI		TERPRISES LI	:	
CULLIN																	Ft. Above Perm.	Elev.	TA		AIN				L COMPANY	-	rd, calg	FOCUSED BEA	
GHAM																	Detum CSG	K.B.	GRN-1	Other S				J			ARY, 💈 AL	IM LOG	
									•										DEN-CAL. DEV	Services:			E			5	BERTA		, , ,
													-				ł		4	2.41.1		مبر <u>م</u> عد	N. 1997.	l A un assau	 				
Rem	narks	·]	SONT	E GE	OME	RIC	: F/	ACT	OR		329)	P	RO	ro	IVY PI	<u> </u>										1		
Ren	narks		SONI GROU	E GE	IOMET ISH AMPT	RIC REA	C F/	ACT NG EN	OR 75 FR(OHI OM N	329 15 11D) TAI	P	RO	ro	199822	<u>;</u> 3											· · · · · · · · · · · · · · · · · · ·	
Ren	narks		SONI	E GE	ISH	TRIC REA	<u>F</u> ADI	ACT NG_ EN	OR Z5 FR(329 (S (III)	TAI	P	RO	TO							· · · · · · · · · · · · · · · · · · ·							
Ren	harks	· · · · · · · · · · · · · · · · · · ·	SONT	E GE	ISH AMP			ACT NG EN	OR 75 FR	Deprits	329 15 11D	TAI	P NK	PR07	TO ·	IYPI	3					<u></u>							
Ren	narks		SONI		OME ISH AMPI			ACT	VOR 75 FR	OHI Departs		TAI					3						<u> </u>						200
Ren	narks		SONI		ISH AMPI				VOR 75 FR														Ω						200
									VOR. 75 FR																				

Recorded By C		Truck No.	Operating Time			Rm @ ^O F	Mith, Diant,		I initial level	Fluid Type	Casing Drilter	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	Eirst Reading	Date	Run. No.	Well Depths Measured	Log Measured from _	Permanent Datum					M M	TWP	LSD SEC	FILE NO.			RN
ARLSON								ľ		G								4 SEP		I from RIG FI	RIG FI	GROUNI	PROVINCE		FIELD		LOCATION	WELL		COMPANY	OIL EN		
Witnessed B		36	2 HOURS				УH		ა ი	EL/WATER		14	671	671	670	0	670	TEMBER 1976	ONE	DOR	DOR) LEVEL	BRITISH CO		FLAT TOP				76 DO 3	SAGE CREEK	NTERPRISES I		G
Y CULLIN														-							Ft. Above Perr	Elev.	JUMB TW				ſ			COAL COMPANY	TD. CAL		AMMA RAY
GHAM																						K.B.	DENS	Other					J		GARY, AI		NEUTRON LO
																							- URL, DEV, EDI	Services:					(~		LBERTA		ЭС
										L		<u> </u>		<u> </u>]		EQ		PME		DA		<u> </u>										
								·,	GA	MM		RAY	,		-													N	EUTRO	DN			
		10.	051											01	NE.			•		RU	<u>N N</u>	0								NEU	TRON)NE /N	EUTRON
		ME	TEF		<u>.</u>			-					11	1 6		_				TO), I		EL	NO							- 11		
DE	TEC	:тоі	R M	ODE	<u>L</u> N	10.				-			SC	IN	FIL	.L.A	TI	ON					<u>ETE</u>		NO						16		
_	LEN	GT	н										4	IN	ICH	1					τy	'PE	1 100			<u> </u>	-			PRO	PORT	101	NAL
DI	STA	NCE	тс) N.	<u>501</u>	JRCE	<u> </u>			-			6.	8	FT	<u> </u>				501		NG F M	тн юрі)	. <u></u> .				MRC	-N-SS-	W	
					_			_	G	ENE	ERA	L									SE	RIA		0.	-	_					20	65 TN(<u>, , , , , , , , , , , , , , , , , , , </u>
	NST STP			<u>(N(</u>). LICE		•			_				3	6					<u> </u>	SP T	ACI	NG			. <u></u>				Am	Be	1110	
то	OL	SER	IAL	. NC	<u>), </u>								1	25	00)2					ST	REI	NGT	Ή							<u> </u>	UR	LES
											<u> </u>						1	.00	GI	L NG	DA	TA	<u>,</u>				<u>.</u>				<u> </u>		<u>_</u>
F					GE	NER	AL		т			.		-				7	GAM	MA R	AY		_			T						DN T	
RL	IN O	╞	FR	 DM	<u>) E P</u>	THS	то		S F	PEE	ED /IN	T.	.C. EC.	s	SE FTI	NS FIN	GS	D	z IV. I	ERO LORF	1	API - PEI	G. F R L(8. UNI Og di	TS V.	s	. C.	S SE		ss D	ZERÓ IV. L OF	R	API N. UNITS
	<u>.</u>		0		_		27		ţ	12	2	Ē	4		1(00		1	0		╞			16	-		3	10	000		0		340
	2	+	27		-+		67	0	+	12	4	<u> </u>	4	+	(00			0		+			10		╋╸			500				170
RE	MA	RKS	;		4											_		-								_							
		•	G	AN	1M.	A F	RAY	,					·	DEPTHS											N	IEL	JTR	ON					
		GA	мм	AF	AY	' INC	CRE	ASE	ES	•														NEU	ĴŢF	ĨŨſ	N [∼] (NĊ	RE/	SES				· · · · · · · · · · · · · · · · · · ·
				_	, •	API 16	∙	_		-																AI \$4		<u>-</u>					
10										1	60					۱.											0						6800

.

Record		Truck	Operat				Min. C	Liquid	Fluid	Casing	Casing	Depth	Depth	Foota	Last R	First F	Date	Run. 1	Well De	Log Me	Perman				RGE	TWP	LSD	,					 J
ded By		No.	ting Time)iam.	I Level	Туре	Driller	Roke	Driller	Reached	te Logged	leading	Reading		Vo.	epths Measure	busured from	ent Datum				3			FILE NO.			C		
CARLSON																	4		d from RI	RI	GB	PROVING		FIELD	LOCATIO	WELL		COMPAN	C	∎ 2			
Witnessed By		36	2 HOURS				HQ	29	GEL/WATER		14	671	671	668	0	668	SEPTEMBER 1976	ONE	G FLOOR	G FLOOR	DIND LEVEL	E BRITISH O		FLAT TOP	0N	76 DO 3		Y SACE CREE		ENTERPRISES		IS	1
CULLINGHA																				Ft. Above Perm. D	Elev.	DLUMBIA			L			COAL COMPANY		TD CALGA	CALIPE	DEWALL D	
м																			G.L.	atum CSG	K,B.	GRN, FBL, DEV	Other Services:							RY ALBERTA	R	ENSILOG	
 				GI		A1	i			ļ							GA	MM	ARAY						 	 	IDEW	ALL	DEN	SILO	G	1	
	RUN NO.		FF	D OM	EPTH	IS T	0	-	SP FT,	EED /MIN	- J SI	Т.С. ЕС.		S SET	ENS TIN	GS		ZE DIV.L	RO OR R		API PEI	G.R. R LC	UNI G DI	тs v.	т.с. seč.	SE SET1	NS FINGS	S D	ZEF	чо ог і	3	CPS/	VID
	L 2		0			<u>6(</u>	58 70			12		CA	LII	PER											3	1(000_		_2	<u>R</u>		68.	43
						•										 		<u> </u>														······································	
	REN		KS										-											·]	DENSI	TY TO ER TO)OL	SER	IAL IAL	NO		20 587	
													DEPTHS			-#- - -		ŗ					(DIA	C ME	ALIPE TER –	R INCHI	ES)						
	4		6		8)	+		_	12									14										
			(GAN	IMA APi	RA	Ŷ																						1				
					1	├ ब	-																										
				<u>.</u>							╉												в	ULI (GF	K DEN RAMS/(ISITY							
-											1				E																		

1 min 👟 🛄

000		
100		
200		
300		
400		
500		
6 00		
1		
FR	200 AS	0

	000	
	·	
	·	
	·	
	100	
	:	
	· · · · · · · · · · · · · · · · · · ·	
	200	
	300	
	:	
	400	
	500	
	-	
	600	
5	FR	
	-	

			Tieron Dear Dy
	CULLINGHAM	NC	Banned By CARLS
		36	Truck No.
		1 HOUR	Operating Time
			nî na
		11.76 @ 77 ⁰	Rm 🕲 ^O F
		Ън	Min, Diam.
		28	Liquid Level
	· · · · · · · · · · · · · · · · · · ·	GEL/WATER	Fluid Type
			Casing Driller
		14	Casing Roke
		671	Depth Driller
		671	Depth Reached
		640	Footage Logged
		28	Last Reading
		668	First Reading
		4 SEPTEMBER 1970	Date
		ONE	Run. No.
G.L.		RIG FLOOR	Well Depths Measured from
036	Ft. Above Perm. Datum	RIG FLOOR	Log Measured from
X.8	Elev.	GROUND LEVEL	Permanent Datum
GRN, DENS-CAL, DEV	COLUMBIA	INCE BRITISH	PROV
Other Services:			
		FLAT TO	FIELO
		TION	
			ROE
	J	76 - DO	SEC WELL
	TEK COAL COMPANY	ANY SAGE CRI	FILE NO. COMP
ALBERTA	LTD. CALGARY,	OIL ENTERPRISES	
LOG	FOCUSED BEAM		
)

		1			· · · · · · · · · · · · · · · · · · ·	
···· · · ; = ····· ··· · · · · · · ··· · ···	······································			· · · · · · · · · · · · · · · · · · ·		- · · · ·
······································	······································		• • • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·		
				· · · · · · · · · · · ·		
					!	
		LIQUID	LIEVIEL			-
3						
· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·			
		1				
<u> </u>						and an
· · · · · · · · ·			· · · · · · · · ·			
	ere en en la composición de la					
<u> </u>						· · · · · · · · · · · · · · · · · · ·
· · · · ·				<		
			· · · · · · · · · · · · · · · · · · ·			
		-				
	2,		· · · · · · · · · · ·	-		
· ·			· · · · · · · · · · · · · · · · · · ·			
	an an taon an					
				•		
				· · · · · · · · · · · · · · · · · · ·		
N. C. Strate	· · · · · · · · · · · · · · · · · · ·				1 I I I I I I I I I I I I I I I I I I I	
	i.	100	· ····································			۵ اور به موجد میکرد
Contraction 1						
	· · · · ·			· · · ·		· · · · i
	· · · · · · · · · · · · · · · · · · ·				· · · ·	
	erie ie de la la		· · · · · · · · · · · · · · · · · · ·			
	n n n n n n n n n n n n n n n n n n n		│			
·		i	~ ~			
F actor 1 1 1	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			
San an a	· · · · · · · · · · · · · · · · · · ·			· · · · · · · ·		
	· · · · · · · ·					
			· · · · · · · · · · · · · · · · · · ·			
	· · · · · · · · ·					
5	······································		5		· · · · · · · · · · · · · · · · · · ·	· · · · ·
5			5		· · · · · · · · · · · · · · · · · · ·	
			Ş			
		200 '				
		200 '				
		200 '				
		200 '				
		200 '				
		200 '				
		200				
		200				
		200 ʻ				
		200				
		200				
		200				
		200				
		200				
		200				
		200				
		200				

:

Γ	B		Ľ	R	-				Ē		Ľ					CULLINGHAN	Witnessed By	CARLSON	Recorded By
	EMA		10. 1	UN		DOL	ISTR		<u></u>	LE ISTA	TY								
	RKS					SER	UME	TR			PE	AME [*]	MO.				36		Truck No.
G			⊢RC 0			IAL	INT	UCK		<u>н</u> то	. 181		DEL				1 HOUR		Operating Time
AM	L		M	D		NQ	TRL			N. 9		005	. NC						
MA	GG			ЕРТ	GEN		JCK			500).					-	
R	ED		2	HS	NER.		NO.			RCF	<u> </u>	0					2		Rm @ ^O F
AY	TH		то 350		AL		•	_											
,	IRO	<u>.</u>)														НQ		Min. Diam.
	UGI			s				Gi						GA			0		Liquid Level
	H H		т/м 12	PEE				ENE		+		+	_	MM.			GEL/WATER		Fluid Type
	IQ		1N 2	D				RA						A F					Casing Driller
	DR		SE	Т.(L						AY		•			Casing Roke
	LI	-	¢. +). -			·-		-	<u>4</u> 6.	SC	<u>1</u>	,				350		Depth Driller
	R		SI			12	10			<u>IN</u> 8	IN	6	1		_		350		Depth Reached
	OD.	-	1	SEI		<u> </u>	36	<u>.</u>		CH FT.	TII			0			350	-	Footage Logged
•			ING)0	vs		•_0	5	_			LA		<u>v</u> £		E		0		Last Reading
	DR		s		L	02					TI				Q		350		First Reading
	ILI		יוס		OG G						ON				JIP		EPTEMBER 1976	15 2	Date
	ER		V. L 0	ZE							<u> </u>	<u> </u>			ME		ONE		Run. No.
	U		OR	RO	NG MA	Ŀ	F	╉─	s	┢	Ŀ	<u>T</u>			NT				
	VAB		R		D			<u> </u>	OUF		ETE	<u>00</u>			. C	GL.	FLOOR	ed fromRIG	Well Depths Measur
	LE		F	AF		STR	TYP	SER SPA	RCE	TYP LEN	CT	L <u>M</u> D1A	NQ TY)A.	Ft. Above Perm. Datum CSG	FLOOR 2	RIC	Log Measured from
<u> </u>	Τ		PER	יו G	A	EN	E.		MO	PE IGTI	OR	ODE ME1	PF		ТА	Elev K.B	UND LEVEL	GRO	Permanent Datum_
) C		16	. R.		<u>3TH</u>		<u>. NO</u> G	DE		MOI	<u>el n</u> Tep				IA DENS	BRITISH COLUMB	PROVINCE	
	ΟF		G DI	UNI)			DEL	10.				Other Services:			
N	TUF		v .	TS).	<u> </u>	NO						LIVI TOL		
IEU	RTH.		SE	Т.	T					<u></u>									
TRO	ERI		3	C.							_		÷-					LOCATION	M M
ON	DUE		5 5	5			•							Ν					
	TO		=TTIN	SENS			\neg			_							76 - DO 4	WELL	SEC
	HO		IGS				Aı		M	PF			N	RON		L WITHAN L	DAUL VALEN VOR		LSD
	LE		DIV	Z	N		mBe		RC-	KOP			EUT				SACE CREEK COAT	COMPANY	FILE NO.
	CON		<u>и. ц с</u> О	ERO	EUTF		3	17	N-S	0R 6 II	10	1분	RO				ENTERFRISES LTE		
	DIT		DR R		RON	CUF		265 / IN	S-W				N/N	0					
	IONS		PER I	API I		LE <u>S</u>		ICH		NAL I			IEUT						ス
	•		<u>.og</u> 70	N. UI									RO			AMA RAY NEUTHUN LUG	GAM		J
			DIV.	NITS									N						

Recorded By		Truck No.	Operating Time				Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.		Well Depths Measured	Log Measured from	Permanent Datum						TWP	SEC	HILE NO.		.])	
CARLSON Witnessed By		36	1 HOUR				ун – – – – – – – – – – – – – – – – – – –	, c	GEL/WATER			350	350	347	0	347	15 SEPTEMBER 1976	ONE		from RIG FLOOR	RIG FLOOR 2 F	GROUND LEVEL	PROVINCE BRLTISH COLUMBL			FLAT TOP			WELL 76 - DO 4	COMPANY SAGE CREEK COAL		OIL ENTERPRISES LTD.				
CULLI NGHAM																				G.L.	t. Above Perm. Datum CSG	Elev K.B	A GRN	Other Services.	Other Carviner			E	J	COMPANY		CALGARY, ALBERTA				
L	l								<u> </u>				Ļ				L	<u> </u>		1									• 			<u></u>		¥ •5		
F		Т			GEN DEI	IERA PTHS	L		SP	EED		r.c.	Ţ	s	ENS	\$	GA	MM z		YAF O	<u> </u>	API	 G.F	7. UN	ITS		т.с.		SID	EWAI	LL DI	ENSIL ERO	.0G	CPS	/ DI V	
	NO,		F	RON	1		то		FT	/MIN	SE	≞c.	-	SET	TIN	GS	C	ыv.	LO	RR		۶E	RL	og d	uv.	_	SEC.	s	ETTI	NGS	DIV	LOF	1 R			
H	L .			0			347			12																	3	L		<u>.</u>		<u>2 K</u>		3		
						<u> </u>							_										-			-		+								
														•																			-			
-	REI		3KS			FD	านจ	0110	<u> </u> יד ו			י. דד	P			ימת		FP	1.7	49		AB:	TP	<u>то</u>	co		וידיזו	R R	DUR	<u>רד י</u>	ΒΔI		I.F			
				C	ONI)ITI	ONS		· · · · · ·			<u></u>																								
\vdash																									 D	EN	STTY	' T(001.	SER	TAI.	NO	43	20		
	-												DEPTHS											(DI	AN	CA	ER –	ER	CHES	;)						
				GA	MN	1A F	RAY																													

. . .

.

-=| |---

. .

I

•

							BUL (GF	K DENS	TY			
	100-	1.20 -	061	1.40-	1.50 —	1.60-	1.70	1.80 -	1.90	2 10 2 .00	2.40	2.80
	<u> </u>	 							<u>l</u>	k	<u> </u> 	
	······································		· · · · · · · · · · · · · · · · · · ·			 1 				· ·	• • • • • • • • • • • • • • • • • • •	
	· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·	, 1	. :	• - - - 				· · · · · · · · · · · · · · · · · · ·
		000			· · · · · · · · · · · · · · · · · · ·		19		. 15	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·
				-	· ·				· · · · · · · · · · · · · · · · · · · ·		:	2
	· · · · · · · · · · · · · · · · · · ·			•				· · · · · · · · · · · · · · · · · · ·			· ·	2
	: - - - 					1					5	$\sum_{i=1}^{n}$
		•		x m (m (, , , , , , , , , , , , , , , ,		 	·	3 • •	• ••••• ••••••••••••••••••••••••••••••		3	
	 							 ,				7 3
	· · · · · · · · · · · · · · · · · · ·										~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	· · · · · · · · · · · · · · · · · · ·
	 		-		• • •						3	· · ·
		100				1.			. .	- - 		3
	· · · · · · · · · · · · · · · · · · ·			-		• •	······································	· · · · · · · ·		\leq		• • •
	• • • • •			 								
	· · · · · · · · · · · · · · · · · · ·										5	>
	· · · · · · · · · · · · ·					t Generation						3
	· · · · · · · · · · · · · · · · · · ·		· · · · · ·		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·						Ş
	· · · · · · · · · · · · · · · · · · ·						<u>.</u>	•			VV	5
	······································	. 	- - -	·-· - ·								}
		_ 200		··· ••• • · · ·	••••••••••••••••••••••••••••••••••••••	· · · · · · · · · · · · · · · · · · ·		- · ·	~	·····	ΛΛ	
		- mark a transmission for the second s	 			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					• • • • • • • • • • • • • • • • • • •	
	· · · · · · · · · · · · · · · · · · ·			·				·				
					- · ·			۶ 				3
	· · · · · · · · · · · · · · · · · · ·			: 		 		- - 				3
	······································			···· ·····	· · · · · · · ·	·				· · ·	N N	2
		er		 	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		······································	-		1	~
		300	 				· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		
				-	······································		··· ·	 	. • -	Y		2
			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		- 		• • • • •	<u></u>			
	······								••			
		FR								- 		
	· · · · · · · · · · · · · · · · · · ·				······································					· · ·		
				5 C4	0d 25	3111	кт					
					· · · · · · · · · · · · · · · · · · ·			·			1	· · · · · · · · · · · · · · · · · · ·
			 					•		••••••••••••••••••••••••••••••••••••••	• • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • •	
				···	· · · · · · · · · · · · · · · · · · ·				 - -	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·
·	· · · · · · · · · · · · · · · · · · ·	ł.	 			1					!	

Recorded By	Truck No.	Operating Tir				Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reach	Footage Logo	Last Reading	First Reading	Date	Run. No.		Well Depths Me	Log Measured f	Permanent Dati				₹.	RGE	TWP	LSD	FILE A				5	
GIBEAU		he										ă	ed			20			asured from	rom	m GROUND LI	PROVINC		FIELD			WELL		O. COMPAN	01				
Witnessed	32	1 HOUR				Đ	0	MUD		20	222	221	220	0	220	SEPTEMBER 1970	ONE		RIG FLOOR	RIG FLOOR	EVEL	E BRITISH COL		FLATHEAD VAL			76 - DO 5		Y SAGE CRÉEK	ENTERPRISES				
Bv CULLINGHA			-														2			Ft. Above Perm. Dat	Elev.	IMBIA		LEY					OAL COMPANY	LTD, CALGAR			MA DAV NEHTDI	
3																			GL	um CSG	K B	DENS-CAL, DEV	Other Services:			((L)	Y, ALBERIA				
	1 1.				-															Г. Т. А.											***		···	
							GAM	AWN	RA	Y					<u> </u>										_		NEU	TRO	N					_
RUN N	0							_		ON	١E							RUI	N N	0		-				<u>-</u>			10	NE	4.5.1.5			_
	AMET							+				1 1	1/	16				TO		MO	DEL	NO		•	_				EUTH	<u>{ON</u>		2011	ION	-
DETEC	TOR	мос	EL M	10								*4							DI	AM	ETE	R	·							11	1/1	16		
TY	PE			<u> </u>						_SC	IN	TII	LA.	<u>rï(</u>	DN_			DET	TEC) T O	RN	ODE	LNC)				_						_
	NGTO ICE 1	1 10 N	501					+		4	 	NCE	<u>.</u>						1 Y 	'PE NG	тн							P	ROP		<u>'Ю</u> `н	NAL		
					-			\uparrow			<u>.</u>							soi		ΕN	IOD	ELI	NO					М	RC-I	N-SS	3-V	N		
							GΕ	NER	₹AL										SE	RIA	AL N	10						<u> </u>		1	71			
HOIST		:K N T T						_					32					┢──	SP TV		ING								mBe		<u> </u>	NCH		
TOOLS	ERIA		0										34(╂──	51	RF	NG	гн						+~		- 3 Cu	ries			-
													. <i>₹</i> _1	<u></u>																				
													·			LO	GGI	NG D/	ATA	۱											-			
	—		ÚE DE	NER	AL.	-	-								т	GAN	A MA	RAY	Т			0	No. 72	-+		T			NEUT	RON				
RUN NO	-	FRC)M	T	10)	┦,	58EI F T/M	E D MIN	SE	C C	SE	SEN TTI	s NGS	s	DD	∠t+ v L	ORR		AP P	ER	т с LOG			SEČ	s		4G5	DIV		R	PERI	. OG DI	v,
1		0		1	22	0		1	.2	5			1(00			0		1	•	-	16			3		500	L		0		17	70	4
	+			+			+												╉	•														
	1																		T							I						-		
REMAR	ĸs							<u>.</u> .																•			1 ma							
<u> </u>										Γ	-		Т								<u>م</u> ی	1114	. KA	1 [に し し し し	. KUI	10	UL	3LK	ليلاهما	NU .		, 	
	G	A	MA	AN	R	A	1				DEPTHS												N	E	UT	RC)N							

	Recorded By GIBEAU Witnessed By CULLINGHAM	Truck No. 32	Operating Time 1 1/4 HOUR			Min. Diam. HQ	Liquid Level 0	Fluid Type MOD	Casing Driller	Casing Roke 20	Depth Driller 222	Denth Reached 221	Footage Looged 218	ast Reading 0	Circt Basting 218	20 SEPTEMBER 1976	Run. No. 1 ONE	Well Depths Measured from <u>RIG FLOOR</u> G.L.	Log Measured from RIG FLOOR Ft. Above Perm. Datum CSG	Permanent Datum GROUND LEVEL Elev. K.B.	PROVINCE BRITISH COLUMBIA GRN, DEV	Other Services:	FIELD FIATHEAD VALLEY	W M LOCATION	TWP	SEC WELL 76 - DO 5	FILE NO. COMPANY SAGE CREEK COAL COMPANY	OIL ENTERPRISES LTD. CALGARY, ALBERT	ROKE SIDEWALL DENSILOG
· ·	··· · · · · · ·															.~ •••					DEV	Ces:	a a sa a ta a ta a ta a ta a ta a ta a					TA	
·							<u> </u>	<u> </u>		<u> </u>	.																	12	
		 . T		GEN	ERAL										-1	<u>JAI</u>	MMA	RAY	1				╋			SIDEV	VALL	DENSILO	G
	NO.	'	FR	OM	- ins 1	0		SPE FT/I		SE	.с. :с.	s	SE ETT	INS ING	s	D	۲٤ IV.L	OR R	1	PEF	G.R. 1 LOG		5	SEÇ.	SE	TTING	s c	DIV.L OR P	
	1		0		2	18		. 12	2			Ĺ												3		1000		1.8 R	54.55
÷																													. <u> </u>
							+					<u> </u>							·				-		ļ		` -		
I	 			<u>-</u>			+			┢		-						•	╞						-				
	 	+	-				╉			┢		\vdash										-	-†					•	

,

1

	GEN	NERAL				GAMMA RAY			SIDEWA	LL DENSILOG	
RUN	DE	PTHS	SPEED	т.с.	SENS	ZERO	API G.R. UNITS	т.с.	SENS	ZERO	CPS/ DIV
NO.	FROM	то	FT/MIN	SEC.	SETTINGS	DIV.LOR R	PER LOG DIV.	SEĊ.	SETTINGS	DIV.L OR R	
1	0	218	. 12					3	1000	1.8 R	54.55
									ر		
						۰.					
REM	ARKS		•			-					
							D	INSIT?	TOOL SE	RIAL NO.	457
		· · · · · · · · · · · · · · · · · · ·					C/	LIPE	R TOOL SE	RIAL NO.	776
4" (5" 8"			DEFINS			C (DIAME	ALIPE TER	R INCHES)		`
	GAMM	ÍA RAY API				:		· · · -			

. . .

· i

:

BULK DENSITY (GRAMS/CC)

	N N N	N N	in in in	N N W
	20 20	8 5	5 8 3 	
			· · · · · · · · ·	· · · · · · · · · · · ·
	· · · · · ·		k si sana sa	· · · · · · · · · · · · · · · · · · ·
000				
		······································		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
			-	5
			······	
-				
	· · · · · · · · · · · · · · · · · · ·	······································		2
		······································		\leq
		· · · · · · · · · · · · · · · · · · ·		5
<u> </u>				<u>}</u>
100		· · · · · · · · · · · · · · · · · · ·		5
				3
				{
			· · · · · · · · · · · · · · · · · · ·	
	· · · · · · · · · · · · · · · · · · ·			<u> </u>
				}
				~
		· · · · · · · · · · · · · · · · · · ·		
				2
				<u> </u>
200				ζ
200) - Serie and a series and a series of the s 	
				<u>Σ</u>
FR				
· · · · · · · · · · · · · · · · · · ·				
			· · · · · · · · · · · · · · · · · · ·	
10	ooces	SHIFT		ZERO
			· · · · · · · · · · · · · · · · · · ·	
4				
				· · · · · · · · · · · · · · · · · · ·
			· · · · · · · · · · · · · · · · · · ·	

.

٠

	Truck No.	Operating Time				Min. Diam.	Liquid Level	Fluid Type	Casing Driller	Casing Roke	Depth Driller	Depth Reached	Footage Logged	Last Reading	First Reading	Date	Run. No.	Well Depths Measure	Log Measured from	Permanent Datum (M	RGE	SEC	LSD			RO
GIBEAU Witnessed By	32	1 HOUR				B	0	MUD		10	152	152	151	0	151	23 SEPTEMBER 1976	ONE	a from KIG FLAXK		BROUND LEVEL	PROVINCE BRITISH COLU		FIELD FLATHEAD VALL			WELL DO 6	COMPANY SAGE CREEK CO		OIL ENTERPRISES L	
CULLINGHAM																			FI. ADOVE FEITH, Datum	Elev	MBIA		YEN				DAL COMPANY		LTD. CALGARY,	A RAY NEUTRON L
																					DENS-CAL, DEV	Other Services:			(ALBERTA	L0G
,								_								EQI	JIPN	ENT (DAT	A			_				···-			
							GAI		RA	Y								RUN		<u> </u>			•	-		NEUT	RON	ONE		
TOOL	NODE	EL M	NO				<u> </u>	-+										LOG	ТҮ	PE	i						NEL	JTRO		EUTRON
Dt	AME	TER		·								1	11,	16	•		· · ·	100	IL M	006	LN	0								
DETEC	TOR	MO	DEL	NO														<u> </u>	DIA	ME T	ER							1	11/1	6
τγ 	PE	<u> </u>								<u>S</u>			لىلىل H		.ON			DEI	EC TYP	PF	MOL		J				DR		BTIO	 ΝΔ1
DISTA	ICE	TO	N SC	URCE				+		5	.5	F	г					┢	LE	NGT	<u>.</u> Н	<u> </u>						11 6	NCH	
																		sou	RC	MO	DEL	NO					MR	C-N-	SS-I	<u>N</u>
							GE	NE!	RAL									╂	SEF		NO					-+			1/1 אד 7	СН
HOIST	TRU	СҚ 	NO TRUC	KIND	<u> </u>								32						3P/ TVI		6						An	nBe		
TOOL	SE RI	AL	NO										3/	0		-			STR	REN	GTH			,				3	Curies	······································
																									•) .				
						_										L	000	NG D/	TA		-i,									
			G	ENER	AL							·				GA	MMA	RAY	1						.		N T	EUTRO	N R	
RUN	-		D	EPTHS 	s 		4	SPE	E D.		C		SE I	NS NAIC	s		ZE	RO . Or P			GR RIC	יעום טו עום סו	5	T C Sec	s	SENS ETTIN	GS	ZEI DIV L	NU OR R	PER LOG DIV
NO 1	╋	+ R	<u>0</u>	+	15	1	+	12			ει. j	+-	11)0			0		+	, <u>c</u> (10	5		3	+	500		0)	100_
																						•								
												ļ													4					
										<u> </u>						L	<u> </u>										L			J
REMAI	183				•							· ·								G	AM	MAR.	ÁY	NEU	TRO	n t o	OL S	SERIA	L NO	. 340
	GAMMA RAY BY NEUTRON																													

· · · · · · · · · · · · · · · · · · ·				l
		· · · · · · · · · · · · · · · · · · ·	 ·	
· · · · · · · · · · · · · · · · · · ·				
			· · · · · · · · · · · · · · · · · · ·	
	l		 	

87 _____

j.	

•

•

.

•

.

RORAL SIDEWALL DEN CALIPER OL ENTERPRISES LTD. CALIPER CALIPER CALIPER CALIPER CALIPER CALIPER CALIPER CALIPER CALIPER CALIPER CALIPER NO. FILE NO. COMPANY SAGE CREEX COAL COMPANY SEC WELL D0 6 SEC WELL D0 6 WM LOCATION FLATHEAD VALLEY VIM FIELD FLATHEAD VALLEY PROVINCE BRITISEI COLUMEIA PROVINCE BRITISEI COLUMEIA Permanent Davum RIG FLOOR FIELD FLATHEAD VALLEY Demanent Davum RIG FLOOR FIEL D SIEVENDER Date 23 SEVENDERER 1976 Date 149 Fortage Looged 152 Depth Reached 152 Casing Roke 10 Gaing Driller MID Liquid Level 0 Min. Dian. INQ Oberating Time 1 HOUR	CULLINGHAM	Witnesse	Recorded By GIBEAU
SIDEWALL DEN SIDEWALL DEN CALIPER COMPANY SAGE CREEK COAL COMPANY SAGE CREEK COAL COMPANY SEC MEL D0 GALE COMPANY SEC MEL D0 GALE COMPANY SEC MEL D0 GALE COMPANY SEC MEL D0 MEL D0 FILTISE COLDMEIA Province BRITISE COLDMEIA Province BRITISE COLDMEIA Province BRITISE COLDMEIA Province DEDUDNE Lag Measured from RIG FLOOR FL Abow Perm. Datum Mil Depths Measured from RIG FLOOR FL Abow Perm. Datum Bate Reading 0 149 152 149 149 149 149 149 149 149 149 149 149 140 140 140 140 140 140 140 140 140 140 140 140 140 <		32	Truck No.
BOOKE SIDEWALL DEPENDENCE OIL ENTERPRISES LTD. CALIPER FILE NO. COMPANY SAGE CREEK COAL COMPANY SEC WELL D0 6 MRGE WELL D0 6 MRGE WELL D0 6 NM RECONNO SAGE CREEK COAL COMPANY SEC WELL D0 6 MRGE WELL D0 6 NM NOCCATION FLADMENT PROVINCE BRITISH COLUMBIA PROVINCE BRITISH COLUMBIA Promanent Datum Elev. Log Measured from RIG FLOOR FL Reading 0 Gasing Doritler 1149 Depth Reached 152 Depth Reached 152 Depth Reached 152 Depth Reached 152 Depth Reached 10 Liquid Level 0 Min. Diam. HQ Min. Diam. HQ		1 HOUR	Operating Time
BOOKE SIDEWALL DEPARTS CALIPER OIL ENTERPRISES LTD. CALIPER OIL ENTERPRISES LTD. CALIPER OIL ENTERPRISES LTD. CALIGARY, FILE NO. COMPANY SAGE CREEK COAL COMPANY SEC WELL D0 6 YMP WELL D0 6 WELL D0 6 TOP UCCATION ENTITIENT COLUMENT TOP Promanent Datum RIGE FLOOR Etw. Log Measured from RIGE FLOOR Ft. Above Perm. Datum Weil Depits Measured from RIGE FLOOR Etw. Data Reading 0 Top Top Last Reading 0 Top Top Depth Reached 152 Top Top Depth Reached 10 Top Top Liquid Level 0 MID Top Top Liquid Level			
BOOKE SIDEWALL DEPENSES LTD. OIL ENTERPRISES LTD. CALIPER OIL ENTERPRISES LTD. CALIPER FILE NO. COMPANY SAGE CREEK COAL COMPANY SEC WELL D0 6 GOMPANY NP WELL D0 6 GOMPANY VIL D0 6 GOMPANY GOMPANY LOCATION ENTISE GOLUMBIA GOLUMBIA Perment Datum REG EDOR ILEVEL Elevel GOLUMBIA Log Measured from REG EDOR Ft. Above Perm. Datum Mui Datue 10 GOLUMBIA GOLUMBIA Depth Reached 152 GOLUMBIA GOLUMBIA Depth Reached 10 GOLUMBIA			
BOOKE SIDEWALL DEN OIL ENTERPRISES LTD. CALIPER OIL ENTERPRISES LTD. CALIPER OIL ENTERPRISES LTD. CALIPER FILE NO. COMPANY SAGE CREEK COAL COMPANY SEC WELL D0 6 MELL NGE WELL D0 6 MELL D0 6 NGE WELL D0 6 MELL MELL D0 6 NGE NELL D0 6 MELL MER MER </td <td></td> <td></td> <td></td>			
SIDEWALL DEN SIDEWALL DEN OIL ENTERPRISES LTD. CALIPER OIL ENTERPRISES LTD. CALIPER FILE NO. COMPANY SAGE CREEK COAL COMPANY SEC WELL DO 6 GOMPANY SEC WELL DO 6 GOMPANY SEC WELL DO 6 GOMPANY NO FILE D FLATHEAD VALLEY MUL PROVINCE BRITISH COLUMBIA Permanent Datum RIG FLOOR FL Above Perm. Datum Muil Depins Measured from RIG FLOOR FL Above Perm. Datum Muil Depins Measured from RIG FLOOR FL Above Perm. Datum Muil Depins Measured from RIG FLOOR FL Above Perm. Datum Muil Depins Measured from RIG FLOOR FL Above Perm. Datum Muil Depins Measured from RIG FLOOR FL Above Perm. Datum Muil Depins Measured from RIG FLOOR FL Above Perm. Datum Mul Depins Measured from RIG FLOOR FL Above Perm. Datum Mul Depins Measured from RIG FLOOR FL Above Perm. Datum Mul Depins Measured from Datum Datum Datum		B	Min. Diam.
SIDEWALL DEN SAGE CREEK COAL COMPANY SAGE CREEK COAL COMPANY SEC N SEC N NGE NELL NGE NGE CREEK COAL COMPANY SEC NGE CREEK COAL COMPANY NELL DO 6 NGE NGCATION NGC CREEM COAL COMPANY SECTION FIELD FLATHEAD VALLEY FIELD FLATHEAD VALLEY NGG CROUND LEVEL Elw. Log Measured from RLG FLOOR NUN ONE Date ONE SECTIENDER 1976 Interned 149 SECTIENDER 1976 Interned 152 Depth Reached 152		0	Liquid Level
SIDEWALL DEN CALIPER OIL ENTERPRISES LTD. CALIPER CALIPER CALIPER CALIPER FILE NO. COMPANY SAGE CREEX COAL COMPANY LSD SEC TWP RGE COMPANY SAGE CREEX COAL COMPANY LSD RGE WELL D0 6 SAGE CREEX COAL COMPANY LSD RGE WELL D0 6 SAGE CREEX COAL COMPANY LSD RGE WELL D0 6 SAGE CREEX COAL COMPANY LSD RGE NELL D0 6 SAGE CREEX COAL COMPANY LOCATION NELC FLATHEAD VALLEY SAGE CREEX COAL COMPANY LOCATION ENTISE COLUMENTA Elev. SAGE FLOOR Permanent Datum RLG FLOOR Ft. Above Perm. Datum Log Measured from RLG FLOOR Ft. Above Perm. Datum Weil Depths Measured from RLG FLOOR Ft. Above Perm. Datum Weil Depths Measured from RLG FLOOR Ft. Above Perm. Datum Weil Depth Reading 0 SEPTEMENER 1976 SEPTEMENER 1976 Date 149 152 SEPTEMENER 1976 SEPTEMENER 1976 Depth Reading 10 SEPTEMENER 1976 SEPTEMENER 1976 SEPTEMENER 1976 SEPTEMENER 1976 SEPTEMENER 1976		MUD	Fluid Type
SIDEWALL DEN CALIPER OIL ENTERPRISES LTD. CALGARY. FILE NO. COMPANY SAGE CREEK COAL, COMPANY SEC SEC WELL DO 6 SAGE CONTON MRE LOCATION FILED FILEN MIL DO 6 SAGE LOCATION SAGE CREEK COAL, COMPANY MRE NOCATION FILED FILEN MEL DO 6 SAGE LOCATION SAGE CREEK COAL, COMPANY MIL DO 6 SAGE CREEK COAL, COMPANY LOCATION NELL DO 6 SAGE MIL DO 6 SAGE SAGE SAGE CREEK COAL, COMPANY LOCATION WELL DO 6 SAGE SAGE MIL PROVINCE BRITISH COLUMENTA Permanent Datum RIG FLOOR Ft. Above Perm. Datum Meil Depints Mesured from RIG FLOOR Ft. Above Perm. Datum Meil Depints Mesured from RIG FLOOR Ft. Above Perm. Datum Meil Depints Mesured from RIG FLOOR Ft. Above Perm. Datum Date 23 SEPTEXEBER 1976 HIG HIG Date 152 HIG HIG HIG		r -	Casing Driller
SIDEWALL DEN CALIPER OIL ENTERPRISES LTD. CALGARY. FILE NO. COMPANY SAGE CREEK COAL COMPANY SEC SEC WELL D0 6 ONE MW NO. FIELD FLATHEAD VALLEY Permanent Datum RIG FLOOR FLATHEAD VALLEY Log Measured from RIG FLOOR Ft. Above Perm. Datum Meil Depits Measured from RIG FLOOR Ft. Above Perm. Datum Meil Depits Measured from RIG FLOOR ONE First. Reading ON ON Date 23 SEPTEMBER 1976 Ideading Ideading Depith Reached 152 Ideading Ideading		10	Casing Roke
SIDEWALL DEN CALIPER FILE NO. COMPANY SAGE CREEK COAL COMPANY SEC TWP RGE COMPANY SAGE CREEK COAL COMPANY V SAGE CREEK COAL COMPANY SEC COMPANY SAGE CREEK COAL COMPANY SEC WELL DO 6 OMPANY RGE WELL DO 6 OMPANY NO FILE D FLATHEAD VALLEY PROVINCE BRITTISH COLUMBIA Permanent Datum GROUND LEVEL Elev. Log Measured from RIG FLOOR F. Above Perm. Datum Weil Depits Measured from RIG FLOOR F. Above Perm. Datum Meil Depits Measured from RIG FLOOR F. Above Perm. Datum Meil Depits Measured from RIG FLOOR F. Above Perm. Datum Meil Depits Measured from RIG FLOOR F. Above Perm. Datum Meil Depits Measured from RIG FLOOR F. Above Perm. Datum Meil Depits Measured from RIG FLOOR F. Above Perm. Datum Meil Depits Measured from RIG FLOOR F. Above Perm. Datum Meil Depits Measured from RIG FLOOR F. Above Perm. Datum Meil Depits Measured from<		152	Depth Driller
BOOKE SIDEWALL DEN CALIPER OIL ENTERPRISES LTD. CALIPER CALIPER FILE NO. SEC TWP RGE COMPANY SAGE CREEK COAL COMPANY LSD SEC TWP RGE COMPANY SAGE CREEK COAL COMPANY LSD RGE NELL D0 6 WM NO D0 6 MM NCCATION D0 6 MC NELL D0 6 MM FIELD FLATHEAD VALLEY FIELD FLATHEAD VALLEY FIELD PROVINCE BRITTISH COLUMBIA Permanent Datum GROUND LEVEL Elev. Log Measured from RIG FLOOR Ft. Above Perm. Datum Weil Depitts Measured from RIG FLOOR Ft. Above Perm. Datum Meil Depitts Measured from RIG FLOOR Ft. Above Perm. Datum Meil Depitts Measured from RIG FLOOR Ft. Above Perm. Datum First Reading 0 0 0 Last Reading 0 0 0 0		152	Depth Reached
BOOKE SIDEWALL DEN OIL ENTERPRISES LTD. CALIPER FILE NO. COMPANY SAGE CREEK COAL COMPANY LSD COMPANY SAGE CREEK COAL COMPANY SEC WELL D0 6 TWP NELL D0 6 SEC NELL D0 6 MMP FIELD FIATHEAD VALLEY FIELD FIATHEAD VALLEY FIELD FIATHEAD VALLEY Menoment Datum GROUND Log Measured from RIG FLOOR Weil Depiths Measured from RIG FLOOR Bate 23 SEPTEMBER 1976 Last Reading 0		149	Footage Logged
BOOKE SIDEWALL DEN OIL ENTERPRISES LTD. CALIPER FILE NO. COMPANY SAGE CREEK COAL COMPANY SEC NELL D0 6 SEC WELL D0 6 MM LOCATION FIELD MELL D0 6 SOULTISH MM FIELD FLATHEAD VALLEY PROVINCE BRITISH COLUMBIA Permanent Datum GROUND Elev. Log Measured from RIG FLOOR Ft. Above Perm. Datum Weil Depints Measured from RIG FLOOR Ft. Above Perm. Datum Meil Depints Measured from RIG FLOOR Ft. Above Perm. Datum First Reading 149 149		0	Last Reading
RORAL DEN SIDEWALL DEN RORAL ENC COMPANY SAGE CREEX COAL COMPANY SEC SEC WELL D0 6 WM NO E ENTISE CLUMBIA M PROVINCE BRITISH COLUMBIA Meil Depits Measured from RIG FLOOR Ft. Above Perm. Datum Muil Depits Measured from RIG FLOOR Ft. Above Perm. Datum Mail Depits Measured from RIG FLOOR Ft. Above Perm. Datum Mail Depits Measured from RIG FLOOR Elev. Date ONE ONE		149	First Reading
RORALL DEN SIDEWALL DEN OIL ENTERPRISES LTD. OLIPER OIL PERSES LTD. CALIPER FILE NO. COMPANY SAGE CREEK COAL COMPANY LSD COMPANY SAGE CREEK COAL COMPANY SEC WELL DO 6 MELL DO 6 WELL MELL DO 6 COMPANY INCATION LOCATION FILED MELL DO 6 SEC LOCATION LOCATION SEC MELD FLATHEAD VALLEY SEC LOG Measured from RIG FLOOR Elev. LOG Measured from RIG FLOOR Ft. Above Perm. Datum Weil Depths Measured from RIG FLOOR Ft. Above Perm. Datum	976	23 SEPTEMBER 19	Date
BORKE SIDEWALL DEN CALIPER OIL ENTERPRISES LTD. CALIPER OIL ENTERPRISES LTD. CALIPER FILE NO. COMPANY SAGE CREEK COAL COMPANY LSD COMPANY SAGE CREEK COAL COMPANY SEC WELL DO 6 MELL DO 6 OUL COATION MELL FILO OUL COATION MELL FILO FILO MELL GROUND Elev. LOG Measured from RIG FLOOR		ONE	Run, No.
BOOKE SIDEWALL DEN OIL ENTERPRISES LTD. CALIPER OIL ENTERPRISES LTD. CALIPER FILE NO. COMPANY SAGE CREEK COAL COMPANY LSD COMPANY SAGE CREEK COAL COMPANY SEC WELL DO 6 MRGE WELL DO 6 MCELD LOCATION JOUND LOCATION FIELD FLATHEAD VALLEY PROVINCE BRITISH COLUMBIA Log Measured from RIG FLOOR		RIG FLOOR	Well Depths Measured from
BORKE SIDEWALL DEN CALIPER OIL ENTERPRISES LTD. CALIPER FILE NO. COMPANY SAGE CREEK COAL, COMPANY LSD COMPANY SAGE CREEK COAL, COMPANY MELL DO 6 MELL WM LOCATION JOCATION FIELD FIELD FIATHEAD VALLEY PROVINCE BRITTISH COLUMBIA	Ft. Above Perm. Datum	RIG FLOOR	Log Measured from
RONCE SIDEWALL DEN CALIPER FILE NO. OIL ENTERPRISES LTD. CALIPER FILE NO. COMPANY SAGE CREEK COAL COMPANY LSD SEC WELL DO 6 MELL DO 6 OULOCATION OULOMBIA FIELD FLATHEAD VALLEY FIELD FLATHEAD VALLEY	Elev.	GROUND LEVEL	Permanent Datum
ROOKE SIDEWALL DEN ROOKAL OIL ENTERPRISES LTD. FILE NO. COMPANY SEC SAGE CREEX COAL COMPANY SEC WELL M DO 6 WELL DO 6 LOCATION JOCATION FIELD FLATHEAD VALLEY	H COLUMBIA	INCE BRITIS	PROVI
RGE SIDEWALL DEN COMPANY SAGE CREEX COAL COMPANY NGE NELL NOCATION LOCATION	CAU VALLEY	FLATHE	FIELD
RONGE SIDEWALL DEN CALIPER FILE NO. OIL ENTERPRISES LTD. CALIPER SEC TWP COMPANY SAGE CREEX COAL COMPANY NGE WELL DO 6 MUCATION LOCATION COMPANY	AN WATTER		
BROKE SIDEWALL DEN CALIPER OIL ENTERPRISES LTD. FILE NO. COMPANY SEC MELL DO 6 DO 5	6	TION	M LOCA
FILE NO. COMPANY SAGE CREEK COAL COMPANY	J	D0 6	
ROKE SIDEWALL DEN CALIPER OIL ENTERPRISES LTD. CALGARY,	REEK COAL COMPANY	ANY SAGE CI	FILE NO. COMP
ROKE SIDEWALL DEN	SES LTD. CALGARY,	DIL ENTERPRIS	,
	SIDEWALL DEN		ROK

•

	GEN	IERAL		GAMMA RAY			SIDEWALL DENSILOG				1	
RUN	DE	PTHS	SPEED	T.C.	SENS	ZERO	API G.R. UNITS	т.с.	SENS	ZERO	CPS/ DIV	1
NO.	FROM	то	FT/MIN	SEC.	SETTINGS	DIV.L OR R	PER LOG DIV.	SEC.	SETTINGS	DIV.L OR R		₽
1	0	149	12					3	1000	1.8 R	54,55	1
]
											<u> </u>	
REM	ARKS						**= • • •				· · · · · · · · · · · · · · · · · ·	
									4			
DENSITY TOOL SERIAL NO. 457									┦			
							CALIPER	TOOI	SERTAL J	NO. 776		┥
		•					•					
					,		c	AI IDE	D			
				ĒP			(DIAME	TËR I	NCHES)			L
				HS			·		- •			L
											- '	
611	5 11	olt										
<u> </u>								•				1
								_				1
	~											ł
	GAMN											L
	~	VF 1	•									
	-1	17										
												Ł

BULK DENSITY (GRAMS/CC) ;

┢╴╴╞╼╸╍┼╌╌╌╸╌╌╞╺╍╌┼╴╴┼╴╸	
╹╶┯╾┶╍╼┶┶╌╌╌┯┑╸╴┈╴╌╴┠╴╶╴╪╾╌╌┊╌╴╌╻╼╶╮╶ᢤ╌╴╴┨	the second second management of the second

.

•

1

į

•

•