PR- BRI -DOWLING CK 801.1A

1980 REPORT OF EXPLORATION ACTIVITIES ON THE BRI-DOWLING CREEK PROPERTY

Coal Licence Nos. 3642 to 3654 inclusive and 5174 and 5175

Located in
Peace River Land District
and Liard Mining Division

National Topographic System
Designation 93 O 16 West

Centred on Lat. 55°57'N; Long. 122°18'W

Owned and Operated by Utah Mines Ltd.

Report By D. N. Duncan of
Utah Mines Ltd.

Field Work Performed Between
April 29, 1980 and August 27, 1980

Report Submitted December 19, 1980

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} → PR-Bri-Dowling Ck 80(4)A

For further Coal Analysis Refer to:
Confidential Coal Analysis File: PR-Bri-Dowling Creek 80(4)A

ILLUSTRATIONS

TABLES

MAPS

LOGS

Province of
British Columbia

Ministry of
Energy, Mines and
Petroleum Resources

Parliament Buildings
Victoria
British Columbia
V8V 1X4

file

A. Matheson

387-3781

Room 105
525 Superior Street
Victoria, B. C.
V8V 1T7

May 5, 1981

Utah Mines Ltd.
1600 - 1050 West Pender Street
Vancouver, B. C.
V6E 3S7

Attention: D. N. Duncan
Geologist

Dear Mr. Duncan:

1980 Report of Exploration Activities on Bri-Dowling Creek Property

The report referred to above indicated that hole BC-80-24 was not sealed in accordance with instructions from the Chief Inspector of Mines. The reason stated was that it was impossible to put the rods back down the hole as the casing had broken at a depth of 12:19 m.

I wish to point out that the Chief Inspector's instructions must be carried out, unless, an exemption is granted by the Chief Inspector or myself on his behalf. No such exemption was granted for hole BC-80-24 and yet it must be assumed from the report that one or more of the seams of coal penetrated might, at some time in the future, be worked by underground methods. In order to permit me to consider what action should be taken, I should be pleased if you would let me have your comments regarding this matter.

It is also pointed out that the Chief Inspector's instruction indicated that a copy of Appendix II of the instruction should be included with the details of work filed with the Mineral Resources Branch of the Ministry of Energy, Mines and Petroleum Resources. No copy was included with the 1980 report and I should be grateful if you would submit this at an early date.

Yours very truly,

H. J. Dennis, P.Eng.,
Senior Inspector of Mines
(Coal)

HJD:kw

c.c. T. Vaughan-Thomas
P. Hagen
A. Matheson

ABSTRACT

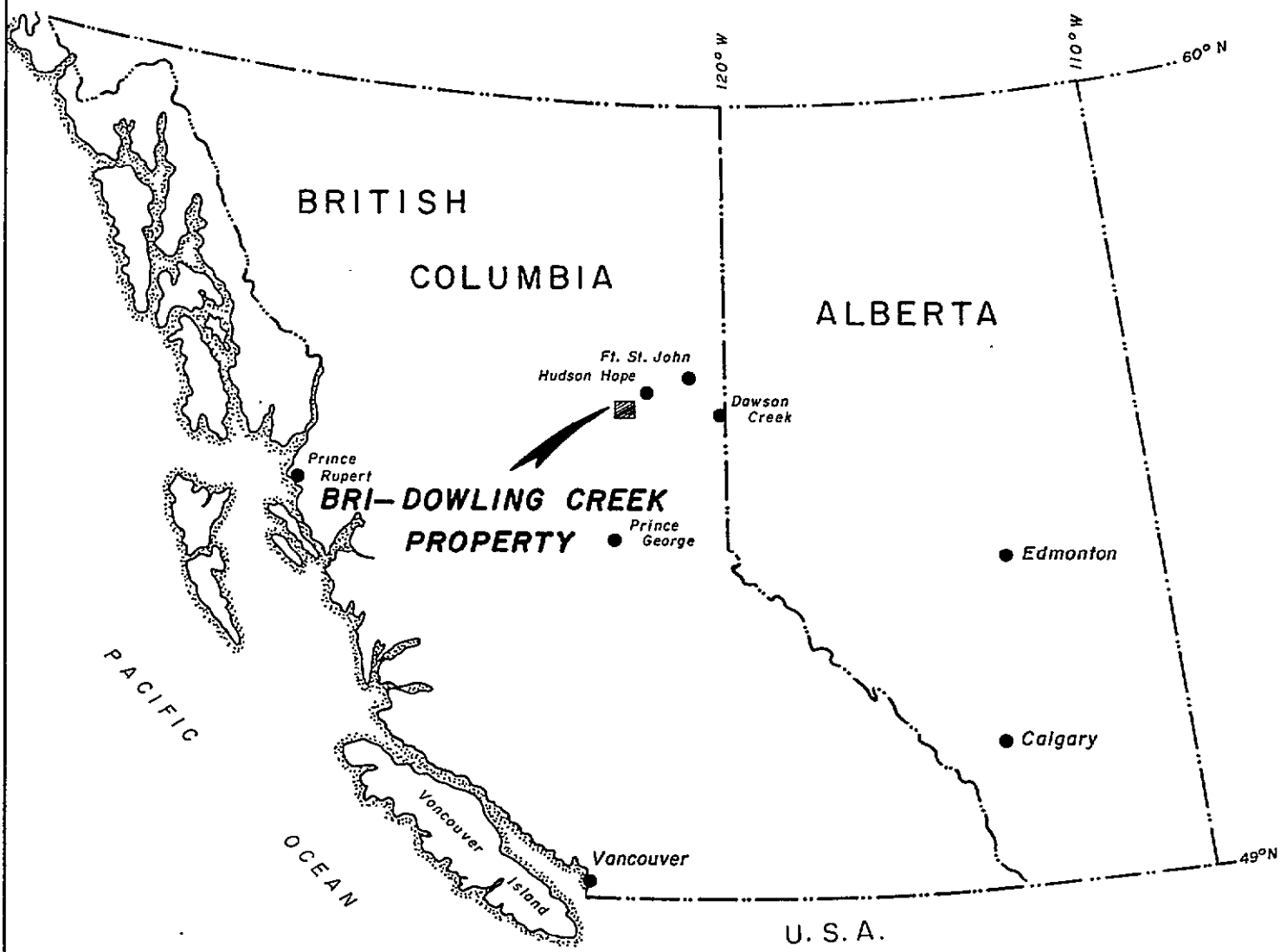
Utah Mines Ltd. acquired the Bri-Dowling Creek Property on May 15, 1978. The property has since undergone extensive exploration in the belief that it has the potential to become a metallurgical and/or thermal coal producer.

An exploration program was formulated for the Bri-Dowling Creek Property based largely on the results of the 1978 and 1979 exploration programs. The 1980 exploration program was designed to examine the property in greater detail and to facilitate the selection of those areas most amenable to mining. During the 1980 program, 3300.06 metres of diamond drilling was completed in 16 holes, 307.84 metres of rotary drilling was completed in 13 holes and extensive, detailed geological mapping was performed on the property. Numerous roads and trails were constructed on the property for access to drill sites. A methane gas testing program on coal recovered from drill core was initiated with encouraging results.

Exploration work completed during the 1980 field season has greatly improved the understanding of the property geology. Five previously undefined thrust faults were effectively delineated, the stratigraphy of the property area is now well documented and coal seam correlations are now adequately defined. The interpretations and conclusions in this report are considered to be reliable as a result of the intensive effort applied to the exploration of the Bri-Dowling Creek Property in 1980.

LOCATION AND ACCESS

Bri-Dowling Creek Property is located in the "Northeast Coal Block" of British Columbia, lying within the Liard Mining Division and the Peace River Land District. The property is approximately centred on 55°57'N latitude; 122°18'W longitude and lies within the area covered by the National Topographic System designation 93-O-16 West. The property is largely confined by Dowling Creek on the west, Gaylard Creek on the north and Track Creek on the east. The northeast corner of the property lies approximately three kilometres southwest from the W.A.C. Bennett Dam. The town of Hudson's Hope is located approximately 24 kilometres northeast from the northeast corner of the property and the town of Chetwynd lies approximately 54 kilometres southeast from the property. Vancouver is located approximately 770 kilometres south from the property. (Refer to figure 1, page 3 and figure 2, page 4). Access to the property is gained by using the Canfor Limited Johnston Creek - Track Creek Road from Highway 29, 19 kilometres south from Hudson's Hope. Alternate access to the property is provided by the paved road from Hudson's Hope to W.A.C. Bennett Dam and the Utah Mines Limited road from the dam to Johnston Creek - Track Creek Road. Several logging haulage roads provide access to the northeastern portion of the property. Additional access to all parts of the property is provided by approximately 53.4 kilometres of drill road, rotary trail and seismic cut line constructed in conjunction with the 1979 and 1980 exploration programs. (Refer to geological map in pocket).



UTAH MINES LTD.

BRI–DOWLING CREEK PROPERTY

LOCATION MAP

0 100 200 300 400

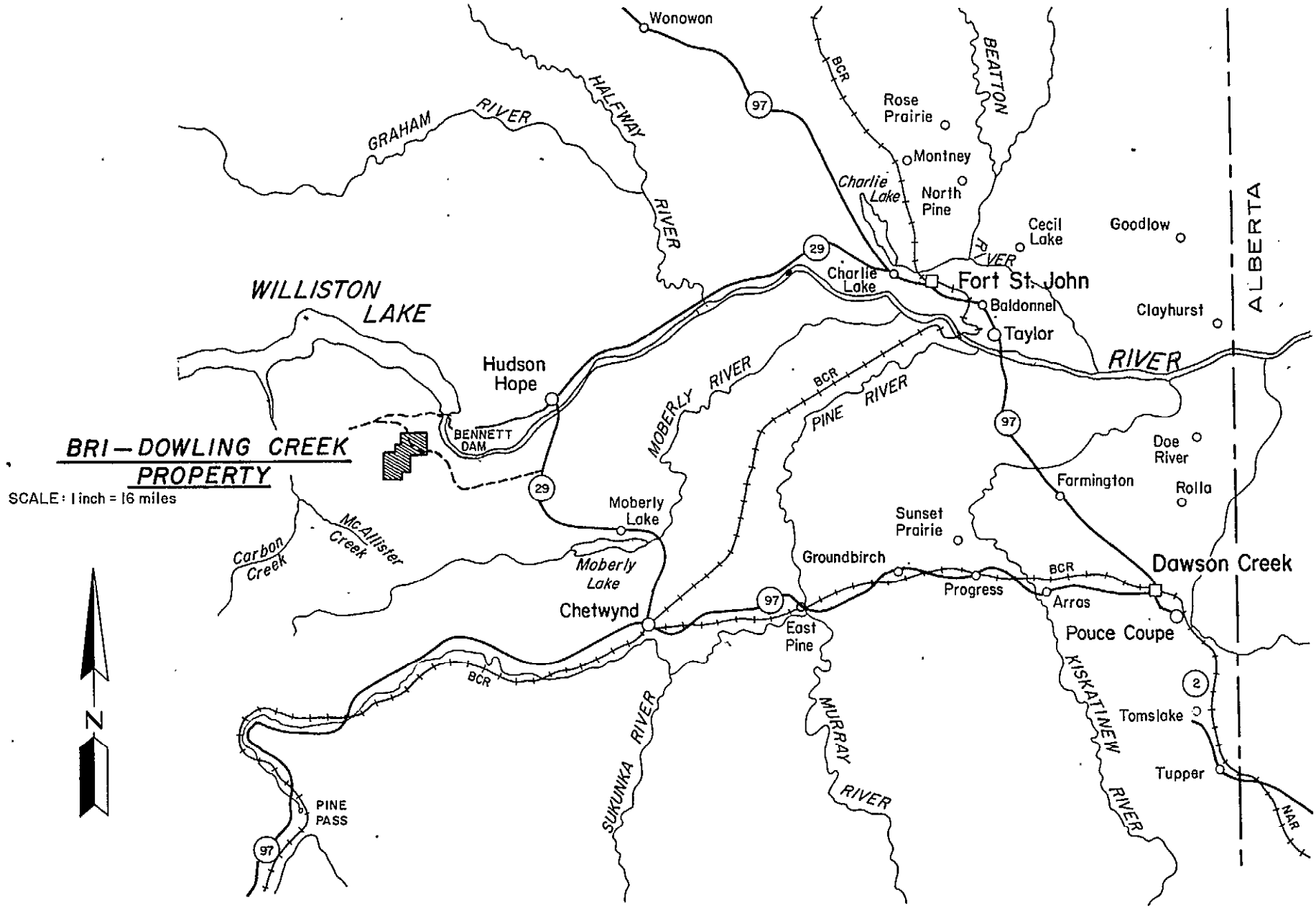
SCALE IN MILES

FIGURE — 1

FIGURE – 2

REGIONAL MAP

BRI – DOWLING CREEK PROPERTY



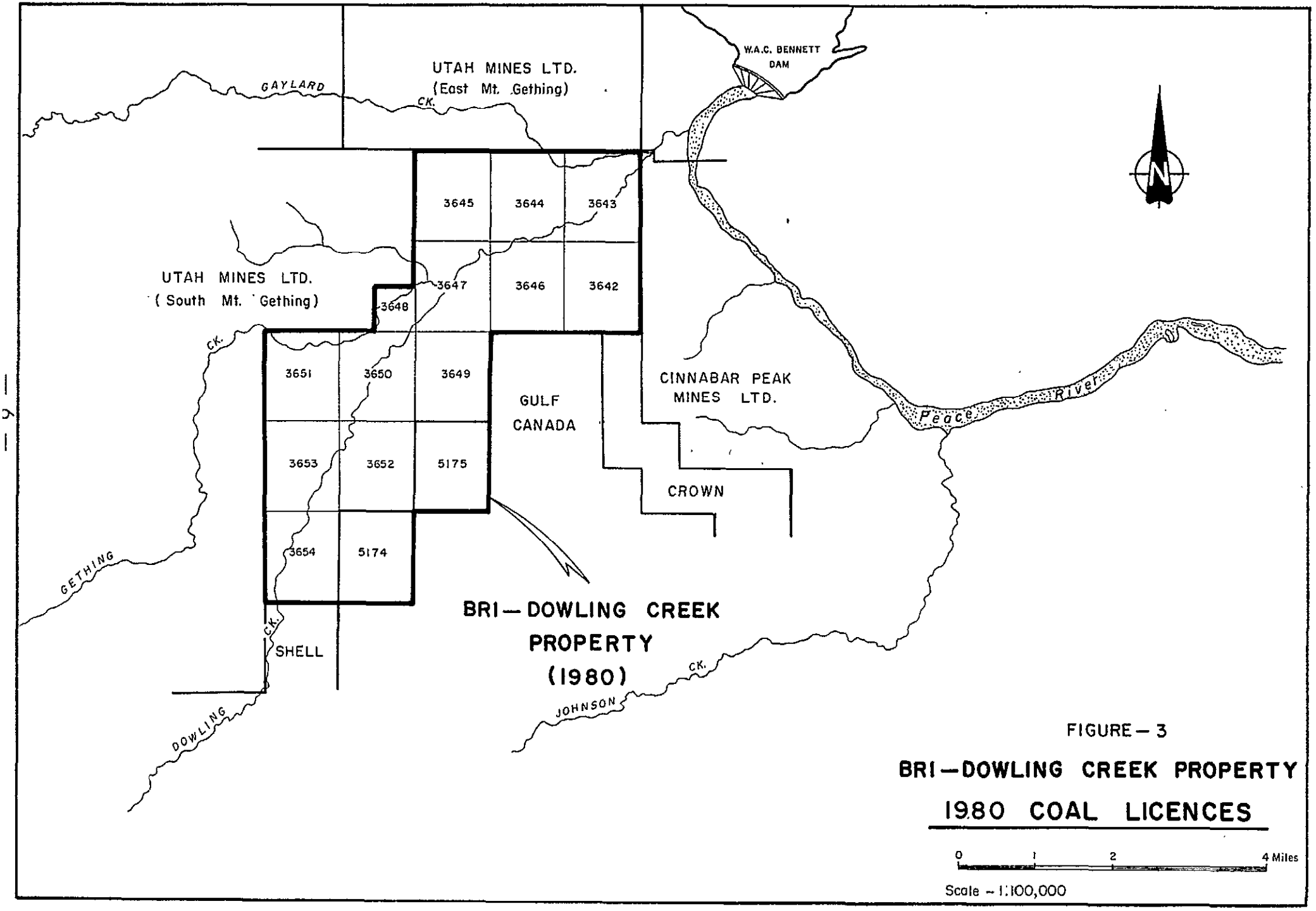
PROPERTY AND TITLE

The Bri-Dowling Creek Property comprises 15 contiguous coal licences numbered 3642 to 3654 inclusive, 5174 and 5175. These licences encompass 4,135 hectares (rounded up from 4,129.33 hectares). They are located within the area commonly referred to as the "Northeast Coal Block" in the Liard Mining Division and the Peace River Land District. (Refer to figure 2, page 4 and figure 3, page 6).

The Bri-Dowling Creek Property adjoins several other coal properties along most of its perimeter. These adjacent properties include East Mount Gething and South Mount Gething Properties of Utah Mines Ltd., Cinnabar Peaks Mines Ltd. Property, a Shell Canada Resources property and a Gulf Canada Ltd. property. The remainder of the property boundary adjoins land where the coal rights are held by the crown (refer to figure 3, page 6).

Utah Mines Ltd. became the owner and operator of the Bri Coal Licences under an agreement formed with Bri Coal Mining Ltd., Bow River Resources Ltd. and Rainier Energy Resources Ltd. dated the 11th of May, 1978. The bill of sale itemizing these licences is dated the 15th of May, 1978. Transfer of ownership was effected by the Ministry of Energy, Mines and Petroleum Resources with ministerial approval on the 14th of June, 1978.

Bow River Resources Ltd. underwent a reorganization and on the 8th of February, 1979 the company name was changed to Suneva Resources Ltd. Suneva retains the same interest in the Bri-Dowling Creek Property as was held by Bow River Resources Ltd.



FIGURE—3

BRI—DOWLING CREEK PROPERTY

1980 COAL LICENCES

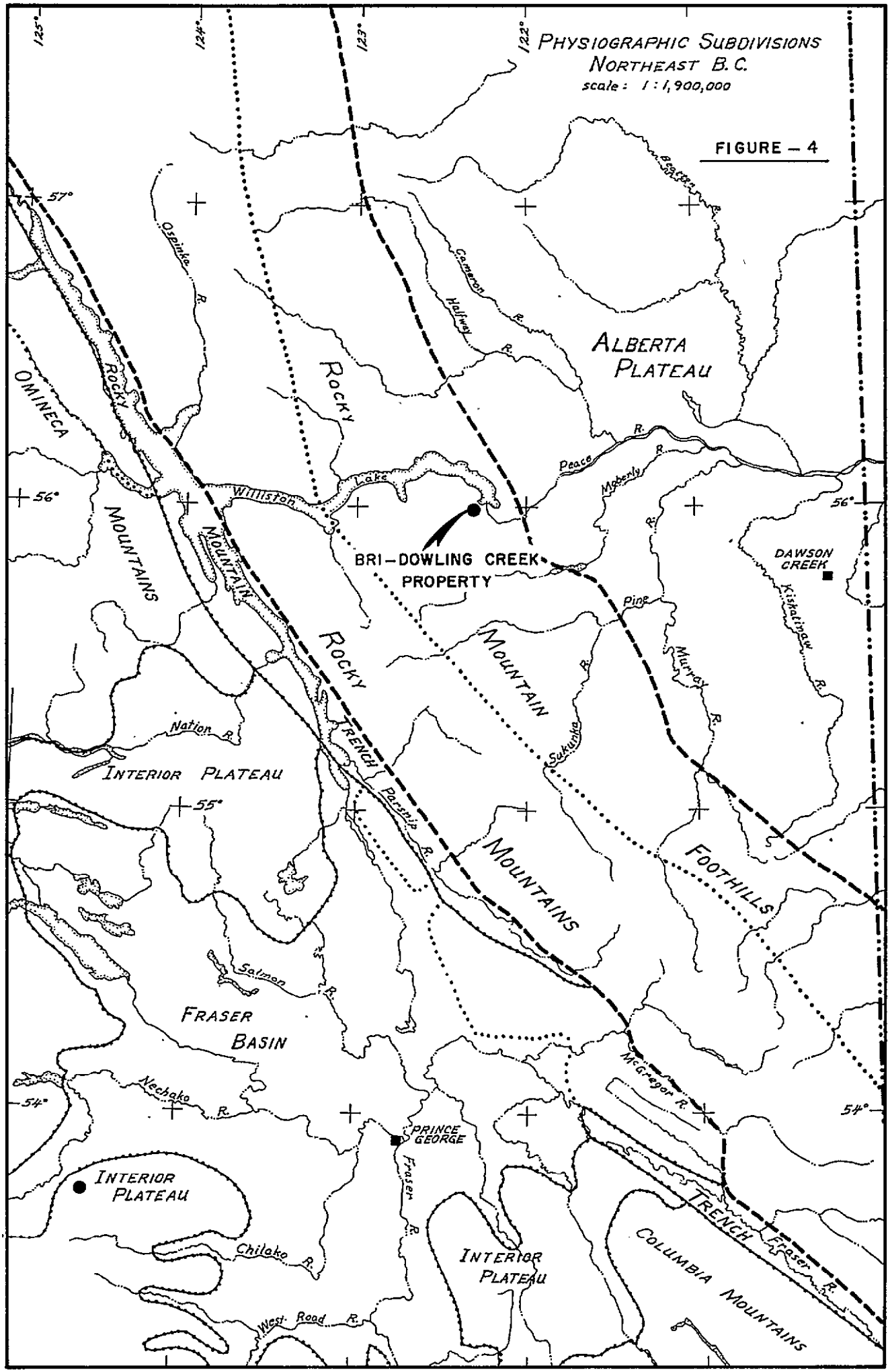
0 1 2 4 Miles

Scale – 1:100,000

PHYSIOGRAPHY

The Bri-Dowling Creek Property is situated in the outer (eastern) belt of the Rocky Mountain Foothills. (See figure 4, page 8). The western margin of the Foothills belt is considered to be the easternmost major fault which thrusts Paleozoic strata over Mesozoic strata. The eastern margin is a series of en echelon thrust faults which separate the folded and faulted strata of the Foothills from the gently dipping to flat lying strata of the Alberta Plateau (Holland, 1976). Within this belt, major fold axes and thrust faults trend in a northerly to northwesterly direction, with thrust faults 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. Bedrock structure and lithology are commonly reflected by the topography.

The property is underlain by the west limb of a south plunging syncline. This structural feature is reflected in the topography of the property. Topographic relief in the immediate vicinity of the property is moderate. The lowest elevations, found in creek valleys, are in the order of 600 metres above sea level, while the elevations of the hills and ridges exceed 1,200 metres above sea level. Creek valleys range in form from the deeply incised canyon of Gething Creek, below its confluence with Dowling Creek to the broad, gravel floored valley of Dowling Creek. In areas of thick till cover, creeks have cut rapidly through the overburden to bedrock, leaving steep, slide prone valley walls. Hilltops and ridge crests are broad and generally rounded and dip slope surfaces are common.


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.
Peace R.
Moberly R.
Pine R.
Murray R.
Kiskatinaw R.
Sukunka R.
Nation R.
Parsnip R.
Salmon R.
Nechako R.
Chilako R.
Fraser R.
West Road R.
McGregor R.
OMINECA MOUNTAINS
ROCKY MOUNTAIN TRENCH
ROCKY MOUNTAINS
ALBERTA PLATEAU
FOOTHILLS
INTERIOR PLATEAU
FRASER BASIN
COLUMBIA MOUNTAINS
TRENCH
Williston Lake
BRI–DOWLING CREEK PROPERTY
DAWSON CREEK
PRINCE GEORGE

EXPLORATION OF THE BRI COAL PROPERTY

PREVIOUS EXPLORATION:

Coal has been known to exist in the Peace River area since it was first noted by Sir Alexander MacKenzie in 1792. He reported a "bituminous substance which resembles coal" in Peace River Canyon. Exploration programs, specifically designed to test the coal potential of the area covered by the Bri-Dowling Creek Property, began in 1971 by the previous owners of the property.

During exploration programs conducted by the previous owners of the property, in the period 1971 to 1977, greater than 2,400 metres of diamond drilling was completed in 17 holes. Of these 17 holes, 13 penetrated into the coal bearing Gething Formation. They were located within a roughly east-northeast trending band through the central area of the northern group of licences. In conjunction with sections measured in Peace River Canyon and along creeks in the area, these holes indicated a potentially significant thickness and extent for the "Trojan" coal seam. With the exception of D.D.H. 71-1, these drill holes tested only the top 150 feet (46 metres) to 450 feet (137 metres) of the Gething Formation over a relatively small area. They provided little or no information on other potentially interesting coal seams.

The 1978 and 1979 exploration programs, formulated and conducted by Utah Mines Ltd., for the Bri-Dowling Creek Property were designed to provide additional geological and analytical data with which to advance the understanding and the evaluation of the property. The determination of the continuity, thickness, character, quality and configuration of the "Trojan" seam over a much broader area than previously considered was of particular importance. It was also considered important to test as much of

the Gething Formation as possible for other economically significant coal seams. In total, 4,333.64 metres of diamond drilling was completed in 11 holes over the two years in order that these objectives might be achieved.

All data and logs derived from the 1978 and 1979 exploration programs may be referred to in the 1978 Report of Exploration Activities on the Bri-Dowling Creek Property by R. B. Anderson and A. T. Armstrong of Utah Mines Ltd. and in the 1979 Report of Exploration Activities on the Bri-Dowling Creek Property by A. T. Armstrong and R. B. Anderson of Utah Mines Ltd.

1980 EXPLORATION PROGRAM:

The 1980 exploration program for the Bri-Dowling Creek Property was designed to provide further, more detailed information on the extent, quality and continuity of coal seams on the property. Exploration activities commenced on April 29, 1980 and were concluded on August 27, 1980. The evaluation of the Superior and Trojan seams in more detail, in areas with economic potential indicated by previous exploration, was considered a priority. Further exploration of the southern portion of the property was essential in order to provide more data on the coal seams and define structural problems in this relatively untested area. The northern portion of the property was to undergo extensive exploration as it was an area of known economic potential requiring more detailed investigation. The location of potential underground adit entry sites for the future bulk sampling of the Trojan seam in this area was considered to be of great importance. A program including diamond drilling, geological mapping and limited rotary drilling was undertaken to provide the information required to fulfill the objections of the program.

Road, drill site and rotary drill trail construction was contracted to Mr. Paul Demeulemeester of Chetwynd, B.C. This work included the slashing, clearing, clean-up and general construction of 8,085 metres of road approximately 10 metres in width and 2,407 metres of rotary drill trails approximately 4.6 metres in width. The access roads constructed during the 1979 exploration program were reused for access to some of the 1980 drill sites. The two plank decked log bridges built in 1979 were also used in the 1980 program for access to drill sites. Some of the newly constructed roads required little or no improvement as pre-existing logging trails were reopened and slightly upgraded for access to drill sites. Numerous culverts were installed to provide road drainage and free flow of small streams. Sixteen road accessible diamond drill sites, each measuring approximately 50 metres by 30 metres, were slashed, cleared and leveled and a temporary waste mud sump was excavated at each site. At some sites, minor clearing was required to provide a location for the water supply pump. The rotary drill trails were constructed so as to minimize disturbance of the ground. The topsoil was left undisturbed wherever possible and the trails were constructed through the thinnest forest cover which could be found along the proposed routes. All the rotary drilling was done on the trails so that no extra clearing was necessary for actual drill sites. Road and drill site maintenance were carried out on an as needed basis.

A trailer camp providing facilities for up to 28 people was installed on the property. The camp was set up in the same location as the 1979 exploration camp and the site required very little extra clearing. The trailers for the camp included a double

kitchen trailer, an office trailer, a first aid trailer, a dry trailer and two storage trailers all owned by Utah Mines Ltd. In addition, three bunk house trailers and a washroom trailer were rented from Territorial Leasing Ltd. of Prince George, B.C. Camp site preparation, trailer installation, water supply installation and propane hook ups were completed by P. Demeulemeester. Artic Propane Ltd. provided two propane tanks and delivered propane on a periodic basis. A 75 kilowatt generator, owned by Utah Mines Ltd., was placed on site and camp wiring and lighting were installed by B5 Outfitters. Diesel and gasoline storage tanks were supplied by P. Demeulemeester and Pacific 66 of Hudson's Hope and fuel was delivered to the camp by Pacific 66.

Reclamation of disturbed ground was conducted by Mr. Paul Demeulemeester as an ongoing part of the program. Roads and diamond drill sites were cleaned and recontoured after moving the drilling rig from each site. Mud sumps were refilled and levelled. Upon the completion of rotary drilling on the rotary drill trails, each trail was cleaned and all trees leaning over the trail were felled and bucked into four foot lengths. The diamond drill sites, access roads and rotary drill trails were sown with a grass seed mixture recommended by the Reclamation Branch of the British Columbia Ministry of Energy, Mines and Petroleum Resources for forested areas of the "North-east Coal Block." Seriously compacted earth was scarified using a cable harrow prior to seeding. Upon the completion of the exploration program, all culverts were removed, the upstream bridge over Dowling Creek was removed and the stream banks were recontoured and water bars were constructed on all steep road grade. In some places, special ditches and channels were excavated to provide adequate drainage and to minimize erosion.

All construction equipment required throughout the 1980 exploration program was provided by Mr. Paul Demeulemeester. A Caterpillar D7G bulldozer was used throughout the program. A second Caterpillar D7G bulldozer, a 450 John Deere backhoe and a cable harrow were used occasionally. One or more 3/4 ton Ford 4-wheel drive trucks were used to transport personnel, fuel and supplies. This equipment was used for road, diamond drill site and rotary drill trail construction and maintenance, reclamation work, camp installation, drill moves and servicing the drill.

The exploration program included the drilling of sixteen diamond drill holes (see figure 5, page 14). Diamond drilling was performed by Longyear Canada Ltd. using a Longyear "38" diamond drilling rig and a Longyear "V52" diamond drilling rig. The drilling rigs were mobilized from Vancouver to the property with the "38" drilling rig commencing work on May 11, 1980 and the "V52" drilling rig commencing work on May 23, 1980. Two 12 hour shifts on each drill, under the foremanship of Mr. H. Meredith, were worked each day that the actual drilling was in progress. Drillers on the job included W. Castle, A. Hayes, A. Gauthier, R. Landry and F. Bennett. Driller's helpers included variously, G. Mononen, L. Martin, A. Wickstrom, F. Oliver, C. Hayes, and R. Stevenson. Removal of the "V52" drilling rig from its last site was completed on June 30, 1980 and the "38" drilling rig was removed from its final site on June 25, 1980.

In total, 3300.06 metres of diamond drilling was completed in 16 holes. The core was logged by P. Cowley, J. Ridley and D. N. Duncan, assisted by E. Anderson, C. Corney, R. Olauson, K. Hartmann and K. Yip (descriptive lithologic logs are bound in this report

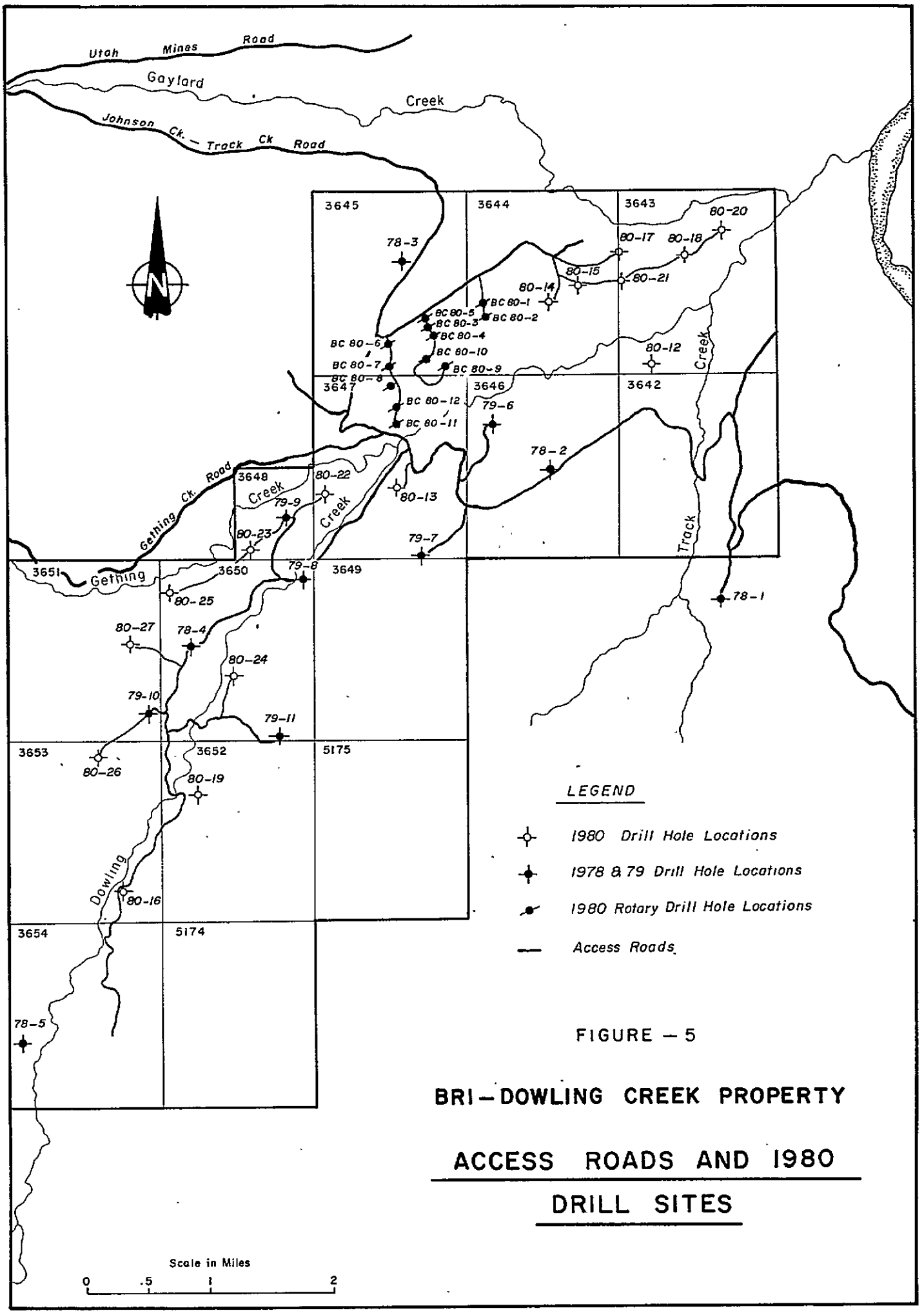


FIGURE — 5

BRI — DOWLING CREEK PROPERTY

ACCESS ROADS AND 1980 DRILL SITES

in Appendix I, graphic lithologic logs are included in the map pocket). Mechanical logs consisting of combined gamma-ray and density logs were run in all the holes except D.D.H. BC-80-16. Combined gamma-ray and resistivity mechanical logs were run in all the holes except diamond drill holes BC-80-12, BC-80-13, BC-80-16, BC-80-17, BC-80-19, and BC-80-24. All mechanical logging was done by Utah Mines Ltd. personnel using a portable Gearhart-Owen, Model 06-3200 Widco Logger employing electric hoisting and a combination down hole tool (mechanical logs are included in the map pocket).

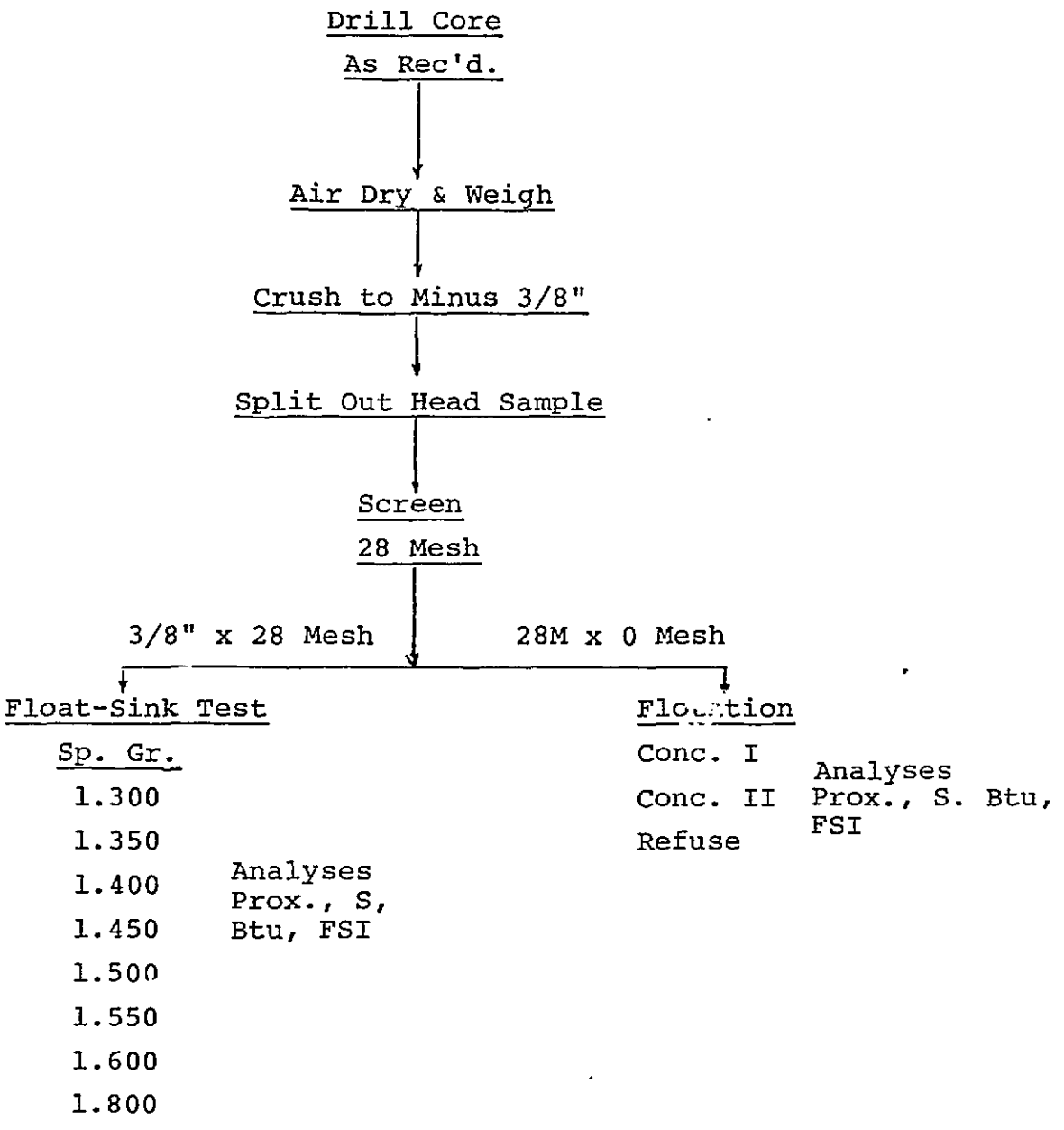
Forty-six coal samples were taken from core recovered from the sixteen diamond drill holes. These samples were submitted for analysis to the Utah International Inc. Minerals Laboratory at 1190 Bordeaux Drive, Sunnyvale, California, 94086. Analyses were completed following the precedures outlined on the laboratory flow chart on the following page (Table I). The analytical results for the coal core samples are bound in this report in Appendix II.

Twenty-one coal samples were removed from core recovered from the sixteen diamond drill holes for methane gas testing. The measurements of gas content were done in the field by Utah Mines Ltd. personnel and the results are bound in this report under the section entitled "Methane Gas Testing."

Upon the completion of the 1980 exploration program, the core from diamond drill holes BC-80-12, BC-80-16 and BC-80-24 was shipped to the Charlie Lake core storage facility of the British Columbia Ministry of Energy, Mines and Petroleum Resources. The core from the remainder of the 1980 diamond drill holes was stored on the property at diamond drill hole site BC-80-22.

TABLE-I

CANADIAN COAL - FLOW SHEET



Analyses on the Head Sample (3/8" x 0)

1) HGI
2) Proximate, S, Btu, and FSI
3) Ultimate Analysis
4) Mineral Analysis of Ash
5) Fusion Temperature of Ash
6) Water Soluble Alkalies
7) Sulfur Forms
8) Equilibrium Moisture

All of the diamond drill holes except BC-80-16 and BC-80-24 were sealed with cement in accordance with the intructions of the Chief Inspector of Mines. Diamond drill hole BC-80-16 did not penetrate into the coal bearing Gething Formation and so, it was not necessary to seal this hole. Diamond drill hole BC-80-24 was not sealed because the casing broke and was offset and the cement could not be pumped down into the hole.

The rotary drilling contract was awarded to Elgin Exploration Company Ltd. of Calgary, Alberta. Two Fahling Model 1200 conventional rotary drills were contracted for the job. One of the drills was track mounted with an accompanying track mounted water carrier and the second drill was tandem truck mounted with an attendant water carrying truck. The truck mounted rig began drilling on the property on August 16, 1980 and completed its last hole on August 19, 1980. The track mounted rig began drilling on the property on August 20, 1980 and completed its last hole on August 21, 1980. A total of 307.84 metres of rotary drilling were completed in 13 drill holes. (See figure 5, page 14). The rotary chips were logged by K. Hartmann and K. Yip of Utah Mines Ltd. (descriptive lithologic logs are bound in this report in Appendix III). No mechanical logging was undertaken on the 13 rotary drill holes.

Helicopter use during the 1980 exploration program was minimal, involving minor mapping crew support and inspection flights with the Reclamation Inspector (Mr. T. Hall). In all cases, a Bell 206 Jet Ranger, supplied by Okanagan Helicopters Ltd. out of Chetwynd, B.C., was used.

Numerous less significant materials and services were supplied by individuals and companies in Hudson's Hope, Chetwynd and Fort St. John.

Extensive geological mapping of the property was undertaken from April 29, 1980 to August 27, 1980. The mapping covered areas which had been unexamined in the past as well as areas which had been mapped in previous years. This work was completed by Utah Mines Ltd. field crews made up of P. Cowley, J. Ridley, R. B. Anderson and D. N. Duncan, assisted by E. Anderson, C. Corney, K. Hartmann, R. Olauson and K. Yip. All information obtained in the mapping program is plotted on the geological property map in the map pocket of this report.

The rotary drill trails and rotary drill hole locations were surveying using a steel tape and transit. The survey team was made up of J. McDiarmid and R. Olauson of Utah Mines Ltd.

GEOLOGY-GENERAL AND LOCAL

The Bri-Dowling Creek Property is underlain by folded and faulted sediments of Lower Cretaceous Bullhead and Fort St. John Groups (see Table 2, page 20). Stott (1968, page 7) considers these two groups to form a 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."

The contact between the argillaceous, recessive beds and fine-grained sandstone beds of the Minnes Group and the overlying conglomeratic sediments of the Cadomin Formation of the Bullhead Group is an abrupt, regional erosional unconformity (Stott; 1968, page 14). This unconformity is present in the Peace River area, extending north, south and east along the Rocky Mountain Foothills and into the Alberta Plateau. The total amount of sediments removed and the exact time interval involved in this erosional event is not known and may vary from area to area in the region.

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
				Commotion Fm. Hulcross Member				Commotion Fm. Hulcross Member
				Commotion Fm.		Gates Fm.		Commotion 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. Montieth Fm.		Cadomin Fm.		Cadomin Fm.		Cadomin Fm.
Lower Cretaceous & Jurassic	Fernie Group		Minnes Group		Minnes Group		Minnes Group	
Jurassic			Fernie Group		Fernie Group			

The oldest unit subcropping on the property is the Cadomin Formation. In the property area, the Cadomin Formation is most commonly a sequence of interbedded sandstones and conglomerates. The sandstone beds are typically coarse grained, massive to coarsely cross-bedded and weather light red-brown in colour. The sandstones contain abundant quartz, chert and volcanic rock fragments, which gives them a salt and pepper appearance on fresh surfaces. The sandstone beds range from less than one metre to over seven metres in thickness. The conglomerate units contain well rounded pebbles and cobbles of chert, quartz and volcanic fragments. These conglomerates range in thickness from pebble bands to massive units over two metres thick. The Cadomin Formation has not been observed in outcrop on the property, but it is postulated to be present in the northwest corner of Coal Licence 3651 (see geology map in the map pocket) on the basis of mapping done on the adjoining South Mount Gething Property.

The environment of deposition for the Cadomin Formation is considered to have been a piedmont alluvial plain (Stott; 1968, page 108). The presence of abundant conglomerate in the formation in the property area indicates that the area was relatively close to the source area of the formation.

The contact between the Cadomin and Gething Formations is not clearly defined in the property area. McLearn and Kindle (1950, page 65) noted that the contact may not occur at the same stratigraphic horizon from area to area. Irish (1970, page 68) noted that, to the northeast of the Bri-Dowling Creek Property:

"In Peace River Canyon, coarse sandstones of the Cadomin Formation grade laterally into interbedded coal, sandstones and shale of the Gething Formation, and therefore the formations are in part lateral equivalents."

This indicates that the contact between the two formations is transitional, not abrupt. Stott (1963, page 3) noted that the Cadomin and Gething Formations are actually "facies of one depositional sequence." Thus, there is a lateral and a vertical transition from the Cadomin Formation to the Gething Formation. The contact between the two formations is placed at the top of the uppermost thick, coarse grained sandstone bed of the Cadomin Formation.

The character of the Gething Formation sediments underlying the property is typical; as described by Irish (1979, page 69), 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 levee deposits and others may represent flood plain splay deposits (Stott, 1968, page 111). Sedimentary features attributable to these types of deposits are present in drill core and in outcrop on the Bri-Dowling Creek Property. Stott (1968, page 111) lists some of the features found in

sandstones in the Gething Formation; well sorted nature but often containing considerable matrix, festoon cross-beds, 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). These silts and clays 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 that some may have originated in abandoned river channels, some paralleling major river channels and some on deltas.

Work by Stott (1969, page 4) indicated a minimum thickness of 1,600 feet (490 metres) for the Gething Formation in the area. The total thickness approaches 1,800 feet (550 metres) if a postulated fault is absent. This formation, which contains the coal seams of interest on the Bri-Dowling Creek Property, is but one of several which contain metallurgical and thermal grade coals throughout the "Northeast Coal Block."

The Bullhead Group is overlain by marine sediments of the Fort St. John Group, which comprises, from oldest to youngest, the Moosebar Formation, the Gates Formation, the Hasler Formation, the Goodrich Formation and the Cruiser Formation (see Table 2, page 20). Of these formations, only the Moosebar Formation and the Gates Formation have been observed on the property in outcrop or in drill core. With the exception of a small area to the west and northwest, the property is largely underlain by Fort St. John Group sediments.

The Moosebar Formation of the Fort St. John Group directly overlies the Gething Formation. It consists of dark grey to black, rubbly to blocky mudstones throughout most of the section. The lower part of the Moosebar Formation is typically strongly glauconitic with abundant pyrite nodules and thin volcanic ash (bentonite) bands. Often a thin pebbly basal sandstone to conglomerate lies abruptly on carbonaceous Gething Formation sediments. This basal unit is very poorly sorted with a mud matrix and often contains abundant glauconite and pyrite. McKechnie (1955, page 7) noted that the basal conglomerate of the Moosebar Formation:

> "...is a typical mud-flats conglomerate ranging from a few inches to about 4 feet thick, and is composed of well rounded grey and black chert pebbles about one quarter inch in diameter in a mudstone matrix."

Ironstone concretions occur in bands at various levels throughout the section. Toward the top of the formation, the mudstones become gritty and thin beds of fine-grained sandstone and siltstone are present. Stott (1968, page 51) considers that the upper boundary with the overlying Gates Formation should be "drawn at the base of the first thick succession of sandstone."

The Gates Formation, as observed from drill core and field mapping, consists of interbedded, grey to brownish-grey, often green weathering, fine to medium grained sandstone, dark grey shales and grey to brownish-grey siltstone. The sandstone units

often resemble Gething Formation sandstones, with very minor coaly streaks observed in rare cases. Ironstone concretions were observed in the Gates Formation in siltstone beds in outcrop on the property. Formations overlying the Gates Formation were not observed.

STRUCTURE - GENERAL AND LOCAL

The Bri-Dowling Creek Property is located within the Foothills structural belt, which is underlain by folded and thrust faulted Mesozoic strata (Irish,1968). The general trend of the structures is northwesterly, with most of the thrust faults dipping in a southwesterly direction. Where the sediments are thick in this belt, the dominant form of deformation is folding.

The property is underlain by Bullhead Group and Fort St. John Group sediments which have been folded into a broad, south plunging syncline. The generally north trending axis of this syncline lies approximately along the eastern boundary of the northern group of coal licences (see the geology map in the map pocket). The vast majority of the property lies on the easterly dipping, west limb of the syncline.

The property can be divided into two acres on the basis of the structural geology of the underlying rocks. The northern coal licences are underlain by relatively flat lying sediments which have been folded into the large syncline underlying the property. There is little evidence of faulting in this area with dips varying from 0° to 20° and strikes ranging from northeast to east. In the northeast corner of the property, the strikes rotate from northeast to southeast indicating the presence of the fold axis of the syncline (see figures 11 , 12 , and 14 , in the map pocket).

The central region of the property (in the area around Coal Licence 3648) is a transition zone between the two structural areas. The rocks underlying this area are folded into relatively gentle anticlines and synclines. The anticlines appear to be underlain by

thrust faults at depth (see figure 10 in the map pocket). Folding becomes more intense to the south and west where the anticlines are breached by thrust faults. Irish (1968, page 24) states that, in the property area, most thrust faults:

> "... have resulted from the breaking of tightly compressed anticlines, and begin and/or terminate in compressed, assymetrical anticlines...."

The southern coal licences are underlain by sediments which have been extensively folded and faulted. There are five thrust faults in this area which have been observed in surface outcrop and in drill core. Drag folding, which is caused by the faults, causes abrupt steepening of dips observed in drill core from this area. The faults seem to parallel the Dowling Creek valley, generally striking in a northerly direction (see geology map in pocket) and may be part of the reason for the formation of the valley. The dips of rocks in the southern coal licences range from 0° to 50° with strikes ranging from north to northeast.

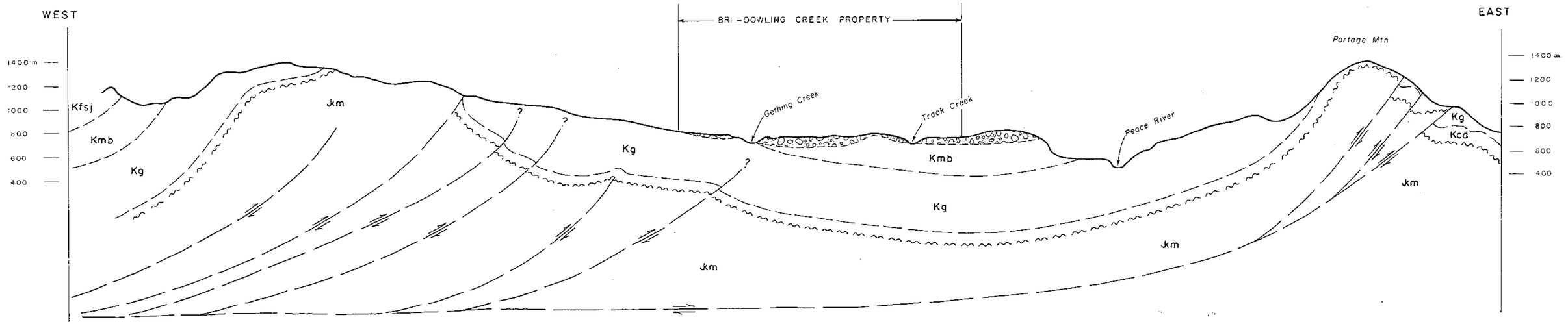
The delineation of the five thrust faults, postulated in the southern portion of the property, was made possible by the extensive drilling undertaken in the 1980 exploration program Fault zones observed in core from several drill holes were correlated with each other and with surficial evidence of faulting. Faulting is displayed in the drill core examined in the 1980 program in three different ways. Thick, competent sandstone units display extensive brecciation of the rock with abundant calcite healed fractures and calcite filled open spaces.

Some folding of the sandstone units is also evident, but frequently is obscured by the highly broken nature of the rocks. In less competent mudstones and coal seams there is frequently little more than slickensides to provide evidence for faulting. However, when a major fault intersects these less competent rocks, the density of slickensides is very high and can be used as evidence. In interbedded sandstones, siltstones and mudstones, the rocks deform plastically. In drill core, this is displayed as a steepening of dips toward the fault surface, where the beds are almost vertical to the fault plane.

The stratum contour maps (in the map pocket) for the Superior, Trojan, Titan and Falls seams show the effects of the faults on these seams. Only three of the thrust faults have an effect on the coal seams at mineable depths. The coal seams are broken into separate mineable blocks by the thrust faulting. Thus, any mining activity in the southern portion of the property would be limited in extent by the size of the block. There is also an increase in the dip of the coal seams in this area, which is related to folding in response to the thrust faults.

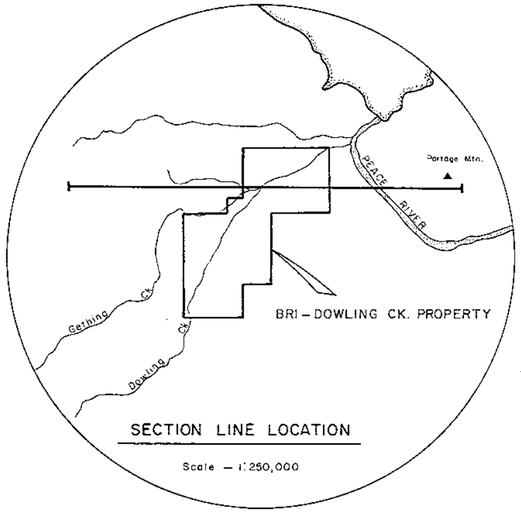
Structural geology for the Bri-Dowling Creek property is shown on the 1:10,000 scale geological map (in the map pocket) and on the cross sections through the property (figures 6 to 14 inclusive, in the map pocket). The cross sections and geological map portray the present interpretation of the structural geology of the rocks underlying the property. The information to produce the map and cross sections was obtained from geological field mapping and from diamond drill hole data.

A 1:50,000 scale cross section showing the structural form and stratigraphic relationships of the property and the surrounding area is shown on the following page (figure 15). It is postulated that the thrust faults observed in the southern portion of the property are splays from a major thrust fault which underlies the property at depth. This major thrust could be the thrust which comes to surface on Portage Mountain, to the east, but there is too little data in the intervening area to be certain.



LEGEND

- Quaternary Alluvium
- Kfsj — Fort St. John Group (undifferentiated)
- Km — Moosebar Formation
- Kg — Gething Formation
- Kcd — Cadomin Formation
- Jkm — Minnes Group
- Unconformity
- Thrust Fault



SECTION LINE LOCATION

Scale — 1:250,000

(2 X VERTICAL EXAGGERATION)

FIGURE — 15

BRI—DOWLING CREEK PROPERTY

EAST — WEST SECTION
ALONG 6,204,000 N
LOOKING NORTH

Date — Dec 1980
NTS — 93 O/16

Horizontal Scale — 1:50,000
Vertical Scale — 1:25,000

D.D.H. BC-80-12

A. WELL COMPLETION REPORT

Location: - On a newly constructed access road (by Utah Mines Ltd.) 670 metres from its junction with the Canfor Ltd. Johnston Creek Forest Haul Road.
- U.T.M. Coordinates: 6,204,491m N x 545,561m E.
- Coal Licence No. 3643

Elevation: 727.5 metres

Orientation: Vertical.

Date Collared: May 11, 1980

Date Completed: May 15, 1980 Plugged: Yes - cemented

Overburden Depth: 48.50 metres

Casing Depth: 50.60 metres Casing Size: H.W. 4.5" (11.4cm) - recovered.

Final Depth: 233.48 metres

Formations Encountered:

0 to 48.50m	Overburden
48.50m to 198.88m	Moosebar Formation
198.88m to 233.48m	Gething Formation

Core Description By: J. Ridley and D. N. Duncan

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Trojan	226.09m to 227.68m	1.59m	1.35m

Logs Run: Gamma and Density - by Utah Mines Ltd.

B. COMMENTS

During site preparation for D.D.H. BC-80-12 and the access road to it, all felled timber was bucked into four foot lengths and buried. Upon the completion of drilling, the drill hole was sealed with cement in accordance with the instructions of the Chief Inspector of Mines. After the removal of the drilling rig, the drill site and access road were cleaned and recontoured, with all leaning trees being felled, bucked into four foot lengths and buried. Disturbed ground was sown on May 27, 1980, with the grass seed mixture recommended by the Reclamation Branch for forested areas of the Northeast Coal Block.

Below 48.50 metres of overburden, D.D.H. BC-80-12 penetrated 150.38 metres of Moosebar Formation sediments. These sediments were primarily mudstones which were dark grey to black, blocky to rubbly and often weakly silty. A number of thin, light grey bands of what was thought to be Kaolinitized volcanic ash were cored in the section. The mudstones contained abundant pyrite, occuring as nodules up to 2.5cm in diameter, which increased in abundance toward the base of the formation. Thin beds and lenses of fine grained sandstone were common toward the base of the section. A sandstone unit cored between 191.24 metres and 191.26 metres contained angular mudstone rip-up clasts. A section of brecciated mudstone with intense calcite veining was penetrated from 60.41 metres to 60.51 metres below the collar. Dark green glauconite was observed in the mudstones in increasing amounts toward the base of the section. A poorly sorted conglomeratic sandstone with a muddy matrix was cored from 197.63 metres to 198.88 metres. The base of this sandstone

is considered to be the contact between the Moosebar Formation and the Gething Formation.

34.6 metres of Gething Formation sediments were cored in D.D.H. BC-80-12 below the Moosebar Formation. The sedimentary sequence penetrated is typical of the Gething Formation, consisting of fine to coarse grained sandstones, siltstones, mudstones and coal. These sediments occur as discrete interbeds and interlaminations or as inhomogeneous mixtures of two or more constituents (e.g. silty mudstone, sandy siltstone, etc.). Homogeneous units ranged from less than one centimetre to several centimetres in thickness with occasional massive beds, usually consisting of medium to coarse grained sandstone. Sedimentary textures observed in the cored section included worm burrows, cross-bedding, convoluted bedding, mud cracks and ripple marks. These textures are indicative of deposition in a relatively low energy alluvial-deltaic flood plain environment.

The sandstone units cored in the Gething Formation in D.D.H. BC-80-12 were generally fine to coarse grained, seldom massive, with minor mudstone or siltstone interlaminations, commonly cross-bedded, and salt and pepper in colour. Mudstone and siltstone rip-up clasts were observed in some of the sandstone units and carbonaceous debris and fine coal streaks were often present. The mudstone units observed in the section were dark grey to black, frequently carbonaceous, and commonly contained minor siltstone and sandstone laminae. Siltstone units in the section were medium grey to dark medium grey, commonly contained greater or lesser amounts of mudstone and sandstone, and were present as interlaminations with mudstone and/or sandstone laminae.

Bedding angles, measured from the vertical core axis, varied from 85^{o} to 87^{o}. Fracturing and calcite healed fracturing were noted in two instances in the cored section, both in the Moosebar Formation. Minor slickensides were observed in two mudstone units in the Gething Formation.

Nine coal seams, ranging in thickness from 0.03 metres to 1.59 metres, were cored in D.D.H. BC-80-12. Of these, only one seam, the Trojan seam, was removed for analysis. The Trojan seam contained two splits composed of sandstone, siltstone and Kaolinitized volcanic ash which were 0.05 metres and 0.03 metres in thickness. The seam itself was 1.59 metres thick (including the splits), shiny, well cleated, and contained 60% to 80% vitrain. Most of the coal seams cored in the section were banded, well cleated and contained abundant vitrain. The Superior seam was intersected in the drill hole, but was split into two benches and was too thin to be of interest. Both benches of the Superior seam contained abundant pyrite which occurred as nodules and laminae.

Head analyses conducted on the Trojan seam (see Appendix II) show that the seam is high volatile A bituminous coal (on a dry, mineral-matter free basis). The ash content of the seam is high, 23.61%, due to the inclusion of splits with the sample. Sulphur content is only 0.78% on an air dried basis and the Free Swelling Index is 2. An analysis of the sulphur forms in the Trojan seam shows that, of the 0.78% sulphur content, 37% is pyritic sulphur, 63% is organic sulphur and less than 1% occurs as sulphate (on an air dry basis). The Hardgrove Grindability Index of the sample is 64.

A 1.400 specific gravity separation of the Trojan seam produced a much improved product. At this specific gravity 67.74% by weight of the original sample was recovered. The resulting improvements of all the proximate analyses are as follows: Ash 5.06%, Sulphur 0.92%, Volatile Matter 28.54%, Fixed Carbon 66.40%, B.T.U. 14,594 B.T.U./lb. and F.S.I. 5 1/2. The ash content of the coal is the most obvious improvement, primarily due to the loss of the two splits.

D.D.H. BC-80-13

A. WELL COMPLETION REPORT

Location: - On a newly constructed access road (by Utah Mines Ltd.) 130 metres from its intersection with the 1980 campsite.
- U.T.M. Coordinates: 6,203,315m N x 543,022m E
- Coal Licence No. 3647

Elevation: 677.5 metres

Orientation: Vertical

Date Collared: May 16, 1980

Date Completed: May 17, 1980 Plugged: Yes - cemented

Overburden Depth: 13.40 metres

Casing Depth: 19.65 Casing Size: H.W. 4.5" (11.4cm) - recovered

Final Depth: 84.12 metres

Formations Encountered:

0 to 13.40m	Overburden
13.40m to 26.35m	Moosebar Formation
26.35m to 84.12m	Gething Formation

Core Description By: P. Cowley

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Superior	27.83m to 28.36m	0.53m	0.55m
2	Trojan	62.33m to 64.01m	1.68m	1.70m
3		71.68m to 72.63m	0.95m	0.95m

Logs Run: Gamma and Density - by Utah Mines Ltd.

B. COMMENTS

Site BC-80-13 was cleaned, the mud sump refilled and the drill site levelled after the removal of the drilling rig. The drill hole itself was sealed with cement in accordance with the instructions of the Chief Inspector of Mines. On May 25, 1980 the drill site and access road were sown with the recommended grass seed mixture.

Below 13.40 metres of overburden, D.D.H. BC-80-13 penetrated 12.95 metres of basal Moosebar Formation sediments. The upper 6.25 metres of the Moosebar Formation was triconed and, as a result, is not present in the cored section. The sediments cored were typical of the basal portion of the Moosebar Formation - dark grey to black mudstone containing abundant pyrite nodules and glauconite. The basal conglomerate of the Formation was cored from 26.07 metres to 26.35 metres and consisted of light and dark chert pebbles in a poorly sorted medium grained sandstone and mudstone matrix. The basal conglomeratic sandstone was also glauconitic and contained coal streaks as well as nodules and lenses of pyrite.

Gething Formation sediments were cored below the Moosebar Formation to a depth of 84.12 metres, where the hole was terminated. The 57.77 metres of Gething sediments cored were typical of the upper Gething Formation in the property region. These sediments comprised sandstones, siltstones, mudstones

and coal. The sediments occured as homogeneous beds and laminae or as inhomogeneous mixtures. Beds (laminae) ranged from less than one centimetre to several centimetres in thickness. Massive thick beds were uncommon in the cored section. Sedimentary textures observed in the cored section included worm burrows, cross-bedding, convoluted bedding, plant fossils, rip-up clasts, load casts, ripple marks and shell fragments. These textures are indicative of sedimentation in an alluvial-deltaic flood plain environment.

The sandstone units cored in D.D.H. BC-80-13 in the Gething section were fine to medium grained, commonly crossbedded, salt and pepper in colour, frequently contained mudstone and siltstone rip-up clasts and coal streaks, and commonly contained minor siltstone and/or mudstone laminae. In most cases the sandstone units were intimately interbedded or interlaminated with siltstone and mudstone. Mudstone units observed in the section were dark grey to black, often carbonaceous, contained plant fossils and often contained minor sandstone and siltstone lenses and laminae. Three mudstone units cored in the section contained pyrite as nodules and are thought to be or marine or brackish origin. These pyritic mudstones occur from 26.65 metres to 26.50 metres, 26.86 metres to 27.42 metres and from 72.63 metres to 72.74 metres below the collar. The siltstone units cored in the section were typically medium grey to dark medium grey. The siltstones commonly contained minor sandstone or mudstone laminae, lenses and minor coaly streaks and plant fossils.

Bedding angles, measured from the vertical core axis, ranged from 56° to 75° and averaged 73°. The two anomalous bedding angles, 56° and 60°, were measured in sandstone units and may have been taken on large scale crossbeds. Fracturing was not very prevalent in the cored section and was usually healed with calcite or, in two cases, pyrite. No slickensides were observed in the core.

Ten coal seams, ranging from 0.08 metres to 1.68 metres in thickness, were cored in D.D.H. BC-80-13. Of these, three seams were removed for analysis. Sample number 1, the Superior seam, was a dull, banded seam, poorly cleated and contained only 24% (visual estimate) vitrain. Sample number 2, the Trojan seam, contained four splits and had a gross thickness of 1.68 metres and a net thickness of coal of 1.18 metres. The splits varied in composition. The upper two splits were kaolinitized volcanic ash and were each 0.02 metres thick. The two lower splits were coaly mudstone and volcanic ash and coaly mudstone and were 0.39 metres and 0.07 metres thick respectively. The coal itself was generally dull banded, moderately cleated and contained approximately 35% vitrain. The lower bench was, however, bright banded, well cleated and contained 90% vitrain. The third sample, a Sub-Trojan seam, contained two splits and had a gross thickness of 0.95 metres. The upper split was a kaolinitized ash band 0.02 metres thick and the lower split was a coaly mudstone 0.04 metres thick. The coal in this sample varied in the three benches from dull banded and moderately cleated to bright banded and well cleated. The coal seams cored in this hole were generally banded with varying amounts of vitrain and were usually cleated.

Two canneloid seams were cored in the section from 66.61 metres to 67.03 metres and from 83.04 metres to 83.27 metres. The upper bench of the Superior Seam, which was too thin and too widely separated from the lower bench to sample, contained abundant pyrite lenses.

Head analyses were conducted on the three coal core samples from D.D.H. BC-80-13. These analyses (Appendix II) show that all three seams are high volatile A bituminous coals. The ash contents of the samples range from 11.42% to 20.90% which is inversely proportional to B.T.U. values which range from 11,722 B.T.U./lb. to 13,344 B.T.U./lb. Fixed Carbon content ranges from 49.15% to 57.79%, Volatile Matter content varies from 28.94% to 31.34%, Sulphur contents range from 0.72% to 0.95% and Free Swelling Indices vary from 6 1/2 to 8. An analysis of sulphur forms for each sample showed that: for the Superior seam 19% of the 0.95% by weight sulphur occurs as pyritic sulphur, 81% occurs as organic sulphur and less than 1% occurs as sulphate; for the Trojan seam, of the 0.72% by weight sulphur, 4% occurs as pyritic sulphur, 96% occurs as organic sulphur and less than 1% occurs as sulphate, and for the sub-Trojan seam, of the 0.90% by weight sulphur, 9% occurs as pyritic sulphur, 91% occurs as organic sulphur and less than 1% occurs as sulphate. The Hardgrove Grindability Indices for the Superior, Trojan and sub-Trojan seams are 64, 72 and 80 respectively.

A 1.500 specific gravity separation of the Superior seam (Appendix II) produced a much improved product. At this specific gravity 73.96%, by weight, of the original sample was recovered in the float fraction. The proximate analyses

of the float fraction are: 4.03% ash, 0.92% sulphur, 34.43% volatile matter, 61.54% fixed carbon, 14,865 B.T.U./lb. and an F.S.I. of 7 1/2.

A 1.400 specific gravity separation of the Trojan seam yielded an improved float fraction (Appendix II). 72.49% by weight of the original sample was recovered in the float fraction at this specific gravity. The proximate analyses of the float fraction are: 5.87% ash, 0.89% sulphur, 30.97% volatile matter, 63.16% fixed carbon, 14,599 B.T.U./lb. and an F.S.I. of 8.

A 1.400 specific gravity separation of the sub-Trojan seam sample (Appendix II) produced a much improved product. 81.19% by weight of the original sample was recovered in the float fraction at this specific gravity. The proximate analyses of the float fraction are: 3.62% ash, 0.91% sulphur, 33.79% volatile matter, 62.59% fixed carbon, 14,936 B.T.U./lb. and an F.S.I. of 9.

The highly pyritic coal seam cored between 26.35 and 26.65 metres below the collar was sent to Chemex Labs Ltd. in North Vancouver for a spectrographic analysis of the ash. The resulting analyses show insignificant quantities of metals, other than iron, in the ash (see Analytical Data section for D.D.H. BE-80-13 in Appendix II).

D.D.H. BC-80-14

A. WELL COMPLETION REPORT

Location: - On a newly constructed access road (by Utah Mines Ltd.) 300 metres from its junction with a reopened (by Utah Mines Ltd.) Canfor logging road.
- U.T.M. Coordinates: 6,205,071.5m N x 544,518m E
- Coal Licence No. 3644

Elevation: 729 metres

Orientation: Vertical

Date Collared: May 18, 1980

Date Completed: May 20, 1980 Plugged: Yes - cemented

Overburden Depth: 83.94 metres

Casing Depth: 83.94 metres Casing Size: H.W. 4.5" (11.4cm) - recovered.

Final Depth: 114.30 metres

Formations Encountered: 0 to 83.94m Overburden
83.94m to 114.30m Gething Formation

Core Description By: D. N. Duncan

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Trojan	106.55m to 107.92m	1.37m	1.90m
2	Trojan	108.00m to 108.30m	0.30m	

Logs Run: Gamma, Density and Resistivity - by Utah Mines Ltd.

B. COMMENTS

During site preparation for D.D.H. BC-80-14 and the access road to it, all felled timber was bucked into four foot lengths and buried. Upon the completion of drilling, the drill hole was sealed with cement in accordance with the instructions of the Chief Inspector of Mines. After the removal of the drilling rig, the drill site and access road were cleaned and recontoured, with all leaning trees felled, bucked into four foot lengths and buried. Disturbed ground was sown with the recommended grass seed mixture on May 27, 1980.

Below 83.94 metres of overburden, D.D.H. BC-80-14 penetrated 30.36 metres of Gething Formation sediments. The sedimentary sequence cored in the drill hole is typical of the formation in the property area. The sediments consisted of sandstones, siltstones, mudstones and coal. These sediments occur as discrete beds and laminae or as inhomogeneous mixtures of two or more constituents (e.g. silty mudstone, sandy siltstone etc.) The sandstone units encountered in the core were typically fine to medium grained, salt and pepper in colour and often contained coal streaks and carbonaceous debris. The sandstones were commonly laminated with minor mudstone or siltstone laminae and some units contained rip-up clasts. The mudstone units observed in the section were commonly dark grey to black, frequently carbonaceous and usually contained minor siltstone and sandstone laminae. Siltstone units in the section were typically dark to medium grey and most commonly occured as interlaminations with sandstone and mudstone.

Sedimentary textures observed in the cored section include cross-bedding, graded bedding, ripple marks, rip-up clasts, convoluted bedding, worm burrows and shell molds. The sediments and sedimentary textures observed in the cored section of this drill hole are indicative of deposition in an aggrading alluvial-deltaic flood plain environment.

Bedding angles, measured from the vertical core axis, ranged from 80° to 85°. No evidence of faulting, fracturing or folding was observed in the core.

Two coal seams were cored in D.D.H. BC-80-14. The upper seam was 0.19 metres thick and the lower, Trojan seam was 1.75 metres thick (gross thickness). The Trojan seam was removed from the core as two samples which were combined for analysis. The Trojan seam contained one, 0.08 metre split composed of fine-grained sandstone. The coal was dull banded, containing minor vitrain, but was generally well cleated.

Head analyses conducted on the Trojan seam (see Appendix II) show that the seam is a medium volatile bituminous coal. The ash content of the seam is 15.19%. The sulphur content is 0.53% and the Free Swelling Index is 4. An analysis of the sulphur forms in the Trojan seam shows that (Appendix II) of the 0.53% sulphur content, 21% is pyritic sulphur, 79% is organic sulphur, and less than 1% occurs as sulphate (on an air dried basis). The Hardgrove Grindability Index of the sample is 60.

A 1.400 specific gravity separation of the Trojan seam produced a much improved product. At this specific gravity 76.39% (by weight) of the original sample was recovered. The results of the proximate analysis on the 1.400 float are: Ash 6.12%, Sulphur 0.61%, Volatile Matter 28.67%, Fixed Carbon 65.21%, B.T.U. 14,385 B.T.U./lb. and F.S.I. 4 1/2.

D.D.H. BC-80-15

A. WELL COMPLETION REPORT

Location: - On a reopened (by Utah Mines Ltd.) Canfor Ltd. logging road 450 metres from its junction with an existing Canfor Ltd. logging road.
- U.T.M. Coordinates: 6,205,238m N x 544,829m E
- Coal Licence No. 3644

Elevation: 726.5 metres

Orientation: Vertical

Date Collared: May 21, 1980

Date Completed: May 23, 1980 Plugged: Yes - cemented

Overburden Depth: 107.29 metres

Casing Depth: 107.29 metres Casing Size: H.W. 4.5" (11.4cm) - recovered.

Final Depth: 122.53 metres

Formations Encountered: 0 to 107.29m Overburden
107.29m to 122.53m Gething Formation

Core Description By: J. Ridley

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Trojan	113.23m to 115.08m	1.85m	2.08m

Logs Run: Gamma, Density and Resistivity - by Utah Mines Ltd.

B. COMMENTS

Drill Site BC-80-15 was cleaned up, the mud sump refilled and the drill site and access road were recontoured after the removal of the drilling rig. The drill hole was sealed with cement in accordance with the instructions of the Chief Inspector of Mines. The drill site was seeded on May 27, 1980 and the access road was seeded on July 12, 1980, with the recommended grass seed mixture.

Below 107.29 metres of overburden, D.D.H. BC-80-15 penetrated 15.24 metres of Gething Formation sediments. The section cored is typical of the Gething Formation in the property area, consisting of sandstones, siltstones, mudstones and coal. These sediments occur as homogeneous beds and laminae or as inhomogeneous mixtures of one or more constituents (e.g. silty mudstone, sandy siltstone). The sediments are commonly interbedded or interlaminated, with individual beds seldom thicker than two metres. Sedimentary textures observed in the drill core include cross-bedding, load casts, rip-up clasts and worm burrows. The sandstone units cored in this hole are typically fine to coarse grained, salt and pepper in colour and often contained coaly streaks. These sandstones are commonly interlaminated with minor siltstone or mudstone. The mudstone units observed in the cored section are typically dark grey to black, carbonaceous and frequently contained minor siltstone or sandstone lenses and laminae. The siltstone units in the cored section are commonly dark grey to medium grey and occur as interbeds interlaminations with sandstone and mudstone. The sediments and sedimentary textures are typical of deposition in an aggrading alluvial-deltaic flood plain environment.

Three coal seams were cored in D.D.H. BC-80-15. Of these seams, only the Trojan seam was thick enough (1.85 metres gross thickness) to be removed for analysis. The Trojan seam contained two splits: the upper split was 0.05 metres thick and was composed of interlaminated coarse grained sandstone and medium grey siltstone and the lower split was 0.08 metres thick and composed of siltstone. The coal in the Trojan seam was shiny and cleated, with abundant vitrain.

Head analyses conducted on the Trojan seam (see Appendix II) show that the seam is a medium volatile bituminous coal. The proximate analysis of the sample on an as received basis is: 1.27% water, 18.74% Ash, 0.50% Sulphur, 24.39% Volatile Matter, 55.60% Fixed Carbon, 11,923 B.T.U./lb. and an F.S.I. of 1 1/2. An analysis of the sulphur forms in the sample shows that (Appendix II) of the 0.50% sulphur content, 92% is organic sulphur, 8% is pyritic sulphur and less than 1% occurs as sulphate. The Hardgrove Grindability of the sample is 60.

A 1.400 specific gravity separation of the Trojan seam produced a much improved product. At this specific gravity 77.85% (by weight) of the original sample was recovered in the float portion. Proximate analysis on the float portion provided the following data: 5.66% Ash, 0.60% Sulphur, 27.43% Volatile Matter, 66.91% Fixed Carbon, 14,469 B.T.U./lb. and an F.S.I. of approximately 4.

D.D.H. BC-80-16

A. WELL COMPLETION REPORT

Location: - On a reopened (by Utah Mines Ltd.) Utah Mines Ltd. exploration access road built during the 1979 exploration program 6,200 metres from its junction with the Canfor Ltd. Johnston Creek Forest Haul Road.
- U.T.M. Coordinates: 6,199,197m N x 540,228m E
- Coal Licence No. 3653

Elevation: 794 metres

Orientation: Vertical

Date Collared: May 23, 1980

Date Completed: May 27, 1980

Plugged: No - wooden surface plug set into casing.

Overburden Depth: 38.40 metres

Casing Depth: 38.40 metres

Casing Size: H.W. 4.5" (11.4cm) - unrecovered.

Final Depth: 203.91 metres

Formations Encountered: 0 to 38.40m Overburden
38.40m to 203.91m Moosebar Formation

Core Description By: P. Cowley

Coal Seams Sampled: None

Logs Run: None

B. COMMENTS

Drill site BC-80-16 was cleaned up, the mudsump refilled and the drill site recontoured after the removal of the drilling rig. The drill hole was not cemented as it did not penetrate into the coal-bearing Gething Formation. The drill site and the access road were seeded on July 4, 1980 with the recommended grass seed mixture.

Below 38.40 metres overburden, D.D.H. BC-80-16 penetrated 165.51 metres of Moosebar Formation sediments. The section cored consisted primarily of dark grey, blocky to rubbly, often weakly silty mudstones. A number of thin, medium grey siltstone laminae were cored and two Kaolinitized volcanic ash bands were observed in drill core from the section. The mudstones did not contain pyrite in significant quantities.

Bedding angles, measured from the vertical core axis, ranged from 37° to 46° with the steeper dips at the top of the hole. Fracturing and calcite healed fractures were observed throughout the section. There are four zones of intense fracturing in the cored section which may indicate the presence of faulting. The upper zone, from 50.29 metres to 69.95 metres, contained abundant fracturing which was healed by calcite and a 0.02 metre thick zone of possible fault gouge at 60.34 metres depth. The lower three zones, from 97.25 metres to 99.96 metres, from 194.41 metres to 194.59 metres and from 201.26 metres to 202.02 metres, contained abundant fractures, calcite and slickensides, but no fault gouge was noted.

The drill hole was terminated in the Moosebar Formation because of the steep dips of the rocks at depth. It was determined that the cost of drilling to the Gething Formation was prohibitively high for the return of information.

D.D.H. BC-80-17

A. WELL COMPLETION REPORT

Location: - On a log landing at the end of a Canfor Ltd. logging road still in driveable condition.
- U.T.M. Coordinates: 6,205,557m N x 545,207m E
- Coal Licence No. 3644

Elevation: 667 metres

Orientation: Vertical

Date Collared: May 24, 1980

Date Completed: May 25, 1980

Plugged: Yes - cemented

Overburden Depth: 40.84 metres

Casing Depth: 40.84 metres

Casing Size: H.W. 4.5" (11.4cm) - recovered.

Final Depth: 87.17 metres

Formations Encountered: 0 to 40.84m Overburden
40.84m to 87.17m Gething Formation

Core Description By: J. Ridley

Coal Seams Sampled: None

Logs Run: Gamma and Density - by Utah Mines Ltd.

B. COMMENTS

Diamond drill site BC-80-17 was located in a Canfor Ltd. log landing and required no clearing of trees or undergrowth for preparation. Upon the removal of the drilling rig, the site was cleaned, the mud sump refilled and the site was recontoured. The drill hole was cemented upon the completion of drilling in accordance with the instructions of the Chief Inspector of Mines. The drill site was sown with recommended grass seed mixture on May 29, 1980.

Below 40.84 metres of overburden, D.D.H. BC-80-17 penetrated 46.33 metres of Gething Formation sediments. The cored sedimentary sequence is typical of the Gething Formation in the property area, consisting of sandstones, siltstones, mudstones and coal. These rock types occur as homogeneous beds and laminae or as inhomogeneous mixtures of two or more constituents (e.g. silty sandstone, muddy siltstone).

The sandstone units cored in the drill hole are fine to very coarse grained, salt and pepper in colour and often contain coaly streaks and carbonaceous debris. They commonly contain minor siltstone and mudstone laminae and, in some units, rip-up clasts. The sandstone units are thicker, coarser grained and most abundant toward the top of the section, possibly representing channel sands. One sandstone unit, from 74.37 metres to 75.64 metres, contains pyrite nodules, possible indicative of marine origin. The mudstone units cored in D.D.H. BC-80-17 are dark grey to black, commonly carbonaceous, frequently contain thin (less than 0.01 metres) coal bands, and commonly contain minor sandstone and siltstone laminae.

Siltstone units observed in the cored section are typically dark to medium grey and most commonly occur as interlaminations with sandstone and mudstone. Sedimentary textures observed in the cored section include cross-bedding, convoluted bedding, ripple marks, rip-up clasts, worm burrows and load structures. The sediments and sedimentary textures observed in the drill core are indicative of deposition in an aggrading alluvial-deltaic flood plain environment.

Bedding angles, measured from the vertical core axis, ranged from 73° to 85° in D.D.H. BC-80-17. Some of the steeper dips may be inaccurate due to measurement of large scale foreset beds. Minor fracturing, calcite veinlets and slickensides were observed in the lower portion of the drill hole. There is no evidence which suggests any major movement along these surfaces, they are probably the result of minor movement in response to the folding of the rocks into the syncline which underlies the property.

Eight coal seams, ranging in thickness from 0.05 metres to 0.56 metres, were cored in D.D.H. BC-80-17. None of these seams were removed for analysis as they were considered to be too thin to be of economic interest. The coal seams cored are generally shiny, banded and well cleated with abundant vitrain.

D.D.H. BC-80-18

A. WELL COMPLETION REPORT

Location: - On a newly constructed access road (by Utah Mines Ltd.) extending 720 metres from a re-opened Canfor Ltd. logging road.
- U.T.M. Coordinates: 6,205,571m N x 545,853m E
- Coal Licence No. 3643

Elevation: 721 metres

Orientation: Vertical

Date Collared: May 26, 1980

Date Completed: May 28, 1980 Plugged: Yes - cemented

Overburden Depth: 100.28 metres

Casing Depth: 100.28 metres Casing Size: H.W. 4.5" (11.4cm) - recovered.

Final Depth: 148.13 metres

Formations Encountered: 0 to 100.28m Overburden
100.28m to 104.98m Moosebar Formation
104.98m to 148.13m Gething Formation

Core Description By: J. Ridley

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Superior	106.29m to 106.68m	0.39m	0.40m
2	Superior	106.99m to 107.55m	0.56m	0.56m
3	Trojan	131.86m to 133.93m	2.07m	2.10m

Logs Run: Gamma, Density and Resistivity - by Utah Mines Ltd.

B. COMMENTS

After the removal of the drilling rig, diamond drill site BC-80-18 was cleaned, the mud sump refilled and the drill site recontoured. The drill hole was sealed with cement in accordance with the instructions of the Chief Inspector of Mines. The drill site was seeded with the recommended grass seed mixture on May 29, 1980, the access road was seeded on June 1, 1980.

Below 100.28 metres of overburden, D.D.H. BC-80-18 penetrated 4.70 metres of Moosebar Formation sediments. These sediments were typical of the basal Moosebar Formation consisting of dark grey, rubbly to blocky, slightly silty, pyritic, glauconitic mudstones and the basal conglomerate. The basal conglomerate consisted of a poorly sorted mixture of sandstone and pebbles in a silty to muddy matrix. This conglomerate was cored between 104.30 metres and 104.98 metres depth below the collar. The base of the conglomerate is considered to be the contact between the Moosebar Formation and the Gething Formation.

43.15 metres of Gething Formation strata were cored in D.D.H. BC-80-18 below the Moosebar Formation. The sedimentary sequence cored is typical of the formation, consisting of sandstones, siltstones, mudstones, coal and inhomogeneous mixtures of these rock types (e.g. silty mudstone). Homogeneous units range in thickness from laminae to thick beds.

Sandstone units cored in D.D.H. BC-80-18 in the Gething Formation are generally fine to coarse grained, seldom massive with minor mudstone or siltstone laminae, salt and pepper in colour and often contain coaly streaks.

The mudstone units observed in the cored section are dark grey to black, frequently carbonaceous and commonly contain minor siltstone or sandstone laminae. Two mudstone units observed at the top of the cored Gething Formation section contain pyrite nodules and disseminations which indicate a marine influence at the time of deposition. Siltstone units in the cored section are medium to dark grey and are commonly interlaminated with sandstone and mudstone. Sedimentary textures observed in the drill core include cross-bedding, convoluted bedding, ripple marks and worm burrows. These sediments and sedimentary textures are indicative of deposition in an aggrading alluvial-deltaic flood plain environment.

Bedding angles, measured from the vertical core axis, range from 80° to 89° in D.D.H. BC-80-18. The steeper angles may have been measured on foreset beds and thus, they may be steeper than the actual dip of the beds. There are several instances of fracturing, calcite veining and slickensiding in the cored section. These are thought to represent minor movement of the rocks parallel to bedding surfaces in response to folding.

Four coal seams, ranging in thickness from 0.18 metres to 2.07 metres, were cored in D.D.H. BC-80-18. Of these, two seams, the Superior seam and the Trojan seam, were removed for analysis in three samples.

The Superior seam was a split seam with 0.31 metres of rock between the upper, 0.39 metre thick bench and the lower, 0.56 metre thick bench and thus was divided into two samples. The two benches of the Superior seam are very different in

composition. The upper bench is dull, banded coal with abundant clarain and durain containing abundant pyrite nodules and lenses. The lower bench is bright, banded coal which contains no pyrite. The pyrite content of the upper bench indicates a marine influence at the time of deposition. The Trojan seam contains three splits each of which are 0.04 metres thick and are composed of sandstone and siltstone. The coal seam itself is generally shiny and well cleated with abundant vitrain. Another seam in the cored section, from 122.88 metres to 123.06 metres, is also shiny and well cleated, but contains pyrite and silt at the top of the seam. This indicates a marine influence at the time of deposition.

Head analyses conducted on the coal core samples taken from D.D.H. BC-80-18 show considerable variation in the coal qualities of the samples. The two Superior seam samples are noticeably different in their proximate analyses. The upper bench (sample number 1) contained 10.31% sulphur, 19.64% ash, had a B.T.U. value of 11,780 B.T.U./lb. and a Free Swelling Index of 2 1/2 (see Appendix II). The high sulphur content of the seam is caused by the presence of pyrite. An analysis of the sulphur forms in the upper bench shows that 98% of the total sulphur content is in the form of pyritic sulphur, while only 1% occurs as organic sulphur and 1% as sulphate sulphur. The Hardgrove Grindability Index of the seam is 73, which is quite high, but may be due to the abundance of pyrite in the seam. The lower bench (sample number 2) contains only 0.95% sulphur and 10.96% ash, much lower than the upper bench. The Free Swelling Index of this bench is 7 1/2 and the calorific value is 13,569 B.T.U./lb. The sulphur forms in this bench are much different from the

upper bench. Of the total sulphur content of the bench, 2% occurs as pyritic sulphur, 97% as organic sulphur and less than 1% as sulphate sulphur. The Hardgrove Grindability of the bench is 66. The analyses of the properties of the two benches show that they were deposited under very dissimilar conditions. The Trojan seam proximate analyses show that the seam contains 16.04% ash, 0.50% sulphur, 25.89% volatile matter and 56.87% fixed carbon. The calorific value of the seam is 12,525 B.T.U./lb. and the Free Swelling Index is 1 1/2. Of the total sulphur content of the seam, 8% occurs as pyritic sulphur, 92% as organic sulphur and less than 1% as sulphate sulphur. The Hardgrove Grindability Index is 64. The head analyses show that the upper bench of the Superior Seam is a medium volatile bituminous coal, the lower bench is a high volatile B bituminous coal and the Trojan seam is a medium volatile bituminous coal.

1.400 specific gravity separations for the three samples show a marked increase in quality in the float fractions of each sample. At this specific gravity, the float fraction of the upper bench of the Superior Seam comprised 46.19% by weight of the original sample and the proximate analyses are: 6.67% ash, 2.75% sulphur, 30.82% volatile matter, 62.51% fixed carbon, 14,391 B.T.U./lb. and an F.S.I. of 6. The float fraction of the lower bench of the Superior seam comprised 81.64% by weight of the original sample with proximate analyses of: 3.26% ash, 0.85% sulphur, 36.27% volatile matter, 60.47% fixed carbon, 14,898 B.T.U./lb. and an F.S.I. of 7 1/2. The float fraction of the Trojan seam comprised 78.06% by weight of the original sample with proximate analyses of: 4.89% ash, 0.55% sulphur, 29.48% volatile matter, 65.63% fixed carbon, 14,709 B.T.U./lb. and an F.S.I. of 2 1/2.

D.D.H. BC-80-19

A. WELL COMPLETION REPORT

Location: - On a reopened (by Utah Mines Ltd.) Utah Mines Ltd. exploration access road built during the 1979 exploration program 4,950 metres from its junction with the Canfor Ltd. Johnston Creek Forest Haul Road.

- U.T.M. Coordinates: 6,200,159m N x 540,891.5m E
- Coal Licence No. 3652

Elevation: 774.5 metres

Orientation: Vertical

Date Collared: May 28, 1980

Date Completed: June 28, 1980 Plugged: Yes - cemented

Overburden Depth: 36.58 metres

Casing Depth: 36.58 metres Casing Size: H.W. 4.5" (11.4cm) - not recovered

Final Depth: 519.99 metres

Formations Encountered:

0 to 36.58m	Overburden
36.58m to 400.29m	Moosebar Formation
400.29m to 519.99m	Gething Formation

Core Description By: P. Cowley

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Superior	413.86m to 415.72m	1.86m	1.80m
2	-	424.62m to 425.50m	0.98m	1.00m
3	Trojan	433.40m to 436.53m	3.13m	3.00m
4	Titan	458.64m to 460.01m	1.37m	1.45m
5	Falls	481.66m to 483.09m	1.43m	1.20m
6	-	517.18m to 517.77m	0.59m	0.85m

Logs Run: Gamma, Density and Resistivity - by Utah Mines Ltd.

B. COMMENTS

During site preparation for D.D.H. BC-80-19 all felled timber was bucked into four foot lengths and buried. The access road to the drill site was constructed during the 1979 exploration program and only minor road work was needed to reopen the road. Upon the completion of drilling, the drill hole was cemented in accordance with the instructions of the Chief Inspector of Mines. After the removal of the drilling rig, the drill site and access road were cleaned and recontoured, with all leaning trees being felled, bucked and buried. Disturbed ground was seeded with the recommended grass seed mixture on July 4, 1980.

During the drilling of this hole, on June 7, 1980, at a depth of 449.88 metres the core barrel jammed at the base of the hole. All efforts to recover the core barrel failed, with 400 feet of broken wireline also lost in the hole, as well as a fishing tool.

The hole was abandoned until equipment for wedging could be acquired and the drilling rig was moved to a new hole (D.D.H. BC-80-24) on June 8, 1980. The drill was moved back onto the hole on June 22, 1980, a wedge was inserted into the hole and the hole was completed to a depth of 519.99 metres. Two clinometer acid tests were done at depths of 333.15 metres and 519.99 metres in the wedged hole with dips of 6° and 9° respectively. Thus, there is deviation from vertical in the core axis below the 449.88 metre depth in the drill hole (see descriptive lithologic log in Appendix I).

Below 36.58 metres of overburden, D.D.H. BC-80-19 penetrated 363.71 metres of Moosebar Formation sediments. These sediments are typical of the Moosebar Formation in the property area, consisting of dark grey to black, rubbly to blocky, slightly silty marine mudstones and a basal conglomeratic unit. There are several thin bands of Kaolinitized volcanic ash noted throughout the cored section as well as medium grey siltstone laminae. The basal portion of the cored section consists of increasingly pyritic and glauconitic mudstones and a basal conglomeratic sandstone. This basal unit is composed of chert and volcanic rock fragments in a poorly sorted sand mud matrix. The base of the conglomeratic unit is considered to be the contact between the Moosebar Formation and the underlying Gething Formation.

119.70 metres of Gething Formation sediments were penetrated in D.D.H. BC-80-19. The sedimentary sequence cored is typical of the formation, consisting of sandstones, siltstones, mudstones, coal and inhomogeneous mixtures of these rock types (e.g. silty sandstone). Individual units occur in varying thicknesses, from laminae to bed size.

Sandstone units cored in D.D.H. BC-80-19 in the Gething Formation are fine to medium grained, seldom massive with minor mudstone or siltstone laminae, salt and pepper in colour and often contain coaly streaks. The mudstone units observed in the cored section are dark grey to black, frequently carbonaceous and often contain sandstone or siltstone laminae. Siltstone units in the cored section are medium to dark grey, frequently contain carbonaceous debris and are commonly interbedded or interlaminated with sandstone and mudstone. A

siltstone unit at the top of the cored Gething Formation contains minor pyrite bands. This is indicative of marine influence at or shortly after the time of deposition. Sedimentary textures observed in the drill core include cross-bedding, convoluted bedding, graded bedding, rip-up clasts and worm burrows. These sediments and sedimentary textures are indicative of deposition in an aggrading alluvial-deltaic flood plain environment.

Bedding angles, measured from the core axis, range from 15° to 81°. The steeper dips occur in zones of postulated folding and, in general, the angle of dip decreases with depth. Many instances of fracturing, calcite veining, brecciation and slickensiding were noted in the drill core. At least one thrust fault is postulated to intersect the cored section.

Twenty coal seams, ranging in thickness from 0.05 metres to 3.13 metres, were cored in D.D.H. BC-80-19. Of these, six seams were removed for analyses. The appearance and character of the seams vary widely as is evident in the written descriptive log for this hole (Appendix I). The seams range from well cleated and vitrain rich to concoidally fractured canneloid coal. Recovery of the coal core ranged from 0% to 100%.

Head analyses conducted on the coal core samples show considerable variation in the qualities between the samples. Ash content of the samples range from 3.39% to 25.76% and are inversely proportional to the calorific values which range from 10,722 B.T.U./lb. to 14,731 B.T.U./lb. Sulphur contents range from 0.49% to 0.93% and Free Swelling Indices

vary from 1 1/2 to 7 1/2. On a dry, mineral matter free basis, the coal seams sampled vary from high volatile A bituminous coal to medium volatile bituminous coal.

1.400 specific gravity separations for the six samples show a marked increase in the quality of the float fractions of each sample as compared to the as received samples. At this specific gravity, the weight percentage of float fraction recovered for the samples ranged from 50.07% to 96.33% (see Appendix II). The calorific values, fixed carbon contents, volatile matter contents and Free Swelling Indices of all the samples were improved in the float fractions. Ash contents were decreased in every case and sulphur contents remained fairly constant.

D.D.H. BC-80-20

A. WELL COMPLETION REPORT

Location: - On a newly constructed access road (by Utah Mines Ltd.) extending from a reopened Canfor Ltd. logging road.
- U.T.M. Coordinates: 6,205,838m N x 546,210.5m E
- Coal Licence No. 3643

Elevation: 719 metres

Orientation: Vertical

Date Collared: May 29, 1980

Date Completed: May 31, 1980

Plugged: Yes - cemented

Overburden Depth: 106.68 metres

Casing Depth: 106.68 metres

Casing Size: H.W. 4.5" (11.4cm) - recovered

Final Depth: 151.18 metres

Formations Encountered: 0 to 106.68m Overburden
106.68m to 151.18m Gething Formation

Core Description By: J. Ridley

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Trojan	130.54m to 132.89m	2.35m	2.30m

Logs Run: Gamma, Density and Resistivity - by Utah Mines Ltd.

B. COMMENTS

After the removal of the drilling rig, diamond drill site BC-80-20 was cleaned , the mud sump refilled and the drill site and access road were recontoured. The drill hole was sealed with cement in accordance with the instructions of the Chief Inspector of Mines. The drill site and access road were seeded with the recommended grass seed mixture on June 1, 1980.

Below 106.68 metres of overburden, D.D.H. BC-80-20 cored 44.50 metres of upper Gething Formation sediments. The section cored consisted of sandstones, siltstones, mudstones, coal and inhomogeneous mixtures of these rock types (e.g. muddy siltstone). This section is typical of the upper Gething Formation in the property area.

Sandstone units observed in the cored section are typically very fine to coarse grained, seldom massive with minor mudstone or siltstone laminae, salt and pepper in colour and often contain coaly streaks and carbonaceous debris. Siltstone units in the cored section are medium grey and are commonly interbedded or interlaminated with mudstone or sandstone. One unit from 109.39 metres to 109.42 metres contains interlaminated siltstone and coal with pyrite throughout the unit. The pyrite in this unit indicates a marine influence at the time of deposition. The mudstone units cored in the section are dark grey to black, frequently carbonaceous and commonly contain minor siltstone or sandstone laminae. Sedimentary textures observed in the drill core include cross-bedding, convoluted bedding, ripple marks, rip-up clasts and worm burrows. The sediments and sedimentary textures are indicative of deposition in an aggrading alluvial-deltaic flood plain environment.

Bedding angles, measured from the vertical core axis, range from 80° to 89°. There is only one instance of calcite veining and slickensides observed in the cored section and there is no evidence of major faulting.

Nine coal seams, ranging in thickness from 0.04 metres to 2.35 metres, were cored in D.D.H. BC-80-20. Of these, only the Trojan seam (2.35 metres thick) was removed for analysis. The Trojan seam contains three splits of sandy ash (volcanic?) in the cored section. The coal seam itself is dull to bright banded and well cleated. In general, the coal seams cored in this hole are bright banded, well cleated and contain abundant vitrain.

Head analyses conducted on the Trojan seam show that it is a high volatile A bituminous coal. The ash content of the sample is high, 24.77%, due to the inclusion of the splits with the sample. For the seam on an air dried basis sulphur content is 0.48%, volatile matter content is 27.53%, fixed carbon content is 46.61%, the calorific value is 10,681 B.T.U./lb and the Free Swelling Index is 2. An analysis of the sulphur forms shows that the total sulphur content of the seam (0.48% by weight) is distributed as follows: 14.5% pyritic sulphur, 85.5% organic sulphur and less than 1% sulphate sulphur. The Hardgrove Grindability Index of the seam is 67.

A 1.400 specific gravity separation of the Trojan seam produced a much improved float product. At this specific gravity, 68.18% by weight of the original sample was recovered in the float fraction. The proximate analyses of the float fraction are: 5.39% ash, 0.57% sulphur, 27.96% volatile matter, 66.65% fixed carbon, 14,555 B.T.U./lb and a Free Swelling Index of 7 1/2.

D.D.H. BC-80-21

A. WELL COMPLETION REPORT

Location: - On a reopened (by Utah Mines Ltd.) Canfor Ltd. logging road.
- U.T.M. Coordinates: 6,205,281m N x 545,210.5m E
- Coal Licence No. 3644

Elevation: 722 metres

Orientation: Vertical

Date Collared: June 1, 1980

Date Completed: June 4, 1980 Plugged: Yes - cemented

Overburden Depth: 97.10 metres

Casing Depth: 99.06 metres Casing Size: H.W. 4.5" (11.4cm) - recovered

Final Depth: 169.47 metres

Formations Encountered: 0 to 97.10m Overburden
97.10m to 169.47m Gething Formation

Core Description By: J. Ridley

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Trojan	121.45m to 123.67m	2.22m	2.20m
2		143.79m to 144.35m	0.56m	0.58m

Logs Run: Gamma, Density and Resistivity - by Utah Mines Ltd.

B. COMMENTS

After the removal of the drilling rig, diamond drill site BC-80-21 was cleaned, the mud sump refilled and the drill site and access road were recontoured. The drill hole was sealed with cement in accordance with the instructions of the Chief Inspector of Mines. The drill site and access road were sown with the recommended grass seed mixture on July 12, 1980.

Below 97.10 metres of overburden, D.D.H. BC-80-21 penetrated 72.37 metres of upper Gething Formation sediments. The section cored is typical of the formation, consisting of sandstones, siltstones, mudstones, coal and inhomogeneous mixtures of these rock types. Sandstone units cored in this hole are typically very fine to medium grained, salt and pepper in colour, seldom massive with minor mudstone or sandstone laminae and frequently contain coaly streaks and carbonaceous debris. The mudstone units observed in the cored section are dark grey to black, frequently carbonaceous and commonly contain minor siltstone or sandstone laminae. The siltstone units cored in this hole are medium to dark grey and are commonly interbedded or interlaminated with mudstone or siltstone. Sedimentary textures observed in the drill core include cross-bedding, convoluted bedding, graded bedding, ripple marks and worm burrows. A band of shell fragments was noted in an interbedded mudstone and siltstone unit from 155.20 metres to 155.90 metres.

Bedding angles, measured from the vertical core axis, ranged from 78° to 85° with the steeper dips occurring in forset beds of crossbedded units. Very minor fracturing and calcite veining were noted in the drill core, but relatively little movement is postulated along these surfaces.

Five coal seams, ranging in thickness from 0.16 metres to 2.22 metres, were cored in D.D.H. BC-80-21. Of these, two seams, the Trojan and a sub-Trojan seam, were removed from the core for analysis. The Trojan seam is a dull banded, well cleated coal with three very fine grained sandstone splits. The sub-Trojan seam is a dull, metallic grey, moderately hard, unsplit coal. The other cored seams were generally dull to dull banded, poorly cleated seams. The first seam cored, from 100.15 metres to 100.31 metres, contained one 0.03 metre thick pyrite band which indicates a marine influence at the time of deposition.

Head analyses were conducted on the two seams sampled from drill core from D.D.H. BC-80-21 (see Appendix II). The Trojan seam and the sub-Trojan seam are both medium volatile bituminous coals. The proximate analyses for the Trojan seam are: 22.93% ash, 0.62% sulphur, 24.46% volatile matter, 51.44% fixed carbon, 11,348 B.T.U./lb. and an F.S.I. of 3 1/2. An analysis of the sulphur forms for the Trojan seam shows that of the 0.62% by weight total sulphur, 30.5% is pyritic sulphur, 69.5% is organic sulphur and less than 1% is sulphate sulphur. The proximate analyses for the sub-Trojan seam are: 10.86% ash, 0.95% sulphur, 25.12% volatile matter, 62.93% fixed carbon, 13,506 B.T.U./lb. and an F.S.I. of 7. An analysis of the sulphur forms for the sub-Trojan seam shows that the total 0.95% by weight sulphur content is divided into: 4% pyritic sulphur, 96% organic sulphur and less than 1% sulphate sulphur. The Hardgrove Grindability Indices for the Trojan and sub-Trojan seams are 65 and 67 respectively.

1.400 specific gravity separations of the Trojan and sub-Trojan seams produced float fractions possessing improved qualities in both cases. At this specific gravity, the float fraction of the Trojan seam sample comprised 71.63% by weight of the original sample. The proximate analyses for the Trojan seam float fraction are: 5.13% ash, 0.58% sulphur, 27.13% volatile matter, 67.74% fixed carbon, 14,515 B.T.U./lb and an F.S.I. of 5. The float fraction of the sub-Trojan seam comprised 84.37% by weight of the original sample with proximate analyses of: 2.31% ash, 0.97% sulphur, 26.71% volatile matter, 70.98% fixed carbon, 15,000 B.T.U./lb and an F.S.I. of 7 1/2.

D.D.H. BC-80-22

A. WELL COMPLETION

Location: - On a newly constructed access road (by Utah Mines Ltd.) 400 metres from its junction with the access road to D.D.H. BC-79-9, built during the 1979 exploration program by Utah Mines Ltd.
- U.T.M. Coordinates: 6,203,203m N x 542,280.5m E
- Coal Licence No. 3647

Elevation: 744.5 metres

Orientation: Vertical

Date Collared: June 4, 1980

Date Completed: June 7, 1980

Plugged: Yes - cemented

Overburden Depth: 68.50 metres

Casing Depth: 71.93 metres

Casing Size: H.W. 4.5" (11.4cm) - recovered

Final Depth: 114.91 metres

Formations Encountered:

0 to 68.50m	Overburden
68.50m to 76.10m	Moosebar Formation
76.10m to 114.91m	Gething Formation

Core Description By: D. N. Duncan and J. Ridley

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Superior	78.54m to 79.61m	1.07m	1.05m
2	Trojan	107.72m to 109.34m	1.62m	1.65m

Logs Run: Gamma, Density and Resistivity - by Utah Mines Ltd.

B. COMMENTS

After the removal of the drilling rig, drill site BC-80-22 was cleaned, the mud sump refilled and the site and access road were recontoured. The drill hole was sealed with cement in accordance with the instructions of the Chief Inspector of Mines. The drill site and access road were sown with the recommended grass seed mixture on July 4, 1980.

Below 68.50 metres of overburden, D.D.H. BC-80-22 penetrated 7.60 metres of basal Moosebar Formation sediments. The section cored is typical of the basal Moosebar Formation in the property area, consisting of dark grey to black, blocky to rubbly, pyritic, glauconitic mudstone and the basal conglomeratic unit. The conglomeratic unit consists of chert pebbles and rock fragments in a sandy mudstone matrix. The base of this conglomerate is considered to be the contact between the Moosebar Formation and the underlying Gething Formation.

38.81 metres of Gething Formation sediments were cored in the drill hole below the Moosebar Formation. The sediments cored are typical of the Gething Formation consisting of sandstones, siltstones, mudstones, coal and inhomogeneous mixtures of these rock types. The sandstone units cored in the drill hole are very fine grained to coarse grained, salt and pepper in colour, often contain coaly streaks and carbonaceous debris and are seldom massive with minor muddy or silty laminae. Siltstone units observed in the drill core are generally medium to dark grey and are commonly interlaminated or interbedded with sandstone or siltstone.

A siltstone unit from 77.68 metres to 78.54 metres contains (see Appendix I) pyrite laminae throughout the unit. This indicates a marine influence at the time of deposition. The mudstone units cored in the drill hole are dark grey to black, commonly carbonaceous and commonly contain minor sandstone or siltstone laminae and coal bands less than 0.01 metres in thickness. A mudstone unit from 83.41 metres to 83.47 metres also shows evidence of marine influence with abundant pyrite throughout the bed. Sedimentary textures observed in the drill core include cross-bedding, convoluted bedding, graded bedding, ripple marks, rip-up clasts and worm burrows. The sediments and sedimentary textures observed in this drill hole are indicative of deposition in an aggrading alluvial-deltaic flood plain environment.

Bedding angles, measured from the vertical core axis, range from 73° to 80°. There are several instances of fracturing and calcite veining in the section. The proximity of the drilled section to the structurally disturbed zone of the property is thought to be the cause of these structures (see Structural Geology section in this report).

Seven coal seams, ranging in thickness from 0.02 metres to 1.62 metres were cored in D.D.H. BC-80-22. Of these, two seams, the Superior seam and the Trojan seam, were removed from the core for analysis. The Superior seam cored in this hole contains one 0.05 metres thick pyritic mudstone split. The coal seam itself is dull banded at the top with increasing vitrain toward the base. The Superior seam is strongly pyritic with abundant laminae and nodules of pyrite throughout the seam. The abundance of pyrite in the seam indicates a marine influence at the time of deposition. The Trojan seam is

generally bright banded, well cleated coal containing abundant vitrain. Two splits were observed in the Trojan seam. The upper split is composed of fine to very coarse grained sandstone and is 0.05 metres thick. The lower split is divided into two units, a 0.04 metre thick coaly mudstone which overlies a 0.09 metre thick fine grained sandstone. The unsampled coal seams in the section are generally bright banded, well cleated and contain abundant vitrain. One canneloid coal was cored from 83.08 metres to 83.41 metres below the collar.

Head analyses were conducted on the Superior and Trojan seams. The resulting proximate analyses show that the Superior seam and the Trojan seam are high volatile A bituminous coals. The proximate analyses for the Superior seam are: 11.23% ash, 2.04% sulphur, 28.31% volatile matter, 59.31% fixed carbon, 13,20[illegible] B.T.U./lb. and an F.S.I. of 7. An analysis of the sulphur forms shows that, of the 2.04% (by weight) total sulphur content of the coal 92% is pyritic sulphur, 8% is organic sulphur and less than 1% is sulphate sulphur. The proximate analyses for the Trojan seam are: 26.74% ash, 0.86% sulphur, 26.46% volatile matter, 45.73% fixed carbon, 10,680 B.T.U./lb. and an F.S.I. of 7 1/2. The 0.86% (by weight) sulphur content is composed of 34% pyritic sulphur, 66% organic sulphur and less than 1% sulphate sulphur. The Hardgrove Grindability Indices for the Superior and Trojan seams are 72 and 74 respectively.

1.400 specific gravity separations of the Superior and Trojan seams produced float fractions possessing improved qualities in both cases. The float fraction of the Superior seam comprised 77.94% (by weight) of the original sample with the following proximate analyses: 3.53% ash, 1.07% sulphur, 30.88% volatile matter, 65.59% fixed carbon, 14,775 B.T.U./lb. and an F.S.I. of 7. The float fraction of the Trojan seam comprised 63.87%

(by weight) of the original sample with the following proximate analyses: 4.72% ash, 0.87% sulphur, 32.11% volatile matter, 63.17% fixed carbon, 14,679 B.T.U./lb. and an F.S.I. of 8.

D.D.H. BC-80-23

A. WELL COMPLETION REPORT

Location: - On a newly constructed access road (by Utah Mines Ltd.) 520 metres from its junction with drill site BC-79-9.
- U.T.M. Coordinates: 6,202,644.5m x 541,536m E
- Coal Licence No. 3647?

Elevation: 756.5 metres

Orientation: Vertical

Date Collared: June 8, 1980

Date Completed: June 13, 1980 Plugged: Yes - cemented

Overburden Depth: 99.36 metres

Casing Depth: 99.36 metres Casing Size: H.W. 4.5" (11.4cm) - recovered

Final Depth: 291.39 metres

Formations Encountered:

0 to 99.36m	Overburden
99.36m to 250.56m	Moosebar Formation
250.56m to 291.39m	Gething Formation

Core Description By: J. Ridley

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Superior	259.32m to 260.91m	1.59m	1.40m
2	Trojan	278.86m to 281.49m	2.63m	2.60m

Logs Run: Gamma, Density and Resistivity - by Utah Mines Ltd.

B. COMMENTS

D.D.H. BC-80-23 was sealed with cement upon the completion of drilling activities in accordance with the instructions of the Chief Inspector of Mines. After the removal of the drilling rig the drill site was cleaned up, the mud sump refilled and the drill site and access road were recontoured. The drill site and access road were sown with the recommended grass seed mixture on July 28, 1980.

Below 99.36 metres of overburden, D.D.H. BC-80-23 penetrated 151.20 metres of Moosebar Formation sediments. The sediments are primarily dark grey to black, blocky to rubbly, often weakly silty mudstone. A number of thin siltstone and sandstone beds were observed in the core with increasing abundance toward the base of the section. A thin siltstone layer at 242.22 metres contained mudstone rip-up clasts and appears to be turbiditic. Abundant pyrite nodules and disseminations were observed in the core and the pyrite content generally increases toward the base of the section. Volcanic ash bands were noted throughout the section. Glauconite was observed in the basal portion of the drill core and increases in abundance toward the base. The basal conglomeratic unit was cored from 250.22 metres to 250.56 metres. It is composed of chert pebbles and rock fragments in a sandy mudstone matrix. The base of this conglomerate is considered to be the contact between the Moosebar Formation and the Gething Formation.

40.83 metres of Gething Formation sediments were cored in D.D.H. BC-80-23 below the Moosebar-Gething contact. The

section cored consists of sandstones, siltstones, mudstones, coal and inhomogeneous mixtures of these rock types. Sandstone units observed in the core are very fine to medium grained, salt and pepper in colour, seldom massive with minor siltstone or mudstone laminae and often contain coaly streaks. The siltstone units cored are typically dark to medium grey and are commonly interlaminated or interbedded with sandstone or mudstone. Several siltstone and interlaminated siltstone and sandstone units toward the top of the section contain significant amounts of pyrite in nodular form. The mudstone units intersected in this drill hole are dark grey to black, frequently carbonaceous and commonly contain minor siltstone or sandstone laminae. Several mudstone units toward the top of the cored section contain pyrite nodules. The presence of pyrite nodules in units of the Gething Formation is indicative of a marine influence at the time at which these units were deposited.

Sedimentary textures observed in the cored section of the Gething Formation include cross-bedding, graded bedding, convoluted bedding, ripple marks, rip-up clasts, bivalve molds and worm burrows. Shell fragments were observed in a mudstone unit cored between 273.10 metres and 278.32 metres below the collar. These sedimentary textures and the actual sediments are indicative of deposition in an alluvial-deltaic flood plain environment. At least one marine incursion is recorded in the core as evidenced by the presence of pyrite and bivalve shell molds and fragments.

Bedding angles, measured from the vertical core axis, range from 75° to 88°. The general trend of bedding dips in the hole

is a shallowing of dip toward the base of the drill hole. Several zones of minor calcite veining, fracturing and slickensiding were noted throughout the drill core, but movement along these structures is considered to be minor. A zone of fault gouge was noted in the Moosebar Formation from 110.83 metres to 110.86 metres below the collar. This is postulated to be a relatively major fault which was intersected in several other diamond drill holes.

Eleven coal seams, ranging in thickness from 0.05 metres to 2.63 metres, were cored in D.D.H. BC-80-23. Of these, two seams, the Superior seam and the Trojan seam, were removed from the core for analysis. The Superior seam cored in this hole is dull banded and uncleated at the top of the seam and bright banded, well cleated and vitrainous toward the base of the seam. The Trojan seam is generally bright banded, well cleated coal containing abundant vitrain. Four splits were observed in the Trojan seam. The composition of the splits varies from fine grained sandstone to coaly mudstone. The lower split is 0.57 metres thick and grades from a coaly mudstone to a fine grained sandstone. The majority of the unsampled seams are bright banded, well cleated coal containing abundant vitrain. Three of these coal seams in the upper part of the cored Gething Formation section contain pyrite in bands and as nodules. This is indicative of a marine influence at the time of deposition.

Head analyses were conducted on the Superior and Trojan seams cored in D.D.H. BC-80-23. The Superior seam is a medium volatile bituminous coal and the Trojan seam is a high volatile A bituminous coal. The proximate analyses for the Trojan seam are: 31.93% ash, 0.63% sulphur, 23.58% volatile matter, 43.38% fixed carbon,

9,789 B.T.U./lb. and an F.S.I. of 6 1/2. The Superior seam is a much cleaner coal with the following proximate analyses: 2.35% ash, 0.67% sulphur, 25.43% volatile matter, 70.95% fixed carbon, 14,826 B.T.U./lb. and an F.S.I. of 6 1/2. An analysis of sulphur forms was conducted on both samples which shows (see Appendix II) that the majority of the sulphur in the seams occurs as pyritic sulphur. The Hardgrove Grindability Indices for the Superior and Trojan seams are 67 and 72 respectively.

1.400 specific gravity separations were conducted on the samples from both the Superior and Trojan seams. The proximate analyses for the float fraction of the Superior seam show little improvement over the as received results: 1.81% ash, 0.73% sulphur, 26.12% volatile matter, 71.97% fixed carbon, 15,137 B.T.U./lb. and an F.S.I. of 6. The float fraction comprises 98.06% (by weight) of the original sample for the Superior seam. The float fraction of the Trojan seam comprises 52.92% (by weight) of the original sample. The proximate analyses for the float fraction are: 5.06% ash, 0.84% sulphur, 29.92% volatile matter, 65.02% fixed carbon, 14,804 B.T.U./lb. and an F.S.I. of 8.

D.D.H. BC-80-24

A. WELL COMPLETION REPORT

Location: - On a newly constructed access road (by Utah Mines Ltd.) 420m from its junction with the access road, constructed during the 1979 exploration program (by Utah Mines Ltd.), to drill site BC-79-11.
- U.T.M. Coordinates: 6,201,389.5m x 541,336m E
- Coal Licence No. 3650

Elevation: 777.5 metres

Orientation: Vertical

Date Collared: June 8, 1980

Date Completed: June 19, 1980 Plugged: No

Overburden Depth: 57.91 metres

Casing Depth: 57.91 metres Casing Size: H.W.4.5" (11.4cm)- 40 feet (12.19m) recovered

Final Depth: 514.50 metres

Formations Encountered:

0 to 57.91m	Overburden
57.91m to 361.30m	Moosebar Formation
361.30m to 514.50m	Gething Formation

Core Description By: P. Cowley

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Superior	379.15m to 380.49m	1.34m	1.90m
2	Trojan	396.54m to 399.20m	2.66m	2.70m
3	Falls	445.88m to 446.53m	0.65m	1.35m
4		480.97m to 482.19m	1.22m	1.05m
5		494.49m to 495.60m	1.11m	0.60m
6		496.18m to 498.97m	2.79m	2.80m

Logs Run: Gamma and Density - by Utah Mines Ltd.

B. COMMENTS

After the removal of the drilling rig the drill site was cleaned up, the mud sump refilled and the drill site and access road were recontoured. The hole was not cemented as the casing broke at a depth of 12.19 metres. It was impossible to put the rods back down the hole in order that cement could be pumped into the hole at the depth of the coal bearing formation. There was no noticeable gas or water flow from the drill hole. The drill site and access road were sown with the recommended grass seed mixture on July 5, 1980.

Below 57.91 metres of overburden, D.D.H. BC-80-24 penetrated 303.39 metres of Moosebar Formation sediments. The cored section consists primarily of dark grey to black, blocky to rubbly, often weakly silty mudstones. Numerous kaolinitized volcanic ash bands, ranging in thickness from 0.01 metres to 0.03 metres, were cored throughout the section. Several thin sandstone and siltstone bands were penetrated in the formation. Glauconitic mudstones were observed throughout the section, but the glauconite content is highest at the base of the section. Pyrite nodules are present in abundance in the basal portion of

the formation with minor disseminations occurring throughout the section. The basal conglomeratic unit, consisting of chert pebbles and rock fragments in a sandy siltstone matrix, was cored between 360.14 metres and 361.30 metres. The base of this conglomerate is considered to be the contact between the Moosebar Formation and the Gething Formation.

153.20 metres of upper Gething Formation sediments were cored in D.D.H. BC-80-24 below the Moosebar-Gething contact. The cored section consists of sandstones, siltstones, mudstones, coal and inhomogeneous mixtures of these components. The sandstone units cored in the section are fine to medium grained, salt and pepper to light grey in colour, seldom massive with minor siltstone and mudstone laminae and often contain coaly streaks. Siltstone units observed in the core are commonly medium grey and interlaminated with sandstone or mudstone. The mudstone units penetrated in this hole are dark grey to black, frequently carbonaceous and commonly contain minor siltstone or sandstone laminae. Sedimentary textures observed in the cored section include cross-bedding, graded bedding, convoluted bedding, rip-up clasts and worm burrows.

Bedding angles, measured from the vertical core axis, range from 35° to 77°. The steepest angles were measured in a fault zone from 367.95 metres to 377.03 metres below the collar. This fault zone contains highly broken sandstone with abundant slickensides, fractures, calcite filled fractures and vuggy calcite veins. Numerous other zones of movement were observed in the section, but they are considered to be minor faults in response to the compressional forces involved in the folding of the syncline.

Nineteen coal seams, ranging in thickness from 0.07 metres to 2.79 metres, were cored in the Gething Formation. Of these, six seams were removed from the core for analysis. The analytical results for the six samples are presented in this report in Appendix II. The coal seams cored in this hole vary in composition and appearance, but are generally dull banded, poorly cleated coals containing abundant clarain and durain. Two coal seams, from 361.49 metres to 361.69 metres and from 410.93 metres to 411.40 metres, contain minor amounts of pyrite in lenses and as nodules. These seams are thought to have been influenced by marine conditions at the time of deposition.

Head analyses were conducted on the six coal seams sampled from D.D.H. BC-80-24. The seams range from high volatile A bituminous to medium volatile bituminous coal. The proximate analyses of the samples show wide variation in quality. Ash contents range from 2.21% to 35.86%, calorific values vary from 9,315 B.T.U./lb. to 15,048 B.T.U./lb., fixed carbon range from 41.26% to 74.21% and Free Swelling Indices vary from 1 to 7 1/2. The sulphur contents of the seams are low, with a range of 0.55% to 0.78%, and an analysis of the sulphur forms (Appendic II) shows that organic sulphur is the major constituent in all cases. The Hardgrove Grindability Indices of the six samples vary from 61 to 74.

A 1.400 specific gravity separation conducted on four of the six samples produced a higher quality float fraction. Two of the samples, numbers three and five, contain very low ash and at a specific gravity of 1.350 the float fractions comprise over 90% of the sample and no higher density fractions were attempted. The results of the gravity separations are included

in Appendix II of this report. In general, ash contents are lower in the float fractions, sulphur contents are fairly stable and all other parameters increase in value.

D.D.H. BC-80-25

A. WELL COMPLETION REPORT

Location: - On a newly constructed access road (by Utah Mines Ltd.) 970 metres from its junction with the drill site BC-80-23.
- U.T.M. Coordinates: 6,202,258.5m N x 540,682m E
- Coal Licence No. 3650

Elevation: 771 metres

Orientation: Vertical

Date Collared: June 14, 1980

Date Completed: June 19, 1980 Plugged: Yes - cemented

Overburden Depth: 70.70 metres

Casing Depth: 73.15 metres Casing Size: H.W. 4.5" (11.4cm) - recovered

Final Depth: 242.62 metres

Formations Encountered: 0 to 70.70m Overburden
70.70m to 242.62m Gething Formation

Core Description By: D. N. Duncan and P. Cowley

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1		88.36m to 89.84m	1.48m	1.50m
2	Trojan	103.64m to 104.87m	1.23m	1.20m
3	Titan	117.45m to 119.80m	2.35m	2.20m
4	Falls	133.37m to 135.59m	2.22m	2.20m

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
5		150.59m to 151.18m	0.59m	0.85m
6		200.25m to 201.17m	0.92m	2.00m
7		216.14m to 217.67m	1.53m	1.57m

Logs Run: Gamma, Density and Resistivity - by Utah Mines Ltd.

B. COMMENTS

D.D.H. BC-80-25 was sealed with cement upon the completion of drilling activities in accordance with the instructions of the Chief Inspector of Mines. After the removal of the drilling rig, the drill site was cleaned, the mud sump re-filled and the drill site and access road were recontoured. The drill site and access road were sown with the recommended grass seed mixture on June 26, 1980 and June 28, 1980.

Below 70.70 metres of overburden, D.D.H. BC-80-25 cored 171.92 metres of Gething Formation sediments. The cored section consists of sandstones, mudstones, siltstones, coal and inhomogeneous mixtures of these rock types (e.g. muddy siltstone). The sediments observed in the core are typical of the Gething Formation in the property area. The contact between the Gething Formation and the Moosebar Formation was not observed in the core, but the characteristics of the sediments indicate that the cored section is upper Gething Formation. One mudstone unit from 77.67 metres to 77.81 metres below the collar contains abundant bands of pyrite. This has been observed in other diamond drill holes on the property in mudstone units very close to the Moosebar-Gething contact. The sediments and sedimentary textures observed in the core indicate an alluvial-deltaic flood plain environment at the time of deposition. A minor, short lived marine transgression accounts for the presence of pyrite in the mudstone unit.

Bedding angles, measured from the vertical core axis, range from 10° to 76°, with an average dip of approximately 75°. The steeply dipping units occur in and around a fault zone. This fault zone extends from 195.68 metres to 207.04 metres below the collar. In this zone, the rocks are highly fractured, with abundant slickensides and calcite veins. This fault is postulated to be one of the major thrust faults on the property (see the geology map and figure 9, both in the map pocket). The steepening of dips in the rock units is a result of folding in response to movement along the thrust fault. Minor fracturing and calcite veining occurs in other parts of the cored section, but are not indicative of major movement along a fault.

Twenty-seven coal seams, ranging in thickness from 0.04 metres to 2.35 metres, were cored in D.D.H. BC-80-25. The seams vary in composition from canneloid coal to bright, highly vitrainous coal. The majority of the seams are bright banded coal containing abundant vitrain. One seam, from 95.25 metres to 95.29 metres, contains abundant laminae of pyrite. A marine influence at the time of deposition is postulated as a cause for the high sulphide content of this seam. Seven of the coal seams cored in the section were removed for analysis.

Head analyses conducted on the seven coal core samples from D.D.H. BC-80-25 show considerable variation in the proximate analyses. Ash contents range from 9.50% to 37.40%, calorific values vary from 8,902 B.T.U./lb. to 13,520 B.T.U./lb., fixed carbon ranges from 39.40% to 62.72% and Free Swelling Indices vary from 1 to 7 (all the analyses are on an air dry basis).

The sulphur contents of the seams are low, from 0.53% to 0.88%, with the vast majority occurring as organic sulphur. Hardgrove Grindability Indices, conducted on five of the seven samples, range from 49 to 65. Samples number two and four are high volatile A bituminous coal and the remainder of the samples are medium volatile bituminous coal.

1.400 specific gravity separations were conducted on all the samples except for sample number six. Sample number six was not examined at a specific gravity higher than 1.350 where 87.99% (by weight) of the original sample was recovered in the float fraction. For the samples which were separated at 1.400 specific gravity, float fraction recoveries ranged from 4 . 92% to 87.87% (by weight) of the original sample. In every case, the float fractions show improved quality, with lower ash content, higher fixed carbon content, higher calorific values and higher Free Swelling Indices. The sulphur content of the float fractions does not increase or decrease by a significant amount.

D.D.H. BC-80-26

A. WELL COMPLETION

Location: - On a newly constructed access road (by Utah Mines Ltd.) 700 metres from its junction with drill site BC-79-10.
- U.T.M. Coordinates: 6,200,535.5m N x 539,971.5m E
- Coal Licence No. 3653

Elevation: 798.5 metres

Orientation: Vertical

Date Collared: June 20, 1980

Date Completed: June 22, 1980 Plugged: Yes - cemented

Overburden Depth: 37.80 metres

Casing Depth: 42.98 metres Casing Size: H.W. 4.5" (11.4cm) - unrecovered

Final Depth: 102.41 metres

Formations Encountered: 0 to 37.80m Overburden
37.80m to 102.41m Gething Formation

Core Description By: P. Cowley

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Trojan	78.92m to 80.34m	1.42m	1.10m
2	Titan	95.84m to 98.05m	2.21m	2.10m

Logs Run: Gamma, Density and Resistivity - by Utah Mines Ltd.

B. COMMENTS

D.D.H. BC-80-26 was sealed with cement upon the completion of drilling activities in accordance with the instructions of the Chief Inspector of Mines. After the removal of the drilling rig the drill site was cleaned, the mud sump was refilled and the drill site and access road were recontoured. All disturbed ground was sown with the recommended grass seed mixture on July 4, 1980.

Below 37.80 metres of overburden D.D.H. BC-80-26 penetrated 64.61 metres of upper Gething Formation sediments. The cored section consists of sandstones, siltstones, mudstones, coal and inhomogeneous mixtures of these rock types. The sediments and the sedimentary textures observed in the core are typical of the Gething Formation in the property area. The sediments and textures are indicative of deposition in an alluvial-deltaic flood plain environment.

Bedding angles, measured from the vertical core axis, range from 39° to 60° and the average angle is approximately 50°. The 60° angle may have been measured on a foreset bed and thus, it may be too shallow. Bedding angles show a general tendency to increase with depth. No fracturing, folding, faulting or veining was noted in the drilled section.

Four coal seams, ranging in thickness from 0.24 metres to 2.21 metres, were cored in D.D.H. BC-80-26. These seams are generally bright banded in appearance, well cleated and contain considerable amounts of vitrain. Two of the cored seams, the Trojan seam and the Titan seam, were removed from the core for analysis.

Head analyses were conducted on the two coal samples taken from D.D.H. BC-80-26. The proximate analyses show that the Trojan seam is a high volatile A bituminous coal and the Titan seam is a medium volatile bituminous coal. The proximate analyses for the Trojan seam (see Appendix II of this report) show that while the seam has a low ash content (relative to samples of the seam from other drill holes on the property) it is a high volatile coal with a low sulphur content, which is typical for the Trojan seam in the property area. The Titan seam has a low sulphur content, a relatively low ash content and an F.S.I. of only 1 1/2. The Free Swelling Index for the Trojan seam is 8 1/2. An analysis of the sulphur forms for the two seams shows that the majority of the sulphur is in the form of organic sulphur. The Hardgrove Grindability Indices for the Trojan and Titan seams are 63 and 59 respectively.

A 1.350 specific gravity separation of the Trojan seam sample produced a higher quality float product. The ash content of the seam is reduced markedly, the calorific value and fixed carbon content are increased and the Free Swelling Index and sulphur content remain virtually the same. Of the total initial Trojan sample 86.89% (by weight) was recovered in the float fraction. A 1.400 specific gravity separation was conducted for the Titan seam and also yielded an improved product. The ash content of the seam is reduced, the calorific value and fixed carbon content are increased and the sulphur content and Free Swelling Index are relatively unchanged.

D.D.H. BC-80-27

A. WELL COMPLETION REPORT

Location: - On a newly constructed access road (by Utah Mines Ltd.) 590 metres from its junction with the Utah Mines Ltd. Dowling Creek Road.
- U.T.M. Coordinates: 6,201,622m N x 540,255.5m E
- Coal Licence No. 3651

Elevation: 775 metres

Orientation: Vertical

Date Collared: June 20, 1980

Date Completed: June 24, 1980 Plugged: Yes - cemented

Overburden Depth: 64.01 metres

Casing Depth: 64.01 metres Casing Size: H.W. 4.5" (11.4cm) - recovered

Final Depth: 199.95 metres

Formations Encountered: 0 to 64.01m Overburden
64.01m to 199.95m Gething Formation

Core Description By: P. Cowley and D. N. Duncan

Coal Seams Sampled:

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
1	Superior	71.00m to 72.33m	1.33m	1.35m
2	Trojan	111.40m to 113.02m	1.62m	0.70m
3	Titan	124.70m to 127.10m	2.40m	2.40m
4	Falls	149.30m to 150.81m	1.51m	1.40m
5		175.33m to 176.32m	0.99m	0.95m

Sample No.	Seam Name	Interval	Thickness Core	Thickness Density Log
6		180.44m to 181.11m	0.67m	0.70m
7		192.95m to 194.20m	1.25m	1.60m
8		196.90m to 197.48m	0.58m	0.50m

Logs Run: Gamma, Density and Resistivity - by Utah Mines Ltd.

B. COMMENTS

D.D.H. BC-80-27 was sealed with cement upon the completion of drilling activities in accordance with the instructions of the Chief Inspector of Mines. After the removal of the drilling rig the drill site was cleaned, the mud sump was refilled and the drill site and access road were recontoured. All disturbed ground was sown with the recommended grass seed mixture on August 15, 1980.

Below 64.01 metres of overburden D.D.H. BC-80-27 penetrated 135.94 metres of upper Gething Formation sediments. The section cored consists of sandstones, siltstones, mudstones, coal and inhomogeneous mixtures of these rock types. The sediments and sedimentary textures observed in the core are typical of the Gething Formation in the property area. Two units were observed which contain pyrite. An interlaminated sandstone and siltstone unit, from 69.06 metres to 70.36 metres below the collar, contains a one centimetre thick pyrite band at a depth of 69.41 metres. An interlaminated mudstone and siltstone unit, from 185.44 metres to 188.63 metres below the collar, also contains pyrite, but in nodular form. These pyritic units suggest brief transgressions of marine conditions or near-marine conditions at the time of deposition. The sediments and textures observed in the drill core are indicative of deposition in an alluvial-deltaic flood plain environment.

Bedding angles, measured from the vertical core axis, range from 80° to 90°. A zone of fracturing and calcite veining from 81.43 metres to 99.36 metres suggests the presence of a thrust fault. No appreciable amount of folding was observed in the core in response to this thrust fault.

Thirty-two coal seams, ranging in thickness from 0.02 metres to 2.40 metres, were cored in D.D.H. BC-80-27. The seams have compositions varying from canneloid to bright, highly vitrainous coal. The majority of the coal seams are bright banded, well cleated coal containing considerable amounts of vitrain. Eight of the coal seams cored were removed for analysis.

Head analyses conducted on the eight coal core samples from D.D.H. BC-80-27 show considerable variation in the proximate analyses. Ash contents range from 4.31% to 19.20%, calorific values vary from 11,358 B.T.U./lb. to 14,460 B.T.U./lb., fixed carbon ranges from 51.54% to 67.63% and Free Swelling Indices vary from 2 1/2 to 8. The sulphur contents of the seams are low, from 0.64% to 0.96%, with the majority of the sulphur occurring in the form of organic sulphur. Hardgrove Grindability Indices range from 50 to 63. Sample number six is a high volatile A bituminous coal and the remainder of the samples are medium volatile bituminous coal.

1.400 specific gravity separations were conducted on all the samples. Float fraction recoveries for the samples ranged from 63.61% to 95.43% (by weight) of the original samples. In every case, the float fractions show improved quality, with lower ash contents and higher fixed carbon contents, calorific values and Free Swelling Indices. The sulphur content of the float fractions does not increase or decrease by a significant amount.

ROTARY DRILL HOLE PROGRAM

A limited rotary drilling program was conducted in the northern portion of the Bri-Dowling Creek Property, on Coal Licences 3643, 3644, 3645 and 3647, during the 1980 exploration program (see geology map in the map pocket). The objects of this program were to accurately determine the overburden thickness, to locate the Trojan coal seam subcrop and using the above information, to locate potential underground entry sites into the Trojan seam. A total of 307.84 metres (1,010 feet) of rotary drilling were completed in thirteen holes. Two separate drilling rigs were used during the program. Both of the drills were Fahling Model 1200 conventional rotary rigs, but one was mounted on a Nodwell tracked vehicle and the other was mounted on a tandem truck.

Of the 13 rotary holes drilled, six penetrated into Gething Formation sediments. These holes are R.D.H. BC-80-1, BC-80-6, BC-80-8, BC-80-10, BC-80-12 and BC-80-13. The remainder of the holes were abandoned when the overburden depth was too great or when the intersection of the Trojan seam was considered to be unlikely. The lithologic logs for the rotary drill holes are bound in Appendix III of this report.

The Trojan seam was not penetrated in any of the rotary holes drilled. In most of the drilling area, overburden depths were too great to warrant exploration for the seam. Since the object of the program was to find potential entry sites into the Trojan seam, areas with greater than 15 metres of overburden were considered unsuitable for an entry.

The drilling did provide information on the subsurface bedrock topography. As indicated by the drilling, the bedrock surface rises in elevation from east to west, in the area drilled, with a corresponding reduction of overburden thickness. The depth to bedrock ranges from 67.06 metres in R.D.H. BC-80-1 to 3.05 metres in R.D.H. BC-80-12. R.D.H. BC-80-13 was drilled at a considerable distance from the other rotary holes, but the actual bedrock surface elevation is lower in this hole than in R.D.H. BC-80-1, which follows the east to west pattern.

The Trojan seam is not considered to subcrop at accessable depths in the area drilled (see figure 24 and the geology map in the map pocket), with the exception of the area around R.D.H. BC-80-13. The area of extensive rotary drilling (i.e. R.D.H. BC-80-1 to BC-80-12 inclusive) is considered to have no potential for an underground entry site. The area in the vicinity of R.D.H. BC-80-13 is still considered to have some potential for entry into the Trojan seam. More drilling is needed, however, to determine the possibility of entry into the seam in this area.

METHANE GAS TESTING

The determination of the methane gas content of the coal seams of the Bri-Dowling Creek Property was considered to be an integral part of the exploration program. The data collected will be extremely valuable in the determination of ventilation problems in any future underground mining plans. A total of 21 coal core samples were analysed in the field for methane gas content. These samples were taken from diamond drill holes BC-80-14, BC-80-17, BC-80-18, BC-80-19, BC-80-20, BC-80-21, BC-80-22, BC-80-23, BC-80-25 and BC-80-27.

The technique used in the calculation of the methane gas content of the coal core samples is described in detail in U.S. Department of the Interior, Bureau of Mines R.I. 8043, 1975. Briefly, the procedure consists of the following steps:

(1) Record the time at which the cored coal sample is started out of the drill hole (i.e. the time at which the pulling of the core barrel out of the bottom of the hole begins).
(2) Record the time at which the cored coal sample reaches the surface.
(3) Place the sample into an airtight container and record the time at which the container is sealed.
(4) Take the container to the measurement laboratory and set up the measurement apparatus as shown in figure 16. The sample should be weighed before the beginning of the degassification measurements.
(5) Initial readings are taken every 15 minutes or when the pressure inside the container increases above nine pounds per square inch. After the first two or three hours, the gas is released at a lower rate and the sampling time interval can be increased.

(6) Data from the testing are recorded as is shown in Appendix IV A of this report.
(7) Calculate lost gas curves using the data as is shown in Appendix IV B of this report.
(8) The measurements of desorbing gas are terminated when the amount of gas released decreases to zero or to a negligible amount over a one day period.

The calculation of "lost" gas is a simple procedure. The initial degassification curve (see Appendix IV B of this report) is extended back to time zero and the value of gas content on the ordinate at this time is the "lost" gas volume. Time zero is the time at which the coal sample begins to give off gas, which is when the sample is one half of the way out of the drill hole (when drilling with water or mud). The degassification data and lost gas graphs for individual coal samples are bound in this report in Appendix IV A and Appendix IV B respectively.

The "residual" gas content of each sample is calculated by using the graph shown in figure 17 , page 102. The combined desorbed gas and lost gas total is plotted on the y-axis and the residual gas content is determined from either the friable or blocky coal curve. The fixed carbon content and Hardgrove Grindability Index of the sample determine the friability of the coal sample (see figure 18 , page 103 and figure 19 , page 103). The gas content of each coal sample is calculated by adding the "desorbed" gas, "lost" gas and "residual" gas totals together and dividing by the sample weight (see data for each coal sample in Appendix IV A).

The degassification data for the Superior coal seam (see Table 3 , page 105) shows an interesting trend. Samples from drill holes where the seam is at considerable (greater than 200 metres) depth from the surface are very gaseous, containing up to 18.77 cubic centimetres of gas per gram of coal. Samples taken from drill holes

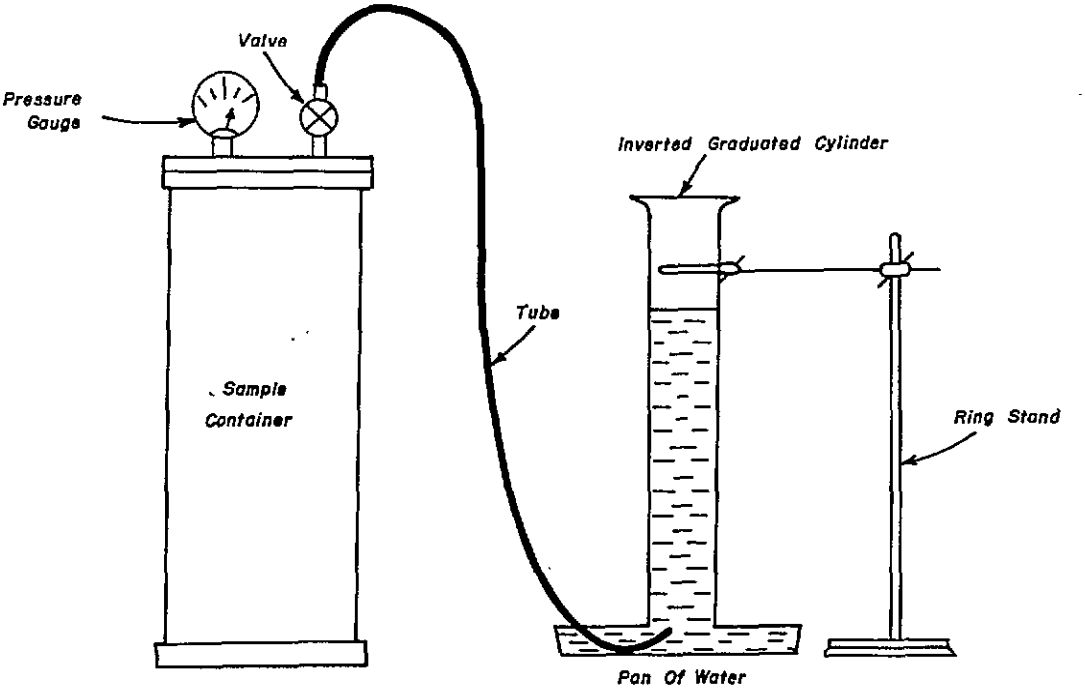


FIGURE – 16 Diagram Of Desorbtion Equipment

where the seam is at shallower depths contain minor amounts of gas. The coal seam is friable in all the drill hole samples examined and the proximate analyses of the samples are very similar. The one factor which seems to determine the gas content of the Superior seam is the depth of the seam below the surface.

The Trojan seam degassification data (Table 3, page 105) show that it is not a gaseous coal. The gas contents of the samples are low and do not correlate significantly with the depth of the seam below the surface. The gas content of the deepest sample was only 2.88 cm^3/gram at a depth of 397.56 metres.

Three samples of the Titan coal seam, from three diamond drill holes, were tested for methane gas content (see Table 3, page 105). The Titan seam samples show the same gas content to depth relationship as the Superior seam samples. The sample from D.D.H. BC-80-19

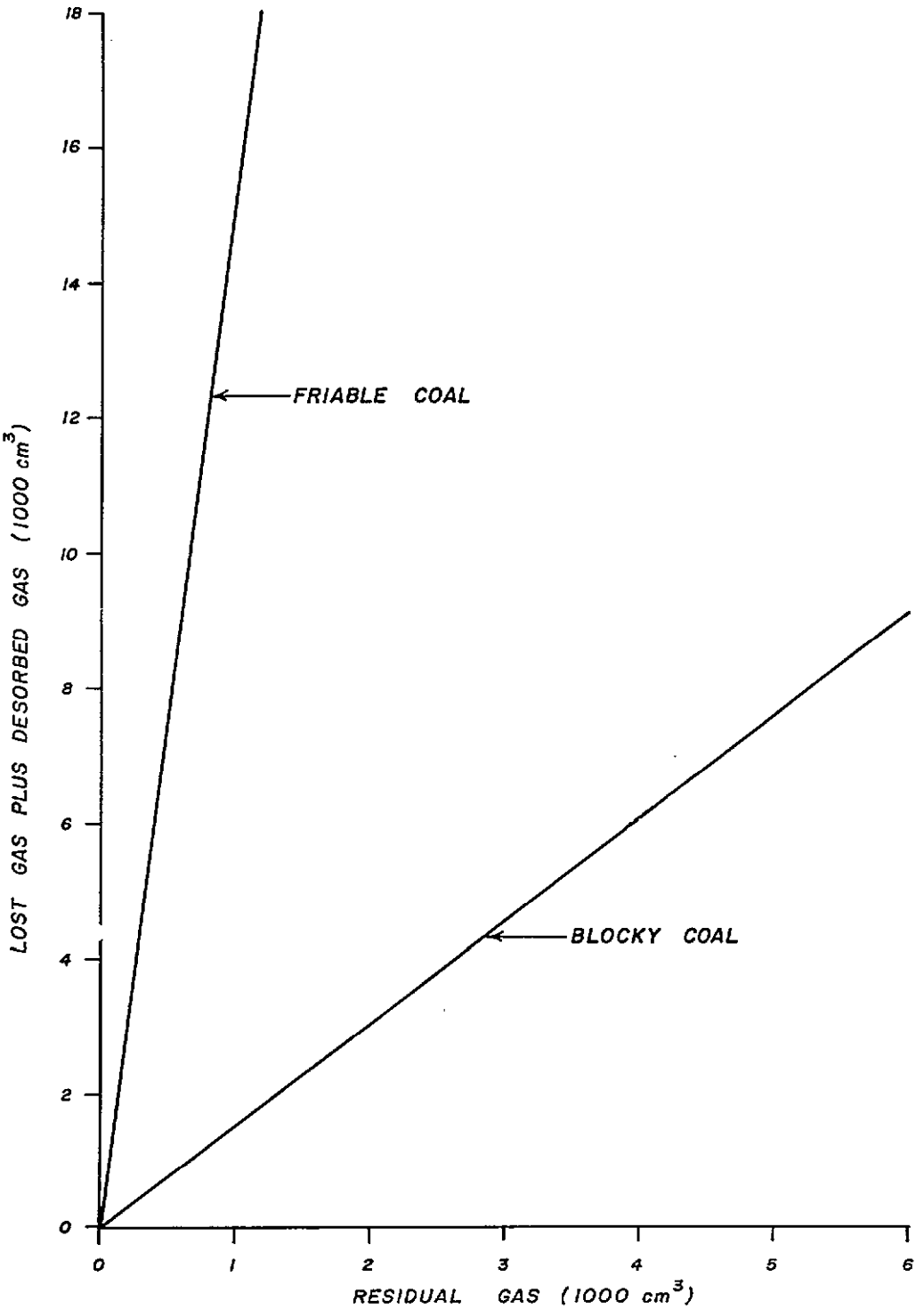


FIGURE – 17

"Lost" gas plus desorbed gas versus "residual" gas

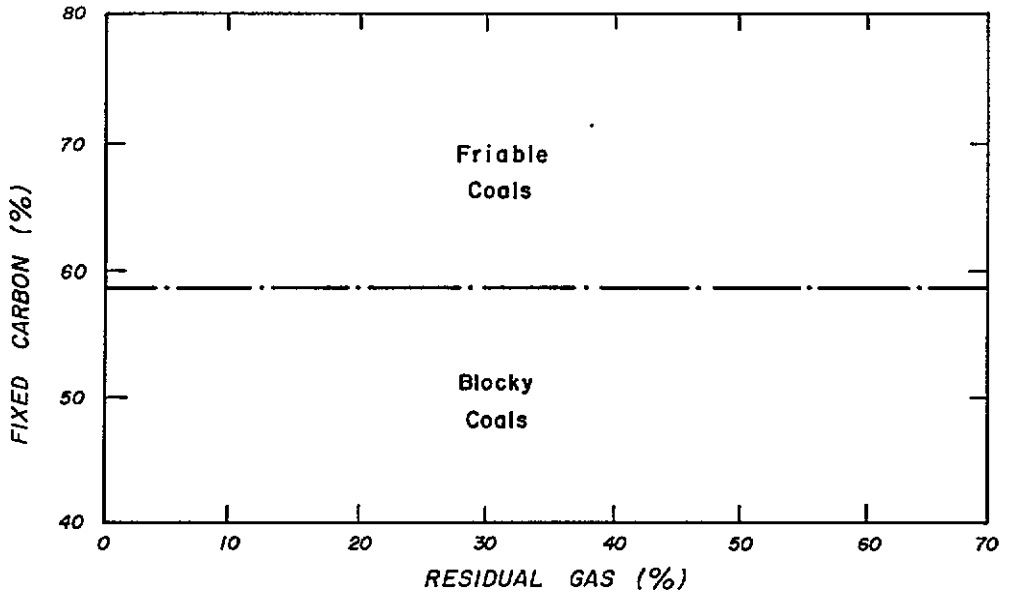


FIGURE – 18 Percent "residual" gas versus fixed carbon percent.

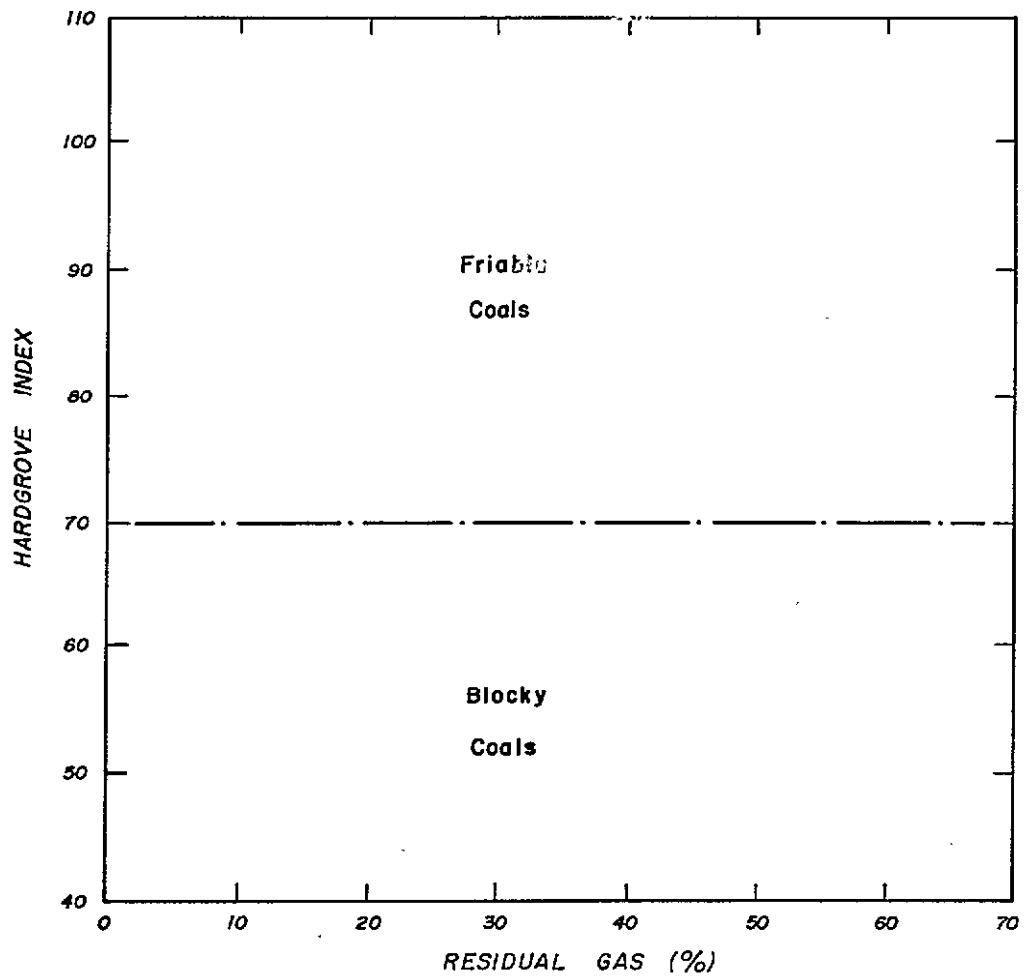


FIGURE – 19 Percent "residual" gas versus Hardgrove, index.

contained 19.75 cubic centimetres of methane gas per gram of coal, which is the highest gas content of all the samples taken. The Titan seam in this sample is a blocky coal with a high "residual" gas content. This sample is also the deepest sample tested and was cored at a depth of 459.03 metres below the surface. The lowest gas content, 0.14cm^3/gram, of all the samples was from D.D.H. BC-80-27 and it was also sampled from the Titan seam.

Only one sample was taken of the Falls coal seam. This sample was cored in D.D.H. BC-80-27 at a depth of 150.61 metres. The seam is a friable coal and has a gas content of 0.73 cubic centimetres per gram of coal.

The methane gas analyses show that there is considerable variation in the gas content of samples taken from different coal seams and of samples taken from the same seam at different locations and depths. There is a general correlation between the depth at which a sample is taken and the gas content of the sample. This is particularly true for the Superior and Titan seams, which have a higher gas content when the depth of the seam below the surface increases. The methane gas content of the coal seams tested compares favourably with coal seams in the eastern United States (see Table 5, page 107. This initial examination of the methane gas content of the Bri Property coal seams indicates that the gas content of the coal seams should impose few additional constraints on mining except at deeper levels, where extra precautions will have to be taken when a mining plan is considered.

TABLE 3 : DATA ON DEGASSIFICATION SAMPLES BY SEAM

COAL SEAM	DIAMOND DRILL HOLE	DEPTH OF SAMPLE (METRES)	GAS CONTENT (cm^3/gram)
Superior	BC-80-22	78.64	0.55
Superior	BC-80-23	259.69	14.15
Superior	BC-80-24	379.15	18.77
Superior	BC-80-27	71.48	1.10
Trojan	BC-80-14	106.55	0.82
Trojan	BC-80-18	131.86	1.31
Trojan	BC-80-20	130.65	1.61
Trojan	BC-80-21	121.46	4.78
Trojan	BC-80-22	107.90	0.26
Trojan	BC-80-24	397.56	2.88
Trojan	BC 80-27	111.40	2.20
Titan	BC-80-19	459.03	19.75
Titan	BC-80-25	117.45	3.06
Titan	BC-80-27	124.70	0.14
Falls	BC-80-27	150.61	0.73

TABLE 4 : DATA ON DEGASSIFICATION SAMPLES

COAL SEAM	DIAMOND DRILL HOLE	DEPTH OF SAMPLE (METRES)	GAS CONTENT (cm^3/gram)
Trojan	BC-80-14	106.55	0.82
-	BC-80-17	66.63	0.51
Trojan	BC-80-18	131.86	1.31
Titan	BC-80-19	459.03	19.75
-	BC-80-19	515.72	16.97
Trojan	BC-80-20	130.65	1.61
Trojan	BC-80-21	121.46	4.78
Superior	BC-80-22	78.64	0.55
Trojan	BC-80-22	107.90	0.26
Superior	BC-80-23	259.69	14.15
Superior	BC-80-24	379.15	18.7[illegible]
Trojan	BC-80-24	397.56	2.8[illegible]
Titan	BC-80-25	117.45	3.06
-	BC-80-25	161.66	2.55
Superior	BC-80-27	71.48	1.10
Trojan	BC-80-27	111.40	2.20
Titan	BC-80-27	124.70	0.14
Falls	BC-80-27	150.61	0.73
-	BC-80-27	175.88	2.31
-	BC-80-27	181.04	10.43
-	BC-80-27	193.85	8.21

TABLE 5 : DATA ON DEGASIFICATION SAMPLES*

Coalbed	Location	Depth of sample, feet	Gas content, cm^3/g
Blocky coals:			
Pittsburgh.....	Washington County, Pa.....	427	2.93
Do.....	Marion County, W. Va.....	850	6.50
Do.....	.....do.....	850	6.57
Do.....	Greene County, Pa.....	675	3.95
Do.....	.....do.....	675	6.50
Castlegate No. 3....	Carbon Fuel Co., Utah.....	1,016	4.69
Illinois No. 5.....	Jefferson County, Ill.....	793	.98
Illinois No. 6.....	.....do.....	733	1.92
Pond Creek.....	Pike County, Ky.....	500	1.28
Do.....	.....do.....	150	.70
Friable coals:			
Sewell.....	Raleigh County, W. Va.....	680	9.34
Beckley.....	.....do.....	990	12.55
Do.....	.....do.....	875	14.13
Do.....	.....do.....	830	15.36
Do.....	.....do.....	740	13.71
Mary Lee.....	Tuscaloosa County, Ala.....	1,076	6.55
Blue Creek.....	.....do.....	2,185	16.24
Do.....	.....do.....	1,099	13.56
New Castle.....	.....do.....	2,137	16.42
Pocahontas No. 3....	Wyoming County, W. Va.....	762	8.90
Do.....	Buchanan County, W. Va.....	1,430	13.62

* From Bureau of Mines Report of Investigation #8043, 1975.

CORRELATION OF COAL SEAMS

In the Bri-Dowling Creek Property area the most precisely correlatable horizon is the contact between the Gething Formation and the Moosebar Formation. This contact is very distinctive and it has been observed in core from numerous diamond drill holes on the property and in outcrop in Gething Creek (see geology map in map pocket). The contact is used in this report as a datum for the correlation of coal seams (see figure 20 in the map pocket).

The large number of diamond drill holes drilled on the Bri-Dowling Creek Property to date have provided a large data base (of analyses, lithologic logs and geophysical logs) for the correlation of coal seams. Stott (1969, page 8) states that for coal seams of the Gething Formation in the Peace River area:

> "Current work shows that considerable variation occurs within each individual seam, that thickness may change rapidly, and that both coal seams and sandstone units are lenticular and have limited extent."

As a result, the correlation of coal seams is a complex problem involving the evaluation of physical, chemical and geophysical drill derived data. The large amount of drill derived data, gathered during the 1978, 1979 and 1980 exploration programs, has made the accurate correlation of the coal seams possible.

The coal seam correlations shown in this report (see figure 20 in the map pocket) are considered to be an accurate description of the actual sub-surface conditions.

Four coal seams, which have been cored in diamond drill holes, are considered to have sufficent thickness and lateral extent to be of economic interest. These seams are the upper four seams of the Gething Formation as described by Stott in his 1969 paper on the Gething Formation at Peace River Canyon. They are, from top to bottom in the stratigraphic section, the Superior seam, the Trojan seam, the Titan seam and the Falls seam.

The Superior seam is continuous throughout the property area. The thickness of the seam is, however, highly variable. It is only in the southern portion of the property, in the vicinity of D.D.H. BC-78-4 (see figure 25 in the map pocket), that the seam is of sufficient thickness and lateral extent to be of economic interest. The seam, in this area, is a low ash, low sulphur, medium volatile bituminous coal with excellent thermal and metallurgical qualities (see the analyses in Appendix II of this report). There are a number of thrust faults in the area which divide the seam into four separate blocks. This structural complication causes considerable problems with respect to the mineability of the seam. To the northeast of the area of economic thickness, the Superior seam thins and splits into two or more benches. The thickness of sediments between the seam and the Moosebar - Gething contact also decreases and the sulphur content of the coal increases. In D.D.H. BC-80-13 the upper bench of the seam contains abundant massive pyrite and is only 0.30 metres thick. In the northwestern area of the property, the Superior seam is of economic thickness in only two diamond drill holes

(D.D.H. BC-71-3 and D.D.H. BC-76-4). The lateral extent of the seam in this area is too limited and precludes the consideration of the economic potential of the seam.

The Trojan seam is the most prominent seam in the property area in terms of thickness and areal extent. The seam is, in general, a low sulphur, high ash, high volatile A bituminous coal. The high ash content of the seam is caused by thin mudstone, sandstone or siltstone splits. When the seam undergoes a gravity separation at a specific gravity of 1.400, the resulting product is low in ash. The Trojan seam is present in economically sufficient thickness (greater than 0.92 metres) in the northeastern and southwestern portions of the property. The seam thins drastically in the central portion of the property, in the vicinity of D.D.H. BC-77-8, and is channelled in D.D.H. BC-71-2. In the southern portion of the property the Trojan seam has economic potential but, as with the Superior seam, it is disected by a series of thrust faults. In D.D.H. BC-78-4 and D.D.H. BC-79-10, however, the seam is divided into thin benches of minimal thickness. The mechanism for this degradation of quality is postulated to be a nearby river channel, which released clastic sediments in the form of crevasse splays. A similar mechanism, but on a larger scale, is postulated for the central region of the property. In this area, a large amount of sediment gathered at the time of deposition of the Trojan seam, which inhibited the formation of the coal swamp. This barrier, possibly the fluvial channel intersected in D.D.H. BC-71-2, created two separate depositional areas for the Trojan coal seam. The Trojan seam in the northeastern portion of the property is a continuous, well developed coal seam of economic thickness. In this area, the seam is relatively flat lying (5° to 8° dip) and has the greatest

potential for mining. A hypothetical portrayal of the Bri-Dowling Creek Property at the time of the deposition of the Trojan seam is shown in figures 21 and 22, page 112.

The Titan and Falls seams attain economic thickness only in the southern portion of the property, in the vicinity of D.D.H. BC-78-4. In this area, the two seams are of sufficient thicknes to be mineable, but are fairly limited in areal extent. The Titan seam is the most economically attractive of the two seams. It is low in ash and sulphur content, but does not possess good coking characteristics. Free Swelling Indices for the Titan seam are in the order of 1, making it suitable for thermal purposes only (see Appendix II). In the six diamond drill holes where the Titan seam is of economic thickens (see figure 27 in the map pocket), the seam is a medium volatile bituminous coal. The Falls seam is as extensive areally as the Titan seam, but is not as consistently thick. The seam thickness and thins over short distances between the drill holes and is over two metres thick in only one drill hole, D.D.H. BC-80-25. The Titan and Falls seams, in the area of economic interest, are offset by thrust faults. These are the same faults which disrupt the Superior and Trojan seams in this area. As a result, the mineability of the Titan and Falls seams is questionable.

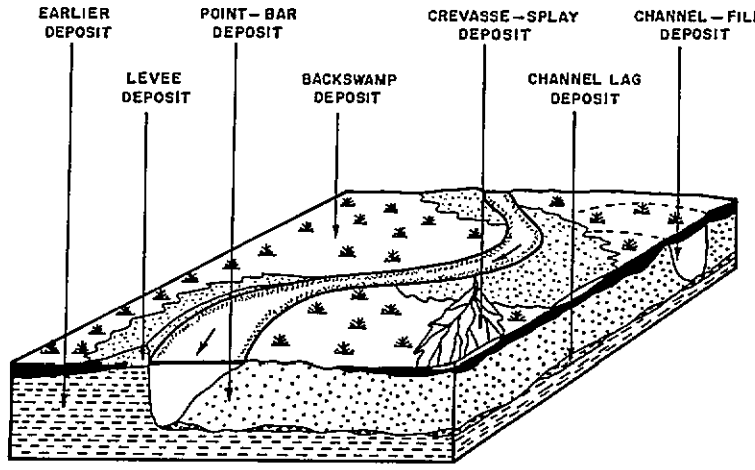


FIGURE – 21

FACIES MODEL OF THE FLOODPLAIN OF A MEANDERING RIVER

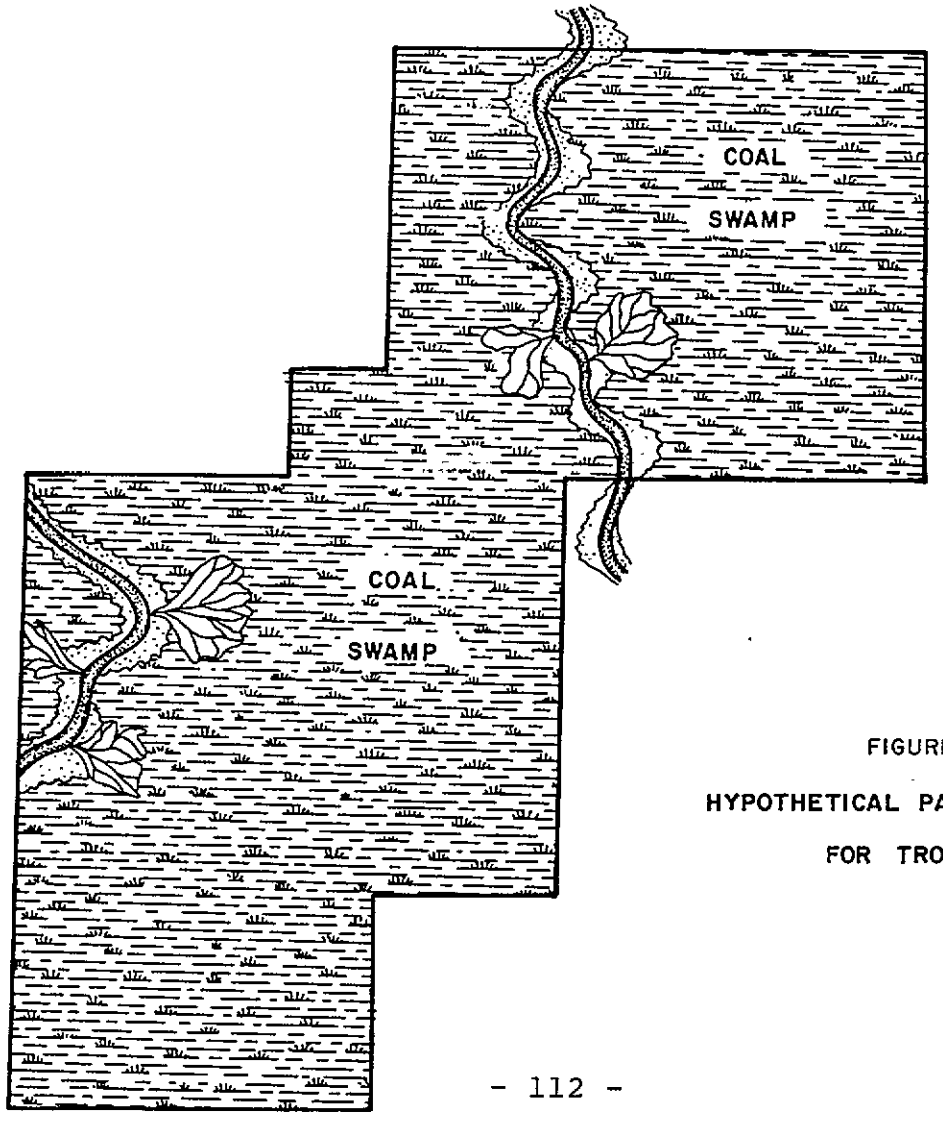


FIGURE – 22

HYPOTHETICAL PALEO ENVIRONMENT

FOR TROJAN SEAM

CONCLUSIONS AND RECOMMENDATIONS

Utah Mines Limited acquired the Bri-Dowling Creek Property on the 15th day of May, 1978. The property has undergone a significant amount of exploration, in the belief that it has the potential to become a metallurgical and/or thermal coal producer. Exploration work to date has primarily consisted of diamond drilling, geological mapping and limited rotary drilling.

The exploration programs undertaken during the summers of 1978 and 1979 delimited areas with economically interesting coal seams. The 1980 exploration program was designed to examine the property in more detail and to reveal any previously unknown problems.

On the basis of the 1980 diamond drilling and geological mapping, the property has been divided into three areas using structural geology and coal seam characteristics as parameters. The northern portion of the property, encompassing Coal Licences 3642 to 3646 inclusive, is underlain by relatively undisturbed, gently dipping coal seams. There is no evidence of thrust faulting in this area and the sediments are gently folded, except in the extreme north-eastern corner of the property where there is a minor anticline. The southern portion of the property, encompassing Coal Licences 3650 to 3654 inclusive, 5174 and 5175 and portions of 3648 and 3649, is an area of extensive folding and thrust faulting. The central portion of the property, comprising the majority of Coal Licences 3647 to 3649 inclusive, is a transition area between the northern and southern areas. Most of the deformation of the sediments in the central area is in the form of folding. This deformation becomes more intense toward the south and west. The coal seams cored in the central area of the property are too thin

to be considered as targets for mining operations. The northern portion of the property is underlain by only one seam, the Trojan seam, of minable thickness and extent. Several coal seams of minable thickness were cored in the southern portion of the property. Of these, the Superior, Trojan, Titan and Falls seams are the most prominent. The structural complications in the southern portion of the property, however, make the mining of the coal seams difficult.

Of the three portions of the property, the northern area is the most amenable to conventional underground mining. The Trojan seam in this area is thick, averaging 1.8 metres, and continuous. The area is relatively undisturbed structurally and a potential entry point for underground mining is postulated in the vicinity of rotary drill hole BC-80-13. The Trojan seam contains from one to three splits, but extraneous material can be removed by cleaning the coal. The seam is low in sulphur and has a relatively high Free Swelling Index. The characteristics of the Trojan seam as shown in the analyses (Appendix II) make it saleable as either a metallurgical or a thermal coal.

It is recommended that limited rotary drilling be performed in the vicinity of R.D.H. BC-80-13 to locate the postulated underground entry point into the Trojan seam. Further rotary drilling is needed in the northern portion of the property to accurately define the minable limits of the Trojan seam in this area. Further diamond drilling is recommended in the vicinity of D.D.H. BC-78-3. This drilling would define any seams of minable thickness deep in the Gething section and should be done in conjunction with a program on the adjacent East Mount Gething Property to the north of the Bri-Dowling Creek Property.

No further work is recommended for the central portion of the property as there are no seams of economic interest in this region. Further work on the southern portion of the property is not recommended until the viability of the northern area has been determined, as the southern property area would require non-conventional mining techniques to be exploited economically.

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APPENDIX VI

STATEMENT OF QUALIFICATIONS

I, Donald Norman Duncan, of 107 Sapper Street, New Westminister, British Columbia, do hereby certify that:

I am a graduate of the University of British Columbia, with a Bachelor of Science Degree in Geology, 1977.

Since graduation I have been engaged in Mineral and Coal Exploration in British Columbia, Alberta, the Yukon Territories and Alaska for Utah Mines Ltd.

I am a member of the Canadian Institute of Mining and Metallurgy.

D N Duncan

Vancouver, B.C.

D. N. Duncan
Geologist.

APPENDIX V

COST STATEMENT

Note: represents a consolidation of the costs included in the Application to Extend the Term of Licence for Coal Licence Numbers 3642 to 3654 inclusive and 5174 and 5175.

ON PROPERTY COSTS

(1)	Operators Fees, Salaries and Wages: Professional and Technical	$ 51,425.00
(2)	Contractors and Consultants:	
	Longyear Canada Ltd. (includes charges for direct drilling costs, drill mud, additives, expenses for additional staff, etc.)	$291,699.48
	P. Demeulemeester (includes charges for slashing, clearing and construction of roads, trails, drill site and reclamation work).	$117,642.94
	Elgin Exploration Co. Ltd. (includes charges for direct rotary drilling costs).	$ 13,917.08
(3)	Equipment and Instructions Used:	
	Gearhart-Owen Model 3200 logging unit (density-gamma @ $3.05/metre for the first 300 metres, then $1.83/metre; resistivity-gamma @ $3.75/metre for the first 300 metres, then $2.25/metre).	$ 8,022.19

(4) Field Camp Costs:

Food	$22,771.94
Accommodation	$ 9,289.52
Telephone	$ 4,121.59
Other	$ 4,665.88

(5) Sampling, Analysis and Testing: $ 1,454.40

(Laboratory analysis of coal samples performed by Utah International Inc. Minerals Laboratory, Sunnyvale, California and by Chemex Labs Ltd., North Vancouver, B.C.)

(6) Supplies and Materials Costs:

Operating and maintenance supplies	$ 8,865.62
Office and technical supplies	$ 662.14
Other supplies and materials	$ 1,058.95

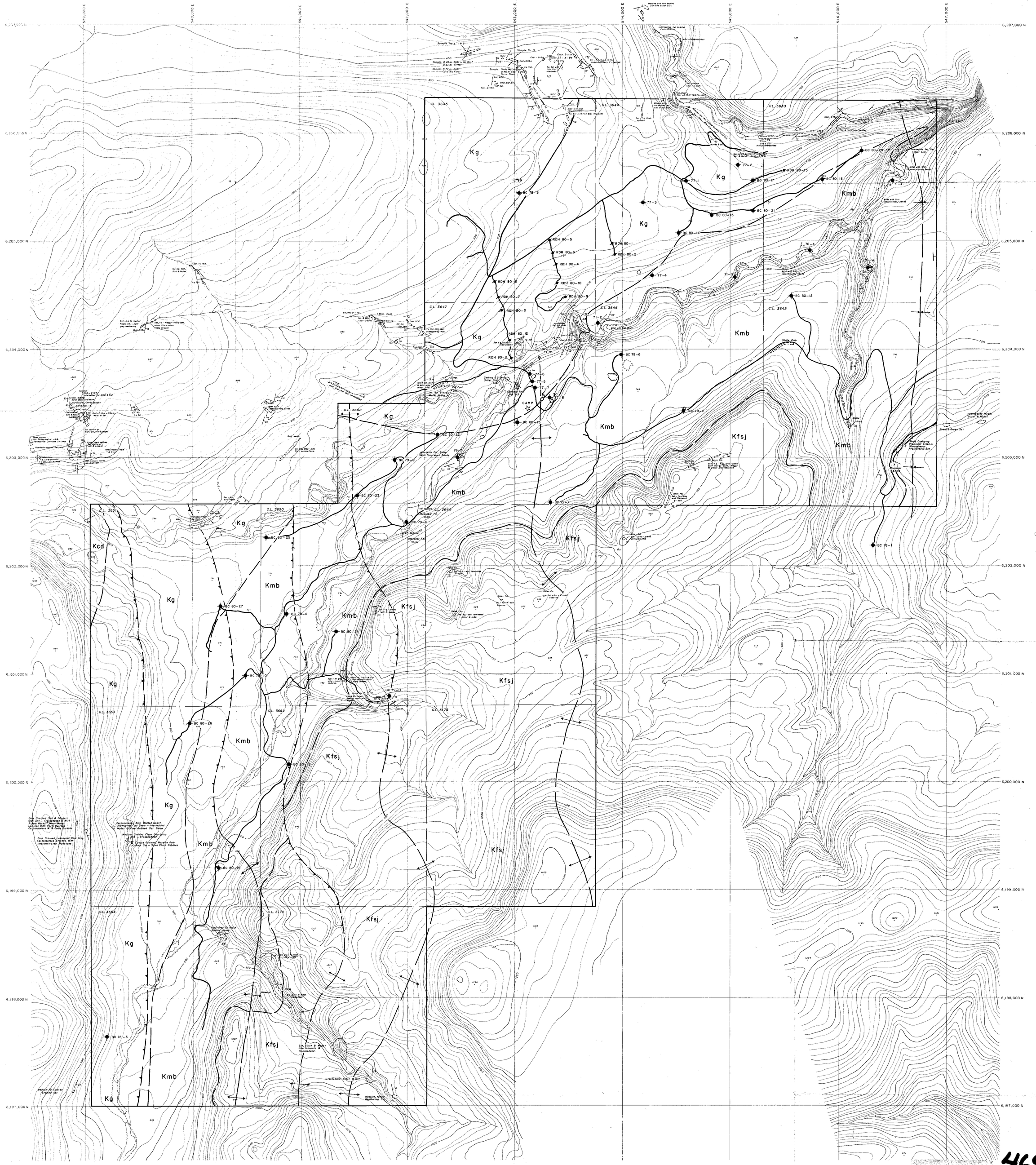
(7) Transportation Costs:

Bell 206B Jet Ranger from Okanagan Helicopters Ltd., Chetwynd, B.C.	$ 1,071.92
1-4 wheel drive Chevrolet Pick-up from Westminister Chev-Olds Leasing	$ 3,125.46
1-5 ton flatdeck Chevrolet Truck from Cana Rentals Ltd.	$ 855.60
Repairs, Parts and Fuel (for trucks, bulldozers, helicopters and camp)	$20,079.95

(8)	Reclamation Work: (Grass seed mixture supplied by Buckerfields Seed Division and B.C. Forest Service stumpage charges)	$ 9,272.58
	Total On Property Costs	$570,002.24

OFF PROPERTY COSTS

(1)	Logistics and Field Support	$ 8,482.00
(2)	Technical and Feasibility Studies	$ 4,875.00
(3)	Supplies and Services	$ 7,277.16
(4)	Mobilization and Demobilization of Equipment and Supplies	$ 6,046.43
(5)	Travelling Expenses	$ 4,885.37
	Total Off Property Costs	$ 31,565.96
	Total Project Costs	$601,568.20



469

LEGEND

Kfsj	Fort St John Group (Undivided)		Fold Axis
Kmb	Moosebar Formation		Diamond Drill Holes
Kg	Gething Formation		Rotary Drill Holes
Kcd	Codomin Formation		Bedding Attitude
	Contact		Outcrop
	Thrust Fault		Road

UTAH MINES LTD.
EXPLORATION DEPARTMENT
Vancouver British Columbia

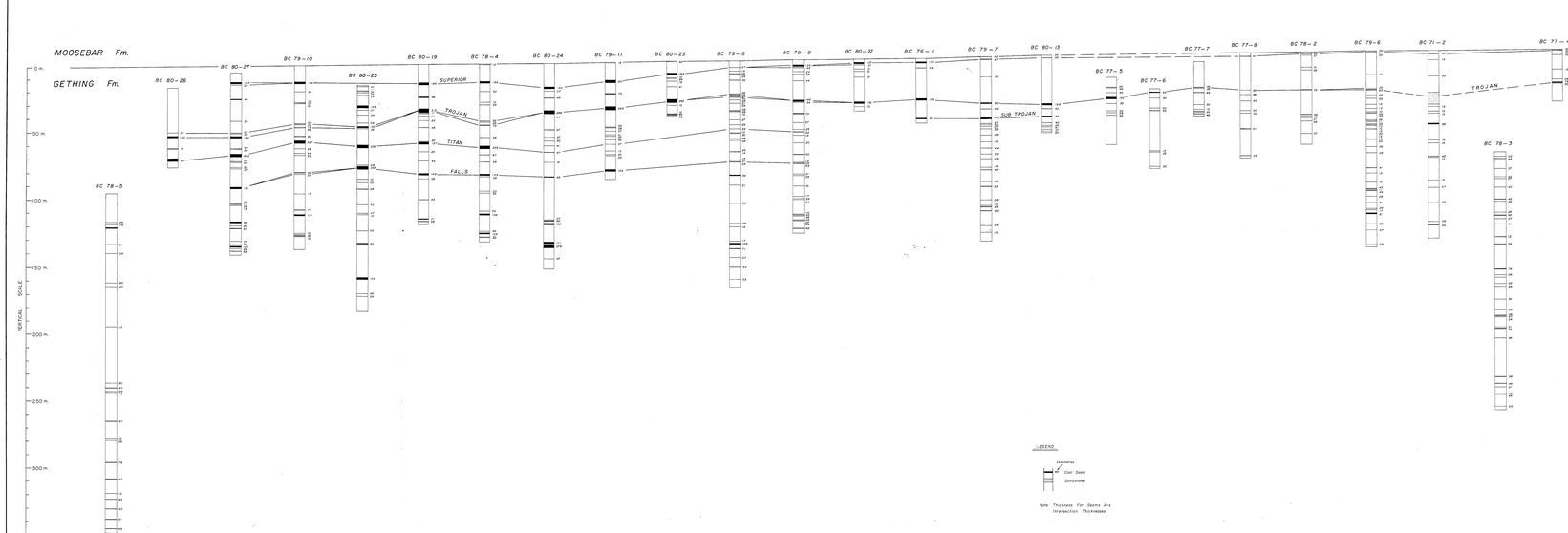
BRI DOWLING CREEK PROPERTY

BEDROCK GEOLOGY AND
DRILL HOLE LOCATIONS

Work by : N. Duncan	Date :	NTS Ref. 93 O/16
Drawn by : T. Drews	Revised :	Scale — 1:10,000

SCALE IN

PR-Bri-Dowling Creek 86(7)A



469

FIGURE — 20

Re: Bri-Dowling Creek 80-(3)A

UTAH MINES LTD.
EXPLORATION DEPARTMENT
Vancouver British Columbia

BRI — DOWLING CREEK PROPERTY

TENTATIVE COAL SEAM CORRELATION
BETWEEN BRI COAL DRILL HOLES

Work by : P.Dawy	Date :	NTS Ref. 93 O/16
Drawn by : T.Dines	Revised :	Vertical Scale - 1:1000

SCALE IN

539,000 E | 540,000 E | 541,000 E | 542,000 E | 543,000 E | 544,000 E | 545,000 E | 546,000 E

6,206,000 N
6,205,000 N
6,204,000 N
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

BC 78-3
BC 78-5
BC 78-4
BC 78-2
BC 78-1
BC 79-6
BC 79-7
BC 79-8
BC 79-9
BC 79-10
BC 79-11
BC 80-12
BC 80-13
BC 80-14
BC 80-15
BC 80-16
BC 80-17
BC 80-18
BC 80-19
BC 80-20
BC 80-21
BC 80-22
BC 80-23
BC 80-24
BC 80-25
BC 80-26
BC 80-27
71-1
71-2
71-3
71-4
76-1
76-4
77-1
77-2
77-3
77-4
77-5
77-6
77-7
77-8

SUPERIOR SEAM SUBCROP

650 m
600 m
550 m
500 m
450 m
400 m
350 m
300 m
250 m

610 m. OF COVER

INDEX MAP
Scale — 1:100,000

469

FIGURE — 23

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

BRI — DOWLING CREEK PROPERTY

SUPERIOR SEAM
STRUCTURE AT THE BASE OF SEAM

Work by:	Date:	NTS Ref. — 93 O/16
Drawn by: T. Drews	Revised:	Vertical Scale — 1:100

SCALE IN FEET

PR-Bri-Dowling Creek 80(21A

539,000 E
540,000 E
541,000 E
542,000 E
543,000 E
544,000 E
545,000 E
546,000 E

6,206,000 N
6,205,000 N
6,204,000 N
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

BC 78-3
BC 80-20
77-2
77-1
BC 80-17
BC 80-18
71-1
77-3
BC 80-21
BC 80-15
BC 80-14
76-4
77-4
71-3
BC 71-4
BC 80-12
71-2
TROJAN SEAM SUBCROP
BC 79-6
77-6
77-5
77-7
77-8
450 m
600 m
550 m
500 m
450 m
400 m
350 m
300 m
250 m
200 m
BC 78-2
BC 80-13
BC 80-22
BC 79-9
76-1
BC 80-23
BC 79-7
BC 79-8
BC 80-25
650 m
600 m
BC 78-1
610 m. OF COVER
BC 80-27
BC 78-4
BC 80-24
300 ft.
BC 79-10
BC 79-11
TROJAN SEAM SUBCROP
BC 80-26
BC 80-19
BC 80-16
BC 78-5

INDEX MAP
Scale — 1:100,000
PEACE RIVER
Dowling Creek
Gething Cr.

469

FIGURE — 24

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

BRI — DOWLING CREEK PROPERTY

TROJAN SEAM
STRUCTURE AT THE BASE OF SEAM

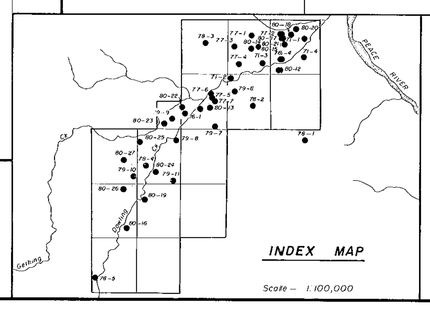
Work by:	Date:	NTS Ref. — 93 O/16
Drawn by: T. Drews	Revised:	Vertical Scale — 1:100
1:10,000		
SCALE IN FEET		

Pt. Bri-Dowling Creek 80(2)A

539,000 E
540,000 E
541,000 E
542,000 E
543,000 E
544,000 E
545,000 E
546,000 E

6,206,000 N
6,205,000 N
6,204,000 N
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

BC 80-20
77-2
77-1
BC 80-17
BC 80-18
71-1
BC 78-3
77-3
BC 80-21
BC 80-15
BC 80-14
76-4
0.97
77-4
71-4
71-3
1.92
BC 80-12
71-2
BC 79-6
77-6
77-5
77-7
77-8
BC 78-2
BC 80-13
BC 80-22
0.91
0.11
76-1
1.02
BC 79-9
1.36
0.48
BC 80-23
1.59
BC 79-7
BC 79-8
1.0
0.47
BC 80-25
BC 78-1
0.94
BC 80-27
1.33
BC 78-4
1.88
BC 80-24
1.34
BC 79-10
1.74
BC 79-11
2.01
BC 80-26
BC 80-19
1.86
BC 80-16
BC 78-5



Thickness In Metres

469

FIGURE — 25

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

BRI — DOWLING CREEK PROPERTY

SUPERIOR SEAM — PANEL DIAGRAM

Work by:	Date:	NTS Ref. — 93 O/16
Drawn by: T. Drews	Revised:	Vertical Scale — 1:100

SCALE IN FEET

PR-Bri-Dowling Creek 80(2)A

539,000 E | 540,000 E | 541,000 E | 542,000 E | 543,000 E | 544,000 E | 545,000 E | 546,000 E

6,206,000 N
6,205,000 N
6,204,000 N
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

BC 79-3
77-3
77-1
BC 80-15
0.90 / 0.70 / 0.12
BC 80-14
1.37 / 0.30
77-2
BC 80-17
BC 80-21
0.19 / 0.84 / 0.63 / 0.36
BC 80-18
0.20 / 0.83 / 0.67 / 0.25
BC 80-20
0.18 / 0.91 / 0.59 / 0.46
71-1
0.25 / 0.74 / 0.76 / 0.83
77-4
0.76 / 0.25
71-3
1.02 / 0.15 / 0.53 / 0.58
76-4
0.21 / 0.82 / 0.67 / 0.30
BC 71-4
0.23 / 1.40
BC 80-12
0.41 / 0.24 / 0.76
71-2
BC 79-6
77-6
77-5
77-7
77-8
BC 78-2
BC 80-13
0.26 / 0.16 / 0.30 / 0.33 / 0.13
BC 80-22
0.35 / 0.69 / 0.40
76-1
0.66 / 0.20 / 0.56
BC 79-9
1.46 / 0.34
BC 80-23
0.37 / 0.05 / 0.57 / 0.77 / 0.34
BC 79-7
0.80 / 0.55
BC 79-8
0.04 / 0.26 / 0.07 / 0.87 / 0.70 / 0.13 / 0.28
BC 80-25
0.87 / 0.88 / 0.77 / 0.05 / 0.25
BC 78-1
0.49 / 0.70
BC 80-27
1.62
BC 78-4
BC 80-24
0.15 / 0.11 / 0.99 / 0.69 / 0.42
BC 79-10
BC 79-11
0.21 / 0.10 / 1.17 / 0.80 / 0.11
BC 80-26
0.73 / 0.62
BC 80-19
0.51 / 0.10 / 0.79 / 1.49
BC 80-16
BC 78-5

INDEX MAP
Scale – 1:100,000

Thickness In Metres

469

FIGURE – 26

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

BRI – DOWLING CREEK PROPERTY

TROJAN SEAM — PANEL DIAGRAM

Work by:	Date:	NTS Ref. – 93 O/16
Drawn by: T. Drews	Revised:	Vertical Scale – 1:100

SCALE IN FEET

PR-Bri-Dowling Creek 80(2)A

539,000 E | 540,000 E | 541,000 E | 542,000 E | 543,000 E | 544,000 E | 545,000 E | 546,000 E

6,206,000 N
6,205,000 N
6,204,000 N
6,203,000 N
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6,200,000 N
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6,198,000 N
6,197,000 N

BC 80-20
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BC 80-18
71-1
BC 78-3
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BC 80-21
BC 80-15
BC 80-14
76-4
BC 71-4
77-4
71-3
BC 80-12
71-2
BC 79-6
77-6
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77-7
77-8
BC 78-2
BC 80-13
BC 80-22
BC 79-9
76-1
BC 80-23
BC 79-7
BC 79-8
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BC 80-25
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1.91
BC 80-27
0.32
2.06
BC 78-4
2.33
BC 80-24
BC 79-10
2.27
BC 79-11
BC 80-26
2.21
BC 80-19
1.97
BC 80-16
BC 78-5

Thickness In Metres

INDEX MAP
Scale — 1:100,000

469

FIGURE — 27

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

BRI — DOWLING CREEK PROPERTY

TITAN SEAM — PANEL DIAGRAM

Work by:	Date:	NTS Ref. — 93 O/16
Drawn by: T. Drews	Revised:	Vertical Scale — 1:100

SCALE IN FEET

PR-Bri-Dowling Creek 80(2)A

539,000 E | 540,000 E | 541,000 E | 542,000 E | 543,000 E | 544,000 E | 545,000 E | 546,000 E

6,206,000 N
6,205,000 N
6,204,000 N
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

BC 80-20
77-2
77-1
BC 80-17
BC 80-18
71-1
BC 78-3
77-3
BC 80-21
BC 80-15
BC 80-14
76-4
BC 71-4
77-4
71-3
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77-7
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BC 78-2
BC 80-13
BC 80-22
BC 79-9
76-1
BC 80-23
BC 79-7
BC 79-8
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BC 80-25
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0.36
BC 80-27
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0.76
BC 78-4
0.98
0.36
BC 80-24
BC 79-10
0.98
0.37
BC 79-11
0.90
0.62
BC 80-26
BC 80-19
0.70
0.88
BC 80-16
BC 78-5

INDEX MAP
Scale – 1:100,000

Thickness In Metres

469

FIGURE — 28

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

BRI — DOWLING CREEK PROPERTY

FALLS SEAM — PANEL DIAGRAM

Work by:	Date:	NTS Ref. – 93 O/16
Drawn by: T. Drews	Revised:	Vertical Scale – 1:100

SCALE IN FEET

PR-Bri-Dowling Creek 86(21A

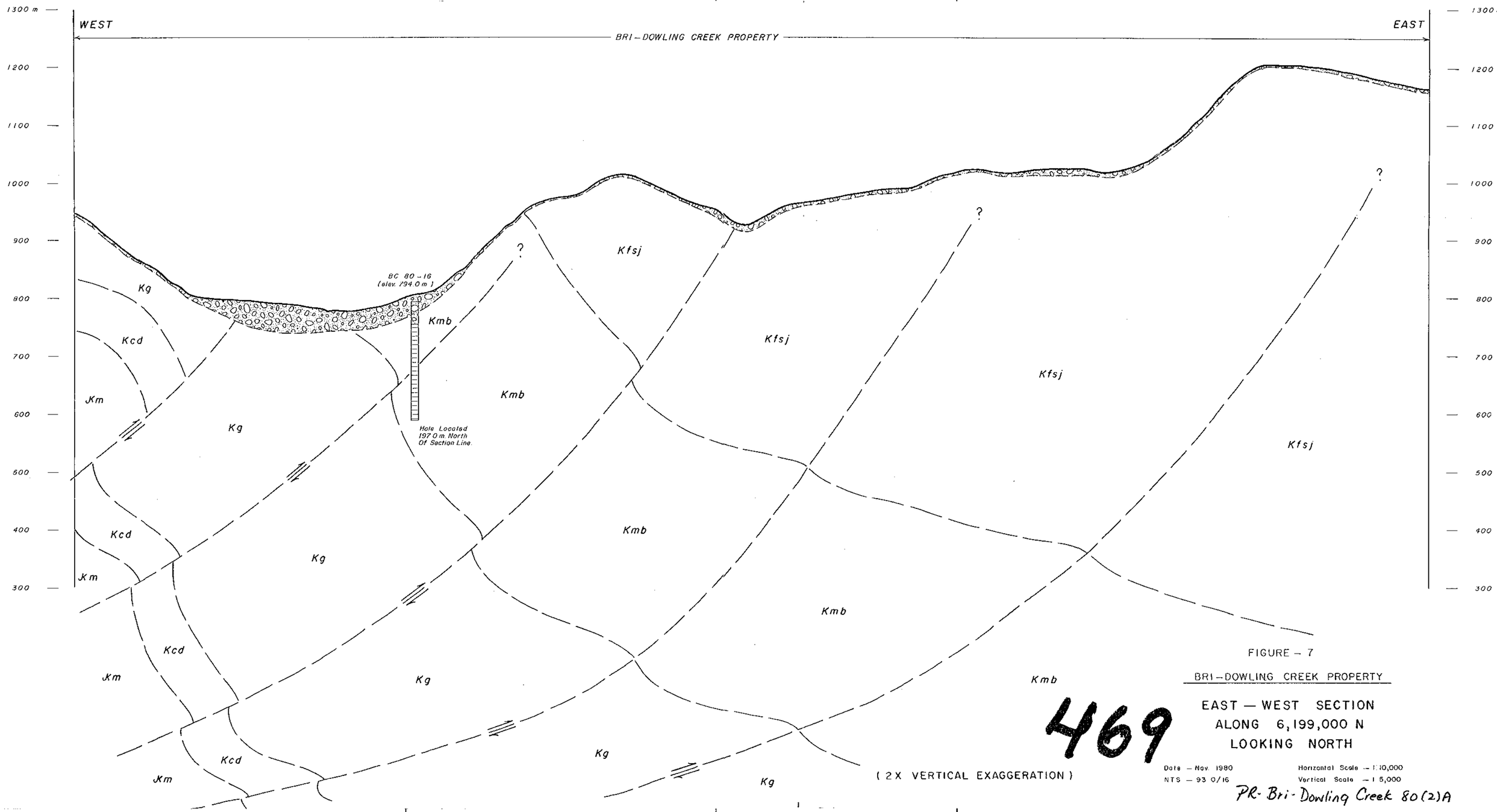


FIGURE – 7

BRI – DOWLING CREEK PROPERTY

EAST — WEST SECTION
ALONG 6,199,000 N
LOOKING NORTH

469

Date – Nov. 1980
NTS – 93 O/16

Horizontal Scale – 1:10,000
Vertical Scale – 1:5,000

PR-Bri-Dowling Creek 80(2)A

WEST — BRI – DOWLING CREEK PROPERTY — EAST

1100 m — 1000 — 900 — 800 — 700 — 600 — 500 — 400 — 300

BC 78-5
(elev. 744.0 m)

Hole Located
354.0 m. South
Of Section Line

Kg
Kcd
Kmb
Kfsj
Km
?

(2 X VERTICAL EXAGGERATION)

FIGURE – 6

BRI – DOWLING CREEK PROPERTY

EAST — WEST SECTION
ALONG 6,198,000 N
LOOKING NORTH

469

Date — Nov. 1980
NTS — 93 O/16

Horizontal Scale — 1:10,000
Vertical Scale — 1:5,000

PR-Bri-Dowling Creek 80(2)A

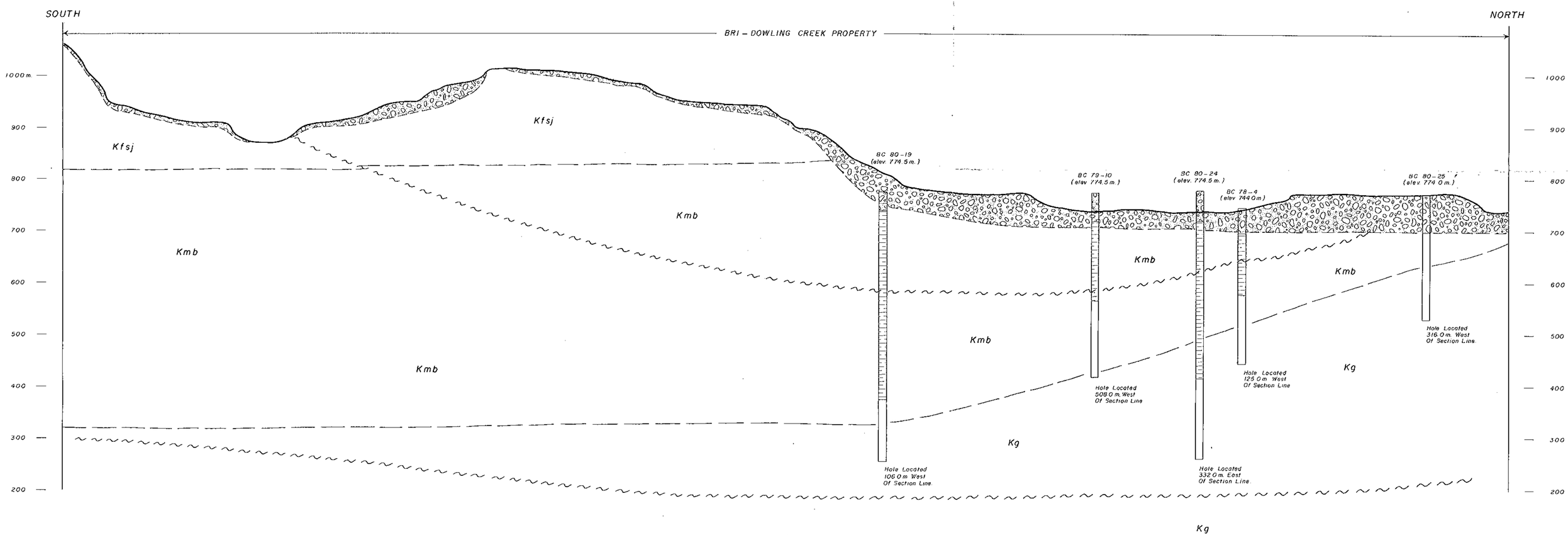


FIGURE – 13

BRI – DOWLING CREEK PROPERTY

NORTH – SOUTH SECTION
ALONG 541,000 E
LOOKING WEST

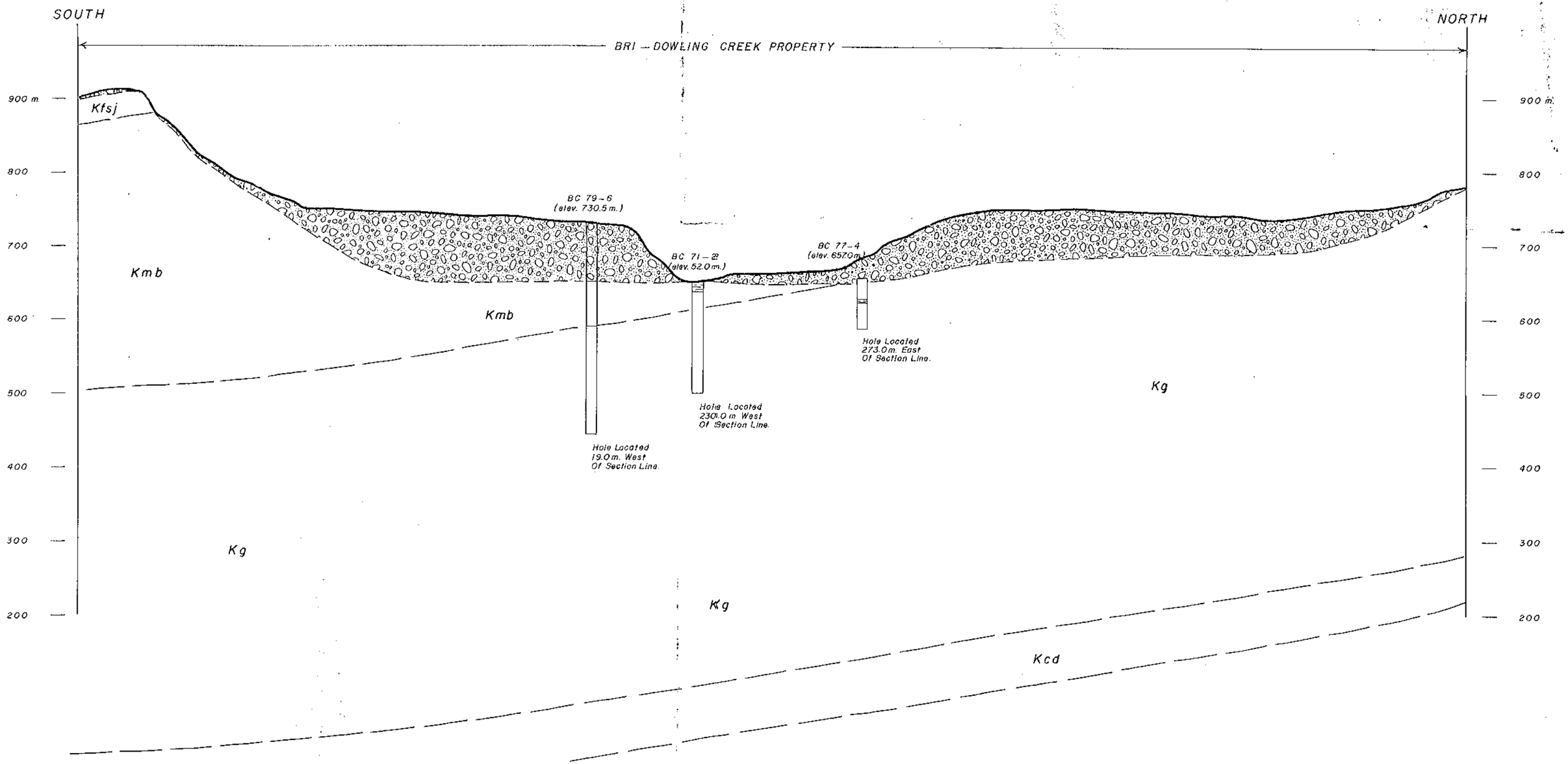
Date – Nov 1980
NTS – 93 O/16

Horizontal Scale – 1:10,000
Vertical Scale – 1:5,000

(2X VERTICAL EXAGGERATION)

469

PR. Bri-Dowling Creek 80(2)A



(2 X VERTICAL EXAGGERATION)

FIGURE - 14

BRI — DOWLING CREEK PROPERTY

NORTH — SOUTH SECTION
ALONG 544,000 E
LOOKING WEST

Date — Nov. 1980
NTS — 93 O/16

Horizontal Scale — 1:10,000
Vertical Scale — 1:5,000

469

PR-Bri-Dowling Creek 80(2)A

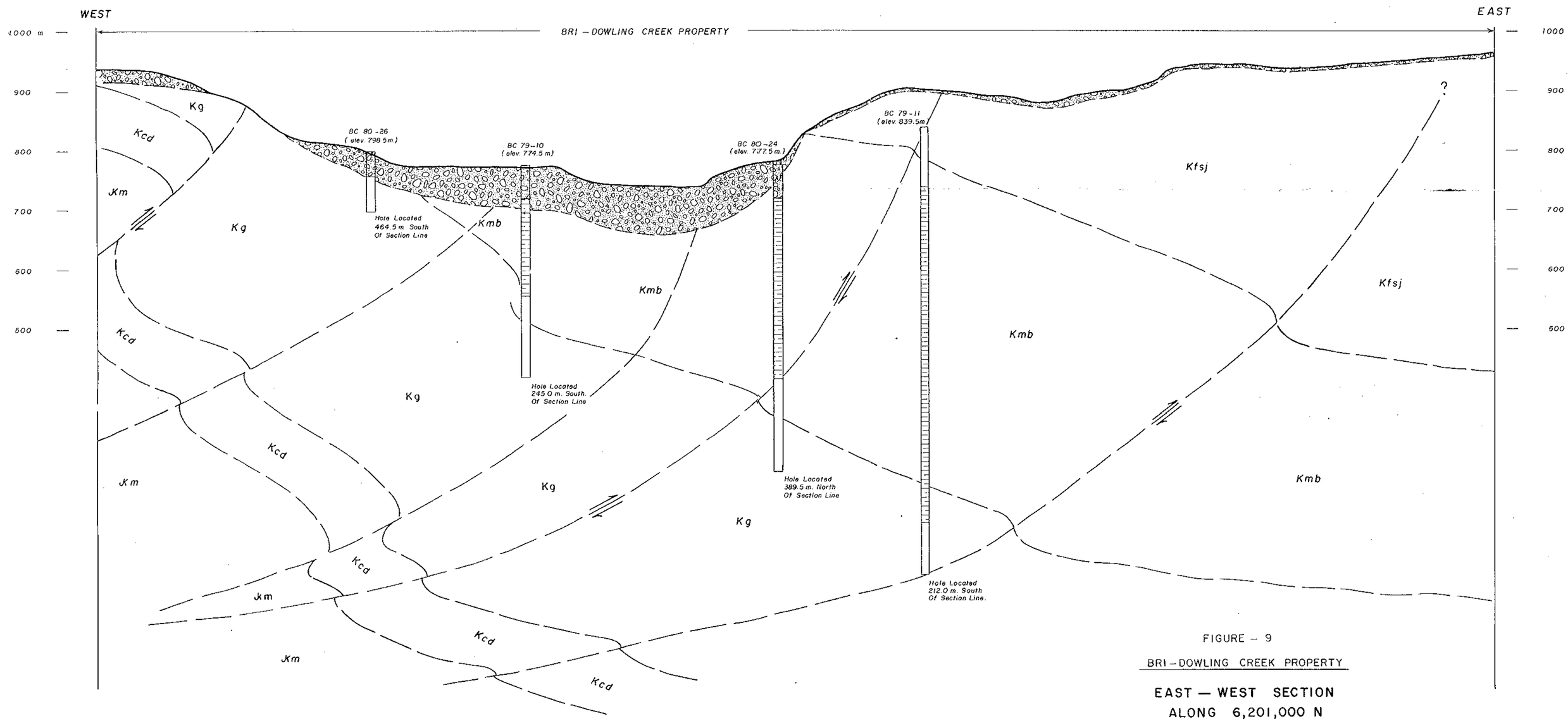


FIGURE – 9

BRI – DOWLING CREEK PROPERTY

EAST — WEST SECTION
ALONG 6,201,000 N
LOOKING NORTH

(2 X VERTICAL EXAGGERATION)

469

Date – Nov. 1980
NTS – 93 O/16

Horizontal Scale – 1:10,000
Vertical Scale – 1:5,000

PR. Bri-Dowling Creek 80(2)A

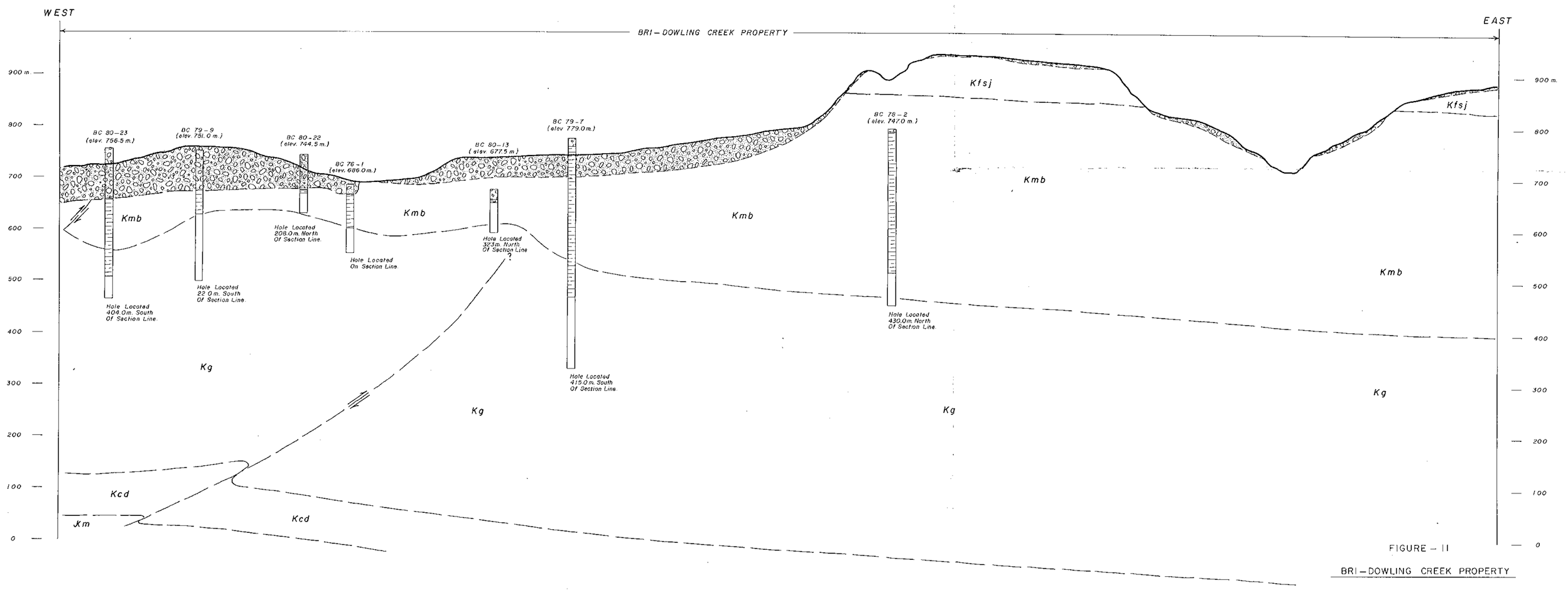


FIGURE – 11

BRI – DOWLING CREEK PROPERTY

EAST – WEST SECTION
ALONG 6,203,000 N
LOOKING NORTH

469

Date – Nov. 1980
NTS – 93 O/16

Horizontal Scale – 1:10,000
Vertical Scale – 1:5,000

PR-Bri-Dowling Creek 80(2)A

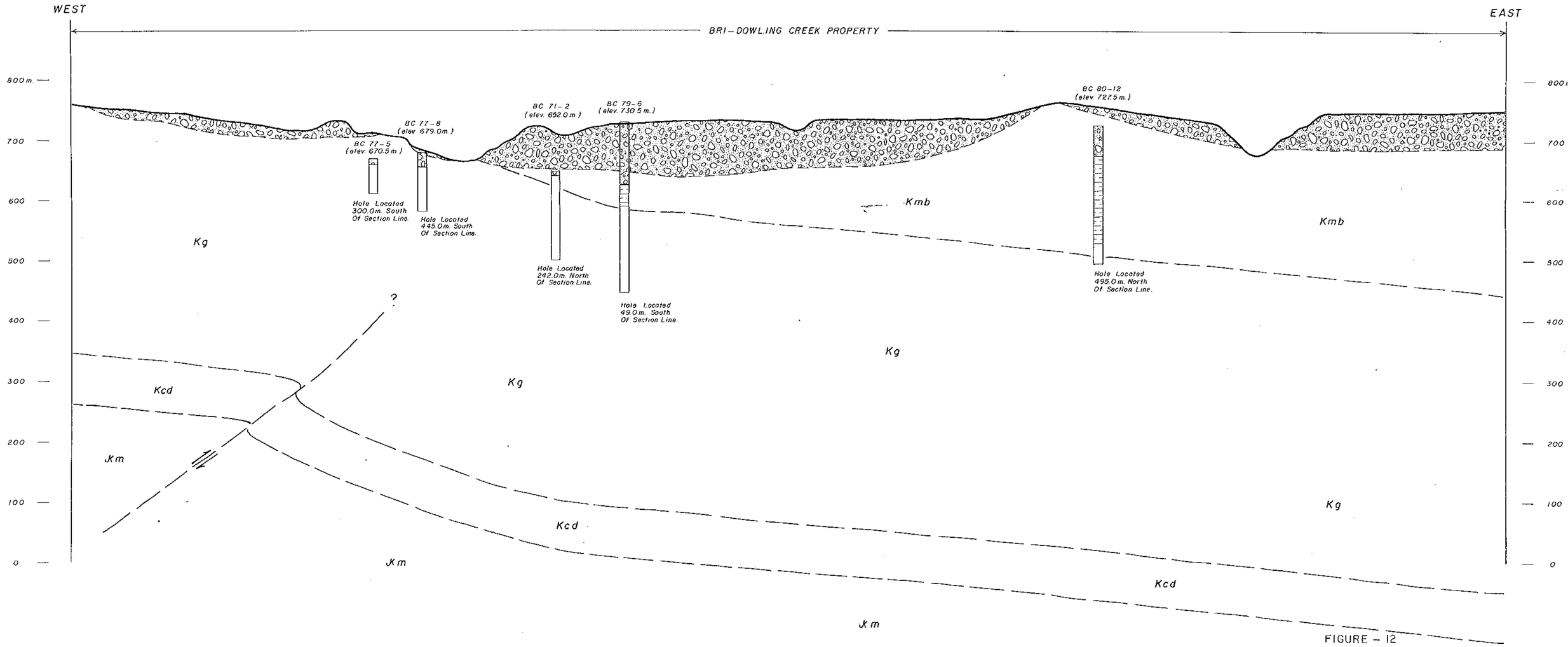


FIGURE – 12

BRI – DOWLING CREEK PROPERTY

469

EAST — WEST SECTION
ALONG 6,204,000 N
LOOKING NORTH

(2X VERTICAL EXAGGERATION)

Date – Nov. 1980
NTS – 93 O/16

Horizontal Scale – 1:10,000
Vertical Scale – 1:5,000

PR-Bri-Dowling Creek 80(2)A

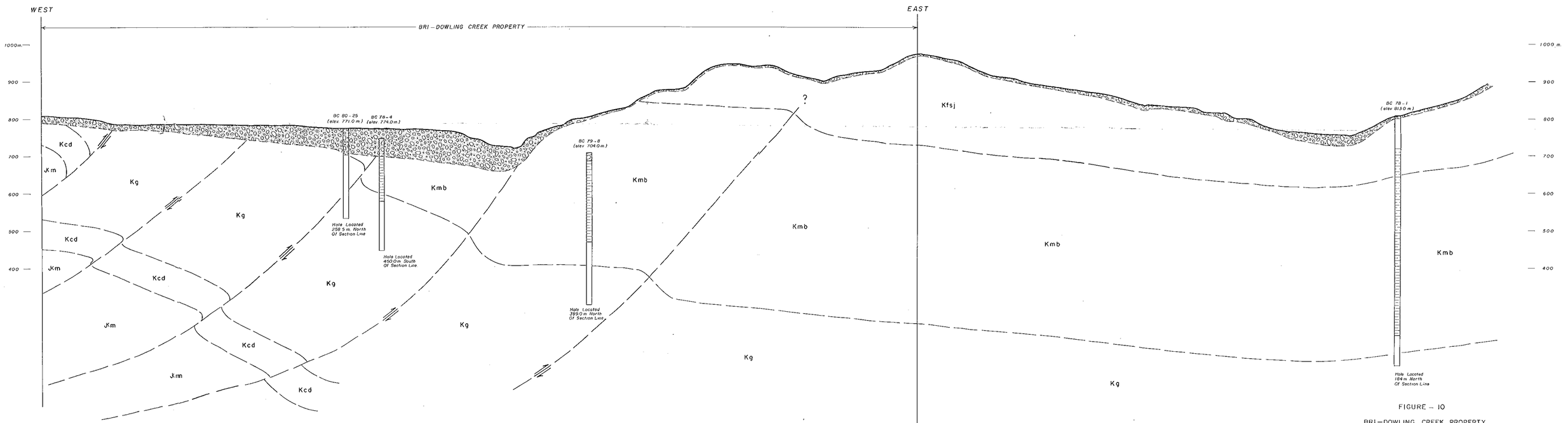


FIGURE – 10

BRI–DOWLING CREEK PROPERTY

EAST – WEST SECTION
ALONG 6,202,000 N
LOOKING NORTH

469

Date – Nov. 1980
NTS – 93 O/16

Horizontal Scale – 1:10,000
Vertical Scale – 1:5,000

PR-Bri-Dowling Creek 80(2)A

PR-Bri-Dowling Ck. 80(3)A

APPENDIX I

DESCRIPTIVE LITHOLOGIC LOGS FOR
1980 DIAMOND DRILL HOLES

CORE DESCRIPTION

HOLE# B.C. 80-12 (T.S.) From 0.00 m To 198.88 m

Area _____ By _____

FROM	TO	DESCRIPTION
0.00 m	50.29 m	Overburden
50.29	198.88	Moosebar Formation
		Dark grey to black Mudstone.
		60.41 to 60.51 m - Brecciated Mudstone with calcite veinlets.
		62.48 to 62.55 m - Volcanic ash band, spotted, light grey.
		63.61 m - Very thin ash band, slighty pyritic , minor blebs.
		67.58 to 67.68 m - Volcanic ash band, bedding angle to 85° to C/A.
		71.02 m - Claystone nodule ∿ 3 cm x 5 cm.
		73.20 to 73.24 m - Ash band with black blebs.
		Pyrite nodules ∿ 5 mm in diameter becoming more abundant down section.
		80.69 to 80.72 m - Light grey to grey Volcanic ash band.
		101.17 to 101.23 m - Light grey volcanic ash split by muddy lamination - lower half sandy.
		102.06 to 102.07 - Light grey sandy volcanic ash band, pyrite nodule 2.5 cm x 1 cm at 106.62 m, Pyrite nodule 1.5 cm x .5 cm at 107.40 m & minor blebs.
		Pyrite nodule 1.7 cm x .5 cm at 108.77 m.
		Slightly Pyritic (disseminated) throughout very thin mud cracks filled with sand at 135.92 m.
		Several Pyrite nodules 2 to 3 cm long parallel to a fracture plane which parallels drill hole - slight calcite on fracture plane and sand filled mud cracks perpendicular at 136.38 m to 136.56 m.
		Several Pyrite blebs between 145.30 m and 147.88 m increasing towards bottom.
		At 162.57 - 1 cm thick volcanic ash band, light grey, very soft minor clam shells (moulds & casts) abundant pyrite nodules & blebs.

HOLE* B.C. 80-12 (T.S.) From 198.88 m To 202.94 m

FROM	TO	DESCRIPTION
		At 187.19 m - Becoming silty with minor fine grained salt & pepper Sandstone lenses.
		At 190.17 m - Sandstone layer ∿1 cm thick, light grey, graded bedding, worm burrows fine grained.
		191.24 to 192.26 m - Sandstone, salt & pepper, graded bedding, rip-up clasts of Mudstone, turbidite (?)
		191.75 to 191.77 m - Sandstone, salt & pepper, medium grained, turbidite (?). Becoming glauconitic toward base. Pyrite nodules becoming very abundant toward base especially from 192.11 m down.
		* 197.63 to 198.88 m - Conglomeratic Sandstone - basal conglomeratic- muddy matrix - chert pebbles very coarse grained.
		GETHING FORMATION
198.88	200.32	MUDSTONE & SILTSTONE - Interlaminated, Mudstone more abundant and medium dark grey, Siltstone light medium grey, minor sandstone lenses, salt & pepper, minor worm burrows, mud content greatest at base & top of unit, minor coaly streaks at base.
200.32	200.48	COAL - 0.16 m - Black, bright banded, well cleated, abundant pyrite bands in seam, abundant Vitrain.
200.48	200.98	MUDSTONE, SANDSTONE & SILTSTONE - Interlaminated, Mudstone dark grey & most abundant, Sandstone fine grained, salt & pepper colour, graded bedding, coaly streaks at base, bedding angle to 87° to C/A.
200.98	201.19	COAL - 0.21 m, Black, bright banded, abundant Vitrain, minor Durain, well cleated, pyrite bands throughout seam.
201.19	201.49	MUDSTONE - Dark black at base, brown towards top.
201.49	202.37	SANDSTONE, SILTSTONE & MUDSTONE - Interlaminated Sandstone medium grained, salt & pepper colour, Siltstone dark grey, Mudstone dark grey to black, laminae are wavy, increasing mudstone towards base, coaly streaks, slight slicken siding on coaly laminae, angle at 85° to 80° to C/A.
202.37	202.94	SANDSTONE - Medium grained, salt & pepper colour , black Mudstone laminae near base, cross bedding 1 cm high.

HOLE* B.C. 80-12 (T.S.) From 202.94 m To 210.70

FROM	TO	DESCRIPTION
202.94	202.98	COAL - .04 m, Muddy black, 30% shiny Vitrain bands, well cleated.
202.98	203.31	MUDSTONE - Dark grey to dark brown siltstone blebs, lighter grey < 1 cm.
203.31	205.02	SANDSTONE, SILTSTONE & MUDSTONE - Interlaminated bedding very disturbed, Sandstone hard at top 2.5 cm fine grained, salt & pepper colour, high Mudstone content and below this for 10 cm below this Sandstone dominates. Sandstone is fine to medium grained, salt & pepper colour, Siltstone medium grey, Mudstone dark grey to black, few coaly streaks, cross bedding, laminae less mottled towards bottom.
205.02	205.13	MUDSTONE - Dark brown to dark black, shiny bands of coal 1 to 3 mm wide.
205.13	205.42	COAL - .29 meters, Black, muddy throughout with a coaly Mudstone split at 205.25 to 205.31, 70% shiny cleated Vitrain.
205.42	205.86	MUDSTONE - Dark grey to dark brown, coaly streak up to 2 mm wide.
205.86	208.72	MUDSTONE - with Siltstone and sandstone laminae, dark grey mudstone, medium grey siltstone, salt & pepper, fine grained sandstone, angle at 86° to C/A, cross bedding in sandstone laminae, laminae wavy and slightly bioturbated.
208.72	208.75	COAL - .03 m, black, shiny cleated, Vitrain.
208.75	209.51	MUDSTONE - Mixed with siltstone and sandstone as laminae and mottled blebs. Sandstone is fine grained, pale grey, Siltstone is medium grey, Mudstone dark grey.
209.51	210.08	SANDSTONE, SILTSTONE AND MUDSTONE - Interlaminated, Sandstone fine grained, salt & pepper, cross bedded, angle at 87° to C/A, ripple marks at border of Sandstone & Mudstone, very thin <1 mm mudcracks in mudstone, one worm tube filled sandstone, 3 cm x.3 cm.
210.08	210.70	MUDSTONE - With Siltstone & slight sandstone laminae Mudstone dark grey, siltstone & sandstone medium grey.

HOLE# B.C. 80-12 (T.S.) From 210.70 m To 226.09 m

FROM	TO	DESCRIPTION
210.70 m	210.80 m	COAL - .10 m, very muddy throughout, black.
210.80	211.56	MUDSTONE - Dark grey to black with several coally bands, shiny & cleated lenticular, ≤2 mm x ≤ 2 cm.
211.56	211.86	SANDSTONE, SILTSTONE & MUDSTONE - mixed some banding but mostly mottled. Sandstone medium grained, salt & pepper , Siltstone medium grey, Mudstone dark grey.
211.86	213.70	SANDSTONE - Salt & pepper colour, medium grained, slightly coarser towards base, a few mudstone bands, .5 cm to 1 cm wide.
213.70	216.95	SANDSTONE - with Siltstone & Mudstone laminae, cross-bedded, sandstone medium grained at top, coarse grained through rest of interval, salt & pepper colour. Distinct boundary between sandstone with and without mudstone & siltstone laminae one mud chip with cracks in it, increasing Mudstone & siltstone content towards base.
216.95	217.48	SANDSTONE, SILTSTONE & MUDSTONE - mixed and inter-laminated, well bioturbated, sandstone fine grained, salt & pepper, decreases towards base, Mudstone dark grey & brown increases towards base.
217.48	217.63	COAL -.15 m, black, shiny cleated 80%, 100% recovery.
217.63	218.44	MUDSTONE - Dark grey, sandstone & siltstone blebs and laminae increasing towards base.
218.44	220.00	SANDSTONE - With Mudstone laminae and blebs increasing towards top and base, sandstone is medium to coarse grained, salt & pepper colour, crossbedding.
220.00	220.29	MUDSTONE - With distinct sandstone & siltstone laminae up to .07 m thick, some are lenticuler, sandstone medium grey, salt & pepper colour.
220.29	220.68	SANDSTONE - With muddy bands, sandstone medium grey, salt & pepper, crossbedded.
220.68	225.94	MUDSTONE - Dark grey to black, ≤ 5% siltstone & sand-stone laminae and blebs, ripple marks and slicken-sides , carbonaceous, increasing sand blebs towards bottom.
225.94	226.09	SANDSTONE - Medium grained, salt & pepper colour, Mudstone bands.

HOLE# B.C. 80-12 (T.S.) From 226.09 m To 233.48 m

FROM	TO	DESCRIPTION
226.09 m	227.68 m	COAL - 1.59 m, with splits at -
		226.50 to 226.55 Sandstone & volcanic ash band.
		226.79 to 226.82 Siltstone and volcanic ash mixed
		60-80% shiny cleated Vitrain
		Sample # 1 (226.09-227.71) FSI #1 above 1st split
		#2 between splits
		#3 below splits
227.68	227.71	SANDSTONE - Split, coarse grained, salt & pepper colour.
227.71	227.85	COAL - .14 m, 70% recovery, black, shiny cleated,
		Sample #1 (same seam) FSI#4.
227.85	228.00	MUDSTONE - Dark grey, several coal bands, shiny
		cleated.
228.00	229.68	MUDSTONE, SILTSTONE & SANDSTONE - Mixed, mottled and
		laminated, sandstone medium to fine grained, salt &
		pepper, decrease in sandstone content towards base,
		increase in Mudstone content towards base.
229.68	230.15	MUDSTONE - Very coally several shiny cleated coal bands
		within, dark grey to black.
230.15	230.60	COAL - .45 m with split of Sandstone 230.35 to 230.43,
		black, shiny, cleated, muddy.
230.60	230.92	MUDSTONE - Very coally, several coally bands, $\leq$ 1.3 cm
		thick, shiny & cleated, mudstone dark brown.
230.92	233.48	MUDSTONE - Dark grey, some coal bands .5 cm thick,
		some sandy & silty blebs, mottled & mixed with
		mudstone.
		End of Hole 233.48 m

CORE DESCRIPTIOI

HOLE# B.C. 80-13 (T.S.) From 0.00 m To 28.81 m

Area _____ By Paul Cowley

FROM	TO	DESCRIPTION
0.00 m	19.65 m	Overburden
19.65 m	26.35 m	Moosebar Formation
		MUDSTONE - Dark grey, peppered with pyrite concretions
		and blebs from 1 cm to 1 mm in diameter throughout.
		At 22.25 is a thin calcite vein.
		23.74 to 24.61 Abundant glauconite.
		24.82 to 25.64 Occasional thin calcite veins.
		26.07 to 26.35 Basal conglomerate Pebble size
		framework of light and dark Chert - 5%; Matrix of
		mud and medium grained sandstone, salt and pepper-
		95%; Coal streaks, minor glauconite, minor pyrite
		in lenses and disseminated.
		GETHING FORMATION
26.35 m	26.65	COAL - 0.30 m - Black, bright banded, well cleated,
		abundant pyrite in lenses, 95% recovery, Fusain - 5%,
		Vitrain - 75%, Duroclarain - 20%.
26.65	26.80	MUDSTONE - Dark grey, carbonaceous, occasional
		pyrite, rare coal streaks.
26.80	26.86	SANDSTONE & MUDSTONE - Sandstone light grey,
		Mudstone dark grey, Sandstone and Mudstone
		interlaminated, cross laminated.
26.86.	27.42	MUDSTONE - Dark grey, frequent pyrite concretions,
		minor Siltstone laminae, abundant plant fossils,
		bedding 73° from core axis.
27.42	27.83	SILTSTONE & MUDSTONE - Interlaminated, Siltstone
		medium grey, Mudstone dark grey, parallel laminations
		at base bioturbated, rare coal streaks.
27.83	28.36	COAL - 0.53 m - 80% Recovery, black, dull banded,
		Duro-clarain 70%, Vitrain 24%, Fusain 1%, poorly
		cleated.
28.36	28.59	MUDSTONE - Dark grey, rare coal streaks, occasional
		plant fossils.
28.59	28.81	SILTSTONE & MUDSTONE - interlaminated, Siltstone
		medium grey, Mudstone dark grey, severely bioturbated

HOLE# B.C. 80-13 (T.S.) From 28.81 m To 38.95 m

FROM	TO	DESCRIPTION
		at top, irregular laminations at base.
28.81	29.29	MUDSTONE - With occasional fine grained Sandstone lenses and minor bands, rare burrowing, bedding 72° from core axis, near base more bioturbation.
29.29	30.30	SANDSTONE - Fine grained, light grey, occasional irregular Siltstone laminae, severely bioturbated in places.
30.30	34.70	SANDSTONE, SILTSTONE & MUDSTONE - Interlaminated, Sandstone light grey, fine grained, Siltstone medium grey, carbonaceous laminae, frequent burrows, irregular laminae, Sandstone frequently in lenses, bedding 73° from core axis.
34.70	35.35	MUDSTONE & SANDSTONE - Mudstone dark grey, Sandstone fine grained, light grey, sandstone in lenses, occasional burrows, carbonaceous laminae, bedding 74° from core axis.
35.35	35.72	SANDSTONE - Fine grained, salt and pepper, fairly clean, light grey, carbonaceous laminae, cross bedded, coal streaks near base, base load cast into Mudstone.
35.72	36.05	MUDSTONE - Dark grey, minor Siltstone laminae, coal streaks at base, pyrite along 2 surfaces at base, bedding 72° from core axis.
36.05	36.22	MUDSTONE & COAL - Mudstone dark grey, carbonaceous, coal bands 2 cm thick of bright banded coal, Vitrain 90%, 10% Duroclarain.
36.22	36.49	SILTSTONE - Dark grey, plant fossils.
36.49	36.82	SANDSTONE & MUDSTONE - Sandstone fine grained, light grey, minor Mudstone bands and irregular laminations, carbonaceous laminae, Sandstone cross bedded, micaceous on some surfaces, plant fossils, Mudstone dark grey.
36.82	37.40	SILTSTONE - Dark grey, non-laminated, from 37.31 to 37.32 is a band of medium grained light grey sandstone.
37.40	38.71	SANDSTONE - Fine grained at top but mostly medium grained, light grey, cross bedded, carbonaceous laminae, rare Siltstone bands (1 cm thick), bedding 72° from core axis, core loss of 43 cm.
38.71	38.95	SANDSTONE - Fine grained, light grey, cross bedded, carbonaceous laminae, burrow.

HOLE* B.C. 80-13 (T.S.) From 38.95 m To 49.49 m

FROM	TO	DESCRIPTION
38.95 m	39.83 m	SANDSTONE - Medium grained, light grey, large scale cross bedded (Foreset beds), faint convolutions in sandstone, bedding 56° from core axis. At base are rare mud clasts.
39.83	40.51	SANDSTONE, SILTSTONE & MUDSTONE - Interbedded, irregular beds < 1 cm thick, sandstone fine grained, light grey, cross bedded, Siltstone dark grey, Mudstone dark grey, carbonaceous laminae, plant fossils.
40.51	40.87	SILTSTONE & MUDSTONE - Interbedded, Siltstone dark grey, Mudstone dark grey, bioturbated, irregular bedding. At base are minor lenses of medium grained, light grey Sandstone.
40.87	41.02	MUDSTONE - Dark grey, carbonaceous, coal streaks and coal bands, plant fossils.
41.02	42.85	SILTSTONE - Medium grey, irregular laminations, coal streaks, bioturbated, plant rootlets, pyrite on broken surfaces, plant fossils, muddy in places, sand near base.
42.85	44.26	SANDSTONE, SILTSTONE & MUDSTONE - Interbedded, irregular bedding surfaces, Sandstone fine grained, light grey, Siltstone medium grey, Mudstone dark grey, carbonaceous laminae, plant fossils, some burrowing and load casts, rip up clasts in several of the thicker sandstone beds.
44.26	44.82	SILTSTONE - Medium grey, minor lenses of very fine grained sandstone.
44.82	45.23	SANDSTONE & SILTSTONE - Interbedded, Sandstone fine grained, medium grey, cross bedded, Siltstone medium grey.
45.23	48.11	MUDSTONE - Dark grey, minor siltstone lenses, rare burrowing, bedding 75° from core axis.
48.11	48.54	MUDSTONE SILTSTONE & SHELL FRAGMENT BANDS - Mudstone dark grey, Siltstone medium grey, 4 bands of shell fragments ∿ 1 cm thick each.
48.54	49.49	MUDSTONE - Dark grey, polished bedding surfaces, burrows filled with siltstone, near base frequent lenses of siltstone and fine grained, light grey Sandstone.

HOLE# B.C. 80-13 (T.S.) From 49.49 m To 64.01 m

FROM	TO	DESCRIPTION
49.49 m	49.67 m	SANDSTONE, SILTSTONE & MUDSTONE - Sandstone fine grained to medium grained, light grey, lenticular and cross bedded, Siltstone medium grey, Mudstone dark grey, burrowing.
49.67	50.43	SILTSTONE & MUDSTONE - Interbedded, Mudstone dark grey.
50.43	51.10	SILTY MUDSTONE - Mudstone dark grey, coaly at top, coal streaks throughout.
51.10	51.24	SILTSTONE - Dark grey, cross bedded, plant fossils.
51.24	52.54	SILTY MUDSTONE - Siltier at base, Mudstone dark grey, coal streaks, carbonaceous laminae, grades into next lower unit.
52.54	53.83	SILTSTONE - Dark grey, rare plant fossils, distinct contact with lower unit.
53.83	56.88	SANDSTONE - Fine grained, dark grey, grades to medium grained in places, coal streaks throughout, carbonaceous laminae, some plant fossils, some zones of rip up clasts, poorly bedded.
56.88	60.70	SANDSTONE & SILTSTONE - Interbedded, Sandstone fine grained, medium grey, Siltstone dark grey, irregular bedding surfaces, burrowing, severely bioturbated in places, Sandstone cross bedded, load casting, plant fossils.
60.70	60.89	CORE LOST
60.89	61.59	SILTSTONE & MUDSTONE - Interbedded, Siltstone medium grey, Mudstone dark grey, irregular bedded, coal streaks , plant fossils.
61.59	62.33	SILTY MUDSTONE - Dark grey, silty near top, coal streaks, abundant plant fossils at base, carbonaceous to base.
62.33	64.01	COAL - 1.68 m, 90% Core recovery.
		0.26 m coal, black, dull banded, moderately cleated, 65% Clarodurain, 35% Vitrain.
		0.02 m Ash Band.
		0.16 Coal, Black, dull banded.

HOLE# B.C. 80-13 (T.S.) From 64.01 m To 71.53 m

FROM	TO	DESCRIPTION
62.33 m	64.01 m	0.02 m Ash banded, moderately cleated, 75% Clarodurain,
	Cont'd	25% Vitrain.
		0.30 m Coal, Methane test sample.
		0.39 m Coal Mudstone turning to ash at base.
		0.33 m Coal, Black, Dull banded, 65% Clarodurain,
		35% Vitrain, moderately cleated.
		0.07 m Coaly Mudstone.
		0.13 m Coal, Black, well cleated, bright banded,
		90% Vitrain, 10% Clarodurain.
64.01	64.30	MUDSTONE - Dark grey, very carbonaceous, plant fossils.
64.30	66.61	SILTSTONE & MUDSTONE - Interbedded, Siltstone medium
		grey, Mudstone dark grey, irregular bedding, some
		bioturbation, Siltstone frequently as lenses, burrows
		throughout.
66.61	67.03	COAL - 0.42 m, Black, canaloid coal, concoidal fractures,
		trace Vitrain.
67.03	67.70	MUDSTONE - Dark grey, coal streaks at base.
67.70	68.23	SILTSTONE & SANDSTONE - Interbedded, Sandstone medium
		grey, fine grained banded and lenticular, Siltstone
		dark grey, rare coal streaks, plant fossils, muddy
		near base, cross bedded.
68.23	68.40	MUDSTONE AND COAL BANDS - 1 cm thick, Mudstone dark
		grey and coaly.
68.40	68.68	MUDDY SILTSTONE - Dark grey, coal streaks, irregular
		bedding planes muddy at top grading to silt at base
		grades to next lower unit.
68.68	71.17	SANDSTONE - Grades from fine grained at top to medium
		grained at base, Sandstone medium grey, cross bedded,
		occasional plant fossils, some cross bedding 40°
		from core axis, sharp lower contact.
71.17	71.53	SANDSTONE - fine grained, medium grey, cross bedded,

HOLE# B.C. 80-13 (T.S.) From 71.53 m To 78.61 m

FROM	TO	DESCRIPTION
		bedding 60° from core axis, sharp lower contact.
71.53 m	71.68 m	MUDSTONE - Dark grey, plant fossils.
71.68	72.63	COAL - 0.95 m, 90% recovery
		0.19 m Coal, Black, dull banded, 20% Vitrain, 80% Claro-durain.
		0.02 m Ash Band
		0.56 m Coal, Black bright banded, 50% Vitrain, 50% Claro-Durain, well cleated.
		0.04 cm Coaly Mudstone
		0.15 m Coal,Black, Bright banded, 80% Vitrain, 20% Claro-Durain, moderately cleated.
72.63	72.79	MUDSTONE - Dark grey, carbonaceous, plant fossils pyrite nodules.
72.79	72.87	COAL - 0.08 cm, 100% Recovery, Black, bright banded, 80% Vitrain, 20% Claro-Durain.
72.87	73.04	MUDSTONE - Dark grey, carbonaceous, sharp lower contact.
73.04	75.45	SANDSTONE - Fine grained, medium gray, cross bedded, carbonaceous, irregular bedding surfaces, Siltstone laminae, bedding 75° from core axis, grading lower contact.
75.45	76.86	SILTSTONE & MUDSTONE - Interbedded, Siltstone dark grey, Mudstone dark grey, irregular bedded, bioturbated, becomes muddy to mudstone at base , carbonaceous laminae, thinly bedded to lenticular.
76.86	77.26	COAL - 0.40 m, Black,poorly cleated, dull coal, 95% Claro-Durain, 5% Vitrain.
77.26	77.85	SILTY MUDSTONE - Silty at top Mudstone at base, dark grey, very carbonaceous, some small bands of Vitrain, minor calcite veinlets, plant fossils.
77.85	78.61	MUDDY SILTSTONE - Dark grey, calcareous throughout calcite layers could be shell fragments, some irregular

HOLE# B.C. 80-13 (T.S.) From 78.61 m To 84.12 m

FROM	TO	DESCRIPTION
		bedding surfaces.
78.61 m	78.90 m	COAL - 0.29 m, 100% recovery, Black, moderately cleated, bright banded, 60% Vitrain, 40% Claro-Durain.
78.90	79.91	MUDSTONE & SILTSTONE - Thinly interbedded, Siltstone dark grey, Mudstone dark grey, plant fossils, rare coal streaks.
79.91	80.32	COAL - 0.41 m, Black, 80% recovery, moderately cleated, bright banded, 50% Vitrain, 50% Claro-Durain.
80.32	80.43	MUDSTONE - Dark grey, carbonaceous, coal streaks.
80.43	80.57	SILTSTONE - Dark grey, occasional plant fossil.
80.57	81.39	SILTSTONE - Dark grey, cacareous , very thin calcite layers, bedding 73° from core axis, minor biotubation.
81.39	81.77	MUDSTONE - Dark gray, calcareous.
81.77	82.14	COAL - 0.37 m, 100% recovery, Black, well cleated, bright banded, 90% Vitrain, 10% Claro-Durain.
82.14	82.70	MUDDY SILTSTONE - Dark grey, plant fossils, 2 - 1 cm ash bands at top, near base becomes calcareous.
82.70	82.92	SILTSTONE - Dark grey, plant fragments, calcareous.
82.92	83.04	MUDSTONE - Dark grey.
83.04	83.27	COAL - 0.23 m, canaloid, Black, conchoidal fracture, 100% recovery.
83.27	83.38	MUDSTONE - Dark grey, plant fragments, grades into lower unit.
83.38	83.61	SILTSTONE - Dark grey, calcareous, rare plant fragments.
83.61	84.12	SILTSTONE & SANDSTONE - Sandstone in lenses, cross-bedded, fine grained, light grey, Silstone dark grey, carbonaceous laminae.
		END OF HOLE 84.12 m

CORE DESCRIPTION

HOLE# B.C.-80-14 From 0.00 m To 95.25 m

Area Bri-Dowling Creek By D.N. Duncan

FROM	TO	DESCRIPTION
0.00 m	83.94 m	Overburden
		GETHING FORMATION
83.94	84.39	MUDSTONE - dark grey, medium grey, abundant plant debris, carbonaceous, becoming silty toward base with minor siltstone laminations at base. Contact at base is gradual with underlying unit.
84.39	90.07	MUDSTONE, SANDSTONE & SILTSTONE - interlaminated, very predominant dark grey, slightly carbonaceous mudstone, sandstone is salt & pepper, fine grained to medium grained & occurs as laminations and lenses. siltstone is medium grey to light medium grey, some sandstone lenses are crossbedded and bedding occurs from sandstone to siltstone, abundant worm burrows, unit more highly bioturbated at top of section, mudstone content increasing toward base, sandstone becomes more fine grained toward base and siltstone more abundant than sandstone toward base. Bedding angle at 80° to C/A.
90.07	90.11	MUDSTONE & COAL - interlaminated, mudstone is dark dark and highly carbonaceous, coal occurs as broken pieces and is very muddy, actually this is a coaly mudstone (muddy coal at top - coaly mudstone at base).
90.11	91.80	SANDSTONE & SILTSTONE - interlaminated, sandstone is salt & pepper & fine grained to medium grained, siltstone is medium grey, poorly laminated, minor bioturbation, minor cross bedding, minor coaly streaks, bioturbation increases toward base.
91.80	93.28	SANDSTONE - medium grained, salt & pepper, bioturbated, worm burrows, minor mudstone and siltstone laminae but generally very poorly laminated - grain size decreases toward base, minor light grey coarse bands in bottom 30 cm of section.
93.28	95.25	SANDSTONE - salt & pepper, laminated, medium grained, crossbedded, coaly streaks throughout section, minor medium grey siltstone laminae, minor graduated

HOLE# B.C.-80-14 From 95.25 m To 105.56 m

FROM	TO	DESCRIPTION
		bedding, very minor worm burrows, abundant calcite cement.
95.25	96.31	MUDSTONE & SANDSTONE - interlaminated, mudstone is dark medium grey & silty and predominant, sandstone is salt & pepper, fine grained & occurs as lenses & laminae, mud content increases toward base, worm burrows throughout section, bedding angle at 82° to C/A.
96.31	96.50	COAL - 0.19 m, black, banded, highly broken & blocky, Durain-clarain content greater than Vitrain content, poorly cleated, 30% recovery.
96.50	98.00	SILTSTONE, SANDSTONE - interlaminated, predominant sandstone, muddy, dark-medium grey, contains mudstone clasts at top of section, mud content of siltstone decreases toward base, sandstone is salt & pepper, fine grained with distinct crossbedding and increases in abundance toward base, abundant worm burrows toward base, minor coaly streaks at top of section, bedding angle at 80° to C/A.
98.00	98.50	SANDSTONE - salt & pepper, medium grained, laminated at top of section, becoming massive toward base, minor cross bedding, minor siltstone laminations, calcite cement.
98.50	98.82	SANDSTONE & MUDSTONE - interlaminated, predominant sandstone, salt & pepper, medium grained, crossbedded, mudstone dark grey, worm burrowing.
98.82	103.97	MUDSTONE & SANDSTONE - interlaminated, predominant mudstone, silty, dark grey-medium grey, silt content of mudstone higher at top & base of section and decreases highly at middle where mudstone becomes carbonaceous, sandstone is fine grained, salt & pepper, occurs as lenses and laminations, it is most abundant at top & base of section, bands of shell fragments from 101.26 m to 102.35 m and a band from 103.23 m to 103.24m shell (bivalve) molds at 102.23 m & throughout section. bedding angle at 82° to C/A.
103.97	105.56	MUDSTONE - dark grey, highly carbonaceous, abundant coal

HOLE# B.C.-80-14 From 103.97 m To 114.30 m

FROM	TO	DESCRIPTION
103.97	cont'd	streaks and bands, abundant disseminated pyrite, expecially with coal bands, abundant plant debris, smells of sulphur when core broken (marine mudstone)?.
105.56	106.25	MUDSTONE - dark grey to dark-medium grey, silty, silt content increasing toward base, minor plant debris.
106.25	106.39	MUDSTONE - dark grey, abundant plant debris, minor coaly streaks.
106.39	106.55	SANDSTONE - medium grey, extremely muddy, medium grained, abundant coaly streaks and plant debris.
106.55	108.30	COAL - 1.75 m, black, finely banded, abundant fusain (∿10%) throughout seam.
		106.55 m to 107.70 m - Vitrain 30%, Clarain-durain 60%, Fusain 10% - well cleated, Sample 1.
		107.70 m to 107.92 m - Vitrain 10%, Clarain-durain 80%, Fusain 10%, well cleated, Sample 1.
		107.92 m to 108.00 m - Sandstone split, fine grained, light-medium grey, abundant coaly streaks.
		108.00 m to 108.30 m - Vitrain 30%, Clarain-durain 60%, Fusain 10%, muddy coal, Sample 2.
		approximately 95% recovery for the whole seam.
108.30	110.71	SILTSTONE, SANDSTONE & MUDSTONE - interlaminated, medium grey siltstone predominant, sandstone is salt & pepper, fine grained, crossbedded, ripple marks, convoluted bedding, mudstone is dark grey, minor plant debris & coaly streaks, minor worm burrows, mudstone increasing toward base.
110.71	111.59	MUDSTONE - dark grey to black, highly carbonaceous, abundant coal bands & streaks, abundant plant debris, almost a coal (coaly mudstone), bedding angle at 85° to C/A.
111.59	114.30	SILTSTONE - dark medium grey, minor sandstone laminae, becoming muddy toward base, abundant plant debris and coaly streaks and bands.
		END OF HOLE 114.30 m

CORE DESCRIPTIOI

HOLE# B.C. 80-15 From 0 To 119.55 m

Area BRI - Dowling Creek By Joey Ridley

FROM	TO	DESCRIPTION
0	107.29m	Overburden
107.29	108.63	GETHING FORMATION
		SANDSTONE - Broken pieces, no solid core, 70%
		recovery, measurements may be off.
108.63	109.00	MUDSTONE - Dark grey to black.
109.00	109.26	SANDSTONE - Broken pieces and some pieces of
		dill, medium to coarse grained.
109.26	110.00	SANDSTONE - Fine to medium grained extremely
		cross bedded, trough & planar, salt & pepper
		colour.
110.00	110.38	SANDSTONE - Coarse grained, extremely crossbedded
		trough & planar, salt & pepper colour.
110.38	110.73	SANDSTONE & SILTSTONE - Interbedded, extremely
		crossbedded, Siltstone dark grey, Sandstone medium
		to coarse grained, salt & pepper colour.
11073	111.23	SANDSTONE - Coarse grained, few planar crossbeds,
		salt & pepper.
111.23	112.55	SANDSTONE, SILTSTONE & MUDSTONE - Interbedded,
		few planar crossbeds, load casts & mud/sand
		interface, Sandstone coarse grained, salt & pepper,
		Mudstone increases toward top, some layers are mixed
		vertically, some mud chips,
112.55	113.23	MUDSTONE & SILTSTONE - Interbedded, some sandy blebs,
		coal bands at bottom.
113.23	115.08	COAL - 1.85 m, Black, shiney & cleated, ~60%.
		SAMPLE #1 1.85 meters thick.
		Splits - 114.13 to 114.18 Sandstone coarse grained
		& Siltstone. 114.88 to 114.96 Siltstone.
115.08	117.94	MUDSTONE - with Siltstone & very fine grained
		Sandstone interlaminated and mixed, dark grey to
		black, load casts.
117.94	118.67	MUDSTONE - Black, very carbonaceous.
118.67	118.72	COAL - .05 meters, black shiny, one cleavage plane.
118.72	119.17	MUDSTONE - Black, carbonaceous.
119.17	119.55	MUDDY SILTSTONE - With paler Siltstone blebs &
		burrows 2 cm x 2 cm.

HOLE# B.C. 80-15 From 119.55 m To 122.53 m

FROM	TO	DESCRIPTION
119.55 m	120.27 m	MUDSTONE - Black, carbonaceous, few Siltstone chips & blebs.
120.27	120.35	COAL - .08 meters, black, all shiny & cleated vitrinite.
120.35	120.81	MUDSTONE - Black, very carbonaceous, contains coal bands 0.3 cm thick.
120.81	122.53	MUDSTONE & SILTSTONE - Interlaminated parallel laminae, carbonaceous towards bottom, a 1 cm thick coal band at 122.47 to 122.48.
		END OF HOLE

CORE DESCRIPTION

HOLE# BC-80-16 From 38.40 To 203.91

Area BRI-DOWLING CREEK By PAUL COWLEY

FROM	TO	DESCRIPTION
0.00m	38.40	Overburden
38.40	203.91	Moosebar Formation - Dark grey mudstone, occasional medium grey siltstone medium bedded.
		50.29m to 50.35m Calcite fracture fillings
		52.92m to 52.96m Calcite fracture fillings
		60.34m to 60.36m fault gouge
		69.88m to 69.95m Calcite fracture fillings
		At 76.45 calcite vein 2mm thick
		88.78m to 88.65, 89.69 to 89.78m, 89.97 to 90.15, 90.47 to 90.54 Siltstone
		91.66m to 91.67m Siltstone Band
		97.25m 97.35m Calcite fracture fillings
		99.31m to 99.36m Calcite fracture fillings
		99.91m to 99.96m " " "
		@103.00m Bedding 37° from axis of core
		104.94m to 10[illegible].02m Calcite fracture fillings
		119.67m to 119.71m Ash Band
		@181.66 Bedding 45° from C/A
		Fracture Zone - Calcite and slickensides @ 194.41, 194.45, 194.53, 194.59m
		@196.48m Bedding 46° from C/A
		Fracture Zone - Calcite and slickensides @ 201.26, 201.40, 201.58, 202.02m.
		End of Hole 203.91m

CORE DESCRIPTIC

HOLE# B.C.-80-17 From 0 To 58.06 m

Area BRI-DOWLING CREEK By Joey Ridley

FROM	TO	DESCRIPTION
0	40.76 m	Overburden
		Gething Formation
40.76 m	41.70 m	SANDSTONE, SILTSTONE & MUDSTONE - Interlaminated sandstone is fine grained, salt & pepper, some laminae are mottled - mixed, coally bands 1 mm thick, shiny & cleated. 1 ash band .4 cm thick at 41.31 mud clasts occur towards bottom, small worm burrows 2 cm x 2 mm, laminae angle at C/A 73°.
41.70	42.57	SANDSTONE - Medium to coarse grained, salt & pepper colour, coarser towards bottom, small crossbeds 0.4 cm high, trough & planar, some darker bands of sandstone have slight mud content, angle to C/A ∿75°, flattens towards base, angle to C/A ∿85°.
42.57	47.62	SANDSTONE - coarse grained, salt & pepper, coal bands o.5 to 2 mm thick, cleated & shiny.
47.62	48.22	SANDSTONE - coarse grained with several muddy and coally bands, coal up to 3 mm thick, mud clasts 0.4 mm x 1 cm, shiny cleated, bands of muddy sandstone not with distinct bounderies - some medium fine grained sandstone.
48.22	56.51	SANDSTONE - coarse grained to very coarse grained, Coal bands several 1-2 mm thick, one 2.5 cm thick at 48.805 to 48.83, some chunks 2.5 cm x 1.5 cm, black shiny well cleated, cross bedding planar 2-3 cm high, some at 70° from C/A, ash band at 52.38 to 52.41, 0.3 m thick, few mud clasts 2 cm x .4 cm.
56.51	57.01	SANDSTONE - coarse grained, salt & pepper, several mud clasts 3 mm to 4 mm, scattered or in bands, 2.5 cm x 2 cm, black coal bands 3 mm thick , shiny & cleated.
57.01	57.53	COAL - .52 meters thick, black shiny, cleated, GAS sample #1
57.53	58.06	MUDSTONE, SILTSTONE & very fine grained SANDSTONE interlaminated, finely & mixed, several lenticuler blebs.

HOLE* B.C.-80-17 From 58.06 m To 70.82 m

FROM	TO	DESCRIPTION
58.06 m	58.62 m	MUDSTONE - dark grey, 1 mm thick coal bands shiny & cleated.
58.62	58.72	SILTSTONE - with mudstone, extremely crossbedded, trough & planar, 1 cm high, pale grey to dark grey in colour, slight burrowing and ripple marks.
58.72	59.33	MUDSTONE - dark grey to black, very carbonaceous, coal bands shiny & cleated up to 0.5 cm thick.
59.33	61.49	MUDSTONE, SILTSTONE & very fine grained sandstone, interbedded & mixed mottled, medium to dark grey.
61.49	61.76	SANDSTONE - very fine grained, extremely mottled & mixed with mudstone & siltstone.
61.76	62.23	MUDSTONE - with very fine grained sandstone & siltstone blebs & lamanae.
62.23	62.63	MUDSTONE, SILTSTONE & very fine grained sandstone mottled & convoluted bedded, worm burrow.
62.63	64.27	MUDSTONE - dark grey to black, darker & more carbonaceous towards base, angel to C/A 75°, siltstone lamanae at top.
64.27	64.36	COAL - .09 m thick, very hard Claro-durain, slightly blocky, metallic grey colour, 10% Vitrinite, shiny & cleated, black.
64.36	64.80	MUDSTONE & SILTSTONE - interlaminated, very pale grey to medium to dark grey load structures, worm burrows, crossbeds, ripple marks all at small scale.
64.80	65.06	MUDSTONE - dark grey, siltstone lamanae at top.
65.06	65.11	COAL - .05 m black shiny cleated.
65.11	66.07	MUDSTONE - dark grey, siltstone bands & blebs at top one burrow 1 cm x 3 cm.
66.07	66.63	COAL - 0.56 m thick, black shiny, well cleated, GAS Sample #2
66.63	69.48	MUDSTONE - dark grey, calcite veinlets 1 mm thick, siltstone blebs & lamanae towards base.
69.48	70.17	MUDSTONE, SILTSTONE & very fine grained sandstone interlaminated & interbedded angle to C/A 85° to 80°, mudstone increases towards base.
70.17	70.82	MUDSTONE - dark grey to black

HOLE* B.C.-80-17 From 70.82 m To 82.67 m

FROM	TO	DESCRIPTION
70.82 m	71.01 m	COAL - .19 m thick, black shiny, well cleated, fairly hard.
71.01	74.37	MUDSTONE - coally at top in band of well cleated shiny coal, very coally 73.51 to 73.59, siltstone blebs mixed in, increasing towards base.
74.37	75.64	SANDSTONE - fine to medium grained with muddy laminae especially at top, salt & pepper sandstone, cross bedding, trough & planar, pyrite nodules 1.5 cm x 4 mm.
75.64	75.85	MUDSTONE - sandy, dark grey.
75.85	76.28	SANDSTONE, SILTSTONE & MUDSTONE - interbedded and mixed, sandstone medium to fine grained, salt & pepper, few carbonaceous laminae.
76.28	76.80	MUDSTONE - with siltstone blebs & laminae dark grey.
76.80	77.06	COAL - 0.26 meters, black & shiny, one cleavage, concoidal fracture, quite hard.
77.06	77.17	MUDSTONE - silty, medium grey, several calcite veinlets in several directions.
77.17	77.42	COAL- 0.25 meters thick, black shiny, well cleated, GAS Sample #3
77.42	79.56	SANDSTONE - grading into very fine grained sandstone towards base, some very coally mudstone bands at top several mudstone laminae towards base - calcite veinlet with slickensides.
79.56	80.76	MUDSTONE - with siltstone & fine grained sandstone laminae & blebs, one 1.5 cm ash band at 80.19.
80.76	80.81	SANDSTONE - medium grained, salt & pepper, carbonaceous laminae.
80.81	80.99	MUDSTONE - dark grey, few sandstone blebs.
80.99	81.00	SANDSTONE - fine grained, salt & pepper
81.00	81.11	COAL - 0.11 meters thick, bands of black, shiny, well cleated.
81.11	81.79	MUDSTONE, SILTSTONE & very fine grained sandstone, interlaminated, very crossbedded, slight bioturbation, pale grey to medium to dark grey.
81.79	82.17	MUDSTONE - dark grey to black.
82.17	82.67	MUDSTONE - very carbonaceous, coally bands, shiny & cleated to 2 mm thick.

HOLE# B.C.-80-17 From 82.67 m To 87.17 m

FROM	TO	DESCRIPTION
82.67 m	83.15 m	SANDSTONE - medium grained, salt & pepper, cross bedded angle up to 55° to C/A, pyrite in coal band, 2 mm thick.
83.15	85.03	MUDSTONE, SILTSTONE & very fine grained sandstone, interlaminated & interbedded, ripple marks, load structures, crossbeds & burrows all on small scale.
85.03	85.47	SANDSTONE - fine grained, pale grey, some muddy laminae.
85.47	86.33	MUDSTONE - dark grey, silty towards base.
86.33	87.17	MUDSTONE, SILTSTONE & very fine grained sandstone, interlaminated, bioturbated, angle at 80° to C/A.
		End of Hole

CORE DESCRIPTION

HOLE# B.C.-80-18 From 0.00 m To 114.78 m

Area Bri-Dowling Creek By J.C. Ridley

FROM	TO	DESCRIPTION
0.00	100.28	Overburden
		Moosebar Formation
100.28	100.95	Fault gauge & broken rock
		Mudstone mostly black, little silty.
100.95	102.11	MUDSTONE - dark grey, pyrite nodules up to 1 cm x 3 cm.
102.11	102.20	Fault gauge = mud & mudstone pieces.
102.20	104.30	MUDSTONE - dark grey, few more bands with fault gauge, pyrite nodules up to 1 cm x 3 cm.
104.30	104.98	SANDSTONE - coarse grained to conglomeratic pebbles of sandstone & other rock fragments, up to 4 mm x 6 mm.
		Gething Formation
104.98	105.91	MUDSTONE - with very finely interlaminated siltstone & siltstone blebs, pyrite in nodules & disseminated.
105.91	106.29	MUDSTONE - dark grey to black, carbonaceous, several pyrite nodules lenticular.
106.29	106.68	COAL - 0.39 m 20% black, shiny, cleated, 80% Claro-durain, hard, metallic grey, one cleavage, sometimes blocky, FSI & sample #1, extremely hard towards base, pyrite bands throughout & nodules up to 3 mm thick, 100% recovery.
106.68	106.99	MUDSTONE, SILTSTONE & SANDSTONE - very fine grained, interlaminated, mudstone very carbonaceous or coaly, siltstone & sandstone very pale grey, cross beds & ripple marks.
106.99	107.55	COAL - 0.56 meters thick, no pyrite, mostly shiny, cleated & black, Sample #2 - 100% recovery.
107.55	108.61	MUDSTONE - with slight siltstone in blebs & mixed in calcite veinlets.
108.61	112.55	SILTSTONE - with mudstone & very fine grained sandstone laminae, bedding well disturbed, ripple marks, worm burrows, scarce coal bands 2 mm thick.
112.55	113.28	MUDSTONE - with siltstone blebs & laminae, angle at 85° to C/A.
113.28	114.78	SANDSTONE - very fine grained, pale- medium grey,

HOLE# B.C.-80-18 From 113.28 m To 123.90 m

FROM	TO	DESCRIPTION
113.28	cont'd	mudstone & siltstone laminae at top, crossbeds where laminated and in sandstone at base, trough & planar.
114.78	115.39	MUDSTONE, SILTSTONE & very fine grained sandstone interlaminated, sandstone & siltstone very pale grey, mudstone black, long worm burrows up to 4 cm long, cross bedding, some convoluted beds.
115.39	116.08	MUDSTONE - with siltstone laminae, less siltstone towards base.
116.08	117.33	MUDSTONE - dark grey to black, sandy at base ,carbonaceous & coaly.
117.33	117.63	SILTY SANDSTONE - very fine grained, massive, pale to medium grey.
117.63	117.84	MUDSTONE, SILTSTONE & very fine grained sandstone interlaminated, crossbeds, ripple marks.
117.84	118.17	SANDSTONE - fine grained to medium grained, some mud mixed in, pale to medium grey.
118.17	118.54	Fine grained SANDSTONE with SILTSTONE & MUDSTONE - interlaminated & mixed, few ripple marks.
118.54	119.13	SANDSTONE - fine grained, pale grey, massive, medium grey where slightly muddy.
119.13	119.73	MUDSTONE, SILTSTONE & very fine grained sandstone interlaminated, bioturbated, well mixed.
119.73	121.04	SANDSTONE - fine to medium grained, interbedded, planar crossbeds, pale to medium grey, angle to C/A up to 80°. some muddy bands, lower 36 cm coarse grained.
121.04	122.88	Fine grained SANDSTONE, SILTSTONE & MUDSTONE - interlaminated & bioturbated, less sandy & more muddy towards base.
122.88	123.06	COAL - 0.18 meters thick, 50% recovery, all black, shiny cleated, pyritic & silty at very top.
123.06	123.18	MUDSTONE - coaly, dark grey.
123.18	123.54	SILTY MUDSTONE - with silt content increasing towards base, siltstone occurs in blebs & well mixed with Mudstone.
123.54	123.90	MUDSTONE & SILTSTONE - interlaminated finely, fine grained sandstone towards base, angle to C/A up to 80°. very small burrows.

HOLE# B.C.-80-18 From 123.90 m To 137.72 m

FROM	TO	DESCRIPTION
123.90	124.89	SANDSTONE - fine to medium grained, crossbedded, pale to medium grey, some muddy bands bioturbated & ripple marks.
124.89	125.38	Fine grained SANDSTONE, SILTSTONE & MUDSTONE - interbedded & interlaminated, worm burrows up to 1 cm long, ripple marks, more mudstone towards base.
125.38	131.44	MUDSTONE - with siltstone laminae, almost half & half at top but grades into preominantly mudstone by 125.91m ripple mark & worm burrows, mudstone is dark grey to black, carbonaceous.
131.44	131.58	SANDSTONE & MUDSTONE - interbedded, coal bands, slickensided, sandstone salt & pepper, medium grained.
131.58	131.71	SILTSTONE - medium grey.
131.71	131.86	SILTSTONE & SANDSTONE - vertically mixed with coal which has been fractured and is full of calcite veinlets.
131.86	133.93	COAL - 2.07 meters SAMPLE #3-100% recovery, 131.86 to 132.06 GAS SAMPLE #1 coal. 132.06 to 132.10 SANDSTONE split, pale grey. 132.10 to 132.28 coal mostly cleated & shiny. 132.28 to 132.67 Clarodurain coal, very hard, metallic grey. 132.67 to 132.93 - Black, shiny coal and well cleated. 132.93 to 132.97 Siltstone & sandstone split, medium grained, pale grey sandstone. 132.97 to 133.64 Black coal, shiny and cleated. 133.64 to 133.68 siltstone split with coal bands. 133.68 to 133.93 black coal, well cleated & shiny.
133.93	134.20	MUDSTONE - dark brown,coaly
134.20	136.00	MUDSTONE, SILTSTONE & very fine grained sandstone, interlaminated & interbedded, well mixed - bioturbated at top, trough cross beds, ripple marks, increasing mud content towards top.
136.00	136.04	SANDSTONE - fine grained, pale grey, crossbedded, trough.
136.04	136.40	MUDSTONE - with siltstone blebs & laminae, carbonaceous.
136.40	137.72	MUDSTONE - dark grey to black, carbonaceous, massive, odd coal bleb.

HOLE# B.C.-80-18 From 137.72 m To 148.13 m

FROM	TO	DESCRIPTION
137.72	139.23	SILTY MUDSTONE - in bands or mixed.
139.23	139.45	SILTSTONE - massive, few calcite veinlets.
139.45	139.88	SILTY MUDSTONE - brownish-grey.
139.88	140.44	SILTSTONE, MUDSTONE & very fine grained sandstone, mixed and poorly interlaminated.
140.44	140.62	SILTSTONE, SANDSTONE & MUDSTONE - interlaminated, angle to C/A 75°.
140.62	141.03	SANDSTONE - muddy, banded, light to medium grey to dark grey where muddy, medium grained sandstone, angle to C/A 89°.
141.03	142.72	SANDSTONE - medium to coarse grained, salt & pepper, very faint crossbeds, coaly streaks.
142.72	143.26	MUDSTONE - dark grey, coaly streaks, very carbonaceous, increasing towards base.
143.26	143.83	COAL & MUDSTONE - interbanded, coal bands are black shiny, well cleated.
143.83	145.02	MUDSTONE - coaly, fault gauge 144.70 to 144.85 calcite veinlets & more fault gauge at 144.91 & 144.97.
145.02	146.18	SILTY MUDSTONE - several calcite veinlets at 90° & other various angles to C/A.
146.18	147.11	MUDSTONE - massive, slightly coaly.
147.11	147.18	COAL & COALY MUDSTONE - all broken up.
147.18	148.13	SANDSTONE - with siltstone & mudstone bands, sandstone medium grained, salt & pepper, calcite veinlet at 30° from C/A, 30 cm long, grades into siltstone towards base.
		148.13 END OF HOLE

HOLE# B.C. 80-19 From 0.00m To 400.29

AREA BRI-DOWLING CREEK

FROM	TO	DESCRIPTION
0.00m	36.58	OVERBURDEN
36.58	400.29	MOOSEBAR FM - Dark grey mudstone, occasional medium grey siltstone medium bedded.
		BEDDING 60° from C/A @ 39.50m
		63° @ 41.00m
		67° @ 42.00m
		71° @ 48.00m
		68° @ 55.70m
		69° @ 58.80m
		64° @ 64.80m
		68° @ 73.00m
		71° @ 92.30m
		75° @111.40m
		75° @117.60m
		73° @123.30m
		73° @133.10m
		71° @143.80m
		72° @157.30m
		69° @185.85m
		- 163.32m to 163.41m Bentonite band-green, talc-like, with bands of dark grey spots consisting of clay.
		- 173.84 surface with pelecypod and plant fossil
		- 175.40m to 175.45m shear surfaces on shale.
		- bedding 72° from C/A @ 188.80m
		- SLICKENSIDES on all surfaces from 190.72m to 195.40m.
		- SILTSTONE BANDS - Medium grey frequently associated with fracturing @ 189.82 189.86, 192.80 to 192.88m, 193.27 to 193.39m, 193.56 to 193.63m, 194.56 to 194.62, 195.08 to 195.13, 198.34 to 198.45m.
		- ASH BANDS frequently altered to bentonite, occasional contain dark grey Mudstone Clasts @ 207.85 to 207.88, 209.15 to 209.17.
		- SLICKENSIDES @ 211.95 and @ 213.98m
		- Ash band with dark grey spots 212.99 to 213.00m and 215.41 to 215.48m
		- Ash band and slickensides 221.41 to 221.42
		- Ash band 228.74 to 228.81m - Bedding 71° from C/A

HOLE# B.C. 80-19 From 36.58 To 400.29

FROM	TO	DESCRIPTION
		Ash bands 231.06 to 231.09m, 232.39 to 232.41m,
		236.98 to 237.04m
		244.18 to 245.00m crunched up shale but no slickensides.
		248.72 Slickensides
		249.46 Slickensides
		251.70 Slickensides (Abundant)
		256.45 to 256.62 crunched up shale but no slickensides
		- Calcite filled fractures @ 258.10 and @ 258.34 - 22°
		to C/A.
		Shear zone 263.96 to 264.65m with a section 264.44 to
		264.65 highly shattered and calcite veining.
		SHEAR ZONE 267.71m to 267.88m and 268.63 to 268.74m.
		- SILTSTONE - medium grey 281.17 to 281.31m and 302.05
		to 302.21.
		Bedding 15° to C/A @ 285.08m.
		- Crumbled shale but no slickensides @ 293.65 to 293.78m
		- Bedding 15° to C/A @ 296.73m
		- SILTSTONE - medium grey 305.73 to 305.95m
		- Shell band - Pelecypods - 334.73 to 334.74m - bedding
		83° to C/A
		- SANDSTONE - fine grained - irregularly banded -
		probably sloughing from Delta Front - 366.32 to 366.35
		- Bedding 79° to C/A @ 374.30m
		- SANDSTONE - fine grained,slough from Delta Front.
		382.70 to 382.71, 386.85, 389.42 to 389.44m, 389.56 to
		389.59
		- Bedding 81° to C/A @ 386.54m
		79° to C/A @ 388.85m
		75° to C/A @ 389.44m
		78° to C/A @ 389.59m
		- Glauconite present from 394.79m to 400.29m
		- Pyritic towards base
		- Conglomerate - 399.46m to 400.29 - Granular chert
		conglomerate, light and dark grey and rare green chert,
		average framework size is 2mm.

HOLE# B.C. 80-19 From 400.29 To 412.06

FROM	TO	DESCRIPTION
		Largest size is 6mm, matrix dark grey siltstone with glauconite, framework 10%, lower contact sharp.
		GETHING FM.
400.29	402.05	SILTSTONE - medium grey, abundant carbonaceous. Lamelli, cross bedded, worm burrows, minor pyrite bands, plant fragments,
		SILTY MUDSTONE - Dark grey, abundant plant at middle, coal streaks at middle with shear surfaces, occasional minor silty bands to base, lower contact sharp.
402.05	403.98	SANDSTONE - fine grained, dark grey, carbonaceous lamelli, cross bedded, siltstone bands towards base, lower contact gradational.
403.98	406.13	MUDDY SILTSTONE - dark grey, bedding 77° to C/A, lower contact gradational.
		SANDSTONE AND SILTSTONE interbedded, sandstone fine grained, medium grey, cross bedded, siltstone dark grey.
406.13	407.57	SILTSTONE AND SANDSTONE interbedded - Siltstone medium grey, plant fossils, carbonaceous. Lamelli, occasional thin sandstone bands, sandstone light grey, cross bedded, occasional sandstone lenses, becomes predominantly sandy at base, lower contact gradational.
407.57	409.05	SILTSTONE - medium grey, rare qine grained sandstone lenses, lower contact sharp.
409.05	410.06	SILSTONE AND SANDSTONE - Siltstone medium grey, three thickly bedded sandstone, fine grained to medium grained light grey, sandstone beds show grading upward, lower contact sharp.
410.06	410.59	SILTSTONE - medium grey.
410.59	411.15	SANDSTONE AND SILTSTONE - thinnly interbedded, sandstone light grey, fine grained, siltstone medium grey, beds have irregular surfaces, some bioturbated, calcite vein and slickensides 80° to C/A and 40° to C/A.
411.15	412.06	SANDSTONE - light grey, fine grained to medium grey, massive, some cross bedded, two zones of graded bedding upwards, sharp lower contact.

HOLE# B.C. 80-19 From 412.06 To 422.82

FROM	TO	DESCRIPTION
412.06	412.84	SANDSTONE - top grades from siltstone to fine grained sandstone over 20cm then predominantly medium grained sandstone with a muddy matrix, some bedding, plant fossils sharp lower contact.
412.84	413.86	SILTSTONE AND MUDSTONE - grades from siltstone at top to mudstone at base, siltstone dark grey, mudstone dark grey.
413.86	415.72	COAL - 1.86m - 100% recovery, modified cleated, hard sample #1.
		0.63m coal, dull coal, black, 95% duro-clarain, 5% fusain.
		0.27m coal, dull banded, black, 85% duro-clarain, 15% vitrain.
		0.64m coal, black, bright banded, 60% vitrain, 40% duro-clarain.
		0.32m coal, black, dull banded, 85% duro-clarain, 10% vitarin, 5% fusain.
415.72	416.04	MUDSTONE - dark grey, very carbonaceous, plant fossils
416.04	417.22	MUDSTONE AND SILTSTONE interlaminated, worm burrows, mudstone dark grey, siltstone medium grey, bottom 3cm fine grained to medium grained sandstone, sharp lower contact.
417.22	418.25	MUDSTONE - dark grey, very carbonaceous, coal streaks
418.25	418.71	SILTSTONE - medium grey, carbonaceous towards base.
418.71	418.88	SILTSTONE - very fine grained, light grey, convolute bedding.
418.88	419.24	MUDSTONE - dark grey, very carbonaceous, coal streaks, lower contact gradational.
419.24	421.61	SILTSTONE AND SANDSTONE intermixed, irregular bedding surfaces convoluted bedding in places, carbonaceous lamelli, sandstone medium grey, siltstone medium grey, sharp lower contact.
421.61	422.03	SANDSTONE - fine grained, light grey, some convoluted bedding, minor cross bedding
422.03	422.82	SANDSTONE, SILTSTONE AND MUDSTONE INTERLAMINATED - Sandstone - light grey, cross bedded, fine grained, Siltstone medium grey, mudstone medium grey, rare worm burrows.

HOLE# B.C. 80-19 From 422.82 To 436.58

FROM	TO	DESCRIPTION
422.82	424.57	SANDSTONE - fine grained, medium grey, carbonaceous lenses and specks, bedding only at top 10cm, bedding 75° to C/A.
424.57	424.62	COALY MUDSTONE, dark grey.
424.62	425.50	COAL - 0.88m - 99% recovery, modified cleated, sample #2. 0.64m coal - black, canneloid coal, no cleating transitional to next lower unit. 0.25m coal - black, dull coal, no cleating, 96% duro-clarain, 2% fusain.
425.50	432.81	MUDSTONE, SILTSTONE, SANDSTONE - Mudstone and siltstone interlaminated, mudstone dark grey, siltstone dark grey, sandstone in thin bands and lenses at middle of unit. minor worm burrows, sandstone medium grey, fine grained rare pyrite nodules, bedding 79° to C/A, slickensides at base.
432.81	433.40	SILTSTONE AND SANDSTONE INTERBEDDED - Sandstone fine grained medium grey, convoluted, Siltstone medium grey, coal streaks, rip up clasts at top.
433.40	436.53	COAL - 3.13m - 95% recovery - 433.40 to 433.91m coal - black - dull, 95% duro-clarain, 3% vitrain, 2% fusain, poorly cleated - 433.91 to 434.00m sandstone - fine grained, medium grey. - 434.00 to 434.10m coal - dull and bright - 50% vitrain. 45% duro-clarain, 5% fusain, poorly cleated 434.10 to 434.16 - sandstone - fine grained, medium grey, bedding 75° to C/A - 434.16 to 434.95 - coal - black, slickensides, dull banded, 85% duro-clarain, 10% vitrain, 5% fusain, poorly cleated. - 434.95 to 435.04 - sandstone - medium grey, fine grained - 435.04 to 436.03 - coal - black, dull, 95% duro-clarain, 3% fusain, 2% vitrain, poorly cleated 436.03 to 436.53 - coal - black, dull banded, 65% duro-clarain, 30% vitrain, 5% fusain, poorly cleated slickensides.
436.53	436.58	MUDSTONE - dark grey, carbonaceous, coal streaks

HOLE# B.C. 80-19 From 436.58 To 448.03

FROM	TO	DESCRIPTION
436.58	436.69	SANDSTONE - fine grained, medium grey, bedding 75° to C/A, coal streaks
436.69	436.91	COAL - 0.30m - black, dull and bright - 50% vitrain, 50% duro-clarain, modified cleating, 90% recovery.
436.91	437.09	MUDSTONE - dark grey, very carbonaceous, coal streaks
437.09	437.20	COAL - 0.11m, black, bright banded, 80% vitrain, 20% duro-clarain, well cleated.
437.20	437.52	MUDSTONE - very carbonaceous, coal streaks, dark grey, lower contact gradational.
437.52	438.95	MUDSTONE AND SILTSTONE INTERLAMINATED, irregular bedding planes, bioturbated, 438.08 to 438.10 breccia in calcite 53° to C/A, siltstone medium grey, mudstone dark grey, minor fine grained sandstone lenses towards base.
438.95	439.02	MUDSTONE - dark grey
439.02	439.13	COAL - 0.11m - black, 50% vitrain, 50% claro-durain, core ground.
439.13	439.71	Core loss 0.58m
439.71	441.97	MUDSTONE, SILTSTONE, SANDSTONE - completely gradational from dark grey mudstone at top to medium grey siltstone to fine grained, medium grey sandstone at base, bedding very faint, in places convoluted, clacite veinlets from 440.74m to base and brecciated in places.
441.97	442.40	MUDSTONE AND SILTSTONE INTERLAMINATED, Mudstone dark grey, siltstone medium grey, siltstone in irregular thin lenses and bands, sharp upper and lower contact.
442.40	442.64	COAL 0.24m - black, poorly cleated, 50% vitrain, 50% claro-durain, slickensided.
442.64	442.88	Core loss 0.24m
442.88	443.85	SILTSTONE AND MUDSTONE - mudstone at top grading to siltstone towards base, mudstone dark grey,siltstone medium grey, irregular bedding surfaces to convoluted.
443.85	446.17	SANDSTONE - fine grained, medium grey, cross bedded, slickensides and calcite veinlets throughout, lower contact gradational.
446.17	447.57	SILTY MUDSTONE - medium grey.
447.57	448.03	COAL - 0.46m - black, poor cleating, 80% duro-clarain, 20% vitarin.

HOLE# B.C. 80-19 From 448.03 To 449.88

FROM	TO	DESCRIPTION
448.03	448.18	Core loss 0.15m
448.18	448.95	MUDSTONE - dark grey, very carbonaceous, coal streaks
448.95	449.24	COALY MUDSTONE - large coal streakd and sections of very coaly mudstone, lower contact sharp.
449.24	449.88	MUDSTONE, SILTSTONE AND SANDSTONE INTERLAMINATED, Sandstone - fine grained, medium grey, siltstone medium grey, mudstone dark grey, irregular bedding surfaces, convolutions at base, minor calcite veinlets 75° to C/A, bedding 70° to 75° to C/A.
		LOSS OF HOLE.

HOLE# BC-80-19 From 45.52 To 458.03

FROM	TO	DESCRIPTION
	45.52	Began wedge and bullbitting
445.52	446.69	Sandstone - fine grained, medium grey, cross-bedded and convolute bedding, sharp lower contact, calcite veins throughout 60° to C/A, brecciated zone from 445.60 to 445.68 and very vuggy
446.69	448.70	Siltstone and mudstone - siltstone at top sandy grades rapidly to medium grey siltstone then to dark grey mudstone at base, bedding 70° to C/A, slickenside and calcite veining 70% to C/A and movement 84° from true dip of surface
448.70	449.15	Coaly mudstone - black
449.15	450.48	Core loss 1.33m
450.48	450.63	Coaly mudstone - black
450.63	451.47	Sandstone, siltstone and mudstone interlaminated - sandstone - fine grained medium grey, siltstone medium grey, mudstone dark grey, worm burrows throughout, minute calcite veinlets following bedding 60° to C/A carbonaceous laminated, slickensides
451.47	452.88	Mudstone and siltstone alternating thick beds with gradational contacts, siltstone medium grey, mudstone dark grey, plant fossils, gradational lower contact
452.88	453.24	Sandstone - fine grained, medium grey, cross bedded, sharp lower contact
453.24	454.37	Siltstone and sandstone - siltstone medium grey at top grades suddenly to fine grained, medium grey sandstone, cross bedded, sharp lower contact
454.37	455.80	Mudstone and siltstone - mudstone dark grey at top grades to medium grey siltstone at base, extension fracture fillings present, rare fine grained sandstone laminated, sharp lower contact
455.80	457.12	Siltstone and sandstone - medium grey siltstone with occasional thin fine grained sandstone bands, worm burrows, sandstone cross bedded
457.12	458.03	Siltstone - medium grey, fine grained sandstone laminated, bedding 67° to C/A becoming mudstone at base

HOLE# BC-80-19 From 458.03 To 472.59

FROM	TO	DESCRIPTION
458.03	458.33	Coal 0.30m - 99% recovery, no cleating
		458.03m to 458.20m - 99% claro-durain, 1% vitrain
		458.20m to 458.33m - cannoloid coal
458.33	458.64	Mudstone - very carbonaceous, black
458.64	460.01	Coal 1.37m - 75% recovery, black, methane #1, sample #4
		458.64m to 459.03m - coal - 90% claro-durain, 5% vitrain, 5% fusain, moderately well cleated
		459.03m to 459.20m - methane test
		459.20m to 460.01m - coal - 49% claro-durain, 5% vitrain, 5% fusain
460.01	461.08	Siltstone - medium grey, plant fossils
461.08	464.94	Siltstone and sandstone - siltstone medium grey with occasional thin fine grained, light grey sandstone interbeds, towards base the sandstone beds become laminated
464.94	465.01	Mudstone - dark grey, very carbonaceous
465.01	465.12	Muddy Coal - cannoloid coal with dark brown streak
465.12	465.65	Mudstone - dark grey, very carbonaceous
465.65	465.85	Coal 0.20m - 99% recovery, black, well cleated, 60% vitrain, 40% claro-durain
465.85	467.04	Mudstone, siltstone and sandstone - mudstone dark grey at top rapidly grades to medium grey siltstone with occasional fine grained sandstone laminated, grades to fine grained, medium grey, cross bedded sandstone with carbonaceous laminated, sharp lower contact
467.04	468.25	Mudstone, siltstone, and sandstone - mudstone dark grey at top rapidly grades to siltstone medium grey with occasional thin fine grained sandstone interbeds becoming sandier at base, gradational lower contact
468.25	469.52	Mudstone - dark grey, gradational lower contact
469.52	471.46	Siltstone - medium grey, sandy near base, occasional coal streaks
471.46	472.59	Mudstone - dark grey, very carbonaceous near base, abundant plant fossils

HOLE# BC-80-19 From 472.59 To 501.92

FROM	TO	DESCRIPTION
472.59	473.01	Coal 0.42m - 60% recovery, black, 90% vitrain, 10% claro-durain, well cleated, one 2cm mudstone split
473.01	481.66	Mudstone, siltstone, and sandstone - mudstone dark grey rapidly grades to medium grey siltstone which rapidly grades to fine grained to medium grained, light grey, cross bedded sandstone, sandstone contains carbonaceous laminated
481.66	483.09	Coal 1.43m - 40% recovery, well cleated, 60% claro-durain, 35% vitrain, 5% fusain, 0.17m mudstone split somewhere in the seam, no methane sample, sample #5
483.09	483.96	Mudstone, siltstone and sandstone - mudstone dark grey at top rapidly grades to medium grey siltstone which rapidly grades to fine grained, medium grey sandstone with plant fossils, sandstone cross bedded
483.96	484.99	Mudstone, siltstone and sandstone - mudstone dark grey at top grades to medium grey siltstone which grades to medium grained sandstone with coal streaks, sharp lower contact
484.99	485.10	Mudstone - dark grey becomes silty at base, carbonaceous near base, coal streaks near base
485.10	486.15	Coal 0.05 - 100% recovery, 95% claro-durain, 3% vitrain, 2% fusain, black, bedding 70° to C/A @ 486.15m
486.15	488.34	Sandstone - fine grained to medium grained, cross bedded, medium to light grey, carbonaceous laminated, siltstone laminated near base, some worm burrows, graded bedding present (fining up)
488.34	493.09	Silty mudstone - dark grey, occasional minute calcite veinlets at base, sharp lower contact, slickensides
493.09	501.36	Sandstone, siltstone and mudstone - sandstone fine grained medium grey intermixed with medium grey siltstone, convolute bedding throughout, several thin zones of minute calcite veinlets following bedding
501.36	501.79	Coal 0.43m - 95% recovery, black, 80% claro-durain, 15% vitrain, 5% fusain, well cleated
501.79	501.92	Mudstone - dark grey, modified sharp lower contact

HOLE# BC-80-19 From 501.92 To 518.66

FROM	TO	DESCRIPTION
501.92	505.69	Sandstone - fine grained, light grey, cross bedded, carbonaceous laminated, rare thin siltstone bands near base, rare worm burrows near base
505.69	510.29	Mudstone, siltstone and sandstone - medium grey siltstone and medium grey fine grained sandstone interlaminated and mixed from bioturbation at top, grading to dark grey mudstone with frequent siltstone and fine grained sandstone laminated, bedding 71° to C/A at 508-00m, last 20 cm at base becomes mudstone with numerous coal streaks, sharp lower contact
510.29	511.04	Siltstone and sandstone - siltstone medium grey at top grades rapidly to a mixture of siltstone and fine grained sandstone convoluted
511.04	511.97	Siltstone - medium grey with occasional fine grained sandstone laminated, bedding 69' to C/A at 511-59m, gradational lower contact
511.97	514.44	Sandstone - fine grained to medium grained, cross bedded, two zones of rip-up clasts, convoluted at very top, lower contact sharp, carbonaceous laminated
514.44	515.67	Mudstone and siltstone - siltstone medium grey at top grades to silty mudstone at base
515.67	516.37	Coal 0.71m - 40% recovery recovery too low to sample, 70% claro-durain, 20% vitrain, 10% fusain, black, well cleated
516.37	517.18	Mudstone and siltstone - mudstone dark grey at top grades to medium grey siltstone at base
517.18	517.77	Coal 0.59m - 80% recovery, black, chunks rounded, sample #6, no methane sample 517.18m to 517.51m - coal - 80% claro-durain, 20% vitrain 517.51m to 517.54m - Mudstone split 517.54m to 517.77m - coal - 80% vitrain, 20% claro-durain
517.77	518.12	0.35m core loss
518.12	518.66	Mudstone - dark grey, very carbonaceous, coal streaks

HOLE# BC-80-19 From 518.66 To 519.99

FROM	TO	DESCRIPTION
518.66	518.91	Coal 0.25m - Black, 80% vitrain, 20% claro-durain, well cleated
518.91	519.77	Mudstone and siltstone - mudstone dark grey rapidly grades to medium grey siltstone at base
519.77	519.82	Coal 0.05 - 100% recovery, 100% claro-durain
519.82	519.99	Sandstone - fine grained, medium grey, cross bedded, bedding 69° to C/A
		END OF HOLE

CORE DESCRIPTIC

HOLE# B.C.-80-20 From 0.00 m To 114.76 m

Area Bri-Dowling Creek By J.C. Ridley

FROM	TO	DESCRIPTION
0.00 m	106.68m	Overburden
		Gething Formation
106.68	107.19	Broken pieces of Mudstone & Sandstone- coarse grained salt & pepper.
107.19	107.85	MUDSTONE, SILTSTONE & SANDSTONE - very fine grained, interlaminated but extremely bioturbated & mixed, worm burrows 1 cm long.
107.85	109.08	SANDSTONE - with siltstone & mudstone laminae, moderately bioturbated, sandstone is very fine grained, very pale grey, worm burrows 2 cm long, cross bedding trough, more muddy towards base.
109.08	109.39	MUDSTONE - with siltstone & very fine grained sandstone, laminae & blebs.
109.39	109.42	Bands of COAL siltstone & pyrite.
		COAL - black shiny & cleated.
109.42	109.54	COAL - 0.12 meters thick, 50% black shiny cleated vitrinite. 50% metallic grey, very hard Claro-durain.
109.54	109.95	MUDSTONE - carbonaceous, dark grey to black, coaly at top.
109.95	111.92	MUDSTONE - with siltstone & sandstone laminae, angle at 75° C/A 10% of core = laminae sandstone & siltstone.
111.92	112.01	COAL - 0.09 meters thick, 80% metallic grey Claro-durain, hard, 20% black shiny & well cleated.
112.01	112.05	MUDSTONE - very coaly
112.05	113.05	SILTSTONE & very fine grained sandstone, less silty more sandy towards base, extremely cross bedded, trough & planar.
113.05	113.69	MUDSTONE, SILTSTONE & ver fine grained sandstone interlaminated, bioturbated slightly, very small worm burrows, ripple marks, increasing mudstone content towards base.
113.69	114.31	MUDSTONE - with siltstone laminae, worm burrows, angle at 80° to C/A.
114.31	114.76	MUDSTONE - very coaly, 'wood' chips

HOLE# B.C.-80-20 From 114.76 m To 124.06 m

FROM	TO	DESCRIPTION
114.76	114.94	COAL - 0.18 meters thick, black shiny, some concoidal fracture, well cleated, abundant Vitrain.
114.94	116.39	SILTY MUDSTONE - with some siltstone laminae
116.39	117.10	SILTSTONE & MUDSTONE - interlaminated, moderately bioturbated, ripple mark, worm burrows 4 cm long
117.10	117.73	SANDSTONE - fine to medium grey, salt & pepper, mostly massive
117.73	117.94	SILTY MUDSTONE
117.94	118.79	SANDSTONE - fine to medium grained, more medium towards base, cross bedded, very pale grey, interbedded with convoluted beds of same sandstone and sandstone with mudstone laminae.
118.79	119.09	SANDSTONE - medium grained, crossbedded, salt & pepper with mudstone laminae increasing towards base.
119.09	120.05	SANDSTONE - coarse grained, crossbedded, salt & pepper, interbedded with sandstone fine to medium grained with mudstone laminae, bioturbated where mudstone occurs
120.05	121.45	MUDSTONE, SILTSTONE & very fine grained sandstone interlaminated, extemely bioturbated, several worm burrows, more mudstone towards base.
121.45	121.77	COAL - 0.32 meters thick, 80% black shiny, well cleated. 75% recovery.
121.77	122.01	MUDSTONE - coaly streaks in upper half.
122.01	122.58	MUDSTONE & SILTSTONE - interlaminated, calcareous, worm burrows, angle to C/A 85°.
122.58	122.94	SANDSTONE, SILTSTONE & MUDSTONE - interlaminated, moderately bioturbated, sandstone is calcareous plus calcite veinlet.
122.94	123.81	SANDSTONE - medium to coarse grained, salt & pepper, cross bedded, very calcareous, shell fragment bands, some muddy bands showing bioturbation.
123.81	124.06	SANDSTONE, SILTSTONE & MUDSTONE - interlaminated, moderately bioturbated, calcareous, sandstone is medium grained, salt & pepper.

HOLE# B.C.-80-20 From 124.06 m To 140.63 m

FROM	TO	DESCRIPTION
124.06	126.80	MUDSTONE - with siltstone laminae & blebs mixed in, bioturbated at top calcareous at top, less siltstone towards base.
126.80	128.00	MUDSTONE - dark grey to black massive.
128.00	128.68	MUDSTONE - dark grey to black with lenticuler sandstone blebs medium grey, salt & pepper, bands of pale brown mudstone. siderite?
128.68	130.16	MUDSTONE - extremely fractured, very carbonaceous, black slickensides and fault gauge, some bands with high sandstone content in blebs, sandstone is very fine grained.
130.16	130.54	SANDSTONE & MUDSTONE - interlaminated & interbedded, sandstone medium grey, salt & pepper, mudstone very black & carbonaceous, calcite veinlets.
130.54	132.89	COAL - 2.35 meters thick, 130.54 to 130.70 Coal 40% black, shiny, cleated. 60% metallic grey, hard Claro-durain. (130.65 to 130.70 methane gas sample 1) 130.70 to 130.76 Split, Ash band with coal bands or carbonaceous ash. 130.76 to 131.67 Coal slickensided, 40% black, shiny well cleated, 60% metallic grey - concoidal fracture. 131.67 to 131.73 Split, Sandy Ash 131.73 to 132.32 Coal 50% black, shiny, cleated. 50% grainy metallic grey hard concoidal. 132.32 to 132.42 Split, fracture, Sandy ash band, more sandy than last ash band. 132.42 to 132.89 70% black, shiny, well cleated, 30% metallic grey grainy Claro-durain. SAMPLE #1
132.89	135.54	MUDSTONE, SILTSTONE & very fine sandstone, interlaminated and interbedded, trough crossbedding, angle up to 80° to C/A, moderately bioturbated, small up to 1 cm worm burrows.
135.54	136.25	MUDSTONE - dark grey, some silty blebs.
136.25	136.29	COAL - 0.04 meters thick, black, shiny, cleated Vitrinite.
136.29	140.63	SILTY MUDSTONE - massive, dark brown to grey, sandy at base with coaly streaks.

HOLE* B.C.-80-20 From 140.63 m To 151.18 m

FROM	TO	DESCRIPTION
140.63	142.73	SANDSTONE - medium grained, uniform salt & pepper, massive,coal streaks at top, rip up clasts of mud at base and coal fragments.
142.73	143.16	SILTY MUDSTONE - dark brown, coal streaks.
143.16	143.27	COAL - 0.11 meters thick, only 50% recovery, 10% black, shiny, cleated Vitrinite, 90% black, shiny on one cleavage surface, hard.
143.27	145.64	SILTY MUDSTONE - massive, coal fragments up to 1 cm x 5 cm, dark grey.
145.64	147.30	SANDY MUDSTONE - massive, some interbedded sandstone, medium grey, salt & pepper, some sandstone laminae in mudstone, coal bands and fragments towards base.
147.30	147.47	COAL - 0.17 meters thick, 90% recovery, 80% black, shiny cleated.
147.47	147.88	MUDSTONE - with siltstone laminae and blebs, angle at 89° to C/A.
147.88	148.02	SANDSTONE - fine grained, pale grey, extremely cross bedded, mostly planar.
148.02	148.61	MUDSTONE & SILTSTONE - interlaminated and interbedded. moderately bioturbated, worm burrows.
148.61	150.26	MUDSTONE - with siltstone laminae & blebs, one sandstone band 2 cm thick, less silty towards base.
150.26	151.12	MUDSTONE - dark grey to black, carbonaceous massive
151.12	151.18	COAL - 0.06 meters thick in core, (could be thicker) mostly black, shiny well cleated.
		END OF HOLE 151.18 m

CORE DESCRIPTION

HOLE# B.C.-80-21 From 0.00 m To 121.45 m

Area Bri-Dowling Creek By J.C. Ridley

FROM	TO	DESCRIPTION
0.00 m	99.06 m	Overburden
		Gething Formation
99.06	100.02	SANDSTONE & MUDSTONE - interlaminated and interbedded with some siltstone laminae, sandstone medium grained, pale grey.
100.02	100.15	MUDSTONE - with slight sandstone mixed in, very carbonaceous, black.
100.15	100.31	COAL - 0.16 meters thick, 50% recovery, black grainy, blocky in places, one pyrite band 3 mm thick, muddy.
100.31	100.97	MUDSTONE - dark brown, few siltstone laminae.
100.97	105.25	MUDSTONE - with siltstone & very fine grained sandstone laminae, angle 85° to C/A, moderately bioturbated, most laminae are lenticuler, worm burrows 1.2 cm.
105.25	111.28	SILTY MUDSTONE - massive, dark brown, some sandy bands towards base.
111.28	112.78	SANDSTONE - muddy, medium grained, salt & pepper, few coal streaks up to .5 cm thick.
112.78	113.18	MUDSTONE - coaly streaks several up to 2 mm thick
113.18	113.59	MUDSTONE & SILTSTONE - mixed, extremely bioturbated.
113.59	114.01	MUDSTONE & SILTSTONE - interlaminated, angle up to 82° from C/A, small crossbeds.
114.01	116.01	SANDSTONE - medium grained, salt & pepper, cross - bedded, some muddy bands with worm burrows, more mud towards base, few load casts, slightly coaly.
116.01	116.25	SANDSTONE, SILTSTONE & MUDSTONE - interlaminated & interbedded, sandstone fine to medium grained, crossbedded.
116.25	117.89	MUDSTONE - with siltstone laminae and blebs, dark brown mudstone.
117.89	121.45	MUDSTONE - with occasional sandy blebs or laminae, fine to medium grained sandstone more sand between 119.90 and 120.32, well fractured below 120.52, fault gauge at 121.05

HOLE# B.C.-80-21 From 121.45 m To 141.29 m

FROM	TO	DESCRIPTION
121.45	123.67	COAL - 2.22 meters thick, 100% recovery, SAMPLE 1 AND
	METHANE	SAMPLE 1. 121.45 to 121.64 Coal ∿30% black, shiny,
		cleated Vitrinite, ∿70% metallic grey, hard, grainy
		Claro-durain.
		121.64 to 121.69 Split, coaly sandstone, very fine
		grained, large coal chunks.
		121.69 to 122.53 Coal, 40% black, shiny, well cleated
		Vitrinite, 60% metallic grey, hard, blocky to grainy
		Claro-durain.
		122.53 to 122.58 Split, Ashy, coaly sandstone in bands
		at all angles 3/4 of sandstone is very ashy.
		122.58 to 123.21 Coal 50% blacky shiny, well cleated, 50%
		metallic grey, grainy to blocky.
		123.21 to 123.31 Split, very fine grained sandstone &
		volcanic ash, interbanded.
		123.31 to 123.67 Coal mostly black shiny, cleated no
		concoidel fracture.
123.67	125.98	MUDSTONE, SILTSTONE & very fine grained sandstone
		interlaminated and interbedded, beds of well bioturbated
		with well laminated sediments, sandstone is very pale
		grey, angles upto 80° from C/A.
125.98	126.55	MUDSTONE - very dark brown, one sand band 3 mm thick.
126.55	128.44	SANDY SILTY MUDSTONE - massive, one coal chunk 1 cm x
		4 cm.
128.44	133.68	SANDY MUDSTONE - some beds more sandy than other sandy
		mudstone, moderately bioturbated. 132.51 to 132.56
		sandstone with mud chips, medium grained.
133.68	135.03	SANDSTONE - salt & pepper, medium to coarse grained,
		muddy bands & laminae, fines upwards, slight crossbedding,
		some mud chips, one coal band, 1 cm thick, shiny black,
		well cleated Vitrinite.
135.03	139.98	COALY-SILTY MUDSTONE - with coal streaks up to 2 cm thick.
139.98	140.48	SANDSTONE & SILTSTONE - interbedded and interlaminated,
		trough and planar, crossbedding, angle to C/A = 78°.
140.48	141.29	SILTSTONE & MUDSTONE - interlaminated, but extremely
		bioturbated, muddier towards base.

HOLE* B.C.-80-21 From 141.29 m To 155.90 m

FROM	TO	DESCRIPTION
141.29	142.64	MUDSTONE - dark grey to black with siltstone & sandstone laminae & blebs, ripple marks.
142.64	142.97	MUDSTONE - silty, dark grey & dark brown, massive well mixed.
142.97	143.23	SANDSTONE - fine grained, crossbedded, planar, salt & pepper but muddy.
143.23	143.79	MUDSTONE - black, carbonaceous.
143.79	144.35	COAL - 0.56 meters thick, 93% recovery, 90% metallic grey grainy, moderately hard, 10% black, shiny, well cleated bands.
144.35	144.49	MUDSTONE - dark grey, brown.
144.49	144.89	SILTSTONE & MUDSTONE - interlaminated, ripple marks, one calcite veinlet parallel to bedding.
144.89	145.54	COALY MUDSTONE - black, Vitirinite bands of coal - black shiny, well cleated up to 2 cm thick, silty at base.
145.54	146.15	SANDSTONE - salt & pepper, slightly muddy, crossbedded, planar, fines downward.
146.15	146.49	SANDSTONE - fine grained & silty mudstone interbedded, crossbedded, salt & pepper, slightly muddy.
146.49	150.71	MUDSTONE - dark grey to black, occasional siltstone laminae and blebs, one coal chunk 1 cm x 2 cm, one very coaly band 150.53 to 150.62.
150.71	152.04	SILTY MUDSTONE - massive, one sandstone bed at 151.30 to 151.39, fine grained, very pale grey.
152.04	152.42	MUDSTONE - carbonaceous, dark grey, black, coaly, calcite veinlet.
152.42	152.94	COAL - 0.52 meters, black, 65% recovery, 152.42 to 152.66 Coal metallic grey to black, shiny concoidal fracture. 152.66 to 152.70 Split, coaly mudstone. 152.70 to 152.94 Coal Claro-durain, 50% shiny, black concoidal fracture, 50% metallic grey.
152.94	153.69	MUDSTONE - carbonaceous & coaly.
153.69	155.20	SILTY & SANDY MUDSTONE - interbeds of fine grained, very pale grey sandstone.
155.20	155.90	MUDSTONE, SILTSTONE & very fine grained sandstone interbedded, calcareous - shelly bands very fine.

HOLE* B.C.-80-21 From 155.90 m To 167.47 m

FROM	TO	DESCRIPTION
155.90	156.52	MUDSTONE - dark grey, massive.
156.52	157.62	SANDY MUDSTONE & MUDDY SANDSTONE - interbedded.
157.62	158.15	MUDSTONE - coaly
158.15	159.00	MUDSTONE - dark grey, massive.
159.00	159.35	SILTY MUDSTONE
159.35	159.91	MUDDY SANDSTONE & MUDSTONE - interbedded, fine grained very pale grey.
159.91	160.32	MUDSTONE - dark grey-brown, massive.
160.32	161.20	MUDDY SANDSTONE - with sandy mudstone interbeds, sandstone fine to medium grained, coaly streaks.
161.20	162.05	SANDSTONE - medium grained, salt & pepper, angle 85° to C/A, slightly crossbedded towards top.
162.05	162.32	MUDSTONE - dark grey to black, massive.
162.32	162.75	SANDSTONE - medium grained, some muddy bands, few coaly streaks.
162.75	163.22	SILTY MUDSTONE - mostly massive, mixed, some laminae.
163.22	163.86	COAL - 0.64 meters, 98% recovery, 163.22 to 163.40 Coal 20% shiny, black, well cleated Vitrinite, 80% metallic grey, moderately hard, Claro-durain. 163.40 to 163.50 Split Mudstone with 5% disseminated pyrite blebs, calcite veinlets. 163.50 to 163.86 Coal 20% shiny, black, cleated to concoidal fracture, 80% metallic grey, moderately hard Claro-durain.
163.86	164.01	COALY MUDSTONE - black.
164.01	165.65	SANDSTONE - very fine grained, muddy at top, pale grey, worm burrows, some mudstone blebs.
165.65	166.09	SANDSTONE, MUDSTONE & SILTSTONE - interlaminated sandstone is fine grained, crossbedded, all moderately bioturbated.
166.09	167.27	MUDSTONE - black with siltstone laminae & beds up to 2 cms thick.
167.27	167.40	SANDSTONE - medium grained, salt & pepper. slight cross bedding.
167.40	167.47	MUDSTONE - silty.

HOLE# B.C.-80-21 From 167.47 m To 169.47 m

FROM	TO	DESCRIPTION
167.47	167.51	SANDSTONE - medium grained, salt & pepper, slight trough, cross bedding.
167.51	167.61	MUDSTONE - black, massive
167.61	167.66	MUDDY SANDSTONE - fine grained.
167.66	167.71	MUDSTONE - very coaly
167.71	168.76	MUDSTONE - coaly & slightly silty.
168.76	169.47	SILTY MUDSTONE - with a bed of very fine grained sandstone, some convoluted bedding and bioturbation.
		169.47 END OF HOLE

CORE DESCRIPTIC

HOLE# B.C.-80-22 From 0.00 m To 79.61 m

Area Bri-Dowling Creek By D.N. Duncan

FROM	TO	DESCRIPTION
0.00 m	71.93 m	Triconed - Overburden
71.93	76.10	MOOSEBAR FORMATION Dark grey to black mudstone highly pyritic toward base-nodular pyrite glauc onitic from 73.03 m toward base. 75.50 m to 76.10 m - Basal conglomerate - chert pebbles & rock frags up to 0.005 m in diameter totally unsorted - muddy, silty matrix.
		GETHING FORMATION
76.10	76.30	SILTSTONE - muddy, medium grey, abundant pyrite nodules.
76.30	77.43	SANDSTONE - fine grained to medium grained, salt & pepper, minor medium grey siltstone laminae, contact gradual with underlying to overlying units, slightly bioturbated at top of section - cross bedded, finely at top & base, fairly coarse cross bedding in middle of section where sandstone in massive - calcite veinlet at 76.94 m with angle at 70° to C/A ∿1 cm thick- bedding angle at 75° to C/A
77.43	77.68	SILTSTONE & SANDSTONE - Interlaminated, siltstone is medium grey and increasing toward base in abundance, sandstone is fine grained, salt & pepper, cross bedded, ripple marks.
77.68	78.54	SILTSTONE - medium grey, minor sandstone laminae, fine grained, salt & pepper toward top of section - mud content increasing toward base where have a mudstone-pyrite laminae throughout the section, very abundant.
78.54	79.61	COAL - 1.07 m - black - Superior Seam - Sample 1 methane gas sample 1 - 100 % recovery, 78.54 m to 78.84 m - coal - poor to moderate cleated, low vitrain content, mostly Duro-clarain, no visible fusain, minor pyrite laminae, dull banded. 78.84 m to 78.88 m - coal, highly pryitic, sulphur

HOLE# B.C.-80-22 From 78.54 m To 84.00m

Area _____ By _____

FROM	TO	DESCRIPTION
		smell when broken very little vitrain - dull.
		78.88m to 79.35m - coal, dull, very minor vitrain in very thin bands, very minor fusain, almost entirely composed of durain-clarain, uncleated.
		79.35m to 79.45m - coal, dull banded, vitrain content increasing, cleated.
		79.45m to 79.50m - mudstone split, dark grey to black, coal bands, minor pyrite blebs.
		79.50m to 79.61m - coal, bright banded, abundant vitrain, well cleated.
79.61	80.44	MUDSTONE - dark grey to black, carbonaceous, minor sandstone laminae toward middle of section, fine grained, salt and pepper, minor worm burrows, abundant plant debris and coaly streaks.
80.44	80.73	COAL - 0.29m, black, 73% recovery, 80.44m to 80.49m - coal, bright banded, abundant vitrain, well cleated.
		80.49m to 80.57m - coal, dull, looks ground up abundant pyrite, unbanded, fault gouge?
		80.57m to 80.73m - coal - bright banded, abundant vitrain, well cleated.
80.73	81.32	MUDSTONE - dark grey, massive silty at base.
81.32	82.99	SANDSTONE, MUDSTONE & SILTSTONE - interlaminated, angle at 80° to C/A, moderately bioturbated sandstone very fine grained, very pale grey, 7cm sandstone bed at 82.20 crossbedded, 7cm mudstone bed @ 82.27, fractures and calcite veinlets at 82.84.
82.99	83.08	MUDSTONE - dark brown, massive
83.08	83.41	COAL - 0.33m, black, canneloid - very muddy, 83% recovery.
83.41	83.47	MUDSTONE - dark grey, abundant pyrite, abundant plant debris.
83.47	84.00	SANDSTONE & SILTSTONE - interlaminated to mixed - sandstone predominant, salt and pepper, fine grained to medium grained - Siltstone medium grey - bioturbated at top of section - minor coaly streaks at top of section - minor mudstone laminae at bottom of section - abundant plant debris.

HOLE# B.C.-80-22 From 84.00m To 90.02m

FROM	TO	DESCRIPTION
84.00	85.17	MUDSTONE, SANDSTONE, SILTSTONE - interlaminated predominant Mudstone, sandstone predominant at top of section, decreasing toward base - Siltstone minor constituent, medium grey - Sandstone is salt and pepper and fine grained - crossbedded ripple marks - minor worm burrows, bedding angle at 75° to C/A. Abundant coaly streaks and bands at base.
85.17	85.48	COAL - 0.31m, black, very muddy, abundant vitrain bands, mud content extremely high especially toward base of seam, 76% recovery.
85.48	85.59	MUDSTONE - dark grey, coal bands at top of section, silt content increasing toward base, abundant plant debris.
85.59	86.52	SANDSTONE - salt and pepper to medium grey, very silty matrix, abundant plant debris, unlaminated, bioturbated at base, fine grained to medium grained, minor coaly streaks.
86.52	86.78	SANDSTONE & MUDSTONE - interlaminated, predominant fine grained, light grey sandstone, highly broken at base of section, minor coaly streaks, Mudstone dark grey.
86.78	88.37	SANDSTONE - massive to laminated, coarse grained to medium grained, salt and pepper, laminations occur toward bottom of section, minor cross-bedding, minor siltstone laminae toward base, minor worm burrows, bedding angle at 75° to C/A, minor ripple marks, mudstone clasts (pebble band) at 88.33m, grain size increases toward base.
88.37	89.62	SANDSTONE, MUDSTONE & SILTSTONE - interlaminated, sandstone and mudstone equally abundant, siltstone minor constituent, sandstone predominant at top of section and is salt and pepper, fine grained to medium grained, mudstone is dark grey.
89.62	89.93	COAL - 0.31m, black, bright banded, abundant vitrain minor fusain, well cleated, slightly muddy, 83% recovery.
89.93	90.02	MUDSTONE - dark grey, abundant pyrite, abundant plant debris.

HOLE# B.C.-80-22 From 90.02m To 106.65m

FROM	TO	DESCRIPTION
90.02	90.46	SILTSTONE - dark medium grey, minor sandstone laminae, fine grained, minor plant debris.
90.46	91.85	SANDSTONE, SILTSTONE & MUDSTONE - interlaminated, predominant sandstone, fine grained to medium grained, salt and pepper, siltstone light medium grey, mudstone dark grey, crossbedded, ripple marks, minor worm burrows, abundant plant debris, at 91.67m - calcite vein at 70° to C/A, minor graded bedding, minor soft sediment stump structures.
91.85	92.06	SILTSTONE - light medium grey, calcite and pyrite filled tension gashes at top of unit at 15° to C/A.
92.06	92.28	SANDSTONE - fine grained to medium grained, salt and pepper, finely laminated, crossbedded, minor siltstone and mudstone laminae, minor worm burrows.
92.28	93.06	SILTSTONE, MUDSTONE AND SANDSTONE - interlaminated, light medium grey, siltstone predominant, sandstone is salt and pepper and fine grained, mudstone is dark grey, crossbedded, ripple marks, worm burrows.
93.06	97.24	MUDSTONE - dark grey, some siltstone laminae, angle at 80° to C/A, sandstone bands with shells calcareous 1cm thick.
97.24	97.58	MUDSTONE, SANDSTONE & SILTSTONE - interlaminated, sandstone is crossbedded, very fine grained, mudstone is black.
97.58	98.44	COALY MUDSTONE - several wood chunks with vitrain.
98.44	98.96	SILTY MUDSTONE - massive
98.96	100.88	MUDSTONE - coaly at base and sandy at base.
100.88	101.06	MUDSTONE - very sandy and coaly mudstone
101.06	103.58	SANDSTONE - fine to medium grained, salt and pepper but slightly more pepper coal streaks, mud chips.
103.58	104.67	SILTSTONE - with muddy beds
104.67	106.20	SANDSTONE, SILTSTONE & SILTY MUDSTONE - interbedden and interlaminated, sandstone beds with mudchips, sandstone very fine grained, pale to medium grey, angle at 73° to C/A.
106.20	106.65	SANDSTONE - medium grained, pale grey, coaly laminae at base.

HOLE# B.C.-80-22 From 106.65m To 114.91m

FROM	TO	DESCRIPTION
106.65	106.72	SANDSTONE - coal streaks, interlaminated, 1mm
106.72	107.25	SANDSTONE, SILTSTONE, MUDSTONE - interlaminated, ripple marks.
107.25	107.72	MUDSTONE - coaly, black.
107.72	109.34	COAL - 1.62m, black, 100% recovery, sample 2, 107.72m to 108.07m - coal, bright banded, abundant vitrain, methane sample 2, cleated, hard. 108.07m to 108.12m - split, sandstone, fine grained to very coarse grained, light medium grey, abundant feldspar clasts, graded bedding, coaly streaks and plant debris. 108.12m to 108.81m - Coal, bright banded, very well cleated, highly broken, abundant vitrain bands ∿ 1.5cm thick, fusain ∿ 10%. 108.81m to 108.85m - mudstone, very coaly, dark grey black, abundant coaly streaks and plant debris. 108.85m to 108.94m - sandstone fine grained laminae, coaly streaks, plant debris. 108.94m - coal, black, muddy at top of bench highly broken, abundant vitrain, well cleated.
109.34	109.73	MUDSTONE - dark grey, abundant siltstone laminae, abundant plant debris and coaly streaks.
109.73	110.75	SILTSTONE & MUDSTONE - interlaminated, medium grey predominant, dark grey mudstone, bioturbated toward middle of section. Bedding angle at 73° to C/A, cross-bedded, graded bedding.
110.75	111.69	MUDSTONE & SILTSTONE - interlaminated, dark grey mudstone predominant, siltstone is medium grey, minor sandstone lenses and laminae, convoluted bedding, coaly streaks and plant debris.
111.69	111.71	COAL - 0.02m, black, bright, abundant vitrain.
111.71	114.91	SILTSTONE & SANDSTONE - mixed, medium grey siltstone predominant, sandstone salt and pepper, unit is highly mixed (bioturbated?), coaly streaks and roots (?) at top of section.
		END OF HOLE

CORE DESCRIPTIOI

HOLE# B.C.-80-23 From 0.00 m To _____

Area Bri-Dowling Creek By J.C. Ridley

FROM	TO	DESCRIPTION
0.00 m	99.36 m	Overburden
99.36		Moosebar Formation
		MUDSTONE - massive, dark grey.
		98.75 to 99.49 - extremely fractured & muddy.
		99.49 to 100.54 - moderate to extremely fractured.
		99.73 to 99.77 - ash band or fault gauge, very tiny mud chips in mud.
		99.90 to 100.04 - ash band with mud chips 1 cm.
		100.13 to 100.17 - ash band with very small mud chips.
		PYRITE - 99.51 to 100.96 - small blebs up to .5 cm
		1% of core.
		100.96 - 4 cm x .5 cm, one zoned nodule.
		100.96 to 102.00 - .5% of core, average bleb .5 cm.
		FOLD - appears to be penecontemporaneous, occurred while sediments unlithified, still high water content traceable from 109.30 to 113.74 , core usually breaks perpendicular to and along fold plane, most distinct fold is at 113.74.
		Pyrite nodule 2 cm x 2 cm at 113.28 between 102.00 and 113.28 pyrite is very occasional and in very small blebs.
		Ash band 110.70 to 110.74
		Fault gauge 110.83 to 110.86.
		Coaly band 2 mm and slickensides at 114.25.
		Ash band .5 cm thick at 117.09. disseminated pyrite but no real blebs.
		Pyrite & Calcite vein - pyrite is disseminated to mesh texture at 124.43.
		occasional pyrite blebs .5 cm x .5 cm below 124.43.

HOLE# B.C.-80-23 From _____ To _____

FROM	TO	DESCRIPTION
	cont'd	Ash altered to bentonite at 126.62, only ∿1 cm thick.
		Pyrite bleb 5 cm x 0.5 cm at 128.53.
		Silty band at 130.64 to 130.72.
		Slightly carbonaceous & disseminated pyrite at 131.82.
		Coaly pyritic fragment 3 cm x 0.75 cm at 134.61.
		Silty band 139.81 to 139.91, one coaly laminae at base and one silty band at 145.63 to 145.76.
		Mud-filled mudcracks at 147.26.
		Pyrite blebs .25 cm to 1 cm between 147.34 and 147.53.
		Pyritized coal streak 2 cm x 1 mm at 155.51.
		Silty band 159.23 to 159.37, occasional Pyrite disseminated in very tiny blebs throughout one bleb 5 cm x 1 cm at 159.18.
		Calcite veinlet very very thin at 55° to C/A.
		Silty layer 164.61 m to 164.83 m.
		several very very thin calcite veinlets at 65°to C/A to 88° to C/A. only in silty band.
		some convoluted bedding of mud in silty layer.
		very little pyrite in disseminated blebs.
		Silty layer 167.27 to 167.39.
		Silty layer 171.97 to 172.13.
		Slickensides at 171.96 and mineral coating on slickensides at 171.98 to 172.11. sample #1 of coating.
		two fractures parallel.
		Pyrite blebs .5 cm x .25 cm at 179.88 m.
		increasing pyrite towards base to 181.41 m up to 1% pyrite, some blebs are obviously replaced.
		wood-coal chips upto 1 cm x .25 cm.
		Calcareous from at least 183.50 and below.
		occasional very tiny shells 1 mm or less, shelly bands 189.18 2 mm thick.
		very thin shelly band at 204.15 m.
		3 2 mm pyrite blebs at 212.26 m.
		Silty band 217.42 m to 217.59 m.
		wavy shelly band 1 mm thick at 218.03.
		occasional pyrite blebs .5 cm below 219.

HOLE# B.C.-80-23 From _____ To 250.56

FROM	TO	DESCRIPTION
	250.56	Pyrite blebs below 225.43 m average 2 mm x 3 mm.
		1 bleb at disseminated to mesh pyrite, 2 cm x 5 cm at 227.51.
		Siltstone nodule 8 cm x 7 cm at 229.63 with sandy laminae
		Siltstone at 229.17 to 229.32, some is mixed with mudstone, sandy laminae & calcite veinlets.
		Siltstone at 229.53 to 229.61 and 231.16 to 231.32.
		Slickensides with calcite secondary at 231.22.
		Siltstone at 232.13 to 231.26.
		Silty at 233.89, occasional pyrite blebs 0.5 x 1 cm.
		Very silty at 235.70 to 235.90.
		Silty at 238.86 to 239.05, bioturbated, pyrite nodules 0.5 cm x 0.5 cm.
		Sandy ash band at 240.06 to 240.08.
		Silty at 240.22 to 240.34.
		Sand lens at 241.14 - 0.75 cm thick, occasional pyrite.
		Ash band - sandy.
		241.71 to 241.73 silt with rip up mud clasts at top of ash band.
		Sand & Ash band, sand is top 1 cm.
		242.22 to 242.24 ash is bottom 1 cm.
		Sand layer - ripple marks.
		242.36 to 242.38 disseminated pyrite increasing.
		Silt layer at 244.66 to 244.74.
		dissemated pyrite and occasional blebs 1 cm x 0.30 cm. 1% of core.
		increasing number of pyrite below 246.
		Glauconite - very slight at 246.79 increasing to 3% of core at 247.83.
		distinct bands starting at 248.19, silt also occurs at this depth.
		Pyrite band 0.01 m thick at 248.75.
		Conglomeratic sandstone - base of Moosebar, sandstone coarse with pebbles, very muddy matrix from 250.22 m to 250.56 m.

HOLE# B.C.-80-23 From 250.56 m To 260.91 m

FROM	TO	DESCRIPTION
		GETHING FORMATION
250.56	250.78	COAL - 0.22 m, black, poor recovery, highly ground.
		250.56 m to 250.57 m - coal, dull banded, 50% Vitrain, pyritic.
		250.57 m to 250.61 m - sandstone split - highly coaly, medium grained, mud rip-up clasts.
		250.61 m to 250.78 m - coal, dull banded, 30% Vitrain, minor Fusain, well cleated, highly broken at base.
250.78	251.03	SILTSTONE - medium grey, muddy at top, abundant coaly streaks, minor pyrite nodules, abundant plant debris.
251.03	251.76	SILTSTONE & SANDSTONE - interlaminated, medium-light grey predominant siltstone, sandstone is fine grained, salt & pepper, crossbedded, minor pyrite nodules, minor graded bedding, minor mudstone laminae toward base, bedding angle at 75° to C/A, abundant plant debris at base.
251.76	251.92	MUDSTONE - dark grey, abundant coaly streaks, abundant plant debris, pyrite nodules, slickensides, calcite veinlets from 251.80 m to 251.82 m and form 251.91 m to 251.92 m at 80° to C/A.
251.92	259.32	SILTSTONE & SANDSTONE - interlaminated to mixed, predominant medium grey siltstone at top of section becoming sandier toward base, sandstone is fine grained to medium grained, salt & pepper, minor coaly streaks and rootlets toward top of section and at base, minor pyrite nodules at top of section, mudstone bed from 256.32 m to 256.40 m with abundant plant & coaly streaks, calcite vein <0.01 m thick at 256.37 m at 75° to C/A, bedding is convoluted and bioturbated, minor crossbedding toward base, minor graded bedding.
259.32	260.91	COAL - 1.59 m, black, Sample 1, Methane Gas Sample 1.
		259.32 m to 260.30 m - dull banded coal, 75% Clarain & Durain, 10% Vitrain in bands, 5% Fusain, very hard, uncleated.
		260.30 m to 260.91 m - bright banded, abundant Vitrain (50%), 5% Fusain, well cleated, softer.

HOLE# B.C.-80-23 From 260.91 m To 265.46 m

FROM	TO	DESCRIPTION
260.91	261.63	MUDSTONE - dark grey, abundant plant debris, coaly streaks at top of section, silty at base.
261.63	263.08	MUDSTONE & SANDSTONE - interlaminated, dark grey mudstone predominant, sandstone is salt & pepper and fine grained to medium grained, minor coaly streaks, abundant plant debris, convoluted bedding at top of section, minor siltstone at top of section, bedding angle at 80° to C/A, highly pyritic at base, pyrite occurs in bands, also highly carbonaceous at base with slickensides.
263.08	263.18	COAL - 0.10 m, dull banded, minor Vitrain, mostly Durain & Clarain, abundant pyrite bands & blebs, minor slickensides.
263.18	263.23	SILTSTONE - medium grey, coaly streaks, calcite veinlets (tension gashes?), minor sandstone lenses, fine grained.
263.23	263.49	COAL - 0.26 meters, black, bright banded, abundant Vitrain, minor Fusain (<5%), pyritic at top of seam, Vitrain content decreases toward top of seam where coal is duller.
263.49	263.73	MUDSTONE - dark grey, highly carbonaceous at top of section with abundant plant debris & coaly streaks, becoming silty toward base with minor siltstone laminae at base.
263.73	263.96	SANDSTONE - fine grained, salt & pepper, crossbedded, trough &shaped, plant rootlets.
263.96	264.29	SILTSTONE & SANDSTONE & MUDSTONE - interlaminated, medium grey siltstone predominant, sandstone is very fine grained, salt & pepper, mudstone is dark grey, coaly streak, crossbedded, minor convoluted bedding, slickensides, minor worm burrows.
264.29	265.33	MUDSTONE & SILTSTONE - interlaminated, mudstone dark grey, siltstone medium grey, mud content increasing toward base, abundant worm burrows, abundant plant debris & coaly streaks toward base, bedding angle at 80° to C/A.
265.33	265.46	COAL - 0.13 m, black, bright banded, well cleated, abundant Vitrain, highly broken, minor muddy bands, poor recovery.

HOLE* B.C.-80-23 From 265.46 m To 273.10 m

FROM	TO	DESCRIPTION
265.46	266.10	MUDSTONE - dark grey, very coaly at top becoming silty toward base, abundant coal streaks & bands at top abundant plant debris.
266.10	267.68	SANDSTONE - fine grained at top, grading to medium grained at base, bioturbated at top & poorly laminated in middle with mudstone laminae, massive at base, salt & pepper, minor graded bedding.
267.68	268.02	SILTSTONE - dark medium grey, minor sandstone lenses & laminations, very fine grained.
268.02	268.04	VOLCANIC SANDSTONE - very ashy, medium grained, light grey.
268.04	268.58	SANDSTONE - very fine grained, salt & pepper, silty, minor siltstone laminations, trough shaped crossbedding, minor worm burrows, minor ripple marks, very minor mudstone laminations.
268.58	269.36	SANDSTONE & SILTSTONE - interlaminated, fine grained, salt & pepper sandstone predominant, siltstone dark grey, abundant worm burrows, crossbedded, ripple marks, graded bedding, bedding angle at 85° to C/A. channel sandstone at base with mudstone rip-up clasts.
269.36	269.77	COAL - 0.41 m, black, bright, abundant Vitrain, well cleated, highly broken, recovery fairly good. 269.50 m to 269.58 m muddy coal - mudstone bands in coal seam.
269.77	270.32	SILTSTONE & MUDSTONE - interlaminated,dark medium grey, siltstone predominant, dark grey mudstone, abundant coaly streaks at top of section, abundant plant debris, minor fine grained sandstone lenses.
270.32	273.10	SILTSTONE, SANDSTONE & MUDSTONE - interlaminated, dark medium grey siltstone predominant at top of section, sandstone is fine grained to medium grained, salt & pepper & increasing in abundance toward base, where it is predominant, mudstone is dark grey, abundant worm burrows, abundant coaly streaks at top of section, abundant plant debris, crossbedded, graded bedding, convoluted bedding, minor ripple marks, minor slicken-

HOLE# B.C.-80-23 From 273.10 m To 281.67 m

FROM	TO	DESCRIPTION
		sides.
273.10	278.32	MUDSTONE - dark grey, slightly silty, minor sandstone and siltstone lenses & laminae, minor clam shell molds, shell fragments at 277.01 m, minor pyrite nodules, 80° to C/A, minor channel structures (sandstone), abundant slickensides at 178.17 m.
278.32	278.86	MUDSTONE & SANDSTONE - interlaminated, dark grey mudstone predominant, sandstone is fine grained to medium grained, salt & pepper, graded bedding, minor crossbedded, minor worm burrows, minor convoluted bedding
278.86	281.49	COAL - 2.63 m, black, excellent recovery, Sample 2, Methane Gas Sample 2. 278.86 m to 279.23 m - coal, bright banded, abundant Vitrain, 5% Fusain, well cleated, pyrite band at 278.96 m which is ∿0.01 m thick in mudstone. 279.23 m to 279.30 m sandstone, coaly, abundant coaly streaks, minor mudstone laminae. 279.30 m to 279.35 m, coal, black, bright, 90% Vitrain, very well cleated. 279.35 m to 279.65m - mudstone - dark grey to black, abundant plant debris & coaly streaks. 279.65 m to 280.22 m - coal - bright banded, abundant Vitrain, Vitrain content increasing toward base, well cleated, 5% Fusain. 280.22 m to 280.28 m 0 sandstone & coal interlaminated sandstone is medium grained and salt & pepper. 280.28 m to 280.58 m coal, bright banded, abundant Vitrain, highly broken, well cleated. 280.58 m to 281.05 m - muddy coal - banded bright coal with abundant mudstone bands & minor medium grained, salt & pepper sandstone lenses. Abundant Vitrain. 281.05 m to 281.15 m - sandstone - fine grained, salt & pepper, minor coaly streaks, unlaminated. 281.15 m to 281.49 m - coal, dull banded, mainly Clarain Durain, poorly cleated, highly broken.
281.49	281.67	MUDSTONE - dark grey, abundant plant debris & coaly streaks, minor siltstone laminae.

HOLE# B.C.-80-23 From 281.67 m To 289.88 m

FROM	TO	DESCRIPTION
281.67	283.30	MUDSTONE & SILTSTONE - Interlaminated, mudstone predominant & dark grey, siltstone medium grey, convoluted bedding, minor cross bedding, abundant plant debris, bioturbated, minor plant rootlets, bedding angle at 85° to C/A, mudstone content increasing toward base.
283.30	283.40	COAL - 0.10 m, black, bright, banded, abundant Vitrain, (30%), well cleated, broken core.
283.40	283.45	MUDSTONE - dark grey, abundant plant debris, abundant coaly streaks.
283.45	283.69	SILTSTONE - dark medium grey, sandy, abundant plant debris, coaly streaks.
283.90	284.28	SANDSTONE - silty, dark medium grey to salt & pepper, fine grained, bioturbated abundant coaly streaks & plant debris.
284.28	284.80	MUDSTONE - dark grey, abundant plant debris, coaly streaks and coal bands <0.01 m thick.
284.80	285.32	SILTSTONE & SANDSTONE - mixed to interlaminated, medium grey siltstone predominant, sandstone is salt & pepper, fine grained, sandstone content increases toward base, abundant plant debris.
285.32	285.42	SANDSTONE - salt & pepper, medium grained, laminated, crossbedded.
285.42	285.71	SILTSTONE - medium grey, minor sandstone component toward base of section.
285.71	286.30	SANDSTONE - salt & pepper, fine grained to medium grained, laminated crossbedded, abundant siltstone laminations at top of section, convoluted bedding at top of section.
286.30	289.72	SILTSTONE & SANDSTONE - interlaminated to interbedded, medium grey siltstone highly predominant, sandstone is fine grained to very fine grained, salt & pepper, minor plant debris, minor coaly streaks at top of section, bedding angle at 85° to C/A.
289.72	289.84	COAL - 0.12 m, black, bright banded, calcite veinlet at top of seam, abundant Vitrain.
289.84	289.88	MUDSTONE - dark grey, abundant coaly streaks, abundant plant debris.

HOLE# B.C.-80-23 From 289.88 m To 291.39 m

FROM	TO	DESCRIPTION
289.88	290.73	COAL - 0.85 m, black, bright, banded, abundant Vitrain, highly borken, 44% recovery so too little coal to sample (only 0.35 m in core box).
290.73	290.83	MUDSTONE - dark grey, abundant coaly streaks, abundant plant debris.
290.83	290.88	COAL - 0.05m, black, bright banded, abundant Vitrain, well cleated.
290.88	291.39	MUDSTONE - dark grey, abundant plant debris and coaly streaks, minor slickensides.
		END OF HOLE

CORE DESCRIPTION

HOLE# B.C. 80-24 From 0.00 m To 177.64 m

Area Bri-Dowling Creek By Paul Cowley

FROM	TO	DESCRIPTION
0.00 m	57.91 m	OverBurden
57.91	361.30	Moosebar Formation
		Dark grey Mudstone, occasional medium grey siltstone medium bedded, occasional pryite nodules throughout.
		Occasional broken surfaces with drusy calcite from 59.14 m to 75.61 m - Most surfaces 20° and 45° to core axis.
		Bedding 72° to C/A at 69.37 m
		71° to C/A at 79.00 m
		70° to C/a at 99.27 m
		70° to C/A at 116.75 m
		70° to C/A at 123.00 m
		125.85 m to 125.88 - 2 Glauconite bands - each approximately 1 cm in thickness.
		144.22 to 14[illegible] m - Glauconite Band.
		149.69 Slickensides.
		160.32 m - Ash band
		160.42 m to 160.58 - Ash band with round clam blebs.
		160.80 to 160.81 - Glauconite band.
		161.26 m - Slickensides
		161.65 m to 161.66 m - Glauconite band.
		163.83 m to 164.04 - Siltstone light grey, stockwork of calcite filled fractures - also 164.47 m to 164.76 and from 172.57 to 172.67 m.
		166.15 m to 166.16 m Glauconite band.
		167.76 m to 167.85 - Ash band with mudstone blebs, bedding 75° to C/A.
		177.33 m to 177.51 Fault Gouge.
		177.64 m Slickensides

HOLE# B.C. 80-24 From 187.41 m To _____

FROM	TO	DESCRIPTION
		Bedding 75° to C/A at 187.41 m - Surface with ash.
		193.51 m to 193.53 m Ash band with dark grey mudstone rounded blebs.
		195.24 m Slickensides
		Bedding 75° to C/A at 197.62 m.
		198.43 m Slickensides.
		198.75 m vein of a glassy dark brown rhombohedral mineral - vein only 2 mm thick.
		199.09 m to 209.76 m occasional slickensides.
		Thin ash bands at 203.37 m, 203.80m, 205.56m, 211.42 m, 211.52 m.
		216.76 m to 216.78 - Fine grained sandstone in an irregular band appearing like slough from delta front.
		221.68 m to 221.69 - Fine grained sandstone band.
		224.58 m to 224.59 m - Ash Band.
		242.62 m to 243.02 m - Broken mudstone.
		263.96 m to 263.97 m Calcite vein 80° to C/A.
		Slickensides at 267.92 m, 277.41 m, 278.92 m.
		Bedding 77° to C/A at 276.72.
		299.92 m - shell fossil.
		310.63 m to 310.64 m - Calcite vein, horizontal.
		315.27 m Slickensides
		Slickensides at 325.73 m, 327.74 m, 327.82 m, 339.86 m.
		Ash band 327.90 to 327.91 m, 345.00 to 345.01 m.
		Sandstone slough 328.93 m to 328.94 m.
		332.04 to 332.06 m Band of shell fragments.
		Slickensides at 347.07 m.
		Ash band and lenses - 348.77 m to 348.79 m, 350.00 to 350.01 m, 350.29 m to 350.30 m, 350.85 m to 350.87 m, 351.38 m to 351.41 m, 351.51 m to 351.54.
		Bedding 75° to C/A at 351.54 m.
		Glauconite from 357.19 m to 357.67 m.
		Pyritic towards base.
		Conglomerate - Chert pebble framework - 50% light grey Chert, 50% dark grey Chert, framework 40%,dark grey siltstone Matrix with Glauconite 360.64 m to 361.30 m.

HOLE# B.C. 80-24 From 361.30 m To 377.03 m

FROM	TO	DESCRIPTION
		Gething Formation
361.30	361.49	MUDSTONE - Dark grey, silty at top, pyrite nodules.
361.49	361.69	COAL - 0.20 m, 99% recovery, black, 50% Vitrain, 50% Claro-durain, occasional pyrite lenses.
361.69	363.37	SANDSTONE - Fine grained, light grey, silty at top grades to medium grained at base, crossbedded, rare worm burrows, carbonaceous laminae, lower contact sharp.
363.37	365.80	SILTSTONE - Medium grey, rare thin fine grained sandstone lenses, bedding 72° to C/A, muddy at base, Slickensides and minor calcite veinlets at 365.70 m.
365.80	367.63	SANDSTONE, SILTSTONE, MUDSTONE - Sandstone at top grades to siltstone at middle and mudstone at base, sandstone fine grained, light grey, some faint bedding, siltstone medium grey, mudstone dark grey, unit contains occasional slickensides and calcite veinlets, mudstone contains coal streaks and is very coal in places bedding 60° to C/A.
367.63	367.95	SILTSTONE - Medium grey, coal streaks, lower contact gradational.
367.95	377.03	SANDSTONE - Fine grained and medium grained, light grey, crossbedded, rock severely broken, slickensided and [illegible] fractures filled with calcite some vugs, fault breccia, bedding 35° to C/A , bedding 60° to C/A, some orientations or slickensides, 30° to C/A and 10° to C/A, 60° to C/A and plunge of 30°to C/A and 10° from trend of surface, plunge of 60° to C/A and 25° from trend of surface. Plunge of 30° to C/A and 0° from trend of surface. Plunge of 40° to C/A and 30° from trend of surface. Plunge of 55° to C/A and 30° from trend of surface. Plunge of 55° to C/A and 30° from trend of surface. Plunge of 35° to C/A and 85° from trend of surface. Plunge of 0° to C/A and 70° from trend of surface. Plunge of 05° to C/A and 60° from trend of surface. Plunge of 20° to C/A and 80° from trend of surface. Lower contact sharp.

HOLE# B.C. 80-24 From 377.03 m To 387.68 m

FROM	TO	DESCRIPTION
377.03	379.15	SILTY MUDSTONE - Dark grey, occasional minor calcite veinlets.
379.15	380.49	COAL - 1.34 m, 99% recovery, Methane sample #1, 379.08 to 379.40 m - Coal, black, poorly cleated, 95% Claro-durain, 5% Vitrain. 379.40 m to 380.49 m - Coal, black, poorly cleated, 60% Claro-durain, 40% Vitrain.
380.49	382.25	SANDSTONE & SILTSTONE - interlaminated and interbedded, siltstone dark grey, sandstone in lenses and bands medium grey, crossbedded, worm burrows throughout, muddy at top and muddy at bottom.
382.25	382.32	COAL - 0.07 m, 99% recovery, black, 50% Vitrain, 50% Claro-durain, poorly cleated.
382 .32	383.74	MUDSTONE, SILTSTONE & SANDSTONE - Mudstone at top grading to siltstone at upper middle grading to sandstone at base, mudstone dark grey, coal streaks, very carbonaceous, siltstone medium grey, sandstone medium grained, light grey, faint bedding, carbonaceous in places, lower contact sharp.
383.74	385.21	SILTSTONE & SANDSTONE - Siltstone at top grading to sandstone at base, siltstone medium grey, convolute bedding, plant fossils, sandstone light grey, fine grained, crossbedded, convolute bedding, rare thin bands of medium grained sandstone, rare thin bands of ash, some slickensides and minor calcite veinlets, sharp lower contact.
385.21	385.97	SANDSTONE - Fine grained, light grey, carbonaceous laminae, heavily crossbedded, minor calcite veinlets, lower contact moderately sharp.
385.97	387.08	SANDSTONE & SILTSTONE - Interbedded, minor mudstone, sandstone fine grained, light grey, crossbedded, siltstone medium grey, worm burrows throughtout, lower contact sharp.
387.08	387.19	MUDSTONE - Dark grey, very carbonaceous, very hard, possibly silicified, plant fossils.
387.19	387.68	COAL - 0.49 m, 45% recovery, black, poorly cleated, 50% Vitrain, 50% Claro-durain.

HOLE# B.C. 80-24 From 387.68 m To 399.39 m

FROM	TO	DESCRIPTION
387.68	388.54	MUDSTONE - Dark grey, abundant plant fossils, coal streaks at top, lower contact moderately sharp.
388.54	390.71	MUDSTONE & SILTSTONE - Interlaminated, mudstone dark grey, siltstone in thin lenses medium grey, worm burrows, lower contact gradational.
390.71	395.74	MUDSTONE - with minor siltstone laminae, mudstone dark grey, minor plant fossils, minor slickensides, shell bands from 393.92 to 393.94 m and 394.45 to 394.49 m, minor siltstone lenses at base, lower contact moderately sharp.
395.74	396.54	SANDSTONE - Fine grained, light grey, crossbedded, minor mudstone lenses with worm burrows, carbonaceous laminae, lower contact sharp.
396.54	399.20	COAL - 2.66 m - 65% recovery, Methane Sample #2 from 397.56 to 397.76 m. Coal - 396.54 to 396.69 m - 0.15 m, black, moderately cleated, 70% Vitrain, 20% Claro-durain, 5% Fusain. Sandstone - 396.69 to 396.77 m - 0.08 m, fine grained, cross bedded, light grey. Coal - 396.77 m to 396.88 m - 0.11m, 70% Claro-durain 20% Vitrain, 5% Fusain, black, moderately cleated. Sandstone - 396.88 m to 396.91 m - Fine grained, light grey. Coal - 396.91 m to 396.97 m - 0.06 m, 90% Claro-durain 5% Fusain, 5% Vitrain. Coal - 396.97 to 397.96 - 60% Vitrain, 40% Claro-durain. Sandstone - 397.96 to 398.01 m - 0.05 m, fine grained, crossbedded. Coal - 398.01 to 398.69 m - 0.68 m, moderately cleated, 50% Claro-durain, 45% Vitrain, 5% Fusain. Sandstone - 398.69 to 398.78 m - Fine grained, light grey. Coal - 398.78 m to 399.20 m - Coal lost, ground by drill.
399.20	399.39	MUDSTONE - Dark grey, carbonaceous, lower contact gradation.

HOLE# B.C. 80-24 From 399.39 m To 410.93 m

FROM	TO	DESCRIPTION
399.39	400.81	MUDSTONE & SILTSTONE - Interlaminated, mudstone dark grey, siltstone in thin lenses, medium grey, some bioturbation, lower contact sharp.
400.81	401.21	MUDSTONE - With rare fine grained sandstone thin lenses, mudstone dark grey.
401.21	401.45	COAL - 0.24 m, 95% recovery, black, no cleating, 100% Duro-clarain.
401.45	402.87	MUDSTONE, SILTSTONE & SANDSTONE - Dark grey mudstone at top grading to medium grey siltstone at middle grading to fine grained medium grey sandstone at base with carbonaceous laminae, sharp lower contact.
402.87	403.20	SILTSTONE & SANDSTONE - Siltstone at top grades to sandstone at base, siltstone medium grey, sandstone fine grained, light grey, crossbedded, worm burrows, carbonaceous laminae, lower contact, moderately sharp.
403.20	403.71	SILTSTONE - Medium grey.
403.71	405.61	SANDSTONE - Fine grained, medium to light grey, cross-bedded, some areas are carbonaceous and contain worm burrows, lower contact sharp.
405.61	406.59	MUDSTONE, SILTSTONE & SANDSTONE - Interlaminated, mudstone dark grey, siltstone medium grey, sandstone fine grained, light grey, lower contact moderately sharp.
406.59	407.77	SANDSTONE, SILTSTONE & MUDSTONE - Interlaminated, sandstone fine grained, light grey, contain worm burrows, siltstone medium grey, mudstone dark grey, carbonaceous laminae, sharp lower contact.
407.77	408.65	SANDSTONE - Fine grained, light grey, crossbedded, carbonaceous laminae, one thin band of medium grained sandstone, lower contact sharp.
408.65	410.20	SANDSTONE, SILTSTONE & minor mudstone interlaminated, sandstone fine grained, light grey, siltstone medium grey, mudstone dark grey, upper section heavily bioturbated, minor calcite veinlets following bedding 73^{0} to C/A.
410.20	410.93	SILTSTONE & MUDSTONE - Interlaminated, siltstone medium grey, mudstone dark grey, very muddy at base, sharp

HOLE# B.C. 80-24 From 410.93 m To 424.06 m

FROM	TO	DESCRIPTION
		lower contact.
410.93	411.40	COAL - 0.47 m, 68% recovery, black, poorly cleated, Pyritic in places, sheared, 80% Duro-clarain, 20% Vitrain.
411.40	414.55	MUDSTONE, SILTSTONE & SANDSTONE - Dark grey coaly, mudstone at top grading to mudstone and siltstone interlaminated, grading to fine grained medium grey sandstone with carbonaceous laminae, some plant fossils, moderately sharp contact.
414.55	415.26	ALTERNATING THIN BEDS OF SANDSTONE, SILTSTONE & MUDSTONE - Sandstone fine grained, medium grey, siltstone medium grey, mudstone dark grey some worm burrows, moderately sharp contact.
415.26	416.09	MUDSTONE - With minor siltstone laminae, mudstone dark grey, siltstone medium grey, sharp lower contact.
416.09	416.46	COAL - 0.37 m, 95% recovery, poorly cleated 60% Claro-durain, 40% Vitrain, black.
416.46	417.91	MUDSTONE, SILTSTONE & SANDSTONE - Mudstone at top grading to siltstone grading to fine grained, cross bedded sandstone at base with carbonaceous laminae.
417.91	419.15	MUDSTONE - Dark grey, carbonaceous at base.
419.15	419.54	COAL - 0.39 m, 90% Recovery, Black, poorly to moderately cleated, 60% Duro-clarain, 35% Vitrain, 5% Fusain.
419.54	421.34	MUDSTONE, SILTSTONE & SANDSTONE - Mudstone dark grey at top grades to medium grey siltstone to fine grained sandstone at base, carbonaceous laminae, rare coal streaks, lower contact moderately sharp.
421.34	422.75	MUDSTONE & SILTSTONE - Siltstone at top grades to dark grey mudstone at base, coaly streaks.
422.75	423.16	COAL - 0.41 m, 85% recovery, black, poorly cleated, 80% Duro-clarain, 15% Vitrain, 5% Fusain, slightly sheared.
423.16	424.06	MUDSTONE, SILTSTONE & SANDSTONE - Dark grey mudstone rapidly grades to interlaminated siltstone & mudstone grades to medium grey fine grained sandstone, cross bedded carbonaceous laminae, sharp lower contact.

HOLE# B.C 80-24 From 424.06 m To 435.94 m

FROM	TO	DESCRIPTION
424.06	424.72	MUDSTONE, SILTSTONE & SANDSTONE - Mudstone & siltstone interlaminated at top, fine grained, medium grey, sandstone at base, crossbedded, carbonaceous laminae, rare worm burrows.
424.72	425.22	SILTY MUDSTONE - Silty at top, muddy at base.
425.22	426.28	SILTSTONE & SANDSTONE - Thickly interbedded, sandstone fine grained, light to medium grey, crossbedded, siltstone medium grey.
426.28	427.67	SILTSTONE & MUDSTONE - Siltstone at top grades to mudstone at base, carbonaceous to base.
427.67	428.14	COAL - 0.47 m, 38% recovery, black, poorly cleated, slightly sheered, 90% Claro-durain, 10% Vitrain.
428.14	428.75	MUDSTONE & SILTSTONE - Mudstone at top grades to siltstone at base, sharp lower contact.
428.75	429.66	SANDSTONE & SILTY MUDSTONE - Alternating, thickly bedded, sandstone fine grained, medium grey, cross bedded, silty mudstone medium grey.
429.66	430.21	SANDSTONE & MUDDY SILTSTONE - Interlaminated, sandstone fine grained, medium grey, carbonaceous, crossbedded, bioturbated, muddy siltstone dark grey.
430.21	433.09	MUDSTONE & SILTSTONE - Mudstone dark grey at top grades to medium grey siltstone at base, sandy in places.
433.09	434.51	SILTSTONE & SANDSTONE - Interlaminated, medium grey, fine grained sandstone, sharp lower contact.
434.51	434.89	SANDSTONE & MUDDY SILTSTONE - Alternating medium bedding sandstone fine grained, medium grey, cross bedded, rare plant rootlets & coal streaks, muddy siltstone, medium grey, sharp lower contact.
434.89	435.24	MUDSTONE - Very carbonaceous, calcite veinlet following bedding 80° to C/A.
435.24	435.40	COAL - 0.16 m - 100% recovery black, slightly sheared, poorly cleated, 50% Claro-durain, 50% Vitrain.
435.40	435.94	MUDSTONE, SILTSTONE & SANDSTONE - Dark grey mudstone at top grades to siltstone then to fine grained carbonaceous sandstone at base, plant rootlets sharp lower contact.

HOLE# B.C. 80-24 From 435.94 To 459.86

FROM	TO	DESCRIPTION
435.94	439.30	MUDSTONE AND SILTSTONE - dark grey Mudstone grading to medium grey Siltstone towards base and fine grained Sandstone, crossbedded at base, lower contact sharp.
439.30	440.30	SILTSTONE - Medium grey
440.30	442.05	SANDSTONE & SILTSTONE - Alternating thin and medium beds, sandstone fine grained, medium grey, crossbedded, irregular bedding surfaces, mixed at base, worm burrows, calcite veinlets at irregular orientations from 440.74 to 441.15 and 441.62 to 441.77. Breccia from 440.74 to 440.77, sharp lower contact. Siltstone medium grey.
442.05	442.99	SILTSTONE - Medium grey, muddy at top, sharp lower contact.
442.99	444.70	SANDSTONE & SILTSTONE - Alternating thick medium and thin bedded, sandstone medium and thin bedded, sandstone medium grey, fine to medium grained, cross-laminated, siltstone medium grey, carbonaceous laminae, irregular and regular calcite veinlets at 75° to C/A, minor soft sediment deformation, minor bioturbation.
444.70	445.88	SILTSTONE - Medium grey, muddy at base, minor fine grained sandstone laminae at 65° to C/A.
445.88	446.53	COAL - 0.65m, 86% recovery, black, very hard, poorly cleated.
		COAL - 445.88 to 446.05 - 100% durain.
		COAL - 446.05 to 446.53 - 80% Claro-durain, 20% vitrain, Sample #3.
		No Methane test.
446.53	450.50	SANDSTONE & SILTSTONE - Intermixed and interbedded disturbed bedding, sandstone fine grained, medium grey, siltstone medium grey, calcite veinlets irregular, 450.10 to 450.40 sharp lower contact.
450.50	453.47	SILTSTONE & SANDSTONE - Siltstone with occasional minor sandstone beds at top grading to fine grained sandstone medium grey at base, sharp lower contact, plant fossils.
453.47	457.81	SILTY MUDSTONE - Occasional plant fossils, coaly in places sharp lower contact, dark grey.
457.81	459.86	SANDSTONE & SILTSTONE - Interbedded and intermixed, sandstone fine grained, medium grey, siltstone dark grey, abundant plant fossils, bedding planes disturbed,

HOLE# B.C.-80-24 From 457.81m To 478.22m

FROM	TO	DESCRIPTION
457.81	459.86	sharp lower contact.
459.86	460.21	SANDSTONE - Medium grey, fine grained, carbonaceous laminae, crossbedded, slickenside surface with calcite veining sharp lower contact.
460.21	464.24	SILTSTONE & SANDSTONE - Siltstone at top grades to fine grained sandstone at base, siltstone is muddy in places and has rare fine grained sandstone lenses, sandstone at base dark grey, disturbed bedding, abundant plant fossils, sharp lower contact, minute calcite veinlets from 464.00 to 464.24.
464.24	464.72	MUDSTONE - Black, very carbonaceous, coaly streaks, slickensides.
464.72	465.12	CORE LOSS - 0.40m.
465.12	465.87	SILTSTONE & MUDSTONE - Siltstone at top with minor very fine grained sandstone in lenses grades to mudstone and coaly mudstone at base.
465.87	466.19	SILTY MUDSTONE - Coaly streaks at top, abundant plant fossils throughout, sharp lower contact.
466.19	468.83	SANDSTONE - Fine grained, light to medium grey, cross-bedded, worm burrows, coarser near base, carbonaceous laminae, vertical calcite vein from 467.65 to 468.83 vuggy in places, slickensides 85½ from C/A on surface.
468.83	469.61	SANDSTONE & SILTSTONE - Alternating medium bedded sandstone, fine grained, light grey, crossbedded rare worm burrows, siltstone dark grey, lower contact sharp.
469.61	473.60	SILTSTONE & MUDSTONE - Interlaminated at top, [illegible] bioturbated grades to mudstone with rare thin siltstone lenses.
473.60	474.25	SANDY SILTSTONE - Medium grey, bedding disturbed, lower contact sharp.
474.25	475.86	SILTSTONE - Dark grey, muddy near top grades to siltstone with minor sandstone lenses and bands, bedding disturbed near base, moderately sharp lower contact.
475.86	478.22	MUDSTONE, SILTSTONE & SANDSTONE - Mudstone dark grey at top grades to dark grey siltstone, grades to very carbonaceous silty siltstone with irregular bedding,

HOLE# BC-80-24 From 478.22m To 494.49m

FROM	TO	DESCRIPTION
475.86	478.22	calcite veinlet with slight brecciation 477.17 to 477.22m @ 55° to C/A, coaly streaks at base sharp lower contact.
478.22	478.26	MUDSTONE - Dark grey, very carbonaceous, coal streaks.
478.26	478.33	COAL - 0.07m
478.33	478.74	MUDSTONE - Dark grey, carbonaceous, abundant plant fossils.
478.74	479.34	COAL - 0.60m, 28% recovery, 90% duro-clarain, 10% vitrain.
479.34	479.51	MUDSTONE - Dark grey, silty at base, abundant plant fossils, sharp lower contact.
479.51	480.12	SANDSTONE - Fine grained, medium grey, carbonaceous laminae, crossbedded, slickensides with calcite coating 75° to C/A, sharp lower contact.
480.12	480.97	SILTY MUDSTONE - Dark grey, very carbonaceous at base.
480.97	482.19	COAL - 1.22m, highly broken, black, 68% recovery, 2 carbonaceous mudstone splits each 40cm thick, sample #4.
482.19	483.38	SILTSTONE - Dark grey, very carbonaceous, abundant plant fossils, moderately sharp lower contact, muddy at base.
483.38	484.62	SILTSTONE & MUDSTONE - Interlaminated and thinly bedded, mudstone dark grey, siltstone medium grey, worm burrows, bedding slightly disturbed, lower contact sharp.
484.62	485.69	SANDSTONE - Fine grained, light grey, crossbedded, rare thin mudstone beds with worm burrows, rare mud clasts in sandstone, carbonaceous, laminated, sharp lower contact.
485.69	486.56	SILTY MUDSTONE - Dark grey, abundant plant fossils.
486.56	488.95	MUDSTONE AND SILTSTONE - Interlaminated with occasional thin fine grained sandstone lenses, mudstone dark grey, siltstone medium grey in thin lenses.
488.95	490.78	SILTY MUDSTONE - Sandy at top grading rapidly to silty mudstone - medium grey.
490.78	491.95	MUDSTONE - Silty at top showing convolute bedding grades rapidly to mudstone dark grey with plant fossils, lower contact moderate sharp.
491.95	494.49	SILTSTONE AND MUDSTONE - Mixed and interbedded, siltstone dark grey, carbonaceous, plant fossils, top part has no

HOLE# BC-80-24 From 491.95m To 494.49m

FROM	TO	DESCRIPTION
491.95	494.49	bedding, at base becomes bedded and lenticular.
494.49	495.60	COAL - 1.11m - 23% recovery, 95% claro-durain, 5% vitrain, poorly cleated, sample #5 no methane.
495.60	496.18	SILTSTONE AND SANDSTONE - Interbedded, siltstone dark grey, carbonaceous, sandstone fine grained, medium grey, in thin lenses, slickensides present.
496.18	498.97	COAL - 2.79m, 26% recovery, sample #6, No Methane, Coal 496.18 to 498.40m, 90% claro-durain, 10% vitrain, Muddy cannaloid coal - 498.40m to 498.68m Coal 498.68m to 499.97m.
498.97	500.54	MUDDY SILTSTONE - Dark grey, plant fossils.
500.54	501.82	SANDSTONE - Fine grained, light grey, slickensides 30° to C/A and 20° from C/A on surface along cross bedding surfaces.
501.82	506.63	MUDSTONE, SILTSTONE & SANDSTONE - Mudstone dark grey at top grades to dark grey siltstone at middle grades to fine grained light grey steeply crossbedded sandstone at base, sharp lower contact.
506.63	507.00	COAL - 0.37m, 60% recovery, black, sheared, 50% vitrain, 50% claro-durain, poorly cleated.
507.00	508.01	SILTY MUDSTONE - Coaly in places, dark grey, sharp lower contact.
508.01	509.93	SANDSTONE & MUDSTONE - Thickly interbedded, sandstone fine grained, steeply crossbedded, carbonaceous laminae, medium grey, minor irregular oriented calcite veinlets.
509.93	514.45	MUDSTONE, SILTSTONE & SANDSTONE - Dark grey mudstone at top rapidly grades to dark grey siltstone rapidly and grades to sandstone fine grained, light grey, steeply crossbedded, minor zone of rip-up clasts in sandstone, frequent irregularly oriented calcite veinlets throughout, sandstone with carbonaceous laminae, lower contact sharp.
514.45	514.50	MUDDY SILTSTONE - Dark grey, coaly streaks.
		END OF HOLE 514.50m

HOLE# B.C. 80-25 From 0.00 To 77.87

FROM	TO	DESCRIPTION
0.00	73.15	OVERBURDEN - TRICONED.
		GETHING FORMATION
73.15	73.91	MUDSTONE - dark grey - highly broken - minor silty lenses toward base - abundant plant debris and coaly streaks - broken piece of medium grained salt and pepper sandstone at top of section; impossible to log - may be overburden - becoming very coaly toward base.
73.91	74.33	COAL - 0.42m - black bright banded highly broken - recovery. 73.91m to 74.09m - coal - bright - banded - muddy - abundant vitrain - 10% fusain - well cleated. 74.09m to 74.15m - mudstone - very coaly - dark grey - abundant plant debris. 74.15m to 74.33 - coal - bright- ground up - abundant vitrain.
74.33	74.40	MUDSTONE - dark grey - becoming silty toward base - abundant plant debris and coaly streaks - minor slickensides.
74.40	75.72	SILTSTONE - medium grey - abundant very fine grained sandstone laminae - convoluted bedding - plant debris minor slickensides - bedding angle at 75° to C/A.
75.72	77.28	SILTSTONE AND SANDSTONE - Interlaminated - medium grey siltstone pred - sandstone is fine grained and salt and pepper. Cross bedded - minor ripple marks - siltstone becoming muddy toward base - abundant plant debris.
77.28	77.56	MUDSTONE - dark grey - minor plant debris - massive
77.56	77.67	COAL - 0.11m - black - dull banded - mostly clarain and durain - highly broken - slickensides in seam.
77.67	77.81	MUDSTONE - very dark grey to black - highly carbonaceous - abundant coaly streaks and plant debris - minor sandstone laminae - sandstone in brown - grey and salt and pepper - abundant pyrite in bonds.
77.81m	77.87	COAL - 0.06 - black - banded - dull - abundant clarain - durain (75%) - vitrain occurs in thin bands (20%) - 5% fusain - cleated.

HOLE# B.C. 80-25 From 77.87m To 86.97m

FROM	TO	DESCRIPTION
77.87	78.58	MUDSTONE AND SANDSTONE - Interlaminated - dark grey mudstone predominant- sandstone is fine grained and salt and pepper - sandstone is most abundant toward the centre of the section - minor slump features - abundant plant debris - abundant coaly streaks toward base.
78.58	78.82	COAL - 0.24m - black - bright banded - muddy at top of seam from 78.58m to 78.70m and poorly cleated - highly broken from 78.70m to 78.82m.
78.82	78.98	MUDSTONE AND SILTSTONE - Interlaminated - dark grey, mudstone predominant - Siltstone is medium grey - abundant plant debris and coaly streaks.
78.98	79.68	SANDSTONE AND SILTSTONE - Interlaminated - salt and pepper, fine grained, sandstone predominant- siltstone is medium grey - abundant plant debris - cross bedded - graded bedding - abundant coaly streaks - bedding angle at 76° to C/A.
79.68	79.89	MUDSTONE - dark grey to black - very coaly - abundant plant debris.
79.89	80.66	MUDSTONE AND SILTSTONE - Interlaminated to interbedded- Mudstone is dark grey - Siltstone is medium grey - abundant plant debris.
80.66	80.90	COAL - 0.24m - black - muddy - banded - dull -highly ground up and broken - poor recovery, hard to see anything.
80.90	81.08	SILTSTONE - sandy - medium grey - abundant plant debris- plant rootlets - coal bands at base of section - slickenside at 80.97m.
81.08	81.15	COALY MUDSTONE - highly broken - dark grey - abundant plant debris and coaly streaks.
81.15	86.97	SILTSTONE AND SANDSTONE - Interlaminated to interbedded - Siltstone is dark medium grey - sandstone is salt and pepper and fine grained to medium grained - abundant rip-up clasts in sandstone in middle of section, the clasts are silty - cross bedded - convoluted bedding - minor coaly streaks. Calcite veinlet at 82.04m at 20° to C/A.

HOLE# B.C. 80-25 From 86.97m To 94.71m

FROM	TO	DESCRIPTION
		Muddy section from 86.46m to 86.70m - bioturbated in middle of section.
86.97	87.24	SANDSTONE - salt and pepper - medium grained - convoluted bedding - plant debris and coaly streaks - abundant mudstone and siltstone rip up clasts.
87.24	88.01	SILTSTONE AND SANDSTONE - Siltstone is medium grey to dark medium grey to muddy sandstone in fine grained and salt and pepper and less abundant - abundant plant debris - minor coaly streaks bedding angle at 74° to C/A - medium grained sandstone at base of section with rip-up clasts of mudstone - slickensides at 88.00m.
88.01	88.36	MUDSTONE - dark grey - silty at top of section
88.36	89.84	COAL - 1.48m - black - Sample 1.
		88.36m to 88.76m - Coal - black - canneloid.
		88.76m to 89.29m - Coal - dull - banded - 5% vitrain - 5% fusain - 90% clarain - durain - poorly cleated.
		89.29m to 89.84m - coal - bright banded, highly broken - well cleated - minor. Fusain - 50% vitrain - 50% clarain.
		SANDSTONE split from 89.62m to 89.68m - medium grained, salt and pepper and durain - well cleated.
89.84	90.60	MUDSTONE - silty - dark grey - abundant coaly streaks and bands - abundant plant debris - slickensides throughout section.
90.60	91.83	SILTSTONE - medium grey - muddy - abundant plant debris - abundant coaly streaks at base.
91.83	91.91	COAL - very muddy - black - abundand calcite veinlets 0.08m thick.
91.91	92.24	SILTSTONE - medium grey - abundant plant debris - minor coaly streaks toward base.
92.24	93.06	SANDSTONE - salt and pepper - fine grained to medium grained - miner siltstone laminated - minor coaly streaks poorly laminated - bioturbated at base.
93.06	94.32	SILTSTONE - medium grey - minor very fine grained, light grey sandstone laminated.
94.32	94.71	MUDSTONE - dark grey - very carbonaceous - abundant plant debris and coaly streaks - broken at base.

HOLE# B.C. 80-25 From 94.71m To 104.87m

FROM	TO	DESCRIPTION
94.71	95.25	SILTSTONE AND SANDSTONE - Interlaminated - medium grey siltstone predominant - sandstone is fine grained and salt and pepper - convoluted bedding - abundant plant debris and coaly streaks.
95.25	95.29	COAL - 0.04m - black - bright - abundant vitrain - abundant pyrite in bands - well cleated - slickensides at base.
95.29	96.16	MUDSTONE - dark grey to black - abundant coal bands angle 0.01m thick - abundant plant debris - minor slickensides very coaly at base of section.
96.16	101.14	SILTSTONE - medium grey to dark modified grey - muddy at top of section with mud content decreasing toward base - abundant plant debris - minor very fine grained, light grey sandstone laminated - bedding angle at 73° to C/A. Coal banded from 101.03m to 101.04m with very carbonaceous mudstone to 101.08 - carbonaceous mudstone from 100.74 to 100.77m.
101.14	101.23	COAL - 0.09m - almost all lost - highly broken - difficult to say if it is all coal - may have abundant mudstone in it.
101.23	102.30	SILTSTONE - medium grey - abundant silty nodules angle 0.01 in diameter - 101.65m to 101.69m sandstone, very carbonaceous abundant pyrite, very muddy matrix -
102.30	102.73	SANDSTONE, SILTSTONE AND MUDSTONE - Sandstone is predominant, fine grained and salt and pepper - siltstone is medium grey - mudstone is dark grey and very carbonaceous with abundant plant debris - abundant coaly streaks - cross bedding - miner ripple marks.
102.73	102.84	MUDSTONE - dark grey to black - abundant plant debris and coaly streaks - very carbonaceous.
102.84	103.07	SILTSTONE - medium grey - abundant plant debris and coaly streaks.
103.07	103.64	MUDSTONE AND SILTSTONE - Interlaminated to interbedded- mudstone is dark grey - siltstone is medium grey, abundant coaly streaks and plant debris.
103.64	104.87	COAL - 1.23m - black - Sample 2.

HOLE# B.C. 80-25 From 103.64m To 113.24

FROM	TO	DESCRIPTION
103.64	104.87	103.64m to 103.71m - coal - black - canneloid. 103.71m to 103.75m - Mudstone - dark grey to light - very carbonaceous - abundant plant debris and coaly streaks. 103.75m to 103.81m - Coal - bright vanded - abundant vitrain (30%) - no fusain visible - well cleated. 103.81m to 104.00 - MUDSTONE AND SILTSTONE - dark grey mudstone and medium grey siltstone - abundant plant debris and coaly streaks. 104.00m to 104.77m - Coal - black, bright - banded - abundant vitrain - minor Fusain - well cleated - pyritic at 104.53m 104.77m to 104.82m - mudstone - very coaly - abundant plant debris and coaly streaks. 104.82m to 104.87m - Coal - bright banded - abundant vitrain - muddy - poorly cleated.
104.87	105.14	MUDSTONE - dark grey - abundant plant debris and coaly streaks.
105.14	105.39	COAL - 0.25m - black - bright - banded - abundant vitrain well cleated - highly broken.
105.39	106.01	SILTSTONE - medium grey - abundant plant debris - sandstone bed from 105.69m to 105.76m, fine grained, cross bedded, salt and pepper.
106.01	109.23	SANDSTONE - fine grained - salt and pepper - finely laminated - cross bedded- ripple marks - minor mudstone laminated - worm burrows toward base of section. Calcite veinlet at 106.62m at 35° to C/A. Bedding angle at 75° to C/A - trough shaped cross bedding abundant.
109.23	113.24	SILTSTONE, MUDSTONE AND SANDSTONE - Interlaminated - medium grey siltstone predominant - mudstone is dark grey - sandstone is very fine grained - abundant worm burrows at top of section - abundant plant debris - section becoming muddier toward base where mudstone is predominant - minor coaly streaks and bands toward base.

HOLE# B.C. 80-25 From 113.24m To 123.21m

FROM	TO	DESCRIPTION
113.24	114.89	SILTSTONE, SANDSTONE - Interlaminated - dark medium grey siltstone predominant - sandstone is fine grained to very fine grained and salt and pepper - minor dark grey mudstone laminated - abundant plant debris and coaly streaks and bands angle 0.01m
114.89	116.48	SANDSTONE - fine grained - salt and pepper - finely laminated - cross bedded - convoluted bedding - rip up clasts toward base - minor mudstone laminae with abundant plant debris - ripple marks - coaly streaks at base - rup-up clasts at base (mudstone clask).
116.48	116.82	MUDSTONE - dark grey to black - abundant coal bands and streaks - abundant plant debris - very carbonaceous.
116.82	117.39	SANDSTONE AND SILTSTONE - Interlaminated - sandstone fine grained, salt and pepper and predominant. Siltstone is medium grey - cross bedded - ripple marks- convoluted bedding - minor slump structures (soft sediment)- minor coaly streaks.
117.39	117.45	MUDSTONE - dark grey to black - very carbonaceous - abundant plant debris and coaly streaks.
117.45	119.80	COAL - 2.35m - black - sample 3. 117.45m to 118.13m - coal - bright - banded abundant vitrain - well cleated - methane sample 1 - minor fusain (angle 5%) 118.13m to 118.49m - Coal - dull - banded minor vitrain (10%) - clarain and durain 85% - Fusain 5% - poorly cleated - minor sandstone lenses at 118.30m to 118.36m. 118.49m to 119.80m - Coal - bright - banded - abundant vitrain (50%) - minor fusain well cleated - broken core.
119.80	120.50	MUDSTONE AND SANDSTONE - Interlaminated - dark grey, carbonaceous mudstone predominant - sandstone is fine grained and salt and pepper - abundant coaly streaks and plant debris - highly broken in sections - bedding angle at 75° to C/A.
120.50	123.21	SANDSTONE - fine grained to very fine grained - laminated - salt and pepper - cross bedded - trough shaped cross beds - minor convoluted bedding - minor mudstone laminated - minor coaly streaks - ripple marks - minor worm burrows.

HOLE# B.C. 80-25 From 123.21m To 141.12m

FROM	TO	DESCRIPTION
123.21	129.94	SANDSTONE, SILTSTONE, MUDSTONE - Interlaminated to interbedded - sandstone is salt and pepper, fine grained to medium grained and predominant - siltstone is medium grey - mudstone is dark grey - cross bedded - minor convoluted bedding - minor plant debris - minor coaly streaks - mud content increasing toward base - bedding angle at 126.39m 75° to C/A.
129.94	130.93	MUDSTONE - dark grey - abundant plant debris and coaly streaks.
130.93	132.89	SILTSTONE AND SANDSTONE - Interlaminated - medium grey siltstone predominant - sandstone is salt and pepper and fine grained - miner mudstone laminated at base.
132.89	132.97	COAL - 0.08m - black - bright - 90% vitrain cleated.
132.97	133.37	MUDSTONE - very coaly - dark grey to black - abundant plant debris and coaly streaks - coal bands angle 0.01m
133.37	135.59	COAL - 2.22m - black - sample 4. 133.37m to 134.31m - coal - dull - banded 70% durain and clarain - minor fusain - with 30% vitrain - poorly cleated - broken core. 134.31m to 134.58m - mudstone dark grey - very carbonaceous - abundant plant debris and coaly streaks and coaly streaks. 134.58m to 135.18m - coal - bright banded - 50% vitrain- 45% durain and clarain - 5% fusain - well cleated - broken. 135.18m to 135.23m - mudstone - dark grey - abundant plant debris and coaly streaks. 135.23m to 135.59m - coal - bright banded - 50% vitrain - 45% durain and clarain - 5% fusain - well cleated - highly broken.
135.59	135.93	MUDSTONE AND SILTSTONE - Interlaminated - dark grey mudstone predominant - siltstone is medium grey - abundant plant debris and coaly streaks.
135.93	141.12	SANDSTONE AND MUDSTONE - Interlaminated - Sandstone is salt and pepper, fine grained and very predominant - cross bedded, abundant plant debris - worm burrows - minor ripple marks - cross bedding in predominant trough shaped - bedding angle at 75° to C/A.

CORE DESCRIPTION

HOLE# B.C. 80-25 From 141.12 To 150.36

FROM	TO	DESCRIPTION
141.12	143.11	MUDSTONE AND SILTSTONE - Interlaminated - dark grey, silty mudstone predominant - sandstone is very fine grained and light grey - minor siltstone laminated - plant debris - minor disseminated pyrite.
143.11	143.21	COAL - 0.10m - black - bright - banded - abundant vitrain - well cleated - highly broken.
143.21	143.48	SILTSTONE - medium grey - very coaly at top of section with abundant plant debris and coaly streaks.
143.48	143.60	MUDSTONE, COAL, SANDSTONE - Interlaminated - dark grey mudstone predominant - sandstone is fine grained and salt and pepper - coal occurs in bands angle 0.01m thich and has abundant vitrain and is well cleated.
143.60	145.47	SILTSTONE, MUDSTONE, SANDSTONE - Interlaminated - medium grey siltstone predominant - mudstone is dark grey - sandstone is fine grained and salt and pepper - abundant plant debris at top of section - minor ripple marks - minor cross bedding - bedding angle at 75° to C/A - minor worm burrows.
145.47	145.77	MUDSTONE - dark grey - plant debris common.
145.77	145.82	COAL - 0.05m - black - bright - banded - abundant vitrain - well cleated.
145.82	145.87	SANDSTONE - fine grained - salt and pepper - coaly streaks.
145.87	145.90	COAL - 0.03m - black - bright - banded - abundand vitrain - well cleated.
145.90	146.77	MUDSTONE, SILTSTONE SANDSTONE - Interlaminated - dark grey mudstone predominant - siltstone is medium grey - sandstone is fine grained and salt and pepper - abundant plant debris and coaly streaks - minor convoluted bedding - minor cross bedding - minor slickensides at base.
146.77	150.36	SANDSTONE AND SILTSTONE - Interlaminated - sandstone is fine grained, salt and pepper - siltstone is predominant and is medium grey and cross bedded - steep forest bedding- ripple marks - abundant calcite veinlets throughout section - minor worm burrows.

CORE DESCRIPTION

HOLE# B.C. 80-25 From 146.77 To 166.01

Area _____ By _____

FROM	TO	DESCRIPTION
146.77	150.36	Abundant slickenside throughout section at average of 25° to C/A - siltstone becoming muddy toward base.
150.36	150.59	MUDSTONE - Dark grey - minor fine grained sandstone laminated - abundant plant debris - abundant pyrite disseminated throughout section and along fracture surfaces.
150.59	151.18	COAL - 0.59m - black - dull to bright - banded - 20% vitrain - 75% recovery.
151.18	152.40	SILTSTONE - medium grey, abundant plant fossils muddy at base, carbonaceous, lower contact modified sharp.
152.40	156.41	SANDSTONE - fine grained, light grey, cross bedded, minute irregularly oriented calcite veinlets, minor thin dark grey siltstone bands, rare minor vugs aligned with calcite.
156.41	161.66	SILTY MUDSTONE with occasional thin sandstone lenses, sandstone fine grained light grey, silty mudstone dark grey.
161.66	162.10	COAL - 0.43m - 99% recovery, black, methane sample #2. Coal - 161.66 to 161.74m - 50% vitrain, 50% claro-durain. Sandstone - 161.74 to 161.77m - fine grained.
162.10	163.37	SILTSTONE AND SANDSTONE - siltstone at top grades sandstone at base. Siltstone calcareous (minute calcite veinlet) dark grey, carbonaceous, sandstone fine grained, light grey cross bedded, siltstone laminated.
163.37	164.00	MUDSTONE AND SILTSTONE - Mudstone dark grey at top rapidly grades to siltstone at base, siltstone medium grey, sharp lower contact.
164.00	164.13	MUDSTONE AND SILTSTONE - Mudstone dark grey at top grades to medium grey siltstone at base, abundant plant fossils, modified sharp contact.
163.13	166.01	SANDSTONE - light grey, cross bedded, fine grained to medium grained, calcite veinlet 70° to C/A.

CORE DESCRIPTION

HOLE# B.C. 80-25 From 166.01 To 181.64

Area _____ By _____

FROM	TO	DESCRIPTION
166.01	166.42	SANDSTONE AND SILTSTONE - thinly interbedded, - sandstone fine grained, light grey, cross bedded, siltstone medium grey.
166.42	167.54	SILTSTONE AND MUDSTONE INTERLAMINATED - siltstone medium grey, predominant at top, mudstone dark grey predominant at base modified sharp lower contact.
167.54	168.59	SILTSTONE AND MUDSTONE - siltstone at top becomes sandy towards middly then grades to mudstone at base dark grey with abundant plant fossils.
168.59	168.86	COAL - 0.27m - 99% recovery, black, 80% claro-durain, 10% vitrain, 10% fusain, poorly cleated.
168.86	168.90	MUDSTONE - dark grey.
168.90	168.95	COAL - 0.05m - 99% recovery, 95% vitrain, 5% claro-durain.
168.95	169.34	MUDSTONE - dark grey, coal streaks
169.34	169.47	COAL - 0.13m - 95% recovery, black, modified cleated, 80% claro-durain, 20% vitrain.
169.47	171.03	MUDSTONE, SILTSTONE, SANDSTONE - dark grey mudstone at top to medium grey siltstone at middle grades to fine grained, light grey sandstone with minute calcite veinlets at base, sharp lower contact.
171.03	171.47	MUDSTONE - dark grey abundant plant fossils, very carbonaceous at top.
171.47	176.07	SANSSTONE - fine grained, light grey, siltstone laminated, load casts in rare thin mudstone band, cross bedded, calcite veinlet 70° to C/A, rip-up clasts at base sharp lower contact.
176.07	181.00	MUDSTONE, SILTSTONE, SANDSTONE - mudstone dark grey at top grades to medium grey siltstone to middle grades to fine grained light grey cross bedded sandstone, carbonaceous laminated, minute calcite veinlets in places.
181.00	181.48	MUDSTONE AND SILTSTONE INTERLAMINATED - mudstone dark grey, carbonaceous, siltstone medium grey becomes more predominant towards base, sharp lower contact, bedding 63° to C/A.
181.48	181.64	MUDSTONE - dark grey.

CORE DESCRIPTION

HOLE# B.C. 80-25 From 181.64 To 203.45

Area _____ By _____

FROM	TO	DESCRIPTION
181.64	181.73	COAL - 0.09m, 100% recovery, black,
		0.04m - dull coal - 100% claro-durain
		0.05m - 80% vitrain, 20% claro-durain
181.73	182.00	MUDSTONE - dark grey, coaly streaks
182.00	182.22	SILTSTONE AND SANDSTONE - alternating thin beds, sandstone fine grained light grey, siltstone medium grey, abundant plant fossils.
182.22	182.76	SILTSTONE - medium grey, plant fossils, sharp lower contact.
182.76	182.98	SILTSTONE - very fine grained sandstone - light grey, cross bedded, sharp lower contact.
182.98	185.07	SANDSTONE - medium grey, light grey, massive, rare carbonaceous laminated.
185.07	185.85	SANDSTONE AND SILTY MUDSTONE - alternating thin beds, sub-paralle bedding surfaces, becomes predominantly silty mudstone with minor fine grained sandstone beds towards base, bedding 38° to C/A.
185.85	195.68	SANDSTONE - fine grained to medium grained, light grey convolute bedding, occasional carbonaceous laminated, cross bedded, bedding 20° to C/A, @ 188.50m bedding 25° to C/A @ 192.60m, massive, occasional siltstone laminated near base bedding 40° to C/A @ 195.44m.
195.68	200.25	MUDSTONE - dark grey - abundant plant debris and coaly streaks - minor sandstone laminae, fine grained, salt and pepper - highly broken below 197.90m with abundant slickensides - bedding angle at 197.40m 30° to C/A - slickenside angle from 35° to C/A.
200.25	201.17	COAL - 0.92m - 60% recovery - black bright - abundant slickensides - highly broken - banding in coal destroyed by faulting - abundant vitrain. - Sample 6.
201.17	202.80	MUDSTONE - dark grey - abundant coaly streaks and plant debris - abundant slickensides - highly broken minor calcite veinlets.
202.80	203.45	SILTSTONE - medium grey - abundant slickensides -

CORE DESCRIPTION

HOLE# B.C. 80-25 From 203.45 To 210.97

Area By

FROM	TO	DESCRIPTION
202.80	203.45	Minor muddy bands.
203.45	205.89	SANDSTONE - fine grained to medium grained - salt and pepper - abundant calcite veinlets brecciating the unit - abundant slickensides - difficult to see structures as rock is very broken - laminated - bedding (?) @ 203.95m angle @ 10° to C/A - minor mudstone laminae.
205.89	206.10	MUDSTONE - dark grey - abundant coal streaks and plant debris - abundant slickensides - minor calcite veinlets.
206.10	207.04	SILTSTONE - medium grey - abundant plant debris - minor coaly streaks - minor calcite veinlets - abundant slickensides - mud content increasing toward base and increasing coaly streaks toward base - contact with underlying sandstone is gradational with sand content increasing.
207.04	207.21	SANDSTONE - fine grained - laminated - salt and pepper - minor mudstone laminated - bedding angle @ 60° to C/A - minor coaly streaks.
207.21	207.86	SANDSTONE AND SILTSTONE - interlaminated - sandstone is fine grained and salt and pepper - siltstone is medium grey - minor plant debris and coaly streaks minor cross bedding - minor calcite veinlets.
207.86	209.63	SILTSTONE and MUDSTONE - inter-bedded - siltstone predominant and medium grey - mudstone is dark grey - siltstone content increasing toward base of section- abundant plant debris and coaly streaks.
209.63	210.27	SILTSTONE AND SANDSTONE - interlaminated - siltstone medium grey - sandstone fine grained and salt and pepper - very abundant coaly streaks. - convoluted bedding - calcite vein approximately 0.01m thick at 210.17 with slickensides at angle to 55° to C/A.
210.27	210.97	SANDSTONE - fine grained to medium grained - salt and pepper - finely laminated - bedding (?) angle to @ 65° to C/A - minor cross-bedding - forest bedding (?)

CORE DESCRIPTION

HOLE# B.C. 80-25 From 210.97 To 220.01

Area _____ By _____

FROM	TO	DESCRIPTION
210.97	213.42	SILTSTONE - medium grey - minor plant debris - abundant fine grained, salt and pepper sandstone laminae - bedding angle to @ 65° to C/A
213.42	213.99	SANDSTONE - medium grained - salt and pepper - poorly laminated - cross-bedding - minor angular siltstone clasts toward base base.
213.99	214.30	SILTSTONE AND SANDSTONE - interlaminated - medium grey siltstone predominant - sandstone is fine grained and salt and pepper - abundant coaly streaks toward base - minor mo laminated toward base.
214.30	216.14	SANDSTONE, SILTSTONE, MUDSTONE - Interlaminated - gradation from sandstone to siltstone to mudstone from top to bottom section - sandstone at top of section (to 214.46m) is fine grained, salt and pepper, cross-bedded, to coaly streaks - grading into a medium grey siltstone at minor sandstone laminated- Siltstone is medium grey, minor coaly streaks and plant debris - grading onto a mustone toward base - mudstone is dark grey to abundant plant debris.
216.14	217.67	COAL - 1.53 m - black - 100% recovery - Sample 7 216.14m to 216.36m - coal- canneloid - black. 216.36m to 216.87m - coal - black - dull - banded - clarain and durain 90% - vitrain 5% - fusain 5% - hard - poorly cleated. 216.87m to 217.42m - coal - bright-banded - 50% vitrain - 50% durain and clarain - well cleated. 217.42m to 217.45m - sandstone - silty matrix - muddy - medium grained. 217.45m to 217.67m - coal - bright - banded - 50% vitrain - 50% clarain and durain - well cleated.
217.67	218.58	MUDSTONE - dark grey - abundant plant debris and coaly streaks.
218.58	220.01	SILTSTONE - dark medium grey to medium grey - minor plant debris and coaly streaks - minor very fine grained, light grey sandstone laminae - convoluted bedding .

CORE DESCRIPTION

HOLE# B.C. 80-25 From 220.01 To 232.78

Area By

FROM	TO	DESCRIPTION
220.01	220.90	MUDSTONE - dark grey - very carbonaceous - abundant plant debris and coaly streaks - some core loss in this section of 0.15m.
220.90	223.61	SILTSTONE AND SANDSTONE - Interlaminated - siltstone is fine grained and salt and pepper - cross-bedded-minor ripple mards - minor graded bedding - minor coaly streaks at top of section - sandstone decreasing in abundant toward base of section - minor plant debris - bedding angle at 75° to C/A.
223.61	226.85	SILTSTONE - medium grey - becomes muddy toward base-minor fine grained, salt and pepper sandstone laminae and lenses.
226.85	226.99	MUDSTONE - very ashy (?) dark brown - grey - highly broken and crumbly.
226.99	227.68	SILTSTONE - medium grey - abundant plant debris - minor fine grained, salt and pepper sandstone laminae
227.68	227.76	MUDSTONE - dark grey - abundant plant debris and coaly streaks.
227.76	228.16	COAL - 0.40m - black canneloid.
228.57	229.23	SILTSTONE - dark medium grey - abundant plant debris-minor coaly streaks.
229.23	229.73	MUDSTONE - dark grey - plant debris and coaly streaks
229.73	230.12	COAL - 0.39m - black - dull - poorly banded - 95% durain and clarain - 50% vitrain concoidal fracture: 100% recovery.
230.12	230.34	MUDSTONE - dark grey - silty - abundant plant debris and coaly streaks.
230.34	232.13	SANDSTONE AND SILTSTONE - Interlaminated - sandstone is fine grained, salt and pepper and predominant - Siltstone is medium grey - convoluted bedding - siltstone content increasing toward base where it is predominant - calcite veinlets from 231.04m to 231.36m - minor cross-bedding - minor ripple marks.
232.13	232.34	MUDSTONE - dark grey - minor plant debris.
232.34	232.78	SILTSTONE - dark grey - abundant plant - minor plant debris and coaly streaks - minor fine grained, salt and pepper sandstone laminae - convoluted bedding.

HOLE# B.C.-80-25 From 232.78m To 242.62m

FROM	TO	DESCRIPTION
232.78	235.63	SANDSTONE - fine grained to medium grained - salt and pepper - finely laminated - crossbedded - minor plant debris - minor vuggy calcite veins at 233.13 to 233.30m bedding angle to @ 70° to C/A.
235.63	241.39	MUDSTONE AND SANDSTONE - Interlaminated - mudstone very predominant and dark grey - bioturbated at top of sectior abundant plant debris - crossbedded - graded bedding - minor siltstone laminae.
241.39	242.62	SANDSTONE & SILTSTONE - Interlaminated - Sandstone is fine grained, salt and pepper and predominant - cross-bedded - minor coaly streak - minor convoluted bedding @ top of section.
	T.D.	END OF HOLE.

CORE DESCRIPTIC

HOLE# B.C. 80-26 From 0.00 m To 71.93 m

Area Bri-Dowling Creek By P. Cowley

FROM	TO	DESCRIPTION
0.00 m	42.98 m	Overburden
		Gething Formation
42.98	44.81	SANDSTONE - Fine grained, light grey, cross bedded, broken bedrock with iron staining, sharp lower contact, bedding 55° to C/A.
44.81	46.14	MUDSTONE - Dark grey, very soft, almost clay, plant fossils.
46.14	47.45	SANDSTONE - Fine grained, light grey, carbonaceous laminae, some bands of medium grained sandstone, sharp lower contact.
47.45	49.66	SILTSTONE - Light grey, carbonaceous at top with abundant plant fossils, sandy at b ase, very soft - almost unconsolidated, sharp lower contact.
49.66	50.60	MUDSTONE AND SILTSTONE - Mudstone dark grey and poorly indurated at top grades to medium grey sandstone.
50.60	53.53	MUDSTONE, SILTSTONE & SANDSTONE - Alternating thick beds of dark grey mudstone and medium grev siltstone at top, grades to fine grained, light grey sandstone at base, sandstone has carbonaceous laminae, bedding 47° to C/A at 53.00 m, sharp lower contact.
53.53	55.75	MUDSTONE & SILTSTONE - Alternating very thickly bedded, mudstone dark grey and siltstone inter-laminated and thinly interbedded, sandstone fine grained, light grey, siltstone medium grey, sandstone slightly crossbedded, sharp lower contact.
55.75	56.33	SANDSTONE & SILTSTONE - Interlaminated and thinly interbedded, sandstone fine grained, light grey, siltstone medium grey, sandstone slightly cross-bedded, sharp lower contact.
56.33	57.22	SILTY MUDSTONE - Dark grey, poorly indurated - almost clay, plant fossils, grading lower contact.
57.22	71.93	SILTSTONE & SANDSTONE - Siltstone medium grey at top grades rapidly to fine grained, light grey sandstone at base, rare coaly streaks, some convolute bedding in sandstone, rare thin bands of coarse grained

HOLE* B.C. 80-26 From 71.93 m To 89.07 m

FROM	TO	DESCRIPTION
		sandstone, bedding 50° to C/A, crossbedded, rip up clasts in zones from 67.90 m to 71.48 m, sharp lower contact.
71.93	75.76	SANDSTONE & SILTSTONE - Alternating medium bedded, sandstone fine grained, light grey convolute and crossbedded, siltstone medium grey, bedding 45° to C/A at 73.00 m, some zones of bioturbation, siltstone with sandstone laminae at base.
75.76	75.84	COALY MUDSTONE - Dark grey.
75.84	76.30	CORE LOSS
76.30	76.48	SANDSTONE - Medium grey, very carbonaceous.
76.48	76.72	COAL - 0.24 m, Black, 99% recovery, good cleating, 50% Vitrain, 50% Claro-durain.
76.72	78.92	MUDSTONE, SILTSTONE & SANDSTONE - Interlaminated, sandstone fine grained, medium grey, siltstone dark grey, mudstone dark grey, irrequalr bedding surfaces, bedding 50° to C/A
78.92	80.34	COAL - 1.42 m, 70% recovery, Black, no Methane, Sample #1 Coal - 78.92 to 79.65 m, well cleated, 50% Claro-durain, 45% Vitrain, 5% Fusain. Mudstone - 79.65 to 79.72 m, Dark grey, coaly Coal - 79.72 to 80.34 m, Well cleated, 20% Claro-durain, 75% Vitrain, 5% Fusain, 1
80.34	80.47	SANDSTONE - Fine grained, light grey, wavy bedding, carbonaceous laminae.
80.47	81.31	SILTSTONE - Medium grey, sandy at base.
81.31	83.25	SANDSTONE - Fine grained, light grey, siltstone laminae, crossbedded, convolute bedding, bedding 60° to C/A.
83.25	86.16	MUDSTONE - Dark grey, bedding 45° to C/A.
86.16	88.31	SANDSTONE & SILTSTONE - Interlaminated, sandstone fine grained, light grey, siltstone medium grey.
88.31	89.07	COAL - 0.76 m, 99% recovery, Black, Coal - 88.31 to 88.47 m, 80% Vitrain, 20% Claro-durain, well cleated. Coal - 88.47 to 88.87 m, 90% Claro-durain, 10% Vitrain, poorly cleated, very hard.

HOLE# B.C. 80-26 From 89.07 m To 102.41 m

FROM	TO	DESCRIPTION
		Coal - 88.87 to 89.07 m, 70% Vitrain, 30% Claro-durain, well cleated.
89.07	91.08	MUDSTONE, SILTSTONE & SANDSTONE - Mudstone at top rapidly grades to medium grey siltstone and slowly grades to fine grained, light grey sandstone at base, lower contact gradational.
91.08	93.06	SILTSTONE & SANDSTONE - Siltstone medium grey at top grades to fine grained, light grey sandstone at base, sandstone contains siltstone laminae, some coal streaks.
93.06	94.46	SILTSTONE & SANDSTONE - Siltstone medium grey at top grades to fine grained, light grey sandstone at base, sandstone contains minor convolute bedding, crossbedded, bedding 40° to C/A at 94.00 m, sandstone contains siltstone laminae.
94.46	95.84	MUDSTONE - Dark grey, almost turned to clay, plant fossils.
95.84	98.05	COAL - 2.21 m, True thickness 1.42 m, 90% recovery, 80% Claro-durain, 20% Vitrain, very hard, black, poorly cleated - Sample #2.
98.05	99.54	SILTSTONE - Medium grey, plant fossils.
99.54	102.41	SILTSTONE & SANDSTONE - Alternating thin and thick bedded, sandstone fine grained, light grey, crossbedded, siltstone medium grey, bedding 39° to C/A at 102.00 m.
		END OF HOLE

CORE DESCRIPTION

HOLE# B.C. 80-27 From 0.00 m To 71.00m

Area Bri-Dowling Creek By D.N. Duncan

FROM	TO	DESCRIPTION
0.00 m	64.01 m	Overburden - Triconed.
		GETHING FORMATION
64.01	66.16	SANDSTONE - salt & pepper, medium grained, laminated, crossbedded, abundant coaly streaks from 64.98 m to 65.15 m, siltstone clasts toward base (rip-up) bedding angle at 83° to C/A , sandstone becomes almost massive at base.
66.16	66.40	SILTSTONE - Medium grey, muddy, abundant plant debris and coaly streaks, top seems channeled by overtying sandstone.
66.40	67.99	SANDSTONE - Salt & pepper, medium grained, laminated, minor, crossbedding, minor coaly streaks, siltstone rip-up clasts throughout section, but concentrated from 67.60 m to 67.64 m.
67.99	68.11	SILTSTONE - Dark medium grey, sandy, minor slickensides.
68.11	68.24	SANDSTONE & SILTSTONE - Mixed, lightly convoluted, fine grained, salt & pepper sandstone predominant, siltstone is medium grey.
68.24	68.40	SANDSTONE - Fine grained, salt & pepper, cross-bedded, minor coaly streaks, silty toward base.
68.40	69.06	SILTSTONE - Dark medium grey, abundant fine grained salt & pepper sandstone laminae, highly convoluted, abundant coaly streaks and plant debris, sandstone content increasing toward base.
69.06	70.36	SANDSTONE & SILTSTONE - Interlaminated, fine grained, salt & pepper, sandstone predominant, siltstone is medium grey, bioturbated at top & base of section minor convoluted bedding, crossbedding, abundant coaly streaks & plant debris, pyrite band <0.01 m @ 69.41 m, worm burrows, bedding angle @ 80° to C/A
70.36	71.00	SILTSTONE - Medium grey, minor fine grained, salt & pepper sandstone lenses and laminae, becoming muddy toward base, abundant plant debris & coaly streaks.

HOLE* B.C. 80-27 From 71.00 m To 80.02m

FROM	TO	DESCRIPTION
71.00	72.33	COAL - 1.33 m, black, Sample 1 - Methane, Sample 1 - 80% recovery, dull banded, 70% Clarain & durain, 25% Vitrain, 5% Fusain, poorly cleated, relatively hard.
72.33	72.40	SANDSTONE - Fine grained, muddy, salt & pepper, abundant plant debris, minor coaly streaks.
72.40	72.48	COAL 0.08 m, black, dull banded, 85% Durain & Clarain, 10% Vitrain, 5% Fusain, poorly cleated, broken
72.48	72.70	MUDSTONE - Dark grey, abundant plant debris, becoming silty toward base, abundant coaly streaks.
72.70	72.92	SILTSTONE - Medium grey, abundant plant debris & coaly streaks, muddy.
72.92	73.04	MUDSTONE - Dark grey, abundant plant debris & coaly streaks, very carbonaceous.
73.04	73.20	SILTTONE - Medium grey, muddy, abundant plant debris & coaly streaks.
73.20	73.22	COAL - 0.02 m, black, bright banded, abundant vitrain, well cleated.
73.22	74.21	SILTSTONE & SANDSTONE - Interlaminated, medium grey silt stone predominant. sandstone is fine grained and salt & pepper, crossbedded, convoluted bedding, abundant plant debris & coaly streaks at top of section.
74.21	76.19	MUDSTONE - Darkgrey, very silty at top of section with mud content increasing toward base, minor plant debris.
76.19	78.24	SILTSTONE & SANDSTONE - Interlaminated, dark medium grey siltstone predominant. sandstone is fine grained, and salt & pepper, minor crossbedding, minor convoluted bedding, abundant plant debris, minor graded bedding, bedding angle at 80° to C/A.
78.24	79.30	SANDSTONE - Medium grained, salt & pepper, crossbedded, minor rip-up clasts, minor mudstone laminae.
79.30	80.02	SANDSTONE & SILTSTONE - Interlaminated, fine grained, salt & pepper sandstone predominant, siltstone is medium grey, minor bioturbation, minor worm burrows, cross bedded, minor graded bedding abundant plant debris.

HOLE# B.C. 80-27 From 80.02m To 99.36m

FROM	TO	DESCRIPTION
80.02	81.43	SILTSTONE - Medium grey, minor fine grained, salt and pepper sandstone laminated at top of section.
81.43	83.52	SILTSTONE & MUDSTONE - Interlaminated to interbedded, equally abundant siltstone is medium grey, mudstone is dark grey, highly broken, abundant slickensides, abundant calcite veins, possible into fault zone (?)
83.52	84.16	COAL - 0.64m, black, 40% recovery, bright banded, abundant Vitrain, cleated, too little recovery for sampling.
84.16	84.42	SILTSTONE - Medium grey, minute calcite veins at base, sharp lower contact.
84.42	90.01	SANDSTONE - Fine grained, medium grey, crossbedded, rare convolute bedding, occasional zones of rip-up clasts, siltstone laminae, from 84.42 to 85.69m unit heavily criss-crossed with calcite veinlets associated frequently with slickensides, 45° to C/A, coaly streaks near base, carbonaceous at base, sharp lower contact.
90.01	91.64	SILTSTONE & SANDSTONE - Siltstone at top medium grey grades to alternating thick and thin beds of fine grained, medium grey sandstone and medium grey siltstone, several thin zones of clacite filled fractures oriented 90° to C/A, slickensides along these zones.
91.64	95.79	SANDSTONE AND SILTSTONE - Alternating thin and thick beds, sandstone medium grey, very fine grained, siltstone medium grey, frequent calcite filled fractures and slickensides 28% to C/A with movement along dip, sharp lower contact.
95.79	96.20	SANDSTONE - Fine grained to medium grained, light grey, convoluted bedding throughout, sharp lower contact.
96.20	97.58	MUDSTONE AND SILTSTONE - Alternating thick beds, most dark grey, siltstone medium grey, arbitrary lower contact.
97.58	99.36	SANDSTONE - Fine grained, medium grey, silty in places, two minor zones of calcite filled fractures 80° to C/A, modified sharp lower contact.

HOLE# B.C. 80-27 From 99.36m To 119.20m

FROM	TO	DESCRIPTION
99.36	100.03	MUDSTONE AND SILTSTONE - Alternating thick bedded, mudstone dark grey, siltstone medium grey, coaly streaks throughout.
100.03	100.37	COAL - 0.34m - 85% recovery, black, well cleated, Coal 100.03 to 100.28m - 80% claro-durain, 20% vitrain, Coal 100.28 to 100.37m - 90% cannoloid coal, 10% vitrain lenses.
100.37	103.48	MUDSTONE, SILTSTONE AND SANDSTONE - Mudstone dark grey at top, rapidly grades to medium grey siltstone which rapidly grades to fine grained to medium grained, light grey sandstone, cross bedded, rare worm burrows, some zones of disturbed bedding, coaly streaks in places.
103.48	104.30	SILTSTONE AND SANDSTONE - Alternating thin bedded, siltstone - fine grained light grey, sandstone, medium grey, worm burrows, wavy bedding surfaces.
104.30	109.08	SILTSTONE - Medium grey, muddy in places, some coal streaks, muddy at base.
109.08	109.11	COAL - 0.03m - black, well created, 50% vitrain, 50% claro-durain.
109.11	109.30	MUDSTONE - Dark grey, very carbonaceous.
109.30	109.39	SANDSTONE - Fine grained, muddy matrix, very carbonaceous
109.39	109.70	COAL - 0.31m - 95% recovery, black, 40% vitrain, 60% claro-durain, modified well cleated.
109.70	111.40	MUDSTONE AND SILTSTONE INTERLAM - Dark grey mudstone, siltstone medium grey, lenticular, worm burrows throughout.
111.40	113.02	COAL - 1.62m - 45% recovery, black, methane sample #2 50% vitrain, 50% claro-durain, coal sample #2.
113.02	114.55	SILTSTONE AND SANDSTONE - Medium grey siltstone with occasional thin fine grained, light grey sandstone beds, bedding 90% to C/A @ 114.27m.
114.55	114.79	SANDSTONE - Fine grained to mudstone light grey, cross-bedded, sharp lower contact.
114.79	119.20	SILTSTONE AND SANDSTONE - Siltstone medium grey at top rapidly grades to fine grained, light grey sandstone, cross bedded, occasional calcite filled fractures throughout 80% to C/A, gradational lower contact.

HOLE# B.C. 80-27 From 119.20 To 130.97m

FROM	TO	DESCRIPTION
119.20	120.40	SILTSTONE - Medium grey.
120.40	120.89	COAL - 0.49m, 85% recovery, black,
		COAL - 120.40 to 120.46 - 80% vitrain, 20% duro-Clarain
		MUDSTONE - 120.46 to 120.49 - dark grey.
		COAL - 120.49 to 120.89m 80% vitrain, 20% claro-durain
		well cleated.
120.89	121.01	MUDSTONE - Dark grey, carbonaceous.
121.01	121.09	COAL - 0.08m - 100% recovery, 100% vitrain.
121.09	121.28	MUDSTONE - Dark grey, carbonaceous.
121.28	121.34	COAL - 0.06m - Black, well cleated, 100% vitrain.
121.34	121.90	MUDSTONE - Dark grey, modified sharp lower contact.
121.90	123.43	SANDSTONE with occasional thin siltstone beds - fine
		grained, medium grey, wavy bedding, modified sharp contac
123.43	124.70	MUDSTONE AND SILTSTONE - Interlamat top becomes mudstone
		at base, mudstone dark grey, siltstone medium grey.
124.70	127.10	COAL - 2.40m · 99% recovery, very hard, poorly cleated,
		methane #3, coal sample #3. Coal-124.70 to 124.91-10% Vitrain
		Coal - 124.91 to 124.97 - 80% Vitrain, 20% claro-durain
		Coal - 124.97 to 125.02 - 90% claro-durain, 10% vitrain
		Mudstone 125.02 to 125.04 - Dark grey.
		Coal 125.04 to 127.10 - 85% claro-durain, 10% vitrain,
		5% fusain.
127.10	129.00	MUDSTONE, SILTSTONE AND SANDSTONE - Mudstone at top dark
		grey rapidly grades to medium grey siltstone then grades
		to fine grained medium grey siltstone at base, sharp
		lower contact.
129.00	129.97	SILTSTONE AND MUDSTONE - Siltstone at top medium grey
		grades to mudstone dark grey and carbonaceous at base.
129.97	130.31	COAL - 0.34m - 99% recovery, black, no cleating - dirty
		cannoloid coal.
130.31	130.48	MUDSTONE - Dark grey, very carbonaceous.
130.48	130.97	COAL - 0.49m - 99% recovery, black
		Coal 130.48 to 130.75m - Dirty cannoloid coal
		Coal 130.75 to 130.87m - 90% claro-durain, 10% vitrain
		Coal 130.87 to 130.97m - 100% vitrain.

HOLE# B.C. 80-27 From 130.97 To 150.81m

FROM	TO	DESCRIPTION
130.97	132.91	MUDSTONE, SILTSTONE, SANDSTONE - Mudstone dark grey at top rapidly grades to medium grey siltstone, grades to fine grained light grey siltstone, trough cross bedded at base, sharp lower contact.
132.91	133.41	SILTSTONE - Medium grey, sharp lower contact.
133.41	134.23	SANDSTONE AND SILTSTONE - Alternating thick and thin beds, siltstone fine grained, medium grey, trough cross bedded, siltstone medium grey, sharp lower contact.
134.23	134.69	MUDSTONE - Dark grey, very carbonaceous.
134.69	135.01	COAL - 0.32m - 99% recovery, black, 50% vitrain, 45% claro-durain, 5% fusain, modified well cleated.
135.01	135.66	MUDSTONE - Dark grey, very carbonaceous.
135.66	135.94	COAL - 0.28m - 99% recovery - black, mudstone split 135.81 to 138.83m, Coal - 90% vitrain, 10% claro-durain.
135.94	136.01	MUDSTONE - Dark grey.
136.01	136.07	COAL - 0.06m - 100% recovery, black, well cleated, 100% vitrain.
136.07	138.70	SANDSTONE AND SILTSTONE - Sandstone fine grained, medium grey at top grades to medium siltstone at base, plant fossils in upper unit, gradational lower contact, siltstone poorly bedded.
138.70	145.08	MUDSTONE, SILTSTONE AND SANDSTONE - Mudstone dark grey at top rapidly grades to,Siltstone medium grey which rapidly grades to fine grained medium grey sandstone and medium grey siltstone interlam, bedding highly disturbed, worm burrows, convolute bedding.
145.08	145.32	SILTSTONE - Medium grey, sharp lower contact.
145.32	148.81	SILTSTONE - Fine grained, medium grey, bioturbated, worm burrows, some cross beds graded bedding present, siltstone laminated, lower contact sharp.
148.81	149.30	SILTSTONE AND MUDSTONE - Siltstone medium grey at top grades to mudstone dark grey at base.
149.30	150.81	COAL - 1.51m - 80% recovery - Black, poorly cleated 149.30 to 149.94m - 90% duro-clarain, 10% vitrain 149.94 to 150.61m - 60% vitrain, 40% claro-durain 150.61 to 150.81m - Methane test #4, coal sample #4.

HOLE# B.C. 80-27 From 150.81 To 163.37m

FROM	TO	DESCRIPTION
150.81	150.90	MUDSTONE - Dark grey, very carbonaceous, plant fossils.
150.90	150.95	COALY MUDSTONE
150.95	151.53	MUDSTONE AND SILTSTONE - Alternating thick beds, mudstone dark grey, coal streaks, siltstone medium grey.
151.53	154.70	SANDSTONE, SILTSTONE AND MUDSTONE - Silty fine grained sandstone medium grey at top grades to siltstone grades to dark grey mudstone at base, sandstone has no bedding, some coal streaks.
154.70	155.88	SANDSTONE AND SILTSTONE - Fine grained, medium grey sandstone at top grades to siltstone with thin interbeds at base, sandstone bioturbated, carbonaceous.
155.88	156.49	SANDSTONE AND SILTSTONE - Sandstone with siltstone laminated, sandstone fine grained, carbonaceous, bioturbates, sharp lower contact.
156.49	158.33	SANDSTONE - Medium grained, light grey, cross bedded, calcite vein from 157.75 to 157.79m 65° to C/A with slickensides.
158.33	159.18	SANDSTONE AND SILTSTONE very thinly interlam - Sandstone fine grained, medium grey, siltstone medium grey, bedding bioturbated, sandier at top siltier at base, sharp lower contact.
159.18	161.67	SILTY MUDSTONE - Dark grey, from 161.49 to 161.51m band of ash particules in a muddy matrix.
161.67	161.72	COAL - 0.05m - 99% recovery, black, 60% vitrain, 40% claro-durain.
161.72	161.78	MUDSTONE - Dark grey, coaly.
161.78	161.81	COAL - 0.03m - 99% recovery, black, 60% claro-durain, 40% vitrain, well cleated.
161.81	161.95	MUDSTONE - Dark grey, coal streaks.
161.95	162.06	COAL - 0.11m, 99% recovery, black, well cleated, 100% claro durain.
162.06	162.13	MUDSTONE - Dark grey, coal streaks.
162.13	162.48	COAL - 0.35m - 80% recovery, well cleated, 80% vitrain, 20% claro-durain.
162.48	163.00	MUDSTONE - Dark grey, abundant plant fossils.
163.00	163.13	COAL - 0.13m, 80% recovery, 80% claro-durain, 20% vitrain, well cleated.
163.13	163.37	MUDSTONE, SILTSTONE - Mudstone dark grey at top grades to medium grey at base, gradational lower contact.

HOLE# B.C.-80-27 From 163.37m To 180.02m

FROM	TO	DESCRIPTION
163.37	166.00	SANDSTONE - fine grained, light grey, crossbedded, worm burrows at top, carbonaceous laminated, sharp lower contact.
166.00	173.79	MUDSTONE, SILTSTONE, AND SANDSTONE - fine grained medium grey sandstone and medium grey siltstone interlaminated, bioturbated at top grades to mudstone with siltstone laminated, calcite veinlets 80% to C/A with slickensides, convolute bedding, bedding 80% to C/A rara coal streaks, sharp lower contact.
173.79	175.33	SANDSTONE AND SILTSTONE - medium grained, light grey interlaminated with medium grey siltstone, disturbed bedding, carbonaceous.
175.33	176.32	COAL - 0.99m 99% recovery, black, well cleated, samples #5 175.33 to 175.58m - 80% claro-durain, 15% vitrain, 5% fusain. MUDSTONE - 175.58 to 175.60 - calcareous. 175.60 to 175.88m - 90% claro-durain, 5% vitrain, 5% fusain. 175.88 to 175.96 - methane sample #5. 175.96 to 176.05m - 90% claro-durain, 5% vitrain, 5% fusain. 176.05m to 176.32m - 100% claro-durain.
176.32	177.16	MUDSTONE, SILTSTONE, SANDSTONE - Mudstone dark grey at top, rapidly grades to medium grey siltstone which grades to fine grained. Sandstone, light grey at base.
177.16	177.87	Siltstone and Sandstone - Siltstone medium grey at top with rare fine grained sandstone lenses grades to fine grained. Sandstone with convoluted bedding at base.
177.87	178.52	SILTSTONE AND MUDSTONE - Siltstone - medium grey at top grades to dark grey carbonaceous mudstone at base rare fine grained sandstone lenses near top.
178.52	178.72	Coal - 0.20m - 99% recovery - black, well cleated 60% vitrain, 35% claro-durain, 5% fusain.
178.72	180.02	SANDSTONE - medium grey, fine grained, carbonaceous muddy at top with coal streaks, sharp lower contact.

HOLE# B.C.-80-27 From 180.02m To 189.94m

FROM	TO	DESCRIPTION
180.02	180.44	SILTSTONE - medium grey, plant fossils.
180.44	181.11	COAL - 0.67m - 100% recovery - black, moderately well cleated, vitrain, claro-durain, fusain, sample #6 180.44 to 180.70 - 90% claro-durain, 5% vitrain, 5% fusain. 180.70 to 180.74 - Mudstone split. 180.74m to 180.82m - 60% claro-durain, 40% vitrain. 180.82m to 180.84m - Mudstone split 180.84m to 180.90m - Coal - 60% vitrain, 40% claro-durain 180.90m to 180.92 - Mudstone split. 180.92m to 180.93 - Coal - 100% vitrain 180.93m to 180.95m - Mudstone split 180.95m to 181.04m - Coal - 50% vitrain, 50% claro-durain. 181.04m to 181.11 - Methane sample #6 Coal sample #6.
181.11	181.74	MUFSTONE - dark grey, sharp lower contact.
181.74	182.82	MUDSTONE, SILTSTONE AND SANDSTONE - Mudstone and siltstone interlaminated at top grades to sandstone and siltstone interbeds towards base which grades to fine grained, medium grey crossbedded sandstone at base, worm burrows.
182.82	185.44	SILTSTONE AND SANDSTONE interlaminated and thinly bedded. SANDSTONE - fine grained, medium grey to light grey, crossbedded in places - Siltstone - medium grey, contains worm burrows, sharp lower contact.
185.44	188.63	MUDSTONE AND SILTSTONE interlaminated - Mudstone - dark grey. Siltstone - medium grey, rare fine grained. Siltstone lenses Pyrite nodules at base, sharp lower contact.
188.63	189.86	SILTSTONE AND MUDSTONE - Siltstone medium grey at top grades to dark grey mudstone at base. One thin bed of fine grained siltstone from 189.26m to 189.31m.
189.86	189.90	COAL - 0.04m - 100% recovery - black, well cleated - 100% vitrain.
189.90	189.94	MUDSTONE - dark grey.

HOLE# B.C.-80-27 From 189.94m To 197.62

FROM	TO	DESCRIPTION
189.94	190.01	COAL - 0.07m - 50% recovery - 100% vitrain, well cleated.
190.01	190.80	MUDSTONE AND SILTSTONE - dark grey carbonaceous mudstone at top, slowly grades to medium grey siltstone at base.
190.80	192.46	MUDSTONE, SILTSTONE AND SANDSTONE interlaminated - Siltstone fine grained in lenses and irregular bands, convolute bedding, bioturbation, siltstone medium grey, most dark grey.
192.46	192.66	COAL - 0.20m - 99% recovery, 192.46 to 192.58m - 60% vitrain, 40% claro-durain, two thin mudstone splits. 192.58 to 192.60m - Mudstone 192.60m to 192.66m - 80% vitrain, 20% claro-durain.
192.66	192.79	MUDSTONE - Dark grey, carbonaceous.
192.79	192.95	COALY MUDSTONE - Almost cannoloid coal but muddy.
192.95	194.20	COAL - 1.25m - 95% recovery, black, sample #7, methane #7, 192.95 to 193.50 - 80% claro-durain, 10% vitrain, 5% fusain. 193.50 to 193.85 - cannoloid coal. 193.85 to 193.98m - methane sample. 193.98m to 194.20m - 60% vitrain, 40% claro-durain.
194.20	194.91	MUDSTONE, SILTSTONE, SANDSTONE - Mudstone dark grey at top rapidly grades to medium grey siltstone to fine grained, crossbedded, medium grey. Sandstone to siltstone to mudstone at base.
194.91	195.15	COAL - 0.24m 99% recovery, black. 194.91 to 195.00 - 60% claro-durain, 40% vitrain. 195.00 to 195.15 - 95% vitrain, 5% fusain.
195.15	196.90	SANDSTONE, SILTSTONE AND MUDSTONE - Mudstone dark grey a top rapidly grades alternating thick beds of fine grained medium grey sandstone and medium grey siltstone, grades to mudstone at base.
196.90	197.48	COAL - 0.58m - 90% recovery, black, 60% claro-durain, 35% vitrain, 5% fusain, sample #8, no methane.
197.48	197.62	MUDSTONE - Dark grey, sharp lower contact.

HOLE# B.C. 80-27 From 197.62 To 199.95

FROM	TO	DESCRIPTION
197.62	199.95	SANDSTONE - fine grained, medium grey, minute coal streaks throughout, carbonaceous, laminated.
		End of hole.

APPENDIX III

DESCRIPTIVE LITHOLOGIC LOGS FOR 1980 ROTARY DRILL HOLES

WELL COMPLETION REPORT

BRI-DOWLING CREEK Prospect

Hole No. RDH-BC-80-1

Location: 6,204,971mN x 543,897m E

Gr. Elev.: 733.7m

Province B.C.

Surface Owner Crown Coal License No. 3644

Spudded August 16, 1980. Completed August 17, 1980.

Depth: 79.25m Air to _____ Water (Mud) to T.D.79.25m

Hole Size: 4½" Bits: Surface 4 5/8" ( )

Main Hole 4½" ( )

Cored: (Yes) (No): intervals _____ (wireline, convention)

Core Head: ( ), I.D. _____, O.D. _____, Mfgr. _____

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

Mfgr. _____

Logging Co. _____

Chemicals: _____

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

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

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

Casing: Depth _____; Diameter _____ 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 Elgin Exploration Ltd.

Samples and Core Description by: K. Yip

Report Prepared by: J. Ridley Date Aug. 20, 1980.

Comments: _____

HOLE# RDH-BC-80-1 From OM To 79.25m

Area BRI-DOWLING CREEK By K. Yip

FROM	TO	DESCRIPTION
0	15.54	Overburden -clay and some cobbles
15.54	25.60	Overburden - coal and minor mudstone chips
25.60	64.01	Overburden - hard with minor pebble zones
64.01	65.53	Overburden - very hard - sandstone cobbles and boulders (?)
65.53	67.06	Overburden - very hard - quartzose sandstone pebbles
		Gething Formation
67.06	68.58	Sandstone - fine grained, medium grey to salt and pepper in colour - minor dark grey mudstone and medium dark grey siltstone
68.58	70.10	Sandstone - fine grained, medium grey - minor dark grey mudstone
70.10	71.63	Sandstone and Silty Mudstone - interbedded - sandstone is fine grained and medium grey- mudstone is dark grey and increasing in content toward bottom of interval.
71.63	73.15	Sandstone - fine grained - medium grey.
73.15	74.68	Sandstone and Siltstone - interbedded - sandstone is fine grained and medium grey - siltstone is medium grey.
74.68	76.20	Mudstone, Siltstone and Sandstone - interbedded - mudstone is dark grey - siltstone is medium grey- sandstone is fine grained and medium grey.
76.20	77.72	Sandstone and Mudstone - interbedded - sandstone is fine grained and medium grey - medstone is dark grey and silty.
77.72	79.25	Sandstone - fine grained, medium grey - minor dark grey mudstone interlaminae
	T.D.	End of Hole

WELL COMPLETION REPORT

BRI-DOWLING CREEK Prospect

Hole No. RDH-BC-80-2

Location: 6,204,872m N x 543,923m E

Gr. Elev.: 725 m

Province B.C.

Surface Owner Crown Coal License No. 3644

Spudded August 18, 1980 Completed August 18, 1980

Depth: 50.29m Air to _____ Water (Mud) to T.D. 50.29m

Hole Size: 4½" Bits: Surface 4 5/8" ( )

Main Hole 4½" ( )

Cored: (Yes) (No); intervals _____ (wireline, convention)

Core Head: ( ), I.D. _____, O.D. _____, Mfgr. _____

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

Mfgr. _____

Logging Co. _____

Chemicals: _____

Lost Circulation at depth(s) 20.42m and 24.38m ; Regained (Yes) (No)

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

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

Casing: Depth _____; Diameter _____ 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 Elgin Exploration Ltd.

Samples and Core Description by: K. Yip

Report Prepared by: J. Ridley Date August 20, 1980

Comments: _____

HOLE# RDH-BC-80-2 From 0m To 50.29m

Area BRI-DOWLING CREEK By K. Yip

FROM	TO	DESCRIPTION
0	6.09	Overburden - clay
6.09	9.14	Overburden - Clay with minor cobbles
9.14	12.19	Overburden - Clay
12.19	13.72	Overburden - gravel, broken weathered sandstone - very hard.
13.72	19.81	Overburden - mainly weathered sandstone - broken
19.81	21.34	Overburden - loss of circulation at 20.42m recovered quickly
21.34	28.96	Overburden - small chips of sandstone, siltstone, mudstone and quartz - lost circulation at 24.38m, recovered easily.
28.96	39.62	Overburden - gravel and sand with varying amounts of clay
39.62	50.29	Overburden - gravel and sand - minor clay at bottom
	T.D.	End of Hole

WELL COMPLETION REPORT

BRI-DOWLING CREEK Prospect

Hole No. RDH-BC-80-3

Location: 6,204,885m N x 543,344 m E

Gr. Elev.: 740.6 m

Province B.C.

Surface Owner Crown Coal License No. 3645

Spudded August 19, 1980 Completed August 19, 1980

Depth: 18.29 m Air to T.D. 18.29 m Water (Mud) to _____

Hole Size: 4½" Bits: Surface 4 5/8" ( )

Main Hole 4½" ( )

Cored: (Yes) (No); intervals _____ (wireline, convention)

Core Head: ( ), I.D. _____, O.D. _____, Mfgr. _____

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

Mfgr. _____

Logging Co. _____

Chemicals: _____

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

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

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

Casing: Depth _____; Diameter _____ 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 Elgin Exploration Ltd.

Samples and Core Description by: R.B. Anderson

Report Prepared by: K. Yip Date Aug. 21, 1980

Comments: _____

HOLE# RDH-BC-80-3 From 0 m To 18.29 m

Area BRI-DOWLING CREEK By R.B. Anderson

FROM	TO	DESCRIPTION
0	1.52	Overburden - brownish sandy silt
1.52	18.29	Overburden - medium grey to dark grey sandy silt with occasional coal debris fragments
	T.D.	End of Hole

WELL COMPLETION REPORT

BRI-DOWLING CREEK Prospect

Hole No. RDH-BC-80-4

Location: 6,204,780 m N x 543,378 m E

Gr. Elev.: 738.2 m

Province B.C.

Surface Owner Crown Coal License No. 3645

Spudded August 19, 1980 Completed August 19, 1980

Depth: 18.29 m Air to T.D. 18.29m Water (Mud) to _____

Hole Size: 4½" Bits: Surface 4 5/8" ( )

Main Hole 4½" ( )

Cored: (Yes) (No); intervals _____ (wireline, convention)

Core Head: ( ), I.D. _____, O.D. _____, Mfgr. _____

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

Mfgr. _____

Logging Co. _____

Chemicals: _____

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

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

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

Casing: Depth _____; Diameter _____ 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 Elgin Exploration Ltd.

Samples and Core Description by: R.B. Anderson

Report Prepared by: K. Yip Date Aug. 21, 1980

Comments: _____

HOLE# RDH-BC-80-4 From 0 m To 18.29 m

Area BRI-DOWLING CREEK By R.B. Anderson

FROM	TO	DESCRIPTION
0	3.05	Overburden - brownish weathered, clay rich silt
3.05	4.57	Overburden - sandy brown weathered, clay rich silt
4.57	18.29	Overburden - silt and sand - light to medium grey - occasional pebbles
	T.D.	End of Hole

WELL COMPLETION REPORT

BRI-DOWLING CREEK Prospect

Hole No. RDH-BC-80-5

Location: 6,205,003 m N x 543,315 m E

Gr. Elev.: 741.7 m

Province B.C.

Surface Owner Crown Coal License No 3645

Spudded August 19, 1980 Completed August 19, 1980

Depth: 18.59 m Air to T.D. 18.59 m Water (Mud) to

Hole Size: 4½" Bits: Surface 4 5/8" ( )

Main Hole 4½" ( )

Cored: (Yes) (No); intervals (wireline, convention)

Core Head: ( ), I.D. , O.D. , Mfgr.

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

Mfgr.

Logging Co.

Chemicals:

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

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

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

Casing: Depth ; Diameter 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 Elgin Exploration Ltd.

Samples and Core Description by: R.B. Anderson

Report Prepared by: K. Yip Date Aug. 21, 1980

Comments:

HOLE# RDH-BC-80-5 From 0 m To 18.59 m

Area BRI-DOWLING CREEK By R.B. Anderson

FROM	TO	DESCRIPTION
0	3.05	Overburden - brownish silt - lacustrine
3.05	18.59	Overburden - medium to dark grey silt - boulder at 18.59 m
	T.D.	End of Hole

WELL COMPLETION REPORT

BRI-DOWLING CREEK Prospect

Hole No. RDH-BC-80-6

Location: 6,204,620 m N x 542,808 m E

Gr. Elev.: 760.5 m

Province B.C.

Surface Owner Crown Coal License No. 3645

Spudded August 19, 1980 Completed August 19, 1980

Depth: 8.84m Air to T.D. 8.84 m Water (Mud) to _____

Hole Size: 4½" Bits: Surface 4 5/8" ( )

Main Hole 4½" ( )

Cored: (Yes) (No); intervals _____ (wireline, convention)

Core Head: ( ), I.D. _____, O.D. _____, Mfgr. _____

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

Mfgr. _____

Logging Co. _____

Chemicals: _____

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

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

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

Casing: Depth _____; Diameter _____ 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 Elgin Exploration Ltd.

Samples and Core Description by: K. Yip

Report Prepared by: K. Yip Date Aug. 21, 1980

Comments: _____

HOLE# RDH-BC-80-6 From 0 m To 8.84 m

Area BRI-DOWLING CREEK By K. Yip

FROM	TO	DESCRIPTION
0	1.52	Overburden - sandy silt - brown - boulder at 0.30 m
1.52	7.62	Overburden - gravel - well rounded pebbles in sandy silt - coal spoil from 3.66 m to 4.27 m
		Gething Formation
7.62	8.84	Sandstone - coarse grained, salt and pepper inter-bedded with fine grained, medium grey sandstone - minor silty, carbonaceaus mudstone
	T.D.	End of Hole

WELL COMPLETION REPORT

BRI-DOWLING CREEK Prospect

Hole No. RDH-BC-80-7

Location: 6,204,474 m N x 542,845m E

Gr. Elev.: 743.7 m

Province B.C.

Surface Owner Crown Coal License No. 3645

Spudded August 19, 1980 Completed August 19, 1980

Depth: 6.09 m Air to T.D. 6.09 m Water (Mud) to

Hole Size: 4½" Bits: Surface 4 5/8" ( )

Main Hole 4½" ( )

Cored: (Yes) (No); intervals (wireline, convention)

Core Head: ( ), I.D. , O.D. , Mfgr.

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

Mfgr.

Logging Co.

Chemicals:

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

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

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

Casing: Depth ; Diameter 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 Elgin Exploration Ltd.

Samples and Core Description by: K. Yip

Report Prepared by: K. Yip Date Aug. 21, 1980.

Comments:

HOLE# RDH-BC-80-7 From 0 m To 6.09 m

Area BRI-DOWLING CREEK By K. Yip

FROM	TO	DESCRIPTION
0	1.52	Overburden - highly weathered mudstone fragments
1.52	6.09	Overburden - gravel - minor sand and silt layers.
	T.D.	End of Hole.

WELL COMPLETION REPORT

BRI-DOWLING CREEK Prospect

Hole No. RDH-BC-80-8

Location: 6,204,355 m N x 542,873 m E

Gr. Elev.: 730.1 m

Province B.C.

Surface Owner Crown Coal License No. 3647

Spudded August 19, 1980 Completed August 19, 1980

Depth: 12.19 m Air to T.D. 12.19m Water (Mud) to

Hole Size: 4½" Bits: Surface 4 5/8" ( )

Main Hole 4½" ( )

Cored: (Yes) (No); intervals (wireline, convention)

Core Head: ( ), I.D. , O.D. , Mfgr.

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

Mfgr.

Logging Co.

Chemicals:

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

Noticeable Water Invasion: (No) (Yes); Intervals at 7.62 m

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

Casing: Depth ; Diameter Recovered (Yes) (No)

Plugged: (Yes) (No); if no, explain water flow ceased after hole completed

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

Invoice Number for above

Contractor: Name & Address Elgin Exploration Ltd.

Samples and Core Description by: K. Yip

Report Prepared by: K. Yip Date Aug. 21, 1980

Comments:

HOLE# RDH-BC-80-8 From 0 To 12.19 m

Area BRI-DOWLING CREEK By K. Yip

FROM	TO	DESCRIPTION
0	1.52	Overburden - gravel, sand, silt
1.52	4.57	Overburden - large boulders and slabs - broken bedrock?
		GETHING FORMATION
4.57	7.62	Mudstone - dark grey - carbonaceous
7.62	10.06	Mudstone - very dark grey to black - coaly - hole making water at 7.62 m.
10.06	12.19	Siltstone and Mudstone - interbedded - siltstone medium grey - mudstone dark grey
	T.D.	End of Hole

WELL COMPLETION REPORT

BRI-DOWLING CREEK Prospect

Hole No. RDH-BC-80-9

Location: 6,204,476 m N x 543,465 m E

Gr. Elev.: 732 m

Province B.C.

Surface Owner Crown Coal License No. 3645

Spudded August 20, 1980 Completed August 20, 1980

Depth: 18.29m Air to _____ Water (Mud) to 18.29 m

Hole Size: 4½" Bits: Surface 4 5/8" ( )

Main Hole 4½" ( )

Cored: (Yes) (No); intervals _____ (wireline, convention)

Core Head: ( ), I.D. _____, O.D. _____, Mfgr. _____

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

Mfgr. _____

Logging Co. _____

Chemicals: _____

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

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

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

Casing: Depth _____; Diameter _____ 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 Elgin Exploration Ltd., Calgary, Alberta.

Samples and Core Description by: Kim Hartmann

Report Prepared by: Kim Hartmann Date Aug. 21, 1980

Comments: _____

HOLE# RDH-BC-80-9 From 0m To 18.29 m

Area BRI-DOWLING CREEK By K. Hartmann

FROM	TO	DESCRIPTION
0	3.05	Overburden - gravel
3.05	6.09	Overburden - gravel and clay
6.09	15.24	Overburden - clay
15.24	18.29	Overburden - gravel and minor clay
	T.D.	End of Hole

WELL COMPLETION REPORT

BRI-DOWLING CREEK Prospect

Hole No. RDH-BC-80-10

Location: 6,204,607 m N x 543,387 m E

Gr. Elev.: 694.8m

Province B.C.

Surface Owner Crown Coal License No. 3645

Spudded Aug. 20, 1980. Completed Aug. 20, 1980.

Depth: 13.72 m Air to _____ Water (Mud) to 13.72 m

Hole Size: 4½" Bits: Surface 4 5/8" ( )

Main Hole 4½" ( )

Cored: (Yes) (No); intervals _____ (wireline, convention)

Core Head: ( ), I.D. _____, O.D. _____, Mfgr. _____

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

Mfgr. _____

Logging Co. _____

Chemicals: _____

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

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

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

Casing: Depth _____; Diameter _____ 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 Elgin Exploration Ltd., Calgary, Alberta.

Samples and Core Description by: K. Hartmann

Report Prepared by: K. Hartmann Date Aug. 21, 1980.

Comments: _____

HOLE* RDH-BC-80-10 From 0 m To 13.72 m

Area BRI-DOWLING CREEK By K. Hartmann

FROM	TO	DESCRIPTION
0	5.33	Overburden - gravel - minor coal fragments
5.33	12.80	Overburden - clay - minor pebble bands at 10.97 m to 11.28 m and at base of section - minor coal fragments
		GETHING FORMATION
12.80	13.11	Sandstone, Siltstone, Mudstone and Coal - interbedded
13.11	13.72	Sandstone - fine to medium grained - medium grey - minor coal.
	T.D.	End of Hole
		Note: Washout at top of hole caused loss of circulation - overburden possibly washed into hole and coal could be from overburden.

WELL COMPLETION REPORT

BRI-DOWLING CREEK Prospect

Hole No. RDH-BC-80-11

Location: 6,203,916 m N x 542,965 m E

Gr. Elev.: 706.6 m

Province B.C.

Surface Owner Crown Coal License No. 3647

Spudded August 20, 1980. Completed August 20, 1980.

Depth: 18.29m Air to _____ Water (Mud) to 18.29m

Hole Size: 4½" Bits: Surface 4 5/8" ( )

Main Hole 4½" ( )

Cored: (Yes) (No); intervals _____ (wireline, convention)

Core Head: ( ), I.D. _____, O.D. _____, Mfgr. _____

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

Mfgr. _____

Logging Co. _____

Chemicals: _____

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

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

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

Casing: Depth _____; Diameter _____ 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 Elgin Exploration Ltd., Calgary, Alberta.

Samples and Core Description by: K. Hartmann

Report Prepared by: K. Hartmann Date Aug. 21, 1980.

Comments: _____

HOLE# RDH-BC-80-11 From 0 m To 18.29 m

Area BRI-DOWLING CREEK By K. Hartmann

FROM	TO	DESCRIPTION
0	6.09	Overburden - pebbles - predominantly sandstone
6.09	10.67	Overburden - sandstone pebbles and clay
10.67	12.19	Overburden - predominantly clay
12.19	15.24	Overburden - pebbles and clay
15.24	17.37	Overburden - predominantly clay
17.37	18.29	Overburden - sandstone pebbles
	T.D.	End of Hole

WELL COMPLETION REPORT

BRI-DOWLING CREEK Prospect

Hole No. RDH-BC-80-12

Location: 6,204,076 m N x 542,948 m E

Gr. Elev.: 703.1m

Province B.C.

Surface Owner Crown Coal License No. 3647

Spudded August 20, 1980 Completed August 21, 1980

Depth: 6.09m Air to _____ Water (Mud) to 6.09m

Hole Size: 4½" Bits: Surface 4 5/8" ( )

Main Hole 4½" ( )

Cored: (Yes) (No); intervals _____ (wireline, convention)

Core Head: ( ), I.D. _____, O.D. _____, Mfgr. _____

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

Mfgr. _____

Logging Co. _____

Chemicals: _____

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

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

Noticeable Gas Invasion: (No) (Yes); Interval- _____

Casing: Depth _____; Diameter _____ 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 Elgin Exploration Ltd., Calgary, Alberta.

Samples and Core Description by: K. Hartmann

Report Prepared by: K. Hartmann Date August 21, 1980

Comments: _____

HOLE# RDH-BC-80-12 From 0 m To 6.09 m

Area BRI-DOWLING CREEK By K. Hartmann

FROM	TO	DESCRIPTION
0	3.05	Overburden - pebbles of mudstone and sandstone - minor coal fragments
		GETHING FORMATION
3.05	3.66	Sandstone - fine to medium grained - medium to dark grey-minor coal
3.66	3.96	Sandstone and Mudstone - interbedded
3.96	4.57	Sandstone - fine to very fine grained - light to medium grey-minor siltstone
4.57	5.49	Siltsone - dark grey
5.49	6.09	Mudstone - dark grey-coaly
	T.D.	End of Hole

HOLE# RDH-BC-80-13 From 0 To 39.62

Area BRI-DOWLING CREEK By

FROM	TO	DESCRIPTION
0	6.09	Overburden - clay
6.09	9.14	Overburden - gravel - large pebbles
9.14	13.72	Overburden - Sandstone chips - minor coal fragments
13.72	21.34	Overburden - predominantly clay
21.34	24.38	Overburden - pebbles
24.38	39.62	Overburden - pebbles and minor clay
	T.D.	End of Hole
		NOTE: Last 0.30m of drilling could be bedrock - very slow drilling - but may also be boulder.

PR-Bri-Dowling Creek 80(3)A
80-12

LOOAH MINES LTD.
GRAPHIC CORE LOG

HOLE NO B.C. 80-12 (TS)

LOG BY ROD CLAUSON
DATE MAY. 20, 1980

E. V. 7275.9 m
N 6,204,491.1 N
L 545,561.5 E

HOLE SIZE HQ 76.0 mm
AIR ☐ WATER ☒
T.D. 233.48 m P.D.

PROJECT: BRI - DOWLING CREEK
LEASE: 3643
SEC. T. R.

CORE RECOVERY %	DEPTH	STRUCTURE	THICK	SAMPLE NO.	GRAPH	LITHOLOGY	ANALYSIS

0m

OVERBURDEN

10

40

50

469

60

85

70

MOOSEBAR FORMATION

DARK GREY TO BLACK MUDSTONE + VOLCANIC ASH BANDS + PYRITE NODULES WHICH BECOME MORE ABUNDANT TOWARD THE BASE. GLAUCONITE TOWARD BASE. MINOR SANDSTONE BEDS TOWARD BASE. MINOR SHELL MOLDS AND CASTS.

80

BASE OF FORMATION IS A CONGLOMERATE WITH CHERT PEBBLES AND A SAND AND MUD MATRIX

90

100

160

170

180

190

GETHING FORMATION

200
87 0.16 / 0.21 — COAL - BRIGHT - BANDED - WELL CLEATED - ABUNDANT PYRITE BANDS AND NODULES
COAL - BRIGHT - BANDED - WELL CLEATED - ABUNDANT PYRITE BANDS AND NODULES

0.04 — COAL - MUDDY - 50% VITRAIN BANDS - WELL CLEATED

0.29 — COAL - MUDDY - 70% VITRAIN BANDS + COAL - MUDSTONE SPLIT FROM 208.25 m TO 208.34 m

0.03 — COAL - BRIGHT - CLEATED - VITRAIN

210 0.10 — COAL - VERY MUDDY

0.15 — COAL - BRIGHT - CLEATED

220

0.41 / 0.08 / 0.14 — *1 — COAL - BRIGHT BANDED - 60% TO 80% VITRAIN - CLEATED

230 0.45 — COAL - BRIGHT - MUDDY - CLEATED + SANDSTONE SPLIT FROM 230.03 m TO 230.43 m

TD 233.48 m - END OF HOLE

240

PR - Bri - Dowling Creek 80(3)A

80-13

TAH MINES LTD.

GRAPHIC CORE LOG

HOLE NO. BC-80-13 (T.S.)

LOG BY: R CLAUSON

DATE: MAY 11 1980

ELEV: 677.5 ± m

N: 6 203 315 ± N

E: 543 022 ± E

HOLE SIZE: HQ 96.0 mm

AIR ☐ WATER ☒

I.D. 84.12 m P.D.

HOLE NO. BC 80-13 (TS)

PROJECT: BRI - DOWLING CK

LEASE: 3647

SEC. T. R.

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO.	GRAV	LITHOLOGY	ANALYSIS
	0m						
	10					OVERBURDEN	
	20					MOOSEBAR FORMATION	
95%		0.30				GETHING FORMATION COAL 0.30 m bright banded, well cleated, abundant pyrite	5% Fusain, 75% Vitrain 20% Duro-Clarain
80%	73°	0.53	1			COAL 0.53 m dull banded, 10% Duro+clarkin 24% Vitrain 1% Fusain	
	72°						
	30						
	73°						
	74°						
	72°						
	72°						
	40	54°					
	50						
	60					CORE LOST	
90%		1.68	2			COAL - 90% Core Recovery - 0.26 m - coal - black - dull banded 0.02 m - ash band 0.16 m - coal - black - dull banded 0.02 m - ash band 0.30 m - coal - black 0.29 m - coally mudstone 0.33 m - coal - black - dull banded 0.02 m - coaly mudstone 0.13 m - coal - black - bright banded	
		0.42				COAL - Black, Canaloid Coal, Concoidal Fractures, Trace Vitrain	
	70						
	60°	0.19	3			COAL - Black - dull banded - 20% Vitrain	
		0.56				COAL - Black - bright banded - 50% Vitrain - well cleated	
		0.15				COAL - Black - bright banded - 80% Vitrain - moderately cleated	
	75°						
		0.40				COAL - Black poorly cleated, dull coal, 95% Claro-Durain, 5% Vitrain	
		0.29				COAL - Moderately cleated, bright banded, 60% Vitrain, 40% Claro-Durain	
	80	0.41				COAL - Moderately cleated, bright banded, 50% Vitrain, 50% Claro-Durain	
	73°	0.37				COAL - Black, well cleated, bright banded, 90% Vitrain, 10% Claro-Durain	
		0.23				COAL - Canaloid, Black, concoidal fracture, 100% recovery	
		T.D. 84.12					
	90						

469

PR-Bri-Dowling Creek 80(3)A

80-15

LOAH MINES LTD.

GRAPHIC CORE LOG

HOLE NO. BC-80-15 (TS.)

LOG BY: Rod Olauson

DATE May 25th 1980

ELEV: 726.5 m ±

N: 6,205,238 ±

E: 544,829 ±

HOLE SIZE HQ

AIR ☐ WATER ☒

T.D. 122.53m

HOLE NO. BC-80-15 (TS.)

PROJECT: BRI-Dowling Ck.

LEASE: CL 3644

SEC. ____ T. ____ R. ____

469

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO.	GRAV.	LITHOLOGY	ANALYSIS
	0						
	100m					OVERBURDEN	
70%	110					GETHING FORMATION	
60%			1.85m	1		Black, shiney and cleated, ~ 60 %, Sample #1 1.85 m. thick Splits 114.13 to 114.18 Sst. coarse grained and Slst. 114.88 to 114.96	Slst.
	120		0.05			Black shiny, one cleavage plane	
			0.08			Black, all shiny and cleated vitrinite	
						END OF HOLE T.D. 122.53m	

PR-Bri-Dowling Creek 80(3)A

80-14

UTAH MINES LTD.

GRAPHIC CORE LOG

HOLE NO. B.C.-80-14 (T.S.)

LOG BY: K. YIP

DATE: MAY 24 1980

ELEV: 729 m.

N: 6,205,071 N

E: 544,518 E

HOLE SIZE: HQ 96.0 mm.

AIR ☐ WATER ☒

TD 114.30 m.

HOLE NO. B.C. 80-14 (T.S.)

PROJECT: BRI - DOWLING CK

LEASE: C.L. 3644

SEC. ____ T. ____ R. ____

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO	GRAV.	LITHOLOGY	ANALYSIS
	0 m						469
	10					OVERBURDEN 0 - 107.29 m.	
	70						
	80					GETHING FORMATION	
	80°						
	90						
	82°		0.19			Coal - Black, banded, highly broken and blocky, Durain - clarain content greater than Vitrain content, poorly cleated, 30% recovery.	
	100						
	82°						
%			1.75	#1 #2		COAL - 1.75 m. Finely banded	106.55 to 107.70 - 30% Vitrain, 60% clarain - durain 10% Fusain
							108.0 to 108.30 - 30% Vitrain 60% clarain - durain 10% fusain
	110						
	85°						
						T.D. 114.3 m	

PR-Bri-Dowling Creek 80(3)A
80-16

LORAH MINES LTD.
GRAPHIC CORE LOG

HOLE NO. BC-80-16
LOG BY ERIC ANDERSON
DATE

ELEV. 1702' M.
N 6,149,240 N
E 340,230 E

HOLE SIZE NQ
AIR ☐ WATER ☒
I.D. 203 m H2O

HOLE NO. BC-80-16
PROJECT: BRL - DOWLING CK
LEASE C.L. 3653
SEC T. R.

CORE RUNS	DEPTH	DRILL LOG	THICK	SAMPLE NOS.	GRAV.	LITHOLOGY	ANALYSIS

469

0m
10m
20m
30m
40m
50m
60m
70m
80m
90m
100m
110m
120m
130m
140m
150m
160m
170m
180m
190m
200m

OVERBURDEN

HORNBLENDE FEL

CALCITE FRACTURE FILLINGS

CALCITE FRACTURE FILLINGS

CALCITE FRACTURE FILLINGS

CALCITE FRACTURE FILLINGS

CALCITE FRACTURE FILLINGS

BEDDING 30° TO CORE AXIS

BEDDING 45° TO CORE AXIS

HOLE ABANDONED 203.91 m

PR-Bri-Dowling Creek 80(3)A

UTAH MINES LTD.

80-17

GRAPHIC CORE LOG

HOLE NO. BC-80-17

LOG BY: R. OLAWSON

DATE: MAY 26, 1980

ELEV: 667 ± m.

N: 6,205,557 N

E: 545,207 E

HOLE SIZE: HQ - 96.0 mm

AIR ☐ WATER ☑

TD 87.17m PD.

HOLE NO. BC. 80-17 (T.S.)

PROJECT: BRI-DOWLING CK.

LEASE: C.L. 3644

SEC. ____ T. ____ R. ____

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO.	GRAV.	LITHOLOGY	ANALYSIS
	0m						469
						OVERBURDEN	
	40						
	73°					GETHING FORMATION	
	50						
			0.52			Black shiny, cleated, Gas sample #1	Gas Sample #1
	60						
	75°					Very hard Claco-durain, slightly blocky, metallic grey colour, 10% Vitrinite, shiny and cleated, black	
			0.09				
			0.05			Black shiny cleated.	
			0.56	#1		Black shiny, well cleated	Gas Sample #2
	70						
	85°		0.19			Black shiny, well cleated, Fairly hard.	
						Black shiny, one cleavage, concoidal fracture, quite hard.	
			0.26			Black shiny, well cleated.	Gas Sample #3
			0.25				
	80						
			0.11			Thick bands of black, shiny, well cleated.	
	80°						
			T.D. 87.17				
	90						

PR-Bri-Dowling Creek 80(3)A

80-18

UTAH MINES LTD.

GRAPHIC CORE LOG

HOLE NO. BC-80-18 (T.S.)

LOG BY R. OLAUSON

DATE: JUNE 1 1980

ELEV: 721 ± m.

N: 6,205,571 ± m.

E: 545,853 m ±

HOLE SIZE HQ 96.0 mm.

AIR ☐ WATER ☒

T.D 148.13 P.D

HOLE NO. BC-80-18 (T.S.)

PROJECT: BRI- DOWLING CK.

LEASE: CL 3643

SEC. T. R.

469

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO.	GRAV.	LITHOLOGY	ANALYSIS
						C — COALY OR CARBONACEOUS	
	0m					OVERBURDEN	
	100					MOOSEBAR FORMATION	
						GETHING FORMATION	
100%			0.39m	1		COAL - Shiny - Cleated - Hard Toward Base - Pyrite Bands + Nodules	
100%			0.56m	2		COAL - Shiny - Cleated	
	110						
	85°						
	120						
	≥80°						
50%			0.18			COAL - Shiny - Cleated - Pyritic - Silty At Top	
	≥80°						
	130						
100%			2.07	3		COAL - 131.86m to 132.06 m - COAL 132.06 m to 132.10 m - Split - SS 132.10 m to 132.28 m - COAL - Shiny - Cleated 132.28 m to 132.67 m - COAL - V. Hard - Dull - Metallic Lustre 132.67 m to 132.93 m - COAL - Shiny - Well Cleated 132.93 m to 132.97 m - Split - SS And Slt 133.97 m to 133.64 m - COAL - Shiny - Cleated 133.64 m to 133.68 m - Split - Slt 133.68 m to 133.73 m - COAL - Shiny - Well Cleated.	
	140						
	89°						
	150	T.D. 143.13 m					

PR-Bri-Dowling Creek 80(3)A
80-19

UTAH MINES LTD.
GRAPHIC CORE LOG

HOLE NO. BC-80-19
LOG BY: R. OLAUSON
DATE: JUNE 28th, 1980

ELEV: 774.5 ± m.
N: 6,200,159 ± N
E: 540,891.5 E

HOLE SIZE: 96.0 m.m.
AIR ☐ WATER ☒
T.D. 519.99 m v.p.d.

HOLE NO. BC-80-19
PROJECT: BRI-DOWLING CK.
LEASE: C.L. 3652
SEC. ____ T. ____ R. ____

469

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO.	GRAV.	LITHOLOGY	ANALYSIS

OVERBURDEN

MOOSEBAR FORMATION

GETHING FORMATION

100% recovery, modified cleated, hard, sample #1
0.63 m coal, dull coal, black, 95% duro-clarain, 5% Fusain
0.27 m coal, dull banded, black, 85% duro-clarain, 15% Vitrain
0.64 m coal, black, bright banded, 60% vitrain, 40% duro-clarain
0.32 m coal, black, dull banded, 85% duro-clarain, 10% vitrain, 5% Fusain

99% recovery, modified cleated, sample #2,
0.74 m coal - black canneloid coal, no cleating, transitional to next lower unit
0.25 m coal - black, dull coal, no cleating, 96% duro-clarain, 2% Fusain

433.40 - 433.91 Coal - black - dull, 95% duro-clarain, 3% vitrain, 2% Fusain, poorly cleated
433.91 - 434.00 Sst. - Fine grained, medium grey
434.00 - 434.10 coal - dull and bright - 50% vitrain, 45% duro-clarain, 5% Fusain, poorly cleated
434.10 - 434.16 Sst - Fine grained, medium grey, bedding 75° to C/A
434.16 - 434.95 - coal - black, slickensides, dull banded, 85% duro-clarain, 10% vitrain, 5% Fusain, poorly cleated
434.95 - 435.04 - Sst - medium grey, fine grained
435.04 - 436.03 - coal - black, dull, 95% duro-clarain, 3% Fusain, 2% vitrain, poorly cleated
436.03 - 436.53 - coal - black, dull banded, 65% duro-clarain, 30% vitrain, 5% Fusain, poorly cleated slickensides
Black - dull and bright - 50% vitrain, 50% duro-clarain, modified cleating, 90% recovery
Black - bright banded, 80% Vitrain, 20% duro-clarain, well cleated.

Black - poorly cleated, 50% Vitrain, 50% claro-durain, slickensided.

Black, poor cleating, 80% duro-clarain, 20% Vitrain

HOLE LOST - WEDGED AND REDRILLED TO THIS POINT

99% recovery, no cleating, 458.03 to 458.20 m - 99% claro-durain, 1% vitrain
458.20 to 458.33 m. - canneloid coal.
75% recovery, black, methane, Sample #1
458.64 to 458.05 m - coal - 90% claro-durain, 5% vitrain, 5% Fusain, moderately well cleated.
459.03 to 459.20 m. - methane test
459.20 to 460.01 m. - coal - 99% claro-durain, 5% vitrain, 5% Fusain.

99% recovery, black, well cleated, 60% vitrain, 40% claro-durain

60% recovery, black, 70% vitrain, 10% claro-durain, well cleated, one 2 cm. mudstone split

40% recovery, well cleated, 60% claro-durain, 35% vitrain, 5% Fusain, 0.17 m. mudstone split somewhere in the seam.
no methane sample, Sample #2

100% recovery, 95% claro-durain, 3% vitrain, 2% Fusain, black, bedding 70° to C/A @ 486.15 m.

95% recovery, black, 80% claro-durain, 15% vitrain, 5% Fusain, well cleated.

40% recovery, methane sample recovery to low to sample, 70% claro-durain, 20% vitrain, 10% Fusain, black, well cleated.

80% recovery, black, chunks rounded, sample #3, no methane sample,
517.18 to 517.51 m. - coal - 80% claro-durain, 2% vitrain.
517.51 to 517.54 m. - Mudstone split.
517.54 to 517.77 m. - Coal - 80% vitrain, 20% claro-durain.
0.25 m. Coal - black, 80% vitrain, 20% claro-durain, well cleated.
0.05 m. Coal - 100% recovery, 100 claro-durain.

T.D. 519.99 m

PR-Bri- Dowling Creek 80(3)A

80-20

UTAH MINES LTD.

GRAPHIC CORE LOG

HOLE NO BC-80-20 (T.S.)

LOG BY R. CLAWSON

DATE JUNE 2 1980

ELEV. 719 m

N 6,205,838 m.

E 546,210.5m.

HOLE SIZE HQ 96.0 mm

AIR ☐ WATER [x]

T D 151.18 m P D

HOLE NO. BC-80-20 (T.S.)

PROJECT BRI-DOWLING CK.

LEASE: CL. 3643

SEC. T. R.

469

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO.	GRAV.	LITHOLOGY	ANALYSIS
	0m					OVERBURDEN	
	100						
						BETHING FORMATION	
	110		0.12 m			COAL - Banded - Bright - Abundant Vitrain - Cleated	
	75°		0.09			COAL - Banded - Bright And Dull - 20% Vitrain - Cleated	
	80°		0.18			COAL - Banded - Bright - Abundant Vitrain - Cleated.	
	120						
			0.32			COAL - Bright - Abundant Vitrain - Well Cleated	
	85°						
	130						
			2.35	1		COAL - 130.54 m to 130.70 m - COAL - Bright - Banded - 40% Vitrain 130.70 m to 130.76 m - Split - Volcanic Ash 130.76 m to 131.67 m - COAL - Bright - Banded - 40% Vitrain - Slickensides 131.67 m. to 131.73 m - Split - Sandy Ash 131.73 m to 132.32 m - COAL - Bright - Banded - 50% Vitrain 132.32 m to 132.42 m - Split - Sandy Ash 132.42 m to 132.89 m - COAL - Bright - Banded - 70% Vitrain	
			0.04			COAL - Black - Shiny - Well Cleated - Vitrain	
	140						
50%			0.11			COAL - Bright - Banded - Cleated - Abundant Vitrain	
90%	89°		0.17			COAL - Bright - Cleated	
	150						
	T.D.		0.06			COAL - Bright - Well Cleated.	

PR-Bri-Dowling Creek 80(3)A

80-21

UTAH MINES LTD.

GRAPHIC CORE LOG

HOLE NO. BC-80-21 (TS)

LOG BY: R. OLAWSON

DATE: JUNE 5 1980

ELEV: 722 m

N 6,205,281 m

E 545,210.5 m

HOLE SIZE: H.Q. 96.0 mm

AIR [ ] WATER [X]

162.47 m

HOLE NO. BC-80-21 (TS)

PROJECT: BRI-DOWLING CK

LEASE: CL 3644

SEC ____ T. ____ R. ____

469

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO	GRAV	LITHOLOGY	ANALYSIS
	0m					OVERBURDEN	
50%	100		0.16m			GETHING FORMATION COAL - Black - Blocky - Pyritic - Muddy	
	110						
	≥ 82°						
	120						
100%			2.22	1		COAL - 121.45m to 121.64 m - 30% Black Shiny, Cleated Vitrain - 70% Metallic Grey, Grainy, Hard Durain - Clarain - Banded 121.64 m. to 121.69 m - Split - COALY SS 121.69 m to 122.53 m. - COAL - Banded - 40% Shiny, Well Cleated Vitrain - 60% Metallic Grey, Hard Durain - Clarain 122.53 m to 122.58 m - Split - Ashy COALY SS 122.58 m to 123.21 m - COAL - Banded - 50% Vitrain - 50% Durain - Clarain 123.21 m to 123.31 m - Split - SS + Volcanic Ash 123.31 m to 123.67 m - COAL - Black - Shiny - Cleated to Concoidal Fracture	
	≥ 80°						
	130						
	140						
	≥ 78°						
92%			0.64	2		COAL - Banded - Cleated - 90% Durain - Clarain - 10% Vitrain	
	150						
65%			0.52			COAL - 152.42 m to 152.66 m - Dull And Bright - Poorly Cleated 152.66 m. to 152.70 m - Split - Coaly MS 152.70 m to 152.94 m. - COAL - 50% Vitrain - 50% Durain - Clarain - Banded	
	160						
	85°						
98%			0.64			COAL - 163.22 m to 163.40 m - Banded - 20% Vitrain - 80% Durain - Clarain - Cleated 163.40 m to 163.50 m. - Split - MS 163.50 m to 163.86 m. - COAL - 20% Vitrain - 80% Durain - Clarain - Banded Cleated	
	170		T.D. 169.47 m				

PR-Bri-Dowling Creek 80(3)A

80-22

UTAH MINES LTD.

GRAPHIC CORE LOG

HOLE NO. BC-80-22

LOG BY: R OLAUSON

DATE: JUNE 10 1980

ELEV: 744.5 m.

N: 6,203,203 m

E: 542,280.5m

HOLE SIZE: HQ 96.0 mm

AIR ☐ WATER ☒

T.D. 114.91m P.D.

HOLE NO. BC-80-22

PROJECT: BRI-DOWLING CK.

LEASE: CL.3647

SEC. T. R.

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO.	GRAV.	LITHOLOGY	ANALYSIS
	0m					OVERBURDEN	469
	70					MOOSEBAR FORMATION	
			Ca				
						BETHING FORMATION	
		75° 70°					
100%			1.07	1		COAL - Dull, Abundant Clarain-Durain, Pyritic At Top - 0.05m Split Bright Banded Toward Base - Abundant Vitrain	
73%	80		0.29			COAL - Bright Banded to Dull - Abundant Vitrain - Pyrite in Dull Section. Generally Well Cleated.	
83%		80°	0.33			COAL - Canneloid	
7%		75°	0.31			COAL - Black - Muddy - Abundant Vitrain - Mud Content Increases Toward Base	
		75°					
83%	90		0.31			COAL - Bright Banded - Abundant Vitrain - Minor Fusain - Slightly Muddy Well Cleated.	
			Ca				
		73° 70°					
		80°					
	100						
		73°					
100%			1.62	2		COAL - 107.12 m to 108.07 m. - Coal - Bright Banded - Abundant Vitrain - Cleated 108.07 m to 108.12 m. - Split - SS 108.12 m to 108.81 m - Coal - Bright Banded - Abundant Vitrain - Well Cleated 108.81 m to 108.85 m - Split - Coaly Ms. 108.85 m to 108.94 m - Split - SS 108.94 m to 109.34 m. - Coal - Abundant Vitrain - Well Cleated - Muddy At Top	
	110						
		73°					
			0.02			COAL - Bright - Abundant Vitrain	
						T.D. 114.91 m.	
	120						

PR-Bri-Dowling Creek 80(3)A

UTAH MINES LTD.

GRAPHIC CORE LOG

80-23

HOLE NO. BC-80-23 (T.S.)

LOG BY: K. YIP + R. OLAWSON

DATE: JUNE 26, 1980

ELEV: 756.5 m

N: 6,202,644.5 m. N

E: 541,536 m. E.

HOLE SIZE: HQ 96.0 mm

AIR ☐ WATER ☒

T.D. 291.39 m. P.D.

HOLE NO. BC-80-23

PROJECT: BRI-DOWLING CK.

LEASE: 3648

SEC. T. R.

469

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO.	GRAV.	LITHOLOGY	ANALYSIS

0m

OVERBURDEN

10

90

100

MOOSEBAR FORMATION

110

120

230

240

250

GETHING FORMATION

0.22 m.

Black - poor recovery, highly ground
250.54 - 250.57 m. - coal, dull banded, 90% Vitrain, pyritic.
250.57 - 250.61 m. - Sst split - highly coaly, med grained, mud cip-up clasts.
250.61 - 250.78 m. - coal, dull banded, 80% Vitrain, minor Fusain, well cleated, highly broken at base.

75° 80° Ca

75° Ca

260

1.59

1

Black - Sample #1 Methane Gas Sample #1
259.52 - 260.30 m. - dull banded coal, 75% Clarain and Durain, 10% Vitrain in Bands 5% Fusain, very hard, uncleated.
260.30 - 260.91 m. - bright banded, abundant Vitrain (50%), 5% Fusain, well cleated, softer.

80° 0.10

0.25

Dull banded, minor Vitrain, mostly Durain and Clarain, abundant pyrite bands and blebs, minor slickensides.
Black-bright banded, abundant Vitrain, minor Fusain (±5%) pyritic at top of seam, Vitrain content decreases toward top of seam where coal is duller.

80° 0.13

Black - bright banded, well cleated, abundant Vitrain, highly broken, minor muddy bands, poor recovery.

85° 270 0.41

Black - bright, abundant Vitrain, well cleated, highly broken, recovery fairly good
269.50 to 269.58 m. muddy coal - Mdst bands in coal seam.

80° Ca

280

2.63

2

278.86 to 279.25 m. - coal, bright banded abundant Vitrain, 5% Fusain, well cleated, pyrite band at 278.96 m. which is ~0.01 m.
279.25 to 279.30 m. - Sst, coaly, abundant coaly streaks, minor Mdst laminae.
279.30 to 279.35 m. - coal, black, bright, 10% Vitrain, very well cleated.
279.35 to 279.65 m. - Mdst - dark to black, abundant plant debris and coaly streaks.
279.65 to 280.22 m. - coal - bright banded, abundant Vitrain, Vitrain content increasing toward base, well cleated, 5% Fusain.
280.22 to 280.28 m. - Sst. and coal interlaminated Sst is medium grained and salt and pepper.
280.28 to 280.58 m. - Coal, bright banded, abundant Vitrain, highly broken, well cleated.
280.58 to 281.05 m. - muddy coal, banded bright coal with abundant Mdst bands and minor medium grained salt + pepper Sst lenses.
281.05 to 281.15 m. - Sst., fine grained, salt & pepper, minor coaly streaks, unlaminated.
281.15 to 281.49 m. - Coal, dull banded, mainly Clarain Durain, poorly cleated, highly broken.

85° 0.10

0.10, Black, bright, banded, abundant Vitrain (30%), well cleated, broken core.

85°

290 0.12

0.85

0.05

44%

Black, bright banded, calcite veinlet at top of seam, abundant Vitrain.
Black, bright, banded, abundant Vitrain, highly broken, 44% recovery, too little coal to sample.
Black, bright, banded, abundant Vitrain, well cleated.

T.D.
291.39 m.

PR-Bri-Dowling Creek 80(3)A

80-24

UTAH MINES LTD.

GRAPHIC CORE LOG

HOLE NO. BC-80-24

LOG BY: R. OLAUSON

DATE: JULY 3rd, 1980

ELEV: 777.5 m

N: 6,201,389.5

E: 541,336

HOLE SIZE: 96 mm

AIR ☐ WATER ☒

T.D. 514.50 m P.D.

HOLE NO. BC-80-24

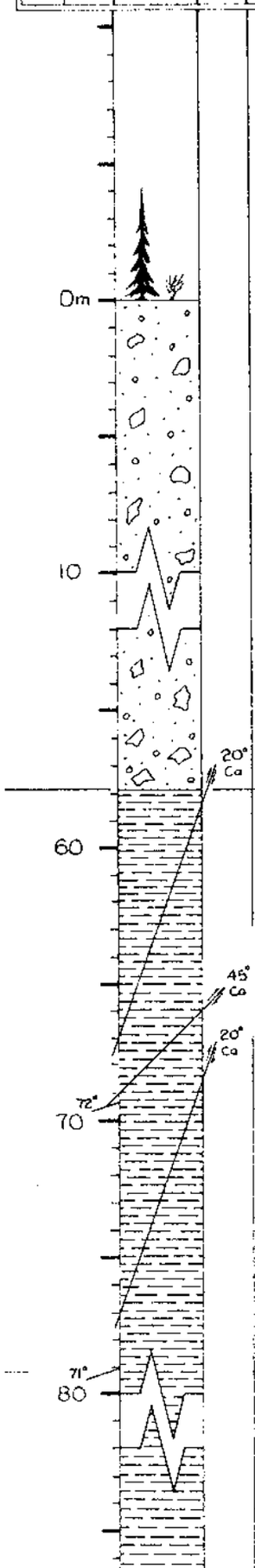
PROJECT:

LEASE: 3650

SEC. T. R.

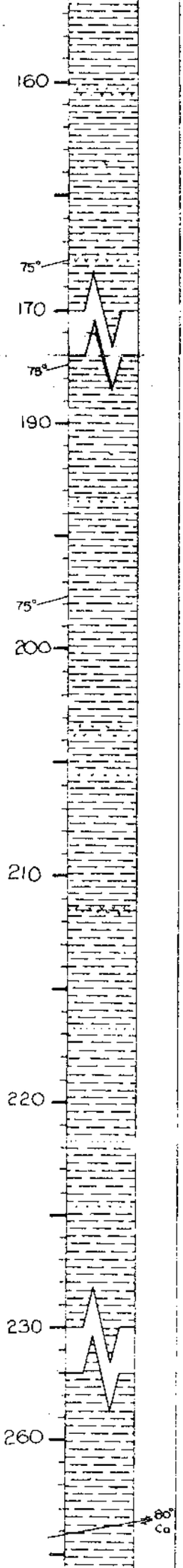
469

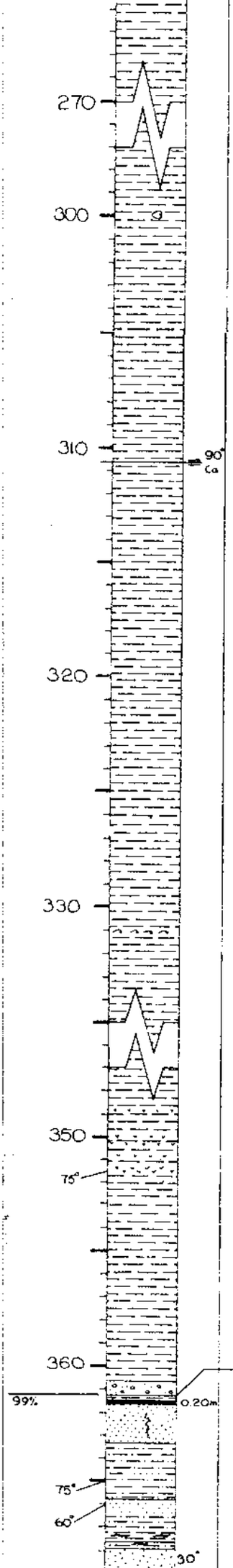
% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO.	GRAV.	LITHOLOGY	ANALYSIS



OVERBURDEN

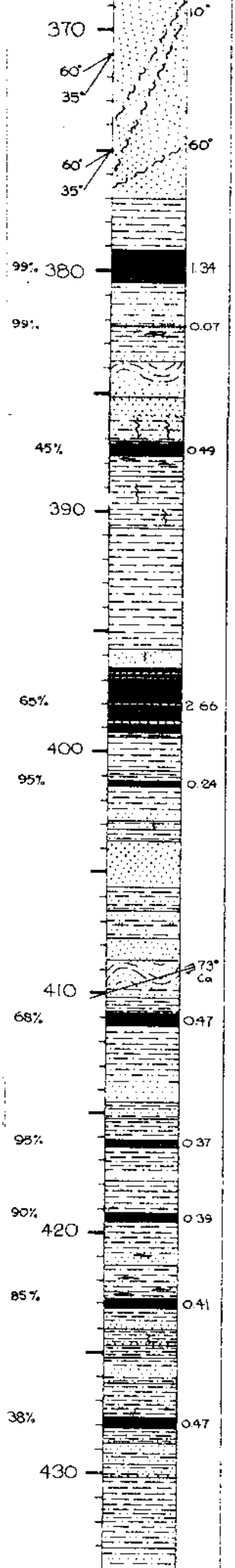
MOOSEBAR FORMATION


160
75°
170
78°
190
75°
200
210
220
230
260
80°
Ca



GETHING FORMATION

99% recovery, black, 50% vitrain, 50% Claro-durain, occasional pyrite lenses.



99% recovery, Methane sample #1
379.08 to 379.40 - Coal, black, poorly cleated, 95% Claro-durain, 5% Vitrain
379.40 to 380.49 m - Coal, black, poorly cleated, 60% Claro-durain, 40% Vitrain

99% recovery, black, 50% Vitrain, 50% Claro-durain, poorly cleated.

45% recovery, black, poorly cleated, 50% Vitrain, 50% Claro-durain

65% recovery, Methane sample #2 from 395.56 to 397.96 m
396.54 to 396.69 m - Black, mod cleated, 10% vitrain 20% Claro-durain, 5% Fusain
396.77 to 396.89 m - 10% Claro-durain, 20% Vitrain 5% Fusain, Black, mod cleated
396.91 to 396.97 m - Coal - 90% Claro-durain, 5% Fusain, 5% Vitrain
396.97 to 397.96 m - 60% Vitrain, 40% Claro-durain
398.01 to 398.69 m - mod. cleated, 50% Claro-durain, 45% Vitrain, 5% Fusain
398.78 to 399.26 m - Coal lost around end drill

95% recovery, black, no cleating, 100% Claro-durain

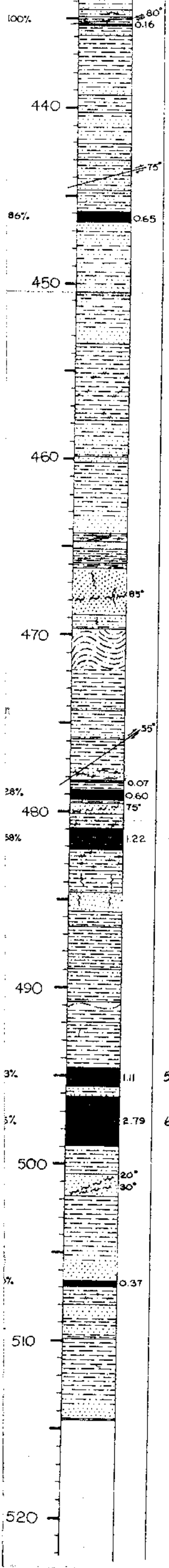
68% recovery, black, poorly cleated, pyritic in places, sheared, 80% Claro-durain, 20% Vitrain

95% recovery, poorly cleated, 60% Claro-durain, 40% Vitrain, black

90% recovery, black, poorly to moderately cleated, 60% Claro-durain, 35% Vitrain, 5% Fusain

85% recovery, black, poorly cleated, 80% Claro-durain, 15% Vitrain, 5% Fusain, slightly sheared.

38% recovery black poorly cleated, slightly sheared, 90% Claro-durain, 10% Vitrain



100% recovery, black, slightly sheared, poorly cleated, 50% Claro-durain, 50% Vitrain

86% recovery, black, very hard, poorly cleated
445.86 to 446.05 - Durain
446.05 to 446.53 m - 80% Claro-durain, 20% Vitrain Sample #3, no methane test

3 — 28% recovery, 90% Claro-durain, 10% Vitrain

4 — Highly broken, black, 68% recovery, & carbonaceous Mdst. splits each 40 cm thick, Sample #4

5 — 23% recovery, 95% Claro-durain, 5% Vitrain, poorly cleated, Sample #5, no Methane

6 — 26% recovery, Sample #6, no Methane,
Coal - 496.18 to 498.40 m, 90% Claro-durain, 10% Vitrain
Muddy carbonaceous coal - 498.40 to 498.68 m
Coal - 498.68 to 498.97 m

60% recovery, black, sheared, 50% Vitrain, 50% Claro-durain, poorly cleated

PR-Bri-Dowling Creek 80 (3)A

80-25

UTAH MINES LTD.

GRAPHIC CORE LOG

HOLE NO. BC-80-25

LOG BY: R. OLAWSON

DATE: JUNE 22nd 1980

ELEV: 771 m.t

N: 6,202,258.5 m.

E: 540,682 m.

HOLE SIZE: HQ 96.0 mm

AIR ☐ WATER ☒

T.D. 242.62 m. P.D

HOLE NO. BC-80-25

PROJECT: BRI-DOWLING CK.

LEASE: C.L. 3650

SEC. ____ T. ____ R. ____

469

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO.	GRAV.	LITHOLOGY	ANALYSIS
	0m					OVERBURDEN	
	70					GETHING FORMATION	
	75°		0.12			Black - bright banded, highly broken recovery 73.91 to 74.09 Coal, bright banded, muddy, abundant vitrain, 10% Fusain, well cleated. 74.15 to 74.33 m - Coal, bright, ground up, abundant Vitrain.	
			0.11 m 0.06 0.24			Black, dull banded, mostly clarain and durain, highly broken, slickensides in seam. Black banded, dull, abundant clarain durain, (75%), vitrain occurs in thin bands (20%), 5% Fusain, cleated.	
	76° 80					Black, bright banded, muddy at top of seam from 78.58 to 78.70 m. and poorly cleated, highly broken from 78.70 to 78.82 m	
			0.24 30° Ca			Black, muddy, banded, dull, highly ground up and broken, poor recovery.	
	74°						
			1.48	1		88.36 to 88.76 - Coal, black, canneloid; Sample #1 88.76 to 89.29 m. - Coal, dull, banded, 5% Vitrain, 5% Fusain, 90% Clarain, durain, poorly cleated. 89.29 to 89.84 m. - Coal, bright banded, highly broken, well cleated, minor Fusain, 50% Vitrain, 50% clarain.	
	90		0.08			Coal: very muddy, black, abundant calcite veinlets.	
			0.04			Black, bright, abundant vitrain, abundant pyrite in bands, well cleated, slickensides at base.	
	100 73°		0.09			Almost all lost, highly broken.	
			1.23	2		Black, Sample #2, 103.64 to 103.71 m., coal, black, canneloid, 103.71 to 103.75 m - Mdst, dark grey to light, very carb., abundant plant debris and coaly streaks., 103.75 to 103.81 m. Coal, bright banded, abundant vitrain (30%), no Fusain visible, well cleated. 103.81 to 104.06 m Mdst and Slst, dark grey, Mdst and med. grey Slst, abundant plant debris, and coaly streaks. 104.06 to 104.71 m. Coal, black, bright, banded, abundant vitrain, minor Fusain, well cleated, pyrite at 104.53 m. 104.71 to 104.82 m. - Mdst, very coaly, abundant plant debris, and coaly streaks. 104.82 to 104.87 m. - Coal, bright banded, abundant Vitrain, muddy, poorly cleated.	
			0.25 35° Ca			0.25 m - Coal, black, bright, banded, abundant vitrain, well cleated, highly broken	
	75°						
	110						
				3		Black, Sample #3, 117.45 to 118.49 m., Coal, bright, banded abundant Vitrain, well cleated 118.13 to 118.49 m. - Coal, dull, banded minor Vitrain (10%), clarain and durain 85%, Fusain 5% 118.49 to 119.80 m. Coal, bright, banded, abundant Vitrain (50%), minor Fusain well cleated, broken core	Methane Sample #1, minor Fusain. poorly cleated, minor Slt lenses at 118.30 to 118.36 m.
			2.35				
	130						
			0.08			Black, bright, 90% Vitrain cleated	
			2.22	4		Black, Sample #4, 133.37 to 134.31 - Coal dull, banded, 10% durain and clarain, minor Fusain, with 30% Vitrain, poorly cleated, broken core 134.31 to 134.58 m - Mdst dark grey, very carbonaceous, abundant plant debris and coaly streaks. 134.58 to 135.18 m - Coal, bright banded, 50% Vitrain, 45% durain and clarain, 5% Fusain, well cleated, broken 135.18 to 135.23 m - Mdst, dark grey, abundant plant debris and Coaly streaks 135.23 to 135.59 m - Coal, bright banded, 50% Vitrain, 45% durain and clarain, 5% Fusain, well cleated, highly broken.	
	75° 140						
			0.10			Black, bright, banded, abundant Vitrain well cleated, highly broken.	
	75°		0.05 0.03			Black, bright, banded, abundant Vitrain, well cleated. Black, bright, banded, abundant Vitrain, well cleated	
			25°				
	150						
70%			0.59	5		Black, dull to bright, banded, 20% Vitrain, - 75% recovery	
	160						
99%			0.43			99% recovery, black, methane sample #2 Coal - 161.66 To 161.74 m., 50% Vitrain, 50% Charo-durain Slt - 161.74 to 161.77 m Fine grained	
			70° Ca				
99% 99% 95%	170		0.27 0.06 0.15			99% recovery, black, 80% Charo-durain, 10% Vitrain, 10% Fusain, poorly cleated. 99% recovery, 95% vitrain - 5% Charo-durain 95% recovery, black, modified cleated, 80% Chaco-ducain, 20% Vitrain	
			70° Ca				
	180						
	63°		0.09			100% recovery, black,	
	190		20°				
			25°				
			40°				
			35° 35°				
			30°				
60%	200		0.92	6		60% recovery, black, bright, abundant slickensides, highly broken, bedding in Coal destroyed by Faulting, abundant Vitrain, Sample #6	
			10°				
			60°				
	210		55°				
			45°				
			1.53	7		Black, 100% recovery, Sample #1, 216.19 to 216.36 m - Coal, canneloid, black 216.36 to 216.87 m - Coal, black, dull, banded, clarain and durain (90%), Vitrain (5%), Fusain (5%), hard, poorly cleated. 216.87 to 217.42 m. - Coal, bright banded, 50% Vitrain, 50% durain and clarain, well cleated. 217.42 to 217.45 m. - Slt, silty matrix, muddy, medium grained. 217.45 to 217.65 m. - Coal, bright, banded, 50% Vitrain, 50% Clarain and durain, well cleated.	
	220						
	75°						
			0.40			Black, Canneloid	
100%	230		0.39			Black, dull, poorly banded, 95% durain and clarain, 50% Vitrain conchoidal Fracture, 100% recovery	
	70°						
	240						
			T.D. 242.62 m.				

PR-Bri-Dowling Creek 80(3)A

80-26

UTAH MINES LTD.

GRAPHIC CORE LOG

HOLE NO. BC-80-26

LOG BY: R. OLAUSON

DATE: JUNE 27th 1980

ELEV: 798.5 m

N: 6,200,535.5 m. N

E: 539,971.5 m. E

HOLE SIZE: HQ 96.0 mm.

AIR ☐ WATER ☑

T.D. 102.41 m. P.D

HOLE NO. BC-80-26

PROJECT: BC - DOWLING CK

LEASE: C.L. 3653

SEC. ____ T. ____ R. ____

469

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO.	GRAV.	LITHOLOGY	ANALYSIS
	0m						
	10					OVERBURDEN	
	40						
	55°					GETHING FORMATION	
	50						
	47°						
	60						
	50°						
	70						
	45°						
99%			0.24 m			Black, 99% recovery, good cleating, 50% Vitrain, 50% Clara-durain	
	50°						
70%	80		1.42	1		70% recovery, Black, no Methane sample #1 Coal - 18.92 - 79.65 m - well cleated, 50% Clara-durain, 45% Vitrain, 5% Fusain Coal - 79.12 - 80.34 m - well cleated, 20% Clara-durain, 75% Vitrain, 5% Fusain	
	60°						
	42°						
99%			0.76			99% recovery, Black, Coal - 88.31 to 88.47 m., 80% Vitrain, 20% Clara-durain, well cleated. Coal - 88.47 to 88.81 m., 90% Clara-durain, 10% Vitrain, poorly cleated, very hard	
	90						
	10°						
90%			2.21	2		90% recovery, 80% Clara-durain, 20% Vitrain, very hard, black, poorly cleated,	Sample #2
	100						
	39°						
						T.D. 102.41 m.	

PR-Bri-Dowling Creek 80(3)A

80-27

UTAH MINES LTD.

GRAPHIC CORE LOG

HOLE NO. B.C-80-27

LOG BY: R. OLAUSON

DATE: JULY 6th, 1980

ELEV: 775.0 m

N: 6,201,622 ±

E: 540, 255.5

HOLE SIZE: 96.0 mm

AIR ☐ WATER ☒

T.D. 199.95m P.D.

HOLE NO. B.C-80-27

PROJECT:

LEASE: C.L. 3651

SEC. T. R.

469

% REC	DEPTH	STRIP LOG	THICK	SAMPLE NO.	GRAV.	LITHOLOGY	ANALYSIS
	0m					OVERBURDEN	
	10						
	60						
	83°					GETHING FORMATION	
	70						
80%	80		1.33m 0.08 0.02	1		Black, Sample #1 - Methane Sample #1, 80% recovery, dull banded, 70% Clarain and durain, 25% Vitrain, 5% Fusain, poorly cleated, relatively hard Black, dull banded, 85% durain and clarain, 10% Vitrain, 5% fusain, poorly cleated, broken.	
						Black, bright banded, abundant Vitrain, well cleated.	
	80°						
	80						
40%			0.64			Black, 40% recovery, bright banded, abundant Vitrain, cleated, too little recovery for sampling	
						45° Ca	
						45 Ca	
	90						
						90° Ca	
						28° Ca	
						80°	
85%	100		0.34			85% recovery, black, well cleated 100.05 to 100.28 m. - 80% Claro-durain, 20% Vitrain. 100.28 to 100.37 m. - 90% cannelloid coal, 10 Vitrain lenses.	
95%	110		0.03 0.31			Black, well cleated, 50% Vitrain, 50% Claro-durain. 95% recovery, black, 40% Vitrain, 60% Claro-durain, modified well cleated.	
45%			1.62	2		45% recovery, black, methane sample #2, 50% Vitrain, 50% Claro-durain, Coal Sample #2	
	90°						
						80° Ca	
						80° Ca	
	120						
85%			0.49 0.08 0.06			95% recovery, black. 120.40 to 120.46 - 80% Vitrain, 20% duro-clarain 120.46 to 120.49 - black grey (Mdst) 120.49 to 120.89 - 80% Vitrain, 20% Claro-durain, well cleated. Coal - 0.08m. - 100% recovery, 100 Vitrain Coal - 0.06m - Black, well cleated, 100% Vitrain.	
99%			2.40	3		99% recovery, very hard, poorly cleated, Methane sample #3, Coal sample #3 124.70 to 124.91 - Coal. 90% Claro-durain, 10% Vitrain. 124.91 to 124.97m - 80% Vitrain, 20% Claro-durain (Coal) 124.97 to 125.02m 90% Claro-durain, 10% Vitrain, (Coal) 125.02 to 125.04m Mdst - Dark grey 125.04 to 127.10 m. - 85% Claro-durain, 10% Vitrain, 5% Fusain (Coal)	
99%	130		0.34			99% recovery, black, no cleating, dirty cannelloid coal	
99%			0.49			99% recovery, black 130.48 to 130.75 m. - Coal, Dirty cannelloid Coal 130.75 to 130.87 m. - 90% claro-durain, 10% Vitrain 130.87 to 130.97 m. - 100% Vitrain	
99%			0.32			99% recovery, black, 50% Vitrain, 45% claro-durain, 5% Fusain, modified well cleated	
99%			0.28 0.06			99% recovery, black, Mdst split, 135.81 to 138.83 m. - Coal - 90% Vitrain, 10% Claro-durain.	
	140					100% recovery, black, well cleated, 100% Vitrain	
80%	150		1.51	4		80% recovery, black, poorly cleated 149.30 to 149.94 m. - 90% duro-clarain, 10% Vitrain. 149.94 to 150.61 m - 60% Vitrain, 40% Claro-durain. 150.61 to 150.81 m. - Methane test #4, Coal sample #4	
						65°	
	160						
			0.88 0.11 0.36 0.13			99% recovery, black, 60% Vitrain, 40% Claro-durain, 99% recovery, black, well cleated, 60% Claro-durain, 40% Vitrain 99% recovery, black, well cleated, 100% Claro-durain. 90% recovery, well cleated, 60% Vitrain, 40% Claro-durain. 80% recovery, 80% Claro-durain 20% Vitrain, well cleated	
	170						
	80°					80° Ca	
99%			0.99	5		99% recovery, black, well cleated, Sample #5 175.33 to 175.58 m. - 80% Claro-durain, 15% Vitrain, 5% Fusain. 175.60 to 175.88 m. - 90% Claro-durain, 5% Vitrain, 5% Fusain. 175.88 to 175.96 m. - Methane Sample #5 175.96 to 176.05 m. - 90% Claro-durain, 5% Vitrain, 5% Fusain. 176.05 to 176.32 m. - 100% Claro-durain.	
99%			0.20				
	180					99% recovery, black, well cleated, 60% Vitrain, 35% Claro-durain, 5% Fusain	
			0.67	6		100% recovery, black, moderately well cleated, Vitrain, Claro-durain, Fusain. 180.44 to 180.70 m. - 90% claro-durain, 5% Vitrain, 5% Fusain 180.74 to 180.82 m. - 60% Claro-durain, 40% Vitrain, 180.84 to 180.90 m. - Coal - 60% Vitrain. 181.04 to 181.11 m. - Methane Sample #6, Coal Sample #6	
	190		0.04 0.07			100% recovery, black, well cleated, 100% Vitrain. 50% recovery, 100% Vitrain, well cleated.	
99%			0.20			99% recovery, 192.46 to 192.58 m., 60% Vitrain, 40% Claro-durain, two thin Mdst splits.	
95%			1.25	7		192.60 to 192.66 - 80% Vitrain, 20% Claro-durain	
99%			0.24			95% recovery, black, Sample #7, Methane Sample #7 192.85 to 193.50 m. - 80% Claro-durain, 15% Vitrain, 5% Fusain.	
90%			0.58	8		99% recovery, black, 60% Claro-durain, 35% Vitrain, 5% Fusain, Sample #8, No Methane 194.91 to 195.00 m. - 60% Claro-durain, 40% Vitrain, 195.00 to 195.15 m. - 95% Vitrain, 5% Fusain.	
	200						

PR. BRI Dowling Creek 80(3)A

Widco* WELL LOG

COMPANY: Utah Mines Ltd.
AREA: BRI - Dowling Creek (C.L. 3643)
WELL: B.C. 80-12 (T.S.)
COUNTY: Peace R. Land District STATE: British Columbia

COORDINATES: 6,204,491 E N
N 543,565 m
S
ELEVATION: 767.5 m
D.F.
K.B.
G.L.

COMPANY: Utah Mines Ltd. — WELL: B.C. 80-12 (T.S.) — LOCATION: BRI - Dowling Creek

	Run No. 1	Run No. 2
Date	May 15, 1980	
First Reading	233.5 m	
Last Reading	0	
Footage Logged	233.5 m	
Bottom (Driller)	233.48 m	
Casing (From Log)		
Casing (Driller)	50.29 m	
Casing Size	HW (114.3 mm)	
Bit Size	HQ (96 mm)	
Bit Size		

MUD	Run No. 1	Run No. 2
Nature		
Density		
Viscosity	@ °F	@ °F
Resistivity	@ °F	@ °F
Res. @ BHT	@ °F	@ °F
pH		
Circ. Temp.		
B.H. Temp.		
Logged by	N. Duncan	
Witnessed by	C. Corney	

REMARKS

469

Reg. U.S. Pat. Off.

Gamma

Density

PR: BRI: Dowling Creek 80(3)A 8013

Widco* WELL LOG

COMPANY	Utah Mines Ltd.	COORDINATES	6,205,31[illegible] N
AREA	BRI - Dowling Creek (C.L. 3647)	N	[illegible] E
WELL	B.C. 80313 (T-3)	S	
COUNTY	Peace R. Land District	ELEVATION	677 m
STATE	British Columbia	D.F.	
		K.B.	
		G.L.	

LOCATION: BRI - Dowling Creek
WELL: B.C. 80313
COMPANY: Utah Mines Ltd.

	Run No. 1	Run No. 2
Date	May 17, 1980	
First Reading	83.21 m	
Last Reading	0.0 m	
Footage Logged	83.21 m	
Bottom (Driller)	84.12 m	
Casing (From Log)		
Casing (Driller)	15.84 m	
Casing Size	HW (114.3 mm)	
Bit Size:	HQ (96 mm)	
Bit Size:		

MUD	Run No. 1	Run No. 2
Nature		
Density		
Viscosity	@ °F	@ °F
Resistivity	@ °F	@ °F
Res. @ BHT	@ °F	@ °F
pH		
Circ. Temp.		
B.H. Temp.		
Logged by	N. Duncan	
Witnessed by	D. Ridley & K. Yip	

REMARKS

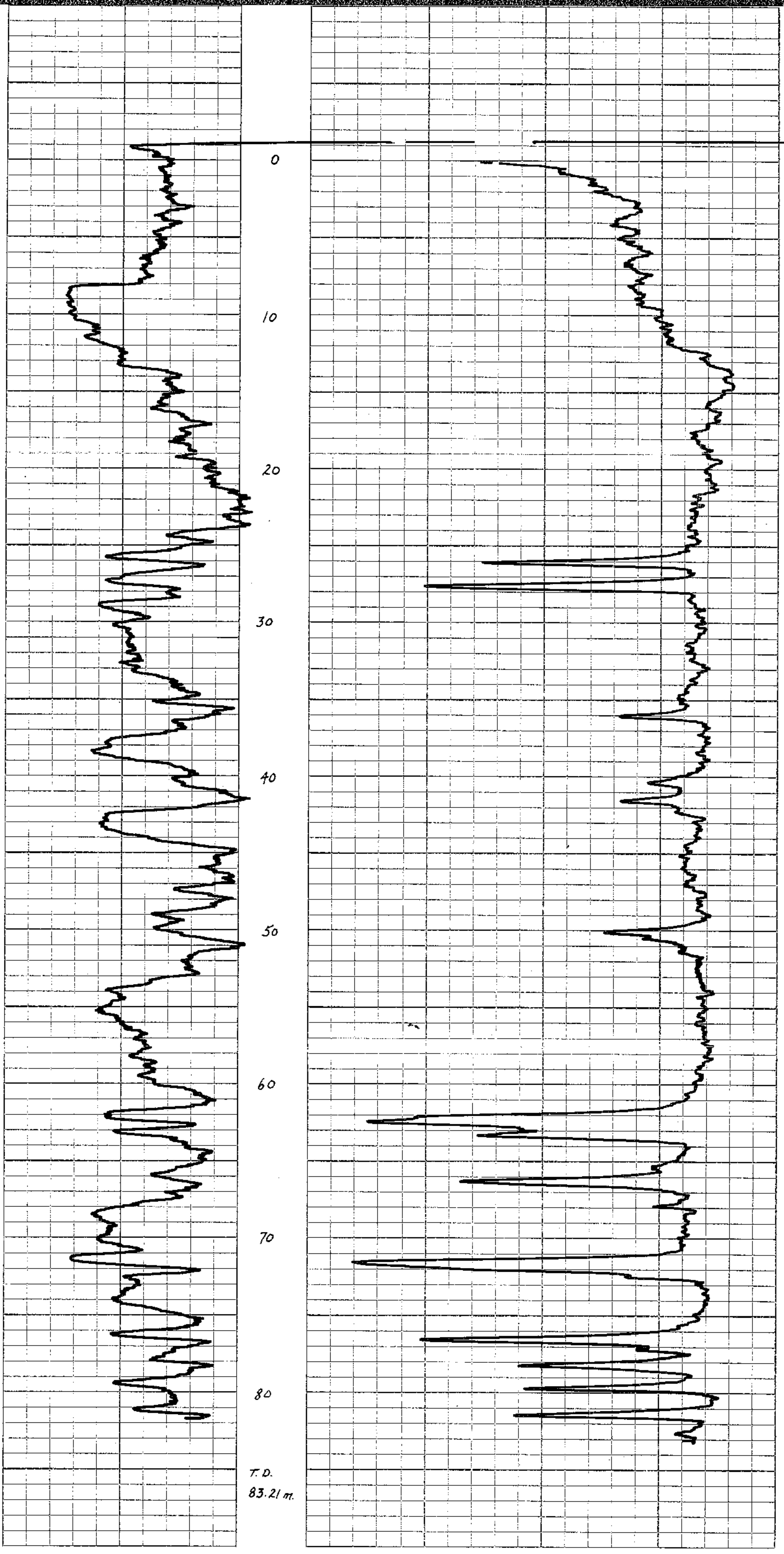
469

*Reg. U.S. Pat. Off.

FD-137

Gamma 100 cps

Density 600 cps



PR-B / Dowling Cr. 80-(3)A 0014

Wideo* WELL LOG

COMPANY Utah Mines Ltd.

AREA BRT - Dowling Creek (G.P. 3644)

WELL B.C. 80-14 (W.S.)

COUNTY Peace R. Land District STATE British Columbia

COORDINATES: 344,518
N 6,205,611 SN
S
ELEVATION 721 m
D.F.
K.B.
G.L.

LOCATION (LEGAL DESCRIPTION) | WELL | COMPANY

	Run No. 1	Run No. 2
Date	May 20, 1980	
First Reading	113 m	
Last Reading	81 m	
Footage Logged	32 m	
Bottom (Driller)	114.3 m	
Casing (From Log)	83.2 m	
Casing (Driller)	84.7 m	
Casing Size	HW (114.3 mm)	
Bit Size	HQ (96 mm)	
Bit Size		

MUD	Run No. 1	Run No. 2
Nature		
Density		
Viscosity	@ °F	@ °F
Resistivity	@ °F	@ °F
Resi. @ BHT	@ °F	@ °F
pH		
Circ. Temp.		
B.H. Temp.		
Logged by	N. Duncan	
Witnessed by	D. Riddell, P. Vip	

REMARKS

469

* Reg. U.S. Pat. Off.

Gamma
100 API

Resist.
20 Ohm m

80
90
100
110
T. D.
113.0 m

PR. Bri Dowling 80 (3) A 80-14

Widco* WELL LOG

COMPANY Utah Mines Ltd.
AREA BRP - Dowling Creek (C.L. 3644)
WELL B.C. 80-14 (T.S.)
COUNTY Peace R. Land Dist. STATE British Columbia

COORDINATES 544 [illegible] E
N 6,205,011 N
S
ELEVATION 721 m
D.F.
K.B.
G.L.

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	May 20, 1980		Nature		
First Reading	113.31 m		Density		
Last Reading	0		Viscosity	@ °F	@ °F
Footage Logged	113.31 m		Resistivity	@ °F	@ °F
Bottom (Driller)	114.3 m		Res. @ BHT	@ °F	@ °F
Casing (From Log)			pH		
Casing (Driller)	84.7 m		Circ. Temp.		
Casing Size	HW (114.3 mm)		B.H. Temp.		
Bit Size	HQ (96 mm)				
Bit Size					
			Logged by	Duncan	
			Witnessed by	J. Ridley [illegible]	

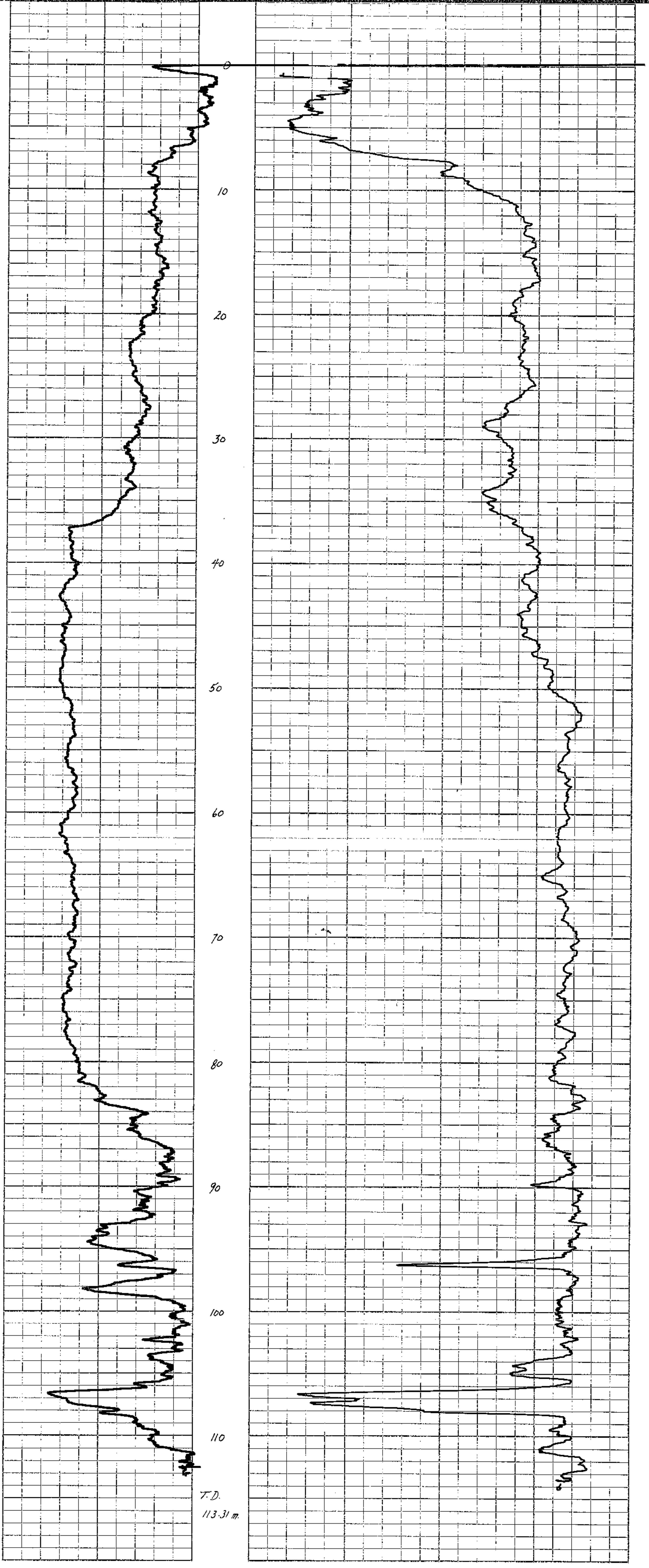
REMARKS

469

* Reg. U.S. Pat. Off.

Gamma 100 cps

Density



BB-Bri-Dowling Creek 80(3)A-80 15

Widco* WELL LOG

COMPANY Utah Mines Ltd.
AREA BBI - Dowling Creek (C.L. 3644)
WELL B.C. 80-15 (T.S.)
COUNTY Peace R. Land Dist. STATE British Columbia

COORDINATES 6,208,258 N
N 544,825 E
S
ELEVATION 765 m
D.F.
K.B.
G.L.

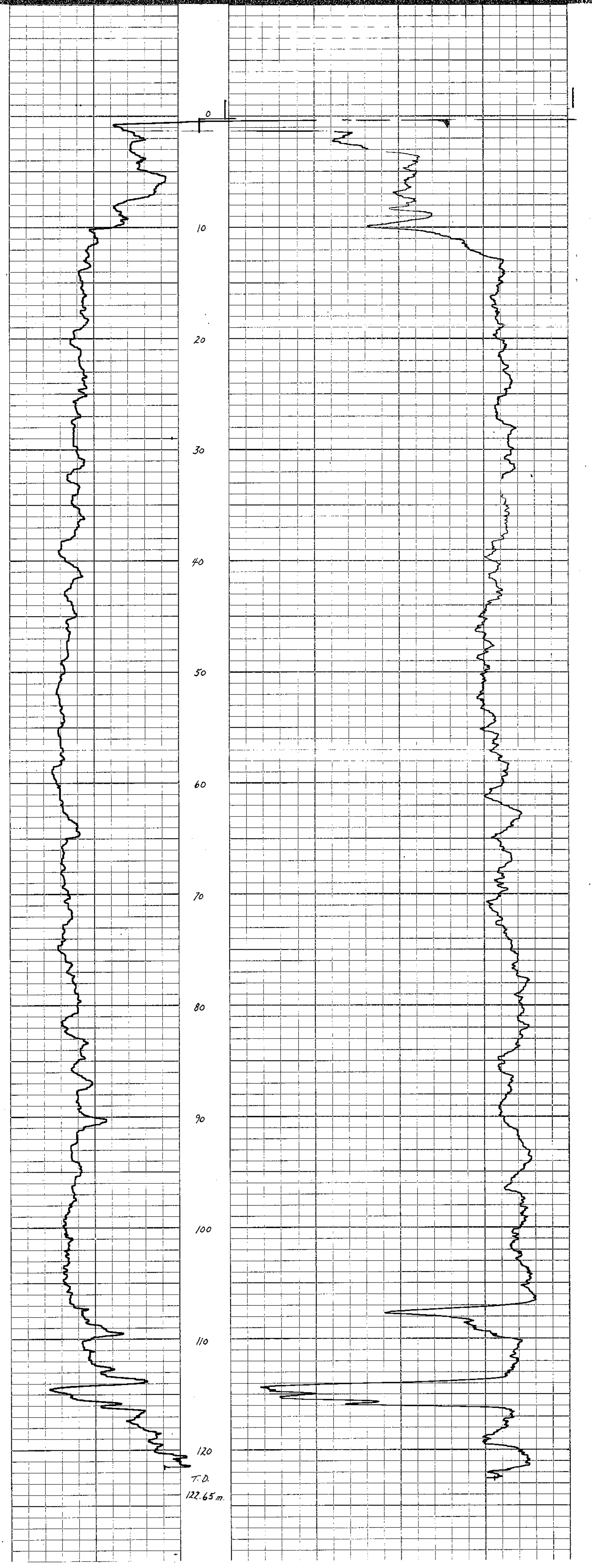
	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	May 23, 1980		Nature		
First Reading	122.65 m		Density		
Last Reading	0		Viscosity	@ °F	@ °F
Footage Logged	122.65 m		Resistivity	@ °F	@ °F
Bottom (Driller)	122.5 m		Res. @ BHT	@ °F	@ °F
Casing (From Log)	122.65 m		pH		
Casing (Driller)	107.29 m		Circ. Temp.		
Casing Size	HW (114.3 mm)		B.H. Temp.		
Bit Size	HQ (96 mm)				
Bit Size					
			Logged by	R.F. Anderson	
			Witnessed by	G. Colmayer, R. Olauson	

REMARKS

469

*Reg. U.S. Pat. Off.

Ohms Ohms



B.C. Prov. Dowling 80(3)A 80-15

Widco® WELL LOG

COMPANY: Utah Mines Ltd.

AREA: Peace R. Dowling Creek (CL-3644)

WELL: B.C. 80-19 (M-4)

COUNTY: Peace R. Land Dist. STATE: British Columbia

COORDINATES: 6,205,258 E
N 44,849
S
ELEVATION: 424.5 m
D.F.
K.B.
G.L.

LOCATION: Lat. 56° 08' 00" Long. 120° 50' 00"

WELL: B.C. 80-19

COMPANY: Utah Mines Ltd.

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	May 23, 1980		Nature		
First Reading	121.9 m		Density		
Last Reading	109.0 m		Viscosity	@ °F	@ °F
Footage Logged	12.9 m		Resistivity	@ °F	@ °F
Bottom (Driller)	122.50 m		Res. @ BHT	@ °F	@ °F
Casing (From Log)	109 m		pH		
Casing (Driller)	107.29 m		Circ. Temp.		
Casing Size	NW (114.3 mm)		B.H. Temp.		
Bit Size	HQ (96 mm)				
Bit Size					
			Logged by	R.G. Anderson	
			Witnessed by	C. Gorney & S. Olafson	

REMARKS

469

® Reg. U.S. Pat. Off.

Resistivity

10 ohm

100

110

T.D.
121.9 m
(400.0')

PR-Bri-Dowling Creek 80(3)A 80-17

Widco* WELL LOG

COMPANY Utah Mines Ltd.

AREA BRI - Dowling Creek (C.L. 3644)

WELL B.C. 80-17 (msur)

COUNTY Peace R. Land District STATE British Columbia

COORDINATES: N 6 205 815.1 N
E 545 701.5 E

ELEVATION:
D.F.
K.B.
G.L.

LOCATION BRI - DOWLING CREEK

WELL B.C. 80-17 (MSUR)

COMPANY Utah Mines Ltd.

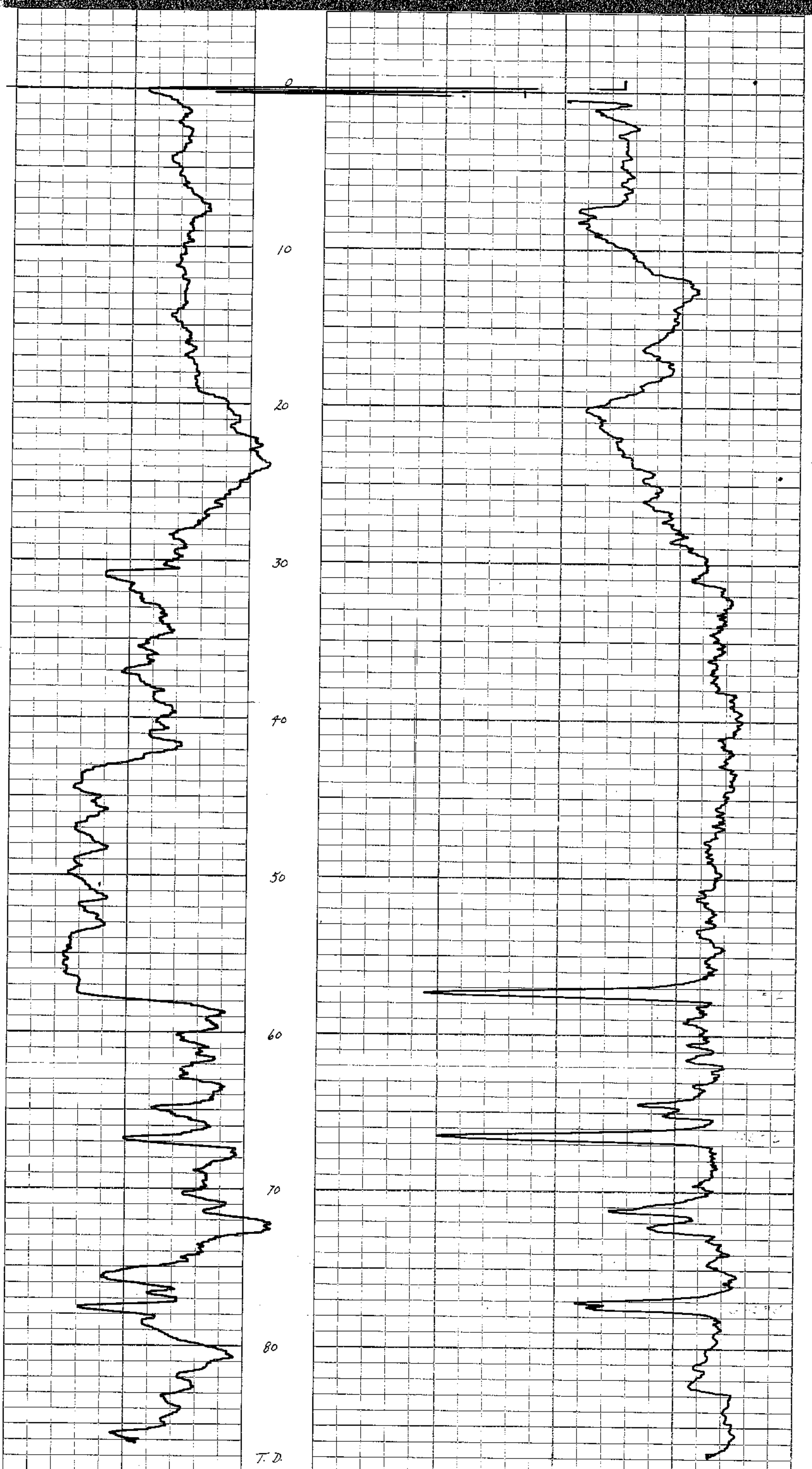
	Run No. 1	Run No. 2
Date	May 25, 1980	
First Reading	86.67 m	
Last Reading	0 m	
Footage Logged	86.67 m	
Bottom (Driller)	87.17 m	
Casing (From Log)		
Casing (Driller)	39.0 m	
Casing Size	HW (114.3 mm)	
Bit Size:	HQ (96 mm)	
Bit Size:		

MUD	Run No. 1	Run No. 2
Nature		
Density		
Viscosity	@ °F	@ °F
Resistivity	@ °F	@ °F
Res. @ BHT	@ °F	@ °F
pH		
Circ. Temp.		
B.H. Temp.		
Logged by	R. E. Anderson	
Witnessed by	K. Yorke	

REMARKS Logged through drill stem.

469

* Reg. U.S. Pat. Off.



PR-BR-Dowling Creek 86(3)A 80-18

Widco* WELL LOG

COMPANY	Utah Mines Ltd.
AREA	BRI - Dowling Creek (C.L. 3843)
WELL	BRC 80-18 (P.S.)
COUNTY	Peace R. Land Dist. STATE British Columbia
COORDINATES	6,206,5?? N; N 645,853 E
ELEVATION	721 m

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	May 28, 1980		Nature		
First Reading	148.2 m		Density		
Last Reading	0		Viscosity	@ °F	@ °F
Footage Logged	148.2 m		Resistivity	@ °F	@ °F
Bottom (Driller)	148.13 m		Res. @ BHT	@ °F	@ °F
Casing (From Log)	100.5 m		pH		
Casing (Driller)	100.28 m		Circ. Temp.		
Casing Size	HW 114.3 mm		B.H. Temp.		
Bit Size	HQ 96.0 mm				
Bit Size					
			Logged by	R.B. Anderson	
			Witnessed by	G. Cozney & R. Olafson	

REMARKS

469

*Reg. U.S. Pat. Off.

Gamma 100 cps

Resistivity 20 Ohm-m

PR BRI - Dowling Creek 80 (3) A 80-18

Widco* WELL LOG

COMPANY Utah Mines Ltd.

AREA BRI - Dowling Creek (C.L. 3643)

WELL B.C. 80-18 (T.S.)

COUNTY Peace R. Land Dist. STATE British Columbia

COORDINATES 6,205,571 N

N 545,853 E

S

ELEVATION 741 m

D.F.

K.B.

G.L.

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	May 28, 1980		Nature		
First Reading	147.83 m		Density		
Last Reading	0 m		Viscosity	@ °F	@ °F
Footage Logged	147.83 m		Resistivity	@ °F	@ °F
Bottom (Driller)	148.13 m		Res. @ BHT	@ °F	@ °F
Casing (From Log)			pH		
Casing (Driller)	114.57 m		Circ. Temp.		
Casing Size	HW 114.3 m		B.H. Temp.		
Bit Size	HQ 96.01 m				
Bit Size					
			Logged by	R.B. Anderson	
			Witnessed by	C. Corney/R. Colatuso	

REMARKS

469

*Reg. U.S. Pat. Off.

Gamma

Dens

PR-Bri-Dowling Creek 80(3)A 80-19

Widco* WELL LOG

COMPANY Utah Mines Ltd.
AREA Bri-Dowling Creek
WELL B.C. 80-19
COUNTY Peace River Land District PROV STATE B.C.

COORDINATES 540,891.5mE
N 6,200,159 N
S
ELEVATION 714.5m
DF
KB
GL

COMPANY Utah Mines Ltd.
WELL B.C. 80-19
LOCATION Bri-Dowling Creek

	Run No. 1	Run No. 2
Date	June 28, 1980	
First Reading	519.7m	
Last Reading	380.0m	
Footage Logged	139.7	
Bottom (Driller)	519.99	
Casing (From Log)		
Casing (Driller)	36.68m	
Casing Size	HW - 114.3 m	
Bit Size	HQ - 96.0 mm	
Bit Size		

MUD	Run No. 1	Run No. 2
Nature		
Density		
Viscosity	@ °F	@ °F
Resistivity	@ °F	@ °F
Res. @ BHT	@ °F	@ °F
pH		
Circ. Temp.		
B.H. Temp.		
Logged by	P. Cowley	
Witnessed by		

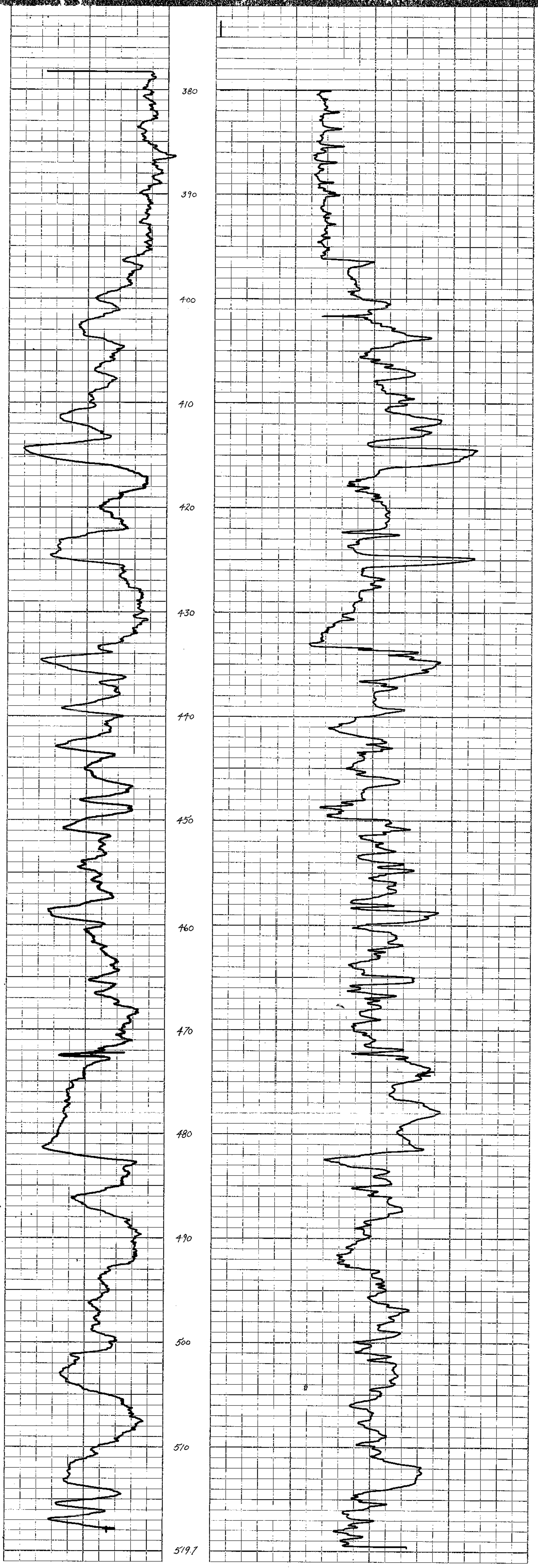
REMARKS

469

* Reg. U.S. Pat. Off.

GAMMA
100 cps

RESISTIVITY
50 ohms/in



PR - Bri-Dowling Creek 80 (3) A 80-19

Widco* WELL LOG

COMPANY: Utah Mines Ltd.
WELL: Bri-Dowling Creek
LOCATION: Bri-Dowling Creek

COMPANY: Utah Mines Ltd.
AREA: Bri-Dowling Creek
WELL: B.C. 80-19
COUNTY: Peace River Land District PROV./STATE: B.C.

COORDINATES: 640,891.5m E
N: 6,200,159 m. N
S:
ELEVATION: 774.5 m
D.F.:
K.B.:
G.L.:

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	June 28, 1980		Nature		
First Reading	519.68m		Density		
Last Reading	373.50m		Viscosity	@ °F	@ °F
Footage Logged	146.18m		Resistivity	@ °F	@ °F
Bottom (Driller)	519.99m		Res. @ BHT	@ °F	@ °F
Casing (From Log)			pH		
Casing (Driller)	36.68m		Circ. Temp.		
Casing Size	HW - 114.3m		B.H. Temp.		
Bit Size	HQ - 96.0m				
Bit Size					
			Logged by	P. Cowley	
			Witnessed by		

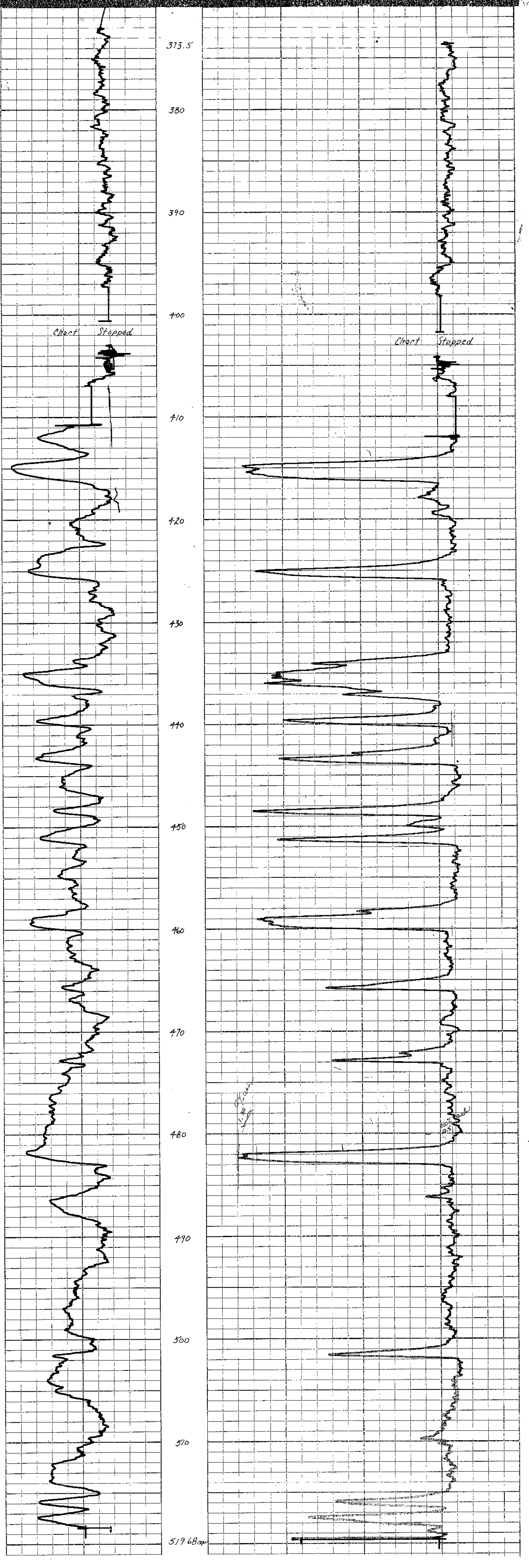
REMARKS:

469

* Reg. U.S. Pat. Off.

GAMMA 100 cps

DENSITY 500 cps



PR Br Dowling Creek 80(3)A 80-20

Widco* WELL LOG

COMPANY: Utah Mines Ltd
AREA: Bri Dowling Creek (C.L. 3643)
WELL: B.C. 80-20 (m.s.)
COUNTY: Peace R. Land Dist. STATE: British Columbia

COORDINATES: 6,208,238 m N
N: 546,205 m E
S:
ELEVATION: 1719 m
D.F.:
K.B.:
G.L.:

COMPANY: Utah Mines Ltd
WELL: B.C. 80-20 (m.s.)
LOCATION: Bri Dowling Creek

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	May 31, 1980		Nature		
First Reading	151.12 m		Density		
Last Reading	0 m		Viscosity	@	@
Footage Logged			Resistivity	@	@
Bottom (Driller)			Res. @ BHT	@	@
Casing (From Log)			pH		
Casing (Driller)	106.68		Circ. Temp.		
Casing Size	HW		B.H. Temp.		
Bit Size	HQ (96.0 mm)				
Bit Size					
			Logged by	R. B. Anderson	
			Witnessed by	J. Blaley	

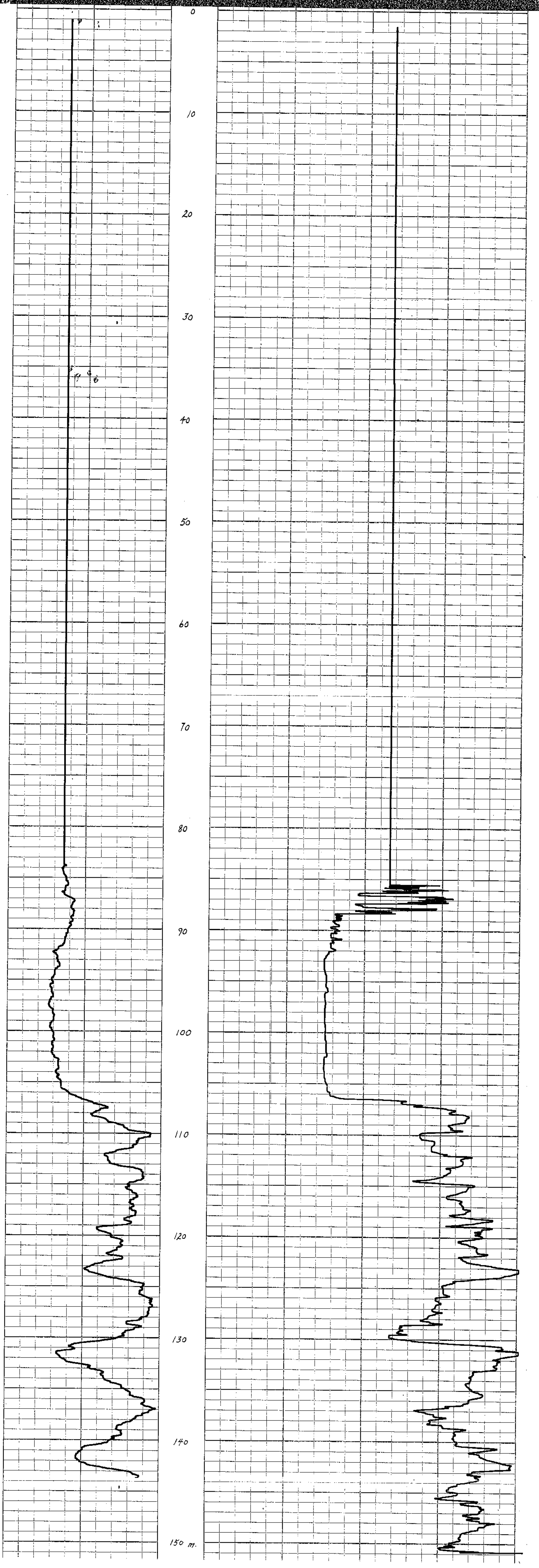
REMARKS:

469

*Reg. U.S. Pat. Off.

Gamma
100 cps

Resistivity
40 Ohms/in



PR-Bri Dowling 80(3)A 80-10

Widco* WELL LOG

COMPANY: Utah Mines Ltd.

AREA: Bri-Dowling Creek (C.L. 3643)

WELL: B.C.-80-20 (U.S.)

COUNTY: Peace R. Land Dist. STATE: British Columbia

COORDINATES: 6,205,838m N
N 546,285m E

ELEVATION: 749 m

D.F.

K.B.

G.L.

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	May 31, 1980		Nature		
First Reading	151.18 m		Density		
Last Reading	0		Viscosity	@ °F	@ °F
Footage Logged			Resistivity	@ °F	@ °F
Bottom (Driller)			Res. @ BHT	@ °F	@ °F
Casing (From Log)			pH		
Casing (Driller)	106.68 m		Circ. Temp.		
Casing Size			B.H. Temp.		
Bit Size					
Bit Size					
			Logged by	R.B. Anderson	
			Witnessed by	J. Ridley	

REMARKS:

469

*Reg. U.S. Pat. Off.

Gamma 100 cps

Density 800 cps

BR - Bri Dowling Creek 80(3)A 80-21

Widco* WELL LOG

COMPANY Utah Mines Ltd.
AREA BRI-DOWLING CREEK (C.L. 3644)
WELL B.C. 80-21 (T.S.)
COUNTY Peace R. Land Dist. STATE British Columbia

COORDINATES 6,205,28[illegible] m N
N 545,210.5 m E
S
ELEVATION [illegible] 1122 m
D.F.
K.B.
G.L.

COMPANY Utah Mines Ltd.
WELL B.C. 80-21 T.S.
LOCATION Bri-Dowling Creek

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	June 3, 1980		Nature		
First Reading	169.5 m		Density		
Last Reading	0		Viscosity	@ °F	@ °F
Footage Logged	169.5 m		Resistivity	@ °F	@ °F
Bottom (Driller)	169.47 m		Res. @ BHT	@ °F	@ °F
Casing (From Log)	99.5 m		pH		
Casing (Driller)	99.06 m		Circ. Temp.		
Casing Size	HW-114.3 mm		B.H. Temp.		
Bit Size	HQ-96.0 mm				
Bit Size					
			Logged by	Riole	
			Witnessed by	[illegible] Anderson	

REMARKS

469

Reg. U.S. Pat. Off.

Gamma   Density

PR Br. Dowling Creek 80(3)A 80-21

Widco* WELL LOG

COMPANY: Utah Mines Ltd.
AREA: BRI-DOWLING CREEK (C.L. 3644)
WELL: B.C. 80-21 (T.S.)
COUNTY: Peace R. Land Dist. STATE: British Columbia

COORDINATES: 6,205,280 m N
N: 545,210.5 m E
S:
ELEVATION: 722 m
D.F.
K.B.
G.L.

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	June 3, 1980		Nature		
First Reading	169.5 m		Density		
Last Reading	0		Viscosity	@ °F	@ °F
Footage Logged	169.5 m		Resistivity	@ °F	@ °F
Bottom (Driller)	169.47 m		Res. @ BHT	@ °F	@ °F
Casing (From Log)			pH		
Casing (Driller)	99.06 m		Circ. Temp.		
Casing Size	HW-114.3 mm		B.H. Temp.		
Bit Size:	HQ-96.0 mm				
Bit Size:					
			Logged by	J. Ridley	
			Witnessed by	K. Yip E. Anderson	

REMARKS:

469

* Reg. U.S. Pat. Off.

Gamma 100 cps

Resistivity 2050 ohms

PR-Bri-Dowling Creek 80(3)A 80-22

Widco* WELL LOG

COMPANY Utah Mines Ltd.
WELL B.C. 80-22 (T.S.)
LOCATION Bri-Dowling Creek

COMPANY Utah Mines Ltd.
AREA Bri-Dowling Creek (C.L. 3647)
WELL B.C. 80-22 (T.S.)
COUNTY Peace R. Land Dist. STATE British Columbia

COORDINATES 6,203,203m N
N 542,480.5m E
S
ELEVATION 744m
D.F.
K.B.
G.L.

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	June 6, 1980		Nature		
First Reading	114.35 m		Density		
Last Reading	0		Viscosity	@ °F	@ °F
Footage Logged	114.35 m		Resistivity	@ °F	@ °F
Bottom (Driller)	114.91 m		Res. @ BHT	@ °F	@ °F
Casing (From Log)	72.1 m		pH		
Casing (Driller)	71.93 m		Circ. Temp.		
Casing Size	HW-114.3 mm		B.H. Temp.		
Bit Size	HQ-96.0 mm				
Bit Size					
			Logged by	J. Ridley	
			Witnessed by	K. Yip	

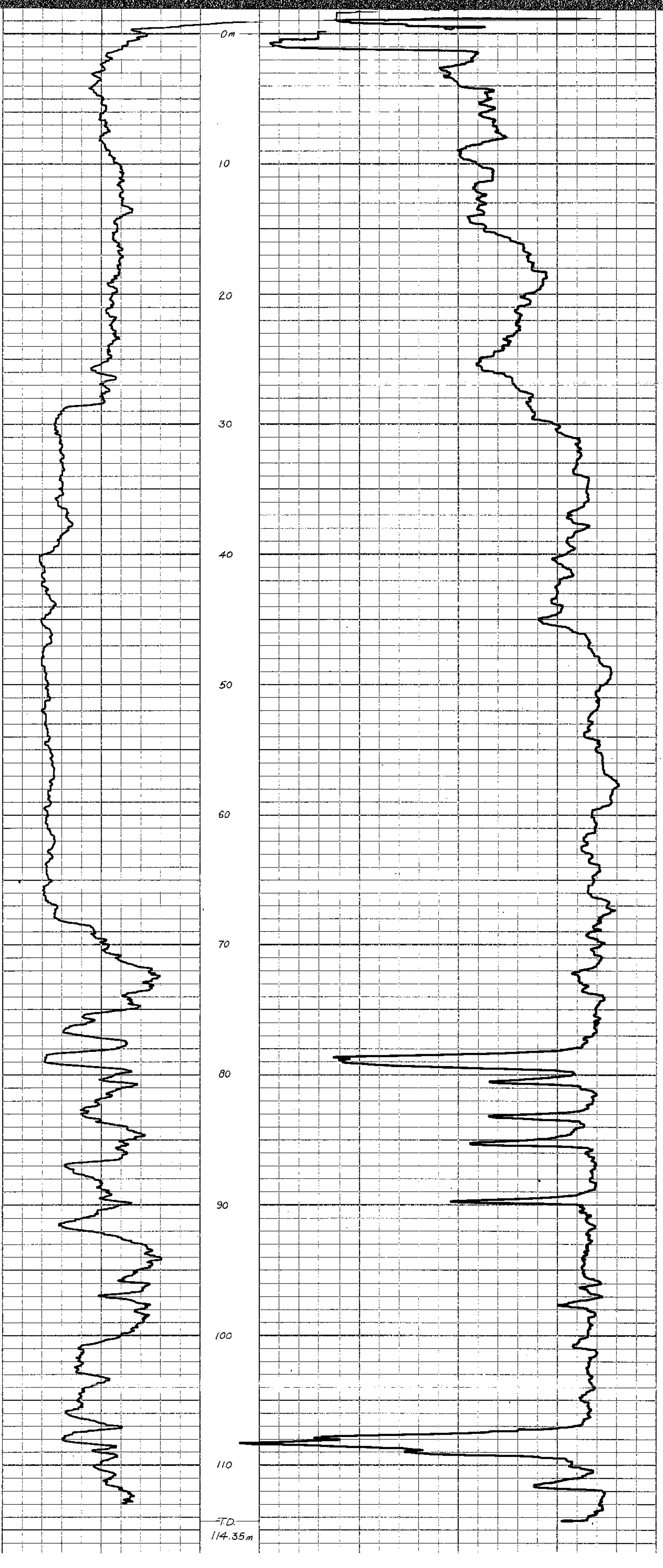
REMARKS

469

*Reg. U.S. Pat. Off.

Gamma 100 cps

Density 500 cps



PR. Bri Dowling Creek 86(3)A 80-12

Widco* WELL LOG

COMPANY: Utah Mines Ltd.

AREA: Bri-Dowling Creek (C.L. 3647)

WELL: B.C.-80-22 (T.S.)

COUNTY: Peace R. Land Dist. STATE: British Columbia

COORDINATES: 6,203,203 m N

ELEVATION: 1,111 m

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	June 7, 1980		Nature		
First Reading	115.51 m		Density		
Last Reading	0		Viscosity	@ °F	@ °F
Footage Logged	115.51 m		Resistivity	@ °F	@ °F
Bottom (Driller)	114.91 m		Res. @ BHT	@ °F	@ °F
Casing (From Log)	72.2 m		pH		
Casing (Driller)	71.93 m		Circ. Temp.		
Casing Size	HW-114.3 mm		B.H. Temp.		
Bit Size:	HQ-96.0 mm				
Bit Size:					
			Logged by		
			Witnessed by		

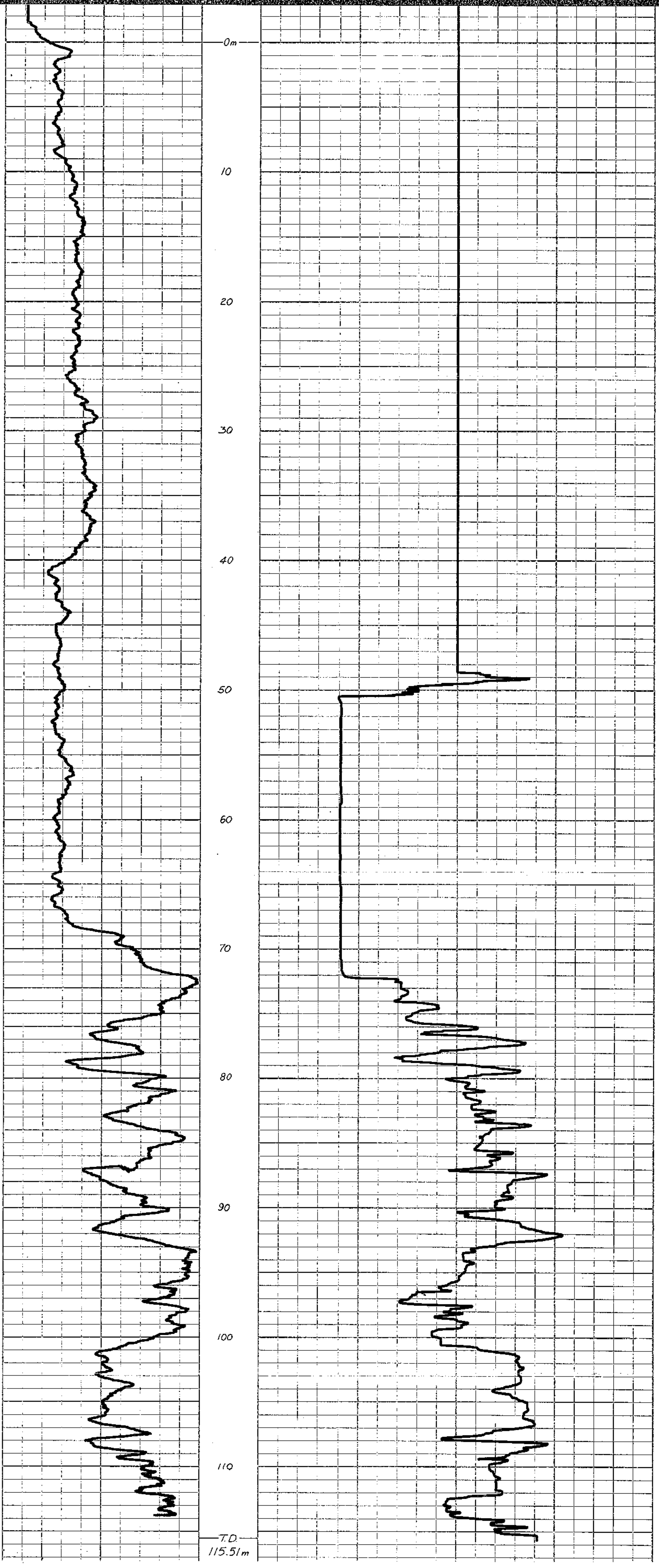
REMARKS: Drill broke down after density log was run. Had to fix before rods could be pulled and resistivity log run, one day later.

469

*Reg. U.S. Pat. Off.

Gamma 100 cps

Resistivity 200 ohms



Widco® WELL LOG

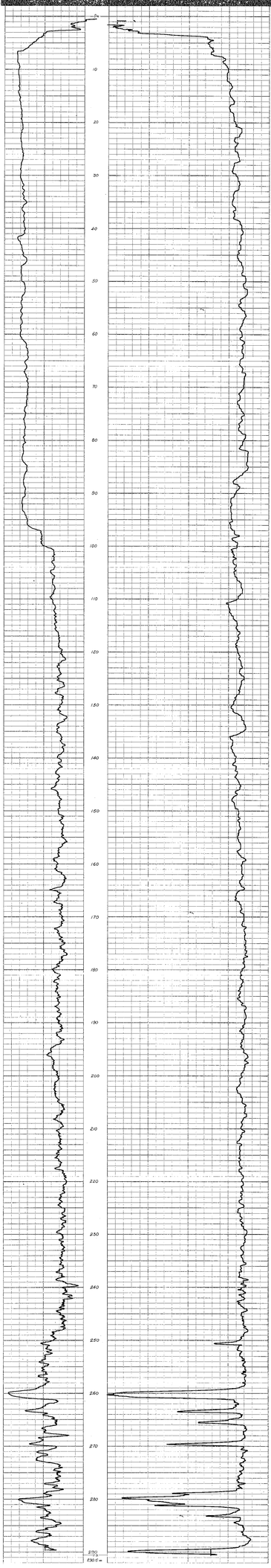
COMPANY
WELL
FIELD
COUNTY Grant STATE Wyo.

LOCATION
Sec. Twp. Rge.

Run No.	One	Two	Three
Date			
First Reading			
Last Reading			
Footage Logged			
Recor. Gather			
Config. (type log)			
Centra. (Gather)			
Casing Size			
Bit Size			
Bit Size			

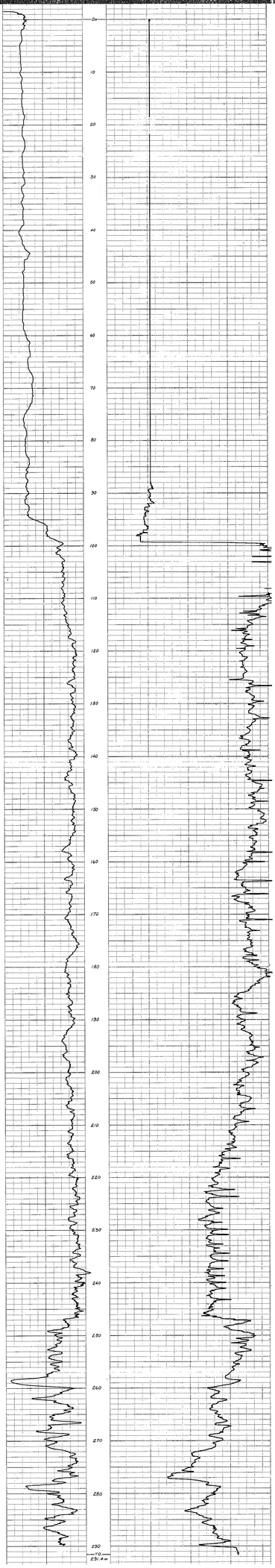
REMARKS

469



Widco WELL LOG

469



PR-Bri-Dowling 80(3)A 80-25

Widco* WELL LOG

COMPANY Utah Mines Ltd.
WELL B.C. 80-25
LOCATION Bri-Dowling Creek

COMPANY Utah Mines Ltd.
AREA Bri-Dowling Creek (C.L. 3650)
WELL B.C. 80-25
COUNTY ______ STATE ______

COORDINATES: ______ m E
N 6,202,248 m N
S ______
ELEVATION: 770 m
D.F. ______
K.B. ______
G.L. ______

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	June 19, 1980		Nature		
First Reading	242.6 m		Density		
Last Reading	0		Viscosity	@ °F	@ °F
Footage Logged	242.6 m		Resistivity	@ °F	@ °F
Bottom (Driller)	242.62 m		Res. @ BHT	@ °F	@ °F
Casing (From Log)	73.15 m		pH		
Casing (Driller)	73.15 m		Circ. Temp.		
Casing Size	HW - 114.3 mm		B.H. Temp.		
Bit Size	HQ - 96.0 mm				
Bit Size					
			Logged by	N. Duncan	
			Witnessed by	R. Olavson	

REMARKS

469

* Reg. U.S. Pat. Off.

FO-159

Gamma 100 cps

Resisitivity 20 ohms/in

R. Bri-Dowling Creek 80(3)A 80-25

Widco* WELL LOG

COMPANY: Utah Mines Ltd.
AREA: Bri-Dowling Creek (GTL 3650)
WELL: B.C. 80-25
COUNTY: Peace R. Land Dist. STATE: British Columbia

COORDINATES: 540 700 m E
N 6 202 248 m N
S
ELEVATION: 770 m
D.F.
K.B.
G.L.

COMPANY: Utah Mines Ltd.
WELL: B.C. 80-25
LOCATION: Bri-Dowling Creek

	Run No. 1	Run No. 2
Date	June 19, 1980	
First Reading	242.62 m	
Last Reading	0	
Footage Logged	242.62 m	
Bottom (Driller)	242.62 m	
Casing (From Log)		
Casing (Driller)	76.15 m	
Casing Size	HWL 114.3 mm	
Bit Size	HQ 96.0 mm	
Bit Size		

MUD	Run No. 1	Run No. 2
Nature		
Density		
Viscosity	@ °F	@ °F
Resistivity	@ °F	@ °F
Res. @ BHT	@ °F	@ °F
pH		
Circ. Temp.		
B.H. Temp.		
Logged by	N. Duncan	
Witnessed by	R. Olavson	

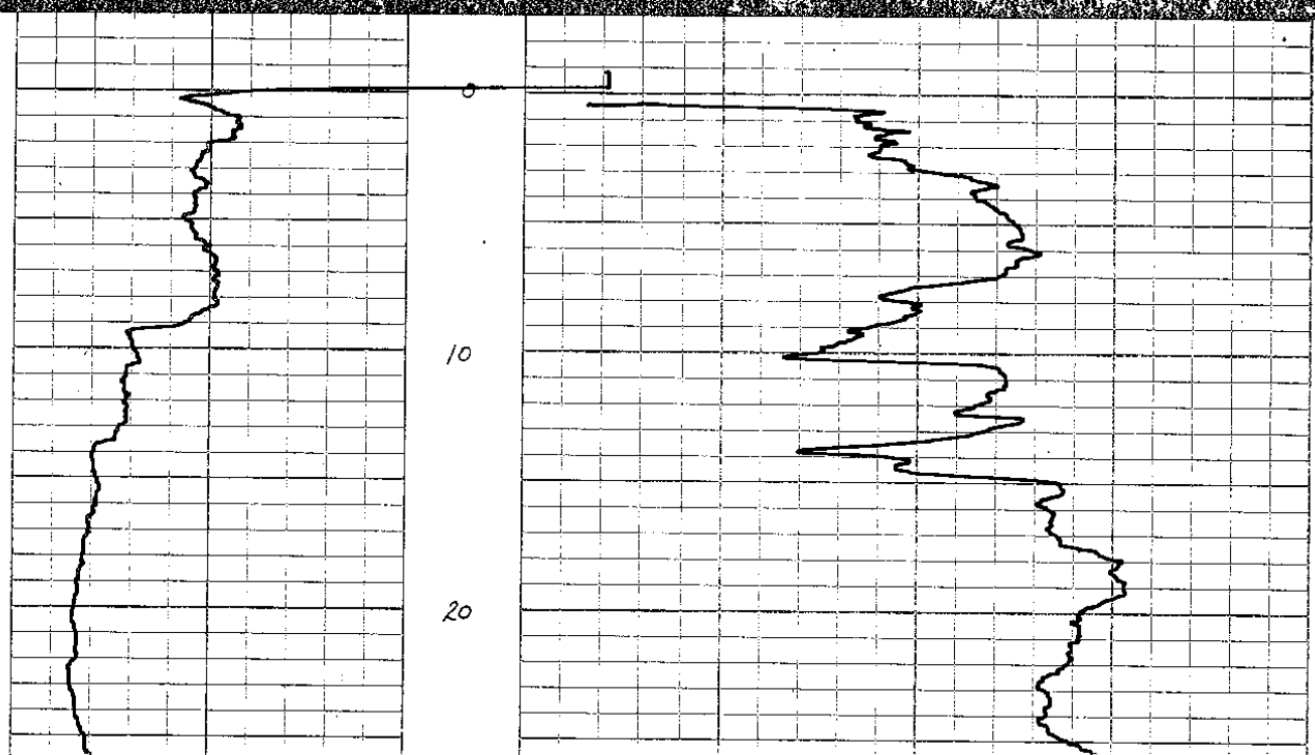
REMARKS

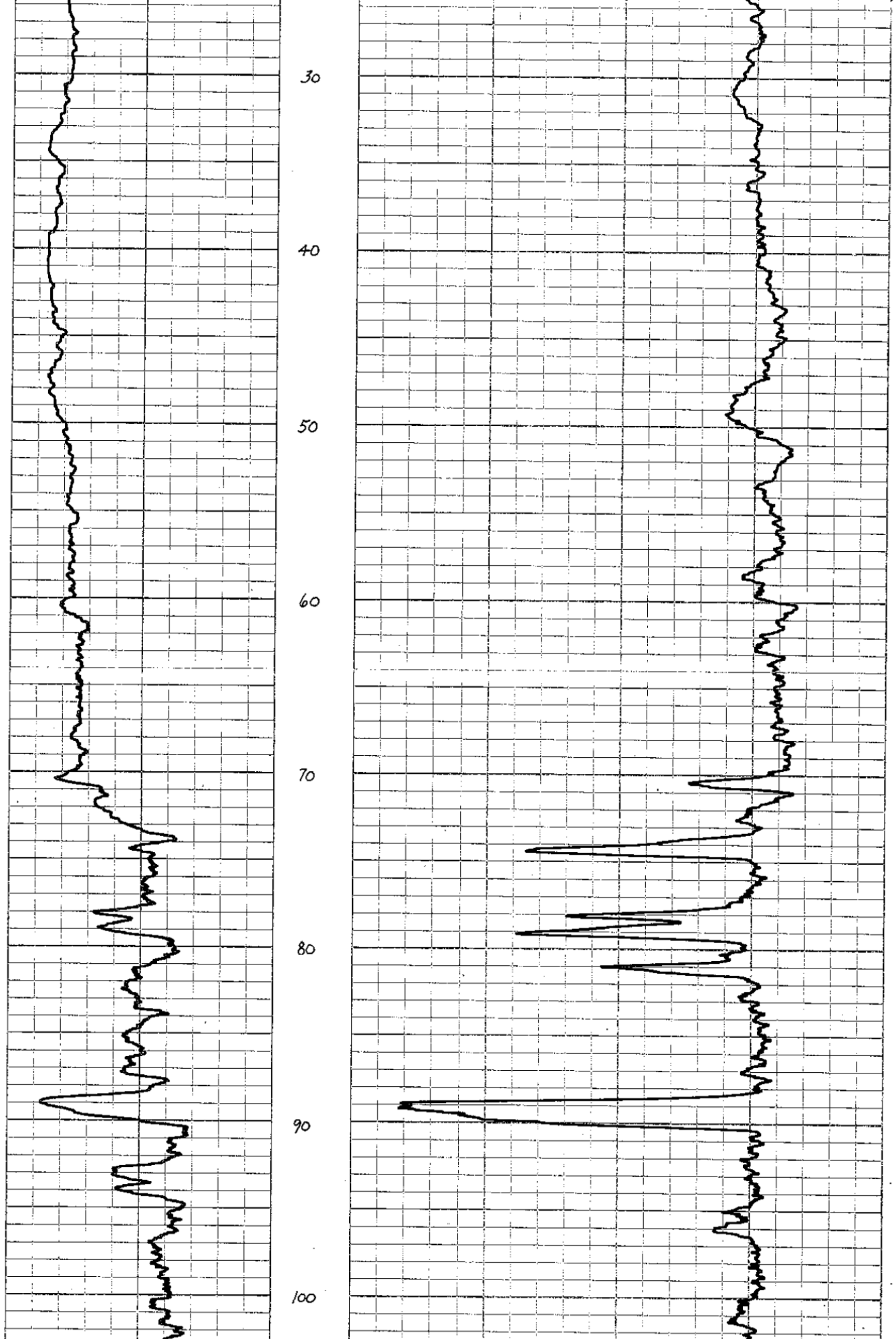
469

Reg. U.S. Pat. Off.

Gamma
1100 cps
TC = 57

Density
500 cps
TC = 3

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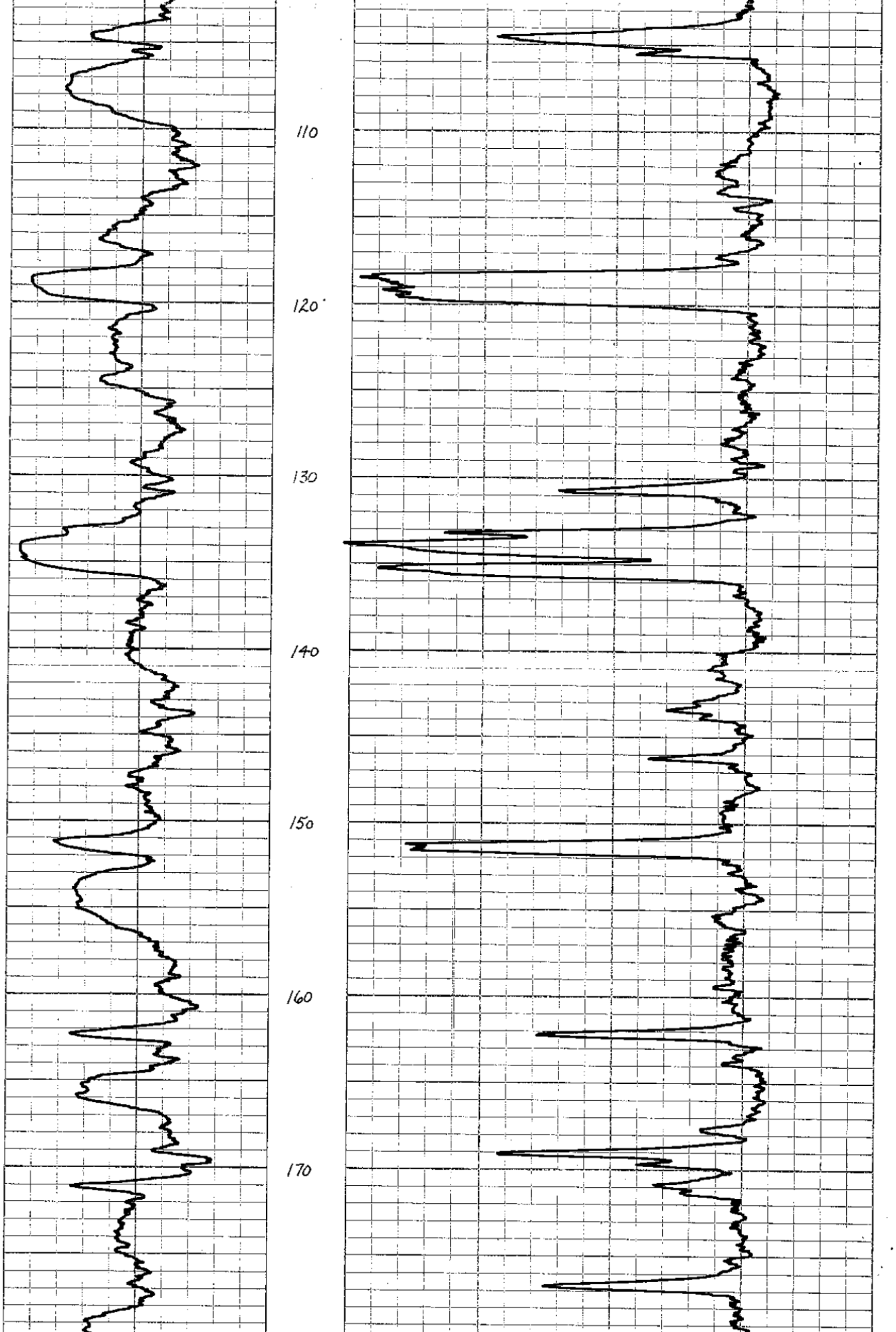
40
50
60
70
80
90
100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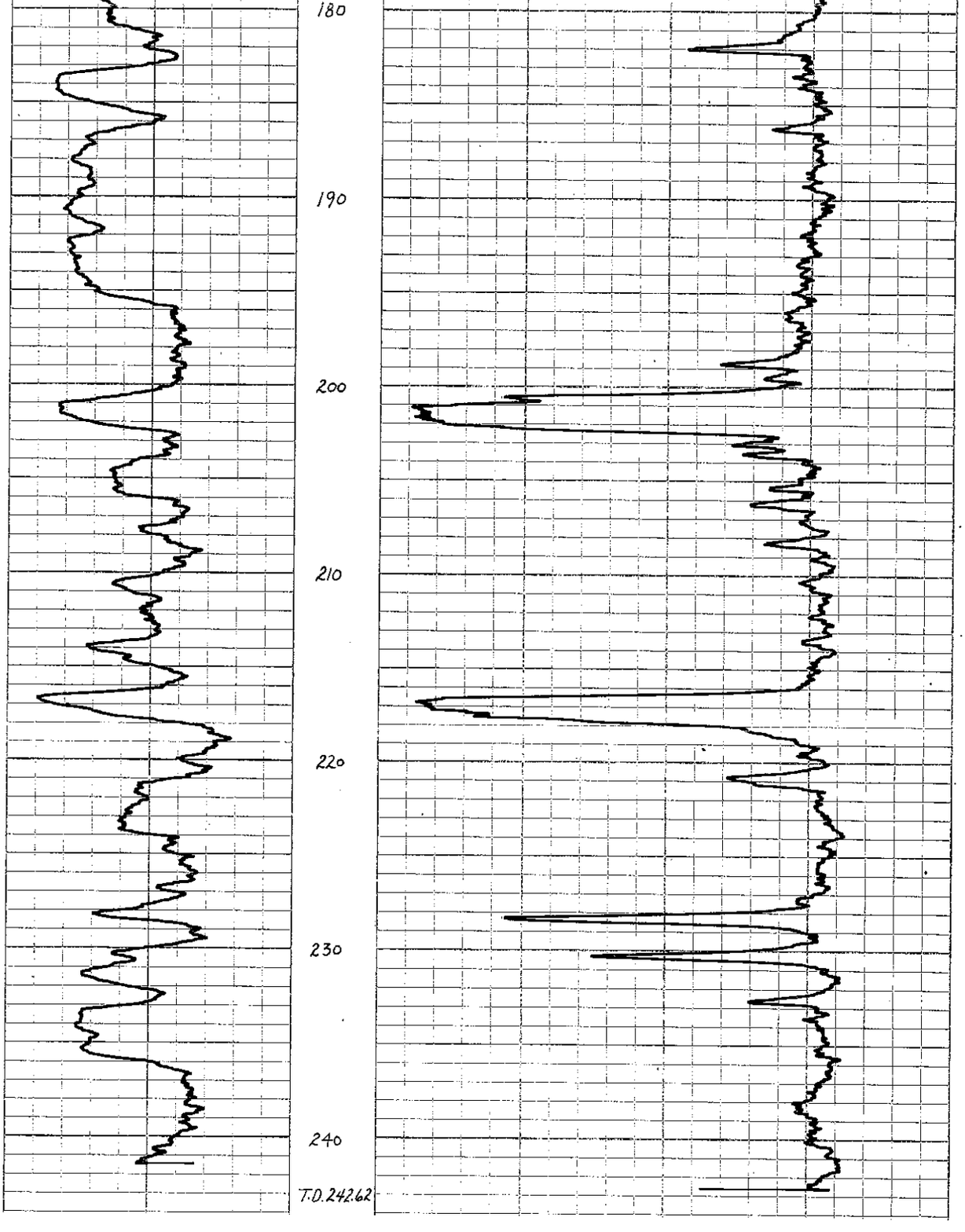
120
130
140
150
160
170


180
190
200
210
220
230
240
T.D. 242.62

PR Br. Dawling Creek 80-3A 80-26

Widco* WELL LOG

COMPANY Utah Mines Ltd.

AREA Pr. Br. Dawling Creek (C.L. 3683)

WELL B.C. 80-26

COUNTY Peace R. Land Dist. STATE British Columbia

COORDINATES E 200,635 m
N 539,971.5 m
S

ELEVATION D.F.
K.B.
G.L. 1198 ft

LOCATION Pr. Br. Dawling Creek

WELL B.C. 80-26

COMPANY Utah Mines Ltd.

	Run No. 1	Run No. 2
Date	June 28, 1980	
First Reading	100.98 m	
Last Reading	0	
Footage Logged	102.41 m	
Bottom (Driller)	102.41 m	
Casing (From Log)	41.8 m	
Casing (Driller)	42.98 m	
Casing Size	HW - 114.3 mm	
Bit Size	HQ - 96.0 mm	
Bit Size		

MUD	Run No. 1	Run No. 2
Nature		
Density		
Viscosity	@ °F	@ °F
Resistivity	@ °F	@ °F
Res. @ BHT	@ °F	@ °F
pH		
Circ. Temp.		
B.H. Temp.		
Logged by		
Witnessed by		

REMARKS

469

® Reg. U.S. Pat. Off.

Gamma
100 cps

Density
500 cps

0m

10

20

30

40

50

60

70

80

90

100

T.D. 102.41 m

R. Bri. Dowling Creek 80(3)A 80-26

Widco* WELL LOG

COMPANY Utah Mines Ltd.
AREA Bri. Dowling Creek (C.L. 3653)
WELL B.C. 80-26
COUNTY Peace R. Land Dist. STATE British Columbia

COORDINATES 6 200 535.6 m N
N 559 911.5 m E
S
ELEVATION 1181.6 m
D.F.
K.B.
G.L.

COMPANY Utah Mines Ltd.
WELL B.C. 80-26
LOCATION Bri. Dowling Creek

	Run No. 1	Run No. 2
Date	June 22, 1980	
First Reading	101.42 m	
Last Reading	0	
Footage Logged	102.41 m	
Bottom (Driller)	102.41 m	
Casing (From Log)	43.0 m	
Casing (Driller)	42.98 m	
Casing Size	HW 114.3 mm	
Bit Size	HQ 96.0 mm	
Bit Size		

MUD	Run No. 1	Run No. 2
Nature		
Density		
Viscosity	@ °F	@ °F
Resistivity	@ °F	@ °F
Res. @ BHT	@ °F	@ °F
pH		
Circ. Temp.		
B.H. Temp.		
Logged by		
Witnessed by		

REMARKS

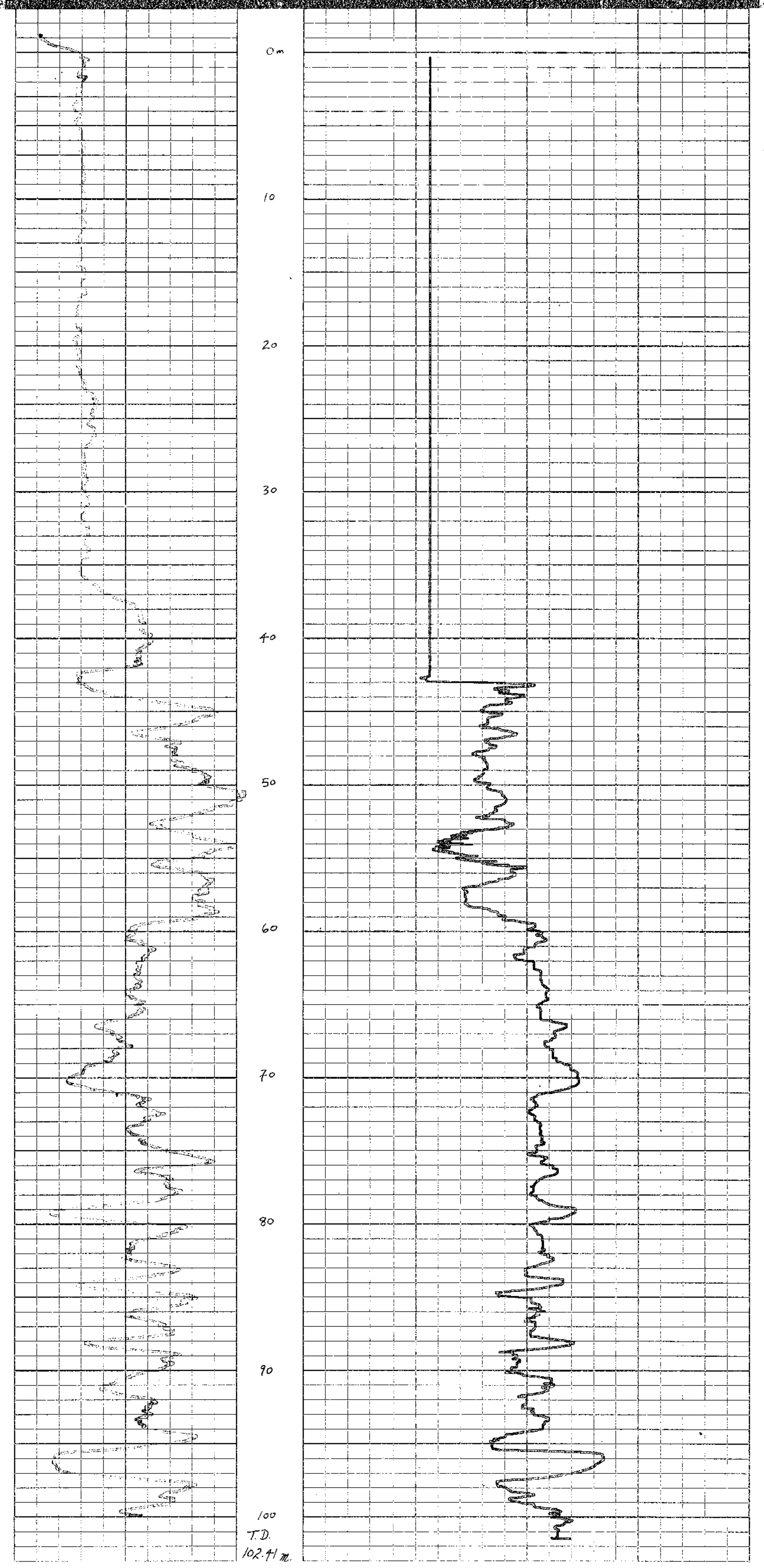
469

* Reg. U.S. Pat. Off.

FO-139

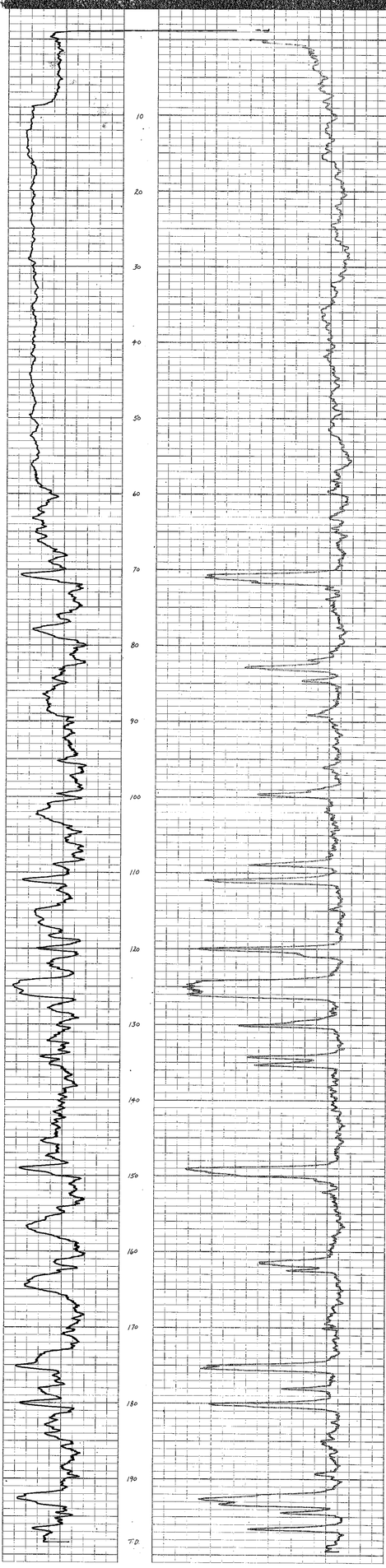
Gamma 100 cps

Resistivity 60 ohms/in



Widco® WELL LOG

469



UTAH MINES LTD.

EXPLORATION DEPARTMENT

SUITE 1600, 1050 W. PENDER STREET • VANCOUVER, B.C., CANADA V6E 3S7

(604) 683-6921

024

January 16, 1981

Mr. Paul Hagan
Coal Administrator
Ministry of Energy, Mines &
Petroleum Resources
Parliament Buildings
Victoria, B. C.

Dear Paul,

Re: Report of Exploration Activities -
Bri-Dowling Creek Property

The attached flotation test results were received from our lab yesterday and are being forwarded to you in duplicate for inclusion in the above referenced report. These results complete the analytical work for samples from holes BC-80-19, BC-80-24, 25, 26 and 27.

Yours truly,

R. B. Anderson
Senior Geologist

REFERRED TO	DATE	INITIALS
C.G.C.	4/21	
D.G.G.C.		
C.C.		
F.M.C.		
M.T.O.R.		
P.L.S.R.		

Alex, please place with report.
Thanks
Paul

PR-Bri-Dowling Creek 80(4)A

APPENDIX II

ANALYTICAL DATA FOR
1980 DIAMOND DRILL HOLES

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-12

3/8" X 0

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS SULFATE SULFUR AS % S	AIR DRY BASIS PYRITIC SULFUR	AIR DRY BASIS ORGANIC SULFUR	AIR DRY BASIS TOTAL	MOISTURE FREE BASIS SULFATE SULFUR AS % S	MOISTURE FREE BASIS PYRITIC SULFUR	MOISTURE FREE BASIS ORGANIC SULFUR	MOISTURE FREE BASIS TOTAL
SAMPLE #1	<0.01	0.29	0.49	0.78	<0.01	0.29	0.50	0.79

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS % K2O	AIR DRY BASIS % Na2O	AIR DRY BASIS % Cl	MOISTURE FREE BASIS % K2O	MOISTURE FREE BASIS % Na2O	MOISTURE FREE BASIS % Cl
SAMPLE #1	<0.01	0.04	0.02	<0.01	0.04	0.02

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	1.78	64

BRI - DOWLING CREEK

Hole #BC-80-12

Sample #1 226.09-227.85 Meters

Flotation Products

Size	% Weight
3/8" X 28M	93.03
28M X 0	6.97
Total	100.00

28 Mesh X 0 Fraction

	Moisture Free Basis												
	Elementary Data							% Distribution					
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	84.54	6 1/2	10.12	0.97	27.27	62.61	13568	45.76	92.34	89.29	95.39	95.50
Conc. II	5.51	2	32.61	0.92	23.95	43.44	9708	9.61	5.74	5.11	4.31	4.45
Refuse	9.95	0	83.84	0.17	14.51	1.65	62	44.63	1.92	5.60	0.30	0.05
Total	100.00		18.69	0.89	25.82	55.49	12011	100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

ERI-DONLING CREEK COAL

HOLE #BC-80-12

HEAD ANALYSIS

ULTIMATE ANALYSIS

SAMPLE #1

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.14	--
% CARBON	63.32	64.05
% HYDROGEN	4.07	4.12
% NITROGEN	1.16	1.17
% CHLORINE	0.04	0.04
% SULFUR	0.78	0.79
% ASH	23.61	23.88
% OXYGEN (DIFF.)	5.88	5.95
TOTAL	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #DC-80-12
SAMPLE #1
3/8" X 0
226.09-227.85 METERS
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	53.30
Alumina,Al2O3	37.00
Titania,TiO2	1.04
Ferric oxide,Fe2O3	1.88
Lime,CaO	1.86
Magnesia,MgO	0.22
Potassium oxide,K2O	0.48
Sodium oxide,Na2O	0.66
Sulfur trioxide,SO3	1.01
Phos. pentoxide,P2O5	0.96
Undetermined	1.59
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.23
SILICA VALUE	= 93.08
BASE: ACID RATIO	= 0.06
FOULING INDEX	= 0.04
SLAGGING INDEX	= 0.04

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-J3

3/8" X 0

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS SULFATE SULFUR AS % S	AIR DRY BASIS PYRITIC SULFUR	AIR DRY BASIS ORGANIC SULFUR	AIR DRY BASIS TOTAL	MOISTURE FREE BASIS SULFATE SULFUR AS % S	MOISTURE FREE BASIS PYRITIC SULFUR	MOISTURE FREE BASIS ORGANIC SULFUR	MOISTURE FREE BASIS TOTAL
SAMPLE #1	<0.01	0.18	0.77	0.95	<0.01	0.18	0.78	0.96
SAMPLE #2	<0.01	0.03	0.69	0.72	<0.01	0.03	0.70	0.73
SAMPLE #3	<0.01	0.08	0.82	0.90	<0.01	0.08	0.83	0.91

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS % K2O	AIR DRY BASIS % Na2O	AIR DRY BASIS % Cl	MOISTURE FREE BASIS % K2O	MOISTURE FREE BASIS % Na2O	MOISTURE FREE BASIS % Cl
SAMPLE #1	<0.01	0.02	0.02	<0.01	0.02	0.02
SAMPLE #2	<0.01	0.04	<0.01	<0.01	0.04	<0.01
SAMPLE #3	<0.01	0.02	0.01	<0.01	0.02	0.01

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	4.31	64
SAMPLE #2	2.99	72
SAMPLE #3	2.77	80

BRI - DOWLING CREEK

Hole #BC-80-13

Sample #1 27.83-28.36 Meters

Flotation Products

Sample #1		Sample #2		Sample #3	
Size	% Weight	Size	% Weight	Size	% Weight
3/8" X 28M	92.62	3/8" X 28M	93.21	3/8" X 28M	92.55
28M X 0	7.38	28M X 0	6.79	28M X 0	7.45
Total	100.00	Total	100.00	Total	100.00

28 Mesh X 0 Fraction

	Moisture Free Basis											
	Elementary Data							% Distribution				
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	67.09	8	6.80	0.94	30.39	62.81	14275	42.73	54.07	68.47	70.77	70.49
Conc. II	30.10	)										
		)										
Refuse	2.81	) →	7 15.58	1.63	28.53	52.89	12185	57.27	45.93	31.53	29.23	29.51
Total	100.00		10.68	1.17	29.78	59.54	13587	100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-13

HEAD ANALYSIS

ULTIMATE ANALYSIS

SAMPLE #1

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.09	--
% CARBON	75.60	76.43
% HYDROGEN	4.85	4.90
% NITROGEN	1.11	1.12
% CHLORINE	0.03	0.03
% SULFUR	0.95	0.96
% ASH	11.42	11.55
% OXYGEN (DIFF.)	4.95	5.01
TOTAL	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-13
SAMPLE #1
3/8" X 0
27.83-28.36 METERS
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	44.40
Alumina,Al2O3	33.90
Titania,TiO2	1.11
Ferric oxide,Fe2O3	2.41
Lime,CaO	4.14
Magnesia,MgO	0.32
Potassium oxide,K2O	0.73
Sodium oxide,Na2O	0.87
Sulfur trioxide,SO3	1.06
Phos. pentoxide,P2O5	6.90
Undetermined	4.16
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.16
SILICA VALUE	= 86.60
BASE: ACID RATIO	= 0.11
FOULING INDEX	= 0.09
SLAGGING INDEX	= 0.10

BRI - DOWLING CREEK

Hole #BC-80-13

28M X 0

Flotation Products

Sample #2 (62.33-64.01 Meters)

	Moisture Free Basis											
	Elementary Data							% Distribution				
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	75.09	8	10.90	0.84	28.95	60.25	13602	36.64	86.08	81.60	88.52	88.23
Conc. II	12.02	7 1/2	27.14	0.72	25.86	47.00	10794	14.60	11.87	11.71	11.05	11.20
Refuse	12.89	0	84.50	0.12	13.79	1.71	505	48.76	2.05	6.69	0.43	0.57
Total	100.00		22.34	0.73	26.55	51.11	11576	100.00	100.00	100.00	100.00	100.00

Sample #3 (71.68-72.63 Meters)

	Moisture Free Basis											
	Elementary Data							% Distribution				
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	86.65	8 1/2	8.70	0.92	31.08	60.22	13712	58.43	89.35	88.30	92.19	91.77
Conc. II	9.70	)										
Refuse	3.65	) → 6 1/2	40.17	0.71	26.73	33.10	7976	41.57	10.65	11.70	7.81	8.23
Total	100.00		12.90	0.89	30.50	56.60	12946	100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-13
HEAD ANALYSIS

ULTIMATE ANALYSIS

SAMPLE #2

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.01	--
% CARBON	65.96	66.63
% HYDROGEN	4.43	4.48
% NITROGEN	0.90	0.91
% CHLORINE	0.02	0.02
% SULFUR	0.72	0.73
% ASH	20.90	21.11
% OXYGEN (DIFF.)	6.06	6.12
TOTAL	100.00	100.00

ULTIMATE ANALYSIS

SAMPLE #3

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.01	--
% CARBON	74.49	75.25
% HYDROGEN	4.57	4.62
% NITROGEN	1.09	1.10
% CHLORINE	0.06	0.06
% SULFUR	0.90	0.91
% ASH	11.55	11.67
% OXYGEN (DIFF.)	6.33	6.39
TOTAL	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-13
SAMPLE #2
3/8" X 0
62.33-64.01 METERS
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	54.60
Alumina, Al2O3	30.90
Titania, TiO2	1.15
Ferric oxide, Fe2O3	6.02
Lime, CaO	1.36
Magnesia, MgO	0.65
Potassium oxide, K2O	0.76
Sodium oxide, Na2O	0.80
Sulfur trioxide, SO3	1.37
Phos. pentoxide, P2O5	1.08
Undetermined	1.31
Total	100.00

ALKALIES AS Na2O, DRY COAL BASIS	= 0.27
SILICA VALUE	= 87.18
BASE: ACID RATIO	= 0.11
FOULING INDEX	= 0.09
SLAGGING INDEX	= 0.08

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-13
SAMPLE #3
3/8" X 0
71.68-72.63 METERS
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	26.20
Alumina, Al2O3	18.70
Titania, TiO2	0.68
Ferric oxide, Fe2O3	31.10
Lime, CaO	6.92
Magnesia, MgO	0.66
Potassium oxide, K2O	0.31
Sodium oxide, Na2O	0.56
Sulfur trioxide, SO3	8.54
Phos. pentoxide, P2O5	2.33
Undetermined	4.00
Total	100.00

ALKALIES AS Na2O, DRY COAL BASIS	= 0.09
SILICA VALUE	= 40.38
BASE: ACID RATIO	= 0.87
FOULING INDEX.	= 0.49
SLAGGING INDEX	= 0.79

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: [redacted] 984-0221
AREA CODE: 604
TELEX: 043-52597

CHEMEX LABS LTD.

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. SP 606

TO: Utah Mines Ltd.
1600-1050 W. Pender St.
Vancouver, B.C.
V6E 3S7

ATTN: John Deighton

INVOICE NO. 36460

RECEIVED June 9/80

ANALYSED June 25/80

SAMPLE NO. :	Lower Concentration Limit (PPM)	26.35-26.65m Deighton's Coal and Pyrite T59
Antimony	50	bcl
Arsenic	50	bcl
Barium	5	
Beryllium	5	20
Bismuth	5	
Boron	20	50
Cadmium	20	bcl
Calcium	0.05%	
Chromium	10	200
Cobalt	10	20
Copper	1	15
Gallium	5	
Germanium	20	
Indium	50	
Iron	0.05%	>20%
Lead	5	30
Magnesium	0.02%	
Manganese	5	300
Molybdenum	10	<100
Nickel	5	30
Niobium	50	
Silver	1	1
Strontium	2	
Tellurium	200	
Thorium	200	bcl
Tin	10	50
Titanium	5	500
Vanadium	20	300
Zinc	50	100
Zirconium	20	300

NOTE: Ash content of coal is 14%. Spectrograph analysis was carried out on ash sample.

SEMI QUANTITATIVE SPECTROGRAPHIC ANALYSES

>5000 ppm = > 5000 ppm		50 ppm	= 25–100 ppm
5000 ppm = 2500–10000 ppm		20 ppm	= 10–50 ppm
2000 ppm = 1000–4000 ppm		10 ppm	= 5–20 ppm
1000 ppm = 500–2000 ppm		5 ppm	= 2–10 ppm
500 ppm = 250–1000 ppm		2 ppm	= 1–4 ppm
200 ppm = 100–400 ppm		1 ppm	= 0.5–2 ppm
100 ppm = 50–200 ppm		bcl	= below concentration limit

Ranges for Iron, Calcium & Magnesium are reported in %

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: .....

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

CHEMEX LABS LTD.

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 53409

TO: Utah Mines Ltd.,
1600 -1050 W. Pender St.,
Vancouver, B.C.
V6E 3S7

INVOICE NO. 36349

RECEIVED June 9/80

ATTN: John Deighton

ANALYSED June 19/80

SAMPLE NO. :	PPB Au
Dayton's Coal and Pyrite 759 26.35-26.65m	< 10

CERTIFIED BY: Hart Biddle

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-14

3/8" X 0

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS				MOISTURE FREE BASIS			
	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL
SAMPLE #1	<0.01	0.11	0.42	0.53	<0.01	0.11	0.43	0.54

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS			MOISTURE FREE BASIS		
	% K2O	% Na2O	% Cl	% K2O	% Na2O	% Cl
SAMPLE #1	<0.01	0.02	0.01	<0.01	0.02	0.01

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	3.40	60

BRI - DOWLING CREEK

Hole #BC-80-14

(106.55-107.92) (108.00-108.30) Meters

Flotation Products

Size	% Weight
3/8" X 28M	91.86
28M X 0	8.14
Total	100.00

28 Mesh X 0 Fraction

	Moisture Free Basis												
			Elementary Data					% Distribution					
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	82.88	5 1/2	8.59	0.60	27.24	64.17	13807	50.30	88.12	84.87	89.77	89.63
Conc. II	12.47	2	27.29	0.47	24.83	47.88	10290	24.04	10.46	11.64	10.08	10.05
Refuse	4.65	0	78.08	0.17	19.99	1.93	881	25.66	1.42	3.49	0.15	0.32
Total	100.00		14.15	0.56	26.60	59.25	12767	100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #DC-80-14

SAMPLE #1

3//8" X 0

106.55-107.92 METERS
108.00-108.30 METERS

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	45.70
Alumina,Al2O3	27.90
Titania,TiO2	1.02
Ferric oxide,Fe2O3	16.30
Lime,CaO	1.74
Magnesia,MgO	1.63
Potassium oxide,K2O	0.68
Sodium oxide,Na2O	1.21
Sulfur trioxide,SO3	1.83
Phos. pentoxide,P2O5	1.65
Undetermined	0.34
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.26
SILICA VALUE	= 69.91
BASE: ACID RATIO	= 0.29
FOULING INDEX	= 0.35
SLAGGING INDEX	= 0.16

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-15

3/8" X 0

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS				MOISTURE FREE BASIS			
	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL
SAMPLE #1	<0.01	0.04	0.46	0.50	<0.01	0.04	0.47	0.51

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS			MOISTURE FREE BASIS		
	% K2O	% Na2O	% Cl	% K2O	% Na2O	% Cl
SAMPLE #1	<0.01	0.02	0.01	<0.01	0.02	0.01

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	1.99	60

BRI - DOWLING CREEK

Hole #BC-80-15

Sample #1 113.23-115.08 Meters

Flotation Products

Size	% Weight
3/8" X 28M	91.44
28M X 0	8.56
Total	100.00

28 Mesh X 0 Fraction

	Moisture Free Basis											
	Elementary Data							% Distribution				
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	75.40	4	7.06	0.65	25.52	67.42	14144	28.25	83.19	79.68	89.17	88.34
Conc. II	10.62	2	20.14	0.63	24.28	55.58	11763	11.35	11.38	10.68	10.35	10.35
Refuse	13.98	0	81.42	0.23	16.65	1.93	1138	60.40	5.43	9.64	0.48	1.31
Total	100.00		18.85	0.59	24.15	57.00	12073	100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-15
SAMPLE #1
3/8" X 0
113.23-115.08 METERS
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	54.70
Alumina, Al2O3	37.00
Titania, TiO2	1.30
Ferric oxide, Fe2O3	0.36
Lime, CaO	1.68
Magnesia, MgO	0.16
Potassium oxide, K2O	0.34
Sodium oxide, Na2O	1.16
Sulfur trioxide, SO3	0.27
Phos. pentoxide, P2O5	0.68
Undetermined	2.35
Total	100.00

ALKALIES AS Na2O, DRY COAL BASIS	= 0.26
SILICA VALUE	= 96.13
BASE: ACID RATIO	= 0.04
FOULING INDEX	= 0.05
SLAGGING INDEX	= 0.02

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #BC-80-18

3/8" X 0

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS SULFATE SULFUR AS % S	AIR DRY BASIS PYRITIC SULFUR	AIR DRY BASIS ORGANIC SULFUR	AIR DRY BASIS TOTAL	MOISTURE FREE BASIS SULFATE SULFUR AS % S	MOISTURE FREE BASIS PYRITIC SULFUR	MOISTURE FREE BASIS ORGANIC SULFUR	MOISTURE FREE BASIS TOTAL
SAMPLE #1	0.14	10.08	0.09	10.31	0.14	10.17	0.10	10.41
SAMPLE #2	0.01	0.02	0.92	0.95	0.01	0.02	0.93	0.96
SAMPLE #3	<0.01	0.04	0.46	0.50	<0.01	0.04	0.47	0.51

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS % K2O	AIR DRY BASIS % Na2O	AIR DRY BASIS % Cl	MOISTURE FREE BASIS % K2O	MOISTURE FREE BASIS % Na2O	MOISTURE FREE BASIS % Cl
SAMPLE #1	<0.01	0.01	<0.01	<0.01	0.01	<0.01
SAMPLE #2	<0.01	0.01	0.01	<0.01	0.01	0.01
SAMPLE #3	<0.01	0.02	0.01	<0.01	0.02	0.01

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	3.04	73
SAMPLE #2	4.71	66
SAMPLE #3	2.39	64

BRI - DOWLING CREEK

Hole #BC-80-18

Sample #1 106.29-106.68 Meters

Flotation Products

Sample #1		Sample #2		Sample #3	
Size	% Weight	Size	% Weight	Size	% Weight
3/8" X 28M	92.12	3/8" X 28M	93.00	3/8" X 28M	91.69
28M X 0	7.88	28M X 0	7.00	28M X 0	8.31
Total	100.00	Total	100.00	Total	100.00

28 Mesh X 0 Fraction

	Moisture Free Basis											
	Elementary Data							% Distribution				
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	19.09											
Conc. II	70.45											
Refuse	10.46	4 1/2	20.46	10.24	24.34	55.20	11700	100.00	100.00	100.00	100.00	100.00
Total	100.00		20.46	10.24	24.34	55.20	11700	100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-18

HEAD ANALYSIS

ULTIMATE ANALYSIS

SAMPLE #1

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	0.93	--
% CARBON	64.01	64.61
% HYDROGEN	4.03	4.07
% NITROGEN	0.75	0.76
% CHLORINE	0.02	0.02
% SULFUR	10.31	10.41
% ASH	19.64	19.82
% OXYGEN (DIFF.)	0.31	0.31
TOTAL	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-18

SAMPLE #1

3/8" X 0

106.29-106.68 METERS

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	24.40
Alumina,Al2O3	4.24
Titania,TiO2	0.31
Ferric oxide,Fe2O3	68.00
Lime,CaO	0.70
Magnesia,MgO	0.34
Potassium oxide,K2O	0.48
Sodium oxide,Na2O	0.13
Sulfur trioxide,SO3	1.00
Phos. pentoxide,P2O5	0.08
Undetermined	0.32
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.09
SILICA VALUE	= 26.11
BASE: ACID RATIO	= 2.41
FOULING INDEX	= 0.31
SLAGGING INDEX	= 25.05

BRI - DOWLING CREEK

Hole #BC-80-18

28M X 0

Flotation Products

Sample #2 (106.99-107.55 Meters)

	Moisture Free Basis											
	Elementary Data							% Distribution				
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	64.02	8 1/2	4.22	0.91	34.78	61.00	14676	29.70	54.38	67.45	67.46	67.87
Conc. II	31.80	)										
Refuse	4.18	) — 7 1/2	17.78	1.36	29.87	52.35	12363	70.30	45.62	32.55	32.54	32.13
Total	100.00		9.10	1.07	33.01	57.89	13844	100.00	100.00	100.00	100.00	100.00

Sample #3 (131.86-133.93 Meters)

	Moisture Free Basis											
	Elementary Data							% Distribution				
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	81.49	3 1/2	6.94	0.60	27.59	65.47	14207	40.26	87.32	83.53	90.37	89.83
Conc. II	11.27	1 1/2	23.74	0.54	26.66	49.60	11253	19.05	10.89	11.16	9.47	9.84
Refuse	7.24	0	78.93	0.14	19.72	1.35	575	40.69	1.79	5.31	0.16	0.33
Total	100.00		14.05	0.56	26.92	59.03	12887	100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-18

HEAD ANALYSIS

ULTIMATE ANALYSIS

SAMPLE #2

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.06	--
% CARBON	75.58	76.39
% HYDROGEN	4.95	5.00
% NITROGEN	1.19	1.20
% CHLORINE	0.01	0.01
% SULFUR	0.95	0.96
% ASH	10.96	11.08
% OXYGEN (DIFF.)	5.30	5.36
TOTAL	100.00	100.00

ULTIMATE ANALYSIS

SAMPLE #3

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.20	--
% CARBON	71.41	72.28
% HYDROGEN	4.51	4.56
% NITROGEN	0.86	0.87
% CHLORINE	0.01	0.01
% SULFUR	0.50	0.51
% ASH	16.04	16.23
% OXYGEN (DIFF.)	5.47	5.54
TOTAL	100.00	100.00

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL
HOLE #BC-80-18
SAMPLE #2
3/8" X 0
106.99-107.55 METERS
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	66.80
Alumina, Al2O3	18.10
Titania, TiO2	0.77
Ferric oxide, Fe2O3	5.05
Lime, CaO	1.68
Magnesia, MgO	0.85
Potassium oxide, K2O	1.94
Sodium oxide, Na2O	0.53
Sulfur trioxide, SO3	1.31
Phos. pentoxide, P2O5	0.65
Undetermined	2.32
Total	100.00

ALKALIES AS Na2O, DRY COAL BASIS	= 0.20
SILICA VALUE	= 89.81
BASE: ACID RATIO	= 0.12
FOULING INDEX	= 0.06
SLAGGING INDEX	= 0.11

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-18
SAMPLE #3
3/8" X 0
131.86-133.93 METERS
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	54.30
Alumina,Al2O3	34.70
Titania,TiO2	1.26
Ferric oxide,Fe2O3	3.71
Lime,CaO	0.61
Magnesia,MgO	0.70
Potassium oxide,K2O	0.53
Sodium oxide,Na2O	0.91
Sulfur trioxide,SO3	0.60
Phos. pentoxide,P2O5	0.89
Undetermined	1.79
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.20
SILICA VALUE	= 91.54
BASE: ACID RATIO	= 0.07
FOULING INDEX	= 0.07
SLAGGING INDEX	= 0.04

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-19

3/8" X 0

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS SULFATE SULFUR AS % S	AIR DRY BASIS PYRITIC SULFUR	AIR DRY BASIS ORGANIC SULFUR	AIR DRY BASIS TOTAL	MOISTURE FREE BASIS SULFATE SULFUR AS % S	MOISTURE FREE BASIS PYRITIC SULFUR	MOISTURE FREE BASIS ORGANIC SULFUR	MOISTURE FREE BASIS TOTAL
SAMPLE #1	<0.01	0.19	0.47	0.66	<0.01	0.19	0.48	0.67
SAMPLE #2	0.01	0.24	0.68	0.93	0.01	0.24	0.69	0.94
SAMPLE #3	0.01	0.03	0.45	0.49	0.01	0.03	0.45	0.49

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS % K2O	AIR DRY BASIS % Na2O	AIR DRY BASIS % Cl	MOISTURE FREE BASIS % K2O	MOISTURE FREE BASIS % Na2O	MOISTURE FREE BASIS % Cl
SAMPLE #1	<0.01	0.02	0.01	<0.01	0.02	0.01
SAMPLE #2	<0.01	0.02	0.01	<0.01	0.02	0.01
SAMPLE #3	<0.01	0.07	0.01	<0.01	0.07	0.01

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	1.52	66
SAMPLE #2	2.06	61
SAMPLE #3	2.57	70

BRI - DOWLING CREEK

Hole #BC-80-19

Sample #1 413.86-415.72 Meters

Flotation Products

Sample #1		Sample #2		Sample #3	
Size	% Weight	Size	% Weight	Size	% Weight
3/8" X 28M	91.99	3/8" X 28M	91.81	3/8" X 28M	91.07
28M X 0	8.01	28M X 0	8.19	28M X 0	8.93
Total	100.00	Total	100.00	Total	100.00

28 Mesh X 0 Fraction

Moisture Free Basis

			Elementary Data					% Distribution				
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	88.10	6 1/2	2.01	0.74	28.56	69.43	15075	45.13	89.44	88.91	90.25	90.16
Conc. II	9.40	)										
Refuse	2.50	)—3 1/2	18.09	0.65	26.38	55.53	12178	54.87	10.56	11.09	9.75	9.84
Total	100.00		3.92	0.73	28.30	67.78	14730	100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-19

HEAD ANALYSIS

ULTIMATE ANALYSIS

SAMPLE #1

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.03	--
% CARBON	83.83	84.70
% HYDROGEN	4.82	4.87
% NITROGEN	1.02	1.03
% CHLORINE	0.01	0.01
% SULFUR	0.66	0.67
% ASH	3.39	3.43
% OXYGEN (DIFF.)	5.24	5.29
TOTAL	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-19
SAMPLE #1
3/8" X 0
413.86-415.72 METERS
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	50.20
Alumina,Al2O3	16.10
Titania,TiO2	0.74
Ferric oxide,Fe2O3	15.90
Lime,CaO	5.32
Magnesia,MgO	2.65
Potassium oxide,K2O	0.77
Sodium oxide,Na2O	1.56
Sulfur trioxide,SO3	4.66
Phos. pentoxide,P2O5	0.56
Undetermined	1.54
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.07
SILICA VALUE	= 67.77
BASE: ACID RATIO	= 0.39
FOULING INDEX	= 0.61
SLAGGING INDEX	= 0.26

BRI - DOWLING CREEK

Hole #BC-80-19

28M X 0

Flotation Products

Sample #2 (424.62-425.50 Meters)

	Moisture Free Basis											
		Elementary Data						% Distribution				
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	79.68	8	4.31	1.03	28.40	67.29	14777	55.21	82.76	82.56	80.78	81.55
Conc. II	19.20											
Refuse	1.12	→ 1	13.71	0.84	23.52	62.77	13105	44.79	17.24	17.44	19.22	18.45
Total	100.00		6.22	0.99	27.41	66.37	14437	100.00	100.00	100.00	100.00	100.00

Sample #3 (433.40-436.53 Meters)

	Moisture Free Basis											
		Elementary Data						% Distribution				
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	75.56	8	10.47	0.68	26.84	62.69	13667	32.51	88.93	80.78	93.69	93.63
Conc. II	6.92	4 1/2	33.43	0.55	23.32	43.25	9659	9.50	6.57	6.43	5.92	6.06
Refuse	17.52	0	80.54	0.15	18.33	1.13	193	57.99	4.50	12.79	0.39	0.31
Total	100.00		24.34	0.58	25.11	50.55	11029	100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #BC-80-19

HEAD ANALYSIS

ULTIMATE ANALYSIS

SAMPLE #2

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	0.89	--
% CARBON	81.68	82.41
% HYDROGEN	4.73	4.77
% NITROGEN	1.04	1.05
% CHLORINE	0.01	0.01
% SULFUR	0.93	0.94
% ASH	7.33	7.40
% OXYGEN (DIFF.)	3.39	3.42
TOTAL	100.00	100.00

ULTIMATE ANALYSIS

SAMPLE #3

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.00	--
% CARBON	61.58	62.20
% HYDROGEN	3.91	3.95
% NITROGEN	0.74	0.75
% CHLORINE	0.02	0.02
% SULFUR	0.49	0.49
% ASH	25.76	26.02
% OXYGEN (DIFF.)	6.50	6.57
TOTAL	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-19
SAMPLE #2
3/8" X 0
424.62-425.50 METERS
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	50.60
Alumina,Al2O3	30.80
Titania,TiO2	1.19
Ferric oxide,Fe2O3	2.10
Lime,CaO	2.26
Magnesia,MgO	0.31
Potassium oxide,K2O	1.46
Sodium oxide,Na2O	1.02
Sulfur trioxide,SO3	1.91
Phos. pentoxide,P2O5	4.28
Undetermined	4.07
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.15
SILICA VALUE	= 91.55
BASE: ACID RATIO	= 0.09
FOULING INDEX	= 0.09
SLAGGING INDEX	= 0.08

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-19
SAMPLE #3
3/8" X 00
433.40-436.553 METERS
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	52.80
Alumina,Al2O3	28.80
Titania,TiO2	1.01
Ferric oxide,Fe2O3	7.02
Lime,CaO	2.41
Magnesia,MgO	1.99
Potassium oxide,K2O	1.15
Sodium oxide,Na2O	0.94
Sulfur trioxide,SO3	1.05
Phos. pentoxide,P2O5	0.44
Undetermined	2.39
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.44
SILICA VALUE	= 82.22
BASE: ACID RATIO	= 0.16
FOULING INDEX	= 0.15
SLAGGING INDEX	= 0.08

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-19

458.14-460.01 METERS

SAMPLE #4 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	86.76	86.76
28M X 0	13.24	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	21.33	4.03	0.84	26.61	69.36	14638	1	15.95	21.31	21.64	21.63	21.60
CONC II.	75.93	5.76	0.84	26.12	68.12	14405	1	84.05	78.69	78.36	78.37	78.40
REFUSE	2.74											
TOTAL	100.00	5.39	0.84	26.23	68.38	14455		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-19

481.66-483.09 METERS

SAMPLE #5 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	88.54	88.54
28M X 0	11.46	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	79.45	9.28	0.80	32.91	57.81	13561	5	44.77	86.30	80.00	90.33	89.88
CONC II.	15.72	44.26	0.49	31.81	23.93	5904	1	55.23	13.70	20.00	9.67	10.12
REFUSE	4.83											
TOTAL	100.00	16.47	0.74	32.68	50.85	11987		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-19

515.18-515.77 METERS

SAMPLE #6 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	83.54	83.54
28M X 0	16.46	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	52.49	5.44	1.00	30.59	63.97	14407	8	18.05	60.90	60.08	58.44	61.85
CONC II.	43.86	27.28	0.71	22.46	50.26	9820	5 1/2	81.95	39.10	39.92	41.56	38.15
REFUSE	3.65											
TOTAL	100.00	15.82	0.86	26.73	57.45	12228		100.00	100.00	100.00	100.00	100.00

BRI - DOWLING CREEK

Hole #BC-80-20

Sample #1 130.54-132.89 Meters

Flotation Products

Size	% Weight
3/8" X 28M	91.82
28M X 0	8.18
Total	100.00

28 Mesh X 0 Fraction

	Moisture Free Basis											
	Elementary Data							% Distribution				
Product	% Weight	FSI	% Ash	% S	% VM	% FC	BTU	Ash	S	VM	FC	BTU
Conc. I	75.22	5	8.27	0.63	26.43	65.30	13895	32.13	82.43	79.42	88.33	88.24
Conc. II	12.36	2	22.97	0.68	25.89	51.14	11222	14.66	14.61	12.78	11.37	11.71
Refuse	12.42	0	82.93	0.14	15.71	1.36	48	53.21	2.96	7.80	0.30	0.05
Total	100.00		19.36	0.58	25.03	55.61	11845	100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-20

3/8" X 0

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS				MOISTURE FREE BASIS			
	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL
SAMPLE #1	<0.01	0.07	0.41	0.48	<0.01	0.07	0.42	0.49

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS			MOISTURE FREE BASIS		
	% K2O	% Na2O	% Cl	% K2O	% Na2O	% Cl
SAMPLE #1	<0.01	0.02	0.01	<0.01	0.02	0.01

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	2.32	67

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-20
SAMPLE #1
3/8" X 0
130.54-132.89 METERS
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	45.50
Alumina,Al2O3	26.70
Titania,TiO2	0.96
Ferric oxide,Fe2O3	16.70
Lime,CaO	2.73
Magnesia,MgO	2.31
Potassium oxide,K2O	0.35
Sodium oxide,Na2O	0.71
Sulfur trioxide,SO3	1.96
Phos. pentoxide,P2O5	0.42
Undetermined	1.66
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.24
SILICA VALUE	= 67.67
BASE: ACID RATIO	= 0.31
FOULING INDEX	= 0.22
SLAGGING INDEX	= 0.15

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-21

121.45-123.67 METERS

SAMPLE #1 (28M X 0)

FLOTATION TEST

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	57.93	6.53	0.69	27.86	65.61	14213		17.49	57.72	63.12	71.98	70.37
CONC II.	26.20	18.02	0.81	25.75	56.23	12136		21.83	30.59	26.39	27.90	27.18
REFUSE	15.87	82.71	0.51	16.90	0.39	1803		60.68	11.69	10.49	0.12	2.45
TOTAL	100.00	21.63	0.69	25.57	52.80	11700		100.00	100.00	100.00	100.00	100.00

STRUCTURES

SIZE	% WEIGHT	CUM. %WT.
3/8" X 28M	94.02	94.02
28M X 0	5.98	100.00
TOTAL	100.00	

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-21

SAMPLE #1

3/8" X 0

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	55.60
Alumina,Al2O3	35.80
Titania,TiO2	1.37
Ferric oxide,Fe2O3	1.72
Lime,CaO	0.46
Magnesia,MgO	0.26
Potassium oxide,K2O	0.38
Sodium oxide,Na2O	0.66
Sulfur trioxide,SO3	0.53
Phos. pentoxide,P2O5	0.67
Undetermined	2.55
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.21
SILICA VALUE	= 95.80
BASE: ACID RATIO	= 0.04
FOULING INDEX	= 0.02
SLAGGING INDEX	= 0.02

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-21

143.79-144.35 METERS

SAMPLE #2 (28M X 0)

FLOTATION TEST

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	44.47	3.39	0.98	32.87	63.74	14858		18.34	35.45	48.08	46.18	46.94
*REFUSE	55.53	12.09	1.43	28.42	59.49	13449		81.66	64.55	51.92	53.82	53.06
TOTAL	100.00	8.22	1.23	30.40	61.38	14076		100.00	100.00	100.00	100.00	100.00

* Combination of 51.89% of Conc. II and 3.64% of refuse.

STRUCTURES

SIZE	% WEIGHT	CUM. %WT.
3/8" X 28M	91.36	91.36
28M X 0	8.64	100.00
TOTAL	100.00	

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-21
SAMPLE #2
3/8" X 0
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO_2	66.80
Alumina, Al_2O_3	14.00
Titania, TiO_2	0.64
Ferric oxide, Fe_2O_3	7.98
Lime, CaO	2.03
Magnesia, MgO	1.50
Potassium oxide, K_2O	2.08
Sodium oxide, Na_2O	0.85
Sulfur trioxide, SO_3	2.14
Phos. pentoxide, P_2O_5	0.12
Undetermined	1.86
Total	100.00

ALKALIES AS Na_2O, DRY COAL BASIS	= 0.24
SILICA VALUE	= 85.30
BASE: ACID RATIO	= 0.18
FOULING INDEX	= 0.15
SLAGGING INDEX	= 0.17

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-21

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS				MOISTURE FREE BASIS			
	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL
SAMPLE #1	<0.01	0.19	0.43	0.62	<0.01	0.19	0.44	0.63
SAMPLE #2	<0.01	0.04	0.91	0.95	<0.01	0.04	0.92	0.96

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS			MOISTURE FREE BASIS		
	% K2O	% Na2O	% Cl	% K2O	% Na2O	% Cl
SAMPLE #1	<0.01	0.02	0.06	<0.01	0.02	0.06
SAMPLE #2	<0.01	0.03	0.08	<0.01	0.03	0.08

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	3.65	65
SAMPLE #2	3.07	67

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-22

78.54-79.61 METERS

SAMPLE #1 (28M X 0)

FLOTATION TEST

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	65.14	12.27	2.79	32.26	55.47	14340		49.37	50.78	69.10	67.66	71.22
CONC II.	29.89	15.63	5.73	27.14	57.23	12340		28.86	47.88	26.68	32.03	28.12
REFUSE	4.97	70.90	0.97	25.82	3.28	1748		21.77	1.34	4.22	0.31	0.66
TOTAL	100.00	16.19	3.58	30.41	53.40	13116		100.00	100.00	100.00	100.00	100.00

STRUCTURES

SIZE	% WEIGHT	CUM. %WT.
3/8" X 28M	92.86	92.86
28M X 0	7.14	100.00
TOTAL	100.00	

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-22

SAMPLE #1

3/8" X 0

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	18.00
Alumina,Al2O3	17.60
Titania,TiO2	0.57
Ferric oxide,Fe2O3	36.10
Lime,CaO	8.93
Magnesia,MgO	4.10
Potassium oxide,K2O	0.44
Sodium oxide,Na2O	0.45
Sulfur trioxide,SO3	6.25
Phos. pentoxide,P2O5	4.49
Undetermined	3.07
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.08
SILICA VALUE	= 26.81
BASE: ACID RATIO	= 1.38
FOULING INDEX	= 0.62
SLAGGING INDEX	= 2.85

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-22

107.72-109.34 METERS

SAMPLE #2 (28M X 0)

FLOTATION TEST

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	56.25	10.22	0.70	32.79	56.99	13659		19.34	45.39	64.17	77.20	75.99
CONC II.	18.31	20.07	1.21	30.00	49.93	11888		12.36	25.58	19.11	22.02	21.53
REFUSE	25.44	79.83	0.99	18.89	1.28	984		68.30	29.03	16.72	0.79	2.48
TOTAL	100.00	29.73	0.87	28.74	41.52	10110		100.00	100.00	100.00	100.00	100.00

STRUCTURES

SIZE	% WEIGHT	CUM. %WT.
3/8" X 28M	91.84	91.84
28M X 0	8.16	100.00
TOTAL	100.00	

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-22

SAMPLE #2

3/8" X 0

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	53.20
Alumina,Al2O3	31.00
Titania,TiO2	1.13
Ferric oxide,Fe2O3	6.55
Lime,CaO	1.71
Magnesia,MgO	1.02
Potassium oxide,K2O	0.62
Sodium oxide,Na2O	0.54
Sulfur trioxide,SO3	1.91
Phos. pentoxide,P2O5	0.60
Undetermined	1.72
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.26
SILICA VALUE	= 85.15
BASE: ACID RATIO	= 0.12
FOULING INDEX	= 0.07
SLAGGING INDEX	= 0.11

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-22

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS				MOISTURE FREE BASIS			
	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL
SAMPLE #1	<0.01	1.88	0.16	2.04	<0.01	1.90	0.16	2.06
SAMPLE #2	<0.01	0.29	0.57	0.86	<0.01	0.29	0.58	0.87

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS			MOISTURE FREE BASIS		
	% K2O	% Na2O	% Cl	% K2O	% Na2O	% Cl
SAMPLE #1	<0.01	0.01	0.12	<0.01	0.01	0.12
SAMPLE #2	<0.01	0.03	0.11	<0.01	0.01	0.11

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	1.86	72
SAMPLE #2	2.28	74

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #BC-80-23

259.32-260.91 METERS

SAMPLE #1 (28M X 0)

FLOTATION TEST

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	90.35	1.96	0.53	29.19	68.85	15018		63.18	87.89	90.54	91.39	91.27
CONC II.	9.65	10.69	0.68	28.57	60.74	13441		36.82	12.11	9.46	8.61	8.73
TOTAL	100.00	2.80	0.55	29.13	68.07	14865		100.00	100.00	100.00	100.00	100.00

* Combination of 9.04% of Conc. II and 0.62% of refuse.

STRUCTURES

SIZE	% WEIGHT	CUM. %WT.
3/8" X 28M	92.39	92.39
28M X 0	7.61	100.00
TOTAL	100.00	

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-23
SAMPLE #1
3/8" X 0
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	43.30
Alumina,Al2O3	30.60
Titania,TiO2	0.86
Ferric oxide,Fe2O3	8.68
Lime,CaO	3.42
Magnesia,MgO	1.84
Potassium oxide,K2O	0.69
Sodium oxide,Na2O	1.51
Sulfur trioxide,SO3	5.11
Phos. pentoxide,P2O5	2.25
Undetermined	1.74
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.05
SILICA VALUE	= 75.65
BASE: ACID RATIO	= 0.22
FOULING INDEX	= 0.33
SLAGGING INDEX	= 0.15

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-23

278.86-281.49 METERS

SAMPLE #2 (28M X 0)

FLOTATION TEST

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	82.69	11.37	0.73	32.07	56.56	13445		42.06	89.22	89.72	97.26	95.98
CONC II.	4.42	49.04	0.65	26.34	24.62	7351		9.70	4.28	3.94	2.26	2.81
REFUSE	12.89	83.66	0.34	14.55	1.79	1091		48.24	6.50	6.34	0.48	1.21
TOTAL	100.00	22.35	0.68	29.56	48.09	11583		100.00	100.00	100.00	100.00	100.00

STRUCTURES

SIZE	% WEIGHT	CUM. %WT.
3/8" X 28M	96.01	96.01
28M X 0	3.99	100.00
TOTAL	100.00	

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-23

SAMPLE #2

3/8" X 0

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	64.90
Alumina,Al2O3	27.50
Titania,TiO2	0.88
Ferric oxide,Fe2O3	2.41
Lime,CaO	0.65
Magnesia,MgO	0.66
Potassium oxide,K2O	1.00
Sodium oxide,Na2O	0.66
Sulfur trioxide,SO3	0.78
Phos. pentoxide,P2O5	0.29
Undetermined	0.27
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.43
SILICA VALUE	= 94.58
BASE: ACID RATIO	= 0.06
FOULING INDEX	= 0.04
SLAGGING INDEX	= 0.04

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-23

HEAD ANALYSIS

SULFUR FORMS

	AIR DRY BASIS				MOISTURE FREE BASIS			
PRODUCT	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL
SAMPLE #1	<0.01	<0.01	0.67	0.67	<0.01	<0.01	0.68	0.68
SAMPLE #2	<0.01	0.15	0.48	0.63	<0.01	0.15	0.49	0.64

WATER SOLUBLE ALKALIES

	AIR DRY BASIS			MOISTURE FREE BASIS		
PRODUCT	% K2O	% Na2O	% Cl	% K2O	% Na2O	% Cl
SAMPLE #1	<0.01	0.01	0.02	<0.01	0.01	0.02
SAMPLE #2	<0.01	0.08	0.05	<0.01	0.08	0.05

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	2.12	67
SAMPLE #2	1.75	72

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

379.15-380.49 METERS

SAMPLE #1 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	93.06	93.06
28M X 0	6.94	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	87.81	2.92	0.74	21.81	75.27	14954	8	56.75	89.78	89.88	89.11	89.60
CONC II.	9.04	16.03	0.61	17.69	66.28	12508	5 1/2	43.25	10.22	10.12	10.89	10.40
REFUSE	3.15											
TOTAL	100.00	4.52	0.72	21.31	74.17	14656		100.0	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-24
SAMPLE #1
3/8" X 28M
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	59.30
Alumina,Al2O3	16.70
Titania,TiO2	0.75
Ferric oxide,Fe2O3	6.86
Lime,CaO	5.70
Magnesia,MgO	2.06
Potassium oxide,K2O	1.69
Sodium oxide,Na2O	1.06
Sulfur trioxide,SO3	3.71
Phos. pentoxide,P2O5	0.11
Undetermined	2.06
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.11
SILICA VALUE	= 80.22
BASE: ACID RATIO	= 0.23
FOULING INDEX	= 0.24
SLAGGING INDEX	= 0.17

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

396.54-399.20 METERS

SAMPLE #2 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	93.08	93.08
28M X 0	6.92	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	73.85	12.93	0.69	21.29	65.78	13396	7 1/2	31.99	86.00	86.50	93.47	93.99
CONC II.	6.27	39.34	0.72	19.15	41.51	8740	3 1/2	8.26	7.59	6.61	5.01	5.21
REFUSE	19.88	89.72	0.19	6.30	3.98	424	0	59.75	6.41	6.89	1.52	0.80
TOTAL	100.00	29.85	0.59	18.18	51.97	10526		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-24
SAMPLE #2
3/8" X 28M
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	64.30
Alumina,Al2O3	26.40
Titania,TiO2	0.88
Ferric oxide,Fe2O3	3.18
Lime,CaO	0.76
Magnesia,MgO	0.77
Potassium oxide,K2O	1.17
Sodium oxide,Na2O	0.65
Sulfur trioxide,SO3	1.16
Phos. pentoxide,P2O5	0.28
Undetermined	0.45
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.51
SILICA VALUE	= 93.17
BASE: ACID RATIO	= 0.07
FOULING INDEX	= 0.05
SLAGGING INDEX	= 0.04

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

445.88-446.53 METERS

SAMPLE #3 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	91.78	91.78
28M X 0	8.22	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	41.12	2.43	0.77	20.41	77.16	15039	4	19.49	40.54	44.90	41.65	42.52
CONC II.	55.46	7.01	0.79	17.49	75.50	14198	1	80.51	59.46	55.10	58.35	57.48
REFUSE	3.42											
TOTAL	100.00	5.13	0.78	18.69	76.18	14544		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-24
SAMPLE #3
3/8" X 28M
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	57.40
Alumina,Al2O3	24.40
Titania,TiO2	0.64
Ferric oxide,Fe2O3	4.38
Lime,CaO	3.57
Magnesia,MgO	1.13
Potassium oxide,K2O	1.04
Sodium oxide,Na2O	0.36
Sulfur trioxide,SO3	2.59
Phos. pentoxide,P2O5	0.54
Undetermined	3.95
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.07
SILICA VALUE	= 86.34
BASE: ACID RATIO	= 0.13
FOULING INDEX	= 0.05
SLAGGING INDEX	= 0.10

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

480.97-482.19 METERS

SAMPLE #4 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	87.49	87.49
28M X 0	12.51	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	26.93	7.04	0.89	26.18	66.78	14284	8	11.34	28.57	28.48	30.73	30.60
CONC II.	39.91	9.58	0.94	24.60	65.82	13888	7 1/2	22.87	44.64	39.65	44.88	44.10
REFUSE	33.16	33.16	0.68	23.79	43.05	9589	6	65.79	26.79	31.87	24.39	25.30
TOTAL	100.00	16.71	0.84	24.76	58.53	12569		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

SAMPLE #4

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	55.70
Alumina, Al2O3	14.40
Titania, TiO2	0.74
Ferric oxide, Fe2O3	11.70
Lime, CaO	5.22
Magnesia, MgO	3.56
Potassium oxide, K2O	1.99
Sodium oxide, Na2O	0.52
Sulfur trioxide, SO3	0.00
Phos. pentoxide, P2O5	5.17
Undetermined	1.00
Total	100.00

ALKALIES AS Na2O, DRY COAL BASIS	= 0.46
SILICA VALUE	= 73.12
BASE: ACID RATIO	= 0.32
FOULING INDEX	= 0.17
SLAGGING INDEX	= 0.23

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

494.49-495.60 METERS

SAMPLE #5 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	90.54	90.54
28M X 0	9.46	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
PRODUCT	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC. I	17.26											
CONC. II	77.38	2.55	0.77	22.72	74.73	14978	1	100.00	100.00	100.00	100.00	100.00
REFUSE	5.36											
TOTAL	100.00											

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

SAMPLE #5

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	57.80
Alumina, Al2O3	15.20
Titania, TiO2	0.68
Ferric oxide, Fe2O3	8.01
Lime, CaO	5.78
Magnesia, MgO	2.05
Potassium oxide, K2O	1.45
Sodium oxide, Na2O	1.92
Sulfur trioxide, SO3	5.56
Phos. pentoxide, P2O5	0.19
Undetermined	1.36
Total	100.00

ALKALIES AS Na2O, DRY COAL BASIS	= 0.06
SILICA VALUE	= 78.49
BASE: ACID RATIO	= 0.26
FOULING INDEX	= 0.50
SLAGGING INDEX	= 0.21

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

496.18-498.97 METERS

SAMPLE #6 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	93.50	93.50
28M X 0	6.50	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	45.64	10.63	0.82	19.35	70.02	13695	3 1/2	18.48	55.16	56.53	54.98	55.51
CONC II.	42.36	39.37	0.56	12.49	48.14	9216	1 1/2	81.52	44.84	43.47	45.02	44.49
REFUSE	12.00											
TOTAL	100.00	26.25	0.68	15.62	58.13	11260		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

SAMPLE #6

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, iO2	71.00
Alumina,Al2O3	13.30
Titania,TiO2	0.79
Ferric oxide,Fe2O3	5.42
Lime,CaO	1.84
Magnesia,MgO	1.57
Potassium oxide,K2O	2.21
Sodium oxide,Na2O	0.48
Sulfur trioxide,SO3	2.48
Phos. pentoxide,P2O5	0.31
Undetermined	0.60
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.66
SILICA VALUE	= 88.94
BASE: ACID RATIO	= 0.14
FOULING INDEX	= 0.06
SLAGGING INDEX	= 0.08

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS				MOISTURE FREE BASIS			
	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL
SAMPLE #1	<0.01	<0.01	0.73	0.73	<0.01	<0.01	0.74	0.74
SAMPLE #2	<0.01	0.12	0.43	0.55	<0.01	0.12	0.44	1.56
SAMPLE #3	<0.01	0.03	0.73	0.76	<0.01	0.03	0.74	0.77
SAMPLE #4	<0.01	0.04	0.67	0.71	<0.01	0.04	0.68	0.72
SAMPLE #5	<0.01	0.02	0.76	0.78	<0.01	0.02	0.77	0.79
SAMPLE $6	<0.01	0.03	0.56	0.59	<0.01	0.03	0.57	0.60

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

HEAD ANALYSIS

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS			MOISTURE FREE BASIS		
	% K2O	% Na2O	% Cl	% K2O	% Na2O	% Cl
SAMPLE #1	<0.01	0.01	0.01	<0.01	0.01	0.01
SAMPLE #2	<0.01	0.07	0.03	<0.01	0.07	0.03
SAMPLE #3	<0.01	0.01	0.06	<0.01	0.01	0.06
SAMPLE #4	<0.01	0.05	0.03	<0.01	0.05	0.03
SAMPLE #5	<0.01	0.01	0.02	<0.01	0.02	0.02
SAMPLE #6	0.01	0.07	0.02	0.01	0.07	0.02

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	2.02	72
SAMPLE #2	1.52	74
SAMPLE #3	1.89	69
SAMPLE #4	1.60	73
SAMPLE #5	1.39	67
SAMPLE #6	1.47	61

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

88.36-89.84 METERS

SAMPLE #1 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	92.85	92.85
28M X 0	7.15	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	81.67	5.69	0.85	22.71	71.60	14282	2 1/2	32.93	86.64	88.57	90.04	91.12
CONC II.	7.29	18.03	0.90	16.11	65.86	12190	2	9.31	8.24	5.61	7.39	6.94
REFUSE	11.04	73.83	0.37	11.03	15.14	2252	0	57.76	5.12	5.82	2.57	1.94
TOTAL	100.00	14.11	0.80	20.94	64.95	12802		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

SAMPLE #1

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	56.60
Alumina,Al2O3	36.10
Titania,TiO2	1.25
Ferric oxide,Fe2O3	1.22
Lime,CaO	1.83
Magnesia,MgO	0.31
Potassium oxide,K2O	0.69
Sodium oxide,Na2O	0.34
Sulfur trioxide,SO3	0.64
Phos. pentoxide,P2O5	0.75
Undetermined	0.27
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.11
SILICA VALUE	= 94.40
BASE: ACID RATIO	= 0.05
FOULING INDEX	= 0.02
SLAGGING INDEX	= 0.04

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

103.64-104.87 METERS

SAMPLE #2 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	93.96	93.96
28M X 0	6.04	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	49.88	11.02	1.16	25.85	63.13	13495	8	18.71	56.32	59.02	64.56	64.64
CONC II.	20.32	22.04	1.18	23.08	54.88	11557	6 1/2	15.24	23.35	21.47	22.86	22.55
REFUSE	29.80	65.12	0.70	14.30	20.58	4475	0	66.05	20.33	19.51	12.58	12.81
TOTAL	100.00	29.38	1.03	21.85	48.77	10413		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

SAMPLE #2

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	64.10
Alumina, Al2O3	15.60
Titania, TiO2	0.72
Ferric oxide, Fe2O3	7.45
Lime, CaO	2.81
Magnesia, MgO	1.41
Potassium oxide, K2O	2.61
Sodium oxide, Na2O	0.39
Sulfur trioxide, SO3	3.02
Phos. pentoxide, P2O5	0.27
Undetermined	1.62
Total	100.00

ALKALIES AS Na2O, DRY COAL BASIS	= 0.80
SILICA VALUE	= 84.60
BASE: ACID RATIO	= 0.18
FOULING INDEX	= 0.07
SLAGGING INDEX	= 0.14

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

117.45-119.80 METERS

SAMPLE #3 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	98.14	98.14
28M X 0	1.86	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	36.13	5.49	0.91	24.94	69.57	14359	5 1/2	25.96	34.52	36.88	37.01	37.38
CONC II.	57.74	6.39	0.92	24.55	69.06	14036	5	48.28	55.72	58.02	58.70	58.39
REFUSE	6.13	32.12	1.52	20.34	47.54	9578	3 1/2	25.76	9.76	5.10	4.29	4.23
TOTAL	100.00	7.64	0.95	24.43	67.93	13880		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #BC-80-25

SAMPLE #3

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO_2	44.10
Alumina, Al_2O_3	14.20
Titania, TiO_2	0.87
Ferric oxide, Fe_2O_3	15.90
Lime, CaO	9.59
Magnesia, MgO	2.05
Potassium oxide, K_2O	0.97
Sodium oxide, Na_2O	0.84
Sulfur trioxide, SO_3	9.97
Phos. pentoxide, P_2O_5	1.26
Undetermined	0.25
Total	100.00

ALKALIES AS Na_2O, DRY COAL BASIS	= 0.17
SILICA VALUE	= 61.56
BASE: ACID RATIO	= 0.50
FOULING INDEX	= 0.42
SLAGGING INDEX	= 0.44

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #BC-80-25

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS				MOISTURE FREE BASIS			
	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL
SAMPLE #1	<0.01	0.07	0.67	0.74	<0.01	0.07	0.68	0.75
SAMPLE #2	<0.01	0.15	0.63	0.78	<0.01	0.15	0.64	0.79
SAMPLE #3	<0.01	0.06	0.82	0.88	<0.01	0.06	0.82	0.89

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS			MOISTURE FREE BASIS		
	% K2O	% Na2O	% Cl	% K2O	% Na2O	% Cl
SAMPLE #1	<0.01	0.02	0.01	<0.01	0.02	0.04
SAMPLE #2	0.01	0.06	0.04	0.01	0.06	0.04
SAMPLE #3	<0.01	0.02	0.03	<0.01	0.02	0.03

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	1.78	61
SAMPLE #2	2.36	64
SAMPLE #3	2.00	65

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

133.37-135.59 METERS

SAMPLE #4 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	87.42	87.42
28M X 0	12.58	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	41.89	5.69	0.76	30.54	63.77	14221	2 1/2	11.98	45.82	46.52	50.79	52.83
CONC II.	38.25	12.03	0.76	27.59	60.38	12982	1 1/2	23.12	41.93	38.38	43.91	44.04
REFUSE	19.86	65.04	0.43	20.91	14.05	1779	0	64.90	12.25	15.10	5.30	3.13
TOTAL	100.00	19.90	0.69	27.50	52.60	11276		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-25
SAMPLE #4
3/8" X 28M
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	25.10
Alumina,Al2O3	5.56
Titania,TiO2	0.29
Ferric oxide,Fe2O3	9.84
Lime,CaO	47.40
Magnesia,MgO	5.37
Potassium oxide,K2O	0.78
Sodium oxide,Na2O	0.26
Sulfur trioxide,SO3	4.23
Phos. pentoxide,P2O5	0.16
Undetermined	1.01
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.18
SILICA VALUE	= 28.62
BASE: ACID RATIO	= 2.06
FOULING INDEX	= 0.53
SLAGGING INDEX	= 1.11

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-25
150.59-151.18 METERS
SAMPLE #5 (28M X 0)
FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	88.63	88.63
28M X 0	11.37	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	45.45	6.56	0.95	26.24	67.20	14042	1	20.86	49.15	48.49	49.98	49.85
CONC II.	47.81	20.74	0.82	23.22	56.04	11769	1	79.14	50.85	51.51	50.02	50.15
REFUSE	6.74											
TOTAL	100.00	14.30	0.88	24.59	61.11	12802		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-25
SAMPLE #5
3/8" X 28M
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	59.60
Alumina,Al2O3	30.20
Titania,TiO2	1.00
Ferric oxide,Fe2O3	1.90
Lime,CaO	0.97
Magnesia,MgO	0.31
Potassium oxide,K2O	1.25
Sodium oxide,Na2O	0.25
Sulfur trioxide,SO3	0.64
Phos. pentoxide,P2O5	1.88
Undetermined	2.00
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.13
SILICA VALUE	= 94.93
BASE: ACID RATIO	= 0.05
FOULING INDEX	= 0.01
SLAGGING INDEX	= 0.04

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

200.25-201.17 METERS

SAMPLE #6 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	86.62	86.62
28M X 0	13.38	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	25.12	3.63	0.89	28.23	68.14	14733	1	11.19	26.96	26.73	26.20	26.55
CONC II.	59.29	5.99	0.86	26.52	67.49	14207	1	43.56	61.37	59.26	61.27	60.41
REFUSE	15.59	23.66	0.62	23.85	52.49	11658	1	45.25	11.67	14.01	12.53	13.04
TOTAL	100.00	8.15	0.83	26.53	65.32	13942		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-25
SAMPLE #6
3/8" X 28M
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	61.60
Alumina,Al2O3	23.00
Titania,TiO2	0.80
Ferric oxide,Fe2O3	6.98
Lime,CaO	1.88
Magnesia,MgO	0.92
Potassium oxide,K2O	2.23
Sodium oxide,Na2O	0.95
Sulfur trioxide,SO3	0.80
Phos. pentoxide,P2O5	0.24
Undetermined	0.60
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.23
SILICA VALUE	= 86.30
BASE: ACID RATIO	= 0.15
FOULING INDEX	= 0.14
SLAGGING INDEX	= 0.12

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

216.14-217.67 METERS

SAMPLE #7 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	94.09	94.09
28M X 0	5.91	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	73.44	3.86	0.86	28.99	67.15	14473	3	32.08	76.42	75.76	78.20	78.21
CONC II.	20.67	8.78	0.84	27.01	64.21	13568	1 1/2	20.54	21.04	19.87	21.05	20.64
REFUSE	5.89	71.10	0.35	20.84	8.06	2655	0	47.38	2.54	4.37	0.75	1.15
TOTAL	100.00	8.84	0.83	28.10	63.06	13590		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-25
SAMPLE #7
3/8" X 28M
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	49.40
Alumina,Al2O3	33.70
Titania,TiO2	0.77
Ferric oxide,Fe2O3	6.69
Lime,CaO	1.82
Magnesia,MgO	1.49
Potassium oxide,K2O	0.41
Sodium oxide,Na2O	0.31
Sulfur trioxide,SO3	1.71
Phos. pentoxide,P2O5	0.98
Undetermined	2.72
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.06
SILICA VALUE	= 83.16
BASE: ACID RATIO	= 0.13
FOULING INDEX	= 0.04
SLAGGING INDEX	= 0.10

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

3/8" X 28M

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS				MOISTURE FREE BASIS			
	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL
SAMPLE #4	<0.01	0.05	0.48	0.53	<0.01	0.05	0.49	0.54
SAMPLE #5	<0.01	0.02	0.72	0.74	<0.01	0.02	0.73	0.75
SAMPLE #6	<0.01	0.01	0.77	0.78	<0.01	0.01	0.78	0.79
SAMPLE #7	<0.01	0.03	0.73	0.76	<0.01	0.03	0.74	0.77

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS			MOISTURE FREE BASIS		
	% K2O	% Na2O	% Cl	% K2O	% Na2O	% Cl
SAMPLE #4	<0.01	0.01	0.04	<0.01	0.01	0.04
SAMPLE #5	<0.01	0.02	0.08	<0.01	0.02	0.08
SAMPLE #6	<0.01	0.01	0.02	<0.01	0.01	0.02
SAMPLE #7	<0.01	0.01	0.02	<0.01	0.01	0.02

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #4	1.63	49
SAMPLE #7	1.87	62

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-26

78.92-80.34 METERS

SAMPLE #1 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	92.80	92.80
28M X 0	7.20	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	54.56	2.36	0.82	31.44	66.20	15008	8	12.79	48.17	58.54	59.58	60.22
CONC II.	20.50	6.70	0.91	29.70	63.60	14126	8	13.63	20.15	20.78	21.50	21.30
REFUSE	24.94	29.72	1.18	24.29	45.99	10074	1	73.58	31.68	20.68	18.92	18.48
TOTAL	100.00	10.07	0.93	29.30	60.63	13597		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-26

SAMPLE #1

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	22.20
Alumina,Al2O3	5.47
Titania,TiO2	0.32
Ferric oxide,Fe2O3	49.10
Lime,CaO	6.54
Magnesia,MgO	6.20
Potassium oxide,K2O	0.83
Sodium oxide,Na2O	0.71
Sulfur trioxide,SO3	7.36
Phos. pentoxide,P2O5	0.15
Undetermined	1.12
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.11
SILICA VALUE	= 26.42
BASE: ACID RATIO	= 2.26
FOULING INDEX	= 1.61
SLAGGING INDEX	= 1.56

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-26

95.84-98.05 METERS

SAMPLE #2 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	94.01	94.01
28M X 0	5.99	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	87.98	5.54	0.67	23.96	70.50	14243	2	61.36	89.79	90.04	90.36	90.73
CONC II.	9.72	25.53	0.56	19.40	55.07	10647	1 1/2	38.64	10.21	9.96	9.64	9.27
REFUSE	2.30											
TOTAL	100.00	7.94	0.66	23.41	68.65	13811		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-26

SAMPLE #2

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	37.90
Alumina,Al2O3	27.20
Titania,TiO2	0.68
Ferric oxide,Fe2O3	18.50
Lime,CaO	4.16
Magnesia,MgO	1.03
Potassium oxide,K2O	0.62
Sodium oxide,Na2O	0.65
Sulfur trioxide,SO3	4.27
Phos. pentoxide,P2O5	3.46
Undetermined	1.53
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.08
SILICA VALUE	= 61.54
BASE: ACID RATIO	= 0.38
FOULING INDEX	= 0.25
SLAGGING INDEX	= 0.25

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-26

3/8"X 28M

HEAD ANALYSIS

SULFUR FORMS

PRODUCT	AIR DRY BASIS				MOISTURE FREE BASIS			
	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL
SAMPLE #1	<0.01	<0.06	0.62	0.68	<0.01	0.06	0.63	0.69
SAMPLE #2	<0.01	<0.01	0.66	0.66	<0.01	<0.01	0.67	0.67

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS			MOISTURE FREE BASIS		
	% K2O	% Na2O	% Cl	% K2O	% Na2O	% Cl
SAMPLE #1	<0.01	0.02	0.03	<0.01	0.02	0.03
SAMPLE #2	<0.01	0.01	0.06	<0.01	0.01	0.06

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	1.67	63
SAMPLE #2	2.49	59

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

71.00-72.33 METERS

SAMPLE #1 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	88.57	88.57
28M X 0	11.43	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	93.94	3.38	0.93	31.02	65.60	14540	4	78.22	93.08	94.33	94.74	94.63
CONC II.	5.55	14.59	1.07	28.93	56.48	12797	2 1/2	21.78	6.92	5.67	5.26	5.37
REFUSE	0.51											
TOTAL	100.00	4.06	0.94	30.89	65.05	14434		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

SAMPLE #1

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	55.60
Alumina,Al2O3	34.80
Titania,TiO2	1.03
Ferric oxide,Fe2O3	1.81
Lime,CaO	1.71
Magnesia,MgO	0.38
Potassium oxide,K2O	0.64
Sodium oxide,Na2O	0.60
Sulfur trioxide,SO3	0.32
Phos. pentoxide,P2O5	2.35
Undetermined	0.76
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.04
SILICA VALUE	= 93.45
BASE: ACID RATIO	= 0.06
FOULING INDEX	= 0.03
SLAGGING INDEX	= 0.05

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

111.40-113.02 METERS

SAMPLE #2 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	80.26	80.26
28M X 0	19.74	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	82.60	4.99	0.72	28.84	66.17	14380	4 1/2	59.46	85.00	84.55	84.22	84.70
CONC II.	15.57	9.91	0.62	25.33	64.76	13412	2	22.26	13.86	14.00	15.54	14.89
REFUSE	1.83	69.23	0.46	22.34	8.43	3111	0	18.28	1.14	1.45	0.24	0.41
TOTAL	100.00	6.93	0.70	28.18	64.89	14023		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

SAMPLE #2

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	36.30
Alumina,Al2O3	23.50
Titania,TiO2	0.73
Ferric oxide,Fe2O3	13.10
Lime,CaO	5.85
Magnesia,MgO	4.03
Potassium oxide,K2O	0.89
Sodium oxide,Na2O	2.31
Sulfur trioxide,SO3	8.42
Phos. pentoxide,P2O5	1.64
Undetermined	3.23
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.17
SILICA VALUE	= 61.23
BASE: ACID RATIO	= 0.43
FOULING INDEX	= 1.00
SLAGGING INDEX	= 0.28

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

124.70-127.10 METERS

SAMPLE #3 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	82.90	82.90
28M X 0	17.10	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	60.90	3.82	0.75	26.58	69.60	14603	4 1/2	26.84	62.52	63.66	64.31	64.57
CONC II.	33.01	8.68	0.73	24.12	67.20	13776	1 1/2	33.06	32.97	31.31	33.66	33.02
REFUSE	6.09	57.06	0.54	21.01	21.93	5458	0	40.10	4.51	5.03	2.03	2.41
TOTAL	100.00	8.67	0.73	25.43	65.90	13773		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-27
SAMPLE #3
3/8" X 28M
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	48.80
Alumina,Al2O3	32.90
Titania,TiO2	0.90
Ferric oxide,Fe2O3	5.31
Lime,CaO	2.28
Magnesia,MgO	0.96
Potassium oxide,K2O	1.69
Sodium oxide,Na2O	2.04
Sulfur trioxide,SO3	1.42
Phos. pentoxide,P2O5	2.48
Undetermined	1.22
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.24
SILICA VALUE	= 85.09
BASE: ACID RATIO	= 0.15
FOULING INDEX	= 0.30
SLAGGING INDEX	= 0.11

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

149.30-150.81 METERS

SAMPLE #4 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	86.60	86.60
28M X 0	13.40	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	86.79	5.01	0.97	29.44	65.55	14431	5 1/2	36.32	94.18	91.81	94.51	94.77
CONC II.	5.76	19.99	0.82	26.36	53.65	11680	1 1/2	9.61	5.26	5.45	5.13	5.09
REFUSE	7.45	86.89	0.07	10.23	2.88	249	0	54.07	0.56	2.74	0.36	0.14
TOTAL	100.00	11.97	0.89	27.83	60.20	13216		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

SAMPLE #4

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	54.20
Alumina,Al2O3	38.90
Titania,TiO2	1.30
Ferric oxide,Fe2O3	1.08
Lime,CaO	1.24
Magnesia,MgO	0.38
Potassium oxide,K2O	0.51
Sodium oxide,Na2O	0.26
Sulfur trioxide,SO3	0.64
Phos. pentoxide,P2O5	0.89
Undetermined	0.60
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.07
SILICA VALUE	= 95.25
BASE: ACID RATIO	= 0.04
FOULING INDEX	= 0.01
SLAGGING INDEX	= 0.03

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

175.33-176.32 METERS

SAMPLE #5 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	84.31	84.31
28M X 0	15.69	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	82.75	7.53	0.84	31.26	61.21	13892	6 1/2	54.14	86.98	84.90	87.29	87.78
CONC II.	14.45	24.09	0.69	27.38	48.53	10727	2 1/2	30.25	12.52	12.98	12.09	11.84
REFUSE	2.80	64.17	0.13	23.03	12.80	1764	0	15.61	0.50	2.12	0.62	0.38
TOTAL	100.00	11.51	0.80	30.47	58.02	13095		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

SAMPLE #5

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	21.90
Alumina,Al2O3	14.20
Titania,TiO2	0.59
Ferric oxide,Fe2O3	34.50
Lime,CaO	11.10
Magnesia,MgO	3.51
Potassium oxide,K2O	0.24
Sodium oxide,Na2O	0.35
Sulfur trioxide,SO3	11.93
Phos. pentoxide,P2O5	1.11
Undetermined	0.57
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.06
SILICA VALUE	= 30.84
BASE: ACID RATIO	= 1.35
FOULING INDEX	= 0.47
SLAGGING INDEX	= 1.10

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

180.44-181.11 METERS

SAMPLE #6 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	86.27	86.27
28M X 0	13.73	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	60.28	5.35	1.06	32.27	62.38	14438	8	29.73	60.28	61.71	65.25	65.39
CONC II.	36.74	19.19	1.06	30.39	50.42	11599	6 1/2	70.27	39.72	38.29	34.75	34.61
REFUSE	2.98											
TOTAL	100.00	10.85	1.06	31.52	57.63	13310		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

SAMPLE #6

3/8" X 28M

HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	23.80
Alumina,Al2O3	6.79
Titania,TiO2	0.33
Ferric oxide,Fe2O3	38.50
Lime,CaO	9.60
Magnesia,MgO	8.05
Potassium oxide,K2O	0.79
Sodium oxide,Na2O	0.30
Sulfur trioxide,SO3	10.52
Phos. pentoxide,P2O5	0.30
Undetermined	1.02
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.16
SILICA VALUE	= 29.77
BASE: ACID RATIO	= 1.85
FOULING INDEX	= 0.56
SLAGGING INDEX	= 1.80

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

192.95-194.20 METERS

SAMPLE #7 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	87.22	87.22
28M X 0	12.78	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	82.30	5.58	0.86	27.96	66.46	14492	5	42.35	89.28	83.89	88.61	87.48
CONC II.	14.50	30.02	0.52	25.57	44.41	10583	1	40.15	9.46	13.52	10.43	11.26
REFUSE	3.20	59.29	0.32	22.18	18.53	5386	0	17.50	1.26	2.59	0.96	1.26
TOTAL	100.00	10.84	0.79	27.43	61.73	13634		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-27
SAMPLE #7
3/8" X 28M
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	69.40
Alumina,Al2O3	19.40
Titania,TiO2	0.89
Ferric oxide,Fe2O3	2.84
Lime,CaO	1.39
Magnesia,MgO	0.82
Potassium oxide,K2O	2.13
Sodium oxide,Na2O	0.71
Sulfur trioxide,SO3	1.00
Phos. pentoxide,P2O5	0.60
Undetermined	0.82
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.33
SILICA VALUE	= 93.22
BASE: ACID RATIO	= 0.09
FOULING INDEX	= 0.06
SLAGGING INDEX	= 0.07

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

196.90-197.98 METERS

SAMPLE #8 (28M X 0)

FLOTATION TEST

STRUCTURES

SIZE	% WT.	CUM. % WT.
3/8" X 28M	89.01	89.01
28M X 0	10.99	100.00
TOTAL	100.00	

MOISTURE FREE BASIS

		ELEMENTARY DATA						% DISTRIBUTION				
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	ASH	S	VM	FC	BTU
CONC I.	80.82	3.89	0.95	28.08	68.03	14738	6	53.60	83.21	83.69	82.04	82.62
CONC II.	18.47	14.19	0.81	23.06	62.75	13065	1	46.40	16.79	16.31	17.96	17.38
REFUSE	0.71											
TOTAL	100.00	5.87	0.92	27.12	67.01	14417		100.00	100.00	100.00	100.00	100.00

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL
HOLE #BC-80-27
SAMPLE #8
3/8" X 28M
HEAD ANALYSIS

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	71.30
Alumina,Al2O3	16.10
Titania,TiO2	0.94
Ferric oxide,Fe2O3	0.77
Lime,CaO	5.34
Magnesia,MgO	0.52
Potassium oxide,K2O	1.77
Sodium oxide,Na2O	0.62
Sulfur trioxide,SO3	1.05
Phos. pentoxide,P2O5	0.30
Undetermined	1.29
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.15
SILICA VALUE	= 91.49
BASE: ACID RATIO	= 0.10
FOULING INDEX	= 0.06
SLAGGING INDEX	= 0.09

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

3/8" X 28M

HEAD ANALYSIS

SULFUR FORMS

	AIR DRY BASIS				MOISTURE FREE BASIS			
PRODUCT	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL	SULFATE SULFUR AS % S	PYRITIC SULFUR	ORGANIC SULFUR	TOTAL
SAMPLE #1	<0.01	0.03	0.83	0.86	<0.01	0.03	0.83	0.86
SAMPLE #2	<0.01	<0.01	0.64	0.64	<0.01	<0.01	0.65	0.65
SAMPLE #3	<0.01	0.13	0.60	0.73	<0.01	0.13	0.61	0.74
SAMPLE #4	<0.01	0.06	0.74	0.80	<0.01	0.06	0.75	0.81
SAMPLE #5	<0.01	0.01	0.79	0.80	<0.01	0.01	0.80	0.81
SAMPLE #6	<0.01	0.18	0.78	0.96	<0.01	0.18	0.79	0.97
SAMPLE #7	<0.01	<0.01	0.73	0.73	<0.01	<0.01	0.74	0.74
SAMPLE #8	<0.01	<0.01	0.88	0.88	<0.01	<0.01	0.88	0.89

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #BC-80-27

3/8" X 28M

HEAD ANALYSIS

WATER SOLUBLE ALKALIES

PRODUCT	AIR DRY BASIS			MOISTURE FREE BASIS		
	% K2O	% Na2O	% Cl	% K2O	% Na2O	% Cl
SAMPLE #1	<0.01	<0.01	0.02	<0.01	<0.01	0.02
SAMPLE #2	<0.01	0.02	0.04	<0.01	0.02	0.04
SAMPLE #3	<0.01	0.02	0.06	<0.01	0.02	0.06
SAMPLE #4	<0.01	0.01	0.03	<0.01	0.01	0.03
SAMPLE #5	<0.01	0.01	0.03	<0.01	0.01	0.03
SAMPLE #6	<0.01	0.02	0.04	<0.01	0.02	0.04
SAMPLE #7	<0.01	0.03	0.03	<0.01	0.03	0.03
SAMPLE #8	<0.01	0.02	0.06	<0.01	0.02	0.06

PRODUCT	% EQUILIBRIUM MOISTURE	HGI
SAMPLE #1	----	57
SAMPLE #2	2.63	50
SAMPLE #3	2.49	60
SAMPLE #4	1.90	63
SAMPLE S5	1.39	62
SAMPLE #6	1.65	62
SAMPLE #7	1.61	51
SAMPLE #8	----	53

APPENDIX IV-A

METHANE GAS TESTING DATA

D.D.H. BC-80-14

TROJAN COAL SEAM AT 106.55 METRES

Coal sample started out of hole: 3:35 p.m.
Coal sample began giving off gas: 3:36 p.m.
Coal sample at surface: 3:37 p.m.
Coal sample cannister: 3:45 p.m.
Weight of sample: 706.06 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
05-20-80	3:58 p.m.	80	80
	4:13 p.m.	25	105
	4:28 p.m.	0	105
	4:43 p.m.	25	130
	4:58 p.m.	0	130
	5:13 p.m.	20	150
	5:28 p.m.	0	150
	5:43 p.m.	20	170
	5:58 p.m.	0	170
	6:13 p.m.	15	185
	6:43 p.m.	15	200
	7:13 p.m.	10	210
	9:10 p.m.	25	235
05-21	9:10 a.m.	5	240
	9:16 p.m.	0	240
05-22	9:15 a.m.	0	240

Desorbed gas = 240 cm^3
"Lost' gas = 79 cm^3
"Residual" gas = 260 cm^3
Total = 579 cm^3
Gas content of coal sample = 0.82 cm^3/gram

D.D.H. BC-80-17

SAMPLE TAKEN AT 66.63 METRES

Coal sample started out of hole: 6:30 p.m.
Coal sample began giving off gas: 6:30:30 p.m.
Coal sample at surface: 6:31 p.m.
Coal sample in cannister: 6:35 p.m.
Weight of sample: 966.13 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
05-25	7:00 p.m.	45	45
	7:15 p.m.	30	75
	10:30 p.m.	65	140
	11:30 p.m.	0	140
05-26	8:00 a.m.	20	160
	9:00 a.m.	3	163
	10:00 a.m.	2	165
	11:00 a.m.	5	170
	12:00 p.m.	11	181
	1:00 p.m.	10	191
	2:00 p.m.	5	196
	7:41 p.m.	10	206
	8:35 p.m.	15	221
05-27	7:45 a.m.	0	221
	10:30 p.m.	0	221
05-28	7:43 a.m.	0	221
	8:00 p.m.	5	226
05-29	8:20 a.m.	0	226

Desorbed gas = 226 cm^3
"Lost" gas = 20 cm^3
"Residual" gas = 250 cm^3
Total = 496 cm^3
Gas content of coal sample = 0.51 cm^3/gram

D.D.H. BC-80-18

TROJAN COAL SEAM AT 131.86 METRES

Coal sample started out of hole: 2:15 p.m.
Coal sample began giving off gas: 2:20 p.m.
Coal sample at surface: 2:25 p.m.
Coal sample in cannister: 2:30 p.m.
Weight of sample: 978.77 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
05-28	3:08 p.m.	110	110
	3:23 p.m.	30	140
	3:38 p.m.	10	150
	3:53 p.m.	30	180
	4:08 p.m.	10	190
	4:23 p.m.	20	210
	4:38 p.m.	20	230
	4:53 p.m.	20	250
	5:23 p.m.	30	280
	5:53 p.m.	30	310
	6:53 p.m.	40	350
	8:00 p.m.	0	350
	11:00 p.m.	0	350
05-29	8:20 a.m.	25	375
	4:45 p.m.	55	430
	7:48 p.m.	20	450
05-30	10:00 p.m.	75	525
05-31	8:01 a.m.	5	530
	9:56 p.m.	80	610
06-01	8:09 a.m.	10	620
	10:49 a.m.	0	620
	2:00 p.m.	20	640
	8:59 p.m.	20	660
06-02	9:45 a.m.	0	660
	8:15 p.m.	0	660
06-03	8:52 a.m.	0	660

Desorbed gas = 660 cm^3
"Lost" gas = 77 cm^3
"Residual" gas = 550 cm^3
Total = 1,287 cm^3
Gas content of coal sample = 1.31 cm^3/gram

D.D.H. BC-80-19

TITAN COAL SEAM AT 459.03 METRES

Coal sample started out of hole: 10:09 a.m.
Coal sample began giving off gas: 10:11 a.m.
Coal sample at surface: 10:13 a.m.
Coal sample in cannister: 10:18 a.m.
Weight of sample: 620:85 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-27	10:30 a.m.	387	387
	10:45 a.m.	268	655
	11:00 a.m.	222	877
	11:15 a.m.	213	1090
	11:30 a.m.	143	1233
	11:45 a.m.	153	1386
	12:00 p.m.	135	1521
	12:15 p.m.	110	1631
	12:45 p.m.	225	1856
	1:00 p.m.	110	1966
	1:15 p.m.	108	2074
	1:30 p.m.	97	2171
	1:45 p.m.	80	2251
	2:00 p.m.	145	2396
	2:19 p.m.	100	2496
	2:34 p.m.	85	2581
	2:49 p.m.	90	2671
	3:04 p.m.	70	2741
	3:19 p.m.	75	2816
	3:34 p.m.	70	2886
	3:55 p.m.	80	2966
	4:10 p.m.	90	3056
	4:25 p.m.	25	3081
	4:40 p.m.	70	3151
	4:55 p.m.	60	3211
	5:10 p.m.	45	3256
	5:25 p.m.	75	3331
	5:40 p.m.	60	3391
	5:55 p.m.	50	3441
	6:10 p.m.	58	3499
	6:40 p.m.	110	3609
	6:55 p.m.	40	3649
	7:10 p.m.	36	3685
	7:40 p.m.	60	3745
06-28	2:00 p.m.	612	4357
	2:15 p.m.	57	4414
	2:30 p.m.	30	4444
	2:45 p.m.	31	4475
	3:00 p.m.	38	4513
	3:15 p.m.	17	4530

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-28	3:30 p.m.	31	4561
	3:45 p.m.	27	4588
	4:00 p.m.	27	4615
	4:15 p.m.	24	4639
	4:30 p.m.	24	4663
	4:45 p.m.	22	4685
	5:00 p.m.	29	4714
	5:15 p.m.	21	4735
	5:30 p.m.	23	4758
	5:45 p.m.	0	4758
	6:00 p.m.	20	4778
	6:30 p.m.	38	4816
	7:00 p.m.	50	4866
	7:30 p.m.	20	4886
	8:00 p.m.	25	4911
	8:34 p.m.	40	4951
	9:00 p.m.	0	4951
06-30	9:35 a.m.	397	5348
	8:20 p.m.	270	5618
07-01	9:46 a.m.	108	5726
	7:06 p.m.	190	5916
07-02	9:54 a.m.	79	5995
	7:38 p.m.	60	6055
07-03	7:48 a.m.	42	6097
07-04	8:38 a.m.	35	6132
07-05	8:28 a.m.	40	6172
07-06	7:59 a.m.	20	6192
07-07	8:14 a.m.	112	6304
07-08	8:57 a.m.	110	6414
07-09	7:16 a.m.	50	6464
07-10	8:19 a.m.	30	6494
07-11	9:10 a.m.	54	6548
07-12	8:08 a.m.	27	6575
07-13	8:57 a.m.	100	6675
07-14	8:28 a.m.	36	6711
07-15	8:03 a.m.	15	6726
07-16	7:07 a.m.	0	6726
07-17	7:11 a.m.	0	6726
07-18	9:07 a.m.	0	6726
07-19	1:20 p.m.	10	6736
07-20	8:46 a.m.	26	6762
07-21	9:43 a.m.	38	6800
07-23	8:36 a.m.	37	6837
07-24	10:54 a.m.	15	6852
07-26	10:51 a.m.	65	6917
07-31	11:00 a.m.	45	6962

Desorbed gas = 6,962 cm^3
"Lost" gas = 400 cm^3
"Residual" gas = 4,900 cm^3
Total = 12,262 cm^3
Gas content of coal sample = 19.75 cm^3/gram

D.D.H. BC-80-19

SAMPLE TAKEN AT 515.72 METRES

Coal sample started out of hole: 9:11 a.m.
Coal sample began to give off gas: 9:13 a.m.
Coal sample at surface: 9:15 a.m.
Coal sample in cannister: 9:20 a.m.
Weight of sample: 780:50 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-28	9:32 a.m.	390	390
	9:47 a.m.	350	740
	10:02 a.m.	570	1310
	10:17 a.m.	385	1695
	10:32 a.m.	310	2005
	10:47 a.m.	130	2135
	11:02 a.m.	210	2345
	11:17 a.m.	217	2562
	11:32 a.m.	191	2753
	11:47 a.m.	193	2946
	12:02 p.m.	142	3088
	12:17 p.m.	140	3228
	1:02 p.m.	295	3523
	1:17 p.m.	125	3648
	1:32 p.m.	100	3748
	1:47 p.m.	96	3844
	2:02 p.m.	109	3953
	2:17 p.m.	92	4045
	2:32 p.m.	80	4125
	2:47 p.m.	81	4206
	3:02 p.m.	91	4297
	3:17 p.m.	77	4374
	3:32 p.m.	71	4445
	3:47 p.m.	75	4520
	4:02 p.m.	69	4589
	4:17 p.m.	75	4664
	4:32 p.m.	66	4730
	4:47 p.m.	60	4790
	5:02 p.m.	70	4860
	5:17 p.m.	64	4924
	5:32 p.m.	57	4981
	5:47 p.m.	45	5026
	6:02 p.m.	45	5071
	6:32 p.m.	85	5156
	7:02 p.m.	80	5236
	7:32 p.m.	75	5311
	8:02 p.m.	65	5376
	8:33 p.m.	85	5461
	9:02 p.m.	55	5516

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-30	9:36 a.m.	541	6057
	8:20 p.m.	350	6407
07-01	9:50 a.m.	129	6536
	7:08 p.m.	188	6724
07-02	9:55 a.m.	69	6793
	7:39 p.m.	135	6928
07-03	7:48 a.m.	28	6956
07-04	8:38 a.m.	40	6996
07-05	8:29 a.m.	0	6996
07-06	8:00 a.m.	0	6996
07-07	8:15 a.m.	40	7036
07-08	8:58 a.m.	52	7088
07-09	7:17 a.m.	15	7103
07-10	8:20 a.m.	0	7103
07-11	9:10 a.m.	23	7126
07-12	8:08 a.m.	0	7126
07-13	8:58 a.m.	45	7171
07-14	8:29 a.m.	18	7189
07-15	8:03 a.m.	0	7189
07-16	7:07 a.m.	0	7189
07-17	7:12 a.m.	0	7189
07-18	9:08 a.m.	0	7189
07-19	1:20 a.m.	0	7189

Desorbed gas = 7,189 cm^3
"Lost" gas = 805 cm^3
"Residual" gas = 5,250 cm^3
Total = 13,244 cm^3
Gas content of coal sample = 16.97 cm^3/gram

D.D.H. BC-80-20

TROJAN COAL SEAM AT 130.65 METRES

Coal sample started out of hole: 1:30 p.m.
Coal sample began giving off gas: 1:32:30 p.m.
Coal sample at surface: 1:35 p.m.
Coal sample in cannister: 2:06 p.m.
Weight of sample: 373:27 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
05-31	2:15 p.m.	20	20
	2:45 p.m.	35	55
	3:00 p.m.	25	80
	3:30 p.m.	25	105
	3:45 p.m.	0	105
	4:00 p.m.	20	125
	4:15 p.m.	15	140
	4:45 p.m.	15	155
	5:15 p.m.	10	165
	5:45 p.m.	15	180
	6:55 p.m.	15	195
	7:30 p.m.	20	215
	8:00 p.m.	10	225
	8:30 p.m.	15	240
	8:57 p.m.	0	240
	9:56 p.m.	0	240
06-01	8:09 a.m.	0	240
	10:49 a.m.	0	240
	2:00 p.m.	0	240
	8:59 p.m.	0	240
06-02	9:45 a.m.	0	240
	8:15 p.m.	0	240
06-03	8:52 a.m.	0	240

Desorbed gas = 240 cm^3
"Lost" gas = 100 cm^3
"Residual" gas = 260 cm^3
Total = 600 cm^3
Gas content of coal sample = 1.61 cm^3/gram

D.D.H. BC-80-21

TROJAN COAL SEAM AT 121.46 METRES

Coal sample started out of hole: 6:03 a.m.
Coal sample began giving off gas: 6:03:30 a.m.
Coal sample at surface: 6:04 a.m.
Coal sample in cannister: 6:08:30 a.m.
Weight of sample: 453.13 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-03	6:20 a.m.	75	75
	6:35 a.m.	30	105
	6:50 a.m.	23	128
	7:05 a.m.	12	140
	7:20 a.m.	8	148
	7:55 a.m.	30	178
	8:55 a.m.	0	178
	8:23 p.m.	35	213
06-04	8:10 a.m.	70	283
	9:46 a.m.	10	293
	10:29 p.m.	85	378
06-05	9:33 a.m.	25	403
	11:15 a.m.	20	423
	8:36 p.m.	40	463
06-06	8:52 a.m.	0	463
	4:43 p.m.	50	513
	11:07 p.m.	20	533
06-07	8:20 a.m.	0	533
	8:24 p.m.	90	623
06-08	8:52 a.m.	0	623
	8:33 p.m.	125	748
06-09	8:15 a.m.	0	748
	9:10 p.m.	90	838
06-10	8:04 a.m.	0	838
	11:12 a.m.	20	838
06-12	11:12 a.m.	0	858
06-12	11:12 a.m.	70	928
06-13	4:01 p.m.	90	1018
06-14	9:10 a.m.	0	1018
06-15	9:12 a.m.	90	1108
06-16	9:07 a.m.	20	1128
06-17	10:50 a.m.	50	1178
06-18	9:08 p.m.	0	1178
06-19	8:08 p.m.	50	1228
06-20	11:02 a.m.	0	1228

Desorbed gas = 1,228 cm^3
"Lost" gas = 64 cm^3
"Residual" gas = 875 cm^3
Total = 2,167 cm^3
Gas content of coal sample = 4.78 cm^3/gram

D.D.H. BC-80-22

SUPERIOR COAL SEAM AT 78.64 METRES

Coal sample started out of hole: 4:00 a.m.
Coal sample began giving off gas: 4:00:30 a.m.
Coal sample at surface: 4:01 a.m.
Coal sample in cannister: 4:05 a.m.
Weight of sample: 556.22 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-06	4:31 a.m.	22	22
	4:46 a.m.	0	22
	5:01 a.m.	8	30
	5:30 a.m.	0	30
	6:31 a.m.	25	55
	6:46 a.m.	0	55
	7:01 a.m.	0	55
	7:31 a.m.	10	65
	8:01 a.m.	5	70
	8:30 a.m.	0	70
	9:30 a.m.	0	70
	1:30 p.m.	45	115
	3:18 p.m.	17	132
	3:58 p.m.	0	132
	4:48 p.m.	0	132
	5:20 p.m.	0	132
	7:04 p.m.	0	132
	9:04 p.m.	0	132
	10:04 p.m.	0	132
06-08	11:01 a.m.	50	182
	8:34 p.m.	10	192
06-09	8:16 a.m.	0	192
	9:12 p.m.	25	217
06-10	8:05 a.m.	0	217
	11:15 a.m.	0	217
06-11	11:13 a.m.	0	217
06-12	11:12 a.m.	5	222
06-13	4:02 p.m.	20	242
06-14	9:10 a.m.	0	242
06-15	9:13 a.m.	26	268
06-16	9:08 a.m.	0	268
06-17	10:51 a.m.	1	269
06-18	9:00 a.m.	0	269

Desorbed gas = 269 cm^3
"Lost" gas = 15 cm^3
"Residual" gas = 25 cm^3
Total = 399 cm^3
Gas content of coal sample = 0.55 cm^3/gram

D.D.H. BC-80-22

TROJAN COAL SEAM AT 107.90 METRES

Coal sample started out of hole: 12:32:30 p.m.
Coal sample began giving off gas: 12:33 p.m.
Coal sample at surface: 12:33:30 p.m.
Coal sample in cannister: 12:38 p.m.
Weight of sample: 469.14 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-06	1:00 p.m.	32	32
	1:25 p.m.	0	32
	3:17 p.m.	42	74
	3:59 p.m.	0	74
	4:46 p.m.	0	74
	5:20 p.m.	0	74
	5:55 p.m.	10	84
	10:04 p.m.	0	84
06-07	5:32 a.m.	0	84

Desorbed gas = 84 cm^3
"Lost" gas = 27 cm^3
"Residual" gas = 10 cm^3
Total = 121 cm^3
Gas content of coal sample = 0.26 cm^3/gram

D.D.H. BC-80-23

SUPERIOR COAL SEAM AT 259.69 METRES

Coal sample started out of hole: 5:58:30 a.m.
Coal sample began giving off gas: 6:00 a.m.
Coal sample at surface: 6:01:30 a.m.
Coal sample in cannister: 6:05 a.m.
Weight of sample: 436.73 grams.

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-13	6:26 a.m.	360	360
	6:40 a.m.	138	498
	6:55 a.m.	112	610
	7:15 a.m.	126	736
	7:30 a.m.	90	826
	7:45 a.m.	70	896
	8:00 a.m.	74	970
	8:15 a.m.	52	1022
	8:30 a.m.	59	1081
	8:45 a.m.	60	1141
	9:03 a.m.	52	1193
	9:15 a.m.	60	1253
	9:30 a.m.	40	1293
	9:45 a.m.	46	1339
	10:00 a.m.	45	1384
	10:15 a.m.	47	1431
	10:30 a.m.	50	1481
	11:20 a.m.	90	1571
	11:50 a.m.	110	1681
	12:50 p.m.	170	1851
	2:25 p.m.	315	2166
	3:25 p.m.	215	2381
	4:25 p.m.	155	2536
	5:25 p.m.	160	2696
	6:25 p.m.	105	2801
	7:25 p.m.	140	2941
	8:25 p.m.	90	3031
	9:25 p.m.	75	3106
	10:25 p.m.	60	3166
	11:25 p.m.	90	3256
06-14	12:25 a.m.	30	3286
	1:07 a.m.	20	3306
	7:47 a.m.	160	3466
	10:52 a.m.	105	3571
	1:15 p.m.	155	3726
	2:31 p.m.	230	3956
	4:30 p.m.	70	4026
	6:30 p.m.	49	4075
	9:53 p.m.	70	4145
06-15	9:13 a.m.	120	4265
	9:02 p.m.	140	4405

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-16	9:05 a.m.	80	4485
	9:15 p.m.	160	4645
	9:45 p.m.	20	4665
06-17	10:49 a.m.	79	4744
	8:17 p.m.	24	4768
06-18	9:01 a.m.	36	4804
	10:12 a.m.	0	4804
	12:31 p.m.	29	4833
	9:09 p.m.	30	4863
06-19	8:57 a.m.	0	4863
	8:12 p.m.	110	4973
06-20	8:00 a.m.	0	4973
	9:29 a.m.	0	4973
	11:01 a.m.	31	5004
	8:12 p.m.	72	5076
06-21	7:59 a.m.	0	5076
	9:21 a.m.	23	5099
	11:12 a.m.	21	5120
06-22	9:11 a.m.	55	5175
	11:58 a.m.	35	5210
	2:38 p.m.	29	5239
06-23	12:59 p.m.	38	5277
06-24	8:12 p.m.	94	5371
06-25	9:04 a.m.	0	5371
06-26	9:59 a.m.	40	5411
06-27	8:35 a.m.	22	5433
06-28	7:53 a.m.	35	5468
	7:48 p.m.	40	5508
06-29	8:10 a.m.	0	5508
06-30	8:20 a.m.	0	5508
07-01	9:41 a.m.	30	5538
	7:02 p.m.	60	5598
07-02	9:50 a.m.	0	5598
07-03	7:45 a.m.	0	5598

Desorbed gas = 5,598 cm^3
"Lost" gas = 190 cm^3
"Residual" gas = 390 cm^3
Total = 6,178 cm^3
Gas content of coal sample = 14.15 cm^3/gram

D.D.H. BC-80-24

SUPERIOR COAL SEAM AT 379.15 METRES

Coal sample started out of hole: 12:03 a.m.
Coal sample began giving off gas: 12:06 a.m.
Coal sample at surface: 12:09 a.m.
Coal sample in cannister: 12:14 a.m.
Weight of sample: 599.87 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-16	12:29 a.m.	552	552
	12:44 a.m.	384	936
	1:00 a.m.	313	1249
	1:15 a.m.	250	1499
	1:30 a.m.	215	1714
	1:45 a.m.	185	1899
	2:00 a.m.	109	2008
	2:15 a.m.	240	2248
	2:30 a.m.	133	2381
	2:45 a.m.	163	2544
	3:00 a.m.	125	2669
	3:15 a.m.	133	2802
	3:30 a.m.	84	2886
	3:45 a.m.	94	2980
	4:00 a.m.	90	3070
	4:15 a.m.	107	3177
	4:30 a.m.	77	3254
	4:45 a.m.	61	3315
	5:00 a.m.	71	3386
	5:15 a.m.	75	3461
	5:30 a.m.	50	3511
	5:45 a.m.	62	3573
	6:00 a.m.	85	3658
	6:15 a.m.	40	3698
	6:30 a.m.	57	3755
	7:30 a.m.	224	3979
	8:30 a.m.	206	4185
	9:45 a.m.	151	4336
	10:45 a.m.	221	4557
	11:45 a.m.	197	4754
	12:45 p.m.	219	4973
	1:45 p.m.	191	5164
	2:45 p.m.	230	5394
	3:45 p.m.	178	5572
	4:45 p.m.	173	5745
	5:45 p.m.	142	5887
	6:45 p.m.	189	6076
	7:15 p.m.	62	6138
	9:15 p.m.	178	6316
	10:15 p.m.	81	6397
	11:45 p.m.	120	6517

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-17	12:45 a.m.	74	6691
	1:45 a.m.	76	6667
	10:45 a.m.	330	6997
	8:19 p.m.	240	7237
06-18	9:03 a.m.	225	7462
	12:33 p.m.	109	7571
	9:10 p.m.	145	7716
06-19	8:59 a.m.	117	7833
	11:48 a.m.	69	7902
	8:14 p.m.	200	8102
06-20	8:01 a.m.	113	8215
	11:00 a.m.	63	8278
	8:13 p.m.	177	8455
06-21	11:12 a.m.	147	8602
06-22	2:42 p.m.	286	8888
06-23	1:00 p.m.	107	8995
06-24	8:13 p.m.	188	9183
06-25	8:29 p.m.	127	9310
06-26	10:01 a.m.	21	9331
06-27	8:39 a.m.	46	9377
06-28	7:46 p.m.	140	9517
06-29	8:12 a.m.	0	9517
06-30	8:11 p.m.	92	9609
07-01	7:04 p.m.	68	9677
07-02	9:51 a.m.	0	9677
07-03	7:47 a.m.	30	9707
07-04	8:35 a.m.	35	9742
07-05	8:26 a.m.	0	9742
07-06	7:58 a.m.	0	9742
07-07	8:10 a.m.	30	9772

Desorbed gas = 9,772 cm^3
"Lost" gas = 800 cm^3
"Residual" gas = 690 cm^3
Total = 11,262 cm^3
Gas content of coal sample = 18.77 cm^3/gram

D.D.H. BC-80-24

TROJAN COAL SEAM AT 397.56 METRES

Coal sample started out of hole: 8:29 a.m.
Coal sample begins giving off gas: 8:32 a.m.
Coal sample at surface: 8:35 a.m.
Coal sample in cannister: 8:41 a.m.
Weight of sample: 623.61 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-16	8:56 a.m.	160	160
	9:11 a.m.	95	255
	9:26 a.m.	94	349
	9:41 a.m.	85	434
	9:56 a.m.	70	504
	10:11 a.m.	64	568
	10:26 a.m.	83	651
	10:41 a.m.	77	728
	10:56 a.m.	65	793
	11:11 a.m.	54	847
	11:26 a.m.	50	897
	11:41 a.m.	57	954
	11:56 a.m.	50	1004
	12:11 p.m.	38	1042
	12:26 p.m.	40	1082
	12:41 p.m.	46	1128
	12:56 p.m.	62	1190
	1:26 p.m.	30	1220
	1:56 p.m.	41	1261
	2:26 p.m.	29	1290
	2:56 p.m.	0	1290
	3:26 p.m.	20	1310
	3:56 p.m.	0	1310
	4:26 p.m.	20	1330
	4:56 p.m.	30	1360
	5:26 p.m.	1	1361
	5:56 p.m.	0	1361
	6:56 p.m.	22	1383
	9:14 p.m.	20	1403
	9:44 p.m.	19	1422
	10:14 p.m.	20	1442
	11:14 p.m.	11	1453
	11:44 p.m.	5	1458
06-17	10:47 a.m.	0	1458
	8:19 p.m.	0	1458
06-18	9:05 a.m.	0	1458
	10:15 a.m.	0	1458
	12:34 p.m.	0	1458
	9:11 p.m.	0	1458
06-19	8:59 a.m.	0	1458

Desorbed gas	=	1,458 cm^3
"Lost" gas	=	225 cm^3
"Residual" gas	=	110 cm^3
Total	=	1,793 cm^3

Gas content of coal sample = 2.88 cm^3/gram

D.D.H. BC-80-25

TITAN COAL SEAM AT 117.45 METRES

Coal sample started out of hole: 4:19 p.m.
Coal sample began giving off gas: 4:20 p.m.
Coal sample at surface: 4:21 p.m.
Coal sample in cannister: 4:26 p.m.
Weight of sample: 622.77 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-16	4:41 p.m.	100	100
	4:56 p.m.	36	136
	5:11 p.m.	31	167
	5:26 p.m.	37	204
	5:41 p.m.	21	225
	5:56 p.m.	29	254
	6:26 p.m.	50	304
	6:56 p.m.	29	333
	9:13 p.m.	50	383
	9:43 p.m.	20	403
	10:13 p.m.	10	413
	11:13 p.m.	27	440
	11:43 p.m.	15	455
06 17	10:48 a.m.	145	600
	8:20 p.m.	62	662
06-18	9:06 a.m.	74	736
	10:15 a.m.	19	755
	12:35 p.m.	15	770
	9:12 p.m.	45	815
06-19	9:00 a.m.	26	841
	11:49 a.m.	22	863
	8:15 p.m.	80	943
06-20	8:02 a.m.	25	968
	11:00 a.m.	37	1005
	8:15 p.m.	75	1080
06-21	9:23 a.m.	23	1103
	11:11 a.m.	20	1123
06-22	9:13 a.m.	20	1143
	12:00 p.m.	49	1192
	2:41 p.m.	28	1220
06-23	1:01 p.m.	42	1262
06-24	8:13 p.m.	92	1354
06-25	9:07 a.m.	0	1354
06-26	10:02 a.m.	68	1422
06-27	8:37 a.m.	38	1460
06-28	7:55 a.m.	47	1507
	7:47 p.m.	49	1556
06-29	8:12 a.m.	0	1556
06-30	8:21 a.m.	10	1566
	8:10 p.m.	50	1616

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
07-01	7:04 p.m.	52	1668
07-02	9:50 a.m.	0	1668
07-03	7:46 a.m.	20	1688
07-04	8:34 a.m.	25	1713
07-05	8:26 a.m.	0	1713
07-06	7:57 a.m.	0	1713

Desorbed gas = 1,713 cm^3
"Lost" gas = 75 cm^3
"Residual" gas = 120 cm^3
Total = 1,908 cm^3
Gas content of coal sample = 3.06 cm^3/gram

D.D.H. BC-80-25

SAMPLE TAKEN AT 161.66 METRES

Coal sample started out of hole: 12:08 a.m.
Coal sample began giving off gas: 12:09 a.m.
Coal sample at surface: 12:10 a.m.
Coal sample in cannister: 12:14 a.m.
Weight of sample: 372.10 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-18	12:31 a.m.	77	77
	12:46 a.m.	15	92
	1:01 a.m.	10	102
	1:16 a.m.	10	112
	1:31 a.m.	8	120
	6:46 a.m.	104	224
	11:46 a.m.	63	287
	4:50 p.m.	31	318
	5:50 p.m.	0	318
	7:05 p.m.	0	318
	9:13 p.m.	22	340
06-19	8:55 a.m.	8	348
	9:33 a.m.	10	358
	11:47 a.m.	0	358
	8:10 a.m.	108	466
06-20	8:00 a.m.	0	466
	9:30 a.m.	1	467
	11:03 a.m.	25	492
	8:15 p.m.	79	571
06-21	8:00 a.m.	0	571
	9:26 a.m.	19	590
	11:14 a.m.	20	610
06-22	9:14 a.m.	40	650
	12:01 p.m.	32	682
	2:40 p.m.	20	702
06-23	1:02 p.m.	30	732
06-24	8:14 a.m.	61	793
06-25	9:08 a.m.	0	793
06-26	10:00 a.m.	30	823
06-27	8:38 a.m.	0	823
06-28	7:54 a.m.	0	823
06-29	8:09 a.m.	0	823

Desorbed gas = 823 cm^3
"Lost" gas = 66 cm^3
"Residual" gas = 60 cm^3
Total = 949 cm^3
Gas content of coal sample = 2.55 cm^3/gram

D.D.H. BC-80-27

SUPERIOR COAL SEAM AT 71.48 METRES

Coal sample started out of hole: 1:09 a.m.
Coal sample began giving off gas: 1:09:30 a.m.
Coal sample at surface: 1:10 a.m.
Coal sample in cannister: 1:13:30 a.m.
Weight of sample: 332.48 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-23	1:28 a.m.	60	60
	1:43 a.m.	0	60
	1:58 a.m.	0	60
	2:13 a.m.	0	60
	2:28 a.m.	0	60
	6:54 a.m.	38	98
	9:07 a.m.	0	98
	2:34 p.m.	88	186
	3:38 p.m.	0	186
	4:38 p.m.	18	204
	5:38 p.m.	0	204
	6:38 p.m.	0	204
	7:41 p.m.	0	204
	8:41 p.m.	0	204
	9:41 p.m.	0	204
06-24	7:27 a.m.	0	204
	8:27 a.m.	0	204
	10:27 a.m.	0	204
	11:27 a.m.	18	222
	12:57 p.m.	32	254
	1:27 p.m.	0	254
	6:35 p.m.	36	290
06-25	8:45 p.m.	7	297
06-26	9:47 p.m.	0	297
06-27	8:31 p.m.	0	297
06-28	7:48 p.m.	0	297

Desorbed gas = 297 cm^3
"Lost" gas = 45 cm^3
"Residual" gas = 25 cm^3
Total = 367 cm^3
Gas content of coal sample = 1.10 cm^3/gram

D.D.H. BC-80-27

TROJAN COAL SEAM AT 111.40 METRES

Coal sample started out of hole: 3:37:30 p.m.
Coal sample began giving off gas: 3:38 p.m.
Coal sample at surface: 3:38:30 p.m.
Coal sample in cannister: 3:43 p.m.
Weight of sample: 820.20 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-23	3:58 p.m.	83	83
	4:13 p.m.	36	119
	4:28 p.m.	32	151
	4:43 p.m.	21	172
	4:58 p.m.	25	197
	5:13 p.m.	20	217
	5:28 p.m.	0	217
	5:43 p.m.	33	250
	5:58 p.m.	0	250
	6:28 p.m.	38	288
	7:43 p.m.	59	347
	8:13 p.m.	0	347
	8:43 p.m.	22	369
	9:13 p.m.	18	387
	9:43 p.m.	0	387
06-24	7:25 a.m.	110	497
	8:25 a.m.	19	516
	8:55 a.m.	0	516
	10:25 a.m.	25	541
	10:55 a.m.	15	556
	11:25 a.m.	13	569
	12:55 p.m.	46	615
	1:25 p.m.	30	645
	6:36 p.m.	119	764
	9:07 p.m.	45	809
	11:28 p.m.	0	809
06-25	6:55 a.m.	25	834
	1:23 p.m.	111	945
	8:47 p.m.	60	1005
06-26	9:48 a.m.	30	1035
06-27	8:32 a.m.	91	1126
06-28	7:49 a.m.	91	1217
	7:50 p.m.	60	1277
06-29	8:10 a.m.	20	1297
	6:25 p.m.	0	1297
06-30	8:19 a.m.	32	1329
	8:08 p.m.	65	1394
07-01	9:42 a.m.	0	1394
	7:03 p.m.	70	1464
07-02	9:50 a.m.	0	1464

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
07-03	7:45 a.m.	52	1516
07-04	8:34 a.m.	50	1566
07-05	8:25 a.m.	0	1566
07-06	7:56 a.m.	0	1566
07-07	8:10 a.m.	70	1636

Desorbed gas = 1,636 cm^3
"Lost" gas = 58 cm^3
"Residual" gas = 110 cm^3
Total = 1,804 cm^3

Gas content of coal sample = 2.20 cm^3/gram

D.D.H. BC-80-27

TITAN COAL SEAM AT 124.70 METRES

Coal sample started out of hole: 7:52 p.m.
Coal sample began giving off gas: 7:53 p.m.
Coal sample at surface: 7:54 p.m.
Coal sample in cannister: 7:58 p.m.
Weight of sample: 899.14 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-23	8:13 p.m.	20	20
	8:28 p.m.	0	20
	8:43 p.m.	0	20
	8:58 p.m.	0	20
	9:13 p.m.	0	20
	9:28 p.m.	0	20
	9:43 p.m.	0	20
	9:58 p.m.	0	20
06-24	7:23 a.m.	67	87
	8:23 a.m.	1	88
	8:53 a.m.	0	88
	10:23 a.m.	0	88
	11:23 a.m.	0	88
	12:53 p.m.	0	88
	6:37 p.m.	1	89
06-25	8:48 p.m.	14	103
06-26	9:48 a.m.	0	103
06-27	8:33 a.m.	0	103
06-28	7:49 a.m.	0	103

Desorbed gas = 103 cm^3
"Lost" gas = 20 cm^3
"Residual" gas = 5 cm^3
Total = 128 cm^3
Gas content of coal sample = 0.14 cm^3/gram

D.D.H. BC-80-27

FALLS COAL SEAM AT 150.61 METRES

Coal sample started out of hole: 3:47 a.m.
Coal sample began giving off gas: 3:47:30 a.m.
Coal sample at surface: 3:48 a.m.
Coal sample in cannister: 3:52 a.m.
Weight of sample: 733.05 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-24	4:11 a.m.	35	35
	4:26 a.m.	32	67
	4:41 a.m.	30	97
	4:56 a.m.	27	124
	5:11 a.m.	23	147
	5:21 a.m.	20	167
	5:41 a.m.	22	189
	5:56 a.m.	20	209
	6:11 a.m.	22	231
	6:26 a.m.	23	254
	6:41 a.m.	21	275
	6:56 a.m.	21	296
	7:26 a.m.	15	311
	7:56 a.m.	10	321
	8:26 a.m.	30	351
	8:56 a.m.	20	371
	9:26 a.m.	39	410
	9:56 a.m.	19	429
	10:26 a.m.	0	429
	10:56 a.m.	0	429
	11:26 a.m.	0	429
	12:56 p.m.	0	429
	6:38 p.m.	12	441
06-25	8:49 p.m.	16	457
06-26	9:49 a.m.	1	458
06-27	8:34 a.m.	1	459
06-28	7:52 a.m.	0	459
06-29	8:08 a.m.	0	459
06-30	8:19 a.m.	0	459

Desorbed gas = 459 cm^3
"Lost" gas = 36 cm^3
"Residual" gas = 40 cm^3
Total = 535 cm^3

Gas content of coal sample = 0.73 cm^3/gram

D.D.H. BC-80-27

SAMPLE TAKEN AT 175.88 METRES

Coal sample started out of hole: 1:27:30 p.m.
Coal sample began giving off gas: 1:28:30 p.m.
Coal sample at surface: 1:29:30 p.m.
Coal sample in cannister: 1:32:30 p.m.
Weight of sample: 389.40 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-24	1:45 p.m.	80	80
	2:00 p.m.	80	160
	2:15 p.m.	80	240
	2:30 p.m.	66	306
	2:45 p.m.	65	371
	3:00 p.m.	58	429
	3:15 p.m.	47	476
	3:30 p.m.	40	516
	3:45 p.m.	39	555
	4:15 p.m.	29	584
	4:45 p.m.	24	608
	5:15 p.m.	34	642
	5:45 p.m.	32	674
	6:45 p.m.	19	693
	9:52 p.m.	10	703
	11:28 p.m.	20	723
06-25	6:54 a.m.	20	743
	1:19 p.m.	0	743
	8:50 p.m.	0	743
06-26	9:50 a.m.	0	743
06-27	8:35 a.m.	0	743
06-28	7:52 a.m.	0	743

Desorbed gas = 743 cm^3
"Lost" gas = 95 cm^3
"Residual" gas = 60 cm^3
Total = 898 cm^3
Gas content of coal sample = 2.31 cm^3/gram

D.D.H. BC-80-27

SAMPLE TAKEN AT 181.04 METRES

Coal sample started out of hole: 2:05:30 p.m.
Coal sample began giving off gas: 2:06:30 p.m.
Coal sample at surface: 2:07:30 p.m.
Coal sample in cannister: 2:12:30 p.m.
Weight of sample: 559.38 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-24	2:35 p.m.	119	119
	2:50 p.m.	59	178
	3:05 p.m.	75	253
	3:20 p.m.	56	309
	3:35 p.m.	48	357
	3:50 p.m.	44	401
	4:05 p.m.	49	450
	4:20 p.m.	30	480
	4:35 p.m.	30	510
	5:05 p.m.	66	576
	5:35 p.m.	58	634
	6:05 p.m.	50	684
	6:35 p.m.	43	727
	9:53 p.m.	160	887
	11:30 p.m.	105	992
06-25	6:52 a.m.	285	1277
	1:21 p.m.	112	1389
	8:50 p.m.	165	1554
06-26	9:50 a.m.	101	1655
06-27	8:40 a.m.	181	1836
06-28	7:57 a.m.	170	2006
	7:45 p.m.	100	2106
06-29	8:14 a.m.	33	2139
	6:25 p.m.	59	2198
06-30	8:23 a.m.	28	2226
	8:12 p.m.	70	2296
07-01	9:45 a.m.	22	2318
	7:05 p.m.	95	2413
07-02	9:52 a.m.	32	2445
	7:35 p.m.	79	2524
07-03	7:48 a.m.	0	2524
07-04	8:37 a.m.	80	2604
07-05	8:29 a.m.	28	2632
07-06	7:59 a.m.	19	2651
07-07	8:13 a.m.	75	2726
07-08	8:56 a.m.	70	2796
07-09	7:15 a.m.	42	2838
07-10	8:18 a.m.	21	2859
07-11	9:09 a.m.	50	2909
07-12	8:06 a.m.	28	2937
07-13	9:00 a.m.	78	3015
07-14	8:30 a.m.	50	3065
07-15	8:05 a.m.	20	3085

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
07-16	7:08 a.m.	0	3085
07-17	7:13 a.m.	0	3085
07-18	9:08 a.m.	0	3085
07-19	1:22 p.m.	40	3125
07-20	8:48 a.m.	37	3162
07-21	9:43 a.m.	42	3204
07-23	8:35 a.m.	45	3249
07-24	10:53 a.m.	23	3272
07-26	10:49 a.m.	56	3328
07-31	10:58 a.m.	90	3418

Desorbed gas = 3,418 cm^3
"Lost" gas = 119 cm^3
"Residual" gas = 2,300 cm^3
Total = 5,837 cm^3
Gas content of coal sample = 10.43 cm^3/gram

D.D.H. BC-80-27

SAMPLE TAKEN AT 193.85 METRES

Coal sample started out of hole: 8:31 p.m.
Coal sample began giving off gas: 8:32 p.m.
Coal sample at surface: 8:33 p.m.
Coal sample in cannister: 8:36 p.m.
Weight of sample: 479.74 grams

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
06-24	8:49 p.m.	100	100
	9:04 p.m.	40	140
	9:19 p.m.	19	159
	9:34 p.m.	20	179
	9:49 p.m.	15	194
	10:04 p.m.	15	209
	10:19 p.m.	0	209
	10:37 p.m.	25	234
	11:27 p.m.	40	274
06-25	6:49 a.m.	150	424
	1:20 p.m.	135	559
	8:52 p.m.	85	644
06-26	9:51 a.m.	70	714
06-27	8:40 a.m.	110	824
06-28	7:58 a.m.	121	945
	7:45 p.m.	64	1009
06-29	8:13 a.m.	27	1036
	6:26 p.m.	48	1084
06-30	8:24 a.m.	5	1089
	8:12 p.m.	135	1224
07-01	9:45 a.m.	21	1245
	7:06 p.m.	81	1326
07-02	9:53 a.m.	0	1326
	7:36 p.m.	68	1394
07-03	7:47 a.m.	0	1394
07-04	8:36 a.m.	51	1445
07-05	8:27 a.m.	25	1470
07-06	7:58 a.m.	0	1470
07-07	8:12 a.m.	71	1541
07-08	8:55 a.m.	70	1611
07-09	7:15 a.m.	38	1649
07-10	8:18 a.m.	20	1669
07-11	9:09 a.m.	41	1710
07-12	8:07 a.m.	22	1732
07-13	8:59 a.m.	78	1810
07-14	8:30 a.m.	40	1850
07-15	8:04 a.m.	22	1872
07-16	7:08 a.m.	0	1872
07-17	7:12 a.m.	0	1872
07-18	9:08 a.m.	0	1872
07-19	1:21 p.m.	45	1917
07-20	8:47 a.m.	39	1956
07-21	9:42 a.m.	39	1995

DATE	TIME	GAS RELEASED (cm^3)	TOTAL GAS (cm^3)
07-23	8:37 a.m.	67	2062
07-24	10:55 a.m.	21	2083
07-26	10:53 a.m.	67	2150
07-31	10:59 a.m.	130	2280

Desorbed gas = 2,280 cm^3
"Lost" gas = 60 cm^3
"Residual" gas = 1,600 cm^3
Total = 3,940 cm^3
Gas content of coal sample = 8.21 cm^3/gram

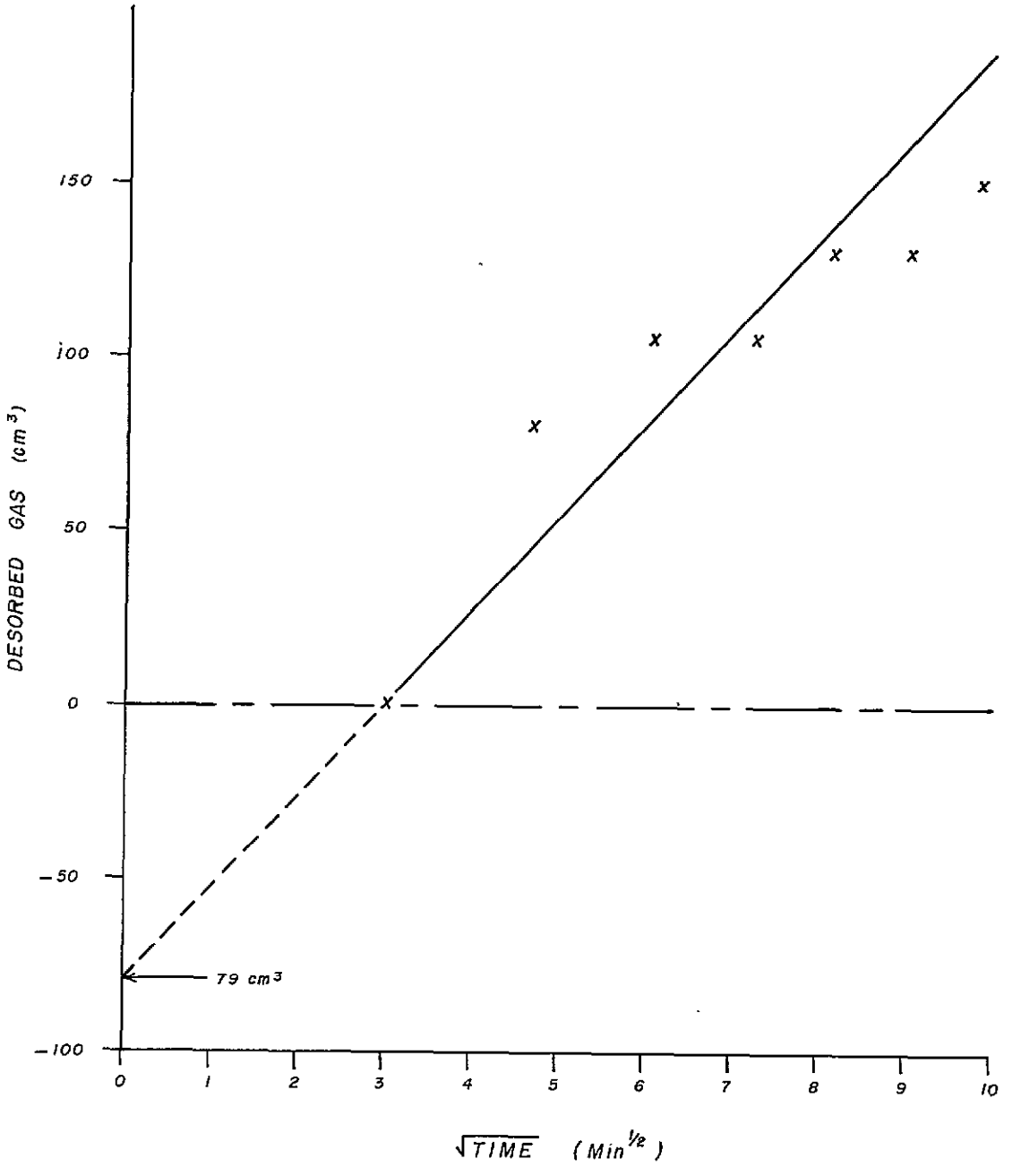
APPENDIX IV-B

METHANE GAS TESTING
"LOST" GAS GRAPHS

D.D.H. BC 80-14

TROJAN COAL SEAM

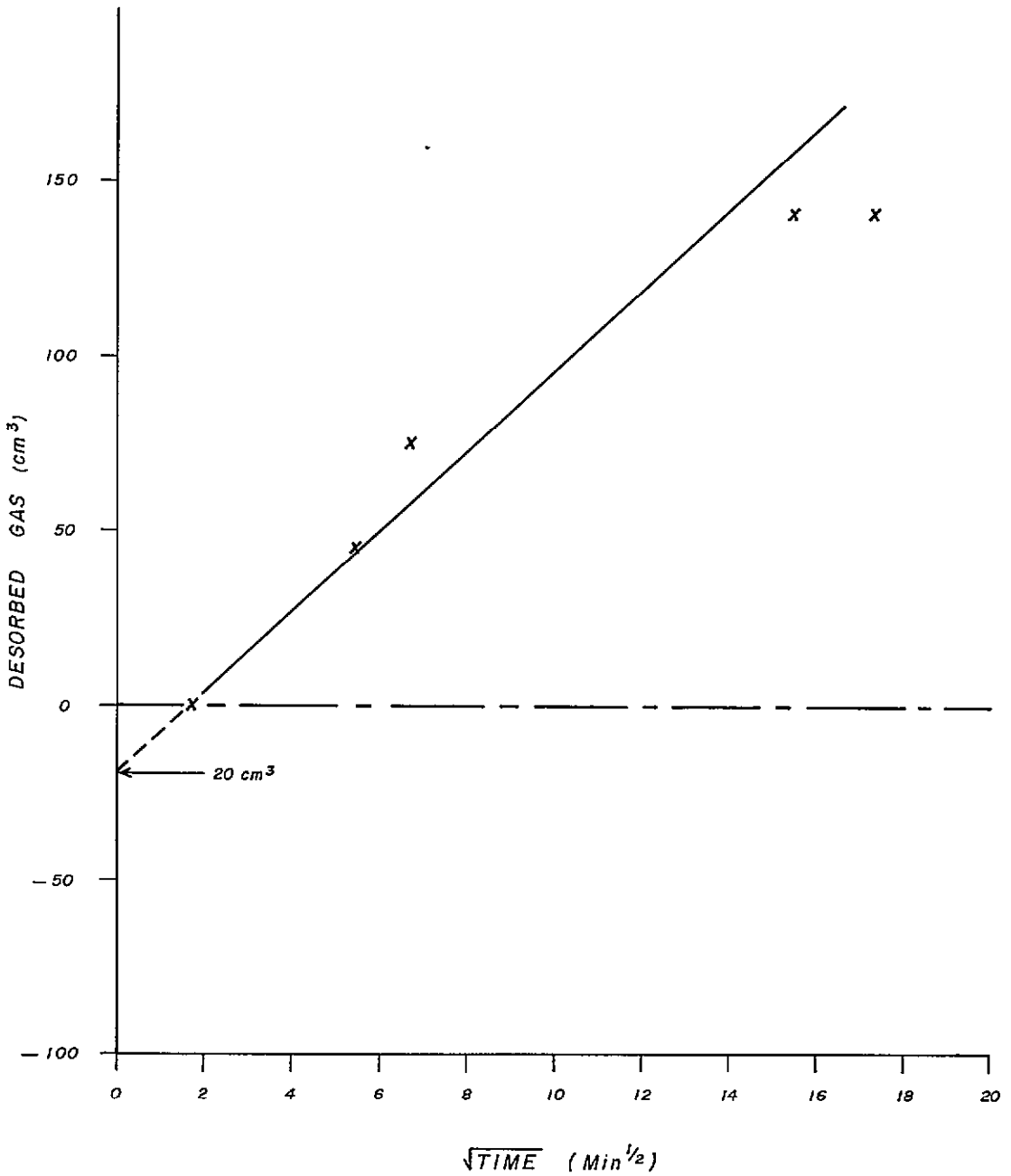
AT 106.55 METRES



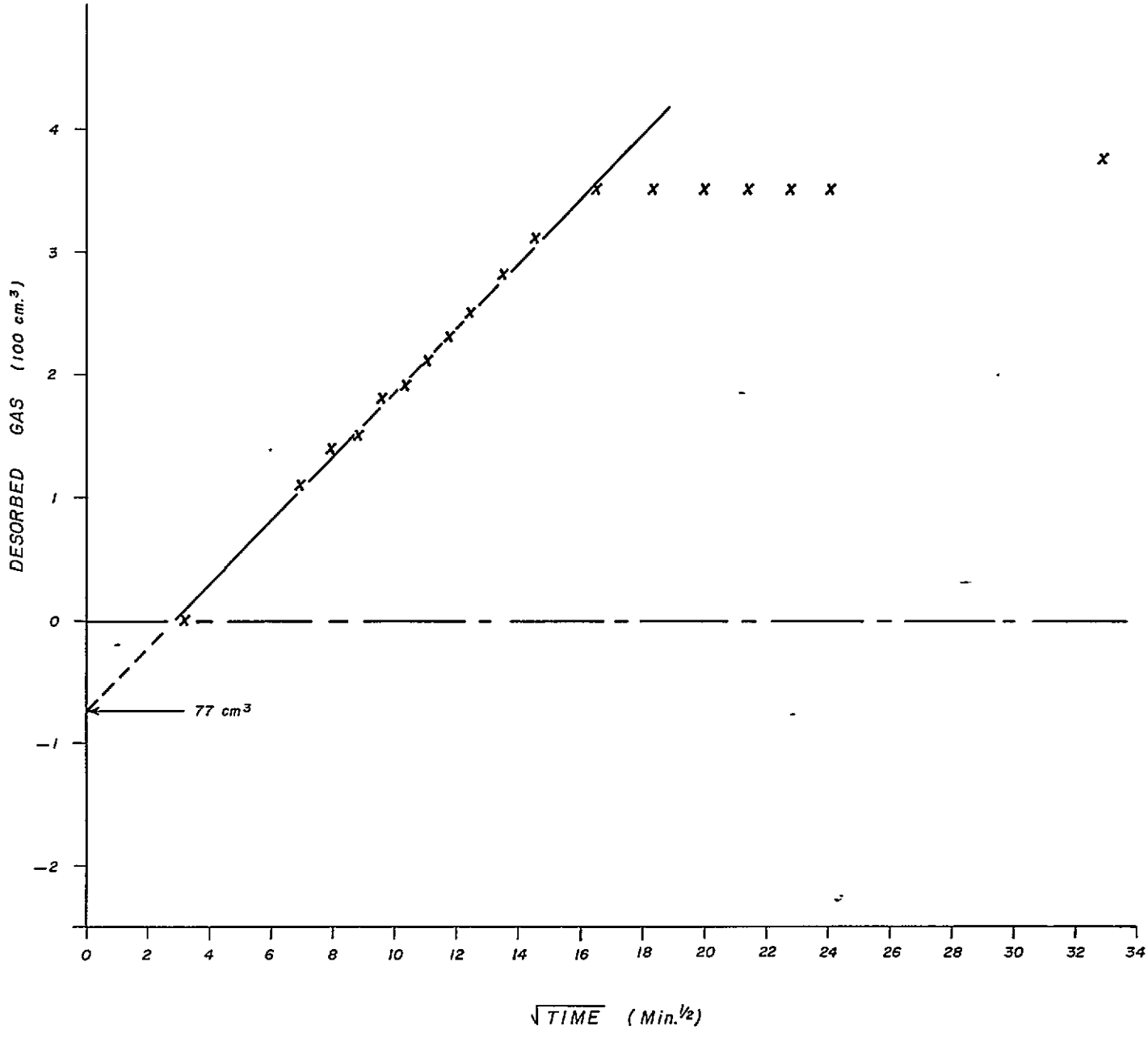
D.D.H. BC 80-17

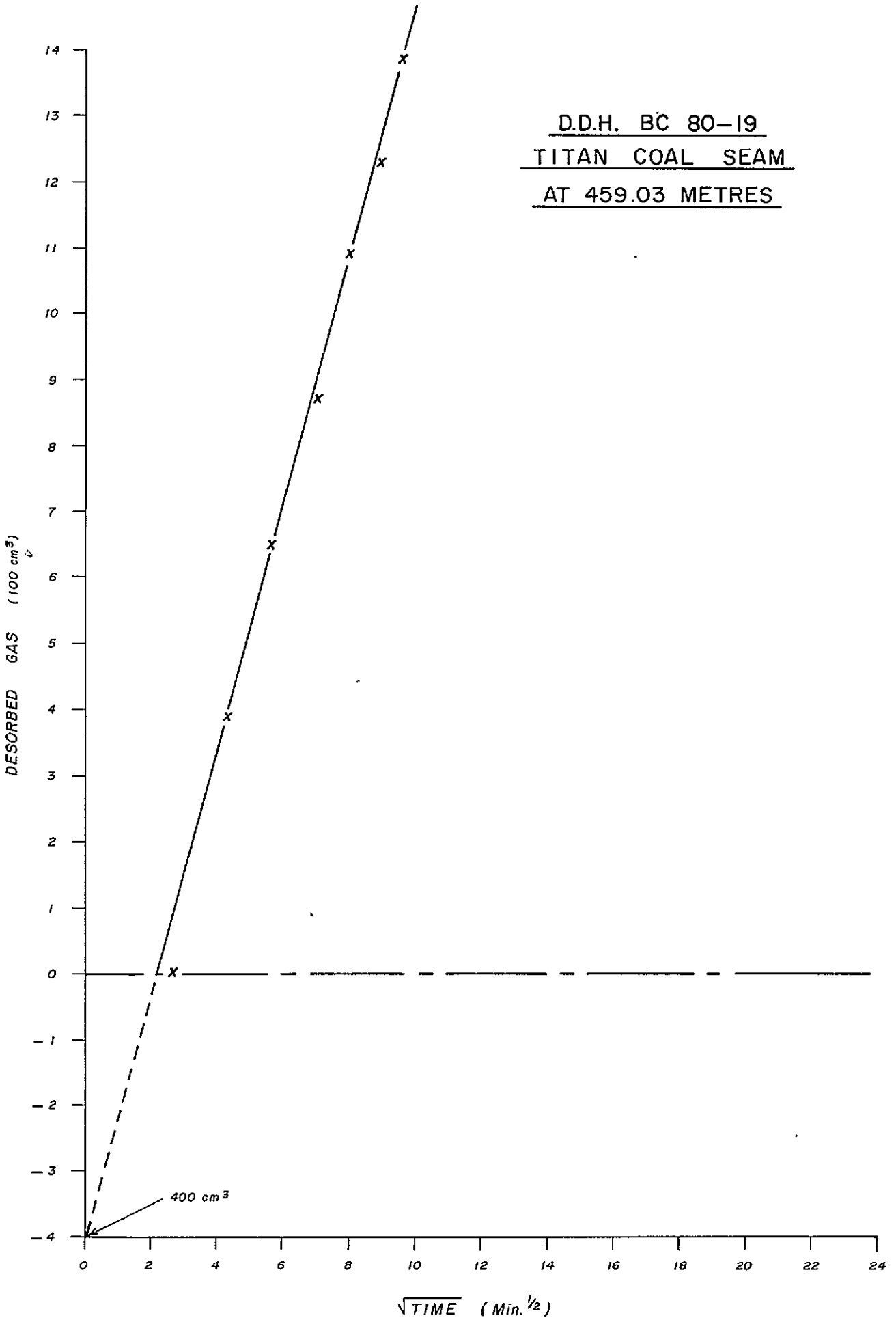
SAMPLE TAKEN AT

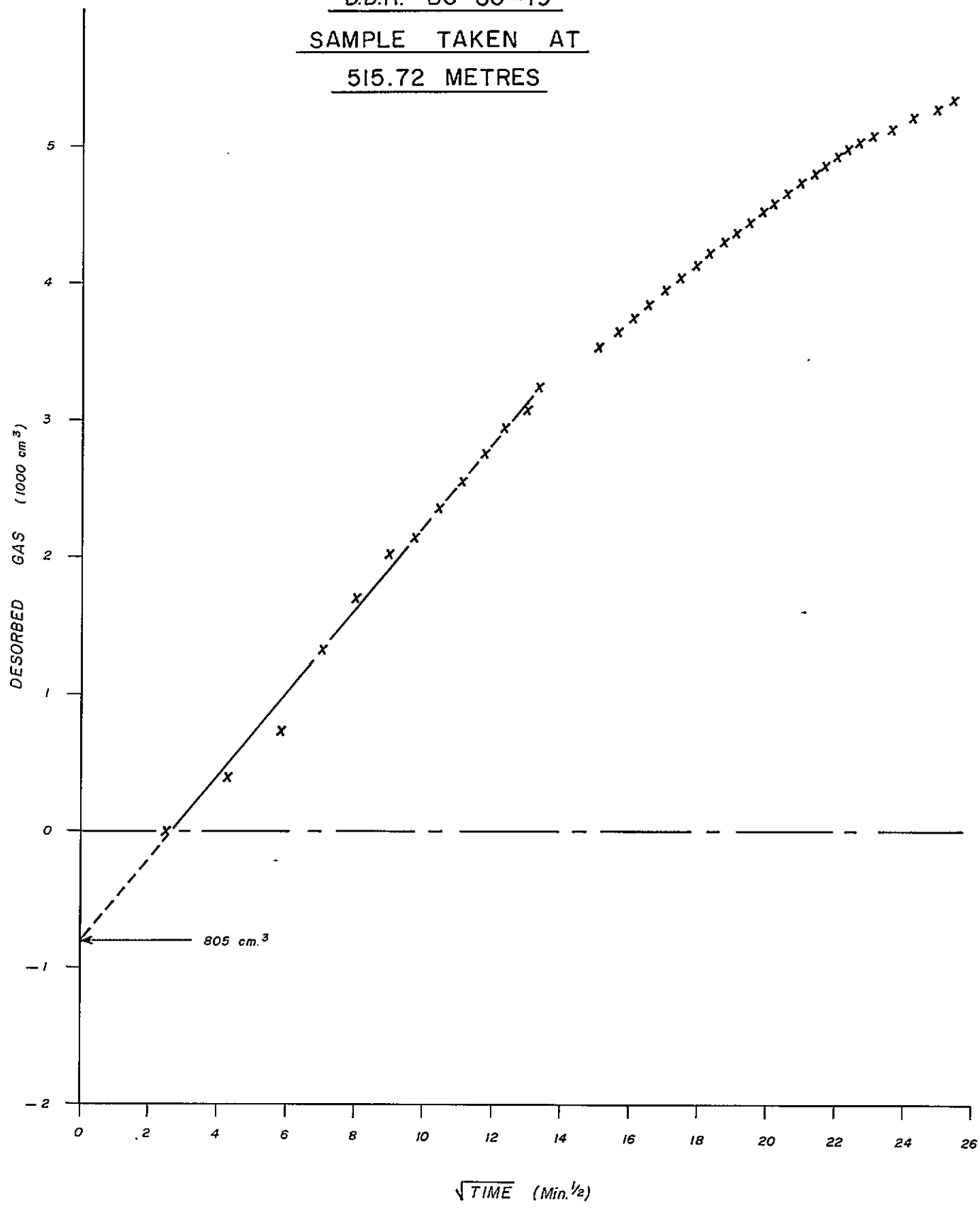
66.63 METRES



D.D.H. BC 80-18
TROJAN COAL SEAM
AT 131.86 METRES



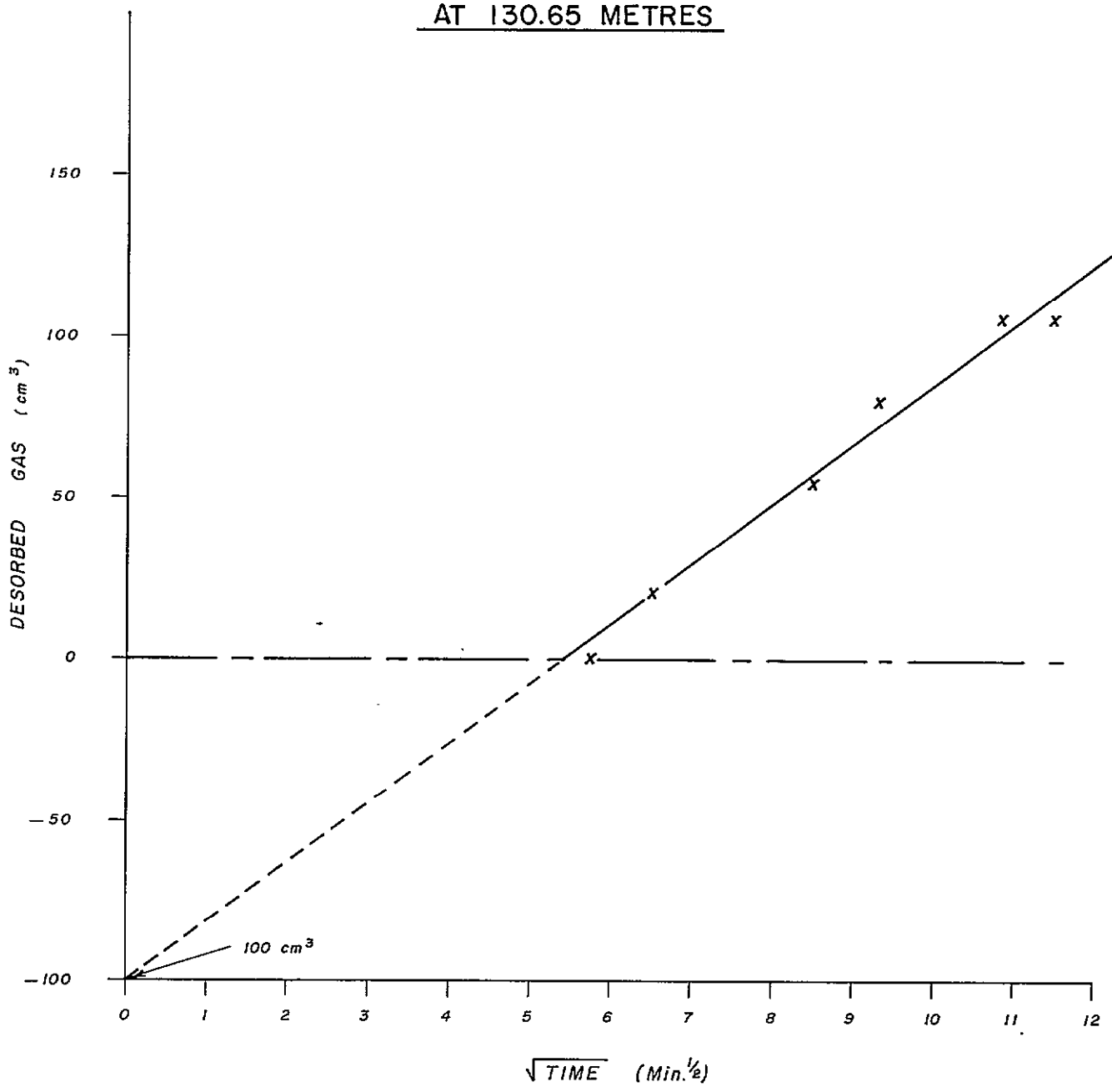

D.D.H. BC 80-19
TITAN COAL SEAM
AT 459.03 METRES
DESORBED GAS (100 cm³)
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
400 cm³
0
2
4
6
8
10
12
14
16
18
20
22
24
√TIME (Min.½)


D.D.H. BC 80-19
SAMPLE TAKEN AT
515.72 METRES
DESORBED GAS (1000 cm³)
5
4
3
2
1
0
-1
-2
805 cm.³
0
.2
4
6
8
10
12
14
16
18
20
22
24
26
√TIME (Min.½)

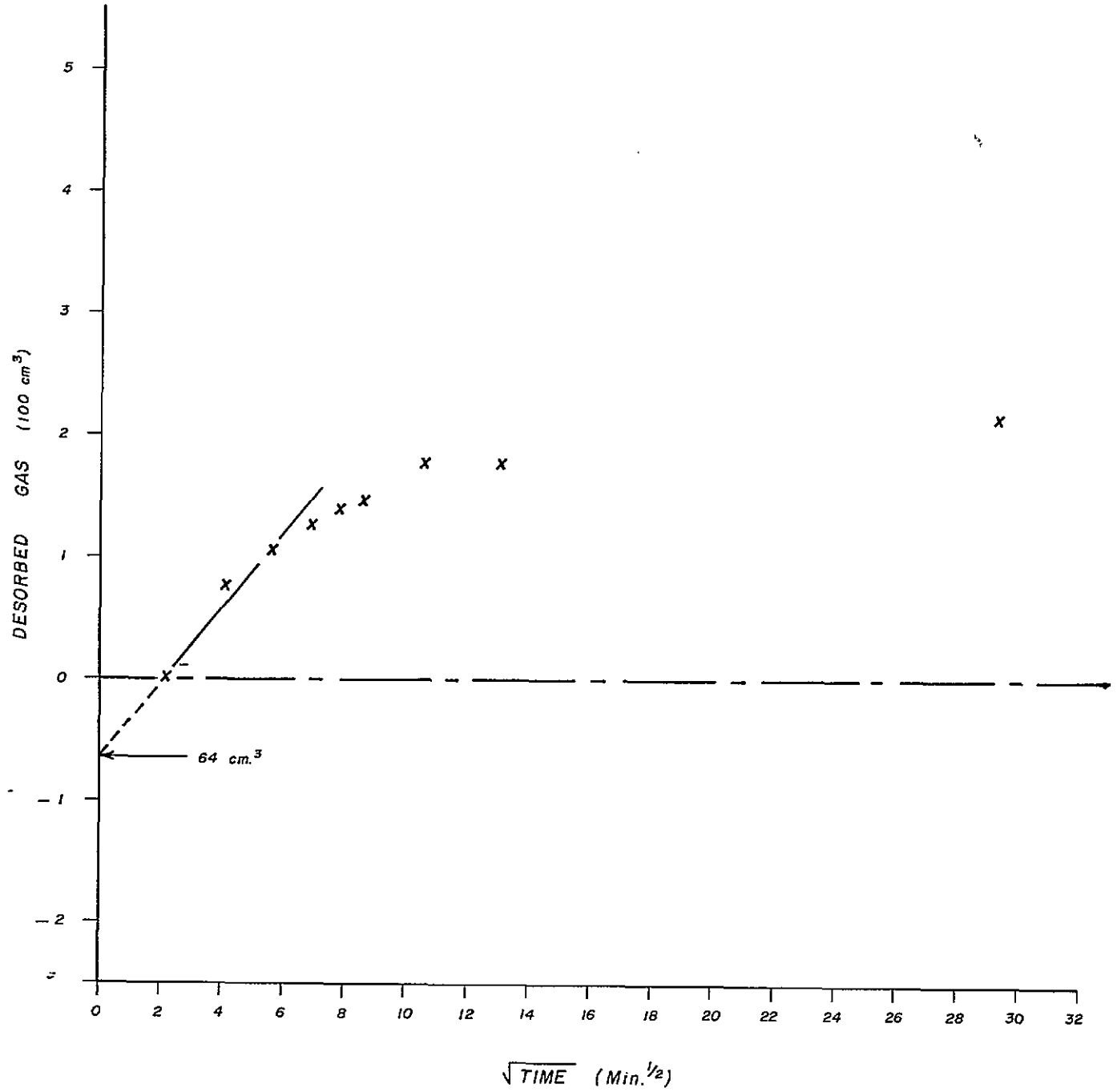
D.D.H. BC 80-20

TROJAN COAL SEAM

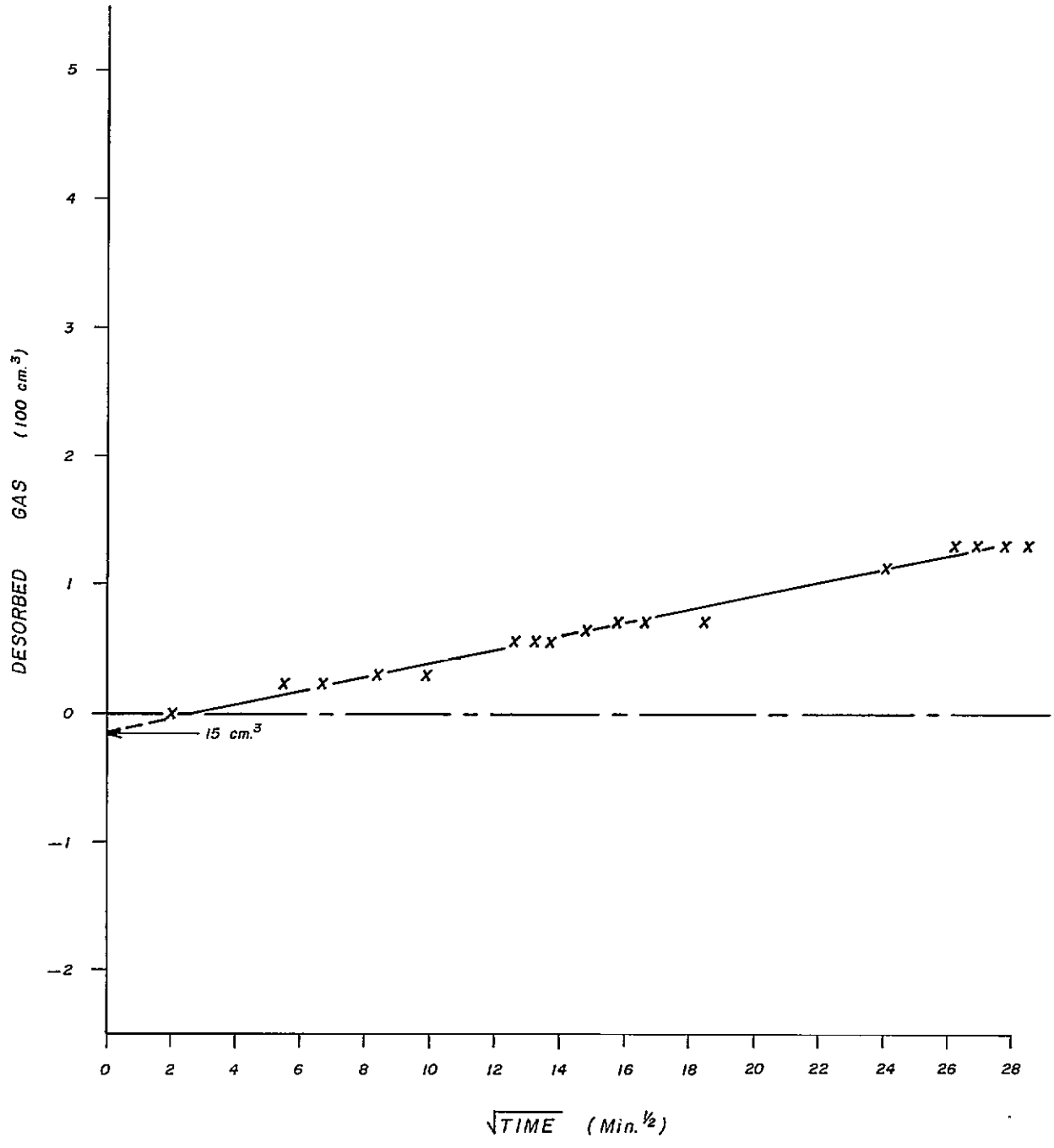
AT 130.65 METRES



D.D.H. BC 80-21
TROJAN COAL SEAM
AT 121.46 METRES



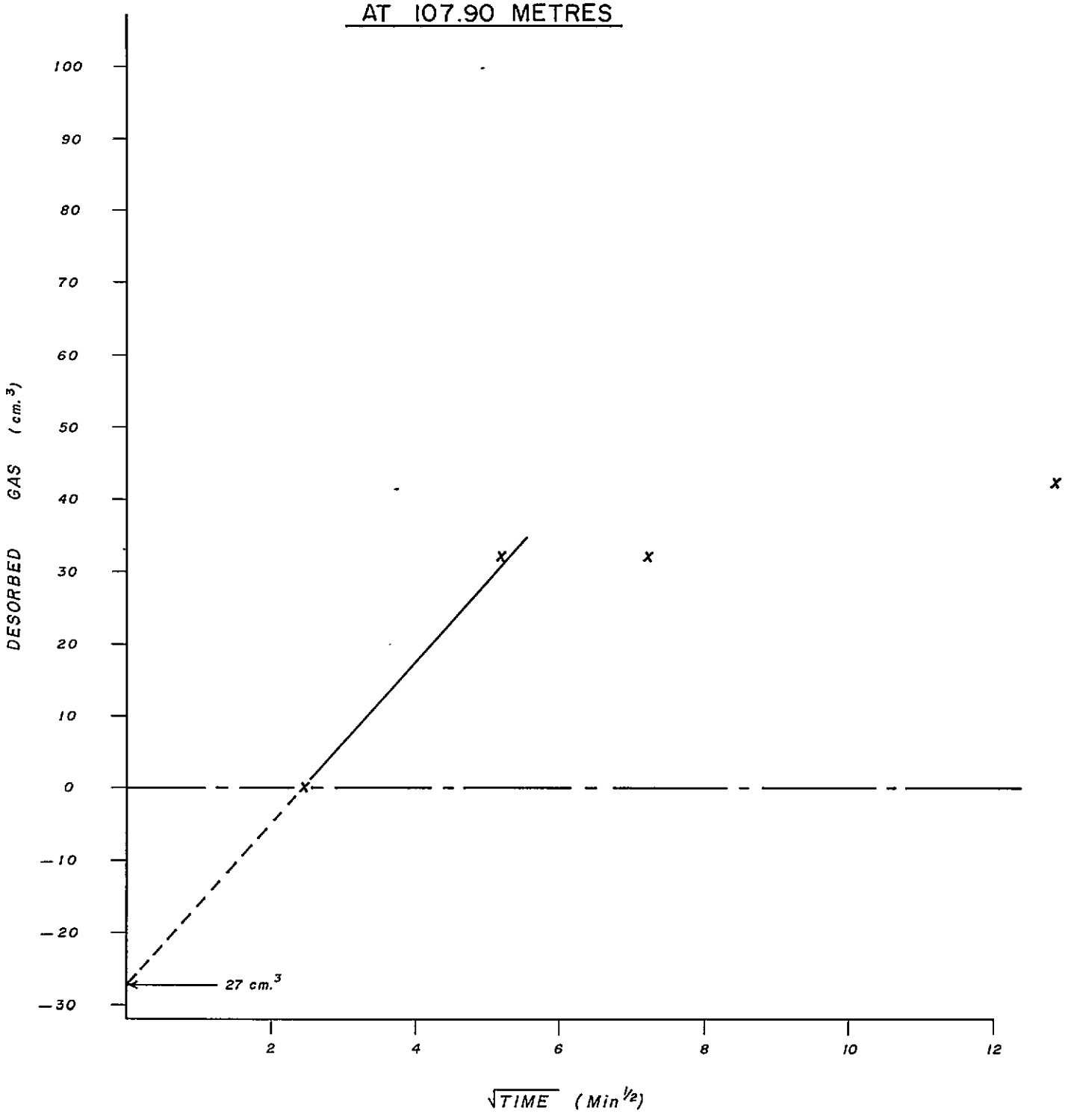
D.D.H. BC 80-22
SUPERIOR COAL SEAM
AT 78.64 METRES



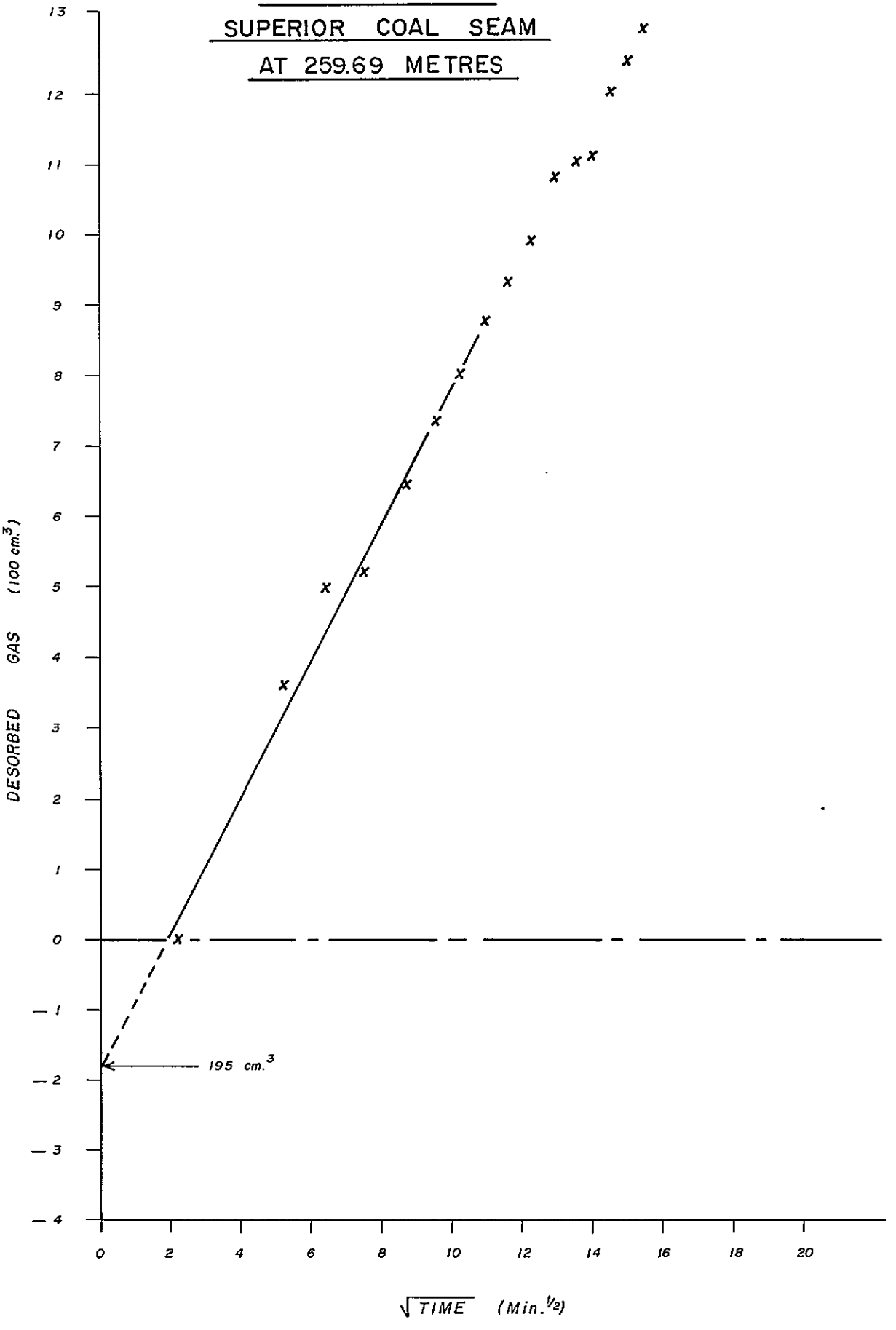
D.D.H. BC 80–22

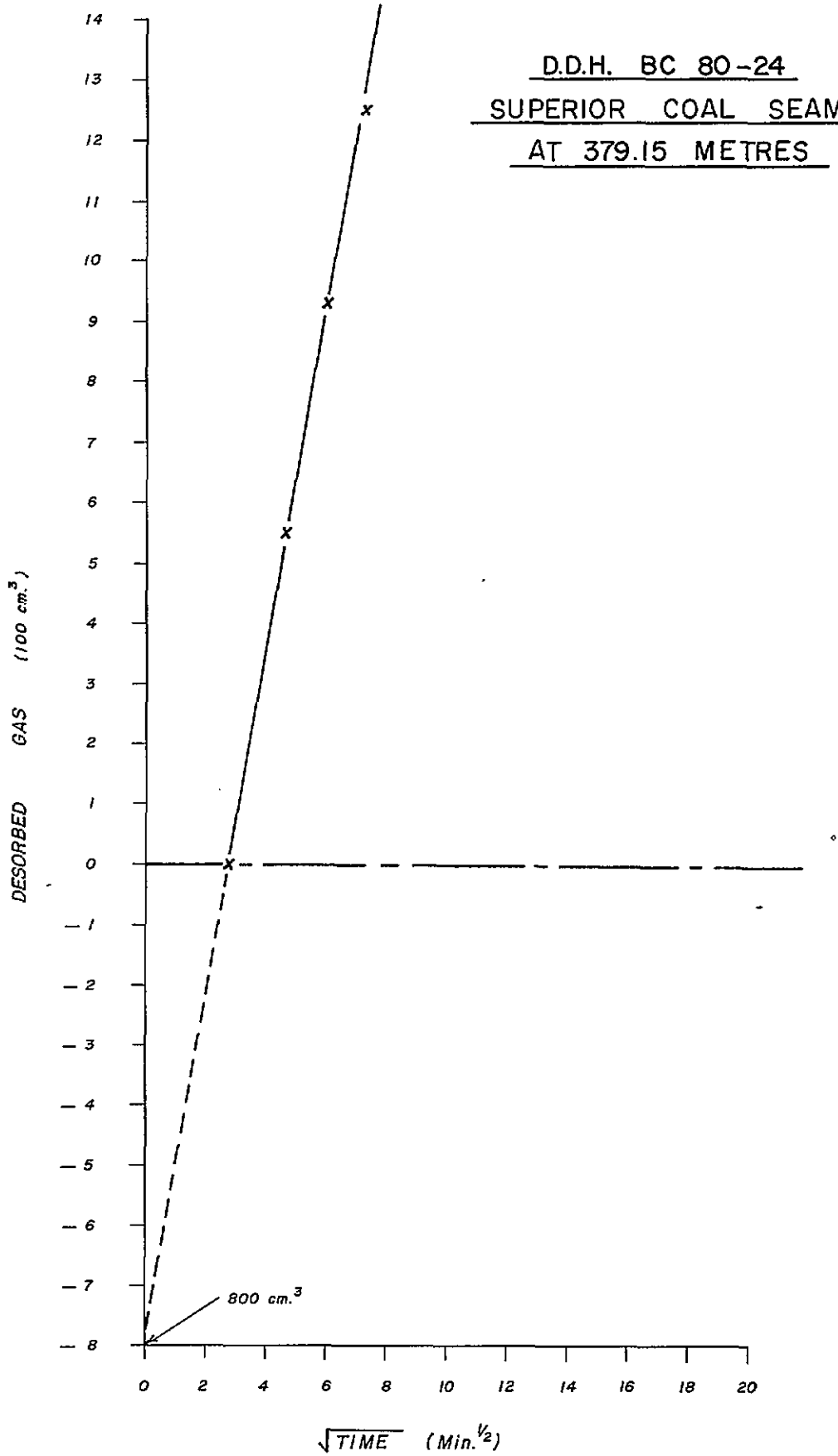
TROJAN COAL SEAM

AT 107.90 METRES



D.D.H. BC 80-23
SUPERIOR COAL SEAM
AT 259.69 METRES

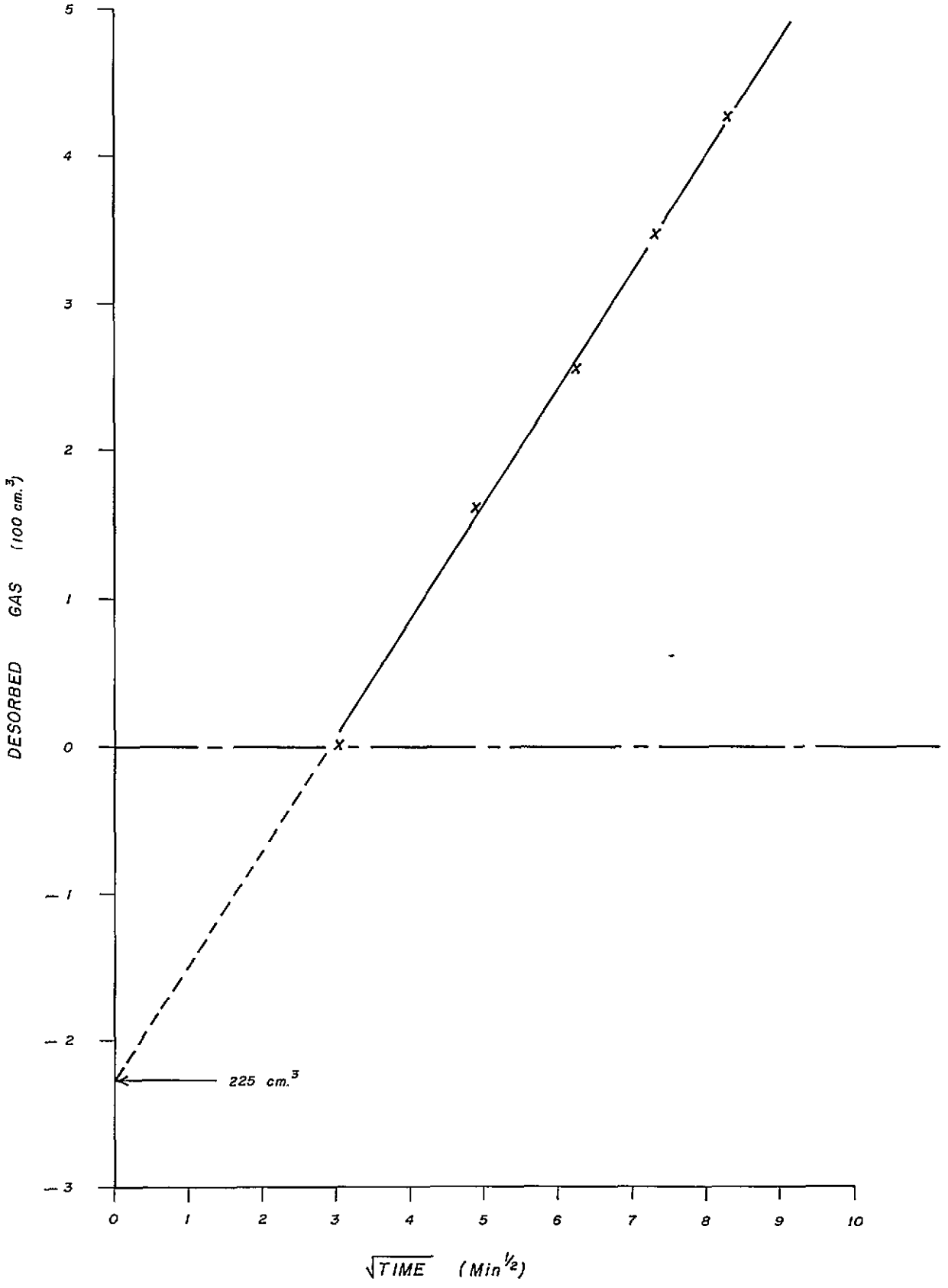



D.D.H. BC 80-24
SUPERIOR COAL SEAM
AT 379.15 METRES
DESORBED GAS (100 cm.³)
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
— 1
— 2
— 3
— 4
— 5
— 6
— 7
— 8
800 cm.³
0
2
4
6
8
10
12
14
16
18
20
√TIME (Min.½)

D.D.H. BC 80-24

TROJAN COAL SEAM

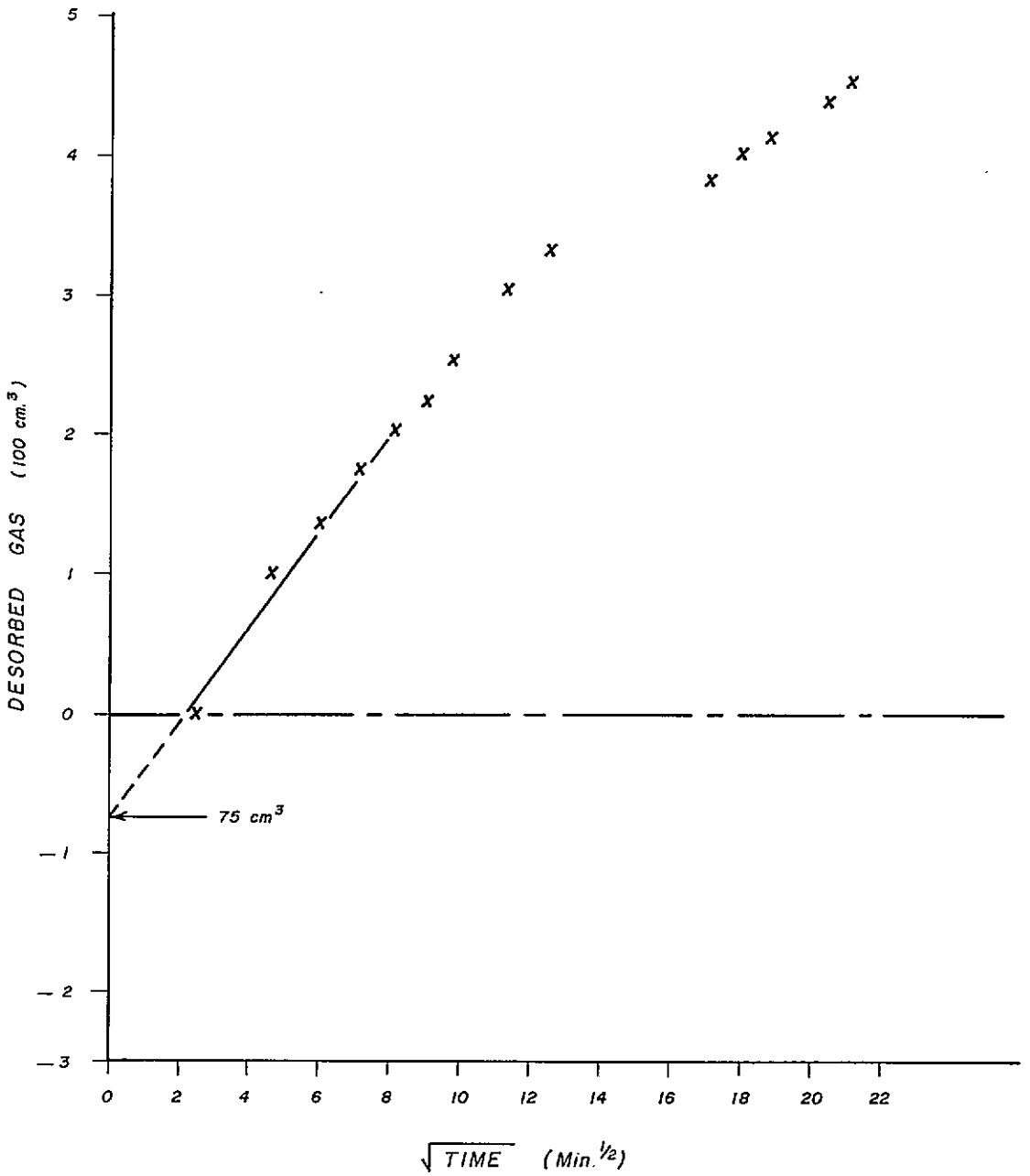
AT 397.56 METRES



D.D.H. BC 80-25

TITAN COAL SEAM

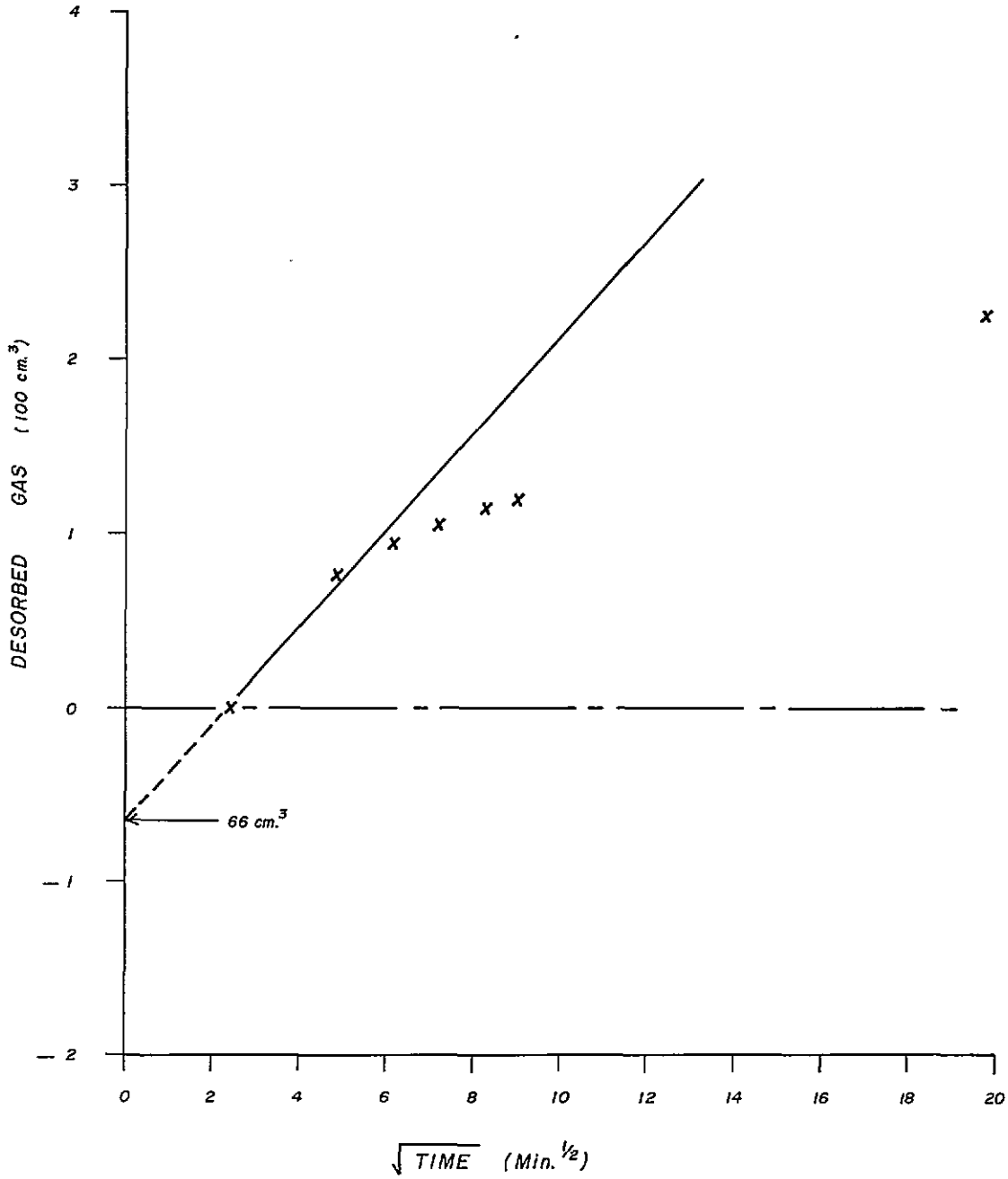
AT 117.45 METRES



D.D.H. BC 80-25

SAMPLE TAKEN AT

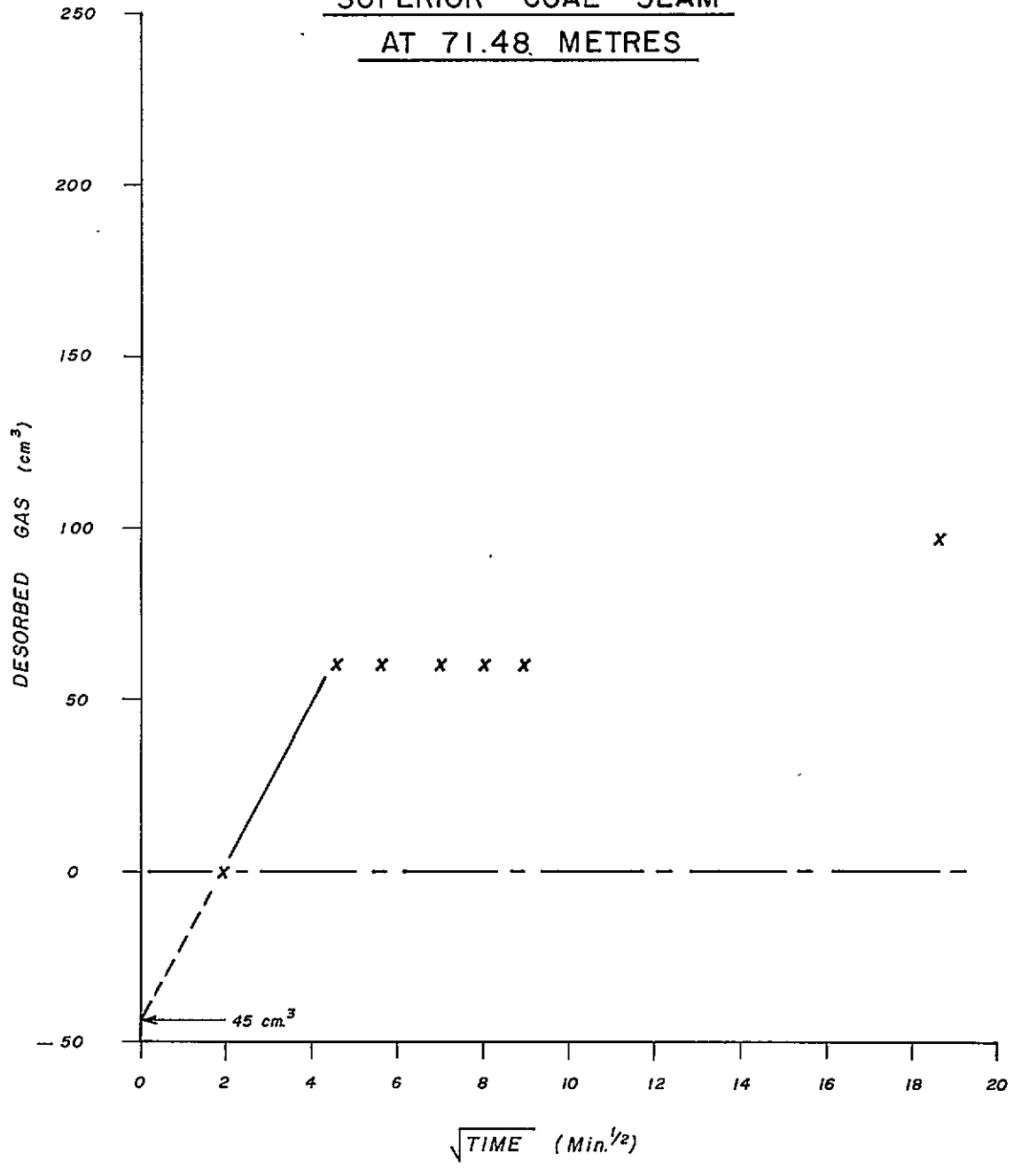
161.66 METRES



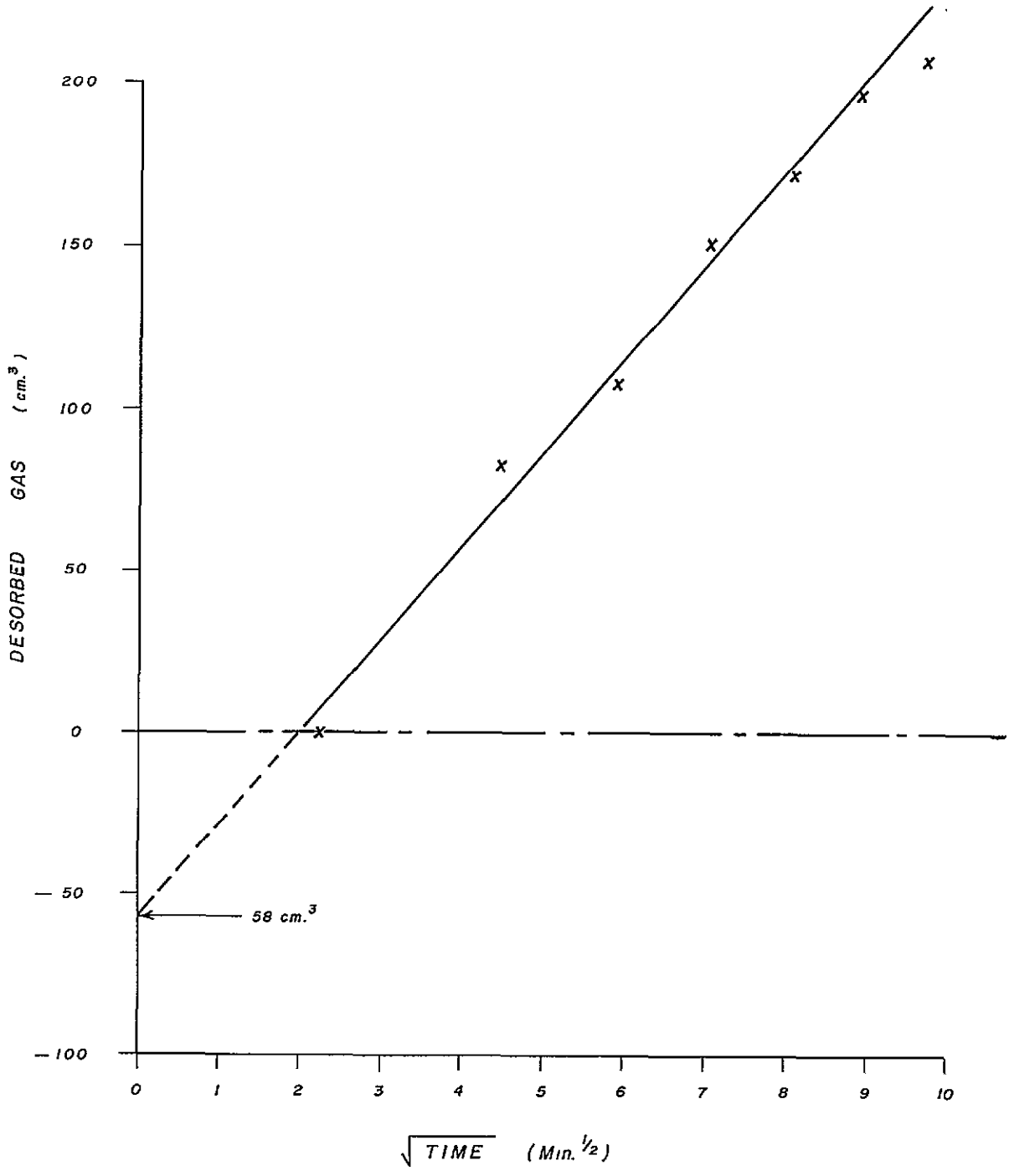
D.D.H. BC 80-27

SUPERIOR COAL SEAM

AT 71.48 METRES



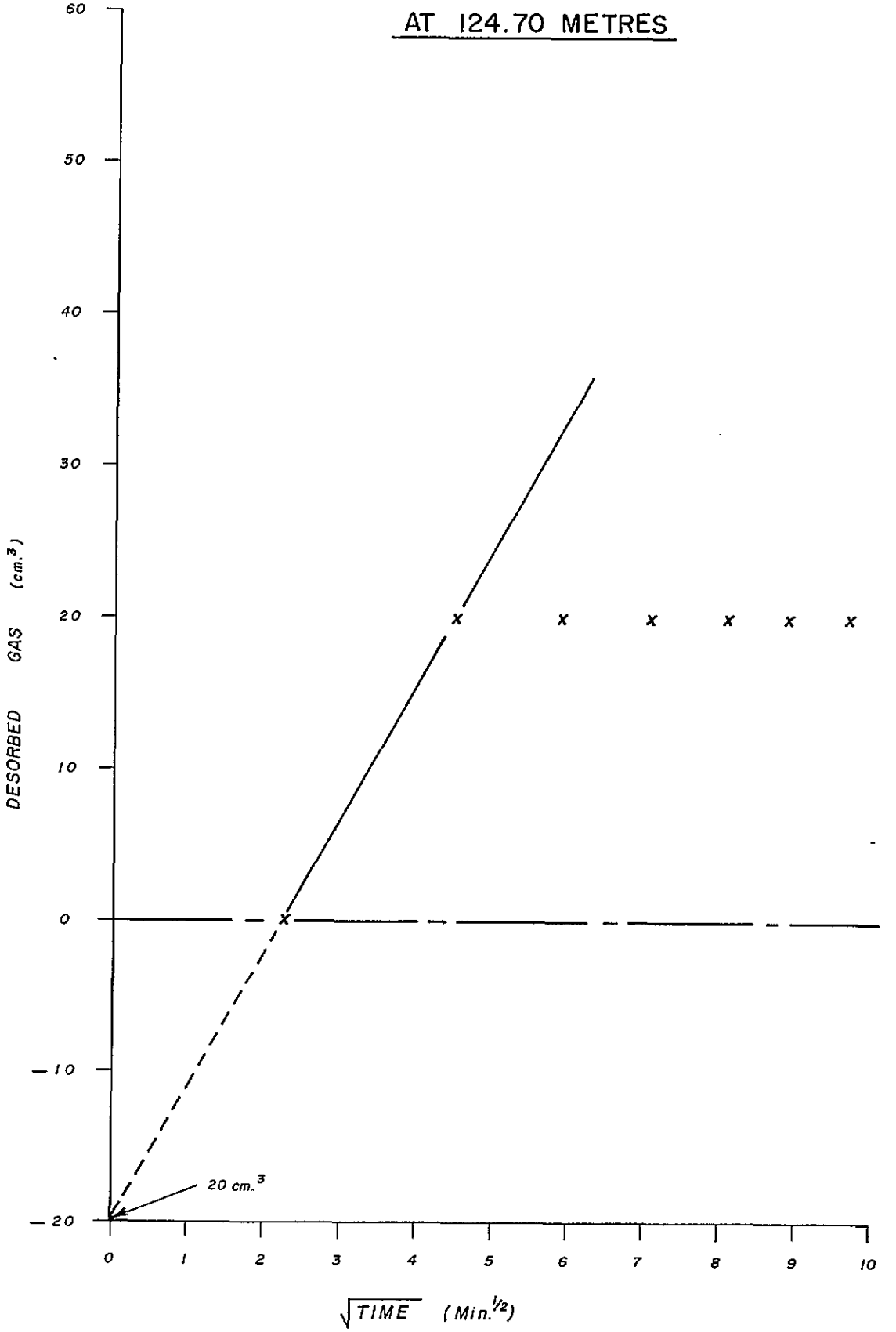
D.D.H. BC 80-27
TROJAN COAL SEAM
AT 111.40 METRES

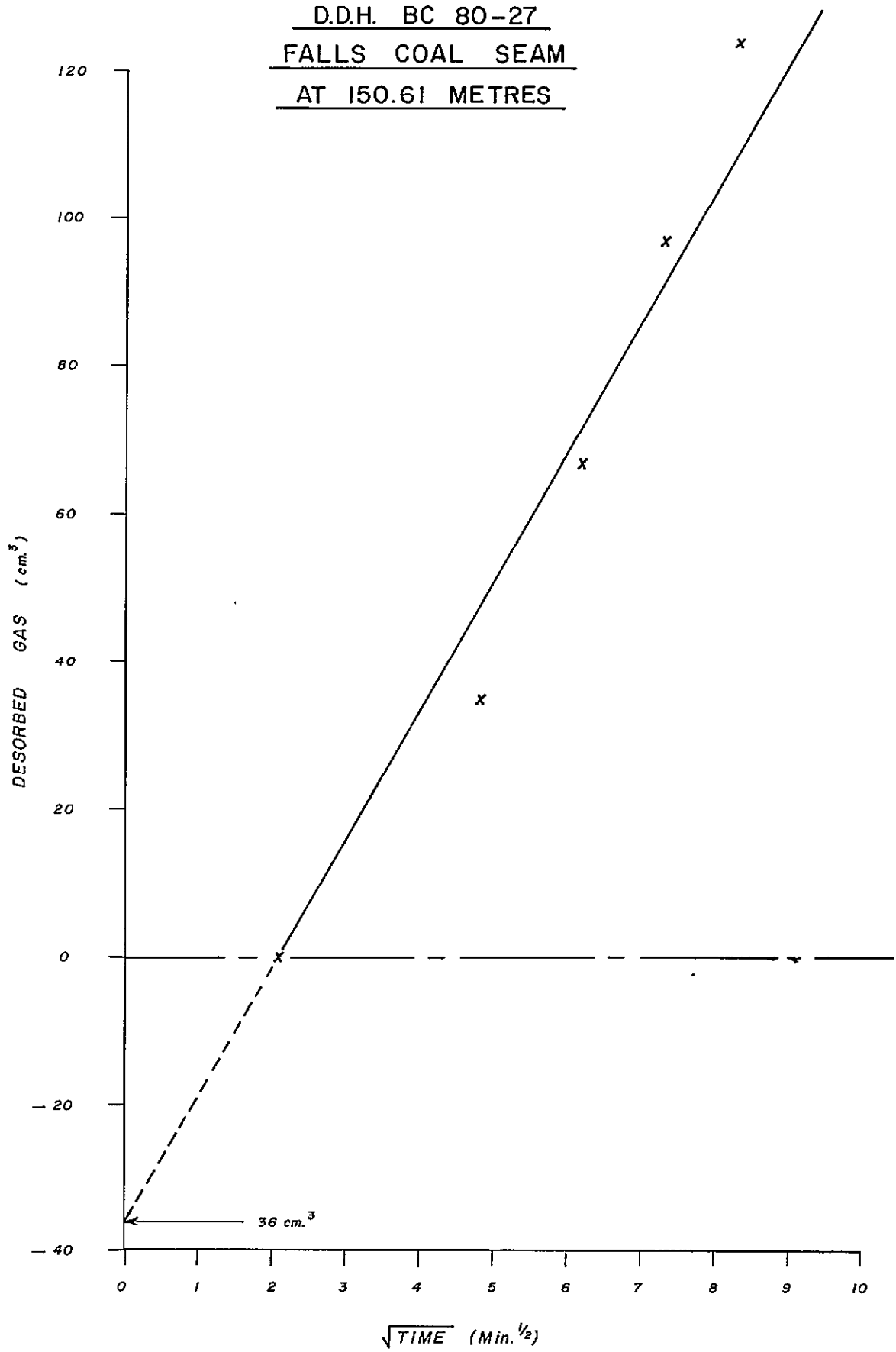


D.D.H. BC 80-27

TITAN COAL SEAM

AT 124.70 METRES

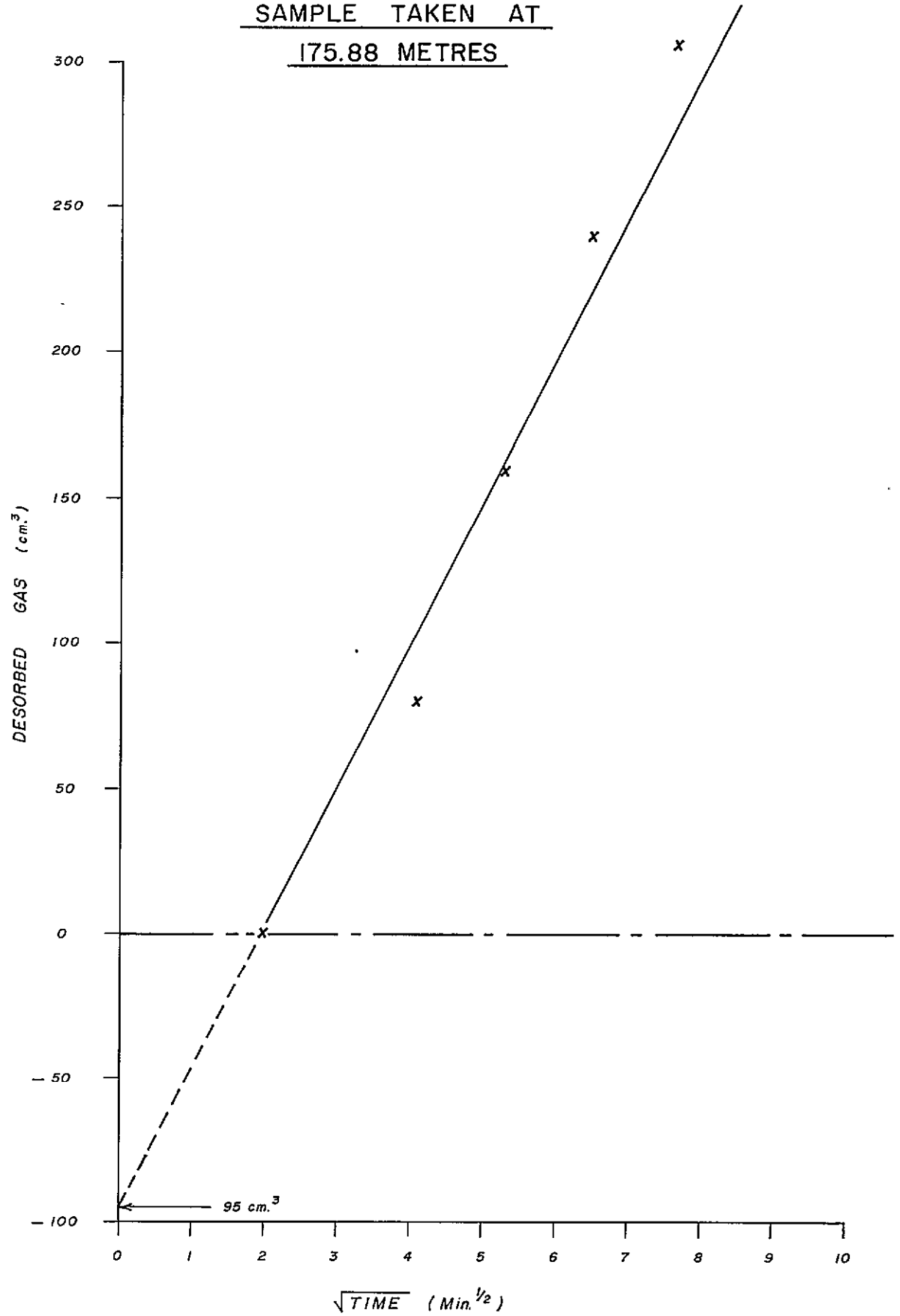



D.D.H. BC 80-27
FALLS COAL SEAM
AT 150.61 METRES
120
100
80
60
40
20
0
— 20
— 40
DESORBED GAS (cm.³)
36 cm.³
0
1
2
3
4
5
6
7
8
9
10
√TIME (Min.½)

D.D.H. BC 80-27

SAMPLE TAKEN AT

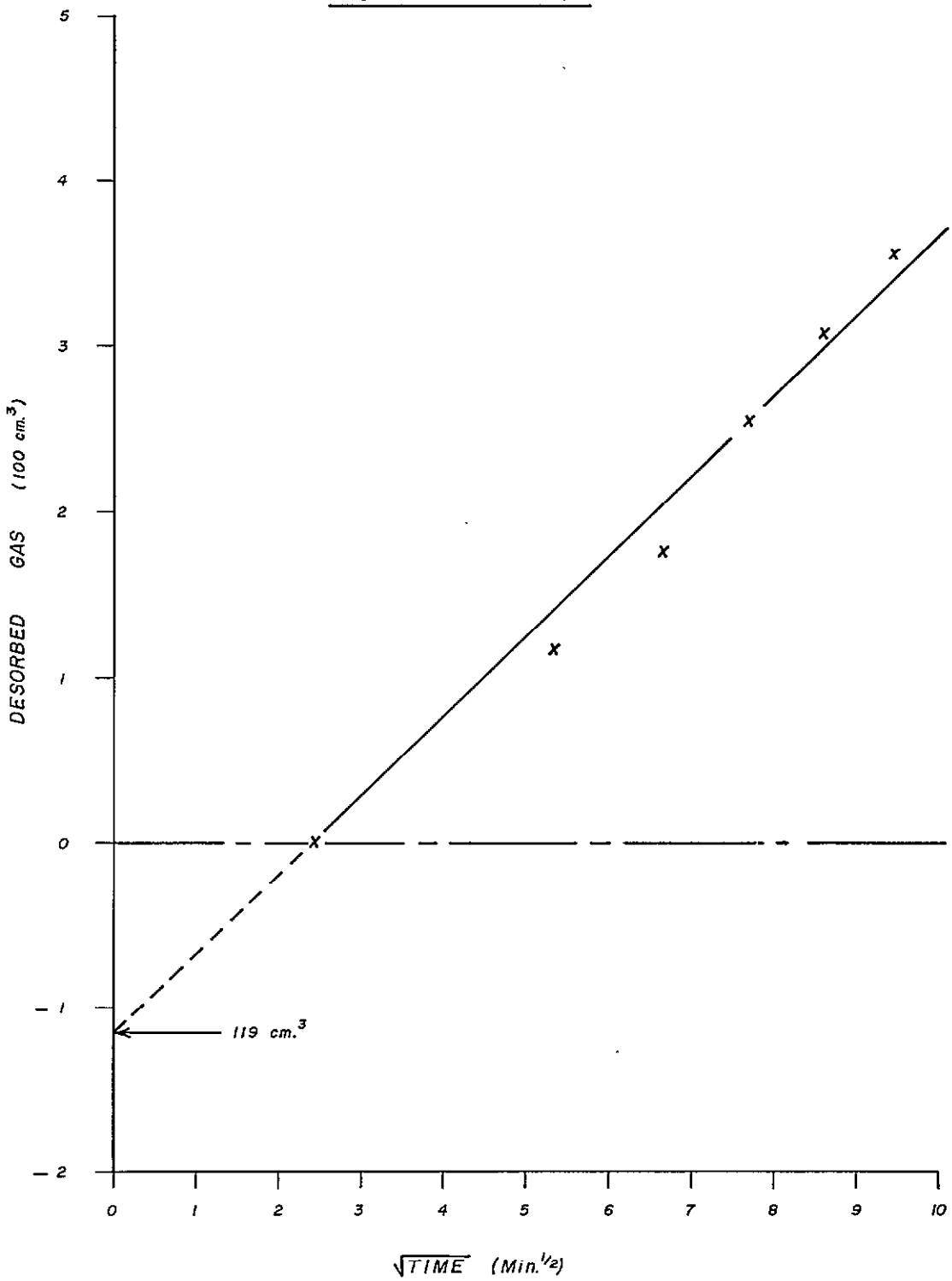
175.88 METRES



D.D.H. BC 80-27

SAMPLE TAKEN AT

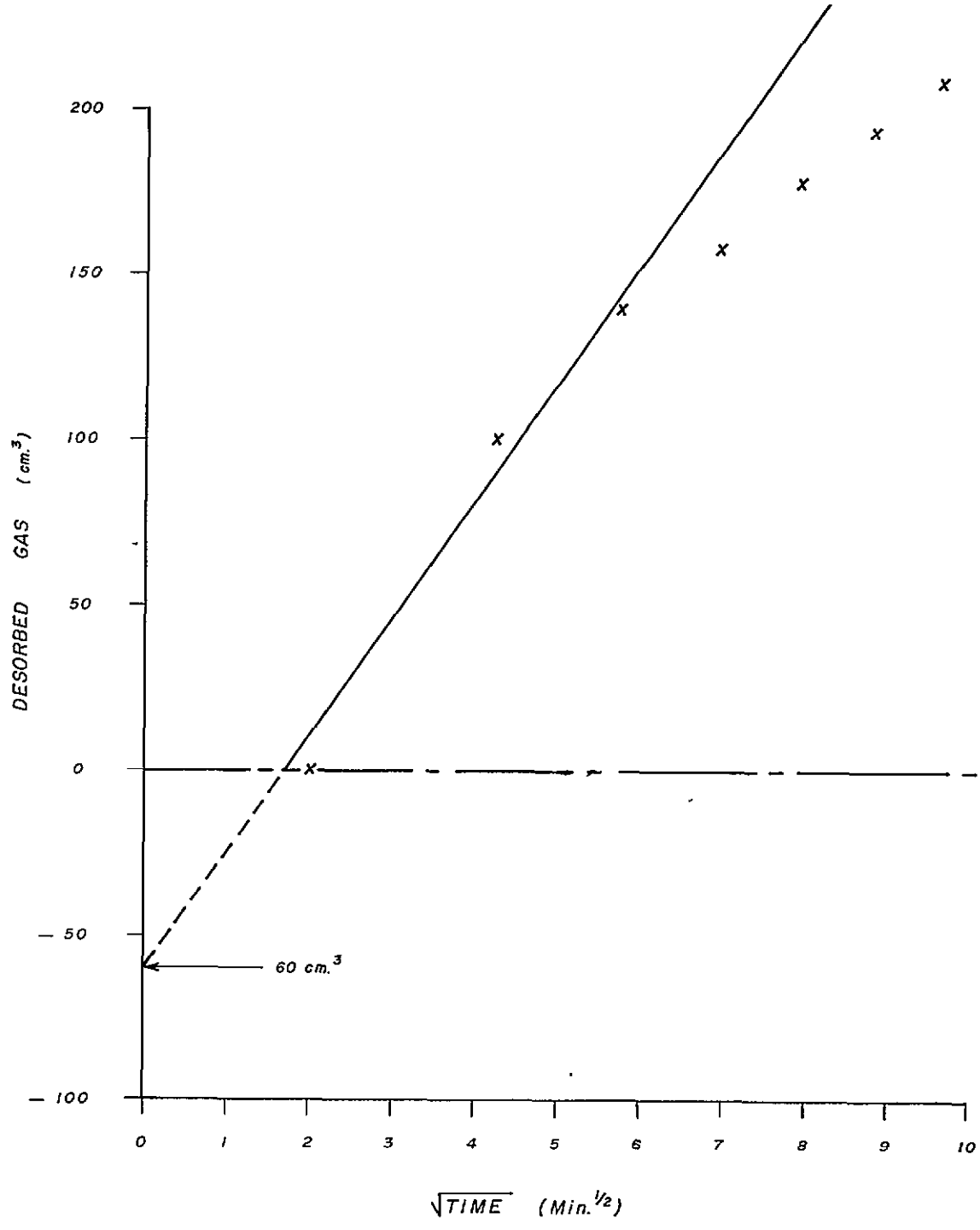
181.04 METRES



D.D.H. BC 80-27

SAMPLE TAKEN AT

193.85 METRES



SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #DC-80-12
226.09-227.85 METERS
SAMPLE #1
3/8" X 28M
WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.14	23.61	0.78	25.37	49.88	11212	2	23.88	0.79	25.66	50.46	11341

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	31.53	2.20	0.74	28.71	69.09	15059	7	31.53	2.20	0.74	28.71	69.09	15059
1.350F	27.48	5.95	0.99	28.68	65.37	14459	4 1/2	59.01	3.95	0.86	28.70	67.35	14780
1.400F	8.73	12.58	1.33	27.49	59.93	13339	3 1/2	67.74	5.06	0.92	28.54	66.40	14594
1.450F	1.76	18.75	1.30	26.62	54.63	12277	3 1/2	69.50	5.41	0.93	28.49	66.10	14535
1.500F	2.32	23.93	1.14	26.46	49.61	11359	2	71.82	6.00	0.93	28.43	65.57	14433
1.550F	2.34	28.46	0.98	23.76	47.78	10504	1	74.16	6.71	0.93	28.28	65.01	14309
1.600F	1.76	34.18	0.91	22.54	43.28	9538	1	75.92	7.35	0.93	28.15	64.50	14198
1.800F	4.84	43.31	0.84	21.90	34.79	8142	1	80.76	9.50	0.93	27.77	62.73	13835
1.800S	19.24	81.11	0.16	17.22	1.67	995	0	100.00	23.28	0.78	25.74	50.98	11365
TOTAL	100.00	23.28	0.78	25.74	50.98	11365							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-12

HEAD ANALYSIS

FUSION TEMP. OF ASH

SAMPLE #1

	Oxidizing	Reducing
Initial deformation	>2777	>2277
Softening (H=W)	> 2777	>2777
Softening (H=1/2 W)	>2777	>2777
Fluid	>2777	>2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-13

27.83-28.36 METERS

SAMPLE #1

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.09	11.42	0.95	29.70	57.79	13344	6 1/2	11.55	0.96	30.03	58.42	13491

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	58.67	2.06	0.94	35.42	62.52	15229	8	58.67	2.06	0.94	35.42	62.52	15229
1.350F	10.50	6.57	0.87	32.25	61.18	14375	7 1/2	69.17	2.75	0.93	34.94	62.31	15100
1.500F	4.79	22.64	0.79	27.03	50.33	11479	2 1/2	73.96	4.03	0.92	34.43	61.54	14865
1.550F	12.82	28.47	0.55	24.98	46.55	10564	1	86.78	7.64	0.87	33.03	59.33	14230
1.600F	9.74	31.56	0.52	24.59	43.85	10021	1	96.52	10.06	0.83	32.18	57.76	13805
1.600S	3.48	52.07	4.80	17.96	29.97	6549	0	100.00	11.52	0.97	31.68	56.80	13553
TOTAL	100.00	11.52	0.97	31.68	56.80	13553							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #DC-80-13

62.33-64.01 METERS

SAMPLE #2

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.01	20.90	0.72	28.94	49.15	11722	7	21.11	0.73	29.24	49.65	11842

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	54.34	3.56	0.92	31.58	64.86	14990	8 1/2	54.34	3.56	0.92	31.58	64.86	14990
1.350F	11.96	10.46	0.80	29.26	60.28	13809	7 1/2	66.30	4.81	0.90	31.16	64.03	14777
1.400F	6.19	17.22	0.77	28.93	53.85	12686	7	72.49	5.87	0.89	30.97	63.16	14599
1.450F	3.43	23.78	0.72	28.63	47.59	11527	7	75.92	6.68	0.88	30.87	62.45	14460
1.500F	2.19	28.99	0.70	27.84	43.17	10522	7	78.11	7.30	0.88	30.78	61.92	14350
1.550F	1.42	34.06	0.62	27.64	38.30	9796	5	79.53	7.78	0.87	30.72	61.50	14268
1.600F	1.59	38.44	0.59	24.62	36.94	8881	2 1/2	81.12	8.38	0.87	30.60	61.02	14163
1.800F	4.39	44.36	0.55	24.12	31.52	7879	2	85.51	10.23	0.85	30.27	59.50	13840
1.800S	14.49	80.97	0.13	17.65	1.38	1053	0	100.00	20.48	0.74	28.44	51.08	11987
TOTAL	100.00	20.48	0.74	28.44	51.08	11987							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-13
71.68-72.63 METERS
SAMPLE #3
3/8" X 28M
WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.01	11.55	0.90	31.34	56.10	13157	8	11.67	0.91	31.66	56.67	13291

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	73.75	2.75	0.92	34.07	63.18	15089	9	73.75	2.75	0.92	34.07	63.18	15089
1.350F	4.76	10.39	0.88	31.48	58.13	13776	8	78.51	3.21	0.92	33.91	62.88	15009
1.400F	2.68	15.66	0.79	30.16	54.18	12791	7 1/2	81.19	3.62	0.91	33.79	62.59	14936
1.450F	1.73	20.95	0.72	29.85	49.20	11751	7 1/2	82.92	3.99	0.91	33.71	62.30	14870
1.500F	1.50	25.57	0.67	28.97	45.46	10887	7	84.42	4.37	0.90	33.62	62.01	14799
1.550F	1.31	30.49	0.64	28.87	40.64	9934	7	85.73	4.77	0.90	33.55	61.68	14725
1.600F	0.92	32.22	0.62	28.25	39.53	9728	6 1/2	86.65	5.06	0.90	33.49	61.45	14671
1.800F	2.73	35.71	0.58	27.17	37.12	8427	3 1/2	89.38	6.00	0.89	33.30	60.70	14481
1.800S	10.62	53.94	0.49	24.58	21.48	4042	0	100.00	11.09	0.85	32.37	56.54	13372
TOTAL	100.00	11.09	0.85	32.37	56.54	13372							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-13

HEAD ANALYSIS

FUSION TEMP. OF ASH

SAMPLE #1

	Oxidizing	Reducing
Initial deformation	2677	>2777
Softening (H=W)	2749	>2777
Softening (H=1/2 W)	>2777	>2777
Fluid	>2777	>2777

FUSION TEMP. OF ASH

SAMPLE #2

	Oxidizing	Reducing
Initial deformation	>2777	>2777
Softening (H=W)	>2777	>2777
Softening (H=1/2 W)	>2777	>2777
Fluid	>2777	>2777

FUSION TEMP. OF ASH

SAMPLE #3

	Oxidizing	Reducing
Initial deformation	2397	2127
Softening (H=W)	2437	2157
Softening (H=1/2 W)	2487	2227
Fluid	2607	2457

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-14

HEAD ANALYSIS

ULTIMATE ANALYSIS

SAMPLE #1

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.34	---
% CARBON	71.45	72.42
% HYDROGEN	4.30	4.36
% NITROGEN	0.90	0.91
% CHLORINE	0.04	0.04
% SULFUR	0.53	0.54
% ASH	15.19	15.40
% OXYGEN (DIFF.)	6.25	6.33
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

SAMPLE #1

	Oxidizing	Reducing
Initial deformation	2352	2227
Softening (H=W)	2657	2523
Softening (H=1/2 W)	2677	2577
Fluid	2767	2725

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #EC-80-14

106.55-107.92 METERS
108.00-108.30 METERS

SAMPLE #1

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.34	15.19	0.53	26.71	56.76	12517	4	15.40	0.54	27.07	57.53	12687

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	29.95	2.64	0.63	30.37	66.99	14991	7	29.95	2.64	0.63	30.37	66.99	14991
1.350F	33.25	6.55	0.61	27.71	65.74	14309	3	63.20	4.70	0.62	28.97	66.33	14632
1.400F	13.19	12.95	0.56	27.21	59.84	13201	3	76.39	6.12	0.61	28.67	65.21	14385
1.450F	4.86	18.37	0.53	27.04	54.59	12221	2 1/2	81.25	6.86	0.61	28.57	64.57	14255
1.500F	3.44	25.01	0.49	25.86	49.13	11182	2 1/2	84.69	7.59	0.60	28.46	63.95	14131
1.550F	1.39	29.87	0.40	24.49	45.64	10344	2	86.08	7.95	0.60	28.40	63.65	14070
1.600F	1.20	35.06	0.37	24.00	40.94	9488	1 1/2	87.28	8.32	0.59	28.34	63.34	14007
1.800F	3.09	43.82	0.29	23.67	32.51	7987	1	90.37	9.54	0.58	28.18	62.29	13801
1.800S	9.63	64.59	0.17	21.09	14.32	2678	0	100.00	14.84	0.54	27.49	57.67	12730
TOTAL	100.00	14.84	0.54	27.49	57.67	12730							

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #BC-80-15

113.23-115.08 METERS

SAMPLE #1

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.27	18.74	0.50	24.39	55.60	11923	1 1/2	18.98	0.51	24.70	56.32	12076

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	36.48	2.96	0.62	28.70	68.34	14920	6	36.48	2.96	0.62	28.70	68.34	14920
1.350F	30.13	6.34	0.59	26.63	67.03	14364	2	66.61	4.49	0.61	27.76	67.75	14669
1.400F	11.24	12.61	0.56	25.42	61.97	13285	2	77.85	5.66	0.60	27.43	66.91	14469
1.450F	3.64	19.27	0.51	25.39	55.34	12177	2	81.49	6.27	0.60	27.33	66.40	14366
1.500F	1.91	24.31	0.50	24.92	50.77	11247	1 1/2	83.40	6.68	0.59	27.28	66.04	14295
1.550F	0.52	29.93	0.50	24.05	46.02	10357	1	83.92	6.83	0.59	27.26	65.91	14271
1.600F	0.40	32.13	0.48	23.65	44.22	9870	0	84.32	6.95	0.59	27.24	65.81	14250
1.800F	1.17	43.93	0.32	22.59	33.48	7806	0	85.49	7.45	0.59	27.18	65.37	14162
1.800S	14.51	83.29	0.17	13.05	3.66	648	0	100.00	18.46	0.53	25.13	56.41	12201
TOTAL	100.00	18.46	0.53	25.13	56.41	12201							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-15

HEAD ANALYSIS

ULTIMATE ANALYSIS

SAMPLE #1

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.27	--
% CARBON	69.30	70.19
% HYDROGEN	4.32	4.38
% NITROGEN	1.04	1.05
% CHLORINE	0.04	0.04
% SULFUR	0.50	0.51
% ASH	18.74	18.98
% OXYGEN (DIFF.)	4.79	4.85
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

SAMPLE #1

	Oxidizing	Reducing
Initial deformation	>2777	>2777
Softening (H=W)	>2777	>2777
Softening (H=1/2 W)	>2777	>2777
Fluid	>2777	>2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-18

106.29-106.68 METERS

SAMPLE #1

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.93	19.64	10.31	27.11	52.32	11780	2 1/2	19.82	10.41	27.36	52.82	11891

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	16.06	3.53	1.37	32.48	63.99	15041	6 1/2	16.06	3.53	1.37	32.48	63.99	15041
1.350F	19.71	6.42	2.50	30.02	63.56	14387	6	35.77	5.12	1.99	31.12	63.76	14680
1.400F	10.42	11.99	5.34	29.76	58.25	13397	6	46.19	6.67	2.75	30.82	62.51	14391
1.450F	5.21	12.45	5.65	28.48	59.07	13237	4	51.40	7.26	3.04	30.58	62.16	14274
1.500F	7.43	18.25	7.00	27.08	54.67	12399	2	58.83	8.65	3.54	30.14	61.21	14037
1.550F	4.35	20.62	8.18	26.61	52.77	11826	2	63.18	9.47	3.86	29.90	60.63	13885
1.600F	4.16	23.38	9.80	26.31	50.31	11358	2	67.34	10.33	4.23	29.67	60.00	13729
1.800F	11.70	28.96	15.09	24.63	46.41	10307	1	79.04	13.09	5.84	28.93	57.98	13222
1.800S	20.96	43.27	26.75	21.99	34.74	7574	0	100.00	19.41	10.22	27.47	53.12	12038
TOTAL	100.00	19.41	10.22	27.47	53.12	12038							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #DC-80-18
106.99-107.55 METERS
SAMPLE #2
3/8" X 28M
WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.06	10.96	0.95	33.17	54.81	13569	7 1/2	11.08	0.96	33.53	55.39	13714

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	68.80	1.94	0.82	37.25	60.81	15120	8	68.80	1.94	0.82	37.25	60.81	15120
1.350F	8.73	8.02	1.00	32.23	59.75	14091	6 1/2	77.53	2.62	0.84	36.69	60.69	15004
1.400F	4.11	15.16	1.09	28.49	56.35	12901	5 1/2	81.64	3.26	0.85	36.27	60.47	14898
1.450F	2.65	18.48	1.23	27.34	54.18	12296	3 1/2	84.29	3.73	0.86	35.99	60.28	14817
1.500F	1.81	23.52	1.30	24.67	51.81	11434	2 1/2	86.10	4.15	0.87	35.75	60.09	14745
1.600F	1.69	31.39	1.25	20.77	47.84	10228	2	87.79	4.67	0.88	35.47	59.86	14658
1.800F	6.08	46.78	0.99	19.43	33.79	7718	1	93.87	7.40	0.89	34.43	58.17	14209
1.800S	6.13	68.10	3.12	14.56	17.34	4464	0	100.00	11.12	1.02	33.21	55.67	13612
TOTAL	100.00	11.12	1.02	33.21	55.67	13612							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-18

131.86-133.93 METERS

SAMPLE #3

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.20	16.04	0.50	25.89	56.87	12525	1 1/2	16.23	0.51	26.20	57.57	12677

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	50.53	3.31	0.58	30.62	66.07	15001	3	50.53	3.31	0.58	30.62	66.07	15001
1.350F	22.57	6.50	0.52	27.91	65.59	14400	2	73.10	4.30	0.56	29.78	65.92	14815
1.400F	4.96	13.64	0.47	24.96	61.40	13138	2	78.06	4.89	0.55	29.48	65.63	14709
1.450F	2.12	20.11	0.44	24.84	55.05	12084	1 1/2	80.18	5.29	0.55	29.35	65.36	14639
1.500F	2.57	25.63	0.38	24.28	50.09	11145	1 1/2	82.75	5.92	0.55	29.20	64.88	14531
1.550F	1.24	31.01	0.37	24.14	44.85	10190	1	83.99	6.29	0.54	29.12	64.59	14467
1.600F	1.21	35.80	0.33	23.85	40.35	9359	1	85.20	6.71	0.54	29.05	64.24	14394
1.800F	2.40	44.19	0.24	23.36	32.45	7523	1	87.60	7.74	0.53	28.89	63.37	14206
1.800S	12.40	79.02	0.10	18.65	2.33	1196	0	100.00	16.58	0.48	27.62	55.80	12593
TOTAL	100.00	16.58	0.48	27.62	55.80	12593							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-18

HEAD ANALYSIS

FUSION TEMP. OF ASH

SAMPLE #1

	Oxidizing	Reducing
Initial deformation	2607	2007
Softening (H=W)	2647	2047
Softening (H=1/2 W)	2652	2077
Fluid	2662	2142

FUSION TEMP. OF ASH

SAMPLE #2

	Oxidizing	Reducing
Initial deformation	2312	2288
Softening (H=W)	2687	2556
Softening (H=1/2 W)	2737	2632
Fluid	2777	2725

FUSION TEMP. OF ASH

SAMPLE #3

	Oxidizing	Reducing
Initial deformation	> 2777	> 2777
Softening (H=W)	> 2777	> 2777
Softening (H=1/2 W)	> 2777	> 2777
Fluid	> 2777	> 2777

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #BC-80-19

413.86-415.72 METERS

SAMPLE #1

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.03	3.39	0.66	27.23	68.35	14731	6 1/2	3.43	0.67	27.51	69.06	14884

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	89.72	1.31	0.69	29.31	69.38	15251	7	89.72	1.31	0.69	29.31	69.38	15251
1.350F	5.89	3.85	0.59	28.24	67.91	14714	6	95.61	1.47	0.68	29.24	69.29	15218
1.400F	0.72	7.63	0.58	25.74	66.63	14025	5	96.33	1.51	0.68	29.22	69.27	15209
1.600F	0.49	16.94	0.51	24.92	58.14	11973	2	96.82	1.59	0.68	29.20	69.21	15193
1.800F	0.38	28.66	0.45	24.09	47.25	9309	1	97.20	1.70	0.68	29.18	69.12	15170
1.800S	2.80	68.14	0.17	20.74	11.12	2790	0	100.00	3.56	0.67	28.94	67.50	14823
TOTAL	100.00	3.56	0.67	28.94	67.50	14823							

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL
HOLE #BC-80-19
424.62-425.50 METERS
SAMPLE #2
3/8" X 28M
WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.89	7.33	0.93	27.66	64.12	14120	5 1/2	7.40	0.94	27.91	64.69	14247

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	50.69	2.87	1.02	30.80	66.33	15028	8	50.69	2.87	1.02	30.80	66.33	15028
1.350F	26.62	4.52	0.80	26.94	68.54	14581	7	77.31	3.44	0.94	29.47	67.09	14874
1.400F	9.22	10.75	0.77	25.33	63.92	13711	6	86.53	4.22	0.93	29.03	66.75	14750
1.450F	4.45	16.74	0.75	24.82	58.44	12651	5	90.98	4.83	0.92	28.82	66.35	14648
1.500F	2.68	22.72	0.73	23.28	54.00	11619	5	93.66	5.34	0.91	28.66	66.00	14561
1.550F	3.67	28.04	0.69	23.20	48.76	10662	4	97.33	6.20	0.90	28.46	65.34	14414
1.600F	1.01	32.59	0.68	22.42	44.99	9856	2	98.34	6.47	0.90	28.40	65.13	14367
1.600S	1.66	72.82	0.42	11.00	16.18	3723	0	100.00	7.57	0.89	28.11	64.32	14191
TOTAL	100.00	7.57	0.89	28.11	64.32	14191							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-19
433.40-436.53 METERS
SAMPLE #3
3/8" X 28M
WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.00	25.76	0.49	28.14	45.10	10722	6 1/2	26.02	0.49	28.42	45.56	10830

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	37.07	3.29	0.67	31.87	64.84	14921	8	37.07	3.29	0.67	31.87	64.84	14921
1.350F	16.09	7.46	0.63	27.97	64.57	14299	7	53.16	4.55	0.66	30.69	64.76	14733
1.400F	8.41	13.61	0.59	27.37	59.02	13263	6	61.57	5.79	0.65	30.24	63.97	14532
1.450F	2.80	19.19	0.62	25.10	55.71	12337	5	64.37	6.37	0.65	30.01	63.62	14437
1.500F	2.97	24.51	0.62	24.22	51.27	11377	4	67.34	7.17	0.64	29.76	63.07	14302
1.550F	2.09	30.55	0.58	24.12	45.33	10439	3	69.43	7.88	0.64	29.59	62.53	14185
1.600F	1.90	34.97	0.55	23.49	41.54	9674	2	71.33	8.60	0.64	29.42	61.98	14065
1.800F	4.30	42.97	0.54	21.96	35.07	8242	1	75.63	10.55	0.63	29.00	60.45	13734
1.800S	24.37	76.41	0.20	19.77	3.82	1533	0	100.00	26.60	0.53	26.75	46.65	10761
TOTAL	100.00	26.60	0.53	26.75	46.65	10761							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-19

HEAD ANALYSIS

FUSION TEMP. OF ASH

SAMPLE #1

	Oxidizing	Reducing
Initial deformation	2197	2077
Softening (H=W)	2322	2139
Softening (H=1/2 W)	2417	2228
Fluid	2597	2555

FUSION TEMP. OF ASH

SAMPLE #2

	Oxidizing	Reducing
Initial deformation	2277	2355
Softening (H=W)	>2777	>2777
Softening (H=1/2 W)	>2777	>2777
Fluid	>2777	>2777

FUSION TEMP. OF ASH

SAMPLE #3

	Oxidizing	Reducing
Initial deformation	2507	2327
Softening (H=W)	>2777	2752
Softening (H=1/2 W)	>2777	>2777
Fluid	>2777	>2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-19

458.14-460.01 METERS

SAMPLE #4

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.45	5.26	0.71	25.77	68.52	14437	1 1/2	5.28	0.71	25.89	68.83	14502

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	46.77	1.81	0.79	25.86	72.33	15194	2 1/2	46.77	1.81	0.79	25.86	72.33	15194
1.350F	38.75	3.67	0.62	24.92	71.41	14842	1	85.52	2.65	0.71	25.43	71.92	15035
1.400F	6.72	10.90	0.61	22.90	66.20	13577	1	92.24	3.25	0.70	25.25	71.50	14928
1.450F	2.63	17.11	0.72	22.78	60.11	12574	1	94.87	3.64	0.71	25.18	71.18	14863
1.500F	1.28	21.54	0.67	21.37	57.09	11618	1	96.15	3.88	0.71	25.13	70.99	14820
1.500S	3.85	34.07	0.60	18.23	47.70	9076	0	100.00	5.04	0.70	24.87	70.09	14599
TOTAL	100.00	5.04	0.70	24.87	70.09	14599							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-19

481.66-483.09 METERS

SAMPLE #5

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.04	21.00	0.69	28.53	49.43	11426	4 1/2	21.22	0.70	28.83	49.95	11546

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	23.87	1.97	0.86	32.45	65.58	15126	8	23.87	1.97	0.86	32.45	65.58	15126
1.350F	14.45	4.19	0.70	30.71	65.10	14592	3 1/2	38.32	2.81	0.80	31.80	65.39	14924
1.400F	11.75	9.85	0.66	28.67	61.48	13614	1 1/2	50.07	4.46	0.77	31.06	64.48	14617
1.450F	5.31	15.84	0.64	28.03	56.13	12626	1 1/2	55.38	5.55	0.75	30.77	63.68	14426
1.500F	7.96	16.35	0.65	27.35	56.30	12249	1	63.34	6.91	0.74	30.34	62.75	14152
1.550F	9.46	20.69	0.56	26.20	53.11	11399	1	72.80	8.70	0.72	29.80	61.50	13795
1.600F	6.25	22.58	0.55	25.72	51.70	10182	1	79.05	9.79	0.70	29.48	60.73	13509
1.800F	5.19	33.06	0.53	23.98	42.96	8809	1	84.24	11.23	0.69	29.14	59.63	13219
1.800F	15.76	77.27	0.48	19.53	3.20	1779	0	100.00	21.64	0.66	27.63	50.73	11416
TOTAL	100.00	21.64	0.66	27.63	50.73	11416							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-19

515.18-515.77 METERS

SAMPLE #6

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.90	18.76	0.80	29.75	50.59	11830	7 1/2	18.93	0.81	30.02	51.05	11937

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	30.88	1.68	0.91	31.06	67.26	15135	8 1/2	30.88	1.68	0.91	31.06	67.26	15135
1.350F	15.08	2.94	0.93	30.34	66.72	14581	8	45.96	2.09	0.92	30.82	67.09	14953
1.400F	10.55	7.47	0.83	29.45	63.08	13113	7	56.51	3.10	0.90	30.57	66.33	14610
1.450F	5.47	14.54	0.79	28.73	56.73	12196	7	61.98	4.11	0.89	30.40	65.49	14397
1.500F	3.66	23.96	0.78	27.90	48.14	11233	7	65.64	5.21	0.89	30.27	64.52	14220
1.550F	3.08	30.08	0.73	27.08	42.84	10350	5 1/2	68.72	6.33	0.88	30.12	63.55	14047
1.600F	2.70	34.88	0.71	26.11	39.01	9589	5	71.42	7.41	0.87	29.97	62.62	13878
1.800F	7.47	39.84	0.71	24.70	35.46	8188	3	78.89	10.48	0.86	29.47	60.05	13340
1.800S	21.11	55.52	0.42	22.79	21.69	4042	0	100.00	19.99	0.76	28.06	51.95	11377
TOTAL	100.00	19.99	0.76	28.06	51.95	11377							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-20
130.54-132.89 METERS
SAMPLE #1
3/8" X 28M
WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.09	24.77	0.48	27.53	46.61	10681	2	25.04	0.49	27.83	47.13	10799

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	37.43	3.04	0.61	29.63	67.33	14983	8	37.43	3.04	0.61	29.63	67.33	14983
1.350F	21.48	6.58	0.51	26.24	67.18	14324	7	58.91	4.33	0.57	28.39	67.28	14743
1.400F	9.27	12.16	0.52	25.19	62.65	13360	6	68.18	5.39	0.57	27.96	66.65	14555
1.450F	3.21	19.06	0.48	24.70	56.24	12180	5	71.39	6.01	0.56	27.81	66.18	14448
1.500F	1.39	24.41	0.47	24.33	51.26	11261	4	72.78	6.36	0.56	27.75	65.89	14387
1.550F	0.67	29.39	0.44	24.00	46.61	10389	3	73.45	6.57	0.56	27.71	65.72	14351
1.600F	0.58	32.50	0.43	23.06	44.44	9807	2	74.03	6.77	0.56	27.68	65.55	14315
1.800F	1.15	40.62	0.53	22.87	36.51	8315	1	75.18	7.29	0.56	27.60	65.11	14223
1.800S	24.82	77.96	0.17	20.20	1.84	756	0	100.00	24.83	0.46	25.77	49.40	10881
TOTAL	100.00	24.83	0.46	25.77	49.40	10881							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-20
HEAD ANALYSIS

ULTIMATE ANALYSIS

SAMPLE #1

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.09	--
% CARBON	61.19	61.86
% HYDROGEN	3.92	3.96
% NITROGEN	0.80	0.81
% CHLORINE	0.03	0.03
% SULFUR	0.48	0.49
% ASH	24.77	25.04
% OXYGEN (DIFF.)	7.72	7.81
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

SAMPLE #1

	Oxidizing	Reducing
Initial deformation	2502	2152
Softening (H=W)	2622	2517
Softening (H=1/2 W)	2657	2587
Fluid	2727	2677

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-21

121.45-123.67 METERS

SAMPLE #1

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.17	22.93	0.62	24.46	51.44	11348	3 1/2	23.20	0.63	24.75	52.05	11482

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	44.13	3.31	0.60	27.91	68.78	14891	6 1/2	44.13	3.31	0.60	27.91	68.78	14891
1.350F	19.12	6.45	0.53	26.18	67.37	14225	3 1/2	63.25	4.26	0.58	27.39	68.35	14689
1.400F	8.38	11.71	0.56	25.20	63.09	13199	1 1/2	71.63	5.13	0.58	27.13	67.74	14515
1.450F	3.24	19.69	0.64	24.99	55.32	12036	1	74.87	5.76	0.58	27.04	67.20	14408
1.500F	1.74	25.89	0.75	24.78	49.33	10909	1	76.61	6.22	0.58	26.99	66.79	14328
1.550F	1.82	30.29	1.13	24.47	45.24	10243	1	78.43	6.78	0.60	26.93	66.29	14234
1.600F	0.93	35.67	1.48	24.18	40.15	9223	1	79.36	7.11	0.61	26.90	65.99	14175
1.800F	1.97	43.14	1.23	22.27	34.59	8020	1	81.33	7.99	0.62	26.79	65.22	14026
1.800S	18.67	81.49	0.53	17.09	1.42	1054	0	100.00	21.71	0.61	24.98	53.31	11604
TOTAL	100.00	21.71	0.61	24.98	53.31	11604							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-21

SAMPLE #1

3/8" X 0

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.17	—
% CARBON	22.93	23.20
% HYDROGEN	0.62	0.63
% NITROGEN	63.99	64.75
% CHLORINE	4.13	4.18
% SULFUR	0.98	0.99
% ASH	0.01	0.01
% OXYGEN (DIFF.)	6.17	6.24
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	> 2777	> 2777
Softening (H=W)	> 2777	> 2777
Softening (H=1/2 W)	> 2777	> 2777
Fluid	> 2777	> 2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-21

143.79-144.35 METERS

SAMPLE #2

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.09	10.86	0.95	25.12	62.93	13506	7	10.98	0.96	25.40	63.62	13655

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	72.60	1.90	0.99	26.94	71.16	15070	7 1/2	72.60	1.90	0.99	26.94	71.16	15070
1.350F	10.32	3.57	0.82	25.39	71.04	14803	7 1/2	82.92	2.11	0.97	26.75	71.14	15037
1.400F	1.45	13.77	1.00	24.62	61.61	12902	7	84.37	2.31	0.97	26.71	70.98	15000
1.500F	1.99	25.55	1.18	23.47	50.98	11251	7	86.36	2.84	0.97	26.64	70.52	14914
1.600F	2.08	34.44	1.05	22.59	42.97	9527	5	88.44	3.59	0.98	26.54	69.87	14787
1.800F	3.51	46.68	0.68	21.41	31.91	7535	1 1/2	91.95	5.23	0.96	26.34	68.43	14510
1.800F	8.05	69.83	0.38	14.87	15.30	4079	0	100.00	10.43	0.92	25.42	64.15	13671
TOTAL	100.00	10.43	0.92	25.42	64.15	13671							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-21

SAMPLE #2

3/8" X 0

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.09	---
% CARBON	10.86	10.98
% HYDROGEN	0.95	0.96
% NITROGEN	76.91	77.76
% CHLORINE	4.53	4.58
% SULFUR	1.12	1.13
% ASH	0.03	0.03
% OXYGEN (DIFF.)	4.51	4.56
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2360	2205
Softening (H=W)	2540	2397
Softening (H=1/2 W)	2575	2513
Fluid	2770	2739

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-22

78.54-79.61 METERS

SAMPLE #1

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.15	11.23	2.04	28.31	59.31	13261	7	11.36	2.06	28.64	60.00	13415

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	60.16	1.93	0.95	31.40	66.67	15049	7 1/2	60.16	1.93	0.95	31.40	66.67	15049
1.350F	9.10	6.49	1.48	29.37	64.14	14284	6 1/2	69.26	2.53	1.02	31.13	66.34	14948
1.400F	8.68	11.49	1.46	28.82	59.69	13394	5	77.94	3.53	1.07	30.88	65.59	14775
1.450F	4.19	15.98	1.80	28.63	55.39	12596	2	82.13	4.16	1.11	30.76	65.08	14664
1.500F	1.87	20.65	2.47	28.16	51.19	11781	2	84.00	4.53	1.14	30.70	64.77	14600
1.550F	1.44	24.77	2.46	27.39	47.84	11069	1 1/2	85.44	4.87	1.16	30.65	64.48	14540
1.600F	1.14	29.16	2.92	26.45	44.39	10359	1	86.58	5.19	1.18	30.59	64.22	14485
1.800F	2.82	37.09	4.06	21.59	41.32	8683	1	89.40	6.20	1.27	30.31	63.49	14302
1.800S	10.60	59.29	7.62	20.02	20.69	5838	0	100.00	11.83	1.94	29.22	58.95	13405
TOTAL	100.00	11.83	1.94	29.22	58.95	13405							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-22
SAMPLE #1
3/8" X 0
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.07	--
% CARBON	26.74	27.03
% HYDROGEN	0.86	0.87
% NITROGEN	61.69	62.36
% CHLORINE	3.89	3.93
% SULFUR	1.04	1.05
% ASH	0.01	0.01
% OXYGEN (DIFF.)	4.70	4.75
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2370	2070
Softening (H=W)	2445	2125
Softening (H=1/2 W)	2475	2250
Fluid	2675	2450

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-22

107.72-109.34 METERS

SAMPLE #2

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.07	26.74	0.86	26.46	45.73	10680	7 1/2	27.03	0.87	26.75	46.22	10796

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	47.10	2.69	0.89	32.84	64.47	15016	8 1/2	47.10	2.69	0.89	32.84	64.47	15016
1.350F	8.43	8.01	0.82	30.57	61.42	14174	8	55.53	3.50	0.88	32.50	64.00	14888
1.400F	8.34	12.83	0.79	29.54	57.63	13288	7 1/2	63.87	4.72	0.87	32.11	63.17	14679
1.450F	2.04	21.24	0.88	28.56	50.20	11875	7 1/2	65.91	5.23	0.87	32.00	62.77	14593
1.500F	1.72	27.14	0.81	27.69	45.17	10926	7	67.63	5.78	0.87	31.89	62.33	14499
1.550F	1.49	32.14	0.87	26.04	41.82	10096	7	69.12	6.35	0.87	31.77	61.88	14404
1.600F	0.95	36.33	1.03	25.45	38.22	9270	6	70.07	6.76	0.87	31.68	61.56	14335
1.800F	6.27	46.44	1.28	24.58	28.98	7705	2	76.34	10.02	0.90	31.10	58.88	13790
1.800S	23.66	80.64	0.67	19.09	0.27	1592	0	100.00	26.73	0.85	28.26	45.01	10904
TOTAL	100.00	26.73	0.85	28.26	45.01	10904							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-22
SAMPLE #2
3/8" X 0
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.07	—
% CARBON	26.74	27.03
% HYDROGEN	0.86	0.87
% NITROGEN	61.69	62.36
% CHLORINE	3.89	3.93
% SULFUR	1.04	1.05
% ASH	0.01	0.01
% OXYGEN (DIFF.)	4.70	4.75
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	>2777	2751
Softening (H=W)	>2777	>2777
Softening (H=1/2 W)	>2777	>2777
Fluid	>2777	>2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-23

259.32-260.91 METERS

SAMPLE #1

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.27	2.35	0.67	25.43	70.95	14826	6 1/2	2.38	0.68	25.76	71.86	15017

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	61.68	1.29	0.76	26.50	72.21	15249	8	61.68	1.29	0.76	26.50	72.21	15249
1.350F	33.52	2.55	0.67	25.88	71.57	14988	2	95.20	1.73	0.73	26.28	71.99	15157
1.400F	2.86	4.39	0.59	24.31	71.30	14461	1 1/2	98.06	1.81	0.73	26.22	71.97	15137
1.400S	1.94	46.85	0.38	21.74	31.41	6940	0	100.00	2.69	0.72	26.14	71.17	14978
TOTAL	100.00	2.69	0.72	26.14	71.17	14978							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-23
SAMPLE #1
3/8" X 0
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.27	—
% CARBON	2.35	2.38
% HYDROGEN	0.67	0.68
% NITROGEN	82.94	84.01
% CHLORINE	4.69	4.75
% SULFUR	1.23	1.25
% ASH	0.03	0.03
% OXYGEN (DIFF.)	6.82	6.90
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2355	2240
Softening (H=W)	2695	2505
Softening (H=1/2 W)	2725	2630
Fluid	>2777	2770

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-23

278.86-281.49 METERS

SAMPLE #2

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.11	31.93	0.63	23.58	43.38	9789	6 1/2	32.29	0.64	23.84	43.87	9899

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	39.47	3.41	0.85	30.55	66.04	15100	8 1/2	39.47	3.41	0.85	30.55	66.04	15100
1.350F	9.35	7.33	0.81	28.37	64.30	14310	7 1/2	48.82	4.16	0.84	30.13	65.71	14949
1.400F	4.10	15.74	0.84	27.43	56.83	13080	7 1/2	52.92	5.06	0.84	29.92	65.02	14804
1.450F	2.20	20.26	0.76	27.29	52.45	12029	7	55.12	5.66	0.84	29.82	64.52	14693
1.500F	1.64	25.14	0.75	25.95	48.91	11379	6 1/2	56.76	6.23	0.84	29.71	64.06	14598
1.550F	2.12	29.43	0.67	24.89	45.68	10461	3 1/2	58.88	7.06	0.83	29.53	63.41	14449
1.600F	1.55	33.30	0.70	24.20	42.50	9759	3	60.43	7.73	0.83	29.40	62.87	14328
1.800F	5.55	43.14	0.55	22.54	34.32	7923	1 1/2	65.98	10.71	0.80	28.82	60.47	13790
1.800S	34.02	77.67	0.33	17.51	4.82	2264	0	100.00	33.49	0.64	24.97	41.54	9868
TOTAL	100.00	33.49	0.64	24.97	41.54	9868							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-23

SAMPLE #2

3/8" X 0

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.11	—
% CARBON	31.93	32.29
% HYDROGEN	0.63	0.64
% NITROGEN	57.04	57.68
% CHLORINE	3.98	4.02
% SULFUR	0.96	0.97
% ASH	0.01	0.01
% OXYGEN (DIFF.)	4.34	4.39
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	>2777	>2777
Softening (H=W)	>2777	>2777
Softening (H=1/2 W)	>2777	>2777
Fluid	>2777	>2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

379.15-380.49 METERS

SAMPLE #1

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.08	4.81	0.73	27.17	66.94	14614	7 1/2	4.86	0.74	27.47	67.67	14774

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	82.28	1.44	0.85	29.62	68.94	15423	8	82.28	1.44	0.85	29.62	68.94	15423
1.350F	9.44	3.10	0.63	28.23	68.67	14745	4	91.72	1.61	0.83	29.48	68.91	15354
1400F	0.93	9.27	0.57	27.76	62.97	13609	3 1/2	92.65	1.69	0.82	29.46	68.85	15336
1.450F	0.46	17.80	0.61	27.46	54.74	12121	3	93.11	1.77	0.82	29.45	68.78	15320
1.500F	0.91	23.94	0.56	24.42	51.64	11285	2 1/2	94.02	1.98	0.82	29.40	68.62	15281
1.550F	0.89	29.79	0.53	24.28	45.93	10567	1	94.91	2.24	0.82	29.35	68.41	15237
1.600F	0.71	33.99	0.50	23.72	42.29	9821	1	95.62	2.48	0.82	29.31	68.21	15197
1.800F	3.28	45.00	0.40	21.76	33.24	8173	1	98.90	3.89	0.80	29.06	67.05	14964
1.800S	1.10	77.86	0.08	20.14	2.00	2535	0	100.00	4.70	0.79	28.96	66.34	14827
TOTAL	100.00	4.70	0.79	28.96	66.34	14827							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

SAMPLE #1

3/8" X 28M

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.08	---
% CARBON	81.51	82.40
% HYDROGEN	4.79	4.84
% NITROGEN	1.36	1.37
% CHLORINE	0.01	0.01
% SULFUR	0.73	0.74
% ASH	4.81	4.86
% OXYGEN (DIFF.)	5.71	5.78
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2325	2159
Softening (H=W)	2395	2300
Softening (H=1/2 W)	2495	2400
Fluid	2770	2695

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

396.54-399.20 METERS

SAMPLE #2

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.91	35.86	0.55	21.97	41.26	9315	5 1/2	36.19	0.56	22.17	41.64	9401

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	38.61	3.17	0.69	28.76	68.07	14824	8 1/2	38.61	3.17	0.69	28.76	68.07	14824
1.350F	7.87	7.95	0.73	28.08	63.97	14097	7 1/2	46.48	3.98	0.69	28.64	67.38	14700
1.400F	5.77	13.42	0.67	27.85	58.73	13242	5	52.25	5.02	0.69	28.56	66.42	14539
1.450F	3.86	19.69	0.61	27.42	52.89	12247	4 1/2	56.11	6.03	0.69	28.48	65.49	14382
1.500F	2.61	23.16	0.60	26.84	50.00	11733	2	58.72	6.79	0.68	28.41	64.80	14264
1.550F	2.42	29.45	0.58	26.58	43.97	10560	2	61.14	7.69	0.68	28.33	63.98	14117
1.600F	1.70	33.70	0.51	24.88	41.42	9612	1 1/2	62.84	8.39	0.68	28.24	63.37	13995
1.800F	4.89	42.17	0.53	24.30	33.53	8001	1	67.73	10.83	0.67	27.96	61.21	13563
1.800S	32.27	83.62	0.29	15.28	1.10	1032	0	100.00	34.32	0.55	23.87	41.81	9519
TOTAL	100.00	34.32	0.55	23.87	41.81	9519							

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL
HOLE #BC-80-24
SAMPLE #2
3/8" X 28M
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	0.91	—
% CARBON	52.14	52.62
% HYDROGEN	3.61	3.64
% NITROGEN	0.81	0.82
% CHLORINE	0.01	0.01
% SULFUR	0.55	0.56
% ASH	35.86	36.19
% OXYGEN (DIFF.)	6.11	6.16
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2765	2590
Softening (H=W)	>2777	> 2777
Softening (H=1/2 W)	> 2777	> 2777
Fluid	> 2777	> 2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

445.88-446.53 METERS

SAMPLE #3

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.04	6.53	0.76	22.54	69.89	14128	1	6.60	0.77	22.78	70.62	14276

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	62.58	2.25	0.77	23.04	74.71	15154	1 1/2	62.58	2.25	0.77	23.04	74.71	15154
1.350F	31.50	3.19	0.69	22.82	73.99	14798	1	94.08	2.56	0.74	22.97	74.47	15035
1.350S	5.92	65.47	0.58	19.23	15.30	3758	0	100.00	6.29	0.73	22.74	70.97	14367
TOTAL	100.00	6.29	0.73	22.74	70.97	14367							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

SAMPLE #3

3/8" X 28M

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.04	—
% CARBON	82.57	83.44
% HYDROGEN	4.57	4.62
% NITROGEN	1.00	1.01
% CHLORINE	0.04	0.04
% SULFUR	0.76	0.77
% ASH	6.53	6.60
% OXYGEN (DIFF.)	3.49	3.52
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2495	2395
Softening (H=W)	2700	2685
Softening (H=1/2 W)	2750	2720
Fluid	> 2777	> 2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

480.97-482.19 METERS

SAMPLE #4

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.97	24.95	0.71	24.79	49.29	10780	7 1/2	25.19	0.72	25.03	49.78	10886

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	40.10	2.80	0.94	29.47	67.73	14958	9	40.10	2.80	0.94	29.47	67.73	14958
1.350F	10.62	8.02	0.97	28.59	63.39	14044	8 1/2	50.72	3.89	0.95	29.28	66.83	14767
1.400F	4.85	14.68	0.48	27.38	57.94	13057	8	55.57	4.84	0.91	29.12	66.04	14617
1.450F	2.81	19.97	0.82	26.32	53.71	12182	7	58.38	5.56	0.90	28.98	65.46	14500
1.500F	3.18	24.75	0.74	24.38	50.87	11373	6	61.56	6.55	0.89	28.75	64.70	14339
1.550F	2.10	29.25	0.62	24.68	46.07	10559	3 1/2	63.66	7.30	0.88	28.61	64.09	14214
1.600F	1.84	33.19	0.59	23.89	42.92	9814	1 1/2	65.50	8.03	0.88	28.48	63.49	14090
1.800F	6.35	45.09	0.52	23.60	31.31	7912	1	71.85	11.31	0.84	28.05	60.64	13544
1.800S	28.15	65.68	0.26	18.13	16.19	3726	0	100.00	26.61	0.68	25.26	48.13	10780
TOTAL	100.00	26.61	0.68	25.26	48.13	10780							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

SAMPLE #4

3/8" X 28M

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	0.97	—
% CARBON	65.03	65.67
% HYDROGEN	4.01	4.05
% NITROGEN	1.01	1.02
% CHLORINE	0.02	0.02
% SULFUR	0.71	0.72
% ASH	24.95	25.19
% OXYGEN (DIFF.)	3.30	3.33
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2300	2115
Softening (H=W)	2370	2230
Softening (H=1/2 W)	2489	2305
Fluid	2595	2465

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

494.49-495.60 METERS

SAMPLE #5

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.93	2.21	0.78	22.65	74.21	15048	1	2.23	0.79	22.86	74.91	15189

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	36.49	0.83	0.75	23.70	75.47	15426	1 1/2	36.49	0.83	0.75	23.70	75.47	15426
1.350F	61.45	1.13	0.84	23.70	75.17	15232	1	97.94	1.02	0.81	23.70	75.28	15304
1.350S	2.06	62.97	0.75	16.58	20.45	4013	0	100.00	2.29	0.81	23.55	74.16	15071
TOTAL	100.00	2.29	0.81	23.55	74.16	15071							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

SAMPLE #5

3/8" X 28M

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	0.93	—
% CARBON	87.74	88.56
% HYDROGEN	5.10	5.15
% NITROGEN	0.97	0.98
% CHLORINE	0.02	0.02
% SULFUR	0.78	0.79
% ASH	2.21	2.23
% OXYGEN (DIFF.)	2.25	2.27
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2324	2145
Softening (H=W)	2393	2325
Softening (H=1/2 W)	2487	2370
Fluid	2770	2630

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

496.18-498.97 METERS

SAMPLE #6

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.92	33.56	0.59	19.81	45.71	9580	1	33.87	0.60	19.99	46.14	9669

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	25.43	2.02	0.86	24.63	73.35	15284	4 1/2	25.43	2.02	0.86	24.63	73.35	15284
1.350F	18.04	3.42	0.82	24.10	72.48	15041	3	43.47	2.60	0.84	24.41	72.99	15183
1.400F	1.14	9.59	0.78	23.31	67.10	13846	3	44.61	2.78	0.84	24.38	72.84	15149
1.500F	1.91	25.72	0.63	22.48	51.80	11305	2 1/2	46.52	3.72	0.83	24.30	71.98	14991
1.550F	2.01	33.01	0.57	21.80	45.19	10459	2	48.53	4.94	0.82	24.20	70.86	14803
1.600F	1.58	39.52	0.55	19.78	40.70	9131	1	50.11	6.02	0.81	24.06	69.92	14624
1.800F	6.33	43.39	0.53	18.40	38.21	7634	0	56.44	10.22	0.78	23.43	66.35	13840
1.800S	43.56	62.27	0.43	16.39	21.34	4015	0	100.00	32.89	0.63	20.36	46.75	9560
TOTAL	100.00	32.89	0.63	20.36	46.75	9560							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-24

SAMPLE #6

3/8" X 28M

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	0.92	—
% CARBON	55.71	56.23
% HYDROGEN	3.19	3.22
% NITROGEN	0.77	0.78
% CHLORINE	0.01	0.01
% SULFUR	0.59	0.60
% ASH	33.56	33.87
% OXYGEN (DIFF.)	5.25	5.29
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2445	2335
Softening (H=W)	2595	2490
Softening (H=1/2 W)	2655	2595
Fluid	>2777	2770

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

88.36-89.84 METERS

SAMPLE #1

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.14	14.16	0.74	24.28	60.42	12692	3	14.32	0.75	24.56	61.12	12838

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	42.81	2.13	0.87	26.68	71.19	15012	8	42.81	2.13	0.87	26.68	71.19	15012
1.350F	27.78	3.17	0.76	26.24	70.59	14741	1	70.59	2.54	0.83	26.51	70.95	14906
1.400F	3.68	9.34	0.73	24.70	65.96	13710	1	74.27	2.88	0.82	26.42	70.70	14846
1.450F	3.64	15.54	0.68	24.10	60.36	12578	1	77.91	3.47	0.82	26.31	70.22	14740
1.500F	3.63	20.42	0.61	23.83	55.75	11817	1	81.54	4.22	0.81	26.20	69.58	14610
1.550F	1.55	25.29	0.59	21.44	53.27	10824	1	83.09	4.62	0.80	26.11	69.27	14540
1.600F	0.49	32.69	0.78	20.71	46.60	9984	1	83.58	4.78	0.80	26.08	69.14	14513
1.800F	9.38	56.88	0.28	19.70	23.42	5255	0	92.96	10.04	0.75	25.43	64.53	13579
1.800S	7.04	81.50	0.25	17.32	1.18	1102	0	100.00	15.07	0.71	24.86	60.07	12700
TOTAL	100.00	15.07	0.71	24.86	60.07	12700							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

SAMPLE #1

3/8" X 28M

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.14	—
% CARBON	74.61	75.47
% HYDROGEN	4.30	4.35
% NITROGEN	1.08	1.09
% CHLORINE	0.03	0.03
% SULFUR	0.74	0.75
% ASH	14.16	14.32
% OXYGEN (DIFF.)	3.94	3.99
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	> 2777	> 2777
Softening (H=W)	> 2777	> 2777
Softening (H=1/2 W)	> 2777	> 2777
Fluid	> 2777	> 2777

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #BC-80-25

103.64-104.87 METERS

SAMPLE #2

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.30	37.40	0.78	21.90	39.40	8902	5	37.89	0.79	22.19	39.92	9019

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	18.06	3.19	1.10	27.56	69.25	14884	8	18.06	3.19	1.10	27.56	69.25	14884
1.350F	19.00	5.88	1.01	27.30	66.82	14440	7 1/2	37.06	4.57	1.06	27.43	68.00	14656
1.400F	6.86	13.96	1.04	27.00	59.04	13089	7	43.92	6.04	1.05	27.36	66.60	14411
1.450F	3.54	19.36	0.89	26.29	54.35	12185	6 1/2	47.46	7.03	1.04	27.28	65.69	14245
1.500F	2.19	25.09	1.13	26.20	48.71	11156	5	49.65	7.82	1.05	27.23	64.95	14109
1.550F	2.88	30.76	1.00	25.56	43.68	10326	2	52.53	9.08	1.04	27.14	63.78	13902
1.600F	3.16	33.04	1.07	25.10	41.86	9967	2	55.69	10.44	1.05	27.02	62.54	13678
1.800F	6.40	44.78	1.08	23.93	31.29	8046	1	62.09	13.98	1.05	26.71	59.31	13098
1.800S	37.91	79.83	0.35	18.19	1.98	2072	0	100.00	38.95	0.78	23.48	37.57	8918
TOTAL	100.00	38.95	0.78	23.48	37.57	8918							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

SAMPLE #2

3/8" X 28M

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.30	—
% CARBON	50.27	50.93
% HYDROGEN	3.36	3.40
% NITROGEN	0.89	0.90
% CHLORINE	0.02	0.02
% SULFUR	0.78	0.79
% ASH	37.40	37.89
% OXYGEN (DIFF.)	5.98	6.07
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2385	2275
Softening (H=W)	2545	2440
Softening (H=1/2 W)	2585	2515
Fluid	2725	2695

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

117.45-119.80 METERS

SAMPLE #3

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.10	11.31	0.88	27.41	60.18	13469	7	11.44	0.89	27.71	60.85	13619

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	60.12	3.79	0.90	29.70	66.51	14970	8	60.12	3.79	0.90	29.70	66.51	14970
1.350F	21.23	5.80	0.95	28.08	66.12	14515	3 1/2	81.35	4.31	0.91	29.28	66.41	14851
1.400F	4.84	11.76	0.84	27.99	60.25	13425	4 1/2	86.19	4.73	0.91	29.21	66.06	14771
1.450F	1.96	16.86	0.88	27.41	55.73	12546	4 1/2	88.15	5.00	0.91	29.17	65.83	14722
1.500F	1.16	20.93	0.80	27.24	51.83	11713	2	89.31	5.21	0.91	29.14	65.65	14683
1.550F	1.09	26.17	0.76	26.35	47.48	10869	2 1/2	90.40	5.46	0.90	29.11	65.43	14637
1.600F	0.59	30.91	0.81	25.38	43.71	10081	2 1/2	90.99	5.63	0.90	29.08	65.29	14607
1.800F	1.55	40.32	0.66	25.02	34.66	8513	1	92.54	6.21	0.90	29.01	64.78	14505
1.800S	7.46	67.30	0.39	20.26	12.44	2841	0	100.00	10.77	0.86	28.36	60.87	13635
TOTAL	100.00	10.77	0.86	28.36	60.87	13635							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

SAMPLE #3

3/8" X 28M

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.10	—
% CARBON	76.15	77.00
% HYDROGEN	4.63	4.68
% NITROGEN	1.17	1.18
% CHLORINE	0.03	0.03
% SULFUR	0.88	0.89
% ASH	11.31	11.44
% OXYGEN (DIFF.)	4.73	4.78
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2260	2110
Softening (H=W)	2335	2145
Softening (H=1/2 W)	2392	2245
Fluid	2505	2330

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

133.37-135.59 METERS

SAMPLE #4

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.97	23.27	0.53	29.48	46.28	10506	1	23.50	0.54	29.77	46.73	10609

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	41.30	1.41	0.61	31.62	66.97	15083	4	41.30	1.41	0.61	31.62	66.97	15083
1.350F	21.45	3.18	0.63	30.55	66.27	14756	1	62.75	2.01	0.62	31.25	66.74	14971
1.400F	1.49	8.75	0.67	28.65	62.60	13865	1	64.24	2.17	0.62	31.19	66.64	14946
1.450F	0.41	17.37	0.73	27.30	55.33	12409	5 1/2	64.65	2.27	0.62	31.17	66.56	14929
1.500F	0.31	23.01	0.73	26.62	50.37	11517	5 1/2	64.96	2.36	0.62	31.15	66.49	14913
1.550F	0.34	27.43	0.73	25.33	47.24	10720	2	65.30	2.49	0.62	31.12	66.39	14891
1.600F	0.27	32.86	0.76	25.25	41.89	9963	1 1/2	65.57	2.62	0.62	31.09	66.29	14871
1.800F	1.77	43.10	0.65	23.62	33.28	7961	0	67.34	3.68	0.62	30.90	65.42	14689
1.800S	32.66	63.42	0.21	21.76	14.82	2172	0	100.00	23.19	0.49	27.91	48.90	10601
TOTAL	100.00	23.19	0.49	27.91	48.90	10601							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-25
SAMPLE #4
3/8" X 28M
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	0.97	--
% CARBON	59.98	60.57
% HYDROGEN	3.05	3.08
% NITROGEN	0.73	0.74
% CHLORINE	0.02	0.02
% SULFUR	0.53	0.54
% ASH	23.27	23.50
% OXYGEN (DIFF.)	11.45	11.55
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2509	2487
Softening (H=W)	2558	2527
Softening (H=1/2 W)	2563	2552
Fluid	2602	2599

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

150.59-151.18 METERS

SAMPLE #5

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.23	11.53	0.74	24.54	62.70	13203	1	11.67	0.75	24.85	63.48	13367

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	39.11	1.67	0.86	27.16	71.17	15103	3 1/2	39.11	1.67	0.86	27.16	71.17	15103
1.350F	36.70	2.96	0.80	26.96	70.08	14625	1 1/2	75.81	2.29	0.83	27.06	70.65	14872
1.400F	3.88	9.46	0.75	27.24	63.30	13683	1	79.69	2.64	0.83	27.07	70.29	14814
1.450F	5.59	15.44	0.72	26.10	58.46	12611	1	85.28	3.48	0.82	27.01	69.51	14670
1.550F	1.84	26.20	0.59	24.85	48.95	10728	0	87.12	3.96	0.81	26.96	69.08	14586
1.600F	1.28	30.94	0.60	24.12	44.94	10015	0	88.40	4.35	0.81	26.92	68.73	14520
1.800F	4.74	41.97	0.50	22.41	35.62	8033	0	93.14	6.27	0.80	26.69	67.04	14190
1.800S	6.86	79.27	0.31	15.40	5.33	2594	0	100.00	11.27	0.76	25.92	62.81	13395
TOTAL	100.00	11.27	0.76	25.92	62.81	13395							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-25
SAMPLE #5
3/8" X 28M
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.23	—
% CARBON	75.36	76.30
% HYDROGEN	4.21	4.26
% NITROGEN	0.83	0.84
% CHLORINE	0.04	0.04
% SULFUR	0.74	0.75
% ASH	11.53	11.67
% OXYGEN (DIFF.)	6.06	6.14
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	>2777	2776
Softening (H=W)	>2777	>2777
Softening (H=1/2 W)	>2777	>2777
Fluid	>2777	>2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

200.25-201.17 METERS

SAMPLE #6

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.37	9.50	0.78	27.12	62.01	13492	2 1/2	9.63	0.79	27.50	62.87	13679

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	22.07	1.68	0.96	30.53	67.79	15021	3	22.07	1.68	0.96	30.53	67.79	15021
1.350F	65.92	2.95	0.85	30.08	66.97	14924	1	87.99	2.63	0.88	30.19	67.18	14948
1.350S	12.01	64.91	0.43	18.31	16.78	3150	0	100.00	10.11	0.82	28.77	61.12	13531
TOTAL	100.00	10.11	0.82	28.77	61.12	13531							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-25
SAMPLE #6
3/8" X 28M
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.37	--
% CARBON	79.82	80.93
% HYDROGEN	4.76	4.83
% NITROGEN	1.19	1.21
% CHLORINE	0.02	0.02
% SULFUR	0.78	0.79
% ASH	9.50	9.63
% OXYGEN (DIFF.)	2.56	2.59
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2418	2085
Softening (H=W)	2740	2653
Softening (H=1/2 W)	>2777	2758
Fluid	>2777	2773

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-25

216.14-217.67 METERS

SAMPLE #7

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.08	9.64	0.76	26.56	62.72	13520	3 1/2	9.75	0.77	26.85	63.40	13668

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	48.71	1.97	0.83	28.43	69.60	15102	8	48.71	1.97	0.83	28.43	69.60	15102
1.350F	35.79	3.17	0.79	27.83	69.00	14733	1	84.50	2.48	0.81	28.18	69.34	14946
1.400F	3.37	9.43	0.77	27.58	62.99	13620	1	87.87	2.75	0.81	28.15	69.10	14895
1.450F	1.49	15.87	0.75	27.46	56.67	12281	1	89.36	2.96	0.81	28.14	68.90	14851
1.500F	1.20	20.82	0.71	27.00	52.18	11340	1	90.56	3.20	0.81	28.13	68.67	14805
1.550F	0.83	27.34	0.54	26.54	46.12	10358	1	91.39	3.42	0.81	28.11	68.47	14765
1.600F	0.54	30.39	0.51	26.27	43.34	9868	1	91.93	3.58	0.80	28.10	68.32	14736
1.800F	0.86	41.23	0.48	25.68	33.09	8196	1	92.79	3.93	0.80	28.08	67.99	14675
1.800S	7.21	76.35	0.37	21.67	1.98	1372	0	100.00	9.15	0.77	27.62	63.23	13716
TOTAL	100.00	9.15	0.77	27.62	63.23	13716							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-25
SAMPLE #7
3/8" X 28M
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.08	—
% CARBON	75.95	76.78
% HYDROGEN	4.36	4.41
% NITROGEN	1.01	1.02
% CHLORINE	0.02	0.02
% SULFUR	0.76	0.77
% ASH	9.64	9.75
% OXYGEN (DIFF.)	7.18	7.25
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	> 2777	2596
Softening (H=W)	> 2777	> 2777
Softening (H=1/2 W)	> 2777	> 2777
Fluid	> 2777	> 2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-26

78.92-80.34 METERS

SAMPLE #1

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.05	8.69	0.68	31.88	58.38	13617	8 1/2	8.78	0.69	32.22	59.00	13761

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	85.40	1.46	0.69	35.37	63.17	15204	8 1/2	85.40	1.46	0.69	35.37	63.17	15204
1.350F	1.49	7.03	0.76	31.64	61.33	14278	5	86.89	1.56	0.69	35.31	63.13	15188
1.450F	0.78	13.72	0.79	30.82	55.46	12919	7 1/2	87.67	1.66	0.69	35.27	63.07	15168
1.600F	0.75	24.42	0.61	29.82	45.76	10678	7	88.42	1.86	0.69	35.22	62.92	15130
1.800F	0.85	34.15	0.50	27.81	38.04	8651	5	89.27	2.16	0.69	35.15	62.69	15068
1.800S	10.73	59.41	0.40	22.36	18.23	3090	0	100.00	8.31	0.66	33.78	57.91	13783
TOTAL	100.00	8.31	0.66	33.78	57.91	13783							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-26
SAMPLE #1
3/8" X 28M
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.05	--
% CARBON	76.55	77.36
% HYDROGEN	4.72	4.77
% NITROGEN	1.35	1.36
% CHLORINE	0.03	0.03
% SULFUR	0.68	0.69
% ASH	8.69	8.78
% OXYGEN (DIFF.)	6.93	7.01
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2465	2055
Softening (H=W)	2739	2058
Softening (H=1/2 W)	2762	2060
Fluid	2771	2165

SUNNYVALE MINERALS LABORATORY.

BRI-DOWLING CREEK COAL

HOLE #BC-80-26

95.84-98.05 METERS

SAMPLE #2

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.40	7.87	0.66	25.10	65.63	13720	1 1/2	7.98	0.67	25.46	66.56	13915

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	21.80	1.90	0.77	27.58	70.52	15167	3 1/2	21.80	1.90	0.77	27.58	70.52	15167
1.350F	41.16	3.17	0.69	27.23	69.60	14747	1	62.96	2.73	0.72	27.35	69.92	14892
1.400F	21.13	7.89	0.59	24.64	67.47	13903	1	84.09	4.03	0.69	26.67	69.30	14644
1.450F	5.88	13.63	0.46	23.54	62.83	12818	0	89.97	4.65	0.67	26.46	68.89	14524
1.500F	1.80	18.64	0.57	23.17	58.19	11662	0	91.77	4.93	0.67	26.40	68.67	14468
1.550F	1.77	19.89	0.57	22.50	57.61	10837	0	93.54	5.21	0.67	26.33	68.46	14399
1.600F	1.72	21.59	0.48	21.51	56.90	10384	0	95.26	5.51	0.66	26.24	68.25	14327
1.800F	2.54	26.38	0.40	20.83	52.79	9093	0	97.80	6.05	0.66	26.10	67.85	14191
1.800S	2.20	78.57	0.15	19.53	1.90	2105	0	100.00	7.65	0.65	25.95	66.40	13925
TOTAL	100.00	7.65	0.65	25.95	66.40	13925							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-26
SAMPLE #2
3/8" X 28M
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.40	--
% CARBON	79.99	81.13
% HYDROGEN	4.40	4.46
% NITROGEN	0.98	0.99
% CHLORINE	0.02	0.02
% SULFUR	0.66	0.67
% ASH	7.87	7.98
% OXYGEN (DIFF.)	4.68	4.75
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2380	2120
Softening (H=W)	2575	2285
Softening (H=1/2 W)	2585	2355
Fluid	2660	2480

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #BC-80-27

71.00-72.33 METERS

SAMPLE #1

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.56	4.31	0.86	28.76	66.37	14460	3 1/2	4.33	0.86	28.92	66.75	14541

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	65.13	1.77	0.94	30.76	67.47	15082	6	65.13	1.77	0.94	30.76	67.47	15082
1.350F	25.40	3.21	0.95	29.85	66.94	14480	1	90.53	2.17	0.94	30.50	67.33	14913
1.400F	4.90	12.81	0.93	27.58	59.61	13138	1	95.43	2.72	0.94	30.35	66.93	14822
1.450F	2.18	19.16	0.74	26.31	54.53	12096	1	97.61	3.09	0.94	30.26	66.65	14761
1.450S	2.39	44.00	0.76	25.30	30.70	7864	1	100.00	4.07	0.93	30.15	65.78	14596
TOTAL	100.00	4.07	0.93	30.15	65.78	14596							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-27
SAMPLE #1
3/8" X 28M
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	0.56	—
% CARBON	82.69	83.16
% HYDROGEN	4.76	4.79
% NITROGEN	1.05	1.06
% CHLORINE	0.02	0.02
% SULFUR	0.86	0.86
% ASH	4.31	4.33
% OXYGEN (DIFF.)	5.75	5.78
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	>2777	>2777
Softening (H=W)	>2777	>2777
Softening (H=1/2 W)	>2777	>2777
Fluid	>2777	>2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

111.40-113.02 METERS

SAMPLE #2

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.38	5.88	0.64	25.65	67.09	14066	2 1/2	5.96	0.65	26.01	68.03	14263

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	42.46	1.88	0.75	28.02	70.10	15086	6 1/2	42.46	1.88	0.75	28.02	70.10	15086
1.350F	41.83	3.19	0.60	26.91	69.90	14724	1	84.29	2.53	0.68	27.47	70.00	14906
1.400F	6.34	10.00	0.63	25.94	64.06	13451	1 1/2	90.63	3.05	0.67	27.36	69.59	14805
1.450F	1.57	15.33	0.59	25.15	59.52	12299	3	92.20	3.26	0.67	27.32	69.42	14762
1.500F	2.14	19.87	0.60	24.51	55.62	11479	1 1/2	94.34	3.64	0.67	27.26	69.10	14688
1.550F	1.11	25.03	0.53	23.77	51.20	10627	1 1/2	95.45	3.89	0.67	27.22	68.89	14640
1.600F	0.99	28.36	0.37	23.02	48.62	9934	2	96.44	4.14	0.66	27.18	68.68	14592
1.800F	1.50	30.57	0.44	20.93	48.50	8849	0	97.94	4.54	0.66	27.08	68.38	14504
1.800S	2.06	64.32	0.38	19.35	16.33	3701	0	100.00	5.78	0.66	26.92	67.30	14281
TOTAL	100.00	5.78	0.66	26.92	67.30	14281							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-27
SAMPLE #2
3/8" X 28M
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.38	—
% CARBON	81.76	82.90
% HYDROGEN	4.64	4.70
% NITROGEN	1.04	1.05
% CHLORINE	0.05	0.05
% SULFUR	0.64	0.65
% ASH	5.88	5.96
% OXYGEN (DIFF.)	4.61	4.69
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2363	2195
Softening (H=W)	2396	2293
Softening (H=1/2 W)	2423	2351
Fluid	2568	2549

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #BC-80-27

124.70-127.10 METERS

SAMPLE #3

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.37	7.55	0.73	24.86	66.22	13879	4	7.65	0.74	25.21	67.14	14072

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	56.11	2.91	0.70	27.58	69.51	14911	7	56.11	2.91	0.70	27.58	69.51	14911
1.350F	27.17	4.10	0.60	27.38	68.52	14643	1 1/2	83.28	3.30	0.67	27.51	69.19	14824
1.400F	5.01	9.99	0.67	27.13	62.88	13618	1 1/2	88.29	3.68	0.67	27.49	68.83	14755
1.450F	1.93	16.44	1.09	26.68	56.88	12523	1	90.22	3.95	0.68	27.48	68.57	14708
1.500F	1.68	23.07	1.65	26.19	50.74	11529	1	91.90	4.30	0.70	27.45	68.25	14649
1.550F	1.92	29.00	1.75	24.65	46.35	10522	1	93.82	4.81	0.72	27.39	67.80	14565
1.600F	1.07	32.20	2.06	22.08	45.72	10094	1 1/2	94.89	5.12	0.73	27.33	67.55	14515
1.600S	5.11	64.38	0.78	16.36	19.26	4201	0	100.00	8.14	0.73	26.77	65.09	13988
TOTAL	100.00	8.14	0.73	26.77	65.09	13988							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-27
SAMPLE #3
3/8" X 28M
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.37	--
% CARBON	80.51	81.63
% HYDROGEN	4.59	4.65
% NITROGEN	1.11	1.13
% CHLORINE	0.05	0.05
% SULFUR	0.73	0.74
% ASH	7.55	7.65
% OXYGEN (DIFF.)	4.09	4.15
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2352	2195
Softening (H=W)	>2777	>2777
Softening (H=1/2 W)	>2777	>2777
Fluid	>2777	>2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-27
149.30-150.81 METERS
SAMPLE #4
3/8" X 28M
WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.02	12.39	0.80	26.76	59.83	12974	5	12.52	0.81	27.04	60.44	13108

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	55.62	2.20	0.97	29.67	68.13	14982	7	55.62	2.20	0.97	29.67	68.13	14982
1.350F	21.97	3.71	0.86	28.86	67.43	14705	2	77.59	2.63	0.94	29.44	67.93	14904
1.400F	2.75	11.14	1.03	28.19	60.67	13489	2	80.34	2.92	0.94	29.40	67.68	14855
1.450F	2.03	16.53	0.81	26.52	56.95	12489	1	82.37	3.25	0.94	29.33	67.42	14797
1.500F	4.30	20.53	0.70	24.81	54.66	11629	1	86.67	4.11	0.93	29.10	66.79	14640
1.550F	2.22	24.85	0.66	22.98	52.17	10935	1	88.89	4.63	0.92	28.95	66.42	14547
1.600F	1.47	29.67	0.86	22.09	48.24	10045	0	90.36	5.04	0.92	28.84	66.12	14474
1.800F	1.60	39.36	0.66	20.41	40.23	8344	0	91.96	5.64	0.92	28.69	65.67	14367
1.800S	8.04	84.01	0.11	15.40	0.59	453	0	100.00	11.94	0.85	27.62	60.44	13248
TOTAL	100.00	11.94	0.85	27.62	60.44	13248							

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL
HOLE #BC-80-27
SAMPLE #4
3/8" X 28M
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.02	—
% CARBON	73.06	73.81
% HYDROGEN	4.59	4.64
% NITROGEN	1.08	1.09
% CHLORINE	0.01	0.01
% SULFUR	0.80	0.81
% ASH	12.39	12.52
% OXYGEN (DIFF.)	7.05	7.12
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	>2777	>2777
Softening (H=W)	>2777	>2777
Softening (H=1/2 W)	>2777	>2777
Fluid	>2777	>2777

SUNNYVALE MINERALS LABORATORY

ERI-DOWLING CREEK COAL

HOLE #BC-80-27

175.33-176.32 METERS

SAMPLE #5

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.89	11.92	0.80	27.56	59.63	12805	6 1/2	12.03	0.81	27.81	60.16	12920

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	40.26	1.94	1.00	30.93	67.13	15148	8 1/2	40.26	1.94	1.00	30.93	67.13	15148
1.350F	18.18	5.29	0.83	29.68	65.03	14392	3	58.44	2.98	0.95	30.54	66.48	14913
1.400F	10.61	10.52	0.78	28.61	60.87	13369	2 1/2	69.05	4.14	0.92	30.24	65.62	14676
1.450F	7.10	16.33	0.74	27.92	55.75	12340	2 1/2	76.15	5.28	0.91	30.03	64.69	14458
1.500F	4.99	18.35	0.69	27.67	53.98	11757	1 1/2	81.14	6.08	0.89	29.88	64.04	14292
1.550F	3.31	22.87	0.63	26.14	50.99	10879	1	84.45	6.74	0.88	29.74	63.52	14158
1.600F	2.90	26.81	0.52	23.39	49.80	9945	1	87.35	7.40	0.87	29.52	63.08	14018
1.800F	3.22	32.74	0.59	20.88	46.38	8862	1	90.57	8.31	0.86	29.22	62.47	13835
1.800S	9.43	57.19	0.21	19.66	23.15	2411	0	100.00	12.92	0.80	28.32	58.76	12757
TOTAL	100.00	12.92	0.80	28.32	58.76	12757							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

SAMPLE #5

3/8" X 28M

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	0.89	---
% CARBON	75.19	75.87
% HYDROGEN	4.44	4.48
% NITROGEN	1.18	1.19
% CHLORINE	0.05	0.05
% SULFUR	0.80	0.81
% ASH	11.92	12.03
% OXYGEN (DIFF.)	5.53	5.57
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2470	2013
Softening (H=W)	2498	2141
Softening (H=1/2 W)	2508	2178
Fluid	2543	2533

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

180.44-181.11 METERS

SAMPLE #6

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.95	19.20	0.96	28.31	51.54	11358	8	19.38	0.97	28.58	52.04	11467

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	48.95	2.25	1.04	30.56	67.19	14995	8	48.95	2.25	1.04	30.56	67.19	14995
1.350F	12.42	8.87	0.96	29.41	61.72	14375	7	61.37	3.59	1.02	30.33	66.08	14869
1.400F	2.24	12.86	1.09	27.88	59.26	12951	7	63.61	3.92	1.02	30.24	65.84	14802
1.450F	0.72	16.48	1.05	26.49	57.03	12288	8	64.33	4.06	1.03	30.20	65.74	14774
1.500F	1.05	19.84	0.92	25.34	54.82	11448	8	65.38	4.31	1.02	30.12	65.57	14720
1.550F	0.70	22.80	0.83	24.31	52.89	10590	7 1/2	66.08	4.51	1.02	30.06	65.43	14677
1.600F	0.84	29.18	0.76	24.17	46.65	9940	7 1/2	66.92	4.82	1.02	29.99	65.19	14617
1.800F	7.68	46.97	0.55	23.98	29.05	7618	4 1/2	74.60	9.16	0.97	29.37	61.47	13897
1.800S	25.40	53.69	0.82	21.31	25.00	3751	0	100.00	20.47	0.93	27.32	52.21	11320
TOTAL	100.00	20.47	0.93	27.32	52.21	11320							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

SAMPLE #6

3/8" X 28M

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	0.95	—
% CARBON	68.01	68.66
% HYDROGEN	3.94	3.98
% NITROGEN	1.18	1.19
% CHLORINE	0.05	0.05
% SULFUR	0.96	0.97
% ASH	19.20	19.38
% OXYGEN (DIFF.)	5.71	5.77
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2283	1958
Softening (H=W)	2593	2118
Softening (H=1/2 W)	2613	2145
Fluid	2698	2443

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

192.95-194.20 METERS

SAMPLE #7

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.17	15.38	0.73	25.44	58.01	12356	2 1/2	15.56	0.74	25.74	58.70	12502

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	41.54	2.01	0.83	29.95	68.04	15069	6	41.54	2.01	0.83	29.95	68.04	15069
1.350F	20.52	4.47	0.79	28.59	66.94	14526	1 1/2	62.06	2.82	0.82	29.50	67.68	14890
1.400F	5.09	12.26	0.68	27.81	59.93	13355	1	67.15	3.54	0.81	29.37	67.09	14773
1.450F	2.10	19.00	0.64	27.05	53.95	12361	1	69.25	4.01	0.80	29.30	66.69	14700
1.500F	1.85	24.77	0.61	24.07	51.16	11408	1	71.10	4.55	0.80	29.17	66.28	14614
1.550F	1.66	30.42	0.54	23.27	46.31	10585	1	72.76	5.14	0.79	29.03	65.83	14522
1.600F	4.37	34.21	0.56	22.63	43.16	9824	1	77.13	6.78	0.78	28.67	64.55	14256
1.800F	13.96	44.31	0.48	20.77	34.92	8205	0	91.09	12.54	0.73	27.46	60.00	13329
1.800S	8.91	60.05	0.38	18.98	20.97	3542	0	100.00	16.77	0.70	26.70	56.53	12457
TOTAL	100.00	16.77	0.70	26.70	56.53	12457							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

SAMPLE #7

3/8" X 28M

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.17	—
% CARBON	70.95	71.79
% HYDROGEN	4.05	4.10
% NITROGEN	1.05	1.06
% CHLORINE	0.03	0.03
% SULFUR	0.73	0.74
% ASH	15.38	15.56
% OXYGEN (DIFF.)	6.64	6.72
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2313	2293
Softening (H=W)	> 2777	2728
Softening (H=1/2 W)	> 2777	>2777
Fluid	>2777	> 2777

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL

HOLE #BC-80-27

196.90-197.98 METERS

SAMPLE #8

3/8" X 28M

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.92	8.58	0.88	22.87	67.63	13832	4 1/2	8.66	0.89	23.08	68.26	13960

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	34.69	1.67	1.03	23.78	74.55	15211	8	34.69	1.67	1.03	23.78	74.55	15211
1.350F	44.05	2.71	0.89	23.61	73.68	14982	2	78.74	2.25	0.95	23.68	74.07	15083
1.400F	4.12	10.23	0.76	22.79	66.98	13776	1 1/2	82.86	2.65	0.94	23.64	73.71	15018
1.450F	2.82	17.27	0.71	22.39	60.34	12716	1 1/2	85.68	3.13	0.93	23.60	73.27	14942
1.500F	4.15	22.73	0.70	22.18	55.09	11795	1	89.83	4.03	0.92	23.53	72.44	14797
1.550F	3.90	27.62	0.63	14.91	57.47	11002	1	93.73	5.02	0.91	23.17	71.81	14639
1.550S	6.27	62.06	0.38	7.73	30.21	3417	0	100.00	8.59	0.88	22.21	69.20	13935
TOTAL	100.00	8.59	0.88	22.21	69.20	13935							

SUNNYVALE MINERALS LABORATORY

BRI-DOWLING CREEK COAL
HOLE #BC-80-27
SAMPLE #8
3/8" X 28M
HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	0.92	—
% CARBON	77.83	78.55
% HYDROGEN	4.30	4.34
% NITROGEN	1.08	1.09
% CHLORINE	0.07	0.07
% SULFUR	0.88	0.89
% ASH	8.58	8.66
% OXYGEN (DIFF.)	6.34	6.40
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2303	1953
Softening (H=W)	2601	2572
Softening (H=1/2 W)	2731	2693
Fluid	>2777	>2777

PR-Bri-Dowling Ck 80 (8)A

REPORT ON A

REFRACTION SEISMIC SURVEY

BRI-DOWLING CREEK PROPERTY

PEACE RIVER LAND DISTRICT

LIARD MINING DIVISION

NTS 93-0-16W

55°57'N; 128°18'W

Located Approximately 24 Km. Northwest of Hudson's Hope, B.C.

Owned and Operated by:

UTAH MINES LTD.

1600-1050 West Pender Street

Vancouver, B. C.

CONFIDENTIAL

J. Vyselaar, Geophysicist
Vancouver, B. C.

December, 1980

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

INTRODUCTION

A geophysical program consisting of linecutting and a refraction seismic survey was completed on the Bri-Dowling Creek property during the period May to July, 1980.

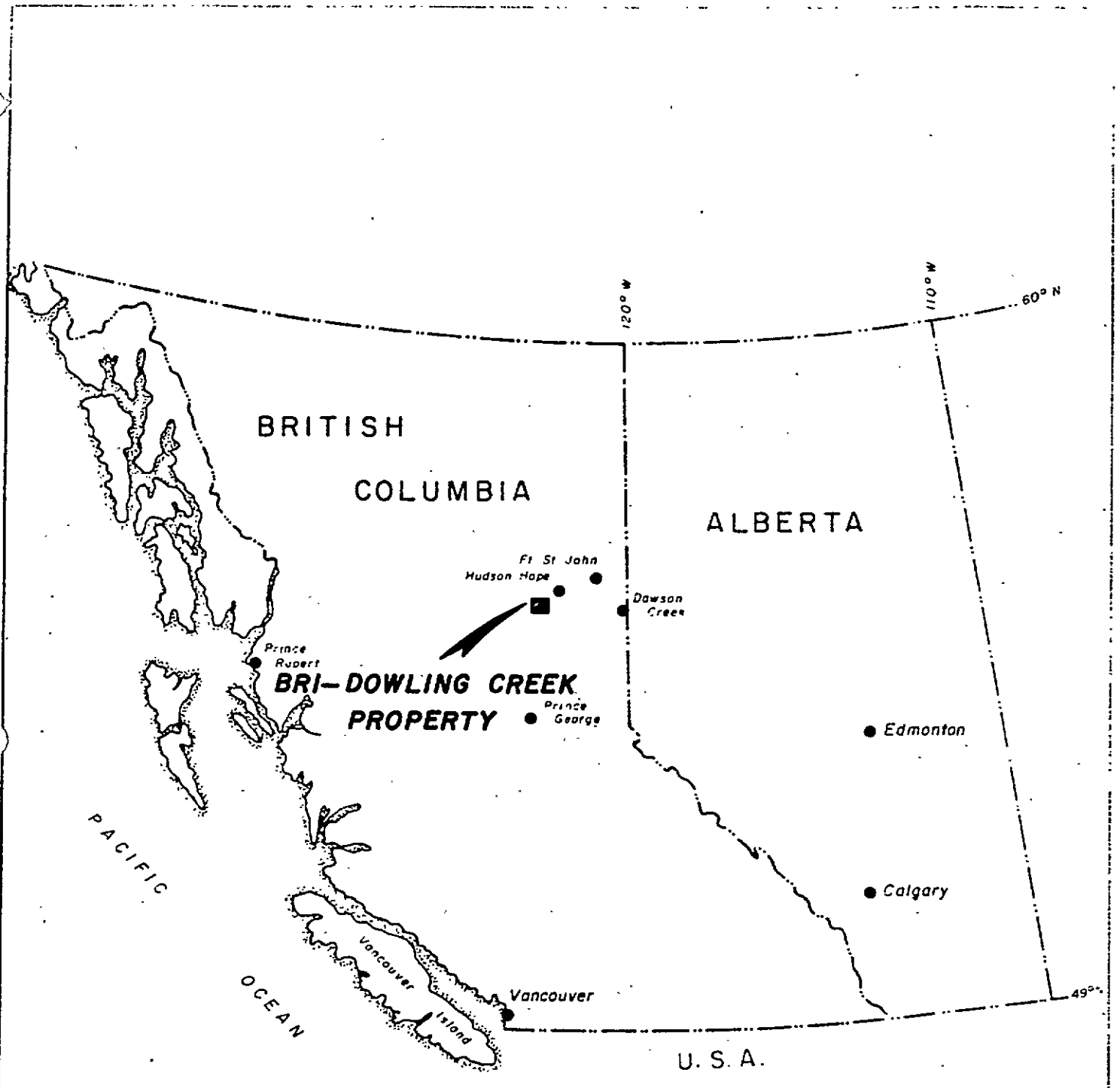
Linecutting, by Duchan Enterprises Ltd. of Burnaby, B.C. began on May 14th and was completed on June 1st.

The refraction seismic survey commenced May 31st and was completed on July 23rd. Staffing consisted of S. Bedard, J. Balfour and C. Corney, temporary geophysical assistants under the supervision of J. Vyselaar, geophysicist.

LOCATION AND ACCESS

The Bri-Dowling Creek property is located in the Peace River Land District of the Liard Mining Division. The property is centred on 55°57'N latitude; 128°18'W longitude placing it in NTS area 93-0-16W. The property is bounded by Dowling Creek on the west, Gaylord Creek on the north and Track Creek on the east. The northeast corner of the property lies approximately three kilometres southwest of the W.A.C. Bennett Dam. The town of Hudson's Hope is situated approximately 24 kilometres northeast of the property and the town of Chetwynd is found 54 kilometres southeast of the property. The property lies 770 kilometres north of Vancouver. (Figure 1, page 2 and figure 2, page 3).

Access to the property is by the Canfor Limited Johnston Creek-Track Creek Forest road 19 kilometres south of Hudson's



UTAH MINES LTD.

BRI–DOWLING CREEK PROPERTY

LOCATION MAP

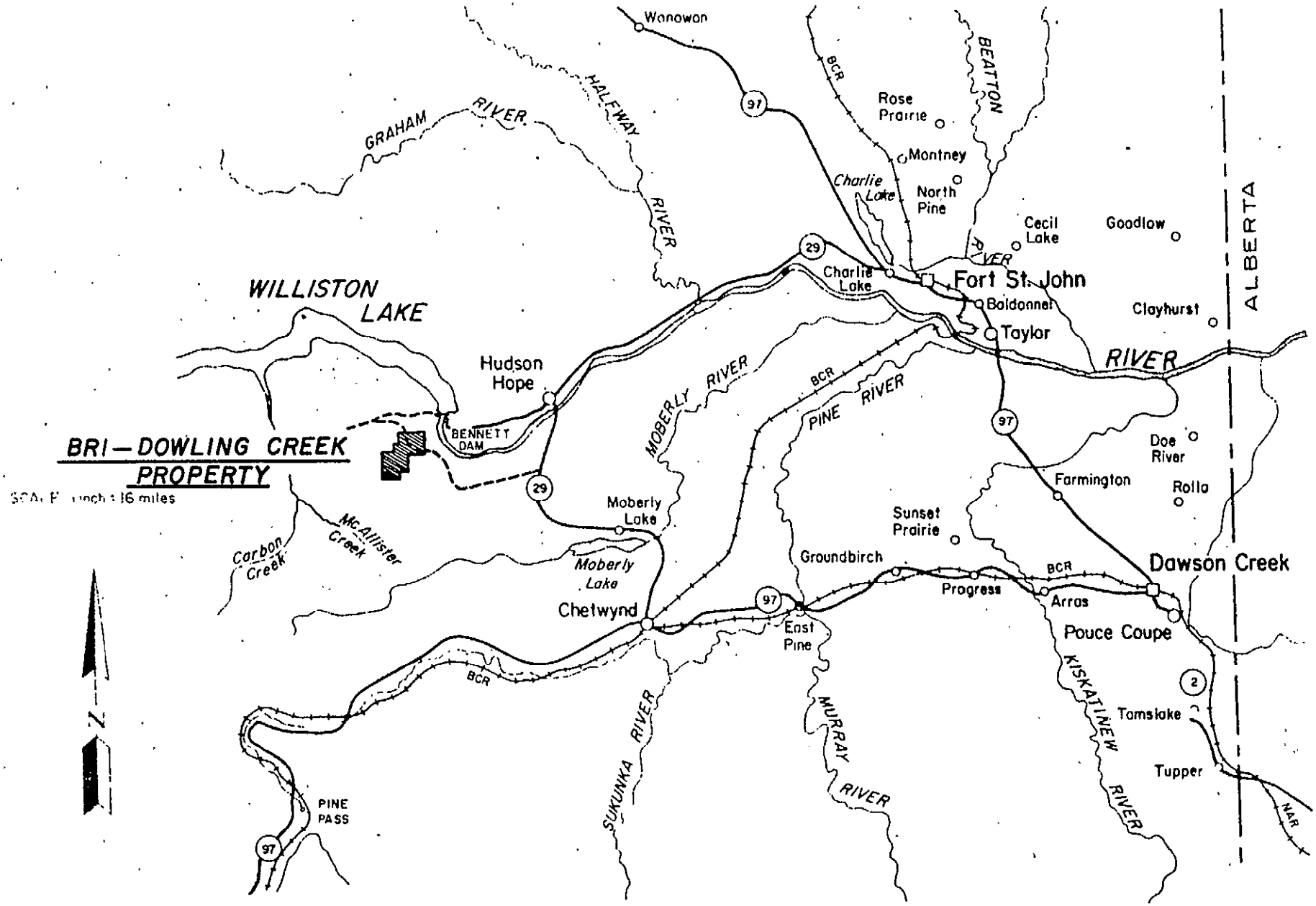
SCALE IN MILES

FIGURE — 1

FIGURE – 2

REGIONAL MAP

BRI – DOWLING CREEK PROPERTY



Hope on Highway 29. The property can also be reached via paved road from Hudson's Hope to the W.A.C. Bennett Dam and then via a Utah Mines Ltd. road from the dam to the Johnston Creek-Track Creek road. Access on the property is provided by several logging haulage roads and drill roads.

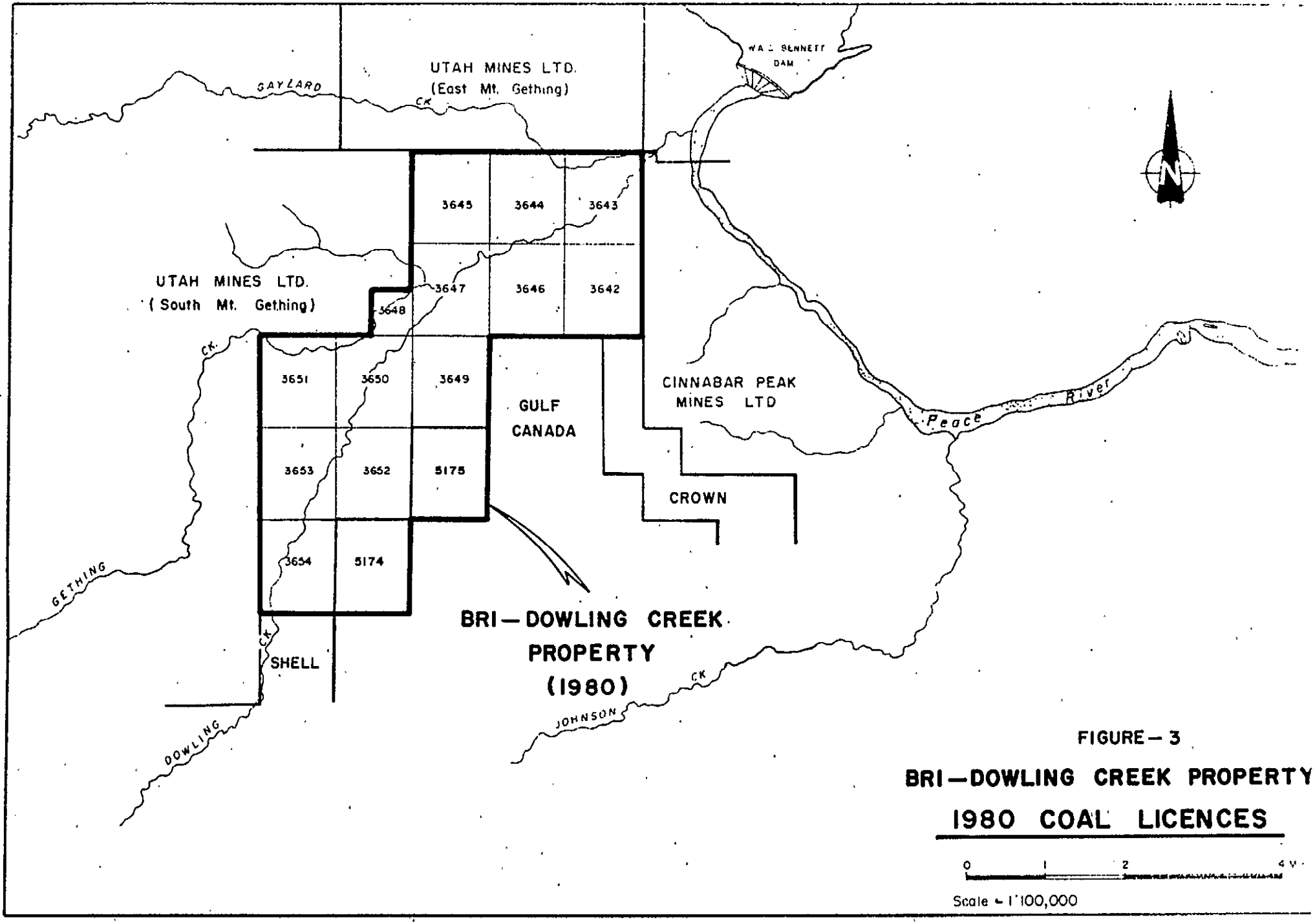
HISTORY

The Bri-Dowling Creek property consists of 15 contiguous coal licenses numbered 3642 to 3654 inclusive, 5174 and 5175 encompassing 4,135 hectares. The property adjoins several other properties held by Utah Mines Ltd., Cinnabar Peaks Mines Ltd., Shell Canada Resources Ltd. and Gulf Canada Resources Ltd., as well as crown land (see figure 3, page 5).

Utah Mines Ltd. became owner-operator of the Bri coal licenses through an agreement between Utah, Bri Coal Mining Ltd., Bow River Resources Ltd., and Rainier Energy Resources Ltd. in May, 1978. Bow River Resources Ltd. changed their name to Suneva Resources Ltd. in February 1979 after a company re-organization. Suneva retained all of Bow River interests in the Bri-Dowling Creek property.

PHYSIOGRAPHY

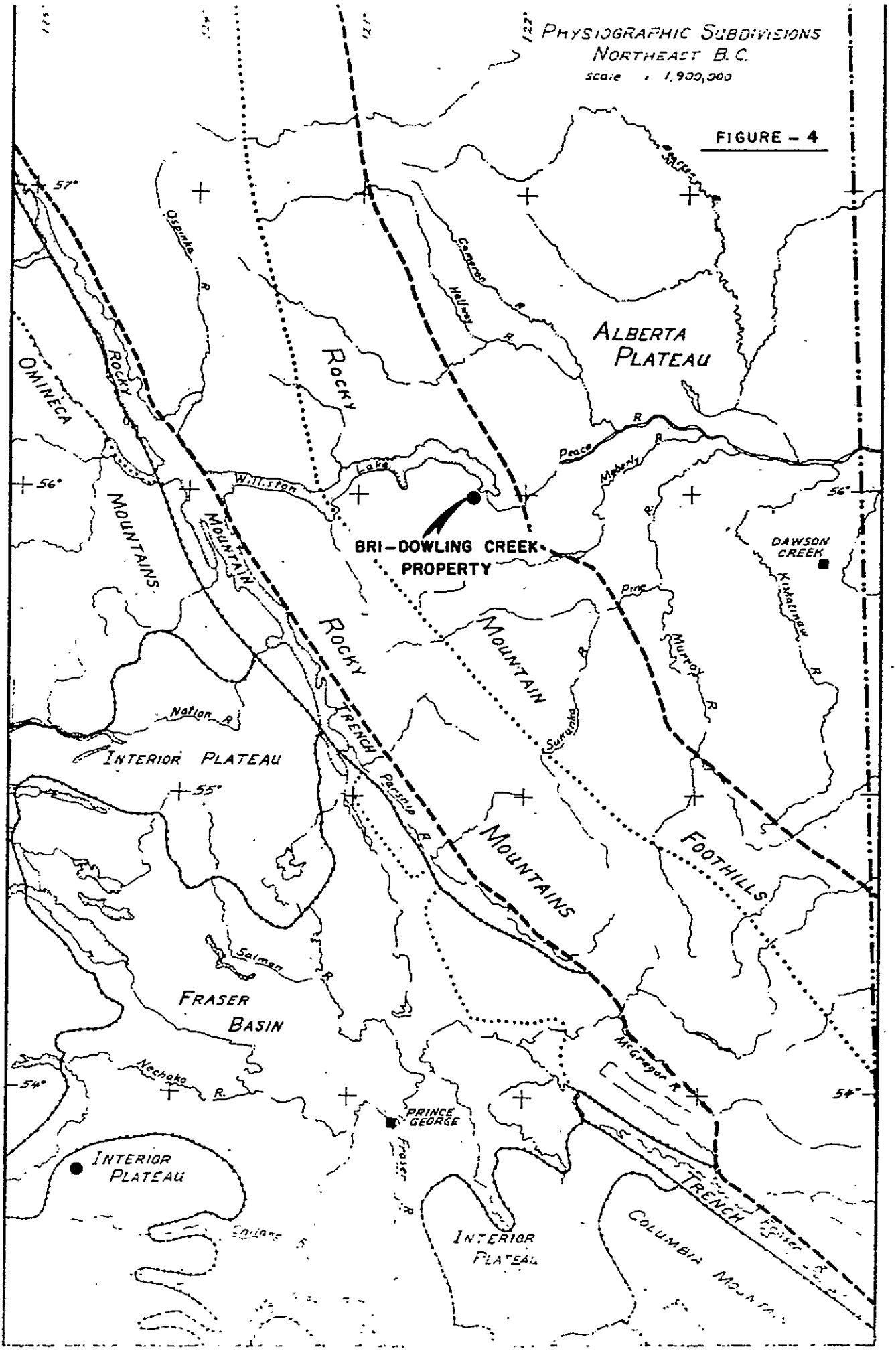
The Bri-Dowling Creek Property is located in the eastern belt of the Rocky Mountain Foothills (see figure 4 page 6). The western margin of the Foothills belt is considered to be the eastern most major fault which thrusts Paleozoic strata over Mesozoic strata. The eastern margin is a series of en echelon thrust faults which separate the folded, faulted strata of



FIGURE—3

BRI—DOWLING CREEK PROPERTY

1980 COAL LICENCES


PHYSIOGRAPHIC SUBDIVISIONS
NORTHEAST B.C.
scale : 1,900,000
FIGURE – 4
BRI–DOWLING CREEK PROPERTY
ALBERTA PLATEAU
ROCKY MOUNTAIN TRENCH
OMINECA MOUNTAINS
ROCKY MOUNTAINS
FOOTHILLS
INTERIOR PLATEAU
FRASER BASIN
COLUMBIA MOUNTAINS
DAWSON CREEK
PRINCE GEORGE
Ospika R.
Halfway R.
Peace R.
Williston Lake
Nation R.
Parsnip R.
Pine R.
Murray R.
Kiskatinaw R.
Sukunka R.
Salmon R.
Nechako R.
Fraser R.
McGregor R.
Chilcotin R.
57°
56°
55°
54°

the Foothills from the gently dipping to flat lying strata of the Alberta Plateau (Holland, 1976). Within this belt, major fold axes and thrust faults tend in a northerly to northwesterly direction, with thrust faults 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. The topography commonly reflects bedrock structure and lithology.

The property is underlain by the west limb of a south plunging syncline. Topographic relief in the immediate vicinity of the property is moderate with elevations ranging from 600 to 1200 metres above sea level. Creek valleys range in form from the deeply incised canyon of Gething Creek, below its confluence with Dowling Creek, to the broad, gravel floored valley of Dowling Creek. In areas of thick till cover creeks have rapidly cut through the overburden to bedrock leaving steep, slide prone valley walls. Hill tops and ridge crests are broad and generally rounded. Dip slope surfaces are common.

LINECUTTING

The linecutting contract was awarded to Duchan Enterprises Ltd. of Burnaby, B. C. The specifications of the contract were as follows:

1) Lines to be 1.2 metres wide.
2) Sufficient brush to be removed to make lines passable but to cut as few trees as possible.
3) Lines to be marked with flourescent flagging.
4) Lines to be chained at 30 metre intervals and to be slope corrected.

The linecutters arrived on the property on May 14th and began work on May 15th. The linecutting was completed on June 1st and the linecutters left the same day.

A total of 19 lines spaced 300 metres apart were cut in two grids. Lines 1E to 11E were cut in a grid southwest of the camp. Lines 12E to 19E were cut in a grid extending northeast from camp. The total length of lines plus baselines was 27,630 metres with a disturbed area of 33,156 square metres.

Lines 20E to 23E were cut by the geophysical crew. The baseline was flagged while the lines were flagged and cut to the same specifications as the other lines. Lines 21E, 22E, and 23E were located mainly in a recently logged area, thereby necessitating very little additional disturbance. Lines 20E to 23E covered a total of 2,800 metres with a disturbed area of 3,360 square metres.

The totals for lines 1E to 23E are 30,430 metres total length with a disturbed area of 36,516 square metres. A grid line location (figure 12) drawn at the scale of 1:10,000 can be found in the back pocket.

REFRACTION SEISMIC SURVEY

The purpose of the refraction seismic survey was to determine the depth of overburden most likely to be found in the floor areas of Dowling Creek. The survey was carried out using a twelve channel refraction seismograph manufactured by Geo-Space Corporation of Houston, Texas. The signal source was

75% forcite dynamite produced by Canadian Industries Limited. The seismic data is recorded on Polaroid Type 57 high speed film. Thirteen traces are produced on film, one time break for the shot and one trace for each of the twelve geophones. Ten millisecond timing lines are also produced. Geophone separation was 100 feet (30.5 metres) or 200 feet (61 metres) depending on the anticipated depth of overburden.

All lines were also surveyed with a hammer seismic unit produced by Nimbus Instruments Ltd. of Toronto, Ontario. The purpose of the hammer seismic unit was to obtain first layer velocities indicative of soil which could not be easily obtained from the refraction data. Readings were taken at 10 foot (3 metre) intervals for a distance of 70 feet (21 metres) from the geophone.

Three blasts were generally taken on the 100 foot spreads, one off each end of the spread and one at the midpoint of the spread, halfway between geophones 6 and 7. Five blasts were used on the 200 foot spreads, one off each end and one midway between geophones 3 and 4, 5 and 6, and 9 and 10. All shots were set 10 feet (3 metres) perpendicular to the line and buried about three feet (1 metre) deep. The electrical impulse to set off the blast was generated by the seismograph. Seismic caps with a true zero delay time were used to ensure an instantaneous blast.

The first arrival at each geophone was then "picked" in units of milliseconds after the blast. The picks for each array were then plotted on time-distance graphs. The plotted points were then usually divided into first, second and third layer

arrivals for each shot. The first layer is interpreted as being the soil layer, the second, the till layer, and the third layer represents bedrock. Second and third layer velocities in feet per second were determined from the graphs. First layer velocities were determined from the hammer seismic data. The delay time method was used to determine the amount of time spent travelling from bedrock to surface under each geophone. Half intercept times from the second layer arrivals were used to divide the total delay times into first and second layer delay times. Knowing the time spent in each layer and the seismic speed of each layer, the thickness of each layer and hence the depth to bedrock can be readily calculated.

Every spread was analyzed in this way. Since most of the lines had large elevation changes, up to 300 feet (100 metres), all lines were put on computer cards and run on a seismic program developed by the United States Geological Survey in Denver, Colorado. On lines where the elevation change over the spread were minimal, agreement was generally good between the computer derived depths and the delay time depths. However, on lines with large elevation changes the computer derived depths were more uniform than the delay time depths. In these cases the computer derived times were generally used rather than the delay time depths as the computer solution is more rigorous than the delay time method.

The data for line 8E and the two methods of interpretation are included as Appendix II.

Lines 1E and 2E were not surveyed due to unfavourable drilling results while line 12E was not surveyed as it ran through the camp and it would have been necessary to set off blasts very close to it. This was deemed to be too dangerous so the line was left unsurveyed.

The rest of the lines were surveyed with either the 100 foot or 200 foot separation cable. The position of the spreads and the speeds determined for each layer are tabulated in Table 1 at the end of this section.

The depths obtained at each geophone are tabulated in Appendix I.

The interpreted depths to bedrock are plotted in profile form at a scale of 1:5,000. These are included as figures 5 to 11 inclusive, pages 17 to 23. Elevations were obtained using a Thommen barometric altimeter. These elevations were than adjusted to the elevations obtained from a pencil manuscript of the property. The elevations on the profiles are thus true elevations to an accuracy of ± 5 metres.

Depths to bedrock were then obtained every 50 metres using the profiles. These values were plotted on a grid map at a scale of 1:10,000 and contoured. This data appears as figure 13 in the back pocket.

TABLE I

SPREAD POSITIONS AND LAYER VELOCITIES

Line	Spread	Geo. Sep.	Location	V1-Ft/sec(m/sec)	V2	V3
3E	1	100 ft.	18N-370N	1200 (366)	6760 (2060)	12990 (3959)
	2	100 "	370N-720N	1200 (366)	7360 (2243)	13546 (4129)
4E	1	100 "	180N-532N	1170 (357)	7060 (2152)	13230 (4033)
	2	100 "	532N-884N	1170 (357)	8775 (2675)	13890 (4234)
5E	1	100 "	240N-595N	1175 (358)	2475 (754)	10555 (3217)
	2	100 "	595N-940N	1150 (351)	2688 (819)	10660 (3249)
6E	1	100 "	35S-300N	1259 (384)	absent -	10990 (3350)
	2	100 "	300N-645N	1125 (343)	2645 (806)	11120 (3389)
	3	100 "	645N-990N	1127 (344)	3440 (1049)	14110 (4301)
	4	100 "	990N-1340N	1175 (358)	7510 (2289)	16655 (5077)
7E	1	100 "	120S-233N	1365 (416)	7230 (2204)	11365 (3464)
	2	100 "	240N-580N	1410 (430)	3575 (1090)	11978 (3651)
	3	100 "	580N-920N	1345 (410)	3497 (1066)	10523 (3207)
	4	100 "	920N-1290N	1270 (387)	3275 (998)	10627 (3239)
8E	1	100 "	90N-443N	1442 (440)	3410 (1039)	10520 (3207)
	2	100 "	443N-798N	1442 (440)	2985 (910)	11155 (3400)
9E	1	200 "	120N-807N	1060 (323)	2210 (674)	10889 (3319)
10E	1	200 "	245S-425N	1140 (347)	2830 (863)	12469 (3801)
11E	1	200 "	481S-190N	1123 (342)	3558 (1084)	10884 (3317)
13E	1	100 "	480S-135S	1035 (315)	2720 (829)	1500 (4572)
	2	100 "	135S-190N	1035 (315)	2720 (829)	1500 (4572)
14E	1	200 "	667S-15S	1205 (367)	6183 (1885)	12439 (3791)
15E	1	200 "	440S-180N	1110 (338)	4640 (1414)	12407 (3782)
16E	1	200 "	530S-150N	1080 (329)	4850 (1478)	17950 (5471)
17E	1	200 "	530S-150N	1083 (330)	4285 (1306)	14135 (4308)
18E	1	200 "	773S-105S	1130 (344)	4500 (1372)	13655 (4162)

TABLE I (continued)

Line	Spread	Geo. Sep.	Location	V1-Ft/sec(m/sec)	V2	V3
19E	1	200 ft.	140N-810N	1137 (347)	4610 (1405)	10848 (3307)
	2	200 "	753S-71S	1200 (366)	5727 (1746)	12727 (3879)
20E	1	200 "	15N-700N	1132 (345)	4676 (1425)	12922 (3939)
21E	1	200 "	0 -677N	1160 (354)	3215 (980)	14975 (4564)
22E	1	200 "	21S-653N	1300 (396)	3970 (1210)	14250 (4343)
23E	1	200 "	122S-570N	1140 (347)	2440 (744)	13685 (4171)

DRILL HOLE CORRELATION

There are several drill holes in the grid areas that allow for correlation with the seismic data.

Hole B.C. 80-26

65 metres west of line 3E at 550N has 43 metres of overburden. Line 3E has 55 metres at 550N and gets shallower to the north.

Hole B.C. 79-10

35 metres west of line 4E at 290N has 55 metres of overburden. Line 4E shows 50 and 60 metres straddling the hole.

Hole B.C. 80-27

Midway between lines 6E and 7E at 750N has 64 metres overburden. Lines 6E and 7E show about 35 and 45 metres respectively but 7E has values of around 60 metres 150 metres south. These widely variant overburden thicknesses could represent a channel filling located between the lines.

Hole B.C. 78-4

55 metres east of line 7E at 200N has 48 metres. Line 7E shows 41 metres getting deeper to the north.

Hole B.C. 80-25

20 metres east of line 9E at 700N has 73 metres. Line 9E shows 48 metres. This is the poorest correlation on the property. Computer interpretation gave almost exactly the same results as the delay time method. There could

possibly be a fault between line and drill hole but there is likely something wrong with the interpretation. There could possibly be a hidden layer with a speed close to that of bedrock. This layer could be interpreted as bedrock and thus not detected.

Hole B.C. 80-23

135 metres east of line 11E at 125N has 99 metres overburden. Line 11E shows 89 metres.

Hole B.C. 79-6

115 metres east of line 15E at 75N has 105 metres overburden. Lines 15E and 16E both have depths in the order of 100-110 metres in that area.

Hole B.C. 80-14

30 metres west of intersection of lines 19E and 20E has 84 metres overburden. Line 19E shows 62 metres while line 20E has 73 metres.

Hole B.C. 80-15

25 metres east of line 21E at 50N has 107 metres overburden. Line 21E shows 96 metres.

Hole B.C. 80-21

45 metres south of baseline 90 metres east of line 22E has 99 metres overburden. Line 22E at 20S has 109 metres.

Hole B.C. 80-17

Roughly midway between lines 22E and 23E at 200N has 41 metres overburden. Lines 22E and 23E have 44 and 40 respectively.

CONCLUSION

Except for line 9E at 700N the correlation between drill hole information and seismic results is quite good. The seismic depths would appear to be accurate to within ± 10-15%. As a result of this program the Dowling Creek valley is now known to blanketed by a layer of overburden up to 120 metres thick.

SUMMARY

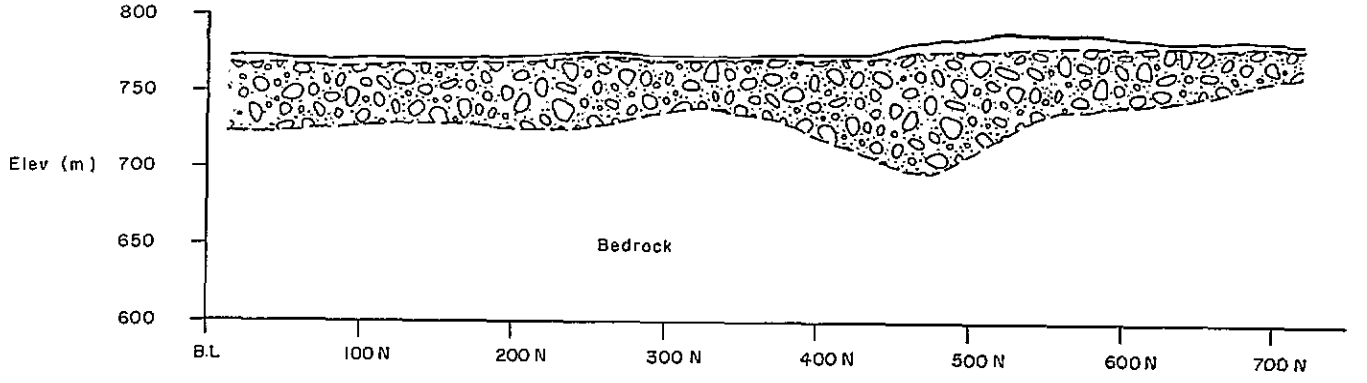
A refraction seismic survey was completed over precut lines on the Bri-Dowling Creek property during the summer of 1980. A 12 channel seismograph was used with Forcite 75% dynamite as the signal source. The records were picked and interpreted using the delay time method. They were also computer processed. Profiles of depth to bedrock beneath each geophone were drawn. From these a contour map of bedrock depths was drawn. Several drill holes allowed for correlation of the seismic depths with depths encountered in the drill holes. From these overall accuracy of the seismically derived depth is estimated at 10-15%.

Jim Vyselaar

J. Vyselaar
Geophysicist

December 1980

LINE 3 E



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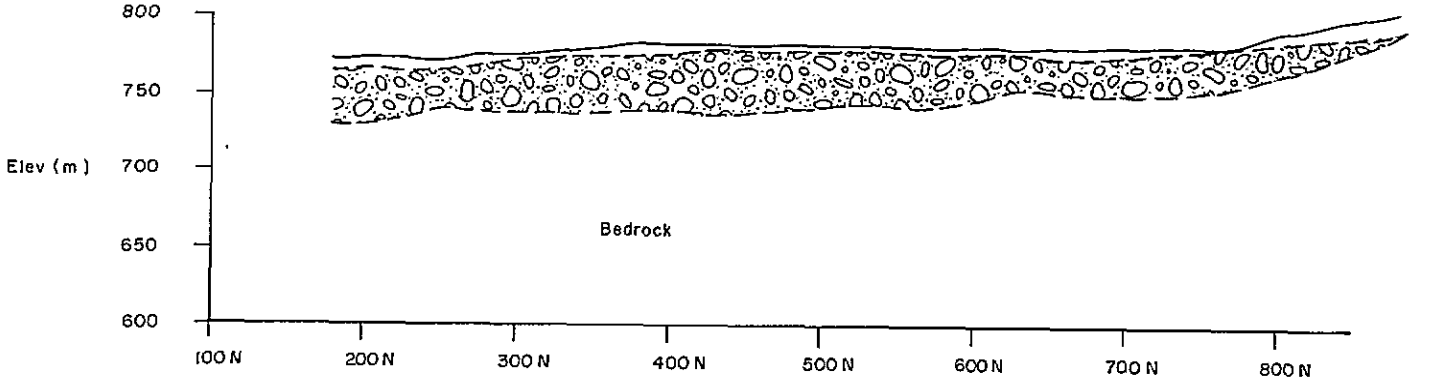

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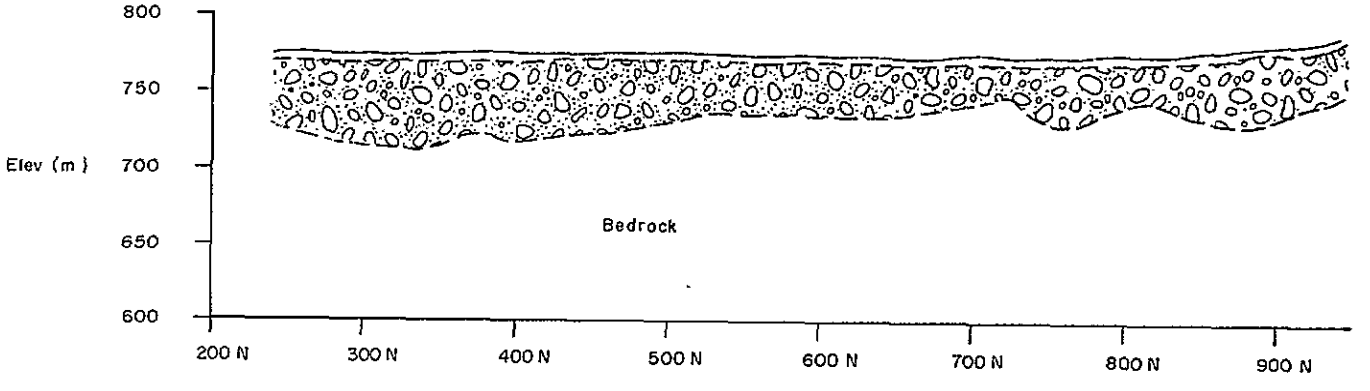
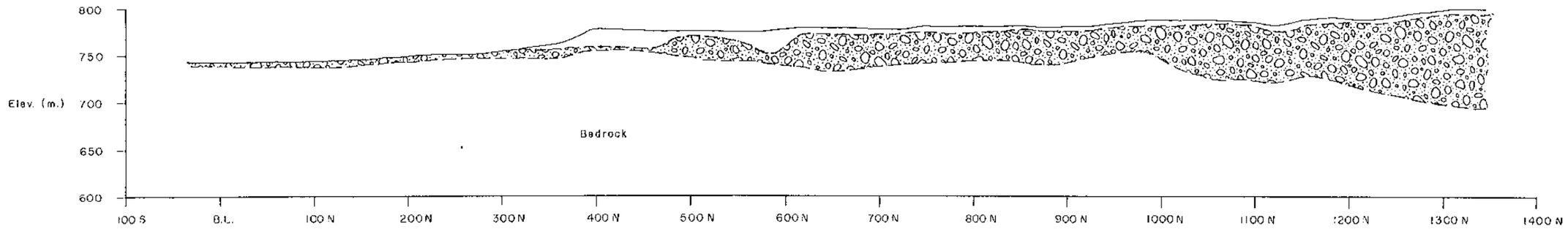


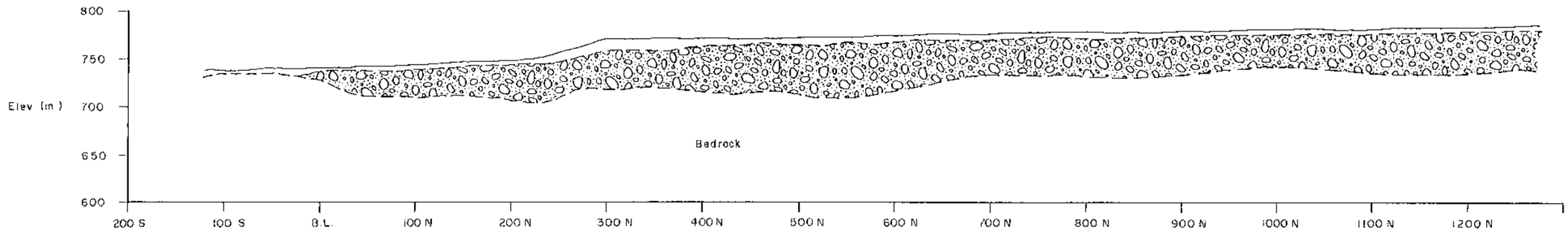
FIGURE — 5

Scale — 1:5000

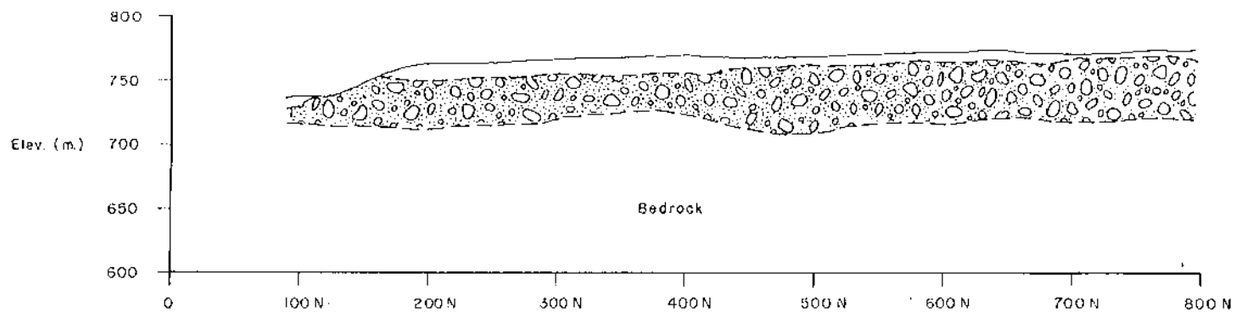
LINE 6 E.



LINE 7 E.



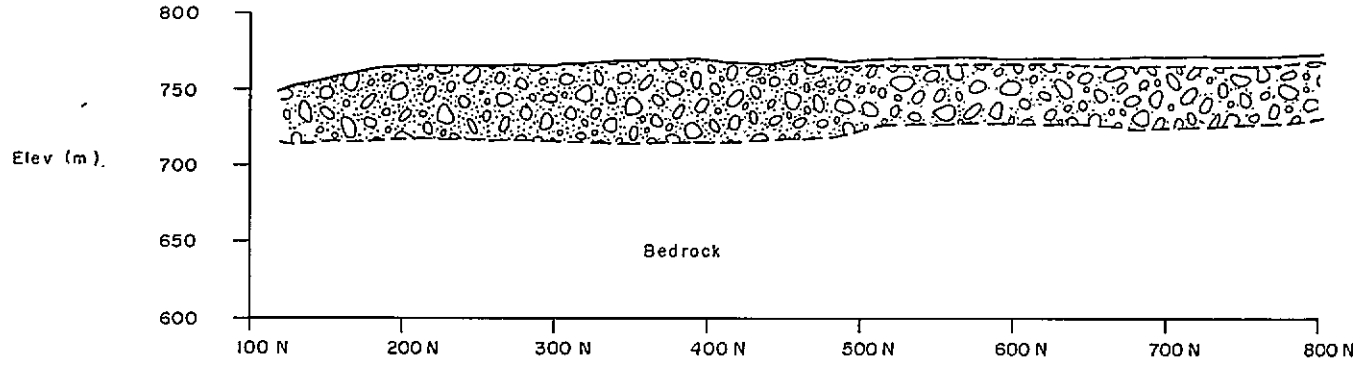
LINE 8 E.



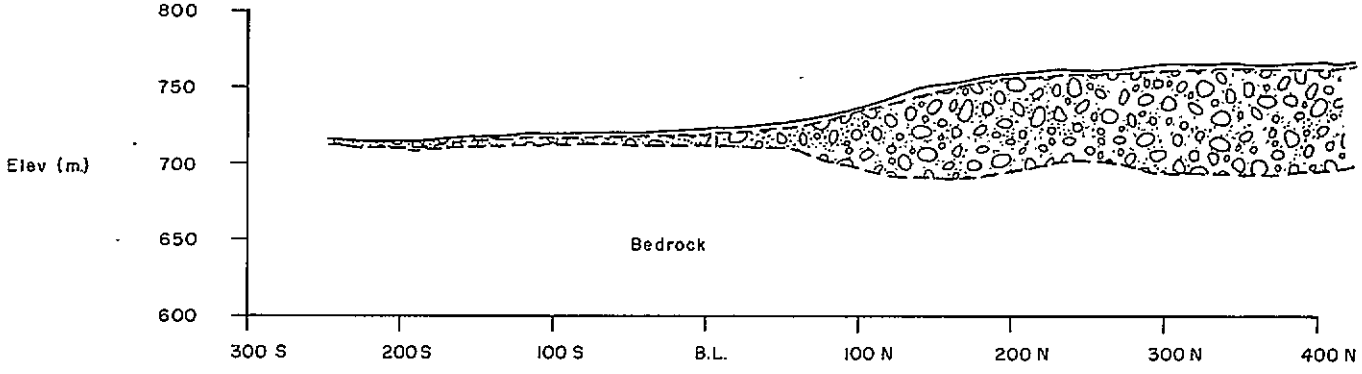
Scale — 1:5000

FIGURE — 6

LINE 9 E



LINE 10 E



LINE 11 E

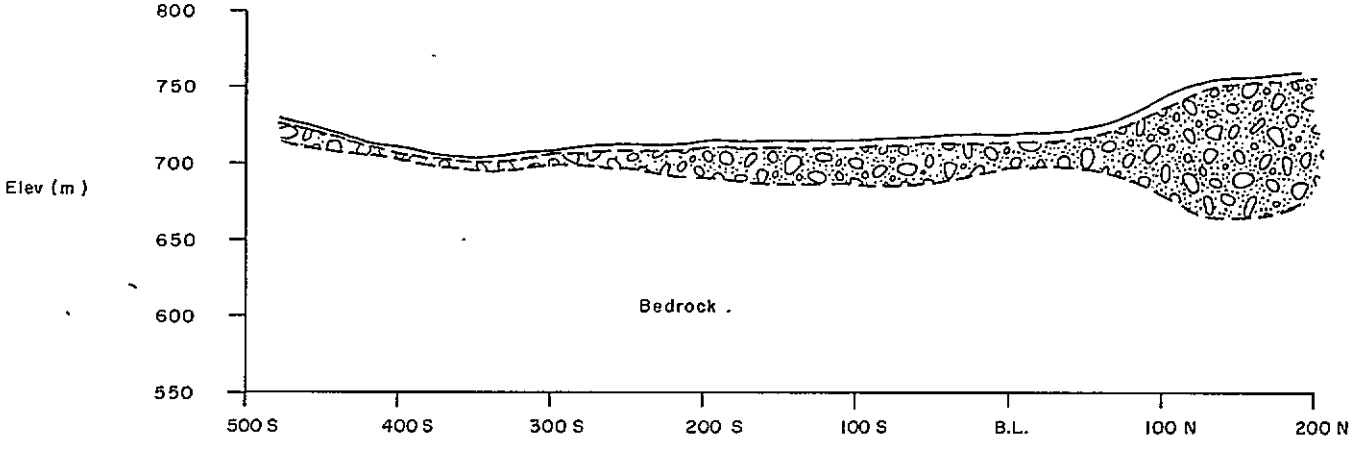
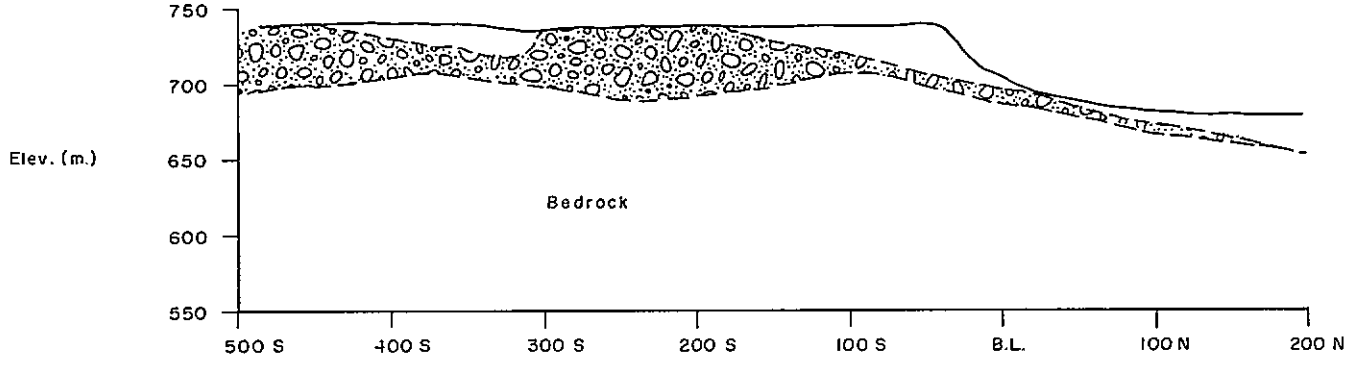


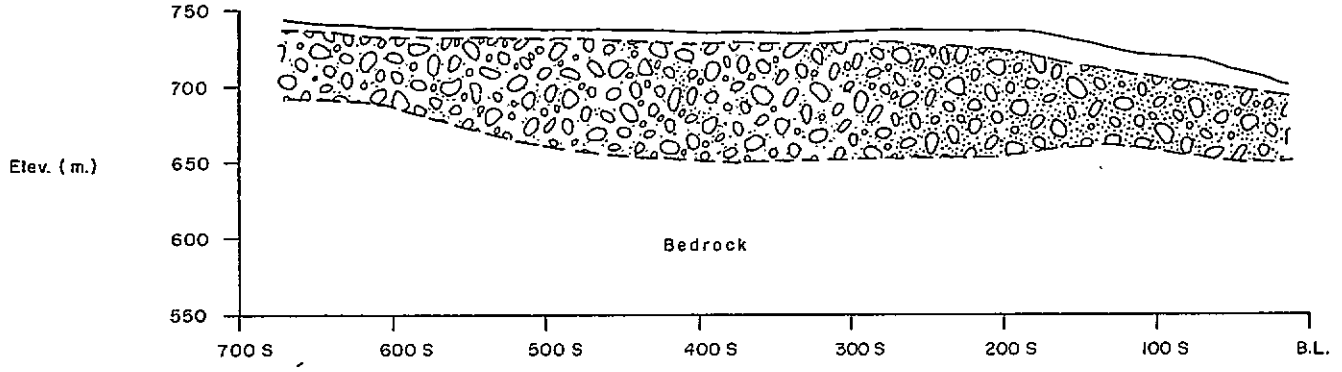
FIGURE — 7

Scale – 1:5000

LINE 13 E.



LINE 14 E



LINE 15 E

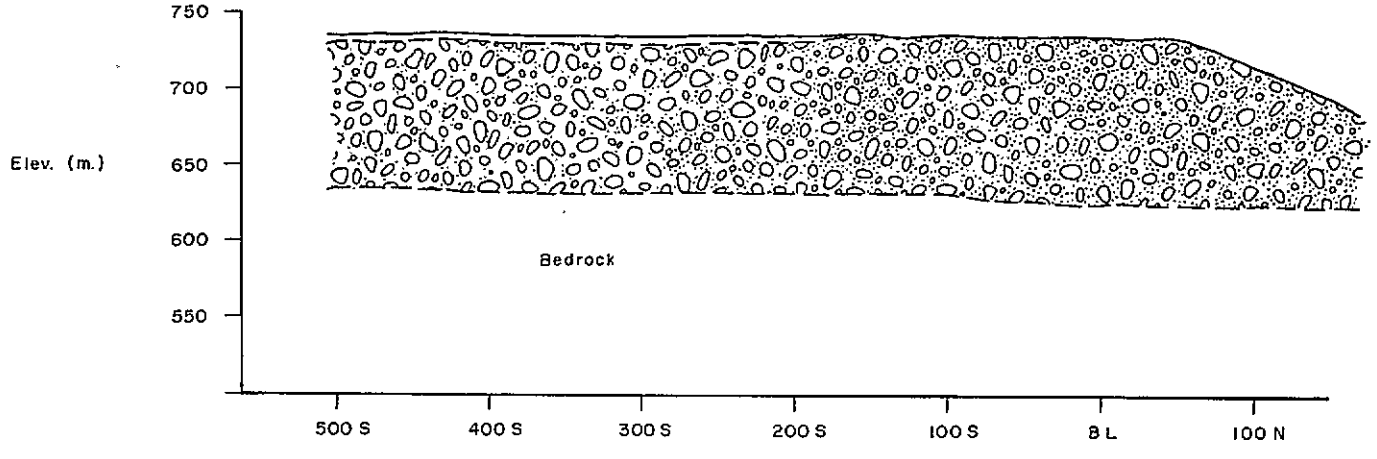
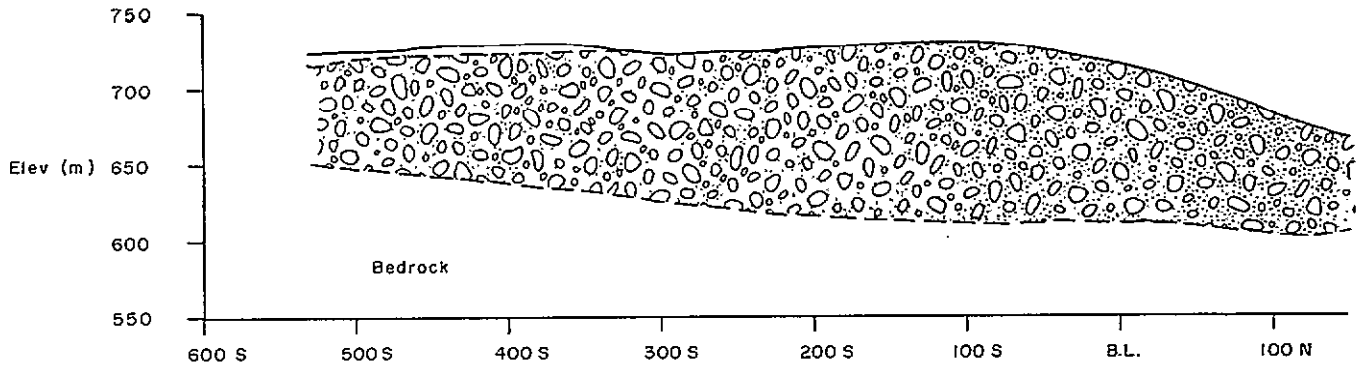


FIGURE — 8

Scale — 1:5,000

LINE 16 E



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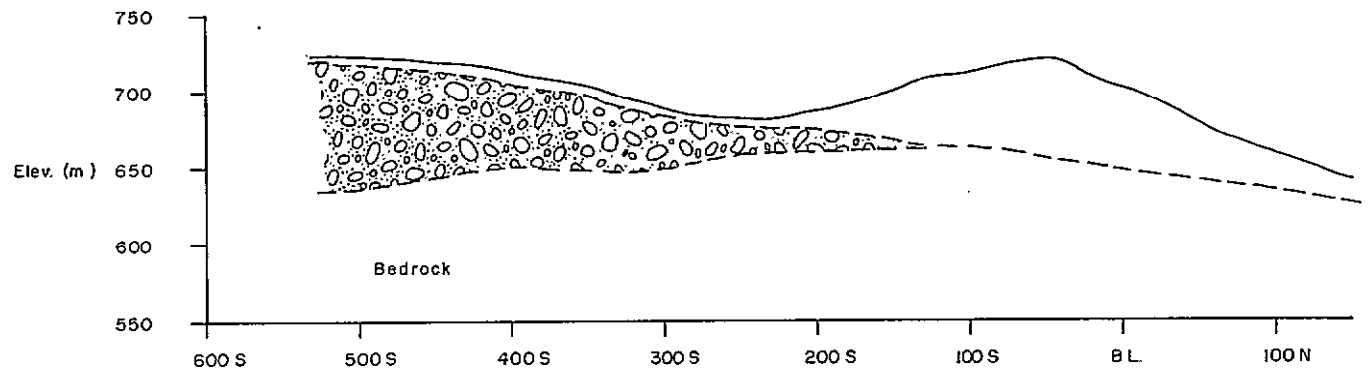


LINE 18 E

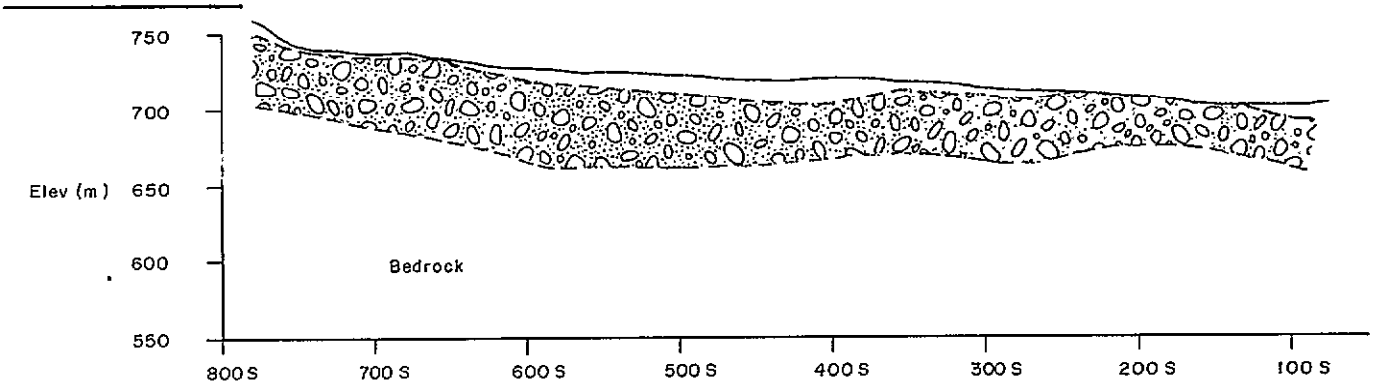
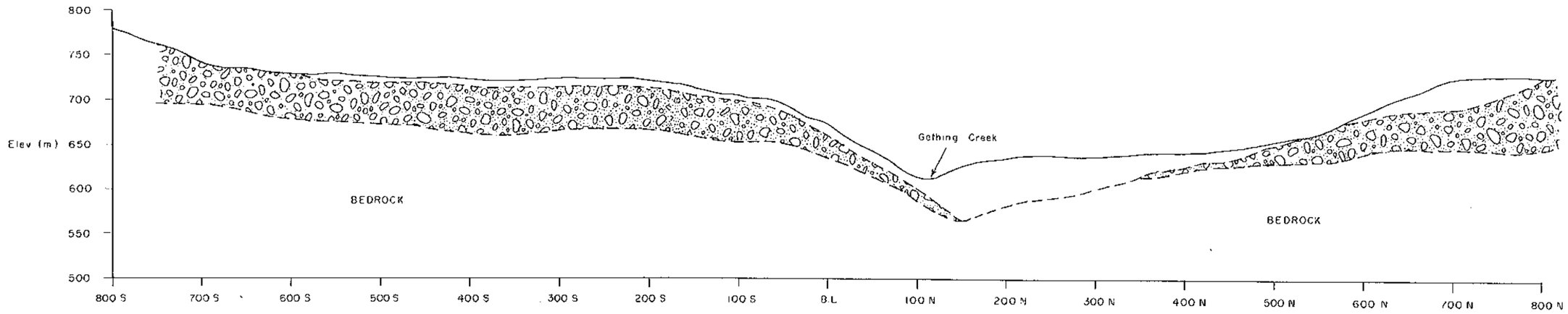


FIGURE — 9

Scale — 1:5000

LINE 19 E



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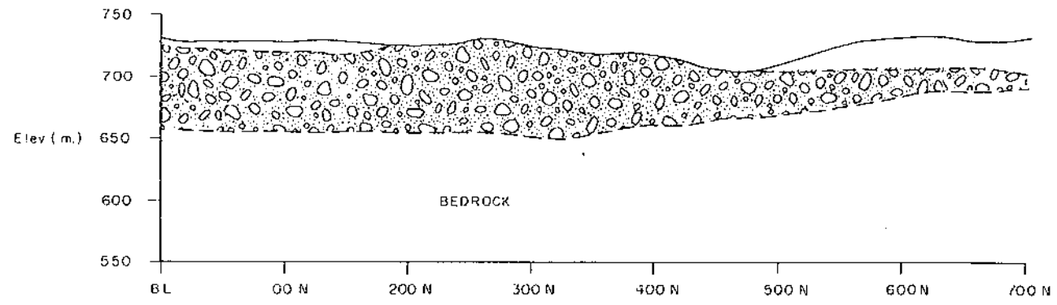
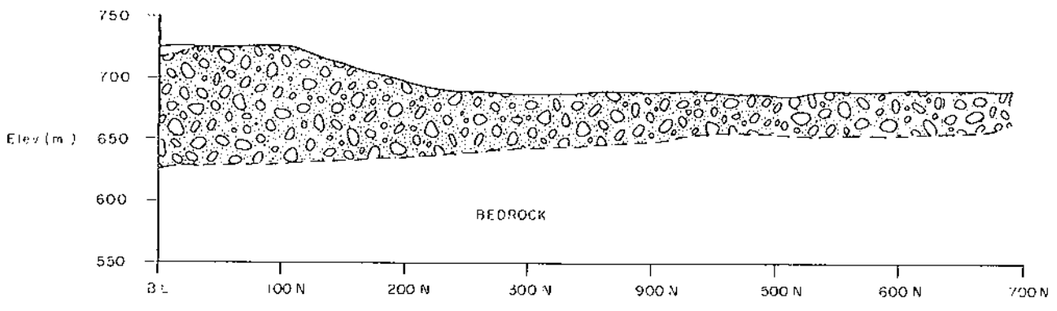


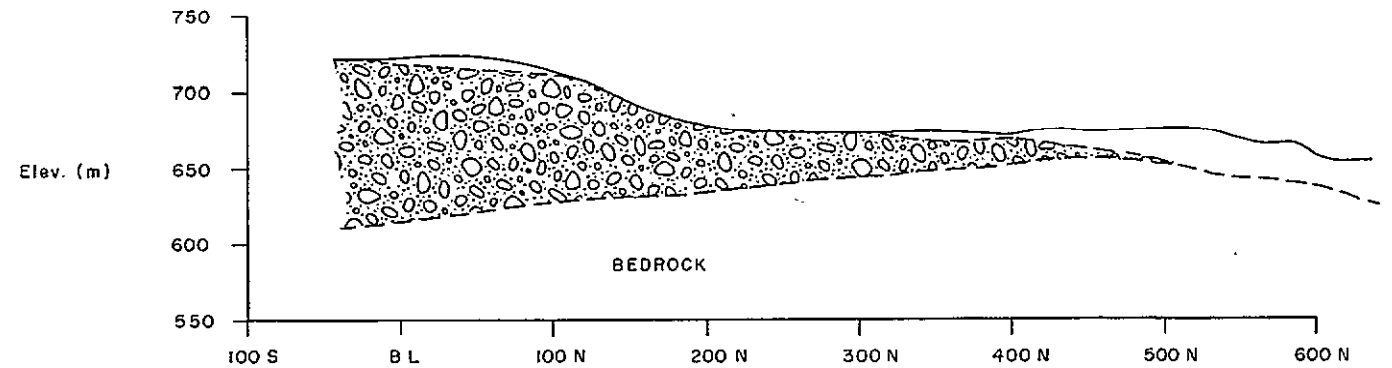
LINE 21 E



Scale – 1 5000

FIGURE — 10

LINE 22 E



LINE 23 E

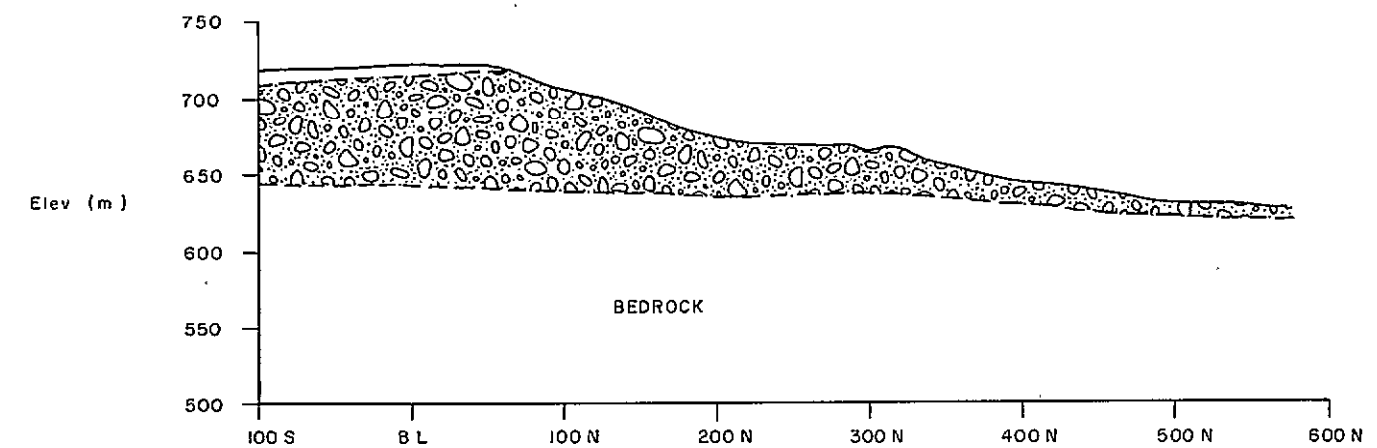


FIGURE — 11

Scale — 1:5000

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APPENDIX I

LIST OF INTERPRETED DEPTHS

Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
3E	18N	4 metres	48 metres
	50N	4 "	47 "
	82N	5 "	46 "
	114N	5 "	43 "
	146N	4 "	44 "
	178N	3 "	46 "
	210N	2 "	47 "
	242N	4 "	49 "
	274N	3 "	44 "
	306N	1 metre	37 "
	338N	1 "	36 "
	370N	2 metres	42 "
	402N	1 metre	54 "
	434N	1 "	67 "
	465N	6 metres	86 "
	497N	9 "	77 "
	529N	12 "	65 "
	561N	9 "	50 "
	593N	10 "	47 "
	625N	2 "	41 "
	656N	1 metre	35 "
	688N	1 "	28 "
	720N	2 metres	21 "
4E	180N	7 "	42 "
	212N	9 "	41 "
	244N	10 "	33 "
	276N	6 "	37
	308N	4 "	39 "
	340N	5 "	41 "

Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
4E	372N	7 metres	43 metres
	404N	5 "	44 "
	436N	2 "	44 "
	468N	4 "	43 "
	500N	3 "	39 "
	532N	3 "	40 "
	564N	5 "	40 "
	596N	4 "	36 "
	628N	4 "	26 "
	660N	5 "	29 "
	692N	5 "	32 "
	724N	3 "	32 "
	756N	1 metre	28 "
	788N	1 "	26 "
	820N	8 metres	26 "
	852N	12 "	20 "
	844N	12 "	12 "
5E	240N	3 "	37 "
	272N	3 "	37 "
	304N	0 "	38 "
	337N	3.4 metres	37 "
	369N	8 metres	34 "
	401N	2 "	34 "
	433N	1 metre	33 "
	465N	0 metres	32 "
	498N	1 metre	28 "
	530N	3 metres	24 "
	562N	2 "	23 "
	595N	3 "	22 "

Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
5E	626N	0 metres	23 metres
	658N	5 "	23 "
	689N	11 "	22 "
	721N	5 "	21 "
	752N	2 "	19 "
	783N	2 "	16 "
	814N	3 "	12 "
	846N	8 "	11 "
	877N	12 "	12 "
	909N	13 "	13 "
	940N	16 "	16 "
6E	35S	4 "	4 "
	5S	3 "	3 "
	26N	4 "	4 "
	56N	4 "	4 "
	87N	3 "	3 "
	117N	5 "	5 "
	148N	4 "	4 "
	178N	4 "	4 "
	209N	4 "	4 "
	239N	3 "	3 "
	270N	2 "	2 "
	300N	8 "	8 "
	331N	0 "	14 "
	363N	4 "	14 "
	394N	19 "	20 "
	426N	19 "	19 "
	457N	19 "	20 "
	488N	4 "	25 "

Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
6E	520N	1 metre	30 metres
	551N	12 metres	30 "
	582N	25 "	34 "
	614N	5 "	39 "
	645N	3 "	44 "
	676N	6 "	42 "
	708N	8 "	38 "
	739N	5 "	36 "
	771N	5 "	36 "
	802N	5 "	35 "
	833N	3 "	35 "
	865N	2 "	37 "
	896N	1 metre	36 "
	928N	1 "	32 "
	959N	4 metres	33 "
	990N	6 "	37 "
	1021N	2 "	50 "
	1053N	0 "	61 "
	1085N	1 metre	61 "
	1116N	1 "	59 "
	1149N	2 metres	59 "
	1181N	4 "	66 "
	1213N	1 metre	73 "
	1244N	2 metres	83 "
	1276N	3 "	91 "
	1308N	4 "	99 "
	1340N	2 "	104 "
7E	120S	2 "	8 "
	88S	1 metre	3 "

Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
7E	56S	2 metres	5 metres
	24S	2 "	6 "
	8N	2 "	21 "
	40N	3 "	30 "
	73N	1 metre	32 "
	105N	2 metres	34 "
	137N	2 "	34 "
	169N	2 "	35 "
	201N	3 "	41 "
	233N	6 "	48 "
	240N	8 "	46 "
	271N	10 "	40 "
	302N	13 "	52 "
	333N	14 "	51 "
	364N	13 "	53 "
	395N	10 "	55 "
	425N	8 "	57 "
	456N	5 "	56 "
	487N	4 "	56 "
	518N	8 "	61 "
	549N	0 "	60 "
	580N	7 "	61 "
	611N	4 "	56 "
	642N	6 "	51 "
	673N	7 "	45 "
	704N	6 "	43 "
	735N	5 "	45 "
	766N	5 "	44 "
	796N	6 "	43 "

Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
7E	827N	5 metres	44 metres
	858N	4 "	45 "
	889N	5 "	47 "
	920N	4 "	43 "
	952N	4 "	37 "
	984N	5 "	38 "
	1016N	1 metre	38 "
	1048N	1 "	42 "
	1080N	1 "	43 "
	1112N	3 metres	46 "
	1144N	2 "	46 "
	1176N	3 "	47 "
	1208N	1 metre	46 "
	1240N	1 "	44 "
	1272N	4 metres	45 "
8E	90N	10 "	22 "
	122N	0 "	21 "
	154N	0 "	39 "
	186N	11 "	51 "
	218N	12 "	51 "
	250N	11 "	50 "
	283N	11 "	48 "
	315N	12 "	44 "
	347N	14 "	43 "
	379N	12 "	48 "
	410N	9 "	55 "
	443N	6 "	59 "
	475N	6 "	59 "
	507N	5 "	56 "

Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
8E	539N	4 metres	55 metres
	571N	5 "	56 "
	603N	4 "	54 "
	635N	8 "	54 "
	667N	7 "	52 "
	669N	2 "	53 "
	731N	1 metre	52 "
	763N	1 "	52 "
	795N	4 metres	51 "
9E	120N	0 "	34 "
	182N	0 "	47 "
	245N	0 "	47 "
	307N	0 "	51 "
	370N	0 "	55 "
	432N	0 "	51 "
	495N	4 "	47 "
	557N	1 metre	43 "
	620N	2 metres	43 "
	682N	4 "	44 "
	744N	7 "	43 "
	807N	6 "	43 "
10E	245S	2 "	2 "
	184S	2 "	7 "
	123S	2 "	7 "
	62S	2 "	6 "
	1S	2 "	10 "
	60N	2 "	16 "
	120N	2 "	49 "
	181N	2 "	65 "

Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
10E	242N	2 metres	59 metres
	303N	2 "	68 "
	364N	2 "	72 "
	425N	2 "	67 "
11E	475S	4 "	15 "
	415S	3 "	6 "
	355S	3 "	6 "
	294S	3 "	13 "
	233S	3 "	18 "
	173S	3 "	25 "
	118S	3 "	26 "
	56S	3 "	31 "
	5N	3 "	19 "
	67N	3 "	34 "
	129N	3 "	86 "
	190N	3 "	89 "
13E	480S	0 "	42 "
	449S	0 "	43 "
	418S	6 "	39 "
	386S	11 "	33 "
	354S	16 "	35 "
	323S	20 "	37 "
	291S	0 "	39 "
	260S	0 "	46 "
	229S	0 "	47 "
	197S	0 "	45 "
	165S	5 "	40 "
	135S	14 "	34 "
	104S	18 "	27 "

Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
13E	75S	27 metres	31 metres
	45S	33 "	42 "
	16S	13 "	24 "
	14N	4 "	12 "
	43N	2 "	7 "
	73N	4 "	9 "
	102N	8 "	13 "
	132N	14 "	15 "
	161N	18 "	18 "
	191N	24 "	24 "
14E	667S	8 "	51 "
	606S	5 "	50 "
	545S	4 "	69 "
	485S	5 "	80 "
	424S	6 "	82 "
	363S	7 "	83 "
	306S	8 "	83 "
	246S	11 "	84 "
	187S	13 "	79 "
	130S	15 "	64 "
	72S	14 "	64 "
	15S	5 "	47 "
15E	491S	2 "	99 "
	430S	2 "	101 "
	365S	3 "	101 "
	308S	0 "	104 "
	247S	1 "	103 "
	186S	0 "	103 "
	125S	0 "	103 "

Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
15E	64S	0 metres	106 metres
	3S	0 "	110 "
	58N	0 "	111 "
	119N	0 "	88 "
	180N	0 "	62 "
16E	530S	7 "	74 "
	468S	2 "	81 "
	406S	6 "	91 "
	345S	1 metre	95 "
	283S	0 metres	98 "
	221S	0 "	110 "
	159S	0 "	117 "
	97S	0 "	120 "
	35S	0 "	112 "
	26N	0 "	99 "
	88N	0 "	83 "
	150N	0 "	63 "
17E	530S	1 metre	88 "
	468S	7 metres	79 "
	406S	10 "	64 "
	345S	8 "	54 "
	283S	1 metre	30 "
	221S	3 metres	21 "
	159S	27 "	31 "
	97S	50 "	50 "
	35S	61 "	61 "
	26N	46 "	46 "
	88N	27 "	27 "
	150N	15 "	15 "

Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
18E	773S	6 metres	57 metres
	712S	0 "	49 "
	652S	2 "	56 "
	591S	7 "	64 "
	530S	11 "	63 "
	469S	14 "	59 "
	409S	16 "	54 "
	348S	6 "	49 "
	287S	6 "	49 "
	226S	0 "	35 "
	166S	0 "	30 "
	105S	7 "	39 "
19E	753S	7 "	65 "
	691S	0 "	46 "
	629S	0 "	51 "
	567S	5 "	51 "
	505S	8 "	54 "
	443S	8 "	59 "
	381S	8 "	62 "
	319S	9 "	59 "
	257S	9 "	57 "
	195S	9 "	57 "
	133S	7 "	54 "
	71S	6 "	47 "
19E	140N	51 "	57 "
	201N	55 "	55 "
	262N	43 "	43 "
	323N	29 "	29 "
	384N	18 "	19 "
	445N	8 "	20 "

Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
19E	505N	2 metres	23 metres
	566N	0 "	34 "
	627N	15 "	51 "
	688N	27 "	71 "
	749N	21 "	84 "
	810N	1 metre	78 "
20E	15N	6 metres	74 "
	77N	8 "	74 "
	140N	12 "	74 "
	202N	0 "	71 "
	264N	0 "	75 "
	326N	0 "	70 "
	389N	0 "	59 "
	451N	1 metre	40 "
	513N	7 metres	42 "
	575N	25 "	53 "
	638N	26 "	46 "
	700N	29 "	41 "
21E	0	6 "	99 "
	62N	0 "	96 "
	123N	0 "	86 "
	185N	0 "	68 "
	246N	0 "	49 "
	308N	0 "	93 "
	369N	0 "	42 "
	431N	0 "	36 "
	492N	0 "	31 "
	554N	0 "	34 "
	615N	0 "	33 "
	677N	1 metre	39 "

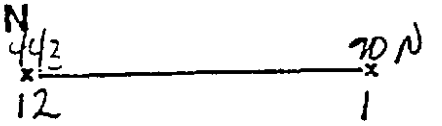
Line	Loc.	Depth to Layer 2 (m)	Depth to Bedrock (m)
22E	40S	0 metres	112 metres
	23N	2 "	105 "
	86N	6 "	90 "
	149N	0 "	62 "
	212N	0 "	41 "
	275N	0 "	31 "
	338N	5 "	26 "
	401N	0 "	22 "
	464N	14 "	17 "
	527N	27 "	27 "
	590N	26 "	26 "
	653N	33 "	33 "
23E	122S	6 "	72 "
	59S	7 "	77 "
	4N	5 "	78 "
	67N	0 "	76 "
	130N	0 "	59 "
	193N	0 "	40 "
	255N	0 "	33 "
	318N	0 "	32 "
	381N	0 "	16 "
	444N	0 "	16 "
	507N	0 "	12 "
	570N	1 metre	12 "

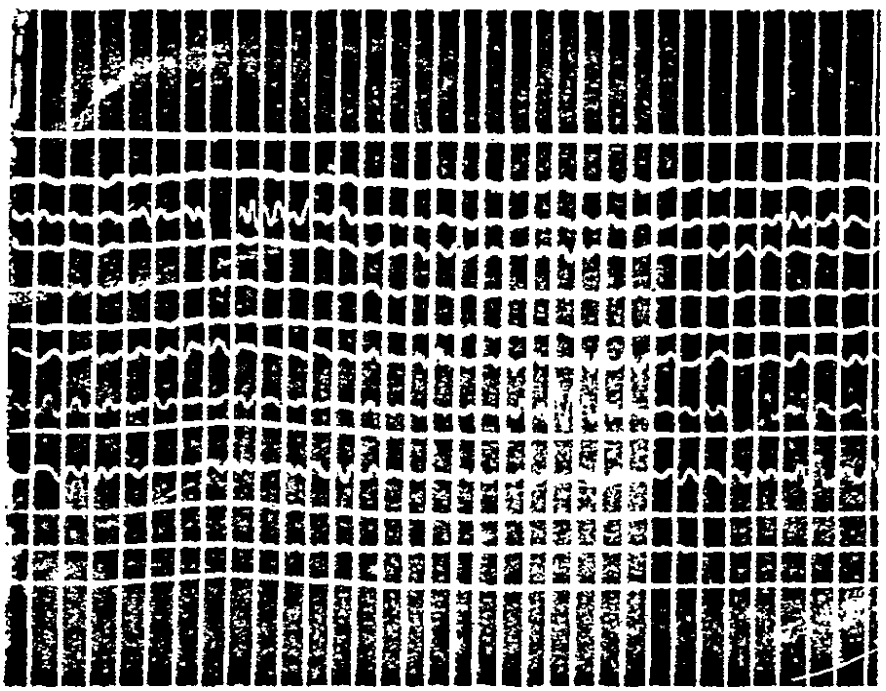
APPENDIX II

SAMPLE DATA AND INTERPRETATION

LINE 8E

DATE : July 5/80
LINE : C 15E
SET UP : 1
Geophone Spacing 100ft ORIENTATION





Time break
Geophone

	1st pick	2nd pick	GAINS	Elevation
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				

COMMENTS :
Noise test

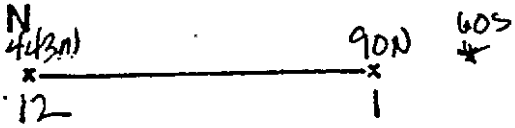
LOCATION :

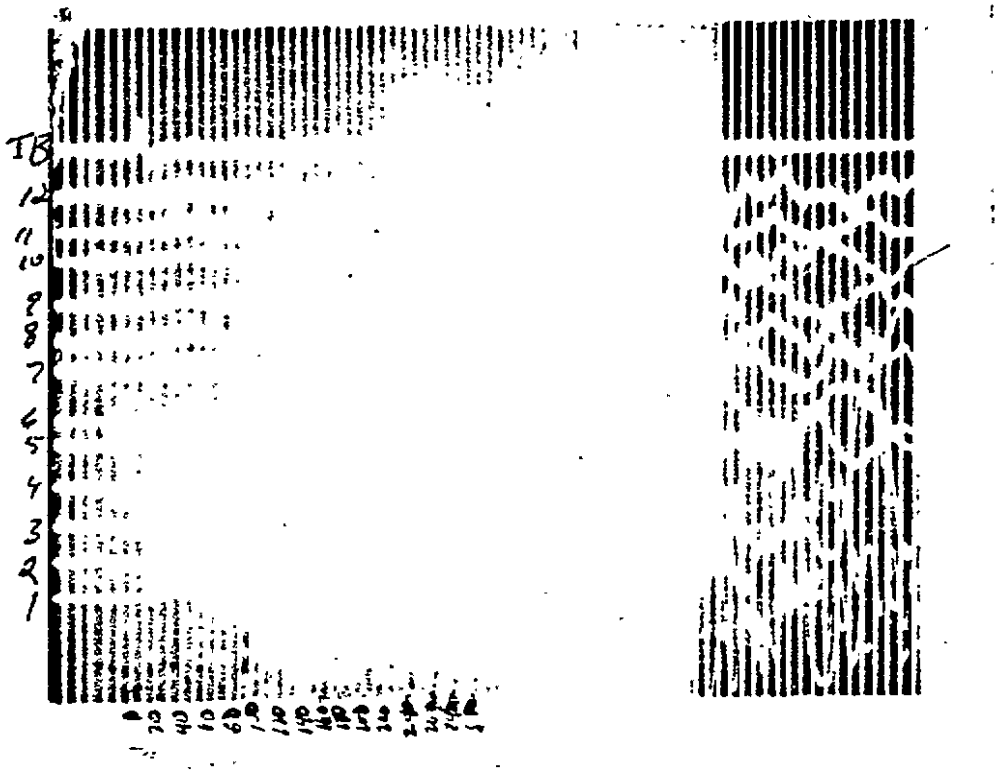
DATE: July 5/80

LINE: BE

SET UP: 1

Geophone Spacing 100 ft ORIENTATION





Time break

Geophone

	1st pick	2nd pick	GAINS	Elevation
		-2.70		
1			84.0	
2			92.3	
3		120.0		
4		150.0		
5		157.3		
6		167.3		
7		177.3		
8		167.3		
9		187.3		
10		194.0		
11		207.3		
12		217.3		
13				
14				
15				
16				
17				
18				
19				

COMMENTS:
shot at 0+60S.
Photograph went bad after shot

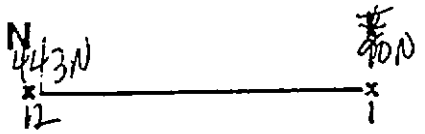
LOCATION:

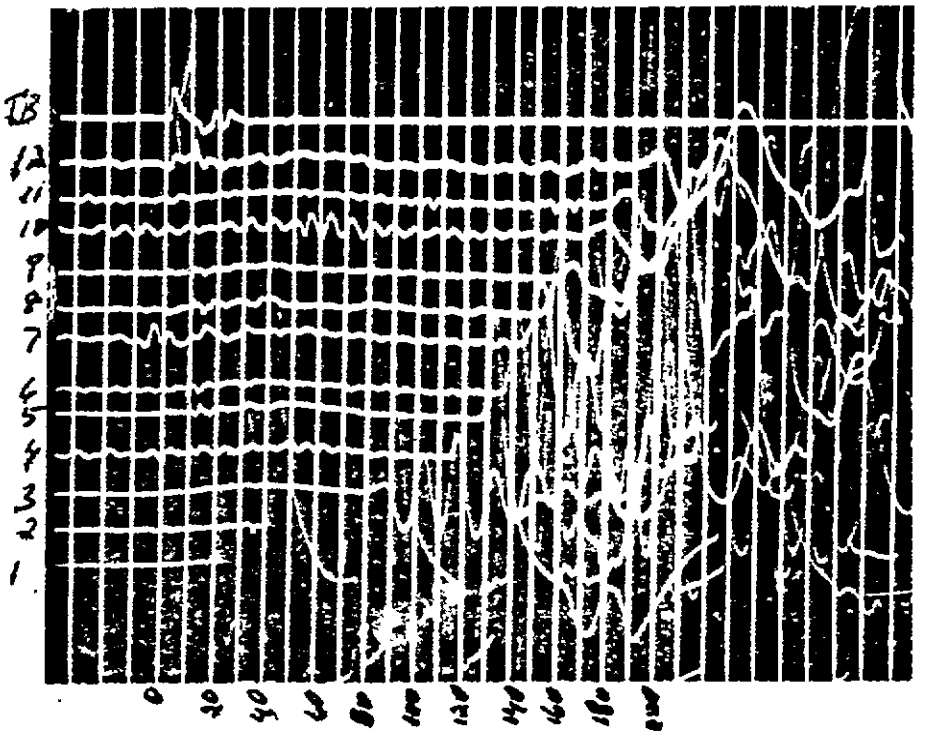
DATE: July 5/80

LINE: BB

SET UP: 1

Geophone Spacing 100 ft ORIENTATION





Time break

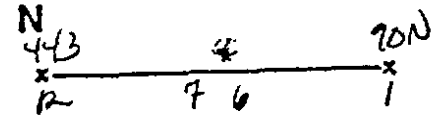
Geophone

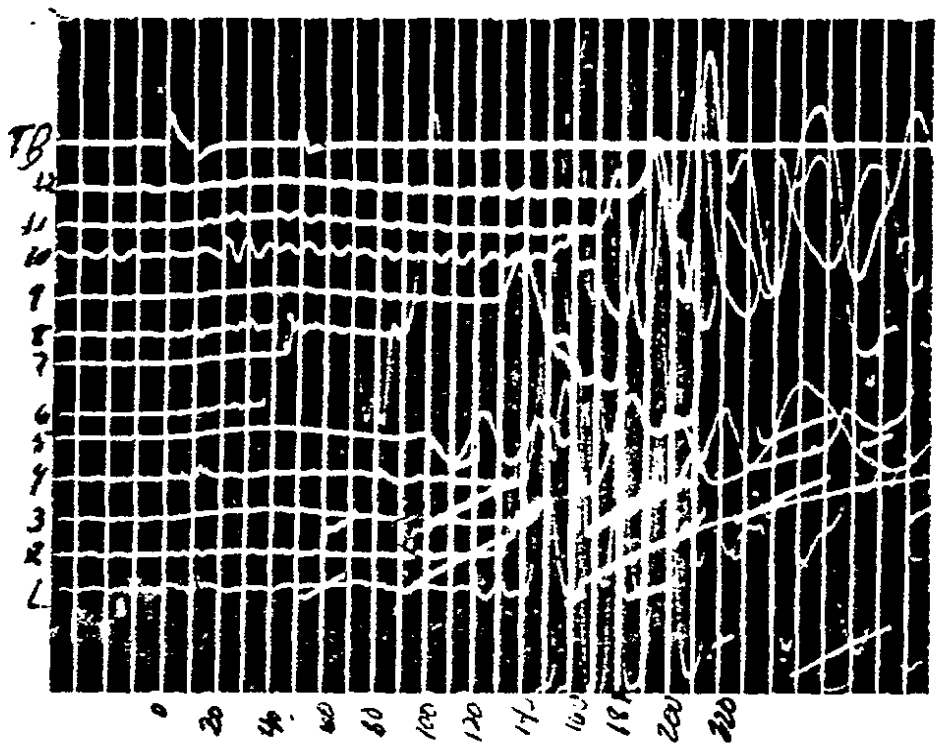
	1st pick	2nd pick	GAINS	Elevation
1		-1.43		
2		21.7		
3		39.4		
4		78.6		
5		113.9		
6		125.2		
7		134.8		
8		142.1		
9		151.6		
10		158.6		
11		168.6		
12		178.6		
13		188.6		
14				
15				
16				
17				
18				
19				

COMMENTS:
shot off geophone 1.

LOCATION:

DATE : July 5/80
LINE : BE0
SET UP : 1
Geophone Spacing 100 ft. ORIENTATION





Time break
Geophone

	1st pick	end pick	GAINS	Elevation
	—	0		
1		140.7		
2		130.7		
3		140.7		
4		137.0		
5		97.2		
6		36.5		
7		45.5		
8		90.0		
9		129.9		
10		148.1		
11		167.3		
12		182.8		
13				
14				
15				
16				
17				
18				
19				

COMMENTS :
Shot betw 6 and 7.

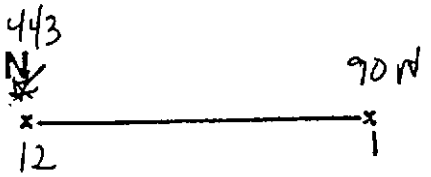
LOCATION :

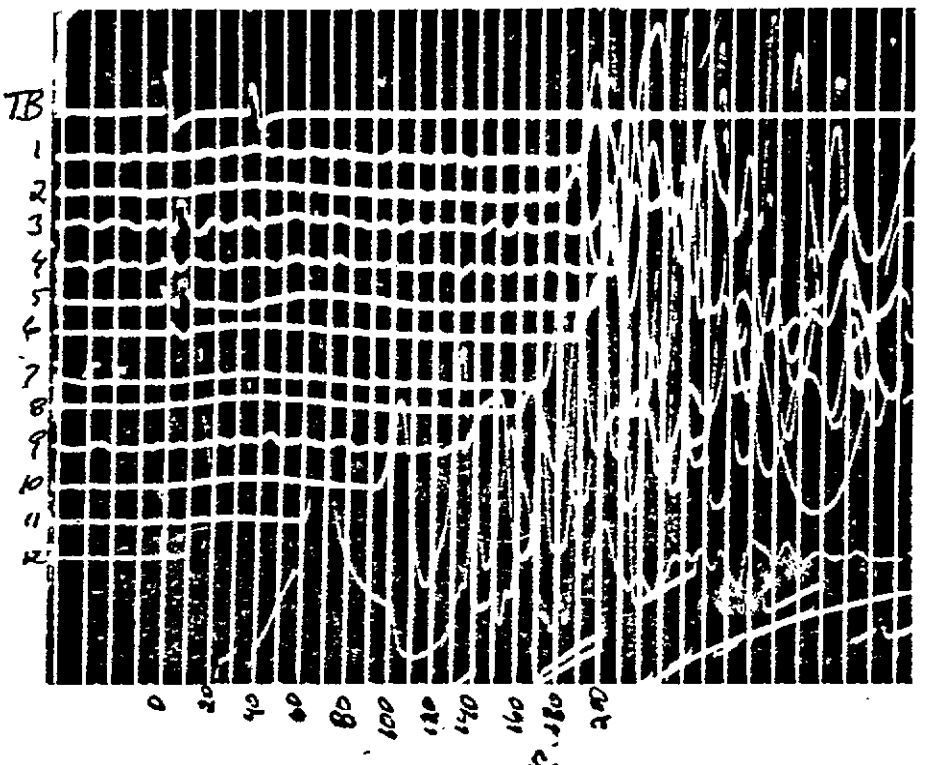
DATE: July 5/80

LINE: BE

SET UP: 1

Geophone Spacing 100 ft ORIENTATION



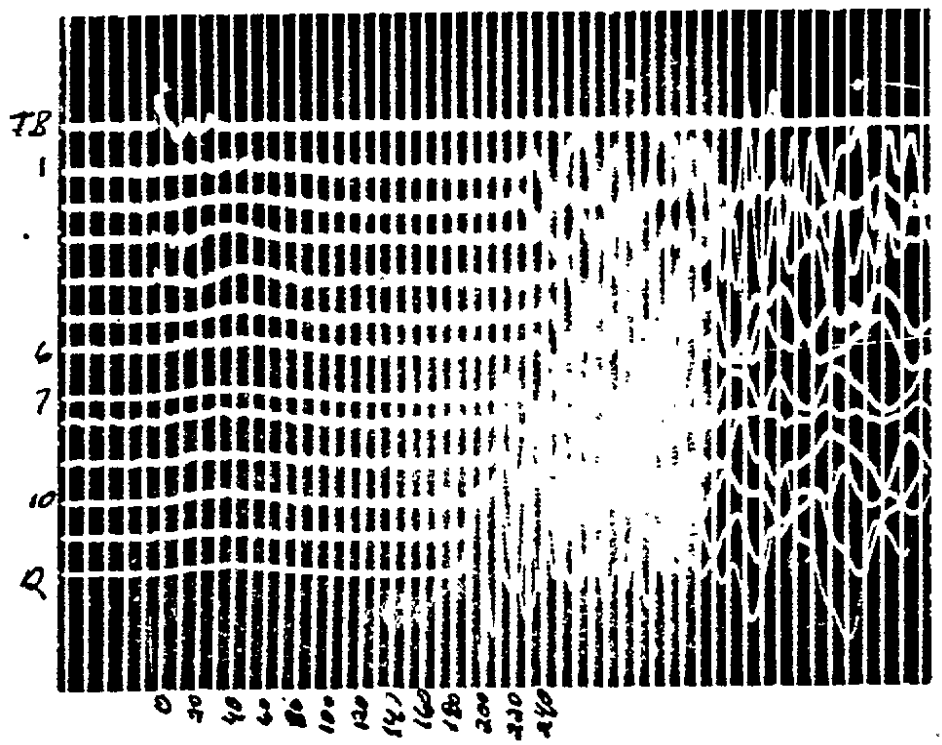


Time break / Geophone	1st pick	end pick	GAINS	Elevation
1		+1.82		
2		187.4		
3		181.8		
4		194.0		
5		205.3		
6		195.8		
7		189.2		
8		173.0		
9		161.8		
10		135.7		
11		95.7		
12		61.8		
13		11.8		
14				
15				
16				
17				
18				
19				

COMMENTS:
shot off geophone 12.

LOCATION:

DATE: July 5/80
LINE: 8E
SET UP: 1
Geophone Spacing 100 ft. ORIENTATION 610N N 90N
12 1



Time break / Geophone	1st pick	2nd pick	GAINS	Elevation
1		+2.3		
2		222.3		
3		217.3		
4		233.8		
5		247.3		
6		234.8		
7		228.3		
8		213.3		
9		212.3		
10		202.3		
11		200.8		
12		192.8		
13		185.3		
14				
15				
16				
17				
18				
19				

COMMENTS:
shot at 610N.

LOCATION:

DATE : July 6/80

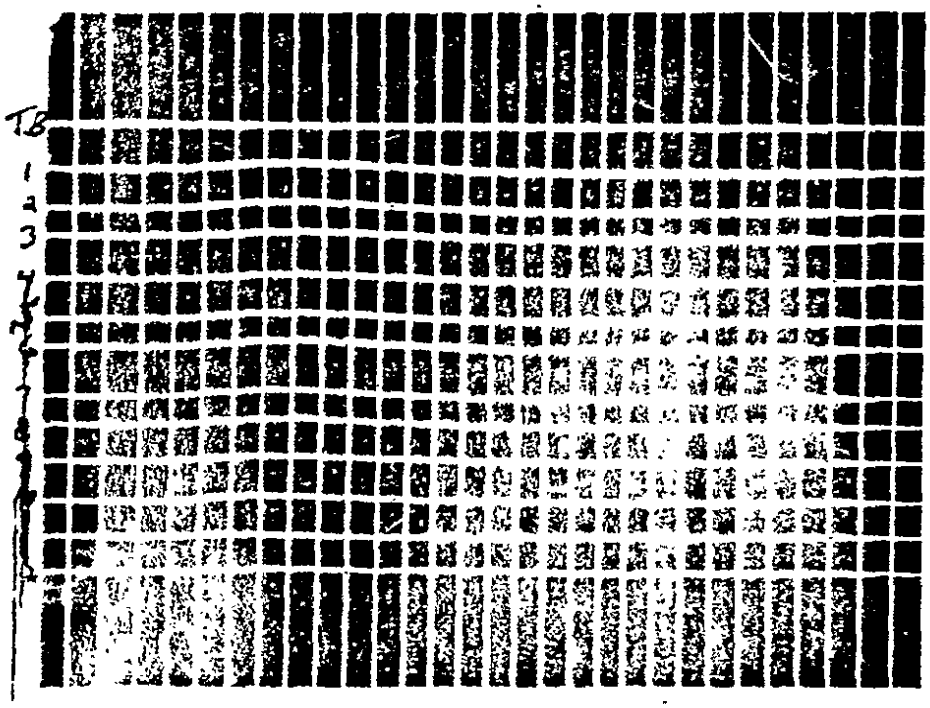
LINE : 8E

SET UP : 2

Geophone Spacing 100 feet ORIENTATION

N

798 N x 12 ——— 443 N x 1



Time break / Geophone	1st pick	2nd pick	GAINS	Elevation
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				

COMMENTS :

Noise test

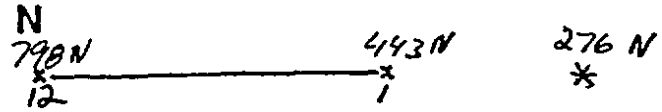
LOCATION :

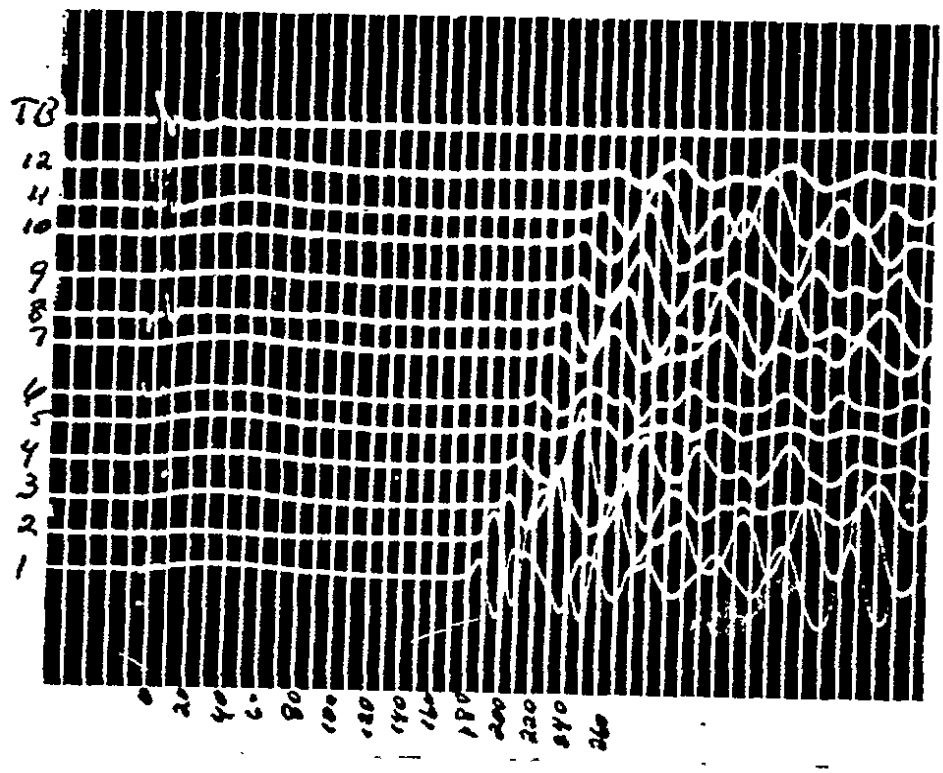
DATE: July 6/80

LINE: BE

SET UP: 2

Geophone Spacing 100 feet ORIENTATION





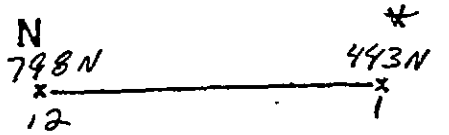
Time break / Geophone	1st pick	2nd pick	GAINS	Elevation
1	+5.36	+5.4		
2	184.11	184.1		
3	189.96	189.9		
4	200.36	200.4		
5	205.36	205.4		
6	215.36	215.4		
7	215.36	215.4		
8	222.96	222.9		
9	227.96	227.9		
10	235.36	235.4		
11	239.17	239.2		
12	248.99	249.0		
13	259.39	259.4		
14				
15				
16				
17				
18				
19				

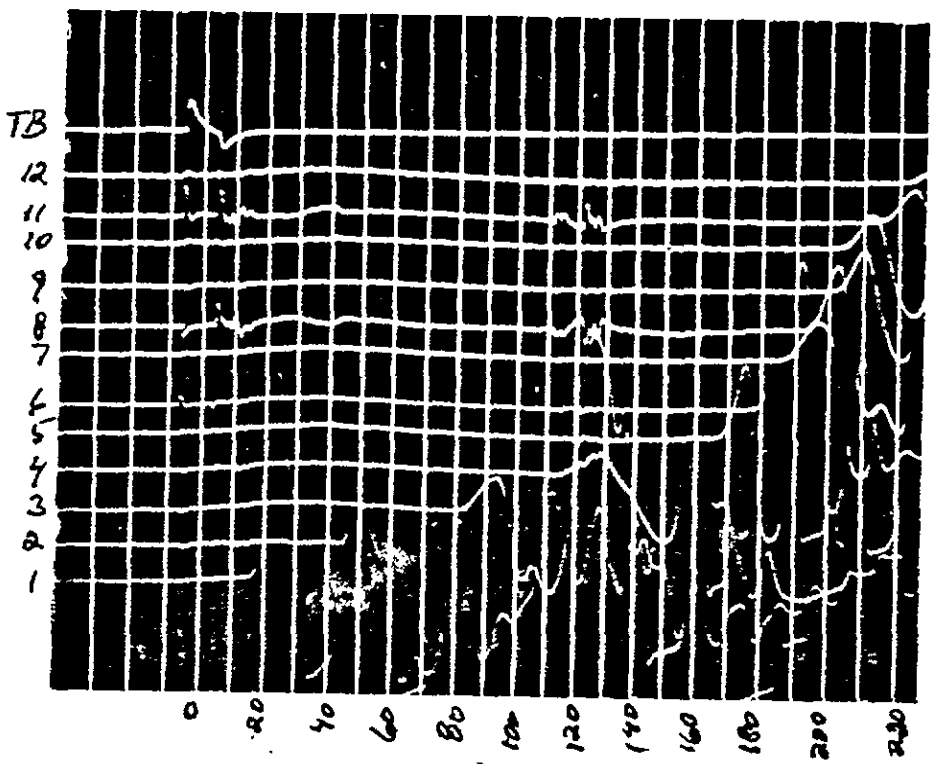
COMMENTS:

Shot at 276 N

LOCATION:

DATE: July 6/80
LINE: 8E
SET UP: 2
Geophone Spacing 100 feet ORIENTATION





Time break
Geophone

	1st pick	end pick	GAINS	Elevation
1	+6.00	+6.0		
2	22.22	22.2		
3	49.76	49.8		
4	86.00	86.0		
5	131.00	121.0		
6	171.85	171.9		
7	182.17	182.7		
8	190.47	190.5		
9	198.22	198.2		
10	208.05	208.1		
11	207.70	207.7		
12	218.50	218.5		
13	229.9	229.2		
14				
15				
16				
17				
18				
19				

COMMENTS:
Shot off Geo 1

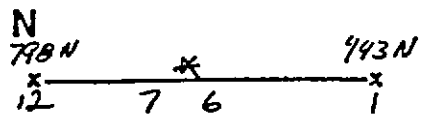
LOCATION:

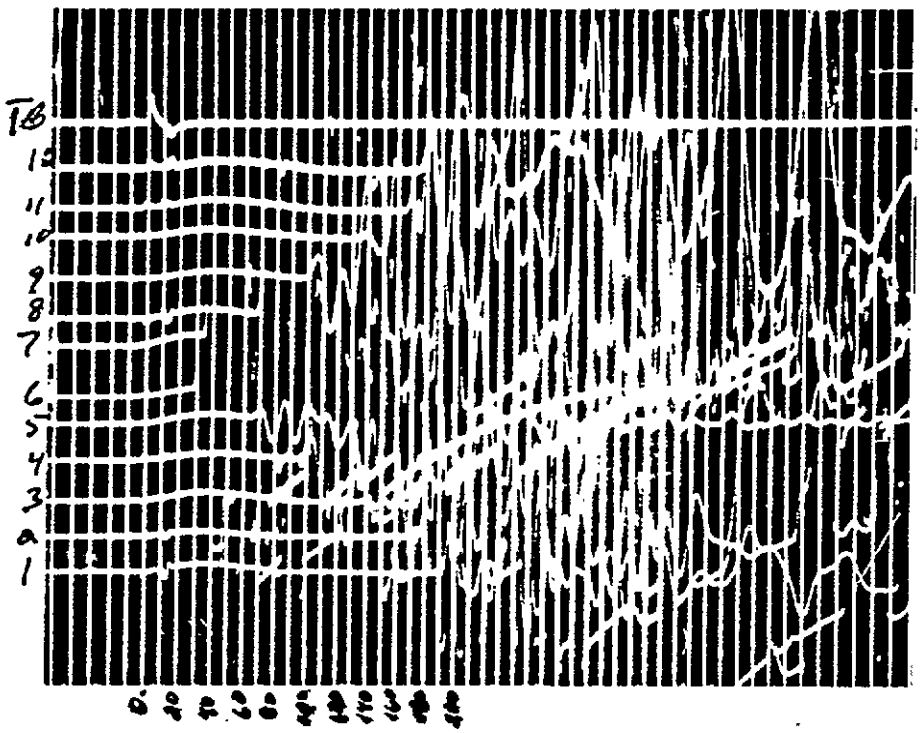
DATE: July 6/80

LINE: 8E

SET UP: 2

Geophone Spacing 100 feet ORIENTATION





Time break

Geophone

	1st pick	2nd pick	GAINS	Elevation
1	+1.67	+1.7		
2	191.67	191.7		
3	176.67	176.7		
4	139.67	139.7		
5	96.67	96.7		
6	67.38	67.4		
7	29.50	29.5		
8	33.94	33.9		
9	97.17	97.2		
10	108.96	108.9		
11	133.34	133.3		
12	166.4	166.4		
13	175.67	175.7		
14				
15				
16				
17				
18				
19				

COMMENTS:
Shot bet: 687

LOCATION:

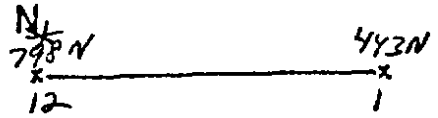
- x -

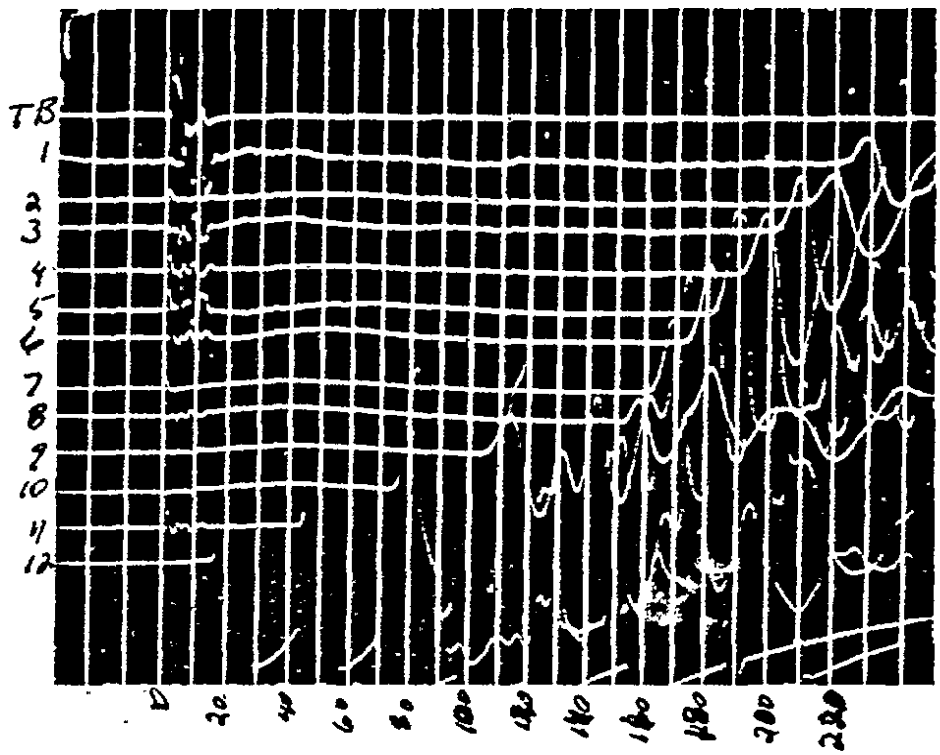
DATE : July 6/80

LINE : 8E

SET UP : 2

Geophone Spacing 100 feet ORIENTATION





Time break

Geophone

	1st pick	2nd pick	GAINS	Elevation
1	-0.63	-0.63		
2	219.96	223.0		
3	[illegible]	207.3		
4	[illegible]	198.5		
5	182.46	188.4		
6	176.46	178.4		
7	171.87	171.9		
8	159.37	159.4		
9	151.37	151.4		
10	103.37	103.4		
11	73.12	73.1		
12	42.05	42.1		
13	14.25	14.3		
14				
15				
16				
17				
18				
19				

COMMENTS :

Shot off Geo. 12

LOCATION :

DATE : July 6/80

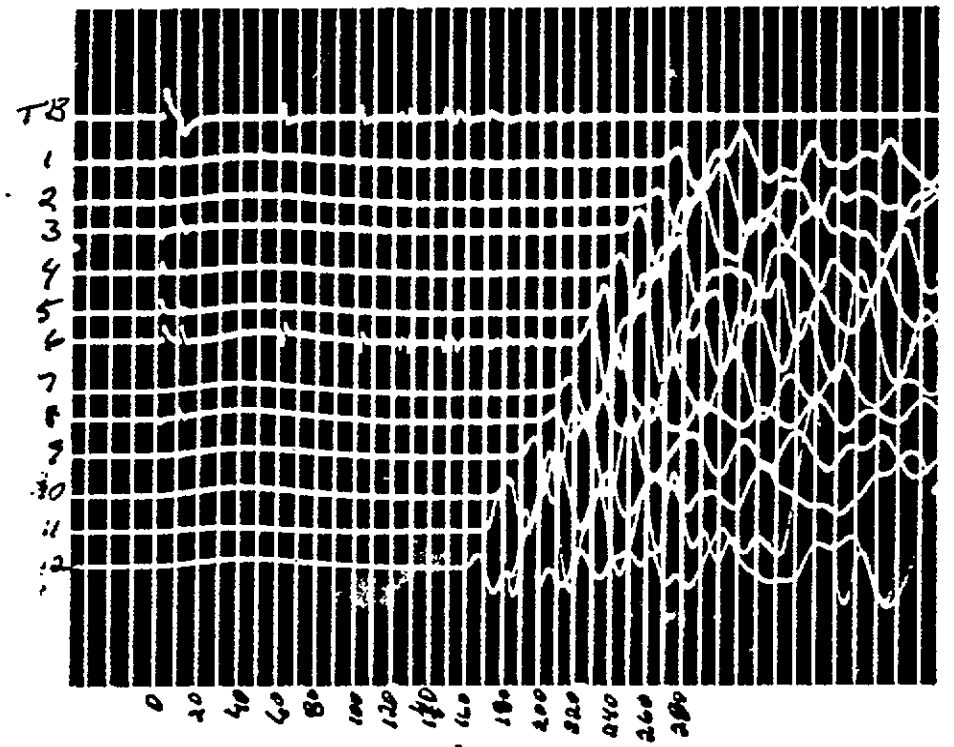
LINE : 8E

SET UP : 2

Geophone Spacing 100 feet ORIENTATION

960 N
*

N
798N x——————————x 443N
12 1

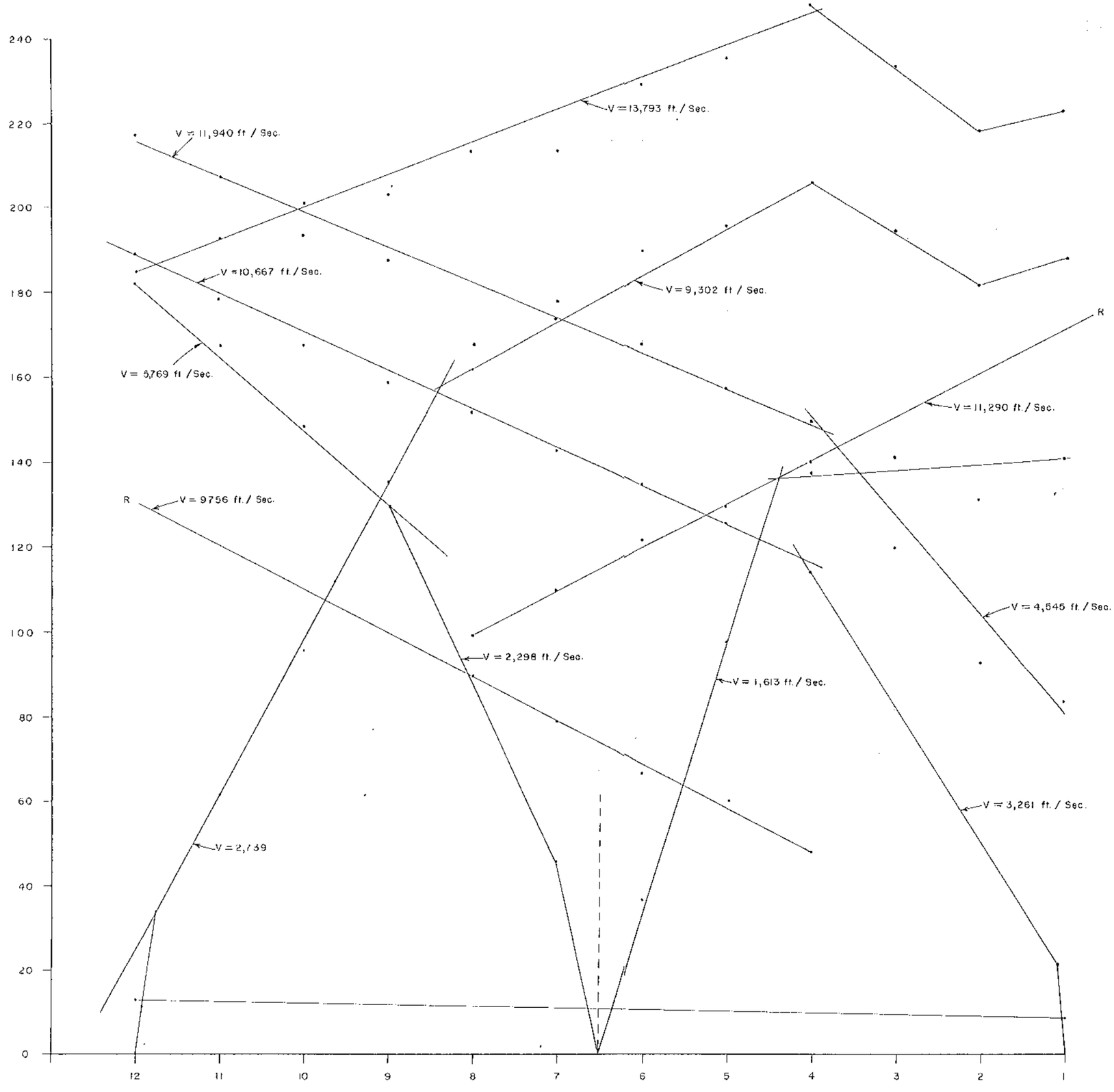


Time break / Geophone	1st pick	end pick	GAINS	Elevation
	-1.70	-1.7		
1	263.70	263.8		
2	252.30	252.3		
3	242.30	242.3		
4	231.50	231.5		
5	220.85	222.9		
6	216.48	216.5		
7	204.30	204.3		
8	198.30	198.3		
9	186.58	186.6		
10	172.15	172.2		
11	168.30	168.3		
12	158.30	158.3		
13				
14				
15				
16				
17				
18				
19				

COMMENTS :

Shot at 960N

LOCATION :

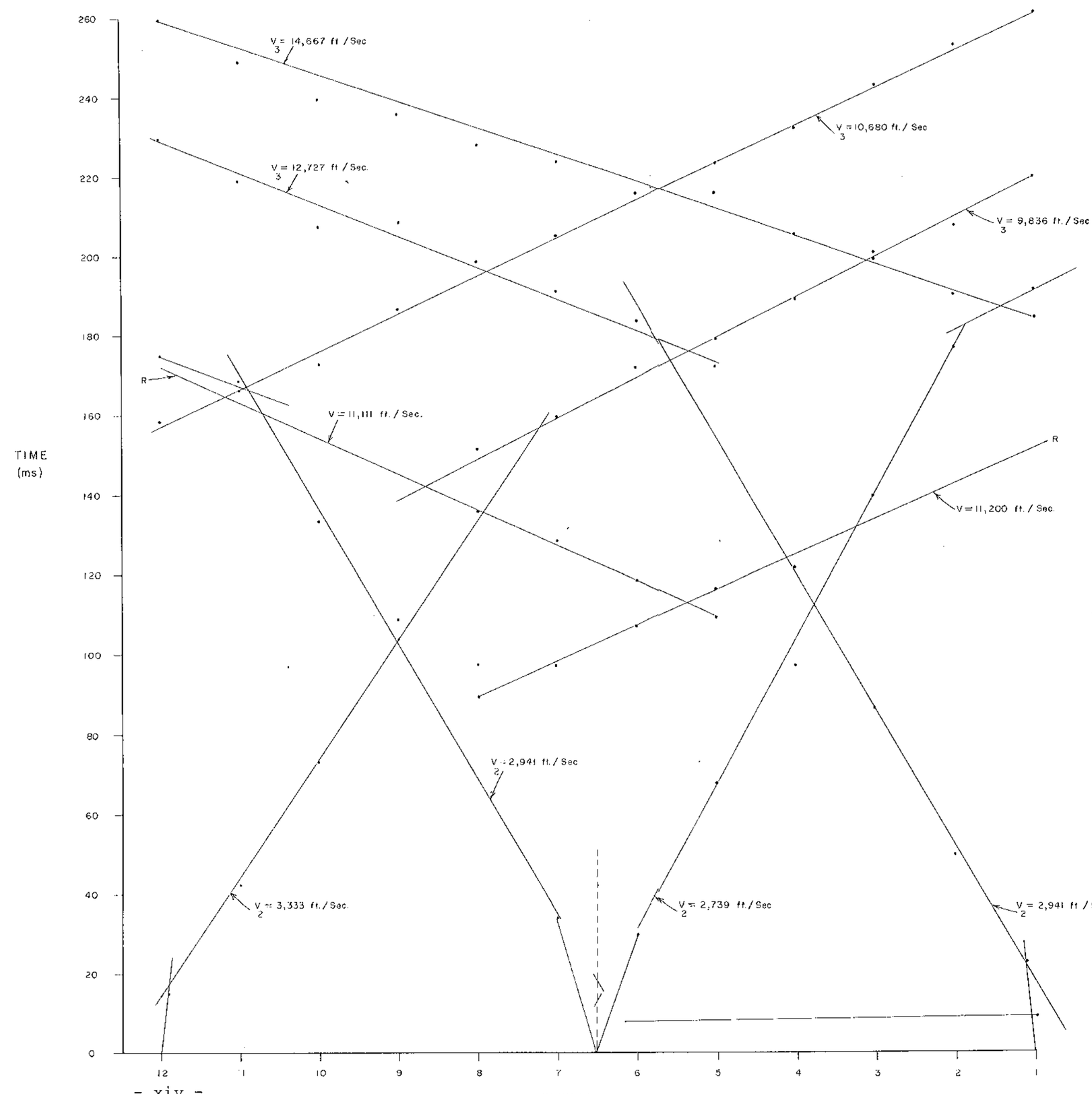


BRI — DOWLING CREEK PROPERTY

REFRACTION SEISMIC SURVEY

LINE 8 E

SETUP 1



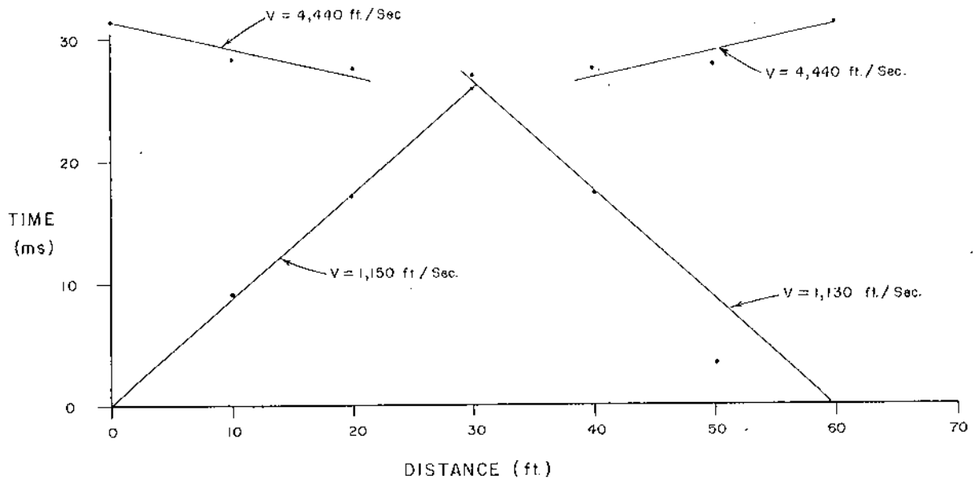
BRI — DOWLING CREEK PROPERTY

REFRACTION SEISMIC SURVEY

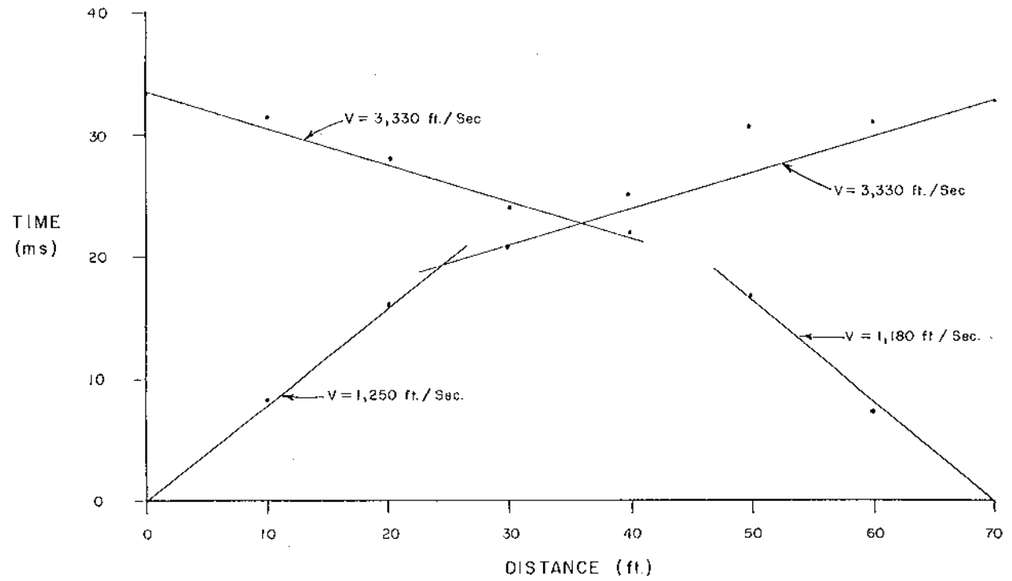
LINE 8 E

SETUP 2

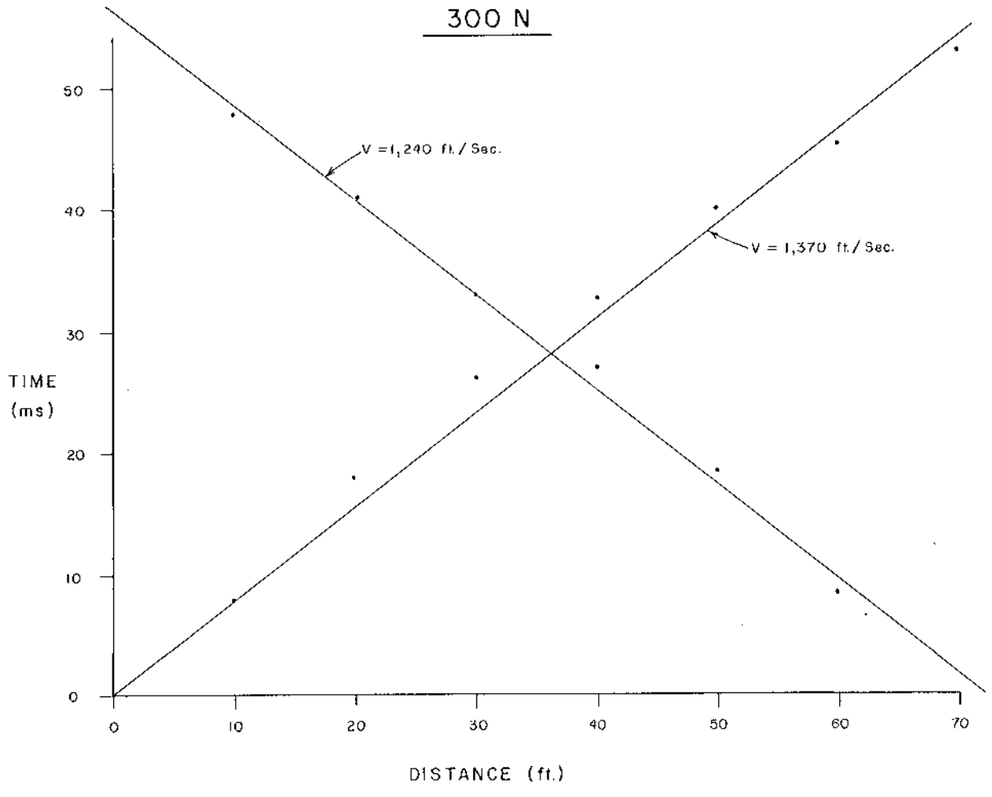
60 N



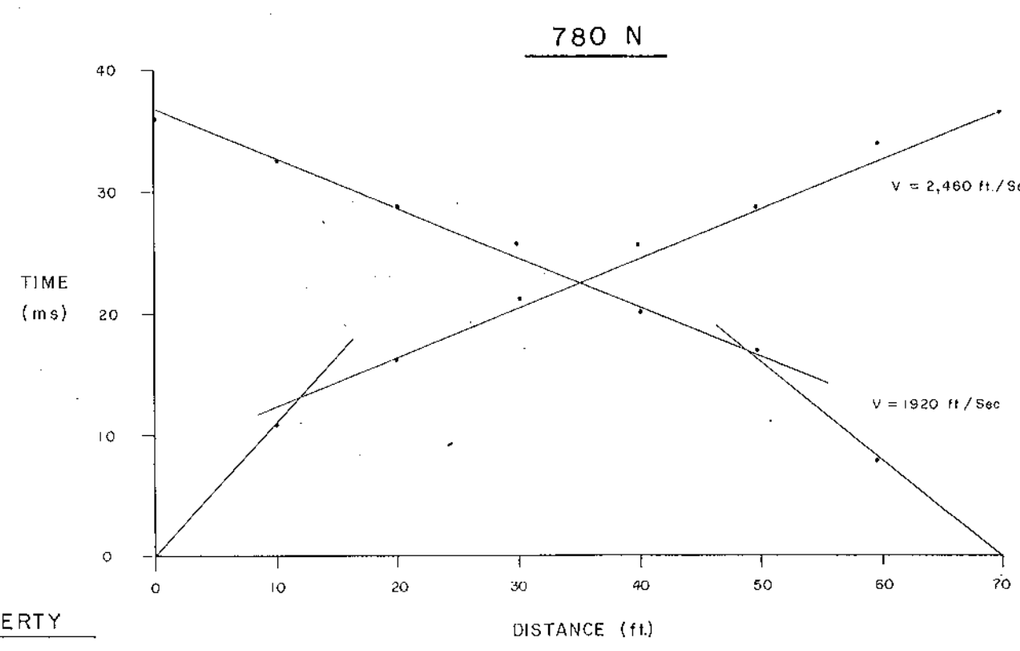
540 N



300 N



780 N



BRI — DOWLING CREEK PROPERTY

HAMMER SEISMIC SURVEY

LINE 8 E

AREA Bri LINE 8E SET U 1

JUG No.	1	2	3	4	5	6	7	8	9	10	11	12
N / W E / S				113.9 205.3 319.2 188.0 131.2	125.2 195.7 320.9 188.0 132.9	134.8 189.2 324.0 188.0 136.0	142.1 173.0 315.1 188.0 127.1	151.6 161.8 313.4 180.0 125.4				
Td123	16.5	22.0	44.0	65.6	66.5	68.0	63.6	62.7	58.5	57.5	58.0	58.0
Td1	9.0	9.5	10.0	10.0	10.5	11.0	11.5	12.0	12.0	12.3	12.7	13.0
Td2	7.5	12.5	34.0	55.6	56.0	58.0	52.1	50.7	46.5	45.2	45.3	45.0
Td3												
V1 1442 fe/sec	13.0	13.7	14.4	14.4	15.1	15.9	16.6	17.3	17.3	17.7	18.3	18.7
V2 3403 fe/sec	25.5	42.5	115.7	189.2	190.2	197.4	177.3	172.5	158.2	153.8	154.2 ~~172.5~~	153.1
V3 10523 fe/sec												
Total Depth (feet)	38.5	56.2	130.1	203.6	205.4	213.2	193.9	189.8	175.5	171.6	172.5	171.8
elev. / offset												

AREA Bri LINE 8E SET UP 2

JUG No.	1	2	3	4	5	6	7	8	9	10	11	12
N / W E / S					171.9 178.4 350.3 224.6 125.7	182.7 171.9 354.6 224.6 130.0	190.5 159.4 349.8 224.6 125.2	198.2 151.4 348.6 224.6 125.0				
Td123	68.0	64.5	65.0	64.0	62.9	65.0	62.6	62.5	63.0	52.8	55.4	57.0
Td1	9.0	8.5	8.2	8.0	7.5	9.0	8.7	8.5	8.2	8.0	7.5	7.0
Td2	59.0	56.0	56.8	56.0	55.4	56.0	53.9	54.0	54.8	44.8	47.9	50.0
Td3												
V1 1,442 ft/sec	13.0	12.3	11.8	11.5	10.8	13.0	12.6	12.3	11.8	11.5	10.8	10.1
V2 2,988 ft/sec	176.3	167.3	169.7	167.3	165.4	167.3	161.1	161.4	163.7	133.9	143.1	149.4
V3 11,155 ft/sec												
Total Depth (feet)	189.3	179.6	181.5	178.8	176.2	180.3	173.7	173.6	175.6	145.4	153.9	159.5
elev. / offset												

SIPP REV 21

BRI SEISMIC SURVEY JULY 1980 LINE BE SPREADS 1 AND 2 GEO SEP 100 FEET

CONTROL CARD DATA — PLOT SCALES — DATUM — OVERRIDE VALUES

SPRDS	EXIT	LAYERS	PLOT	VCARDS	ELEV FT/COL	HORIZ FT/ROW	TIME MS/COL	POINT 1 ELEV	POINT 1 X POS	POINT 2 ELEV	POINT 2 X POS	SLOPE	INTCPT	BLIM	TLIM	TRACE	DEP	DIP
2	6	3	2	3	5.0	8.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.50	10.0	0	C	0

VELOCITY CARDS

LAYER	SPREAD 1 VV	SPREAD 1 VH	SPREAD 2 VV	SPREAD 2 VH	SPREAD
1	1442.	1442.	1442.	1442.	
2	3410.	3410.	2935.	2935.	
3	10520.	10520.	11155.	11155.	

SHOTPOINT AND GEOPHONE DATA

SPREAD 1, 5 SHOTPOINTS, 12 GEOPHONES, XSHIFT = 0.0, XTRUE = 1

SP	ELEV	X LOC	Y LOC	DEPTH	UPHOLE T	FUDGE T	END SP
A	2440.0	-195.0	10.0	3.0	0.0	0.0	0
B	2471.0	295.0	10.0	3.0	0.0	0.0	0
C	2560.0	874.0	10.0	3.0	0.0	0.0	0
D	2570.0	1453.0	10.0	3.0	0.0	0.0	0
E	2578.0	2000.0	10.0	3.0	0.0	0.0	0

ARRIVAL TIMES + FUDGE T AND LAYERS REPRESENTED

GEO	ELEV	X LOC	Y LOC	SP A	SP B	SP C	SP D	SP E	SP
1	2471.0	295.0	0.0	84.0 2	21.7 1	143.7 3	187.4 3	222.3 3	
2	2470.0	400.0	0.0	92.3 2	39.4 2	130.7 3	181.9 3	217.3 3	
3	2512.0	505.0	0.0	120.0 2	78.6 2	140.7 3	194.0 3	233.8 3	
4	2552.0	610.0	0.0	150.0 3	113.9 3	137.0 3	205.3 3	247.3 3	
5	2560.0	715.0	0.0	157.3 3	125.2 3	97.2 2	195.7 3	234.8 3	
6	2560.0	821.0	0.0	167.3 3	134.8 3	36.5 2	189.2 3	228.3 3	
7	2561.0	927.0	0.0	177.3 3	142.1 3	45.5 2	179.9 3	212.3 3	
8	2565.0	1032.0	0.0	167.3 3	151.6 3	90.0 2	161.8 3	212.3 3	
9	2565.0	1137.0	0.0	187.3 3	158.6 3	129.9 2	135.7 2	202.3 3	
10	2569.0	1243.0	0.0	194.0 3	168.6 3	149.1 2	95.7 2	200.8 3	
11	2570.0	1348.0	0.0	207.3 3	178.6 3	167.3 2	61.8 2	192.3 3	
12	2570.0	1453.0	0.0	217.3 3	188.6 3	182.8 2	11.8 2	185.3 3	

BRI SEISMIC SURVEY JULY 1980 LINE 8E SPREADS 1 AND 2 GEO SEP 100 FEET

SHOTPOINT AND GEOPHONE DATA

SPREAD 2, 5 SHOTPOINTS, 12 GEOPHONES, XSHIFT = 0.0, XTRUE = 1

SP	ELEV	X LOC	Y LOC	DEPTH	UPHOLE T	FUDGE T	END SP
A	2560.0	905.0	10.0	3.0	0.0	0.0	0
B	2570.0	1453.0	10.0	3.0	0.0	0.0	0
C	2580.0	2030.0	10.0	3.0	0.0	0.0	0
D	2582.0	2608.0	10.0	3.0	0.0	0.0	0
E	2596.0	3150.0	10.0	3.0	0.0	0.0	0

GEO	ELEV	X LOC	Y LOC	ARRIVAL TIMES + FUDGE T AND LAYERS REPRESENTED SP A	SP B	SP C	SP D	SP E	SP
1	2570.0	1453.0	0.0	184.1 3	22.2 1	191.7 3	220.0 3	263.8 3	
2	2570.0	1558.0	0.0	189.9 3	49.8 2	176.7 2	207.3 3	252.3 3	
3	2569.0	1663.0	0.0	200.4 3	86.0 2	139.7 2	198.5 3	242.3 3	
4	2571.0	1768.0	0.0	205.4 3	121.0 2	96.7 2	188.4 3	231.5 3	
5	2579.0	1873.0	0.0	215.4 3	171.9 3	67.4 2	178.4 3	222.9 3	
6	2578.0	1978.0	0.0	215.4 3	182.7 3	29.5 2	171.9 3	216.5 3	
7	2587.0	2083.0	0.0	222.9 3	190.5 3	33.9 2	159.4 3	204.3 3	
8	2580.0	2188.0	0.0	227.9 3	198.2 3	97.2 2	151.4 2	198.3 3	
9	2578.0	2293.0	0.0	235.4 3	208.1 3	108.9 2	103.4 2	186.6 3	
10	2580.0	2398.0	0.0	239.2 3	207.7 3	133.3 2	73.1 2	172.2 3	
11	2586.0	2503.0	0.0	249.0 3	219.5 3	166.4 2	42.1 2	168.3 3	
12	2582.0	2608.0	0.0	259.4 3	229.2 3	175.7 3	14.3 2	158.3 3	

ERI SEISMIC SURVEY JULY 1980 LINE 87 SPREADS 1 AND 2 SEP 180 SEPT

V1 FOR DIRECT RAYS AND DIRECT DISTANCES DD

SPREAD 1	SP	GEO	DD	V1	AVG V1
	B	1	10.4	481.	
					481.

SPREAD 2	SP	GEO	DD	V1	AVG V1
	B	1	10.4	470.	
					470.

AVG OF ALL 476.

.BRI SEISMIC SURVEY JULY 1980 LINE 85 SPREADS 1 AND 2 GEO SEP 100 FEET

ARRIVAL TIMES CORRECTED TO DATUM (DATUM ELEV = 2510.6 + (0.0344)X), AND PLOT POSITIONS D

SPREAD 1			SP A		SP B		SP C		SP D		SP E		SP
ELEV			2503.9		2520.8		2540.7		2560.7		2579.5		
GEO		CORR T	0.0		36.6		-11.3		-4.4		0.0		
			T	D	T	D	T	D	T	D	T	D	
1	2520.8	34.5	118.5	296.1	21.7	305.4	163.9	288.1	217.5	290.7	256.8	291.6	
2	2524.4	37.7	130.0	400.8	113.7	400.5	157.1	391.4	215.1	395.2	255.0	396.3	
3	2528.0	11.1	131.1	508.8	126.3	509.2	140.5	501.9	200.7	503.2	244.9	503.5	
4	2531.6	-14.1	135.9	617.8	136.4	620.4	111.6	609.7	186.8	609.7	233.2	609.7	
5	2535.2	-17.2	140.1	722.9	144.6	724.4	68.7	714.7	174.1	714.9	217.6	714.8	
6	2538.9	-14.6	152.7	828.1	156.8	828.6	10.6	820.1	170.2	820.8	213.7	820.8	
7	2542.5	-12.8	164.5	933.6	165.9	933.5	21.4	927.9	162.7	926.8	199.5	926.8	
8	2546.2	-13.1	154.2	1038.4	175.1	1038.0	65.6	1032.4	144.3	1031.9	199.2	1031.9	
9	2549.8	-10.6	176.7	1142.9	184.6	1142.3	108.1	1137.2	120.7	1136.8	191.7	1136.8	
10	2553.4	-10.8	183.2	1248.8	194.4	1248.1	126.0	1243.2	80.5	1242.8	190.0	1242.9	
11	2557.0	-9.0	198.3	1353.5	206.2	1352.7	147.0	1348.2	48.4	1347.5	183.8	1347.9	
12	2560.7	-6.5	210.8	1458.1	218.7	1457.3	165.0	1453.2	0.9	1443.0	178.3	1452.9	

SPREAD 2			SP A		SP B		SP C		SP D		SP E		SP
ELEV			2541.8		2560.7		2580.5		2600.4		2619.1		
GEO		CORR T	0.0		-4.4		2.4		14.9		0.0		
			T	D	T	D	T	D	T	D	T	D	
1	2560.7	-6.5	177.6	1453.2	22.2	1463.4	187.7	1452.8	228.4	1452.9	257.3	1452.8	
2	2564.3	-4.0	185.9	1558.2	41.4	1559.5	175.2	1557.8	218.2	1557.9	248.3	1557.8	
3	2567.9	-0.8	199.6	1663.1	80.8	1663.2	141.4	1662.7	212.6	1662.9	241.5	1662.7	
4	2571.5	0.3	205.7	1768.1	116.9	1768.2	99.5	1767.7	203.6	1767.9	231.8	1767.7	
5	2575.1	-2.7	212.7	1873.2	164.8	1873.2	67.1	1872.7	190.6	1872.9	220.1	1872.8	
6	2578.7	0.5	215.9	1978.2	178.8	1978.2	32.4	1977.0	187.3	1977.9	217.0	1977.8	
7	2582.3	-3.2	219.7	2083.4	182.9	2083.3	33.1	2084.4	171.0	2082.9	201.1	2082.9	
8	2586.0	4.1	232.0	2188.2	197.9	2188.1	103.8	2188.3	170.4	2187.9	202.4	2187.9	
9	2589.6	8.0	243.4	2293.2	211.7	2293.1	119.4	2293.2	126.3	2292.8	194.6	2292.8	
10	2593.2	9.1	243.3	2398.2	212.4	2398.1	144.9	2398.1	97.1	2397.8	181.3	2397.8	
11	2596.8	7.5	256.5	2503.2	221.6	2503.2	176.3	2503.1	64.4	2502.4	175.8	2502.8	
12	2600.4	12.8	272.2	2608.2	237.6	2608.1	190.9	2608.1	41.9	2598.0	171.1	2607.7	

BRI SEISMIC SURVEY JULY 1980 LINE 6B SPREADS 1 AND 2 SEP 100 FEET
LAYER 2 VELOCITY AND TIME INTERCEPTS COMPUTED BY REGRESSION

SPREAD 1	VEL	TIME	GEOS	SP	GEOS	TIME	VEL	AVG V	AVG T	PTS
	0.	0.0	0 0	A	1 3	91.4	16975.	16975.	91.4	3.
	0.	0.0	0 0	B	2 3	101.5	9641.	9641.	101.5	2.
	1812.	-19.2	5 6	C	7 12	21.3	3755.	2961.	1.0	8.
	2619.	1.4	9 12	D	0 0	0.0	0.	2619.	1.4	4.
							AVG	3666.		17.

SPREAD 2	VEL	TIME	GEOS	SP	GEOS	TIME	VEL	AVG V	AVG T	PTS
	0.	0.0	0 0	B	2 4	4.0	2777.	2777.	4.0	3.
	2915.	13.1	2 6	C	7 11	33.1	3199.	3050.	23.1	10.
	3227.	34.3	8 12	D	0 0	0.0	0.	3227.	34.3	5.
							AVG	3047.		18.
							AVG OF ALL	3319.		35.

LAYER 2 VELOCITY COMPUTED BY HOUSON-OVERTON METHOD

SPREAD 1

VEL	SPS	GEOS	TDSP	SE EP	EP	GEO	5 HIGHEST EPS EP	GEO	EP	GEO	EP	GEO	EP	GEO
3560.	C D	9 12	0.6	3.419	-5.539	11	3.662	12	1.607	9	0.270	10	0.0	0

AVG= 3560. FOR 4. POINTS

SPREAD 2

VEL	SPS	GEOS	TDSP	SE EP	EP	GEO	5 HIGHEST EPS EP	GEO	EP	GEO	EP	GEO	EP	GEO
2775.	B C	2 4	-2.4	1.114	-1.576	3	0.788	2	0.788	4	0.0	0	0.0	0
3555.	C D	8 11	6.7	1.960	-3.278	10	1.832	11	1.761	8	0.3[illegible]	9	0.0	0

AVG= 3221. FOR 7. POINTS

AVG OF ALL 3344. FOR 11. POINTS
OVERRIDE V2 = 3410.

BRI SEISMIC SURVEY JULY 1980 LINE BE SPREADS 1 AND 2 GEO SEP 100 FEET
LAYER 3 VELOCITY AND TIME INTERCEPTS COMPUTED BY REGRESSION

SPREAD 1	VEL	TIME	GEOS	SP	GEOS	TIME	VEL	AVG V	AVG T	PTS
	0.	0.0	0 0	A	4 12	61.4	11512.	11512.	61.4	9.
	0.	0.0	0 0	B	4 12	103.9	10327.	10327.	103.9	9.
	6175.	74.3	1 4	C	0 0	0.0	0.	6175.	74.3	4.
	10131.	105.8	1 8	D	0 0	0.0	0.	10131.	105.8	8.
	13980.	133.1	1 12	E	0 0	0.0	0.	13980.	133.1	12.
							AVG	10635.		42.

SPREAD 2	VEL	TIME	GEOS	SP	GEOS	TIME	VEL	AVG V	AVG T	PTS
	0.	0.0	0 0	A	1 12	137.5	13251.	13251.	137.5	12.
	0.	0.0	0 0	B	5 12	127.2	10679.	10679.	127.2	8.
	11488.	128.5	1 7	D	0 0	0.0	0.	11488.	128.5	7.
	13183.	126.9	1 12	E	0 0	0.0	0.	13183.	126.9	12.
							AVG	12296.		39.

							AVG OF ALL	11371.		81.

LAYER 3 VELOCITY COMPUTED BY HOBSON-OVERTON METHOD

SPREAD 1 — 5 HIGHEST EPS

VEL	SPS	GEOS	TDSP	SE EP	EP	GEO	EP	GEO	EP	GEO	EP	GEO	EP	GEO
13391.	A D	4 8	-47.3	2.491	4.154	7	-3.419	8	-1.287	4	0.643	6	-0.039	5
13704.	A E	4 12	-51.7	6.487	-12.685	8	12.631	7	-5.233	10	-3.491	4	2.964	12
10767.	B D	4 8	-2.7	2.812	-4.489	7	3.643	8	1.911	5	-1.503	6	0.438	4
12936.	B E	4 12	-7.4	3.662	7.715	7	-6.393	4	-3.422	10	-1.749	11	1.583	9

AVG= 12845. FOR 28. POINTS

SPREAD 2 — 5 HIGHEST EPS

VEL	SPS	GEOS	TDSP	SE EP	EP	GEO	EP	GEO	EP	GEO	EP	GEO	EP	GEO
12922.	A D	1 7	-1.0	3.040	5.085	5	-4.662	6	-2.802	1	2.503	3	1.350	4
13217.	A E	1 12	10.1	3.105	5.825	5	-4.835	8	-3.759	6	3.121	12	3.120	3
11171.	B D	5 7	1.9	0.703	-0.994	6	0.497	5	0.497	7	0.0	0	0.0	0
12230.	B E	5 12	15.5	1.738	2.937	9	-2.667	11	1.997	7	-1.451	8	0.878	12

AVG= 12681. FOR 30. POINTS

AVG OF ALL 12760. FOR 58. POINTS
OVERRIDE V3 = 10520.

BRI SEISMIC SURVEY JULY 1980 LINE BF SPREADS 1 AND 2 GEO SEP 100 FEET

ARRIVAL TIMES CORRECTED TO BASE OF LAYER 1, AND ELEV OF BASE OF LAYER 1

SPREAD 1

			SP A		SP B		SP C		SP D		SP E		SP
	ELEV		0.0		2438.7		2524.1		2551.2		0.0		
	CORR T		20.3		20.3		22.8		11.0		11.0		
GEO			T	D	T	D	T	D	T	D	T	D	
1	2438.7	22.4	-5.8	296.1	0.0	305.4	95.5	288.1	154.1	290.7	149.8	291.6	
2	2469.9	0.1	24.8	400.8	19.1	400.5	107.8	391.4	170.8	395.2	147.1	396.3	
3	2512.0	0.0	52.6	508.8	58.3	509.2	117.9	501.8	183.0	503.2	183.7	503.5	
4	2515.9	5.8	94.7	617.8	87.8	620.4	108.4	609.7	188.5	609.7	191.4	609.7	
5	2519.1	12.0	95.8	722.9	92.9	724.4	62.4	714.7	172.8	714.9	172.7	714.8	
6	2522.4	18.2	99.6	828.1	96.3	828.6	-4.6	820.1	160.0	820.8	159.9	820.8	
7	2525.7	24.5	103.3	933.6	97.3	933.5	-1.8	927.9	144.4	926.8	137.7	926.8	
8	2526.5	26.7	91.1	1038.4	104.6	1038.0	40.4	1032.4	124.1	1031.9	135.4	1031.9	
9	2519.2	31.8	106.0	1142.7	106.6	1142.3	75.3	1137.2	93.0	1136.8	120.4	1136.9	
10	2530.2	26.9	117.5	1248.8	121.4	1248.1	98.3	1243.2	57.8	1242.8	123.7	1242.9	
11	2541.6	19.7	138.1	1353.5	138.6	1352.7	124.7	1348.2	31.1	1347.5	122.9	1347.9	
12	2551.2	13.1	154.7	1458.1	155.3	1457.3	146.9	1453.2	-12.2	1448.0	122.1	1452.9	

SPREAD 2

			SP A		SP B		SP C		SP D		SP E		SP
	ELEV		0.0		2551.4		2562.8		2568.3		0.0		
	CORR T		10.8		10.8		9.9		7.4		7.4		
GEO			T	D	T	D	T	D	T	D	T	D	
1	2551.4	12.9	128.2	1453.2	0.0	1463.4	168.9	1452.8	199.7	1452.9	199.3	1452.8	
2	2551.8	12.6	134.2	1558.2	26.4	1558.5	154.2	1557.8	187.2	1557.9	188.0	1557.8	
3	2552.2	11.7	145.7	1663.1	63.5	1663.2	118.2	1662.7	179.4	1662.9	179.0	1662.7	
4	2559.5	8.0	154.4	1768.1	102.2	1768.2	78.9	1767.7	173.0	1767.9	171.9	1767.7	
5	2562.0	11.3	160.6	1873.2	149.3	1873.2	45.8	1872.7	159.2	1872.9	159.4	1872.9	
6	2563.8	9.3	162.6	1978.2	162.1	1978.2	9.3	1977.3	154.7	1977.9	155.0	1977.8	
7	2561.7	17.6	162.3	2083.4	162.1	2083.3	-6.5	2084.4	134.4	2082.9	135.1	2082.9	
8	2557.4	15.6	169.2	2188.2	171.7	2188.1	71.7	2188.3	128.3	2187.9	131.0	2187.8	
9	2572.4	3.9	188.5	2293.2	193.4	2293.1	95.1	2293.2	92.1	2292.8	131.0	2292.8	
10	2577.7	1.6	194.5	2398.2	195.3	2398.1	121.8	2398.1	64.1	2397.8	118.9	2397.8	
11	2582.1	2.7	203.3	2503.2	205.0	2503.2	153.8	2503.1	32.0	2502.4	114.0	2502.8	
12	2568.3	9.5	206.9	2608.2	208.9	2608.1	156.3	2608.1	-2.6	2598.0	97.1	2607.7	

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BRI SEISMIC SURVEY JULY 1980 LINE 8E SPREADS 1 AND 2 GEO SEP 100 FEET

SPREAD 1 RAY END POINTS BENEATH GEOPHONES

GEO		SP A	SP B	SP C	SP D	SP E	SP
1	POS	280.4 2	0.0 1	316.7 3	309.4 3	307.5 3	
	ELEV	2434.6	0.0	2409.3	2429.8	2435.1 ?	
2	POS	400.3 2	400.3 2	417.6 3	415.0 3	413.3 3	
	ELEV	2470.0	2470.0	2336.4	2398.9	2406.9	
3	POS	504.9 2	504.9 2	553.8 3	551.0 3	550.8 3	
	ELEV	2511.9	2511.9	2365.2	2373.8	2374.2	
4	POS	558.0 3	564.7 3	658.8 3	665.7 3	667.0 3	
	ELEV	2380.6	2399.6	2400.9	2382.4	2378.8	
5	POS	671.1 3	674.8 3	739.9 2	770.0 3	769.4 3	
	ELEV	2393.4	2405.2	2484.4 ?	2390.7	2392.3	
6	POS	776.5 3	780.4 3	884.6 2	894.3 3	893.5 3	
	ELEV	2392.5	2405.1	2509.6 ?	2387.3	2388.9	
7	POS	897.2 3	900.9 3	921.6 2	1007.3 3	999.6 3	
	ELEV	2397.2	2414.6	2529.8	2393.9	2407.4	
8	POS	1016.9 3	1014.2 3	1012.0 2	1072.5 3	1078.7 3	
	ELEV	2446.7	2429.4	2527.3	2414.9	2396.1	
9	POS	1098.5 3	1100.5 3	1109.1 2	1166.3 2	1173.8 3	
	ELEV	2434.4	2440.4	2518.6	2519.7	2399.3	
10	POS	1196.7 3	1195.6 3	1230.6 2	1265.0 2	1275.4 3	
	ELEV	2435.7	2435.7	2528.6	2532.7	2376.2	
11	POS	1279.2 3	1282.3 3	1338.0 2	1363.3 2	1382.6 3	
	ELEV	2418.3	2424.1	2540.6	2543.2	2357.0	
12	POS	1371.2 3	1374.3 3	1446.0 2	1463.0 2	1509.6 3	
	ELEV	2404.1	2409.8	2551.0 ?	2551.8	2351.9	

RAY END POINTS BENEATH SHOTPOINTS

L=2	RIGHT	POS	318.3	318.3	904.2	0.0	0.0
		ELEV	2443.2 *	2443.2	2520.9	0.0	0.0
L=2	LEFT	POS	0.0	0.0	875.4	1447.2	0.0
		ELEV	0.0	0.0	2504.6 ?	2551.1	0.0
L=3	RIGHT	POS	312.1	312.1	0.0	0.0	0.0
		ELEV	2418.9 *	2418.9	0.0	0.0	0.0
L=3	LEFT	POS	0.0	0.0	843.7	1360.0	1360.0
		ELEV	0.0	0.0	2392.2	2384.0	2384.0 *

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BRI SEISMIC SURVEY JULY 1980 LINE 8F SPREADS 1 AND 2 GEO SEP 100 FEET

SPREAD 2 RAY END POINTS BENEATH GEOPHONES

GEO		SP A	SP B	SP C	SP D	SP E	SP
1	POS	1348.8 3	0.0 1	1506.8 3	1498.9 3	1500.2 3	
	ELEV	2364.1	0.0	2362.4	2391.4	2386.7	
2	POS	1501.0 3	1547.9 2	1548.1 2	1617.1 3	1619.5 3	
	ELEV	2359.5	2551.8	2551.8	2399.6	2393.1	
3	POS	1624.2 3	1653.8 2	1673.7 2	1714.6 3	1716.1 3	
	ELEV	2359.7	2551.8	2552.6	2399.7	2395.0	
4	POS	1721.2 3	1752.6 2	1774.4 2	1823.6 3	1824.8 3	
	ELEV	2366.9	2559.3	2559.8	2401.4	2397.8	
5	POS	1830.8 3	1834.2 3	1892.9 2	1926.5 3	1928.4 3	
	ELEV	2375.8	2391.2	2562.3	2412.4	2406.7	
6	POS	1938.9 3	1938.6 3	1985.1 2	2033.9 3	2035.9 3	
	ELEV	2391.2	2389.9	2564.8	2408.9	2403.0	
7	POS	2047.8 3	2047.4 3	2068.5 2	2122.5 3	2124.2 3	
	ELEV	2408.2	2406.5	2562.4	2425.8	2419.4	
8	POS	2143.0 3	2141.3 3	2171.0 2	2207.2 2	2231.8 3	
	ELEV	2410.7	2404.8	2554.6 ?	2556.7	2403.2	
9	POS	2243.1 3	2240.3 3	2291.1 2	2295.9 2	2351.4 3	
	ELEV	2402.7	2393.1	2572.2	2572.7	2402.8	
10	POS	2361.6 3	2360.9 3	2396.7 2	2399.3 2	2450.2 3	
	ELEV	2412.2	2409.1	2577.6	2577.7	2411.7	
11	POS	2462.4 3	2461.3 3	2501.1 2	2504.5 2	2560.0 3	
	ELEV	2417.4	2412.7	2582.2	2592.1	2407.9	
12	POS	2562.5 3	2561.0 3	2558.8 3	2616.7 2	2656.0 3	
	ELEV	2419.6	2414.5	2406.7	2567.8	2413.4	

RAY END POINTS BENEATH SHOTPOINTS

L=2	RIGHT	POS	0.0	1461.6	2037.0	0.0	0.0
		ELEV	0.0	2551.8	2563.3	0.0	0.0
L=2	LEFT	POS	0.0	0.0	2022.2	2600.2	0.0
		ELEV	0.0	0.0	2563.7	2568.6	0.0
L=3	RIGHT	POS	1504.5	1504.5	2092.0	0.0	0.0
		ELEV	2369.1 *	2369.1	2399.9	0.0	0.0
L=3	LEFT	POS	0.0	0.0	1991.4	2565.3	2565.3
		ELEV	0.0	0.0	2387.4	2428.2	2428.2 *

BRI SEISMIC SURVEY JULY 1980 LINE 8C SPREADS 1 AND 2 SEQ SEP 100 FEET

SPREAD 1 SMOOTHED POSITION OF LAYERS BENEATH SHOTPOINTS AND GEOPHONES

			LAYER 2		LAYER 3		LAYER
SP	POSITION	SURF ELEV	DEPTH	ELEV	DEPTH	ELEV	
B	295.0	2471.0	32.3	2438.7	71.8	2399.2	
C	874.0	2560.0	35.9	2524.1	160.4	2399.6	
D	1453.0	2570.0	18.8	2551.2	194.8	2375.2	

GEO			(m) ft		(m) ft		
1	295.0	2471.0	10 32.3	2438.7	22 71.8	2399.2	
2	400.0	2470.0	0 0.1	2469.9	21 69.3	2400.7	
3	505.0	2512.0	0 0.0	2512.0	39 126.6	2385.4	
4	610.0	2552.0	11 36.1	2515.9	51 166.8	2385.2	
5	715.0	2560.0	12 40.9	2519.1	51 166.5	2393.5	
6	821.0	2560.0	11 37.6	2522.4	50 164.5	2395.5	
7	927.0	2561.0	11 35.3	2525.7	48 157.2	2403.8	
8	1032.0	2565.0	12 38.5	2526.5	44 145.0	2420.0	
9	1137.0	2565.0	14 46.2	2519.2	43 142.5	2422.5	
10	1243.0	2569.0	12 38.8	2530.2	48 155.9	2413.1	
11	1348.0	2570.0	9 28.4	2541.6	55 181.3	2388.7	
12	1453.0	2570.0	6 18.8	2551.2	59 194.8	2375.2	

VELOCITIES USED:

	LAYER 1	LAYER 2	LAYER 3	LAYER
VERTICAL	1442.	3410.		
HORIZONTAL		3410.	10520.	

BRI SEISMIC SURVEY JULY 1980 LINE BF SPREADS 1 AND 2 SEP SEP 100 FEET

SPREAD 2 SMOOTHED POSITION OF LAYERS BENEATH SHOTPOINTS AND GEOPHONES

			LAYER 2		LAYER 3		LAYER
SP	POSITION	SURF ELEV	DEPTH	ELEV	DEPTH	ELEV	
B	1453.0	2570.0	18.6	2551.4	194.8	2375.2	
C	2030.0	2580.0	17.2	2562.8	175.4	2404.6	
D	2608.0	2582.0	13.7	2569.3	167.6	2414.4	
GEO							
1	1453.0	2570.0	6 18.6	2551.4	59 194.8	2375.2	
2	1558.0	2570.0	6 18.2	2551.8	59 193.3	2376.7	
3	1663.0	2569.0	5 16.8	2552.2	56 183.5	2385.5	
4	1768.0	2571.0	7 11.5	2559.5	65 181.9	2389.1	
5	1873.0	2579.0	5 17.0	2562.0	56 183.8	2395.2	
6	1978.0	2578.0	7 14.2	2563.8	59 177.0	2401.0	
7	2083.0	2587.0	8 25.3	2561.7	59 178.7	2408.3	
8	2188.0	2580.0	7 22.6	2557.4	52 172.0	2408.0	
9	2293.0	2578.0	2 5.6	2572.4	53 173.6	2404.4	
10	2398.0	2580.0	1 2.3	2577.7	52 169.6	2410.4	
11	2503.0	2586.0	1 3.9	2582.1	52 171.4	2414.6	
12	2608.0	2582.0	7 13.7	2568.3	57 167.6	2414.4	

VELOCITIES USED:

	LAYER 1	LAYER 2	LAYER 3	LAYER
VERTICAL	1442.	2985.		
HORIZONTAL		2985.	11155.	

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APPENDIX IV

STATEMENT OF QUALIFICATIONS

APPENDIX IV - STATEMENT OF QUALIFICATIONS

J. Vyselaar, Geophysicist for Utah Mines Ltd., Vancouver British Columbia:

Completed B.Sc. (Geology and Geophysics) at the University of British Columbia in 1971; employed by Chisolm Prospecting Ltd. and Texas Gulf Sulphus Ltd. during the 1969 and 1970 field seasons, respectively, as geological assistant; employed by Geoterrex from May, 1971 to October, 1971 and January, 1972 to April, 1972 as a field geophysicist under Peer Norgaard, P.Eng.; employed by Barringer Research Ltd. as a geophysicist from May, 1972 to October, 1974 under the supervision of F.L. Jagodits, P.Eng., and R.J. Henderson; employed by Utah Mines Ltd. from January, 1975 to present as a geophysicist under the supervision of A.J. Schimdt, P.Eng.

STATEMENT OF COSTS

On-Property Costs

1)	Wages	$10,100.82
2)	Contractors	
	Duchan Enterprises Ltd.	14,422.74
3)	Equipment and Instruments Used	
	Geo Space Canada Ltd. (new cable, repairs to cable, replacement equipment)	1,568.25
4)	Supplies and Material Costs	
	J. P. Delf Ltd. (high speed film)	789.36
	Continental Explosives Ltd. (magazine)	126.87
	Explosives Ltd. (magazines, dynamite, caps)	4,936.36
5)	Transportation Costs	
	1 - 2 wheel drive GMC Van from Westminster Chev-Olds Leasing	1,122.01
6)	Expense Accounts	669.33
	Total On-Property Costs	$33,735.74

Off-Property Costs

a)	Preparation of Reports	$ 5,000.00
	TOTAL SEISMIC SURVEY COSTS	$38,735.74

539,000 E | 540,000 E | 541,000 E | 542,000 E | 543,000 E | 544,000 E | 545,000 E | 546,000 E | 547,000 E

6,207,000 N | 6,206,000 N | 6,205,000 N | 6,204,000 N | 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

C.L. 3645 | C.L. 3644 | C.L. 3643

C.L. 3647 | C.L. 3646 | C.L. 3642

C.L. 3648

CAMP

C.L. 3651 | C.L. 3650 | C.L. 3649

PERMIT No. C—111

C.L. 3653 | C.L. 3652 | C.L. 5175

C.L. 3654 | C.L. 5174

FIGURE – 12

LEGEND

- 1980 Diamond Drill Hole Location (Utah Mines Ltd.)
- 1980 Rotary Drill Hole Location (Utah Mines Ltd.)
- 1978 & 1979 Drill Hole Location (Utah Mines Ltd.)
- Access Roads
- 1980 Utah Mines Ltd. Exploration Roads.
- 1980 Utah Mines Ltd. Rotary Drill Lines.
- 1980 Seismic Lines.
- C.L. 5174 Coal Licence Number

Contour Interval = 10 Metres

UTAH MINES LTD.
EXPLORATION DEPARTMENT
Vancouver British Columbia

BRI — DOWLING CREEK PROPERTY

GRID LINE LOCATION

PR-Bri-Dowling Creek 80(2)A *(3)

Work by: J. Vyselaar	Date: October 1980	NTS Ref. 93 O/16
Drawn by: T. Drews	Revised:	Scale — 1:10,000

SCALE IN

469

539,000 E | 540,000 E | 541,000 E | 542,000 E | 543,000 E | 544,000 E | 545,000 E | 546,000 E | 547,000 E

6,207,000 N | 6,206,000 N | 6,205,000 N | 6,204,000 N | 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

C.L. 3645 | C.L. 3644 | C.L. 3643 | C.L. 3647 | C.L. 3646 | C.L. 3642 | C.L. 3648 | C.L. 3651 | C.L. 3650 | C.L. 3649 | C.L. 3653 | C.L. 3652 | C.L. 5175 | C.L. 3654 | C.L. 5174

CAMP

LINE 20 E | LINE 19 E | LINE 18 E | LINE 17 E | LINE 16 E | LINE 15 E | LINE 14 E | LINE 13 E | LINE 12 E | LINE 11 E | LINE 10 E | LINE 9 E | LINE 8 E | LINE 7 E | LINE 6 E | LINE 5 E | LINE 4 E | LINE 3 E | LINE 2 E | LINE 1 E

PERMIT No. C—III

Contour Interval = 10 Metres

LEGEND

- 1980 Diamond Drill Hole Location (Utah Mines Ltd.)
- 1980 Rotary Drill Hole Location (Utah Mines Ltd.)
- 1978 & 1979 Drill Hole Location (Utah Mines Ltd.)
- Access Roads
- 1980 Utah Mines Ltd. Exploration Roads
- Contour Lines
- 1980 Seismic Lines.
- C.L. 5174 — Coal Licence Number

FIGURE - 13

UTAH MINES LTD.
EXPLORATION DEPARTMENT
Vancouver British Columbia

BRI — DOWLING CREEK PROPERTY

INTERPRETED DEPTH CONTOURS

PR-Bri Dowling Creek Property 82 G/9 "18"

Work by: J Vyselaar	Date: October 1980	NTS Ref. 93 O/16
Drawn by: T. Crews	Revised:	Scale — 1:10,000

SCALE IN

469