CONFIDENTIAL

OPEN FILE

1983 REPORT OF EXPLORATION ACTIVITIES (DRILLING REPORT)

ON THE BINGAY CREEK PROPERTY

Coal Licence Nos. 7299, 7471, 7688 and 7689

Located in
Kootenay Land District and Fort Steele Mining Division

National Topographic System
Designation 82 J/2 West

Centered on Lat. 50°14'N; Long. 114°58'W

Report by R.B. Anderson
Utah Mines Ltd.

Field Work Performed Between
November 14, 1983 and December 18, 1983

Report Submitted July 1984

TABLE OF CONTENTS

FIGURES PAGE NO.

TABLES

MAPS

APPENDICES

ABSTRACT

Four contiguous coal licences, numbered 7299, 7471, 7688 and 7689 are presently owned by Utah Mines Ltd. The latter two licences (7688 and 7689) were issued on July 15, 1983 to Utah by the Crown and the former licences (7299 and 7471) were acquired through a title transfer. Together these licences comprise the Bingay Creek Property located in the Kootenay Regional District of the Fort Steele Mining Division.

An exploration program formulated in May of 1983 involved both the geologic mapping and the initial test drilling of the property. A report detailing the geologic mapping program was filed with the Ministry in December 1983 to fulfill the work required on coal licences 7299 and 7471. The report that follows supplements the geology as it was then known by reporting the results of the initial drill program conducted in November and December 1983.

Together these reports provide data useful in the preliminary evaluation of the property.

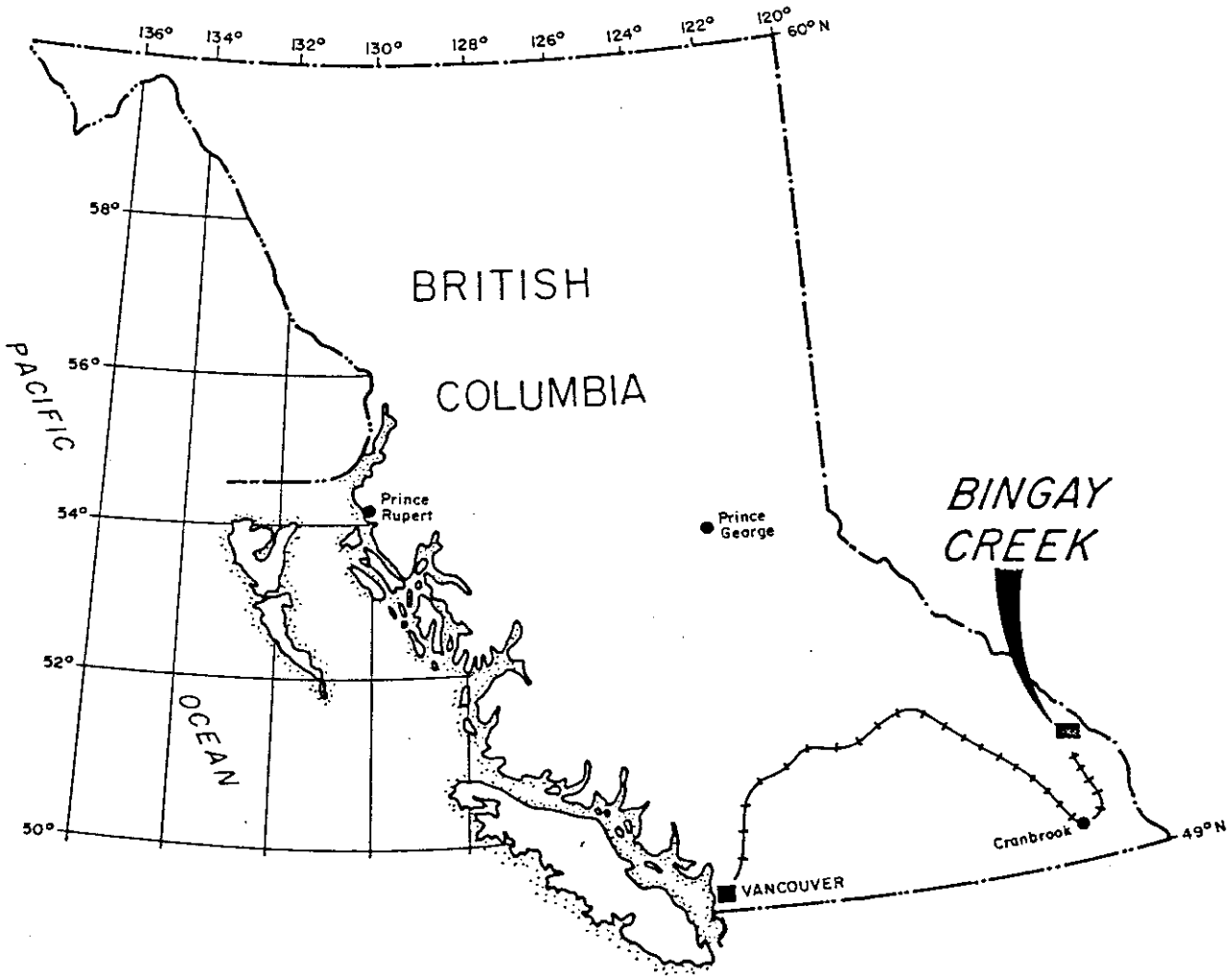


FIGURE 1

LOCATION MAP

R.N.G., Jun.'84 — UTAH MINES LTD., Vancouver.

PROPERTY AND TITLE

The Bingay Creek property comprises four (4) contiguous coal licences numbered 7299, 7471, 7688 and 7689. Together these licences encompass 1039 hectares located in the Elk Valley Coalfield of the designated Southeast British Columbia Coal Block.

Coal licences 7299 and 7471 were transfered to the name of Utah Mines from the previous owner, Mr. William Shenfield of Fernie, B.C. Coal licences 7688 and 7689 were acquired directly from the Crown.

C.L. Number	Anniversary Date	Area
7299	January 2	259 ha
7471	September 30	259 ha
7688	July 15	261 ha
7689	July 15	260 ha

Licence number 7299 was granted on January 2, 1982 and licence 7471 was granted on September 30, 1982. Subsequently Ministerial approval was granted on November 9, 1983 for the transfer of these licences from William Shenfield to Utah Mines Ltd. Coal licences 7688 and 7689 were applied for and subsequently granted to Utah Mines by the Minister on July 15, 1983.

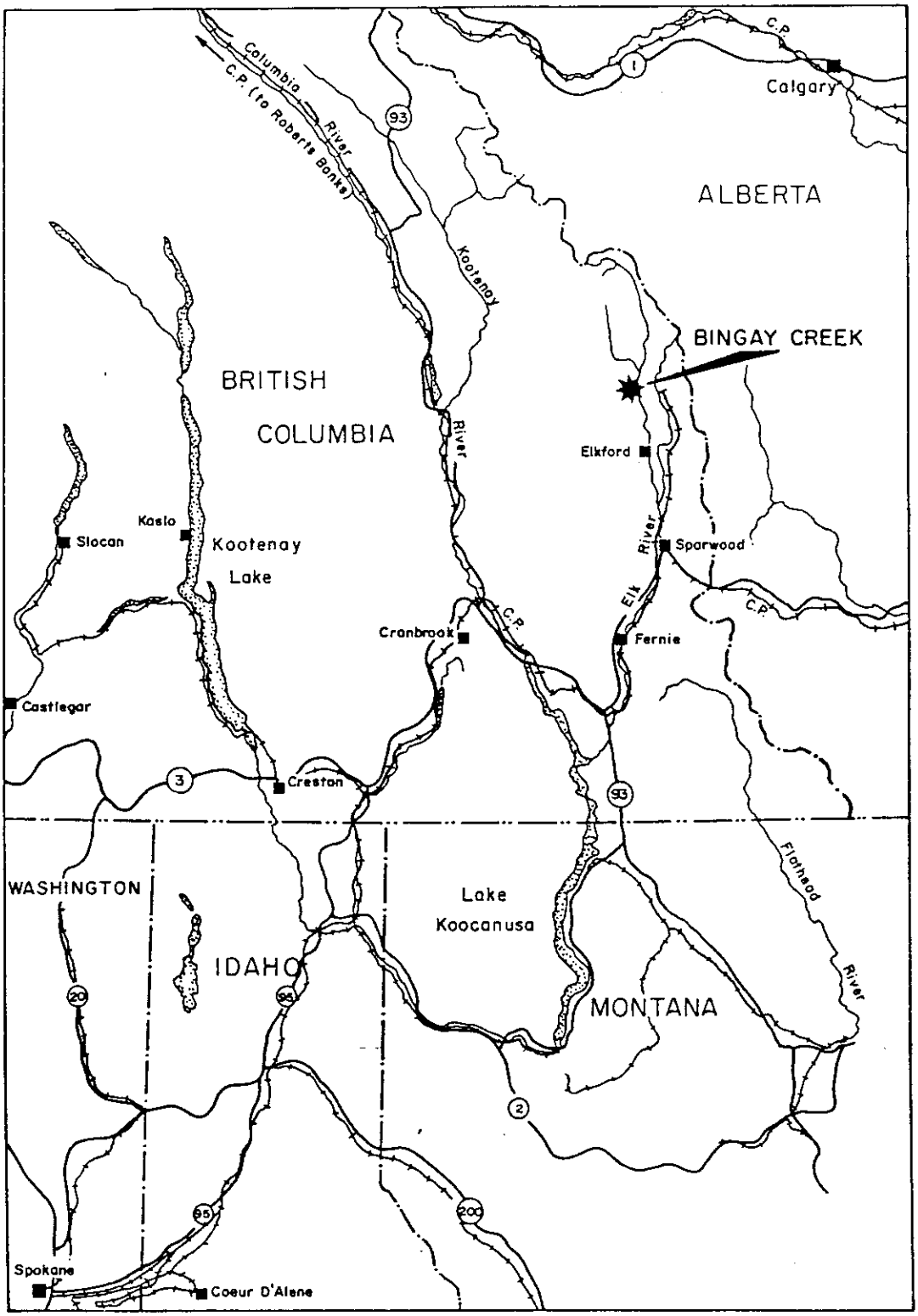
LOCATION AND ACCESS

The Bingay Creek Property is located in the floor of the Elk River Valley approximately 22 km north of the town of Elkford, B.C. in southeastern British Columbia. Centered on 50°14'N and 114°58'W the property is found on NTS map sheet 82 J/2 West approximately 640 km due east of Vancouver.

The property is accessed by an all weather forest access road from Elkford and the main Trans Alta Power transmission line and road follows the eastern property boundary (see Figures 1, 2 and 3).

TOPOGRAPHY AND RELIEF

The property lies within the lower levels of the Elk Valley with elevations varying from 1390 to 1527 meters. Mountains confining the valley attain elevations of 2500 meters on the Greenhills eastern valley margin and over 3000 meters in the Front Ranges to the west.



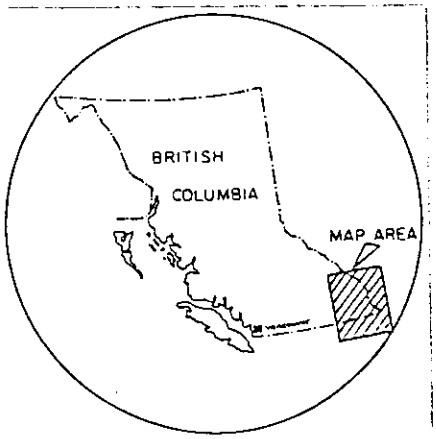


FIGURE-2

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER, BRITISH COLUMBIA

BINGAY CREEK

LOCATION MAP #2

NTS Ref. :	REVISIONS
Work by : R.B. Anderson	Work by :
Drawn by : T. Drews	Drawn by :
Date : May 1984	Date :

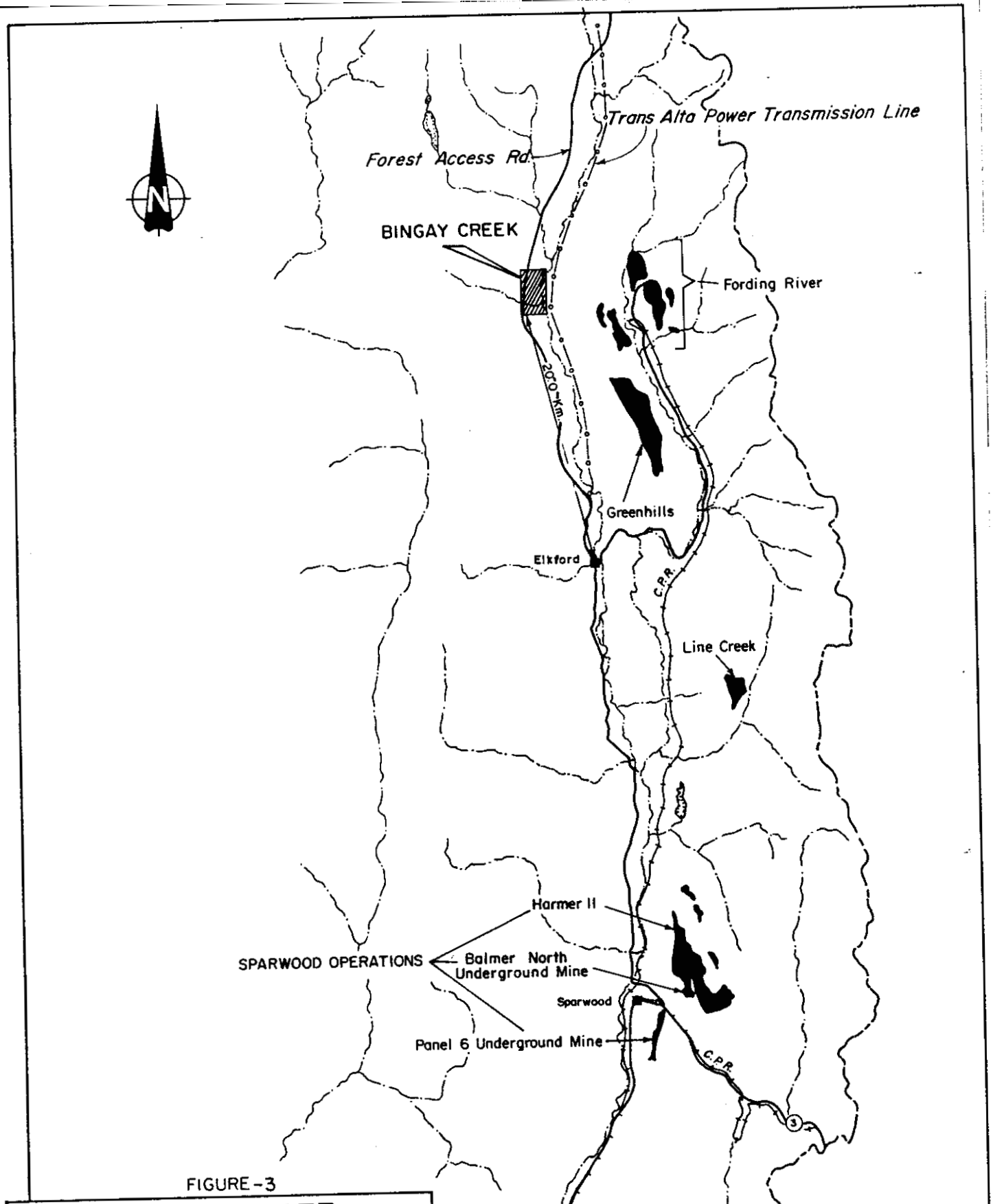


FIGURE-3

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER, BRITISH COLUMBIA

BINGAY CREEK

REGIONAL LOCATION MAP

NTS Ref.: 82/J2	REVISIONS
Work by : R.B. Anderson	Work by :
Drawn by: T. Drews	Drawn by:
Date : May 1984	Date :

The Elk River flows southerly through the eastern property boundary and Bingay Creek flows west to east into the Elk River across the southern limits of the property.

PHYSIOGRAPHY

The upper Elk Valley belongs to the physiographic sub-province known as the Fernie Coal Basin. The basin's topography reflects structural and lithologic controls typical of soft, less resistant rocks found within the more regional Front Ranges province of the Rocky Mountain Physiographic region. The area is typified by the steep sided resistant thrust fault-produced Devonian limestone ranges that enclose younger softer Jurassic-Cretaceous rocks found in the valley bottoms.

The Elk Valley displays the broad open "U" shape typical of glaciated valleys and thick blankets of quaternary gravels terrace the valley at various levels further attesting to glacial influences. The valley floor south of the property is underlain by soft Jurassic Fernie Shales that were less resistant to glavial action than the overlying sandstones of the Kootenay Formation displayed along the Greenhills Range immediately east of the Bingay Creek property.

EXPLORATION

Previous Exploration

The earliest known activity on the property was reported to have taken place in the early years of this century. The Fernie Free Press, in an article dated June 15, 1983, reports on activities that took place in the Upper Elk Valley from 1903 through 1911 during which time various companies starting with the Elk River Coal and Oil Company, undertook surface work "on the west side of the Elk"..."south of the C.P.R. Syndicate work on Aldridge Creek".

In 1910, another company, the Elk Valley Coal and Coke Company, emerged and, on June 10 of that year, the Free Press reported that 20 men were on the scene and "a diamond drill is being used for boring...the first...that has been taken up the Elk River". Evidence, in the form of hand tranches and coal spoil piles dating from this period were readily located.

Following this early work, the area was reportedly prospected by Cominco geologists in the late 1950's, but reports to this effect were not located and are assumed to be private.

In a report dated June 6, 1982, Stephen Gardner notes that "the property was held for a period of one year by Specific Natural Resources". No exploration was performed by this company but a report entitled "Preliminary Geological Report, Coal Licence No. 5176" was prepared by a Mr. John Jenks. This report, although not in the possession of the writer, is reported by Gardner to be on file with the Ministry of Energy, Mines and Petroleum Resources in Victoria. Gardner, however, failed to note the year that the property was held by Specific Natural Resources.

Subsequent to this activity, Mr. William Shenfield acquired the coal licences 7299 and 7471 in 1982 and undertook the opening of seams by hand trenching at three widely separated locations. Roads built in 1980 by Elk Valley Forest Products cut intervals of coal-bearing lithologies. These exposures enabled Mr. Shenfield to establish a workable correlation between surface exposures of coal and sediments. A stratigraphic interval whose lithologies changed upsection from Marine to Deltaic and correlate with the Fernie Group shale and the overlying Kootenay Group found elsewhere was established and thereby confirmed the potential of the area.

Gardner in June of 1982 reviewed available previous work at the request of Mr. Shenfield and produced a report entitled "A Geologic Overview of the Bingay Creek Coal Property, Elk River Valley". This report states that "at least three major coal zones are exposed" on the flanks of the Bingay Creek structure and further that "preliminary observations suggest that the structure in the area may yield some surface recoverable coal reserves...".

Gardner was unable to produce a reserve potential but did suggest the possibility of a northerly extension to the structure "along the leading edge of a major thrust plane". The possibility of finding additional reserve potential led to Gardner recommending "more detailed geological investigations...in order to satisfactorily evaluate the in-situ coal resources and their mining potential".

1983 Mapping Program

Utah Mines Ltd. began its investigations of the Bingay Creek property by initiating in May 1983 a mapping program on the scale of 1:5,000 using a topographic base map produced by McElhanney on 10 metre contours. Twenty six-days, including travel time from Vancouver, were spent by Utah Geologists, R.B. Anderson and Norm Duncan, on the property. Mapping was conducted on a daily basis from a base in Sparwood. A chain and compass closed loop control survey consisting of 105 stations was established using available roads and trails, an additional 202 surveyed stations were established over the course of the program in order to tie in surface geologic features. In the course of mapping a total of 38 hand dug pits and 12 hand

trenches were located. The pit spoil piles were checked for coal spoil and an attempt using shovels was made to rejuvenate the pit and measure the coal seam.

The time available however did not allow for the complete rejuvenation of these old pits as it readily became apparent that most were either of such a depth or of such a scale (5m. deep x 5m. across) as to require mechanized equipment to uncover the in-situ seam.

Map number 1 shows the location of all coal pits found. These in total number 23 coal pits and 6 trenches. An additional 21 pits and trenches did not contain coal in the spoil, but instead the spoil tended to contain a large proportion of glacial till suggesting that bedrock may not have been reached.

Although found in 29 trenches and pits the coal was not sampled due to its obvious oxidized character.

Airphoto interpretations suggested a northward plunging synclinal structure. Rock exposure, especially north of Bingay Creek, on coal licence 7299 afforded the accurate location and attitude of formational contacts. Coal pit locations when interpreted in conjunction with bedrock geometry confirmed the structural style and numerous coal seams.

1983 Diamond Drill Program

Following the summer mapping program described above, a diamond drill and trenching program consisting of three (3) holes drilled from two sites, (see Geology map #1) and 2 backhoe trenches were cut across strike to locate, measure and sample qualitatively the subsurface stratigraphy and its included coal seams. Drilling was contracted to Tonto Drilling of Vancouver using a Longyear "44" drilling rig producing HQ sized ore. The Tonto personnel consisted of driller/foreman Elmer Ciulka and driller Don Reber helped by Bob Ciulka, and Andy Jantunen.

Road construction and surface backhoe trenching were contracted to Rudy Johnson Contracting of Sparwood. Roads were built and kept open using a Caterpillar D8K tractor and the trenches were dug using a John Deere 450 backhoe.

Andy Latka Construction supplied slashing crews to fall and buck timber in advance of road construction and trenching.

Owing to the extreme cold weather conditions drill water was hauled to the drill in heated tank trucks contracted from Coalex of Sparwood.

Snow condition dictated the periodic grading of the Forestry Access Road from Elkford 22 km to the property. This work was contracted to Tom Dennie also of Sparwood.

Site preparation for drill hole B.C. 83-1 was completed on November 22 and drilling commenced November 24. This hole was drilled to a depth of 295.3m (969 feet), inclined from the horizontal at an angle of -50^{o} at an azimuth of 130^{o}. This hole tested the west dipping limb in the region of the syncline nose. Core was logged and coal samples taken from 10 coal seams by R.B. Anderson and D.N. Duncan of Utah Mines. Following completion the hole was electrically logged using a company owned Comprobe downhole probe using a gamma-density-caliper sonde (see Well completion Reports in the Appendices).

On December 2nd the drill was rotated 45^{o} and the angle steepened to -80o prior to commencing drill hole B.C. 83-2. At an azimuth of 175^{o} the objective of this hole was to test for axial thickening of coal seams. The hole terminated at a depth of 199.9m (656 feet). Two coal zones yielding four individually sampled seams were intersected. A power supply fault in the Comprobe equipment dictated contracting the electrical logging to Roke Oil Enterprises of Calgary (see Well Completion Reports in Appendices).

The final diamond drill hole was spotted approximately 600 metres northeast of sites 1 and 2 along the projected axial trace. The objective of this hole was to test those lithologies stratigraphically superior to those found in holes 1 and 2 as well as to provide a correlation overlap. Mapping had indicated the northeast direction to be that of increasingly higher stratigraphic section. Drill hole B.C. 83-3 was spudded on December 7, 1983 and completed to a depth of 394.4 meters (1284 feet) on December 16, 1983. Fourteen (14) coal seams were intercepted and samples taken for analytical purposes (see Well Completion Reports). Davies Exploration Logging produced the downhole logs consisting of a gamma, density, caliper suite.

The drill program tested approximately 500 metres of stratigraphy or what is now thought to be a nearly complete Mist Mountain formational sequence from near the overlying Elk Formation through the Mist Mountain down into the Morrissey Formation.

Reclamation followed drilling; the drill sites and roads were reclaimed and the trenchs filled and recontoured, the core stored in Fernie on the property of Mr. Shenfield and the program finalized on the 18th of December 1983.

STRATIGRAPHY

A. REGIONAL STRATIGRAPHY

A1. Spray River and Fernie Group Stratigraphy

Bedrock stratigraphy representing three (3) main groups of Jurassic to Cretaceous age sediments are found widely distributed in the Elk Valley. For convenience the "middle Elk River Valley", geology will serve to represent the geology on a regional scale. This area is bounded by Weary Ridge on the north, the town of Elkford on the south, the Front Ranges on the west and the Greenhills Range on the east, an area of approximately 600 square kilometres.

The lithostratigraphic sediments and their included formations found in this area are represented by the Pre-Jurassic Spray River limestones, the Jurassic Fernie Group shales and the Jurassic-Cretaceous Kootenay Group coal-bearing sediments.

The oldest rocks in the area, the Spray River limestones are exposed along the west side of the area where the Bourgeau Thrust has emplaced the Spray River over younger rocks. The fault has been mapped along the entire length of the valley at the base of the Front Ranges.

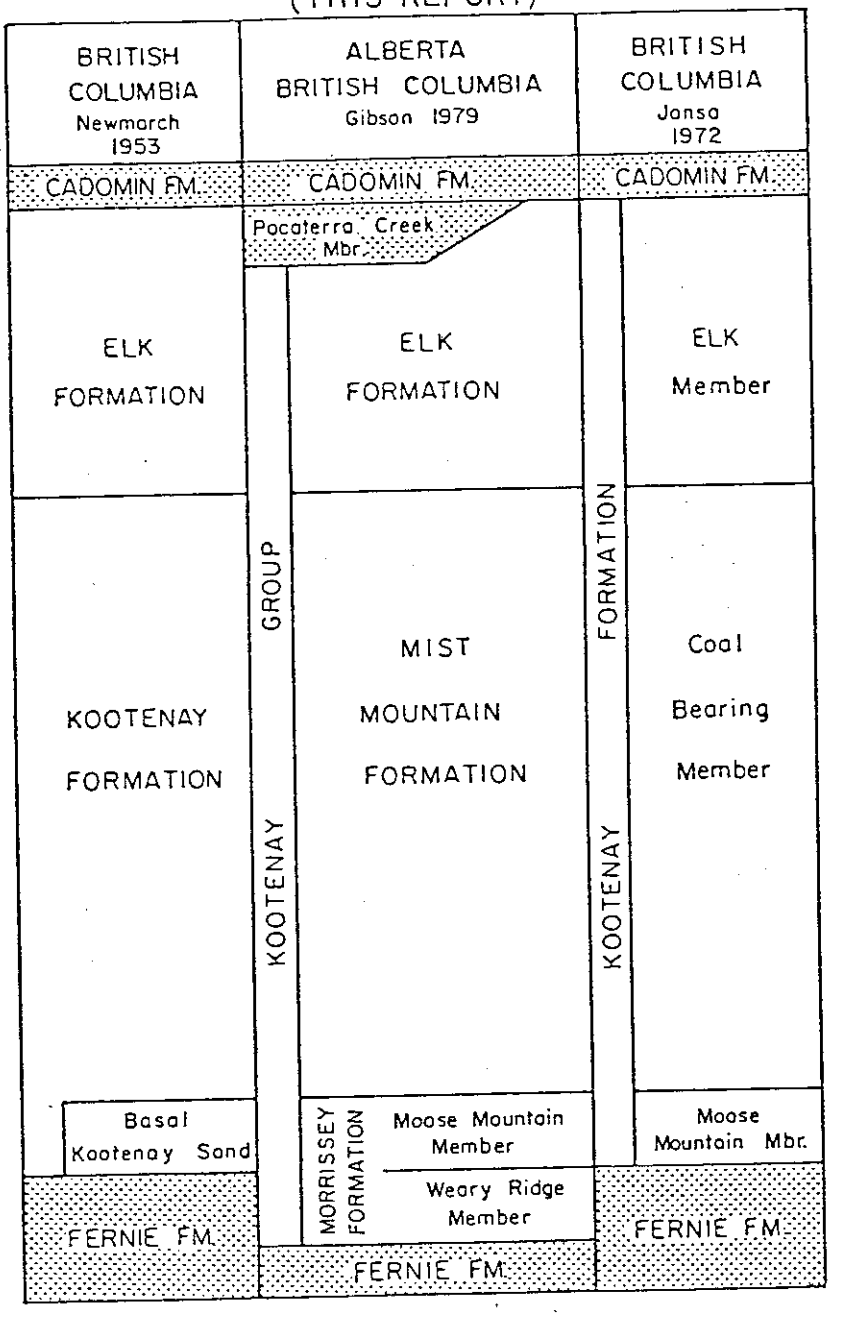
'Passage' beds of the Upper Fernie Group represented by silty sandstones and sandstones deposited on a "storm-dominated shelf" (Hamblin and Walker) mark a change to a regressive stage of sedimentation in the area. These beds occupy the floor of Elk Valley and extend north only as far as Bingay Creek.

A2. Kootenay Group Stratigraphy

Conformably overlying the Fernie 'passage' beds are a "nonmarine, interstratified sequence of dark grey to greyish brown weathering siltstone, sandstone, mudstone, shale, conglomerate and coal" (Gibson, 1977) belonging to the Kootenay Group.

Recent work by Gibson, 1979, produced the first significant change in nomenclature for this former "formation" since the early work of Newmarch (1953), Gibson has, in ascending order, recognized four main formational sub-divisions of the Kootenay Group; the Morrissey Formation sandstone, consisting of the Weary Ridge and Moose Mtn. Members, the coal-bearing Mist Mountain Formation and the capping sandstone-rich Elk Formation. Together these formations attain reported thicknesses of 1000m (3300 ft.) (Graham, 1977) in the Upper Elk Valley and a similar thickness of 1170m at Coal Creek (Newmarch) near Fernie.

(THIS REPORT)



UTAH MINES LTD. EXPLORATION DEPARTMENT VANCOUVER, BRITISH COLUMBIA	
REGIONAL STRATIGRAPHY SOUTHEAST COALBLOCK	
NTS Ref.:	REVISIONS
Work by : R.B. Anderson	Work by :
Drawn by: T. Drews	Drawn by:
Date : Dec. 1983	Date :
FIGURE 4	

A2a) Morrissey Formation

Conformably overlying 'Passage bed' silty shales is the first of the Kootenay units, the Morrissey Formation. Formerly known as the "Basal Sandstone Units A and B" (Gibson, 1977), this formation consists of cliff-forming sandstones that mark the advent of non-marine depositional regimes. As described by Graham, the Morrissey is represented by a "thick, medium to light grey, very fine to medium grained quartzose sandstone". Cross-bedding, both "micro- to large-scale festoon and planar" (Gibson, 1977) as well as "trough" cross-bedding (Hamblin and Walker) are the major sedimentary structures. Thicknesses vary from 20 metres at Line Creek to 39 metres at Weary Ridge.

Gibson has assigned both the recessive brown sandstones of the "Passage Beds" and the previously noted quartzose sandstones to the Morrissey Formation.

Hamblin and Walker describe the Morrissey as being "salt and pepper", fine to medium grained and "moderately sorted", an observation consistant with that of the writer, when considering the Moose Mtn. Member only. However the underlying Weary Ridge Member is a lithic greywacke.

Gibson, citing others, supports the interpretation that the Morrissey "was deposited as part of a delta-front sheet sand, or as part of an elongate interdeltaic beach-barrier island system, similar to that found today along the Atlantic, Texas and Georgia coasts" (Gibson, 1979).

A2b) Mist Mountain Formation

The "economically important" Mist Mountain formation, "comprises a thick succession of light to dark grey...interbedded siltstone, mudstone, sandstone and thin to thick seams of low- to high-volatile bituminous coal" (Gibson, 1977) deposited conformably upon the sheet wash Morrissey formation sandstone. The formation represents numerous upward coursening sequences culminating in the accumulation of peat swamps which were ultimately covered and preserved.

The Mist Mountain formation is found to average about 500 metres in thickness at both Line Creek and at Fording River (Gibson and Grieve, 1979). The 1983 drill program suggests at least a thickness of 500 metres on the Bingay Property.

The more resistant sandstone facies observed within the Mist Mountain Formation on the west side of the Greenhills Range were generally lenticular, cross-bedded channel deposits. These sands were siliceous in nature and, like the sandstone Morrissey formation,

weathered out as cliff-formers. Generally, these channel sandstones had an observed thickness up to ten (10) metres and appeared persistant over a length of up to 0.5 km in cross-section. These channel deposits, owing to their lenticularity, "generally cannot be used for correlation purposes on a regional or even a local basis" (Gibson, 1977).

Other finer grained, graded upward sandstone units typical of bay-fill type, deposits were observed to grade laterally into finer grained facies.

Coal seams in the Mist Mountain Formation have been mined since the 1800's from both open cut and underground operations. Today one hydraulic underground and 4 open pit, single-or multiple seam, mines actively recover large volumes of coal from the Mist Mountain formation. More than 50 distinct seams are recorded by Graham ranging in thickness from 0.12m to 5.5m in his northern Elk Valley area and it is known that more than 15 seams in excess of 0.5m are reported from Fording operations. A total of 30 seams containing 18 seams in excess of 1.0m thick, were penetrated during the drilling of the 3 Bingay Property holes.

At the nearby Greenhills operation of Fording 18 individual seams are mined to produce 3 metallurgical products varying in volatile content from low to high. "The coal seams generally increase in volatile matter from the bottom seam at 20% V.C.M. to 32% V.C.M. in the uppermost seam" (Gaspe) at Fording.

Although coal seams are randomly distributed throughout the Mist Mountain, the bottom half of the section generally appears to contain the better quality thicker seams as well as a bulk of the mineable reserves.

The Mist Mountain formation is a product of delta building processes and contains sedimentary features and relationships typical of "deltaic, interdeltaic and alluvial plain depositional environments" (Gibson). Hamblin and Walker suggest that plant material accumulated "in coastal swamps or on an alluvial plain", which is partially consistent with Gibson. In fact the Mist Mountain formation probably represents the seaward advance of numerous delta lobes into the then present Jura-Cretaceous seaway.

A2c) Elk Formation

Conformable with and grading into the underlying coal-bearing Mist Mountain formation is the 300+ metre thick "Elk Formation". This unit of course poorly sorted predominantly sandstones marks the upper delta alluvial plain advance of the Kootenay delta systems.

According to D. Grieve "strata of the Elk Formation are similar in most respects to those of the Mist Mountain formation", and further observed that "the presence of Elk Coal, an alginite-rich cannel coal, is used to distinguish the Elk Formation from the Mist Mountain".

Alginite "needle" coals were not found in the outcrop nor were they encountered in the core drilling suggesting that the Elk Formation should subcrop north of and near to drill site B.C. 83-3.

An alluvial plain depositional environment is suggested by structures commonly found in outcrop such as cross-bedding, both festoon and planar, as well as the presence of conglomeratic sandstones. The course grained nature and high sandstone to siltstone ratio further suggest an alluvial plain mode of deposition (Gibson).

B. LOCAL STRATIGRAPHY (Bingay Creek Property)

Stratigraphic lithofacies representative of the upper Fernie Group and lower Kootenay Group are found underlying the Bingay Creek Property.

"Passage beds" of the Fernie, now named the "Weary Ridge Member of the Morrissey Formation", consisting of soft, light greenish grey planar bedded sandstones and silty sandstones can be found outcropping both in Bingay Creek, 90m east of the Bingay Creek bridge and again from survey stations 4 through 6 on the east side of the access road immediately north of Bingay Creek (see Geology Map). Only one additional outcrop of "passage bed" sandstone was found. At survey station #337, on coal licence 7471, approximately 150m east of the Forestry Access Road a 'passage bed' outcrop of easily weathered dirty brownish grey planar bedded sandstone was found contacting the overlying resistant massive trough cross-bedded Moose Mtn. sandstone. At this location only did the two units marking the marine transition appear in contact, in this case by virtue of the fact that the resistant Moose Mtn. had preserved the underlying Weary Ridge 'Passage beds' from glacial influences.

The single most readily mappable continuous unit on the property is the Moose Mtn. Member sandstone. Its light colour, massive, resistant character and trough cross-bedding characterize this facies and distinguish it from sands of the overlying Mist Mountain formation. Sands of both units stand out in relief but the Moose Mtn. Member is everywhere harder, trough cross-bedded, more siliceous and consequently lighter grey in colour than Mist Mountain sandstone units.

Numerous outcrops of Morrissey Formation, Weary Ridge and Moose Mtn. Member sandstones were exposed in the building of Bingay Creek Access Road by Elk Valley Forest Products. When plotted these outcrops define accurately the synclinal structure associated with the property.

Although a complete Morrissey section was not observed at any one location, the Morrissey appeared to measure an average 40 to 50m thick.

Conformably overlying the basal Morrissey were facies of interbedded mudstone, siltstone, sandstones and coal of the Mist Mountain formation. Outcrop exposure was limited to the leading and trailing edges of "Bingay Hill" which appears like an island in the surrounding thick glacial gravel deposits common to the floor of the Elk Valley.

A total of 435 metres of Mist Mountain formation sediment have been measured on this hill from the top of the Morrissey to the highest traceable coal seam. Within this section were found three (3) prominant, traceable but discontinuous sandstone units that displayed distanct cross-bedding typical of channel deposits. These channel sandstones up to 12m in thickness served as convenient local markers and greatly assisted in the structural interpretation of the property. All three are readily identified on aerial photos as either the cliff forming members in the nose region of the "Bingay syncline" or as exposed ridges with little or no cover on the limbs. The mappable extent of these channel deposits can be seen on the enclosed geology map.

Less resistant facies were difficult to locate in outcrop except where preserved beneath ledges or adjacent to the previously mentioned channel sandstones. In general coal seams were located beneath sand bodies. Pits dug by early investigators were located primarily by tracing the toe region of sandstone ridges or by systematically traversing the area across regional strike. Coals appear distributed randomly throughout the mappable section. Eight (8) individually mappable seams of thicknesses varying from less than 1.0m to greater than 4.2m were traced from pit to pit along strike and plotted on the geology map.

A more complete stratigraphic interpretation of the Mist Mountain formation has been afforded by the completion of drill holes #1, #2 and #3. Approximately 500 metres of overlapping section was drilled revealing seven (7) readily distinguishable lithostraigraphic units. In ascending stratigraphic order from the Moose Mountain - Mist Mountain contact these units are the following:

Unit 1 - Bay-fill sequence 1 consisting of 8 distinct coursening upward bay-fill sequences capped by thin to medium (0.25 to

5.5m) coal seams. This unit is approximately 110 metres thick and contains coal seams randomly, but rhythmically distributed throughout.

Unit 2 - Coal Zone 1 - capping unit 1 bay-fill is a widely distributed coal zone 15 metres thick. This "zone" contains two clean coal seams separated by a siltstone split approximately 1.0 metres thick.

Unit 3 - Bay Fill sequence 2 consisting of a 45 metre thick repetative mudstone-siltstone sequence and very thin impure coal seams up to 0.40m thick.

Unit 3a - Channel deposit 1 consisting of medium to course grained cross-bedded sandstone sequences containing rip-up clasts and coal spar. Found in drill holes #1 and #2 this unit appears to have scoured up to 15 metres down into Bay fill sequence 2. This channel deposit can be traced on surface for 650 metres along strike and generally averages 40 metres thick. Laterally this channel is not persistant as it is not present in DDH #3.

Unit 4 - Coal Zone 2 is represented by a widely distributed coal zone containing up to 4 seams found capping either Bay Fill sequence 2 or channel deposit 1. The zone averages 18 metres in thickness and contains up to 14.1 metres of coal in DDH #1 but averages a total 9.5 metres in the three (3) holes.

Unit 5 - Bay Fill sequence 3 consisting of ripple laminated siltstones and coaly mudstones. This unit in DDH #3 is over 70 metres thick but in DDH's #1 and #2 the unit averages 38 metres thick as a result of scouring by unit 5a.

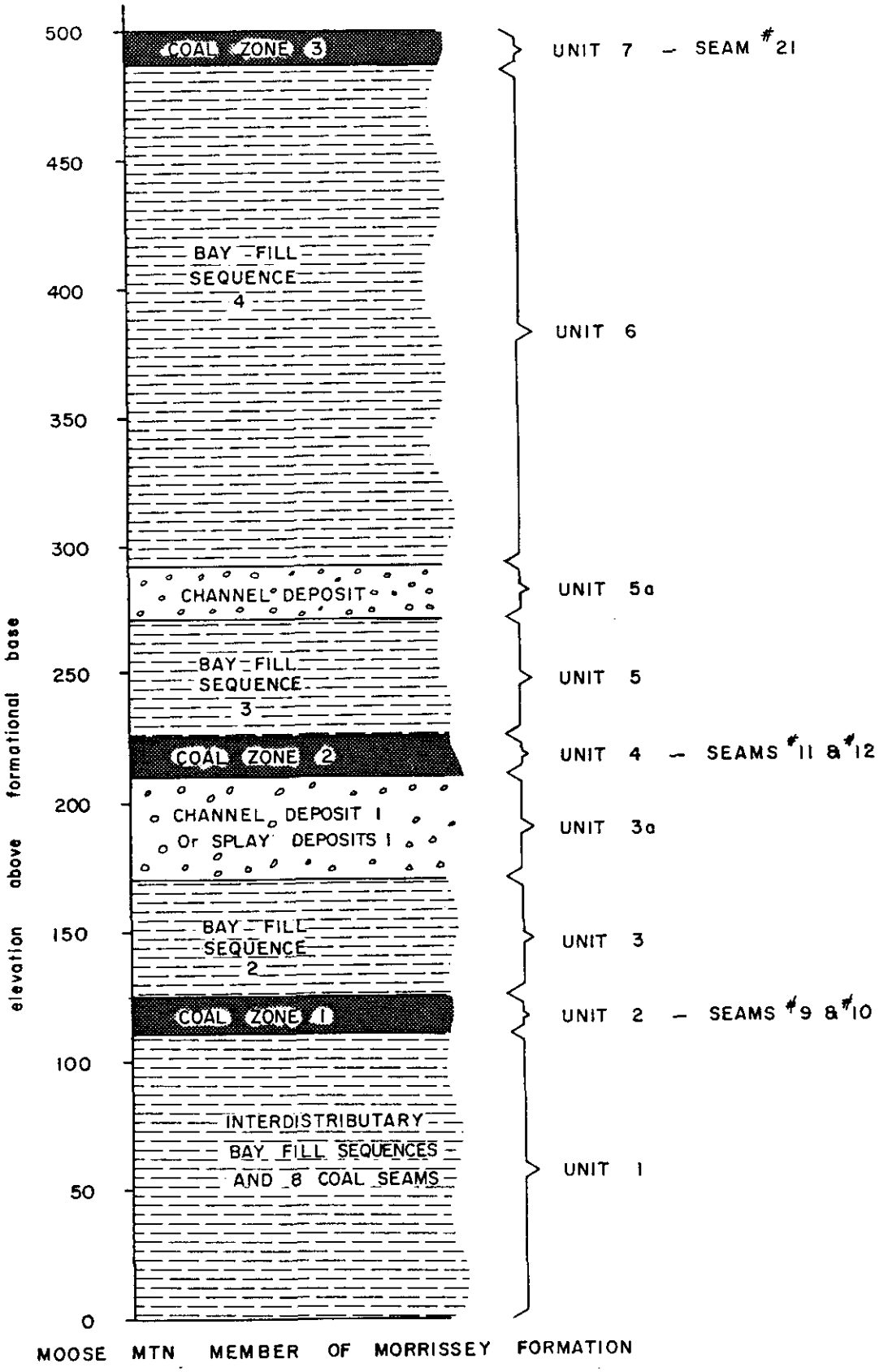
Unit 5a - Channel deposit 2 consisting of large scale cross bedded point bar sandstones and course grained sandstones containing rip-up clasts in a unit approximately 20 metres thick.

Unit 6 - Bay Fill sequence 4 consisting of 8 cycles of coal seam capped bay fill siltstone/mudstones in a unit approximately 220 to 230 metres thick. Within unit 6 are found eight (8) individual coal seams from 0.42 to 4.92 metres thick. The seams are randomly but rhythmically distributed approximately every 15 to 20 metres throughout the unit.

Unit 7 - Coal Zone 3 consists of a coal seam 10.2 metres thick that was cut in DDH #3. The hole crossed the tightly folded syncline axis thereby cutting this seam twice. In core the coal, although crushed, was relatively clean and contained only one thin split.

FIGURE – 5

DIAGRAMMATIC DEPOSITIONAL SEQUENCES
MIST MOUNTAIN FORMATION



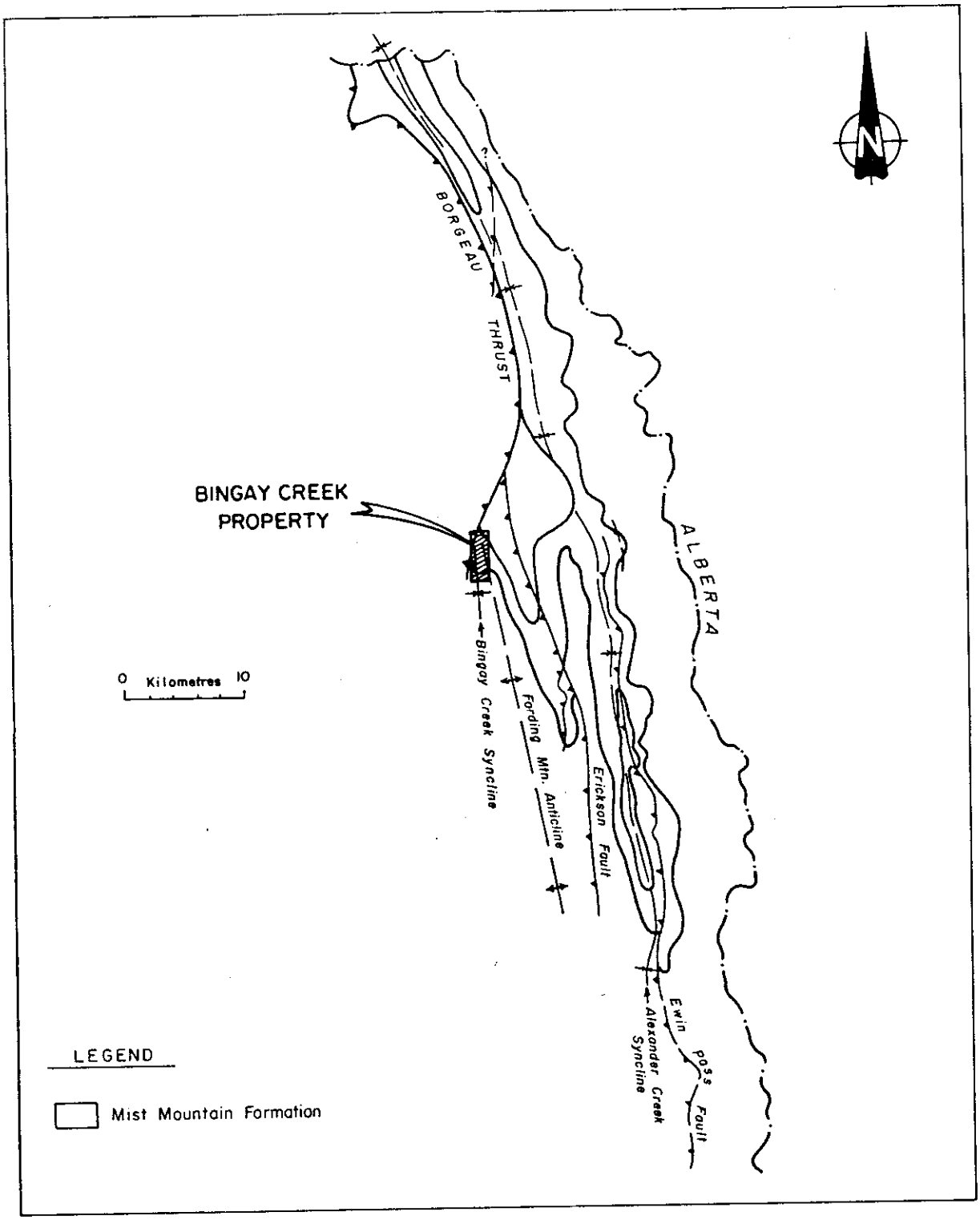


FIGURE – 6

REGIONAL STRUCTURAL STYLE
ELK VALLEY COALFIELD
(After Pearson And Grieve, 1979)

Units 1 through 7 cumulatively represent upwards of 500 metres of Mist Mountain formation lithostratigraphy. Additional units will likely be added to the section when drilling progresses in a northeast direction. (Drill logs, both descriptive and graphic, and electric logs can be found in the Appendices, N.B. sequenced numbers to the right of the graphic log correspond to the line numbers on the far left of the computer printed litho log).

STRUCTURAL GEOLOGY

The structural style of the Bingay Creek property is dominated by a north-east plunging assymetric syncline, the axial trace of which parallels the adjacent regional Fording Mountain Anticline. The axial trace of the Bingay Creek syncline gradually changes azimuth from near north-south on the southern end of licence 7299 to north-east in coal licence 7471. Plunge of the syncline in the axial nose region at station #11 was measured at 42^{o} north. It is assumed that the plunge flattens in the northerly down plunge direction. This assumption is based on the observation that the plunge of other syncline-anticline pairs in the area tend to flatten away from the nose.

Limb dips on the syncline average 43^{o} north-west on the west dipping limb and from 64^{o} to near vertical on the east dipping limb. Bedding dips appeared to steepen with increased proximity to the trace of the regional Bourgeau Thrust. The syncline is undoubtedly genetically related to tectonics that generated the thrust.

In the vicinity of drill hole #3, beds have been tightly folded with the included coal seams highly sheared and possibly structurally thickened.

A regional structural diagram #5 illustrates the relationship of the Bingay Creek syncline to the bracketing Bourgeau Thrust on the west and the Fording Mountain Anticline on the east. In fact the west dipping limb of the Bingay syncline corresponds with the west dipping limb of the Fording Mountain Anticline. It is assumed that the Bingay syncline persists for some distance north beneath the floor of the Elk Valley, however supporting evidence could not be found in outcrop within the property boundary but shallow dips and axial plunge angles were found in the Elk River approximately 5 km. north of Bingay Creek.

COAL SEAM GEOLOGY

In excess of 34 coal seams with thickness varying from 0.2 metres to 10.2 metres net coal were located in the approximately 500 metres of Mist Mountain formation tested by drilling. Of these coal

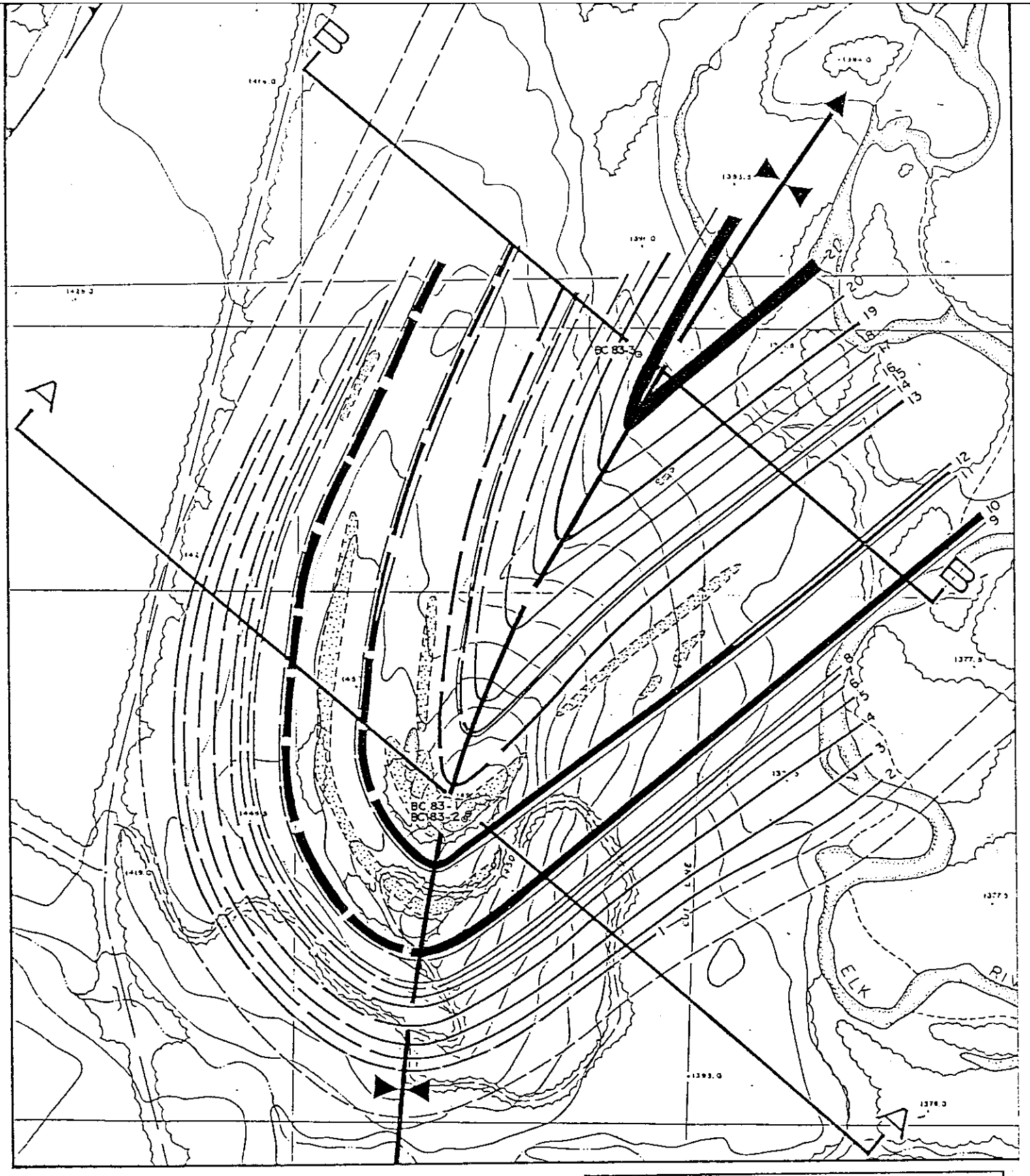
seams 21 were deemed sufficiently thick and laterally persistant as to be assigned numbers. Core samples of a size sufficient for analysis were obtained from 18 of these seams.

Seams numbered 1 through 8 were cored in DDH #1 only, numbers 8 through 12 were cored in all three holes and coal seams numbered 13 through 21 were cored in hole #3 only. The following table illustrates average seam thicknesses and the relative average interburden.

TABLE #1

COAL SEAM THICKNESS AND SEAM INTERBURDEN

	Seam #		Average Seam Thickness	Average Interburden
	21	Coal Zone 3	10.2m	
				17.0m
	20		2.22m	
				16.5m
	19		4.92m	
				34.0m
	17		2.05m	
				28.0m
	16		2.50m	
				4.0m
	15		3.13m	
				0.7m
Mist	14		1.65m	
				15.0m
Mountain	13		4.02m	
				73.8m
Formation	12		7.48m	
		Coal Zone 2		3.8m
	11		2.07m	
				81.0m
	10		9.56m	
		Coal Zone 1		1.0m
	9		2.49m	
				20.0m
	8		2.11m	
				4.3m
	7		1.57m	
				4.0m
	6		1.19m	
				14.5m
	4		3.04m	
				13.0m
	3		1.64m	
				24.5m
	2		5.44m	
				15.0m
	Morrissey Formation Basal Sandstone			



UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER, BRITISH COLUMBIA

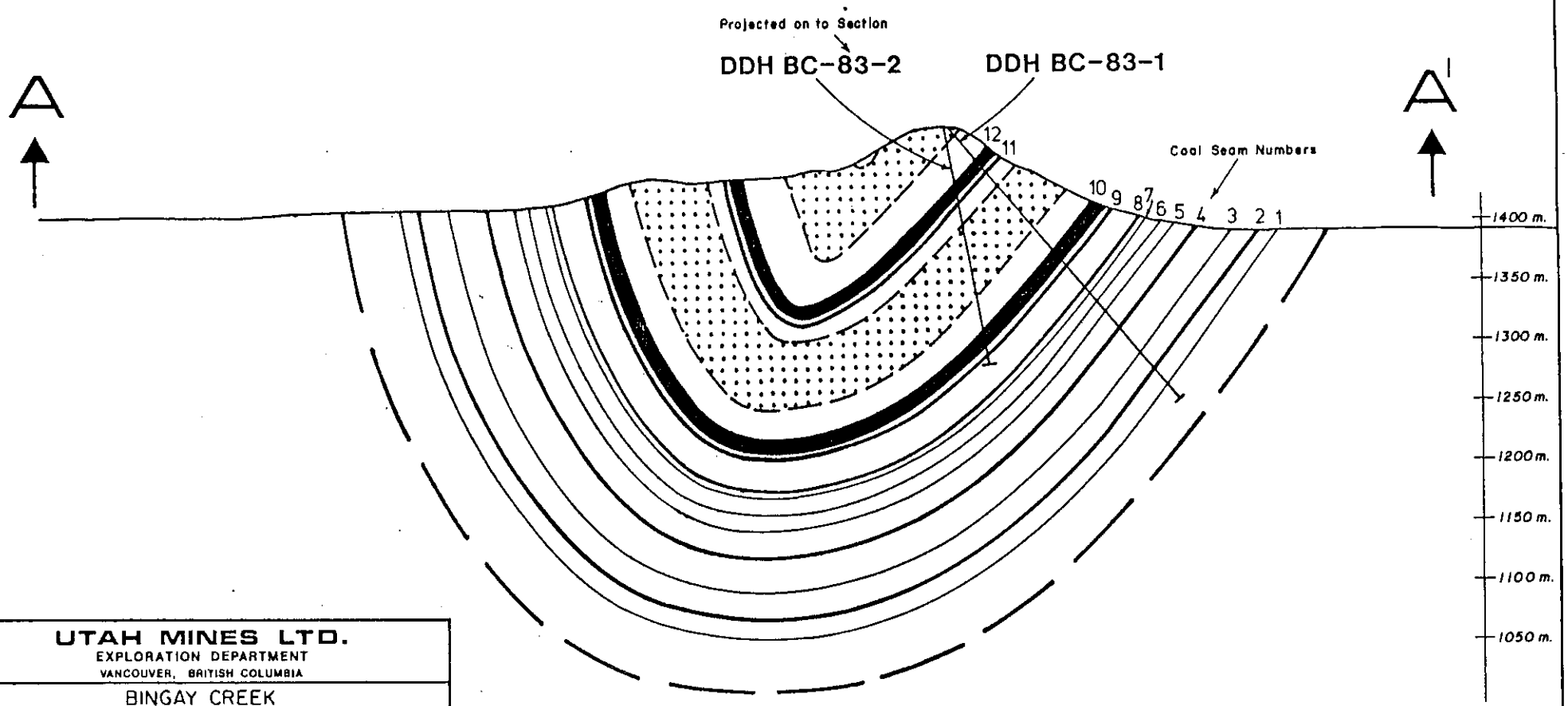
BINGAY CREEK

CROSS SECTIONS AND
SEAM SUBCROP LOCATIONS

SCALE - Approx 1:9000

NTS Ref. : 82 / J 2	REVISIONS
Work by : R.B. Anderson	Work by :
Drawn by : T. Drews	Drawn by :
Date : May 1984	Date :

FIGURE 7



UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER, BRITISH COLUMBIA

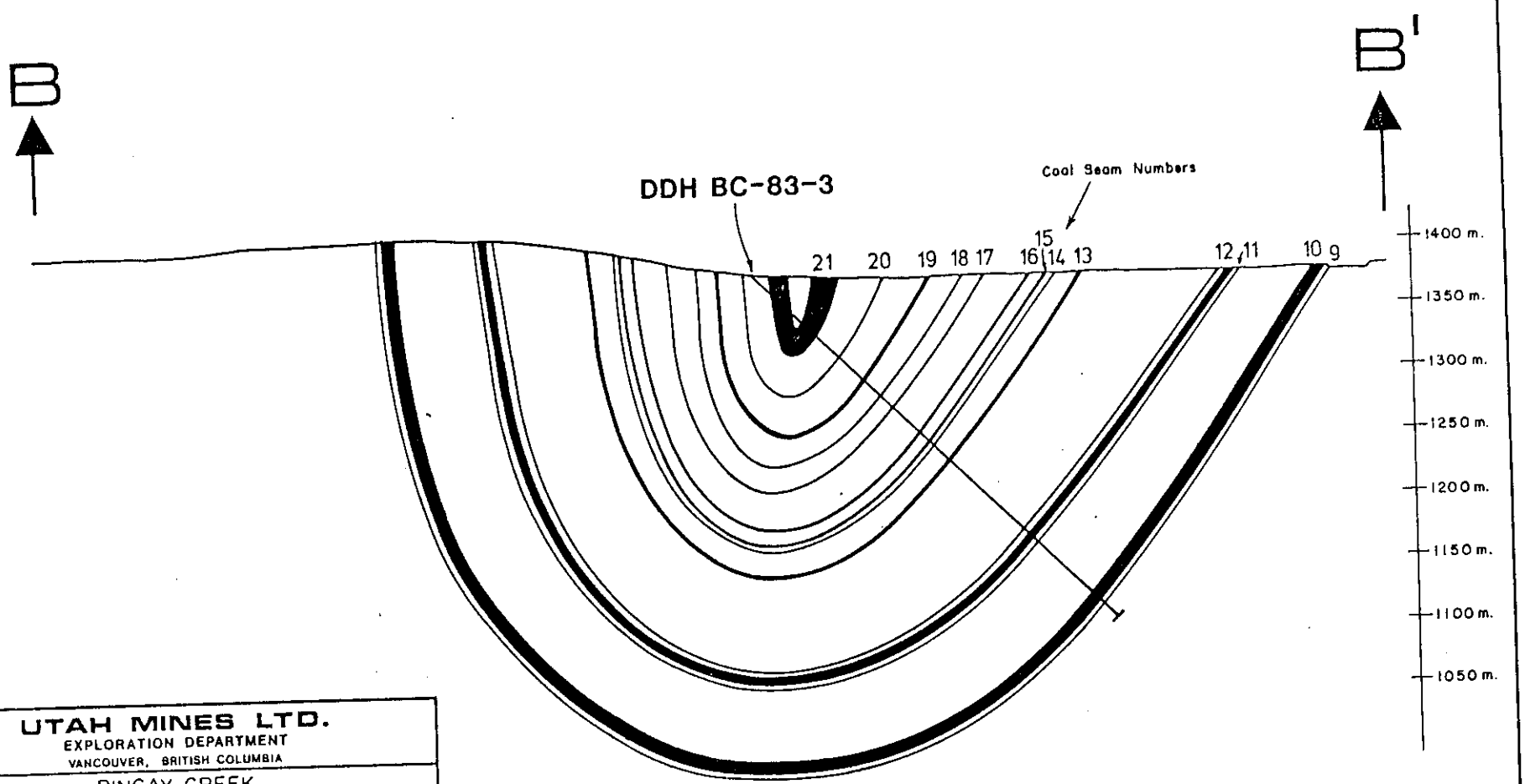
BINGAY CREEK

SECTION A – A'
THROUGH DDH BC 83-1
(AZIMITH 130°)

SCALE 1:5000

NTS Ref.: 82 / J2	REVISIONS
Work by : R.B. Anderson	Work by :
Drawn by: T. Drewe	Drawn by:
Date : May 1984	Date :

FIGURE 8



UTAH MINES LTD. EXPLORATION DEPARTMENT VANCOUVER, BRITISH COLUMBIA	
BINGAY CREEK	
SECTION B – B' THROUGH DDH BC 83–3 (AZIMITH 130°)	
SCALE 1:5000	
NTS Ref.: 82 / J 2	REVISIONS'
Work by : R.B. Anderson	Work by :
Drawn by: T. Drews	Drawn by:
Date : May 1984	Date :

FIGURE 9

Previously under the section detailing lithostratigraphic units of the Mist Mountain stratigraphy, 3 "coal zones" or major coal accumulations were reported as being recognizabley distinct, and laterally continuous. In ascending order these zones correspond to the following numbered coal seams.

Coal Zone 3 - coal seam #21
Coal Zone 2 - coal seams #11 and #12
Coal Zone 1 - coal seams #9 and #10

Hamblin and Walker suggest that the Kootenay Group coals accumulated along a storm dominated shoreline. A review of the cored Mist Mountain stratigraphy would however suggest the coals accumulated on a lower delta plain in a depositional environmental not too unlike the present Mississippi delta. Main feeder channels appear to have migrated back and forth across vast interdistributary bays that were periodically flooded when dewatering processis of compaction exceeded peat swamp accumulation. Repetative rejuvenations followed when channel levies broke and refilled the bay with fine silt and mud. No evidence of barrier bar systems were encountered which would support Hamblin and Walker.

COAL SEAM CORRELATION

Coal seam correlation for the Bingay Creek Property is, at this point, a straight forward situation greatly facilitated by 3 continuous to semi-continuous marker horizons or units; the Morrissey Formation and channel sandstone bodies.

Principal to the exercise of seam correlation is the presence of the readily identifiable Moose Mountain member of the Morrissey Formation. As mentioned in the section on regional geology this unit is found at the base of the Mist Mountain coal-bearing formation throughout the Elk Valley Coalfield. Knowing the location of the readily identifiable Moose Mountain member, other units can be stratigraphically correlated one to the other.

Coal seam correlation is also facilitated by the major channel deposits that act as marker horizons and by the consistant thickness and physical characteristics of the coal seams themselves. Analytical results further confirmed the correlation between coal seams #9, #10, #11 and #12. A diagramatic correlation can be seen on diagram #8 (Coal Rank Distribution) on page 26.

COAL SEAM QUALITY

Samples from 18 coal seams were submitted to Utah International laboratory in Sunnyvale, California for analysis. The results of this work are included in Appendix "E" at the back.

The following tests were run on the samples:

1. Head Analysis
2. Washability tests including F.S.I.
3. Ash Analysis consisting of (a) ash fusion temperatures
   (b) ultimate analysis
   (c) sulphur forms
   (d) water soluable alkalies
   (e) mineral analysis of ash
4. Hardgrove grindability

Bingay Creek coals are ranked according to ASTM standards as medium to high volatile A Bituminous (see Coal Rank Distribution chart). A rank change from medium volatile to high volatile appears to be depth and not seam dependant, taking place at approximately the 150 metre level of cover (see Table #2 - Parr-Formula Coal Rank Classification by Seam).

Analyses for the 29 core samples representing 18 coal seams have been averaged and weighted by sample thickness and are presented on Table #3. The average weighted results of washability tests performed appear on Tables 4, 5 and 6.

Additional drilling and bulk sampling will be required before an entirely representative quality of Bingay Creek coal can be determined. The results available and presented here are however sufficient to categorize the coals as low sulphur Medium to High Volatile A Bituminous coking coals.

FIGURE 10

BINGAY CREEK PROPERTY
COAL RANK DISTRIBUTION

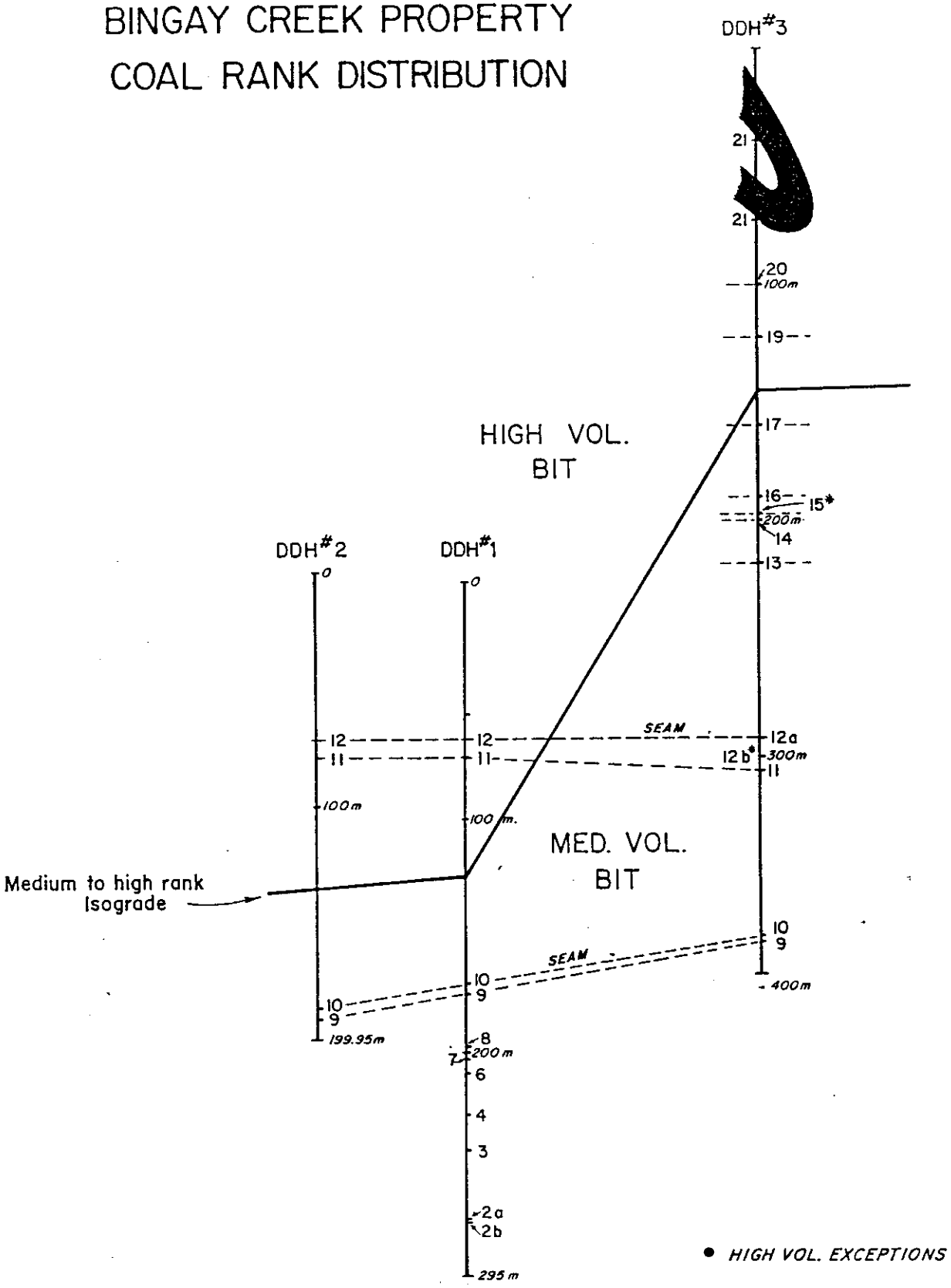


TABLE 2

COAL RANK CLASSIFICATION
(Mm-free Basis)

SEAM	F.C.	Av.F.C.	V.M.	Av.V.M.	BTU	(Av.BTU)	RANK
21	66.24		33.76	34.02	14904		
	65.72		34.28		14883		
		65.98		34.02		14893	HiVol.A.Bit
20	68.10		31.90		14790		HiVol.A.Bit
19	68.97		31.03		14957		HiVol.A.Bit
17	70.09		29.91		14987		Med.Vol.Bit
16	70.89		29.11		15089		Med.Vol.Bit
15	67.95		32.05		15167		HiVol.A.Bit
14	70.09		29.91		15091		Med.Vol.Bit
13	69.01		30.99		15170		Med.Vol.Bit
12a	69.76		30.24		15213		Med.Vol.Bit
12b	67.39		32.61		14988		HiVol.A.Bit
12	66.10		33.90		15030		
	66.45		33.54		15043		
		66.27		33.72		15036	HiVol.A.Bit
11	67.3		32.7		15073		
	67.34		32.66		14955		HiVol.A.Bit
	*72.37		27.63		14955		Med.Vol.Bit
		69.01		30.99		15007	Med.Vol.Bit
10	*69.98		30.02		15099		Med.Vol.Bit
	*69.89		30.11		15030		Med.Vol.Bit
	*72.66		27.34		15195		
		70.84		29.16		15108	Med.Vol.Bit
9	69.17		30.83		14643		
	69.05		30.95		15518		
	73.55		26.45		14994		
		70.59		29.41		15052	Med.Vol.Bit
8	69.76		30.24		15064		Med.Vol.Bit
7	69.29		30.71		14903		Med.Vol.Bit
6	67.98		32.02		15270		HiVol.A.Bit
4	71.76		28.24		15268		Med.Vol.Bit
3	70.10		29.90		15311		Med.Vol.Bit
2	69.04		30.96		15460		Med.Vol.Bit

TABLE 3

AVERAGE QUALITY OF BINGAY CREEK COALS
(based on 29 samples from 18 seams)

	Head Analysis (Air Dried)	Float Products (Moisture Free)		
		1.3	1.5	1.8
H_2O	1.25	-	-	-
Ash	25.01	3.14	8.07	11.74
Sulphur	0.48	0.63	0.49	0.55
Volatiles	24.44	30.5	28.2	27.6
Fixed Carbon	52.2	66.3	63.4	60.8
BTU	11112	14801	13977	13372
FSI	4 1/2	8 1/2	-	-
Yield	-	28.78	70.34	80.06
Fuel Ratio	-	2.14	2.17	2.20

H.G.I. - 60

Ash Analysis

Water Soluable Alkalies
% K_2O - less than 0.01%
% Na_2O - less than 0.01%
% Cl - less than 0.01%

Base:Acid Ratio 0.14

Ash Fusion temperatures (Reducing)
Softening 2112 - 2700+°F
Fluid 2301 - 2700+°F

(N.B. 22 of 28 samples at upper limits)

TABLE 4

COAL ANALYSIS AT 1.3 SPECIFIC GRAVITY

Coal Seam #	Thickness (meters)	Recovery	Ash	Sulphur	Volatile Matter	Fixed Carbon	BTU	FSI
21	10.20	55.49	2.34	0.45	33.9	63.7	14818	6 1/2
20	2.22	47.50	2.77	0.79	30.2	66.9	14703	8
19	4.92	34.14	3.93	0.94	29.0	67.0	14535	8
17	2.05	52.54	2.29	0.82	29.7	68.0	14989	8 1/2
16	2.50	14.32	3.69	0.81	28.9	67.4	14718	8 1/2
15	3.13	18.09	2.97	0.97	28.6	68.5	14845	8 1/2
14	1.65	32.32	2.89	0.79	30.4	66.7	14870	8 1/2
13	4.02	17.27	3.80	0.90	29.9	66.2	14701	8 1/2
12	7.48	24.09	3.61	0.48	31.1	66.3	14794	8
11	2.07	11.08	3.58	0.83	30.1	66.3	14762	8 1/2
10	9.56	25.42	2.91	0.33	30.1	67.0	14976	7
9	2.49	21.77	3.06	0.52	29.5	67.4	14953	8 1/2
8	2.11	19.71	2.59	0.68	30.7	66.7	15049	9
7	1.57	16.22	2.51	0.56	30.3	67.2	15060	8 1/2
6	1.19	47.84	2.85	0.87	33.2	63.9	14989	8 1/2
4	3.04	28.32	3.01	0.61	29.1	67.9	14929	8 1/2
3	1.64	30.28	2.83	0.78	29.6	67.5	15010	8 1/2
2	5.44	14.09	5.14	0.71	30.1	64.7	14357	9
Weighted Averages		29.78	3.14	0.63	30.5	66.3	14801	8 1/2

TABLE 5

COAL ANALYSIS AT 1.5 SPECIFIC GRAVITY

Coal Seam #	Thickness (meters)	Recovery	Ash	Sulphur	Volatile Matter	Fixed Carbon	BTU
21	10.20	83.86	4.78	0.44	32.5	62.7	14384
20	2.22	80.85	5.36	0.70	29.5	65.1	14241
19	4.92	69.09	7.46	0.84	28.4	64.1	13921
17	2.05	96.81	5.06	0.74	27.9	66.9	14426
16	2.5	60.33	10.16	0.67	26.6	63.2	13663
15	3.13	59.71	9.37	0.85	26.3	64.3	13758
14	1.65	75.77	7.27	0.68	27.3	65.4	14119
13	4.02	53.16	9.26	0.76	27.6	63.1	13805
12	7.48	70.67	9.48	0.40	28.4	63.1	13797
11*	2.07	55.23	12.2*	0.64	27.2	60.6	13309
10	9.56	83.38	8.09	0.27	26.8	65.1	14049
9	2.49	71.18	8.24	0.43	26.6	65.2	14020
8	2.11	68.02	9.0	0.59	27.6	53.4	13952
7	1.57	73.67	8.03	0.44	26.4	65.5	14034
6	1.19	82.76	6.91	0.78	30.6	62.4	14294
4	3.04	75.53	7.73	0.52	26.4	65.8	14116
3	1.64	60.03	6.45	0.71	27.6	65.9	14395
2*	5.44	33.2	11.73*	0.59	27.5	60.7	13425
Weighted Averages		70.34	8.07	0.49	28.2	63.43	13977

* High Ash Seams

TABLE 6

COAL ANALYSIS AT 1.8 SPECIFIC GRAVITY

Coal Seam #	Thickness (meters)	Recovery	Ash	Sulphur	Volatile Matter	Fixed Carbon	BTU
21	10.20	85.82	5.64	0.44	32.2	61.8	14226
20	2.22	86.55	7.20	0.69	29.3	63.5	13926
19	4.92	77.35	10.60	0.84	27.9	61.5	13397
17	2.05	98.59	5.62	0.74	27.8	66.5	14329
16	2.5	66.16	12.56	0.65	26.2	61.2	13266
15	3.13	72.36	14.06	0.85	25.6	60.3	12981
14	1.65	83.32	9.59	0.68	26.7	63.6	13739
13	4.02	65.72	14.40	0.82	26.3	59.3	12928
12	7.48	81.31	13.66	0.4	27.4	58.8	12787
11*	2.07	84.99	20.17*	0.57	25.4	54.3	11829
10	9.56	91.54	10.65	0.27	26.3	63.4	13612
9	2.49	83.09	12.06	0.43	25.8	61.7	13393
8	2.11	82.74	14.16	0.56	26.6	59.2	13072
7	1.57	83.96	10.94	0.43	26.2	62.8	13522
6	1.19	91.50	9.68	0.79	29.7	60.6	13817
4	3.04	86.22	11.18	0.50	25.7	63.1	13539
3	1.64	69.88	10.88	0.72	26.7	62.4	13627
2*	5.44	53.02	18.36*	0.60	26.5	55.0	12431
Weighted Averages		80.06	11.74	0.55	27.6	60.8	13372

* High Ash Coals

CONCLUSIONS AND RECOMMENDATIONS

Field mapping and core drilling have confirmed the existence of a section of Mist Mountain coal-bearing stratigraphy, at least 500 metres thick, underlies the Bingay Creek property. This section is now known to contain up to 21 laterally continuous coal seams distributed regularly throughout. Seams attain true thicknesses as great as 10.2 metres with the majority averaging between 2.0 and 4.0 metres thick. These three "Coal Zone" units attain net coal seam thicknesses of:

	Seam #'s	Net Coal	Gross Coal
a.)	Coal Zone 1 - Seams 9 & 10	- 12.1m	- 13.2m
b.)	Coal Zone 2 - Seams 11 & 12	- 9.6m	- 14.4m
c.)	Coal Zone 3 - Seam 21	- 10.2m	- 10.2m

Additional work in the form of diamond drilling and seam aditing are recommended to more fully evaluate the overall coal quality, reserve potential and possible mineability. Environmental base line studies should also be initiated at this time to provide long term data support prior to the preparation of an Environmental Impact Statement.

COST STATEMENT

ON PROPERTY COSTS

1.	Operators Fees, Salaries and Wages (Professional and Technical)	$ 9,403.50
2.	Contractors and Consultants:	
	- Tonto Drilling Ltd. (Diamond Drilling)	$ 87,650.41
	- R.A. Johnson (Road Construction)	$ 12,082.00
	- Coalex Ltd. (Water Truck)	$ 16,595.00
	- Andy Latka (Slashing and Site Preparation)	$ 2,427.97
	- T. Dennie Trucking Ltd. (Road Grading)	$ 975.00
	- Roke Oil Enterprises Ltd. (Downhole Logging)	$ 2,120.60
	- Davies Exploration Logging Ltd. (Downhole Logging)	$ 1,975.00
3.	Food, Accomodation, etc.	$ 2,497.40
4.	Sampling Testing and Analyses (Laboratory analysis of coal samples performed by Utah International Inc. Minerals Laboratory, Sunnyvale, California.	$ 22,336.60
5.	Supplies, Services and Materials	$ 3,445.11
6.	Communications	$ 858.83
7.	Transportation:	
	- Kiki and Sons Ltd. (Cat and Backhoe Transportation)	$ 1,312.12
	- Vehicle Fuel, Repairs and Maintenance	$ 2,003.87
8.	Reclamation	$ 1,000.00
	Total On Property Costs	$166,683.41

OFF PROPERTY COSTS

1.	Technical and Feasibility Studies	$ 16,449.12
2.	Logistics and Field Support	$ 5,249.44
3.	Supplies and Services	$ 869.07
	Total Off Property Costs	$ 22,567.63
	TOTAL PROJECT COSTS	$189,251.04

STATEMENT OF QUALIFICATIONS

I, Robert Brent Anderson, of 6532 Cypress Street, Vancouver, British Columbia, do hereby certify that:

I am a graduate of the University of British Columbia, with a Bachelor of Science Degree in Geology, 1970.

Since graduation I have been engaged in Minerals and Coal exploration for Utah Mines Ltd. in Alaska, Alberta, British Columbia, the Yukon, Northwest Territories and Montana.

I am a Fellow of the Geological Association of Canada and an Active Member of the American Association of Petroleum Geologists.

Vancouver, B.C.
June, 1984

R.B. Anderson
District Geologist, Coal

SELECTED BIBLIOGRAPHY

Gardner, S.L. (1982) A Geologic Overview of the Bingay Creek Coal Property, Elk River Valley.

Gaspe, D.L. (1983) Eagle Mountain Development, Fording River Operations - C.I.M. Paper No. 6 presented at Smithers, B.C. October 1983.

Gibson, D.W. (1977) Sedimentary facies in the Jura-Cretaceous Kootenay Formation, Crowsnest Pass area, southwestern Alberta and southeastern British Columbia; Bull. Can. Petrol. Geol., ssspecial guidebook issue, Waterton Lakes.

(1979) Morrissey and Mist Mountain Formations. Newly defined lithostratigraphic units of the Jura-Cretaceous Kootenay Group, Alberta and British Columbia; Bull. Can. Petrol. Geol. (Volume 27, No. 2) pp. 183 - 208.

Graham, P.G. (1977) Geological investigations of the Coal Bearing Kootenay Formation in the subsurface of the Upper Elk River Valley, British Columbia; Report of Activities, Part B, Geol. Surv. Can., Paper 77-1B.

Grieve, D.A. (1981) Elk Valley Coalfield, B.C. Ministry of Energy, Mines and Pet. Res., Geological Fieldwork, 1980. Paper 1981-1, pp. 70 - 72.

(1982) Line Creek and Crown Mountain Areas, Elk Valley Coalfield, B.C. Ministry of Energy Mines and Pet. Res., Geological Fieldwork, 1982, Paper 1982-1, pp. 21 - 26.

Hamblin, A.P. & Walker, R.G. (1979) Storm dominated shallow marine deposits: the Fernie-Kootenay (Jurassic) transition, southern Rocky Mountains; Can. Jour. Earth Scil, Vol. 16, 1979; pp. 1673 - 1690.

Holland, S.S. (1964) Landforms of British Columbia. A Physiographic Outline; British Columbia Dept. of Mines and Pet. Res., Bull. No. 48.

Newmarch, C.B. (1953) Geology of the Crowsnest Coal Basin with Special Reference to The Fernie Area, British Columbia Department of Mines, Bull No. 33.

Pearson, D.E. & Grieve, D.A. (1980a) Elk Valley Coalfield, B.C. Ministry of Energy mines and Pet. Res., Geological Fieldwork, 1979, Paper 1980-1, pp. 91 - 96.

(1980b) The quality of Western Canadian Coking Coal, The Can. Mining and Metal Bull. January 1980.

(1980c) Geology and Rank Distribution of the Elk Valley Coalfield, Southwestern British Columbia, Geol. Assoc. Can., Annual Meeting, Halifax, May 1980.

APPENDIX A

DRILL COMPLETION REPORT

BINGAY CREEK Prospect

Hole No. DDH BC-83-1

Location: 5,562,388m N x 644,219m E

Gr. Elev.: 1495m

Province B.C.

Surface Owner CROWN C.L. Option No. 7299

Spudded Nov. 24, 1983 Completed Dec. 1, 1983

Depth: 295.35m Air to _____ Water (Mud) to 295.35m

Hole Size: HQ Bits: Surface Tricone (13.34cm)

Main Hole HQ (9.60cm)

Cored: (Yes) (No); intervals 0m to 295.35m (wireline, convention)

Core Head: (HQ), I.D. 6.35cm, O.D. 9.60cm, Mfgr. Longyear

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

Mfgr. Comprobe, Inc.

Logging Co. Utah

Chemicals: Kwik-Thik, Alcomer, Kwik-Seal, Kwik-Trol

Lost Circulation at depth(s) 3.05m; Regained (Yes) (No)

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

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

Casing: Depth 3.05m; Diameter 11.43cm Recovered (Yes) (No)

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

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

Invoice Number for above

Contractor: Name & Address Tonto Drilling Ltd.

Samples and Core Description by: R.B. Anderson & D.N. Duncan

Report Prepared by: D.N. Duncan Date Jan.12, 1984

Comments: Hole drilled at azimuth = 130° Angle = -50°(from horizontal)

DRILL COMPLETION REPORT

BINGAY CREEK Prospect

Hole No. DDH BC-83-2

Location: 5,562,384m N x 644,221m E

Gr. Elev.: 1495m

Province B.C. C.L.

Surface Owner CROWN ~~Option~~ No. 7299

Spudded Dec. 2, 1983 Completed Dec. 6, 1983

Depth: 199.95m Air to _____ Water (Mud) to 199.95m

Hole Size: HQ Bits: Surface Tricone (13.34cm)

Main Hole HQ (9.60cm)

Cored: (Yes) (No); intervals 0m to 199.95m (wireline, convention)

Core Head: (HQ), I.D. 6.35cm, O.D. 9.60cm, Mfgr. Longyear

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

Mfgr. Gearhart-Owens

Logging Co. Roke Oil Enterprises Inc.

Chemicals: Kwik-Thik, Kwik-Trol, Kwik-Seal, Alcomer

Lost Circulation at depth(s) 3.05m; Regained (Yes) (No)

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

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

Casing: Depth 3.05m; Diameter 11.43cm Recovered (Yes) (No)

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

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

Invoice Number for above

Contractor: Name & Address Tonto Drilling Ltd.

Samples and Core Description by: R.B. Anderson & D.N. Duncan

Report Prepared by: D.N. Duncan Date Jan. 12, 1984

Comments: Hole drilled at azimuth = 175° Angle = -80° (from horizontal)

WELL COMPLETION REPORT

BINGAY CREEK Prospect

Hole No. DDH BC-83-3

Location: 5,562,970m N x 644,430m E

Gr. Elev.: 1388m

Province B.C.

Surface Owner CROWN C.L. Option No. 7299

Spudded Dec. 7, 1983 Completed Dec. 16, 1983

Depth: 394.41m Air to _____ Water (Mud) to 394.41m

Hole Size: HQ Bits: Surface Tricone (13.34cm)

Main Hole HQ (9.60cm)

Cored: (Yes) (No); intervals 0m to 394.41m (wireline, convention)

Core Head: (HQ), I.D. 6.35cm , O.D. 9.60cm , Mfgr. Longyear

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

Mfgr. Comprobe Inc.

Logging Co. Davies Exploration Logging Ltd.

Chemicals: Kwik-Thik, Kwik-Trol, Kwik-Seal, Alcomer

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

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

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

Casing: Depth 6.10m ; Diameter 11.43cm Recovered (Yes) (No)

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

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

Invoice Number for above

Contractor: Name & Address Tonto Drilling Ltd.

Samples and Core Description by: R.B. Anderson & D.N. Duncan

Report Prepared by: D.N. Duncan Date Jan.12, 1984

Comments: Hole drilled at azimuth = 135° Angle = -45° (from horizontal)

* Note: Hole deviation survey to be performed by contractor during 1984 program (paid for in 1983 budget).

APPENDIX E

CONFIDENTIAL ANALYSES HAVE BEEN REMOVED

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-1 (SEAM-12)

3/8" X 0

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	59.37
Alumina,Al2O3	22.51
Titania,TiO2	1.17
Ferric oxide,Fe2O3	8.08
Lime,CaO	2.00
Magnesia,MgO	0.71
Potassium oxide,K2O	1.92
Sodium oxide,Na2O	0.07
Sulfur trioxide,SO3	0.77
Phos. pentoxide,P2O5	1.29
Undetermined	2.11
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.38
SILICA VALUE	= 84.62
BASE: ACID RATIO	= 0.15
FOULING INDEX	= 0.01
SLAGGING INDEX	= 0.05

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-3 (SEAM-10)

3/8" X 0

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	61.88
Alumina,Al2O3	28.66
Titania,TiO2	1.29
Ferric oxide,Fe2O3	2.55
Lime,CaO	1.03
Magnesia,MgO	0.42
Potassium oxide,K2O	0.00
Sodium oxide,Na2O	0.96
Sulfur trioxide,SO3	0.07
Phos. pentoxide,P2O5	0.15
Undetermined	2.99
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.14
SILICA VALUE	= 93.93
BASE: ACID RATIO	= 0.05
FOULING INDEX	= 0.05
SLAGGING INDEX	= 0.01

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-11 (SEAM-12)

3/8" X 0

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	60.77
Alumina, Al2O3	23.07
Titania, TiO2	1.24
Ferric oxide, Fe2O3	6.40
Lime, CaO	1.95
Magnesia, MgO	0.67
Potassium oxide, K2O	1.93
Sodium oxide, Na2O	0.10
Sulfur trioxide, SO3	0.39
Phos. pentoxide, P2O5	1.34
Undetermined	2.14
Total	100.00

ALKALIES AS Na2O, DRY COAL BASIS	=	0.36
SILICA VALUE	=	87.08
BASE: ACID RATIO	=	0.13
FOULING INDEX	=	0.01
SLAGGING INDEX	=	0.04

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-13 (SEAM-10)

3/8" X 0

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	61.15
Alumina,Al2O3	26.93
Titania,TiO2	1.38
Ferric oxide,Fe2O3	5.01
Lime,CaO	1.08
Magnesia,MgO	0.60
Potassium oxide,K2O	0.86
Sodium oxide,Na2O	0.04
Sulfur trioxide,SO3	0.27
Phos. pentoxide,P2O5	0.68
Undetermined	2.00
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.11
SILICA VALUE	= 90.14
BASE: ACID RATIO	= 0.08
FOULING INDEX	= 0.00
SLAGGING INDEX	= 0.02

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-16 (SEAM-21)

3/8" X 0

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	61.42
Alumina,Al2O3	24.97
Titania,TiO2	1.23
Ferric oxide,Fe2O3	3.73
Lime,CaO	1.98
Magnesia,MgO	0.73
Potassium oxide,K2O	2.02
Sodium oxide,Na2O	0.14
Sulfur trioxide,SO3	0.45
Phos. pentoxide,P2O5	0.75
Undetermined	2.58
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.19
SILICA VALUE	= 90.51
BASE: ACID RATIO	= 0.10
FOULING INDEX	= 0.01
SLAGGING INDEX	= 0.04

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-17 (SEAM-21)

3/8" X 0

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	63.41
Alumina, Al2O3	21.44
Titania, TiO2	1.01
Ferric oxide, Fe2O3	5.43
Lime, CaO	1.04
Magnesia, MgO	1.18
Potassium oxide, K2O	3.29
Sodium oxide, Na2O	0.08
Sulfur trioxide, SO3	0.49
Phos. pentoxide, P2O5	0.39
Undetermined	2.24
Total	100.00

ALKALIES AS Na2O, DRY COAL BASIS	= 0.42
SILICA VALUE	= 89.23
BASE: ACID RATIO	= 0.13
FOULING INDEX	= 0.01
SLAGGING INDEX	= 0.05

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-25 SEAM-12

3/8" X 0

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	66.78
Alumina,Al2O3	25.75
Titania,TiO2	1.66
Ferric oxide,Fe2O3	0.60
Lime,CaO	0.10
Magnesia,MgO	0.32
Potassium oxide,K2O	1.15
Sodium oxide,Na2O	0.05
Sulfur trioxide,SO3	0.03
Phos. pentoxide,P2O5	0.17
Undetermined	3.39
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.19
SILICA VALUE	= 98.50
BASE: ACID RATIO	= 0.02
FOULING INDEX	= 0.00
SLAGGING INDEX	= 0.01

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-26 SEAM-12

3/8" X 0

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	43.91
Alumina,Al2O3	23.52
Titania,TiO2	1.46
Ferric oxide,Fe2O3	22.44
Lime,CaO	2.61
Magnesia,MgO	0.88
Potassium oxide,K2O	0.58
Sodium oxide,Na2O	0.06
Sulfur trioxide,SO3	1.13
Phos. pentoxide,P2O5	1.40
Undetermined	2.01
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.08
SILICA VALUE	= 62.87
BASE: ACID RATIO	= 0.39
FOULING INDEX	= 0.02
SLAGGING INDEX	= 0.10

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-28 SEAM-10

3/8" X 0

MINERAL ANALYSIS OF ASH	PERCENT WEIGHT IGNITED BASIS
Silica, SiO2	54.89
Alumina,Al2O3	25.96
Titania,TiO2	1.40
Ferric oxide,Fe2O3	10.35
Lime,CaO	1.73
Magnesia,MgO	0.69
Potassium oxide,K2O	1.29
Sodium oxide,Na2O	0.07
Sulfur trioxide,SO3	0.39
Phos. pentoxide,P2O5	1.07
Undetermined	2.16
Total	100.00

ALKALIES AS Na2O,DRY COAL BASIS	= 0.15
SILICA VALUE	= 81.13
BASE: ACID RATIO	= 0.17
FOULING INDEX	= 0.01
SLAGGING INDEX	= 0.05

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

PRODUCT	HGI	% EQUIL. H2O
SAMPLE-1	59	1.87
SAMPLE-2	51	1.46
SAMPLE-3	71	2.09
SAMPLE-4	66	1.78
SAMPLE-5	65	1.61
SAMPLE-6	46	1.48
SAMPLE-7	68	1.44
SAMPLE-8	89	1.84
SAMPLE-9	71	1.71
SAMPLE-10A	93	1.97
SAMPLE-10B	66	2.40
SAMPLE-11	65	1.93
SAMPLE-12	60	1.58
SAMPLE-13	67	1.85
SAMPLE-14	66	1.73
SAMPLE-15	61	1.52
SAMPLE-16	76	2.80
SAMPLE-17	93	2.60
SAMPLE-18	81	2.48
SAMPLE-19	73	2.24
SAMPLE-20	77	2.52
SAMPLE-21	60	1.75
SAMPLE-22	67	1.98
SAMPLE-23	75	2.08
SAMPLE-24	65	1.78
SAMPLE-25	70	1.74
SAMPLE-26	71	1.80
SAMPLE-27	65	1.60
SAMPLE-28	76	1.87
SAMPLE-29	71	1.74

Water Soluble
Alkalies

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

3/8" X 0

HEAD ANALYSIS

WATER SOLUBLE ALKALIES

	AIR DRY BASIS			MOISTURE FREE BASIS		
PRODUCT	% K2O	% Na2O	% Cl	% K2O	% Na2O	% Cl
SAMPLE-2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-4	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-9	<0.01	0.01	0.01	<0.01	0.01	0.01
SAMPLE-10A	<0.01	0.01	<0.01	<0.01	0.01	<0.01
SAMPLE-10B	<0.01	0.01	<0.01	<0.01	0.01	<0.01
SAMPLE-12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-14	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-15	0.01	<0.01	<0.01	0.01	<0.01	<0.01
SAMPLE-18	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-19	<0.01	<0.01	0.01	<0.01	<0.01	0.01
SAMPLE-20	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-21	0.01	<0.01	<0.01	0.01	<0.01	<0.01
SAMPLE-22	0.01	<0.01	<0.01	0.01	<0.01	<0.01
SAMPLE-23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-24	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-25	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-26	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-27	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-28	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-29	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Sulfur
Forms

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

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	0.10	0.21	0.31	<0.01	0.10	0.21	0.31
SAMPLE-3	<0.01	0.03	0.19	0.22	<0.01	0.03	0.19	0.22
SAMPLE-11	<0.01	0.07	0.25	0.32	<0.01	0.07	0.25	0.32
SAMPLE-13	<0.01	0.05	0.20	0.25	<0.01	0.05	0.20	0.25
SAMPLE-16	<0.01	0.05	0.38	0.43	<0.01	0.05	0.39	0.44
SAMPLE-17	<0.01	0.05	0.33	0.38	<0.01	0.05	0.34	0.39

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-3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-16	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SAMPLE-17	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

3/8" X 0

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-2	<0.01	0.03	0.36	0.39	<0.01	0.03	0.36	0.39
SAMPLE-4	<0.01	0.03	0.28	0.31	<0.01	0.03	0.28	0.31
SAMPLE-5	<0.01	0.06	0.43	0.49	<0.01	0.06	0.44	0.50
SAMPLE-6	<0.01	0.04	0.29	0.33	<0.01	0.04	0.29	0.33
SAMPLE-7	<0.01	0.01	0.64	0.65	<0.01	0.01	0.65	0.66
SAMPLE-8	<0.01	0.02	0.39	0.41	<0.01	0.02	0.40	0.42
SAMPLE-9	<0.01	0.05	0.41	0.46	<0.01	0.05	0.42	0.47
MPLE-10A	<0.01	0.06	0.30	0.36	<0.01	0.06	0.03	0.37
SAMPLE-10B	<0.01	0.02	0.17	0.19	<0.01	0.02	0.17	0.19
SAMPLE-12	<0.01	0.01	0.51	0.52	<0.01	0.01	0.52	0.53
SAMPLE-14	<0.01	0.03	0.28	0.31	<0.01	0.03	0.28	0.31
SAMPLE-15	<0.01	0.03	0.32	0.35	<0.01	0.03	0.32	0.35
SAMPLE-18	<0.01	0.07	0.53	0.60	<0.01	0.07	0.54	0.61
SAMPLE-19	<0.01	0.63	0.57	1.20	<0.01	0.64	0.58	1.22
SAMPLE-20	<0.01	0.01	0.70	0.71	<0.01	0.01	0.71	0.72
SAMPLE-21	<0.01	0.02	0.40	0.42	<0.01	0.02	0.41	0.43
SAMPLE-22	<0.01	0.52	0.56	1.08	<0.01	0.52	0.57	1.09
SAMPLE-23	<0.01	0.27	0.51	0.78	<0.01	0.27	0.52	0.79
SAMPLE-24	<0.01	0.23	0.42	0.65	<0.01	0.23	0.43	0.66
SAMPLE-25	<0.01	0.07	0.37	0.44	<0.01	0.07	0.37	0.44
SAMPLE-26	<0.01	0.06	0.21	0.27	<0.01	0.06	0.21	0.27
SAMPLE-27	<0.01	0.03	0.51	0.54	<0.01	0.03	0.52	0.55
SAMPLE-28	<0.01	0.04	0.27	0.31	<0.01	0.04	0.27	0.31
SAMPLE-29	<0.01	0.03	0.32	0.35	<0.01	0.03	0.32	0.35

Head Analysis
& Washability

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-1 SEAM-12

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.26	28.16	0.31	25.48	45.10	10449	2 1/2	28.52	0.31	25.81	45.67	10582

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	17.42	3.36	0.46	33.17	63.47	14690	7 1/2	17.42	3.36	0.46	33.17	63.47	14690
1.350F	19.40	6.88	0.39	29.88	63.24	14158	4 1/2	36.82	5.21	0.42	31.44	63.35	14410
1.400F	12.21	11.52	0.33	27.47	61.01	13448	1 1/2	49.03	6.79	0.40	30.45	62.76	14170
1.450F	8.01	16.74	0.31	26.63	56.63	12444	1	57.04	8.18	0.39	29.91	61.91	13928
1.500F	6.03	21.77	0.29	26.41	51.82	11550	1	63.07	9.48	0.38	29.58	60.94	13700
1.600F	5.95	29.32	0.28	26.28	44.40	10284	1	69.02	11.19	0.37	29.29	59.52	13406
1.800F	8.50	40.82	0.26	23.76	35.42	8377	1	77.52	14.44	0.36	28.69	56.87	12855
1.800S	22.48	77.53	0.15	13.97	8.50	2404	0	100.00	28.63	0.31	25.38	45.99	10505
TOTAL	100.00	28.63	0.31	25.38	45.99	10505							

SUNNYVALE MINERALS LABORATORY

RINGAY CREEK PROPERTY COAL

SAMPLE-2 SEAM-11

3/8' X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.05	46.11	0.39	19.84	33.00	7553	1	46.60	0.39	20.05	33.35	7633

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	4.56	4.21	0.83	32.63	63.16	14584	8 1/2	4.56	4.21	0.83	32.63	63.16	14584
1.400F	15.44	10.70	0.68	29.76	59.54	13536	7	20.00	9.22	0.72	30.42	60.36	13775
1.500F	12.51	20.12	0.55	24.82	55.06	11994	1 1/2	32.51	13.41	0.65	28.26	58.33	13090
1.600F	8.53	32.02	0.46	22.78	45.20	10037	1	41.04	17.28	0.61	27.12	55.60	12455
1.800F	16.56	44.96	0.40	21.16	33.88	7814	1/2	57.60	25.24	0.55	25.41	49.35	11121
1.800S	42.40	75.11	0.19	12.45	12.44	2962	0	100.00	46.38	0.40	19.91	33.71	7661
TOTAL	100.00	46.38	0.40	19.91	33.71	7661							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-3 SEAM-10

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.23	13.99	0.22	26.28	58.50	12811	5	14.16	0.22	26.61	59.23	12971

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	29.30	2.84	0.33	31.02	66.14	14965	6 1/2	29.30	2.84	0.33	31.02	66.14	14965
1.350F	28.22	5.96	0.23	28.20	65.84	14445	4	57.52	4.37	0.28	29.64	65.99	14710
1.400F	17.42	10.57	0.20	24.80	64.63	13578	1	74.94	5.81	0.26	28.51	65.68	14447
1.450F	6.57	16.32	0.20	24.31	59.37	12547	1/2	81.51	6.66	0.26	28.17	65.17	14294
1.500F	4.62	22.99	0.22	24.05	52.96	11041	1	86.13	7.53	0.26	27.95	64.52	14119
1.600F	3.91	30.02	0.23	23.20	46.78	10212	1	90.04	8.51	0.25	27.75	63.74	13950
1.800F	3.38	43.93	0.19	21.07	35.00	7921	1	93.42	9.79	0.25	27.50	62.71	13731
1.800S	6.58	75.00	0.08	14.76	10.24	2549	0	100.00	14.08	0.24	26.67	59.25	12996
TOTAL	100.00	14.08	0.24	26.67	59.25	12996							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-4 SEAM-9

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.04	24.81	0.31	24.55	49.60	11113	3	25.07	0.31	24.81	50.12	11230

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	23.20	3.30	0.51	30.32	66.38	14922	8 1/2	23.20	3.30	0.51	30.32	66.38	14922
1.400F	38.41	8.35	0.38	25.52	66.13	14021	2	61.61	6.45	0.43	27.33	66.22	14360
1.500F	11.76	17.89	0.32	23.62	58.49	12293	1 1/2	73.37	8.28	0.41	26.73	64.99	14029
1.600F	4.12	28.36	0.29	22.85	48.79	10537	1	77.49	9.35	0.41	26.53	64.12	13843
1.800F	4.42	45.13	0.27	20.39	34.48	7858	1	81.91	11.28	0.40	26.19	62.53	13520
1.800S	18.09	76.26	0.08	17.51	6.23	2112	0	100.00	23.04	0.34	24.62	52.34	11457
TOTAL	100.00	23.04	0.34	24.62	52.34	11457							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-5 SEAM-8

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.10	24.35	0.49	24.02	50.53	11087	6	24.62	0.50	24.29	51.09	11210

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	19.71	2.59	0.68	30.70	66.71	15049	9	19.71	2.59	0.68	30.70	66.71	15049
1.400F	34.98	8.63	0.58	27.04	64.33	14028	6 1/2	54.69	6.45	0.62	28.36	65.19	14396
1.500F	13.33	19.44	0.47	24.52	56.04	12131	3 1/2	68.02	9.00	0.59	27.61	63.39	13952
1.600F	6.54	30.86	0.49	22.85	46.29	10196	2	74.56	10.91	0.58	27.19	61.90	13623
1.800F	8.18	43.75	0.40	21.20	35.05	8057	1 1/2	82.74	14.16	0.56	26.60	59.24	13072
1.800S	17.26	77.16	0.25	11.52	11.32	2786	0	100.00	25.04	0.51	24.00	50.96	11297
TOTAL	100.00	25.04	0.51	24.00	50.96	11297							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-6 SEAM-7

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.00	20.64	0.33	25.28	53.08	11568	2 1/2	20.85	0.33	25.54	53.61	11685

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	16.22	2.51	0.56	30.28	67.21	15060	8 1/2	16.22	2.51	0.56	30.28	67.21	15060
1.400F	42.69	7.59	0.42	25.44	66.97	14122	2 1/2	58.91	6.19	0.46	26.77	67.04	14380
1.500F	14.76	15.35	0.35	25.01	59.64	12650	1	73.67	8.03	0.44	26.42	65.55	14034
1.600F	5.83	26.28	0.31	24.73	48.99	10705	1	79.50	9.36	0.43	26.29	64.35	13790
1.800F	4.46	38.96	0.26	24.09	36.95	8753	1	83.96	10.94	0.42	26.18	62.88	13522
1.800S	16.04	67.31	0.10	21.17	11.52	3310	0	100.00	19.98	0.37	25.37	54.65	11884
TOTAL	100.00	19.98	0.37	25.37	54.65	11884							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-7 (SEAM-6)

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.99	14.37	0.65	28.03	56.61	12878	7 1/2	14.51	0.66	28.31	57.18	13007

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	47.84	2.85	0.87	33.21	63.94	14989	8 1/2	47.84	2.85	0.87	33.21	63.94	14989
1.500F	34.92	12.47	0.65	27.11	60.42	13341	6 1/2	82.76	6.91	0.78	30.64	62.45	14294
1.800F	8.74	35.94	0.40	20.69	43.37	9308	1	91.50	9.68	0.74	29.69	60.63	13817
1.800S	8.50	77.61	0.13	11.94	10.45	2457	0	100.00	15.46	0.69	28.18	56.36	12852
TOTAL	100.00	15.46	0.69	28.18	56.36	12852							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-8 (SEAM-4)

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.21	21.08	0.41	23.26	54.45	11778	4 1/2	21.34	0.42	23.54	55.12	11922

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	28.32	3.01	0.61	29.10	67.89	14929	8 1/2	28.32	3.01	0.61	29.10	67.89	14929
1.400F	34.80	8.18	0.48	25.51	66.31	14056	3 1/2	63.12	5.86	0.54	27.12	67.02	14448
1.500F	12.41	17.21	0.40	23.02	59.77	12431	1	75.53	7.73	0.52	26.45	65.82	14116
1.600F	5.73	30.77	0.40	21.03	48.20	10255	1/2	81.26	9.35	0.51	26.06	64.59	13844
1.800F	4.96	41.10	0.34	19.39	39.51	8535	0	86.22	11.18	0.50	25.68	63.14	13539
1.800S	13.78	79.75	0.11	10.61	9.64	2143	0	100.00	20.63	0.45	23.60	55.77	11968
TOTAL	100.00	20.63	0.45	23.60	55.77	11968							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-9 (SEAM-3)

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.15	33.87	0.46	21.41	43.57	9703	5 1/2	34.26	0.47	21.66	44.08	9816

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	30.28	2.83	0.78	29.62	67.55	15010	8 1/2	30.28	2.83	0.78	29.62	67.55	15010
1.500F	29.75	10.13	0.65	25.59	64.28	13769	1	60.03	6.45	0.71	27.62	65.93	14395
1.800F	9.85	38.33	0.42	20.96	40.71	8944	1	69.88	10.94	0.67	26.68	62.38	13627
1.800S	30.12	83.48	0.15	9.96	6.56	1441	0	100.00	32.79	0.52	21.65	45.56	9956
TOTAL	100.00	32.79	0.52	21.65	45.56	9956							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-10A SEAM-2

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.46	42.58	0.36	19.76	36.20	8338	3	43.21	0.37	20.05	36.74	8462

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	19.35	5.22	0.67	31.12	63.66	14694	9	19.35	5.22	0.67	31.12	63.66	14694
1.400F	20.46	17.60	0.52	26.42	55.98	12639	7	39.81	11.58	0.59	28.71	59.71	13638
1.500F	8.51	20.18	0.47	24.11	55.71	12121	2	48.32	13.10	0.57	27.90	59.00	13371
1.600F	5.34	30.57	0.42	22.36	47.07	10327	1	53.66	14.83	0.56	27.35	57.82	13068
1.800F	7.40	44.64	0.33	20.52	34.84	7962	1/2	61.06	18.45	0.53	26.52	55.03	12449
1.800S	38.94	79.37	0.14	11.09	9.54	2283	0	100.00	42.17	0.38	20.51	37.32	8490
TOTAL	100.00	42.17	0.38	20.51	37.32	8490							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-10B SEAM-2

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.38	65.72	0.19	13.42	19.48	4497	1/2	66.64	0.19	13.61	19.75	4560

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	8.83	5.06	0.76	29.19	65.75	14020	9	8.83	5.06	0.76	29.19	65.75	14020
1.500F	9.26	15.42	0.50	25.16	59.42	12964	5 1/2	18.09	10.36	0.62	27.13	62.51	13479
1.800F	6.42	39.83	0.40	20.46	39.71	8885	1	24.51	18.08	0.57	25.38	56.54	12276
1.800S	75.49	80.18	0.12	10.43	9.39	2192	0	100.00	64.96	0.23	14.10	20.94	4664
TOTAL	100.00	64.96	0.23	14.10	20.94	4664							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-11 SEAM-12

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.24	25.64	0.32	25.96	47.16	10867	4 1/2	25.96	0.32	26.29	47.75	11003

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	23.13	3.50	0.45	33.19	63.31	14790	8	23.13	3.50	0.45	33.19	63.31	14790
1.350F	17.63	7.48	0.38	29.71	62.81	14197	5	40.76	5.22	0.42	31.69	63.09	14534
1.400F	12.52	11.95	0.36	27.52	60.53	13318	1	53.28	6.80	0.41	30.71	62.49	14248
1.450F	7.91	17.74	0.30	27.13	55.13	12288	1	61.19	8.22	0.39	30.25	61.53	13995
1.500F	5.29	22.81	0.30	26.25	50.94	11438	1/2	66.48	9.38	0.39	29.93	60.69	13791
1.600F	6.45	29.23	0.28	25.62	45.15	10292	1/2	72.93	11.13	0.38	29.55	59.32	13482
1.800F	6.97	40.89	0.25	23.65	35.46	8263	1/2	79.90	13.73	0.36	29.03	57.24	13026
1.800S	20.10	73.94	0.15	14.32	11.74	3031	0	100.00	25.83	0.32	26.07	48.10	11017
TOTAL	100.00	25.83	0.32	26.07	48.10	11017							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-12 SEAM-11

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.11	28.27	0.52	24.70	45.92	10373	4	28.59	0.53	24.98	46.43	10489

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	14.86	3.47	0.85	31.16	65.37	14754	8 1/2	14.86	3.47	0.85	31.16	65.37	14754
1.400F	21.63	11.35	0.65	29.14	59.51	13441	7	36.49	8.14	0.73	29.96	61.90	13976
1.500F	17.99	20.98	0.58	26.83	52.19	11848	4	54.48	12.38	0.68	28.93	58.69	13273
1.600F	14.24	31.54	0.48	23.69	44.77	10071	1 1/2	68.72	16.35	0.64	27.84	55.81	12610
1.800F	16.30	43.13	0.40	21.61	35.26	8012	1	85.02	21.48	0.59	26.65	51.87	11728
1.800S	14.98	66.41	0.22	16.46	17.13	4212	1/2	100.00	28.21	0.54	25.12	46.67	10602
TOTAL	100.00	28.21	0.54	25.12	46.67	10602							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-13 SEAM-10

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.24	17.76	0.25	25.44	55.56	12139	4 1/2	17.98	0.25	25.76	56.26	12291

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	22.40	2.80	0.31	31.12	66.08	14976	6	22.40	2.80	0.31	31.12	66.08	14976
1.350F	25.87	6.40	0.26	28.19	65.41	14349	4	48.27	4.73	0.28	29.55	65.72	14640
1.400F	18.37	10.85	0.23	24.90	64.25	13558	1	66.64	6.42	0.27	28.27	65.31	14342
1.450F	8.95	16.03	0.23	24.26	59.71	12665	1	75.59	7.56	0.26	27.79	64.65	14143
1.500F	3.43	22.06	0.21	24.01	53.93	11580	1	79.02	8.19	0.26	27.63	64.18	14032
1.600F	4.03	30.73	0.23	23.77	45.50	10152	1	83.05	9.28	0.26	27.44	63.28	13844
1.800F	5.65	43.97	0.20	20.80	35.23	7974	1	88.70	11.49	0.25	27.02	61.49	13470
1.800S	11.30	72.02	0.13	17.25	10.73	2734	0	100.00	18.33	0.24	25.91	55.76	12257
TOTAL	100.00	18.33	0.24	25.91	55.76	12257							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-14 SEAM-9

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.99	18.71	0.31	25.75	54.55	11674	2 1/2	18.90	0.31	26.01	55.09	11791

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	22.55	3.28	0.45	29.61	67.11	14869	8 1/2	22.55	3.28	0.45	29.61	67.11	14869
1.400F	37.51	8.09	0.35	25.04	66.87	13987	2	60.06	6.29	0.39	26.76	66.95	14318
1.500F	15.88	17.21	0.29	23.66	59.13	12316	1 1/2	75.94	8.57	0.37	26.11	65.32	13899
1.600F	3.82	27.14	0.26	23.60	49.26	10476	1 1/2	79.76	9.46	0.36	25.99	64.55	13736
1.800F	5.61	40.83	0.23	22.58	36.59	8136	1/2	85.37	11.52	0.35	25.77	62.71	13368
1.800S	14.63	62.89	0.09	20.55	16.56	3657	0	100.00	19.04	0.31	25.00	55.96	11947
TOTAL	100.00	19.04	0.31	25.00	55.96	11947							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-15 SEAM-9

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.12	40.92	0.35	20.28	37.68	8648	3 1/2	41.38	0.35	20.51	38.11	8746

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	20.30	3.12	0.65	31.34	65.54	14967	8 1/2	20.30	3.12	0.65	31.34	65.54	14967
1.500F	25.88	11.39	0.51	27.39	61.22	13515	7	46.18	7.75	0.57	29.13	63.12	14153
1.800F	17.49	41.57	0.33	21.38	37.05	8652	1 1/2	63.67	17.04	0.51	27.00	55.96	12642
1.800S	36.33	80.30	0.12	9.84	9.86	2348	0	100.00	40.03	0.37	20.77	39.20	8902
TOTAL	100.00	40.03	0.37	20.77	39.20	8902							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-16 SEAM-21

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.80	12.77	0.43	29.60	55.83	12835	7 1/2	13.00	0.44	30.14	56.86	13070

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	54.29	2.48	0.47	34.32	63.20	14781	6 1/2	54.29	2.48	0.47	34.32	63.20	14781
1.350F	19.24	6.75	0.44	30.81	62.44	14046	6 1/2	73.53	3.60	0.46	33.40	63.00	14589
1.400F	7.65	12.47	0.40	28.01	59.52	13142	3	81.18	4.43	0.46	32.89	62.68	14452
1.450F	3.97	16.79	0.37	27.18	56.03	12287	1 1/2	85.15	5.01	0.45	32.63	62.36	14351
1.500F	2.70	21.74	0.36	27.05	51.21	11490	1	87.85	5.52	0.45	32.46	62.02	14263
1.600F	2.56	29.03	0.31	25.80	45.17	10260	1	90.41	6.19	0.45	32.27	61.54	14150
1.800F	1.47	41.13	0.34	24.13	34.74	8071	1	91.88	6.75	0.45	32.14	61.11	14053
1.800S	8.12	80.58	0.26	12.37	7.05	1860	0	100.00	12.74	0.43	30.53	56.73	13063
TOTAL	100.00	12.74	0.43	30.53	56.73	13063							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-17 SEAM-21

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.74	18.18	0.38	28.49	51.59	11949	8	18.50	0.39	28.99	52.51	12161

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	56.70	2.21	0.44	33.57	64.22	14855	6	56.70	2.21	0.44	33.57	64.22	14855
1.350F	16.34	6.22	0.43	30.90	62.88	14031	6	73.04	3.11	0.44	32.97	63.92	14671
1.400F	4.29	11.50	0.42	28.93	59.57	13182	5 1/2	77.33	3.57	0.44	32.75	63.68	14588
1.450F	1.66	17.48	0.40	28.24	54.28	12193	4 1/2	78.99	3.86	0.44	32.65	63.49	14538
1.500F	0.89	20.21	0.38	27.96	51.83	11633	4	79.88	4.05	0.43	32.60	63.35	14505
1.600F	1.60	28.91	0.36	26.84	44.25	10187	2	81.48	4.53	0.43	32.49	62.98	14421
1.800F	1.36	38.23	0.35	25.78	35.99	8266	2	82.84	5.09	0.43	32.38	62.53	14320
1.800S	17.16	82.87	0.14	11.27	5.86	1566	0	100.00	18.44	0.38	28.76	52.80	12131
TOTAL	100.00	18.44	0.38	28.76	52.80	12131							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-18 SEAM-20

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.65	17.45	0.60	26.89	54.01	11984	7	17.74	0.61	27.34	54.92	12185

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	47.50	2.77	0.79	30.28	66.95	14703	8	47.50	2.77	0.79	30.28	66.95	14703
1.400F	26.60	7.07	0.58	28.89	64.04	13911	4	74.10	4.31	0.71	29.78	65.91	14419
1.500F	6.75	16.85	0.53	26.44	56.71	12295	1 1/2	80.85	5.36	0.70	29.50	65.14	14241
1.600F	3.33	28.69	0.59	26.18	45.13	10362	1 1/2	84.18	6.28	0.69	29.37	64.35	14088
1.800F	2.37	39.67	0.58	26.08	34.25	8188	1	86.55	7.20	0.69	29.28	63.52	13926
1.800S	13.45	81.53	0.28	11.77	6.70	1931	0	100.00	17.20	0.64	26.93	55.87	12313
TOTAL	100.00	17.20	0.64	26.93	55.87	12313							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-19 SEAM-19

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.43	26.09	1.20	24.20	48.28	10705	4	26.47	1.22	24.55	48.98	10860

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	34.14	3.93	0.94	29.06	67.01	14535	8	34.14	3.93	0.94	29.06	67.01	14535
1.400F	25.08	8.24	0.75	28.53	63.23	13738	3 1/2	59.22	5.76	0.86	28.83	65.41	14197
1.500F	9.87	17.66	0.74	26.06	56.28	12259	2 1/2	69.09	7.46	0.84	28.44	64.10	13921
1.600F	3.61	29.49	0.84	24.70	45.81	10257	1	72.70	8.55	0.84	28.25	63.20	13739
1.800F	4.65	42.55	1.28	22.44	35.01	8049	1/2	77.35	10.60	0.87	27.90	61.50	13397
1.800S	22.65	77.64	3.85	12.31	10.05	2462	0	100.00	25.78	1.54	24.37	49.85	10920
TOTAL	100.00	25.78	1.54	24.37	49.85	10920							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-20 SEAM-17

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.65	6.73	0.71	27.94	63.68	13895	6 1/2	6.84	0.72	28.41	64.75	14128

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	52.54	2.29	0.82	29.69	68.02	14898	8 1/2	52.54	2.29	0.82	29.69	68.02	14898
1.400F	39.99	7.26	0.65	26.15	66.59	14056	2 1/2	92.53	4.44	0.75	28.16	67.40	14534
1.500F	4.28	18.48	0.59	24.10	57.42	12090	1	96.81	5.06	0.74	27.98	66.96	14426
1.600F	1.03	31.26	0.66	23.09	45.65	9913	1	97.84	5.33	0.74	27.93	66.74	14379
1.800F	0.75	43.43	0.53	20.90	35.67	7901	1	98.59	5.62	0.74	27.88	66.50	14329
1.800S	1.41	75.09	0.40	11.92	12.99	3148	0	100.00	6.60	0.73	27.65	65.75	14172
TOTAL	100.00	6.60	0.73	27.65	65.75	14172							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-21 SEAM-16

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.24	38.68	0.42	19.78	40.30	8772	1	39.17	0.43	20.03	40.80	8882

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	14.32	3.69	0.81	28.90	67.41	14718	8 1/2	14.32	3.69	0.81	28.90	67.41	14718
1.500F	46.01	12.18	0.63	25.94	61.88	13335	2 1/2	60.33	10.16	0.67	26.64	63.20	13663
1.800F	5.83	37.34	0.46	21.69	40.97	9150	1	66.16	12.56	0.65	26.21	61.23	13266
1.800S	33.84	84.61	0.13	9.74	5.65	1592	0	100.00	36.94	0.48	20.63	42.43	9315
TOTAL	100.00	36.94	0.48	20.63	42.43	9315							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-22 SEAM-15

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.26	32.65	1.08	23.20	42.89	9783	1 1/2	33.07	1.09	23.50	43.43	9908

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	18.09	2.97	0.97	28.57	68.46	14845	8 1/2	18.09	2.97	0.97	28.57	68.46	14845
1.400F	28.76	9.22	0.77	25.87	64.91	13783	2	46.85	6.81	0.85	26.91	66.28	14193
1.500F	12.86	18.71	0.85	24.04	57.25	12174	1 1/2	59.71	9.37	0.85	26.29	64.34	13758
1.600F	6.39	29.60	1.05	23.48	46.92	10440	1 1/2	66.10	11.33	0.87	26.02	62.65	13437
1.800F	6.26	42.92	1.23	21.28	35.80	8159	1	72.36	14.06	0.90	25.61	60.33	12981
1.800S	27.64	77.55	1.65	19.29	3.16	1812	0	100.00	31.61	1.10	23.86	44.53	9894
TOTAL	100.00	31.61	1.10	23.86	44.53	9894							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-23 SEAM-14

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.30	20.76	0.78	24.66	53.28	11682	3 1/2	21.03	0.79	24.98	53.99	11836

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	32.32	2.89	0.79	30.45	66.66	14870	8 1/2	32.32	2.89	0.79	30.45	66.66	14870
1.500F	43.45	10.53	0.60	24.99	64.48	13561	1 1/2	75.77	7.27	0.68	27.32	65.41	14119
1.800F	7.55	32.88	0.70	21.19	45.93	9917	1/2	83.32	9.59	0.68	26.76	63.65	13739
1.800S	16.68	79.19	1.01	15.38	5.43	1837	0	100.00	21.20	0.74	24.86	53.94	11753
TOTAL	100.00	21.20	0.74	24.86	53.94	11753							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-24 SEAM-13

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.27	37.38	0.65	21.22	40.13	9024	2	37.86	0.66	21.49	40.65	9140

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	17.27	3.80	0.90	29.97	66.23	14701	8 1/2	17.27	3.80	0.90	29.97	66.23	14701
1.400F	27.56	9.25	0.71	27.11	63.64	13822	5 1/2	44.83	7.15	0.78	28.21	64.64	14161
1.500F	8.33	20.65	0.64	24.21	55.14	11888	2	53.16	9.26	0.76	27.59	63.15	13805
1.600F	4.92	28.73	0.68	22.33	48.94	10500	1	58.08	10.91	0.75	27.14	61.95	13525
1.800F	7.64	40.89	0.77	19.79	39.32	8396	1	65.72	14.40	0.75	26.29	59.31	12928
1.800S	34.28	77.41	0.69	15.07	7.52	2150	0	100.00	36.00	0.73	22.44	41.56	9234
TOTAL	100.00	36.00	0.73	22.44	41.56	9234							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-25 SEAM-12

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.03	23.35	0.44	24.27	51.35	11362	6	23.59	0.44	24.52	51.89	11480

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	25.68	4.17	0.67	29.31	66.52	14776	8 1/2	25.68	4.17	0.67	29.31	66.52	14776
1.400F	31.80	11.41	0.50	27.63	60.96	13527	7	57.48	8.18	0.58	28.38	63.44	14085
1.500F	12.70	20.66	0.39	23.52	55.82	11957	2	70.18	10.43	0.54	27.50	62.07	13700
1.600F	9.11	30.42	0.33	21.33	48.25	10303	1	79.29	12.73	0.52	26.79	60.48	13310
1.800F	9.02	42.55	0.28	18.69	38.76	8322	1	88.31	15.78	0.49	25.96	58.26	12800
1.800S	11.69	77.79	0.09	10.87	11.34	2653	0	100.00	23.03	0.45	24.20	52.77	11614
TOTAL	100.00	23.03	0.45	24.20	52.77	11614							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-26 SEAM-12

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.13	18.08	0.27	27.38	53.41	12053	6	18.29	0.27	27.69	54.02	12191

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	30.15	3.42	0.37	28.62	67.96	14919	8 1/2	30.15	3.42	0.37	28.62	67.96	14919
1.400F	39.03	8.87	0.29	25.91	65.22	13960	4	69.18	6.49	0.33	27.09	66.42	14378
1.500F	13.78	19.44	0.24	23.60	56.96	12082	1	82.96	8.65	0.31	26.51	64.84	13997
1.600F	4.40	28.99	0.20	22.99	48.02	10360	1	87.36	9.67	0.31	26.33	64.00	13813
1.800F	4.00	39.36	0.19	21.57	39.07	8614	1	91.36	10.97	0.30	26.13	62.90	13586
1.800S	8.64	69.60	0.02	20.79	9.61	1643	0	100.00	16.04	0.28	25.67	58.29	12554
TOTAL	100.00	16.04	0.28	25.67	58.29	12554							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-27 SEAM-11

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	0.96	16.79	0.54	23.83	58.42	12259	1 1/2	16.95	0.55	24.06	58.99	12378

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	13.82	3.07	0.81	26.57	70.36	14949	8 1/2	13.82	3.07	0.81	26.57	70.36	14949
1.400F	38.97	8.98	0.61	24.56	66.46	13876	2 1/2	52.79	7.43	0.66	25.09	67.48	14157
1.500F	25.91	17.66	0.51	23.30	59.04	12359	1	78.70	10.80	0.61	24.50	64.70	13565
1.600F	9.74	27.05	0.42	22.65	50.30	10638	1	88.44	12.59	0.59	24.29	63.12	13243
1.800F	6.25	37.08	0.36	22.13	40.79	8739	1/2	94.69	14.21	0.58	24.15	61.64	12945
1.800S	5.31	65.06	0.18	21.17	13.77	3556	0	100.00	16.91	0.56	23.99	59.10	12447
TOTAL	100.00	16.91	0.56	23.99	59.10	12447							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-28 SEAM-10

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.18	16.39	0.31	23.56	58.87	12495	2 1/2	16.59	0.31	23.84	59.57	12644

		MOISTURE FREE BASIS											
		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	24.55	3.09	0.36	28.01	68.90	14987	8 1/2	24.55	3.09	0.36	28.01	68.90	14987
1.400F	44.59	8.39	0.28	23.76	67.85	14022	2	69.14	6.51	0.31	25.27	68.22	14365
1.500F	15.87	17.47	0.25	22.35	60.18	12390	1	85.01	8.55	0.30	24.72	66.73	13996
1.600F	4.75	27.63	0.23	21.47	50.90	10763	1	89.76	9.56	0.29	24.55	65.89	13825
1.800F	3.18	40.54	0.20	20.15	39.31	8571	1	92.94	10.62	0.29	24.40	64.98	13645
1.800S	7.06	75.48	0.06	18.12	6.40	2148	0	100.00	15.20	0.27	23.96	60.84	12833
TOTAL	100.00	15.20	0.27	23.96	60.84	12833							

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-29 SEAM-9

3/8" X 0

WASHABILITY TEST

	AIR DRY BASIS							MOISTURE FREE BASIS				
PRODUCT	% H2O	% ASH	% S	% VM	% FC	BTU	FSI	% ASH	% S	% VM	% FC	BTU
HEAD	1.00	12.41	0.35	23.72	62.87	12974	3 1/2	12.54	0.35	23.96	63.50	13105

MOISTURE FREE BASIS

		ELEMENTARY DATA						CUMULATIVE DATA					
SP. GR.	% WT.	% ASH	% S	% VM	% FC	BTU	FSI	% WT.	% ASH	% S	% VM	% FC	BTU
1.300F	21.02	2.53	0.47	26.87	70.60	15054	8 1/2	21.02	2.53	0.47	26.87	70.60	15054
1.400F	47.14	7.67	0.35	23.73	68.60	14135	1 1/2	68.16	6.09	0.39	24.70	69.21	14418
1.500F	21.08	15.79	0.29	23.11	61.10	12645	1	89.24	8.38	0.36	24.32	67.30	14000
1.600F	5.91	27.03	0.26	22.88	50.09	10629	1	95.15	9.54	0.36	24.23	66.23	13790
1.800F	2.71	37.19	0.23	21.95	40.86	8794	1	97.86	10.30	0.35	24.17	65.53	13652
1.800S	2.14	60.55	0.12	21.33	18.12	4524	1/2	100.00	11.38	0.35	24.11	64.51	13456
TOTAL	100.00	11.38	0.35	24.11	64.51	13456							

Ultimate &
Fusion Temp

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-1 SEAM-12

3/8" X 0

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.26	--
% CARBON	59.59	60.35
% HYDROGEN	3.68	3.73
% NITROGEN	0.94	0.95
% CHLORINE	0.07	0.07
% SULFUR	0.31	0.31
% ASH	28.16	28.52
% OXYGEN (DIFF.)	5.99	6.07
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2647	2424
Softening (H=W)	2700	2557
Softening (H=1/2 W)	2700+	2630
Fluid	2700+	2700+

% EQUILIBRIUM MOISTURE = 1.87

HARDGROVE GRINDABILITY INDEX = 59

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-3 SEAM-J0

3/8" X 0

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.23	--
% CARBON	73.26	74.17
% HYDROGEN	4.52	4.58
% NITROGEN	0.96	0.97
% CHLORINE	0.05	0.05
% SULFUR	0.22	0.22
% ASH	13.99	14.16
% OXYGEN (DIFF.)	5.77	5.85
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	22700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

% EQUILIBRIUM MOISTURE = 2.09

HARDGROVE GRINDABILITY INDEX = 71

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-11 SEAM-12

3/8" X 0

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.24	—
% CARBON	62.32	63.10
% HYDROGEN	3.97	4.02
% NITROGEN	0.97	0.98
% CHLORINE	0.07	0.07
% SULFUR	0.32	0.32
% ASH	25.64	25.96
% OXYGEN (DIFF.)	5.47	5.55
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2688	2557
Softening (H=W)	2700+	2641
Softening (H=1/2 W)	2700+	2692
Fluid	2700+	2700+

% EQUILIBRIUM MOISTURE = 1.93

HARDGROVE GRINDABILITY INDEX = 65

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-13 SEAM-10

3/8" X 0

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.24	--
% CARBON	69.99	70.87
% HYDROGEN	4.14	4.19
% NITROGEN	0.96	0.97
% CHLORINE	0.07	0.07
% SULFUR	0.25	0.25
% ASH	17.76	17.98
% OXYGEN (DIFF.)	5.59	5.67
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

% EQUILIBRIUM MOISTURE = 1.85

HARDGROVE GRINDABILITY INDEX = 67

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-16 SEAM-22

3/8" X 0

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.80	--
% CARBON	72.62	73.95
% HYDROGEN	4.58	4.66
% NITROGEN	1.34	1.36
% CHLORINE	0.06	0.06
% SULFUR	0.43	0.44
% ASH	12.77	13.00
% OXYGEN (DIFF.)	6.40	6.53
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

% EQUILIBRIUM MOISTURE = 2.8

HARDGROVE GRINDABILITY INDEX = 76

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-17 SEAM-2

3/8" X 0

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.74	--
% CARBON	67.82	69.02
% HYDROGEN	4.32	4.40
% NITROGEN	1.33	1.35
% CHLORINE	0.05	0.05
% SULFUR	0.38	0.39
% ASH	18.18	18.50
% OXYGEN (DIFF.)	6.18	6.29
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2700+	2617
Softening (H=W)	2700+	2682
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

% EQUILIBRIUM MOISTURE = 2.6

HARDGROVE GRINDABILITY INDEX = 93

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-25 SEAM-12

3/8" X 0

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.03	--
% CARBON	64.79	65.46
% HYDROGEN	4.06	4.10
% NITROGEN	0.86	0.87
% CHLORINE	0.02	0.02
% SULFUR	0.44	0.44
% ASH	23.35	23.59
% OXYGEN (DIFF.)	5.45	5.52
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-26 SEAM-12

3/8" X 0

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.13	—
% CARBON	69.33	70.12
% HYDROGEN	4.13	4.18
% NITROGEN	1.03	1.04
% CHLORINE	0.04	0.04
% SULFUR	0.27	0.27
% ASH	18.08	18.29
% OXYGEN (DIFF.)	5.99	6.06
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2567	2202
Softening (H=W)	2589	2370
Softening (H=1/2 W)	2605	2401
Fluid	2689	2461

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

SAMPLE-28 SEAM-10

3/8" X 0

HEAD ANALYSIS

ULTIMATE ANALYSIS

	AIR DRY BASIS	MOISTURE FREE BASIS
% MOISTURE	1.18	—
% CARBON	70.62	71.46
% HYDROGEN	3.91	3.96
% NITROGEN	0.95	0.96
% CHLORINE	0.03	0.03
% SULFUR	0.31	0.31
% ASH	16.39	16.59
% OXYGEN (DIFF.)	6.61	6.69
TOTAL	100.00	100.00

FUSION TEMP. OF ASH

	Oxidizing	Reducing
Initial deformation	2700+	2688
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

3/8" X 0

HEAD ANALYSIS

FUSION TEMP. OF ASH

SAMPLE-2 SEAM-11

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

FUSION TEMP. OF ASH

SAMPLE-4 SEAM-9

	Oxidizing	Reducing
Initial deformation	2480	2300
Softening (H=W)	2580	2340
Softening (H=1/2 W)	2630	2505
Fluid	2700+	2576

FUSION TEMP. OF ASH

SAMPLE-5 SEAM-8

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

3/8" X 0

HEAD ANALYSIS

FUSION TEMP. OF ASH

SAMPLE-6 SEAM-7

	Oxidizing	Reducing
Initial deformation	2380	2060
Softening (H=W)	2490	2112
Softening (H=1/2 W)	2504	2230
Fluid	2554	2301

FUSION TEMP. OF ASH

SAMPLE-7 SEAM-6

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

FUSION TEMP. OF ASH

SAMPLE-8 SEAM-4

	Oxidizing	Reducing
Initial deformation	2700+	2639
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

3/8" X 0

HEAD ANALYSIS

FUSION TEMP. OF ASH

SAMPLE-9 SEAM-3

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

FUSION TEMP. OF ASH

SAMPLE-10A SEAM-2

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

FUSION TEMP. OF ASH

SAMPLE-10B SEAM-2

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

3/8" X 0

HEAD ANALYSIS

FUSION TEMP. OF ASH

SAMPLE-12 SEAM-11

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

FUSION TEMP. OF ASH

SAMPLE-14 SEAM-9

	Oxidizing	Reducing
Initial deformation	2590	2407
Softening (H=W)	2600	2450
Softening (H=1/2 W)	2650	2538
Fluid	2700+	2661

FUSION TEMP. OF ASH

SAMPLE-15 SEAM-9

	Oxidizing	Reducing
Initial deformation	2700+	2627
Softening (H=W)	2700+	2688
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

3/8" X 0

HEAD ANALYSIS

FUSION TEMP. OF ASH

SAMPLE-18 SEAM-20

	Oxidizing	Reducing
Initial deformation	2551	2336
Softening (H=W)	2651	2401
Softening (H=1/2 W)	2681	2564
Fluid	2700+	2586

FUSION TEMP. OF ASH

SAMPLE-19 SEAM-19

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

FUSION TEMP. OF ASH

SAMPLE-20 SEAM-17

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

3/8" X 0

HEAD ANALYSIS

FUSION TEMP. OF ASH

SAMPLE-21 SEAM-16

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

FUSION TEMP. OF ASH

SAMPLE-22 SEAM-15

	Oxidizing	Reducing
Initial deformation	2666	2401
Softening (H=W)	2679	2493
Softening (H=1/2 W)	2700+	2565
Fluid	2700+	2700+

FUSION TEMP. OF ASH

SAMPLE-23 SEAM-14

	Oxidizing	Reducing
Initial deformation	2619	2376
Softening (H=W)	2679	2435
Softening (H=1/2 W)	2700+	2560
Fluid	2700+	2700+

SUNNYVALE MINERALS LABORATORY

BINGAY CREEK PROPERTY COAL

3/8" X 0

HEAD ANALYSIS

FUSION TEMP. OF ASH

SAMPLE-24 SEAM-13

	Oxidizing	Reducing
Initial deformation	2594	2435
Softening (H=W)	2630	2490
Softening (H=1/2 W)	2700+	2560
Fluid	2700+	2700+

FUSION TEMP. OF ASH

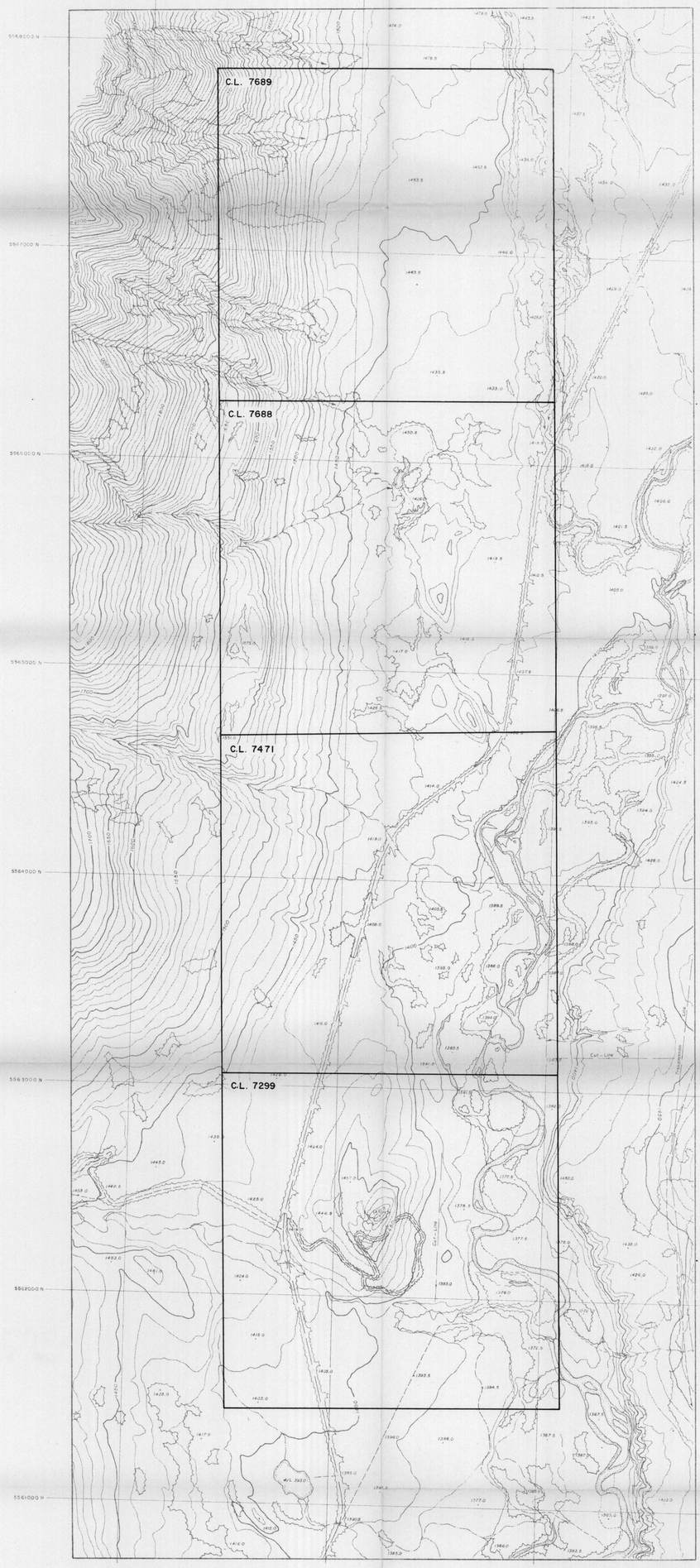
SAMPLE-27 SEAM-11

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+

FUSION TEMP. OF ASH

SAMPLE-29 SEAM-9

	Oxidizing	Reducing
Initial deformation	2700+	2700+
Softening (H=W)	2700+	2700+
Softening (H=1/2 W)	2700+	2700+
Fluid	2700+	2700+



256

K-BINGAY 82(2)A *(1)

MAP 1

UTAH MINES LTD.
EXPLORATION DEPARTMENT
Vancouver British Columbia

BINGAY CREEK

COAL LICENCES

Work by: R.B.A. & N.D.	Date: Aug. 1983	NTS Ref. 82 / J / 2
Drawn by: T.D.	Revised	SCALE — 1:10,000

200 0 100 200 300 400 Metres
SCALE

256

MAP 2
K-BINGAY 83(2)A*(1)

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

BINGAY CREEK

SURVEY STATIONS

Work by: R.B. Anderson & N. Duncan	Date: July 1984	NTS Ref. 82 J/12
Drawn by: T. Drews	Revised:	1:5000

100 50 0 100 200 300 METRES
Scale

643000 E

644000 E

645000 E

5564000 N

5563000 N

5562000 N

5561000 N

BORGEAU THRUST

HORNICKEL CREEK

BINGAY CREEK

ELK RIVER

CUT LINE

TRANSMISSION LINE

BC 83-1

BC 83-2

BC 83-3

A

A'

B

B'

Kootenay Group

- Coal Seam Subcrop (Measured – Inferred)
- Shale & Siltstone
- Channel Sandstone
- Morrissey Formation
- Fernie Formation

Mist Mtn Formation

- Contact
- Fold Axis

256

MAP-3

K-Bingay 83(2)A *(1)

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

GEOLOGY

Work by : R.B. Anderson	Date : July 1984	NTS Ref. 82/J/2
Drawn by : T. Drews	Revised:	Scale 1:5000

100 50 0 100 200 300 Metres

643,000 E

644,000 E

645,000 E

5,564,000 N

5,563,000 N

5,562,000 N

5,561,000 N

DDH BC 83-3

DDH BC 83-1&2

SEAM 10

SEAM 9

LEGEND

160 — Bench Thickness (In Centimetres) — Corrected For Dip
98 — Interburden

Note: Seam Scale = 1:240

256

MAP – 4

K. BINGAY 83(2)8 *(1)

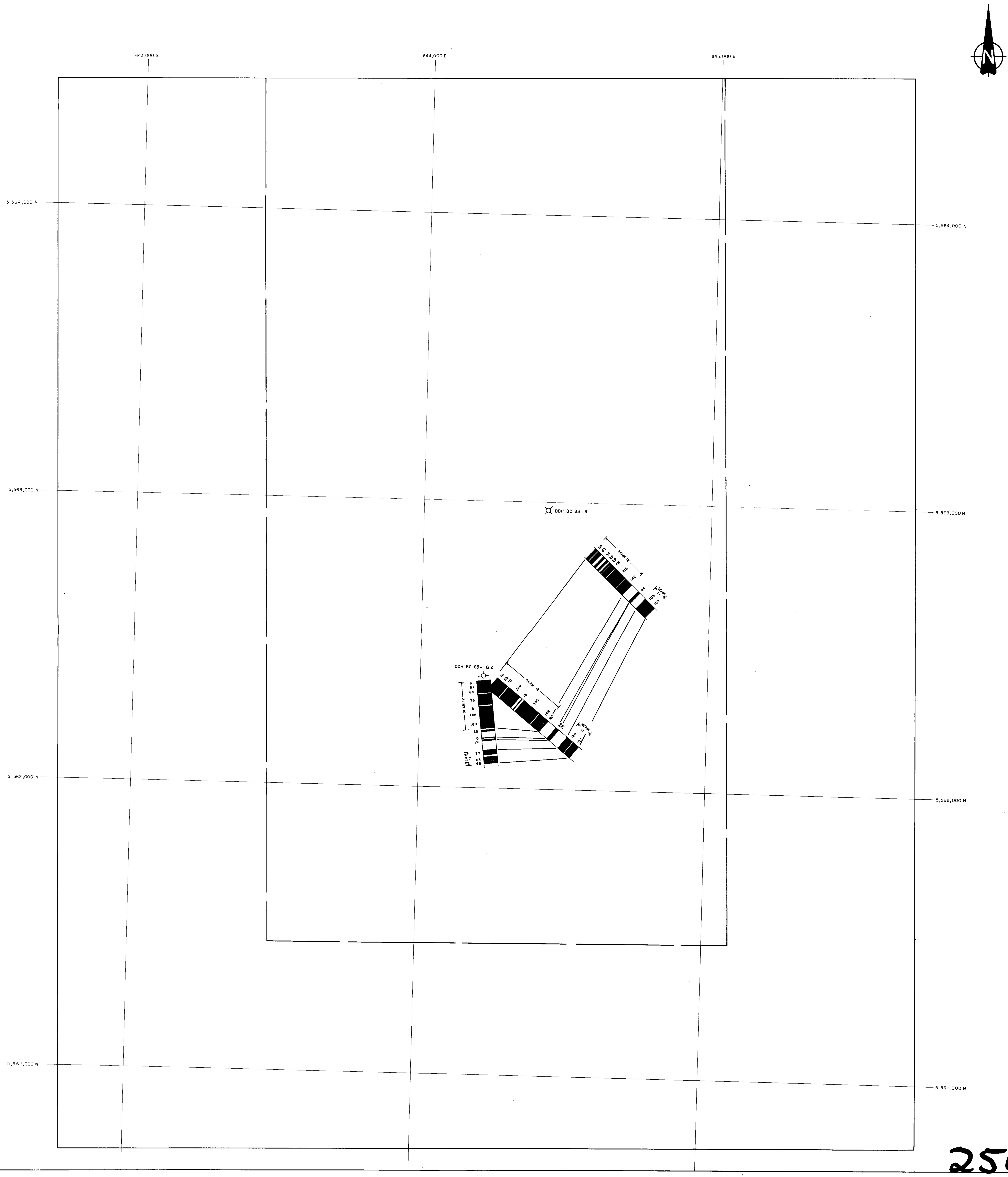
UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

BINGAY CREEK

PANEL DIAGRAM
SEAMS #9 AND #10

Work by: R.B.Anderson B.N.Duncan	Date: May 1984	NTS Ref. 82/J/2
Drawn by: T.Drews	Revised	

100 50 0 100 200 300 METRES
Scale



256

LEGEND

155 ← Bench Thickness (In Centimetres) - Corrected For Dip
← Interburden
90

Note: Seam Scale = 1:240

MAP – 5

K - Bingay 83 *(2)A *(1)

UTAH MINES LTD.
EXPLORATION DEPARTMENT
VANCOUVER BRITISH COLUMBIA

BINGAY CREEK

PANEL DIAGRAM
SEAMS #11 AND #12

Work by: R.B. Anderson & N. Duncan	Date: May 1984	NTS Ref. 82/J/2
Drawn by: T. Drews	Revised:	

100 50 0 100 200 300 METRES
Scale

BINGAY CREEK

DDH B.C.-83-01

LITHOLOGIC DESCRIPTIONS

0.001 ##
0.002
0.003 ELEVATION: 1495 M.
0.004 COORDINATES: 5562588 N X 644218 E
0.005 SINBAY CREEK DIAMOND DRILL HOLE 83-01 DATE SPUDDED: NOVEMBER 24,1983
0.006 DATE COMPLETED: DECEMBER 1,1983
0.007 TOTAL DEPTH: 295.35 M.
0.008 ##
0.009 LITHOLOGIC DESCRIPTIONS
0.01
0.011

	THICKNESS (METRES)	DEPTH TO TOP (METRES)	LITHOTYPE	COMMENTS
	3.00	0.0	CASING OR SURFACE	TRICONED - BEDROCK
			GRAY SANDSTONE WITH SHALE STREAKS	RIP
	5.77	5.00	CROSS-BEDDED GRAY SANDSTONE	
			GRAY SANDSTONE WITH COAL BANDS	
			UNDIFFERENTIATED DEFORMED ROCK	FALT - FRCT 0 TO CA - CACO3
			GRAY SANDSTONE WITH SHALE STREAKS	RIP
			DARK GRAY SHALE WITH SANDSTONE STREAKS	
			GRAY SANDSTONE WITH COAL BANDS	RIP
			BLACK SHALE WITH COAL STREAKS	
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP W COAL SPAR BDG 85 TO CA
			BLACK SHALE WITH COAL STREAKS	
			BLACK SHALE WITH SANDSTONE STREAKS	W COAL SPAR BDG 85 TO CA
			MASSIVE BLACK SHALE	FALT BRECCIA 31.1 M FY + CACO3
			BLACK SHALE WITH SANDSTONE STREAKS	
			GRAY SANDSTONE WITH SHALE STREAKS	RIP
			MASSIVE DARK GRAY SANDY SHALE	W PLANT DEB. BDG 85 TO CA
			MASSIVE BLACK SHALE	W PLANT DEB. + PY
			MASSIVE DARK GRAY SANDY SHALE	LIMY
			MASSIVE DARK GRAY SANDY SHALE	W PLANT DEB.
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP BDG 80 TO CA
			MASSIVE DARK GRAY SANDY SHALE	W COAL STREAKS + SPAR AT BASE
			MASSIVE BLACK SHALE	W PLANT DEB. + PY
			COMMON BANDED COAL	SAMPLE 1
			BONE LAYERED WITH SHALE	SAMPLE 1
			COMMON BANDED COAL	SAMPLE 1
			MASSIVE BLACK SHALE	W COAL SPAR
			COMMON BANDED COAL	
			BONE LAYERED WITH SHALE	
			COMMON BANDED COAL	
			MASSIVE BLACK SHALE	
			COMMON BANDED COAL	SAMPLE 2 - 0.29 M SPLIT @ ?
			MASSIVE DARK GRAY SANDY SHALE	
			GRAY SANDSTONE WITH SHALE STREAKS	
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
			MASSIVE DARK GRAY SANDY SHALE	
			CHURNED GRAY SANDSTONE	
			CROSS-BEDDED GRAY SANDSTONE	
			CHURNED GRAY SANDSTONE	
			CROSS-BEDDED GRAY SANDSTONE	
			MASSIVE HARD SANDSTONE	
			GRAY SHALE CONGLOMERATE	
			MASSIVE HARD SANDSTONE	
			GRAY SHALE CONGLOMERATE	
			MASSIVE DARK GRAY SANDY SHALE	
			GRAY SHALE CONGLOMERATE	
			GRAY SANDSTONE WITH SHALE STREAKS	
			GRAY SHALE CONGLOMERATE	
			MASSIVE HARD SANDSTONE	
			GRAY SHALE CONGLOMERATE	
			CROSS-BEDDED GRAY SANDSTONE	
			GRAY SANDSTONE WITH COAL SPARS	W COAL SPAR
			CROSS-BEDDED GRAY SANDSTONE	
			GRAY SANDSTONE WITH COAL SPARS	
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
			GRAY SANDSTONE WITH COAL SPARS	
			DARK GRAY SHALE WITH COAL STREAKS	
			COAL WITH PYRITE STREAKS	
			BLACK SHALE WITH COAL STREAKS	
			COMMON BANDED COAL	
			BLACK SHALE WITH COAL STREAKS	
			COAL LAYERED WITH BONE	
			BLACK SHALE WITH COAL STREAKS	
			MASSIVE DARK GRAY SANDY SHALE	W PLANT DEB.
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
			MASSIVE BLACK SHALE	W PLANT DEB.
			DULL OR CANNEL COAL	
			MASSIVE BLACK SHALE	
			DULL OR CANNEL COAL	BDG 80 TO CA
			MASSIVE DARK GRAY SANDY SHALE	W PLANT DEB.
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
			UNDIFFERENTIATED DEFORMED ROCK	FALT
			SANDY SHALE MUDFLOW	
			MASSIVE BLACK SHALE	W PLANT DEB.
			MASSIVE DARK GRAY SANDY SHALE	W PLANT DEB.
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
			BLACK SHALE WITH COAL STREAKS	
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP CACO3-FRCT. AT 20 TO CA
			BLACK SHALE WITH COAL STREAKS	
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
			BLACK SHALE WITH COAL STREAKS	
			COMMON BANDED COAL	SAMPLE 3
			GRAY SANDSTONE WITH COAL SPARS	SAMPLE 3
			COMMON BANDED COAL	SAMPLE 3
			BLACK SHALE WITH SANDSTONE STREAKS	
			COMMON BANDED COAL	SAMPLE 4
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
			COMMON BANDED COAL	
			BLACK SHALE WITH SANDSTONE STREAKS	
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
			BLACK SHALE WITH SANDSTONE STREAKS	
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
			MASSIVE DARK GRAY SANDY SHALE	W PLANT DEB.
			BLACK SHALE WITH COAL STREAKS	
			MASSIVE DARK GRAY SANDY SHALE	
			COMMON BANDED COAL	
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
			DULL OR CANNEL COAL	
			MASSIVE DARK GRAY SANDY SHALE	
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
			BLACK SHALE WITH SANDSTONE STREAKS	
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
			DARK GRAY SHALE WITH SANDSTONE STREAKS	
			MASSIVE DARK GRAY SANDY SHALE	
			COMMON BANDED COAL	SAMPLE 5
			BLACK SHALE WITH COAL STREAKS	
			COMMON BANDED COAL	
			BLACK SHALE WITH COAL STREAKS	
			COMMON BANDED COAL	SAMPLE 6
			BLACK SHALE WITH COAL STREAKS	
			COMMON BANDED COAL	
			DARK GRAY SANDY FIRECLAY	
			MASSIVE DARK GRAY SHALE	
			COMMON BANDED COAL	
			BLACK SHALE WITH SANDSTONE STREAKS	
			DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP

[illegible]	[illegible]	206.40	COMMON BANDED COAL	
120.	0.83	206.81	BLACK SHALE WITH SANDSTONE STREAKS	
121.	0.74	207.44	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
122.	1.21	208.16	COMMON BANDED COAL	SAMPLE 7
[illegible]	[illegible]	209.32	BLACK SHALE WITH SANDSTONE STREAKS	
124.	0.16	212.11	BONE LAYERED WITH SHALE	
125.	1.09	212.27	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
126.	0.28	213.36	MASSIVE DARK GRAY SHALE	
127.	0.88	214.24	COMMON BANDED COAL	
128.	1.22	215.16	MASSIVE DARK GRAY SANDY SHALE	W COAL STREAKS + SPAR
129.	2.56	216.38	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP BDG 75 TO CA
130.	0.19	218.94	MASSIVE DARK GRAY SANDY SHALE	BRECCIA ZONE @ 219.13 M W CACO3 + PY
[illegible]	[illegible]	224.13	COMMON BANDED COAL	SAMPLE 8-0.05 M SPLIT @ 224.34 M
132.	3.54	227.30	MASSIVE DARK GRAY SANDY SHALE	
133.	1.38	227.84	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP - FRCT. CLVG. 15 TO CA
134.	0.45	229.62	MASSIVE DARK GRAY SANDY SHALE	
135.	1.38	230.22	BLACK SHALE WITH COAL STREAKS	
136.	2.09	231.65	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP W COAL SPAR-FRCT. CLVG. 15 TO CA
137.	1.06	234.24	DARK GRAY FIRECLAY	
138.	0.30	235.30	PARTLY CHURNED DARK GRAY SANDY SHALE	
[illegible]	[illegible]	235.60	DARK GRAY FIRECLAY	
140.	3.08	237.13	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
141.	0.27	240.21	COMMON BANDED COAL	
142.	0.16	240.48	BLACK SHALE WITH COAL STREAKS	
143.	1.67	240.64	COMMON BANDED COAL	SAMPLE 9
144.	1.29	242.31	BLACK SHALE WITH SANDSTONE STREAKS	
145.	1.60	243.60	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
146.	0.16	245.28	COMMON BANDED COAL	
[illegible]	[illegible]	245.44	DARK GRAY FIRECLAY	
148.	3.02	248.46	MASSIVE DARK GRAY SANDY SHALE	
149.	1.02	253.48	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
150.	0.76	254.50	MASSIVE DARK GRAY SANDY SHALE	
151.	0.93	255.26	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
152.	3.51	256.19	MASSIVE DARK GRAY SANDY SHALE	
153.	5.47	259.70	BLACK SHALE WITH COAL STREAKS	W COAL SPAR + STREAKS
154.	0.25	265.17	COAL WITH SHALE LAYERS	
[illegible]	[illegible]	265.42	BLACK SHALE WITH COAL STREAKS	
156.	4.30	266.97	COMMON BANDED COAL	SAMPLE 10A
157.	1.22	271.27	COAL WITH SHALE LAYERS	SAMPLE 10B
158.	1.73	272.49	DARK GRAY FIRECLAY	
159.	4.81	274.22	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP FRCT.CLVG. W CACO3 15 TO CA
160.	0.63	279.03	BLACK SHALE WITH COAL STREAKS	
161.	0.96	279.68	BLACK FIRECLAY	
162.	0.35	280.64	COMMON BANDED COAL	
163.	0.63	280.99	BLACK SHALE WITH COAL STREAKS	
164.	5.28	281.64	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
165.	1.07	286.92	COMMON BANDED COAL	
166.	7.36	287.99	CROSS-BEDDED GRAY SANDSTONE	MORRISSEY FM.-MOOSE MTN. MBR.
167.				
168.				
169.				
170.				
171.				
172.	*NOTE:			
173.	------			
174.	LINE NUMBERS CORRESPOND TO NUMBERS TO THE RIGHT OF THE DEPTH			
175.	NUMBERS ON THE GRAPHIC CORE LOG			
176.				

Widco WELL LOG

COMPANY	UTAH MINES LTD.
AREA	BINGAY CREEK PROPERTY
WELL	DDH BC-83-1
COUNTY	
STATE	

256

COORDINATES, E	644,219m
N	5,562,388m
S	
ELEVATION	1495m
D.F.	
K.B.	
G.L.	

COMPANY UTAH MINES LTD.
WELL DDH BC-83-1
LOCATION 644,219m E x 5,562,388m N

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	Dec. 1, 1983		Nature		
First Reading	294.0m		Density		
Last Reading	0m		Viscosity	@ °F	@ °F
Footage Logged	294.0m		Resistivity	@ °F	@ °F
Bottom (Driller)	295.35		Res. @ BHT	@ °F	@ °F
Casing (From Log)	3.00m		pH		
Casing (Driller)	3.05m		Circ. Temp.		
Casing Size	HW		B.H. Temp.		
Bit Size:	HQ				
Bit Size:					
			Logged by	R.B.A. + D.N.D.	
			Witnessed by		

REMARKS

* Reg. U.S. Pat. Off.

FO-139

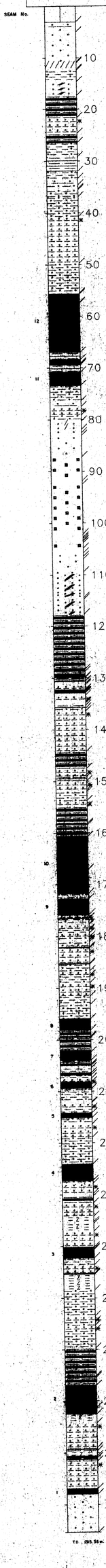
GAMMA

DENSITY

K. BINGAY *(G)B *(L)

256

BINGAY BC
HOLE# 4X4:7299
CO. NO. BC-83-01
E:644219 N:5562388
SCALE 1:240.0
ELEV 1495 DEPTH 288



BINGAY CREEK

DDH B.C.-83-02

LITHOLOGIC DESCRIPTIONS

BINGAY CREEK DIAMOND DRILL HOLE 83-02

ELEVATION: 1495 M.
COORDINATES: 5362384 N X 644221 E
DATE SPUDDED: DECEMBER 2,1983
DATE COMPLETED: DECEMBER [illegible],1983
TOTAL DEPTH: 199.95 M.

LITHOLOGIC DESCRIPTIONS

	THICKNESS (METRES)	DEPTH TO TOP (METRES)	LITHOTYPE	COMMENTS
2.	3.05	0.0	CASING OR SURFACE	TRICONED-CASING
3.	5.54	3.05	CROSS-BEDDED GRAY SANDSTONE	CARB. DEB. - FINING UP - WEATH.
4.	[illegible]	[illegible]	GRAY SANDSTONE WITH COAL SPARS	
5.	0.84	9.81	MASSIVE DARK GRAY SANDY SHALE	
6.	0.63	10.65	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
7.	[illegible]	11.28	MASSIVE DARK GRAY SANDY SHALE	
8.	[illegible]	[illegible]	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP - BDG 50 TO CA X-BED?
9.	0.27	16.15	HARD SHALE PEBBLE CONGLOMERATE	
10.	0.72	16.42	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP - BDG 50 TO CA X-BED? - CARB. DEB.
11.	0.73	17.14	GRAY SANDSTONE WITH COAL SPARS	
12.	[illegible]	[illegible]	[illegible]	
13.	0.94	18.27	GRAY SANDSTONE WITH COAL BANDS	
14.	0.31	19.21	HARD SHALE PEBBLE CONGLOMERATE	
15.	6.09	19.52	BLACK SHALE WITH COAL STREAKS	
16.	[illegible]	[illegible]	BLACK SHALE WITH SANDSTONE STREAKS	
17.	0.62	26.18	BLACK SHALE WITH COAL STREAKS	
18.	0.87	26.80	BLACK SHALE WITH SANDSTONE STREAKS	
19.	5.03	27.67	BLACK SHALE WITH COAL STREAKS	
20.	[illegible]	[illegible]	BLACK SHALE WITH SANDSTONE STREAKS	
21.	1.15	33.93	DARK GRAY FIRECLAY	
22.	0.72	35.08	DARK GRAY SHALE WITH SANDSTONE STREAKS	
23.	[illegible]	[illegible]	BLACK SHALE WITH COAL STREAKS	
24.	[illegible]	[illegible]	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	FLT
25.	1.31	38.94	BLACK SHALE WITH COAL STREAKS	
26.	4.50	40.25	MASSIVE DARK GRAY SANDY SHALE	
27.	0.87	44.75	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	FLT
28.	[illegible]	[illegible]	MASSIVE DARK GRAY SANDY SHALE	[illegible]
29.	2.55	53.23	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
30.	1.21	55.78	MASSIVE DARK GRAY SANDY SHALE	
31.	1.44	56.99	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
32.	0.92	58.43	MASSIVE DARK GRAY SANDY SHALE	
33.	0.47	59.35	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
34.	2.41	59.82	MASSIVE DARK GRAY SANDY SHALE	BDG 50 TO CA X-BED?
35.	3.00	62.23	COMMON BANDED COAL	SAMPLE 11
36.	0.08	65.23	BLACK SHALE WITH COAL STREAKS	SAMPLE 11
37.	2.95	65.31	COMMON BANDED COAL	SAMPLE 11
38.	0.30	68.26	BLACK SHALE WITH COAL STREAKS	SAMPLE 11
39.	1.56	68.56	COMMON BANDED COAL	SAMPLE 11
40.	0.09	70.12	BLACK SHALE WITH COAL STREAKS	SAMPLE 11
41.	2.02	70.21	COMMON BANDED COAL	SAMPLE 11
42.	2.44	72.23	DARK GRAY FIRECLAY	
43.	1.53	74.67	BLACK SHALE WITH COAL STREAKS	
44.	1.08	76.20	MASSIVE DARK GRAY SHALE	
45.	1.34	77.28	COMMON BANDED COAL	SAMPLE 12
46.	0.32	78.62	BLACK SHALE WITH COAL STREAKS	
47.	0.75	78.94	COMMON BANDED COAL	SAMPLE 12
48.	0.92	79.69	MASSIVE DARK GRAY SHALE	
49.	11.66	80.61	MASSIVE DARK GRAY SANDY SHALE	WELDED W CACO3 85.64 TO 85.9 M
50.	7.50	92.27	CROSS-BEDDED GRAY SANDSTONE	CARB. DEB. ON X-BEDS
51.	2.46	99.77	MASSIVE GRAY SANDSTONE	
52.	0.47	102.23	GRAY SANDSTONE WITH COAL BANDS	
53.	4.43	102.70	MASSIVE GRAY SANDSTONE	
54.	0.62	107.13	GRAY SANDSTONE WITH COAL SPARS	
55.	2.16	107.75	MASSIVE GRAY SANDSTONE	
56.	1.05	109.91	HARD SHALE PEBBLE CONGLOMERATE	
57.	1.20	110.96	MASSIVE GRAY SANDSTONE	
58.	0.92	112.16	HARD SHALE PEBBLE CONGLOMERATE	
59.	1.61	113.08	CROSS-BEDDED GRAY SANDSTONE	
60.	3.51	114.69	GRAY SANDSTONE WITH COAL SPARS	
61.	1.05	118.20	MASSIVE DARK GRAY SANDY SHALE	
62.	0.60	119.25	SANDY SHALE MUDFLOW	
63.	0.87	119.85	HARD SHALE PEBBLE CONGLOMERATE	
64.	2.18	120.72	MASSIVE GRAY SANDSTONE	
65.	1.12	122.90	MASSIVE DARK GRAY SANDY SHALE	
66.	0.67	124.02	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
67.	3.42	124.69	MASSIVE DARK GRAY SANDY SHALE	
68.	3.17	128.11	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
69.	3.14	131.28	MASSIVE DARK GRAY SANDY SHALE	
70.	9.79	134.42	BLACK SHALE WITH COAL STREAKS	
71.	0.70	144.21	MASSIVE DARK GRAY SANDY SHALE	
72.	1.02	144.91	DARK GRAY SHALE WITH SANDSTONE STREAKS	
73.	2.51	145.93	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
74.	0.79	148.44	BLACK SHALE WITH COAL STREAKS	
75.	1.95	149.23	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
76.	0.53	151.18	GRAY SANDSTONE WITH COAL SPARS	
77.	1.60	151.71	UNDIFFERENTIATED DEFORMED ROCK	FALT - CACO3 INFILLING IN FRACT
78.	2.30	153.31	MASSIVE BLACK SHALE	EXTREMELY SHATTERED
79.	1.46	155.61	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
80.	7.22	157.07	MASSIVE DARK GRAY SANDY SHALE	PLANT DEBRIS
81.	1.86	164.29	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
82.	2.10	166.15	MASSIVE DARK GRAY SANDY SHALE	
83.	1.14	168.25	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
84.	1.71	169.39	MASSIVE DARK GRAY SANDY SHALE	BDG 65 TO CA
85.	1.22	171.30	BLACK SHALE WITH COAL STREAKS	
86.	2.89	172.52	MASSIVE DARK GRAY SANDY SHALE	BDG 70 TO CA
87.	0.09	175.41	BLACK SHALE WITH COAL STREAKS	
88.	0.31	175.50	COMMON BANDED COAL	SAMPLE 13
89.	0.07	175.81	COAL WITH SHALE LAYERS	SAMPLE 13
90.	2.80	175.88	COMMON BANDED COAL	SAMPLE 13
91.	0.10	178.68	IMPURE COAL	SAMPLE 13
92.	2.44	178.78	COMMON BANDED COAL	SAMPLE 13
93.	0.05	181.22	BONE	SAMPLE 13 - W FECO3 NODULES
94.	2.09	181.27	COMMON BANDED COAL	SAMPLE 13
95.	0.42	183.36	BONE LAYERED WITH COAL	SAMPLE 13
96.	3.37	183.78	COMMON BANDED COAL	SAMPLE 13
97.	0.27	187.15	DARK GRAY SHALE WITH COAL STREAKS	
98.	0.97	187.42	DARK GRAY FIRECLAY	
99.	0.59	188.39	COAL LAYERED WITH BONE	SAMPLE 14
100.	0.20	188.98	IMPURE COAL	SAMPLE 14 FECO3 NODULES IN COAL
101.	2.03	189.18	COAL LAYERED WITH BONE	SAMPLE 14
102.	1.35	191.21	COAL WITH SHALE LAYERS	SAMPLE 15
103.	0.91	192.56	DARK GRAY FIRECLAY	
104.	0.23	193.47	COMMON BANDED COAL	
105.	1.04	193.70	BLACK SHALE WITH COAL STREAKS	
106.	0.63	194.74	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
107.	0.31	195.37	MASSIVE BLACK SHALE	
108.	0.09	195.68	COMMON BANDED COAL	
109.	0.33	195.77	BLACK SHALE WITH COAL STREAKS	
110.	0.72	196.10	MASSIVE DARK GRAY SANDY SHALE	
111.	3.13	196.82	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP

*NOTE:

LINE NUMBERS CORRESPOND TO NUMBERS TO THE RIGHT OF THE DEPTH NUMBERS ON THE GRAPHIC CORE LOG

K- BINGAY 83*(3) B*(1)

256

BINGAY BC
HOLE#: 4X4:7299
CO. NO. BC-83-02
E:644221 N:5562384
SCALE 1:240.0
ELEV 1495 DEPTH 197

COMMENTS	THICKNESS CORE	THICKNESS CORRECTED	SAMPLE No.
COAL	10.0 m.		#11
Splits 66.23 to 66.31, 68.26 to 68.56, 70.12 to 70.21			
COAL	1.56 m.		#12
COAL	0.75 m.		
COAL	11.65 m.		#13
Shale layers @ 175.81 to 175.78 Ms & Fe_2CO_3 concretions (~1m.m.) 178.68 to 178.72 shale & bone @ 183.36 to 183.75 Ms & Fe_2CO_3 nodules 181.22 to 181.27m.			
COAL (Dirty)	2.82 m.		#14
COAL (Dirty)	1.35 m.		#15

K- BINGAY CREEK 83*(3)-8
*(1)

256

BINGAY CREEK

DDH B.C.-83-03

LITHOLOGIC DESCRIPTIONS

0.001 ##

0.002 ELEVATION: 1388 M.

0.003 COORDINATES: [illegible] N.Y. [illegible] E

0.004 BINGAY CREEK DIAMOND DRILL HOLE 83-03 DATE SPUDDED: DECEMBER 07,1983

0.005 DATE COMPLETED: DECEMBER 16,1983

0.006 TOTAL DEPTH: [illegible] M

0.007 ##

0.008

0.009 LITHOLOGIC DESCRIPTIONS

0.01

0.011

0.012	THICKNESS	DEPTH TO TOP	LITHOTYPE	COMMENTS
0.013	(METRES)	(METRES)		
0.014				
2.	6.10	0.0	CASING OR SURFACE	
3.	1.18	6.10	BLACK SHALE WITH SANDSTONE STREAKS	
4.	1.95	7.28	BLACK SHALE WITH COAL STREAKS	
5.	0.83	9.23	COMMON BANDED COAL	
6.	0.20	10.06	DULL OR CANNEL COAL	
7.	0.87	10.26	MASSIVE DARK GRAY SANDY SHALE	BDG 25 TO CA
8.	2.59	11.13	BLACK SHALE WITH SANDSTONE STREAKS	
9.	4.26	13.72	MASSIVE DARK GRAY SANDY SHALE	
10.	0.55	17.98	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
11.	0.30	18.53	MASSIVE DARK GRAY SANDY SHALE	
12.	0.46	18.83	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
13.	0.04	19.29	COMMON BANDED COAL	
14.	0.17	19.33	DARK GRAY SANDY FIRECLAY	
15.	6.79	19.50	COMMON BANDED COAL	SAMPLE 16
16.	0.22	26.29	BLACK SHALE WITH COAL STREAKS	SAMPLE 16
17.	13.27	26.51	COMMON BANDED COAL	SAMPLE 16
18.	0.51	39.78	DARK GRAY FIRECLAY	
19.	4.63	40.29	BLACK SHALE WITH COAL STREAKS	BDG 15 TO CA
20.	11.46	44.92	MASSIVE DARK GRAY SANDY SHALE	FRCT. @25 TO CA-CACO3
21.	0.92	56.38	BLACK SHALE WITH COAL STREAKS	BDG 35 TO CA
22.	4.77	57.30	COMMON BANDED COAL	SAMPLE 17
23.	0.11	62.07	BLACK SHALE WITH COAL STREAKS	SAMPLE 17
24.	11.42	62.18	COMMON BANDED COAL	SAMPLE 17
25.	0.86	73.60	DARK GRAY FIRECLAY	
26.	0.91	74.46	COMMON BANDED COAL	
27.	0.80	75.37	BLACK SHALE WITH COAL STREAKS	
28.	0.47	76.17	ROOTED GRAY SANDSTONE	
29.	0.77	76.64	CHURNED DARK GRAY SANDY SHALE	
30.	1.22	77.41	BLACK SHALE WITH COAL STREAKS	
31.	5.45	78.63	MASSIVE DARK GRAY SANDY SHALE	BDG 75 TO CA-FRCT. @ 20 TO CA
32.	0.23	84.08	MASSIVE BLACK SHALE	
33.	0.34	84.31	IMPURE COAL	
34.	0.54	84.65	DARK GRAY FIRECLAY	
35.	0.88	85.19	MASSIVE DARK GRAY SANDY SHALE	
36.	0.19	86.07	BLACK SHALE WITH COAL STREAKS	
37.	0.38	86.26	COMMON BANDED COAL	
38.	2.52	86.64	BLACK SHALE WITH COAL STREAKS	
39.	0.15	89.16	IMPURE COAL	
40.	1.08	89.31	DARK GRAY FIRECLAY	
41.	4.23	90.39	MASSIVE DARK GRAY SANDY SHALE	W PLANT DEB.
42.	0.55	94.62	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
43.	2.68	95.17	BLACK SHALE WITH SANDSTONE STREAKS	
44.	0.45	97.85	COMMON BANDED COAL	SAMPLE 18
45.	0.10	98.30	DARK GRAY FIRECLAY	SAMPLE 18
46.	1.81	98.40	COMMON BANDED COAL	SAMPLE 18
47.	1.93	100.21	BLACK SHALE WITH COAL STREAKS	BDG 90 TO CA
48.	0.48	102.14	MASSIVE DARK GRAY SANDY SHALE	
49.	0.40	102.62	DARK GRAY SHALE WITH SANDSTONE STREAKS	
50.	0.73	103.02	MASSIVE DARK GRAY SANDY SHALE	
51.	0.12	103.75	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
52.	1.80	103.87	BLACK SHALE WITH COAL STREAKS	
53.	2.48	105.67	HARD SANDSTONE WITH SHALE STREAKS	RIP
54.	2.27	108.15	MASSIVE DARK GRAY SANDY SHALE	
55.	2.05	110.42	BURROWED DARK GRAY SANDY SHALE	
56.	1.72	112.47	MASSIVE DARK GRAY SANDY SHALE	
57.	0.31	114.19	BURROWED DARK GRAY SANDY SHALE	
58.	2.69	114.50	MASSIVE DARK GRAY SANDY SHALE	
59.	0.50	117.19	IMPURE COAL	SAMPLE 19
60.	3.93	117.69	COMMON BANDED COAL	SAMPLE 19
61.	0.45	121.62	DARK GRAY FIRECLAY	SAMPLE 19
62.	0.57	122.07	COMMON BANDED COAL	SAMPLE 19
63.	2.40	122.64	DARK GRAY SHALE WITH SANDSTONE STREAKS	W COAL SPAR
64.	0.38	125.04	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
65.	1.81	125.42	DARK GRAY SHALE WITH SANDSTONE STREAKS	W COAL STREAKS
66.	0.48	127.23	BLACK SHALE WITH COAL STREAKS	
67.	0.94	127.71	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
68.	2.10	128.65	MASSIVE DARK GRAY SANDY SHALE	W PLANT DEB.
69.	0.21	130.75	BONE STREAKED WITH COAL	
70.	1.79	130.96	MASSIVE DARK GRAY SANDY SHALE	W PLANT DEB.
71.	1.30	132.75	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
72.	1.65	134.05	DARK GRAY SHALE WITH SANDSTONE STREAKS	
73.	0.26	135.70	BLACK SHALE WITH COAL STREAKS	
74.	0.66	135.96	COAL WITH SHALE LAYERS	CORE LOSS APPARENT
75.	0.23	136.62	DARK GRAY FIRECLAY	
76.	1.05	136.85	COAL WITH SHALE LAYERS	
77.	0.17	137.90	BLACK SHALE WITH COAL STREAKS	
78.	7.86	138.07	MASSIVE DARK GRAY SANDY SHALE	FRCT. @ 20 TO CA-0.02M COAL @ 144.97
79.	1.08	145.93	DARK GRAY SHALE WITH SANDSTONE STREAKS	
80.	4.61	147.01	MASSIVE DARK GRAY SANDY SHALE	
81.	2.27	151.62	DARK GRAY SHALE WITH SANDSTONE STREAKS	
82.	2.58	153.89	MASSIVE DARK GRAY SANDY SHALE	
83.	0.55	156.47	BLACK SHALE WITH COAL STREAKS	
84.	0.08	157.02	COMMON BANDED COAL	APPEARS GROUND
85.	0.29	157.10	BLACK SHALE WITH COAL STREAKS	
86.	2.10	157.39	COMMON BANDED COAL	SAMPLE 20
87.	0.39	159.49	BLACK SHALE WITH COAL STREAKS	

88.	0.42	189.76	MASSIVE DARK GRAY SANDY SHALE	
89.	[illegible]	[illegible]	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	FLT [illegible]
90.	1.03	160.49	BLACK SHALE WITH COAL STREAKS	
91.	0.11	161.43	IMPURE COAL	
92.	0.16	161.59	BLACK SHALE WITH COAL STREAKS	
93.	9.09	161.75	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
94.	0.71	171.04	BURROWED DARK GRAY SANDY SHALE	
95.	3.09	171.75	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
96.	2.53	174.84	DARK GRAY SHALE WITH SANDSTONE STREAKS	
97.	2.23	177.37	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
98.	1.27	179.60	DARK GRAY SHALE WITH SANDSTONE STREAKS	
99.	2.25	181.59	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
100.	1.06	181.54	DARK GRAY SHALE WITH SANDSTONE STREAKS	SOM TO TO CA
101.	0.72	185.62	MASSIVE DARK GRAY SANDY SHALE	
102.	0.91	186.34	BLACK SHALE WITH COAL STREAKS	
103.	2.81	187.15	COMMON BANDED COAL	SAMPLE 21-80XR20.+0.15 M SPLIT @?
104.	0.47	189.96	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP W COAL SPAR
105.	1.05	190.43	DARK GRAY SHALE WITH SANDSTONE STREAKS	W COAL SPAR
106.	1.12	191.48	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
107.	0.72	192.60	MASSIVE DARK GRAY SANDY SHALE	
108.	0.52	193.59	BLACK SHALE WITH COAL STREAKS	
109.	1.11	194.11	COMMON BANDED COAL	SAMPLE 22
110.	0.14	195.22	BLACK SHALE WITH COAL STREAKS	SAMPLE 23
111.	2.31	195.37	COMMON BANDED COAL	SAMPLE 23
112.	0.76	197.68	BLACK SHALE WITH COAL STREAKS	
113.	1.74	198.34	COMMON BANDED COAL	SAMPLE 24 - HIGHLY BROKEN
114.	0.30	200.10	DARK GRAY FIRECLAY	
115.	3.42	200.40	MASSIVE DARK GRAY SANDY SHALE	
116.	0.74	203.82	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
117.	1.48	204.63	MASSIVE DARK GRAY SANDY SHALE	
118.	1.61	206.11	SANDY SHALE MUDFLOW	
119.	7.73	207.62	MASSIVE DARK GRAY SANDY SHALE	SOM TO TO CA
120.	4.44	215.35	COMMON BANDED COAL	SAMPLE 24-3 SPLITS TOTAL 0.28M @ ?
121.	1.65	219.79	MASSIVE DARK GRAY SANDY SHALE	W COAL SPAR
122.	1.37	221.44	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
123.	0.68	222.81	MASSIVE DARK GRAY SANDY SHALE	
124.	0.97	223.49	DARK GRAY SHALE WITH SANDSTONE STREAKS	
125.	0.12	224.46	GRAY SANDSTONE WITH SHALE STREAKS	RIP
126.	0.65	224.58	DARK GRAY SHALE WITH SANDSTONE STREAKS	
127.	0.34	225.13	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
128.	2.30	225.47	MASSIVE DARK GRAY SANDY SHALE	
129.	0.10	227.77	IMPURE COAL	
130.	0.10	227.87	BLACK SHALE WITH COAL STREAKS	
131.	0.62	227.97	DARK GRAY SHALE WITH SANDSTONE STREAKS	W PLANT DEB.
132.	0.15	228.59	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
133.	0.71	228.74	GRAY SANDSTONE WITH SHALE STREAKS	RIP
134.	0.60	229.45	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
135.	1.24	230.05	MASSIVE DARK GRAY SANDY SHALE	
136.	0.14	231.29	BLACK SHALE WITH COAL STREAKS	
137.	0.70	231.43	DARK GRAY SHALE WITH SANDSTONE STREAKS	
138.	0.69	232.13	COMMON BANDED COAL	
139.	0.42	232.82	BLACK SHALE WITH COAL STREAKS	
140.	0.26	233.24	DARK GRAY SHALE WITH SANDSTONE STREAKS	
141.	2.19	233.50	BLACK SHALE WITH COAL STREAKS	
142.	0.38	235.69	DARK GRAY SHALE WITH SANDSTONE STREAKS	
143.	1.53	236.07	BLACK SHALE WITH COAL STREAKS	
144.	0.33	237.60	MASSIVE DARK GRAY SANDY SHALE	
145.	7.31	237.93	BLACK SHALE WITH COAL STREAKS	
146.	0.34	245.24	DARK GRAY SHALE WITH SANDSTONE STREAKS	
147.	1.30	245.58	BLACK SHALE WITH COAL STREAKS	
148.	0.82	244.88	COAL WITH SHALE LAYERS	
149.	2.13	247.70	BLACK SHALE WITH COAL STREAKS	
150.	1.00	249.83	DARK GRAY SHALE WITH SANDSTONE STREAKS	
151.	0.46	250.83	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
152.	0.26	251.29	DARK GRAY SHALE WITH SANDSTONE STREAKS	
153.	0.70	251.55	MASSIVE DARK GRAY SANDY SHALE	
154.	0.73	252.25	MASSIVE BLACK SHALE	
155.	3.87	252.98	MASSIVE DARK GRAY SANDY SHALE	W PLANT DEB. & COAL SPAR
156.	0.12	256.85	COMMON BANDED COAL	
157.	0.40	256.97	MASSIVE DARK GRAY SANDY SHALE	W COAL SPAR
158.	0.06	257.37	IMPURE COAL	
159.	0.41	257.43	MASSIVE DARK GRAY SANDY SHALE	
160.	0.42	257.84	BLACK SHALE WITH COAL STREAKS	
161.	4.79	258.26	MASSIVE DARK GRAY SANDY SHALE	W PLANT DEB. & COAL SPAR
162.	0.41	263.05	DARK GRAY SHALE WITH SANDSTONE STREAKS	
163.	0.90	263.46	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	FLT
164.	0.51	264.36	BLACK SHALE WITH COAL STREAKS	
165.	0.82	264.87	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
166.	2.26	265.69	MASSIVE DARK GRAY SANDY SHALE	
167.	3.52	267.95	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
168.	0.55	271.47	MASSIVE DARK GRAY SANDY SHALE	
169.	0.21	272.02	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
170.	3.20	272.23	MASSIVE DARK GRAY SANDY SHALE	
171.	0.21	275.43	BLACK SHALE WITH COAL STREAKS	
172.	0.18	275.64	MASSIVE DARK GRAY SANDY SHALE	
173.	1.67	275.82	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
174.	0.83	277.49	MASSIVE DARK GRAY SANDY SHALE	
175.	1.04	278.32	DARK GRAY SHALE WITH SANDSTONE STREAKS	
176.	3.51	279.36	MASSIVE DARK GRAY SANDY SHALE	
177.	1.33	282.87	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
178.	1.60	284.20	MASSIVE DARK GRAY SANDY SHALE	
179.	0.15	285.80	BLACK SHALE WITH COAL STREAKS	
180.	0.55	285.95	MASSIVE DARK GRAY SANDY SHALE	
181.	4.53	286.50	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
182.	0.55	291.03	DARK GRAY SHALE WITH SANDSTONE STREAKS	
183.	1.47	291.58	MASSIVE DARK GRAY SANDY SHALE	
184.	0.20	292.75	BLACK SHALE WITH COAL STREAKS	
185.	0.29	292.95	MASSIVE DARK GRAY SANDY SHALE	SOM TO TO CA
186.	1.51	293.24	COMMON BANDED COAL	SAMPLE 25
187.	0.35	294.75	MASSIVE DARK GRAY SANDY SHALE	
188.	1.32	295.10	BLACK SHALE WITH COAL STREAKS	

189.	4.68	297.07	COMMON BANDED COAL	SAMPLE 26
190.	0.50	301.75	BLACK SHALE WITH COAL STREAKS	
191.	0.14	302.25	MASSIVE DARK GRAY SANDY SHALE	W COAL SEAM
192.	0.10	302.41	COMMON BANDED COAL	
193.	1.00	302.51	BLACK SHALE WITH COAL STREAKS	
194.	0.70	303.51	COMMON BANDED COAL	
195.	0.33	304.21	BLACK SHALE WITH COAL STREAKS	
196.	0.24	304.54	MASSIVE DARK GRAY SANDY SHALE	
197.	0.14	304.78	BLACK SHALE WITH COAL STREAKS	
198.	2.62	304.92	COMMON BANDED COAL	SAMPLE 27
199.	0.62	307.54	DARK GRAY SHALE WITH SANDSTONE STREAKS	
200.	1.01	308.16	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
201.	0.80	309.17	DARK GRAY SHALE WITH SANDSTONE STREAKS	W PLANT DEB.
202.	1.79	309.97	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
203.	1.44	311.76	DARK GRAY SHALE WITH SANDSTONE STREAKS	W PLANT DEB.
204.	0.36	313.42	BLACK SHALE WITH COAL STREAKS	
205.	0.79	313.78	DARK GRAY SHALE WITH SANDSTONE STREAKS	
206.	0.58	314.57	BLACK SHALE WITH COAL STREAKS	
207.	0.86	315.16	DARK GRAY SHALE WITH SANDSTONE STREAKS	
208.	0.63	315.42	BLACK SHALE WITH COAL STREAKS	
209.	0.15	316.05	IMPURE COAL	
210.	0.34	316.20	COMMON BANDED COAL	
211.	0.15	316.54	BLACK SHALE WITH COAL STREAKS	
212.	1.47	316.69	DARK GRAY SHALE WITH SANDSTONE STREAKS	W COAL SEAM
213.	0.56	318.16	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
214.	1.14	318.72	DARK GRAY SHALE WITH SANDSTONE STREAKS	W COAL SEAM
215.	0.54	319.86	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
216.	0.22	320.40	DARK GRAY SHALE WITH SANDSTONE STREAKS	
217.	0.07	320.62	BLACK SHALE WITH COAL STREAKS	
218.	0.57	320.69	DARK GRAY SHALE WITH SANDSTONE STREAKS	W PLANT DEB.
219.	0.10	321.26	BLACK SHALE WITH COAL STREAKS	
220.	0.33	321.36	DARK GRAY SHALE WITH SANDSTONE STREAKS	W PLANT DEB.
221.	0.11	321.69	BLACK SHALE WITH COAL STREAKS	
222.	0.91	321.80	DARK GRAY SHALE WITH SANDSTONE STREAKS	
223.	0.80	322.71	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
224.	0.92	323.51	MASSIVE DARK GRAY SANDY SHALE	W PLANT DEB.
225.	2.40	324.43	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP-@ 325.83 M CACO3 FROT. ZONE
226.	1.69	326.83	MASSIVE DARK GRAY SANDY SHALE	
227.	1.32	328.52	DARK GRAY SHALE WITH SANDSTONE STREAKS	
228.	2.31	329.84	MASSIVE DARK GRAY SANDY SHALE	
229.	0.70	332.35	DARK GRAY SHALE WITH SANDSTONE STREAKS	
230.	0.17	333.05	BLACK SHALE WITH COAL STREAKS	
231.	0.26	333.22	COMMON BANDED COAL	
232.	1.61	333.48	BLACK SHALE WITH COAL STREAKS	
233.	0.60	335.09	COMMON BANDED COAL	
234.	3.10	335.69	BLACK SHALE WITH COAL STREAKS	
235.	0.17	338.79	DULL OR CANNEL COAL	
236.	1.59	338.96	DARK GRAY SHALE WITH SANDSTONE STREAKS	
237.	0.52	340.55	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
238.	2.63	341.07	MASSIVE DARK GRAY SANDY SHALE	
239.	0.83	343.70	MASSIVE HARD SANDSTONE	
240.	2.73	344.73	MASSIVE DARK GRAY SANDY SHALE	
241.	0.39	347.46	BLACK SHALE WITH COAL STREAKS	
242.	1.15	347.85	GRAY SANDSTONE WITH SHALE STREAKS	RIP
243.	1.73	349.00	MASSIVE BLACK SHALE	
244.	0.27	350.73	GRAY SANDSTONE WITH SHALE STREAKS	RIP
245.	0.74	351.00	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	FLT-BDG 76 TO CA
246.	0.91	351.74	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
247.	1.07	352.65	MASSIVE DARK GRAY SANDY SHALE	
248.	0.52	353.72	DARK GRAY SHALE WITH SANDSTONE STREAKS	
249.	4.36	354.24	BLACK SHALE WITH SANDSTONE STREAKS	
250.	0.09	358.60	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
251.	0.31	358.69	CROSS-BEDDED GRAY SANDSTONE	W MINOR RIP-UP CLASTS
252.	0.55	359.00	GRAY SANDSTONE WITH SHALE STREAKS	RIP
253.	2.95	359.55	MASSIVE DARK GRAY SANDY SHALE	
254.	0.33	362.50	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	FLT
255.	1.32	362.83	BLACK SHALE WITH SANDSTONE STREAKS	
256.	0.17	364.15	GRAY SANDSTONE WITH SHALE STREAKS	RIP
257.	0.37	364.32	CROSS-BEDDED GRAY SANDSTONE	
258.	0.35	364.69	DARK GRAY SHALE WITH SANDSTONE STREAKS	
259.	2.29	365.04	MASSIVE DARK GRAY SANDY SHALE	
260.	0.97	367.33	GRAY SANDSTONE WITH SHALE STREAKS	RIP
261.	0.94	368.30	MASSIVE DARK GRAY SANDY SHALE	
262.	0.30	369.24	BLACK SHALE WITH COAL STREAKS	
263.	3.09	369.54	COMMON BANDED COAL	SAMPLE 28-SPLIT 372.31 TO 372.74 M
264.	1.68	378.83	DARK GRAY SHALE WITH SANDSTONE STREAKS	
265.	1.71	380.51	COMMON BANDED COAL	SAMPLE 29
266.	1.01	382.22	BLACK SHALE WITH COAL STREAKS	
267.	6.76	383.23	DARK GRAY SHALE WITH SANDSTONE STREAKS	
268.	2.07	389.99	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
269.	0.82	392.06	GRAY SANDSTONE WITH SHALE STREAKS	RIP
270.	0.72	392.88	DARK GRAY INTERBEDDED SANDSTONE AND SHAL	RIP
271.	0.81	393.60	DARK GRAY SHALE WITH SANDSTONE STREAKS	

R - DING-A[illegible](3)B (7)

256

DAVIES EXPLORATION LOGGING LTD.

COMPANY	Utah Mines Ltd.
HOLE NUMBER	DDH - B.C. 83 - 3
LOCATION	
PROVINCE	B.C.
ELEVATION	
LOG TYPE:	CALIPER, NATURAL GAMMA, ~~RESISTIVITY~~, DENSITY
DATE	Dec. 16 1983
DRILLED DEPTH	395
LOGGED DEPTH	395
ZERO DATUM	G.L.
HOLE DIAMETER	HQ
CASING LENGTH	6m
REMARKS:	

CALIPER NATURAL GAMMA RESISTIVITY

DENSITY

K- BINGAY 83*(3)B *(1)

ROKE

GAMMA RAY
SIDEWALL DENSILOG
CALIPER

OIL ENTERPRISES LTD. CALGARY, ALBERTA

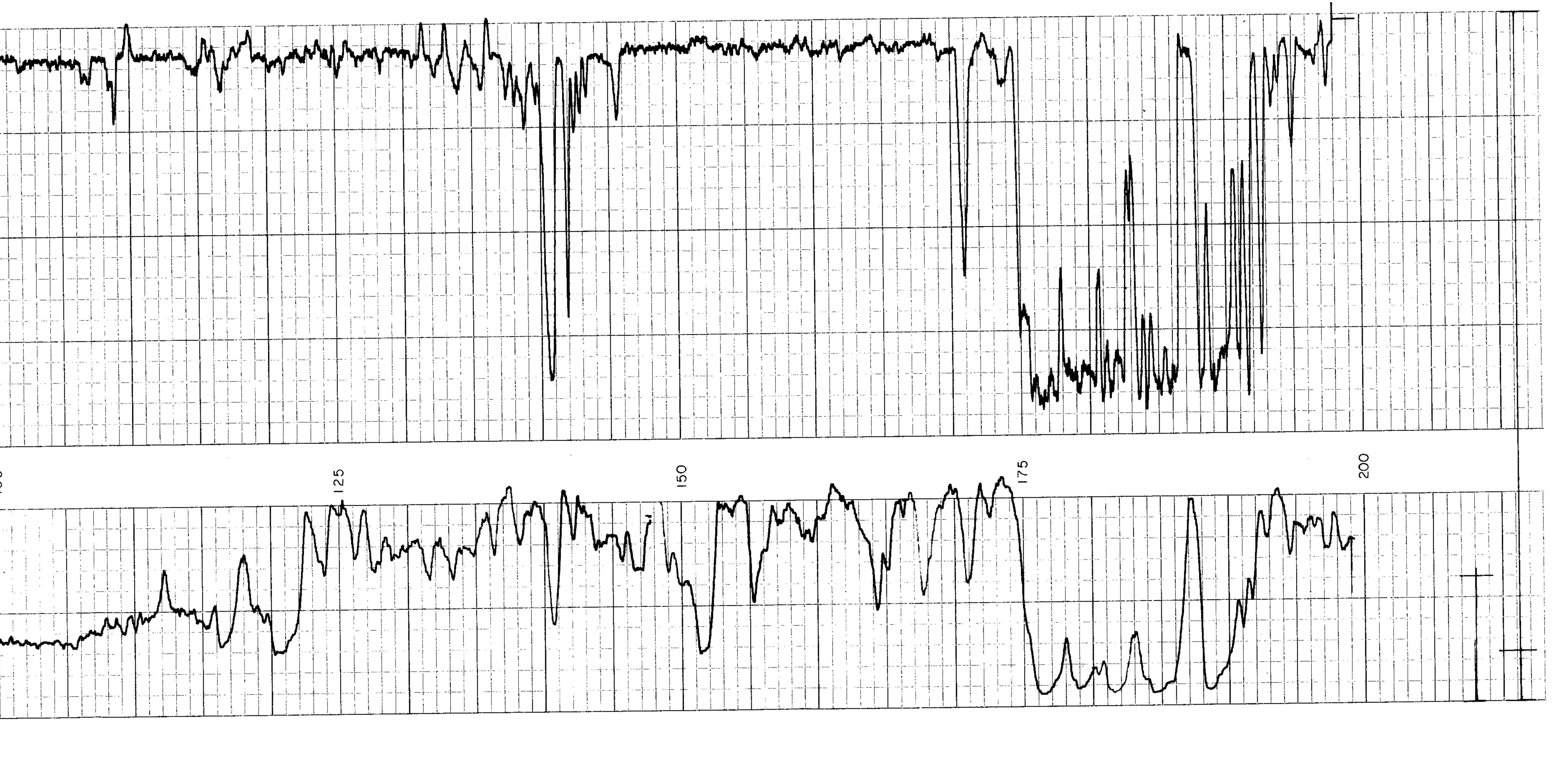
FILE NO.	256
LSD	
SEC	
TWP	
RGE	
W ___ M	
COMPANY	UTAH MINES LTD.
WELL	DDH BC - 83 - 02
LOCATION	
FIELD	BINGAY CREEK
PROVINCE	BRITISH COLUMBIA
Other Services:	DIR.
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	CASING .4M BELOW Perm. Datum
Well Depths Measured from	
K.B.	
CSG	
G.L.	
	240 METRIC

Run. No.	ONE		
Date	7 DEC 83		
First Reading	198		
Last Reading	0		
Footage Logged	198		
Depth Reached	199		
Depth Driller			
Casing Roke			
Casing Driller	3.04		
Fluid Type	MUD		
Liquid Level			
Min. Diam.	HQ		
Operating Time	14:00 —		
Truck No.	50		
Recorded By	S/M	Witnessed By	DUNCAN

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/ DIV
1	0	198	8	4	100	0L	15 API	2	5K	2.36 R	151.53

REMARKS API To CPS = 1 To 1.2   80° ANGLE
GR # 13 DEN # 241

CALIPER DIAMETER - CM	BULK DENSITY (GRAMS/CC)
DEPTHS	
GAMMA RAY API 15 (0 – 150)	



K-BINGAY 83 (3) B (1)

256

BINGAY BC
HOLE# 4X4:7299
CO. NO., BC-83-03
E:644430 N:5562970
SCALE 1:240.0
ELEV 1388 DEPTH 394

COMMENTS	THICKNESS CORE	THICKNESS CORRECTED	SAMPLE No.
COAL 0.83 m. CANNEL COAL 0.20 m. }	1.03 m.		
COAL	20.28m	6.80 m.	#16
CaCO₃ on tension fracts. @ 25° C.A.			
COAL	16.30 m.	13.75 m	#17
IMPURE COAL			
COAL	0.42 m.		
IMPURE COAL			
w plant debris			
COAL	2.26 / 2.36 m.	2.20 m.	#18
IMPURE COAL			
COAL	5.00 m / 5.45 m.	4.40 m.	#19
COAL 0.66 m. COAL 1.05 m. } Core loss ?			
COAL	2.18 m.	2.10 m.	#20
COAL	2.81 m.	2.66 m.	#21
COAL	3.47 m.	2.70 m	#22
COAL	1.76 m.	1.70 m.	#23
COAL	4.16 / 4.44 m.	4.29	#24
COAL	1.51 m.	1.40 m.	#25
COAL	4.68 m.	4.53 m.	#26
COAL	0.70 m.	0.66 m.	
COAL	2.62 m.	2.52 m.	#27
CANNEL			
COAL	9.29 m.	9.18 m.	#28
COAL	1.71 m.		#29