K-SHELL-CORBIN 75(1)A

COAL MOUNTAIN - CORBIN B.C.

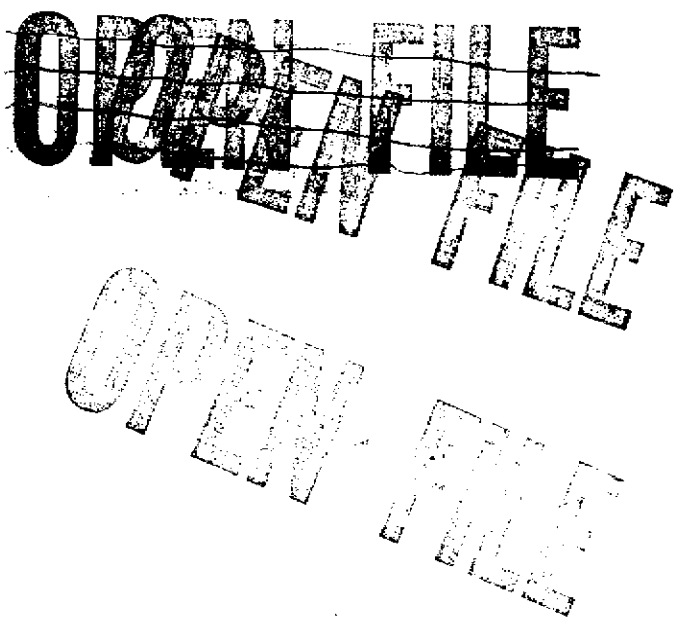
CANADA WEST INDUSTRIES LTD.

Part 1/6

J.J. CRABB.

JAN 28 1975

K-SHELL-CORBIN 75(1)A.



00384

NTS 82G/7, 82G/10

COAL ACT

(Section 19 & B.C. Reg. #436/75)

Exploration & Development Work Report Cover Sheet

Property name: Coal Mountain - Corbin B.C. **Coal Map No.** 138

Location: Coal Mountain **Land District** Kootenay

Coal Licence No.(s) 412 - 413 & 414

Licensee: The Crow's Nest Pass Oil & Gas Company, Limited

Operator: Crows Nest Industries

Title of Report: Coal Deposits of Lot 6995 K.D.
Coal Mountain - Corbin B.C. Jan.28, 1976

Period covered by Report: Sept.1, 1974 to January 31, 1976

Category of work covered in report

Geological Mapping	$ 2,382.47
Surveys: Geophysical	
Geochemical	
Other	
Road Construction	$ 9,787.87
Surface work	
Underground work	
Drilling	$ 90,712.75
Logging, Sampling, Testing	$ 23,925.51
Reclamation	
Other work: Mine Design	$ 13,390.33
Environmental Study	$ 13,733.00
Ancillary Work	$ 4,652.75
Total costs of work reported	$158,584.68

Comments:

Value of work approved $ 158,584.68

Signature: A.R.C. James Date February 9 1976

Senior Inspector of Mines

Accepted: [signature] Date Feb 10/76

Chief Gold Commissioner [illegible]
Mineral Resources Branch [illegible]

[illegible] in duplicate: Original to be filed with report [illegible]

K-CORBIN 75(1)A

"COAL DEPOSITS OF LOT 6995 K.D."

COAL MOUNTAIN - CORBIN B.C.

CROWS NEST INDUSTRIES LIMITED
Fernie, B.C.

January 28, 1976

Fernie, British Columbia
Telephone:(604) 423-4464

CROWS NEST INDUSTRIES LIMITED

January 28, 1976

J. J. CRABB
VICE PRESIDENT - EXPLORATION

Mr. James T. Fyles
Deputy Minister of Mines
Department of Mines and Petroleum Resources
Victoria, B. C.

Dear Sir,

Re: Coal Licences 412 to 414 Inclusive - Corbin Area

We are pleased to submit the enclosed report entitled "Coal Deposits of Lot 6995 " in support of our Application to Extend Term of Licence dated Jan. 28, 1976, pursuant to Sections 19 and 21 of the Coal Act 1974.

The intention is to pursue further evaluation of this prospect with a view toward development. Work to date would indicate that the area could support some one-half million tons per year production, subject to market conditions.

Yours very truly,

J. J. Crabb, P. Eng.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA J. J. CRABB

GENERAL OFFICES
FERNIE, B. C.

MINERALS DIVISION
FERNIE, B. C.

FOREST PRODUCTS DIVISION
MAIN OFFICE
FERNIE, B. C.

ELKO OPERATIONS
ELKO, B. C.

TABLE OF CONTENTS

INTRODUCTION

Crows Nest Industries Limited (C.N.I.) of Fernie, British Columbia holds coal licences 412 to 414 inclusive in the Corbin Area, southeast B.C., some 19 miles due east of Fernie. (See index Map following this page, N.T.S. map reference 82 G/7, 82 G/10, Ed. 2 MCE.)

During the past sixteen months, exploration has been undertaken solely on coal licence 414 (lat. 49°29', long. 114°39').

This report details the work done in order to establish credit for work as required under the Coal Act 1974 for:

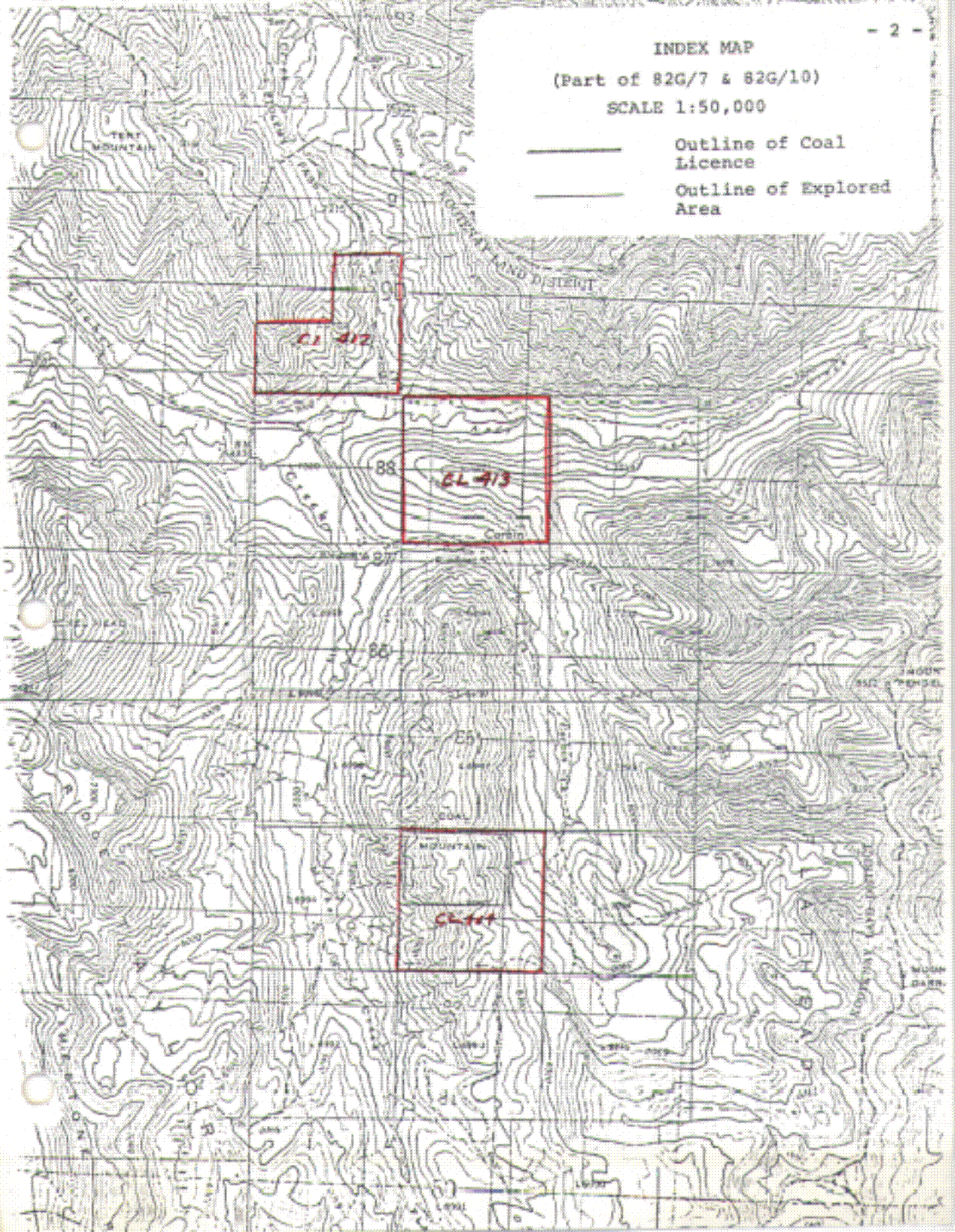
(1) Licence No. 412 - NE¼ and S½ Lot 7002 - 480 acres,

(2) Licence No. 413 - Lot 7001 - 640 acres, and

(3) Licence No. 414, Lot 6995 - 640 acres.

The terms of these licences were consolidated to a uniform date of January 31st, effective September 19th, 1975.

Applications, "Notice of Work on Coal Licences" pursuant to Section 7, Coal Mines Regulations Act were submitted September 19, 1974 and April 18, 1975. Program for the area embodied: geological field work including mapping, drilling and logging holes, quality analysis, environmental studies and a preliminary mine design.


INDEX MAP
(Part of 82G/7 & 82G/10)
SCALE 1:50,000
Outline of Coal Licence
Outline of Explored Area
CL 412
CL 413
CL 414
90
88
85
Corbin
TENT MOUNTAIN
MOUNTAIN
COAL

Further investigation is contemplated for the anniversary year January 31, 1976 to January 31, 1977.

ACCESS

Access to the prospect area is via existing Byron Creek Collieries' coal haul road from McGillivray station on the "Loop" of the C.P.R. to their coal breaker at Corbin (12.4 miles); thence uphill via mine and exploration roads 4.3 miles to the north boundary of coal licence 414. From this point additional roads have been built as shown on Exhibit I and as described on "Application to Extend Term of Licence".

HISTORICAL OUTLINE

Mining began in 1908 with erection of a colliery by Corbin Coal and Coke Company. According to B.R. McKay (G.S.C. Summary Report, 1930, Part A) total production to that time was 2,304,773 short tons. Underground mines (Nos. 1 and 4) were delineated at the North end of Coal Mountain and an open pit operation (No. 3) was established on the west side. A disconnected deposit on the east side labelled No. 6 Mine was later given the name "Mammoth" seam and thicknesses from 400' to 600' ascribed to it. Mining continued until January 1935 at which time, plagued by fires and labour problems, management decided to shut down. Small tonnages were subsequently extracted intermittently from open pit No. 3 Mine, commonly referred to as the "big showing" until about 1950.

In 1974 Byron Creek Coal reopened the "big showing" and are producing some 500,000 short tons annually for what is contemplated to be a long term operation. This is the first long term contract for a B.C. coal designated to supply the eastern Canadian thermal market.

Brief mention should be made of the complexity of the geology and mining of Coal Mountain. A geological map was printed in 1955 as compiled by D.K. Norris and R.A. Price of The Geological Survey of Canada. In the descriptive notes Norris observes:

(a) Despite large tonnages in the mountain underground mining has met with little success. Difficulties have arisen from

attempts to extract coal from steeply dipping and highly deformed seams.

(b) The coal is susceptible to spontaneous combustion. Underground fires have been costly.

(c) Emphasis has been placed on strip mining whereby thickened coal cores of folds is won relatively free of these hazards and at roughly one third the cost.

(d) The coal is highly comminuted and exhibits poor coking properties and high ash.

WORK DONE

(1) Topographic Mapping

Map sheets, on a scale of 1":200' showing twenty foot contours, were provided by Byron Creek Collieries Limited. These were compiled by Burnett Resource Surveys Ltd. from photography taken September 6, 1973, and from control established by Byron Creek personnel.

(2) Geologic Mapping

Geologic mapping was undertaken by C.N.I. staff. All attitudes and related elements were located by transit and stadia from a transit and tape-run baseline. Plotting and cross-sectioning at 250 foot intervals was done on a scale of 1":100 feet. Nearly all drill holes and attitudes have been projected on strike to the various sections. An effort has been made to distinguish between observed data and inferred correlations.

Upon completion, the geologic map and cross sections were reduced photographically to 1":200 feet and are included as Exhibits I, II, III, IV in this report.

(3) Roads

Some 12,454 feet of roads have been built from the north boundary of coal licence 414 to give access to drill sites on the east and west flanks of the mountain. This work was done in part by a C.N.I. bulldozer and operator, the balance by Nohels Logging

Company of Fernie. The roads are shown on the Geologic Map, Exhibit I.

(4) Drilling

Drilling was contracted to "Kenting Petrolia Drilling Ltd." of Calgary. The program was initiated in November 1974 at which time seven holes were drilled.

Drilling resumed in September 1975 and eleven additional holes were completed, one of which (#7A) was a deepening of a previous hole. (See following table which summarizes drilling and logging.)

A truck-mounted reverse circulation drill equipped with 4 7/8" - 5 3/4" bit was used. It produced coal chip samples having a size consist roughly 1/8" x 0, the greater fraction falling in the 16 m x 0 range. An attempt was made at coring with a bit size of 6 1/4" cutting a 3 1/8" core. This endeavour was aborted after some 75' of poor and inconclusive results.

(5) Geophysical (Logging)

Eighteen (18) holes were drilled for a total depth of 7,570 feet, of which 6,260 feet were logged with gamma ray neutron and density tools. The gamma ray neutron logs together with quality analysis are shown on Exhibits V and Vi. Only a limited number of density logs could be run because of hole caving and technique requires an open (uncased) hole. All logging was contracted to "Roke Oil Enterprises Ltd." of Calgary.

CORBIN COAL LICENCE #414 (LOT 6995)

DRILL HOLE SUMMARY

Drill Hole No.	Date Started	Date Finished	Surface Elev. (ASL)	Driller's Depth	Depth Logged	Depth To Top Coal	Depth To Bot. Coal
C 1	12-5/74	12-7/74	6,578' 2006	500'	498'	No coal	
C 2	12-7/74	12-8/74	6,359 1938 m	300 91.44m	296 90.22	90'	289'
C 3	12-8/74	12-9/74	6,320 1926	453	-	(270	441)
C 4	12-9/74	12-10/74	6,683 2036	343	338	182	332
C 5	12-10/74	12-12/74	6,690 2039	588	586	158	580
C 6	12-12/74	12-14/74	6,571 2003	475	464	181	463
C 7	12-14/74	12-15/74	6,703 2043	251	-	No coal	
C 7A	9-23/75	9-25/75	6,703 2043	737	572	465	(730)
C 8	9- 8/75	9- 8/75	6,575 2004	192	187	35	182
C 9	9- 9/75	9-12/75	6,665 2031	283	281	102	270
C 10	9-22/75	9-23/75	6,704 2043	535	528	(0) (134)	(87) (514)
C 11	9-13/75	9-14/75	6,571 2003	405	402	(0) (242)	(101) (389)
C 12	9-14/75	9-15/75	6,532 1991	311	327	178	313
C 13	9-16/75	9-16/75	6,592 2009	313	311	(0) (172)	(108) (295)
C 14	9-17/75	9-18/75	6,433 1961	195	Lost hole	(0	+98)
C 15	9-18/75	9-20/75	6,509 1984	201	Lost hole	(40	+138)
C 15A	9-20/75	9-20/75	6,511 1985	300	297	79	284
C 16	9-21/75	9-21/75	6,584 2007	233	231	34	216
C 17	9-25/75	9-28/75	6,677 2036	955	942	(298) (470)	(345) (+942)
18 holes				7,570	6,260		

1) Except for the top 142' of D.H. #C 9, all holes were drilled using reverse circulation (dual wall) method with compressed air.

2) Except for the top portion of DH #C 9 all holes are approx. 4-7/8" - 5½".

3) Coal chip samples were obtained from all holes except DH #C 1 which did not intersect any coal.

4) Drill hole #C 7A represents a deepening of D.H. #C 7.

5) Drill holes C 14 & C 15 were lost due to caving. Driller's depth to coal is shown in parenthesis.

6) Due to caving holes C3, C 14 & C 15 & the lower portion of C 7A could not be logged.

7) (0 87)
(134 514) Two coal intersections.

(6) Coal Analysis

Chip samples from the drill's cyclone collector were bagged and taken to the Company's lab in Fernie.

Recovery of chip samples, usually over ten foot intervals averaged 80 to 90 pounds. Samples were dried as necessary on a specially built drying table then split down to about 300 grams for sink-float (s.g. 1.5), proximate, or other analysis. Exhibits V and VI show logs, with raw ash, clean ash yield and F.S.I. juxtaposed. For three holes (3, 10, 15), not having logs refer to Appendix I.

Appendix II provides an interpretation of quality values on a hole to hole basis. These were considered in estimating coal tonnages.

(7) Environmental Studies

During 1975 B.C. Research commenced field studies of the Corbin area. Results of last year's work are expected by March 31, 1976. Included as Appendix III are their proposals outlining scope for the program.

(8) Mine Design

Preliminary mine design based upon work done late 1974 and early 1975 is not included in this report because of its bulk, but is mailed separately. This study was conducted by N.A. Degerstrom Inc., of Spokane, Washington and will be reviewed this year encompassing additional information more recently compiled.

GENERAL GEOLOGY

The strata of Coal Mountain are among the most structurally complicated in southeastern B.C. Besides being tightly folded the beds are also cut by numerous faults, mostly west-dipping.

Coal deposits are concentrated in four synclinal-like structures, three are contiguous along the top and west side while the fourth lies on the east slope.

The east limb of the most southerly syncline is faulted while the west limb continues northward and appears to coalesce with the next and largest syncline. The northerly syncline on the west side is the most complex since the west limb is overturned and the entire structure has been dislocated upward and easterly along at least one fault (see for example section 8500 N). The east syncline has the greatest length, extending northward and downward almost to valley floor, some 8,000 feet from its south end.

Contorted Jurassic strata of the Fernie Group comprise the core of the mountain. Near the summit, only a lower portion of the Kootenay Formation containing the "Mammoth" seam and its overlying protective sandstone caprock have escaped erosion.

Three distinct stratigraphic units of the Kootenay formation may be identified within coal licence No. 414: Basal sandstone (Moose Mtn. member),

"Mammoth" seam and its related shales and coal stringers and the upper sandstone and shale series.

Surface distribution of these units is shown on geologic map - Exhibit I.

Exposures made across the most southerly syncline revealed three coal seams within the "Mammoth" series and measured as follows:

Main Seam 80'	15'	good coal
	36'	coal and shale
	29'	clean looking coal
68' 78' Interval	6'	black carb. shale
	24'	fissile carb. shale with coal stringers
	5.5'	brown shale
	10'	black massive shale)
	4.5'	black shale) flaggy
	4'	orange massive shale)
	14'	black shale
Middle Seam	17'	blocky bright coal - three shale partings
37' Interval	11'	black shale with coal stringers
	9'	brown laminated shale
	1'	coal
	16'	black shale
Lower "Dirty" Seam	22'	dull slickinsided coal
	13'	black shale

Basal Kootenay sandstone.

Drill hole No. 11 located near the measured section and collared in the main seam correlates well with surface measurements, as do drill holes 12 and 16. Elsewhere, however, no such 3-seam distinction was discernible, but most of the drill logs and analysis show progressive deterioration in coal quality in the lower "Mammoth" intersections as seen in holes 11, 12, and 16. No explanation is apparent for the anomalous logs and sample analysis in holes 4 and 9.

A good section of the "Mammoth" seam was obtained from a 52 foot cut across the east limb of the eastern syncline (Appendix IV).

COAL RESERVES

All coal deposits explored to date are considered as having only open-pit potential. Factors considered were as follows:

(a) Tonnages determined by planimetering vertical cross-sections and applying this area to one-half the distance on either side (125') of the section.

(b) A cubic yard of coal in situ is assumed to weigh 1.2 short tons or 2400 pounds.

(c) Only 51% of the so-called "coal intersections" in the drill holes were considered useable coal. This is discussed more fully under the heading of "coal quality".

(d) Reserves were calculated to section 9250 N latitude, some 200 feet south of northern boundary of coal licence No. 414 (lot 6995 K.D.):

Section	Short Tons (2000#) in situ		
	West Side	East Side	
6500 N	151,328	-	
6750 N	344,444	-	
7000 N	297,778	-	
7250 N	260,000	-	
7500 N	611,014	-	
7750 N	1,405,707	-	
8000 N	1,636,063	-	
8250 N	2,258,762	100,490	
8500 N	1,474,467	301,467	
8750 N	1,558,158	284,013	
9000 N	1,578,478	315,582	
9250 N	1,578,478	315,582	(assumed same as 9000)
	13,154,677	1,317,134	

Until a revised mine design is completed, waste volumes are unknown but the ratio of total waste to coal is expected to be low.

K-Shell Corbin 75(4)A

CONFIDENTIAL

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 384

Part 2/6

K-SHELL CORBIN TS-4)A

APPENDIX I

ANALYSIS OF COAL CHIP SAMPLES
CORBIN
C2

Depth	% Raw Ash*	Raw F.S.I.	% Float Ash*	% Float F.S.I.	% Yield **
90-95	20.0	1½	14.3	1½	67.0
95-100	33.9	2½	12.3	3	65.0
100-105	29.7	1½	14.2	2	43.0
105-110	20.4	1½	14.4	3	71.0
113-120	13.9	2	9.9	3	83.0
120-125	14.4	3	11.6	3	80.0
125-130	20.3	4½	9.8	6	91.0
130-135	19.9	5	10.4	6	63.0
135-140	13.0	4½	9.0	6½	77.0
140-145	13.1	3½	9.5	4	81.0
145-150	9.8	3½	8.6	4	89.0
150-155	Shale		Not Done		
155-160	64.5	1	18.1	5½	4.0
160-170	38.1	1	17.8	4	15.0
170-180	26.7	1	16.7	3	56.0
180-190	31.3	2½	11.2	5½	48.0
190-200	58.8		Not Done		
200-210	54.2	1	22.8	1½	<1.0
210-220	40.2	1	22.0	3½	15.0
220-230	46.5	1	13.9	3	11.0
230-240	40.7	1	17.4	4	18.0
240-250	72.9	1	Not Done		
250-260	55.5	1	Not Done		
260-270	38.7	1	21.6	5½	<1.0
270-280	60.6	1	Not Done		
280-290	48.7	1	15.7	5	11.0
290-300	85.4	1	Not Done		

27 samples

* 1.0% Moist. Assumed
** Washed at S.G.1.500

CORBIN

C3 - 1.0% Moist

S.G. 1.500

Depth	% Raw Ash*	Raw F.S.I.	% Float Ash*	% Float F.S.I.	% Yield**
34-40	27.7	0	8.2	0	31.0
40-45	23.6	0	13.8	0	47.0
45-50	40.9	1½	6.0	4	45.0
270-280	29.4	1½	12.5	3	66.0
280-290	30.6	1	13.4	2½	54.0
290-300	26.8	1	9.5	2	51.0
300-305	15.9	1	11.0	3½	70.0
305-310	24.3	1	9.2	4	45.0
310-320	27.0	2	10.3	3½	68.0
320-330	50.7	1	12.5	2½	20.0
330-340	20.4	4	7.9	5½	63.0
340-350	17.6	2½	9.4	4	81.0
350-360	37.0	1½	10.3	3	41.0
360-370	44.0	1	10.8	4	30.9
370-380	28.7	1½	11.9	3½	48.0
380-390	26.1	2	11.6	3½	56.0
390-400	45.2	1	10.7	4	31.0
400-410	60.3	0	13.4	3	7.0
410-420	47.9	1.0	13.4	3	13.0
420-430	49.8	1.0	11.9	5½	14.0
430-440	43.8	1.0	12.9	4½	22.0

21 samples

* 1.0% Moist. Assumed

** Washed at S.G. 1.500

CORBIN

C4 - 1.0% Moist.
Float S.G. 1.5

Depth	% Raw Ash*	Raw F.S.I.	% Float Ash*	% Float F.S.I.	% Yield**
57-62	43.5	1	10.1	5½	27.0
182-185	58.5	1½	8.6	8	21.0
187-190	59.6	1	14.6	6½	2.0
190-200	25.8	4	8.9	8½	22.0
200-210	45.3	1	8.0	3½	16.0
210-220	68.3	0	N11		
220-230	55.5	1	11.3	4	9.0
230-240	52.5	1	13.2	4	8.0
240-250	39.6	1½	15.8	6	25.0
250-260	37.4	1	10.2	2½	22.0
260-270	44.6	1	13.7	2½	25.0
270-280	36.4	1	10.1	5	28.0
280-290	50.3	1	11.7	4	8.0
290-300	55.0		12.8	4	14.0
300-310	64.5	1	15.0	1	4.0
310-320	53.1	1	15.4	5	10.0
320-330	53.5	1	12.6	7½	11.0

17 samples

* 1.0% Moist. Assumed
** Washed at S.G.1.500

CORBIN

C5 - 1.0% Moist. (Assumed)
Float S.G. 1.500

Depth	% Raw Ash	Raw F.S.I.	% Float Ash	Float F.S.I.	% Yield
125-135	56.6	0	6.3	1½	23.0
135-145	74.5	0	9.4	1½	5.0
145-155	Clay				
155-165	36.6	1½	8.5	1½	70.0
165-175	21.5	1	7.7	5½	60.0
175-185	15.2	1	7.2	1½	74.0
185-195	31.0	1	8.3	2½	54.0
195-205	60.5	½	12.8	3½	10.0
205-215	20.0		7.0	2½	65.0
215-225	47.8	1	12.7	3½	17.0
225-235	33.8	1	8.9	1½	37.0
235-245	17.4	1	5.9	1½	70.0
245-255	34.1	1	8.0	2	55.0
255-265	26.2	1	7.9	1½	58.0
265-275	36.4	1½	7.7	3	55.0
275-285	Rock				
285-295	36.9	1	9.0	2½	46.0
295-305	21.2	1	8.8	1½	70.0
305-315	32.2	1	9.3	3½	46.0
315-325	26.8	1½	7.2	3	58.0
325-335	13.5	1½	8.9	2½	76.0
335-345	34.1	1½	11.0	2½	54.0
345-355	Rock				
355-365	45.5	1	11.9	3	15.0
365-375	42.3	1	9.8	3	33.0
375-385	25.9	1	7.6	2	49.0
385-395	32.3	1	8.9	2½	48.0
395-405	55.4	1	9.7	3½	13.0
405-415	24.7	1½	8.3	2	59.0
415-425	34.1	1	9.6	1½	44.0
425-435	62.8	0	10.0	2	7.0
435-445	53.4	1	9.2	1½	21.0
445-455	71.0	0			
455-465	57.1	1	9.8	2	10.0
465-475	44.6	1	13.4	1½	25.0
475-485	58.5	1	11.2	1½	12.0
485-495	70.1			3	14.0
495-505	56.7	1	10.1	3	19.0
505-515	69.1	0	9.6	2½	8.0
515-525	57.1	1	11.9	3	15.0
525-535	59.2	1	11.4	2	11.0
535-545	65.5	½	9.8	1½	4.0
545-555	50.1	1	13.0	1½	6.0
555-565	61.7	1	11.6	2	1.0
565-575	60.8	0	10.6	2½	4.0

45 samples

February 17, 1975

DH C6 - CORBIN

1.0% Moist. Assumed
Sink Floats - 1.500 S.G.

DE	RAW		FLOAT		
DEPTH	ASH	FSI.	ASH	FSI.	YIELD
158-170	63.3	0	7.8	1	19.0
170-180	78.3	0	8.7	2	11.0
180-190	40.8	1	8.5	1½	50.0
190-200	30.1	½	6.3	1½	63.0
200-210	32.4	1	8.3	1½	60.0
210-220	34.4	1	8.4	1½	47.0
220-230	17.7	1	8.0	1½	64.0
230-240	11.9	1	9.4	2½	
240-250	31.2	1	7.4	2	61.0
250-260	20.5	1½	7.2	1½	78.0
260-270	42.1	1	7.7	2	46.0
270-280	57.5	1	9.6	2	21.0
280-290	24.5	1	9.4	2	66.0
290-300	61.6	0	9.3	1½	11.0
300-310	45.3	1	11.6	4	16.0
310-320	57.4	½	8.5	1½	35.0
320-330	45.1	1	9.6	2	30.0
330-340	21.9	1½	8.2	3½	54.0
340-350	42.0	1	11.0	2	14.0
350-360	42.1	1	13.5	2	16.0
360-370	59.9	1	15.0	3½	10.0
370-380	41.2	1	15.6	2½	8.0
380-390	52.1	1	13.5	4	10.0
390-400	52.6	1	13.3	3	9.0
400-410	40.8	1	15.6	1½	10.0
410-420	51.8	1			
420-430	55.8	½	14.5	1½	9.0
430-440	45.2	½	14.9	2	19.0
440-450	55.4	1	12.4	5½	8.0
450-460	51.0	1	14.9	3	22.0

30 samples

February 17, 1975

DH C7 - CORBIN

1.0% Moist. Assumed
Sink Floats - 1.500 S.G.

	RAW		FLOAT		
DEPTH	ASH	FSI.	ASH	FSI.	YIELD
177-185	Clay				
185-195	61.8	1	No Sink - Floats done		
195-205	Clay		on D.H. C7		
205-215	Clay				
215-225	Clay				

CORBIN - D.H. #7A

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
466-469	45.7	1	11.9	6½	39.9
472-482	46.2	1	10.9	2½	31.7
482-492	27.3	1	9.1	1½	61.9
492-502	13.6	1	8.9	1½	75.7
502-513	30.1	1	8.9	1½	63.8
513-523	20.3	1	8.4	1½	60.1
523-533	24.6	½	8.5	1	30.3
533-543	38.0	1	9.6	1½	40.7
543-553	25.5	1	9.6	1	61.5
553-563	24.0	1	8.0	1½	51.7
563-573	23.5	1	7.6	1½	61.2
573-583	29.7	1	9.9	1½	47.8
583-593	20.6	1	8.6	1½	46.1
593-603	23.5	0	9.2	1	57.0
603-613	25.6	1	8.4	1½	40.3
613-623	19.3	½	9.0	1½	59.5
623-633	22.2	1	8.6	1½	46.1
633-643	21.3	1	10.0	2	60.0
643-653	27.1	1	10.8	1½	53.8
650-659	34.7	1	11.9	3½	50.1
658-667	50.6	1	19.6	1½	10.5
=======	====	===	====	===	====
678-686	53.2	½	10.2	1	18.1
683-693	30.6	1	8.2	1½	40.7
690-700	34.4	1	9.5	1½	41.1
700-710	28.2	1	15.3	1½	47.3
710-720	20.1	1	10.0	2	60.3
720-730	34.4	1	22.4	2	29.8

(a) Float Vol. - s.g. 1.500 - 466' - 720' - 21.9% d.a.f.

(b) Float Ash - s.g. 1.500 - 466' - 720' - 9.3% d.b.

(c) Float FSI - s.g. 1.500 - 466' - 720' - 1½

(d) One sample no tag and 2 samples marked 710' - 720'

27 samples

CORBIN - D.H. #8

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
35-45	25.0	1	7.3	1	53.1
45-55	39.2	1½	7.7	2	23.1
55-65	22.3	2	11.7	3	70.4
65-75	24.4	1½	10.0	1½	50.6
75-85	16.2	1½	10.8	1½	73.0
85-95	23.5	2	9.5	5½	56.0
95-105	39.8	2½	13.6	6	30.0
105-115	30.6	1½	11.8	5	33.6
115-125	31.9	1½	13.3	3½	37.3
125-135	37.5	1½	14.5	3½	33.7
135-145	39.0	1½	12.0	4	35.5
145-155	33.2	1	12.8	3½	38.6
155-165	44.5	1½	12.4	4½	25.3
165-175	26.7	1½	10.7	3	52.6
175-185	30.7	1½	12.2	5	36.3
185-188	48.8	1	12.8	3	33.4

16 samples

(a) Float Vol. s.g. 1.500 - 55' - 88' - 24.3% d.a.f.

(b) Float Ash s.g. 1.500 - 55' - 88' - 9.8% d.b.

(c) Float FSI s.g. 1.500 - 55' - 88' - 3

CORBIN - D.H. #9

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
52-61	26.5	1	9.4	4½	N.D.
65-75	60.0	1	7.0	N.D.	N.D.
75-85	Rock	N.D.	N.D.	N.D.	N.D.
85-90	Rock	N.D.	N.D.	N.D.	N.D.
90-95	Rock	N.D.	N.D.	N.D.	N.D.
95-100	Rock	N.D.	N.D.	N.D.	N.D.
100-103	27.2	3½	11.4	7½	N.D.
103-108	28.2	2	7.4	6½	N.D.
113-117	16.6	5	11.4	7	N.D.
122-127	53.6	1	8.0	8	N.D.
127-131	49.5	0	10.2	6½	N.D.
142-150	44.5	1	11.0	4	41.3
150-160	23.2	1	9.0	2	53.6
160-170	43.0	1	12.0	3	36.9
170-180	76.2	0	10.1	8	3.9
180-190	68.9	0	12.4	1½	10.8
190-200	16.3	1	11.0	1½	68.0
200-210	31.6	2½	9.9	5½	45.5
210-220	54.8	1	10.8	5	12.4
220-230	50.8	1	11.3	4	15.6
230-240	54.8	1	11.4	7	14.0
246-250	41.8	1	15.0	4	15.1

CORBIN - D.H. #9 cont'd.

(a) Depth 52' - 127' cored - 3 cores not identified - mostly rock - one sample untagged.

(b) 65-75 rock cores about 4" long some badly crushed - little coal.

(c) 95' - 100' - rock core and fragmented coal.

(d) 100' - 102.5' - fragmented coal - no coal core.

(e) 103' - 105' - some coal cores about 1" long and half of bit diam., however, mainly larger fragments.

(f) 113' - 117' - Large fragments but no coal core.

(g) 122' - 124' - Rock cores and fragmented coal.

(h) No yields recorded for cores as they would be meaningless.

(i) Float Vol. - s.g. 1.500 on 113' - 117' (cored) plus 190' - 200' - 24.5% d.a.f.

(j) Float Ash - s.g. 1.500 on 113' - 117' (cored) plus 190' - 200' - 11.3% d.b.

(k) Float FSI - s.g. 1.500 on 113' - 117' (cored) plus 190' - 200' - 4½.

CORBIN - D.H. #10

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.50 % ASH	FLOAT S.G. 1.50 FSI	% APPROX YIELD
20-30	49.5	0	9.4	1½	20.7
30-40	27.5	1½	11.0	3½	53.2
40-50	28.2	1	9.2	3	54.5
50-60	26.6	1	8.9	2	54.8
60-70	15.4	½	6.9	1½	65.4
70-80	18.0	1½	9.6	2	61.0
80-90	13.0	½	11.0	2	74.4
87-91	33.4	1	10.8	6½	49.5
94-99	51.0	0	8.7	4	24.7
137-147	26.0	1	10.6	1½	49.1
147-157	20.9	1	8.3	1½	73.0
157-167	26.5	1	10.1	1½	51.7
167-177	26.2	1	8.4	3	50.3
177-187	26.5	1	9.7	2½	52.8
204-209	51.6	½	10.5	4	13.1
230-240	36.7	1	10.6	2½	45.5
234-244	35.2	1	11.4	5½	24.1
249-259	53.4	1	10.6	4½	17.3
259-269	56.0	1	N.D.	N.D.	5.4
260-265	shale	N.D.	N.D.	N.D.	N.D.
270-280	40.5	1	7.9	3	37.4
280-281	32.4	1	8.4	4½	26.0

CORBIN - D.H. #10 cont'd.

284-294	51.6	1	10.8	6½	49.5
294-297	56.6	1	11.9	7½	12.2
298-303	59.6	0	11.1	2½	9.3
320-330	32.2	1	10.9	1½	52.7
341-351	28.1	1	10.1	N.D.	63.4
351-357	47.1	1	15.9	4	9.5
358-364	64.1	0	N.D.	N.D.	N.D.
371-378	60.0	1	16.5	4	8.3
384-392	40.0	½	8.7	1	42.0
432-442	33.5	1	10.9	1½	52.6
442-452	27.0	1	9.0	3½	50.0
452-462	33.5	1	12.0	4	44.4
484-491	40.6	1	10.3	5	36.2
497-507	45.3	1	15.7	3½	16.3
507-511	55.5	1	13.6	6½	14.4
516-520	53.0	1	13.5	7	11.3

16

(a) Float Vol. - s.g. 1.500 - 30' - 462' - 23.3% d.a.f.

(b) Float Ash - s.g. 1.500 - 30' - 462' - 10.3% d.b.

(c) Float FSI - s.g. 1.500 - 30' - 462' - 2½

CORBIN - D.H. #11

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
10-20	11.4	0	6.2	0	58.9
20-30	16.1	0	9.8	0	51.5
30-40	12.2	0	8.0	0	62.2
40-50	17.5	0	8.2	0	67.3
50-60	20.8	0	7.4	0	59.0
60-70	16.4	0	9.1	0	66.2
70-80	10.1	0	8.3	0	70.2
80-90	32.9	0	11.3	0	51.9
90-100	23.5	0	13.8	0	52.9
100-110	63.0	0	8.7	0	24.1
110-120	58.7	0	8.7	0	10.3
120-130	shale	N.D.	N.D.	N.D.	N.D.
244-254	43.6	1	12.1	1½	45.3
254-264	38.7	2	12.9	4	47.2
264-274	25.6	1½	14.7	2½	56.1
274-284	shale	N.D.	N.D.	N.D.	N.D.
320-322	54.1	1	13.0	1½	21.7
338-342	49.2	1	16.0	1	17.8
340-350	47.7	1	13.1	3½	13.4
351-360	43.5	1	15.8	3½	21.9
360-370	50.9	1	18.0	3½	11.3
375-385	shale	N.D.	N.D.	N.D.	N.D.
385-391	54.7	1	13.8	3½	13.7

23

(a) Float Vol. - s.g. 1.500 - 0' - 100' - 21.0% d.a.f. - Ash 10.1% d.b. - FSI - 0

(b) Float Vol. - s.g. 1.500 - 242' - 272' - 22.3% d.a.f. - Ash 15.8% d.b. - FSI - 3½

(c) Float Vol. - s.g. 1.500 - 315' - 380' - 23.0% d.a.f. - Ash 12.2% d.b. -FSI - 2

CORBIN - D.H. #12

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
161-170	36.4	1½	12.0	1½	55.2
170-175	45.9	1	10.9	5	38.0
175-185	30.3	1	12.8	1½	67.1
185-195	46.2	1	9.5	1½	30.1
=======	====	===	====	===	====
240-246	45.3	1½	12.1	6	27.9
250-260	53.4	1	16.1	1½	6.1
260-270	51.2	1	17.5	2½	10.9
270-280	59.8	1	15.1	6½	7.5
280-290	67.8	½	N.D.	N.D.	<1.0
290-296	59.5	1	15.5	6	9.8

IV

(a) Float Vol. - s.g. 1.500 - 170' - 200' - 22.6% d.a.f.

(b) Float Ash - s.g. 1.500 - 170' - 200' - 11.3% d.b.

(c) Float FSI - s.g. 1.500 - 170' - 200' - 3½

CORBIN - D.H. #13

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
0-10	13.6	0	6.2	0	45.0
10-18	23.6	0	13.1	0	37.4
18-20	19.0	0	7.1	0	41.8
20-30	16.5	0	6.0	0	68.4
30-32	48.2	0	10.5	1½	31.9
33-40	44.8	0	8.0	0	29.0
50-52	shale	-	-	-	-
53-60	24.1	0	7.4	0	54.4
60-70	12.0	0	11.7	0	75.3
70-80	15.6	0	9.1	0	67.7
80-90	20.4	0	8.5	0	45.6
90-95	21.3	0	8.3	0	64.3
95-105	17.5	0	7.2	0	71.6
105-115	29.9	0	7.9	0	52.1
175-180	28.6	1	8.8	5½	54.5
198-200	63.5	1	18.6	4	15.5
203-211	45.2	1	9.6	3	28.5
220-225	52.6	1	9.1	1½	21.0
225-235	20.8	1½	10.3	1½	63.1
235-237	57.7	0	10.5	1½	13.4
250-253	45.0	1	8.6	5	28.6

264-274	42.4	1	14.0	1½	23.2
274-278	57.2	1	14.4	2½	13.7
287-293	57.4	1	12.3	1½	9.9

(a) Float Vol. - s.g. 1.500 - 0'-30' - 28.2% d.a.f. - Ash - 8.3% d.b. - FSI - 0

(b) Float Vol. - s.g. 1.500 - 54'-108' - 24.7% d.a.f. - Ash - 8.9% d.b. - FSI - 0

(c) Float Vol. - s.g. 1.500 - 170'-300' - 24.6% d.a.f. - Ash - 8.8% d.b. - FSI - 3½

CORBIN - D.H. #14

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
0-10	12.4	0	8.0	0	51.3
10-20	23.5	0	6.8	0	48.7
22-32	35.1	0	8.5	0	33.3
34-39	34.7	0	8.2	0	33.2
39-45	15.5	0	9.0	0	73.3
53-63	14.9	1½	6.4	3½	82.7
63-73	15.4	2	6.5	3½	72.7
73-78	19.1	1½	9.1	1½	78.8
140-150	26.2	1	9.2	1	67.6
150-160	23.0	1	7.6	1½	70.6
160-170	27.8	1	9.0	1½	59.4
170-180	51.8	0	13.1	1½	38.8
190-195	36.5	1	7.7	4	59.4

13

(a) Float Vol. - S.G. 1.500 - 0' - 195' - 24.7% d.a.f.

(b) Float Ash - S.G. 1.500 - 0' - 195' - 8.5% d.b.

(c) Float FSI - S.G. 1.500 - 0' - 195' - 1½

CORBIN - D.H. #15

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
40-?	12.0	0	9.9	0	77.9
61-62	32.4	½	9.3	1	40.5
64-73	N.D.	1	8.5	1	60.0
74-79	26.8	0	6.9	1	71.5
80-84	44.8	½	9.0	1½	27.2
113-115	49.2	1	11.0	3	34.6
117-121	42.0	1	6.9	1	49.7
123-133	24.5	1	7.7	1	64.8
135-138	25.9	0	8.5	0	60.0

9

(a) Float Vol. - S.G. 1.500 - 40' - 138' - 22.6% d.a.f.

(b) Float Ash - S.G. 1.500 - 40' - 138' - 8.4% d.b.

(c) Float FSI - S.G. 1.500 - 40' - 138' - 1

CORBIN - D.H. #15A

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
80-90	51.8	1	10.3	1½	34.6
90-100	37.7	1	9.2	1½	37.6
100-110	38.0	1	9.7	1	61.4
110-120	34.6	1½	10.4	3½	57.7
120-130	49.5	1	11.7	3	29.0
130-140	68.1	0	18.2	4	8.7
149-159	48.0	1	12.2	5	24.6
159-169	44.0	1	13.3	2	40.8
169-179	36.6	1	11.6	2	35.4
215-220 '	48.1	1	11.3	4	18.3
221-226 '	41.0	1	10.7	4	36.1
232-236	46.4	1	10.4	3½	33.5
240-250	36.8	1	14.5	1½	26.8
250-254 '	45.5	1	12.6	1	26.7
257-262 '	34.3	1	16.3	1	40.8
267-276	39.1	1	14.9	4½	20.6

16

(a) Float Vol. - s.g. 1.500 - 80' - 262' - 22.8% d.a.f.

(b) Float Ash - s.g. 1.500 - 80' - 262' - 10.8% d.b.

(c) Float FSI - s.g. 1.500 - 80' - 262' - 2½

CORBIN - D.H. #16

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
34-44	16.9	0	11.0	0	53.1
44-54	33.3	0	11.3	0	41.2
54-64	14.7	0	8.1	0	61.1
64-68	28.2	0	7.3	0	44.4
71-77	39.0	0	11.3	0	41.2
115-120	47.0	0	7.6	0	13.4
152-162	34.6	0	9.8	1½	34.9
162-172	43.8	0	19.1	0	12.6
172-182	35.5	0	6.0	0	21.4
182-192	41.3	0	13.7	0	10.5
192-202	42.6	0	14.3	0	11.5
202-210	41.3	0	13.1	0	9.0
211-216	31.0	0	6.0	0	21.4

(a) Float Vol - s.g. 1.500 - 34' - 54' - 22.5% d.a.f.

(b) Float Ash - s.g. 1.500 - 34' - 54' - 10.3% d.b.

(c) Float FSI - s.g. 1.500 - 34' - 54' - 0

Dec./75

CORBIN - D.H. #17

DEPTH	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
298-302	60.2	1	9.2	7	20.7
307-317	46.8	0	9.0	3½	44.7
320-330	55.8	1	11.0	5	27.4
330-340	59.2	1	11.5	3½	12.8
472-475	44.7	1	10.0	7	41.4
480-490	48.4	1	8.2	2	30.5
490-500	25.7	1	7.6	1½	60.6
500-510	26.4	½	9.1	2	57.6
510-520	29.1	1	9.3	3	54.9
520-525	60.5	0	14.1	3½	7.6
525-535	38.6	1	11.3	1½	43.6
535-545	33.8	½	10.2	2½	64.6
545-555	25.5	1	8.6	1½	61.3
555-565	24.2	1	10.2	2½	64.6
565-575	29.4	1	9.5	3	50.9
575-585	19.9	0	8.7	3	74.9
585-595	22.3	½	10.6	1½	68.4
595-605	18.6	1	8.7	2½	69.9
605-615	31.0	1	11.5	1½	49.6
615-625	46.4	1	9.1	4½	20.2
685-695	41.4	1	11.7	4	27.3
695-705	33.0	1	8.3	4	43.5
705-715	52.5	½	N.D.	N.D.	9.9
715-725	39.4	1	9.2	4	25.9
725-735	34.2	1	11.0	4½	40.4
747-752	47.4	1	N.D.	N.D.	9.3
753-763	45.5	1	11.2	4½	23.2

21

D.H. #17 - cont'd.

763-773	46.6	1	12.7	4½	16.5
775-783	37.4	1	10.5	6	34.0
783-793	52.0	0	N.D.	N.D.	9.9
793-803	36.5	2	11.5	3½	12.8
803-813	56.0	0	N.D.	N.D.	3.3
813-823	56.4	0	N.D.	N.D.	3.0
823-833	47.0	½	N.D.	N.D.	4.5
833-843	59.4	0	N.D.	N.D.	3.4
843-853	48.5	1	10.9	3½	17.3
853-863	39.4	1	12.4	2	30.7
863-873	50.3	1	13.8	3	13.2
873-883	42.3	1	12.2	3	24.0
883-893	47.7	1	11.3	5	20.7
893-903	33.6	½	10.7	1½	45.5
903-913	36.6	0	9.8	2½	39.5
925-933	40.2	1	9.5	2½	33.9
935-945	44.2	1	10.3	4	23.9
945-955	29.2	1	9.5	1½	54.8

(a) Float Vol. - s.g. 1.500 - 472' - 955' - 23.1% d.a.f.

(b) Float Ash - s.g. 1.500 - 472' - 955' - 9.8% d.b.

(c) Float FSI - s.g. 1.500 - 472' - 955' - 1½

K-SHELL CORBIN 15 (4) A

00384
pt. 3/6

ANALYSIS OF CORBIN SAMPLES

OPEN FILE

J. J. CRABB

JAN 28 1980

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GEOLOGICAL SURVEY BRANCH
ALASKA CASE FILE COPY

00384

QUALITY ASSESSMENT OF DRILL HOLE CHIP SAMPLES IN CORBIN 2 - 17

INTRODUCTION

All values for ash (d.b.) F.S.I. and yield are based on raw coal washed at S.G. - 1.500. Moisture of 1.0% has been assumed. Seven holes were drilled during November 1974 and 11 drilled during September 1975.

Depending on market specifications plant gravity could be 1.600 S.G. which would increase all values except F.S.I. which would diminish.

Volatiles for the general area would run 22.0%-26.0%(d.a.f.).

Yields and Ash. By Corbin standards average yields and ash at S.G. 1.500 will be classified as follows:

		Yield	Ash
(a)	Good -	60% or better	10.0% or lower
(b)	Fair -	40.0 - 60.0%	10.0 - 11.0%
(c)	Mediocre -	30.0 - 40.0%	11.0 - 12.0%
(d)	Poor -	Less than 30.0%	12.0% or higher

1. D.H. C1 - Did not encounter coal.
2. D.H. C2 - 90' - 300'

   Interval 90' - 150' - Very good yield. Met. Quality. F.S.I. (4). Mediocre Ash.

   150' - 155' - Rock.

   155' - 190' - Mediocre yield. Met. Quality. F.S.I. (4½). Poor Ash. Five foot rock (150'-155').

   190' - 210' - Rock.

   210' - 240' - Poor yield. Met. Quality. F.S.I. (3½). Very poor ash.

   240' - 300' - Mostly rock. Should be left.
3. D.H. C3 - 34' - 440' -

   Interval 34' - 50' - Fair yield. Five feet (45'-50') Met. Quality. F.S.I. (4). Fair ash.

   50' - 270' - Rock.

   270' - 440' - Fair yield. Met. Quality. F.S.I. (3½). Fair ash.

4. D.H. C4 - 57' - 330'
   Interval 57' - 62'' - Poor yield. Met. Quality. F.S.I. (5½) Good ash. Should be left.
   62' - 182' - Rock.
   182' - 330' - Poor yield. Rock band 210'-220'. Met. Quality. F.S.I. (4½). Poor ash. This entire area should be left unmined.

5. D.H. C5 -125' - 575'
   Interval 125' - 155' - Includes a clay band at 145'-155' and entire 30' would best be spoiled.
   155' - 435' - Fair yield with rock stringers at 275'-285' and 345'-355'. Coal suitable for formed coke. F.S.I. (2½). Good ash.
   435' - 575' - Very poor yield. Should be left.

6. D.H. C6 -158' - 460'
   Interval 158' - 340' - Fair yield if top 12' discarded. Formed coke quality. F.S.I. (1½). Good ash.
   340' - 460' - Very poor yields and poor ash. Should be left.

7. D.H. C7 -177' - 225'
   - No coal recovered.

8. D.H. C7A-466' - 730'
   - Fair to good yield for entire hole. Rock band 658'-686'. Formed coke quality. F.S.I. (1½). Good ash.

9. D.H. C8 - 35' - 188'
   - Fair yield. Close to Met. Quality. F.S.I. (3). Fair ash. No rock partings.

10. D.H. C9 - 52' - 250'
    Interval 52' - 127' - Cored with poor and inconclusive results.
    127' - 142' - Thin stringers of high F.S.I. coal which cannot be mined.
    142' - 210' - Fair yield with rock band 170'-180'. Met. Quality. F.S.I. (3½). Fair ash.

210' - 250' - Very poor yield. Should be left.

11. D.H. C10 -20' - 520'

Interval 20' - 91' - Yield fair to good. Formed coke quality. F.S.I. (2½). Good ash.

91' - 137' - Mostly rock except 94'-99' which has poor yield but good F.S.I. (4) and good ash. It may be possible to selectively mine this.

137' - 187' - Fair yield. Form coke quality. F.S.I. (2). Good ash.

187' - 230' - Mostly rock and should be wasted.

230' - 244' - Mediocre yield. Met. Quality. F.S.I. (4). Fair ash. Should be taken.

244' - 270' - Mostly rock. Should be wasted.

270' - 294' - Mediocre yield. Met. Quality. F.S.I. (5½). Fair ash. Should be taken.

294' - 330' - Mostly rock. Should be wasted.

330' - 341' - Rock.

341' - 351' - Good yield. Probably Met. Quality. F.S.I. (not known). Good ash.

351' - 384' - Mostly rock. Should be wasted.

384' - 392' - Fair yield. Thermal quality. F.S.I. (1). Good ash. Should be taken.

392' - 432' - Rock.

432' - 491' - Fair yield. Rock 462'-484'. Nearly Met. Quality. F.S.I. (3). Fair ash.

491' - 520' - Poor yield. Coal interspersed with rock. Should be left.

12. D.H. C11- 10' - 391'

Interval 10' - 110' - Good yield. Thermal quality. F.S.I. Low ash.

110' - 244' - Mostly rock. Should be wasted.

244' - 274' - Fair yield. Form coke quality. F.S.I. (2½). Poor ash.

274' - 391' - Mostly poor yield. Coal and rock. Should be left.

13. D.H. C12-161' - 296'

Interval 161' - 195' - Fair yield. Form coke quality. F.S.I. (2). Mediocre ash.

195' - 296' - Mostly poor yield. Coal and rock. Should be left.

14. D.H. C13- 0 - 293'

Interval 0 - 115' - Good yield. Thermal quality. F.S.I. (0). Low ash. Rock band 40'-50'.

115' - 175' - Rock.

175' - 180' - Fair yield. Met. Quality. F.S.I. (5½). Low ash. This coal band should be selectively mined.

180' - 203' - Mostly rock.

203' - 211' - Poor yield. Nearly Met. Quality. F.S.I. (3). Low ash. Should be recovered.

211' - 220' - Rock.

220' - 237' - Mediocre yield. Form coke quality. F.S.I. (1½). Ash good. Should be taken.

237' - 293' - Mostly rock and poor yield coal. Should be left.

15. D.H. C14- 0 - 195'

Interval 0 - 78' - Fair yield. Thermal quality. F.S.I. (0). Good ash. Several rock bands (20'-22',32'-34',45'-53').

78' - 140' - Rock.

140' - 195' - Fair to good yield. Form coke quality. F.S.I. (1½). Low ash. Rock band 180'-190'.

16. D.H. C15- 40' - 135'

Interval 40' - 84' - Fair yield. Thermal quality. F.S.I. (1). Low ash. Thin rock bands.

84' - 113' - Rock.

113' - 138' - Fair yield. Thermal quality. F.S.I. (1). Low ash. Thin rock bands.

17. D.H. C15a-80' - 276'

Interval 80' - 130' - Fair yield. Form coke quality. F.S.I. (2). Fair ash.

130' - 149' - Rock.

149' - 179' - Mediocre yield. Nearly Met. Quality. F.S.I. (3). Poor ash. Should be taken.

179' - 220' - Mostly rock.

220' - 262' - Mediocre yield. Nearly Met. Quality. F.S.I. (3). Poor ash. Rock bands (226'-232',236'-240',254'-257').

262' - 276' - Mostly poor coal and rock. Should be left.

18. D.H. C16- 34' - 216'

Interval 34' - 77' - Fair yield. Thermal Quality. Good ash. Rock band (68'-71').

77' - 152' - Mostly poor coal and rock. Should be wasted.

152' - 182' - Poor yield. Thermal quality. F.S.I. (0). Fair ash. This fraction should be closely considered.

182' - 216' - Very poor yield. Should be left.

19. D.H. C17-298' - 955'

Interval 298' - 340' - Mediocre yield. Met. Quality. F.S.I. (4½). Good ash. Rock bands (302'-307',317'-320',340'-472').

472' - 625' - Good yield. Form coke quality. F.S.I. (2½). Good ash. Rock band (475'-480').

625' - 685' - Rock.

685' - 735' - Mediocre yield. Met. Quality. F.S.I. (4). Good ash. Rock band (705'-715').

735' - 853' - Mostly poor coal and rock. Should be wasted.

853' - 955' - Mediocre yield. Form coke quality. F.S.I. (2½). Mediocre ash. Rock band (913'-925').

General

A composite washed sample analysed by Birtley Engineering showed following:

Moisture	-	1.0%
Volatile	-	23.6% d.a.f.
Ash	-	9.7% d.b.
F.C.	-	68.8% d.b.
S	-	0.32%
B.T.U.	-	15,150 d.a.f.
Ash Fusion	-	Init. Deform. 2430°F.
		Softening - 2630°+ F.

Detailed analysis values are juxtapositioned by depth opposite appropriate Drill Hole Log (Exhibit

APPENDIX IV

STRATIGRAPHIC SECTION MAMMOTH SEAM EAST SIDE

Main Roof	-	30'	Brown shale 215/50°W
	-	7'	Dark grey shale
	-	1'	Black carb shale and coal
	-	3.6'	Brown shale - Roof-transitional
Main Seam	-	3.5'	Coal soft
	-	1'	Coal with thin shale partings
	-	0.4'	Shale bands
	-	1'	Coal clean
	-	0.1'	Shale
	-	4'	Coal soft clean
	-	1'	Coal soft dirty
	-	6'	Coal harder and banded
	-	1.6'	Black shale band
	-	0.9'	Coal
	-	0.1'	Shale
	-	0.9'	Coal
	-	0.5'	Shale and bone
Middle Seam	-	2.2'	Coal hard
	-	3'	Coal hard stained
	-	4'	Coal soft
	-	1.4'	Coal dirty
	-	3'	Shale band
Lower "Dirty"	-	2.5'	Coal dirty
	-	4.5'	Coal banded dirty
	-	3'	Shale
	-	2'	Gumbo and shale
	-	5'	Coal banded and dirty
	-		Dark grey basal Kootenay sandstone 170/45

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ANALYSIS OF COAL
CORE
C2

Depth	% Raw Ash*	Raw F.S.I.
90-95	20.0	1½
95-100	33.9	2½
100-105	29.7	1½
105-110	20.4	1½
113-120	13.9	2
120-125	14.4	3
125-130	20.3	4½
130-135	19.9	5
135-140	13.0	4½
140-145	13.1	3½
145-150	9.8	3½
150-155	Shale	
155-160	64.5	1
160-170	38.1	1
170-180	26.7	1
180-190	31.3	2½
190-200	58.8	
200-210	54.2	1
210-220	40.2	1
220-230	46.5	1
230-240	40.7	1
240-250	72.9	1
250-260	55.5	1
260-270	38.7	1
270-280	60.6	1
280-290	48.7	1
290-300	85.4	1

27 samples

* 1.0% Moi
** Washed a

CORBIN

C3 - 1.0% Moist
S.G. 1.500

Depth	% Raw Ash*	Raw F.S.I.
34-40	27.7	0
40-45	23.6	0
45-50	40.9	1½
270-280	29.4	1½
280-290	30.6	1
290-300	26.8	1
300-305	15.9	1
305-310	24.3	1
310-320	27.0	2
320-330	50.7	1
330-340	20.4	4
340-350	17.6	2½
350-360	37.0	1½
360-370	44.0	1
370-380	28.7	1½
380-390	26.1	2
390-400	45.2	1
400-410	60.3	0
410-420	47.9	1.0
420-430	49.8	1.0
430-440	43.8	1.0

21 samples

* 1.0%
** Washe

CORBIN

C4 - 1.0%
Float S.G.

Depth	% Raw Ash*	Raw F.S.I.
57-62	43.5	1
182-185	58.5	1½
187-190	59.6	1
190-200	25.8	4
200-210	45.3	1
210-220	68.3	0
220-230	55.5	1
230-240	52.5	1
240-250	39.6	1½
250-260	37.4	1
260-270	44.6	1
270-280	36.4	1
280-290	50.3	1
290-300	55.0	
300-310	64.5	1
310-320	53.1	1
320-330	53.5	1

17 Samples

* 1.0% Moist.
** Washed at S

CORBIN

C5 - 1.0% Moist. (Assumed)
Float S.G. 1.500

Depth	% Raw Ash	Raw F.S.I.
125-135	56.6	0
135-145	74.5	0
145-155	Clay	
155-165	36.6	1½
165-175	21.5	1
175-185	15.2	1
185-195	31.0	1
195-205	60.5	½
205-215	20.0	
215-225	47.8	1
225-235	33.8	1
235-245	17.4	1
245-255	34.1	1
255-265	26.2	1
265-275	36.4	1½
275-285	Rock	
285-295	36.9	1
295-305	21.2	1
305-315	32.2	1
315-325	26.8	1½
325-335	13.5	1½
335-345	34.1	1½
345-355	Rock	
355-365	45.5	1
365-375	42.3	1
375-385	25.9	1
385-395	32.3	1
395-405	55.4	1
405-415	24.7	1½
415-425	34.1	1
425-435	62.8	0
435-445	53.4	1
445-455	71.0	0
455-465	57.1	1
465-475	44.6	1
475-485	58.5	1
485-495	70.1	
495-505	56.7	1
505-515	69.1	0
515-525	57.1	1
525-535	59.2	1
535-545	65.5	½
545-555	50.1	1
555-565	61.7	1
565-575	60.8	0

45 samples

February 17, 1975

DH C6 - CORBIN

1.0% Moist. Assumed
Sink Floats - 1.500 S.G.

DE DEPTH	RAW ASH	FSI.
158-170	63.3	0
170-180	78.3	0
180-190	40.8	1
190-200	30.1	½
200-210	32.4	1
210-220	34.4	1
220-230	17.7	1
230-240	11.9	1
240-250	31.2	1
250-260	20.5	1½
260-270	42.1	1
270-280	57.5	1
280-290	24.5	1
290-300	61.6	0
300-310	45.3	1
310-320	57.4	½
320-330	45.1	1
330-340	21.9	1½
340-350	42.0	1
350-360	42.1	1
360-370	59.9	1
370-380	41.2	1
380-390	52.1	1
390-400	52.6	1
400-410	40.8	1
410-420	51.8	1
420-430	55.8	½
430-440	45.2	½
440-450	55.4	1
450-460	51.0	1

30 samples

CORBIN - D.H. #7A

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
466-469	45.7	1			
472-482	46.2	1			
482-492	27.3	1			
492-502	13.6	1			
502-513	30.1	1			
513-523	20.3	1			
523-533	24.6	½			
533-543	38.0	1			
543-553	25.5	1			
553-563	24.0	1			
563-573	23.5	1			
573-583	29.7	1			
583-593	20.6	1			
593-603	23.5	0			
603-613	25.6	1			
613-623	19.3	½			
623-633	22.2	1			
633-643	21.3	1			
643-653	27.1	1			
650-659	34.7	1			
658-667	50.6	1			
=======	====	===			
678-686	53.2	½			
683-693	30.6	1			
690-700	34.4	1			
700-710	28.2	1			
710-720	20.1	1			
720-730	34.4	1			

(a) Float Vol. - s.g. 1.500 - 466'

(b) Float Ash - s.g. 1.500 - 466'

(c) Float FSI - s.g. 1.500 - 466'

(d) One sample no tag and 2 sample

27 samples

CORBIN - D.H. #8

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
35-45	25.0	1			
45-55	39.2	1½			
55-65	22.3	2			
65-75	24.4	1½			
75-85	16.2	1½			
85-95	23.5	2			
95-105	39.8	2½			
105-115	30.6	1½			
115-125	31.9	1½			
125-135	37.5	1½			
135-145	39.0	1½			
145-155	33.2	1			
155-165	44.5	1½			
165-175	26.7	1½			
175-185	30.7	1½			
185-188	48.8	1			

16 samples

(a) Float Vol. s.g. 1.500 - 55' -

(b) Float Ash s.g. 1.500 - 55' -

(c) Float FSI s.g. 1.500 - 55' -

CORBIN - D.H. #9

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
52-61	26.5	1			
65-75	60.0	1			
75-85	Rock	N.D.			
85-90	Rock	N.D.			
90-95	Rock	N.D.			
95-100	Rock	N.D.			
100-103	27.2	3½			
103-108	28.2	2			
113-117	16.6	5			
122-127	53.6	1			
127-131	49.5	0			
142-150	44.5	1			
150-160	23.2	1			
160-170	43.0	1			
170-180	76.2	0			
180-190	68.9	0			
190-200	16.3	1			
200-210	31.6	2½			
210-220	54.8	1			
220-230	50.8	1			
230-240	54.8	1			
246-250	41.8	1			

CORBIN - D.H. #10

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.50 % ASH	FLOAT S.G. 1.50 FSI	% APPROX YIELD
20-30	49.5	0			
30-40	27.5	1½			
40-50	28.2	1			
50-60	26.6	1			
60-70	15.4	½			
70-80	18.0	1½			
80-90	13.0	½			
87-91	33.4	1			
94-99	51.0	0			
137-147	26.0	1			
147-157	20.9	1			
157-167	26.5	1			
167-177	26.2	1			
177-187	26.5	1			
204-209	51.6	½			
230-240	36.7	1			
234-244	35.2	1			
249-259	53.4	1			
259-269	56.0	1			
260-265	shale	N.D.			
270-280	40.5	1			
280-281	32.4	1			

CORBIN - D.H. #10 cont'd.

284-294	51.6	1
294-297	56.6	1
298-303	59.6	0
320-330	32.2	1
341-351	28.1	1
351-357	47.1	1
358-364	64.1	0
371-378	60.0	1
384-392	40.0	½
432-442	33.5	1
442-452	27.0	1
452-462	33.5	1
484-491	40.6	1
497-507	45.3	1
507-511	55.5	1
516-520	53.0	1

16

(a) Float Vol. - s.g. 1.500 -

(b) Float Ash - s.g. 1.500 -

(c) Float FSI - s.g. 1.500 -

CORBIN - D.H. #11

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
10-20	11.4	0			
20-30	16.1	0			
30-40	12.2	0			
40-50	17.5	0			
50-60	20.8	0			
60-70	16.4	0			
70-80	10.1	0			
80-90	32.9	0			
90-100	23.5	0			
100-110	63.0	0			
110-120	58.7	0			
120-130	shale	N.D.			
244-254	43.6	1			
254-264	38.7	2			
264-274	25.6	1½			
274-284	shale	N.D.			
320-322	54.1	1			
338-342	49.2	1			
340-350	47.7	1			
351-360	43.5	1			
360-370	50.9	1			
375-385	shale	N.D.			
385-391	54.7	1			

23

(a) Float Vol. - s.g. 1.500 - 0'
Ash 10.1% d.b. - FSI - 0

(b) Float Vol. - s.g. 1.500 - 2'
Ash 15.8% d.b. - FSI - 3½

(c) Float Vol. - s.g. 1.500 - 3'
Ash 12.2% d.b. -FSI - 2

CORBIN - D.H. #12

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
161-170	36.4	1½			
170-175	45.9	1			
175-185	30.3	1			
185-195	46.2	1			
=======	====	===			
240-246	45.3	1½			
250-260	53.4	1			
260-270	51.2	1			
270-280	59.8	1			
280-290	67.8	½			
290-296	59.5	1			

(a) Float Vol. - s.g. 1.500 - 1

(b) Float Ash - s.g. 1.500 - 1

(c) Float FSI - s.g. 1.500 - 1

CORBIN - D.H. #13

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
0-10	13.6	0			
10-18	23.6	0			
18-20	19.0	0			
20-30	16.5	0			
30-32	48.2	0			
33-40	44.8	0			
50-52	shale	-			
53-60	24.1	0			
60-70	12.0	0			
70-80	15.6	0			
80-90	20.4	0			
90-95	21.3	0			
95-105	17.5	0			
105-115	29.9	0			
175-180	28.6	1			
198-200	63.5	1			
203-211	45.2	1			
220-225	52.6	1			
225-235	20.8	1½			
235-237	57.7	0			
250-253	45.0	1			

264-274	42.4	1
274-278	57.2	1
287-293	57.4	1

(a) Float Vol. - s.g. 1.500 -
Ash - 8.3% d.b. - FSI - 0

(b) Float Vol. - s.g. 1.500 -
Ash - 8.9% d.b. - FSI - 0

(c) Float Vol. - s.g. 1.500 -
Ash - 8.8% d.b. - FSI - 3½

CORBIN - D.H. #14

DEPTH	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
0-10	12.4	0			
10-20	23.5	0			
22-32	35.1	0			
34-39	34.7	0			
39-45	15.5	0			
53-63	14.9	1½			
63-73	15.4	2			
73-78	19.1	1½			
140-150	26.2	1			
150-160	23.0	1			
160-170	27.8	1			
170-180	51.8	0			
190-195	36.5	1			

13

(a) Float Vol. - S.G. 1.500 - 0' -

(b) Float Ash - S.G. 1.500 - 0' -

(c) Float FSI - S.G. 1.500 - 0' -

CORBIN - D.H. #15

DEPTH	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
40-?	12.0	0			
61-62	32.4	½			
64-73	N.D.	1			
74-79	26.8	0			
80-84	44.8	½			
113-115	49.2	1			
117-121	42.0	1			
123-133	24.5	1			
135-138	25.9	0			

9

(a) Float Vol. - S.G. 1.500 - 4

(b) Float Ash - S.G. 1.500 - 4

(c) Float FSI - S.G. 1.500 - 4

CORBIN - D.H. #15A

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
80-90	51.8	1			
90-100	37.7	1			
100-110	38.0	1			
110-120	34.6	1½			
120-130	49.5	1			
130-140	68.1	0			
149-159	48.0	1			
159-169	44.0	1			
169-179	36.6	1			
215-220 '	48.1	1			
221-226 '	41.0	1			
232-236	46.4	1			
240-250	36.8	1			
250-254 '	45.5	1			
257-262 '	34.3	1			
267-276	39.1	1			

16

(a) Float Vol. - s.g. 1.500 - 80'

(b) Float Ash - s.g. 1.500 - 80'

(c) Float FSI - s.g. 1.500 - 80'

CORBIN - D.H. #16

DEPTH '	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
34-44	16.9	0			
44-54	33.3	0			
54-64	14.7	0			
64-68	28.2	0			
=======	====	===			
71-77	39.0	0			
=======	====	===			
115-120	47.0	0			
=======	====	===			
152-162	34.6	0			
162-172	43.8	0			
172-182	35.5	0			
182-192	41.3	0			
192-202	42.6	0			
202-210	41.3	0			
211-216	31.0	0			

(a) Float Vol - s.g. 1.500 - 34'

(b) Float Ash - s.g. 1.500 - 34'

(c) Float FSI - s.g. 1.500 - 34'

CORBIN - D.H. #17

DEPTH	RAW % ASH	RAW FSI	FLOAT S.G. 1.5 % ASH	FLOAT S.G. 1.5 FSI	% APPROX. YIELD
298-302	60.2	1			
307-317	46.8	0			
320-330	55.8	1			
330-340	59.2	1			
472-475	44.7	1			
480-490	48.4	1			
490-500	25.7	1			
500-510	26.4	½			
510-520	29.1	1			
520-525	60.5	0			
525-535	38.6	1			
535-545	33.8	½			
545-555	25.5	1			
555-565	24.2	1			
565-575	29.4	1			
575-585	19.9	0			
585-595	22.3	½			
595-605	18.6	1			
605-615	31.0	1			
615-625	46.4	1			
685-695	41.4	1			
695-705	33.0	1			
705-715	52.5	½			
715-725	39.4	1			
725-735	34.2	1			
747-752	47.4	1			
753-763	45.5	1			

763-773	46.6	1
775-783	37.4	1
783-793	52.0	0
793-803	36.5	2
803-813	56.0	0
813-823	56.4	0
823-833	47.0	½
833-843	59.4	0
843-853	48.5	1
853-863	39.4	1
863-873	50.3	1
873-883	42.3	1
883-893	47.7	1
893-903	33.6	½
903-913	36.6	0
925-933	40.2	1
935-945	44.2	1
945-955	29.2	1

(a) Float Vol. - s.g. 1.500 -

(b) Float Ash - s.g. 1.500 -

(c) Float FSI - s.g. 1.500 -

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ENVIRONMENTAL IMPACT STUDY OF THE CORBIN MINE DEVELOPMENT

J.A. CRABB. JAN 28TH 1976

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00384

B. C. RESEARCH

ENVIRONMENTAL IMPACT STUDY

Attached as Appendix III is scope of Environmental Impact Study which ought to be completed by March 31, 1976.

B.C. RESEARCH

3650 Wesbrook Crescent, Vancouver 167, Canada.

Phone (604) 224-4331 • Cable 'RESEARCHBC' • Telex 04-507748

June 24, 1975

Our file: 75-1006

Project Proposal

To: Crows Nest Industries Limited
Box 250
Fernie, B. C.
V0B 1M0

Subject: ENVIRONMENTAL STUDY OF THE CORBIN MINE DEVELOPMENT

INTRODUCTION

Crows Nest Industries (C.N.I.) is proposing to develop an open pit coal mine in the East Kootenays in the Corbin area, approximately 20 miles southeast of Sparwood, B. C. The development is situated along a ridge, three miles west of the B. C.-Alberta Border and near the source of Michel Creek.

Coal would be hauled to Provincial Highway No. 3 along an existing provincial right-of-way, following Michel Creek northward. Several miles of new road would have to be constructed.

B. C. Research has been asked to prepare a proposal for an environmental overview of this development. The following proposal outlines the study which will be undertaken by B. C. Research and contains the basic inputs of the Provincial resource agencies discussed at a meeting of the Mines Branch in Victoria on April 8, 1975.

SCOPE OF WORK

Environmental information will be gathered from existing sources and augmented by one field trip to the property during July, 1975.

TIMING

The study will begin in July, 1975. A report will be submitted by March 1, 1976, covering all phases of the study. Field studies will be conducted in mid-July.

STAFF

The following professional staff will be available for this study:

NAME	PROJECT DUTIES
I.V.F. Allen, B.A.	Project supervisor
J. C. Errington, M.Phil.	Project manager. Vegetation and soil surveys reclamation.
M. Zallen, M.Sc.	Aquatic surveys
C. Schmidt, B.Sc.(Hons.)	Wildlife surveys
M. Blazecka	Field technician
G. Longworth	Field technician
J. Leach, Ph.D.	Water quality analysis

Crawford Socio Economic

STUDY COMPONENTS

The environmental study will be composed of four major components.

Resource inventory

Environmental impact assessment

Mitigations

Socio-economic factors

RESOURCE INVENTORY

PHYSICAL OVERVIEW

A description of the physical components of the environment will include an analysis of the climate, surficial geology and topography of the study area. Information will be collected from existing data sources such as government meteorological stations, soils and topographic maps, aerial photographs, and information supplied by Crows Nest Industries.

TERRESTRIAL COMPONENTS

Vegetation

Vegetation will be described and mapped in the study area, using forest inventory maps, aerial photographs, and data collected from field work. These map units will be the basis for assessing wildlife habitat and for assessing forestry values.

Soils

Soils in the proposed pit area will be described. Chemical analysis of soil samples will be made to determine their feasibility as topsoil for reclamation purposes and their erosion potential.

Wildlife

The present and potential wildlife use of the study area will be assessed. The study will involve a compilation of existing information combined with a field program. The field program will assess habitat use through pellet surveys, browse surveys and direct observation. One winter survey is also planned. Emphasis will be placed on ungulates, fur-bearing and carnivorous mammals, and game birds. Important winter ungulate ranges will be identified.

AQUATIC COMPONENTS

The aquatic components will be assessed through a compilation of existing information and collection of field data.

Description of Drainages

Drainage basins will be identified in areas affected by the mine, and creek profiles, discharges and bedload characteristics will be studied.

Water Quality

Michel Creek is the major drainage in the area. Several small creeks drain the general area of the pit development. Sampling locations on Michel Creek and the Corbin Creek will be determined during the field survey. Several sampling sites on Michel Creek may be located downstream of the development site.

Parameters

The following parameters of water quality will be assessed:
Total solids, suspended solids, pH, temperature, turbidity, alkalinity, acidity, sulfate, specific conductance, total organic carbon, hardness, dissolved Cu, Pb, Zn and Fe.

River Sediments

Bottom characteristics will be studied at a number of selected sites. Parameters for river sediment will include: particle size distribution, total organic carbon and heavy metals (Pb, Hg, Cd, Cu, Zn and Fe).

BIOLOGICAL COMPONENTS

Biological productivity of streams potentially affected by development will be assessed.

RESOURCE UTILIZATION

Present and potential land use values will be assessed for the development area. This will include a discussion of agriculture, logging, hunting, trapping and fishing.

HISTORICAL SITES

Potential areas of historical significance will be determined from information provided by government agencies.

ENVIRONMENTAL IMPACT ASSESSMENT

Utilizing the environmental data, and a detailed description of the development plans, an assessment will be made of the potential environmental impacts of development based on:

1. Topographic change (mine, waste disposal, haul roads).
2. Animal habitat removal.
3. Physical emissions.
4. Chemical emissions, including the potential for acid mine drainage.

SOCIO-ECONOMIC FACTORS

The social and economic situation in the area, which centers on Sparwood and Fernie will be studied. This will include the economic level and how it is derived, population growth and distribution, housing, community and municipal services. Existing literature and statistics, along with interviews with government agencies, trade and other associations and individuals, will be used to obtain the required information.

The social and economic impacts in the surrounding area will depend upon the degree of change imposed upon the existing social and economic balances, initially by the construction activity, later during the operating phase, and finally, abandonment. Factors to be documented will be demands for housing, roads, water supply, sewers and electrical services. Changes in requirements for such social services as recreation facilities, schools and health care will also be examined, and both primary and secondary employment opportunities will be estimated.

MITIGATIONS

Mitigations refer to those measures recommended to be undertaken to avoid, reduce, or compensate for environmental changes and include monitoring, special studies, research and planned reclamation.

RECLAMATION

Potential waste material (overburden, bedrock) will be assessed for its ability to support plant growth through:

a. observation of natural revegetation on disturbances resulting from exploration.

b. observation of reclamation of past disturbances.

c. physical and chemical analysis of drill core.

d. plant growth chamber experiments

Factors which may prevent revegetation will be documented, and suggestions for final land use will be made.

SENSITIVITY ZONES

Sensitivity zone mapping similar to that already completed for immediately adjacent lands in a project for another company will be provided as guidance to avoid major environmental disturbance.

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MAPS OF THE LORRIO PROPERTY

J.J. CRABB

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CROWS NEST INDUSTRIES LIMITED

COBEN - B.C.

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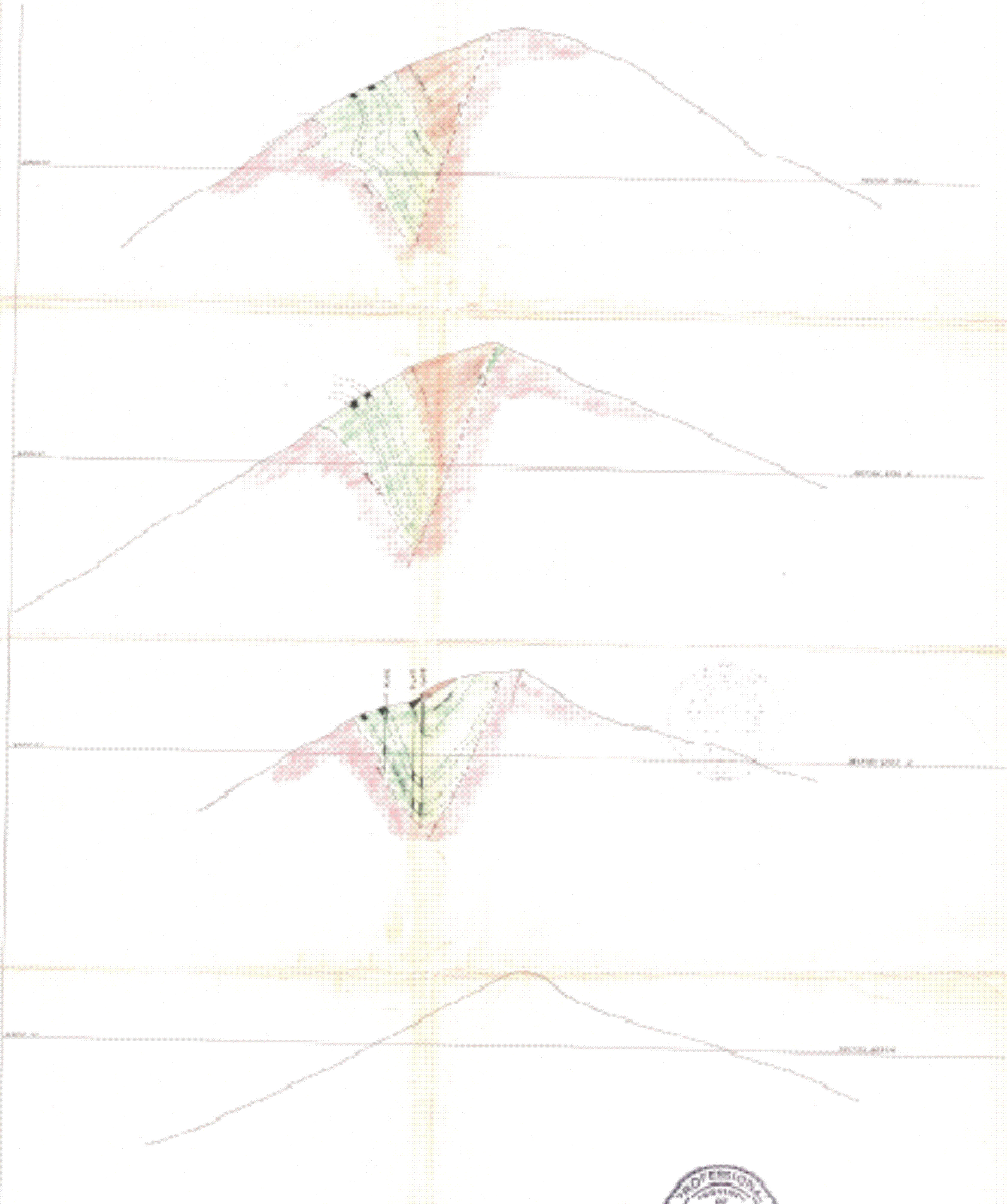

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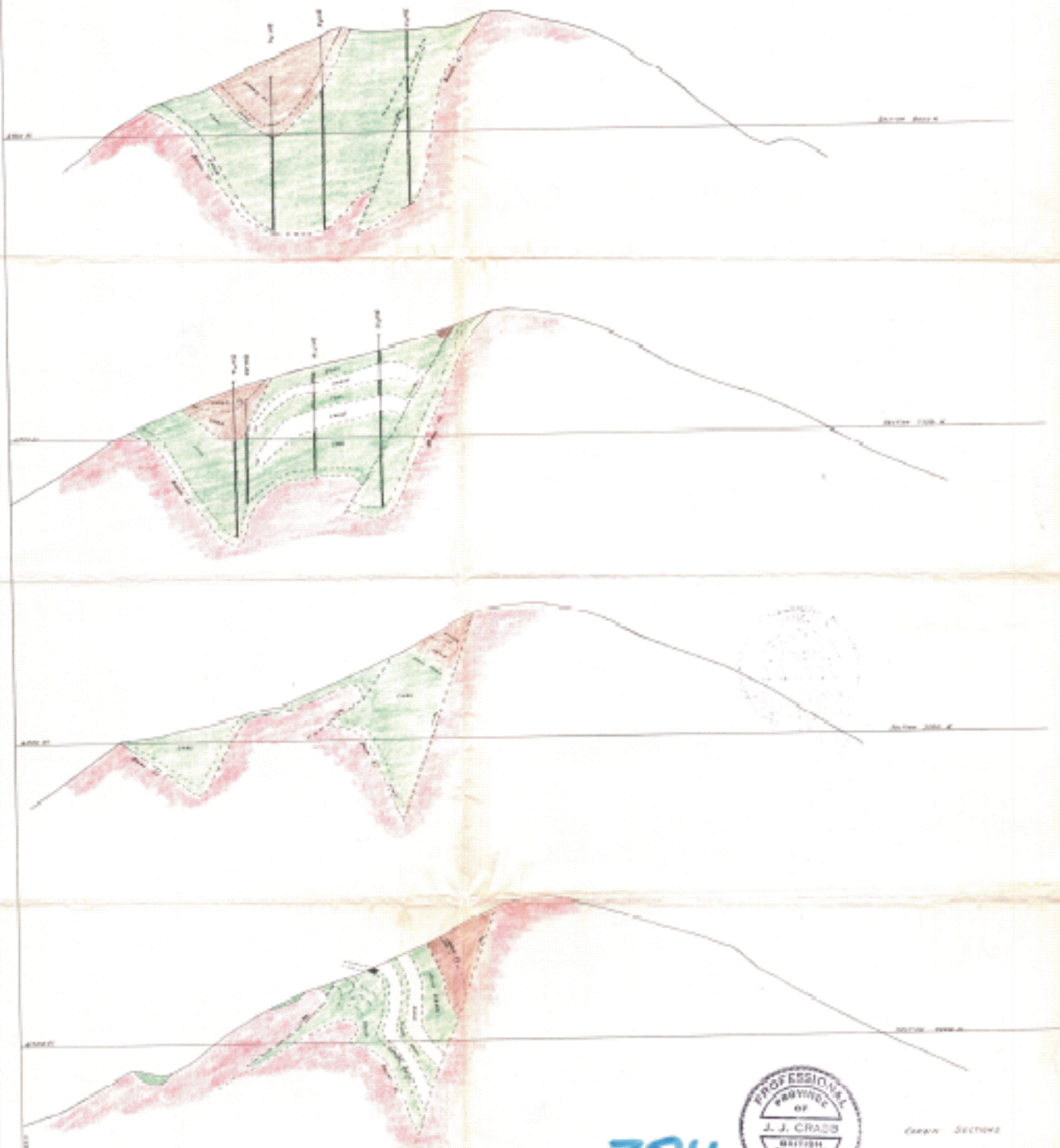

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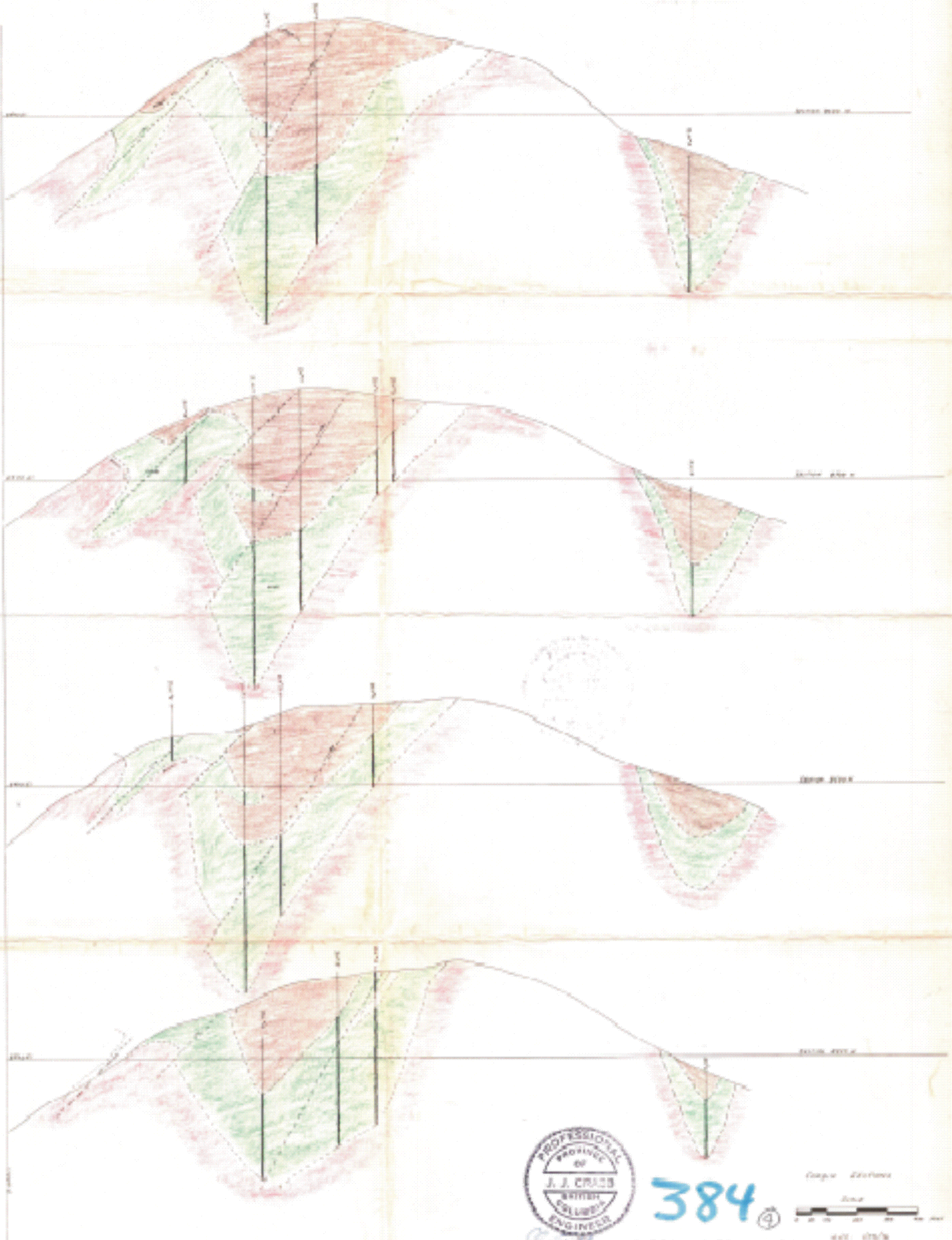
J. J. CRABB

CARBIN SECTIONS

Scale

K. SHELL-CARBIN 75 (2)A



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