Re- SECUS MIN 79(1)A

1979 Geological Report Volume I
CL 4201-4219 NTS 93-I-7, 8 (Peace River)
Secus Mtn. Coal property (Shell)
October, 1979

Georgia Hoffman, P. Geol. (Alberta) for Crows Nest Resources Limited (operator)

# PRES FILE

GPOLOGICAL BRANCH ASSESSMENT REPORT

· PR - SKEUS MIN 79(1)A.

1979 Geological Report
on Field Work From August '78 to August '79

on Coal Licences 4201-4219 incl.

Held By: Shell Canada Resources Limited

Operated By: Crows Nest Resources Limited

Secus Mountain Coal Property

Peace River Land District, N.E. B.C.

NTS. 93-1-7,8

# OPEN FILE

October, 1979

Georgia Hoffman, P. Geol. (Alberta)

for Crows Nest Resources Limited

## PROFESSIONAL VERIFICATION OF REPORT

1979 Geological Report Secus Mountain Coal Property Coal Licences 4201 to 4219 incl. Peace River Land District, B.C.

Pacific Petroleums Limited, with whom our subject licences interlock, carried out field geological mapping in 1978 late summer on the licences above held by Shell Canada Resources Limited, operated by Crows Nest Resources Limited under a contract agreement with the latter companies. Miss Georgia Hoffman reviewed the documentation (enclosed) of this work completed in April, 1979 and carried out the 1979 field program on this property. She also prepared this report. Mr. Frank Martonhegyi supervised the activity of both programs under the general direction of the undersigned.

Georgia Hoffman graduated from the University of Pennsylvania in Philadelphia, Pennsylvania, U.S.A., with a Bachelor's degree in Geology. She is a member, as a Professional Geologist, of the Association of Professional Engineers, Geologists, and Geophysicists of Alberta. Her experience in Western Canadian coal exploration includes positions with:

- Dennison Mines Limited, Vancouver, B.C.
- Shell Canada Resources Limited, Calgary, Alberta
- Crows Nest Resources Limited, Calgary, Alberta She is self-employed since August 1, 1979.

Frank Martonhegyi, M.E., graduated in Mining Geological Engineering from the University of the Heavy Industry, Hungary, in 1962; and received post-graduate training at the University of Saskatchewan, Saskatoon, in 1969-1971. His experience in Western Canadian coal exploration since 1971 includes positions with:

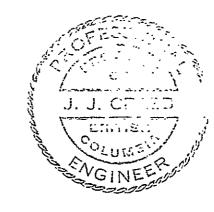
- CanPac Minerals Ltd., Calgary, Alberta
- Shell Canada Resources Ltd., Calgary, Alberta
- Crows nest Resources Ltd., Calgary, Alberta

His prior experience includes underground coal mining geology, geotechnical engineering and geochemistry in Hungary, Austria and Canada.

He currently holds the position of Senior Staff Geologist for Crows

Nest Resources Ltd. superivising coal exploration in British Columbia.

I consider both the forementioned geologists to be well qualified to undertake responsibilities they were assigned for this project. I am satisfied that the attached report dated November 16, 1979 has been competently prepared and justly represents the information obtained from this project. However, the Anniversary Date of these licences was August 17, 1979, in the middle of the field activities. This report was designed to account for work done to this date only, although it includes references to later work as well. As a result of such circumstances, this report is of a preliminary nature. Its content should be viewed together with the account for the remainder of the 1979 activites including a complete compilation and evaluation of all geological information obtained to date.



Will.

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30-54 X SECTIONS (53 MISSING)

1:5000

#### 1 SUMMARY

The Secus Mountain property consists of 5,583 hectares of coal licences held by Crows Nest Resources Ltd. in the Foothills coal field of northeastern British Columbia. The licences lie approxiately 150 km south of Dawson Creek, B.C. between the Narroway River and Red Deer Creek.

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A program of geologic mapping and hand trenching of coal seams was undertaken during August of 1979. The field work was carried out by helicopter since there are no major roads or trails in the area at present.

Four major coal seams in the Gates Member of the Commotion

Formation were trenched by hand and found to have an aggregate thickness
of 9.4 metres. Three coal seams were trenched in the upper Minnes Group,
but geologic mapping indicated that these seams may be discontinuous.

Additional exploration by diamond drilling and other methods to prove
the commercial viability of the property. Drilling on adjacent properties
has established that the Gates Member coal seams are usually good quality
metallurgical coal.

## 2 LOCATION, ACCESS AND TENURE.

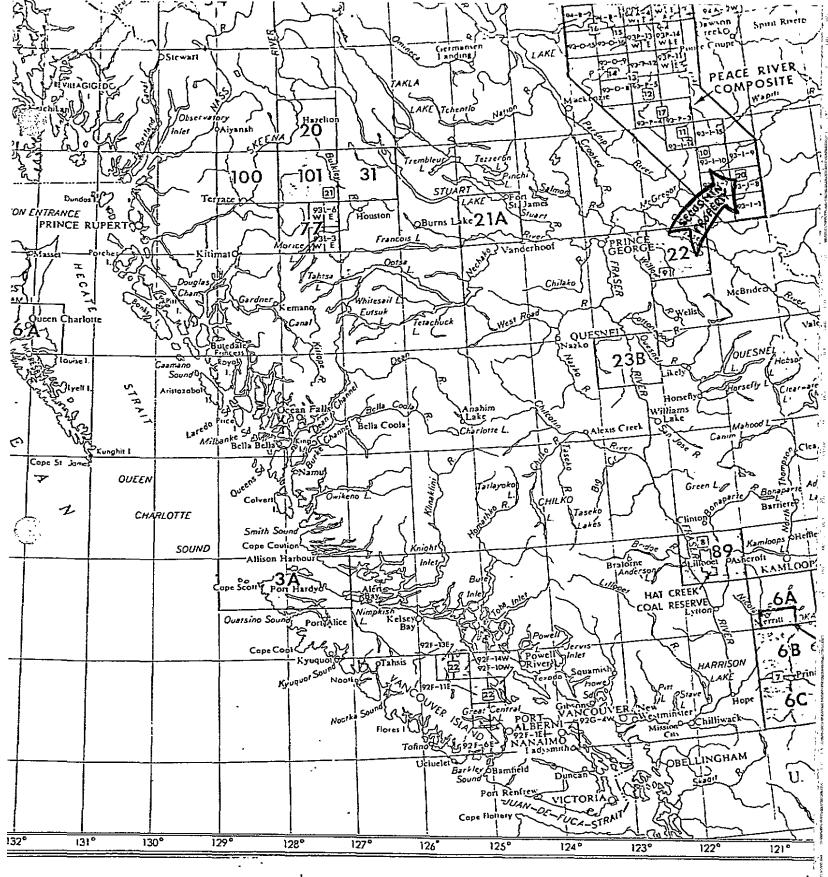
Shell Canada Resources Ltd. holds a now contiguous block of 25 B.C. Coal Licences covering 6,042 hectares, operated by its wholly owned subsidiary Crows Nest Resources Ltd. However, before the acquisition of six new licences on April 18, 1979, these holdings were in three blocks covering 4558 hectares in 19 licences granted on August 17, 1978. These subdivisions are referred to in this report only where statutory requirements are involved. Technically the property is handled as one unit often even including holdings of McIntyre-Canadian Superior-Petro Canada (formerly Pacific Petroleums, operator) with which the Shell-CNRL licences interlock. All pertinent land information is tabulated on Attachment 3:. B.C. Coal Licences Tenure Standing and is shown on Attachment 4: Coal Land Disposition Map.

This property named after Secus Mtn. lies in the Peace River Coal Fields in the Foothills of the Rocky Mountains in northeastern British Columbia (Attachment 1: Location Map)

It is located to cover portions of Secus Mtn., Mount Nekik, Mount Belcourt and is bisected by Belcourt Creek. The Rocky Mountain Range lies along the southwest edge of the property.

The relief of the property varies from 2,000 to 1,250 metres. The higher areas are characterized by alpine vegetation, those at lower elevations are covered by spruce forest.

The property is some 150 km south of Dawson Creek, B.C. between the Narraway River in the southeast and the Red Deer Creek in the northwest where at these two ends the property is accessable on good roads. The road reaching Belcourt Lake from the Narraway River is also in a reasonable condition. This nearby road is quasi parallel with the southern half of the property (Attachment 2: Access Map). There are no roads on the Shell-CNRL holdings although some cut-lines and sesmic trails exist in the major creek valleys. Both the 1978 and the 1979 field work was carried out with helicopter support.



Attachment I

Location Map
Secus Mtn. Coal Prospects
Peace River Land District, B.C.
Scale: 1:4,000,000 NTS 93-I-7, 8
November 16, 1979



# CROWS NEST RESOURCES LIMITED EXPLORATION

# B.C. COAL LICENCES TENURE STANDING

BLOCK: TEMPORARY DESIGNATION PROJECT:

GROUP: UNGROUPED

SECUS MTH.

YEAR: 1979-80 DATE: NOV 5.79

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GENERAL REMARKS: FILL NECESSARY LINES AND COLUMNS ONLY COAL DEVELOPMENT POTENTIAL IS MY PRIME) UNLESS COMERNISE STATED. LICENCES HELD BY SHELL CANADA RESQUECES LTD. CAPILLIS THE OPERATOR.

## 3 THE EXPLORATION PROGRAM 1978, 1979

During 1978 Petro-Canada Explorations Ltd. supplied aerial photographs, and 1:25,000 scale topographic and geologic maps and cross-sections of the Secus Mountain property. These maps and other data were prepared for Crows Nest Resources Limited as an extention of the exploration program being carried out by Petro-Canada on an adjacent property. A resource estimate was subsequently made by personnel from Crows Nest Resources who used estimates of seam thicknesses.

The 1979 exploration program for the Secus Mountain property included geologic mapping designed to confirm the 1978 Petro-Canada 1:25,000 scale geological map and to locate coal seam exposures. Coal seam outcrops observed on Coal Licences No. 4202 to 4219 inclusive were measured, and hand trenching was carried out as required.

The field work was carried out from Chetwynd, B.C. Helicopter support was contracted from Maple Leaf Helicopters Ltd.

## 4 STRATIGRAPHY

The Secus Mountain property contains strata of Lower Cretaceous age, including Minnes Group to Shaftesbury and younger formations (Attachment 6). The Paleozoic marine sediments of the Rocky Mountain Ranges lie along the southwestern edge of the property.

Minnes Group The strata of the upper Minnes Group are the oldest Mesozoic sediments on the Secus Mountain property. The upper Minnes Group consists of nonmarine sandstones, siltstones, mudstones, and coal seams in this area, and the strata are fairly well exposed on Secus Mountain and Mount Nekik.

Three coal seams were trenched about 200 metres below the top of the Minnes Group on Coal Licence No 4216 at the north end of Secus Mountain. These seams ranged from 2 to 4 metres in thickness. This coal-bearing zone could not be located in the exposures on the south end of Secus Mountain and on Mount Nekik, however, and it appears that these seams may be discontinuous.

<u>Cadomin Formation</u> The Cadomin Formation overlies the Minnes Group and contains conglomerate beds and lenses of chert and quartzite pebbles in a sandstone matrix, interbedded with medium and coarse grained sandstone.

The oldest conglomerate units exposed on Secus Mountain and Mount

Nekik consist of beds of smaller, matrix-supported clasts in a brown-weathering

"salt-and-pepper" sandstone matrix, interbedded with sandstone of a similar character. These units may belong to the Minnes Group rather than to the Cadomin Formation. The uppermost beds consist of coarse grained, clast-supported conglomerate with a lighter coloured quartzose sandstone matrix, commonly representative of the Cadomin Formation.

Gething Formation The Gething Formation and lower Ft. St.

John Group strata are fairly well exposed along the west-facing ridge of Mount Belcourt. The Gething Formation is thin in this area and consists of nonmarine clastic sediments and coal seams. These strata were not examined in detail during the 1979 exploration program, and the coal seams were not trenched or measured.

Moosebar Formation The marine Moosebar Formation consists of recessive, dark gray mudstones and siltstones. These beds become more silty and sandy in the upper portion near the gradational contact with the Commotion Formation.

Commotion Formation, Gates Member The Gates Member of the Commotion is the most attractive coal-bearing horizon in the vicinity of the Secus Mountain property. Gates Member strata were examined near Mount Belcourt and hand trenching of coal seams was carried out in the area of Coal Licence No. 4219.

The Gates Member was found to be approximately 270 metres thick.

The unit consists of sandstone, siltstone, mudstone, and major coal seams,

with several massive beds of pebble conglomerate. Four coal seams with

thicknesses in excess of 1 metre were measured, being 2.5, 3.8, 2.1, and 1 metres respectively, from youngest to oldest. Drilling on all adjacent properties has established that The Gates Member coal seams are usually good quality metallurgical coal.

Commotion Formation, Hulcross Member The Hulcross Member consists of gray marine siltstones which sometimes contain beds of pelecypod fossils. This unit is quite thin in the Mount Belcourt area, and becomes increasingly thin and sandy towards the south.

Commotion Formation, Boulder Creek Member Exposures of the Boulder Creek Member may be seen along the west-facing slopes of the Mount Belcourt ridges, and across Belcourt Creek from Secus Mountain.

The Boulder Creek Member consists of several beds of pebble conglomerate and quartzose sandstone in these areas, with minor amounts of siltstone and mudstone.

Shaftesbury Formation The Shaftesbury Formation consists of a thick sequence of dark gray marine mudstones, with siltstones and some sandstones in the upper portion. The lower shales are mapped as Hasler Formation in some areas, while the upper sediments are sometimes mapped as the Goodrich and Cruiser Formations, although no attempt to subdivide them in this fashion was made during the 1979 geological mapping program. Exposures of these strata, overlain by outcrops which may represent the Upper Cretaceous Dunvegan Formation, may be seen west of Mt. Belcourt adjacent to the Rocky Mountains.

# SECUS MOUNTAIN PROPERTY TABLE OF FORMATIONS

PERIOD	GROUP	FORMATION	MEMBER	LITHOLOGY	APPROXIMATE THICKNESS
		Shaftesbury		Dark gray marine mudstone, with siltstone and sand-stone in the upper portion.	
	ST. JOHN		Boulder Creek	Pebble conglomerate and quartzose sand-stone	150 ш
	FORT S'	Commotion	Hulcross	Gray marine silt- stone with peley- pod fossils.	40 ш
CRETACEOUS			Gates	Nonmarine sandstone, pebble conglomerate, siltstone, and mudstone, with major coal seams.	270 ш
GR.	•	Moosebar		Dark gray marine mudstone, becoming silty and sandy near top	70 m
LOWER	виллнеар	Gething		Nonmarine sandstone, siltstone, mudstone, pebble conglomerate, and coal seams	70 m
	BUJ	Cadomin		Pebble conglomerate, chert and quartzite clasts with sandstone matrix, interbedded with sandstone.	70 m = .
	UNCONFOR	MITY ?			
	MINNES			Sandstone, siltstone, mudstone, and conglomeration, with coal seams in some areas.	

## 5 GEOLOGIC STRUCTURE

The geologic structure of the Secus Mountain Property is characterized by southwest dipping strata, including the coal-bearing Gates Member, which form dip slopes along the west-facing ridges of Mount Belcourt and Secus Mountain. These strata terminate against a major west dipping thrust fault which separates them from the paleozoic sediments located along the southwestern edge of the property.

In some areas, broad folds occur in the Lower Cretaceous strata between the dip slope and the Palaeozoic sediments, and a major repeat of the strata by a thrust fault northwest of the Mount Belcourt summit has been mapped.

## 6 CONCLUSION

The 1979 field mapping program clearly demonstrated the presence of coal-bearing Commotion Formation strata on the Secus Mountain property. Four coal seams which may have commercial significance were located and exposed by hand trenching. In addition, the mapping showed that structures suitable for mining by both surface and underground mining are present should the coal quality and coal seam thicknesses be found to be adequate. Significant amounts of exploration by diamond drilling and other means will be required to prove the commercial viability of the property.



# DEPARTMENT OF MINES AND PETROLEUM RESOURCES Coal Act (Sec. 19)

## APPLICATION TO EXTEND TERM OF LICENCE

1. I, GLENN C. FROUDFOOT	agent for SHELL CANADA RESCURCES CIHITED
(Name) 400 Fouety Aueuue Sw.	HOO FOURTH AVENUE > S.W.
CALGARY ALBERTA T27 0:	(Address)
•	Valid FMC No
	of Coal Licences No(s) 4215 440 4201 To 4209 INCL.
TEN LICENCES CALLED SECUS	TN. COAL PROSPECTS (SOUTH BLOCK)
for a further period of one year.	
2. I have performed, or caused to be performed	during the period August 17, 1978 to
AUGUST 16 107	9, work to the value of at least \$ 37,279
on the location of coal licences as follows:	.f., work to the value of at least 3
CATEGORY OF WORK	
Geological mapping	1215 AND 4201 TO 4209 INCL. 5 24 547
Surveys: Geophysical	
Geochemical	
_	215 AND 4201 TO 4209 INCL \$ 11,126
Road construction	
Surface work	
Underground work	
Drilling	
Logging, sampling, and testing	
Reclamation	3 7
Other work (specify) Report to date	4215 AND 4201 TO 4209 INCL. E. \$ 1,556
	his value of work on Coal Licence(s). 4215 AUD
4201 to 4209 INCLUSIVE	
A. 4. I wish to pay cash in lieu of work in the an	nount of \$ on Coal Licence(s)
No(s)	
•	value of work to claim a refund of cash in lieu of work in
	s paid to extend the term of Coal Licence(s) No(s)
	from
to, 19	Mining Receipt No
for prior payment of cash in lieu of work is at	tached for adjustment.
6. The work performed on the location(s) is det	ailed in the attached report entitled
Report will be submitted in	minety days.
***************************************	
AUGUST 16, 1979	· ge 1-t
(Date)  *Applications to group licences may be filed to apportion costs	on a maximum of 10 licences.  (Signature and position)  LANDHAN
	SUBMITTED IN DUPLICATE)
FOR DEPARTMENTAL USE ONLY	
Value of work reported \$	
Value of work approved \$	Value of credit remaining \$

Work performed. Yes No No
The program of operations detailed hereunder was carried out during the period from August 17, 1978  August 16 , 1979. Total costs are \$ 37, 279 , an average
of \$ for acre (\$ 15.91 per hectare). 5,784 acres ~ 2,343 hectares
GEOLOGICAL MAPPING Yes No Cost \$ 24,597  Area (Acres)  Reconnaissance 6,000 ac ~ 2,500 ha 1:25,000; 1:5,000 approx. 52 men-days
Detail: Surface
Other (specify)
GEOPHYSICAL OR GEOCHEMICAL SURVEYS Yes No Cost \$ No Cost \$ Line miles
OTHER SURVEYS Yes X No Cost S 11,126  Grid Topographic Mapping Other Survey
ROAD CONSTRUCTION Yes No E Cost S
SURFACE WORK Yes No Cost \$ Sile Licence Number(s)
Seam tracing Crosscutting
UNDERGROUND WORK Yes No X Cost S No X Total footage Other workings: Area Total footage Total footage
DRILLING Yes No No Cost \$ Number of Holes Total Footage
Core: Diamond Wireline Rotary: Conventional Reverse circulation
Other.
Contractor
Lithology: Drill samples Core samples Bulk samples Logs: Gamma-Neutron Density Other  Testing: Prox. analysis FSI Washability Carbonization Petrographic Plasticity Other
OTHER WORK (specify details). Geological Report Cost \$ 1,556 to date
REPORTS:  1.A. Reclamation work (Permit No) Detail of work*
OPERATIONS:  Work was supervised by T. MARTONIEGY! Position STAPE GEOLOGIST  Is this person a registered or licensed Professional Engineer in British Columbia? Yes No Note—Where the licensee intends to perform, during the extended term of his licence, work not set out in the plan of operations filed under section 15 (2) (c), a supplemental plan of operations is to be attached.

<sup>#</sup>Histoliumition work tra fire the post pice disast and the substitution.

## VALUATION OF WORK: COST STATEMENT (Sec. 27, B.C. Reg. 436/75)

ON-PROPERTY COSTS: For period from	m August 17,197810 August (	, 19 <u>79</u>
1. OPERATOR'S FEES, SALARIES, AN	D WAGES:	
Average of Emp Professional and technical	Number Average Average Number el Days 2 125 23	Amount JOZ CUEL
Machine operators and support		**** ** *******************************
Miners	<u> </u>	
Other		
	Total operator's costs \$	4,520
2. CONTRACTORS AND CONSULTANT		ontraci Amouni
P. Dyson Consultants & Holding Ltd.	GEOLOGICAL CONSULTING	153 cuel
R.M. HARDY & ASSOC. LTD.	PROTOMOSAIC	146 CURL
R.M. HARDY & ASSOCIATED	COUTEOL SURVEY TUROUS PACIFIC ?.	10,980 PAUFIC
/ PACIFIC PETROLEUMS LTD.	GENTHAL GOLTRACTOR TOE GEOL TICLD WOOK S	34,544) .
CONTOUCUTS OF TOTAL CONTRACT AM	NOUNT ENTERED ALLORDING TO THEIR NATURE  SOT ENTERED HERE  Total contractor and consultant costs \$	11,279
~		
3. EQUIPMENT AND INSTRUMENTS Type	USED: Owned Rented	Amount
2370	***************************************	
4	A-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	* ****
		********
	Total equipment and instrument rentals \$	אונ
A TUTE DO CAMBO COSTS.		
4. FIELD CAMP COSTS:	•	InicmA
Food	CANNE SOURCE PURE TERMS DIRECTORS OF A SALE TO T	
à	3 T	
Accommodation	3 7	
Fuel	<u> </u>	
	Total field camp costs \$	3,092 PACIFIC
Fuel Other  5. SAMPLING, ANALYSIS, AND TEST	ING:	
FuelOther	-	3,092 PACIFIC
Fuel Other  5. SAMPLING, ANALYSIS, AND TEST	ING:	
Fuel Other  5. SAMPLING, ANALYSIS, AND TEST	Performed by	
Fuel Other  5. SAMPLING, ANALYSIS, AND TEST	Performed by	Amount
Fuel Other  5. SAMPLING, ANALYSIS, AND TEST	Performed by	Amount
Fuel Other  5. SAMPLING, ANALYSIS, AND TEST	Performed by	Amount
Fuel Other  5. SAMPLING, ANALYSIS, AND TEST Service	Totals, samplings, analysis, and testing \$	Amount
5. SAMPLING, ANALYSIS, AND TEST Service  6. SUPPLIES AND MATERIALS COST	Totals, samplings, analysis, and testing \$	Amount
5. SAMPLING, ANALYSIS, AND TEST Service  6. SUPPLIES AND MATERIALS COSTS Process supplies	Totals, samplings, analysis, and testing \$	Amount
Fuel Other  5. SAMPLING, ANALYSIS, AND TEST Service  6. SUPPLIES AND MATERIALS COSTS Process supplies	Totals, samplings, analysis, and testing \$	Amount
6. SUPPLIES AND MATERIALS COSTS  Process supplies  Operating and maintenance supplies	Totals, samplings, analysis, and testing S	Amount
6. SUPPLIES AND MATERIALS COSTS  Process supplies  Operating and maintenance supplies	Totals, samplings, analysis, and testing \$	Amount
6. SUPPLIES AND MATERIALS COSTS  Process supplies  Office and technical supplies  Other supplies and materials	Totals, samplings, analysis, and testing \$  Totals, samplings analysis and testing \$	Amount
6. SUPPLIES AND MATERIALS COSTS  Process supplies  Operating and maintenance supplies	Totals, samplings, analysis, and testing \$  Totals, samplings analysis, and testing \$  Total, supplies and materials \$  transportation details):	Amount
5. SAMPLING, ANALYSIS, AND TEST Service  6. SUPPLIES AND MATERIALS COSTS Process supplies Operating and maintenance supplies Office and technical supplies Other supplies and materials 7. TRANSPORTATION COSTS (Ground	Totals, samplings, analysis, and testing \$  Totals, samplings analysis, and testing \$  Total, supplies and materials \$  transportation details):	Amount

Air support details: Adverset Type HELICOPTER 206 B	Owner Mapue Leaf Heucopica's U	Charle	er . 612	cuel
NEU COPTERS	CHANTERED BY PACIFIC	Perroleums		PAUFIC
		Total transportation cost	s <b>s</b> 15 <sub>1</sub> 175	-
RECLAMATION WO	DRK:		S. NIL	
. TRAVEL EXPENDIT	TURES (operator's costs only):		72	
Number of Pe		Number of Trips	Amount 204	CNRL
- ×		Total travel expenditure	204	•
· · · · · · · · · · · · · · · · · · ·		Total cost	s s 34,270	
		•		
ų	(Secs. 28 and 29, B.C.			
FF-PROPERTY COST	rs: Period from Augus	+17,1978,0 Augus	+ 16, 19.79	-
(a) Logistics and fic	eld support	*****************************	\$	•
(b) Technical and for	easibility studies Photogeol	ogical mapping	1,453 	حسور
	epons to date			
(d) Supplies and ser	rvices			
(e) Mobilization and	d demobilization of equipment			-
	DScs			-
(Tiemize)				
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Supporting Cost	Statements Attached	Tota	al \$	_
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	SUMMA	RY	•	•
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On-property co	313	Total cos	27 67	9
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ratement of costs verified	d by	_ /3	, , - 0	
Ung 1)	.29	Miet "	Jure and position)	7
	DOUG OF THE CHOOSE THE CONTROL OF THE CHOOSE THE CONTROL OF THE CO	F LICENCES IS DERIVE HERE SEWS MTW. LICEI B PACIFIC PETROLEUM	MITAS AL PEATIN HE COLOR TO THE	G E

	, OF WORK: COST ST :, 27, B.C. Reg. 436/75)		TOTAL SECUS MTN LICENCES OF ANSITY 4,558 haz 100%	14215,4201-4209	1 3 3	(4217-4219) 7556a = 19%
OPERTY COSTS: For period from	Avgvet_17 <u>[15</u> 78	loAugust	_	) #too	CENTRAL	LO R.T.K
RATOR'S FEES, SALARIES, AND	Sumber Ascrage	Average Number of Days	• - • Атоилт _	Ś	_	3
essional and technical	12.5	el Days	PACIFIC 8 663	102 4,418	2,599	1,046
hine operators and support			*			
crs			**************************************	•		
er		otal operator's costs	5 8,863	4,520	2,659	1,624
STRACTORS AND CONSULTANT	S:	-				
Name CONSULTANTS R NOLDING LTD.	Service Course		Contract Amount CNRL 300	153	10	57
1.4xeor & Actoc. LTD.	PROTOTOSAIC		CNGL 217	jų G	.8¢	\$5
1. TARRY & ATOL LTD.  *ACIFIC FET EDEEUH'S LTD.  *ACIFIC FET EDEEUH'S LTD.  *ACIFIC FET EDEEUH'S LTD.  **12,173) **AFFET EVERED ACCORDING  **HOUST IS NOT ENTERED ACCORDING  **HOUST IS NOT ENTERED ACC.	וב דס דענית הגדעת ב, דוו	ic petaoleune For Geolfieldurg 14544.C:20.120	<u>}</u>	·	٠	५,० <b>९०</b>
<del>-</del>	Total contractor a	and consultant costs	s 22,11G	11,279	C,G35	4,202
UIPMENT AND INSTRUMENTS U	JSED: Owned		Amount			
	Total equipment and	d instrument rentals	S	,	in the state of th	
ELD CAMP COSTS:	•		Amount		;	;
commodation			, , , , , , , , , , , , , , , , , , ,		İ	;
:l		<del>-</del>	40 47 6 40 47 4 444 444 444 444 444 444 444 444	•	1	, ,
ner			- PACIFIC 6.063	z 093	   1,819	l <sub>(</sub> 152.)
•	То	stal field camp costs	S PACIFIC 6,063	314	<u> </u>	
MPLING, ANALYSIS, AND TESTII	NG: Performed	_	Amount		Ì	) { } !
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PPLIES AND MATERIALS COSTS:			Amount			- :
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ice and technical supplies						
ner supplies and materials						
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	-		-			
ANSPORTATION COSTS (Ground to Vehicles Owner	•	Remial Raie	Amount			<b>)</b> ,
*** ***********************************						i
						<b>\$</b> ,

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support details:	O≈net	f	Charles	FOT AL SECUS HTN LICE.OF AVG.17 Issala.100%	\$ 00 T # 100 \$) 4215, 1201-1109) 4,34344151%	CENTRAL 4216, 120-4214) 1,360 har 130%	1217-4219) 75512-19%
MINISTYPE ICOPTER 206 B	HARLE LEAF HEUCOPTERS LID		Caster	WEL 1,200	C15	340	228
2 SOTSOL	CHARTERED BY PACIFIC P	Greoleum S		PACIFIC 18,250	9,308	5,475	3,467
		Total transpor	tation costs	s 29,754	15,175	8,926	5,653
CLAMATION WO	PRK:						
				\$NIL			
AVEL EXPENDIT	URES (operator's costs only):				32		
Number of Fee		Number of Trips		Amount CNRL HOO	204	120	76
	<u> </u>	Total travel e	xpenditures	5 400	204	120	76
-	٠ موليد		Total costs	C 12 1 4 4 4	34,270	20,159	12,767
					_		
off~	(Secs. 28 and 29, B.C	_	,	_	18		•
PROPERTY COST	'S: Period from Avc. 1	7,1978, 10	Δως.	V. V. V. V. V. V. V. V. V. V. V. V. V. V			
(a) Logistics and fie	ld support		<del></del> -	<b>S</b>			
(b) Technical and (e	easibility studies PHOTOCEOLO	GICAL MAPPING	(SPROVLE		1,453 574	<i>ኔኔጜ</i> ጸ2፫	541 ; 213
	eports to date			MUFIC 1925	982	578	365
	vices						
-	I demobilization of equipment						
(I) travelling exper	35¢\$						
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Supporting Cost	Statements Attached		Total	5. 5,899	3,009	1,770	1,120
				Amount			!
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		-					,
		Total supp	orting costs	S			ŕ
	SUMMA	R <b>V</b>			•		•
	ts			. 67,196	34.270	20.159	12,7 <b>67</b>
On-property cos	ts			5 21477	31007	, 4 m	11 120 1
Oit-property cos	•		Total costs	s 73,095	37, 279	21,929	
ment of costs verified	by						
		•					# . }

ESignature and him last

#### PACIFIC PETROLEU. VIS LTD.

P.O. BOX 6666

Shell Canada Resources, 400 - 4 Avenue S. W.,

Attention: Mr. F. Martonhegyi

CALGARY, Alberta

CALGARY, ALBERTA T2P 616

INVOICE HUMBER 12-94005-78

1-12-124-64560

December 18, ,, 78 INVOICE

DESCRIPTION To invoice you for: Mapping services provided by Pacific staff in the area south of Red Deer Creek, as per the Pacific-Shell agreement. Reference is made to Pacific's letter of May 18, 1978. \$ 67,734.66 Charges detailed on the attached breakdown

- The cost accounts for the Pacific-Shell Agreement as per Pacific's letter dated May 18, 1978 are determined as follows:
  - Shell to pay 50% of all costs south of Red Deer Creek. The mapping south of Red Deer Creek is estimated to constitute 70% of the total mapping for 1978 on the Honkman Project.
  - 2) Shell to pay 10% surcharge on mapping work to cover administrative costs. No administrative costs are to be assessed on photogrammetric services.
- Costs are determined as follows: в.
  - Winter Survey 1977 1)

Eelicopter Survey Control

17,159.41 \$ 27,295.41

\$ 10,136.00

Charged to Shell at 10%

\$ 2,729.54

ъ. Spring Survey 1978 Helicopter Mapping

Survey

\$ 10,087.05 23,609.81 3,901.46

\$ 37,598.32

Charge to Shell at 50%

18,799.16

Total survey charge to Shell

Total Invoice to Shell:

\$21,528.70

5 67,734.66

2) 1978 Mapping Program

Item .	Total Mapping	South of Red Deer at 76%	Charge toSk at 501
Helicopter	50,000.00	35,000.00	17,500.00
Staff ·	22,500.00	15,750.00	7,875.0 <b>0</b>
Camp & Support Costs	15,750.00	11,025.00	5,512.50
Transport, Communication Materials & Vehicle	26,764.97	18,735.47	9,367 <b>.7</b> 4
, Report Preparation	5,000.00	3,500.00	1,750.00
10% Overhead			4,200.52
Total Mapping Co.	sts Charped to Si	nell	\$ 46,205.76



# DEPARTMENT OF MINES AND PETROLEUM RESOURCES Coal Act (Sec. 19)

## APPLICATION TO EXTEND TERM OF LICENCE

	I, GLEND C. PROUDFOOT agent for Suell CAUADA RESOURCES LIKE
	(Name) 400 FOURTH AVENUE SW. 3
	(Address) CALGARY, ALBERTA T2P 074(Address)
	Valid FMC No. 171 '929
	hereby apply to the Minister to extend the term of Coal Licences No(s) 4216 AND 4210 TO 4214 INSIN LICENCES CALLED SECUS MTN. COAL PROSPECTS (CENTRAL BLOCK
	for a further period of one year. PEACE RIVER LAND DISTRICT
2.	I have performed, or caused to be performed, during the period August 17, 1978  August 16, 1979, work to the value of at least \$ 21, 929
	on the location of coal licences as follows:
	CATEGORY OF WORK
	Geological mapping 4216, 4210 to 4214 succ. \$ 14,468
	Surveys: Geophysical
	Geochemical
	Other - Geodetic 4216200 4210 To 4214 INCL. \$ 6,545
	Road construction
	Surface work
	Underground work
	Drilling
	Logging, sampling, and testing
	Reclamation
	Reclamation Other work (specify) Report to date half 4210 to 4214 INCL. \$ 916
2	I wish to apply \$ 21,929 of this value of work on Coal Licence(s)*.
٥.	4210 TO 4214 INCLUSIVE
. 4.	I wish to pay cash in lieu of work in the amount of \$ on Coal Licence No(s)
5.	I wish to apply \$ of this value of work to claim a refund of cash in lieu of wor
	the amount of \$
	from
	10
	for prior payment of cash in lieu of work is attached for adjustment.
	The work performed on the location(s) is detailed in the attached report entitled
6.	Report will be submitted in ninety days.
6.	Report Will be Susmitted in minery days.
6.	August 16, 1979 Se A
6.	AUGUST 16, 1979 Se A (Signature and prodition)
6. —	AUGUST 16, 1979 Se 1
_	AUGUST 16, 1979  (Date)  (Date)  (Signature and position)  (Signature and position)  (Applications to group themees may be filed to apportion costs on a maximum of 10 licences.  (FORMS TO BE SUBMITTED IN DUPLICATE)
FO	AUGUST 16, 1979  (Date)  (Date)  (Signature and position)  *Applications to group themees may be filed to apportion costs on a maximum of 10 licences.  LAND HAN

The program of operations detailed hereunder was carried out during the period from August 17,1972
10 August 16 , 1979 Total costs are \$ 21,929 , an average
of \$per acre (\$16.12 per hectare). 3,355 acres ~1,360 hectares
GEOLOGICAL MAPPING Yes No Cost \$ 14,468
Reconnaissance 3,500 cc ~ 1,400 he 1:25,000; 1:5,000 approx 24 max-days
Detail: Surface
Underground
Other (specify)
GEOPHYSICAL OR. GEOCHEMICAL SURVEYS Yes No Cost \$ SIE
OTHER SURVEYS Yes X - No Cost \$ 6,545  Grid Topographic Mapping Other Survey
ROAD CONSTRUCTION Yes No K Cost \$ No K Cost \$ Access (off licences)
SURFACE WORK Yes No X Cost \$ NIL Licence Number(s)
Trenching
Scam tracing
<del>-</del>
Other
UNDERGROUND WORK Yes No K Cost S
Test adits: Number Average length Total footage
Other workings: Area
DRILLING Yes No Cost S Number of Holes Total Footage
Core: Diamond Wireline
Rotary: Conventional
Other.
Contractor Where core stored.
•
LOGGING, SAMPLING, AND TESTING (check) Yes No Cost S. Cost S. Cost S.
Lithology: Drill samples Core samples Bulk samples
Logs: Gamma-Neutron Density Other O
Testing: Prox. analysis FSI Washability D
Carbonization Petrographic Plasticity Other
OTHER WORK (specify details) preparation of Geol. Report Isolate Cost 5916 to date
Reports:
W.A. Reclamation work (Permit No) Detail of work*
Geological Report will be prepared in the subsequent term in winety days.  Cost \$ 916 to date
•
OPERATIONS: Work was supervised by F. MARTONUEGY! Position STAFF GrowGISF
Is this person a registered or licensed Professional Engineer in British Columbia? Yes [] No [X]
NOTE—Where the licensee intends to perform, during the extended term of his licence, work not set
out in the plan of operations filed under section 15 (2) (c), a supplemental plan of operations is to be attached.

If reclamation were

## VALUATION OF WORK: COST STATEMENT (Sec. 27, B.C. Reg. 436/75)

OPERATOR'S FEES, SALARIES, AN Average of Emp	ND WAGES : Number ployees	Average Rate	Average Number of Days		سور
Professional and technical	2	125		2,549	PACIFIC
Machine operators and support	v-				
Miners			,	>	
				•	
Other				2,659	
CONTRACTORS AND CONSULTAN	ITS:	Service	tal operator's costs \$.	Contract Amount	
P. Dyson Consultants & Holdings LTD	Geow	GICAL CON		90	cuel
P.H. HARDY & SISOC, LTD.	orcus	HOEAIC			CHRL
R.H. HARDY & ALSOC LTD.	PF27062A	HHETOL HAP	NOT HONGE STORE	6,4 <i>5</i> 9	PACIFIC
·			EN PACIFIC PETE.	/	
PACIFIC PETROLEUHS LTD.			=01 (G601.F1510 WO! 07505D 466000000		
THE NATURE THE TOTAL CONTRAC	THOUST	الما عود ع	red wert.		•
<b>T</b>	Tota	l contractor a	nd consultant costs \$	6,635	
	2010	a contractor a	10 1011,0110111 40000 4		
EQUIPMENT AND INSTRUMENTS Type	USED: Ow	ned Rented Fro		Amount	
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•		*			
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		,,, ×		***** *********************************	
	**********			- 40 5	
	Total o	quipment and	l instrument rentals S	NIL	
FIELD CAMP COSTS:				Amount	
Food					
Accommodation					
Fuel					
	•				
Other				1,819	PACIF
		.16	nal field camp costs \$		
SAMPLING, ANALYSIS, AND TEST	TING:				
Service		Performe	by	Amount	
	********				
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	***********		<b>n</b>		
			-		
•	4	******			
•	4	******	-		
•	Total	******			
•	Total	s. samplings,	analysis, and testing S	NIC	
SUPPLIES AND MATERIALS COST	Total	s. samplings,	analysis, and testing S	MIL	
SUPPLIES AND MATERIALS COST Process supplies Operating and maintenance supplies	Total	s. samplings,	analysis, and testing S	NIL	
SUPPLIES AND MATERIALS COST Process supplies Operating and maintenance supplies Office and technical supplies	Total	s. samplings,	analysis, and testing S	NIL	
SUPPLIES AND MATERIALS COST Process supplies Operating and maintenance supplies	Total	s. samplings,	analysis, and testing S	Amount	
SUPPLIES AND MATERIALS COST Process supplies Operating and maintenance supplies Office and technical supplies	Total	s. samplings,	analysis, and testing S	Amount	
SUPPLIES AND MATERIALS COST Process supplies	Total	s. samplings,	analysis, and testing S	Amount	
SUPPLIES AND MATERIALS COST Process supplies	Total	s. samplings,	analysis, and testing S	Amount	
SUPPLIES AND MATERIALS COST Process supplies	Total	s. samplings,	analysis, and testing S	Amount	
SUPPLIES AND MATERIALS COST Process supplies	Total	Total, su	pplies and materials S	Amount	
SUPPLIES AND MATERIALS COST Process supplies	Total	Total, su	pplies and materials S	Amount	PACIF

·CENTRAL 4210-:4214, 4216

Work performed. Yes 🔀 No 🗌
The program of operations detailed hereunder was carried out during the period from Aucust 17,1972
10 August 16 , 1979 Total costs are \$ 21, 929 , an average
of S B.54per acre (\$16.12 per hectare). 3,355 acres ~ 1,360 hectare
GEOLOGICAL MAPPING Yes No Cost \$ 14,468  Area (Acres) Scale Time
Reconnaissance 3,500 ee ~ 1,400 ha 1:25,000; 1:5,000 approx 24 man-days
Detail: Surface
Underground
Other (specify)
GEOPHYSICAL OR GEOCHEMICAL SURVEYS Yes No & Cost S SIL
Method Line miles
OTHER SURVEYS Yes X No Cost \$ 6,545  Grid Topographic mapping Other survey
ROAD CONSTRUCTION Yes No Cost S. NO. Length: On Licences Access (off licences)
SURFACE WORK Yes No X Cost \$
Crosscutting
UNDERGROUND WORK Yes No Cost \$ Total footage  Other workings: Area Total footage
DRILLING Yes No Cost S. Number of Holes Total Footage  Core: Diamond Wireline Rotary: Conventional
Reverse circulation
Other
Logging, Sampling, and Testing (check)  Lithology: Drill samples  Core samples  Bulk samples  Logs: Gamma-Neutron  Density  Other  Testing: Prox. analysis  FSI Washability  Carbonization  Petrographic  Plasticity  Other  Other
OTHER WORK (specify details) preparation of Geol. Report ladate Cost \$916 to date
REPORTS:
W.A. Reclamation work (Permit No) Detail of work*  Geological Report will be prepared in the subsequent term in winety days  Cost 5916 to date
OPERATIONS:  Work was supervised by T. MARTONHEGY!  Is this person a registered or licensed Professional Engineer in British Columbia? Yes No Note—Where the licensee intends to perform, during the extended term of his licence, work not set out in the plan of operations filed under section 15 (2) (c), a supplemental plan of operations is to be

the maker work reported in separate report give details of report identification,

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COPTER		HARLE LEAF HELLCO	PTERL LID	***************************************		دبر	et 1,200	G12	360	228
u cop T €	225	CHARTERED SY	Pacific Pen	COLEUR S		Pu	INC 18,250	9,308	5,475	3,467
			• •	Total transpo	rtation costs	\$	29,754	15,175	8,926	5,653
CLAMAT	TION WO	RK:			•					
						\$	NIL	,	•	
		TURES (operator's c	•	Yumber of Trips			Amount	· ·		
	Number of Per	rsonnel		1		Ç.	rel 400.	204	120	76
	• :			Total travel o	xpenditures	\$	400	204	120	76
•		*	,		Total costs	s	67,196	34,270	20,159	12,767
	•	·						•		/
off-	š	(Secs. 28	and 29, B.C. P	_						
_	TY COST	S: Period from	Auc. 17	1978 to_	<u> </u>	16	Amount			•
(a) Logisti	ics and tie	ld support				\$				
(b) Techn	ical and fo	asibility studies Ru	12aJO32OTo	CHU HAPPIU	c (Speans	ر. جي	el 2,249	1,453 574	\$2 <b>5</b>	541 213
(c) Prepar	ration of r	epons to date				Pat	FIC 1,925	982	578	365
(d) Suppli	ies and ser	vices					<del></del>			
(e) Mobili	ization and	demobilization of e	quipment	*******					•	
(f) Travel		nses			·	٠				
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Suppo	orting Cost	Statements Attached	I	•	Total	\$	Amount	2,00 (	- 11.70	
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				Total supp	esting costs	\$ :				
			SUMMARY	,					-	
•						_ (	67.196	34.270	20.150	12,767
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## PACIFIC PETROLEUMS LTD.

P.O. BOX 6666

CALGARY, ALBERTA T2P 6T6

INVOICE NUMBER 12-94005-78

Shell Canada Resources, 400 - 4 Avenue S. W., CALGARY, Alberta

Attention: Mr. F. Martonhegyi

1-12-124-64560

December 18,

INVOICE

DESCRIPTION		
	₹	
To invoice you for:	`	
Mapping services provided by Pacific staff in the area south of Red Deer Creek, as per the Pacific-Shell agreement. Reference is made to Pacific's letter of May 18, 1978.		
Charges detailed on the attached breakdown		\$ 67 734 66

- The cost accounts for the Pacific-Shell Agreement as per Pacific's letter dated May 18, 1978 are determined as followst
  - Shell to pay 50% of all costs south of Red Deer Creek. The mapping south of Red Deer Creek is estimated to constitute 70% of the total mapping for 1978 on the Monkman Project. .
  - 2) Shell to pay 10% surcharge on mapping work to cover administrative costs. No administrative costs are to be assessed on photogrammetric services.
- Costs are determined as follows: В.
  - 1) Winter Survey 1977

. Helicopter \$ 10,136.00 Survey Control 17,159.41

\$ 27,295.41

Charged to Shell at 10%

\$ 2,729.54

Spring Survey 1978 Helicopter Mapping

Survey

\$ 10,087.05 23,609.81 3,901.46

\$ 37,598.32

Charge to Shell at 50%

18,799.16

Total survey charge to Shell

\$21,528.70

2) 1978 Happing Program

	*		:
· <u>Item</u>	Total Mapping	South of Red Deer at 70%	Charge to Sh. at 50%
Helicopter	50,000.00	35,000.00	17,500.00
Staff	22,500.00	15,750.00	7,875.00
Camp & Support Costs	15,750.00	11,025.00	5,512.50
Transport, Communication Materials & Vehicle	26,764.97	18,735.47	9,367.74
Report Preparation	5,000.00	3,500.00	1,750.00
10% Overhead	•	, •	4,200.52
Total Mapping Co	osts Charged to Si	hell	s 46, 205.76

Total Invoice to Shell:

\$ 67,734.66



# DEPARTMENT OF MINES AND PETROLEUM RESOURCES Coal Act (Sec. 19)

## APPLICATION TO EXTEND TERM OF LICENCE

CALGARY AGERTA T2P OTY (Address)  Valid FMC No. 171 929  hereby apply to the Minister to extend the term of Coal Licences No(s) 4217 to 4219 insecutives leave uncodes caused Secret Man. Coal Roserects (North Slock)  for a further period of one year.  2. I have performed, or caused to be performed, during the period August 17 [1978  August 1C [1979], work to the value of at least \$ 13, 287 on the location of coal licences as follows:  CATEGORY OF WORK  Geological mapping [1217 to 4219] uses. 5 9, 164  Surveys: Geophysical [1217 to 4219] uses. 5 1, 184  Road construction [1217 to 4219] uses. 5 4, 185  Road construction [1217 to 4219] uses. 5 4, 185  Other work (specify) 5 4, 187  Underground work [1217 to 4219] uses [1217 to 4219] use		(Name) 400	FOURTH AUGUVE S.W.	(Name)
Natid FMC No. 171 929  hereby apply, to the Minister to extend the term of Coal Licences No(s) 4217 to 4219 INSELUCIONE IRRESE LICENCES CALLED SECUS MTN. COAL PROSPECTS (NORTH BLOCK)  for a further period of one year.  2. I have performed, or caused to be performed, during the period. August 17, 1978.  August 16 1979, work to the value of at least \$ 13, 287 on the location of coal licences as follows:  CATEGORY OF WORK  Geological mapping - 4217 to 4219 INSEL. \$ 27,164  Surveys: Geophysical  Geochemical Other Geocletic 4217 to 4219 INSEL. \$ 4,145  Road construction - 1011  Logging, sampling, and testing  Reclamation 2 1217 to 4219 INSEL. \$ 578  3. I wish to apply \$ 13,287 of this value of work on Coal Licence(s)*  4. I wish to pay cash in lieu of work in the amount of \$ 000 Coal Licence(s)*  10. 10. 19. Mining Receipt No. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10	-	(Address) CALG	ARY ALGERTA TEP OJH	(Address)
lereby apply, to the Minister to extend the term of Coal Licences No(s) 4217 to 1219 INPLUSIVE TRREE LICENCES CALLED SECUR MTN, COAL PROSPECTS (NORTH BLOCK) for a further period of one year.  2. I have performed, or caused to be performed, during the period. AUSUST 17, 1978  AUSUST 1 C , 1979, work to the value of at least S 13, 287 on the location of coal licences as follows:  CATEGORY OF WORK  Geological mapping - 1217 to 1219 INPLUS S 4Appointment of coal Licence No(s).  Geochemical - 1217 to 1219 INPLUS S 5 LILES  Road construction - 1217 to 1219 INPLUS S 5 LILES  Road construction - 1217 to 1219 INPLUS S 5			•	
Tenet incoures called Secret Min. Coal Toospects (NORTH SLOCK)  for a further period of one year.  2. I have performed, or caused to be performed, during the period August 17 1978  August 1 C 1979, work to the value of at least \$ 13,227  on the location of coal licences as follows:  CATEGORY OF WORK  Geological mapping 1217 to 1219 well 5 13,227  Surveys: Geophysical  Geochemical Other Geodefic 1217 to 1219 well 5 1145  Road construction  Surface work  Underground work  Diffling  Logging, sampling, and testing  Reclamation 2 2 13,227  Other work (specify) 1 4 442 17 to 1219 well 5 578  3. I wish to apply \$ 13,227  4. I wish to apply \$ 13,227  of this value of work to claim a refund of cash in lieu of work in the amount of \$ 0.000 Licence (s) 19.  No(s)				
Tenet incoures called Secret Min. Coal Toospects (NORTH SLOCK)  for a further period of one year.  2. I have performed, or caused to be performed, during the period August 17 1978  August 1 C 1979, work to the value of at least \$ 13,227  on the location of coal licences as follows:  CATEGORY OF WORK  Geological mapping 1217 to 1219 well 5 13,227  Surveys: Geophysical  Geochemical Other Geodefic 1217 to 1219 well 5 1145  Road construction  Surface work  Underground work  Diffling  Logging, sampling, and testing  Reclamation 2 2 13,227  Other work (specify) 1 4 442 17 to 1219 well 5 578  3. I wish to apply \$ 13,227  4. I wish to apply \$ 13,227  of this value of work to claim a refund of cash in lieu of work in the amount of \$ 0.000 Licence (s) 19.  No(s)		hereby apply to the Minister to extend the	term of Coal Licences No(s). 4217	TO 4219 INCLUSIVE
2. I have performed, or caused to be performed, during the period August 17, 1978  August 1G 1979, work to the value of at least \$	•		COAL TROSPECTS (NORTH	Slock)
August 16 1977, work to the value of at least \$ . 15.227  on the location of coal licences as follows:  CATEGORY OF WORK  Geological mapping - 1217 to 1219 to 1. 5 9, 164  Surveys: Geophysical - 1217 to 1219 to 1. 5 1, 164  Geochemical - 1217 to 1219 to 1. 5 1, 165  Road construction - 1217 to 1219 to 1. 5 1, 165  Road construction - 1217 to 1219 to 1. 5 1, 165  Reclamation - 1217 to 1219 to 1. 5 1, 165  Other work (specify) to 1217 to 1219 to 1. 5 5, 78  3. I wish to apply \$ 13, 1287 of this value of work on Coal Licence(s) *				
August 16 1977, work to the value of at least \$ . 15.227  on the location of coal licences as follows:  CATEGORY OF WORK  Geological mapping - 1217 to 1219 to 1. 5 9, 164  Surveys: Geophysical - 1217 to 1219 to 1. 5 1, 164  Geochemical - 1217 to 1219 to 1. 5 1, 165  Road construction - 1217 to 1219 to 1. 5 1, 165  Road construction - 1217 to 1219 to 1. 5 1, 165  Reclamation - 1217 to 1219 to 1. 5 1, 165  Other work (specify) to 1217 to 1219 to 1. 5 5, 78  3. I wish to apply \$ 13, 1287 of this value of work on Coal Licence(s) *	2.	I have performed, or caused to be perfor	rmed, during the period AUSUS	F 17,1978
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Geological mapping 4217 To 4219 Week 59 164  Surveys: Geophysical  Geochemical Other Geodelic 4217 To 4219 Week 5 4, 145  Road construction 5  Surface work 4  Underground work 5  Dilling 6  Logging, sampling, and testing 7  Reclamation 7  Report 4217 To 4219 Week 5 578  3. I wish to apply 5 13 287 of this value of work on Coal Licence(s) 6  4. I wish to pay cash in lieu of work in the amount of 5 on Coal Licence No(s) 6  5. I wish to apply 5 of this value of work to claim a refund of cash in lieu of work the amount of 5 on Coal Licence (s) No(s) 6  5. I wish to apply 5 of this value of work to claim a refund of cash in lieu of work the amount of 5 on Coal Licence (s) No(s) 6  6. The work performed on the location(s) is detailed in the attached report entitled 8  Report will be submitted in which was paid to extend the term of Coal Licence (s) No(s) 6  Report will be submitted in the attached report entitled 10 Reports will be submitted in the attached report entitled 10 Reports on the proprise results of a submitted in Duplicate) 10 Reports on the proprise results of the Reports of th		on the location of coal licences as follows:	•	
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Surveys: Geophysical  Geochemical Other Geochelic Other Geochelic Other Geochelic Other Geochelic  Surface work Underground work Underground work  Underground work  Underground work  Diilling Logging, sampling, and testing Reclamation Report Other work (specify)  13 1287 of this value of work on Coal Licence(s)  1217 To 1219 INCLUSIVE  4. I wish to apply \$ 13 1287 of this value of work on Coal Licence(s)  No(s)  5. I wish to apply \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this value of work to claim a refund of cash in lieu of work the amount of \$ 00 this v		Geological mapping	4217 To 4219 wet.	\$ 9,164
Geochemical Other Geodetic 4217 to 4219 toct. 5 4, 145  Road construction Surface work Underground work Underground work Underground work  Diffling Logging, sampling, and testing Reclamation Report Other work (specify)  1217 to 4219 toct. 5 578  3. I wish to apply \$ 13,287 of this value of work on Coal Licence(s)* 4. I wish to pay cash in lieu of work in the amount of \$ on Coal Licence No(s).  5. I wish to apply \$ of this value of work to claim a refund of cash in lieu of work the amount of \$ on Coal Licence No(s).  6. I wish to apply \$ of this value of work to claim a refund of cash in lieu of work the amount of \$ on Coal Licence No(s).  19 Nining Receipt No. 19 Nining Receipt No. 19 Nining Receipt No. 19 Aliang Receipt No. 20 August 16, 1979  (Date)  August 16, 1979 (Date)  10 August 16 August 10 Reported to a maximum of 10 licence. 10 August 16 August 10 Reported to a maximum of 10 licence. 10 August 10 Reported to a proportion coals on a maximum of 10 licence. 11 August 10 Reported to a proportion coals on a maximum of 10 licence. 12 August 16 August 16 Reported to a proportion coals on a maximum of 10 licence. 13 August 16			· · · · · · · · · · · · · · · · · · ·	
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Road construction  Surface work  Underground work  Underground work  Logging, sampling, and testing  Reclamation  Report  Other work (specify)  12.17 to 12.19 incl.  5. I wish to apply 5. 13.1287  42.17 to 12.19 inclusive  4. I wish to pay cash in lieu of work in the amount of S. on Coal Licence(s)  5. I wish to apply \$. of this value of work to claim a refund of cash in lieu of work the amount of \$. which was paid to extend the term of Coal Licence(s) No(s).  10. 19. Mining Receipt No.  for prior payment of cash in lieu of work is attached for adjustment.  6. The work performed on the location(s) is detailed in the attached report entitled  Report will be submitted in winely days.  August 16, 1979  (Day)  *Applications to group licences may be filed to approxion coals on a maximum of 10 licence.  (FORMS 70 BE SUBMITTED IN DUPLICATE)			4217 to 4219 wec.	\$ 4,145
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3. I wish to apply \$ 13 287 of this value of work on Coal Licence(s)*  4. I wish to pay cash in lieu of work in the amount of \$ on Coal Licence No(s).  5. I wish to apply \$ of this value of work to claim a refund of cash in lieu of work the amount of \$ which was paid to extend the term of Coal Licence(s) No(s).  10 19 Mining Receipt No.  10 19 Mining Receipt No.  10 19 Mining Receipt No.  11 Nower performed on the location(s) is detailed in the attached report entitled.  12 Report will be submitted in vively days.  13 287 One Submitted in Coal Licence(s) *  (Signaluri and position)  (Signaluri and position)  (FORMS TO BE SUBMITTED IN DUPLICATE)		Keport	4217 to 4219 INCL.	_, \$ 578
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4. I wish to pay cash in lieu of work in the amount of \$	3.			
No(s)		7217 10 421	10000100	
5. I wish to apply \$	4.	I wish to pay cash in lieu of work in th	e amount of \$	on Coal Licence
the amount of \$		No(s)		, 
the amount of \$	5			of cash in lieu of work
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AUGUST 16, 1979  (Date)  (Date)  (Signature and position)  (AND MAN)  (FORMS 70 BE SUBMITTED IN DUPLICATE)  FOR DEPARTMENTAL USE ONLY	т.	for prior payment of cash in lieu of work	-	
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•	т.	for prior payment of cash in lieu of work  The work performed on the location(s) is  Report will be submitted in  August 16, 1979  (Date)  *Applications to group licences may be filed to apportion	s detailed in the attached report enti- wine ty days.  See A  n costs on a maximum of 10 licences.	(Signature and portifion)
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A 3-15 DI MOIN IEDONEU 4	6.	for prior payment of cash in lieu of work  The work performed on the location(s) is  Report will be subwiffed in  August 16, 1979  (Date)  *Applications to group licences may be filed to apportion  (FORMS 76)	s detailed in the attached report enti- wine ty days.  See A  n costs on a maximum of 10 licences.	(Signature and portifion)

Work performed. Yes No
The program of operations detailed hereunder was carried out during the period from Avover 17, 1978
10 August 16 , 1979 Total costs are \$ 13, 887 , an average
of \$ 7.46 per acre (\$ 18.39 per hectare). 1,860 acres 755 hectares
GEOLOGICAL MAPPING Yes No Cost \$ 9164
Reconnaissance 2,000 ac. ~ 800 ha 1:25,000; 1:5,000 approx. 16 met-days
Detail: Surface
Underground
Other (specify)
GEOPHYSICAL OR GEOCHEMICAL SURVEYS Yes No K Cost \$
MethodLine miles
OTHER SURVEYS Yes No Cost S 4, 145  GEODETIC Photogrammetric Ground control  Grid Topographic Marning Other Survey
ROAD CONSTRUCTION Yes No R Cost \$
SURFACE WORK Yes No K Cost \$ NIL
Length Licence Number(s)
Trenching
Scam tracing
Other
UNDERGROUND WORK Yes No Cost \$ Total footage  Test adits: Number Average length Total footage  Other workings: Area Total footage
DRILLING Yes No X Cost S USIL  Hole Size Number of Holes Total Footage  Core: Diamond Wireline
Rotary: Conventional
Reverse circulation
Other
Contractor Where core stored
Logging, Sampling, And Testing (check) Yes No Cost \$
Testing: Prox. analysis FSI Washability Carbonization Petrographic Plasticity Other
OTHER WORK (specify details) preparation -1 Good. Papert to date Cost 5.578
Reports:
Geological Report will be prepared in the subsequent term in ninety days.
Cost \$ 578
OPERATIONS:
Work was supervised by T MARTONHEGY! Position STAFF GOODGIST
Is this person a registered or licensed Professional Engineer in British Columbia? Yes [ No [X]
NOTE—Where the licensee intends to perform, during the extended term of his licence, work not set out in the plan of operations filed under section 15 (2) (c), a supplemental plan of operations is to be attached.

If reclamation work reported in separate report give details of the tentification

## VALUATION OF WORK: COST STATEMENT (Sec. 27, B.C. Reg. 436/75)

Average	Number	ES: Ayerage	Average Number of Days	Amount -o
	ployees 2	Rate 12.5	7	1,6 4 <u>6</u>
Machine operators and support			-	
Miners	<del></del>			
Other		·		·
	*	To	otal operator's costs \$	<u>,</u> 68મ
CONTRACTORS AND CONSULTAN	TS:	Service	•,	Conitaci Amount
P. DYSON CONSULTANTE & HOLDINGS LAD.	Geole	SCICAL CONSI		57
P.M. HARDY & Assoc. LTD.		TOMOSAIC	・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・	<u>SS</u>
R.M HARDY & ASSOC. LTD.			USL PACIFIC P.	4,090
PACIFIC PETROLEUHS LTD.	GENERA	n Courred of F	or Grolfieldwork	
THEIR HATVIE, THE TOTAL CONTRACT	T MOUNT T	7 15 NOT ENT	tato were.	
	To	otal contractor a	and consultant costs \$	4,202
EQUIPMENT AND INSTRUMENTS	USED: C	)wned	Rented	
Type		Renied Fro		Amount
	-			
	********	*** ***********************************		**************
, - ,	*****		***************************************	***************************************
		· <del>···</del> ········		-
	*			NIL.
	. Tota	il equipment an	d instrument rentals S	
FIELD CAMP COSTS:	,	•		Amount "
Food		~*************************************	*	
Accommodation				क क्षेत्रस क्षेत्रस्य अन्तर्भ कलास्य कल करन्त्र ह
Fuel		*		
Other		. ·		1,152
		. To	otal field camp costs \$	
SAMPLING, ANALYSIS, AND TEST	ING:	-	•	
Service		Performe	d by	Amount
,			***************************************	
	7.41.22.22		* .	
, , ,	* *********		,	A
	,	***************************************		,
	Tot	ıale camplines	analysis, and testing	بال
		rais, sampiings,	uning only unite cosming.	
SUPPLIES AND MATERIALS COST				Amount
Process supplies				
Operating and maintenance supplies				
Office and technical supplies				***
Other supplies and materials	<del></del>	·		
		Total, su	pplies and materials	)
TRANSPORTATION COSTS (Ground		ation details):	Dunrat Dar-	Ataount
Vehicles Ox	ner		Remai Rate	Attaches to the second

Aircraft Type 165PTER 20615		Hencolles FI	p	Charter	228	c
LICOPTERS	CHANTERED	BY PACIFIC	PerroLEUR	15	3,467	Pa
	*	,	Total transp	ortation costs \$	5,653	
CLAMATION WO	RK:	•		<u> </u>	NtL_	
AVEL EXPENDIT	TIPES (operator	r's softe only):			*	
Number of Per	sonnel	s costs only).	Number of Trips	•	Amount 76	
			Total trave	l expenditures \$		
			•	Total costs \$	12,767	
·	(Secs.	28 and 29, B.C.	Reg. 436/75)			
ROPERTY COST	e S: Period from	August 17	1978 to	August	16 , 1979	,
z) Logistics and fie	ld support		·····	\$		
b) Technical and fe	asibility studies	PHOTOGEOL	GICAL MA	PPING	541 213	် ပ
Preparation of r						, P.
i) Supplies and ser	vices ::					
2) Mobilization and	demobilization	of equipment		······		•
f) Travelling exper	1568		neva era u retere primar ele		***************************************	<del>.</del>
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* -	Statements Atta	ched		Total S	Amount	
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- ,	<u>, , , , , , , , , , , , , , , , , , , </u>	*******************	Total e	pporting costs		_
.*		•	Y Orat 21	- Phorring costs	- 5 4	•
•		SUMMAI	2 <b>V</b> .			
, •		, actions			. 12,767	
On-property cos	its	<u>,                                     </u>		··	1,120	•
Off-property co				<b>!</b>	13 887	-,
nent of costs verified	by		. ,	Total costs	2 13100 L	<u> </u>
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<u> </u>	167.			J T Sernature	and position)	<u>:</u> _
· f (Date)	1 <b>!</b>					

VALUATIO	N OF WOR	RK: COST ST	ATEMENT		0 + A L	SS has loo	(4215,4201-42 2343h&±517	tat(4216,4210-1214	217-421° 54a=197
	Sec. 27, B.C.	. Reg. 436/75)	× 4	•	, <b>F</b> Q		123	भू मुंग	-1.5
ROPERTY COSTS: For period f	rom Augu	17 1578	to Avgv	s+ 17	, 1	9 75	#170 o	₹	OLTH
PERATOR'S FEES, SALARIES,	AND WAGE	ES:			•		S.	39	ž
Aver	aye Number Employees	Average : Rait 2.04	Average Number	بىن *	a L Amount	2.0	102	· 60	38
ofessional and technical	<u>. 2</u>	125	35	PA:	CIFIC . S	6.2	4,418	2,594	1,646
achine operators and support			***************************************	··· -		·			,
iners	<u> </u>	<del></del>	*				*1	•	
.her ,					<u> </u>	0 24.5	1.50-		
ONTRACTORS AND CONSULTA	NTS:	•	tal operator's co				· 4,520	2,654	<u>ા,૯</u> 8ધ
Name Disson Consultants & Holding LTD.	George	Service TruttucO Sport			Controll Amo NEL	300	162	- 90	รา
M. HARDY & ASSOC. LTD.		MOSAIC.			NRL	287	14G .	. 86	. <i>\$</i> \$
M. TARDY & ATOC LTD.  PACIFIC PETROLEUMS LTD. COMPOSENTS OF THE TOTAL COUTAN H: 12, 170) ARE ENTERED ACCOR AMOUNT 15 NOT ENTERED HE	202027 202027 200017 TUOUDIT TO THE	THRESE HATEM THROUGH PACIFIC E CONTEXCTURE S G7,734 (S13 IN WATURE, TH	c petroleums	7 esc 7	ACIFIC 2	1,529	OIF,OI	<b>ં</b> , ધંદવ	4,090
4		tal contractor as	nd consultant co	sts S	2	2,116	11,279	6,635	4,202
<b>3</b>				•					
QUIPMENT AND INSTRUMENT:	S USED: O	Rented From			, Amount	:	-	. •	*
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	Total	equipment and	instrument rent	als \$	NIL	-			
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,	•	Tot	al field camp co	sts \$ P	ISIFIC G	1063	3,092	1,819	1:152
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AMPLING, ANALYSIS, AND TES Service	ing:	Performed b	by	*,	Amount	•.	•		
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	Total	is, samplings, an	ralysis, and testi	ing \$	NIL.			·	
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lice and technical supplies				- , , , , , , , , , , , , , , , , , , ,	·····	; · ·-	,	j	}
her supplies and materials	<del></del>	-			<u></u>				
		Total, supp	plies and materi	als <b>5</b> .			•,		1
RANSPORTATION COSTS (Groun	id transportati Inner		Remail Rate	• •	Anwert		•		ħ
Vehicles O		and the second						,	:

			•		# ** # <sup>*</sup>	TOT AL CUS HTN CC. OF AVC.17 558 has 100 %	\$,000 # 4215,1201-4109 2,3474-51%	.ENTRAL 126,120-4214 1,360 has 30%	4217-4219 7556~19%
r support det		_		٠	Control	- m	44 4 0 2 4	727.	34 %
LICOPTER 2		HARLE LEAF HE	UCOPTERS LTD		Calley	CHEL 1, 200	C12	360	. 228
HU COPTER		C HARTER ED	er Pacific Pe	TROLEUKS		PACIFIC 18,250	9,308	5,475	3,467
_	1		<del></del>		nsportation costs	00 751	15,175	8,926	5,653
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ECLAMATI	ON WO	RK:	٠ ٣			S NIL	• *	•	-
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	PENDII mber of Per 2.	URES (operator	r's costs, only):	Number of Trip	* • *	Amount	204	120	76
	<u> </u>				ivel expenditures	e Hoo	204	120	.76
-	,r T	• •		· Joial Ga	Total costs	s 67,196	34,270	20,159	12,767
. *		4.45				,	•	<i>;</i>	
		(Secs.	28 and 29, B.C.	Reg. 436/75	5)		•		
OFF -	r cost	S: Period from.	Aug I	7,1972	to Δως.	16			
				. ,		Amount		5 1	
(a) Logistic	s and be	ld support	PHOTOCEOLOG	SICAL MAP	riuc (Spesolt	Cues 2,249	1,453	825	541
(c) Preparat	ion of re	eports to date	<u>L</u> 6			PAUFIC 1,125	574 922	33 <i>2</i> 572	345
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Summer	ino Cost	Statements Attac	hed	٠	Total		3,009	1,770	1,120
Support.	<u>.                                 </u>		-			Amount	: .	_	
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			,	Total	supporting costs	\$	,		
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Ou-broi	erty cos	ls		<u></u>		5 67,196 5, \$99			
Oll-proj	certy cos	ts .'	• • • • • • • • • • • • • • • • • • • •	<del>,</del>	,	- T 2 ORG			
* - * * * * * * * * * * * * * * * * * *					Total costs	2	,	<del></del>	
nicht of costs	resified	by	* *************************************	•			, <b>y</b> ,	•	. ,

## ACIFIC PETROLEUMS LTD.

P.O. BOX 6656

CALGARY, ALBERTA T2P 6T6

INVOICE NUMBER

12-94005-78

Shell Canada Resources, 400 - 4 Avenue S. W., CALGARY, Alberta

Attention: Mr. F. Martonhegyi

1-12-124-64560 December 18,

INVOICE

DESCRIPTION		
	72	
To invoice you for:		•
Happing services provided by Pacific staff in the area south of Red Deer Creek, as per the Pacific-Shell agreement. Reference is made to Pacific's letter of May 18, 1978.		
Charges detailed on the attached breakdown		\$ 67,734,66

- The cost accounts for the Pacific-Shell Agreement as per Pacific's letter dated May 18, 1978 are determined as
  - Shell to pay 50% of all costs south of Red Deer Creek. The mapping south of Red Deer Creek is estimated to constitute 70% of the total mapping for 1978 on the Monkman Project.
  - Shell to pay 10% surcharge on mapping work to cover administrative costs. No administrative costs are to be assessed on photogrammetric services.

## Costs are détermined as follows:

Winter Survey, 1977

\$ 10,136.00 Helicopter Survey Control 17,159.41

\$ 27,295.41

Charged to Shell at 10%

\$ 2,729.54

Spring Survey 1978 Helicopter

\$ 10,087.05 23,609.81 Happing Survey 3,901.46

\$ 37,598.32

Charge to Shell at 50%

18,799.16

Total survey charge to Shell

\$21,528.70

		•
Total Mapping	South of Red Deer at 70%	Charge to Sh
50,000-00	35,000.00	17,500.00
22,500.00	15,750.00	7,875.00
15,750.00	11,025.00	5,512.50
26,764.97	18,735.47	9,367.74
5,000-00	3,500.00	1,750.00
		4, 200.52
ts Charged to S	hell	\$ 46,205.76
	50,000.00 22,500.00 15,750.00 26,764.97 5,000.00	Total Mapping Deer at 70% 50,000.00 35,000.00 22,500.00 15,750.00 15,750.00 11,025.00 26,764.97 18,735.47 5,000.00 3,500.00

\$ 67,734.66 Total Invoice to Shell: