PR-S. MT. GETHING 78(1)A

1978 REPORT OF EXPLORATION ACTIVITIES ON SOUTH MOUNT GETHING PROPERTY

Coal Licence Nos. 4129 to 4152 inclusive
in the Liard Mining Division

NTS 93 O 16 W & 94 B 1 W
55° 58' N; 122° 25' W

Owned by: UTAH MINES LTD.
By: A.T. Armstrong
of Utah Mines Ltd.

March 12, 1979

637

PR-SOUTH MT. GETHING 78(1)A.

1978 REPORT OF EXPLORATION ACTIVITIES

ON THE SOUTH MOUNT GETHING PROPERTY

in the Liard Mining Division
Coal Licence No. 4129 to 4152 inclusive
centred at 55° 58' N; 122° 25' W
NTS 93 O 16 W & 94 B 1 W

Owned by Utah Mines Ltd.

by

A. T. Armstrong

of

UTAH MINES LTD.,
1600 - 1050 West Pender Street,
Vancouver, B. C.
V6E 3S7

Work performed between May 29 and October 21, 1978

RECEIVED for filing. JULY 31ST, 79.

TABLE OF CONTENTS

ILLUSTRATIONS

Abstract:

Twenty-four contiguous coal licences, numbered 4129 to 4152 inclusive, were issued to Utah Mines Ltd. on August 15, 1978. These licences comprise the South Mount Gething Property, located in the Peace River area of the Liard Mining Division. An exploration program was formulated for the 1978 field season both to fulfill the work requirements necessary to keep the licences in good standing and to provide data useful in the preliminary evaluation of the property. Geological mapping and diamond drilling were undertaken to accomplish these objectives.

Utah Mines Ltd. personnel completed a mapping program in areas of maximum outcrop and in conjunction with an air photo interpretation, produced a preliminary geological map of the property. The coal-bearing Gething Formation occurs draped over a broad, south plunging, anticline. Older sediments occur at the summit of South Mount Gething where the Gething Formation has been removed by erosion and younger sediments occur along the western and southern property boundaries. 606.86 metres of diamond drilling were completed in three holes in order that an appraisal of the stratigraphic section and any contained coal seams could be made. Data collected throughout this program has facilitated this preliminary evaluation of South Mount Gething Property.

Property and Title:

The South Mount Gething Property comprises 24 contiguous coal licences number 4129 to 4152 inclusive. These licences encompass 6892 hectares (rounded upward from, more precisely, 6880.99 hectares). The property is located in the area commonly referred to as the Northeast Coal Block, in the Liard Mining Division. (See Figure 1, page 3)

Application for title to the licences included in the South Mount Gething Property was made in the prescribed manner by Utah Mines Ltd. in the spring of 1978. The licences were issued on August 15, 1978 and subsequently, signed by the Minister of Energy, Mines and Petroleum Resources. This property forms a natural westward extension of the Bri Coal Property, held by Utah Mines Ltd. under an agreement formed with Bri Coal Mining Ltd., Bow River Resources Ltd. and Rainier Energy Resources Ltd.

With the exception of part of the northern boundary, South Mount Gething Property is surrounded by other adjoining coal properties. Shell Canada Resources Limited holds adjacent coal licences to the northwest, west, south and southeast. The Bri Coal Property lies adjacent and to the east. The East Mount Gething Property, also owned by Utah Mines Ltd., adjoins the South Mount Gething Property on the northeast. (See Figure 1, page 3)

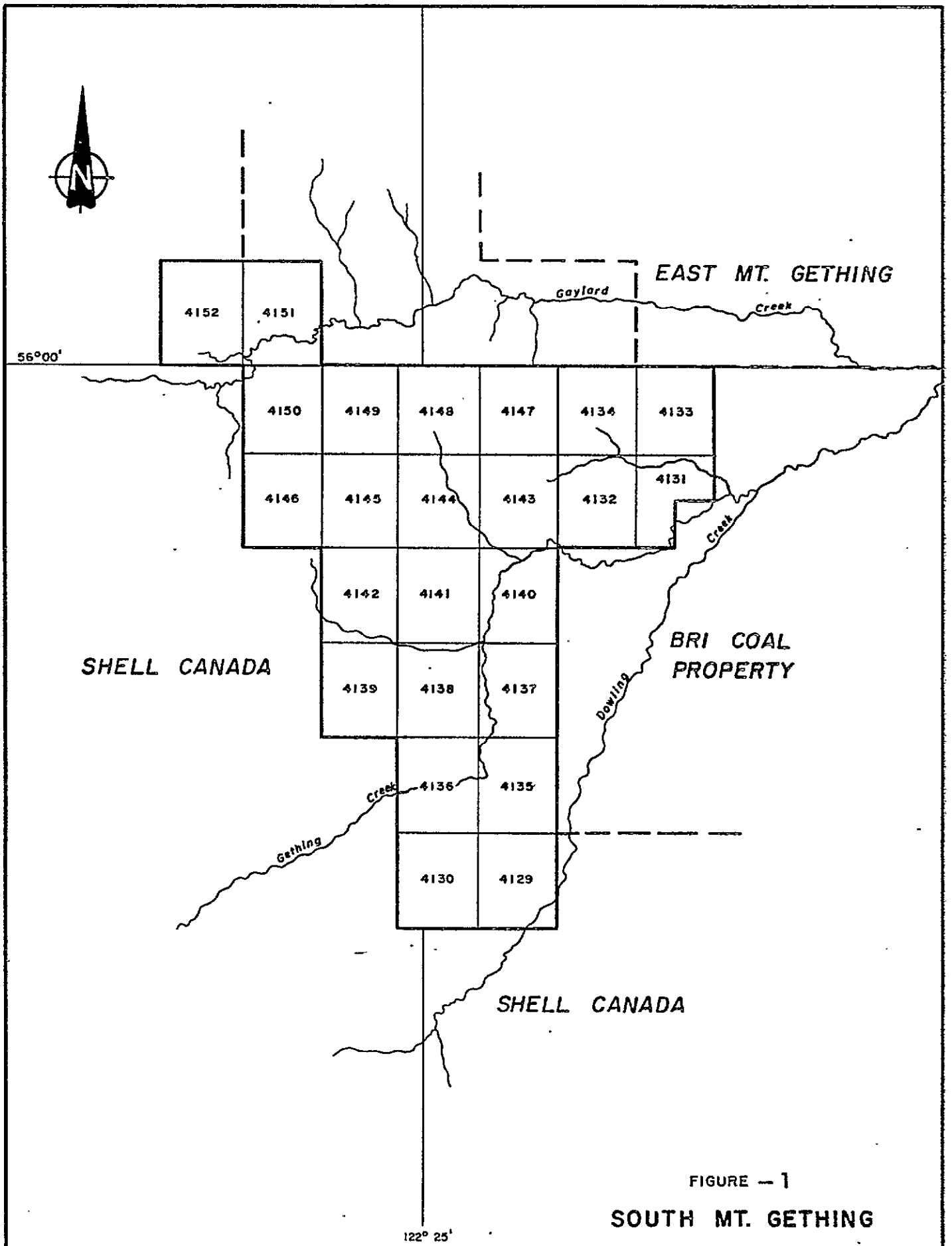


FIGURE — 1

SOUTH MT. GETHING

COAL LICENCES

0 1 2 4 Miles

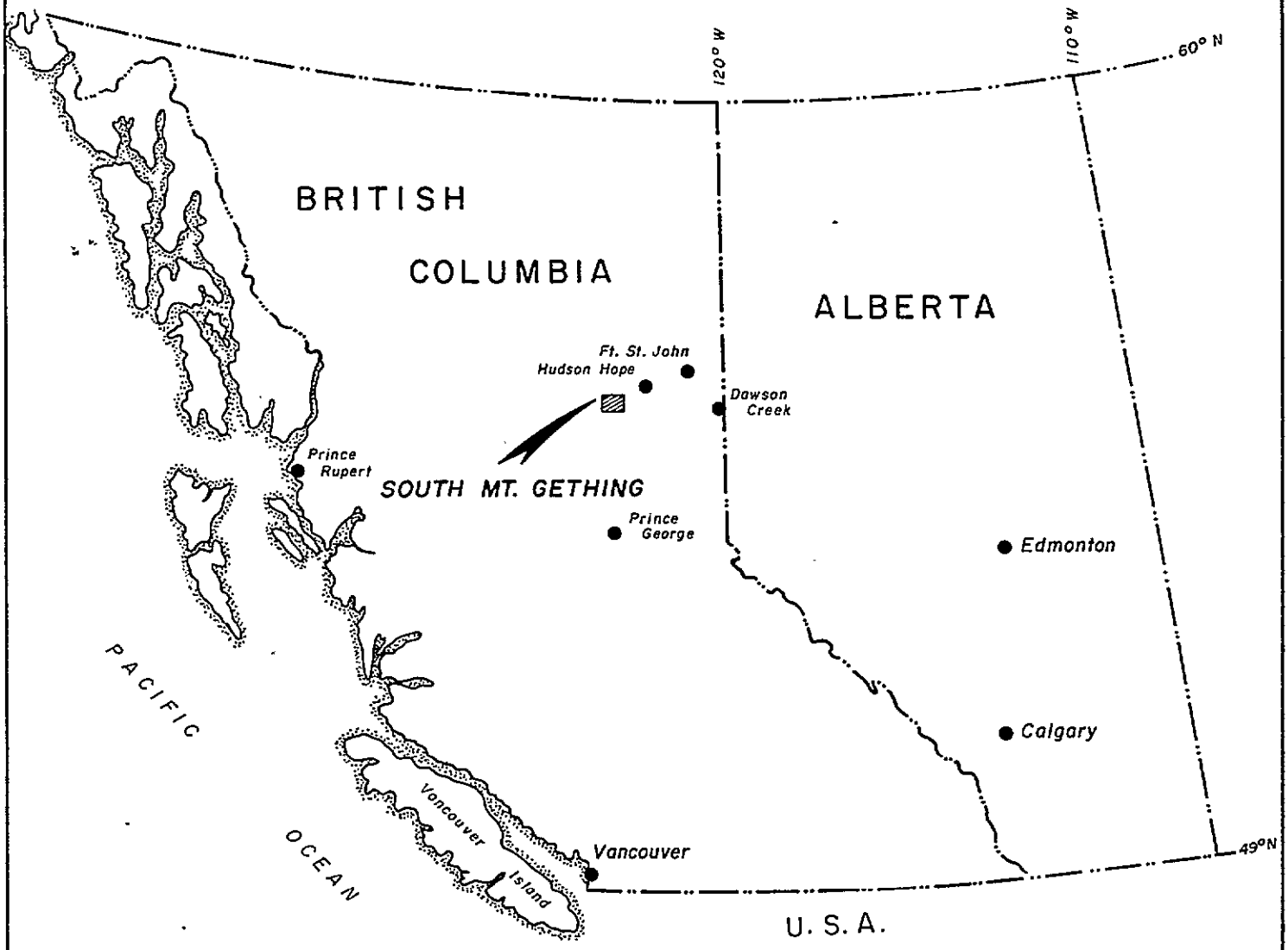
Scale – 1:100,000 Nov. 1978

Location and Access

South Mount Gething Property is located within the area covered by the National Topographic System designation 93 O 16 West and 94 B 1 West. The roughly triangular shaped licence group is approximately centred at 55° 58' N, 122° 25' W. It is largely confined between Dowling Creek on the east and Gaylard Creek on the north with the two northwestern licences lying in and north of the valley of Gaylard Creek. "South Mount Gething", the name given to the isolated rounded peak 5.4 kilometres south-southeast from Mount Gething, forms the northern central part of the property.

The central part of the property lies approximately 15 kilometres west-southwest from W.A.C. Bennett Dam, 36 kilometres west-southwest from Hudson's Hope and 60 kilometres northwest from Chetwynd. Vancouver is approximately 770 kilometres almost due south from the property. (See Figure2, page 5; 3, page 6)

Highway 29, joining Chetwynd, Hudson's Hope and Fort St. John passes approximately 31 kilometres to the east of the property. Canfor Limited's (a major forest products company) Johnson Creek - Track Creek Road, which joins Highway 29 at 19 kilometres south from Hudson's Hope, and several secondary logging roads provide direct road access to various parts of the property. (See maps 1 & 2) Alternate access to the Johnson Creek - Track Creek Road is possible by travelling over the 13.7 kilometres of Utah Mines Ltd. road from the west end of W.A.C. Bennett Dam. Away from these roads, access to much of the property is possible only by helicopter or on foot. (See Figure 3, page 6)



UTAH MINES LTD.

SOUTH MT. GETHING

LOCATION MAP

0 100 200 300 400

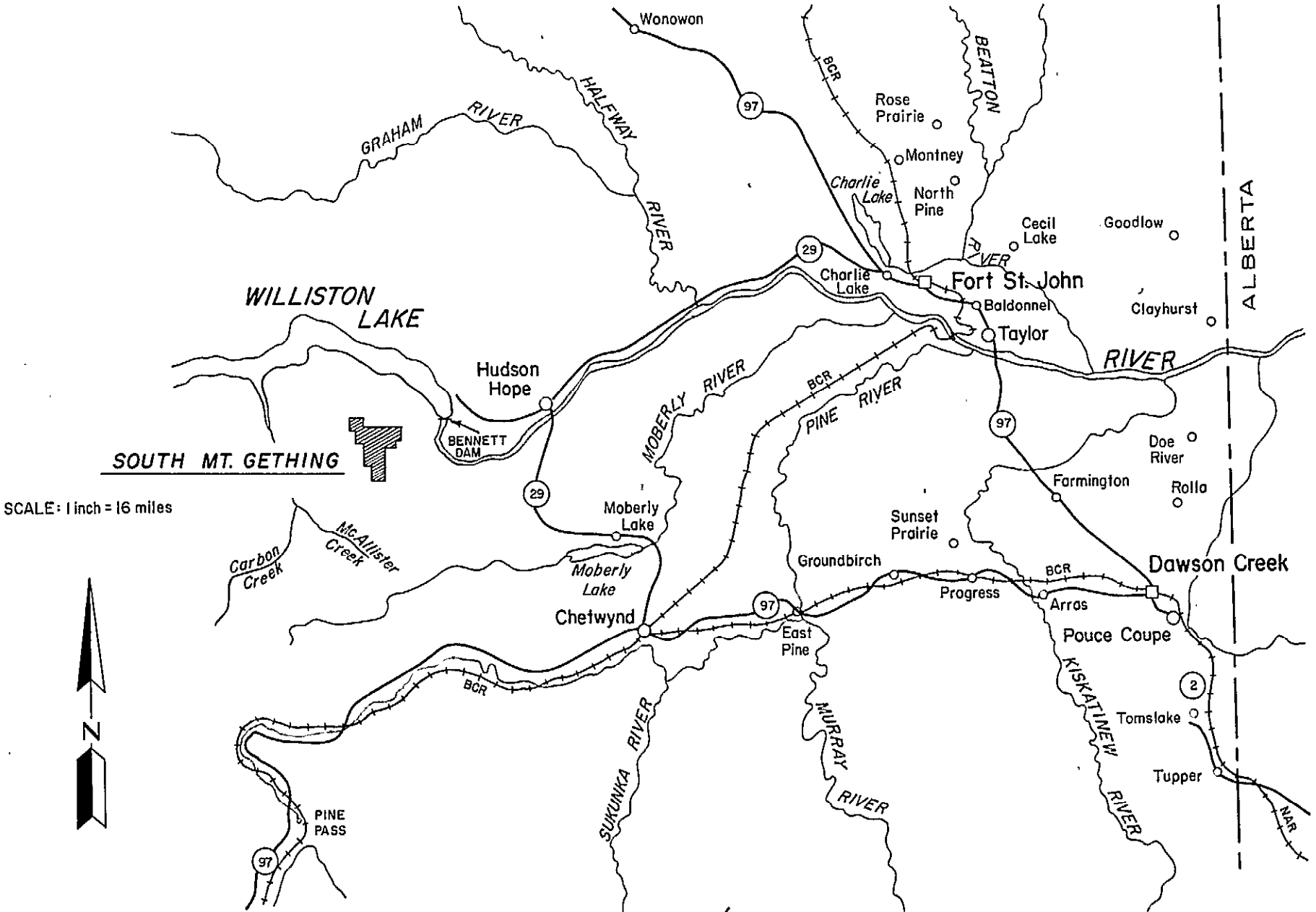
SCALE IN MILES

FIGURE — 2

FIGURE – 3

REGIONAL MAP

SOUTH MT. GETHING



Exploration of the South Mount Gething Property:

(i) Previous Exploration:

Utah Mines Ltd. applied for the licences comprising the South Mount Gething Property during the spring of 1978. Exploration, specifically designed to test the coal potential of the area covered by this property had not previously been undertaken.

General reference to the area is made in various Geological Survey of Canada and British Columbia Department of Mines and Petroleum Resources publications. (e.g. McLearn and Kindle, 1950; Hughes, 1964; Stott, 1963, 1968; Irish, 1968) Geological Survey of Canada Map 11-1961 provides a useful basic interpretation of the geology of the property. Several reports dealing with specific adjacent map - areas contain information useful in the interpretation of the geology of this property. (e.g. Irish, 1965, 1970; Stott, 1969; LeNobel, 1975, 1977; Dyson, 1976; Anderson and Armstrong, 1978)

(ii) 1978 Exploration Program:

The 1978 exploration program formulated for the South Mount Gething Property was designed to provide a preliminary appraisal of the coal potential of the property. Establishing the continuity of the Gething Formation or, more precisely, the coal seams within the formation, from the Bri Coal Property lying to the east onto the South Mount Gething Property was of particular importance. A program of geological mapping and limited diamond drilling was planned to provide the information necessary to make this appraisal.

Geological mapping was undertaken intermittently from May 29, 1978 to August 13, 1978. Traverses were made along many creek valleys and in upland areas where rock exposures were anticipated. This work was performed by Utah Mines Ltd. field crews made up of R. B. Anderson, A. T. Armstrong, R. P. Hill, A. Kay, M. Carr and D. Schmidt. Field data and air photo interpretive data facilitated the development of the preliminary geological interpretation shown on Maps 1, 2 and 3 (included in map pocket). A 1:10,000 scale topographic map, prepared by McElhanney Surveying and Engineering Ltd., covering the area of the property provided an excellent base for the geological mapping.

The initial exploration program included the drilling of two holes. This program was later expanded to include a third hole. Diamond drilling was undertaken by Canadian Longyear Ltd. using a Longyear 38 diamond drill to complete D.D.H. SMG-78-1 and a unitized Longyear 44 diamond drill to complete D.D.H. SMG-78-2 and D.D.H. SMG-78-3. The drilling crew included Wayne Castle (runner, forman), Marc Bouchard (runner), Gary Rohrback (helper) and Mike Rennie (helper) who was later replaced by Gordon Dupuis (helper).

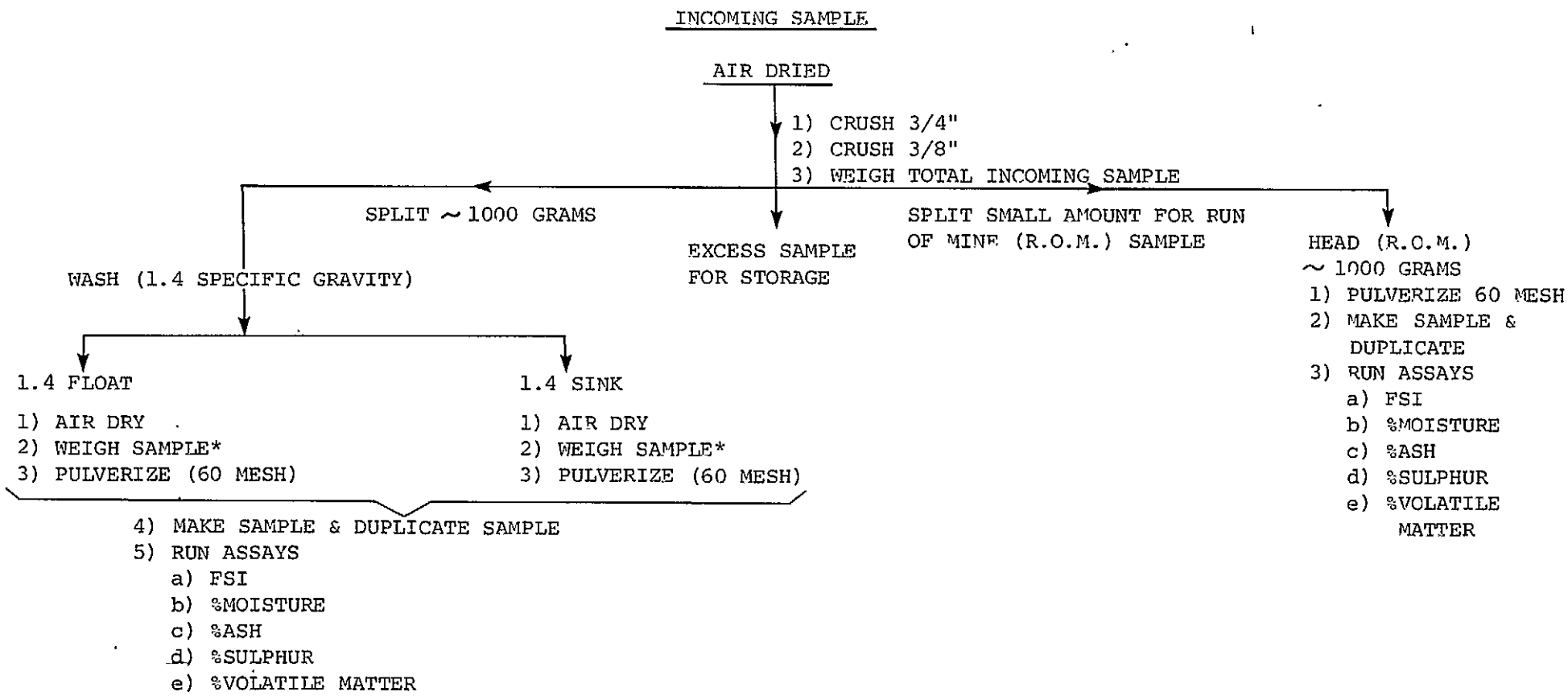
Slashing at site SMG-78-1 was completed by Norm Sawchuck of North Star Fabricating and Contracting Ltd. Okanagan Helicopters Ltd. provided a Bell 205 helicopter to facilitate moving the Longyear 38 diamond drill and related equipment and supplies to the site. Heavy equipment was removed from the site by Okanagan Helicopters Ltd. using a Sikorsky S58T helicopter and small equipment and supplies were removed by Maple Leaf Helicopters Ltd. using two Bell 206 helicopters. Maple Leaf Helicopters Ltd. also provided Bell 206 service for crew changes and moving supplies and drill core.

Site preparation, site access, drill mobilization and demobilization and site clean up for D.D.H. SMG-78-2 and D.D.H. SMG-78-3 were completed by Peter and Paul Demeulemeester Ltd. using a D-7 Caterpillar tractor. A unitized Longyear 44 diamond drill was used to drill these holes. Crew changes and the movement of supplies and drill core were accomplished by road. Water used in drilling these holes was transported to the sites using a rented water truck.

In total, 606.86 metres of diamond drilling were completed in three holes. The core was logged by R. B. Anderson and A. T. Armstrong of Utah Mines Ltd., Vancouver, B. C. (descriptive lithologic logs and graphic lithologic logs are included in the map pocket). Mechanical logs consisting of gamma ray and density logs were run in each hole by Utah Mines Ltd. personnel using a Gearhart-Owens, Model 06-3200 Widco Logger and a combination down hole tool (geophysical logs are included in the map pocket - (NOTE: Gamma ray logs from D.D.H. SMG-78-2 and D.D.H. SMG-78-3 should be disregarded. An equipment malfunction produced an unusual and fallacious log trace).

Thirty-seven samples were taken from the core recovered from the three holes drilled on South Mount Gething Property. These samples and four trench samples were submitted for analysis to the Utah International Inc., Minerals Laboratory at 1190 Bordeaux Drive, Sunnyvale, California, 94086. Tests were performed on each sample using procedures outlined in the laboratory flow chart on the following page. (Table 1) On completion of the 1978 field program, the core was shipped to the Charlie Lake core storage facility of the British Columbia Ministry of Energy, Mines and Petroleum Resources.

FLOW CHART FOR ANALYSIS OF DIAMOND DRILL HOLE SAMPLES



*WEIGHT RECOVERY OF COAL INSIDE SAMPLE

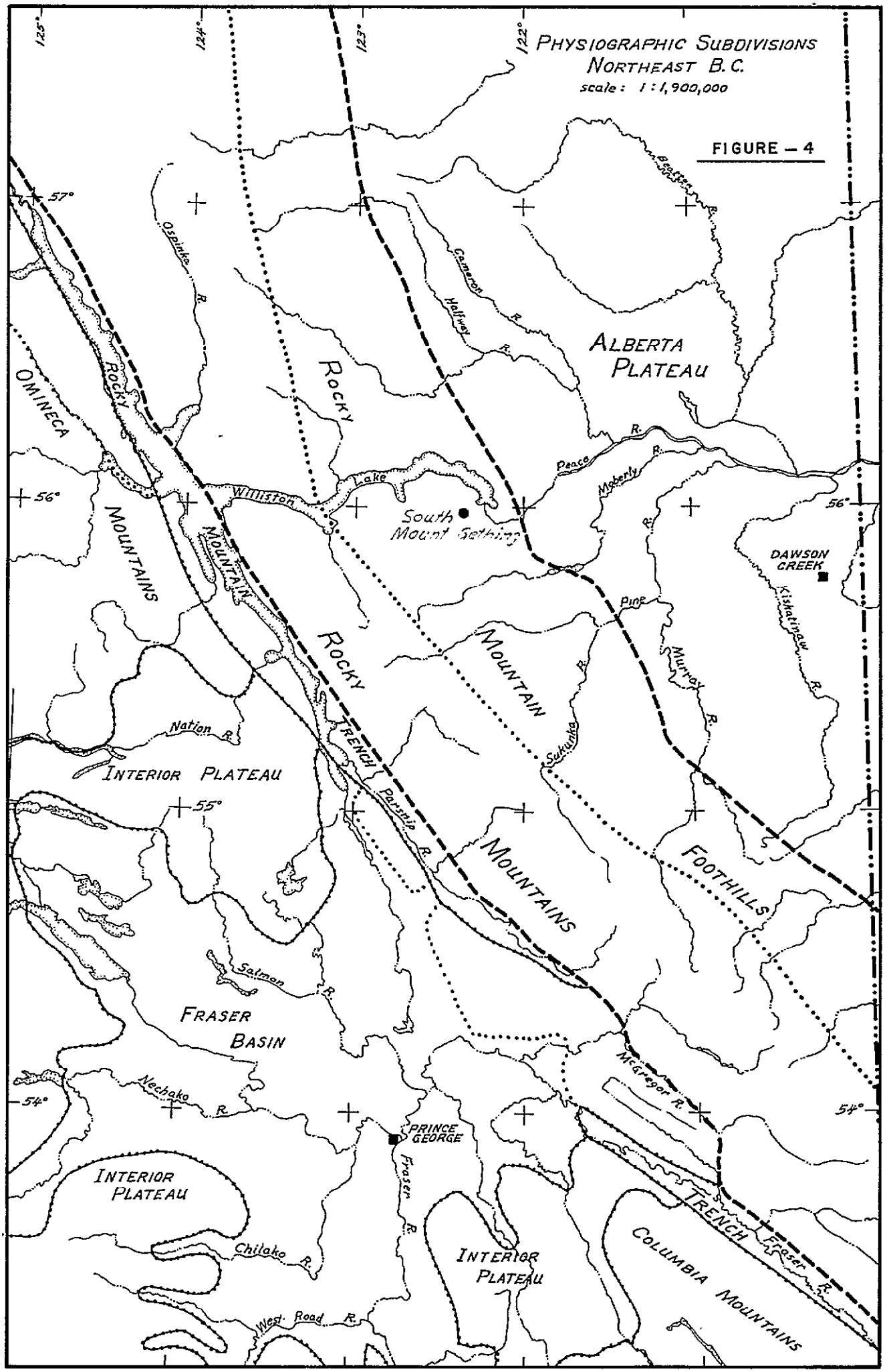
TABLE – I

Physiography:

South Mount Gething Property is situated toward the eastern margin of the Rocky Mountain Foothills. (See Map 4, page 12) To the west, the margin of the Foothills belt is considered to be the easternmost major fault which thrusts Paleozoic strata over Mesozoic strata (Holland, 1976). The eastern margin is less precisely defined but occurs where deformed strata of the foothills meet flat-lying to gently dipping strata of the Alberta Plateau. Within this belt, major fold axes and thrust faults trend in a northerly to northwesterly direction with the thrusts dipping to the southwest. Structural deformation is considerable near the western margin of the foothills and diminishes in extent and complexity toward the eastern margin.

South Mount Gething Property is underlain by a broad south plunging anticline. This prominent structural feature is reflected in the topography of the property. South Mount Gething itself approximates the form of a slice from a cone with the apex to the south. This conic form is surrounded to the west, south and east by numerous hills and ridges occurring in a roughly parabolic pattern. Segments of many streams follow and accentuate this pattern.

Topographic relief in the immediate area of the property is moderate. Elevations range from approximately 770 metres in Gething Creek valley at the eastern property boundary to 1532 metres at the summit of South Mount Gething. Surface slopes are generally shallow to moderate. A few areas of


PHYSIOGRAPHIC SUBDIVISIONS
NORTHEAST B.C.
scale : 1 : 1,900,000
FIGURE – 4
125°
124°
123°
122°
57°
56°
55°
54°
Ospika R.
Cameron R.
Halfway R.
Beatton R.
ALBERTA PLATEAU
ROCKY MOUNTAIN TRENCH
OMINECA MOUNTAINS
Rocky Mountain
Williston Lake
South Mount Sething
Peace R.
Moberly R.
DAWSON CREEK
Kiskatinaw R.
Pine R.
Murray R.
Sukunka R.
MOUNTAIN FOOTHILLS
Nation R.
INTERIOR PLATEAU
Parsnip R.
Salmon R.
FRASER BASIN
Nechako R.
PRINCE GEORGE
Fraser R.
McGregor R.
INTERIOR PLATEAU
Chilako R.
West Road R.
INTERIOR PLATEAU
TRENCH
COLUMBIA MOUNTAINS

steep slopes and vertical cliffs occur on South Mount Gething to the north and northwest. Stream valleys are most commonly broad and V-shaped with moderate to shallow gradients. Gaylard Creek valley and the lower part of Gething Creek valley are alluvium filled and relatively broad and flat bottomed in form.

Geology - General and Local

South Mount Gething Property is underlain by a sequence of Lower Cretaceous and earlier (?) sediments. The oldest exposed rocks are thought to be upper units of the Upper Jurassic (?) to Lower Cretaceous Minnes Group. These rocks are unconformably overlain by the Lower Cretaceous Bullhead Group comprising the Cadomin and Gething Formations. The Bullhead Group is conformably overlain by the Fort St. John Group but only the Moosebar Formation is present within the property boundaries (See Table 2, page 14).

Minnes Group sediments are marine in origin and recessive, fine-grained and argillaceous in character. Although not mapped, the core of South Mount Gething, below the summit on the north side, is undoubtedly a sequence of Minnes Group sediments. These sediments may also occur as an inlier on the southeast slope of South Mount Gething as shown on Geological Survey of Canada Map 11-1961.

Stott (1968, page 4) describes the boundary between the Minnes Group and the overlying Bullhead Group as "a profound regional erosional unconformity". The total thickness of sediments removed from the paleo-land surface and the time

NOMENCLATURE OF THE LOWER CRETACEOUS BULLHEAD AND FORT ST. JOHN GROUP

TABLE – 2

	Muller 1961		Stott 1968 Pine River Foothills			(used in this report) Stott 1968 Upper Peace River			Flynn 1976		
Upper Cretaceous	Dunvegan Fm.		Dunvegan Fm.			Dunvegan Fm.					
Lower Cretaceous	Fort St. John Group	Cruiser Fm.	Fort St. John Group	Cruiser Fm.		Fort St. John Group	Cruiser Fm.		Fort St. John Group	Hasler Fm. & Younger	
		Goodrich Fm.		Goodrich Fm.			Goodrich Fm.				
		Hasler Fm.		Hasler Fm.			Hasler Fm.				
		Commotion Fm.		Commotion Fm.	Boulder Creek Member					Commotion Fm.	Boulder Creek Member
					Hulcross Member						Hulcross Member
							Gates Fm.				Gates Member
		Moosebar Fm.		Moosebar Fm.			Moosebar Fm.			Moosebar Fm.	
	Bullhead Group	Gething Fm.	Bullhead Group	Gething Fm.		Bullhead Group	Gething Fm.		Bullhead Group	Gething Fm.	
		Monach Fm.									
		Beattie Peaks Fm.		Cadomin Fm.			Cadomin Fm.			Cadomin Fm.	
		Monteith Fm.									
Lower Cretaceous & Jurassic	Fernie Group		Minnes Group			Minnes Group			Minnes Group		
Jurassic			Fernie Group			Fernie Group					

interval represented by this unconformity are not precisely known (Stott, 1968, page 13). Little or no evidence of angular relationships has been observed. The boundary is abrupt, with resistant conglomeratic Cadomin Formation sediments overlying recessive Minnes Group sediments.

The Bullhead Group, composed of the Cadomin and Gething Formations underlies most of South Mount Gething Property. Stott (1968, page 7) considers the Bullhead Group and the overlying Fort St. John Group to form a complete nonmarine to marine sequence.

"The basal succession of Lower Cretaceous coal-bearing sediments and massive conglomerates is included in the Bullhead Group. The overlying Lower Cretaceous marine sediments with tongues of carbonaceous, sandy sediments are included in the Fort St. John Group. The lower part of the sequence records widespread fluvial conditions that developed after initial deposition of conglomeratic sediments. The upper part records the complex intertonguing of marine transitional and flood plain environments along the coast-line of the Early Cretaceous epicontinental sea"(Stott, 1968, page 7).

A typical Cadomin Formation section consists predominantly of massive conglomerates containing well rounded pebbles, cobbles and boulders of extremely resistant rocks (Stott, 1968, page 14). North of Pine River and particularly in the area south of but adjacent to Peace River, the Cadomin Formation consists of numerous beds of coarse-grained massive to coarsely crossbedded sandstone containing thin beds and lenses of pebble conglomerate. Irish, (1970, page 68) has

noted that "in Peace River Canyon, coarse sandstones of the Cadomin Formation grade laterally into interbedded coal, sandstones and shale of the Gething Formation and therefore these formations are in part lateral equivalents." The formation is considered to have originated as piedmont alluvial plain deposits (Stott, 1968, page 108.) The sandy character of the sediments in the property area indicates a sizeable distance of transport from the source area.

Cadomin Formation sandstones are exposed in the summit area of South Mount Gething. Outcrops of massive, coarse-grained standstone were mapped in an area extending southeast and south from the summit. Coarse-grained standstone units outcropping on the elongate hill lying along the eastern property boundary southeast from South Mount Gething may be upper Cadomin beds intertonguing with sediments of the lower part of the Gething Formation.

The character of the Gething Formation underlying the property is typical: as described by Irish, (1970, page 68) a sequence of "interbedded, grey-and buff-weathering, medium-to fine-grained, grey to dark brown sandstone, grey to black shales, dark siltstones and coal seams." These sediments represent deposition in an aggrading flood plain environment. Some of the fine-grained sandstones may represent bar finger and levée deposits and others may represent flood plan splay deposits (Stott, 1968, page 111). Sedimentary features attributable to these types of deposits are present in drill core and outcrop on the South Mount Gething Property. Stott (1968, page 111) lists some of the features found in sandstones: well sorted nature but often containing considerable matrix, festoon crossbeds, laminae of plant debris and thin layers of silt and clay.

The finer silts and clays represent deposition from water in areas practically devoid of current on the flood plain proper (Stott, 1968, page 112). They accumulated between the river channels and the swamp and forest areas. The swamp and forest areas are the source of the present coals and are thought to be of several differing occurrences. Stott, (1968, page 112) suggests some may have originated in abandoned river channels, some paralleling major river channels and some on deltas.

Work by Stott (1969, page 4) indicates a minimum thickness of 1600 feet for the Gething Formation in this area. The total thickness approaches 1800 feet if a postulated fault is absent. This formation contains the metallurgical grade coals which are explored for throughout the Northeast Coal Block and are the target of exploration activities on the South Mount Gething Property. The Gething Formation underlies much of the property; extending from the flanks of South Mount Gething outward to the west, south and east.

The Bullhead Group is overlain by marine sediments of the Fort St. John Group. The Fort St. John Group in the Upper Peace River area comprises, from oldest to youngest, the Moosebar Formation, the Gates Formation, the Hasler Formation, the Goodrich Formation and the Cruiser Formation. In the immediate vicinity of the property, the Gates Formation retains formation status whereas, in the Pine River area it is considered to be a member of the Commotion Formation (Stott, 1968, pages 65-77) (See Table 2, page 14).

The Moosebar Formation of the Fort St. John Group directly overlies the Gething Formation. It consists mainly of dark grey to black, rubbly to blockly shales. Often a thin pebbly sandstone lies abruptly on carbonaceous Gething sediments and the lower part of the Moosebar Formation is typically strongly glauconitic. Ironstone concretions occur in bands at various levels in the section. Toward the top of the formation, the shales become gritty and thin beds of fine-grained sandstone and siltstone are present. Although not mapped, the Moosebar Formation is thought to underlie the western and southern extremities of the property.

Gross structure of the property area is relatively simple. A single broad anticline extends beyond the property boundaries to the east, south and west. The east limb of the anticline blends smoothly into the major syncline which underlies the adjacent Bri Coal Property. The axis of the anticline is thought to be distorted but extends from the summit of South Mount Gething in a general southerly direction and also plunges to the south.

The broad anticlinal structure is modified by various minor structures. A discontinuous fault to the west of the summit of South Mount Gething and parallel to the anticlinal axis has thrust Cadomin Formation sandstones over similar Cadomin sediments. This thrust probably is oriented nearly parallel to the base of the Cadomin Formation. Minor folding was observed in several road cuts along the Gething Creek Road and in several localized areas widely variable bedding orientations were measured which suggest small scale folding. Bedding orientations in the upper part of D.D.H. SMG-78-3 also indicate small scale folding.

1:10,000 scale geological maps (Maps 1, 2 and 3) and 1:10,000 scale cross sections (Figures 6 and 7) are included in the map pocket. A 1:50,000 scale cross section detailing structural form and stratigraphic relationships is bound on the following page.

Drill Hole Data, Description and Analytical Data

(i) D.D.H. SMG-78-1

location:- on a saddle between two low peaks that lie between two east flowing tributaries of Gething Creek, near the western property boundary.
- McElhanney co-oridnates: 6,199,410m N x 535,270m E
- Coal Licence No. 4139

elevation:- 1020m

orientation:- vertical

date collared:- September 4, 1978

date completed:- September 9, 1978

overburden depth:- 21.34m

casing depth:- 20.73m

final depth:- 227.69m

formations encountered:- 0 to 21.34m overburden
21.34m to 227.69m Gething Fm.

coal seams sampled:-

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
42		35.84m to 36.14m	0.30m	0.61m
43		36.76m to 38.38m	1.62m	1.28m
44		40.97m to 46.67m	5.70m	5.64m
45		66.48m to 67.03m	0.55m	0.46m
46		91.74m to 92.23m	0.49m	0.49m
47		102.05m to 103.36m	1.31m	1.31m
48		111.45m to 112.18m	0.73m	0.85m
49		142.95m to 143.41m	0.46m	0.46m
50		153.41m to 153.93m	0.52m	0.55m
51		156.73m to 157.58m	0.85m	0.82m
52		199.49m to 199.95m	0.46m	0.46m
53		209.73m to 211.53m	1.80m	1.80m
54		218.69m to 219.45m	0.76m	0.76m

comments:-

Site SMG-78-1 was cleaned up and the hand-dug mud sump was refilled and levelled on October 19, 1978. Disturbed soil areas at the site were then sown with the grass seed mixture recommended by the Reclamation Branch of The British Columbia Ministry of Energy, Mines and Petroleum Resources for forested areas of the Northeast Coal Block.

Below 21.34 metres of overburden, D.D.H. SMG-78-1 penetrated 206.35 metres of Gething Formation sediments. The sedimentary sequence is typical of the formation, consisting of often carbonaceous, interbedded and interlaminated fine-to medium-grained sandstones, siltstones, mudstones and coals. Many

beds and laminae are mixtures of these components. The sedimentary sequence and the sedimentary textures are indicative of alluvial flood plain deposition.

Bedding angles measured from the vertical core axis show considerable variability throughout the length of the drill core. They range from 40° to 65° to the core axis with most being in the range of 50° to 60° to the core axis. Some form of irregular bedding distortion must be present to produce the highly variable and apparently random bedding orientations encountered in this drill hole. Three faults were noted in the descriptive core log which, if they cut and displace segments of folded strata, could produce a section having widely variable bedding orientations.

In addition to the faulting mentioned previously, slickensided shear planes, fractures and calcite healed tension gashes and breccia zones are common throughout the core. The number and continuous occurrence of these features suggest that the area has undergone significant deformation.

A total of 26 coal seams were cored in D.D.H. SMG-78-1 ranging in thickness from 0.03 metres to 5.70 metres (cored thickness). Of these, 13 seams were removed for analysis. Coal core recovery in those seams selected for analysis ranged from approximately 40% to 90%. Most seams were badly broken and some showed evidence of shearing. The coals were generally bright, black and variously banded.

Analytical results show wide variability in the qualities of these coals. They are all of the medium volatile bituminous type with the exception of Sample No. 49 which is slightly below the A.S.T.M. cut-off of 22% volatile matter. Volatile matter contents range from 21.46% to 30.73%. Ash contents range from 4.33% to 25.49% and sulphur contents range from 0.56% to 1.36%. B.T.U. values range from 10,250 B.T.U./lb. to 14,494 B.T.U./lb. with the lower values being derived from those coals having the higher ash contents. F.S.I. values range from 1 to 8 1/2 with only five seams having values of 5 or more.

A 1.400 Specific Gravity float separation conducted on each sample produced a better quality product in most cases. In all cases, ash content was reduced below 4.84% and B.T.U. values were enhanced to greater than 14,568 B.T.U./lb. Five samples continued to retain sulphur in excess of 1%. F.S.I. values were in some cases, moderately improved with seven samples having values ranging from 5 to 9.

SOUTH MOUNT GETHING

Hole SMG-78-1

Head Analyses

Sample No.	Depth	Thickness	Air Dry Basis								Moisture Free Basis				
			Grams Received	% H_2O	% Ash	% S	% VM	% FC	Btu	FSI	% Ash	% S	% VM	% FC	Btu
42	117.6-119.6	2.0	818	1.34	5.35	0.71	23.34	69.97	14228	1	5.42	0.72	23.66	70.92	14421
43	120.6-124.8	4.2	2935	1.38	6.04	0.79	25.07	67.51	14168	4 1/2	6.12	0.80	25.42	68.46	14366
44	131.4-149.9	18.5	13090	2.06	5.59	0.56	22.46	69.89	14048	1	5.71	0.57	22.93	71.36	14343
45	218.1-219.9	1.8	1223	1.21	6.59	0.93	25.03	67.17	14065	3 1/2	6.67	0.94	25.34	67.99	14237
46	301.0-302.6	1.6	3438	0.96	25.49	1.12	30.73	42.82	10250	7	25.74	1.13	31.03	43.23	10349
47	334.8-339.1	4.3	6513	1.06	14.89	1.36	24.49	59.56	12827	7	15.05	1.37	24.75	60.20	12964
48	365.6-368.0	2.4	1169	1.11	8.34	1.00	24.51	66.04	13814	7 1/2	8.43	1.01	24.79	66.78	13969
49	469.0-470.5	1.5	1810	1.08	10.72	0.83	21.46	66.74	13356	1 1/2	10.84	0.84	21.69	67.47	13502
50	503.3-505.0	1.7	928	0.99	4.33	1.10	29.84	64.84	14494	8 1/2	4.37	1.11	30.14	65.49	14639
51	514.2-517.0	2.8	2293	0.95	10.13	0.81	26.13	62.79	13221	1	10.23	0.82	26.38	63.39	13348
52	654.5-656.0	1.5	1056	0.93	20.89	1.12	22.98	55.20	11795	8	21.09	1.13	23.19	55.72	11906
53	688.1-694.0	5.9	5262	1.18	7.77	0.69	22.60	68.45	13675	1	7.86	0.70	22.87	69.27	13838
54	717.5-720.0	2.5	2577	1.02	5.60	0.83	22.07	71.31	14203	1	5.66	0.84	22.30	72.04	14349

SOUTH MOUNT GETHING

Hole SMG-78-1

Structures

	Sample #43		Sample #44		Sample #47		Sample #53	
Size	% Weight	Cum. % Wt.	% Weight	Cum. % Wt.	% Weight	Cum. % Wt.	% Weight	Cum. % Wt.
-3/8" +1/4"	36.87	36.87	35.86	35.86	38.62	38.62	40.58	40.58
-1/4" +6m	28.66	65.53	30.23	66.09	27.60	66.22	25.88	66.46
-6m +10m	14.87	80.40	14.09	80.18	13.88	80.10	13.49	79.95
-10m +28m	12.18	92.58	11.61	91.79	11.97	92.07	11.01	90.96
-28m	7.42	100.00	8.21	100.00	7.93	100.00	9.04	100.00
Total	100.00		100.00		100.00		100.00	

(ii) D.D.H. SMG-78-2

location:- on a logging spur road 705 metres from its junction with Canfor's Gething Creek haulage road at approximately 1150 metres from the Gething Creek Road - Johnson Creek - Track Creek Road junction.
- McElhanney co-ordinates: 6,203,755m N x 541,190m E
- Coal Licence No. 4131

elevation:- 820m

orientation:- vertical

date collared:- October 5, 1978

date completed:- October 8, 1978

overburden depth:- 14.63m

casing depth:- 14.33m

final depth:- 169.77m

formations encountered:- 0 to 14.63m overburden
14.63 to 169.77 Gething Fm.

coal seams sampled:-

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
76		21.09m to 21.79m	0.70m	0.55m
77		23.68m to 24.29m	0.61m	0.79m
78		28.90m to 29.54m	0.64m	0.64m
79		43.53m to 44.78m	1.25m	1.46m
80	Trojan	50.75m to 51.21m	0.46m	0.27m
81	Titan	60.23m to 61.14m	0.91m	0.91m
82		64.92m to 65.22m	0.30m	0.43m
83		65.59m to 65.89m	0.30m	0.33m
84	Falls	74.55m to 75.65m	1.10m/1.04m	1.13m/0.85m
85		84.00m to 84.40m	0.40m	0.33m
86		89.15m to 89.79m	0.64m	0.70m
87	Gething	101.62m to 102.40m	0.58m	0.67m
88		105.95m to 106.41m	0.46m	0.58m
89	Mogal	121.01m to 121.77m	0.76m	0.67m
90		138.65m to 139.14m	0.49m	0.73m
91		152.46m to 152.92m	0.46m	0.67m
92		162.28m to 162.74m	0.46m	0.61m

Comments:-

Site SMG-78-2 was prepared along the right-of-way of a planned logging access road. Immediately upon completion of the drilling and clean up of the area, the site was expanded and levelled by Canfor Ltd. to form a logging landing. No reclamation work was undertaken.

Below 14.63 metres of overburden D.D.H. SMG-78-2 penetrated 155.14 metres of Gething Formation sediments. These sediments are, for the most part, typical of the Gething Formation. They included interbedded and interlaminated fine-grained sandstones, siltstones, mudstones and coal seams. Many individual beds and laminae are mixed in composition (e.g. silty mudstone, sandy siltstone, etc.). Carbonaceous debris is a common constituent, both disseminated within a bed and confined to bedding surfaces. These sediments represent deposition in an aggrading alluvial flood plain environment.

At the top of the section penetrated by this hole, two thick sandstone beds were cored. Both beds display normal graded bedding with finer grained sand at the top and coarser grained sand toward the base. Markedly steeper bedding dip angles within the sandstones indicate large-scale crossbedding or foreset bedding rather than normal planar bedding. These sandstones probably represent stream channel deposits.

Three very thin seams (i.e. 0.03 to 0.06 metres) of a soft, waxy, talc-like mineral were cored in D.D.H. SMG-78-2. These seams are thought to represent the alteration product of volcanic ash deposits. If in fact these seams do represent ash deposits, which normally are very widespread, they may prove useful as marker beds. Their usefulness also depends on their recoverability when diamond drilling.

Measured bedding angles to the vertical core axis range from 58° to 78°. Some of the steeper angles are considered to have been measured on foreset and large-scale crossbedding surfaces. The shallower angles suggest a general bedding dip trend in the area of D.D.H. SMG-78-2 of 70° to 75°. Fractures and calcite veins were noted in only a few rock units. One narrow zone of calcite healed breccia was noted. Most significant breakage is confined to the coal seams which in some cases are sheared and fractured and thus, recovered as fine rubble.

Twenty-nine coal seams ranging in thickness from 0.06 metres to 1.25 metres were cored in D.D.H. SMG-78-2. Eighteen seams were removed for analysis in seventeen samples. Sample No. 84 comprised two coal seams and a 0.06 metres mudstone split. Most of the coals were bright and black in appearance with many displaying definite banding. Four seams showed well developed cleating. Cannoloid coal having a submetallic luster was cored in two seams (i.e. Sample No. 81 and the 0.67 metre upper bench of Sample No. 84). Fine calcite veins were note in Sample No. 78 and a pyritic band was noted in Sample No. 92.

Head analysis conducted on the 17 samples taken from D.D.H. SMG-78-2 show wide variability in the qualities of these coals. Their volatile matter contents range from 19.26% to 31.25%. This range is slightly greater than the 22% to 31% range established by the A.S.T.M. for medium volatile bituminous coals. B.T.U. values range from 8,892 B.T.U./lb. to 14,818 B.T.U./lb. and appear to be inversely related to ash contents which range from 2.00% to 39.24%. Sulphur analyses range from 0.66% to 2.11% with six seams having greater than 1% sulphur. A thin pyrite band was noted in Sample No. 92 which undoubtedly contributed to the 2.11% sulphur analysis. F.S.I. values range from 1 to 9 with 8 seams having values of 5 or more.

Single gravity tests at 1.400 S.G. were conducted on all samples. Sample No. 88 had no 1.400 S.G. sink fraction and thus, the analysis of the float fraction showed little variation from the moisture free head analysis. The sulphur content of Sample No. 92 was greatly reduced with the loss of pyrite in the sink fraction. In all of the samples, with the exception of Sample No. 88, the ash content was markedly reduced and the B.T.U. values enhanced in the float fraction. In most samples, volatile matter and sulphur contents were not significantly changed and F.S.I. values were only moderately improved.

SOUTH MOUNT GETHING

Hole SMG-78-2

Head Analyses

Sample No.	Depth	Thickness	Air Dry Basis								Moisture Free Basis				
			Grams Received	% H_2O	% Ash	% S	% VM	% FC	Btu	FSI	% Ash	% S	% VM	% FC	Btu
76	69.2- 71.5	2.3	648	1.11	8.00	0.89	25.94	64.95	13810	6	8.09	0.90	26.23	65.68	13965
77	77.7- 79.7	2.0	552	1.11	5.50	0.91	26.09	67.30	14318	8 1/2	5.56	0.92	26.38	68.06	14479
78	94.8- 96.9	2.1	484	1.06	4.68	1.21	31.25	63.01	14499	9	4.73	1.22	31.58	63.69	14654
79	142.8-146.9	4.1	3441	1.18	7.17	0.80	22.85	68.80	13978	3	7.26	0.81	23.12	69.62	14145
80	166.5-168.0	1.5	819	1.09	10.91	1.13	28.14	59.86	13310	7	11.03	1.14	28.45	60.52	13457
81	197.6-200.6	3.0	2665	1.24	9.36	0.84	20.21	69.19	13604	1 1/2	9.48	0.85	20.46	70.06	13775
82	213.0-214.0	1.0	1121	1.08	9.41	1.21	28.53	60.98	13710	8 1/2	9.51	1.22	28.84	61.65	13860
83	215.2-216.2	1.0	1274	1.22	39.24	0.95	19.26	40.28	8892	5	39.72	0.96	19.50	40.78	9002
84	244.6-248.0	3.4	2365	1.38	20.26	0.81	20.50	57.86	11812	1 1/2	20.54	0.82	20.79	58.67	11977
85	275.6-276.9	1.3	923	1.16	20.54	0.96	24.34	53.96	11752	8	20.78	0.97	24.63	54.59	11890
86	292.5-294.6	2.1	2076	1.08	11.03	1.05	26.63	61.26	13109	7 1/2	11.15	1.06	26.92	61.93	13252
87	333.4-335.3	1.9	2600	1.04	19.16	0.66	22.12	57.68	12062	1 1/2	19.36	0.67	22.35	58.29	12189
88	347.6-349.1	1.5	1698	1.30	2.00	0.85	21.07	75.63	14818	1	2.03	0.86	21.35	76.62	15013
89	397.0-399.5	2.5	1593	1.53	9.91	0.81	20.23	68.33	13383	2	10.06	0.82	20.55	69.39	13591
90	454.9-456.5	1.6	1961	0.98	8.22	0.97	20.84	69.96	13925	2	8.30	0.98	21.05	70.65	14063
91	500.2-501.7	1.5	1916	1.06	5.49	1.30	21.40	72.05	14310	1	5.55	1.31	21.63	72.82	14463
92	532.4-533.9	1.5	1726	0.79	6.50	2.11	22.58	70.13	14160	3 1/2	6.55	2.13	22.76	70.69	14273

SOUTH MOUNT GETHING

Hole SMG-78-2

Structures

	Sample #79		Sample #81		Sample #84	
Size	% Weight	Cum. % Wt.	% Weight	Cum. % Wt.	% Weight	Cum. % Wt.
-3/8" +1/4"	40.80	40.80	47.87	47.87	43.61	43.61
-1/4" +6m	27.33	68.13	26.94	74.81	25.99	69.60
-6m +10m	14.49	82.62	12.32	87.13	15.08	84.68
-10m +28m	10.52	93.14	7.71	94.84	9.43	94.11
-28m	6.86	100.00	5.16	100.00	5.89	100.00
Total	100.00		100.00		100.00	

(iii) D.D.H. SMG-78-3

location:- adjacent to the Gething Creek Road approximately 2.67 kilometres from the junction with Canfor Limited's Johnson Creek - Track Creek Road.
- McElhanney co-ordinates: 6,202,810m N x 540,580m E
- Coal Licence No. 4132

elevation:- 765m

orientation:- vertical

date collared:- October 10, 1978

date completed:- October 15, 1978

overburden depth:- 7.01m

casing depth:- 6.10m

final depth:- 209.40m

formations encountered:- 0 to 7.01m overburden
7.01m to 209.40m Gething Fm.

coal seams sampled:-

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
93		20.12m to 20.73m	0.61m	1.40m
94	Titan	92.17m to 93.57m	1.40m	1.52m
95		126.07m to 126.65m	0.58m	0.67m
96		138.59m to 139.14m	0.55m	0.55m
97	Gething	140.67m to 141.74m	1.07m	1.07m
98	Gething	141.85m to 142.92m	1.07m	1.07m
99	Mogal	154.75m to 155.63m	0.88m	0.98m

D.D.H. SMG-78-3 was drilled on the edge of a logging landing adjacent to the Gething Creek Road. On October 21, 1978 the Caterpillar excavated mud sump and mud empoundment pond were refilled and the site was levelled using a D-7 Caterpillar Tractor. The site was then sown with the grass seed mixture recommended by the Reclamation Branch of the British Columbia Ministry of Energy, Mines and Petroleum Resources for forested areas of the Northeast Coal Block.

Below 7.01 metres of overburden, D.D.H. SMG-78-3 penetrated 202.39 metres of Gething Formation sediments. The sedimentary sequence cored in this drill hole is typical of the formation and consists of interbedded and interlaminated fine-grained sandstones, siltstones, mudstones and coal seams. Many individual beds and laminations are mixtures of these components (e.g. coaly mudstone, muddy siltstone, silty sandstone, etc.). These sediments and their various textural features indicate aggrading alluvial flood plain and deltaic deposition.

Bedding dip angles measured from the vertical core axis are widely variable in the upper part of the hole and become fairly consistant toward the bottom. In the upper 70 metres of core two bedding angles of 0° to the core axis and bedding angles ranging from 0° to 50° to the core axis were measured. The pattern of these bedding orientations suggests the occurrence of S-shaped drag folding. Below 70 metres, bedding dip angles gradually flatten and range from 70° to 75° to the core axis toward the bottom of the hole. Fracturing and calcite veining are prominent in the upper 70 metres of the section but diminish in abundance downward.

Twenty-three coal seams ranging in thickness from 0.06 metres to 1.40 metres were cored in D.D.H. SMG-78-3. Of these, seven seams greater than 0.54 metres in thickness were removed for analysis. All of the sampled coals were black and generally bright. Many had well developed cleating at least throughout a part of their thickness. Banding was apparent in samples 97, 98 and 99 and samples 94 and 99 contained ashy laminations. Some core loss was noted in all samples.

Head analyses conducted on these coal samples indicate considerable variability in coal quality but all are of the low to medium volatile bituminous type. Only samples 95 and 96 show good coking characteristics. B.T.U. values range from 12,328 B.T.U./lb. to 14,619 B.T.U./lb. and show an inverse relationship with ash content which ranges from 2.77% to 15.64%. Sulphur content ranges from 0.62% to 1.07%.

A 1.400 S.G. float separation reduced the ash content to less than 4.9% and significantly enhanced the B.T.U. value in all samples. Sulphur content in the float samples generally is moderately increased while volatile matter content is increased in some samples and decreased in others. The F.S.I. values of samples 95 and 96 increased slightly while all other samples continued to have poor coking charateristics.

SOUTH MOUNT GETHING

Hole SMG-78-3

Head Analyses

Sample No.	Depth	Thickness	Air Dry Basis								Moisture Free Basis				
			Grams Received	% H_2O	% Ash	% S	% VM	% FC	Btu	FSI	% Ash	% S	% VM	% FC	Btu
93	66.0- 68.0	2.0	2041	2.16	6.49	0.95	23.38	67.97	13717	1 1/2	6.63	0.97	23.90	69.47	14020
94	302.4-307.0	4.6	2863	1.17	4.92	0.88	23.25	70.66	14297	1 1/2	4.98	0.89	23.52	71.50	14466
95	413.6-415.5	1.9	1991	0.86	15.64	0.92	28.74	54.76	12328	8	15.78	0.93	28.99	55.23	12435
96	454.7-456.5	1.8	1169	1.04	4.11	1.07	28.15	66.70	14619	8	4.15	1.08	28.45	67.40	14773
97	461.5-465.0	3.5	3748	1.73	2.77	0.64	20.10	75.40	14613	1 1/2	2.82	0.65	20.45	76.73	14870
98	465.4-468.9	3.5	2800	1.64	4.78	0.62	21.53	72.05	14310	1	4.86	0.63	21.89	73.25	14549
99	507.7-510.6	2.9	2385	1.37	14.65	0.75	19.47	64.51	12701	1 1/2	14.85	0.76	19.74	65.41	12877

SOUTH MOUNT GETHING

Hole SMG-78-3

Structures

Size	Sample #93		Sample #94		Sample #97		Sample #98		Sample #99	
	% Weight	Cum. % Weight	% Weight	Cum. % Weight	% Weight	Cum. % Weight	% Weight	Cum. % Weight	% Weight	Cum. % Weight
-3/8" +1/4"	21.38	21.38	40.92	40.92	48.28	48.28	35.41	35.41	39.28	39.28
-1/4" +6m	38.71	60.09	24.12	65.04	21.39	69.67	29.30	64.71	28.38	67.66
-6m +10m	20.03	80.12	14.80	79.84	12.70	82.37	15.63	80.34	14.65	82.31
-10m +28m	12.85	92.97	11.65	91.49	10.38	92.75	11.99	92.33	11.09	93.40
-28m	7.03	100.00	8.51	100.00	7.25	100.00	7.67	100.00	6.60	100.00
Total	100.00		100.00		100.00		100.00		100.00	

Trench Samples:

Four samples taken from outcropping coal seams were submitted for analysis. Samples numbered 1, 2 and 3 yielded analytical results characteristic of strongly weathered and oxidized coal. In all samples, B.T.U. values were low, F.S.I. values were 0 and water contents were high. Moisture free analyses conducted on single gravity separation products yielded increased percentages for the various components of the coals but the increases were directly related to the loss of water in the drying process. B.T.U. values were also enhanced by drying the samples. These samples were collected outside the property boundary.

Head analysis of Sample No. 6 indicates this coal to be largely unweathered. It is a low sulphur, low ash and low volatile bituminous coal with a high B.T.U. value. The F.S.I. value of 1 indicates poor coking capability. The single gravity separation product differs only slightly from the raw sample.

SOUTH MT. GETHING

Head Analyses

Sample No.	Coordinates	No. of Feet	Air Dry Basis							Moisture Free Basis				
			Grams Received	% H_2O	% Ash	% S	% VM	% FC	Btu	FSI	% Ash	% S	% VM	% FC	Btu
1	6206750N-542550E	.85	1358	16.37	9.54	0.40	26.79	47.30	8452	0	11.41	0.48	32.03	56.56	10106
2	6206750N-542550E	2.36	3308	15.71	7.48	0.41	25.37	51.43	9010	0	8.88	0.49	30.10	61.02	10689
3	6206690N-542980E	1.31	1531	12.38	16.20	0.50	26.06	45.36	8408	0	18.49	0.57	29.74	51.77	9596
6	6200570N-535480E	3.02	3143	1.09	3.90	0.55	20.14	74.87	14626	1	3.94	0.56	20.36	75.70	14787

Correlation of Coal Seams:

No correlation is presently proposed for the coal seams encountered in D.D.H. SMG-78-1. This hole was drilled at a site located a sizeable distance away from measured sections and other holes drilled on South Mount Gething, East Mount Gething and Bri Properties. Since the Gething section in the Peace River area is considered to significantly vary in character over short distances, with coal seams thickening, thinning and dying out, any proposed correlation would be largely speculative. The contact between the Gething Formation and the overlying Moosebar Formation, although thought to occur near the collar of D.D.H. SMG-78-1, was not observed and therefore provides no positive marker horizon for correlation purposes.

The stratigraphic sections penetrated in D.D.H. SMG-78-2 and D.D.H. SMG-78-3 are thought to be from the upper part of the Gething Formation. The correlation of coal seams cored in these holes has been made based on this assumption. Coal analyses, geophysical logs and stratigraphic relationships have been compared in assigning seam names to the individual seams (the names employed are in common usage throughout the Peace River Canyon area). For several reasons, these correlations must be considered tentative. The Gething section is known to be variable in character over short distances and in particular, coal seams within the section vary in thickness over short distances and are of limited lateral extent. Drill holes are widely spaced and therefore, stratigraphic data is not readily projectable between holes. A common distinctive marker horizon such as

the contact between the Gething and Moosebar Formations was not encountered in these holes. The upper segment of core from D.D.H. SMG-78-3 is structurally complicated. The correlation of coal seams between D.D.H. SMG-78-2 and D.D.H. SMG-78-3 and between these drill holes and other drill holes and measured sections is displayed on Figures 8 and 9 (in map pocket).

Conclusions and Recommendations:

The northeastern and eastern coal licences of the South Mount Gething Property have significant potential for the discovery of economically mineable coal. Although the uppermost beds of the Gething Formation do not occur on the property, a complete section does occur between the upper eastern flank of South Mount Gething and the east side of Dowling Creek - Gething Creek valley on the adjacent Bri Coal Property. Together, these two properties form a promising exploration area. Minor structural disruptions have been noted but in general, bedding is uniformly gently dipping to the east from South Mount Gething Property, well to the east on Bri Coal Property.

Numerous coal seams were cored in D.D.H. SMG-78-2 and D.D.H. SMG-78-3. Several seams have been tentatively correlated with seams cored in drill holes on the Bri Coal Property. Further drilling at closer spacing is required to improve the reliability of these correlations. Drilling should also be planned to evaluate continuity, thickness variability, coal quality and lateral extent of the more prominent seams over a larger area. Preliminary testing of the lower part of the Gething Formation is also recommended.

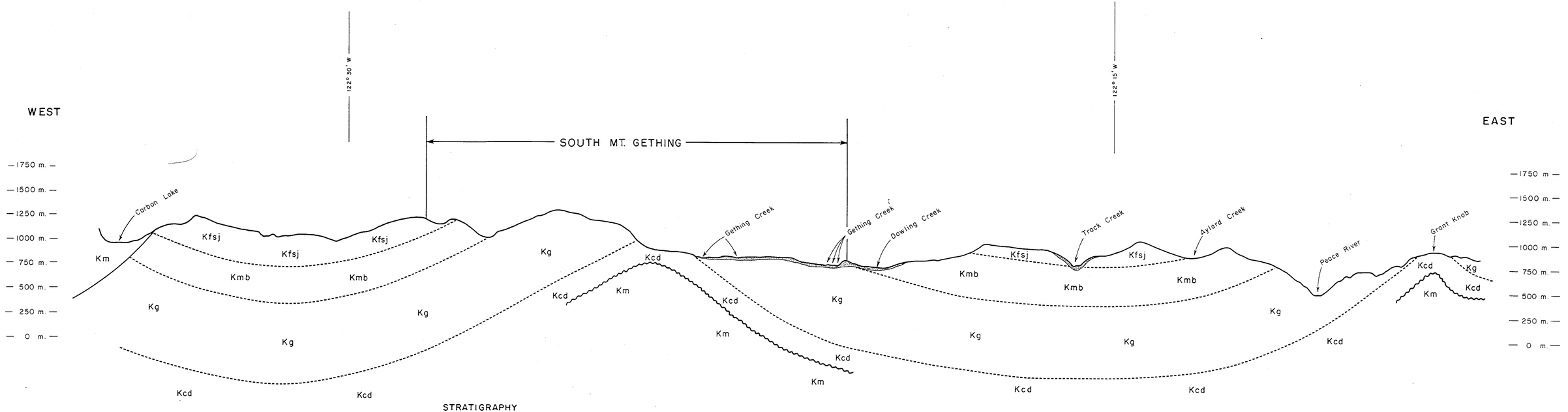
The southern part of South Mount Gething Property remains untested. The Moosebar - Gething contact, defining the top of the Gething Formation occurs in close proximity to the property boundary. Since the Gething sediments are dipping to the east and west away from the central anticlinal axis and the anticlinal axis is plunging to the south, coal seams in the upper part of the formation must be of limited areal extent within the property boundaries. Any exploration undertaking, to outline a coal seam or seams of mineable areal extent within the boundaries of South Mount Gething Property, must therefore necessarily test the Gething Formation at depth. The drilling of a number of holes is recommended to appraise the stratigraphy and any included coal seams in this area and to estimate the possible areal extent of any prominent seams encountered.

On the western licences, the area available to a mining operation is also limited in extent. The Moosebar - Gething contact occurs near to the property boundary both on and off of the property. Gething sediments dip generally west - southwesterly away from the major anticlinal axis underlying the centre of the property. Thus, the areal extent of coal seams occurring in the upper part of the Gething Formation is limited to topography and structure to the east and the property boundary to the west.

D.D.H. SMG-78-1 was drilled near to the western property boundary. Four coal seams having apparent thicknesses of greater than one metre were cored in this hole. Of particular note, one seam (i.e. Sample No. 44) measured 5.64 metres in apparent thickness. Although only two of these four seams

possessed significant coking characteristics (i.e. Sample No. 43, F.S.I. 4 1/2; Sample 47, F.S.I. 7) they must be considered worthy of further exploration.

Assessment of the coal potential of the western licences is further complicated by the variable and often steeply dipping nature of the bedding. Measurements taken from the drill core and from nearby outcrops indicate that the bedding dips approximately 35° to 40° in the immediate area of D.D.H. SMG-78-1 and flattens toward the anticlinal axis. Additional geological mapping wherever possible should be undertaken to better define the structural form of the western limb of the anticline. Additional drilling is warranted but should be directed at those seams which can be expected to occur over a mineable area.



STRATIGRAPHY

- Quaternary Alluvium
- Fort St. John Group
  - Kfsj — Fort St John Group (undifferentiated)
  - Kmb — Moosebar Formation
- Bullhead Group
  - Kg — Gething Formation
  - Kcd — Cadomin Formation
- Minnes Group
  - Km — Minnes Group (undifferentiated)

FIGURE — 5

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

SOUTH MOUNT GETHING
EAST — WEST SECTION
@ 55° 58' 03" NORTH
LOOKING NORTH

Work by: N. Duncan	Date: February 1979	NTS Ref.
Drawn by: T. Drews	Revised:	Horizontal Scale — 1:50,000
		Vertical Scale — 1:25,000

REFERENCES

Anderson, R.B.; ARMSTRONG A.T.,

1979: 1978 Report of Exploration Activities on the Bri - Dowling Creek Property. (unpublished report)

Dyson, I.P.,

1972: Preliminary Report, Peace River Coal Project. (unpublished report)

1976: Peace River Coal Project, of Bow River Resources Ltd. & Rainier Energy Resources Ltd. (unpublished report)

Holland, Stuart S.,

1976: Landforms of British Columbia, A Physiographic Outline; British Columbia Department of Mines and Petroleum Resources, Bulletin 48.

Hughes, J.E.,

1964: Jurassic and Cretaceous Strata of the Bullhead Succession in Peace and Pine River Foothills; British Columbia Department of Mines and Petroleum Resources, Bulletin 51.

Irish, E.J.W.,

1965: Geology of the Rocky Mountain Foothills, Alberta (between latitudes 53° 15' and 54° 15'); Geological Survey of Canada, Memoir 334.

1968: Structure of the Northern Foothills and Eastern Mountain Ranges, Alberta and British Columbia, (between latitudes 53° 15' and 57° 20'); Geological Survey of Canada, Bulletin 168.

1970: Halfway River Map-Area, British Columbia; Geological Survey of Canada, Paper 69-11.

le Nobel, D.N.,

1977: Coal Submittal; Gething Dowling-Creek Coal Licences; (private company memo)

1977: Bri Coal; (private company memo)

1977: 1977 Report of Exploration Activities on the East Mount Gething Property: (unpublished report)

Muller, J.E.,

1959: Geology, Pine Pass, British Columbia; Geological Survey of Canada, Map 11-1961.

Roberts, N. Eric,

1977: Peace River Coal Project of Bow River Resources Ltd./Rainier Energy Resources Ltd. and Bri Coal Mining Ltd. (unpublished report)

Stott, D.F.,

1968: Bullhead and Fort St. John Groups, Rocky Mountain Foothills; Geological Survey of Canada, Bulletin 152.

1969: The Gething Formation at Peace River Canyon, British Columbia; Geological Survey of Canada, Paper 68-28.

APPENDICES

ACKNOWLEDGEMENTS:

The tentative coal seam correlation presented in this report was largely completed by R.B. (Bob) Anderson, Senior Geologist, Utah Mines Ltd., Vancouver. Extensive discussions with Bob and his interest in this project were most beneficial in the preparation of this report.

Norm Duncan, Geologist, Utah Mines Ltd., Vancouver completed the cross sections included with this report.

The drafting of maps, sections and diagrams was completed by T. Drews and the layout and typing of the text were completed by C. DeKuysscher both of Utah Mines Ltd., Vancouver.

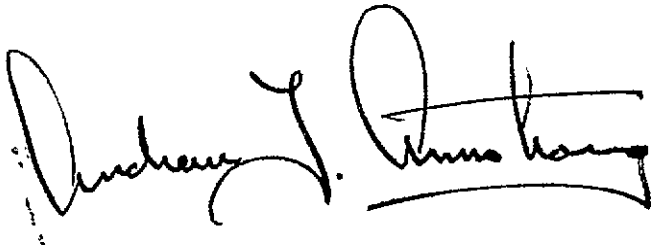
CERTIFICATION

I, ANDREW T. ARMSTRONG of #105 - 4001 Mount Seymour Parkway, North Vancouver, British Columbia, do hereby certify that:

I was granted a Bachelor of Science Degree in Geology by the University of British Columbia in 1970.

I have been continuously employed in various mining exploration activities from May 1970 to the present, throughout British Columbia.

I am an Associate of the Geological Association of Canada.



Vancouver, B. C.

Andrew T. Armstrong
Geologist

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

SOUTH MT. GETHING

BEDROCK GEOLOGY AND DRILL HOLE LOCATIONS

Work by S. Armstrong	Date: February 1979	NTS Ref 930/16,9&8/1
Drawn by T Drews	Revised	Scale - 1:10,000

MAP - 1

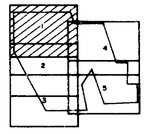
637

Pl. SOUTH MT. GETHING 78(2)A.

LEGEND

Lower Cretaceous	Fort St John Group	Kfsj — Fort St John Group — Undifferentiated
		Kmb — Moosebar Formation
	Bullhead Group	Kg — Gething Formation
		Kc — Cadomin Formation
Jurassic (?) to Lower Cretaceous	Minnes Group	Jk&Km — Undifferenhiated

- Geologic Contact
- Syncline
- Anticline
- (Outcrop) Strike And Dip Of Bedding
- Drill Hole Location
- X 20' Coal Outcrop, Measured Thickness Where Indicated
- Outcrop
- Access Road
- 4148 Coal Licence Number



Scale and elevation datum based on limited ground control resulting in good relative, but uncertain absolute mean accuracy.
Compiled from aerial photography, at an approximate scale of 1 inch equals 5280 feet Flown in 1970

UTAH MINES

PRELIMINARY RECONNAISSANCE TYPE MAPPING

McElhanney Surveying & Engineering Ltd
1200 West Pender Street, Vancouver B.C., Canada

Scale - 1:10,000	
Contour Interval - 10 Metres	
Date June 18, 1978	
Job No. - 08298 - 4	
Sheet No. 1	

551,000 E
552,000 E
553,000 E
554,000 E
555,000 E
556,000 E
557,000 E
558,000 E
559,000 E
560,000 E
561,000 E

6,203,000 N
6,202,000 N
6,201,000 N
6,200,000 N
6,199,000 N
6,198,000 N
6,197,000 N
6,196,000 N

Kmb
Kg
Kcd
Gething Creek
Gething Creek Road
SMG 78-1
SMG 78-3
Sample No. 16
4142
4141
4140
4139
4138
4137
4136
4135
3651
3650
3653
3652
3654

LEGEND

Lower Cretaceous	Fort St John Group	Kfsj	Fort St John Group — Undifferentiated
		Kmb	Moosebar Formation
	Bullhead Group	Kg	Gething Formation
		Kc	Cadomin Formation
Jurassic (?) to Lower Cretaceous	Minnes Group	Jn & Km	Undifferentiated

- Geologic Contact
- Syncline
- Anticline
- (Outcrop) Strike And Dip Of Bedding
- Drill Hole Location
- X 20' Coal Outcrop, Measured Thickness Where Indicated
- Outcrop
- Access Road
- 4136 Coal Licence Number

PR - SOUTH MT. GETHING 78(2)A.

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

SOUTH MT. GETHING

BEDROCK GEOLOGY AND DRILL HOLE LOCATIONS

Work by: S. Armstrong	Date: February, 1979	NTS Ref. 93O/16, 94B/1
Drawn by: T. Drews	Revised:	Scale - 1:10,000

MAP - 2

637

Scale and elevation datum based on slanted ground control resulting in good relative, but uncertain absolute map accuracy
Compiled from aerial photography at an approximate scale of 1 inch equals 5280 feet flown in 1970

UTAH MINES

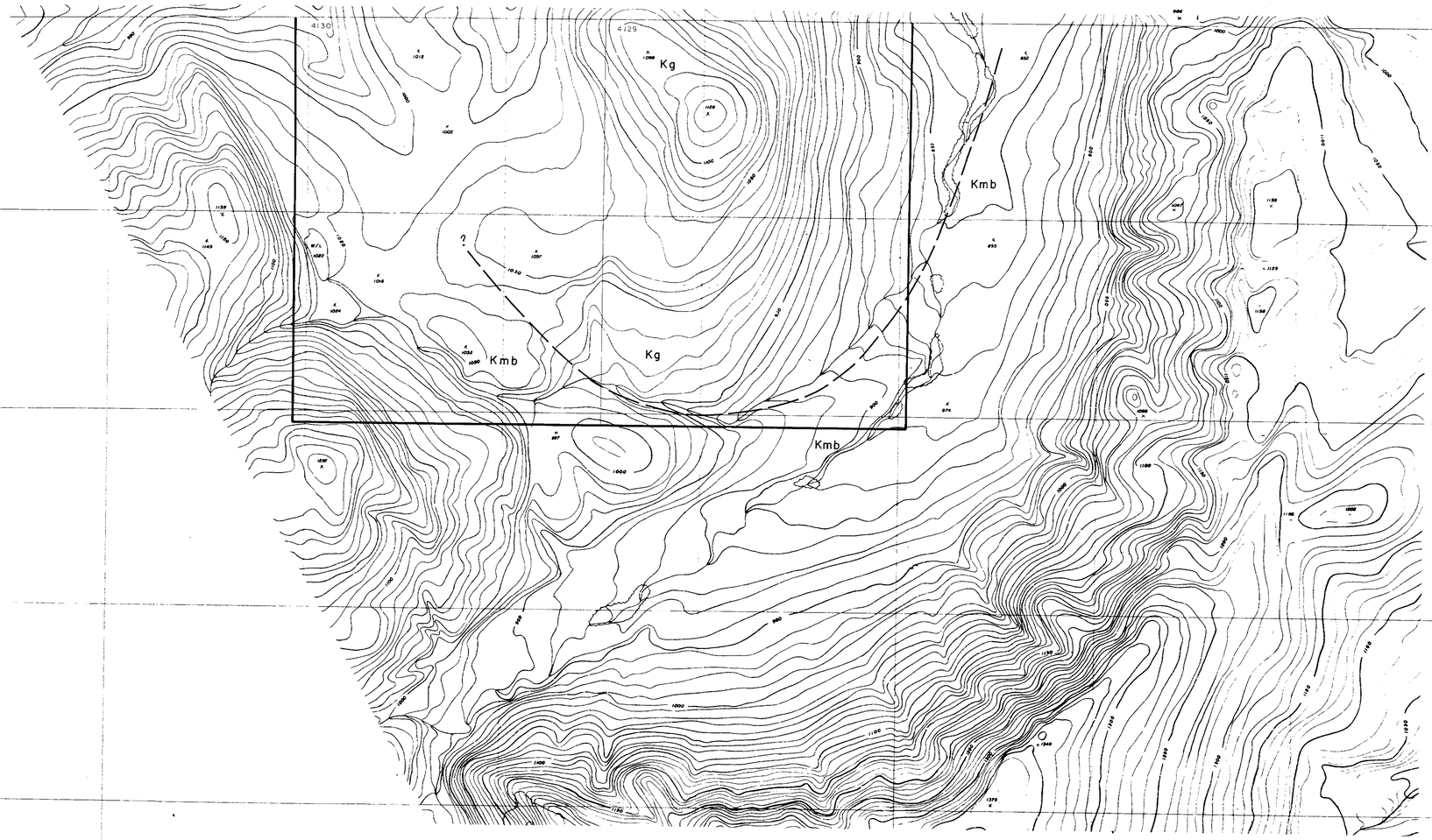
PRELIMINARY RECONNAISSANCE TYPE MAPPING

McElhanney Surveying & Engineering Ltd
1900 West Pender Street, Vancouver B.C., Canada

Scale - 1:10,000
Contour Interval - 10 Metres
Date - June 18, 1978.
Job No. - 08298 - 4
Sheet No. - 2

531,000E
532,000E
533,000E
534,000E
535,000E
536,000E
537,000E
538,000E
539,000E
540,000E
541,000E

6,198,000N
6,197,000N
6,196,000N
6,195,000N
6,194,000N
6,193,000N
6,192,000N
6,191,000N



Re: South Mt. Gething 72(2)A.

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

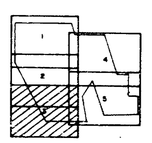
SOUTH MT. GETHING

BEDROCK GEOLOGY AND
DRILL HOLE LOCATIONS

Work by A. Armstrong	Date: March 1979	NTS Ref. 93 O/16, 94 B/1
Drawn by T. Drews	Revised:	Scale — 1: 10,000

MAP — 3

637



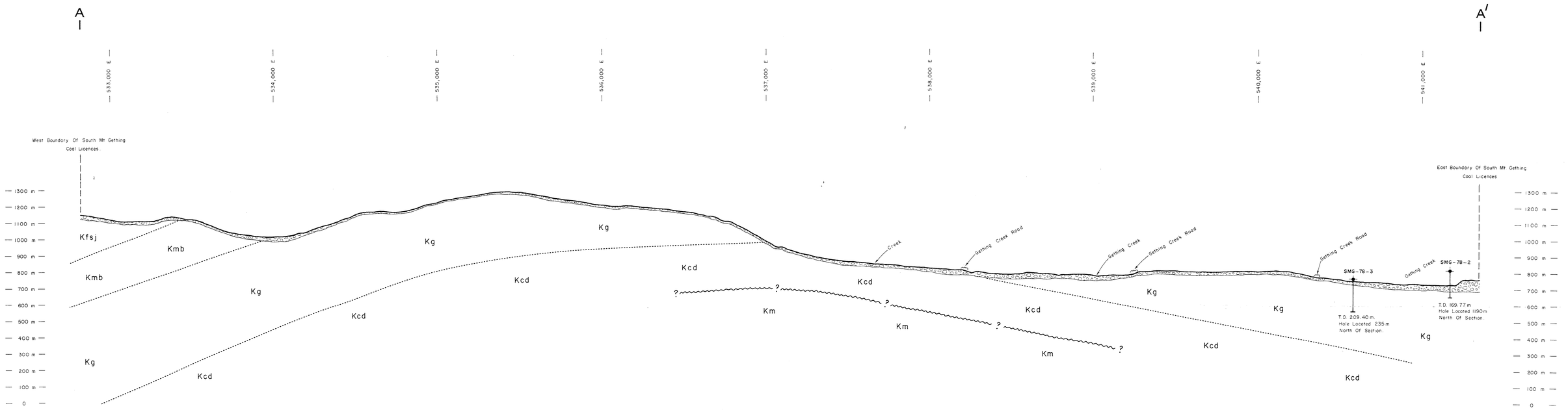
Scale and elevation datum based on limited ground control resulting in good relative, but uncertain absolute map accuracy.
Compiled from aerial photography at an approximate scale of 1 inch equals 5280 feet flown in 1970

UTAH MINES

PRELIMINARY RECONNAISSANCE TYPE MAPPING

McElhanney Surveying & Engineering Ltd.
1300 West Pender Street, Vancouver, B.C., Canada

Scale - 10,000	
Contour Interval - 10 Metres	
Date - June 16, 1978.	
Job No. - 78298-4	
Sheet No. - 3	



LEGEND

- Recent
  - Alluvium & Glacial Deposits
- Lower Cretaceous
  - Fort St. John Group
    - Kfsj — Fort St. John Group Undivided
    - Kmb — Shale, Moosebar Formation
  - Bullhead Group
    - Kg — Carbonaceous Sandstone Mudstone And Shale With Coal, Gething Formation
    - Kcd — Coarse Grained Pebbly Sandstone And Conglomerate, Cadomin Formation
    - Km — Minnes Group Undivided

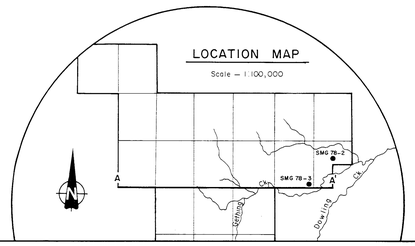


FIGURE – 6

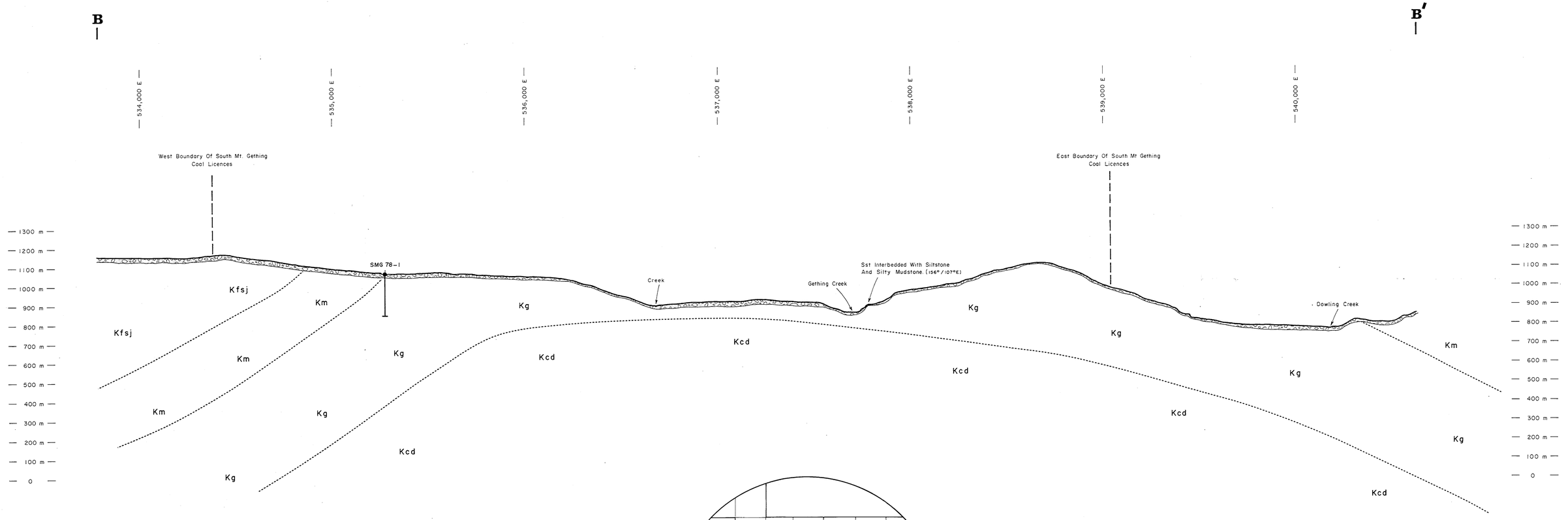
Re. SOUTH MT. GETHING 78 (2) A.

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

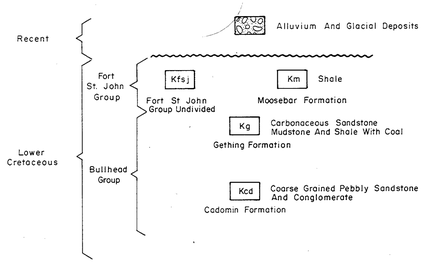
SOUTH MOUNT GETHING
EAST — WEST SECTION
@ 6,202,500 N (McElhanney Coordinates)
LOOKING NORTH

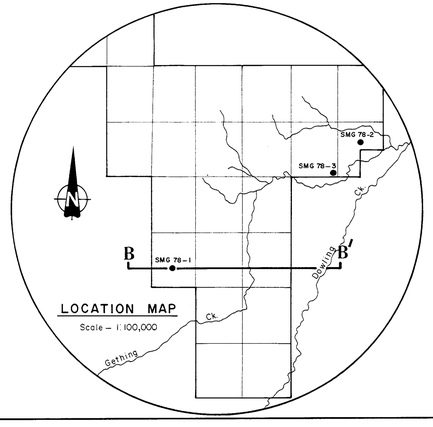
Work by: A. Armstrong	Date: Jan. 1979	NTS Ref.
Drawn by: T. Drews	Revised:	Horizontal Scale – 1:10,000
		Vertical Scale – 1:10000

637



LEGEND





LOCATION MAP
Scale – 1:100,000

FIGURE – 7

Re-South Mt. Gething 78(2)A.

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

SOUTH MOUNT GETHING
EAST — WEST SECTION
@ 6,199,400 N (McElhanney Coordinates)
LOOKING NORTH

Work by: A. Armstrong	Date: January 1979	NTS Ref.
Drawn by: T. Drews	Revised:	Horizontal Scale — 1:10,000
		Vertical Scale — 1:10,000

637

SMG 78 – 1

SMG 78 – 3

SMG 78 – 2

VERTICAL SCALE

0
100'
200'
300'
400'
500'
600'
700'
750'

TD – 747'

TD – 687'

TD – 557'

TROJAN SEAM

TITAN SEAM

FALLS SEAM

GETHING SEAM

MOGAL SEAM

INDEX MAP

DRILL HOLE LOCATIONS

Scale – 1:100,000

SMG 78-2

SMG 78-3

SMG 78-1

N

GETHING CK.

637

FIGURE-8

RE: SOUTH MT. GETHING 78(2)A

UTAH MINES LTD.

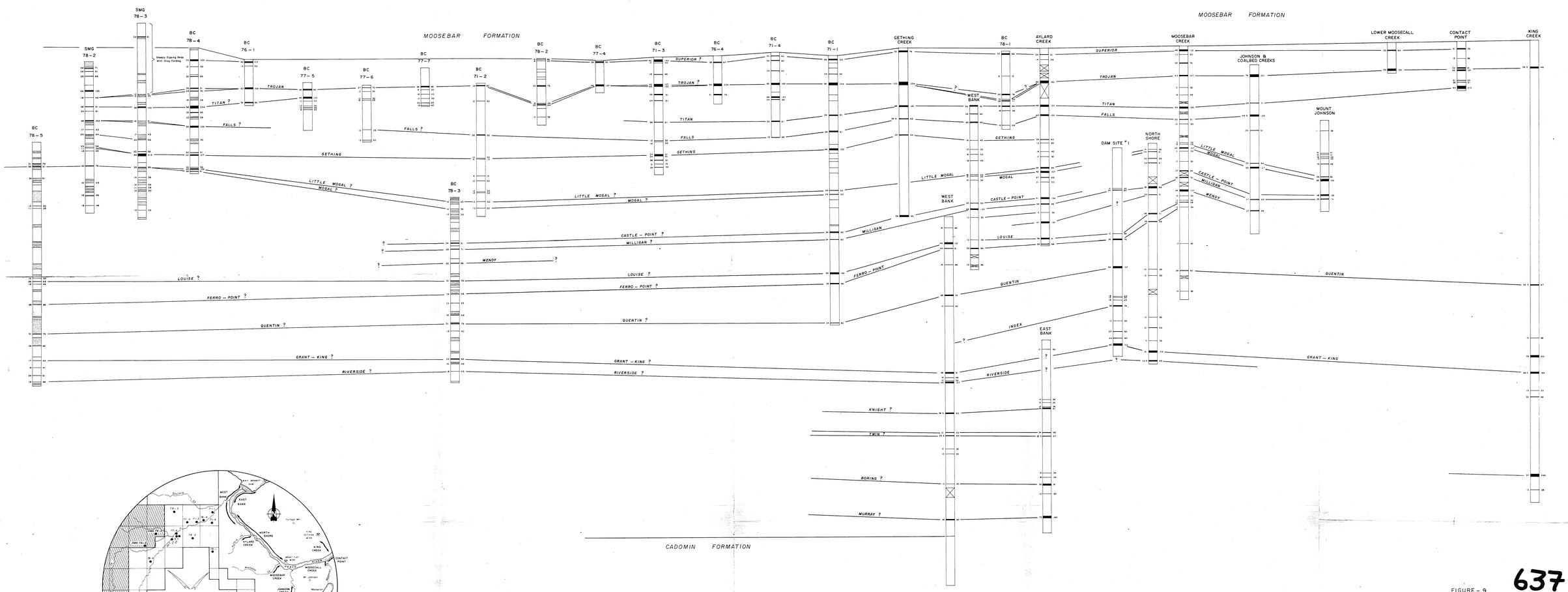
EXPLORATION DEPARTMENT

VANCOUVER BRITISH COLUMBIA

SOUTH MOUNT GETHING

COAL SEAM CORRELATION

Work by: R.B. Anderson	Date: Nov. 1978	NTS Ref.
Drawn by: T. Drews	Revised:	Vertical Scale – 1" = 40'



LEGEND

Centimetres / Inches

- Coal Seam With Thickness
- Coal Seam In Drillhole Less Than 12" Thick
- Covered Interval
- Sandstone

NOTES

1. Most Coal Seams In Outcrop Less Than 12 Inches Have Been Omitted.
2. Thickness For Seams In Drillholes Are Intersection Thicknesses.

FIGURE – 9

637

Re. South Mt. Gething 71(2)B.

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

SOUTH MOUNT GETHING

TENTATIVE COAL SEAM CORRELATION BETWEEN DRILL HOLES AND MEASURED SECTIONS

Work by A.R. Anderson & Associates	Date March 1979	NTS Ref.
Drawn By T. Drews	Revised	Vertical Scale — 1" = 100'

Pt-S. MT. GETHING 78 (-3) A

GEOPHYSICAL LOGS. STRATIGRAPHIC " + WRITTEN. DESCRIPTIONS

OPEN FILE

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00637

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

SOUTH MT. GETHING

BEDROCK GEOLOGY AND DRILL HOLE LOCATIONS

Work by S. Armstrong	Date: February 1979	NTS Ref 930/16,9&8/1
Drawn by T Drews	Revised	Scale - 1:10,000

MAP - 1

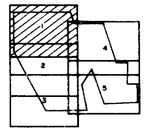
637

Pl. SOUTH MT. GETHING 78(2)A.

LEGEND

Lower Cretaceous	Fort St John Group	Kfsj — Fort St John Group — Undifferentiated
		Kmb — Moosebar Formation
	Bullhead Group	Kg — Gething Formation
		Kc — Cadomin Formation
Jurassic (?) to Lower Cretaceous	Minnes Group	Jk&Km — Undifferenhiated

- Geologic Contact
- Syncline
- Anticline
- (Outcrop) Strike And Dip Of Bedding
- Drill Hole Location
- X 20' Coal Outcrop, Measured Thickness Where Indicated
- Outcrop
- Access Road
- 4148 Coal Licence Number



Scale and elevation datum based on limited ground control resulting in good relative, but uncertain absolute mean accuracy.
Compiled from aerial photography, at an approximate scale of 1 inch equals 5280 feet Flown in 1970

UTAH MINES

PRELIMINARY RECONNAISSANCE TYPE MAPPING

McElhanney Surveying & Engineering Ltd
1200 West Pender Street, Vancouver B.C., Canada

Scale - 1:10,000	
Contour Interval - 10 Metres	
Date June 18, 1978	
Job No. - 08298 - 4	
Sheet No. 1	

551,000 E
552,000 E
553,000 E
554,000 E
555,000 E
556,000 E
557,000 E
558,000 E
559,000 E
560,000 E
561,000 E

6,203,000 N
6,202,000 N
6,201,000 N
6,200,000 N
6,199,000 N
6,198,000 N
6,197,000 N
6,196,000 N

Kmb
Kg
Kcd
Gething Creek
Gething Creek Road
SMG 78-1
SMG 78-3
Sample No. 16
4142
4141
4140
4139
4138
4137
4136
4135
3651
3650
3653
3652
3654

LEGEND

Lower Cretaceous	Fort St John Group	Kfsj	Fort St John Group — Undifferentiated
		Kmb	Moosebar Formation
	Bullhead Group	Kg	Gething Formation
		Kc	Cadomin Formation
Jurassic (?) to Lower Cretaceous	Minnes Group	Jn & Km	Undifferentiated

- Geologic Contact
- Syncline
- Anticline
- (Outcrop) Strike And Dip Of Bedding
- Drill Hole Location
- X 20' Coal Outcrop, Measured Thickness Where Indicated
- Outcrop
- Access Road
- 4136 Coal Licence Number

PR - SOUTH MT. GETHING 78(2)A.

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

SOUTH MT. GETHING

BEDROCK GEOLOGY AND DRILL HOLE LOCATIONS

Work by: S. Armstrong	Date: February, 1979	NTS Ref. 93O/16, 94B/1
Drawn by: T. Drews	Revised:	Scale - 1:10,000

MAP - 2

637

Scale and elevation datum based on slanted ground control resulting in good relative, but uncertain absolute map accuracy
Compiled from aerial photography at an approximate scale of 1 inch equals 5280 feet flown in 1970

UTAH MINES

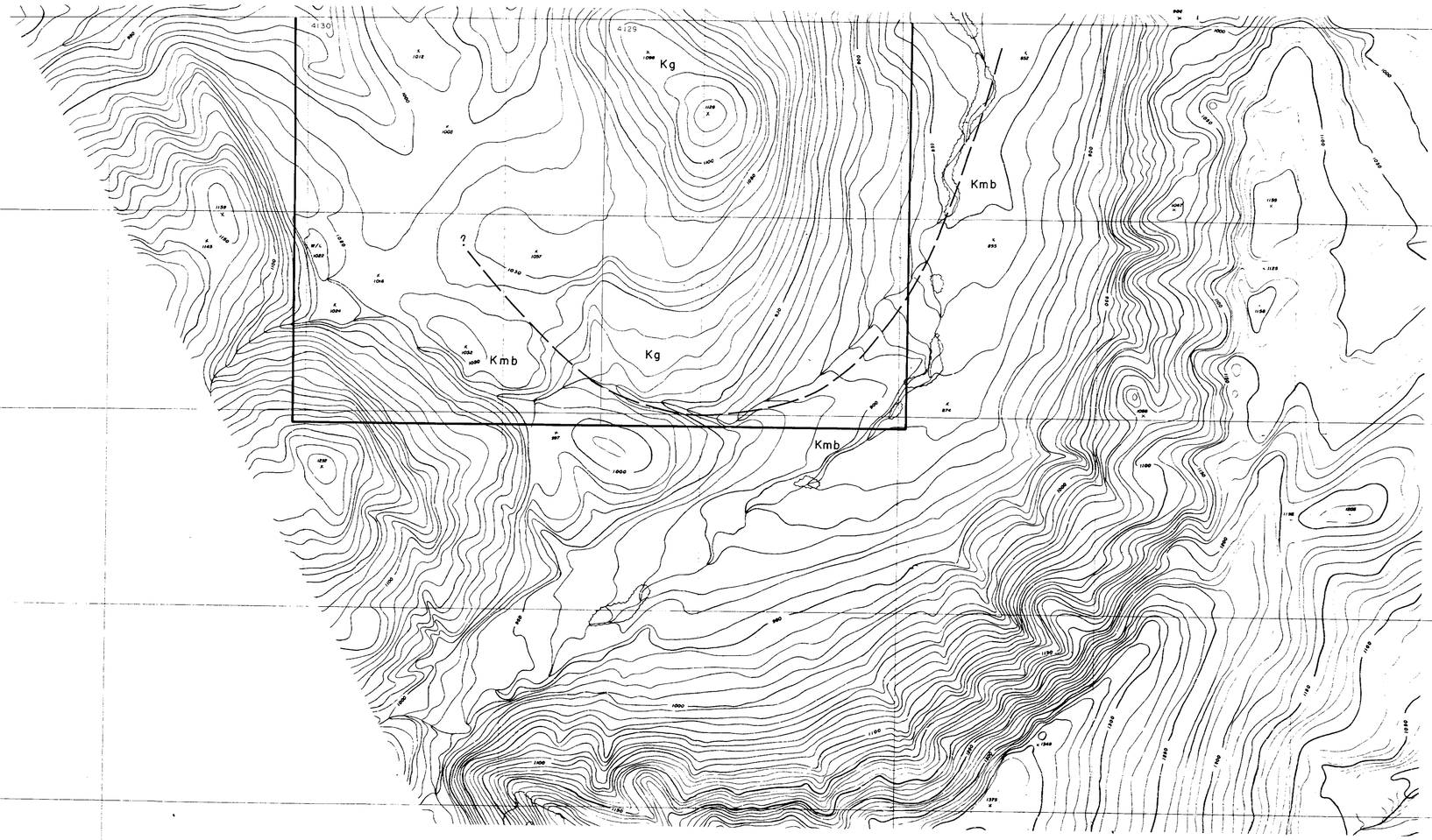
PRELIMINARY RECONNAISSANCE TYPE MAPPING

McElhanney Surveying & Engineering Ltd
1900 West Pender Street, Vancouver B.C., Canada

Scale - 1:10,000
Contour Interval - 10 Metres
Date - June 18, 1978.
Job No. - 08298 - 4
Sheet No. - 2

531,000E
532,000E
533,000E
534,000E
535,000E
536,000E
537,000E
538,000E
539,000E
540,000E
541,000E

6,198,000N
6,197,000N
6,196,000N
6,195,000N
6,194,000N
6,193,000N
6,192,000N
6,191,000N



Re: South Mt. Gething 72(2)A.

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

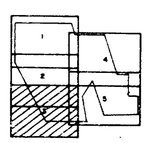
SOUTH MT. GETHING

BEDROCK GEOLOGY AND
DRILL HOLE LOCATIONS

Work by A. Armstrong	Date: March 1979	NTS Ref. 93 O/16, 94 B/1
Drawn by T. Drews	Revised:	Scale — 1: 10,000

MAP — 3

637



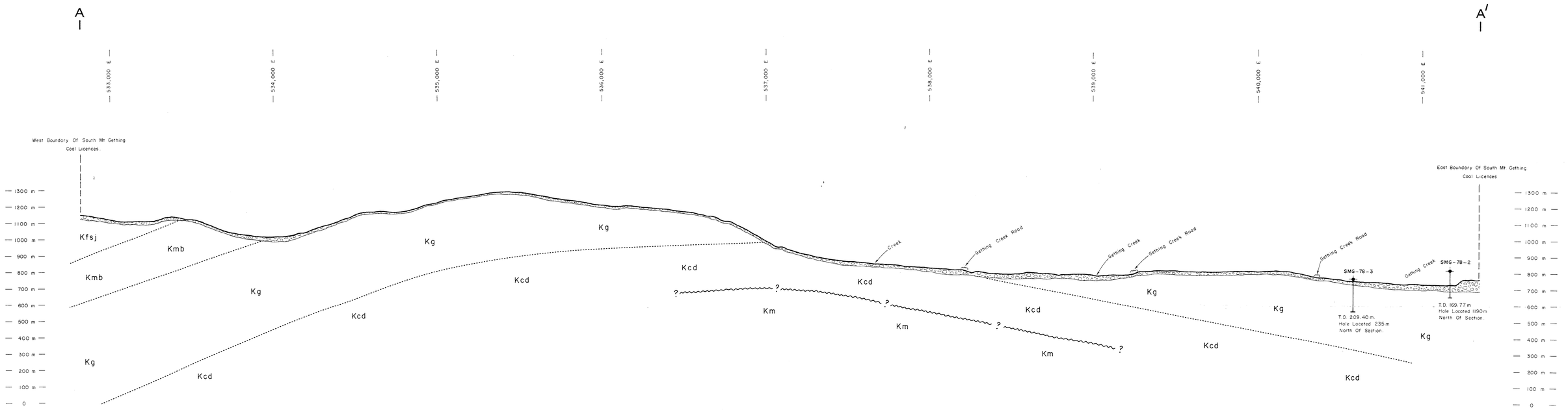
Scale and elevation datum based on limited ground control resulting in good relative, but uncertain absolute map accuracy.
Compiled from aerial photography at an approximate scale of 1 inch equals 5280 feet flown in 1970

UTAH MINES

PRELIMINARY RECONNAISSANCE TYPE MAPPING

McElhanney Surveying & Engineering Ltd.
1300 West Pender Street, Vancouver, B.C., Canada

Scale - 10,000	
Contour Interval - 10 Metres	
Date - June 16, 1978.	
Job No. - 78298-4	
Sheet No. - 3	



LEGEND

- Recent
  - Alluvium & Glacial Deposits
- Lower Cretaceous
  - Fort St. John Group
    - Kfsj — Fort St. John Group Undivided
    - Kmb — Shale, Moosebar Formation
  - Bullhead Group
    - Kg — Carbonaceous Sandstone Mudstone And Shale With Coal, Gething Formation
    - Kcd — Coarse Grained Pebbly Sandstone And Conglomerate, Cadomin Formation
    - Km — Minnes Group Undivided

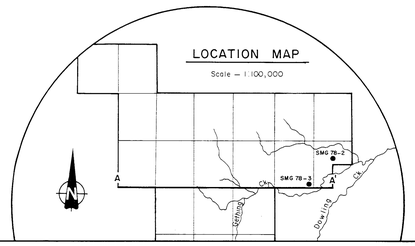


FIGURE – 6

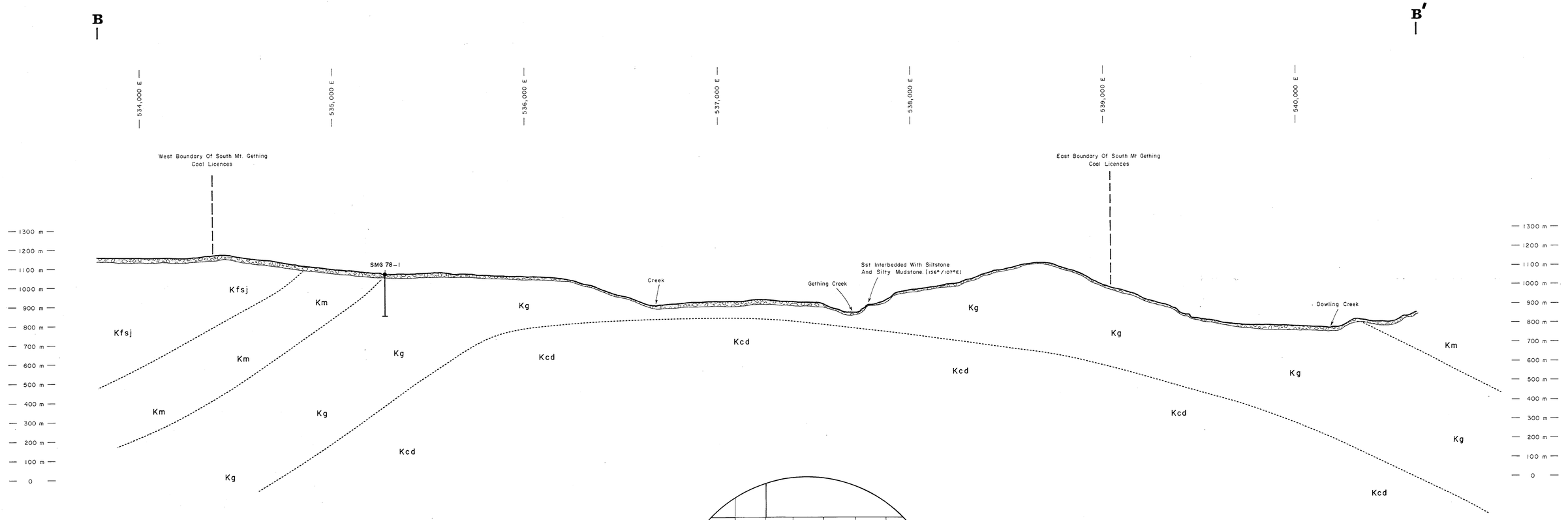
Re. SOUTH MT. GETHING 78 (2) A.

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

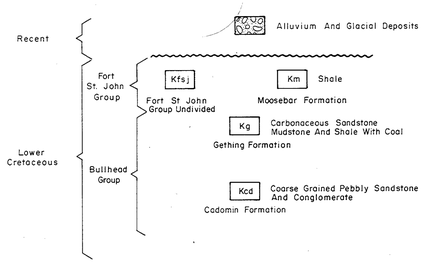
SOUTH MOUNT GETHING
EAST — WEST SECTION
@ 6,202,500 N (McElhanney Coordinates)
LOOKING NORTH

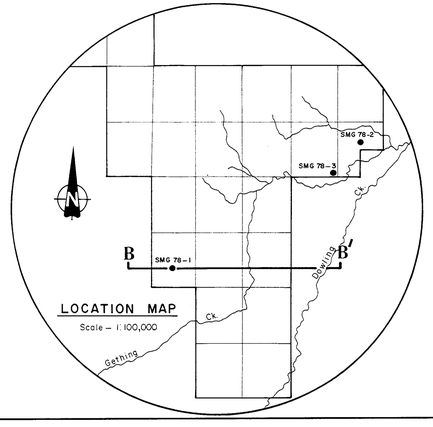
Work by: A. Armstrong	Date: Jan. 1979	NTS Ref.
Drawn by: T. Drews	Revised:	Horizontal Scale – 1:10,000
		Vertical Scale – 1:10000

637



LEGEND





LOCATION MAP
Scale – 1:100,000

FIGURE – 7

Re-South Mt. Gething 78(2)A.

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

SOUTH MOUNT GETHING
EAST — WEST SECTION
@ 6,199,400 N (McElhanney Coordinates)
LOOKING NORTH

Work by: A. Armstrong	Date: January 1979	NTS Ref.
Drawn by: T. Drews	Revised:	Horizontal Scale — 1:10,000
		Vertical Scale — 1:10,000

637

SMG 78 – 1

SMG 78 – 3

SMG 78 – 2

VERTICAL SCALE

0
100'
200'
300'
400'
500'
600'
700'
750'

TD – 747'

TD – 687'

TD – 557'

TROJAN SEAM

TITAN SEAM

FALLS SEAM

GETHING SEAM

MOGAL SEAM

INDEX MAP

DRILL HOLE LOCATIONS

Scale – 1:100,000

SMG 78-2

SMG 78-3

SMG 78-1

N

GETHING CK.

637

FIGURE-8

RE: SOUTH MT. GETHING 78(2)A

UTAH MINES LTD.

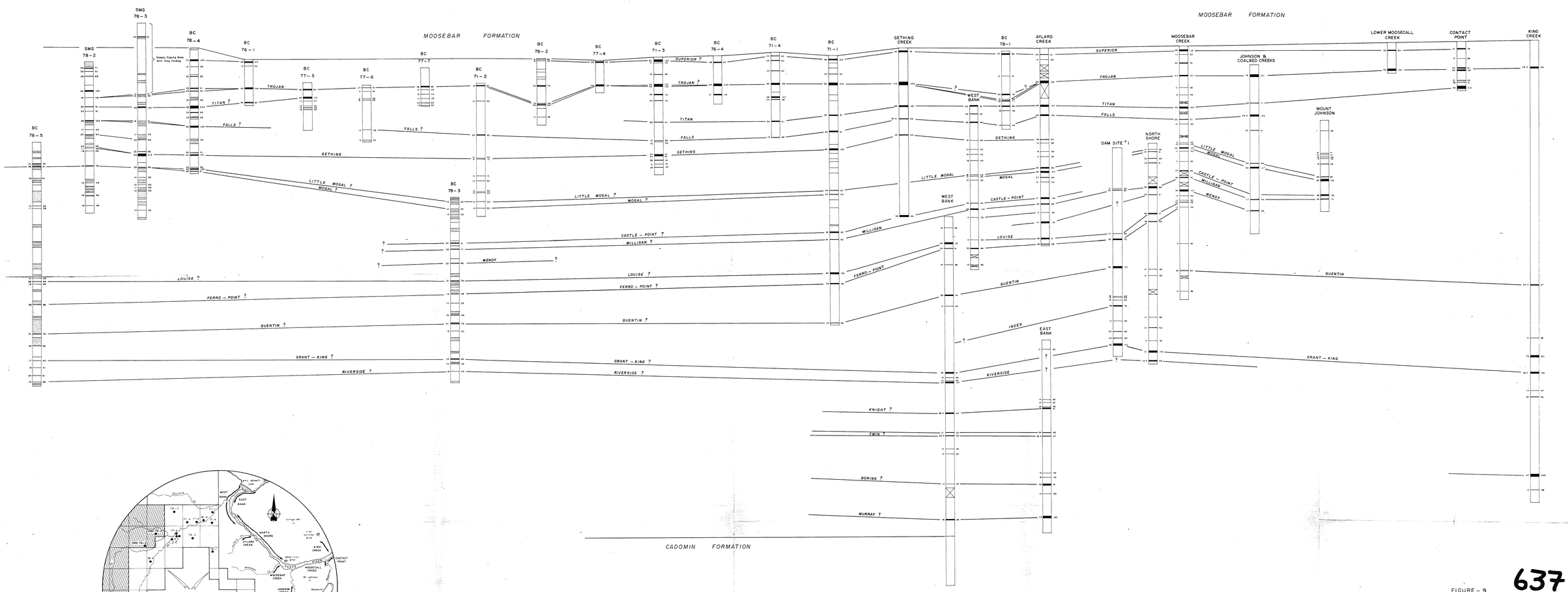
EXPLORATION DEPARTMENT

VANCOUVER BRITISH COLUMBIA

SOUTH MOUNT GETHING

COAL SEAM CORRELATION

Work by: R.B. Anderson	Date: Nov. 1978	NTS Ref.
Drawn by: T. Drews	Revised:	Vertical Scale – 1" = 40'



LEGEND

Centimetres / Inches

- Coal Seam With Thickness
- Coal Seam In Drillhole Less Than 12" Thick
- Covered Interval
- Sandstone

NOTES

1. Most Coal Seams In Outcrop Less Than 12 Inches Have Been Omitted.
2. Thickness For Seams In Drillholes Are Intersection Thicknesses.

FIGURE – 9

637

Re. South Mt. Gething 71(2)B.

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

SOUTH MOUNT GETHING

TENTATIVE COAL SEAM CORRELATION BETWEEN DRILL HOLES AND MEASURED SECTIONS

Work by A.R. Anderson & Associates	Date March 1979	NTS Ref.
Drawn By T. Drews	Revised	Vertical Scale — 1" = 100'

PR - SOUTH MT. GETHING 78(3)A.

637

WELL COMPLETION REPORT

SOUTH MT. GETHING Prospect

Hole No. SMG 78-1

Location: 6,199,410± m N x 535,270± m E

Gr. Elev.: 1020 m (3346±')

Province B.C.

Surface Owner Crown Option No.

Spudded Sept. 4/78 Completed Sept. 9/78

Depth: 747.0' (227.68 . Air to Water (Mud) to T.D.

Hole Size: 3.782" Bits: Surface Tri-Cone (5 7/8")

Main Hole Diamond Inserts (4.5' ")

Cored: (Yes) (No); intervals 68.0 to 747.0 (wireline, convention)

Core Head ( ), I.D. 2.5", O.D. 3.782", Mfgr. Longyear

Logs Run: E-Log ( ), Gamma Ray (X), Other Density

Mfgr. Gearhart-Owens

Logging Co. Utah Mines Ltd.

Chemicals: -

Lost Circulation at depth(s) - ; Regained (Yes) (No)

Noticeable Water Invasion: (No) (Yes); Intervals

Noticeable Gas Invasion: (No) (Yes); Intervals

Casing: Depth 68.0' ; Diameter 4.5" Recovered (Yes) (No)

Plugged: (Yes) (No); if no, explain

If hole plugged by other than contractor, give name and address

Invoice Number for above

Contractor: Name & Address Canadian Longyear

Samples and Core Description by: R. B. Anderson

Report Prepared by: R. B. Anderson Date Sept. 13/78

Comments:

WELL COMPLETION REPORT

SOUTH MT. GETHING Prospect

Hole No. SMG 78-2

Location: Gething Ck. west of the Dowling Ck. junction - 6,203,755N, 541,190E.

Gr. Elev.: 820m

Province B.C.

Surface Owner Crown Option No. _____

Spudded Oct. 5, 1978 Completed Oct. 8, 1978

Depth: 557.0' Air to _____ Water (Mud) to T.D. 557.0'

Hole Size: 3.782" Bits: Surface tricone ( )

Main Hole HQ - 3.782" ( )

Cored: (Yes) (No); intervals 47 to 557.0' (wireline, convention)

Core Head: ( ), I.D. 2.5", O.D. 3.782, Mfgr. Canadian Longyear

Logs Run: E-Log ( ), Gamma Ray ( ), Other Density

Mfgr. Gearhart - Owens

Logging Co. Utah Mines

Chemicals: _____

Lost Circulation at depth(s) - ; Regained (Yes) (No)

Noticeable Water Invasion: (No) (Yes); Intervals 400-550?

Noticeable Gas Invasion: (No) (Yes); Intervals _____

Casing: Depth 47.0'; Diameter 4.5" Recovered (Yes) (No)

Plugged: (Yes) (No); if no, explain _____

If hole plugged by other than contractor, give name and address

Invoice Number for above _____

Contractor: Name & Address Canadian Longyear Ltd., Vancouver, B. C.

Samples and Core Description by: R. B. Anderson

Report Prepared by: R. B. Anderson Date Oct. 9, 1978

Comments: Gamma log inoperative.

Density log ran off-scale from 70' to 0'.

WELL COMPLETION REPORT

HOLE NO, SMG-78-3 South Mt. Gething AREA

LOCATION 6202810mN x 540580mN (McElhanney) FWL,FEL,FNL,FSL X _____ FWL,FEL,FNL,FSL OF

LSD _____, SEC _____, TWP _____, R _____, W _____ MER

GR. ELEV. 765m

PROVINCE British Columbia

SURFACE OWNER Crown

COMMENCED October 10, 1978

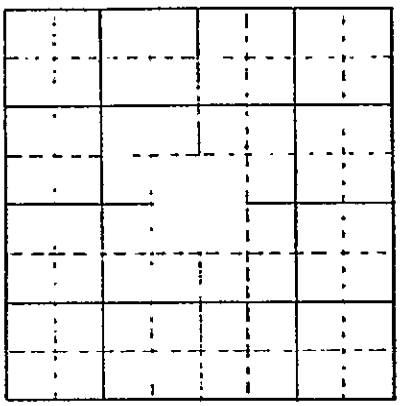
COMPLETED October 15, 1978

TOTAL DEPTH 687'

HOLE SIZE HQ 3.782 in.

AIR TO --- WATER (MUD) TO 687'

CORED: (YES) (NO): INTERVALS _____



Scale: 2"=1 mile
(test hole location in section)

LOGS RUN: E-LOG ( ),

GAMMA RAY ( ), OTHER Density

PH _____ TEMP. _____

LOST CIRCULATION AT DEPTH (S) 20' to 167' REGAINED (YES) (NO)

NOTICEABLE WATER INVASION: (NO) (YES); INTERVALS 180' to 687'

NOTICEABLE GAS INVASION: (NO) (YES); INTERVALS _____

CASING: DEPTH 2 : DIAMETER 4.5" HW RECOVERED (YES) (NO)

PLUGGED: (YES) (NO): IF NO EXPLAIN 2 aluminum and rubber plugs installed above 180'

IF HOLE PLUGGED BY OTHER THAN CONTRACTOR, GIVE NAME AND ADDRESS _____

INVOICE NUMBER FOR ABOVE _____

CONTRACTOR: Canadian Longyear Ltd.

SAMPLES DESCRIBED AND REPORTED BY: A.T. Armstrong

COMMENTS: Gamma Log Inoperative

PR - SOUTH MT. GETHING 78(3)A.

637

CORE DESCRIPTION

HOLE # S.M.G. 78-1 AREA South Mt. Gething

FROM 0 TO 149.9 BY R.B. Anderson

	FROM	TO	DESCRIPTION
	0	70	OVERBURDEN
			GETHING Fm
	70.0	77.5	SILTY MUDSTONE - dark grey - highly broken and rubbley - iron staining on broken surfaces - brecciated at 71 with calcite filling - bedding at 55° to core axis
	77.5	81.0	SILTY SANDSTONE - medium grey-fine-?medium grained - small scale crossbeds calcite filled tension fractures cutting crossbeds - carbonaceous debris on crossbed surfaces - some distorted beds
	81.0	98.5	SILTY MUDSTONE - dark grey--calcite veinlets at various angles to the core axis--core ground at 96.0' and 97.0'
	98.5	100.5	SILTSTONE - medium grey--small scale crossbeds--sandy between 99.0 and 99.5--bedding at 63° core axis--calcite on tension fractures
	100.5	101.7	SILTY MUDSTONE - dark grey--numerous fine calcite veinlets
	101.7	103.6	SILTY SANDSTONE - very fine grained--medium grain--carbonaceous debris on bedding surfaces bedding distorted calcite again prevalent
	103.6	113.4	MUDSTONE - dark grey--silty near top--fractures every ½ foot parallel to bedding--62° to core axis--minor slickensides at angles approximately parallel to bedding attitude
	113.4	114.5	CARBONACEOUS MUDSTONE - dark grey to black--occasional thin coaly streaks
	114.5	116.3	MUDSTONE - dark grey--weakly carbonaceous
	116.3	117.0	SILTY SANDSTONE - fine grained--light medium grey--carbonaceous debris on bedding surfaces - bedding 65° to core axis
	117.0	117.6	CARBONACEOUS MUDSTONE - dark grey→black--base uncertain
#42	117.6	119.6	COAL - 2.0--black-bright-highly broken recovery probably only 40%
	119.6	120.6	SANDSTONE - light medium grey-medium grain-sandstone split to numerous lenticular coal clasts
#43	120.6	124.8	COAL - 4.2'-bright, black, shiney--broken recovery probably ~ 60%
	124.8	125.7	CARBONACEOUS MUDSTONE - dark grey
	125.7	126.2	SILTY MUDSTONE - medium dark grey
	126.2	130.0	INTERLAMINATED MUDSTONE - sandy siltstone - light medium gray→dark grey bedding at 55° to core axis
	130.0	131.4	MUDSTONE - dark grey-broken
#44	131.4	149.9	COAL - 18.5'-black-occasional bright-broken, but

CORE DESCRIPTION

HOLE # S.M.G. 78-1 AREA South Mt. Gething

FROM 149.7 TO 234.5 BY R.B. Anderson

	FROM	TO	DESCRIPTION
			cont'd appears to have been good recovery
	149.7	151.1	SILTY MUDSTONE - dark medium grey-broken
	151.1	158.5	SILTSTONE - dark medium grey - carbonaceous debris on bedding surfaces occasional thin sand lenses
	158.5	180.4	SILTY MUDSTONE - dark grey-occasional sandy lenses bedding at 47° to core axis
	180.4	182.8	SANDSTONE - medium grain-medium grey-carbonaceous debris on bed surfaces calcite on fracture surfaces 45° to bedding - bedding 48° to core axis
	182.8	185.3	CARBONACEOUS MUDSTONE - dark grey-black-occasional thin coal streaks
	185.3	186.9	SILTY SANDSTONE - medium grey-carbonaceous debris on bedding surfaces - bedding at 50° to core axis
	186.9	191.3	INTERBEDDED MUDSTONE/SANDSTONE - black to medium grey - 0.5' beds alternate-mudstone to occasional silt lenses and minor worm burrows, sandstone-medium grain
	191.3	201.0	MUDSTONE - dark gray → black
	201.0	206.1	SILTY MUDSTONE - dark grey-massive-occasional thin siderite nodules near 203.0'
	206.1	209.0	INTERLAMINATED MUDSTONE AND SILTY SANDSTONE - light medium grey to dark grey--silty units cross-bedded-bedding 53° to core axis
	209.0	213.8	MUDSTONE - dark grey-occasional thin coaly streaks - coal clast at 213.3 - slickensides near parallel to bedding - getting silty towards base
	213.8	218.1	SILTSTONE - medium grey, disturbed bedding, fault gouge 216.1 to 216.4 - numerous mudstone interbeds
#45	218.1	219.9	COAL - 1.8' bright black shiney-metallic lusty
	219.9	221.6	COALY MUDSTONE - blackish brown-numerous thin coal streaks
	221.6	221.8	COAL - 0.2'-broken
	221.8	227.0	MUDSTONE - dark grey black-slightly silty
	227.0	227.9	COAL - 0.9' dirty-occasional bright black cleated bands up to 1/2" thick
	227.9	231.2	INTERBEDDED MUDSTONE AND SANDSTONE - light grey to dark grey-sandstone-medium grained and crossbedded
	231.2	234.5	SANDSTONE - light medium grey-fine-medium grain carb-onaceous debris on bedding surfaces calcite filled tension fractures at ~45° to the bedding

CORE DESCRIPTION

HOLE # S.M.G. 78-1 AREA South Mt. Gething

FROM 294.0 TO 405.9 BY R.B. Anderson

	FROM	TO	DESCRIPTION
	294.0	296.4	CARBONACEOUS MUDSTONE - black
	296.4	296.9?	COAL - 0.5'-bright clean coal - badly broken
	296.9	301.0	COALY MUDSTONE - black-numerous coal streaks and bands
#46	301.0	302.6	COAL - 1.6'-black-bright, highly broken
	302.6	307.0	SILTY MUDSTONE - dark grey-bedding at 50° to core axis
	307.0	309.3	SILTY SANDSTONE - medium grey-calcite veinlets at near $\perp$ to bedding
	309.3	318.9	SILTSTONE/MUDSTONE INTERBEDS - medium to dark grey-siltstone shows crossbedding
	318.9	334.8	MUDSTONE - dark grey-numerous silt lenses-occasional burrows
#47	334.8	339.1	COAL - 4.3' - badly broken-bright, some cleated weakly banded-poor recovery-pyrite band at 334.1
	339.1	339.8	CARBONACEOUS SANDY SILTSTONE - dark grey-bedding 60° to core axis pyrite coating plant debris
	339.8	340.5	INTERLAMINATED MUDSTONE/SILTSTONE - medium grey to dark grey-occasional worm burrows-2 parallel 1/4" calcite filled fractures $\perp$ to bedding - bedding at 45° to core axis
	340.5	348.0	MUDDY SILTSTONE - medium grey-carbonaceous debris on bedding surfaces-worm burrows and weakly crossbedded
	348.0	349.5	COAL - 1.5'-from density log-no recovery
	349.5	357.0	INTERLAMINATED MUDSTONE/SILTSTONE - medium grey to dark grey-worm burrows and distorted bedding-occasional mudstone beds
	357.0	365.0	MUDSTONE - dark grey - occasional thin wispy silt lenses
	365.0	365.6	COALY MUDSTONE - black-occasional coal clasts
#48	365.6	368.0	COAL - (2.4) broken-weakly banded with occasional bright bands
	368.0	368.5	CARBONACEOUS MUDSTONE - dark grey → black-occasional silt laminae
	368.5	373.5	INTERLAMINATED MUDSTONE/SILTSTONE - medium grey to dark grey-numerous silt filled burrows throughout
	373.5	380.0	SILTSTONE - medium grey-occasional thin mudstone interbeds - load casts and crossbeds common
	380.0	401.0	SANDSTONE - light medium grey-fine grain - occasional thin mudstone and siltstone interbeds
	401.0	404.0	MUDSTONE - dark grey-weakly carbonaceous-occasional silt lenses
	404.0	405.5	COAL - (1.5) - highly broken (one 0.6' length intact) poorly cleated but bright
	405.5	405.9	CARBONACEOUS MUDSTONE - black with coal clasts

CORE DESCRIPTION

HOLE # S.M.G. 78-1 AREA South Mt. Gething

FROM 234.5 TO 294.0 BY R.B. Anderson

FROM	TO	DESCRIPTION
234.5	235.1	MUDSTONE - dark grey
235.1	239.5	SANDY SILTSTONE - medium grey-carbonaceous debris on bedding surfaces
		- bedding at 40% to core axis
239.5	240.8	MUDDY SILTSTONE - dark medium grey-occasional pure siltstone beds
240.8	242.0	SILTSTONE - light medium grey and calcite ⊥ to core axis-disturbed contact with mudstone beneath
242.0	243.7	MUDSTONE - dark grey-brecciated-welded with calcite occasional thin silt beds
243.7	246.8	SANDSTONE - medium grey-medium grain-carbonaceous debris on bedding surfaces coal material appears to have been injected near its base
246.8	247.5	COALY MUDSTONE - black-occasional coal streaks
		- calcite welded breccia zone at top
247.5	248.0	MUDDY SILTSTONE - medium dark grey
		- occasional worm burrows filled with silt
248.0	249.2	SANDSTONE - light medium grey-fine grain-numerous calcite veinlets near ⊥ to the bedding-bedding 50° to core axis
249.2	251.3	SILTY MUDSTONE - dark grey-numerous thin silt laminae coaly at 51
251.3	258.3	MUDDY SILTSTONE-medium dark grey-numerous calcite veinlets
258.3	261.3	SANDSTONE - fine grain-light-medium grey-small scale crossbeds occasional mud clast inclusions-intense calcite veining
261.3	271.1	SILTSTONE - dark medium grey - occasional thin coal clast numerous calcite veinlets-small scale cross-beds
		- calcite welded breccia at 264.2
274.1	276.0	SANDSTONE - light medium grey--medium grain-occasional thin mudstone lense carbonaceous debris on bedding surfaces
276.0	276.4	CARBONACEOUS MUDSTONE - dark grey → black
276.4	278.0	COAL - 1.6'-good bright coal
278.0	279.5	MUDSTONE - dark grey occasional silt lense
279.5	280.0	COAL - 0.5'-solid black cleated coal
280.0	284.8	SILTY MUDSTONE - dark grey-occasional thin siltstone interbeds
		- thin coal streaks towards base
284.8	285.5	COALY MUDSTONE - dark grey → black-numerous coal streaks
285.5	290.9	MUDSTONE - dark grey-occasional siltstone lense
290.9	294.0	SANDSTONE - medium grey-fine grain-occasional thin mudstone lenses
		- carbonaceous debris on bedding surfaces
		- bedding at 55° to core axis

CORE DESCRIPTION

HOLE # S.M.G. #1 AREA South Mt. Gething

FROM 405.9 TO 482.3 BY R.B. Anderson

	FROM	TO	DESCRIPTION
	405.9	406.5	MUDSTONE - dark grey, with occasional silt laminae
	406.5	414.2	INTERLAMINATED MUDSTONE & SILTSTONE - medium grey to dark grey, mudstone dominant - bedding highly disturbed and wavy
	414.2	414.3	COAL - 0.1'
	414.3	415.0	MUDSTONE - dark grey-weakly carbonaceous
	415.0	416.3	SILTY MUDSTONE - medium dark grey-disturbed bedding
	416.0	418.1	CARBONACEOUS MUDSTONE - dark grey to black
	418.1	419.3	SILTSTONE - medium grey-calcite cemented-calcite fractures at 40° to core axis - no apparent bedding
	419.3	424.6	INTERBEDDED MUDSTONE & SILTSTONE - medium grey to dark grey
	424.6	427.0	SANDSTONE - medium grey-carbonaceous debris on bed surfaces calcite veinlets 40° to core axis cutting bedding at 60° to core axis
	427.0	428.4	CARBONACEOUS MUDSTONE - black-bed 60° to core axis
	428.4	430.2	INTERLAMINATED MUDSTONE/SILTSTONE - medium grey to dark grey
	430.2	432.4	MUDSTONE - dark grey
	432.4	433.0	COAL - 0.6' black, solid
	433.0	433.2	COALY MUDSTONE
	433.2	433.3	COAL - 0.1'-black-badly broken
	433.3	434.5	MUDSTONE - dark grey
	434.5	435.0	SILTY MUDSTONE - dark grey
	435.0	437.6	CARBONACEOUS SILTSTONE - medium dark grey-carbonaceous debris throughout
	437.6	455.0	SILTY SANDSTONE - medium grey-calcite veinlets at various angles-quite numerous
	455.0	459.6	INTERLAMINATED MUDSTONE/SILTSTONE - medium grey to dark grey, mudstone predominates
	459.6	463.0	MUDSTONE - dark grey occasional thin silt laminae-bed 40° to core axis
	463.0	467.0	CARBONACEOUS/MUDSTONE - dark grey-fault gouge at 464.2 to 464.5
	467.0	467.3	SANDSTONE - light grey-medium grey with numerous mudstone interbeds
	467.3	469.0	COALY SANDSTONE - black-50% coal 50% sand grains finely mixed
#49	469.0	470.5	COAL - 1.5' - black-sheared and badly broken
	470.5	477.6	MUDDY SILTSTONE - dark medium grey-wavy bedding, occasional siltstone lense-occasional thin coal clast
	477.6	477.9	COALY MUDSTONE - black
	477.9	479.7	SILTSTONE - dark medium grey-poorly bedded
	479.7	481.0	MUDDY SILTSTONE - dark grey
	481.0	482.3	SILTSTONE - medium grey-large coal clast appears to have been injected at 481.6 becoming sandy towards base

CORE DESCRIPTION

HOLE # S.M.G. 78-1 AREA South Mt. Gething

FROM 482.3 TO 560.0 BY R.B. Anderson

	FROM	TO	DESCRIPTION
	482.3	484.2	MUDDY SILTSTONE - dark medium grey-bedding at 45° to core axis
	484.2	488.5	SILTSTONE - medium grey-occasional crossbeds-generally poorly bedded
	488.5	490.1	MUDDY SILTSTONE - dark grey-massive
	490.1	492.6	SILTY SANDSTONE - medium grey, crossbedded carbonaceous debris on bedding surfaces
	492.6	493.0	MUDDY SILTSTONE - medium dark grey-finely laminated carbonaceous debris on bedding surfaces
	493.0	493.4	SANDSTONE - light medium grey-medium grain bedding at 55° to core axis
	493.4	499.6	INTERLAMINATED MUDSTONE/SILTSTONE - medium dark grey to dark grey - numerous thin silt flutes
	499.6	503.3	MUDSTONE - dark grey-massive-occasional thin coal clast
#50	503.3	505.0	COAL - 1.7' very badly broken-poor recovery of ~ 50%
	505.0	505.4	COALY MUDSTONE - dark grey to black-silty near base
	505.4	506.3	INTERLAMINATED MUDSTONE/SILTSTONE - medium grey to dark grey-wavy distorted bedding-carbonaceous debris on bedding surfaces
	506.3	512.0	SANDSTONE - medium grey-medium grain-carbonaceous debris on bed surfaces - bed 50% to core axis
	512.0	514.2	INTERLAMINATED MUDSTONE/SILTSTONE - mudstone predominates-medium dark grey
#51	514.2	517.0	COAL - 2.8' - badly broken-pieces show slickensides - recovery ~ 40%
	517.0	517.4	COALY MUDSTONE - dark grey to black
	517.4	519.1	MUDDY SILTSTONE - dark medium grey
	519.1	540.3	SANDSTONE (CARBONACEOUS) - medium grey-medium grain-distorted bedding - coaly material injected along disturbed beds - minor calcite veining bedding 30° to core axis (likely large scale foreset beds attitudes) - core quite broken especially parallel to bedding - slickensides common - carbonaceous films common towards base
	540.3	541.1	COAL - 0.81 - very badly broken - ashy
	541.1	544.3	SANDSTONE - medium grey-medium grain-numerous thin calcite veinlets at various angles
	544.3	550.5	SILTSTONE - dark medium grey-crossbedded
	550.5	556.1	INTERLAMINED MUDSTONE/SILTSTONE - mudstone predominates - dark grey with numerous silt lenses (load casts)
	556.1	560.0	SANDSTONE - medium grey-medium grain-wavy disturbed bedding carbonaceous debris on bedding surfaces

CORE DESCRIPTION

HOLE # S.M.G. 78-1 AREA South Mt. Gething

FROM 560.0 TO 654.5 BY R.B. Anderson

FROM	TO	DESCRIPTION
560.0	560.7	MUDSTONE & SILTSTONE INTERLAMINAE - mudstone predominates - dark grey
560.7	570.6	SILTY SANDSTONE - medium grey, massive - carbonaceous debris prevalent after 567.0 especially on bed surfaces - bedding at 60° to core axis
570.6	571.0	COALY MUDSTONE - dark grey
571.0	572.2	CARBONACEOUS SILTY SANDSTONE - dark grey
572.2	576.8	CARBONACEOUS SILTSTONE - dark grey-bedding surface parallel slip surfaces
		COALY MUDSTONE - 60° to core axis
576.8	577.0	COALY MUDSTONE - dark grey to black
577.0	579.7	CARBONACEOUS SILTSTONE - medium grey - carbonaceous debris throughout - bedding and slip directions 60° to core axis - bedding distorted 579.2 to 579.7
579.7	580.1	SANDSTONE - light medium grey - medium grain-erosional lower contact
580.1	582.6	SILTSTONE - (Carbonaceous)-medium grey-numerous thin mudstone laminae
582.6	587.0	SANDSTONE - light medium grain-medium grain, wavy-disturbed bedding carbonaceous debris on wavy bed surfaces occasional calcite veinlet cutting bedding
587.0	588.4	INTERLAMINATED MUDSTONE/SILTSTONE - medium dark grey-mudstone predominates
588.4	593.8	SANDSTONE - medium light grey-medium grain carbonaceous debris and thin mudstone streaks through-out-bedding wavy
593.8	598.6	INTERLAMINED MUDSTONE/SANDSTONE - medium light grey-to dark grey sandstone predominates bedding disturbed-mudstone predominant at 596 to 597
598.6	601.4	MUDSTONE - dark grey-numerous, siltstone and thin sandstone lenses throughout-load casted
601.4	620.0	SANDSTONE - light grey-fine-medium grain-bed at 55° core axis mudstone coal clasts near base - brecciated at 609.5 to 609.6, 612 to 612.4 - fining towards base
620.0	622.5	INTERLAMINATED MUDSTONE/SILTSTONE - medium grey to dark grey, mudstone predominates with load casted siltstone lenses
622.5	622.9	SANDSTONE - light grey-fine grain-carbonaceous debris on bed--occasional thin mudstone lense-coarsing towards base irregular continued at base
622.9	654.5	CARBONACEOUS SILTSTONE - interlaminated with mudstone - dark medium grey to dark grey silt grades to

CORE DESCRIPTION

HOLE # S.M.G. 78-1 AREA South Mt. Gething

FROM 654.5 TO 721.0 BY R.B. Anderson

	FROM	TO	DESCRIPTION
		654.5	cont'd mudstone grades to silt in very finely laminated sequences--laminate bed surfaces at 45° to core axis
#52	654.5	656.0	COAL - 1.5' bright, black, badly broken
	656.0	657.0	CARBONACEOUS MUDSTONE - dark grey to black
	657.0	665.4	SILTY SANDSTONE - medium grey-very fine grain to medium grain--small scale crossbeds throughout
	665.4	666.0	INTERLAMINATED MUDSTONE/SILTSTONE - dark grey
	666.0	668.1	MUDSTONE - dark grey with very finely laminated silt lenses bedding at 50° to core axis
	668.1	668.3	COAL - 0.2' - solid,bright, black
	668.3	670.0	MUDSTONE - dark grey
	670.0	686.1	INTERLAMINATED MUDSTONE/SILTSTONE - dark medium gray to dark grey occasional worm burrow - bedding surfaces have been polished by movement - bedding at 50% to core axis
	686.1	688.1	SILTY MUDSTONE - dark grey
#53	688.1	694.0	COAL - 5.9 less 0.3 with a small 0.3' split in the 5.6 net centre
	694.0	697.6	MUDSTONE - dark grey with very thin siltstone laminae
	697.6	697.8	COAL - 0.2' - badly broken
	697.8	702.5	CARBONACEOUS SILTY SANDSTONE - dark medium grey to dark grey-disturbed bedding - carbonaceous films and debris throughout
	702.5	702.7	MUDSTONE - dark grey
	702.7	703.9	SANDSTONE - light medium grey-medium grain - calcite filled fractures at 80° to bedding, bedding at approximately 50° to core crossbedded throughout
	703.9	704.4	MUDSTONE - dark grey - wavy disturbed contents at base
	704.4	706.2	SANDY SILTSTONE - medium grey to dark medium grey - calcite veinlets perpendicular to bedding, bedding at 50° to core axis
	706.2	707.0	MUDSTONE - dark grey--silty
	707.0	708.3	INTERLAMINATED SILTSTONE/MUDSTONE - dark medium grey to dark grey siltstone predominates - siltstone crossbedded
	708.3	711.3	SILTY MUDSTONE - dark grey-very thin siltstone laminae common
	711.3	713.8	INTERLAMINATED SILTSTONE/MUDSTONE - medium grey to dark grey siltstone crossbedded-calcite veinlets at 75° to bed surfaces
	713.8	717.5	SILTY MUDSTONE - dark grey
#54	717.5	720.0	COAL - 2.5' - often bright-poorly banded - badly broken
	720.0	721.0	MUDSTONE - dark grey-carbonaceous-poor recovery-

CORE DESCRIPTION

HOLE # S.M.G. 78-1 AREA South Mt. Gething

FROM 721.0 TO 747.0 BY R.B. Anderson

FROM	TO	DESCRIPTION
	721.0	cont'd badly broken
721.0	747.0	INTERLAMINATED SILTSTONE/MUDSTONE - medium grey to dark grey - siltstone predominated carbonaceous debris on bedding surfaces - bedding cross-bedded
		- crossbed attitude 50° to core axis - becoming sandy at 730 to 735
		747.0 E.O.H.

PC-SOUTH MT. GETHING 78(3)A.

637

CORE DESCRIPTION

HOLE # S.M.G. 78-2 AREA SOUTH MT. GETHING

FROM 0 TO 106.0 BY R. B. Anderson

FROM	TO	DESCRIPTION
0	48.0	OVERBURDEN- soil and large boulders, casing to 47.0'.
48.0	57.3	SANDSTONE - medium light grey to light grey, fine-coarse grained, regular to wavy bedding - coarse grained 54.5 to 55.7 minor carbonaceous debris on bedding in coarse grained section
		- bedding at 58° to C.A. (this attitude may be cross bedding)
		- mixed with irregular silty lenses near the base
57.3	58.1	SILTSTONE - light grey to medium grey - small scale cross-beds
58.1	58.7	SANDSTONE - light grey - medium grained - cross-bedded
58.7	58.9	SILTY MUDSTONE - medium dark grey - bedding 71° to C.A. - carbonaceous debris and pyrite on bed surfaces
58.9	59.2	SANDSTONE - medium - coarse grained, erosional lower contact
59.2	60.0	SILTSTONE - medium dark grey with sandstone inclusions
60.0	60.5	SANDSTONE - light grey, coarse grained - minor siltstone clasts, large scale cross beds.
60.5	60.9	SILTSTONE - medium grey - small scale cross-beds.
60.9	68.8	SANDSTONE - light grey - light medium grey, medium grained-coarse grained - large scale cross-beds-numerous, thin siltstone lenses - bedding at 62° to C.A. - fracturing at 15° to C.A.
		- coursening towards the base.
		- pyrite nodules at base.
68.8	69.2	CARBONACEOUS MUDSTONE - dark brown - black, numerous thin coal lenses
76 69.2	71.5	COAL - 2.3' bright black, cleated, banded
		- base ground - difficult to tell true thickness
71.5	72.5	MUDSTONE - dark grey - pyrite with coal debris
72.5	77.7	SILTY MUDSTONE - dark grey - fracture at 20° to C.A. - occasional thin siltstone lenses.
77 77.7	79.7	COAL - 2.0 - bright, black, banded - 40% recovery
79.7	90.2	SILTSTONE - medium grey - wavy bedding - occasional thin sandstone lenses.
90.2	91.6	SANDSTONE - light grey - very fine grained
91.6	94.8	SILTY MUDSTONE - dark medium grey - massive - bedding approximately 70° to C.A.
		- dist. bedding and siltstone clasts at base
		- thin coal streak at 93.7
78 94.8	97.0	COAL - bright, black, highly broken - very little recovery - core below is ground.
		- calcite veinlets appear in the coal.
97.0	106.0	MUDSTONE - dark grey - bedding at 65° to C.A. - thin wispy calcite veinlets parallel to bedding.

CORE DESCRIPTION

HOLE # S.M.G. 78-2 AREA SOUTH MT. GETHING

FROM 106.0 TO 170.3 BY R. B. Anderson

	FROM	TO	DESCRIPTION
	106.0	107.0	SILTY SANDSTONE - medium grey - irregular bedding, ¼" calcite vein at 106.3'
	107.0	107.5	SILTY MUDSTONE - medium dark grey
	107.5	109.0	SILTSTONE - light medium grey - cross-bedded.
	109.0	111.3	INTERBEDDED SILTSTONE - SILTY MUDSTONE - light medium grey to medium dark grey - numerous thin worm burrows and sandstone lenses.
	111.3	124.9	SILTY MUDSTONE - medium dark grey - occasional fine siltstone laminae jointing sub-parallel to bedding. calcite rimmed carb. debris at 120-120.5.
	124.9	125.4	COAL - 0.5' - rock above highly fracture - true thickness uncertain.
	125.4	126.3	MUDDY SILTSTONE - medium grey - small scale cross beds and fine wispy calcite veinlets throughout.
	126.3	129.5	SILTY MUDSTONE - medium dark grey - occasional thin siltstone laminae and beds.
	129.5	134.6	SILTSTONE- medium grey - occasional small scale cross beds and sections of highly irregular bedding
	134.6	138.1	SILTY MUDSTONE - medium dark grey - occasional thin siltstone lenses and a thin (¼") shell layer at 137.6
	138.1	142.8	MUDSTONE - dark grey - weakly carbonaceous - friable
#79	142.8	146.9	COAL - 4.1' - bright, clean, often sheared 15-20% vitrainite.
	146.9	148.0	MUDSTONE - dark grey
	148.0	150.6	SANDY SILTSTONE - medium grey - numerous wispy calcareous rims on carbonaceous debris, occasional thin silty mudstone lense
	150.6	153.4	SILTY MUDSTONE - medium dark grey - massive - bedding 75° to C.A.
	153.4	154.5	COALY MUDSTONE - dark grey with coal lenses.
	154.5	155.8	SILTY MUDSTONE - medium dark grey - occasional coal clast or lense
	155.8	162.0	SILTSTONE - medium grey - junctions parallel to C.A. - occasional finely laminated mudstone lenses - both regular small scale cross bedding and highly disturbed bedding apparent.
	162.0	166.5	MUDSTONE - dark grey - especially friable 165 to 165.0 - minor carbonaceous debris.
#80	166.5	168.0	COAL - 1.5' - 30% recovery - bright, cleated
	168.0	169.3	MUDSTONE - dark grey - with occasional thin siltstone lenses
	169.3	169.6	COAL - 0.3'
	169.6	170.0	SILTY MUDSTONE - medium dark grey - calcareous on carbonaceous debris.
	170.0	170.3	COAL - 0.3'

CORE DESCRIPTION

HOLE # S.M.G. 78-2 AREA SOUTH MT. GETHING

FROM 170.3 TO 244.6 BY R. B. Anderson

	FROM	TO	DESCRIPTION
	170.3	171.1	SILTY MUDSTONE - medium dark grey
	171.1	172.0	SILTSTONE - medium grey - cross bedded
	172.0	191.0	SILTY MUDSTONE - medium dark grey - carbonaceous debris and thin coal streaks at 182 and approximately 185.3
			-occasionally wispy siltstone laminae
	191.0	193.5	SILTY SANDSTONE - light medium grey - wavy irregular bedding
	193.5	197.6	SILTY MUDSTONE - medium dark grey - occasional siltstone lenses and irregular calcite clasts
#81	197.6	200.6	COAL 3.0' - metallic black - CANOLLOID COAL
	200.6	203.5	CARBONACEOUS MUDSTONE - dark grey - weakly silty
	203.5	204.2	SILTSTONE - medium grey - highly irregular bedding
	204.2	206.0	MUDSTONE - dark grey
	206.0	212.8	SILTSTONE - medium grey - irregular disturbed bedding
	212.8	213.0	CARBONACEOUS MICA - very soft talc-like material - probably originally a pyroclastic.
#82	213.0	214.0	COAL - 1.0' - bright, black, banded - highly broken.
	214.0	214.2	MUDSTONE - dark grey
	214.2	214.5	COAL - 0.3' - poor recovery - highly broken
	214.5	215.2	CARBONACEOUS MUDSTONE - medium grey - coaly streaks throughout
#83	215.2	216.2	COAL - 1.0' - dull to bright - banded
	216.2	219.5	SILTSTONE - medium grey - regular bedding at 75° to C.A. - vertical worm burrows throughout.
	219.5	222.4	INTERLAIN SILTSTONE-MUDSTONE - medium grey to dark grey - siltstone dominant to 220 and mudstone dominant to base. - thin vertical siltstone filled worm burrows common - small scale cross beds in silt units.
	222.4	223.6	SANDSTONE - medium grey - light grey, coal and mudstone clasts common
	223.6	225.6	INTERLAIN SILTSTONE-MUDSTONE - medium grey to dark grey - thin sand lense 224.3 to 224.5
	225.6	226.6	SANDSTONE - medium grey to light medium grey
	226.6	228.7	INTERLAIN SILTSTONE - MUDSTONE - light grey to dark grey, siltstone units sandy
	228.7	235.3	SILTY MUDSTONE - dark grey
	235.3	240.0	SILTSTONE - light medium grey - irregular wavy bedding - occasional thin mudstone lense
	240.0	240.4	SILTY MUDSTONE - medium dark grey
	240.4	241.0	SANDSTONE - light grey - fine grained - occasional silty mudstone clast - cross bedded
	241.0	244.6	SILTY MUDSTONE - medium dark grey - calcareous rims on carbonaceous debris

CORE DESCRIPTION

HOLE # SMG 78-2 AREA SOUTH MT. GETHING

FROM 244.6 TO 322.0 BY R. B. Anderson

	FROM	TO	DESCRIPTION
	244.6	246.8	COAL - 2.2' dull metallic lustre CANOLLOID COAL
#84	246.8	247.0	COALY MUDSTONE - dark grey to black
	247.0	248.2	COAL - 1.2' bright black banded
	248.2	249.0	SILTY MUDSTONE - medium dark grey
	249.0	250.0	SILTSTONE - medium grey - irregular bedding with worm burrows
	250.0	250.5	SILTY MUDSTONE - medium dark grey - occasional thin silt lense
	250.5	257.0	SANDSTONE - light grey to fine grained to medium grained - cross and planar bedding at 78° to C.A. - occasional thin mudstone lense
	257.0	258.0	SILTSTONE - medium grey - small scale cross beds and worm burrows
	258.0	259.4	INTERLAIN SILTSTONE - MUDSTONE - medium light grey to dark grey - worm burro - siltstone units cross beds
	259.4	270.2	SILTY MUDSTONE - dark grey - with numerous thin siltstone lenses
	270.2	275.6	MUDSTONE - dark grey - carbonaceous debris and thin coal streaks
#85	275.6	276.9	COAL - 1.3' - bright, black, shiny - banded and cleated recovery less than 50% - highly broken
	277.0	284.6	MUDSTONE - dark grey
	284.6	285.3	COALY MUDSTONE - dark grey to black - with a thin coal seam
	285.3	291.0	SILTY MUDSTONE - medium dark grey - thin silty steaks throughout
	291.0	291.3	COAL - 0.3
	291.3	292.0	CARBONACEOUS MUDSTONE - black
	292.0	292.3	COAL - 0.3
	292.3	292.5	CARBONACEOUS MUDSTONE - black
	292.5	294.6	COAL - 2.1' - bright black shiny
	294.6	295.3	CARBONACEOUS MUDSTONE - black
	295.3	295.6	INTERLAIN SILTSTONE- MUDSTONE - medium grey to dark grey - wavy bedding
	295.6	304.0	SILTY SANDSTONE - light medium grey occasional thin mudstone laminae - carbonaceous debris on bedding surfaces - worm burrows in muddy sections
	304.0	312.3	INTERLAIN SILTSTONE - MUDSTONE - light medium grey to dark grey, wavy ripple bedding, cross bedding in silt units, occasional worm burrows
	312.3	319.7	SILTY MUDSTONE - dark grey - thin silt laminae throughout
	319.7	322.0	INTERLAIN SILTSTONE MUDSTONE - ~~medium grey - dark grey~~ no predominates - pyrite concentration (70%) at base

CORE DESCRIPTION

HOLE # S.M.G. 78-2 AREA SOUTH MT. GETHING

FROM 322.0 TO 433.5 BY R. B. Anderson

	FROM	TO	DESCRIPTION
	322.0	322.2	COAL - 0.2 - bedding 72° C.A.
	322.2	323.9	MUDSTONE - dark grey massive
	323.9	325.4	SILTY MUDSTONE - medium dark grey - occasional thin silt laminae
	325.4	326.2	COAL - 0.8 - bright, banded, cleated
	326.2	327.8	COALY MUDSTONE - blacky brown - numerous thin coal lense and thin pyrite
	327.8	332.0	SILTSTONE - medium grey - carbonaceous debris on bedding surfaces - wavy bedding
	332.0	333.4	MUDSTONE - dark grey
#87	333.4	335.3	COAL - 1.9' bright, black, cleated, banded
	335.3	336.8	MUDSTONE - dark grey
	336.8	337.7	COAL - 0.9' - clean bright
	337.7	338.7	MUDSTONE - dark grey
	338.7	339.3	SILTSTONE - medium grey - cross bedded
	339.3	343.4	SILTY MUDSTONE - medium dark grey - occas coal streak - cemented 339.5 to 341. with $FeCO_3$
	343.4	347.6	MUDSTONE - dark grey - massive silty towards base
#88	347.6	349.1	COAL - 1.5' - dull to bright - 100% recovery banded
	349.1	349.4	COALY MUDSTONE - dark brown black
	399.4	366.0	SILTSTONE - medium grey - numerous thin mudstone laminae and worm burrows - small scale cross beds throughout - junction sub-parallel to core Axis.
	366.0	370.2	SILTY MUDSTONE - dark grey - occasional thin siltstone laminae
	370.2	371.5	MUDSTONE - dark grey
	371.5	372.4	SILTY SANDSTONE - light medium grey - cross bedded
	372.4	378.2	SILTY MUDSTONE - medium dark grey
	378.2	380.4	SILTSTONE - medium grey - small scale cross beds
	380.4	382.6	MUDSTONE - dark grey - coaly in basal foot
	382.6	384.2	SILTY MUDSTONE - medium dark grey
	384.2	385.4	INTERLAIN SILTSTONE-MUDSTONE - mudstone predominates
	385.4	388.6	SILTSTONE - medium grey - cross bedded - numerous mudstone laminae and worm burrows
	388.6	397.0	SILTY MUDSTONE - dark grey - numerous thin siltstone laminae throughout, worm burrows throughout bedding at 76° C.A.
#89	397.0	399.5	COAL 2.5'
	399.5	400.0	MUDDY SILTSTONE - dark grey
	400.0	410.1	SILTSTONE - medium grey - wavy cross bedding, occasional sections of planar bedding at 75° C.A. - fractures at 15° C.A. - occasional thin worm burrow
	410.1	433.5	SILTY MUDSTONE - medium dark grey - thin siltstone laminae throughout - thin coal at 427.

CORE DESCRIPTION

HOLE # S.M.G. 78-2 AREA SOUTH MT. GETHING

FROM 433.5 TO 487.5 BY R. B. Anderson

FROM	TO	DESCRIPTION
433.5	433.6	TALC - waxy grains of very soft shiny mica - like material
433.6	433.8	MUDSTONE - dark grey - carbonaceous
433.8	433.9	TALC - same as 433.5 to 433.6
433.9	435.1	CARBONACEOUS MUDSTONE - dark brown black
435.1	436.4	SILTY MUDSTONE - medium grey - welded shatter zone - intraformational breccia - angular fragments welded by $CaCO_3$
436.4	437.7	SILTSTONE - medium grey - hard-cemented by $CaCO_3$
437.7	438.8	COALY MUDSTONE - dark grey - black-numerous thin coal streaks
438.8	442.9	SILTSTONE - medium grey - calcareous veining (¼") at 65 to 50° to the core.
442.9	449.2	SANDSTONE - light grey, medium grey - occasional thin coal streak - bedding at 63° C.A.
449.2	451.8	INTERLAIN SILTSTONE MUDSTONE - medium grey - dark grey, siltstone units cross bedded - worm burrows throughout
451.8	454.9	SILTY MUDSTONE - dark grey - thin siltstone laminae throughout
454.9	456.5	COAL - 1.6 - bright, banded fractured at 25° to C.A.
456.5	460.4	MUDDY SILTSTONE - medium dark grey - wavy irregular bedding
460.4	464.0	SILTSTONE - medium grey - small scale cross beds thin ,mudstone lenses, bedding at 78° C.A.
464.0	467.0	SILTY MUDSTONE - medium dark grey - thin siltstone laminae throughout
467.0	467.5	COAL - 0.5 bright banded
467.5	471.3	CARBONACEOUS SANDSTONE - medium grey - medium grained
471.3	471.8	COALY MUDSTONE - dark grey
471.8	474.7	SILTSTONE - medium grey with thin mudstone laminae throughout
474.7	475.5	INTERLAIN SILTSTONE-MUDSTONE - dark grey - medium grey, siltstone cross bedded
475.5	476.3	COAL - 0.8' - dull to bright - canolloid
476.3	477.1	CARBONACEOUS SILTSTONE - medium dark grey - grading to sandstone
477.1	479.2	SANDSTONE - fine grained - light medium grey
479.2	482.4	SILTSTONE - carbonaceous - disturbed bedding
482.4	482.9	SANDSTONE - light grey - fine grained - thin carbonaceous films on bedding
482.9	484.7	SILTY MUDSTONE - medium dark grey - bedding at 75° C.A.
484.7	487.5	SANDSTONE - light grey - fine medium grained massive, numerous mudstone lenses

CORE DESCRIPTION

HOLE # S.M.G. 78-2 AREA SOUTH MOUNT GETHING

FROM 487.5 TO 542.1 BY R. B. Anderson

	FROM	TO	DESCRIPTION
	487.5	488.5	SILTY MUDSTONE - medium dark grey
	488.5	490.0	SANDSTONE - fine medium grained, light grey - irregular silty laminations.
	490.0	495.6	INTERLAIN SILTSTONE - SANDSTONE - medium dark grey - light grey wavy irregular bedding, occasional worm burrow.
	495.6	497.0	SILTY MUDSTONE - medium dark grey - numerous siltstone laminae and occasional worm burrows.
	497.0	499.3	SANDSTONE - medium light grey, medium grained - thin mudstone streaks and carbonaceous debris throughout.
	499.3	500.2	SILTY MUDSTONE - medium dark grey with occasional sandstone laminae
#91	500.2	501.7	COAL - 1.5' - bright black banded
	501.7	502.3	COALY MUDSTONE - dark brown black
	502.3	509.8	SILTSTONE - medium grey, wavy irregular bedding. - occasional thin muddy sections.
	509.8	516.0	INTERLAIN SANDSTONE-MUDSTONE - dark grey - light grey, distorted bedding, intraunit clastic dyking, numerous worm burrows.
	516.0	518.3	SILTY MUDSTONE - medium dark grey - thin siltstone laminae throughout - bedding at 68° to C.A.
	518.3	519.2	SILTSTONE - medium grey - large scale cross beds
	519.2	521.8	INTERLAIN SILTSTONE-MUDSTONE - medium grey - dark grey - each individual unit grades upward from cross bedded siltstone to planar mudstone - occasional worm burrows
	521.8	526.8	SILTSTONE - medium grey - occasional mudstone laminae, vertical worm burrows throughout.
	526.8	532.4	SILTY MUDSTONE - medium grey - thin irregular siltstone lenses throughout.
#92	532.4	533.9	COAL - 1.5' bright, banded, thin pyrite rich band
	533.9	534.6	COALY MUDSTONE - dark grey - black, thin coal streaks throughout
	534.6	535.1	MUDDY SILTSTONE - medium grey - carbonaceous debris throughout - worm burrows common
	535.1	538.7	SILTSTONE - medium grey - large scale cross beds - occasional worm burrows - becoming muddy towards the base
	538.7	540.5	INTERLAIN SILTSTONE-MUDSTONE - medium grey - dark grey - thin vertical worm burrows throughout
	540.5	542.1	SILTSTONE - light medium grey - small scale cross beds - thin vertical worm burrows throughout

CORE DESCRIPTION

HOLE # S.M.G. 78-2 AREA SOUTH MOUNT GETHING

FROM 542.1 TO 557.0 BY R. B. Anderson

FROM	TO	DESCRIPTION
542.1	544.1	INTERLAIN SILTSTONE-MUDSTONE - medium grey - dark grey - each silt unit grades to a mudstone - vertical worm burrows throughout
544.1	548.2	SILTY SANDSTONE - light medium grey - cross bedded units truncated by regional bedding at 75° C.A.
548.2	551.8	MUDDY SILTSTONE - medium grey - thin siltstone laminae in a silty mudstone matrix - vertical worm burrows throughout
551.8	557.0	MUDSTONE - dark grey - bedding at 76° C.A. - occasional thin silty section.
		E.O.H. 557.0

Pr. SOUTH MT. GETHING 78(3)A.

637

CORE DESCRIPTION

HOLE # SMG - 78-3 AREA South Mount Gething

FROM 0' TO 74.3' BY A.T. Armstrong

FROM	TO	DESCRIPTION
0	23	OVERBURDEN
23	28	INTERLAMINATED SILTSTONE & MUDSTONE - thinly laminate, medium grey to dark grey - few concretions in muddy laminae - very strongly shattered throughout with iron staining common
28	35.5	MUDSTONE & SILTY MUDSTONE - dark grey - strongly broken core - five disseminated pyrite common on fracture surfaces - iron stained - scattered small iron stained concretions.
35.5	36.5	INTERLMAINATED SILTSTONE & SILTY MUDSTONE - light medium grey to dark medium grey - thinly laminate at 40° to core axis - few irregular very fine calcite veins
36.5	51.2	SILTSTONE - medium grey - massive - strongly shattered - numerous, very fine, moderately irregular, calcite veins - sandy laminae at 37.9' - 38.1'. 39.9' - 40.7'
51.2	56.4	INTERLAMINATED SANDSTONE, SILTSTONE, MUDSTONE - predominantly sandstone at the top to predominantly mudstone at the base - thinly laminate at 40° to core axis - light medium grey to dark grey - regular to moderately disturbed laminations - worm burrows common
56.4	64.0	MUDDY SILTSTONE - generally massive dark medium grey - occasional distinct silty lamination - bands of fine shell fragments at 59', 60' and 61' (approx.) - core very strongly broken
64.0	66.0	MUDSTONE - dark grey to black - very strongly broken core
#93 66.0	68.0	COAL-2.0'?- black, bright sheared at the top, appears to be granular at the top (very strongly broken but appears to be approximately 2 ft. recovered)
68.0	68.3	MUDSTONE - black, carbonaceous
68.3	69.2	MUDDY SILTSTONE - dark medium grey - strongly disturbed - few fine coal streaks
69.2	74.3	SANDSTONE - fine grained - light medium grey to medium grey - carbonaceous - numerous fine calcite veins, parallel and regular at 40° to 50° to core axis and at approximately 90° to bedding - bedding moderately irregular at 35° to 40° to core axis

Note: Underlined footages are approximate - core is badly broken with some core loss.

CORE DESCRIPTION

HOLE # SMG - 78-3 AREA South Mount Gething

FROM 74.3 TO 158.0 BY A.T. Armstrong

FROM	TO	DESCRIPTION
74.3	81.1	SILTSTONE TO MUDSTONE - medium grey to dark grey
		- siltstone at the top and gradational to mudstone at the base - generally massive with some bedding surfaces at 40° to core axis
81.1	82.5	COALY MUDSTONE & COAL - very strongly broken and mixed
		- dark grey to black
82.5	82.8	MUDSTONE - dark grey to black
82.8	97.5	SANDSTONE & MUDSTONE & SILTSTONE - predominantly sandstone with occasional muddy laminations, generally regular to moderately disturbed
		- light medium grey to dark grey
		- bedding well developed to moderately disturbed at 25° to 35° to core axis
		- minor cross-bedding - worm burrows in finer laminae - mud clasts in sand at 96'
97.5'	121.3	INTERLAMINATED MUDSTONE & SILTSTONE - light medium grey to dark grey
		- generally regular fine laminations and lenses of siltstone in a mudstone ground mass
		- regularly laminate at 25° to 30° to core axis
121.3	122.0	COALY MUDSTONE & COAL - dark grey to black - very strongly broken
122.0	128.3	SILTY MUDSTONE - dark grey
		- very strongly disturbed - rubbly fracture
		- generally massive
		- carbonaceous debris throughout and on some fracture surfaces
128.3	144.7	INTERLAMINATED TO STRONGLY MIXED, SILTY MUDSTONE, SILTSTONE, & SANDSTONE - light medium grey to dark grey
		- predominantly silty mudstone
		- very fine lacey calcite veining at 134' and 135.3' to 135.9'
		- breccia zone with vuggy calcite veining 143.2' to 143.7'
		- other widely spaced irregular calcite veins
		- carbonaceous muddy zone 141.5' to 142.4'
		- bedding at 30° to core axis
		- worm burrows common
144.7	147.0	MUDSTONE - dark brownish grey with carbonaceous debris and few fine coal streaks
147.0	158.0	MIXED CARBONACEOUS MUDSTONE, SILTSTONE, SANDSTONE
		- dark medium grey to dark grey to black
		- sheared and rubbly - strongly carbonaceous and coal streaked
		numerous calcite veins and calcite filled brecciated zone

CORE DESCRIPTION

HOLE # SMG - 78-3 AREA South Mount Gething

FROM 158.0' TO 209.5' BY A.T. Armstrong

FROM	TO	DESCRIPTION
158.0	161.0	MUDDY SILTSTONE - dark medium grey - massive - few fine calcite veins
161.0	164.0	COALY MUDSTONE - dark grey to balck - carbonaceous and with many fine coal streaks - shearing evident on carbonaceous fracture surfaces
164.0	182.3	INTERLAMINATED MUDSTONE & SILTSTONE - banded light medium grey to dark grey - predominantly mudstone - disturbed laminations roughly parallel to core axis 164.0' to 167.0', flattening to 30° to core axis at 168.0' 35° to core axis at 170.0' 45° to core axis at 173.0' 50° to core axis at 175.0' 55° to core axis at 181.0' - generally regular thinly laminate to lensy - some graded bedding in silty bands
182.3	194.0	MIXED MUDSTONE & SILTY MUDSTONE - dark grey to dark brownish grey - few sandy bands 190.0' to 191.0' and 192.6' to 192.9' - generally blotchy or mottled appearance with some areas of indistinct bedding - fine irregular calcite veining 182.3' to 182.6' - lacey hairline calcite veining down to 190.4' - carbonaceous and coal streaked sandy band 192.6' to 193.0'
194.0	196.8	SANDSTONE - fine grained, light medium grey to dark grey - thinly laminate with some cross-bedding and few worm burrows - bedding at 45° to core axis
196.8	198.2	CARBONACEOUS & COALY MUDSTONE - dark grey to black, strongly disturbed - lacey hairline calcite veining throughout
198.2	201.5	INTERLAMINATED SILTSTONE & SILTY MUDSTONE - light medium grey to dark medium grey - thinly laminate generally disturbed bedding
201.5	209.5	CARBONACEOUS MUDSTONE - dark brownish grey to black - strongly shattered, numerous carbonaceous shear planes throughout - strongly veined with numerous fine, irregular and random calcite veins

CORE DESCRIPTION

HOLE # SMG - 78-3 AREA South Mount Gething

FROM 209.5' TO 261.2 BY A.T. Armstrong

FROM	TO	DESCRIPTION
209.5	213.3	CARBONACEOUS MUDDY SANDSTONE - dark medium grey - massive - strongly shattered and filled with calcite - numerous carbonaceous sheared surfaces
213.3	215.9	MUDSTONE - dark grey to black - some fine lacey calcite veining
215.9	224.0	SANDSTONE - light medium to dark medium grey - thinly laminate with feathery cross-bedding - bedding at 30° to core axis at 217' at 0° to core axis at 220' to 221' at 20° to core axis at 223' - strong calcite veining nearly parallel to core axis 218' to 221.7'
224.0	226.0	INTERLAMINATED SILTSTONE & MUDSTONE - medium grey to dark grey to dark brownish grey, banded - bedding regular at 45° to core axis
226.0	230.6	MIXED MUDSTONE/SILTSTONE - dark medium grey to dark grey - mudstone at the top, grading to siltstone at the base - fine lacey calcite veining 228.7' to 230.4'
230.6	235.8	INTERLAMINATED SANDSTONE/SILTSTONE - light medium grey to dark medium grey - fine grained sandstone - bedding at 55° to 60° to core axis - strongly veined with calcite 231' to 232.3' - decreasing sandstone toward base
235.8	238.4	MUDSTONE - dark grey to black - carbonaceous and calcite veined 237' to 237.7'
238.4	243.8	INTERBEDDED SANDSTONE & MUDDY SILTSTONE - fine grained light medium grey to medium grey sandstone with dark medium grey muddy siltstone beds - sandstone content decreases toward the base - sandstone is thinly laminate with feathery cross-bedding - bedding at 65° to core axis
243.3	252.1	MUDSTONE - dark grey to black - carbonaceous and coal streaked 245.4' to 249.5'
252.1'	257.0'	SILTSTONE/SANDSTONE - strongly disturbed medium grey siltstone grading downward into fine to medium grained light medium grey sandstone - shell debris band at 256.9' - thinly laminate and finely cross-bedded sandstone - bedding at 70° to core axis
257.0	261.2	MUDSTONE - dark grey - sandy and silty area 258' to 259'

CORE DESCRIPTION

HOLE # SMG - 78-3 AREA South Mount Gething

FROM 261.2 TO 347.4 (cont'd) BY A.T. Armstrong

FROM	TO	DESCRIPTION
261.2	262.2	COAL-1.0' - generally black and bright with some ash bands and lenses (broken - recovery about 80%)
262.2	264.3	MUDSTONE - dark grey to black - some carbonaceous debris
264.3	265.4	COAL-1.1' - bright and black with some ash bands (strongly broken - 80% recovery)
265.4	271.8	SANDSTONE - dirty medium brownish grey fine grained, massive and mixed with scattered coal streaks - coal streaks at 266.8', 268.7' to 269.2'
271.8	274.5	MUDSTONE - medium brownish grey to black - coal streaks from 271.8' to 274' - mottled appearance near the base
274.5	282.0	MUDDY SANDSTONE - medium brownish grey - massive fine to medium grained - indistinct strongly disturbed laminations near the base
282.0	291.2	INTERBEDDED SANDSTONE & MUDDY SILTSTONE - fine grained, light medium grey sandstone and dark grey muddy siltstone - generally indistinct disturbed bedding
291.2	297.5	SANDSTONE - light medium grey - fine to medium grained toward the base - bedding at 65° to core axis - carbonaceous debris on bedding surfaces 295.7' to 295.8' and 297.3' to 297.4'
297.5	302.4	MUDSTONE - dark grey - few silty laminae and fine lenses down to 301.0'
#94 302.4	307	COAL- 4.6'- generally black, bright and cleated (very strongly broken - recovery ≈60%)
307	308.7	COALY MUDSTONE - black, carbonaceous and strongly coal streaked
308.7	343.5	SILTY MUDSTONE - dark medium brownish grey to dark grey - generally massive with mottled appearance - coal streaks and carbonaceous shear surfaces 311.0' - 311.2', 311.8', 315.1' to 318.1' 319' to 319.6' - some fine silty laminae and lenses present from 322.8' to 327.6', 330.6' to 331.2', 333.7' to 334.4', 336' to 337.8'
343.5	344.6	SANDSTONE - fine grained - light medium grey - cross-bedded - moderately disturbed
344.6	345.3	MUDSTONE - dark grey
345.3	345.9	SILTY SANDSTONE - light medium grey - fine grained
345.9	347.4	MUDSTONE - medium brownish grey at top grading downward to dark grey and black cont'd

CORE DESCRIPTION

HOLE # SMG - 78-3 AREA South Mount Gething

FROM 347.0 (cont'd) TO 407.2' BY A.T. Armstrong

FROM	TO	DESCRIPTION
	347.0	cont'd - thin sandy band at 346.5'
		- carbonaceous and coal streaked 346.8' to 347.4'
		- lacey carbonate veining 347.0' - 347.1'
347.4	348.8	MIXED SILTY SANDSTONE & MUDDY SILTSTONE - light medium to dark medium grey - mottled to indistinct disturbed banding
348.8	351.4	MUDSTONE - dark grey to black
351.4	352.7	CANNALAID COAL - 1.3'
		- sheeny submetallic appearance
		- concoidal fracture
352.7	355.5	MUDSTONE - dark grey massive
355.5	356.2	COAL - 0.7'
		- very bright and black - cleated - (strongly broken - 50% recovery)
356.2	360.2	MUDSTONE - dark grey to black - brownish tinge near the top
		- coal streaked 357.1 to 357.3 and 359.4' to 360.0'
360.2	363.3	INTERLAMINATED & INTERBEDDED SILTY SANDSTONE & MUDDY SILTSTONE - fine grained sandstone - light medium grey to dark medium grey - strongly disturbed near the top and well bedded toward the base - bedding at 70° to core axis
363.3	371.5	SANDSTONE - light medium grey - fine grained
		- thinly laminate - well developed cross-bedding - regular bedding at 70° to core axis
371.5	397.0	INTERLAMINATE MUDSTONE & SILTSTONE - predominantly dark grey to black mudstone with thin laminae and lenses of light medium grey siltstone
		- disturbed to mixed 386' to 388.7'
		- lacey hairline calcite veining at 386.9' to 387.8', 388.9' to 389.0'
		- coal streaks 393.6' to 394.2'
397.0	397.8	COALY MUDSTONE - black - strongly coal streaked
397.8	399.2	COAL- 1.4' - bright and black (strongly broken - 30% recovery)
399.2	403.2	MUDSTONE - dark grey - massive
403.2	403.7	COAL-0.5'- black - dull to bright (finely ground 50% recovery)
403.7	404.5	MUDSTONE - black to brownish grey downward
		- some silt mixed toward the base
404.5	407.2	SILTSTONE - light medium brownish grey
		- massive to thinly bedded
		- bedding at 72° to core axis
		- shattered with calcite filling 405.1' to 405.3'

CORE DESCRIPTION

HOLE # SMG - 78-3 AREA South Mount Gething

FROM 407.2' TO 468.9' BY A.T. Armstrong

	FROM	TO	DESCRIPTION
	407.2	408.6	INTERLAMINATED MUDSTONE & SILTSTONE - predominantly dark grey mudstone with thin laminae and lenses of siltstone (light medium grey)
	408.6	409.4	COAL- 0.8'- bright, black, well cleated (solid core, 95% recovery)
	409.4	411.4	MUDSTONE - dark grey to black - coal streaked down to 410' - silty in the middle
	411.4	411.9	COAL-0.5' - black, very bright flakey (sheared?) (strongly broken - 75% recovery)
	411.9	413.6	MUDSTONE - dark grey to black
#95	413.6	415.5	COAL-1.9' - black, bright and cleated - several ash laminae present (solid to strongly broken - 80% recovery)
	415.5	416.3	MUDSTONE - black
	416.3	435.6	INTERLAMINATED SILTSTONE & SANDSTONE - minor mudstone - banded light medium grey to dark grey - fine grained sandstone - well developed laminations at 73° to core axis - some distinct cross-bedding and foreset bedding - increasing mudstone content toward the base - numerous horizontal and vertical worm burrows
	435.6	454.7	INTERLAMINATED MUDSTONE & SILTSTONE - predominantly dark grey mudstone with light medium to medium grey siltstone laminae and lenses - generally regularly laminate at 70° to core axis - disturbed 445' to 447'
#95	454.7	456.5	COAL-1.8' - black, bright, well cleated (generally solid with some grinding - 80% recovery)
	456.5	457.0	MUDSTONE - dark grey
	457.0	458.1	INTERLAMINATED CARBONACEOUS MUDSTONE & SILTSTONE - medium grey to black - thinly laminate at 70° to core axis
	458.1	461.1	MIXED SILTY SANDSTONE - strongly disturbed fine grained silty sandstone with minor mud content - some carbonaceous debris
	461.1	461.5	COALY AND CARBONACEOUS SANDY MUDSTONE - blotchy medium grey to black
97	461.5	465.0	COAL-3.5' - bright black banded (solid core 95% recovery)
	465.0	465.4	MUDSTONE - dark brown
98	465.4	468.9	COAL-3.5' - black, bright, banded - some well cleated (solid to broken core - 70% recovery)

CORE DESCRIPTION

HOLE # SMG - 78-3 AREA South Mount Gething

FROM 468.9' TO 543.6(cont'd) BY A.T. Armstrong

FROM	TO	DESCRIPTION
468.9	473.3	MUDSTONE - dark grey - coal streaked near the top - few silty lenses near the base
473.3	482.6	INTERLAMINATED SILTSTONE & MUDSTONE - predominantly siltstone at the top, light medium grey with dark grey muddy laminae, grading to predominantly mudstone with light medium to medium grey siltstone laminae and lenses downward - bedding at 72° to core axis
482.6	492.6	INTERBEDDED MUDSTONE & SILTSTONE - distinctly muddy or silty beds - light medium to dark grey banded - siltstone tend to be disturbed to strongly disturbed - coal streaks at 483.4' to 483.6', 484.5' to 484.7', 485.0' to 485.1' - some carbonaceous debris on bedding surfaces and some lacey hairline veining
492.6	492.8	COAL-0.2' - bright, black, cleated (100% recovery)
492.8	493.0	SANDSTONE - muddy - light medium brownish grey
493.0	493.2	COAL-0.2' - bright, black, cleated (100% recovery)
493.2	507.7	INTERLAMINATED SILTSTONE, SILTY MUDSTONE, MUDSTONE - thinly laminate light medium grey to dark grey regular to moderately disturbed bedding - increasing mud content toward the base - bedding at 65° to 70° to core axis - small worm burrows common
507.7	507.7	CARBONACEOUS & COALY SANDSTONE - thinly laminate light grey and black
#99 507.7	510.6	COAL-2.9' - generally black, bright and banded - ashy and dull at the top (solid core - 80% recovery)
510.6	511.0	CARBONACEOUS & COALY MUDSTONE - dark grey to black - coal streaked
511.0	512.8	SILTSTONE - dark medium grey - minor fine grained sandstone - strongly disturbed
512.8	523.9	SANDSTONE - light medium to medium grey - fine grained, thinly laminate, generally regular at 75° to core axis - some cross-bedding - increasing silt content toward the base
523.9	543.6	INTERLAMINATED MUDSTONE & SILTSTONE - banded dark grey and light medium grey - laminations and fine lenses of siltstone in predominantly mudstone cont'd

CORE DESCRIPTION

HOLE # SMG - 78-3 AREA South Mount Gething

FROM 523.9cont'd TO 587.4' BY A.T. Armstrong

FROM	TO	DESCRIPTION
523.9	543.6	cont'd - few scattered worm burrows
		- some normal graded bedding in few sandy laminations
		- increasing mud content toward the base
543.6	544.0	MUDSTONE - dark grey to black, carbonaceous
544.0	545.2	COAL-1.2' - black, bright, cleated (solid to ground recovery 80%)
545.2	546.8	MUDSTONE - black, grading to medium brownish grey downward
546.8	551.9	MIXED SILTSTONE & SANDSTONE - fine grained sand - light medium grey to dark grey - moderately to strongly disturbed bedding
		- dark grey carbonaceous muddy band at 549.0' - 549.7'
551.9	560.2	SANDSTONE - light medium grey - fine to coarse grained
		- fine grained and thinly laminate at the base - bedding at 75° to core axis
		- some silty beds 556.9' to 558.5'
560.2	562.0	INTERBEDDED & INTERLAMINATE SANDSTONE, SILTSTONE AND MUDSTONE - banded light medium grey to dark grey
		- bedding at 75° to core axis
562.0	566.0	INTERLAMINATED MUDSTONE AND SILTSTONE - predominantly light medium to medium grey siltstone at the top, grading to predominantly dark grey mudstone at the base
566.0	567.0	CARBONACEOUS & COALY MUDSTONE - black, coal streaked
567.0	568.1	COAL-1.1' - black, bright, cleated (solid core - 100% recovery)
568.1	570.7	CARBONACEOUS & COALY MUDSTONE - black - coal streaked
570.7	577.6	INTERLAMINATED TO MIXED SILTSTONE, SANDSTONE & MUDSTONE
		- light medium grey to dark grey
		- regularly laminate to strongly disturbed
		- muddy and carbonaceous 572.1' to 572.8'
		- predominantly siltstone, becoming predominantly mudstone at the base
577.6	578.5	COAL-0.9' - black, very bright, well cleated (badly broken - 50% recovery)
578.5	579.8	MUDSTONE - dark grey
579.8	584.8	SANDSTONE - fine to medium grained - light medium to medium grey - bedding at 75° to core axis
		- carbonaceous debris toward the base
584.8	587.4	INTERLAMINATED CARBONACEOUS SILTSTONE & SANDSTONE
		- minor mudstone
		- banded light medium grey to black
		- strongly carbonaceous on bedding surfaces
		- bedding at 75° to core axis

CORE DESCRIPTION

HOLE # SMG - 78-3 AREA South Mount Gething

FROM 587.4' TO 687' BY A.T. Armstrong

FROM	TO	DESCRIPTION
587.4	588.4	COAL-1.0' - black, bright, cleated
		(strongly broken 40% recovery)
588.4	588.6	COALY MUDSTONE - dark grey - coal streaked
588.6	591.7	SILTSTONE - medium grey - strongly disturbed
		- carbonaceous near the base
591.7	595.6	SANDSTONE - light medium grey - medium grained
		- indistinct bedding
595.6	613.3	CARBONACEOUS SANDSTONE - light medium grey, medium
		grained sands with dark grey to black
		carbonaceous and muddy laminations
		- very regular to strongly disturbed bedding
		at 75° to core axis
613.3	616.5	MUDSTONE - black with a few fine light medium grey
		silty lenses
616.5	617.0	COAL-0.5' - black, bright - cleated
617.0	626.8	INTERLAMINATED SILTSTONE & MUDSTONE - predominantly
		dark grey mudstone at the top to predominantly
		medium grey siltstone toward the base
		- thinly laminate at 70° to core axis -
		carbonaceous debris on bedding surfaces
626.8	637.9	SANDSTONE (CARBONACEOUS) - light grey to light medium grey
		- fine to medium grained
		- films, lenses and laminations of carbonaceous
		debris envlosed in clean sands
		- scattered small pebbles 630.5 to 633.5'
637.9	654.6	INTERLAMINATED MUDSTONE & SILTSTONE - dark grey mudstone
		with lenses and thin laminae - regular to
		moderately disturbed bedding
		- minor fine sand content
654.6	655.7	COAL-1.1'-- black, bright, cleated (solid to finely
		broken - 75% recovery)
655.7	656.4	MUDSTONE - dark grey
656.4	675.0	INTERLAMINATED MUDSTONE & SILTSTONE - thinly laminate
		mudstone and siltstone at the top becoming
		predominantly mudstone at the base with thin
		laminae and lenses of siltstone
		- light medium grey siltstone and dark grey
		mudstone
		- bedding at 75° to core axis
675.0	680.6	MUDSTONE - dark grey - few coal streaks
680.6	686.0	SANDSTONE - fine grained - light grey to light medium
		grey
		- moderately disturbed bedding
686.0	687	INTERLAMINATED - SILTSTONE & MUDDY SILTSTONE
		- light medium to dark medium grey
		- thinly laminate at 75° to core axis
		E O H at 687'

PR-SOUTH MT. GETHING 78(4)A

CONFIDENTIAL

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 637

CONFIDENTIAL

SOUTH MOUNT GETHING

Hole SMG-78-1

Single Gravity Tests

Moisture Free Basis

Product and Sp. Gr.	% Weight	Elementary Data FSI	% Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Sample #42 3/8" x 0												
1.400 F	96.26	1	3.49	0.76	23.46	73.05	14731	60.50	96.70	97.64	98.60	98.49
1.400 S	3.74	1/2	58.63	0.67	14.59	26.78	5818	39.50	3.30	2.36	1.40	1.51
Total	100.00		5.55	0.76	23.13	71.32	14398	100.00	100.00	100.00	100.00	100.00
Sample #43 3/8" x 0												
1.400 F	94.37	5 1/2	3.10	0.81	26.61	70.29	14792	52.07	95.50	96.58	97.01	96.98
1.400 S	5.63	1	47.81	0.64	15.81	36.38	7709	47.93	4.50	3.42	2.99	3.02
Total	100.00		5.62	0.80	26.00	68.38	14393	100.00	100.00	100.00	100.00	100.00
Sample #44 3/8" x 0												
1.400 F	89.86	1 1/2	2.03	0.54	23.43	74.54	14942	27.60	88.34	92.97	94.68	94.66
1.400 S	10.14	1	47.19	0.63	15.70	37.11	7476	72.40	11.66	7.03	5.32	5.34
Total	100.00		6.61	0.55	22.65	70.74	14185	100.00	100.00	100.00	100.00	100.00
Sample #45 3/8" x 0												
1.400 F	92.17	5	4.82	0.98	25.18	70.00	14569	62.90	93.38	92.64	95.04	94.61
1.400 S	7.83	3	33.48	0.82	23.54	42.98	9773	37.10	6.62	7.36	4.96	5.39
Total	100.00		7.06	0.97	25.05	67.89	14193	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-1

Single Gravity Tests

Moisture Free Basis

Product and Sp. Gr.	% Weight	FSI	Elementary Data % Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Sample #46 3/8" x 0												
1.400 F	49.15	8 1/2	4.62	1.13	28.53	66.85	14648	9.15	45.45	44.86	74.81	69.23
1.400 S	50.85	2 1/2	44.35	1.31	33.89	21.76	6292	90.85	54.55	55.14	25.19	30.77
Total	100.00		24.82	1.22	31.26	43.92	10398	100.00	100.00	100.00	100.00	100.00
Sample #47 3/8" x 0												
1.400 F	77.60	8	3.43	1.04	27.58	68.99	14845	17.50	58.95	85.95	89.39	89.19
1.400 S	22.40	1	56.01	2.51	15.62	28.37	6230	82.50	41.05	14.05	10.61	10.81
Total	100.00		15.21	1.37	24.90	59.89	12916	100.00	100.00	100.00	100.00	100.00
Sample #48 3/8" x 0												
1.400 F	89.04	8	3.35	1.07	25.30	71.35	14853	32.64	95.59	92.38	95.57	95.68
1.400 S	10.96	1	56.16	0.40	16.96	26.88	5446	67.36	4.41	7.62	4.43	4.32
Total	100.00		9.14	1.00	24.39	66.47	13822	100.00	100.00	100.00	100.00	100.00
Sample #49 3/8" x 0												
1.400 F	89.02	2	3.22	0.93	22.36	74.42	14858	25.61	96.84	93.34	98.17	98.16
1.400 S	10.98	0	75.83	0.25	12.94	11.23	2260	74.39	3.16	6.66	1.83	1.84
Total	100.00		11.19	0.86	21.33	67.48	13475	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-1

Single Gravity Tests

Moisture Free Basis

Product and Sp. Gr.	% Weight	Elementary Data FSI	% Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Sample #50 3/8" x 0												
1.400 F	94.89	9	2.80	1.21	30.11	67.09	14904	56.01	97.21	95.33	97.51	97.16
1.400 S	5.11	5	40.84	0.65	27.37	31.79	8086	43.99	2.79	4.67	2.49	2.84
Total	100.00		4.74	1.18	29.97	65.29	14555	100.00	100.00	100.00	100.00	100.00
Sample #51 3/8" x 0												
1.400 F	79.80	1	2.82	0.89	24.45	72.73	14887	23.07	86.27	70.54	92.73	89.32
1.400 S	20.20	3	37.15	0.56	40.33	22.52	7028	76.93	13.73	29.46	7.27	10.68
Total	100.00		9.75	0.82	27.66	62.59	13300	100.00	100.00	100.00	100.00	100.00
Sample #52 3/8" x 0												
1.400 F	73.51	9	4.46	1.20	26.97	68.57	14757	15.19	77.98	86.69	90.74	91.55
1.400 S	26.49	1/2	69.09	0.94	11.49	19.42	3778	84.81	22.02	13.31	9.26	8.45
Total	100.00		21.58	1.13	22.87	55.55	11849	100.00	100.00	100.00	100.00	100.00
Sample #53 3/8" x 0												
1.400 F	76.63	1	3.16	0.71	22.02	74.82	14729	29.79	78.39	71.60	83.94	82.40
1.400 S	23.37	0	24.43	0.64	28.64	46.93	10318	70.21	21.61	28.40	16.06	17.60
Total	100.00		8.13	0.69	23.57	68.30	13698	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-1

Single Gravity Tests

roduct and p. Gr.	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	% Distribution: Ash	S	VM	FC	Btu
Sample #54 3/8" x 0												
1.400 F	93.22	1	1.65	0.90	21.40	76.95	15057	32.32	96.66	91.43	97.70	97.28
1.400 S	6.78	0	47.49	0.43	27.59	24.92	5777	67.68	3.34	8.57	2.30	2.72
Total	100.00		4.76	0.87	21.82	73.42	14428	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-1 Sample #43

Washability Test

Specific Gravity	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	Cumulative Data % Weight	% Ash	% S	% VM	% FC	Btu
Minus 3/8" x 28m Fraction													
1.300 F	77.27	6 1/2	2.50	0.84	26.75	70.75	14934	77.27	2.50	0.84	26.75	70.75	14934
1.350 F	15.88	1	4.82	0.71	22.72	72.46	14492	93.15	2.90	0.82	26.06	71.04	14859
1.400 F	2.78	1	17.12	0.74	23.00	59.88	13474	95.93	3.31	0.82	25.97	70.72	14819
1.450 F	1.21	1	17.19	0.82	23.39	59.42	12389	97.14	3.48	0.82	25.94	70.58	14789
1.500 F	0.63												
1.550 F	0.13												
1.600 F	0.08	1	24.74	1.44	22.66	52.60	11073	97.98	3.66	0.82	25.91	70.43	14757
1.600 S	2.02	0	88.25	0.30	4.43	7.32	1530	100.00	5.37	0.81	25.48	69.15	14490
Total	100.00		5.37	0.81	25.48	69.15	14490						

Flotation Test on -28m Fraction

Product	% Weight	FSI	Moisture Free Basis: % Ash	% S	% VM	% FC	Btu	% Distribution: Ash	S	VM	FC	Btu
Conc. I	65.45	5 1/2	3.55	0.82	26.08	70.37	14643	32.38	62.30	67.42	68.22	68.50
Conc. II	32.06	2	14.04	0.94	23.87	62.09	12757	67.62	37.70	32.58	31.78	31.50
Refuse	2.49											
Total	100.00		7.17	0.86	25.32	67.51	13992	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-1 Sample #44

Washability Test

Specific Gravity	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	Cumulative Data % Weight	% Ash	% S	% VM	% FC	Btu
Minus 3/8" x 28m Fraction													
1.300 F	67.19	1	1.38	0.55	24.62	74.00	15017	67.19	1.38	0.55	24.62	74.00	15017
1.350 F	21.12	1	3.07	0.51	21.11	75.82	14743	88.31	1.78	0.54	23.78	74.44	14952
1.400 F	2.36	1	9.04	0.66	21.38	69.58	13756	90.67	1.97	0.54	23.72	74.31	14921
1.450 F	1.29	1	15.07	0.63	20.76	64.17	12739	91.96	2.15	0.55	23.68	74.17	14890
1.500 F	1.48	1	21.00	0.75	21.19	57.81	11689	93.44	2.45	0.55	23.64	73.91	14833
1.550 F	1.14	1	26.94	0.61	20.50	52.56	10641	94.58	2.75	0.55	23.60	73.65	14789
1.600 F	0.66	1	34.09	0.58	19.25	46.66	9609	95.24	2.97	0.55	23.57	73.46	14752
1.600 S	4.76	0	69.74	0.72	12.44	17.82	3882	100.00	6.14	0.56	23.04	70.82	14235
Total	100.00		6.14	0.56	23.04	70.82	14235						

Flotation Test on -28m Fraction

Product	% Weight	FSI	Moisture Free Basis % Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Conc. I	70.13	2	3.31	0.54	23.49	73.20	14597	25.85	62.13	72.94	75.01	74.90
Conc. II	25.88	1 1/2	12.82	0.72	21.82	65.36	13024	36.96	30.49	25.00	24.72	24.66
Refuse	3.99	0	83.69	1.13	11.67	4.64	1494	37.19	7.38	2.06	0.27	0.44
Total	100.00		8.98	0.61	22.59	68.43	13668	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING
Hole SMG-78-1
Sample #47
Washability Test

Specific Gravity	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	Cumulative Data % Weight	% Ash	% S	% VM	% FC	Btu
Minus 3/8" x 28m Fraction													
1.300 F	54.45	8 1/2	2.50	1.01	28.93	68.57	14975	54.45	2.50	1.01	28.93	68.57	14975
1.350 F	18.89	4 1/2	5.12	1.05	26.20	68.68	14513	73.34	3.17	1.02	28.23	68.60	14857
1.400 F	3.65	8	11.99	1.11	28.97	59.04	13297	76.99	3.59	1.02	28.26	68.15	14782
1.450 F	1.87	8	17.35	1.20	26.74	55.91	12408	78.86	3.92	1.03	28.22	67.86	14726
1.500 F	1.32	7	23.55	1.33	24.49	51.96	11372	80.18	4.24	1.03	28.16	67.60	14671
1.550 F	1.02	4 1/2	29.27	1.43	22.70	48.03	10513	81.20	4.56	1.04	28.09	67.35	14618
1.600 F	1.28	4 1/2	34.55	1.28	22.19	43.26	9697	82.48	5.02	1.04	28.00	66.98	14542
1.600 S	17.52	1/2	65.38	3.00	12.67	21.95	4549	100.00	15.60	1.39	25.32	59.08	12791
Total	100.00		15.60	1.39	25.32	59.08	12791						

Flotation Test on -28m Fraction

Product	% Weight	FSI	Moisture Free Basis % Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Conc. I	83.46	9	6.60	1.11	27.05	66.35	14245	41.29	72.74	87.69	90.90	90.67
Conc. II	11.19	3	30.03	1.86	21.65	48.32	10339	25.19	16.34	9.41	8.88	8.82
Refuse	5.35	0	83.58	2.60	13.94	2.48	1248	33.52	10.92	2.90	0.22	0.51
Total	100.00		13.34	1.27	25.74	60.92	13113	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-1

Sample #53

Washability Test

Specific Gravity	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	Moisture Free Basis: Cumulative Data % Weight	% Ash	% S	% VM	% FC	Btu
Minus 3/8" x 28m Fraction													
1.300 F	9.10	2 1/2	1.63	0.88	24.17	74.20	15626	9.10	1.63	0.88	24.17	74.20	15626
1.350 F	54.31	1/2	2.72	0.73	21.29	75.99	14702	63.41	2.56	0.75	21.71	75.73	14835
1.400 F	13.54	1/2	8.54	0.71	24.64	66.82	12927	76.95	3.62	0.74	22.22	74.16	14499
1.450 F	7.60	1	12.33	0.72	27.22	60.45	12875	84.55	4.40	0.74	22.67	72.93	14354
1.500 F	3.90	1/2	15.95	0.68	28.80	55.25	12046	88.45	4.91	0.74	22.94	72.15	14252
1.550 F	2.42	1/2	19.26	0.64	29.26	51.48	11353	90.87	5.29	0.74	23.11	71.60	14175
1.600 F	1.83	1/2	24.30	0.60	27.85	47.85	10492	92.70	5.67	0.73	23.20	71.13	14102
1.600 S	7.30	0	38.93	0.47	28.73	32.34	7661	100.00	8.09	0.71	23.61	68.30	13632
Total	100.00		8.09	0.71	23.61	68.30	13632						

Flotation Test on -28m Fraction

Product	% Weight	FSI	Moisture Free Basis % Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Conc. I	91.38	1/2	6.03	0.71	23.71	70.26	14123	69.51	92.45	90.38	94.28	93.81
Conc. II	7.77	0	28.04	0.61	26.76	45.20	9880	30.49	7.55	9.62	5.72	6.19
Refuse	0.85											
Total	100.00		7.93	0.70	23.97	68.10	13758	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-2

Single Gravity Tests

Moisture Free Basis

Product and Sp. Gr.	% Weight	FSI	Elementary Data % Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Sample #76	3/8" x 0											
1.400 F	94.40	7 1/2	6.38	0.93	26.05	67.57	14373	72.01	94.71	95.74	96.72	96.77
1.400 S	5.60	1/2	41.81	0.88	19.52	38.67	8093	27.99	5.29	4.26	3.28	3.23
Total	100.00		8.37	0.93	25.68	65.95	14021	100.00	100.00	100.00	100.00	100.00
Sample #77	3/8" x 0											
1.400 F	92.92	9	3.51	0.96	26.96	69.53	14609	57.91	93.31	94.67	95.14	95.08
1.400 S	7.08	4 1/2	33.47	0.91	19.90	46.63	9922	42.09	6.69	5.33	4.86	4.92
Total	100.00		5.63	0.96	26.46	67.91	14277	100.00	100.00	100.00	100.00	100.00
Sample #78	3/8" x 0											
1.400 F	95.67	9	2.31	1.26	30.08	67.61	15100	42.06	98.69	96.71	99.53	99.44
1.400 S	4.33	0	70.32	0.36	22.60	7.08	1900	57.94	1.31	3.29	0.47	0.56
Total	100.00		5.25	1.22	29.76	64.99	14528	100.00	100.00	100.00	100.00	100.00
Sample #79	3/8" x 0											
1.400 F	87.34	3	4.28	0.85	23.76	71.96	14660	53.12	90.16	89.08	90.22	90.35
1.400 S	12.66	1 1/2	26.06	0.64	20.10	53.84	10803	46.88	9.84	10.92	9.78	9.65
Total	100.00		7.04	0.82	23.30	69.66	14172	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-2

Single Gravity Tests

Moisture Free Basis

Product and Sp. Gr.	% Weight	FSI	Elementary Data % Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Sample #80	3/3" x 0											
1.400 F	85.14	8	4.72	1.21	27.24	68.04	14589	36.72	88.95	79.26	96.88	93.75
1.400 S	14.86	1	46.61	0.86	40.84	12.55	5571	63.28	11.05	20.74	3.12	6.25
Total	100.00		10.95	1.16	29.26	59.79	13249	100.00	100.00	100.00	100.00	100.00
Sample #81	3/8" x 0											
1.400 F	92.93	1	5.37	0.81	20.82	73.81	14460	56.00	89.75	95.55	96.83	96.84
1.400 S	7.07	0	55.46	1.22	12.74	31.80	6211	44.00	10.25	4.45	3.17	3.16
Total	100.00		8.91	0.84	20.25	70.84	13877	100.00	100.00	100.00	100.00	100.00
Sample #82	3/8" x 0											
1.400 F	91.24	8 1/2	5.16	1.29	29.77	65.07	14543	50.60	93.64	94.64	95.77	95.76
1.400 S	8.76	1	52.48	0.91	17.56	29.96	6707	49.40	6.36	5.36	4.23	4.24
Total	100.00		9.31	1.26	28.70	61.99	13857	100.00	100.00	100.00	100.00	100.00
Sample #83	3/8" x 0											
1.400 F	30.02	8 1/2	7.21	1.38	26.65	66.14	14267	5.64	40.19	40.77	47.24	46.39
1.400 S	69.98	2	51.70	0.88	16.61	31.69	7073	94.36	59.81	59.23	52.76	53.61
Total	100.00		38.35	1.03	19.62	42.03	9233	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-2

Single Gravity Tests

Moisture Free Basis

Product and Sp. Gr.	% Weight	FSI	Elementary Data % Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Sample #84 3/8" x 0												
1.400 F	72.10	4	4.03	1.04	23.49	72.48	14750	13.39	85.91	85.40	89.38	89.53
1.400 S	27.90	0	67.37	0.44	10.38	22.25	4458	86.61	14.09	14.60	10.62	10.47
Total	100.00		21.70	0.87	19.83	58.47	11879	100.00	100.00	100.00	100.00	100.00
Sample #85 3/8" x 0												
1.400 F	61.11	9	5.91	1.16	26.52	67.57	14179	17.70	72.87	68.49	73.82	73.33
1.400 S	38.89	2	43.18	0.68	19.17	37.65	8105	82.30	27.13	31.51	26.18	26.67
Total	100.00		20.41	0.97	23.66	55.93	11817	100.00	100.00	100.00	100.00	100.00
Sample #86 3/8" x 0												
1.400 F	76.50	9	3.27	1.11	26.71	70.02	14587	21.95	74.47	78.37	85.67	84.86
1.400 S	23.50	1 1/2	37.86	1.24	24.00	38.14	8473	78.05	25.53	21.63	14.33	15.14
Total	100.00		11.40	1.14	26.07	62.53	13150	100.00	100.00	100.00	100.00	100.00
Sample #87 3/8" x 0												
1.400 F	66.06	2 1/2	4.35	0.82	22.49	73.16	14679	15.54	75.80	67.77	81.12	79.04
1.400 S	33.94	1	46.03	0.51	20.82	33.15	7579	84.46	24.20	32.23	18.88	20.96
Total	100.00		18.50	0.72	21.92	59.58	12269	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-2

Single Gravity Tests

Moisture Free Basis

Product and Sp. Gr.	% Weight	Elementary Data FSI	% Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Sample #88	3/8" x 0											
1.400 F	100.00	1 1/2	2.29	0.85	20.59	77.12	15057	100.00	100.00	100.00	100.00	100.00
1.400 S												
Total	100.00		2.29	0.85	20.59	77.12	15057	100.00	100.00	100.00	100.00	100.00
Sample #89	3/8" x 0											
1.400 F	79.83	1	4.86	0.88	20.90	74.24	14590	41.20	83.29	81.91	84.41	84.59
1.400 S	20.17	1/2	27.45	0.70	18.27	54.28	10521	58.80	16.71	18.09	15.59	15.41
Total	100.00		9.42	0.84	20.37	70.21	13769	100.00	100.00	100.00	100.00	100.00
Sample #90	3/8" x 0											
1.400 F	92.15	3	4.13	1.02	22.23	73.64	14701	48.47	94.38	94.86	96.18	96.01
1.400 S	7.85	1/2	51.56	0.71	14.13	34.31	7178	51.53	5.62	5.14	3.82	3.99
Total	100.00		7.85	1.00	21.60	70.55	14110	100.00	100.00	100.00	100.00	100.00
Sample #91	3/8" x 0											
1.400 F	91.61	1 1/2	3.26	1.09	21.48	75.26	14885	52.91	72.92	91.91	94.52	94.14
1.400 S	8.39	1	31.68	4.42	20.65	47.67	10125	47.09	27.08	8.09	5.48	5.86
Total	100.00		5.64	1.37	21.41	72.95	14485	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-2

Single Gravity Tests

Product and Sp. Gr.	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	% Distribution: Ash	S	VM	FC	Btu
Sample #92 3/8" x 0												
1.400 F	88.76	3 1/2	3.54	1.39	22.62	73.84	14930	47.87	61.39	89.89	92.18	91.98
1.400 S	11.24	1 1/2	30.44	6.90	20.08	49.48	10285	52.13	38.61	10.11	7.82	8.02
Total	100.00		6.56	2.01	22.34	71.10	14408	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-2

Sample #79 142.8'-146.9'

Washability Test

Specific Gravity	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	Cumulative Data % Weight	% Ash	% S	% VM	% FC	Btu
Minus 3/8" x 28m Fraction													
1.300 F	58.31	4	2.16	0.93	25.20	72.64	15022	58.31	2.16	0.93	25.20	72.64	15022
1.350 F	18.52	1/2	2.31	0.78	23.15	74.54	14279	76.83	2.19	0.89	24.71	73.10	14842
1.400 F	11.06	1	11.41	0.73	22.04	66.55	13396	87.89	3.36	0.87	24.37	72.27	14660
1.450 F	5.22	1/2	16.67	0.65	20.43	62.90	12459	93.11	4.10	0.86	24.15	71.75	14537
1.500 F	2.83	1/2	22.79	0.63	20.66	56.55	11473	95.94	4.65	0.85	24.05	71.30	14447
1.550 F	1.42	1/2	27.70	0.59	20.66	51.64	10552	97.36	4.99	0.85	24.00	71.01	14390
1.600 F	0.60	1/2	32.62	0.57	20.48	46.90	9236	97.96	5.16	0.85	23.98	70.86	14358
1.600 S	2.04	1/2	48.53	0.47	18.23	33.24	6850	100.00	6.04	0.84	23.86	70.10	14205
Total	100.00		6.04	0.84	23.86	70.10	14205						

Flotation Test on -28m Fraction

Product	% Weight	FSI	Moisture Free Basis: % Ash	% S	% VM	% FC	Btu	% Distribution: Ash	S	VM	FC	Btu
Conc. I	90.24	3	5.40	0.85	23.62	70.98	14410	70.89	89.50	91.14	91.85	91.80
Conc. II	8.81	2	20.50	0.92	21.24	58.26	11910	29.11	10.50	8.86	8.15	8.20
Refuse	0.95											
Total	100.00		6.87	0.86	23.39	69.74	14166	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-2

Sample #81 197.6'-200.6'

Washability Test

Specific Gravity	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	Cumulative Data % Weight	% Ash	% S	% VM	% FC	Btu
Minus 3/8" x 28m Fraction													
1.300 F	33.37	1/2	2.83	0.79	21.87	75.30	14871	33.37	2.83	0.79	21.87	75.30	14871
1.350 F	52.15	1/2	6.07	0.77	20.19	73.74	14357	85.52	4.81	0.78	20.84	74.35	14557
1.400 F	6.99	1/2	13.04	0.86	20.73	66.23	13226	92.51	5.43	0.78	20.84	73.73	14456
1.450 F	0.63	1/2	16.54	0.96	19.94	63.52	12547	93.14	5.50	0.79	20.83	73.67	14443
1.500 F	0.32												
1.550 F	0.11												
1.600 F	0.08	1/2	24.52	1.50	18.87	56.61	11204	93.65	5.61	0.79	20.82	73.57	14425
1.600 S	6.35	0	61.86	1.35	11.12	27.02	4310	100.00	9.18	0.83	20.20	70.62	13783
Total	100.00		9.18	0.83	20.20	70.62	13783						

Flotation Test on -28m Fraction

Product	% Weight	FSI	Moisture Free Basis % Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Conc. I	80.77	1/2	5.61	0.82	20.76	73.63	14377	50.98	75.31	82.69	83.96	83.97
Conc. II	15.73	1/2	22.65	1.13	18.26	59.09	11531	49.02	24.69	17.31	16.04	16.03
Refuse	3.50											
Total	100.00		8.89	0.88	20.28	70.83	13829	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-2

Sample #84 244.6'-248.0'

Washability Test

Specific Gravity	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	Moisture Free Basis: Cumulative Data % Weight	% Ash	% S	% VM	% FC	Btu
Minus 3/8" x 28m Fraction													
1.300 F	47.53	4 1/2	2.13	1.09	23.80	74.07	15058	47.53	2.13	1.09	23.80	74.07	15058
1.350 F	18.70	1	5.43	0.98	22.06	72.51	14546	66.23	3.06	1.06	23.31	73.63	14913
1.400 F	4.57	1/2	13.81	0.86	20.41	65.78	12978	70.80	3.76	1.05	23.12	73.12	14788
1.450 F	3.41	1/2	16.92	0.82	19.35	63.73	12672	74.21	4.36	1.03	22.95	72.69	14691
1.500 F	0.63	1	25.76	0.92	19.77	54.47	11089	74.84	4.54	1.03	22.92	72.54	14661
1.550 F	0.27	)											
1.600 F	0.53	) 1 1/2	34.14	0.84	19.19	46.67	9789	75.64	4.85	1.03	22.89	72.26	14609
1.600 S	24.36	) 0	74.83	0.33	9.26	15.91	3331	100.00	21.90	0.86	19.57	58.53	11861
Total	100.00		21.90	0.86	19.57	58.53	11861						

Flotation Test on -28m Fraction

Product	% Weight	FSI	Moisture Free Basis % Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Conc. I	73.82	3	7.68	1.03	22.99	69.33	14126	25.37	82.25	84.14	89.03	88.92
Conc. II	10.47	2	35.81	0.89	17.44	46.75	9478	16.78	10.07	9.05	8.52	8.46
Refuse	15.71	0	82.27	0.45	8.74	8.99	1952	57.85	7.68	6.81	2.45	2.62
Total	100.00		22.34	0.92	20.17	57.49	11727	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-3

Single Gravity Tests

Moisture Free Basis

Product and Sp. Gr.	% Weight	FSI	Elementary Data % Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Sample #93 3/8" x 0												
1.400 F	89.78	1 1/2	4.12	1.01	24.22	71.66	14518	54.45	92.74	91.77	92.56	92.58
1.400 S	10.22	1/2	30.28	0.69	19.08	50.64	10229	45.55	7.26	8.23	7.44	7.42
Total	100.00		6.79	0.98	23.70	69.51	14079	100.00	100.00	100.00	100.00	100.00
Sample #94 3/8" x 0												
1.400 F	97.18	1/2	3.54	0.89	23.18	73.28	14717	77.41	96.22	97.29	98.36	98.27
1.400 S	2.82	1	35.60	1.19	22.25	42.15	8943	22.59	3.78	2.71	1.64	1.73
Total	100.00		4.45	0.90	23.15	72.40	14554	100.00	100.00	100.00	100.00	100.00
Sample #95 3/8" x 0												
1.400 F	73.30	9	3.90	1.09	26.45	69.65	14879	18.77	80.79	69.94	89.49	87.07
1.400 S	26.70	1	46.33	0.71	31.21	22.46	6065	81.23	19.21	30.06	10.51	12.93
Total	100.00		15.23	0.99	27.72	57.05	12525	100.00	100.00	100.00	100.00	100.00
Sample #96 3/8" x 0												
1.400 F	97.64	8 1/2	3.20	1.07	27.69	69.11	14899	75.81	97.66	97.88	98.86	98.71
1.400 S	2.36	2 1/2	42.23	1.04	24.81	32.96	8065	24.19	2.34	2.12	1.14	1.29
Total	100.00		4.12	1.07	27.62	68.26	14737	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-3

Single Gravity Tests

Product and Sp. Gr.	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	% Distribution: Ash	S	VM	FC	Btu
Sample #97 3/8" x 0												
1.400 F	96.59	1/2	1.62	0.68	20.74	77.64	15097	54.47	95.91	95.80	98.40	98.16
1.400 S	3.41	0	38.37	0.81	25.79	35.84	8017	45.53	4.09	4.20	1.60	1.84
Total	100.00		2.87	0.69	20.91	76.22	14855	100.00	100.00	100.00	100.00	100.00
Sample #98 3/8" x 0												
1.400 F	95.29	1 1/2	2.04	0.68	22.70	75.26	15032	40.70	98.18	95.04	98.97	98.61
1.400 S	4.71	0	60.12	0.26	23.95	15.93	4292	59.30	1.82	4.96	1.03	1.39
Total	100.00		4.78	0.66	22.76	72.46	14526	100.00	100.00	100.00	100.00	100.00
Sample #99 3/8" x 0												
1.400 F	66.21	1 1/2	4.89	0.85	21.79	73.32	14653	22.85	75.17	71.05	74.09	74.37
1.400 S	33.79	1/2	32.36	0.55	17.40	50.24	9897	77.15	24.83	28.95	25.91	25.63
Total	100.00		14.17	0.75	20.31	65.52	13046	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-3

Sample #93 66.0'-68.0'

Washability Test

Specific Gravity	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	Cumulative Data % Weight	% Ash	% S	% VM	% FC	Btu
Minus 3/8" x 28m Fraction													
1.300 F	20.15	3 1/2	1.90	1.17	28.30	69.80	14783	20.15	1.90	1.17	28.30	69.80	14783
1.350 F	52.39	1/2	3.41	0.96	23.60	72.99	14620	72.54	2.99	1.02	24.90	72.11	14665
1.400 F	17.29	1/2	7.93	0.85	21.71	70.36	13876	89.83	3.94	0.99	24.29	71.77	14513
1.450 F	3.69	1/2	15.33	0.78	22.34	62.33	12593	93.52	4.39	0.98	24.21	71.40	14438
1.500 F	4.02	1/2	21.40	0.72	21.55	57.05	11680	97.54	5.09	0.97	24.05	70.81	14324
1.550 F	1.10												
1.600 F	0.17	→ 1/2	23.97	0.70	20.22	55.81	11143	98.81	5.34	0.96	24.06	70.61	14284
1.600 S	1.19	0	85.08	0.18	9.50	5.42	1273	100.00	6.28	0.96	23.88	69.84	14129
Total	100.00		6.28	0.96	23.88	69.84	14129						

Flotation Test on -28m Fraction

Product	% Weight	FSI	Moisture Free Basis: % Ash	% S	% VM	% FC	Btu	% Distribution: Ash	S	VM	FC	Btu
Conc. I	38.39	1/2	4.01	1.11	26.69	69.30	14436	19.25	41.52	41.19	39.63	40.29
Conc. II	46.91	1/2	6.34	1.02	24.22	69.44	14047	37.20	46.59	45.68	48.52	47.90
Refuse	14.70	0	23.69	0.83	22.22	54.09	11047	43.55	11.89	13.13	11.85	11.81
Total	100.00		8.00	1.03	24.87	67.13	13755	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-3

Sample #94 302.4'-307.0'

Washability Test

Specific Gravity	% Weight	FSI	Moisture Free Basis — Elementary Data: % Ash	% S	% VM	% FC	Btu	Cumulative Data: % Weight	% Ash	% S	% VM	% FC	Btu
Minus 3/8" x 28m Fraction													
1.300 F	50.88	4	1.82	0.95	24.73	73.45	15050	50.88	1.82	0.95	24.73	73.45	15050
1.350 F	36.93	1 1/2	3.94	0.78	22.54	73.52	14671	87.81	2.71	0.88	23.81	73.48	14890
1.400 F	9.19	1	11.76	0.70	22.82	65.42	13381	97.00	3.57	0.86	23.72	72.71	14747
1.450 F	1.77	1	16.57	0.65	22.54	60.89	12420	98.77	3.80	0.86	23.70	72.50	14706
1.500 F	0.12	)											
1.550 F	0.08	)											
1.600 F	0.09	)											
1.600 S	0.94	) →	0	53.18	1.21	17.87	28.95	6189	100.00	4.41	0.86	23.62	71.97	14601
Total	100.00			4.41	0.86	23.62	71.97	14601					

Flotation Test on -28m Fraction

Product	% Weight	FSI	Moisture Free Basis: % Ash	% S	% VM	% FC	Btu	% Distribution: Ash	S	VM	FC	Btu
Conc. I	81.78	1 1/2	3.48	0.93	23.18	73.34	14703	37.03	81.92	80.36	87.27	86.64
Conc. II	13.98	) → 1 1/2	26.56	0.92	25.42	48.02	10173	62.97	18.08	19.64	12.73	13.36
Refuse	4.24	)										
Total	100.00		7.68	0.93	23.59	68.73	13878	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-3

Sample #97 461.5'-465.0'

Washability Test

Specific Gravity	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	Cumulative Data % Weight	% Ash	% S	% VM	% FC	Btu
Minus 3/8" x 28m Fraction													
1.300 F	48.76	1	1.24	0.67	21.39	77.37	15170	48.76	1.24	0.67	21.39	77.37	15170
1.350 F	47.37	0	1.83	0.62	19.79	78.38	15087	96.13	1.53	0.65	20.60	77.87	15130
1.400 F	0.94	0	5.88	0.63	17.86	76.26	14349	97.07	1.57	0.65	20.58	77.85	15122
1.450 F	0.10	)											
1.500 F	0.21	)											
1.550 F	0.28	)											
1.600 F	0.40	)→ 0	27.61	1.09	17.14	55.25	10896	98.06	1.84	0.65	20.54	77.62	15080
1.600 S	1.94	0	47.02	0.54	35.07	17.91	5571	100.00	2.71	0.65	20.82	76.47	14895
Total	100.00		2.71	0.65	20.82	76.47							

Flotation Test on -28m Fraction

Product	% Weight	FSI	Moisture Free Basis: % Ash	% S	% VM	% FC	Btu	% Distribution: Ash	S	VM	FC	Btu
Conc. I	97.06	→ 1 1/2	2.37	0.71	20.81	76.82	14913	100.00	100.00	100.00	100.00	100.00
Conc. II	2.26	)										
Refuse	0.68	)										
Total	100.00		2.37	0.71	20.81	76.82	14913	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-3

Sample #98 465.4'-468.9'

Washability Test

Specific Gravity	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	Moisture Free Basis: Cumulative Data % Weight	% Ash	% S	% VM	% FC	Btu
Minus 3/8" x 28m Fraction													
1.300 F	64.38	2 1/2	1.72	0.69	23.51	74.77	15098	64.38	1.72	0.69	23.51	74.77	15098
1.350 F	30.01	1/2	2.53	0.57	20.14	77.33	14932	94.39	1.98	0.65	22.44	75.58	15045
1.400 F	1.61	1/2	8.49	0.59	23.18	68.33	13863	96.00	2.09	0.65	22.45	75.46	15025
1.450 F	0.22	)											
1.500 F	0.12	)											
1.550 F	0.03	)											
1.600 F	0.06	)											
1.600 S	3.57	) → 0	64.81	0.14	23.94	11.25	3451	100.00	4.60	0.63	22.51	72.89	14562
Total	100.00		4.60	0.63	22.51	72.89	14562						

Flotation Test on -28m Fraction

Product	% Weight	FSI	Moisture Free Basis: % Ash	% S	% VM	% FC	Btu	% Distribution: Ash	S	VM	FC	Btu
Conc. I	93.83	1 1/2	2.39	0.71	22.21	75.40	14927	52.88	95.69	93.55	96.28	95.97
Conc. II	4.06	) → 2	32.40	0.49	23.29	44.31	9532	47.12	4.31	6.45	3.72	4.03
Refuse	2.11	)										
Total	100.00		4.24	0.70	22.28	73.48	14594	100.00	100.00	100.00	100.00	100.00

SOUTH MOUNT GETHING

Hole SMG-78-3

Sample #99 507.7'-510.6'

Washability Test

Specific Gravity	% Weight	FSI	Moisture Free Basis: Elementary Data % Ash	% S	% VM	% FC	Btu	Moisture Free Basis: Cumulative Data % Weight	% Ash	% S	% VM	% FC	Btu
Minus 3/8" x 28m Fraction													
1.300 F	30.13	3 1/2	2.91	0.93	23.27	73.82	14977	30.13	2.91	0.93	23.27	73.82	14977
1.350 F	24.95	1/2	5.19	0.82	21.12	73.69	14492	55.08	3.94	0.88	22.30	73.76	14759
1.400 F	10.95	1/2	8.99	0.72	19.25	71.76	13864	66.03	4.78	0.85	21.79	73.43	14610
1.450 F	7.10	1	15.86	0.70	19.15	64.99	12708	73.13	5.86	0.84	21.53	72.61	14425
1.500 F	7.88	1	21.88	0.58	18.16	59.96	11714	81.01	7.41	0.81	21.21	71.38	14161
1.550 F	4.66	1/2	27.35	0.59	17.31	55.34	10873	85.67	8.50	0.80	20.99	70.51	13983
1.600 F	4.77	1/2	33.31	0.57	16.71	49.98	9861	90.44	9.81	0.79	20.77	69.42	13765
1.600 S	9.56	0	51.23	0.38	15.27	33.50	6576	100.00	13.77	0.75	20.24	65.99	13078
Total	100.00		13.77	0.75	20.24	65.99	13078						

Flotation Test on -28m Fraction

Product	% Weight	FSI	Moisture Free Basis: % Ash	% S	% VM	% FC	Btu	% Distribution: Ash	S	VM	FC	Btu
Conc. I	93.97	1	11.18	0.81	20.91	67.91	13518	100.00	100.00	100.00	100.00	100.00
Conc. II	4.99											
Refuse	1.04											
Total	100.00		11.18	0.81	20.91	67.91	13518	100.00	100.00	100.00	100.00	100.00

SOUTH MT. GETHING

Single Gravity Tests

Moisture Free Basis

Product and Sp. Gr.	% Weight	FSI	Elementary Data % Ash	% S	% VM	% FC	Btu	% Distribution Ash	S	VM	FC	Btu
Sample #1 3/8" x 0												
1.400 F	100.00	0	11.44	0.49	31.74	56.82	10100	100.00	100.00	100.00	100.00	100.00
1.400 S												
Total	100.00		11.44	0.49	31.74	56.82	10100	100.00	100.00	100.00	100.00	100.00
Sample #2 3/8" x 0												
1.400 F	100.00	0	8.82	0.48	31.58	59.60	10693	100.00	100.00	100.00	100.00	100.00
1.400 S												
Total	100.00		8.82	0.48	31.58	59.60	10693	100.00	100.00	100.00	100.00	100.00
Sample #3 3/8" x 0												
1.400 F	100.00	0	18.57	0.51	29.41	52.02	9637	100.00	100.00	100.00	100.00	100.00
1.400 S												
Total	100.00		18.57	0.51	29.41	52.02	9637	100.00	100.00	100.00	100.00	100.00
Sample #6 3/8" x 0												
1.400 F	97.16	1	3.67	0.57	20.63	75.70	14757	89.60	97.54	97.74	97.40	97.50
1.400 S	2.84	1/2	14.56	0.51	16.30	69.14	12920	10.40	2.46	2.26	2.60	2.50
Total	100.00		3.98	0.57	20.51	75.51	14705	100.00	100.00	100.00	100.00	100.00