B.C. Reconnaissance
Nechako 1983

NTS 93F H. Hopkins

799

MEMORANDUM

1984 03 07

TO: A.R. Peach

FROM: H.E. Hopkins

SUBJECT: Nechako - 1983 Reconnaissance

The purpose of this memo is to document and summarize the findings of the Nechako reconnaissance. This exercise began on September 8, 1983 and ended September 14, 1983. I initiated this area reconnaissance when surplus contract helicopter time became available at the end of the Iskut program.

This area had previously been identified as a possible target area for the 1983 B.C. Reconnaissance program (see H.E.H. memo 1983 01 24 and A.R.P. memo 1983 01 31). The primary objective of the program was to identify the locations and surface extent of potential coal-bearing sedimentary rocks. The two primary target formations were the volcanic Endako Group and the Upper Cretaceous volcanic Ootsa Lake Group which underlie NTS map sheets 93B, 93F and 93G. An attempt to locate four coal float occurrences referenced in Dowling's 1914 G.S.C. report was included in the objectives of the program. Figure 1 shows the area covered by this helicopter reconnaissance.

RESULTS

While no previously unmapped sedimentary sequences were encountered in N.T.S. map sheets 93B and 93G, a great many volcanic outcrops were briefly investigated to ensure no sedimentary rocks were overlooked on the basis of a helicopter flyby.

The rylolitic and basaltic rocks of the Ootsa Lake and Endako Groups form low bluffs usually with one to three cliff-faced slopes (15 to 45 metres high). These outcrops exhibited abundant flow banding, brecciated flow tops and also well defined columnar jointing in the more basic rocks.

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The fact that this area was the subject of an extensive petroleum search in the mid-seventies testifies to the existence of a sedimentary basin in this vicinity. These rock units are probably recessive in nature and therefore eluded observation from the helicopter.

In N.T.S. map sheet 93F, 6 coal float locations were identified along the Nechako River. As shown in Figure 2, this coal float trail lead to the discovery of a coal outcrop at the base of the Cheslatta Falls. Figure 3 shows a measured section of the outcrop along with the sampled interval. This sequence contained a total of 3.4 metres of interbedded coal (excluding seams less than 30 centimetres in thickness) within a 14.5 metre interval. Proximate analysis indicates that this coal falls within the subbituminous range (see enclosed laboratory results). I must stress that these coal samples were definitely weathered and due to the nature of the cliff outcrop, deeper samples could not be taken.

Figure 2 also shows the location and type of associated sedimentary rock encountered in 93F. These lithologies were predominantly "bleached" white clastic rock, ranging from siltstone to medium-grained sandstone, poorly consolidated and exhibited poor sorting and angular clasts.

Outcrop number 2 and 4 (see Figure 2) were overlain by a thick (15 to 30 metre) unit of basalt exhibiting a very irregular columnar joint pattern. This pattern often fanned from vertical to horizontal. Figure 4 shows the white sandstone capped by the basalt while Figure 5 shows the discovery outcrop.

CONCLUSIONS

The existance of coal 35 kilometres northwest of Cheslatta Falls* along with the lateral distribution of outcrops shown in Figure 2, reinforces the potential of this area. Although these occurrences cannot be directly correlated at this time, they do infer a considerable size to this little known coal basin.

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*(Referenced in B.C. Open File #CB 81(1)A, Gulf Canada Resources, Mount Greer Coal Project; 1981)

Thermal upgrading of the coal rank, on a local scale, is certainly possible due to the close proximity of the overlying volcanics. This flat-lying volcanic cap is definitely a mappable marker bed which can be used to predict areas where the sediments are exposed at surface.

RECOMMENDATIONS

1. Decide the value of this prospect on the basis of coal quality.

2. A memo detailing the recommended reconnaissance method for this prospect is forthcoming, pending approval on further work in this area.

3. Conduct an extensive search for all available in-house data obtained during the 1977 CanHunter/Esso joint exploration program. I feel that this data will cover a very large portion of 93B/G and greatly diminish the amount of surface mapping required to assess this prospect area.

HEH/cyg

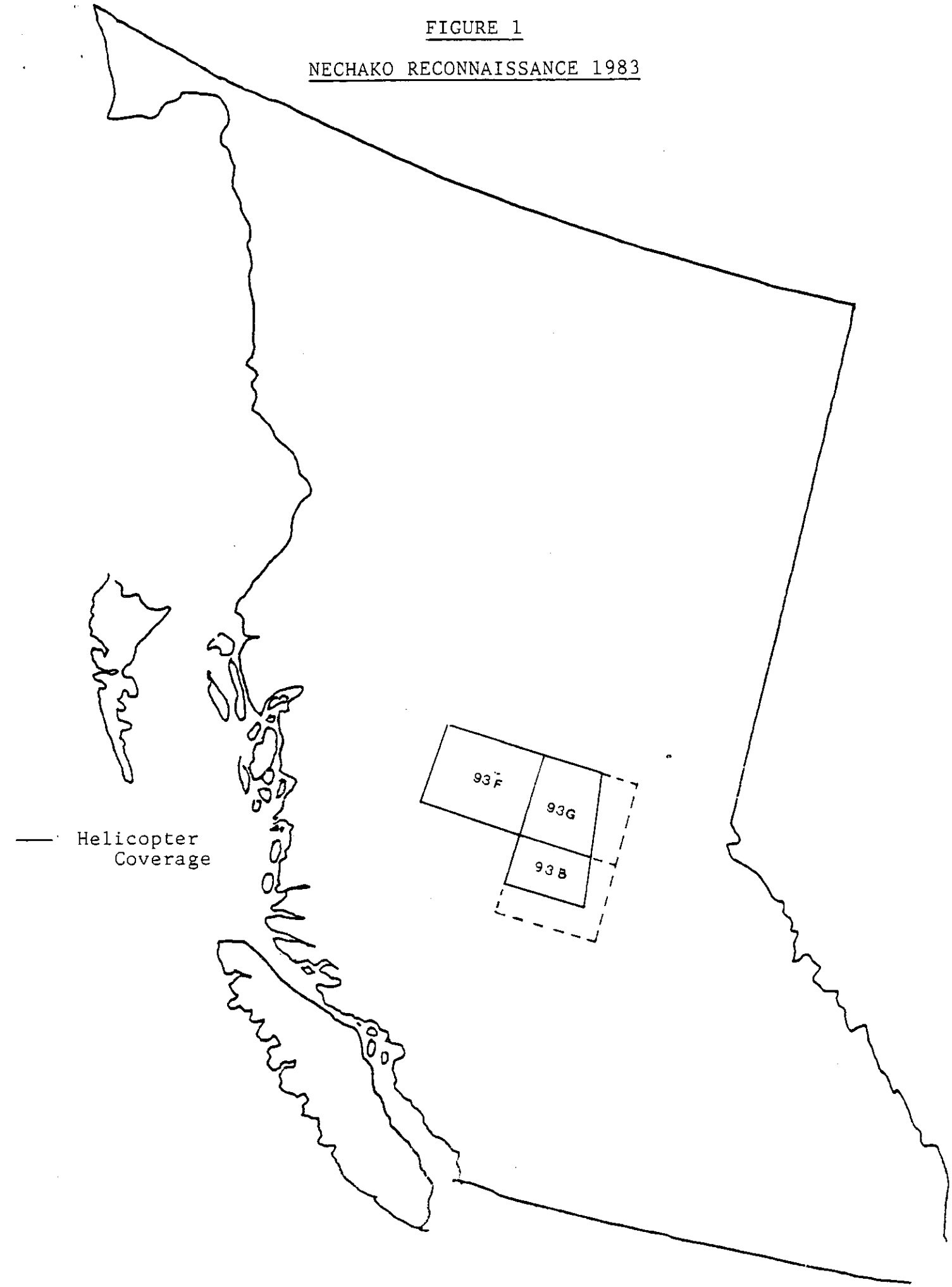
Encls.

cc: D.C.D. Parker
G.J. Ockert

Harold E. Hopkins

FIGURE 1

NECHAKO RECONNAISSANCE 1983



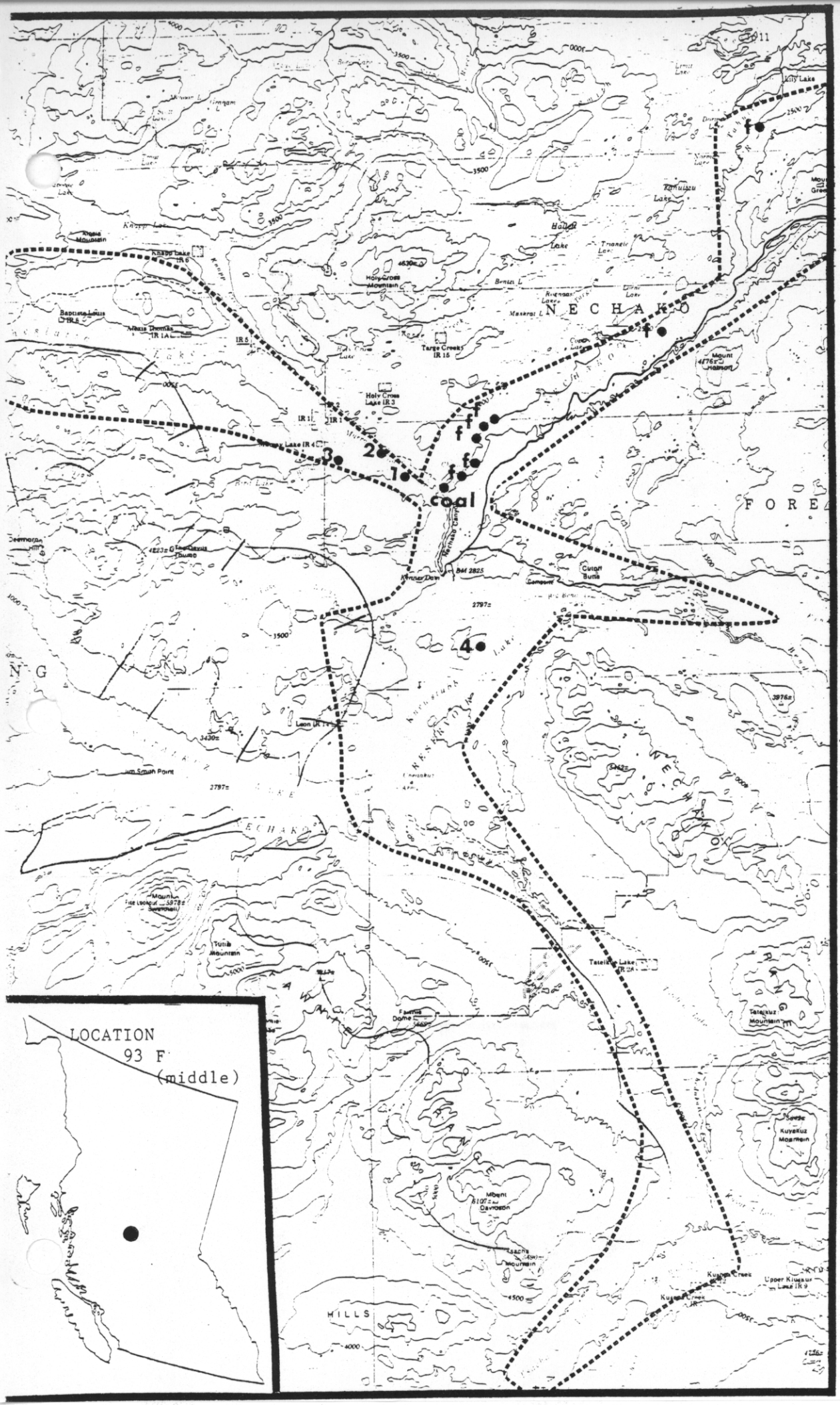


FIGURE 2

NECHAKO
RECONNAISSANCE
1983

LEGEND

f - Coal Float

coal - Coal Outcrop

1. Sedimentary Rock

2. Sedimentary Rock Capped by Columnar Basalt

3. Sedimentary Rock

4. Sedimentary Rock Capped by Columnar Basalt

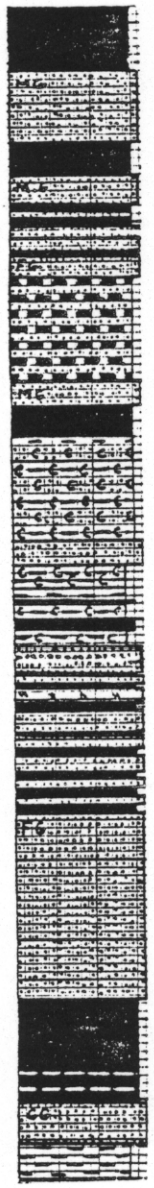
- Enclosed Area Represents Inclusive Helicopter Coverage

SCALE:

0 5 10 Km

FIGURE 3

NECHAKO RECONNAISSANCE 1983



Erosional Surface

SAMPLE E

Sandstone, Medium Grained

SAMPLE D

Carby Sandstone

SAMPLE C

Interbedded Carby Sandstone and Carby Claystone

Sandstone, Medium Grained

Coaly Siltstone

Coaly Sandstone

Palynology Sample

Sandstone, Fine Grained

SAMPLE B

SAMPLE A

Palynology Sample

Sandstone
Claystone

SCALE:

0 1 2 3

(metres)

FIGURE 4

Upper Basin Contact, White Sandstone. Overlain by Jointed Basalt.

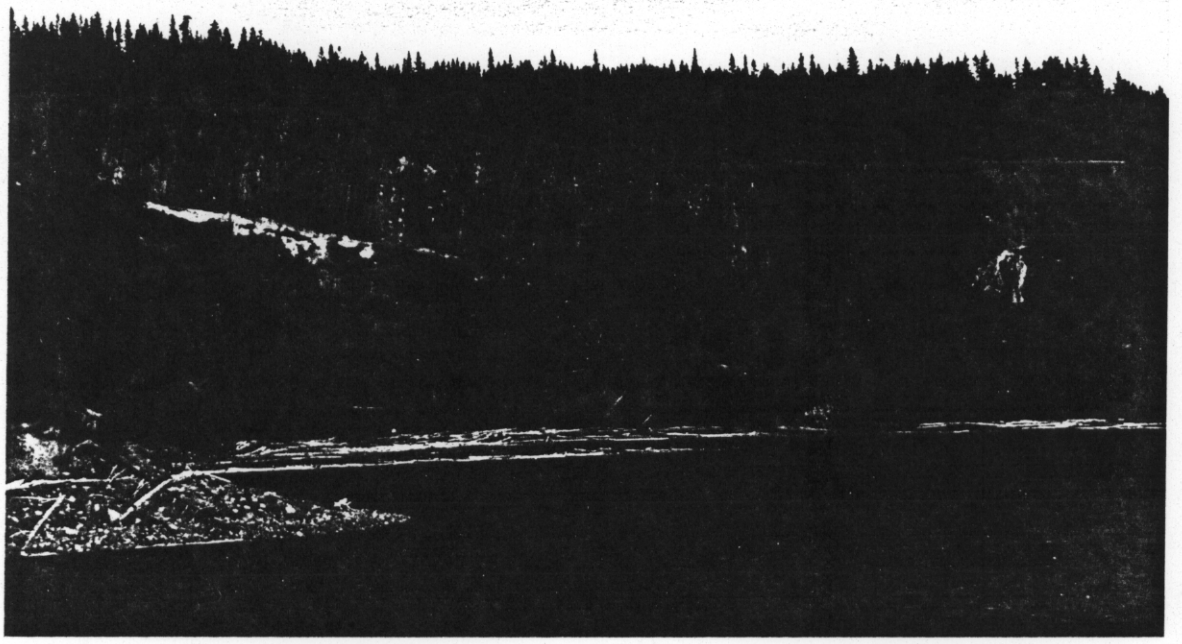


FIGURE 5

Cheslatta Falls Coal Outcrop. (Geologist for Scale)

ESSO RESOURCES CANADA LIMITED

Attn: H.E. Hopkins

LORING LABORATORIES LTD

P.O.# 02-L-100527

FILE NO.: 25[illegible]

CERTIFICATE of COAL TESTING Page # 1

DATE: March 6/84

SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY SINK	% RECOVERY FLOAT		REC'D % H_2O	% H_2O	% VCL MATTER	% ASH	% FIXED CARBON	% S	BTU /LB.	F.S.I.	SPECIFIC GRAVITY
A	NDOC	Raw Coal			As Received	20.54	-	32.50	16.24	30.72	.49	7206		1.46
					Air Dried	-	10.97	36.41	18.20	34.42	.55	8074		
					Dry Basis	-	-	40.90	20.44	38.66	.62	9069		
B	NDOC	Raw Coal			As Received	9.75	-	36.05	22.73	31.47	.53	7793		1.48
					Air Dried	-	7.92	36.79	23.19	32.10	.54	7951		
					Dry Basis	-	-	39.95	25.19	34.86	.59	8635		
C	NDOC	Raw Coal			As Received	9.73	-	38.38	18.21	33.68	3.11	7943		1.47
					Air Dried	-	8.49	38.91	18.46	34.14	3.15	8052		
					Dry Basis	-	-	42.52	20.17	37.31	3.44	8799		
E	NDOC	Raw Coal			As Received	9.87	-	23.96	48.58	17.59	2.12	4378		1.76
					Air Dried	-	5.82	25.03	50.76	18.39	2.21	4574		
					Dry Basis	-	-	26.58	53.90	19.52	2.35	4857		

To: ESSO RESOURCES CANADA LIMITED
237 - 4th Avenue S.W.,
Calgary,Alberta T2P 0H6
Attn: H.E Hopkins

File No. 25956
Date March 6, 1984
Samples Coal
P.O.# 02-L-100527

Certificate of ASSAY

LORING LABORATORIES LTD.

SAMPLE No.	% EQUILIBRIUM H_2O
oal Analysis"	
NDOC-A	22.4
-B	20.5
-C	19.6
-E	16.5

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.

Pulps Retained one month unless specific arrangements made in advance.

Assayer

M E M O R A N D U M

ESSO RESOURCES CANADA LIMITED
RESEARCH DEPARTMENT

84 04 02
File: 2647
Letter No. 44518

TO: H. E. Hopkins
Coal - #695 EPE

FROM: J. Allan

RE: Nechako Basin Coal Samples

I have completed the petrographic examination of your four coal samples, as follows:

Sample NDOC-A

Composition (% Vol.): Huminite - 87.4% (Syn. vitrinite of bituminous coals)
Liptinite - 0.6
Inertinite - 0.2
Minerals - 11.8
Reflectance of Huminite: 0.31%
Rank: Lignite

Comments: The virtual absence of inertinite, good cellular preservation of huminites, evidence of fungal bodies and presence of resinite all suggest that the coal is derived from coniferous forest material, deposited in possibly acidic, fresh water with minimal transport of plant debris. Mineral matter is intergrown clays.

Sample NDOC-B

Composition (% Vol.) Huminite - 77.2%
Liptinite - 0.9
Inertinite - 0.2
Minerals - 21.7
Reflectance of Huminite: 0.33%
Rank: Lignite

Comments: This is generally similar to Sample A, except for a higher clay content, and a similar origin and depositional environment is interpreted.

Sample NDOC-C

Composition (% Vol.): Huminite - 85.3%
Liptinite - 4.1
Inertinite - 0
Minerals - 10.6
Reflectance of Huminite: 0.30%
Rank: Lignite

Comments: This sample contains a mix of huminite types which suggest that it is derived from a mixture of coniferous-forest and reed-moor peats. It is moderately pyritic, and richer in liptinites (spores, cuticle and resin), than Samples A and B. Absence of inertinites suggests little or no transport of plant debris. A brackish, open to partly forested swamp is the inferred depositional environment.

Sample NDOC-E

This sample is a carbonaceous mudstone and was not analyzed in detail. The high proportion of minerals, the presence of pyrite and the presence of thin vitrinitic stringers suggest deposition in a brackish environment marginal to the original peat swamps.

JA/mpa

ESSO RESOURCES CANADA LIMITED

Attn: H.E. Hopkins

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