

TELKWA

TK - NANIKA MTN. 79(1)A.

GEOLOGICAL REPORT

ON

(LICENCES NUMBERS 4328-4370)

Latitude 54° 6' 56" North

Longitude 127° 15' 42" West

3 93 2 - 3

NANIKA MOUNTAIN COAL PROJECT

LAMPREY CREEK, BRITISH COLUMBIA

OPEN FILE

FOR

B. P. EXPLORATION CANADA LIMITED

COAL DIVISION

1544, 333 - 5th Ave. S. W.

Calgary, Alberta

GEOLOGICAL BRANCH
ASSESSMENT REPORT

BY

G. C. SINGHAI, M. Tech., P. Eng.

00 228

C.L. NOS. 4328-4370

AUGUST 31, 1979

COAL LICENCE FORFEITED

RECEIVED FOR FILING SEP 11 1979

BP Exploration Canada Limited

333 Fifth Avenue S.W., Calgary, Alberta T2P 3B6 • Telephone (403) 237-1234

*Alex these reports are for your files; the
Coal Licences have ~~expired~~* October 3, 1979

Mr. Paul Hagen
Administrator for Coal
Ministry of Energy, Mines
& Petroleum Resources
Parliament Buildings
Victoria, British Columbia
V8V 1X4

12715

MINISTRY OF MINES AND
PETROLEUM RESOURCES
OCT 15 1979
GENERAL TITLES FILE ROOM

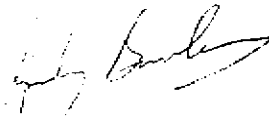
Dear Paul:

Please find accompanying this letter copies of:

- 1) G.C. Singhai's Report on the Nanika Mountain Project
Licence Numbers 4328-4370. This property was
relinquished on August 14, 1979.
- 2) Paul Dyson's Report on the McEvoy Creek Project
Licence Numbers 4190-4200. This property was
relinquished on August 27th, 1979.

The reasons for not extending the term of licences
beyond their anniversary dates is given in the conclusion
of both reports - i.e. little or no coal present.

Yours truly,



A. R. Bowler
Project Geologist

ARB/im
Encl.

SEARCHED	INDEXED
SERIALIZED	FILED
OCT 15 1979	
GENERAL TITLES FILE ROOM	
MINISTRY OF MINES AND PETROLEUM RESOURCES	

TABLE OF CONTENTS

	Page
SUMMARY	(i)
INTRODUCTION	1
HISTORY AND PREVIOUS WORK	3
GEOLOGY	3
A. Stratigraphy and General Geology of North-Central B. C. ...	3
B. Geology of the Area	5
STRUCTURE	7
CONCLUSION AND RECOMMENDATIONS	7
REFERENCES	8

MAPS

Location Map	Fig. 1
Leases Map	Fig. 2
Geological Map	Fig. 3

SUMMARY

The Nanika Mountain coal project involved detailed geologic mapping of rocks belonging to the Early Cretaceous Skeena Group. The area, located approximately fifty kilometres southwest of Houston, B. C., is heavily treed but recent logging operations have provided adequate access and additional exposed outcrop. Outcrop is generally scarce due to the heavy undergrowth.

The Mesozoic rocks of north-central British Columbia have been classified into five groups: Takla, Hazelton, Bowser Lake, Skeena and Sustut. The general lithology of all of these groups is greywacke, sandstone, siltstone, shale, conglomerate, volcanics and related pyroclastics. Recent studies place the coal-bearing strata in the Skeena Group.

The eastern portion of the leases is sedimentary consisting of greywacke and arkosic sandstone with occasional argillite and conglomerate interbeds. The western portion consists of basaltic and andesitic volcanics. Faulting and folding within the area appears to be discontinuous with no apparent regional trends. This could be due to the effects of nearby igneous activity.

No coal-bearing strata was observed in the lease area, therefore further exploration work is not recommended.

GEOLOGICAL REPORT
ON
(LICENCES NUMBERS 4328-4370)
LAMPREY CREEK, BRITISH COLUMBIA
FOR
B.P. EXPLORATION CANADA LIMITED

INTRODUCTION

This project involved the detailed geologic mapping of possible coal-bearing sediments in the Nanika Mountain area. The 43 coal licences of B.P. Exploration Canada Limited are located approximately fifty kilometres southwest of Houston, British Columbia. These licences are centered about $54^{\circ}6'56''$ North Latitude and $127^{\circ}15'42''$ West Longitude. The field work was completed during a five week period in May and June, 1979 and consisted of foot traverses aided by stereographic aerial photographs. Mapping was done on a scale of 1:25,000. Lamprey Creek (93 L/3) topographic map covers the area (Fig. 1). Four-wheel drive vehicle provided transportation from Houston to the project area.

(a) Accessibility

Houston is located on Highway 16 which is a two lane asphalt road and is also serviced by Canadian National Railways. Accessibility to the leases from Houston is by the all weather gravel road to Morice Lake. This road passes through the southern portion of the leases and two all weather gravel logging roads offer access to the central and northern portions.

The northern half of the leases consist of low mountains bounded on the north by the Morice River. The change in relief is about 450 m. The southern portion consists of rolling hills, Collins and McBride Lakes are located near the southeast and southern boundaries respectively.

The area is heavily treed but logging operations carried out over several decades have produced many cleared blocks which has improved the accessibility and has provided more outcrop. Approximately 1% of the leases is outcrop with much of the area which has not been logged covered by a thick undergrowth.

(b) Acknowledgements

The geological personnel who completed the most of the mapping were G. C. Singhai and Larry D. Nicoll. Mr. Larry D. Nicoll was employed by G. C. Singhai and the completion of the geological mapping program would not have been possible without his cooperation. The field assistance was given by Gary McKone and G. Konstapel who were also employed by G. C. Singhai.

The four-wheel drive vehicle was rented from the Chieftain Rent-A-Truck of Vancouver. A helicopter (Bell Jetranger 206) was contracted from Okanagan Helicopters Ltd. Smithers base for about two hours of flying. The crew stayed in Houston, B. C. The base map, aerial photographs and other written information were obtained from B. P. Exploration Canada Limited.

The valuable cooperation of Dr. J. Stoberneck and G. J. Ockert of B. P. Canada Limited and the assistance of above named parties is gratefully acknowledged.

HISTORY AND PREVIOUS WORK

No detailed mapping is known to have been previously done in the lease area. Black (1951) did a detailed study of the Goat Creek coal area near Telkwa which is about 60 km north of the lease area. He reports paper-thin to 4.3 m coal seams and that the coal-bearing series are considered to be part of the Jurassic-Cretaceous Hazelton Group.

The Bulkley Valley Collieries Limited started mining coal in Goat Creek area in 1930 and shipped about 175,250 tons of coal, used chiefly for domestic purposes. This shipment was made during 1930-1950, though the coal was first discovered in Telkwa Valley in about 1900, but mining did not begin until 1918.

Tipper and Richards (1976) show the general geology of the lease area to consist of rocks belonging mainly to the Lower Cretaceous Skeena Group.

GEOLOGY

(A) Stratigraphy and General Geology of North-Central B. C.

The Mesozoic rocks of north-central British Columbia have been in a state of confused stratigraphic terminology however Tipper and Richards (1976) have attempted to clarify the problem. The following nomenclature and descriptions is taken from their work.

(1) The Takla Group (Late Triassic) consists of basaltic and andesitic volcanic rocks with a preponderance of augite porphyry, pelites and minor carbonate.

(2) The Hazelton Group (Early-Middle Jurassic) is a thick and widespread assemblage of basaltic to rhyolitic volcanic rocks, their tuffaceous equivalents and minor limestone. This group can be divided into the Smithers, Nilkitkwa and Telkwa Formations.

(a) The Smithers Formation consists of 40-800 m of greywacke, argillite, siltstone, sandstone, conglomerate, glauconitic sandstone, ash-fall tuff and tuffaceous sediments.

(b) The Nilkitkwa Formation consists of 30-1200 m of shale, siltstone, greywacke, limy shale, limestone, rhyodacite tuff and breccia, basalt.

(c) The Telkwa Formation consists of 4200-8000 m of calc-alkaline basalt to rhyolite flows, breccias, tuffs, limestone, siltstone, shale, greywacke, sandstone, conglomerate.

Black (1951) places the coal-bearing series of the Goat Creek coal area in the Hazelton Group which in that area is comprised of two-thirds mudstone along with interbedded grey and brown sandstone beds with a maximum thickness of 0.3 m. The coal seams are interbedded with the other rocks and range in thickness from paper-thin to 4.3 m. In general, the coal is classed as high-grade, high volatile bituminous with good coking qualities.

(3) The Bowsyer Lake Group (Middle and Late Jurassic) consists of marine and non-marine shale, siltstone, sandstone and conglomerate which has been divided into two or more formations.

(a) The Ashman Formation (300-760 m) contains grey-black shale, feldspathic to quartzose sandstone, greywacke and conglomerate.

(b) The undifferentiated assemblages of this group represent a marine regression and consists of sandstone, conglomerate, siltstone, minor coal and minor basaltic and andesitic volcanics. Maximum thickness of the unit is 300 m.

(4) The Skeena Group (Early Cretaceous) is comprised of marine and non-marine sediments and volcanic rocks. The sediments are greywacke, sandstone, shale and conglomerate with common minor and major coal seams. The volcanics are grey to green or varicolored basaltic to rhyolitic breccias, tuffs and flows. The sediments of the Skeena Group may be difficult to distinguish from the Hazelton and Bowser Lake sediments except for fine flakes of detrital muscovite which are only present in sediments of the Skeena Group.

(5) The Sustut Group (Late Cretaceous to Eocene) is defined as a conspicuously bedded and banded continental strata which includes conglomerate, sandstone, shale and bands of tuff.

(B) Geology of the Area

As reported by others (Tipper and Richards, 1976) it is difficult to distinguish the rocks of the Hazelton, Bowser and Skeena Groups except for the presence of detrital muscovite in sediments of the Skeena Group. Muscovite was observed in many of the greywackes and arkosic sandstones of the leases and on this basis it is concluded that the rocks present in the mapped area may belong to the Skeena Group.

Greywacke and arkosic sandstone are the predominant rock type in the eastern half of the leases. These are a dark grey to greenish-grey

(glaucous) color, very fine to medium grained, with subangular clasts of chert, quartz, feldspar and ± muscovite. Topographic highs in the eastern portion are formed by these sediments. Occasional argillite interbeds were observed in the sandstone. In a creek in the northern portion of the leases these argillites were very carbonaceous but no coal was observed. Southeast of Collins Lake granitic intrusions formed the low hills.

On the western edge of the upper half of Collins Lake is a considerable exposure of gentle northerly dipping, black, concretionary shale which extends under the northern part of the lake. The absence of ripple marks suggests an offshore marine depositional environment. This shale is overlain and underlain by arkosic sandstone.

The western half of the leases consists predominantly of andesitic and basaltic volcanics containing phenocrysts of olivine, pyroxene, hornblende and biotite. These rocks form the topographic highs in the northwest and west-central portions of the leases.

In the central portion of the leases the sedimentary-volcanic contact is marked by a northeast trending conglomerate bed of about 10 m thickness containing coarse grained to boulder sized clasts. This conglomerate extended for about 1.5 km but was not observed elsewhere in the leases. Its stratigraphic position within the (Skeena?) Formation is not certain. A younger, poorly consolidated conglomerate and coarse grained sandstone overlying the volcanics was observed on the western slopes of the volcanic mountains in the northwest corner of the leases.

STRUCTURE

Definite regional structural trends in the lease area are not readily apparent, due possibly to localized faulting associated with the igneous intrusions and volcanic activity within the area. Within the sandstone in the southeast portion of the leases is a northeast trending fault which has formed a scarp visible from the Morice Lake road. Nearly perpendicular to the trace of this fault is a possible fault which could cause the offset between the northern and southern portions of Collins Lake. The trace of this fault may parallel the bedding plane within the shale unit.

Folding within the sediments of the lease area is discontinuous; trends appear to be continuous only within a hill or mountain but not continuous to an adjacent high.

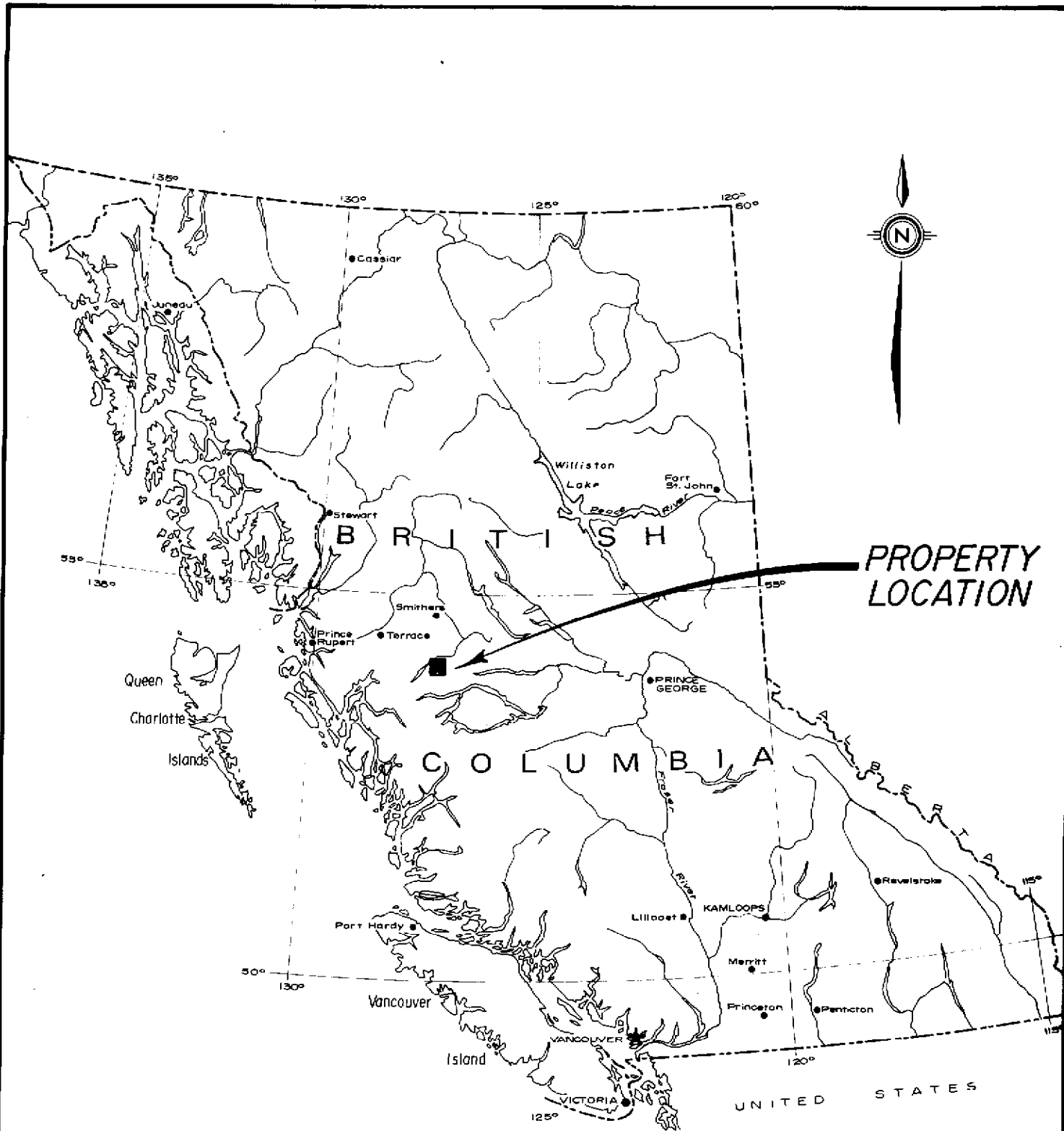
CONCLUSION AND RECOMMENDATIONS

Although the rocks contained in the leases appear to be of the coal-bearing Skeena Group, no coal-bearing strata was observed. Because of a lack of stratigraphic data, it is not possible to determine where in the Skeena Group these rocks are stratigraphically located. There is no coal bearing outcrops we observed along traverses during geological mapping. Therefore it is recommended that no further exploration work is warranted and these leases may be dropped.

Submitted respectfully

Dated at
5620 Clearwater Drive
Richmond, B. C.
August 31, 1979

G. C. Singhai
G. C. Singhai, P. Eng.



**PROPERTY
LOCATION**

BP Exploration Canada Limited (BP)
 COAL DIVISION
NANIKA MOUNTAIN COAL LICENCES
 NUMBERS (4328-70)
LOCATION MAP

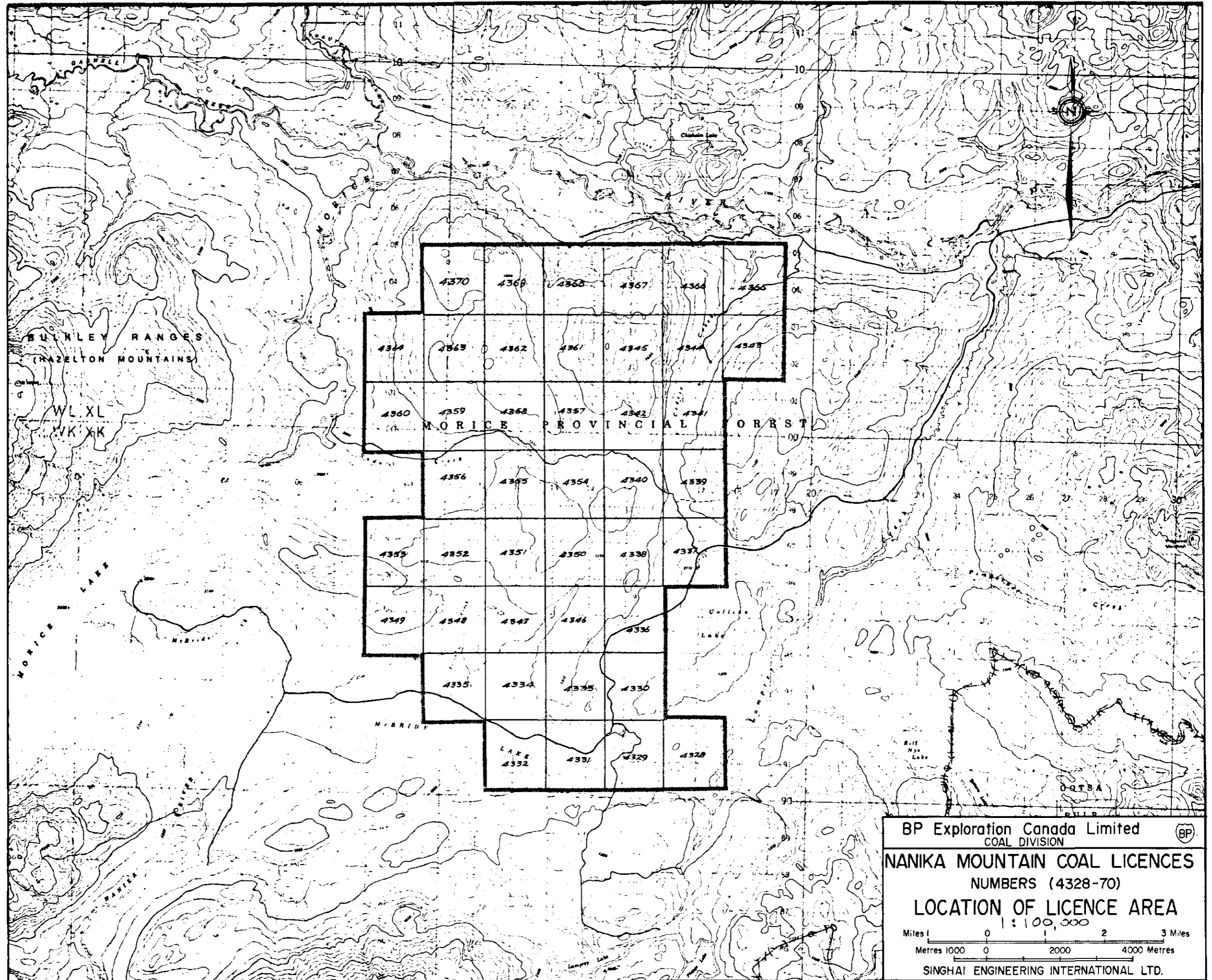
SCALE
 Km. 100 50 0 100 200 300 400 Km.
 Miles 100 50 0 100 200 Miles

SINGHAI ENGINEERING INTERNATIONAL LTD.

REFERENCES

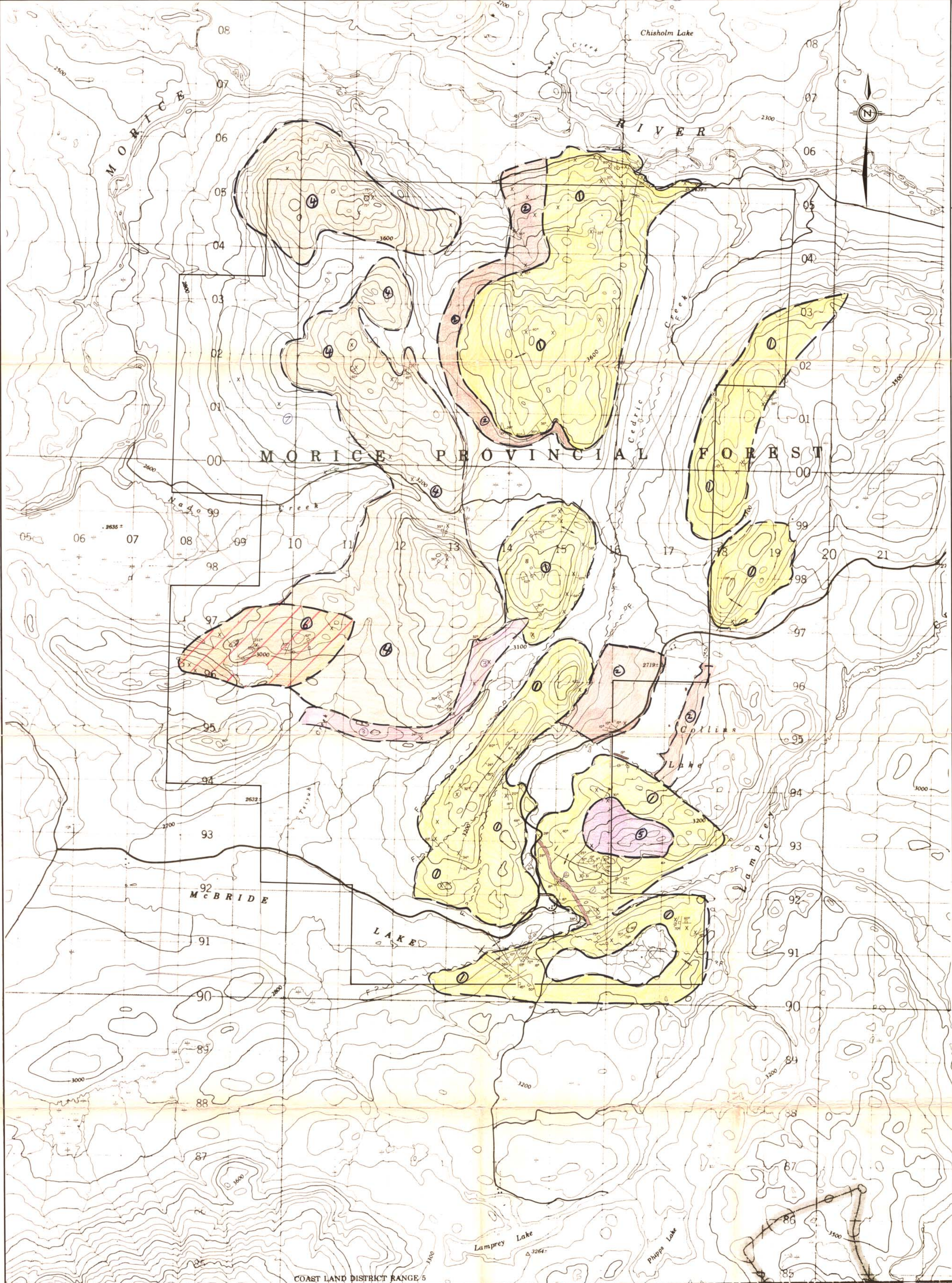
- Black, J. M. (1951): Report on Goat Creek Coal Area, Minister of Mines Annual Report (1951), (Province of B.C.), p A291-A297.
- Mines and Petroleum Resources Report, 1967: (Province of B.C.), Bulkley Valley Collieries Limited, p 458-459.
- Richards, T. A.: Geology of Hazelton (West Half) Map Area, British Columbia, Project 720038, Current Research, Part A. Geol. Surv. Can. Paper 78-1A, p 59-60, 1978.
- Richards, T. A. and D. L. Jeletzky: A preliminary study of the Upper Jurassic Bowser Assemblage in the Hazelton West Half Map Area, British Columbia (93 M-W 1/2). Geol. Surv. Can. Paper 75-1, Part A.
- Richards, T. A.: Hazelton East Half (93 M East Half), Project #720038. Geol. Surv. Can. Paper 74-1, Part A.
- Tipper, H. W. and Richards, T. A. (1976): Jurassic Stratigraphy and History of North-Central British Columbia, G.S.C. Bull. 270, p 73.

228 a



BP Exploration Canada Limited
 COAL DIVISION
NANIKA MOUNTAIN COAL LICENCES
 NUMBERS (4328-70)
LOCATION OF LICENCE AREA
 1:100,000
 Miles 0 1 2 3
 Metres 1000 0 2000 4000
 SINGHAI ENGINEERING INTERNATIONAL LTD.

FIG 2



SYMBOLS

- CONTACT
- ~ FAULT OR MAJOR FRACTURE
- ∩ ANTICLINE
- ∪ SYNCLINE
- - - FRACTURE OR JOINT
- X OUTCROP AREA
- ∠ VERTICAL DIP OF STRATA
- + HORIZONTAL BEDDING
- ∠ FIELD MEASURED BEDDING ATTITUDE

GEOLOGY

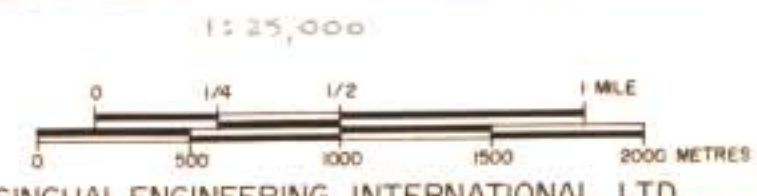
- OOTSJA LAKE GROUP**
- ② POORLY CEMENTED CONGLOMERATE WITH VOLCANIC AND SEDIMENTARY CLASTS.
- ④ RHYOLITIC VOLCANIC FLOWS.
- SKEENA GROUP**
- ⑤ GRANITIC INTRUSIONS
- ⑥ ANDESITIC TO DACITIC VOLCANICS
- ③ CONGLOMERATE WITH QUARTZITE AND CHERTY PEBBLES
- ⑦ SHALE CARBONACEOUS AND MARINE SHALE
- ① MICACEOUS GREYWACKE AND SANDSTONE
- GLACIAL DRIFT

TK-NANIKA H3 71(1)A 228
 BP Exploration Canada Limited
 COAL DIVISION

NANIKA MOUNTAIN COAL LICENCES

NUMBERS (4328-70)

GEOLOGICAL MAP



SINGHAI ENGINEERING INTERNATIONAL LTD.