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K-VINCENT OPTION 71(2)A

N.T.S.: 82-J-6, 7, 10, 11

VINCENT OPTION

UPPER ELK VALLEY, BRITISH COLUMBIA

GEOLOGICAL REPORT

November 1971 O. Cullingham

N.T.S.: 82-J-6, 7, 10, 11

VINCENT OPTION

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GEOLOGICAL REPORT

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VINCENT OPTION

UPPER ELK VALLEY, BRITISH COLUMBIA

GEOLOGICAL REPORT

SUMMARY

A drilling programme consisting of three bore holes was carried out in August of 1971 by Rio Tinto Canadian Exploration Limited on a property optioned from C. Vincent Construction Ltd. in the Upper Elk Valley of British Columbia. The drilling consisted of 2,400 feet of reverse circulation rotary drilling and intersected a total of 384 feet of coal in all three holes. An indication as to the quality of coal was obtained from twenty-five samples analysed by Cyclone Engineering Sales Ltd. of Edmonton and is dealt with later in the report.

References are made to a fourth hole drilled on an adjoining property, the Cassidy Option, which lies directly to the north of the Vincent Option in Alberta.

ACKNOWLEDGEMENTS

The work done by W. J. Hennessey of Calgary on behalf of Rio Tinto is gratefully acknowledged and his advice and assistance enabled the programme to run more efficiently. Mr. R. A. Benkis is gratefully acknowledged for his advice and assisstance during the full course of operations and he is responsible for the statistical summation of the qualitative coal analysis included in this report.

VINCENT OPTION

UPPER ELK VALLEY, BRITISH COLUMBIA

GEOLOGICAL REPORT

INTRODUCTION

The Vincent property lies in the Upper Elk Valley of southeast British Columbia and extends south from the Alberta-British Columbia provincial boundary for approximately 11 miles to the confluence of the Elk River and Cadorna Creek.

An unimproved forestry road, maintained by Calgary Power, traverses the property and provides access from the north and south. To the north, the road links up with the Kananaskis Hwy., an improved forestry road, which joins the Trans-Canada Highway (#1) near Seebe some 40 miles west of Calgary, Alberta. To the south, the road links up with an improved forestry road which joins the Crowsnest Highway (#3) at Sparwood, British Columbia.

The Elk Valley is a northwest-southeast trending valley between the Front Range of the Rocky Mountains to the southwest and the Elk Range to the northeast. The Elk Pass at the north end of the property has an elevation of 6,500 feet while the south end of the property is at 5,300 feet above sea level. Tobermory Hill in the region of the Elk Pass is the highest point on the property with an elevation of 6,750 feet above sea level.

For a fuller description of topography and location, refer to "Geological Report, Vincent Option, Upper Elk Valley, British Columbia" of January 1971, by R. A. Benkis.

PREVIOUS WORK

Little is known regarding coal exploration in the Upper Elk Valley of British Columbia prior to excursions into the field by Rio Tinto Canadian Exploration Limited. It is recognized, however, that some work was done in the early years of this century. A few old adits were encountered during a property examination in June of 1970 which were believed to have been worked in the early 1900's.

Geological Survey of Canada Memoir 53 (Dowling, pp 74) published in 1914, resulted from investigations in the early part of the century and reports analysis of three coal samples taken from seams near Elk Lakes at the northern end of the property.

In 1969, a reconnaissance of the Upper Elk Valley by Rio Tinto Canadian Exploration Limited recognized several coal occurrences which resulted in the optioning of the property and a mapping and prospecting excursion in the summer of 1970. During this visit (June and July 1970) numerous coal occurrences were mapped and although the structural geology of the area appeared complicated, the quantity of coal found led to additional work in August 1971.

EXPLORATION - AUGUST 1971

A drilling programme consisting of seven holes was laid out for the Vincent Option, but owing to higher overall costs, only three of the holes were drilled. The purpose of the programme was to intersect the coal-bearing Kootenay Formation and to obtain coal samples for qualitative analysis.

Armsco Exploration Limited of Calgary moved a D-8 'Cat' into the area in early August and after improving the Elk Valley road, prepared the drill sites. A setback in the commencement of drilling occured when Rig 58, owned and operated by Big Indian Drilling Ltd. of Calgary, was rolled enroute to the property. Drilling commenced on the Vincent Option with the completion of C.V.-1 on the Cassidy Option, August 19th and was concluded with the completion of hole C.V.-4, August 31st, 1971. (Plate 4).

A trailer camp, supplied by Corab Services Ltd. of Calgary was established atRiverside Flats along the Elk River some ten miles south of the area of operations. (Plate 2)

The three holes drilled were along the Elk Pass Road separated by approximately ¼ of a mile. C.V.-2 was the most northerly of the three and was located ¼ of a mile south of the Alberta-British Columbia Provincial Boundary. All holes were drilled to a depth of approximately 800 feet. Downhole caving in hole C.V.-2 prevented deeper penetration and also prevented a complete log of the hole. Roke Oil Enterprises Ltd. of Calgary probed the holes with Gamma-Ray, Neutron and sidewall density tools.

Armsco Exploration Ltd. commenced the 'clean'up' operation September 3rd and brought the programme to completion September 9th, 1971 when it was inspected and approved by the British Columbia Forest Service.

GEOLOGY

General

Kootenay strata in this area is part of the Lewis Thrust Plate and owes its present position to deformation and erosion subsequent to the Laramide Orogeny. The rocks strike northwest-southeast and dip fairly steeply to the west. (Plate #3) The regular succession of strata is interrupted by thrusting and folding which strikes or trends subparallel to the strike of the rocks.

The lower contact of the Kootenay lies conformably on the Fernie Shales and is exposed at various places along the eastern edge of the property. The upper contact is overlain by the Elk formation in the south and north, but disappears under the Bourgeau Thrust in the centre region.

Outcrop over the property is poor due to a thick cover of glacial till, soil and other debris.

Stratigraphy

TABLE OF FORMATIONS

Era	Period	Group or Formation	Brief Description	Thickness
Cenozoic	Quarternary		Overburden of gravel, glacial till, and soil	
		--- UNCONFORMITY ---		
Mesozoic	Cretaceous	Blairmore Group	Non-marine conglomerates sandstones and shales	?

Era	Period	Group or Formation	Brief Description	Thickness
		--- DISCONFORMITY ---		
	Cretaceous	Elk Formation	Non-marine sandstone, conglomeratic sandstone, and conglomerate	± 900'
	Cretaceous Jurassic	Kootenay Formation	Non-marine, sandstone, shale conglomeratic sandstone and coal	± 2000'
	Jurassic	Fernie Group	Marine shale, siltstone and sandstone	± 700'
		--- DISCONFORMITY ---		
	Triassic	Spray River Formation	Marine, siltstones, silty shales and white quartzose sandstones Dolomitic in part	± 1000'
		--- DISCONFORMITY ---		
Palaeozoic	Undivided		Limestones, dolomites, quartzites, chert & dark shale mostly marine.	2500'-3400'

Undivided Paleozoics

Limestones, dolomites, quartzites, chert beds and dark grey calcareous shales mostly of marine origin make up this group. The formations of the Palaeozoic form the mountains of the Elk Range to the east and the Eastern Front Range to the west of the property. The Palaeozoics of the Eastern Front Range are thrust over the less competent beds of the Kootenay Formation by the Bourgeau Thrust.

Spray River Formation

The rocks of the Spray River Formation lie disconformably on the Palaeozoics. These rocks are moderately competent and consist of gray to dark gray siltstones, silty

shales and white quartzose sandstones which are in part dolomitic. The formation in this area is about 1000 feet thick and is found outcropping on the southwestern flank of the Elk Range.

Fernie Group

The rocks of the Fernie Group lie disconformably on the Spray River Formation and consist mainly of marine black and gray fissile shale with siltstone and silty shale interbeds. Some green glauconitic shales are found in this group.

Kootenay Formation

The Kootenay Formation conformably overlies the Fernie Group and is for the most part composed of non-marine strata. An exception is the basal sandstone unit which is marine and transitional.

The basal sandstone unit is commonly a massive, medium to dark gray, fine to medium grained with subangular to subrounded grains, salt and pepper sandstone. Locally this unit is of a medium olive gray colour and is 40' to 60' thick.

The bulk of the Kootenay consists of medium gray shales, silty shales, siltstones and sandstones. In the upper part of this formation, some conglomeratic sandstones have been observed. The beds are lenticular and grade laterally into one another making correlation difficult.

Coal is an important constituent of the Kootenay Formation and seams have been found up to thirty-four feet thick.

Elk Formation

The Elk Formation lies conformably on the Kootenay Formation and outcrops in the northwest and southeast regions of the property. The Elk Formation is commonly a resistant ridge forming chert pebble conglomerate interbedded with medium to light gray, fine to coarse grained sandstones. The conglomerate beds are markedly different from the basal Blair more conglomerate. The Elk conglomerate fractures through the matrix and weathers more readily than does the Blairmore conglomerate which is very siliceous and fractures through the pebbles.

Blairmore Group

The Blairmore Group rests disconformably on the Elk Formation but is absent in the property area; it is probably lost under the Bourgeau Thrust.

The Blairmore Group commonly consists of a basal chert, pebble conglomerate which is extremely resistant overlain by sandstone and shales of non-marine origin.

Quaternary

The Quarternary is represented by the overburden consisting of gravel, glacial till, clay soil.

Correlation

The absence of any good continuous marker horizons, probably due to deltaic deposition and modification to the strata by tectonism, renders correlation difficult. Using the Gamma-Ray and Neutron Logs, correlation of strata penetrated by the bore holes has been attempted but is not entirely convincing. A number of marker horizons were isolated but the strata between these horizons is inconsistent. The variation in lithology and thickness is explained by structural and depositional features. The table below lists possible correlative points which were used to facilitate a correlation.

POSSIBLE CORRELATIVE POINTS THROUGH HOLES C.V.-1 to C.V.-4

C.V.-1	C.V.-2	C.V.-3	C.V.-4
347	-	-	26
403	-	-	79
601	-	170	263
641	-	249	398
728	-	332	457
-	49	442	514
-	-	656	708
-	297	680	730
-	340	733	-
-	364	758	-

Assuming the above correlation to be accurate, then the purpose of the drilling programme to intersect successive intervals of the Kootenay Formation, with a little overlap was not realized.

Because of the distance separating the drill holes and the variation in lithology of the continental deposits, the author questions the validity of attempting correlation at this time, but does so with reservations. (See correlation chart submitted with this report; pocket G-3374)

Structure

Little more can be added to the structural picture of the Vincent property over and above that described in a previous geological report of January 1971. Generally, thrusting subparallel to the strike of the beds interupts the normal succession of stratigraphic events. Because of lithology variations, and scarce outcrop, these thrust slices cannot be accurately located rendering a structural interpretation which is generalized and not accurate.

Three structural cross sections were prepared passing through each of the bore holes and approximately at right angles to the strike. Where available, surface exposures were incorporated into the sections. One section through all the bore holes was prepared in an attempt to show the relationship between the holes and surface exposure. (Included in this report in pocket G-2567 to 2570)

If the above correlation is accepted as accurate, then thrust faults presumably are responsible for bringing sections of the Kootenay strata back to the surface. The surface trace of the thrusts would pass between the holes striking north to northwest.

COAL

A total of 384 feet of coal in all three bore holes was intersected but of this over 100 feet of coal occupied seams of less than six feet in thickness. The calculated true thickness (using dips measured at the surface of each hole) of what is considered mineable coal is only 180 feet giving an overall approximate stripping ratio of 8:1. The identifiable coal horizons were picked from the Gamma-Ray and sidewall Density Logs and are listed below:

COAL HORIZONS C.V.-2

No.	Interval	Thickness	*True Thickness	Comments
1.	9' - 12'	3'	2.2'	Not analysed- Prbly weathered
2.	50' - 53'	3'	2.2'	Horizon in 3 benches. Not sampled because of high ash Content and small size of seams
	64' - 68'	4'	2.8'	
	69' - 72'	3'	2.2'	
3.	178' - 184'	6'	4.2'	Horizon badly split small coal intervals Samples showed predominantly shale therefore no samples analysed.
	184' - 195'	1'	1.0'	
	199' - 204'	5'	3.5'	
	217' - 220'	3'	2.2'	
	229' - 231'	2'	1.5'	
4.	276' - 278'	2'	1.5'	Horizon in 2 benches. Only 5' of coal sampled No analysis
	286' - 296'	10'	7.1'	
5.	341' - 350'	9'	6.4'	Horizon in 2 benches. Higher bench predominantly shale. Lower bench analysed.
	353' - 363'	10'	7.1'	
6.	439' - 453'	14'	9.9'	Horizon in 2 benches. Upper bench sampled. Lower bench showed predominantly coaly sh and was not analysed.
	473' - 481'	8'	5.7'	
7.	505' - 515'	10'	7.1'	Samples showed carbonaceous to coal shale and were not analysed

No.	Interval	Thickness	*True Thickness	Comments
8.	748' - 798'	50'	35.4'	Interval divided into 3 samples for analysis. No log obtained for this seam.

* True Thickness of the coal was calculated using a dip of 45° S.W.

COAL HORIZONS C.V.-3

No.	Interval	Thickness	*True Thickness	Comments
1.	19' - 22'	3'	1.9'	
	36' - 40'	4'	2.7'	
2.	67' - 70'	3'	1.9'	Samples are small and many showed high ash and were not sent for analysis
	86' - 90'	4'	2.7'	
	95' - 98'	3'	1.9'	
3.	129' - 132'	3'	1.9'	
	135' - 137'	2'	1.1'	
4.	172' - 176'	4'	2.7'	
5.	249' - 254'	5'	3.4'	Only 3' of coal recovered-not analysed
6.	332' - 352'	20'	13.7'	Horizon in 2 benches. Both benches were analysed
	366' - 373'	7'	4.8'	
7.	442' - 465'	23'	15.3'	Interval divided into 3 samples of analysis

No.	Interval	Thickness	*True Thickness	Comments
8.	496' - 498'	2'	1.1'	Horizon is badly broken up into small seams. Samples showed high ash and recovery was not good. No samples were analysed.
	501' - 509'	8'	5.5'	
	519' - 522'	3'	1.9'	
	525' - 527'	2'	1.1'	
	532' - 534'	2'	1.1'	
	549' - 552'	3'	1.9'	
	554' - 556'	2'	1.1'	
9.	657' - 663'	6'	4.0'	Horizon in 2 benches. Both benches were sampled and analysed.
	672' - 679'	7'	4.8'	
10.	734' - 757'	23'	15.3'	Horizon divided into 2 samples for analysis

*The true thickness of the coal was calculated using a dip of 48° S.W.

COAL HORIZONS C.V.-4

No.	Interval	Thickness	*True Thickness	Comments
1.	18' - 25'	7'	5.0'	Seam analysed Weathered
2.	80' - 95'	15'	10.6'	Horizon in 2 benches. Only upper bench sampled for analysis
	105' - 107'	2'	1.5'	
3.	164' - 167'	3'	2.2'	Seams did not show in samples and may not exist
4.	191' - 193'	2'	1.5'	
	203' - 204'	1'	1.0'	
	232' - 236'	4'	2.8'	
5.	266' - 272'	6'	4.2'	Seam was sampled and analysed.

No.	Interval	Thickness	*True Thickness	Comments
6.	328' - 329'	1'	1.0'	
	347' - 351'	4'	2.8'	
	356' - 358'	2'	1.5'	
				Seams are small
7.	398' - 400'	2'	1.5'	and many showed
	408' - 409'	1'	1.0'	high ash
	414' - 416'	2'	1.5'	
	434' - 436'	2'	1.5'	
	458' - 462'	4'	2.8'	
	478' - 486'	8'	5.7'	
8.	514' - 523'	9'	6.4'	Sample was analysed
9.	569' - 571'	2'	1.5'	Horizon in 3
	586' - 589'	3'	2.2'	benches. Poor
	611' - 622'	11'	7.8'	recovery. Only 4' of last bench sampled for analysis
10.	714' - 724'	10'	7.1'	Horizon sampled and analysed.

* The true thickness of the coal was calculated by using a dip of 45° S.W.

Twenty five samples of coal from the three bore holes were sent to Cyclone Engineering Sales Ltd. of Edmonton for qualitative analysis. The results of the analysis are included in this report as an appendix but a summary of calculated characteristics of ¼"xO float at - 1.55 specific gravity is given below.

RIO TINTO CANADIAN EXPLORATION LIMITED

Drill Hole	Interval Drillers Depths	Apparent Thickness	True Thickness	Weight %	Ash %	Volatile Matter %	Fixed Carbon %	Sulphur %	F.S.I.
CV-2	356 - 364	8'	5.7'	86.58	5.28	27.6	65.9	0.62	5.80
	448 - 454	6'	4.2'	54.47	11.81	25.2	61.8	0.50	5.91
	748 - 754	6'	4.2'	71.46	10.9	24.8	63.1	0.49	6.93
	754 - 792	38'	26.9'	66.57	10.9	25.2	62.8	0.35	7.74
	792 - 798	6'	4.2'	35.27'	23.3	25.1	56.3	0.34	7.45
	748 - 792	44'	31.1'	67.3	10.9	25.1	62.9	0.36	7.92
	748 - 798	50'	35.4'	63.5	12.0	25.2	62.6	0.36	7.75
CV-3	331 - 347	16'	10.7'	96.44	3.49	33.6	61.9	0.60	8.40
	361 - 367	6'	4.0'	95.79	3.08	32.6	61.8	0.51	8.94
	442 - 452	10'	6.7'	84.26	6.26	33.8	58.5	0.47	9.35
	452 - 458	6'	4.0'	92.88	2.88	32.9	63.2	0.36	8.89
	458 - 464	6'	4.0'	69.82	10.85	31.8	58.2	0.47	8.85
	442 - 458	16'	10.7'	87.4	4.50	33.5	60.2	0.43	8.82+
	442 - 464	22'	14.7'	82.6	6.30	33.4	59.4	0.43	8.87+
	656 - 660	4'	2.7'	92.44	5.65	27.3	66.1	0.42	7.21
	672 - 677	6'	3.4'	63.61	10.84	28.0	60.4	0.48	7.40
	736 - 746	10'	6.7'	56.98	7.01	27.7	64.4	0.39	7.76
	746 - 757	11'	7.4'	60.38	10.54	26.7	61.8	0.62	7.39
	736 - 757	21'	14.1'	58.8	9.15	27.2	61.9	0.50	7.57
CV-4	22 - 28	6'	4.2'	87.17	3.11	34.7	60.8	0.52	3.97
	85 - 96	11'	7.8'	78.67	4.73	34.7	59.2	0.37	6.30
	272 - 276	4'	2.8'	84.93	2.92	34.6	61.2	0.87	6.87
	518 - 526	8'	5.7'	82.71	3.99	32.2	62.7	0.58	7.37
	617 - 621	4'	2.8'	95.68	3.96	32.6	62.5	0.59	8.40
	714 - 724	10'	7.1'	78.54	7.91	31.0	60.2	0.50	8.33

The raw ash content of the coal appears high but after washing is fairly reasonable. However, in the larger seams, the ash content appears to be a little on the high side even after washing. The volatile matter falls in the category of medium to high and high which would probably be an unfavourable aspect in securing a market.

The sulphur content is variable between 0.35% and 0.62% with the exception of one sample from bore hole C.V.-4, 272'-276', which has a value of 0.87%. The coking characteristics appear very good with the F.S.I. ranging from 5.8 to 9.35. One seam, from 22'-28' in hole C.V.-4, shows and F.S.I. of only 3.97 but it is felt this is due to oxidation because of its proximity to the surface. The sampling technique employed by Big Indian Drilling is explained in detail in a geology report on the J.A.Cassidy Option of October 1971 and will not be dealt with here. However, it should be noted that the technique was deemed very satisfactory, by the author, for retaining nearly 100% of the fines (Plate 5). Contamination of the samples was very little to non-existent and it is therefore felt that the results of the analysis should be taken as a good indication as to the quality of the coal. It should be noted that in some cases, the raw ash content seems unreasonably high.

CONCLUSIONS

1. Bore hole C.V.-2 penetrated the deepest in the Kootenay Formation. Bore holes C.V.-3 and C.V.-4 essentially penetrated the same horizon.

2. The stratigraphic record is probably interrupted by thrust faulting of small magnitude.

3. Shale partings and splits in the coal seams are numerous and common.

4. A high percentage of volatile matter in the coal could be unfavourable in securing a market.

5. Correlation with any degree of confidence is difficult.

6. Structural interpretation is very generalized and is not accurate.

7. The thickest coal seams appear to occur in the lower Kootenay.

RECOMMENDATIONS

Any future investigation of the Vincent Property should be carried out by a drilling operation designed to facilitate a better understanding of the structure as well as sampling the coal intersected for qualitative analysis. A programme consisting of a number of holes drilled in close proximity and at right angles to the strike would give the best results. Emphasis should be placed on investigating the lower Kootenay horizon and at least one hole should penetrate in the Fernie Group to allow definite recognition of the Lower Kootenay.

Tobermory Hill at the north end of the property has a more favourable topography for a mining situation and additional drilling throughout the hill would shed more light on the potential of the entire Elk Pass area. It has been recognized that without this area, the southern end of the property holds little interest.

In view of the amount of activity regarding coal exploration being conducted adjacent to the southern boundary of the Vincent property, a programme in the south might prove interesting. The best location for such a programme would be to the west of the Elk River on the west half of the area covered by Coal Licence 572.

Owen Cullingham

:kw

R. C. Hart.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. C. HART

Expiry Date: Mar. 3, 1972

REFERENCES

Benkis, R. A.:
1971: "Geological Report, Vincent Option, Upper Elk Valley, British Columbia" - Private Report of January 1971.

Cullingham, O. R.:
1970: "Report of Geology, Vincent and Cassidy Options" - Private Report of December 1970.

Hennessey, W. J."
1971: Correspondence re: "Cassidy-Vincent Drill Holes" - Private Report of September 1971.

BOREHOLE SAMPLES:

REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 23, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21884
CV-2 (356' - 358') CV-2 (358' - 360')
CV-2 (360' - 362') CV-2 (362' - 364')

C.E.S. SAMPLE NO.: 144

ANALYSES ON AIR DRY BASIS:

ASH:	15.39%
VOLATILE MATTER:	24.71%
RESIDUAL MOISTURE:	0.96%
FIXED CARBON:	58.94%
FREE SWELLING INDEX:	5
B.T.U./lb.:	12,260
SULPHUR:	0.57%
RANK:	mvb

DATE: August 27th '71
LOCATION: Vincent Option
RH. CV-2
WIDTH: 8'1
REMARKS: 356-364
Drillers Depth

CYCLONE ENGINEERING SALES LTD.

Per:
R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21884

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited DATE: Sept. 23, 1971.

PROJECT: C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21884 C.E.S. SAMPLE NO. 144

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	82.70	4.68		27.85	66.51	0.63	6	
1.45-1.55	3.88	18.18		23.52	57.34	0.55	1½	
+ 1.55	13.42	75.33					N.A.	
TOTAL	100.00	14.69						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 23, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21885

CV-2 (448' - 450')
CV-2 (450' - 452') CV-2 (452' - 454')

C.E.S. SAMPLE NO.: 145

ANALYSES ON AIR DRY BASIS:

ASH:	42.17%
VOLATILE MATTER:	17.73%
RESIDUAL MOISTURE:	0.92%
FIXED CARBON:	39.18%
FREE SWELLING INDEX:	2
B.T.U./lb.:	8,330
SULPHUR:	0.49%
RANK:	mvb

DATE: August 24th '71

LOCATION: Vincent Option

C.V. - 2

WIDTH: 6'

REMARKS: 448 - 454

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21885

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 23, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21885 — C.E.S. SAMPLE NO. 145

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	39.85	10.55		25.54	62.99	0.53	6½	
1.45-1.55	14.62	16.12		24.21	58.75	0.46	5	
+ 1.55	45.53	78.70					N.A.	
TOTAL	100.00	42.39						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: _____

R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES:

REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 23, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21886

C.E.S. SAMPLE NO.: 146

ANALYSES ON AIR DRY BASIS:

ASH:	30.31%
VOLATILE MATTER:	20.33%
RESIDUAL MOISTURE:	0.99%
FIXED CARBON:	48.37%
FREE SWELLING INDEX:	4
B.T.U./lb.:	10,530
SULPHUR:	0.45%
RANK:	mvb

DATE: August 24th '71

LOCATION: Vimont Option

R.H. C.V - 2

WIDTH: 6'

REMARKS: 345' - 757'

Driller Depth

CYCLONE ENGINEERING SALES LTD.

Per: _____

R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21886

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 23, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21886 — C.E.S. SAMPLE NO. 146

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	62.48	9.57		25.51	63.93	0.50	7½	
1.45-1.55	8.98	20.05		22.18	56.78	0.39	3	
+ 1.55	28.54	76.19					N.A.	
TOTAL	100.00	29.52						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: _____

R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 23, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21887

C.E.S. SAMPLE NO.: 147

ANALYSES ON AIR DRY BASIS:

ASH:	31.53%
VOLATILE MATTER:	21.34%
RESIDUAL MOISTURE:	1.09%
FIXED CARBON:	46.04%
FREE SWELLING INDEX:	3½
B.T.U./lb.:	10,270
SULPHUR:	0.32%
RANK:	mvb

DATE: August 24th

LOCATION: Vincent Option

R.H. C.V. - 2

381

WIDTH: 754 - 742

REMARKS:

Drill Hole Depth.

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal

R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21887

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 23, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21887 — C.E.S. SAMPLE NO. 147

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	59.03	10.00		25.44	63.47	0.35	8	
1.45-1.55	7.54	17.75		22.94	58.22	0.33	5	
+ 1.55	33.43	70.49					½	
TOTAL	100.00	30.81						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: _____

R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 23, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21888

C.E.S. SAMPLE NO.: 148

ANALYSES ON AIR DRY BASIS:

ASH:	53.42%
VOLATILE MATTER:	16.79%
RESIDUAL MOISTURE:	1.35%
FIXED CARBON:	28.44%
FREE SWELLING INDEX:	2
B.T.U./lb.:	6,660
SULPHUR:	0.31%
RANK:	mvb

DATE: August 24th '71

LOCATION: Vermont Optic

RH. C.V-2

WIDTH: 6'

REMARKS: 794 - 798

Drillers Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal

R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21888

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 23, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21888 — C.E.S. SAMPLE NO. 148

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	27.92	12.74		26.16	59.75	0.35	8½	
1.45-1.55	7.35	32.00		21.37	45.28	0.30	3½	
+ 1.55	64.73	73.31					½	
TOTAL	100.00	53.36						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: _____

R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 28, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21889 (331' - 347')

C.E.S. SAMPLE NO.: 149

ANALYSES ON AIR DRY BASIS:

ASH:	5.85%
VOLATILE MATTER:	31.24%
RESIDUAL MOISTURE:	1.15%
FIXED CARBON:	61.76%
FREE SWELLING INDEX:	7½
B.T.U./lb.:	14,000
SULPHUR:	0.58%
RANK:	hvAd

DATE: August 28th 71

LOCATION: Nisard Option

RH. - C.V. - 3

WIDTH: 16'

REMARKS: 331 - 347

Under Drift

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21889

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 28, 1971.

PROJECT: — C.E.S. PROJECT NO. S1.71

SAMPLE NO: C-21889 (331' - 347') — C.E.S. SAMPLE NO. 149

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	94.27	3.10		33.68	62.07	0.60	8½	
1.45-1.55	2.17	19.94		27.96	50.95	0.54	4	
+ 1.55	3.56	62.88					½	
TOTAL	100.00	5.59						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: _____

R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited
DATE: Sept. 28, 1971.

PROJECT:
C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21890 (361' - 367')
C.E.S. SAMPLE NO.: 150

ANALYSES ON AIR DRY BASIS:

ASH:	6.21%
VOLATILE MATTER:	31.95%
RESIDUAL MOISTURE:	1.02%
FIXED CARBON:	60.82%
FREE SWELLING INDEX:	8
B.T.U./lb.:	13,970
SULPHUR:	0.55%
RANK:	hvAb

DATE: August 25 '71
LOCATION: Vertical Option
R.H. - C.V. - B
WIDTH: 6'
REMARKS: 361 - 367
Dallas Drill

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21890

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 28, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21890 (361' - 367') — C.E.S. SAMPLE NO. 150

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	93.89	2.79		34.15	62.04	0.51	9	
1.45-1.55	1.90	17.21		27.18	54.59	0.65	6	
+ 1.55	4.21	70.85					N.A.	
TOTAL	100.00	5.93						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES:

REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Ltd.

DATE: Sept. 28/71

PROJECT:

C.E.S. PROJECT NO.: S1 - 71

CLIENT SAMPLE NO.: C-21891 (442' - 452')

C.E.S. SAMPLE NO.: 151

ANALYSES ON AIR DRY BASIS:

ASH:	16.29%
VOLATILE MATTER:	28.88%
RESIDUAL MOISTURE:	1.00%
FIXED CARBON:	53.83%
FREE SWELLING INDEX:	7½
B.T.U./lb.:	12,440
SULPHUR:	0.48%
RANK:	hvAb

DATE: August 28 2 171

LOCATION: Vincent Optic

RH - B.V. - 3

WIDTH: 10'

REMARKS: 442 - 452

Drillers Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21891

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Ltd. DATE: Sept. 28/71

PROJECT: C.E.S. PROJECT NO. S1 - 71

SAMPLE NO: C-21891 (442' - 452') C.E.S. SAMPLE NO. 151

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	76.19	5.34		34.72	58.94	0.46	9+	
1.45-1.55	8.07	14.99		30.25	53.76	0.58	8	
+ 1.55	15.74	72.06					1/2	
TOTAL	100.00	16.62						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES:

REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Ltd.

DATE: Sept. 28/71

PROJECT:

C.E.S. PROJECT NO.: S1 - 71

CLIENT SAMPLE NO.: C-21892 (452' - 458')

C.E.S. SAMPLE NO.: 152

ANALYSES ON AIR DRY BASIS:

ASH:	7.40%
VOLATILE MATTER:	30.01%
RESIDUAL MOISTURE:	0.94%
FIXED CARBON:	61.65%
FREE SWELLING INDEX:	8
B.T.U./lb.:	13,860
SULPHUR:	0.34%
RANK:	hvAb

DATE: August 28th 71

LOCATION: Vaiant Option

R.H. 2V - 3

WIDTH: 6'

REMARKS: 452 - 458

True Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21892

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Ltd. DATE: Sept. 28/71

PROJECT: C.E.S. PROJECT NO. S1 - 71

SAMPLE NO: C-21892 (452' - 458') C.E.S. SAMPLE NO. 152

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	82.71	2.38		33.12	63.56	0.35	9	
1.45-1.55	10.17	6.90		31.36	60.80	0.44	8	
+ 1.55	7.12	70.73					1/2	
TOTAL	100.00	7.71						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Ltd. DATE: Sept. 28/71

PROJECT: C.E.S. PROJECT NO.: S1 - 71

CLIENT SAMPLE NO.: C-21893 (458' - 464') C.E.S. SAMPLE NO.: 153

ANALYSES ON AIR DRY BASIS:

ASH:	30.57%
VOLATILE MATTER:	23.76%
RESIDUAL MOISTURE:	0.95%
FIXED CARBON:	44.72%
FREE SWELLING INDEX:	6
B.T.U./lb.:	9,660
SULPHUR:	0.37%
RANK:	hvAb

ATE: August 25th 71

OCATION: Vincent Option

RH - C.V. - 3

IDTH: 6'

EMARKS: 455 - 464

Driller Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21893

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Ltd. DATE: Sept. 28/71

PROJECT: C.E.S. PROJECT NO. S1 - 71

SAMPLE NO: C-21893 (458' - 464') C.E.S. SAMPLE NO. 153

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	52.18	9.98		32.31	56.76	0.44	9	
1.45-1.55	17.64	13.55		30.24	55.26	0.50	8	
+ 1.55	30.18	76.97					1/2	
TOTAL	100.00	30.83						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21894
CV-3 (656' - 660')

C.E.S. SAMPLE NO.: 154

ANALYSES ON AIR DRY BASIS:

ASH:	10.93%
VOLATILE MATTER:	26.25%
RESIDUAL MOISTURE:	0.99%
FIXED CARBON:	61.83%
FREE SWELLING INDEX:	6
B.T.U./lb.:	13,420
SULPHUR:	0.43%
RANK:	mvb

DATE: August 28th 1971

LOCATION: Mineral Option

DH C.V.-3

WIDTH: 4'

REMARKS: 656-660

Dallas Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21894

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 29, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21894
CV-3 (656' - 660') — C.E.S. SAMPLE NO. 154

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	87.83	4.90		27.49	66.62	0.41	7½	
1.45-1.55	4.61	19.73		22.24	57.04	0.50	1½	
+ 1.55	7.56	62.41					½	
TOTAL	100.00	9.93						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 28, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21895
CV-3 (672' - 677')

C.E.S. SAMPLE NO.: 155

ANALYSES ON AIR DRY BASIS:

ASH:	33.79%
VOLATILE MATTER:	21.33%
RESIDUAL MOISTURE:	0.86%
FIXED CARBON:	44.02%
FREE SWELLING INDEX:	4
B.T.U./lb.:	9,350
SULPHUR:	0.45%
RANK:	mvb

DATE: August 28th 71

LOCATION: Normal Option

R.H. - C.V - 3

WIDTH: 5'

REMARKS: 672 - 677

- Driller Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21895

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 29, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21895
CV-3 (672' - 677') — C.E.S. SAMPLE NO. 155

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	57.01	10.40		28.26	60.48	0.47	7½	
1.45-1.55	6.60	14.69		25.75	58.70	0.59	6½	
+ 1.55	36.39	74.86					½	
TOTAL	100.00	34.14						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: _____
R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES:

REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21896
CV-3 (736' - 746')

C.E.S. SAMPLE NO.: 156

ANALYSES ON AIR DRY BASIS:

ASH:	36.97%
VOLATILE MATTER:	21.17%
RESIDUAL MOISTURE:	0.94%
FIXED CARBON:	40.92%
FREE SWELLING INDEX:	3½
B.T.U./lb.:	8,830
SULPHUR:	0.41%
RANK:	mvb

DATE: August 25th '71

LOCATION: Vicinity Ogden

RH. - CV - 3

WIDTH: 10'

REMARKS: 736 - 746

Miller Dept.

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal

R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21896

736 - 746

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 29, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21896 CV-3 (736' - 746') — C.E.S. SAMPLE NO. 156

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	50.18	5.87		28.10	65.09	0.38	8	
1.45-1.55	6.80	16.87		24.66	57.53	0.45	6	
+ 1.55	43.02	77.13					½	
TOTAL	100.00	37.27						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21897
CV-3 (746' - 757')

C.E.S. SAMPLE NO.: 157

ANALYSES ON AIR DRY BASIS:

ASH:	35.25%
VOLATILE MATTER:	20.80%
RESIDUAL MOISTURE:	0.92%
FIXED CARBON:	43.03%
FREE SWELLING INDEX:	4
B.T.U./lb.:	11,760
SULPHUR:	0.51%
RANK:	mvb

DATE: August 25th, 71
LOCATION: Mount Ogilvie
RH, CV-3
WIDTH: 11'
REMARKS: 746 - 757
Drillers Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21897

K-Vincent Option 71(4)A

Copy 1

746 - 757

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 29, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21897 CV-3 (746' - 757') — C.E.S. SAMPLE NO. 157

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	48.25	8.58		27.13	63.37	0.56	8	
1.45-1.55	12.13	18.32		24.79	55.97	0.79	5	
+ 1.55	39.62	73.21					½	
TOTAL	100.00	35.37						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21898
CV-4 (22' - 28')

C.E.S. SAMPLE NO.: 158

ANALYSES ON AIR DRY BASIS:

ASH:	14.13%
VOLATILE MATTER:	30.72%
RESIDUAL MOISTURE:	1.33%
FIXED CARBON:	53.82%
FREE SWELLING INDEX:	3½
B.T.U./lb.:	9,450
SULPHUR:	0.52%
RANK:	hvCb

DATE: August 30th '71

LOCATION: Vincent Option

R.# - C.V - 4

WIDTH: 6'

REMARKS: 22-28'

Drillers Depth.

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX C 21898

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited Limited — DATE: Sept. 29, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21898 CV-4 (22' - 28') — C.E.S. SAMPLE NO. 158

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	84.20	2.77		34.86	61.04	0.52	4	
1.45-1.55	2.97	12.75		29.10	56.82	0.68	3	
+ 1.55	12.83	82.72					N.A.	
TOTAL	100.00	13.32						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: R.S. Sehgal.

R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21899
CV-4 (85' - 96').

C.E.S. SAMPLE NO.: 159

ANALYSES ON AIR DRY BASIS:

ASH:	19.29%
VOLATILE MATTER:	30.83%
RESIDUAL MOISTURE:	1.30%
FIXED CARBON:	48.58%
FREE SWELLING INDEX:	4½
B.T.U./lb.:	11,660
SULPHUR:	0.38%
RANK:	hvAb

ATE: August 30th 71
OCATION: Vincent Option
RH - C.V. - 4
VIDTH: 11'
EMARKS: 85-96
Drill Hole Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal
R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21899

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 29, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21899 CV-4 (85' - 96') — C.E.S. SAMPLE NO. 159

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	75.02	4.11		35.03	59.56	0.37	6½	
1.45-1.55	3.65	17.60		28.74	52.36	0.44	2½	
+ 1.55	21.33	71.17					½	
TOTAL	100.00	18.91						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: R.S. Sehgal

R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Ltd. DATE: October 5, 1971

PROJECT: C.E.S. PROJECT NO.: S1 - 71

CLIENT SAMPLE NO.: C-21900
CV-4 (272' - 276') C.E.S. SAMPLE NO.: 160

ANALYSES ON AIR DRY BASIS:

ASH:	13.36%
VOLATILE MATTER:	29.70%
RESIDUAL MOISTURE:	1.29%
FIXED CARBON:	55.65%
FREE SWELLING INDEX:	5½
B.T.U./lb.:	12,070
SULPHUR:	2.73%
RANK:	lvAb h

DATE: August 30th 71

LOCATION: Vincent Option

R.H., - C.V. - 4

WIDTH: 4'

REMARKS: 272 - 276

Drillers Depth

CYCLONE ENGINEERING SALES LTD.

Per: _____
R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21900

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Ltd. DATE: October 5, 1971

PROJECT: C.E.S. PROJECT NO. S1 - 71

SAMPLE NO: C-21900 , CV-4 (272' - 276') C.E.S. SAMPLE NO. 160

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	82.22	2.38		34.80	61.53	0.86	7	
1.45-1.55	2.71	19.49		27.97	51.25	1.15	2½	
+ 1.55	15.07	72.31				13.05	n.a.	
TOTAL	100.00	13.38				2.70		

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: _____
R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21901
CV-4 (518' - 526')

C.E.S. SAMPLE NO.: 161

ANALYSES ON AIR DRY BASIS:

ASH:	16.11%
VOLATILE MATTER:	28.25%
RESIDUAL MOISTURE:	1.03%
FIXED CARBON:	54.61%
FREE SWELLING INDEX:	6½
B.T.U./lb.:	12,190
SULPHUR:	0.51%
RANK:	hvAb

DATE: Aug. 31st '71
LOCATION: Vanier Option
R.H. — C.V.-4
WIDTH: 8'
REMARKS: 518 - 526
Pilot Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21901

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited DATE: Sept. 29, 1971.

PROJECT: C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21901 C.E.S. SAMPLE NO. 161
CV-4 (518' - 526')

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	78.63	3.49		32.63	62.85	0.58	7½	
1.45-1.55	4.08	15.16		26.49	57.32	0.49	5	
+ 1.55	17.29	72.38					½	
TOTAL	100.00	15.53						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21902
CV-4 (617' - 621')

C.E.S. SAMPLE NO.: 162

ANALYSES ON AIR DRY BASIS:

ASH:	7.08%
VOLATILE MATTER:	31.41%
RESIDUAL MOISTURE:	1.00%
FIXED CARBON:	60.51%
FREE SWELLING INDEX:	8
B.T.U./lb.:	13,000
SULPHUR:	0.60%
RANK:	hvAb

DATE: Aug. 30th '71

LOCATION: Vimont Option

R.H. C.V.-4

WIDTH: 4'

REMARKS: 617-621

Drillers Depth - Represents a composite sectional determination from probe log.

CYCLONE ENGINEERING SALES LTD.

Per: R S Sehgal

R. S. Sehgal, P/ Eng.
Laboratory Manager.

RIOCANEX

C 21902

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 29, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21902 CV-4 (617' - 621') — C.E.S. SAMPLE NO. 162

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	93.47	3.56		32.81	62.63	0.59	8½	
1.45-1.55	2.21	22.96		24.67	51.37	0.68	4	
+ 1.55	4.32	64.02					½	
TOTAL	100.00	6.60						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: _____

R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21903
CV-4 (714' - 724')

C.E.S. SAMPLE NO.: 163

ANALYSES ON AIR DRY BASIS:

ASH:	19.81%
VOLATILE MATTER:	28.02%
RESIDUAL MOISTURE:	0.93%
FIXED CARBON:	51.24%
FREE SWELLING INDEX:	7
B.T.U./lb.:	11,730
SULPHUR:	0.49%
RANK:	hvAb

DATE: Aug - 31st 71

LOCATION: Vincent Option

R.H. - CV - 4

WIDTH: 10'

REMARKS: 714 - 724

Drillers Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21903

BOREHOLE SAMPLES — REPORT OF ANALYSES ON FLOAT-SINK MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited — DATE: Sept. 29, 1971.

PROJECT: — C.E.S. PROJECT NO. S1-71

SAMPLE NO: C-21903 CV-4 (714' - 724') — C.E.S. SAMPLE NO. 163

TABLE 1. Float-Sink Analyses on 1/4" x 0

Property / Fraction	Wt.%	Ash%	RM%	VM%	FC%	S.%	FSI	
- 1.45	69.28	6.20		32.78	60.09	0.50	8½	
1.45-1.55	9.26	20.65		17.21	61.21	0.53	7	
+ 1.55	21.46	59.89					1	
TOTAL	100.00	19.06						

Remarks:

C.E.S. Form 34

CYCLONE ENGINEERING SALES LTD.

Per: R.S. Sehgal, P. Eng.,
Laboratory Manager.

RSS:hg

PLATE 1

View of Elk Valley looking northwest toward the Elk Lakes.

PLATE 2

Trailer camp established at River-side Flats - Elk Valley.

PLATE 3

Prepared drill site #C.V.-3 showing steeply dipping strata.

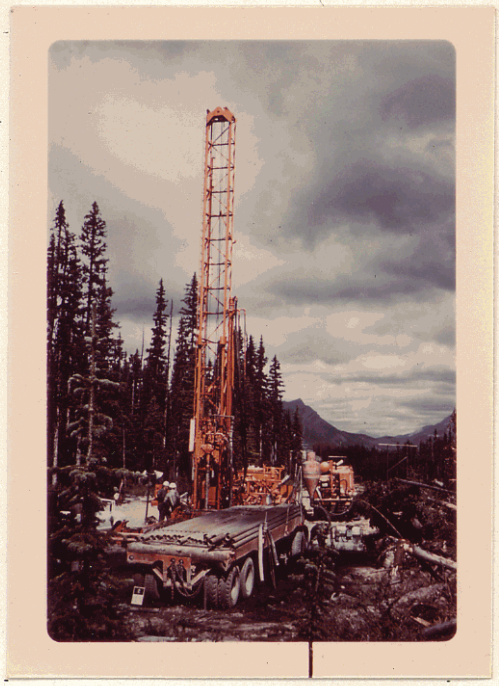


PLATE 4

Rotary Drilling rig. Looking south into Elk Valley from Tobermory Hill.

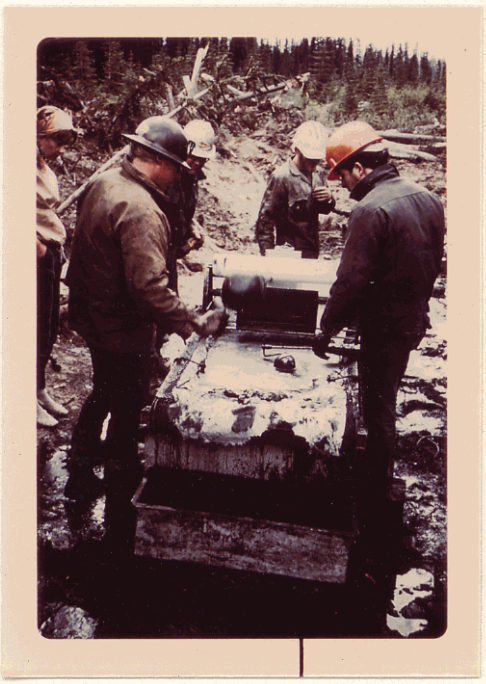
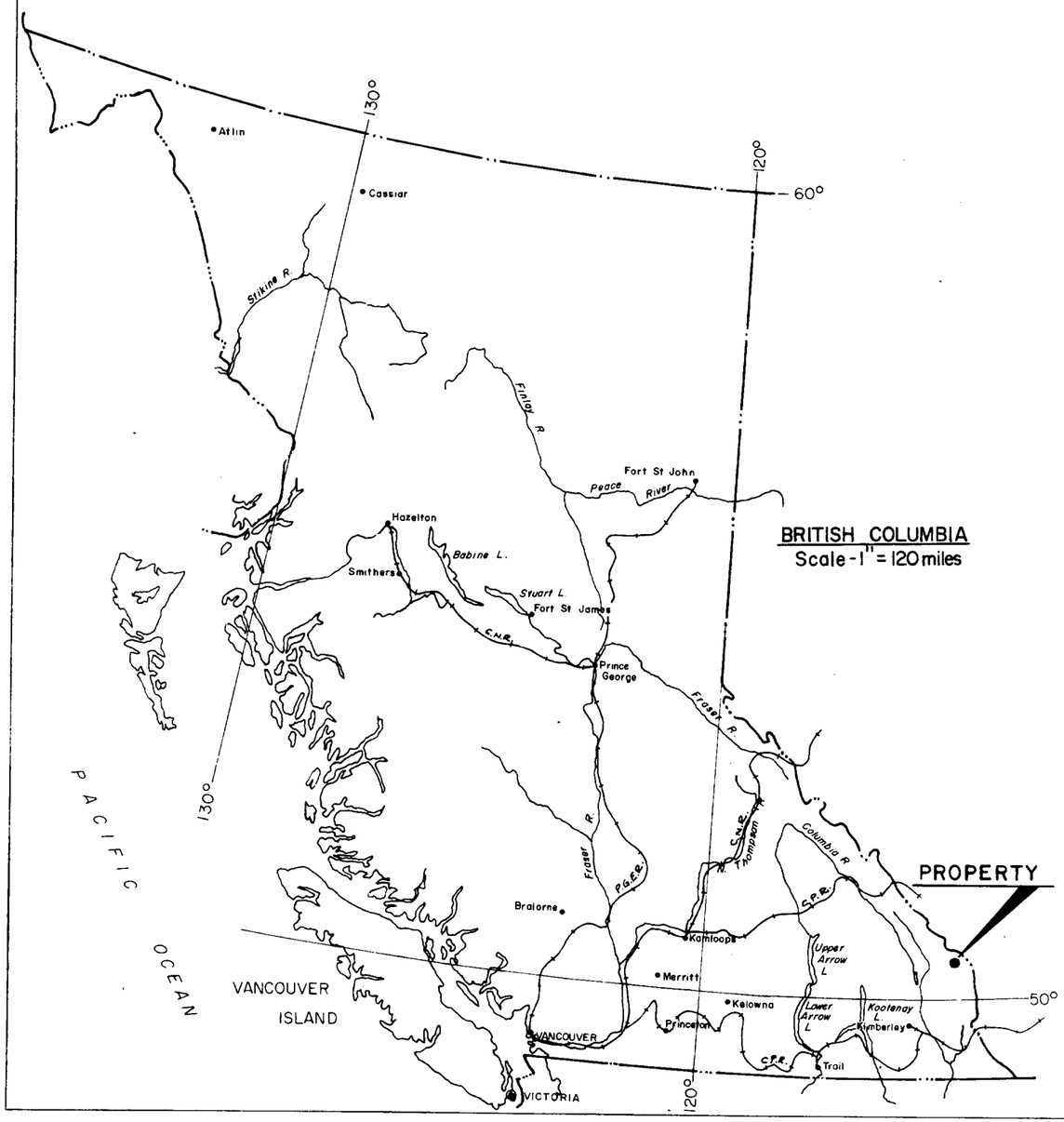
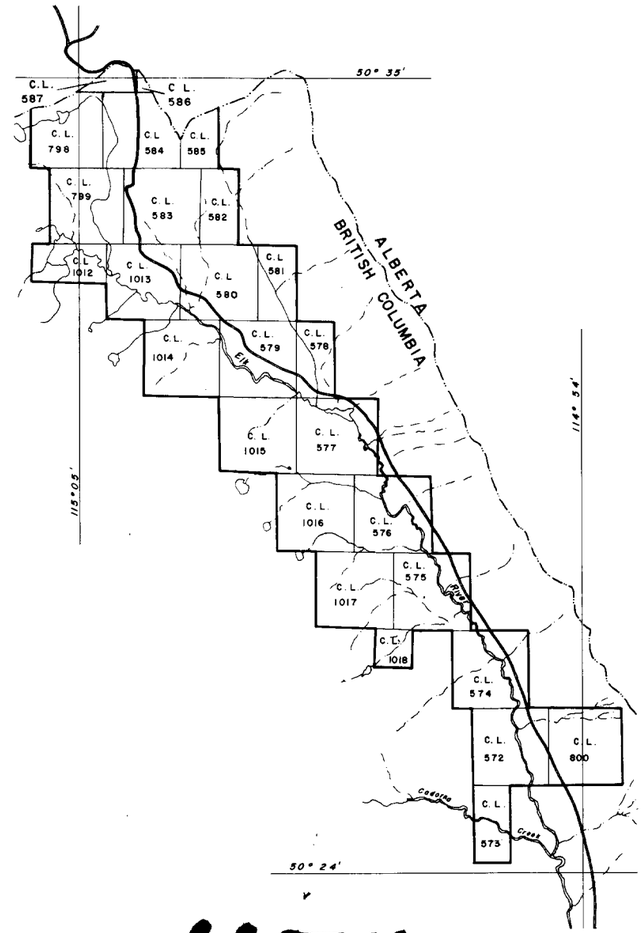


PLATE 5

Apparatus used for coal sampling.



BRITISH COLUMBIA
Scale - 1" = 120 miles



Scale 1"= 2 miles

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K-V 71(2) A(1)

Expiry Date: Mar. 3, 1972

N.T.S.
82 - J - 11

RIO TINTO CANADIAN EXPLORATION LTD.

VINCENT OPTION — ELK VALLEY — B.C.

LOCATION MAP

DEC. - 1970 | R.A.B. /e. k. | DWG L-2554

ROKE

GAMMA RAY NEUTRON LOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO.	
COMPANY	ESSO RESOURCES CANADIAN EXPLORATION LTD.
WELL	C. 5-2
LOCATION	TORBRYAN HILL
FIELD	BEE PASS
PROVINCE	ALBERTA
Permanent Datum: GROUND LEVEL	Elev. 2,778
Log Measured From: KB	10 Ft. Above Perm. Datum
Drilling Measured From: KB	

LOG	
RUN NO.	ONE
DATE	22 AUGUST 71
Depth Reader	0
Last Reading	7721
Depth Reached	7721
Depth Driller	7716
Casing Driller	
Casing Logged	
Bit Size	7.78
Mud Type	
Mud Density	
Mud Viscosity	
Mud Fluid Loss	
Mud Resistivity	
Mud Sample Source	
Rm @ Meas. Temp.	
Rmf @ Meas. Temp.	
Rmc @ Meas. Temp.	
Source of Rmf & Rmc	
Rm @ BHT	
Time Since Circ.	
Max. Rec. Temp.	
Equipment No.	
Location	
Recorded By	ESTO
Witnessed By	CHILDERHOSE

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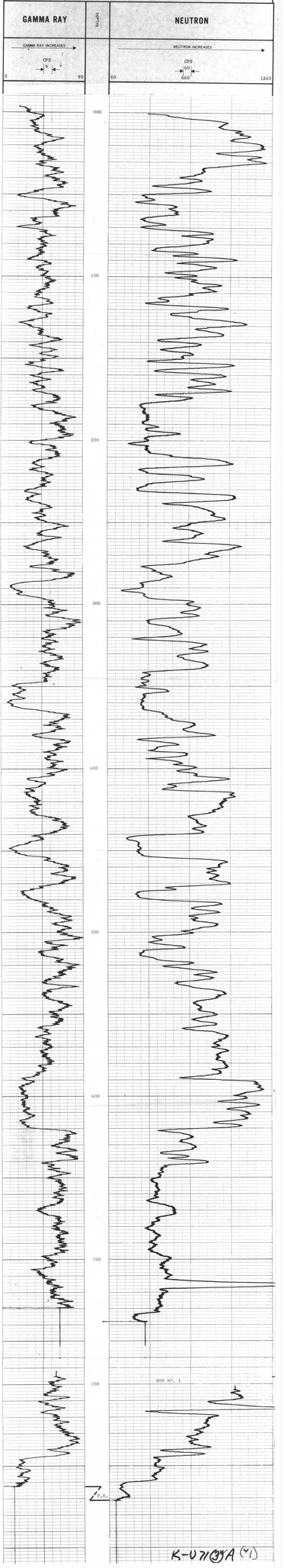
EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO	ONE	RUN NO	ONE
TOOL MODEL NO		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	3⅜	TOOL MODEL NO	
DETECTOR MODEL NO		DIAMETER	1⅝
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	30	SPACING	19 INCH
INSTRUMENT TRUCK NO		TYPE	Am-Be
TOOL SERIAL NO	CON2704GR177	STRENGTH	7.00 X 10^6 N/S

LOGGING DATA

RUN NO	DEPTH FROM	DEPTH TO	SPEED FT/MIN	GAMMA RAY T/C SEC	GAMMA RAY SENS SETTING	GAMMA RAY ZERO DIV. OR %	GAMMA RAY API GR UNITS PER LOG DIV	NEUTRON T/C SEC	NEUTRON SENS SETTING	NEUTRON ZERO DIV. OR %	NEUTRON API N UNITS PER LOG DIV
1	700	771	11	5	100	0L	9 CPS	3	1000	1L	50 CPS
2	0	768	11	5	100	0L	9 CPS	3	1000	1L	60 CPS

REMARKS: LOGGED THRU DOUBLE WALL PIPE



K-U7107A (1)

ROKE

SIDEWALL DENSILOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

K-VINCENT OPTION 71 (3)A(*1)

FILE NO.

LSD
SEC
TWP
RGE
W ___ M

COMPANY RIO TINTO CANADIAN EXPLORATION LTD.

WELL C. V. 2

LOCATION TOBERMORY HILL

FIELD ELK PASS

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	31 AUGUST 71		
First Reading	476		
Last Reading	0		
Footage Logged	476		
Depth Reached	478		
†Depth Driller	798		
Casing Roke			
Casing Driller			
Fluid Type	WATER		
Liquid Level	FULL		
Min. Diam.	4 7/8		
Operating Time	2 HOURS		
Truck No.	30		

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Recorded By STM Witnessed By CULLINGHAM

REMARKS

DENSITY — COUNTS PER SECOND — CPS 300 3000 — 0 — 6000

DEPTHS

CALIPER — HOLE DIAMETER (INCHES)

000 100 200 300 400

F.P.

K-V 71(3)A(*1)

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

K-VINCENT OPTION 71 (3#) A (#1)

HOLE NO. CV #2

PROPERTY: Vincent Option, Elk Valley B.C.
LOCATION: 3,100' E, 100'S of NW corner of Lot 8490 (C.L. 584)
AZIMUTH:
TOTAL DEPTH: 798'
HOLE SIZE: 4 7/8"
DATE STARTED: August 18, 1971
DATE COMPLETED: August 22, 1971
CONTRACTOR: Big Indian Drilling

ELEVATION: 5,400 (approx.)
PROBE DEPTH: 772'
CORE SIZE:
AIR: ☐ WATER: ☐
LOGGED BY: O. Cullingham
PROBED BY: Rake Oil Enterp.

DIP:
DIP TESTS:
DATE: August 19-22, 1971
DATE: August 22 & 23, 197

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

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FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
							SH: m. dm. ltly. fr str. mod. hd. m. dk. gy.		
							Coal: f. grnd. arb. material in ash.		
							SH: m. gy. small amt. fr str.		
							Slst: m. gy. mod. hd to hd. blocky w. sl. arg. some calc. veinlets.		
							Slst, sh: 1:1, m. gy. arg. to silty, mod. hd.		
							Coal: clean br. clara-vitrain, m ash. 32'-39'		
							Coal: Dull to bri. some fg. gy pari. durain. m ash.		
							Coal: dull to bri. grad. mostly durain. low ash		
							SH / Slst: m. gy. v. sl. carb. arg. to silty, sbs mod. hd. to hd.		
							Slst: m. lt. gy. hd. blocky, few frag. of f. gr. SS. sil.		
							SH / Slst: m. gy. silty to arg. hd. v. sl. carb.		
							Slst: m. gy. hd. blocky, few v. f. gr. ss frag. some calc. veinlets.		
							SH: m. gy. mod. hd. silty		
							SS: m. gy. hd. sil. well cmt.		
							Slst: m. gy. hd. blocky some calc. veinlets or infilling.		
							SH: m. gy. v. sl. carb. hd. silty to sdy in part.		
							coals: 10 - 15, 32, 52, 52½, to coaly		
							SS: m. gy. v. hd. sil. some calc. veinlets.		
							Slst: m. gy. hd. blocky, few v. fgr. SS. frag. calc. veinlets.		
							m. to m. dk. gy; sl. silty to sl. carb.		
							SH: mod. hd. sbs some calc. veinlets.		
							SS: m. gy. hd. sil.		
							181'-185' SH: dk. gy. v. carb. to coaly some coal frag.		
							200'-205' carbargillite - 10% coal frag.		
							SS: m. gy. hd. sil. few slst pbls.		
							SS/SH 2:1 SS: m. dk. gy., hd. minor calc. veinlets		
							SH: m. dk. gy. sdy		
							Slst: m. gy, hd. tr. carb. coal flecks		
							SS: m. gy. v. hd. tr. calc. sil. few slst pbls.		
							SH: dk. gy. sl. carb. sbs, sdy in part calc. veinlets.		
							SS, Slst 2:1 m. gy. hd. sil.		
							Slst: m. dk. gy. sl. arg. mod. hd. calc. infilling		
							SS: m. gy. sl. calc. veinlets or infilling mod. hd.		
							Slst, SS, SH: 3:1:1, m. to m. dk. gy. calc. infilling		
							SH: m. dk. to dk. gy. sdy, carb. to coaly to ¼" coal pbls.		
							Coal: f. grnd. arb. mostly durain, low ash		
							SH: m. dk. gy. silty mod. hd. minor calc. infilling to ppr.		
							306-310' carbargillite few coal frag.		
							Slst: m. gy. arg. hd. calc. veinlet or infilling		
							SH: dk. gy. carb. to coaly sbs, few coal pbls.		
							Coal: f. grnd. shale pbls, mostly vitrain 10 - 20% ash.		
							No sample bagged		
							SH: m. dk. gy. carb. mod. hd.		
							SH: m. dk. gy. sl. carb. sl. silty to calc. hd.		
							Slst, SS: m. to m. dk. gy. slt to v. f. gr. mod sort sl. carb. in part. calc. veinlets, mod. hd.		
							SH, Slst: m. dk. gy. sl. carb. in part. mod. hd.		
							SH: dk. gy. carb. to coaly silty in part sbs.		
							SH, SS, : m. dk. gy. sl. carb. in part, silty in part, blocky, mod. hd. 30% ss pbls. calc. infilling		
							Slst, SS: m. to m. dk. gy. slt. to f. gr. mod. hd. calc. infilling		
							SH: m. dk. gy. carb. to coaly - few sdy sh pbls.		
							SS: m. to m. dk. gy. sil. hd.		
							Carbargillite / coal frag.		
							Coal: f. grnd. minor amp. mat. mostly durain, m. ash.		
							SS: m. gy. hd. sil. some calc. infilling sbs. nr. base, sl. carb. in part.		
							Coal / coaly sh: dull to bri. sbs. to. m. ash		
							SS: m. gy. f. gr. v. well cmt. calc. infilling, hd.		
							SH: m. to dk. gy. carb. to coaly nr. top sdy nr. base.		
							Shaly Coal to Coaly Sh.		
							SH: sl. carb. - few coal frag. sl. silty		
							Slst, SS 1:1: m. to m dk. gy, hd. slt to v. f. gr. ss		
							SS: m. gy. sil. hd. few slst pbls.		
							SH: m. gy. mod. hd. sdy		
							SH/SS m. gy. mod. hd. some calcite veinlets		
							SS/Slst: m. to m. dk. gy. hd. slt to v. f. gr.		
							SS: m. gy. v. sl. arg. mod. hd. to hd. sil. some calc. veinlets and infilling.		
							Becomes coarser gr. towards base of unit		
							SH: m. gy. hd. sl. silty in part, mod. hd to hd. blocky, carb. in part. v. sl. micro-mica in part		
							SH / SS: m. dk. gy; slt. to sdy, blocky hd.		
							SH: m. dk. gy, blocky carb in part		
							SS / SH: As for 655'-660'		
							SH: m. gy. to dk. gy. silty in part carb in part mod. hd.		
							SS / SH 1:1 SS: m. gy. sil, sl. arg. hd. to calcite		
							SH: m. gy. to m. dk. gy. silty to sdy in part hd.		
							SH: m. to m dk. gy. sl. carb. in part v. sl. sdy mod. hd. few coal pbls in base of unit		
							Coal: sl. arg. for. typ 4th. m to hi. ash. Mostly clara-vitrain 20% vitrain, some cone in cone structure, low ash last 4th. med. ash.		
							coal underlay		
							Total Depth 798'		

K-V71(3#) A (#1)

ROKE

GAMMA RAY NEUTRON LOG
DENSILOG

File NO.

COMPANY: ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

WELL: C. V. 3

FIELD: ELK PASS

LOCATION: TOWNSEND HILL

COUNTY OR DIST.

STATE OR PROV.: BRITISH COLUMBIA

Permanent Datum: GROUND LEVEL — Elev.: K.B. / D.F. / G.L.

Log Measured from: KELLY BUSHING — 4 Ft. Above Perm. Datum

Drilling Measured from: K.B.

Other Services: NEUTRON

Run No.	ONE		
Date	31 AUGUST 71		
Depth Driller	799		
Depth Logger	799		
Bottom Logged Interval	800		
Top Logged Interval	SURFACE		
Casing String	8 5/8		
Bit Size	7 7/8		
Type Fluid in Hole	WATER		
Dens. Visc.			
Ph/Fluid Loss			
Source of Sample			
Rm @ Meas. Temp.			
Rmf @ Meas. Temp.			
Rmc @ Meas. Temp.			
Source of Rmf & Rmc			
Rm @ BHT			
Time Since Circ.	30		
Max. Rec. Temp.	90°F		
Equipment No. & Location	4776		
Recorded By	G. BROOKS		
Witnessed By	CHILDERHOSE		

EQUIPMENT DATA

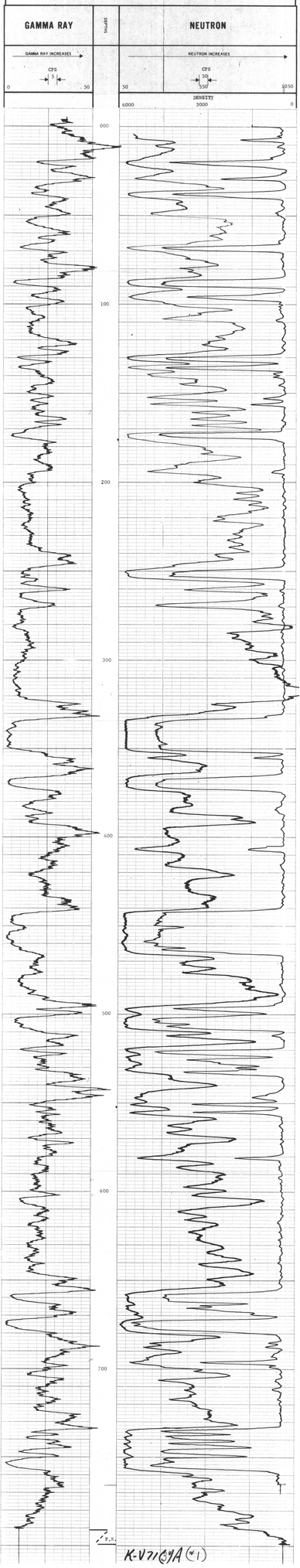
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.		LOG TYPE	NEUTRON/NEUTRON
DIAMETER	1 3/4	TOOL MODEL NO.	
DETECTOR MODEL NO.		DIAMETER	1 3/4
TYPE	GEIGER	DETECTOR MODEL NO.	
LENGTH	18 INCH	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	8.55 FT	LENGTH	6 INCH
		SOURCE MODEL NO.	MRC-N4S-W
		SERIAL NO.	605
		SPACING	19 INCH
		TYPE	AmBe
		STRENGTH	7.00 $\times 10^6$ N/S

GENERAL		
HOIST TRUCK NO	30	
INSTRUMENT TRUCK NO		
TOOL SERIAL NO.	CQR2704CB177	

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED F/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	799	11	5	50	OL	5 CPS	3	1000	1L	50 CPS
DENSITY			9	3	5000	OR	300 CPS				

REMARKS



K-V7167A (4)

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

K-VINCENT OPTION 71(37A)(1)

PROPERTY: Vincent Option, Elk Valley, B.C.		HOLE NO. 71-37A-1
LOCATION: 2,200'E, 1,600'S of NW corner, Lot 8490 (C.L. 584)	ELEVATION: 6,350 (approx.)	DIP:
AZIMUTH:	PROBE DEPTH: 799'	DIP TESTS:
TOTAL DEPTH: 800'	CORE SIZE:	
HOLE SIZE: 4 7/8"	AIR: ☐ WATER: ☐	
DATE STARTED: August 23, 1971	LOGGED BY: O. Cullingham	DATE: August 23-27, 1971
DATE COMPLETED: August 27, 1971	PROBED BY: Roke Oil Enterpr	DATE: August 31, 1971
CONTRACTOR: Big Indian Drilling		

PROVINCIAL GOVERNMENT PROVINCE OF BRITISH COLUMBIA R. C. HART

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Expiry Date: Mar. 3, 1972

FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
		e					SH: m. gy, blocky; mod. hd. sl. bmsh. colour due to wthrg.		
		e					Coal: blk to bri. v. hi% vitrain & 15% ash		
		e x					SH: m gy, minor carb. material SS: quartzose ss bimodal, f. to v.f. gr. sil. hd. tr. calc.		
	70'	x c		f	a	m	Coal Horizon: clean bri. claro-vitrain, few sh. ptds. in ash SS: m. gy. v. ang., graywacke, calc. veinlets, sl. hd.		
		x		sb-f	a	p.m	SH: m. gy. sdy, few coal ptds.		
		x		sb-f	a	p.m	SS: m. gy. graywacke, arg. sil., mod. hd.		
		x					coal Horizon:		
		e					SH: m. to m. dk. gy, sdy, blocky, hd. few carb. ptds. v. sl. micro-mica		
		e					Coal Horizon:		
	100'	x		sb-m	a	w	SH: m. to m. dk. gy, sl. carb. med. hd. Coaly SH: dk. gy, brn. + 70% sh, sl. carb. 30% coal ptds.		
		e					SS: m. gy. quartzitic bimodal, f. + v.f. gr. v. sil., hd, tr. calc. veinlets.		
		e		sl-m	a	w	SH: m. dk. gy. sdy, sl. carb. mod. hd. calc. veinlets.		
		e		sb-sl	a	m	SS: m. dk gy. sl. arg. sil calc. veinlets bimodal		
		e					SH: m. dk. gy. sdy, carb in part. blocky. m. hd.		
		e					Coal Horizon: v.f. grad. claro-vitrain, sh ptds at top & bott.		
	124'	e		sl-f	a	in	SH: coaly, few coal frag. pl. frag. silty in part		
		e		sl-f	a	in	SH/SS: SH: m. dk. gy. blocky; sdy, hd.		
	129'	e					SS: m. dk. gy, sil. hd.		
		x		sb-f	a	m	SS: m. dk. gy. sil to v.f. gr. mod. sort, a gr. sil. sl. arg. few coal frag. sl. calc. veinlets.		
		x					SH: m. dk. gy. to dk. gy. carb. to coaly in part mod. hd. few coal ptds.		
		e		sl/m	a	m	SS: m. dk. gy. sil. quartzitic gr. to gr. m. gr. to f. gr. hd. calc. veinlets 20% sh ptds.		
		e					SH: m. dk. gy. sdy, blocky 20% SS: AA		
	146'	x		sb-m	a-r	p.	SS: m. to m. dk. gy. arr, sl. carb. in part sil. hd. calc. veinlets - Some almost quartzitic, mod. hd. to hd.		
		x		sl-m	a-r	p-m			
		e		sl-m	a	m			
		x					SH: dk. gy, platy to blocky; hd.		
	166'	e		sb-m	a	p	SS, SH: SS: m. vm. gy, sil, sl. to v. carb. mod. hd. sh. dk. gy. carb. sts		
		x		f	a	w	Coal Horizon: v.f. grad. clean silt to bri.; few wash.		
		x					SS: m to m. dk. gy, sil. hd. minor calc. veinlets, sl. carb. in part almost quartzitic		
		x		f	a	w			
		x		sl-f	a	m	Sdy. SH: m. gy, mod. hd. tr. calc. veinlets		
	196'	x					SS: AA		
		x		sl/m	a	m-w			
		x		sl/m f	a	m-w	SH: m-dk. to dk. gy, sdy, carb. to calc. to coal		
		e					Coal Horizon: Mostly clean silt to bri, claro-vitrain few to mod. ash, f. grad. few sdy sh, frag. 398'-399'		
	220'	x		sb-p	a	m	SS: m. gy. vm. mod. hd. sl. carb. calc. veinlets, sts		
		e					SH: m-dk. to dk. gy, carb. some sdy sh ptds. in coal, tr. calc.		
		e					Coal Horizon: clean silt. to bri. silty, claro-vitrain few mod. coaly sh. ptds at bott.		
		e					SH: m-dk. gy, silty to sdy, hd. few coal ptds.		
		e		sl-f	a	m	SH; SS, SH-AA; SS: m. dk. gy, sil. hd. sl. arg.		
		x		sl-f	a	p	SS: m. dk. gy, sil. hd. tr. carb. tr. calc.		
	244'	x					SH: m. dk. to dk. gy, mod. hd. v. sl. silty		
		e							
		x		sb-f	a	m	SS: m. dk. gy, sil. cont. hd. v. sl. carb.		
		x		sb-f	a	m	SH: m. dk. gy, mod. hd. v. sl. silty, blocky minor calc. veinlets		
		x					SS: m. dk. gy sil. sl. arg. mod. hd. blocky		
	276'	x					SS/SH: SS: AA SH: m. dk. gy. silty, sd. v. sl. carb.		
		e					Coal Horizon: dull to bri, claro-vitrain few to mod. ash, f. grad. Some arg. ptgs.		
		e					SH: m. dk. gy to dk. gy, carb in part, silty in part, mod. hd. silty to sdy in part graywacke at base		
		x		sb-f	a	m	SS: m. to m. dk. gy, hd. sil, tr. calcite veinlets		
		x		sl-m	a	m			
		x		sl-f	a	p	SH: m. dk. gy. minor carb. few coal ptds.		
	306'	e					Coal Horizon: dull to bri - mod. to hi ash.		
		e					SH: dk. gy, carb. in part, coaly in part, few coal frag. silty in part mod. hd.		
		e					coal: silt to dull, clarain - some coaly sh.		
		e					SH: m. dk. gy, carb in part some coaly sh frag. coalified pl. strac. alt to dk. gy, mod. hd.		
	336'	e							
		e		sl-f	a	m	SS: m. brn. gy, hd., sil. sl. arg. tr. calc. veinlets.		
		x					SH: m. dk. gy, mod. hd. platy, tr. calcite		
		e		sb-f	a	m	SS: m. gy, mod. hd. sl. arg. sil. cmt.		
		e					SH: m. dk. gy, silty to sdy in part, mod. hd.		
		e		sb-f	a	p	SS: m. to m. dk. gy. hd. tr. calcite		
	366'	x					SH: m. dk. gy, mod. hd. silty to sdy in part v. sl. micro-mica		
		x		sl-f	a	m	SS: m. to m dk. gy, mod. hd. arg. tr. calc.		
		x		sl-f	m	a-p	SH: m. dk. gy, mod. hd. silty to sdy, blocky		
		x		sl-f	m	a-p	SS: m. gy. arg. mod. hd. tr. calc. veinlets approaching graywacke		
		x							
	406'	x		sl-f	m	a-p	SH: m. dk. gy, sdy, mod. hd.		
		x					SS: m. dk. gy, arg. sl. sil. graywacke, tr. calc.		
		e					Coal Horizon: dull to bri, mostly clarain mod. ash.		
		e					SH: m. dk. gy. carb. to coaly in part, sl. sdy, mod. hd.		
		e					Coal Horizon: clean, f. grad. silt bri, claro-vitrain few to v.f. lam. sh		
		e					SH: m. to m. dk gy, blocky sl. silty to carb. in part mod. hd.		
		e					SHSt: dk. gy, arg. platy to blocky, some calc. veinlets, hd. tr. calc. cmt.		
	446'	e					SH: m. dk. gy. sl. silty in part tr. calc. hd.		
		e					SHSt: m. dk. gy. arg. sl. calc. sl. calc. veinlets		
		e					SH: m. dk. gy. sl. silty in part tr. calc. hd.		
		e					SH, SHSt: m. dk. gy arg. to silty, sl. sdy; tr. calc. mod. hd. to hd.		
		e					Coal Horizon: f. grad. clean silt to bri claro-vitrain few to med. ash.		
	496'	e							
		x		sb-f	a	m	SH: m. gy. to m. dk. gy. silty hd. few ss frag.		
		x					SS: m - med. gy. hd. sil. v. minor arg. gels, v. chert gr. gray wacke to quartzitic		
		x		m	a	m-w			
	546'	x		m-c	a	m-w			
							Total Depth 800'		

K-V7137A #1

RIO TINTO CANADIAN EXPLORATION LIMITED

DRILL & CORE LOG

K- VINCENT OPTION ~~#8~~ 71 (3) A(*1)

PROPERTY: Vincent Option, Elk Valley, B.C.	HOLE NO. CV #4
LOCATION: 2,500' E, 2,900'S of NW corner - Lot 8490 (C.L.584)	
AZIMUTH:	ELEVATION: 6,310' (approx.)
TOTAL DEPTH: 802'	PROBE DEPTH: 732'
HOLE SIZE: 4 7/8"	CORE SIZE:
DATE STARTED: August 27, 1971	AIR: ☒ WATER: ☐
DATE COMPLETED: August 31, 1971	LOGGED BY: C. Cullingham
CONTRACTOR: Big Indian Drilling	PROBED BY: Roke Oil Enterprises

DIP:

DIP TESTS:

DATE: August 28-31, 1971

DATE: August 31, 1971

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

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FORMATION TOPS	DEPTH	POROSITY TYPE	LITHOLOGY	GRAIN or CRYSTAL SIZE in mm's	ROUNDING	SORTING	DESCRIPTION	ANALYSIS	ENGINEERING DATA
				vf-f	a	m	SH: m. brn. silty, mod. hd. m. gy. Mdst colour		
							SS: m. gy. grn. silty, m. gy. v. f. to f. gr. a m. sort. sil. sl. arg. hd.		
							SH: m. gy. sl. silty in part, mod. hd.		
							Coal Horizon: silt to bri. shearing.		
				vf-m	a	m	SS: lt. gy. quartzitic, v.hd. well comp., bi. mod. sil. st. above.		
	50'			vf-f	a	p	SH: m. gy. brn. carb. to coaly 20% coal frag.		
							SS: m. gy. sil. hd. minor sh.		
				vf	a	w	SH: m. gy. to m. dk. gy. sdy. to silty in part mod. hd. tr. calcite.		
							SS: m. gy. hd. sil.		
				vf-f	a	w	SH: m. gy. mod. hd. tr. calcite, silty to sdy, sl. carb.		
				vf-st	a	p	Silst to SS: m. gy. silt to f. gr. p. sort. sil. cmt. arg. hd.		
							SH: dk. gy. carb. to coaly ~ 20% coal frag. lamly. grad.		
							Coal Horizon: "Finely grad. silt to bright, clare-vitrain - mostly low ash.		
	100'			vf-m	a	p	SS: m. gy. sil hd. some calc. veinlets		
							coal Horizon: dull to silt, fine coaly ph. frag. in ash.		
				vf-m	a	p	SH: m. gy. blocky mod. hd. sl. silty in part.		
				vf-c	a	p	SS: m. gy. sil. hd. varies from greywacke to quartzitic, calcite veinlets, sl carb. in part.		
				vf-f	a	p-m			
	150'			vf-m	a	m			
				vf-f	a	m			
				vf-f	a	m			
	200'			vf-m	a	p-m	SH: m. dk. to dk. gy. carb. in part minor coaly sh. tr. calc. infilling abrupt change from above.		
				vf-f	a	m	SS: m. gy. sl. arg. sil cmt. gy. to gy. hd. tr. calc.		
				vf-f	a	m	SH: m. dk. gy. silty to sdy. blocky, mod. hd.		
				vf-m	a	p-m	SS: m. gy. sl. arg. sil. hd. calc. veinlets.		
				vf-f	a	m	SH: m. dk. gy. silty in part, blocky mod. hd. to calc.		
	300'			vf-f	a	m	SH, SS: 3:1 AB		
				vf-f	a	m	SH: m. dk. gy. silty to sdy in part hd.		
							SS: m. gy. sil. hd. tr. calcite, a. mod. sort.		
				vf-f	a	m	SH: m. - m. dk. gy. silty to sdy, mod. hd. tr. calc. - carb. to coaly in part.		
							Coal: clean, clare-vitrain ~ 20% low ash.		
							SH: m. dk. gy. sl. carb. in part dem. hd. sdy in part, ss bnd. below coal mod. hd. to calcite.		
	400'			vf-f	a	m	SS: m. gy. sil. arg. mod. hd. calc. veinlets.		
				vf-f	a	m	SH: m. dk. gy. sdy. mod. hd. calc. veinlets, sl. carb. in part.		
	500'			vf-f	a	m	SS: m. gy. sil. hd.		
							coal: dull to bri. mostly clarain, low ash.		
							SH: m. dk. gy. carb. to coaly in part sl. sdy to silty in part.		
							Coal/SH: 2:1 dk. gy to blk. carb. sh to arg. coal silt to bri. frag. of coal.		
	600'						SH: m. dk. to dk. gy. platy mod. hd. sl. carb. in part, coaly sh. pbls. in part.		
							602'-609' - sh/coal ~ 30% coal.		
				vf-f	a	p	SS: m. dk. gy. arg. greywacke, some sil. frag. hd.		
							Coal: dull to bri, clare-vitrain, sbs, few coaly sh. pbls, mod. ash.		
				vf-p	a	m	SH: dk. gy. carb. to coaly bnds. thin. f. grad.		
	700'			vf-f	a	p	SS: m. dk. gy. arg. greywacke, hd.		
							SH: m. dk. gy. v. sl. silty in part, mod. hd. coaly bnds. a 35' - 40'		
				vf-m	a	p	SS: m. gy. sl. arg. mod. hd. sil cmt. tr. calc.		
							Coal Horizon: dull to v.tr. high ash carb. to coaly sh frag.		
				vf-m	a	m	SH/SS:		
				vf-f	a	p	SH: m. dk. gy. silty in part mod. hd.		
							SS: m. dk. gy. sil. mod. hd. m. calc. veinlets.		
							SH: m. dk. to dk. gy. to silty in part carb. to coaly in part.		
	800'						800'-802' SH/coal: dk. gy. bm., frst; ~ 20-30% coal pbls.		
				vf-f	a	p	SS: m. dk. gy. silt to f. gr. mod. sort. sil hd. mixed arg. mat. blk. bry calc. infilling abrupt change from above		
							SH: m. gy. sdy to v. sdy, sl. calc. appro. greywacke		
							Coal Horizon: silt to bri. shearing, clarain, low ash few thick. 2" & 4" at base		
				vf-p	a	m	SH: dk. gy. silty in part, carb. to coaly, mod. hd.		
				vf-m	a	m	SS: m. gy. sil. hd. tr. calc.		
							SH3: sh. dk. gy. carb. sdy.		
				vf-m	a	p			
				vf-f	a	m	SH: dk. gy. carb. to coaly, few coal frag. sbs wd. struct. in part, sdy. sh.		
				vf-f	a	m	SH: dk. gy. brn. hst. few coal frag. carb. to coaly		
							SS: m. dk. gy. arg. sil cmt. some calcite veinlets, sl. carb.		
							SH: m. dk. gy. carb. in part		
							Coal: clean, silt to bri. clare-vitrain, coaly sh. frag. high ash.		
							SH: m. dk. gy. carb. in part, mod. hd. to calc. in silt.		
							Coal Horizon: silt to bri. clare-vitrain, sbs. ~ 20% vitrain; low ash.		
				vf-p	a	p	SH: m. dk. gy. brn. hst in part, carb. in part sl. silty to sdy. tr. calc. veinlets.		
							SS: m. dk. gy. arg. in part, sil cmt. hd.		
							SH: m. dk. gy. mod. hd. tr. calcite veinlets sl. carb. in part		
				vf-st	a	p	Silt to SS: m. dk. gy. silt to f. gr. sil hd. calc veinlets.		
							SS/SH: SS: m. dk. gy. silt to f. gr. sil. hd.		
							SH: m. dk. to dk. gy. carb. in part, platy sl. silty in part.		
							SH/SS: SH - AB		
							SS: m. gy. sil. hd. calc. veinlets 670'-685' - minor ppr.		
							SS/SH SS - AB		
							SH - m. dk. gy. sdy. sl. carb.		
							SH - m. - m. dk. gy. carb. to coaly shs. mod. hd.		
							Coal Horizon: dull to bri. sheared, clare-vitrain, coaly sh. pbls, bm. hst. possibly some carb. mixtion - 5 to 6' ash		
							SH: m. dk. to dk. gy. sl. silty in part, blocky, mod. hd. carb. to coaly in part tr. calc. veinlets.		
							735'-740' 30% SS frag. m. lt. gy. v.f-f. sil. hd. a mod. sort.		
							740'-755' 15% coal frag.		
							755'-760' few coal pbls.		
							795'-802' 50% 35 m gy quartzitic, sil. hd. a, v.f-f gr. mod. sort. calc veinls.		
							Total Depth 802'		

K-U71(3)A(*1)

ROKE

GAMMA RAY NEUTRON LOG

DENSILOG

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FILE NO.

COMPANY RIO TINTO CANADIAN EXPLORATION LTD.

WELL C. V. 4

LOCATION TOBERMORY HILL

FIELD ELK PASS

PROVINCE BRITISH COLUMBIA

Other Services: GAMMA RAY NEUTRON

Permanent Datum: GROUND LEVEL Elev.: K.B. D.F. G.L.

Log Measured from: GROUND LEVEL Ft. Above Perm. Datum

Rig No. Date 31 AUGUST 71

Run No. ONE

Depth Driller 732

Depth Logger 732

Bottom Logged Interval 730

Top Logged Interval 733

Casing Driller @ 732

Casing Logger @ 732

Bit Size 6 3/4"

Type Fluid in Hole WATER

Salinity, PPM Cl 4,78

Density 7

Viscosity

Fluid Loss

Source of Sample

Rm @ Meas. Temp.

Rmf @ Meas. Temp.

Rmc @ Meas. Temp.

Source of Rmf & Rmc

Rm @ BHT

Time Since Circ. 30

Time Since Circ.

Max. Rec. Temp. Deg. F. 72

Equip. Location 1372

Recorded By ERIK

Witnessed By CHILLINGHAM

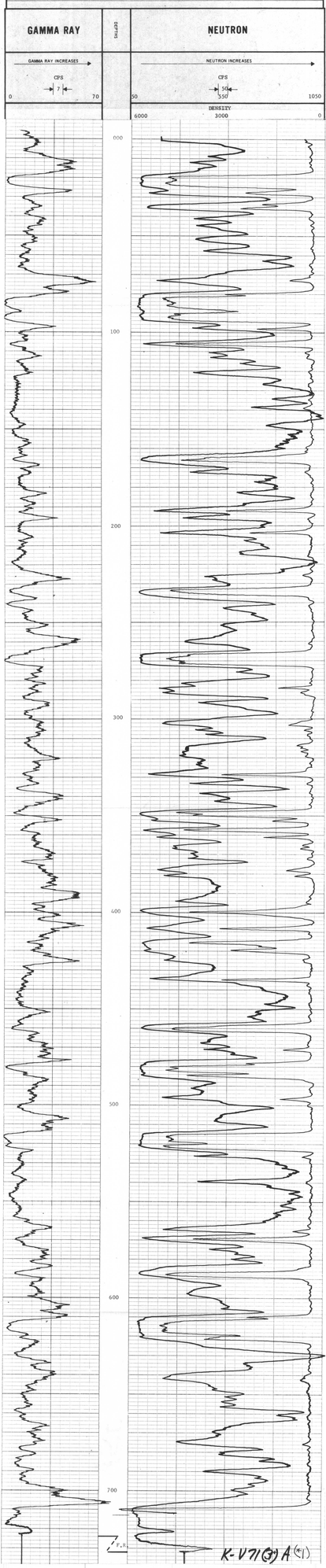
EQUIPMENT DATA

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	30	SPACING	19 INCH
INSTRUMENT TRUCK NO		TYPE	AmBe
TOOL SERIAL NO.	CGR2704CB177	STRENGTH	7.00 $\times 10^6$ N/S

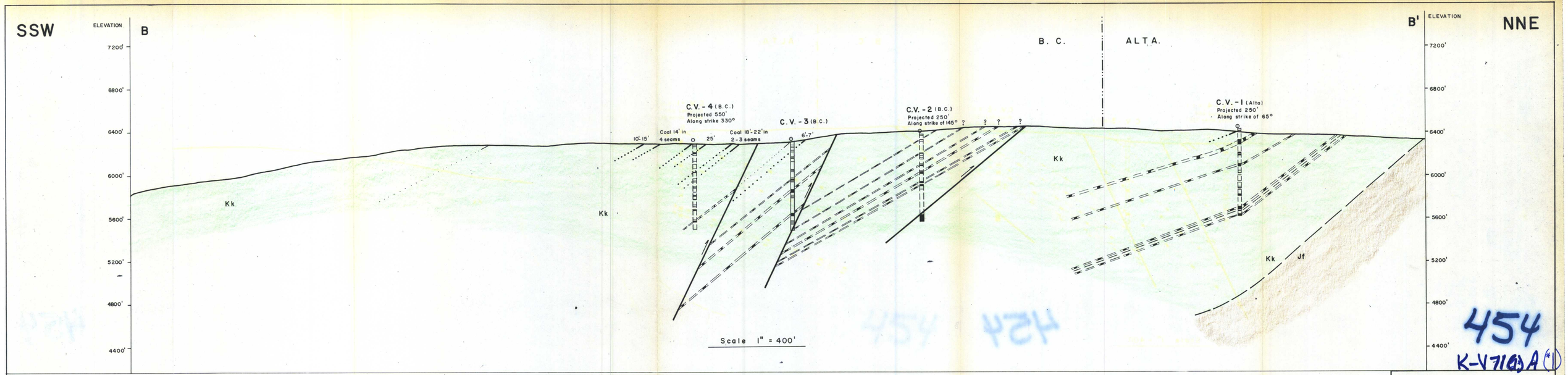
LOGGING DATA

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	732	11	5	100	OL	7 CPS	3	1000	1L	50 CPS
DENSITY			9	3	5000	OR	300 CPS				

REMARKS



K-V71@A(1)



LEGEND

- Kk — Lower Cretaceous — Kootenay Formation
- Jf — Jurassic — Fernie Group
- C.V.-1 — Drill Hole
- Coal
- Thrust Fault
- Geological Boundary

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

Expiry Date: Mar. 3, 1972

N. T. S.
82 - J - 6,7,10,11

RIO TINTO CANADIAN EXPLORATION LTD.

VINCENT OPTION - B.C., CASSIDY OPTION - ALBERTA

STRUCTURAL SECTION B-B'

NOV. — 1971 | O. C. / k. h. | DWG: G-2567

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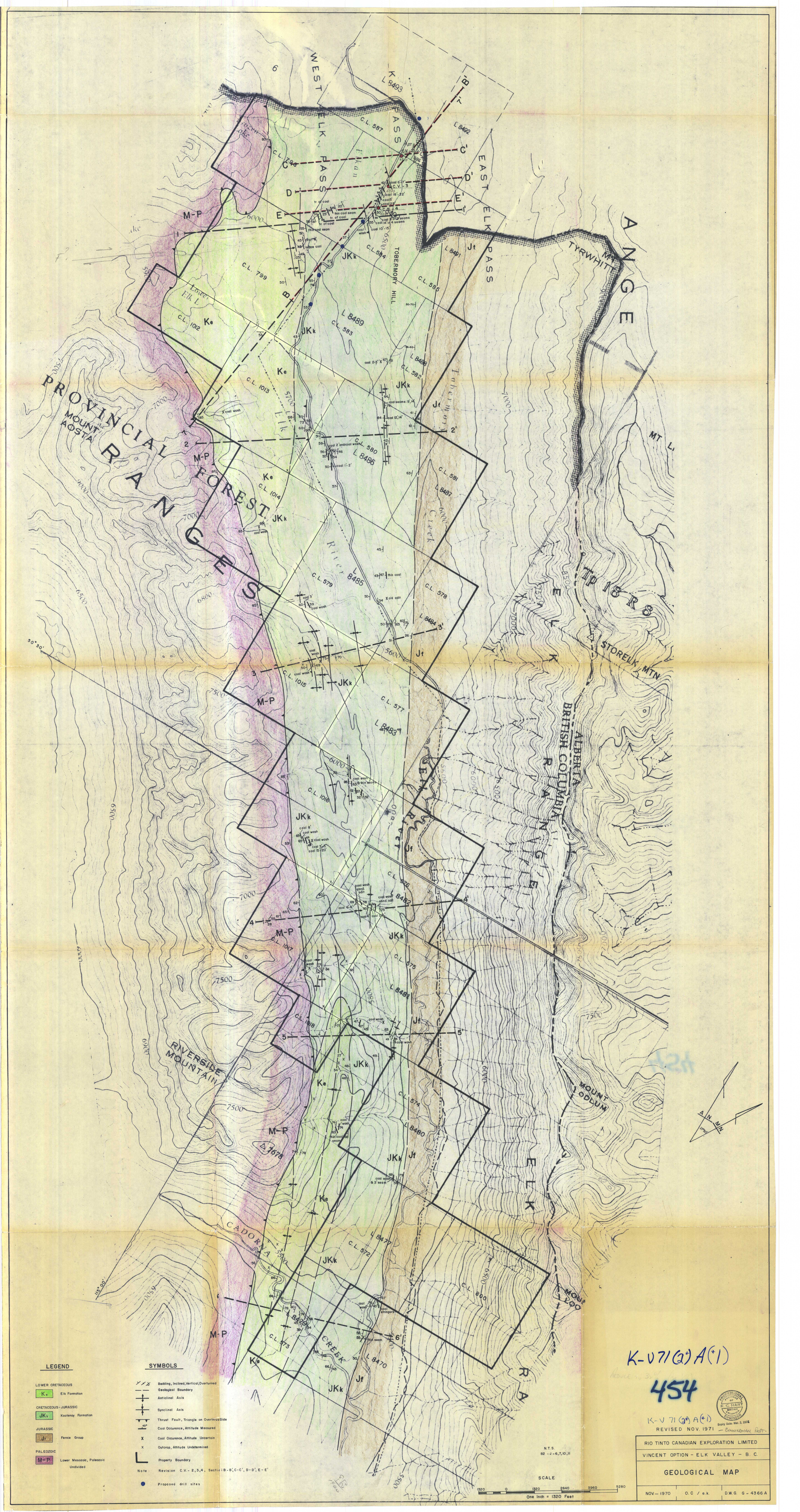
K-V71-9A (*1)


PROVINCIAL FOREST
ELK RANGE
WEST ELK PASS
EAST ELK PASS
TOBERMORY HILL
TYRWHITT MTN
MOUNT AOSTA
STORELK MTN
RIVERSIDE MOUNTAIN
MOUNT LODIUM
CADORNA CREEK
ALBERTA BRITISH COLUMBIA
TP 18 R 8
A
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B'
C
C'
D
D'
E
E'
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C.L. 1015
C.L. 1016
C.L. 1017
C.L. 1018
C.L. 1019
C.L. 1020
Upper Elk
Middle Elk
Lower Elk
Elk River
Ridge Creek
Cadorna Creek
Riverside Creek
Mount Lodium Creek
Storelk Creek
Tobermory Creek
Tyrwhitt Creek
6000
6500
7000
7500
8000
8500
9000
9500
10000
10500
11000
11500
50° 30'
114° 00'
A.I.N. MIN.
LEGEND
LOWER CRETACEOUS
Ke Elk Formation
CRETACEOUS - JURASSIC
JKk Kootenay Formation
JURASSIC
Jf Fernie Group
PALEOZOIC
M-P Lower Mesozoic, Paleozoic Undivided
SYMBOLS
Bedding, Inclined, Vertical, Overturned
Geological Boundary
Anticlinal Axis
Synclinal Axis
Thrust Fault, Triangle on Overthrust Side
Coal Occurence, Attitude Measured
Coal Occurence, Attitude Uncertain
Outcrop, Attitude Undetermined
Property Boundary
Note: Revision C.V. - 2, 3, 4, Section B-B', C-C', D-D', E-E'
Proposed drill sites
N.T.S. 82 - J - 6, 7, 10, 11
SCALE
1320 0 1320 2640 3960 5280
One Inch = 1320 Feet
K-V 71 (2) A (1)
454
K-V 71 (2) A (1)
REVISED NOV. 1971
RIO TINTO CANADIAN EXPLORATION LIMITED
VINCENT OPTION - ELK VALLEY - B. C.
GEOLOGICAL MAP
NOV. - 1970
O. C. / e.k.
D.W.G. G - 4366 A

SW

C

ELEVATION

7200'

6800'

6400'

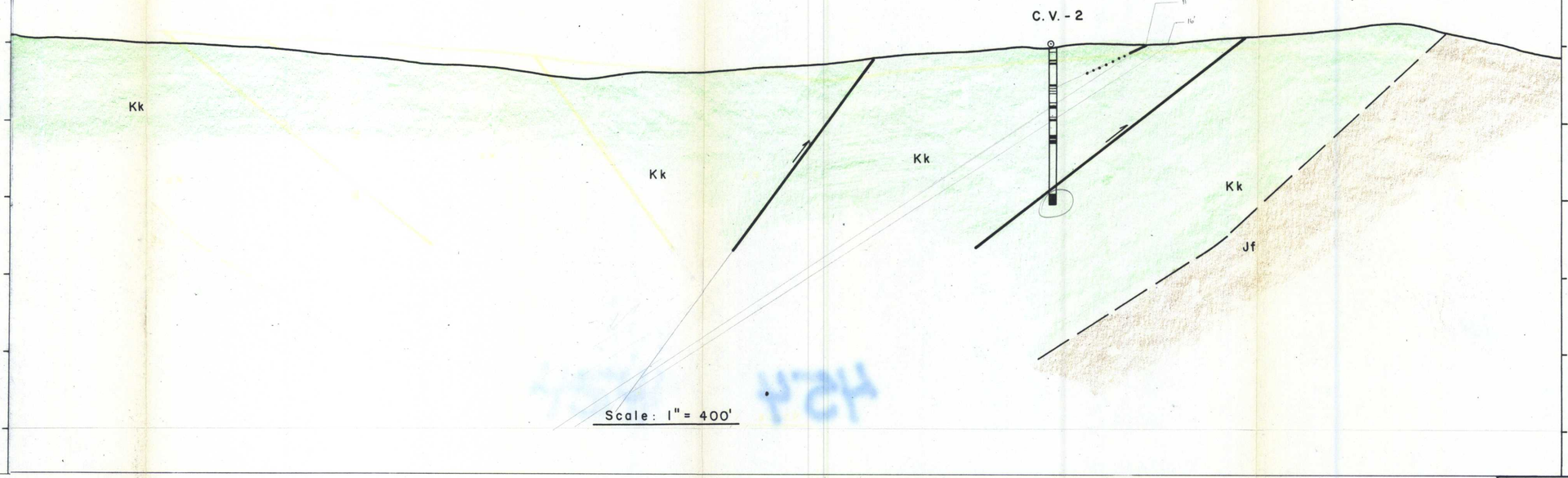
6000'

5600'

5200'

4800'

4400'



Scale: 1" = 400'

C'

ELEVATION

7200'

6800'

6400'

6000'

5600'

5200'

4800'

4400'

NE

454

K-V 71(0)A

LEGEND

Kk — Lower Cretaceous — Kootenay Formation

Jf — Jurassic — Fernie Group

C.V.-1 — Drill Hole

Coal

Thrust Fault

Geological Boundary

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. C. HART

Expiry Date: Mar. 3, 1972

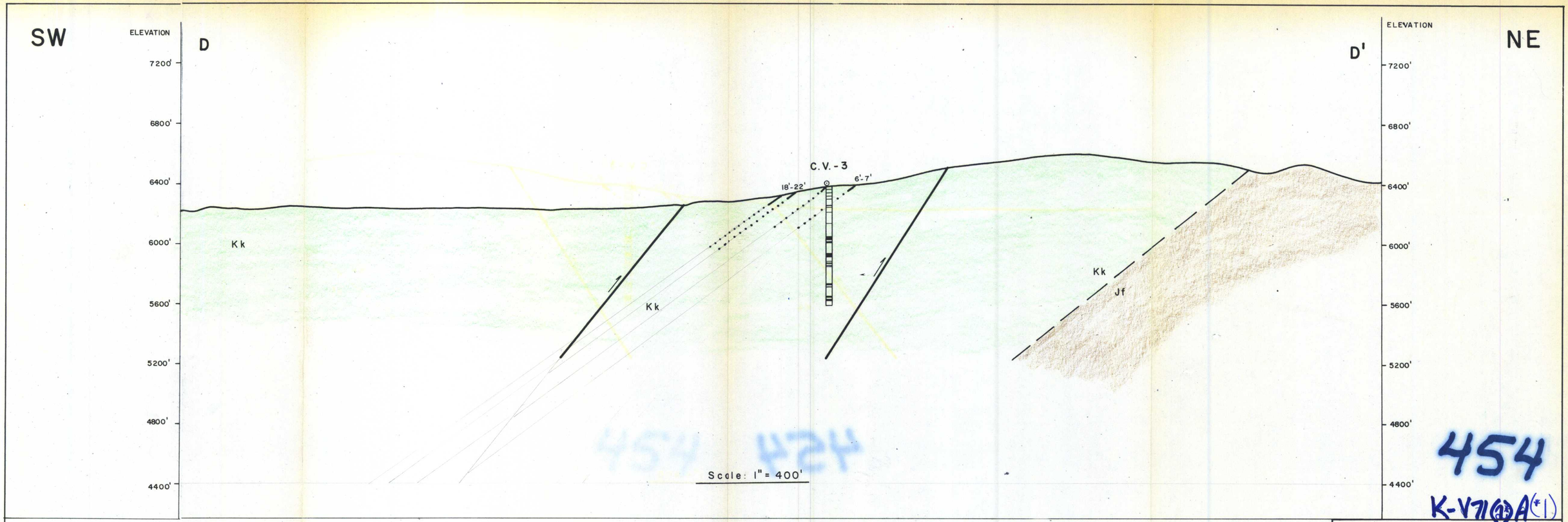
N. T. S.
82 - J - 6,7,10,11

RIO TINTO CANADIAN EXPLORATION LTD.

VINCENT OPTION - B. C.

STRUCTURAL SECTION C-C'

NOV. — 1971 | O. C. / k. h. | DWG: G-2568



454

K-V71-9A(*1)

LEGEND

- Kk — Lower Cretaceous — Kootenay Formation
- Jf — Jurassic — Fernie Group
- C.V.-1 — Drill Hole
- Coal
- Thrust Fault
- Geological Boundary

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

Expiry Date: Mar. 3, 1972

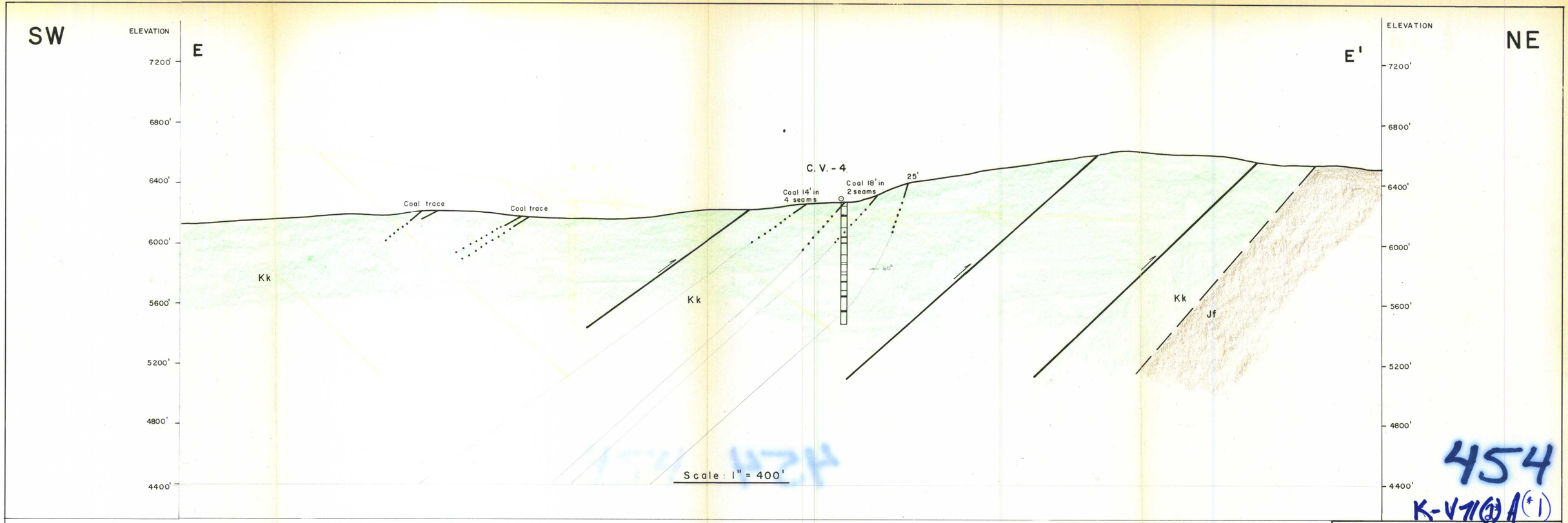
N. T. S.
82 - J - 6,7,10,11

RIO TINTO CANADIAN EXPLORATION LTD.

VINCENT OPTION - B.C.

STRUCTURAL SECTION D-D'

NOV. — 1971 | O. C. / k. h. | DWG: 0-2569



454

K-V71(3)A(*1)

LEGEND

- Kk — Lower Cretaceous — Kootenay Formation
- Jf — Jurassic — Fernie Group
- C.V.-1 — Drill Hole
- Coal
- Thrust Fault
- Geological Boundary

PROFESSIONAL ENGINEER OF R. C. HART BRITISH COLUMBIA ENGINEER

Expiry Date: Mar. 3, 1972

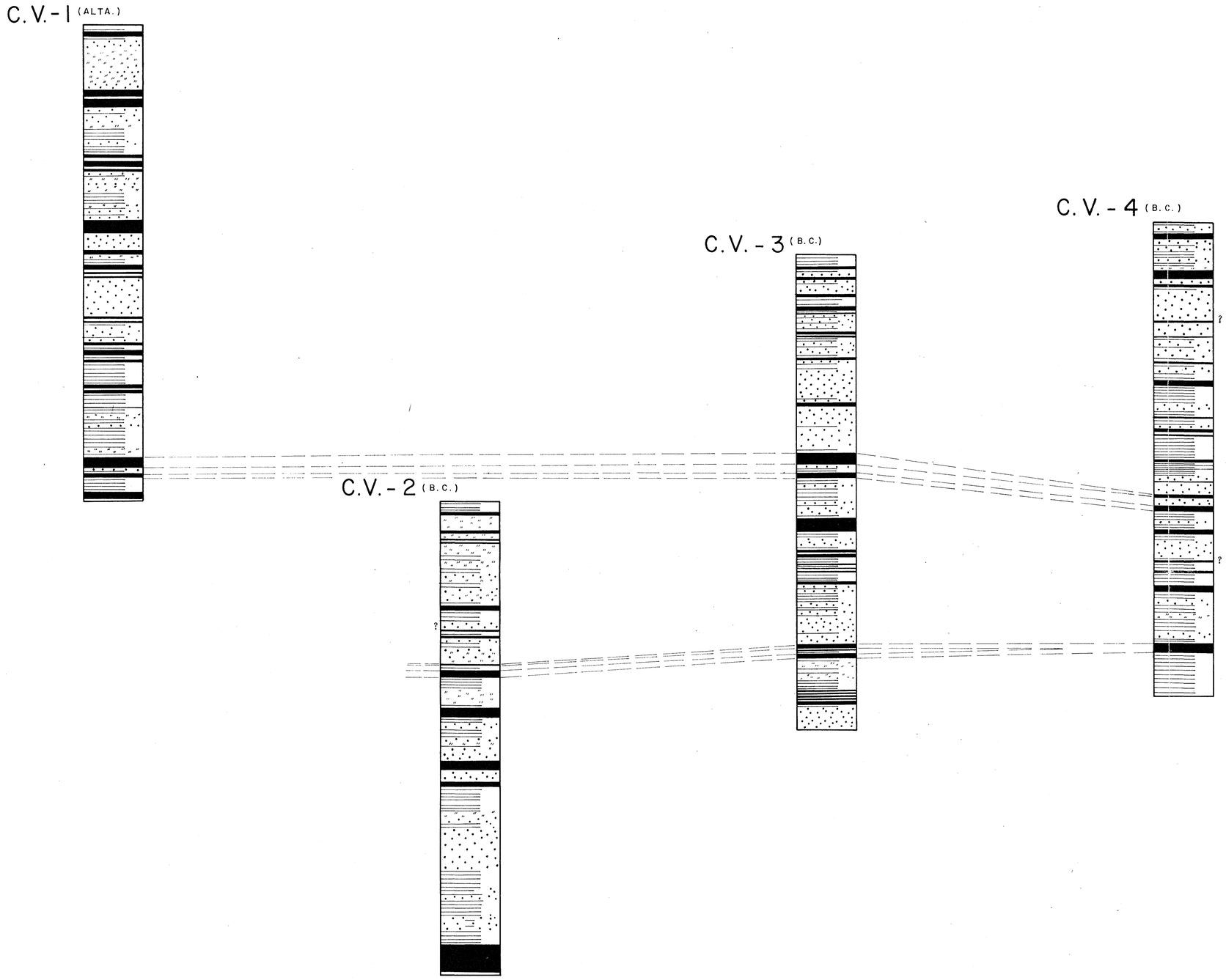
N. T. S.
82 - J - 6,7,10,11

RIO TINTO CANADIAN EXPLORATION LTD.

VINCENT OPTION - B.C.

STRUCTURAL SECTION E-E'

NOV. — 1971 | O. C. / k. h. | DWG: G-2570



LEGEND

- SANDSTONE
- SILTSTONE
- SHALE
- COAL

N.T.S
82 - J - 6, 7, 10, 11

Vertical Scale

100 0 100 200 300 400

One Inch = 100 Feet

RIO TINTO CANADIAN EXPLORATION LIMITED

VINCENT OPTION – B.C., CASSIDY OPTION – ALBERTA

STRATIGRAPHIC CORRELATION

DRILL HOLES C.V.-1 – C.V.-4

NOV. - 1971 | O. C. / e.k. | DWG. G - 3374

K-VINCENT OPTION 71(2)A South East B.C.

OPEN FILE

~~K-VINCENT OPTION~~
~~SPECIMEN~~ VALLEY B.C.
GEOLOGICAL REPORT

(COPY 2)

RIOTINTO CANADIAN EXPLORATION LTD. Nov. 1971

4454

Rio Algom
Rio Tinto

454

November 18, 1971.

Mr. R. H. McCrimmon,
Department of Mines
and Petroleum Resources,
Victoria, British Columbia.

Dear Mr. McCrimmon:

Re: C. Vincent Construction Co.
Coal Licences - 583 and 584

Enclosed herewith is a geological report along with Rotary Drill logs and sections on the above mentioned property in the Elk Valley Area by R. C. Hart and O. Cullingham.

We also attach Form D, Affidavit on Application for Certificate of Work.

Trusting this fulfils your requirements, we remain

Yours very truly,

RIO TINTO CANADIAN EXPLORATION LIMITED

D. J. Gervais

D. J. Gervais.

DJG/gs
Attach.

ACCOMPLISHED	DATE	INITIAL
D. M.		
C.G.C.	✓	
C.C.		
D.C.G.C.		
D.C.C.		
ACCTS.		
C.M.B.		
C.I.		
C.A.		
R. T.		
C.P.E.		
ARC		
MR JAMES		

NOV 25 '71 AM 1318

DEPT. OF MINES
AND PETROLEUM RESOURCES

Rio Tinto Canadian Exploration Limited
120 ADELAIDE STREET WEST, TORONTO 1, CANADA 416/367-4000 TELEX 02-2204 CABLE/RIOCANEX

THE GOVERNMENT OF
THE PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF MINES

MINERAL ACT

FORM D

Affidavit on Application for Certificate of Work

I, R. C. Hart (Name.) Agent for C. Vincent Construction Co. (Name.)

120 Adelaide St. West, (Address.) 120 Adelaide St. West, (Address.)

Toronto 1, Ontario. Toronto 1, Ontario.

Free Miner's Certificate No. Free Miner's Certificate No.

Date issued Date issued

make oath and say:—

I have done, or caused to be done, work on the Coal Licence 583,584

~~Mineral Claim(s)~~

~~Record No.(s)~~

situate at Elk Valley Area, British Columbia

in the Kootenay Land District Mining Division, to the value of at least $47,142.70 ~~one hundred dollars~~, since the 1st day of August, 1971 to November 15, 1971.

The following is a detailed statement of such work:—

(Set out full particulars of the work done in the twelve months in which such work is required to be done.)

Wages and Benefits	$ 2,921.00
Food and Accommodation	813.00
Supplies and Rentals	945.00
Travel within Province	557.00
Bulldozing	3,100.00
Rotary Drilling	26,700.00
Probing	2,200.00
Consultant Fees	200.00
Assaying	2,543.00
Clean Up	2,500.00
Maps and Reports	378.00
	$42,857.00
Overhead - 10%	4,285.70
Total	$47,142.70

That I have not and will not use the work declared herein in ~~any way for the~~ purposes of obtaining tax exemption on a Crown-granted mineral claim under the terms of the *Taxation Act*.

SWORN and subscribed to at TORONTO

this 18 day of NOVEMBER

19 71, before me

* J. Hillaby

NOTARY PUBLIC in and for the PROVINCE OF ONTARIO

R C Hart

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. C. HART

Expiry Date: Not ...

* This affidavit may be taken by a person empowered to take affidavits by the *Evidence Act* of British Columbia.

10M-660-5716 (2)

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 23, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21884
CV-2 (356' - 358') CV-2 (358' - 360')
CV-2 (360' - 362') CV-2 (362' - 364')

C.E.S. SAMPLE NO.: 144

ANALYSES ON AIR DRY BASIS:

ASH:	15.39%
VOLATILE MATTER:	24.71%
RESIDUAL MOISTURE:	0.96%
FIXED CARBON:	58.94%
FREE SWELLING INDEX:	5
B.T.U./lb.:	12,260
SULPHUR:	0.57%
RANK:	mvb

DATE: August 24th '71
LOCATION: Vincent Option
RH. CV-2

WIDTH: 8'
REMARKS: 356-364

Drillers Depth

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 454

CYCLONE ENGINEERING SALES LTD.

Per:
R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX C 21884

BOREHOLE SAMPLES:

REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 23, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21885
CV-2 (448' - 450')
CV-2 (450' - 452') CV-2 (452' - 454')

C.E.S. SAMPLE NO.: 145

ANALYSES ON AIR DRY BASIS:

ASH:	42.17%
VOLATILE MATTER:	17.73%
RESIDUAL MOISTURE:	0.92%
FIXED CARBON:	39.18%
FREE SWELLING INDEX:	2
B.T.U./lb.:	8,330
SULPHUR:	0.49%
RANK:	mvb

DATE: August 24th '71

LOCATION: Vincent Opher

C.V.-2

WIDTH: 6'

REMARKS: 448 - 454

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21885

BOREHOLE SAMPLES:

REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 23, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21886

C.E.S. SAMPLE NO.: 146

ANALYSES ON AIR DRY BASIS:

ASH:	30.31%
VOLATILE MATTER:	20.33%
RESIDUAL MOISTURE:	0.99%
FIXED CARBON:	48.37%
FREE SWELLING INDEX:	4
B.T.U./lb.:	10,530
SULPHUR:	0.45%
RANK:	mvb

DATE: August 24th 71

LOCATION: Vimont Option

R.H. C.V - 3

WIDTH: 6'

REMARKS: 748 - 754

Driller Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21886

BOREHOLE SAMPLES:

REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 23, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21887

C.E.S. SAMPLE NO.: 147

ANALYSES ON AIR DRY BASIS:

ASH:	31.53%
VOLATILE MATTER:	21.34%
RESIDUAL MOISTURE:	1.09%
FIXED CARBON:	46.04%
FREE SWELLING INDEX:	3½
B.T.U./lb.:	10,270
SULPHUR:	0.32%
RANK:	mvb

DATE: August 24th

LOCATION: Vincent Option

RH. C.V. - 2

38'

WIDTH: 754 - 742

REMARKS:

Drill Depth

CYCLONE ENGINEERING SALES LTD.

Per:

R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21887

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 23, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21888

C.E.S. SAMPLE NO.: 148

ANALYSES ON AIR DRY BASIS:

ASH:	53.42%
VOLATILE MATTER:	16.79%
RESIDUAL MOISTURE:	1.35%
FIXED CARBON:	28.44%
FREE SWELLING INDEX:	2
B.T.U./lb.:	6,660
SULPHUR:	0.31%
RANK:	mvb

DATE: August 24th '71

LOCATION: Vimont Option

RH. C.V-2

WIDTH: 6'

REMARKS: 793 - 798

Drill Depth

CYCLONE ENGINEERING SALES LTD.

Per: R S Sehgal

R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21888

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 28, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21889 (331' - 347')

C.E.S. SAMPLE NO.: 149

ANALYSES ON AIR DRY BASIS:

ASH:	5.85%
VOLATILE MATTER:	31.24%
RESIDUAL MOISTURE:	1.15%
FIXED CARBON:	61.76%
FREE SWELLING INDEX:	7½
B.T.U./lb.:	14,000
SULPHUR:	0.58%
RANK:	hvAd

DATE: August 28th 71

LOCATION: Vincent Option

R.H. - C.V. - 3

WIDTH: 16'

REMARKS: 331 - 347

Drill Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal

R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21889

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 28, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21890 (361' - 367')

C.E.S. SAMPLE NO.: 150

ANALYSES ON AIR DRY BASIS:

ASH:	6.21%
VOLATILE MATTER:	31.95%
RESIDUAL MOISTURE:	1.02%
FIXED CARBON:	60.82%
FREE SWELLING INDEX:	8
B.T.U./lb.:	13,970
SULPHUR:	0.55%
RANK:	hvAb

DATE: August 25th '71

LOCATION: Vimont Explo

R.H. - C.V. - 3

WIDTH: 6'

REMARKS: 361 - 367

Drillers Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21890

BOREHOLE SAMPLES:

REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Ltd.

DATE: Sept. 28/71

PROJECT:

C.E.S. PROJECT NO.: S1 - 71

CLIENT SAMPLE NO.: C-21891 (442' - 452')

C.E.S. SAMPLE NO.: 151

ANALYSES ON AIR DRY BASIS:

ASH:	16.29%
VOLATILE MATTER:	28.88%
RESIDUAL MOISTURE:	1.00%
FIXED CARBON:	53.83%
FREE SWELLING INDEX:	7½
B.T.U./lb.:	12,440
SULPHUR:	0.48%
RANK:	hvAb

DATE: August 28 2 171

LOCATION: Vincent Opbr

R.H - B.V. - 3

WIDTH: 10'

REMARKS: 442 - 452

Drillers Depth

CYCLONE ENGINEERING SALES LTD.

Per: Rsehgal

R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21891

BOREHOLE SAMPLES:

REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Ltd. DATE: Sept. 28/71

PROJECT:

C.E.S. PROJECT NO.: S1 - 71

CLIENT SAMPLE NO.: C-21892 (452' - 458')

C.E.S. SAMPLE NO.: 152

ANALYSES ON AIR DRY BASIS:

ASH:	7.40%
VOLATILE MATTER:	30.01%
RESIDUAL MOISTURE:	0.94%
FIXED CARBON:	61.65%
FREE SWELLING INDEX:	8
B.T.U./lb.:	13,860
SULPHUR:	0.34%
RANK:	hvAb

DATE: August 28th 71

LOCATION: Vincent Option

RH. CV - 3

WIDTH: 6'

REMARKS: 452 - 458

Drill Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21892

BOREHOLE SAMPLES:

REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Ltd. DATE: Sept. 28/71

PROJECT:

C.E.S. PROJECT NO.: S1 - 71

CLIENT SAMPLE NO.: C-21893 (458' - 464')

C.E.S. SAMPLE NO.: 153

ANALYSES ON AIR DRY BASIS:

ASH:	30.57%
VOLATILE MATTER:	23.76%
RESIDUAL MOISTURE:	0.95%
FIXED CARBON:	44.72%
FREE SWELLING INDEX:	6
B.T.U./lb.:	9,660
SULPHUR:	0.37%
RANK:	hvAb

TE: August 28th '71

CATION: Vincent Explor

H. - C.V. - 3

DTH: 6'

ARKS: 458 - 464

Dublin Dpt.

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal

R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21893

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21894
CV-3 (656' - 660')

C.E.S. SAMPLE NO.: 154

ANALYSES ON AIR DRY BASIS:

ASH:	10.93%
VOLATILE MATTER:	26.25%
RESIDUAL MOISTURE:	0.99%
FIXED CARBON:	61.83%
FREE SWELLING INDEX:	6
B.T.U./lb.:	13,420
SULPHUR:	0.43%
RANK:	mvb

DATE: August 28th 71

LOCATION: Mainet Option

R.H. C.V.-3

WIDTH: 4'

REMARKS: 656-660

Drillers Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Schaal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21894

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 28, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21895
CV-3 (672' - 677')

C.E.S. SAMPLE NO.: 155

ANALYSES ON AIR DRY BASIS:

ASH:	33.79%
VOLATILE MATTER:	21.33%
RESIDUAL MOISTURE:	0.86%
FIXED CARBON:	44.02%
FREE SWELLING INDEX:	4
B.T.U./lb.:	9,350
SULPHUR:	0.45%
RANK:	mvb

DATE: August 28th 71

LOCATION: Vincent Option

R.H. — C.V-3

WIDTH: 5'

REMARKS: 672 - 677

Drillers Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21895

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21896
CV-3 (736' - 746')

C.E.S. SAMPLE NO.: 156

ANALYSES ON AIR DRY BASIS:

ASH:	36.97%
VOLATILE MATTER:	21.17%
RESIDUAL MOISTURE:	0.94%
FIXED CARBON:	40.92%
FREE SWELLING INDEX:	3½
B.T.U./lb.:	8,830
SULPHUR:	0.41%
RANK:	mvb

DATE: August 25th '71
LOCATION: Vimont Option
R.H. - C.V - 3
WIDTH: 10'
REMARKS: 736 - 746
Driller Dept

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX C 21896

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21897
CV-3 (746' - 757')

C.E.S. SAMPLE NO.: 157

ANALYSES ON AIR DRY BASIS:

ASH:	35.25%
VOLATILE MATTER:	20.80%
RESIDUAL MOISTURE:	0.92%
FIXED CARBON:	43.03%
FREE SWELLING INDEX:	4
B.T.U./lb.:	11,760
SULPHUR:	0.51%
RANK:	mvb

DATE: August 25th, 71

LOCATION: Vincent Option

R.H., C.V.-3

WIDTH: 11'

REMARKS: 746 - 757

Drillers Depth

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21897

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21898
CV-4 (22' - 28')

C.E.S. SAMPLE NO.: 158

ANALYSES ON AIR DRY BASIS:

ASH:	14.13%
VOLATILE MATTER:	30.72%
RESIDUAL MOISTURE:	1.33%
FIXED CARBON:	53.82%
FREE SWELLING INDEX:	3½
B.T.U./lb.:	9,450
SULPHUR:	0.52%
RANK:	hvCb

DATE: August 30th '71

LOCATION: Vincent Copper

R.# - C.V-4

WIDTH: 6'

REMARKS: 22'-28'

Drillers Depth.

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX C 21898

BOREHOLE SAMPLES:

REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21899
CV-4 (85' - 96').

C.E.S. SAMPLE NO.: 159

ANALYSES ON AIR DRY BASIS:

ASH:	19.29%
VOLATILE MATTER:	30.83%
RESIDUAL MOISTURE:	1.30%
FIXED CARBON:	48.58%
FREE SWELLING INDEX:	4½
B.T.U./lb.:	11,660
SULPHUR:	0.38%
RANK:	hvAb

ATE: August 3rd 71

OCATION: Vanier Option

RH. - C V - 4

IDTH: 11'

MARKS: 85-96

Drills Dpt.

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21899

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Ltd DATE: October 5, 1971

PROJECT: C.E.S. PROJECT NO.: S1 - 71

CLIENT SAMPLE NO.: C-21900
CV-4 (272' - 276') C.E.S. SAMPLE NO.: 160

ANALYSES ON AIR DRY BASIS:

ASH:	13.36%
VOLATILE MATTER:	29.70%
RESIDUAL MOISTURE:	1.29%
FIXED CARBON:	55.65%
FREE SWELLING INDEX:	5½
B.T.U./lb.:	12,070
SULPHUR:	2.73%
RANK:	lvAb

DATE: August 30th 71

LOCATION: Vincent Option

D.H., -C.V. -2

WIDTH: -1'

REMARKS: 272 - 276

Drill Depth

CYCLONE ENGINEERING SALES LTD.

Per: _____
R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX C 21900

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21901
CV-4 (518' - 526')

C.E.S. SAMPLE NO.: 161

ANALYSES ON AIR DRY BASIS:

ASH:	16.11%
VOLATILE MATTER:	28.25%
RESIDUAL MOISTURE:	1.03%
FIXED CARBON:	54.61%
FREE SWELLING INDEX:	6½
B.T.U./lb.:	12,190
SULPHUR:	0.51%
RANK:	hvAb

DATE: Aug. 31st '71

LOCATION: Vanier Option

RH. - C.V-4

WIDTH: 5'

REMARKS: 518' - 526'

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21901

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited
DATE: Sept. 29, 1971.

PROJECT:
C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21902
CV-4 (617' - 621')
C.E.S. SAMPLE NO.: 162

ANALYSES ON AIR DRY BASIS:

ASH:	7.08%
VOLATILE MATTER:	31.41%
RESIDUAL MOISTURE:	1.00%
FIXED CARBON:	60.51%
FREE SWELLING INDEX:	8
B.T.U./lb.:	13,000
SULPHUR:	0.60%
RANK:	hvAb

DATE: Aug. 30th '71
LOCATION: Vincent Option
R.H. C.V.-F.
WIDTH: -/
REMARKS: 617-621
Drillers Depth - Represent
a composite of
drill cuttings from
each.

CYCLONE ENGINEERING SALES LTD.

Per: R. S. Sehgal, P.Eng.
Laboratory Manager.

RIOCANEX

C 21902

BOREHOLE SAMPLES: REPORT OF ANALYSES ON RAW MATERIAL

CLIENT: Rio Tinto Canadian Exploration Limited

DATE: Sept. 29, 1971.

PROJECT:

C.E.S. PROJECT NO.: S1-71

CLIENT SAMPLE NO.: C-21903
CV-4 (714' - 724')

C.E.S. SAMPLE NO.: 163

ANALYSES ON AIR DRY BASIS:

ASH:	19.81%
VOLATILE MATTER:	28.02%
RESIDUAL MOISTURE:	0.93%
FIXED CARBON:	51.24%
FREE SWELLING INDEX:	7
B.T.U./lb.:	11,730
SULPHUR:	0.49%
RANK:	hvAb

DATE: Aug. 31st 71

LOCATION: Vincent Option

R.H. - CV - 4

WIDTH: 10'

REMARKS: 714 - 724

Drill Depth

CYCLONE ENGINEERING SALES LTD.

Per: R S Sehgal

R. S. Sehgal, P. Eng.
Laboratory Manager.

RIOCANEX

C 21903

454

MAR 3 - '69 PM K-VII (1)A

20.50

THE NORTH AMERICAN COAL CORPORATION

12800 SHAKER BOULEVARD
CLEVELAND, OHIO 44120

DEPT. OF MINES AND PETROLEUM RESOURCES
BOX 1916
LIGNITE DIVISION OFFICE
BISMARCK, NORTH DAKOTA 58501
TEL. 223-2794 AREA CODE 701

February 25, 1969

Mr. K. B. Blakey, Deputy Minister
British Columbia Dept. of Mines
& Petroleum Resources
Douglas Building
Victoria, British Columbia, Canada

Dear Mr. Blakey:

Relative to my call to you today regarding your office's requirements for an "Engineering Report" and a "Statement of Expenditures" regarding coal exploration work done on certain coal licenses in the Upper Elk River Valley in southeastern British Columbia, held by Scurry-Rainbow Oil Limited, Calgary, Alberta, I am providing you under separate cover my complete geological report of work done on subject properties during 1968.

In addition, included herewith is a Xerox copy of all expenditures (Canadian funds) made through January 1969 by the North American Coal Corporation as payment for this exploration work and for the analytical work done on the coals contained therein. A breakdown of the various expenses (as I stated to you over the phone) is as follows:

EXPENDITURES ON ELK RIVER PROJECT
THROUGH JANUARY, 1969

Drilling and Logging	$109,413.53
Caterpillar-Dozer (includes road work, trenching, drill site preparation)	53,225.10
Sampling Entry Work (includes small amount of camp maintenance)	60,348.78
Analytical Work	40,866.21
Surveying and Mapping (Professional Services)	13,734.18
Camp and Board	24,369.20
Consulting Engineering (Professional Services)	14,018.92
Administration, Engineering and Miscellaneous (including travel)	38,940.49
	$354,916.41

Of the total expenditures listed, the following was applied to CPOG Licenses No's. 64 and 65 (Lots 6384 and 6385):

Bulldozer work plus board and room	$ 29,905.80
Drilling and Logging plus board and room	14,883.51
Analytical Work	304.00
Engineering and Administration	6,762.50
	$ 51,845.81
Total Project Expenditures	$354,916.41
Less CPOG's	51,845.81
Total, Scurry-Rainbow Licenses	$303,070.60

If, after examining the itemized list of vouchers processed, you do not find this summary to be complete enough or if you desire more information relative to travel expenses, as you indicated you might, please contact me and I will ask our Accounting Department for a more detailed breakdown of that particular item.

If you should desire copies of the analytical data derived from detailed studies of coal samples by various commercial coal testing laboratories, please let me know and I will endeavor to comply with your wishes. Much of the laboratory work is still in progress, including complete analytical testing of rock specimens obtained from core holes. The latter will include determinations of compressive and tensile strengths, impact and abrasion tests, thin section work and petrographic descriptions now being done by the Colorado School of Mines Research Foundation.

I was the Project Manager for this particular exploration project for the combined efforts of The North American Coal Corporation, Cleveland, Ohio, U.S.A., and Scurry-Rainbow Oil Limited, Calgary, Alberta, Canada. This is a true and exact breakdown of expenditures insofar as I am able to fairly determine.

The Geological Report is, to the best of my knowledge and belief, a true and fair interpretation and representation of the facts bearing on the Weary Ridge area as determined from photogeologic and field evidence. It must be borne in mind, however, that only cursory work was done outside the Weary Ridge area; therefore, the interpretation of regional geology is based on personal photo study and the projections of the work of others.

THE NORTH AMERICAN COAL CORPORATION

Virgil W. Carmichael

Virgil W. Carmichael
Asst. to Vice President
Registered Geological, Mining and Civil Engineer
Land Surveyor and Certified Professional Geologist

U.S.A. Certificate Numbers:

Minnesota	5945
Idaho	917
New Mexico	1522
North Dakota	1219
Am.Inst. Prof.Geol.	157

Subscribed and sworn to before me
this 27th day of February, 1969.

Margaret L. Geiger
Notary Public

MARGARET L. GEIGER
Notary Public, BURLEIGH CO., N. DAK.
My Commission Expires SEPT. 19, 1972

K-U71(1)A

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Rio Algom
Rio Tinto

May 4, 1971

Mr. R.H. McCrimmon,
Department of Mines and
Petroleum Resources,
British Columbia.

Dear Mr. McCrimmon:

RE: Vincent Option - Elk Valley

Further to your letter of April 20th, we herewith enclose a geological report along with a certified statement of cost on the above mentioned property.

Trusting this fulfils all requirements.

Yours very truly,

RIO TINTO CANADIAN EXPLORATION LIMITED

D.J. Gervais

D.J. Gervais

:jt

REFERRED TO INITIAL
D.M.
O.K. ✓
ARC
MR JAMES ✓

MAY 7 1971

5491

DEPT. OF MINES AND PETROLEUM RESOURCES

THE GOVERNMENT OF
THE PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF MINES
AND PETROLEUM RESOURCES

MINERAL ACT
FORM B

Affidavit on Application for Certificate of Work

I, R. C. Hart (Name.) Agent for C. Vincent Construction Ltd. (Name.)

2400 - 120 Adelaide St. West, (Address.) c/o Rio Tinto Canadian Expl'n Ltd. (Address.)

Toronto 1, Ontario. 2400-120 Adelaide St. W., Toronto,

Free Miner's Certificate No. ..... Free Miner's Certificate No. .....

Date issued ..... Date issued .....

make oath and say:—

I have done, or caused to be done, work on the Coal Leases 572 to 587 Inclusive,

798 to 800 Inclusive, 1012 to 1018 Inclusive ~~Mineral Claim(s)~~

Record No.(s) .....

situate at Elk Valley Area, British Columbia

in the ..... Mining Division, to the value of at least

$37,427.63 ~~six hundred dollars~~, since the 10th day of April, 1970 to Dec. 31, 1970

The following is a detailed statement of such work:—

(Set out full particulars of the work done in the twelve months in which such work is required to be done.)

Consultant Fees	$ 1,257.56
Catering Services	5,043.89
Supplies	601.30
Travel Scheduled	1,959.37
Vehicle Expense	1,057.85
Maps & reports	728.19
Equipment Rentals	1,038.96
Helicopter	11,952.40
Bulldozer	1,291.50
Geology	7,907.91
Benefits	1,186.19
	$34,025.12
Overhead 10%	3,402.51
GRAND TOTAL	$37,427.63

That I have not and will not use the work declared herein in any way for the purposes of obtaining tax exemption on a Crown-granted mineral claim under the terms of the *Taxation Act*.

SWORN and subscribed to at Toronto

this 4th day of May

19 71, before me—

* [illegible]

[illegible] Province of Ontario

R. C. Hart

* This affidavit may be taken by a person empowered to take affidavits by the *Evidence Act* of British Columbia.

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