Appendix 6-5

Drilling Results

DRILLING RESULTS
5-30-86

GENWAL COAL COM!

P.O. Box 1201 • Huntington, Utah 84.
Telephone (801) 687-9813

April 25, 1985

Mr. Toby Manzanares
Moab District Office
Bureau Of Land Management
82 East Dogwood
P.O.Box 970
Moab, Utah 84532

Dear Mr. Manzanares,

Please find enclosed a copy of the drilling information you requested on the phone the other day. I am very sorry for the delay in getting the information to your office.

The information where we did not core must be interpretted from the water returning from the hole and may or may not be accurate. The areas where there was more than two inches of coal were cored and we have these cores stored in this office, Mr. Vance of your Price office has looked at some of the cores, however we will be more than happy for your office to examine these cores and discuss any further questions you may have.

As you can see from the information in the section there are no mineable seams above us at this particular location. Wtih this information and the information from the previous hole we have determined there exists no mineable seams above us on this property. At this point we will begin to make plans to create a larger portal area to better serves the needs of the mine on the Hiawatha level.

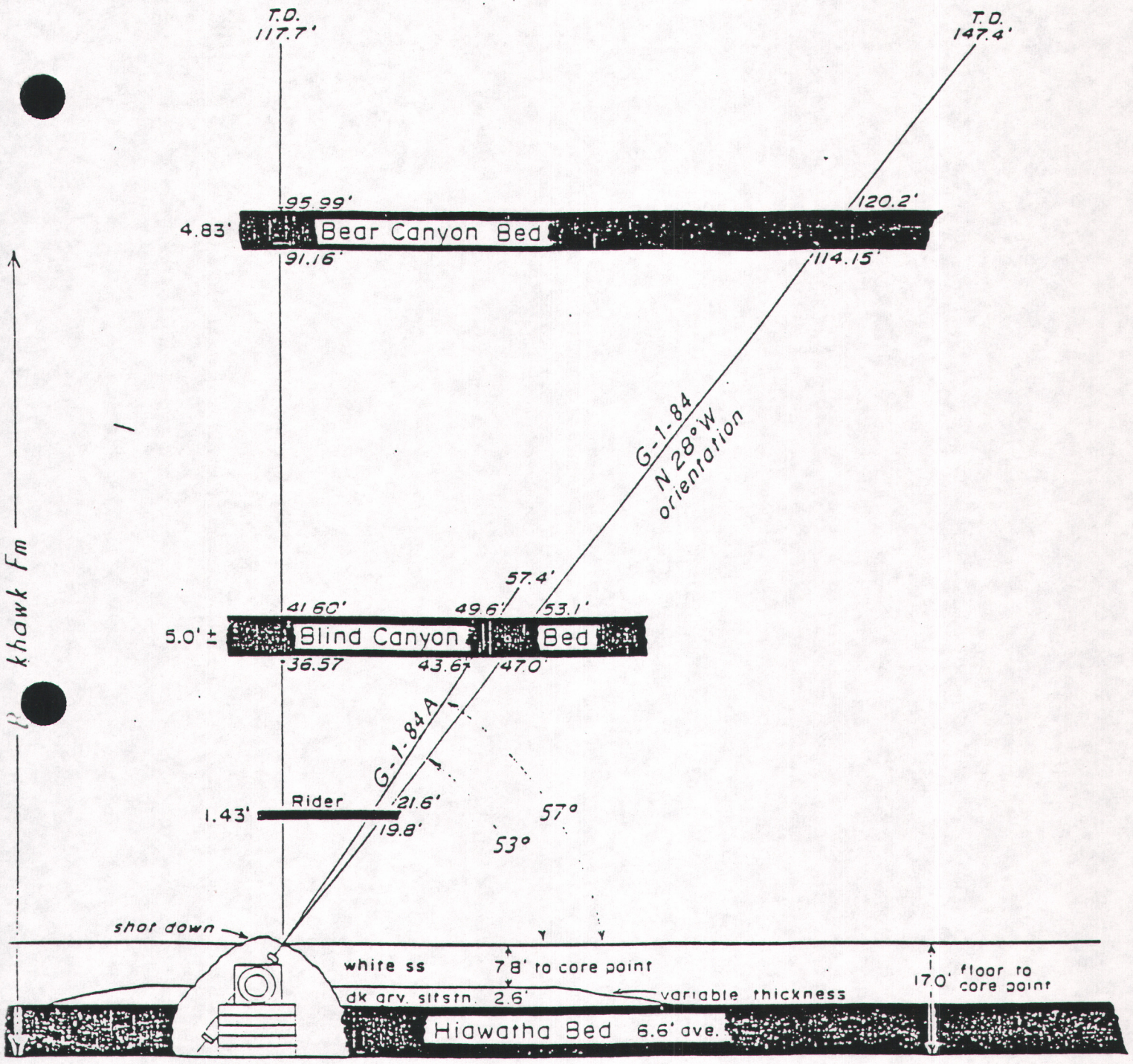
If I can be of any further service please feel free to contact me at 687-9813. Thank you for your time and consideration.

Sincerely yours,

Charles H. Gent Jr.
Vice President

enc.

CONFIDENTIAL



Star Point SS

GENWAL COAL COMPANY
D.H. 1

Coal - Utah

GENWAL MINE

DRILL HOLE G-1-84 and G-1-84A

May, 1984 D.R. Olsen

SCALE 1" = 20'

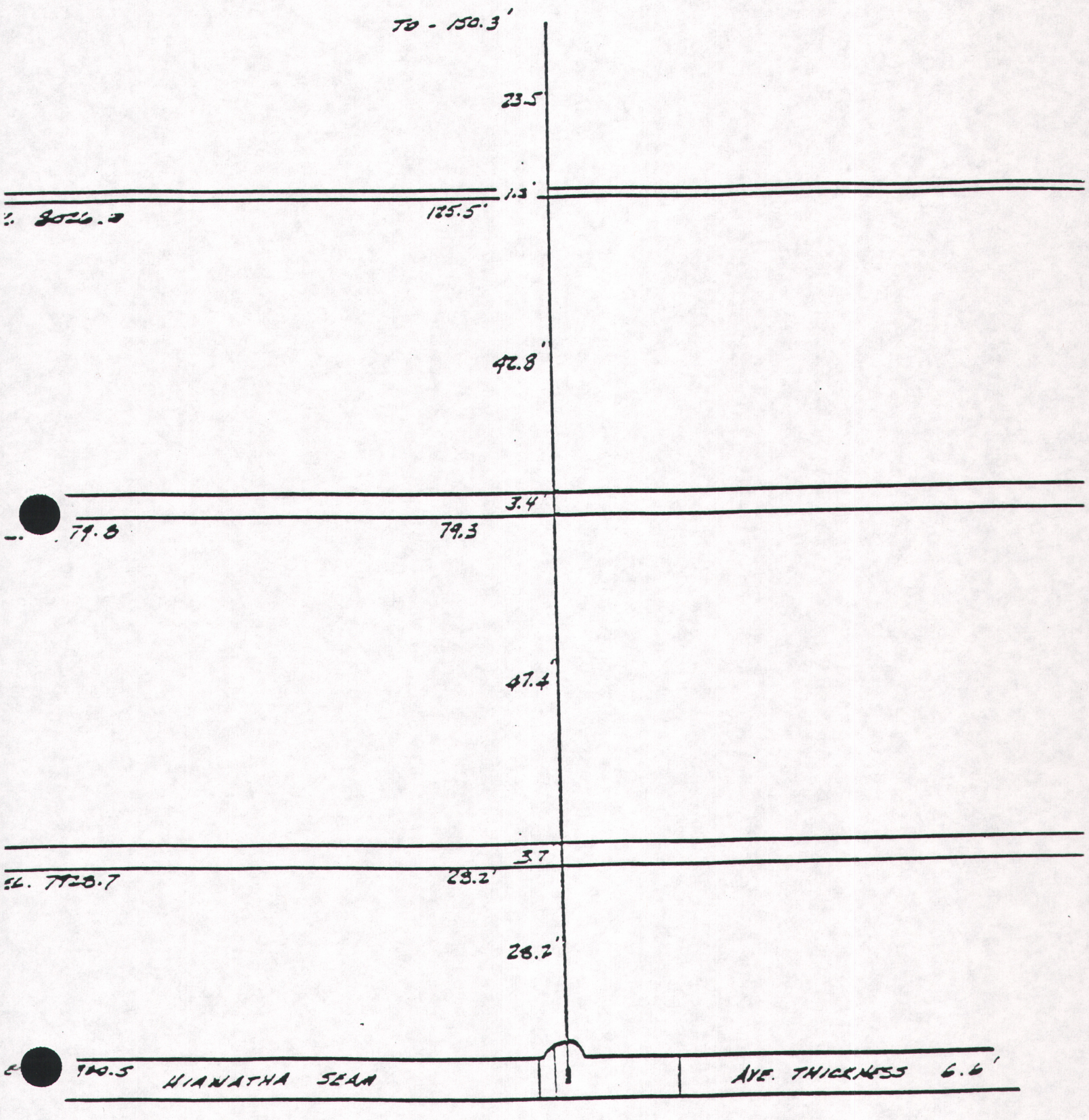
MID TERM REVISION 5-30-86

IKD. BY ..... DATE .....

DRILL HOLE CH-2
CRANDALL CANYON

JOB NO. DRILLER ACK

CONFIDENTIAL



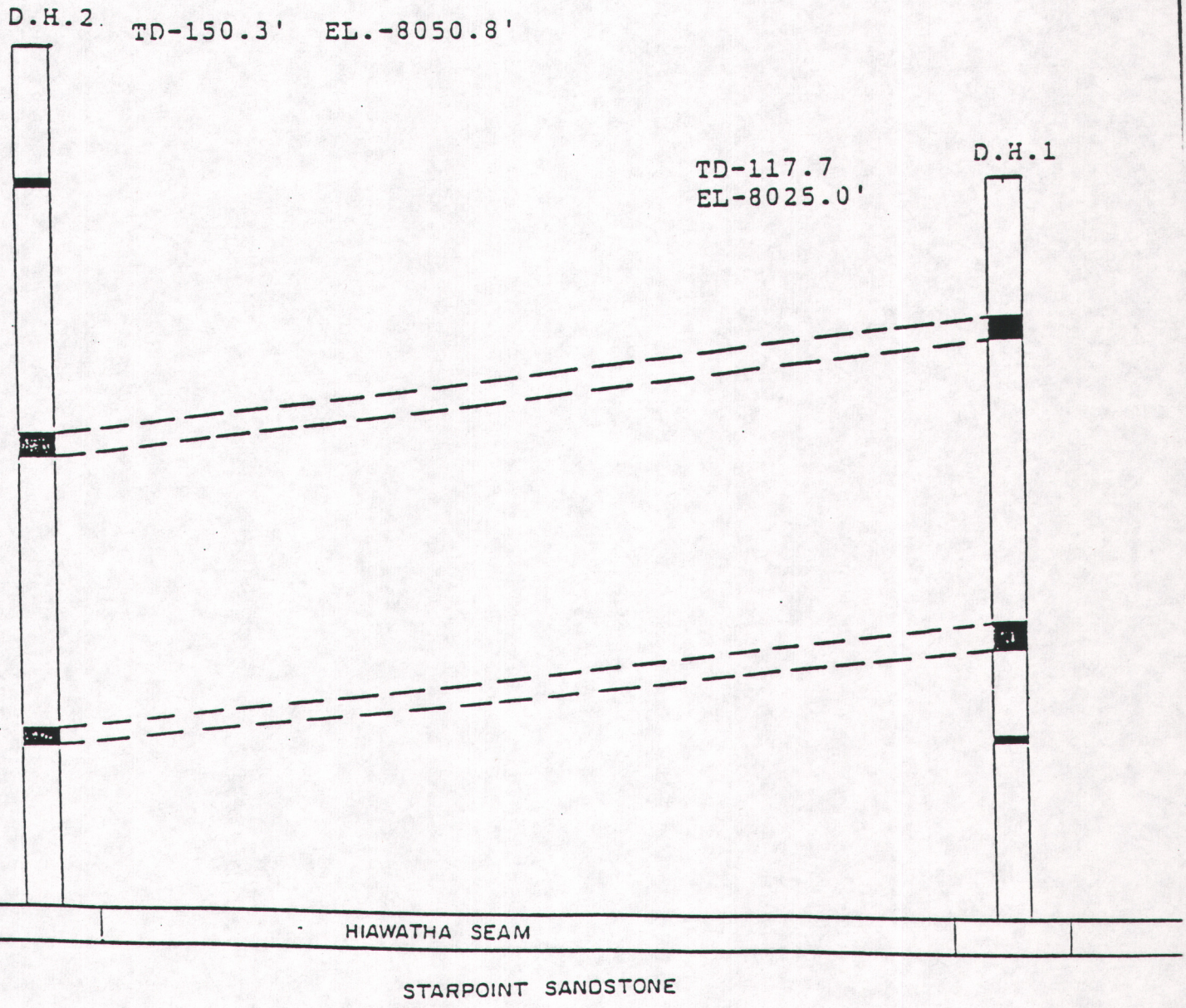
SCALE 1" = 20'

CONFIDENTIAL

20.7' - 26.7'	WHITE SS
	CORE POINT
28.2' - 31.9'	COAL - BRIGHT, HARD RESINOUS
31.9' - 34.4'	LT. GRAY SHALE
	END CORE
34.4' - 74.5'	GRAY DRILLING RETURN W/ THIN LAYERS OF BROWN STREAK
	CORE POINT
79.5' - 82.9'	COAL BRIGHT, HARD, RESINOUS
82.9 - 84.4'	WHITE HARD SANDSTONE
	END CORE
84.4' - 125.5'	GRAY DRILLING RETURN → WHT / LT GREY RETURN
	CORE POINT
125.5' - 126.0'	COAL BRIGHT. HARD
126.8' - 128.7'	CARBONACEOUS SHALE W/ COAL PARTINGS AND LENSES
	END CORING
130.0' - 131.1'	BROWN H_2O MUDDY
131.1' - 131.2'	COAL
[redacted] - 132.2'	BROWN MUDDY H_2O
[redacted] - 134.0'	WHT H_2O RETURN
134.0' - 144.5'	BROWN MUDDY, LT GRAY, WHT H_2O RETURN THIN LAYERS
144.5' - 145.0'	WHT H_2O RETURN
150.3	TD

DRILL HOLE X-SECTION
5-30-86

SCALE H 1"=300'
V 1"= 30'



DRILL HOLE CROSS-SECTION

GENWAL COAL COMPANY
5-30-86

EARTHFAX ENGINEERING, INC. DRILLING LOG 7-5-2 MW4 UP PAGE 1 OF 4

Project Name: CRANDALL CANYON MINE	Boring/Well Number: IMOH-1 MAIN WEST, CROSSCUT #91
Owner/Client: GENWALL COAL COMPANY	Boring/Well Location: 413, 415.7'N 2, 084, 183.0'E
Project Number UC-27	Reference Elevation: 8158.8' AMSL (Drilled up)
Sample Method: CORE	Reference Point: MINE CEILING
Date Drilled: 13 JAN 1992	Drilling Contractor: BOYLES
Logged By: BKB	Drilling Method: ROTARY Rig Type: DIAMEC 260
First occurrence of G W 30-36 5' Static W L.: --	Boring Depth (ft): 151' UP Well Depth (ft): --
Dates Measured: 14 JAN 1992 --	Boring Diameter (in): 3.992"

FORMATION	AGE	DEPTH (FT)	GRAPHICAL LOG	LITHOLOGIC DESCRIPTION AND OBSERVATIONS	WELL COMPLETION DETAILS
		50		(LOG CONTINUED ON FOLLLOWING PAGE)	
				41 5 - 54 5' SILTSTONE Light and dark grey, laminae <0 1 - 0 1", carbonaceous fragments, very fine-grained sandstone lenses present, low porosity, moderate HCl reaction, filled gouge fractures	
		45			
				40 6 - 41 5' SHALE Light grey, carbonaceous-rich	
Cott Coal		40		37 - 40 6' COAL Black vitreous luster, blocky	
				36 5 - 37 5' SILTSTONE Dark to light grey, shaley, no porosity, no HCl reaction	
				34 2 - 36 5' SANDSTONE Light grey, silty, low porosity, strong HCl reaction, bioturbated Perched aquifer	
		35			
				31 8 - 34 2' SILTSTONE Dark grey, clay-rich	
				30 - 31 8' SANDSTONE Light grey, very fine-grained, low porosity, moderate HCl reaction, load structures Clay minerals and carbonaceous material along bedding planes Perched aquifer	
		30			
				24 8 - 30' SILTSTONE Light to dark grey, carbonaceous-rich, clay minerals present, low porosity, moderate HCl reaction	3.992" Drill hole
BLACKHAWK FORMATION	UK				
		25		24 5 - 24 8' COAL Black vitreous	
				23 8 - 24 5' SANDSTONE Very fine-grained, carbonaceous material, low porosity low HCl reaction	
				22 - 23 8' SILTY SANDSTONE Fine-grained low porosity, moderate HCl reaction Clay along bedding planes	
		20		11 2 - 22' SANDY SILTSTONE Dark to light grey, sandstone is very fine-grained, laminae <0 1 to 0 1" thick, no porosity, no HCl reaction	Cement
		15			
				10 5 - 11 2' COAL Black, vitreous, resinous	
		10		10 - 10 5' SILTY SHALE Dark grey, carbonaceous-rich, coal lenses up to 1/8" thick	
				5 - 10' SHALEY SILTSTONE Sand lenses present in minor amounts, carbonaceous fragments, low porosity, mild HCl reaction	
		5		4 6 - 5' SILTY SHALE Grey to light grey	
				4 5 - 4 6' SHALE Black carbonaceous-rich, laminae <0 1"	
				3 5 - 4 5' SHALEY SILTSTONE Dark grey, low porosity, no HCl rxn	
				3 0 - 3 5' SANDSTONE Light grey, fine to very fine-grained, low porosity, no HCl reaction	5" Surface Casing 0-4'
				1 5 - 3' SILTSTONE Light grey, carbonaceous-rich, low porosity, no HCl reaction	
Hiawatha Coal				0 - 1 5' COAL Black vitreous, resinous, blocky	
		0		ROOF OF MINE	

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Project Number: UC-27	Reference Elevation: 8158 8' AMSL (Drilled up)
Sample Method: CORE	Reference Point: MINE CEILING
Date Drilled: 13 JAN 1992	Drilling Contractor: BOYLES
Logged By: BKB	Drilling Method ROTARY Rig Type: DIAMEC 260
First occurrence of G.W.: 30-36.5' Static W.L.: --	Boring Depth (ft): 151' UP Well Depth (ft): --
Dates Measured: 14 JAN 1992 --	Boring Diameter (in): 3 992"

FORMATION	AGE	DEPTH (FT)	GRAPHICAL LOG	LITHOLOGIC DESCRIPTION AND OBSERVATIONS	WELL COMPLETION DETAILS
		100		(CONTINUED ON FOLLOWING PAGE)	
				98 7 - 99' COAL Black, boney	
				98 - 98 7' SILTSTONE Shaley, carbonaceous-rich	
				96 8 - 98' COAL Black, vitreous luster, resinous	
				91 8 - 96 8' SILTSTONE Interbedded black shale (up to 0 5" thick) and light tan sandy siltstone, low porosity, strong HCl reaction	
		95		Vertical fracture from 92 - 93 5'	
Blind Canyon Coal				88 8 - 91 8' COAL Black, vitreous luster, resinous	
		90		86 7 - 88 8' SILTSTONE Light grey, laminae <0 1 - 0 1"	
				84 - 86 7' COAL Black, vitreous luster, resinous	
		85		79 9 - 84' SANDSTONE Light grey, very fine-grained, wavy bedding, low porosity, moderate HCl reaction	3.992" Drill hole
		80			
BLACKHAWK FORMATION	UK				Cement
		75		74 5 - 74 9' COAL Black	
				73.5 - 74 5' SANDSTONE Light grey, wavy lamination, low porosity, moderate HCl reaction	
				72 - 73 5' SILTSTONE Carbonaceous-rich, silty coal seams up to 2" thick	
				69.5 - 72' SANDSTONE Light grey, very fine-grained, wavy bedding, moderate porosity, strong HCl reaction	
		70		67 5 - 69 5' SANDSTONE Silty, very fine-grained, clay minerals along bedding planes	
				65 - 67 5' SANDSTONE Light grey, silty, very fine-grained, clay minerals along bedding planes	
		65		61.5 - 65' SANDY SILTSTONE Light grey, clay and carbonaceous material abundant along bedding planes, bioturbated	
				60.8 - 61 5' SHALEY SILTSTONE Medium grey, abundant carbonaceous material and coal seams up to 1/4" thick, no porosity, no HCl reaction 1/4" coal seam at 61 3'	
		60		55 9 - 60 8' SILTSTONE Sandy, light grey, carbonaceous and clay minerals along bedding planes	
				54 9 - 55 9' SANDSTONE Light grey, very fine-grained, carbonaceous material and clay minerals along bedding planes, low porosity, moderate HCl reaction	
		55		54 5 - 54 9' COAL Black, vitreous	
		50			

Project Name: CRANDALL CANYON MINE	Boring/Well Number: IMOH-1 MAIN WEST, CROSSCUT #91
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First occurrence of G.W.: 30-36.5' Static W.L.: --	Boring Depth (ft): 151' UP Well Depth (ft): --
Dates Measured: 14 JAN 1992 --	Boring Diameter (in): 3.992"

FORMATION	AGE	DEPTH (FT)	GRAPHICAL LOG	LITHOLOGIC DESCRIPTION AND OBSERVATIONS	WELL COMPLETION DETAILS
		150		147.3 - 150.5' SILTSTONE Grey, low porosity, moderate HCl reaction Interbedded with dark grey shale	
Upper Bear Coal				146.75 - 147.3' COAL Black, bony, silty, no porosity, no HCl reaction	
				146 - 146.75' SILTY SHALE Carbonaceous-rich, very low porosity, moderate HCl reaction	
		145		144 - 146' SILTSTONE: Light grey, low porosity, moderate HCL reaction Interbedded with dark grey shale	
				142.8 - 144' SILTSTONE Carbonaceous-rich, very low porosity, very weak HCl reaction	
				1" coal seam at 142.8'	
				141 - 142.8' SILTY SANDSTONE Very fine-grained, low porosity, mild HCl reaction	
		140		138 - 141' SILTSTONE Dark to light grey, low porosity, moderate HCl reaction Interbeds of dark grey to black shale and very fine-grained sandstone	
				123.5 - 138' SANDSTONE Light grey, very fine-grained, massive to wavy-bedded, low porosity, moderate HCl reaction	3.992" Drill hole
		135			
		130			Cement
BLACKHAWK FORMATION	UK			Natural vertical fracture 124 - 127'	
		125			
				112.9 - 123.5' SILTSTONE Light and dark grey, laminae <0.1 - 0.2" thick, low porosity, moderate HCl reaction Interbedded with dark grey shale Siltstone beds up to 2" thick, shale beds up to 1.5" thick	
		120			
		115			
				112.1 - 112.9' COAL Black, vitreous luster	
				110 - 112.1' SILTSTONE Siltstone and very fine-grained sandstone interbedded with carbonaceous-rich shale	
		110		109.5-110.1' COAL Black, bony, vitreous luster	
				109 - 109.5' COAL Black, bony, siltstone intraclasts	
				108 - 109' COAL Black, vitreous luster, minor amounts of clay minerals, resinous	
Bear Coals				106.7 - 108' SHALE Carbonaceous-rich, coal intraclasts	
				105.9 - 106.7' COAL Black, vitreous luster	
		105		103.5 - 105.9' SILTSTONE Shaley, light grey, very low porosity, moderate HCl reaction	
				99 - 103.5' SILTSTONE Very fine-grained, sandy laminae have carbonaceous and clay minerals, laminae <0.1 - 0.1" thick	
				Fracture from 100 - 101.2', dipping 80 - 90 degrees	
		100			

EARTHFAX ENGINEERING, INC.

DRILLING LOG

Project Name: CRANDALL CANYON MINE	Boring/Well Number: IMOH-1 MAIN WEST, CROSSCUT #91
Owner/Client: GENWALL COAL COMPANY	Boring/Well Location: 413,415.7'N 2,084,183.0'E
Project Number: UC-27	Reference Elevation: 8158.8' AMSL (Drilled up)
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Logged By: BKB	Drilling Method: ROTARY Rig Type: DIAMEC 260
First occurrence of G W 30-36 5' Static W L --	Boring Depth (ft): 151' UP Well Depth (ft): --
Dates Measured: 14 JAN 1992 --	Boring Diameter (in): 3.992"

FORMATION	AGE	DEPTH (FT)	GRAPHICAL LOG	LITHOLOGIC DESCRIPTION AND OBSERVATIONS	WELL COMPLETION DETAILS
		200			
		195			
		190			
		185			
		180			
		175			
		170			
		165			
		160			
		155			
BLACKHAWK FORMATION	UK	150		150 S - 151' SILTY SANDSTONE Very fine-grained, low porosity, moderate HCl reaction	Cement

December 9, 1991

EarthFax

EarthFax
Engineering Inc.
Engineers/Scientists
7324 So. Union Park Ave.
Suite 100
Midvale, Utah 84047
Telephone 801-561-1555

Mr. Brent Northrop
Bureau of Land Management
Moab District Office
P.O. Box 970
Moab, Utah 84532

Dear Brent:

In compliance with 43 CFR 3485.1 Genwal Coal Company Inc., a subsidiary of Nevada Electric Investment Company (NEICO), respectfully submits the enclosed East Mountain Coal Exploration Drilling Program Report. Exploration activities were conducted under Coal Exploration License UTU-65418, effective August 25, 1989 through August 24, 1991.

Exploration activities were conducted in compliance with 43 CFR 3485.1 regulations, and all operating stipulations mandated by the Bureau of Land Management and the United States Forest Service outlined in the exploration license.

A total of five exploration holes were drilled. Due to the remote locations of the drill sites, all activities were supported by helicopter. All holes were cored, both lithologically and geophysically logged, and core tested. Genwal requests that all information contained herein remain confidential. Four holes were plugged and abandoned and one hole was completed as a groundwater monitoring well.

Environmental disruption was minimized during all exploration activities. The drill sites were reclaimed before leaving the sites with the seed mix mandated by the USFS in the exploration license.

Following drilling of each hole, copies of logs were provided to James Kohler of the BLM office in Salt Lake City. Jim is currently using this data in delineating the coal tracts. If any additional information is required please contact either myself (801-561-1555), or Jay Marshall (801-687-9813) of Genwal Coal Company.

Sincerely,

Brent Bovée

Brent K. Bovee
Geologist
EarthFax Engineering Inc.

Jay Marshall
Chief Engineer
Genwal Coal Company, Inc.

Attachments

NEVADA ELECTRIC INVESTMENT COMPANY - GENWAL COAL COMPANY

East Mountain Exploration Drilling Program Report
Coal exploration License UTU-65418

Submitted to:

Bureau of Land Management
Moab District Office
P.O. Box 970
Moab, Utah 84532

Prepared by:

EarthFax Engineering Inc.
7324 South, 1300 East, Suite 100
Midvale, Utah 84047

NEVADA ELECTRIC INVESTMENT COMPANY - GENWAL COAL COMPANY
East Mountain Exploration Drilling Program Report

1.0 INTRODUCTION

In compliance with 43 CFR Subpart 3485.1 paragraph (b), Genwal Coal Company respectfully submits this exploration drilling program report. Genwal requests that all data contained herein (lithologic and geophysical logs, core analyses) remain confidential. Drilling information contained herein applies to activity conducted under BLM Coal Exploration License UTU-65418, effective between the dates of August 25, 1989 and August 24, 1991. A total of six coal exploration holes were drilled under this license. All exploration activities were conducted in compliance with the operating regulations mandated by the U.S. Bureau of Land Managemet and the U.S. Forest Service.

2.0 NATURE/RESULTS OF EXPLORATION DRILLING PROGRAM

Unleased federal lands surround federal and state leases currently held by Genwal Coal Co. Federal leases held by Genwal consist of leases UO-54762 and SL-062648 (Plate 1). A right-of-way providing access to State Leases lies in T16S-R7E-Sec 31.

The primary purpose of this exploration program was to delineate the extent of mineable coal in the state and federal lands surrounding the currently held federal leases referenced above. These data are currently being reviewed by BLM and USFS officials to delineate coal tracts in the surrounding federal lands. None of the holes were drilled in currently held federal leases.

Exploration operations primarily included collection and description of continuous core, geophysical logging, and laboratory testing of core samples from six exploration holes (DH-2, DH-3, DH-4, DH-5, DH-6, and DH-7). One hole (DH-4) was completed as a groundwater monitoring well. Drill hole locations and coal outcrop lines are shown in Plate 1.

Due to the remote location of the drill sites and the desire to minimize environmental impacts, all drilling activity was conducted with helicopter support. Drilling fluid consisted of water and environmentally safe biodegradable soap. All drilling fluids were contained within metal troughs and portable rubber holding tanks. Drilling water was obtained from surrounding springs. Due to the presence of minimal spring flows in the vicinity of most drill sites, and the fractured nature of the surficial 300 feet, lost circulation was a major problem during drilling. As a consequence, the acquisition of reliable groundwater data was not possible.

Footages drilled and Abandonment/Completion dates for the wells drilled under permit UTU-65418 are listed below.

DRILL HOLE	ABANDONMENT/ COMPLETION* DATE	DEPTH
DH-2	9/12/89	949 feet
DH-3	9/1/89	769 feet
DH-4	9/23/89*	490 feet
DH-5	8/24/91	1220 feet
DH-6	10/25/89	1679 feet
DH-7	8/25/89	1628 feet
		TOTAL: 6735 feet

Lithologic logs for all six exploration wells appear in Appendix 1. Geophysical logs consisting of gamma ray, density, and caliper data are found in the enclosed binder entitled "Geophysical Logs." Core analysis results (short and full proximate) are found in Appendix 2.

Upon completion of down-hole procedures, all drill holes (with the exception of DH-4) were properly sealed from the bottom to the collar. Plugging and abandonment (P & A) procedures outlined in section 13, part 4 of the exploration license were followed. The BLM was notified prior to P & A operations; a BLM official was on site and observed the P & A operations. Drill hole locations of the P & A wells were marked with a metal plate cemented into the surface concrete plug. DH-4 was completed as a groundwater monitoring well. The surface position of DH-4 is marked with a labeled metal monitor well protective cover, which is cemented into the surface concrete plug.

Following P & A or completion operations, the drill sites were reclaimed. Debris was removed, excavations filled, and the disturbed area was raked and reseeded. The seed mix used was that presented in the Forest Service special stipulations of the coal exploration license agreement.

APPENDIX 1

LITHOLOGIC LOGS OF COAL EXPLORATION WELLS DH-2, DH-3, DH-4, DH-5, DH-6, DH-7

HOLE NO. DH-2

Ore Body East MH. Expl.

Coordinates NW¼ NW¼ SW¼ Sec. 29, T15S R7E

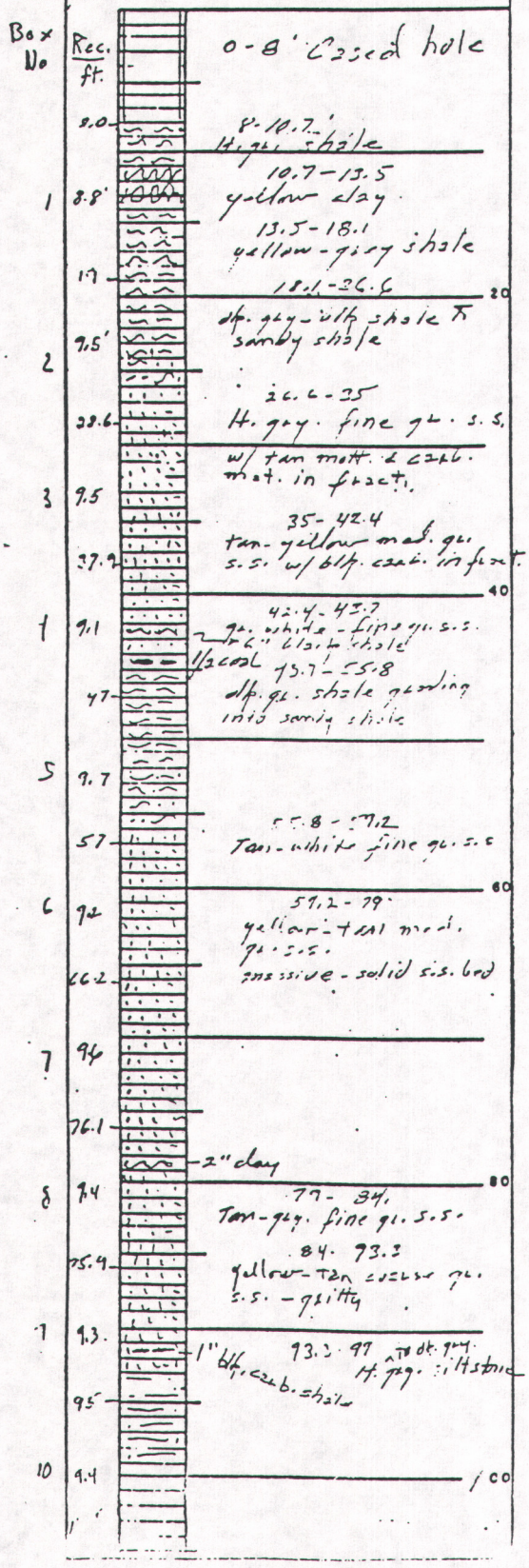
Elevation 8991' 8990.8

Drilling Started 9-7-89

Drilling Finished 9-13-89

Total Depth 949

Logged by L.LoH/9-21-89



HOLE NO. DH-2

Ore Body _____

Coordinates _____

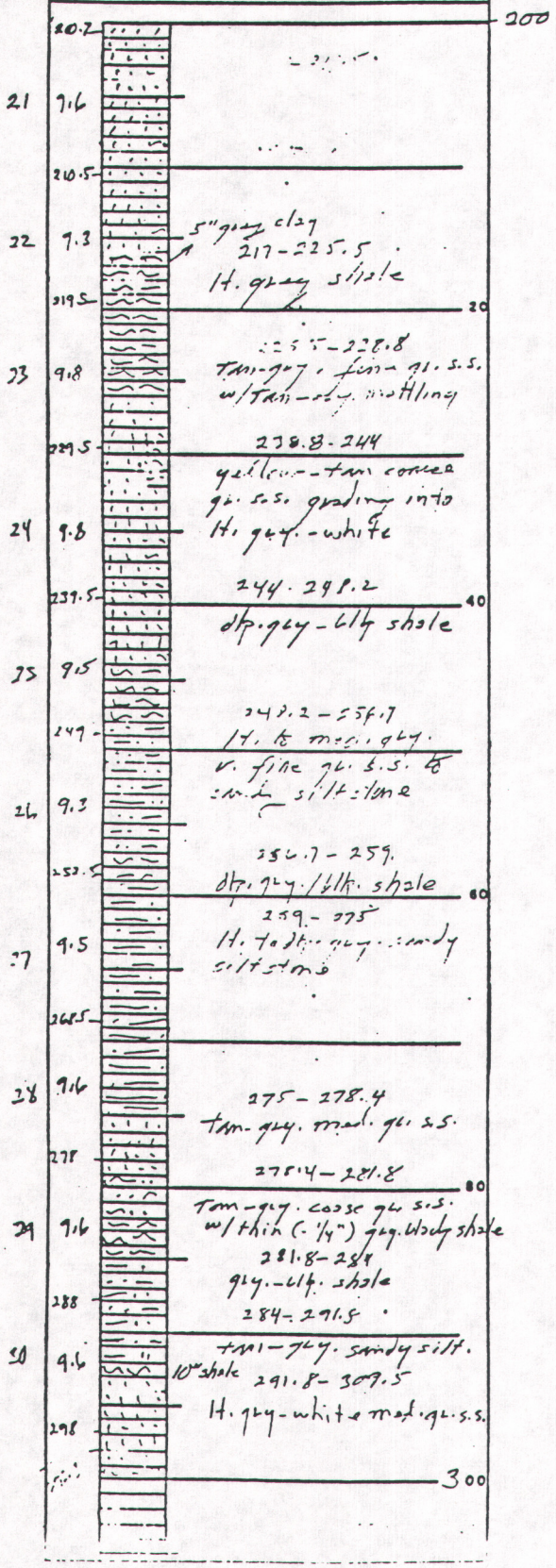
Elevation _____

Drilling Started _____

Drilling Finished _____

Total Depth _____

Logged by _____



HOLE NO. DH-2

Ore Body _____

Coordinates _____

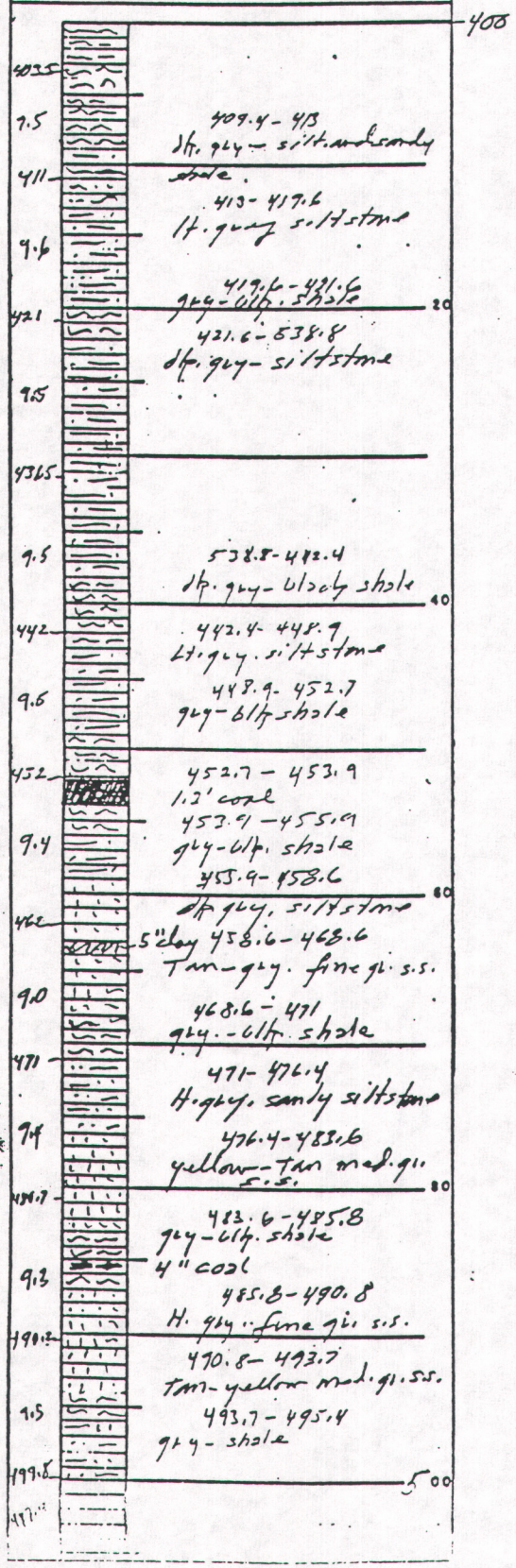
Elevation _____

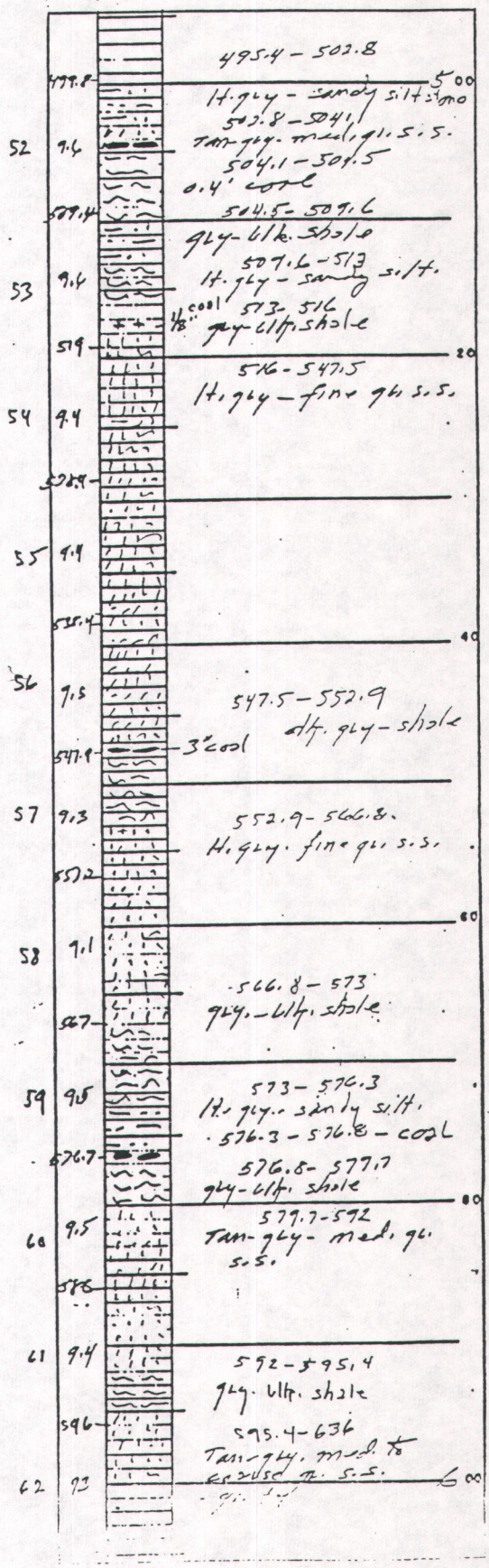
Drilling Started _____

Drilling Finished _____

Total Depth _____

Logged by _____





HOLE NO. DH-2

Ore Body _____

Coordinates _____

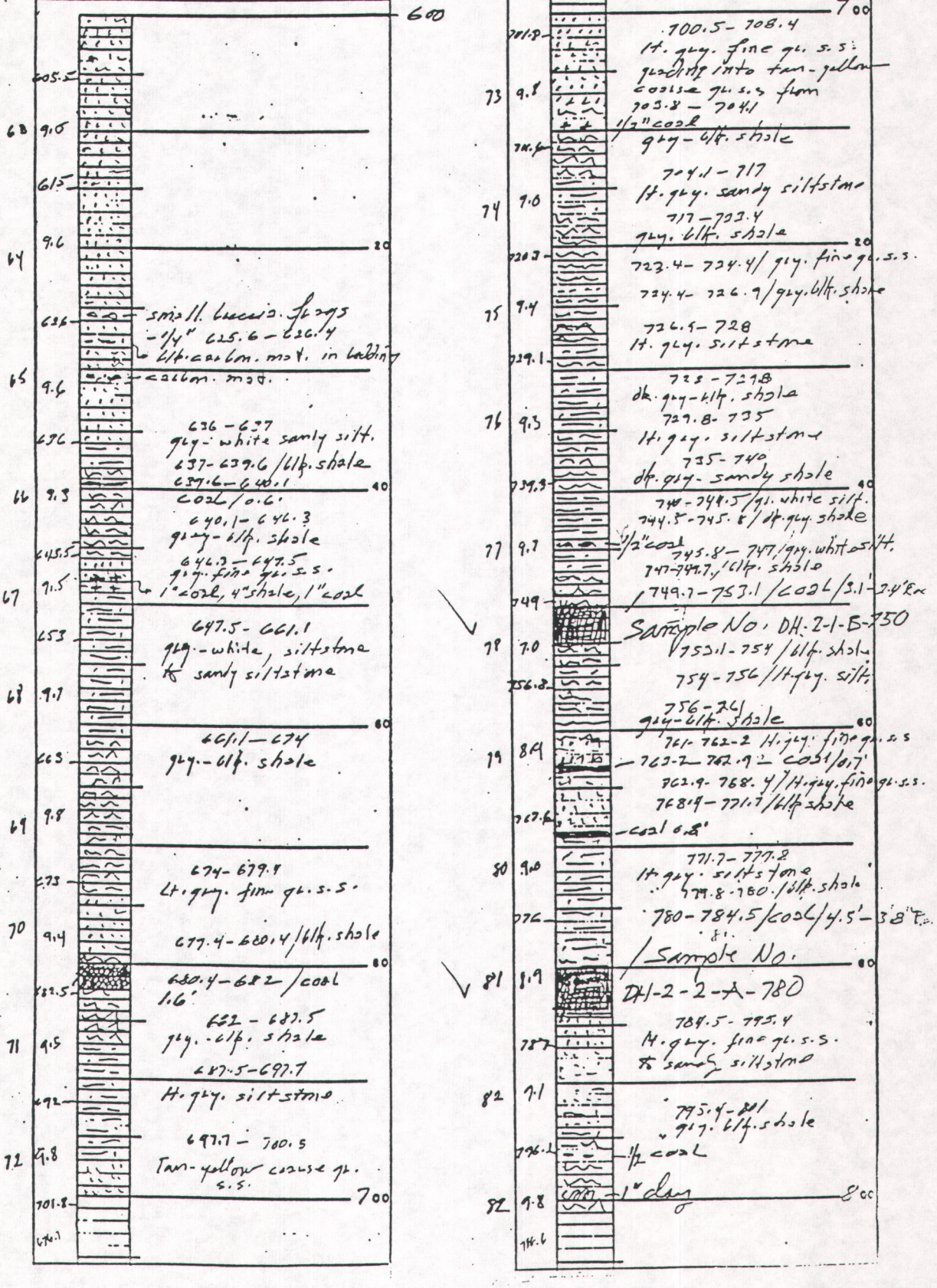
Elevation _____

Drilling Started _____

Drilling Finished _____

Total Depth _____

Logged by _____



HOLE NO. DH-2

Ore Body

Coordinates

Elevation

Drilling Started

Drilling Finished

Total Depth

Logged by

800

801 – 810.1
gry. white siltstone

810.1 – 812.3 Clfy. shale

0.5' coal

812.3 – 838.1
H. gry. fine gr. s.s. to shaly siltstone

838.1 – 822
gry-clfy. shale

822 – 826.5 / coal – 4.4' Rec.
Sample No. DH-2-3-A-822

826.5 – 833
H. gry – siltstone

833 – 834.6
gry-clfy shale / 1/4" coal

834.6 – 846.5
H. gry – white siltstone

846.5 – 847.0 / gry-clfy shale

847 – 849.7 – Coal – 2.7'
Sample No. DH-2-4-B-847

Gypsite 849.7 – 855.3
H. gry. silt. w/carbon. banding

855.7 – 861.5 – Coal 5.6'
Sample No. DH-2-5-A-856

4" shale

861.9 – 878.6
H. gry. fine gr. s.s.

878.6 – 881.0
gry-clfy. shale

881.0 – 881.2 / shale & coal

881.2 – 881.65 – coal / 0.45'
Not enough to sample
10" section of coal/shale mix

881 – 886.6
gry. white sandy silt.

886.6 – 892
gry-clfy. shale

892 – 900.5
med. gry. siltstone

900.5 – 909
Tan-white med. gr. s.s.

909 – 930.7
Tan-white, med. to coarse gr. s.s. locally gritty

930.7 – 931.4
thin-bedded w/carbon. in bedding

931.4 – 934
Tan-gray, micaceous coarse gr. s.s.

934 – 947
H. gray-white med. gr. s.s.

Btm @ 949'.

Strat PH, s.s. – Blackhawk

Abbreviation list

gry. - grey
brn. - brown
blk - black
s.s. - sandstone
sh. - shale
slt. - siltstone
Carb. - carbonaceous
Sm. - small
Fn. - fine
Med. - medium
Lg. - large
lt. - light
dk - dark
gr. - grained

HOLE NO. DH-3
Ore Body East Mtn. Expl.
Coordinates SE¼ SW¼ NW¼ Sec. 30 T15S R7E
Elevation 9053' / 9053.2
Drilling Started 8-27-89
Drilling Finished 9-1-89
Total Depth 767'
Logged by I. Lott / 9-7-89

Blackhawk

Box No.	Rec. ft.		
		0	Hole cased to 6'
		6	6 - 25.4 tan-gry. coarse gr. s.s. (gritty)
1	(8.9)		blk. carbon. mat. interlmit. in fractures
		16	
2	(9.5)	20	
		24.5	
3	(9.0)		25.4 - 36.5 lt. gry-white fine gr. s.s.
		34	1/4" dk. gry. shale
4	(9.5)	40	
			36.5 - 58.5 tan-yellow med. gr. s.s.
		43.5	
5	(9.4)		
		53	
6	(9.5)		58.5 - 63.2 lt. gry-white med. gr. s.s.
		60	
		63	63.2 - 69 dk-gry. shale
7	(9.1)		69 - 80.1 dk. gry - sandy siltstone coal in fract. - 71.3'
		73	
8	(9.5)	80	
			80.1 - 92.6 yellow - gry. coarse gr. s.s. / carbon. in fract & soil
		83	
9	(9.7)		clay & coal in fract. @ 84.1 & 82.2
		92.6	92.6 - 93.0 lt. gr. fine gr. ss. w/ small -½" breccia frags.
10	(9.5)		93.0 - 96.5 lt. gry. sandy silt
		100	96.5 - 103.4 Tan - gry. v. silt-coarse
		103.4	

		100	
		103.5	103.4 - 108 H. gry. fine to med. gr. s.s. // 1" dk gry. shale @ 105.5
11	(9.5)		108 - 135.4
		113	lt. gry. to yellow gry. med. to coarse gr. s.s. - blk. carbon. in fract. & - at 116.5
12	(9.4)	120	
		122.9	
13	(9.1)		131' - clay) 4"
		132	135.4, lt. carbon. mat.
14	(8.5)		135.4 - 131.4 dk. gry.
		140	1. coal 1033 @ 139.
		141	131.4 - 136.5 yellow - gry. med. gr. ss w/ yellow clay in fract.
15	(8.9)		136.5 - 141.7 gry. sandy siltstone
		151	141.7 - 155 gry - blk. shale 2" coal @ 142.5' 1" coal @ 146.5'
16	(9.1)		155 - 161.6
		160	lt. to dk. siltstone
		161	161.6 - 165 lt. gry. fine gr. ss.
17	(9.4)		165 - 173.2 tan-gry. coarse gr. s.s.
		170	
			small breccia frags. - ½"
18	(9.0)		173.2 - 175.6 gr blk. shale
		180	175.6 - 179.4 tan - white fine gr. s.s.
			179.4 - 181.7 gry - blk. shale with small (~1/4") breccia frags throughout
19	(9.5)		1" coal 181.7 - 182.5
		190	tan - white med. to coarse gr. s.s.
			193.7, 2" blk. shale
20	(9.2)		193.5 - 202 yellow - gry. coarse gr. s.s.
		200	
		202	

HOLE NO. DH-3

Ore Body

Coordinates

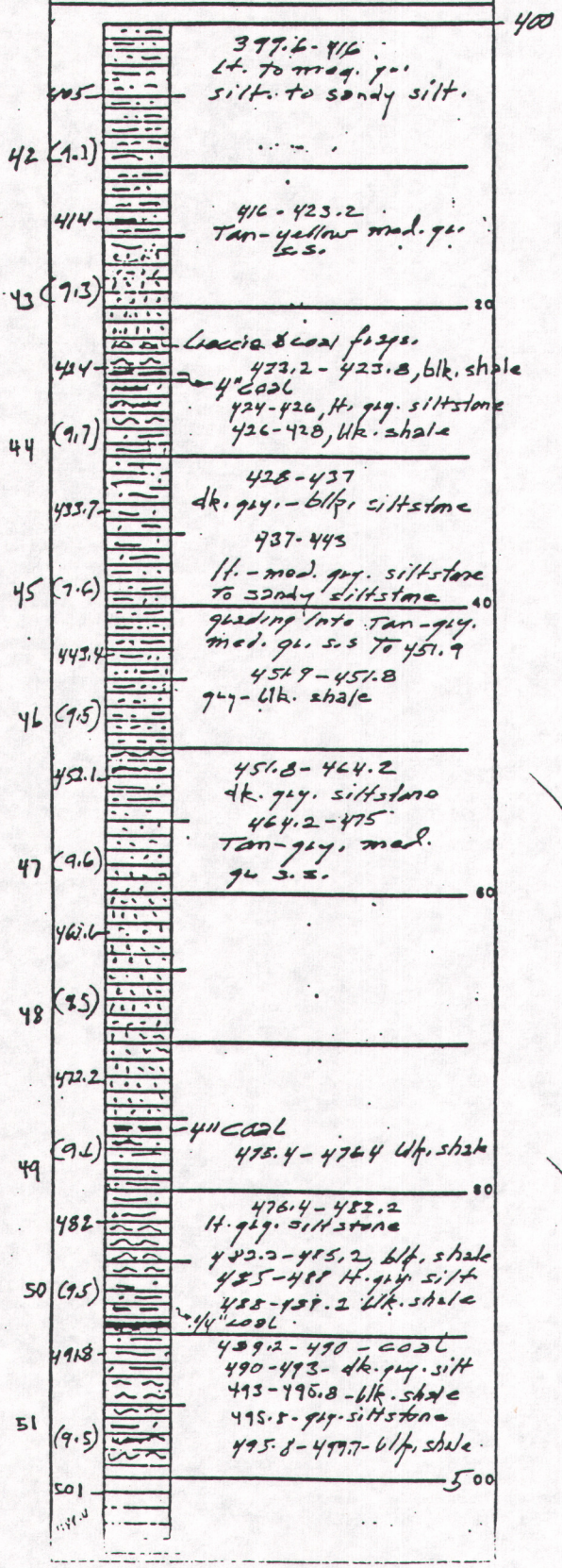
Elevation

Drilling Started

Drilling Finished

Total Depth

Logged by



HOLE NO. DH-3

Ore Body

Coordinates

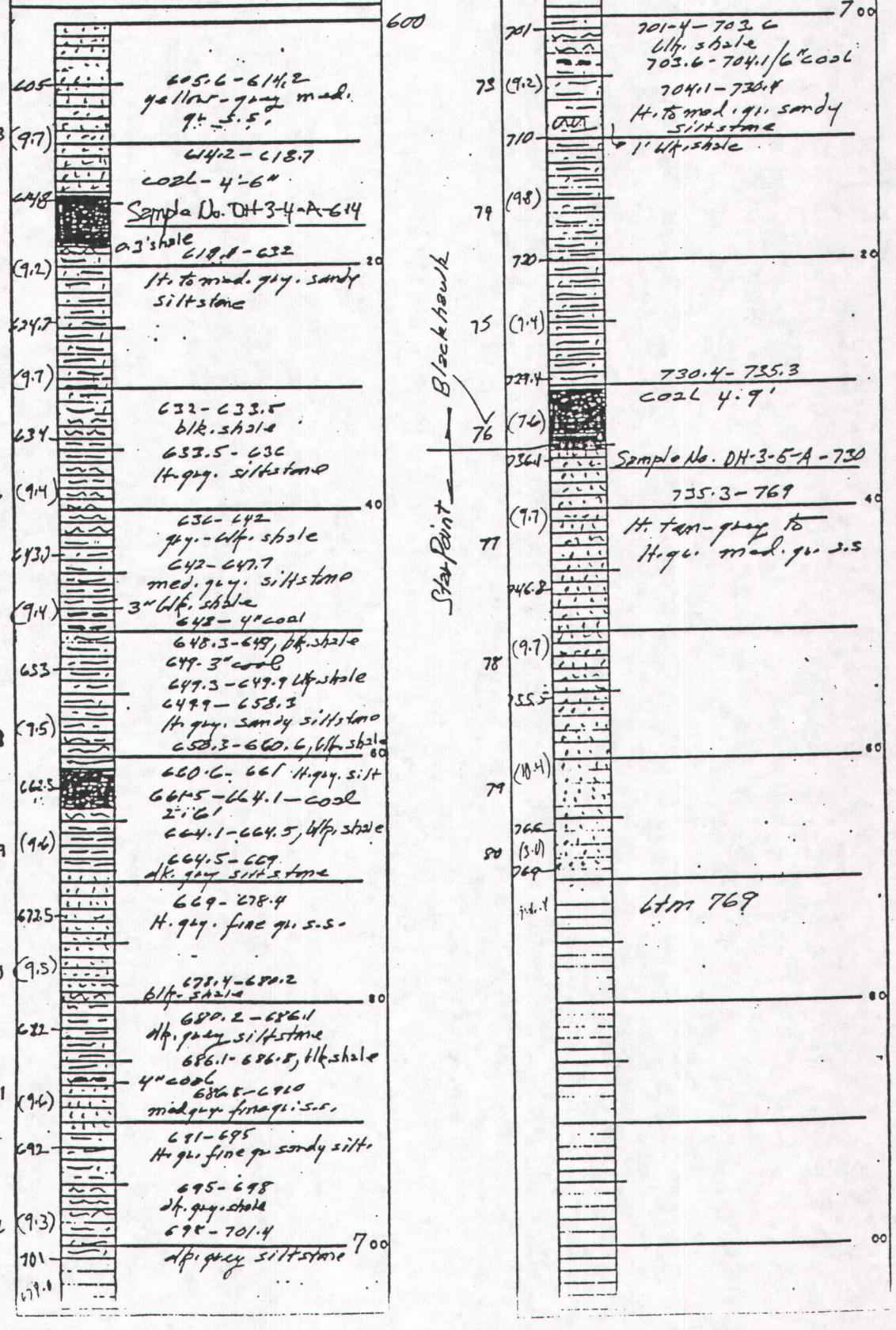
Elevation

Drilling Started.

Drilling Finished

Total Depth.

Logged by



HOLE NO. DH-4

Ore Body East Mtn. Expl.

Coordinates NW¼ SW¼ NE¼ Sec. 1, T4S R6E

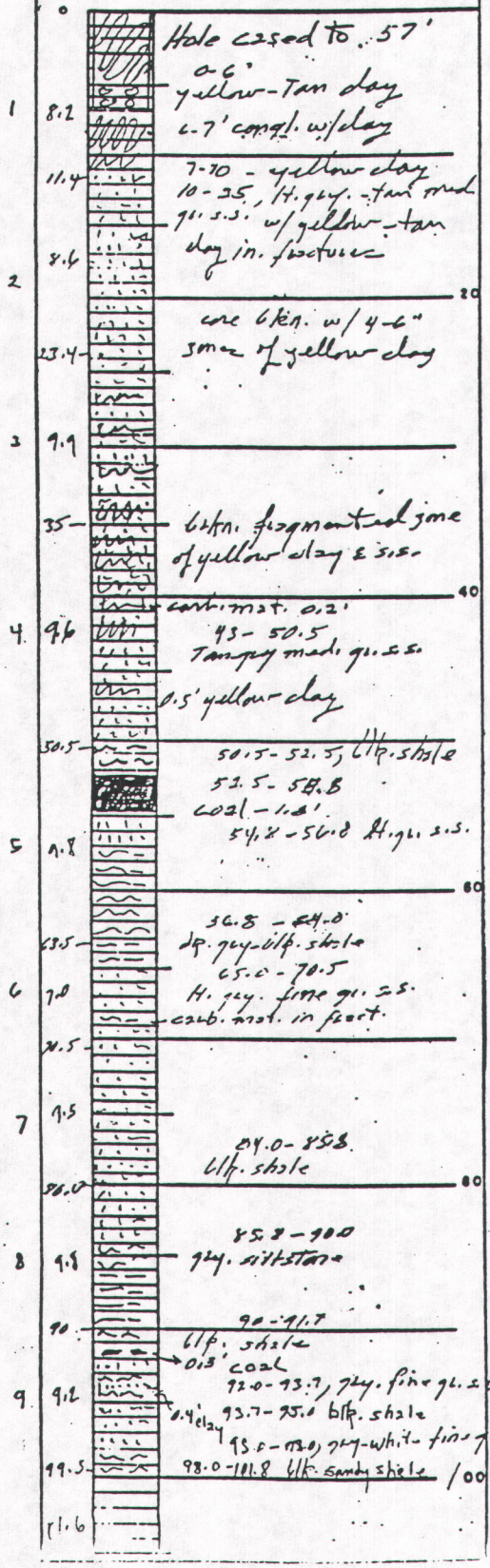
Elevation 8361' (8360.8)

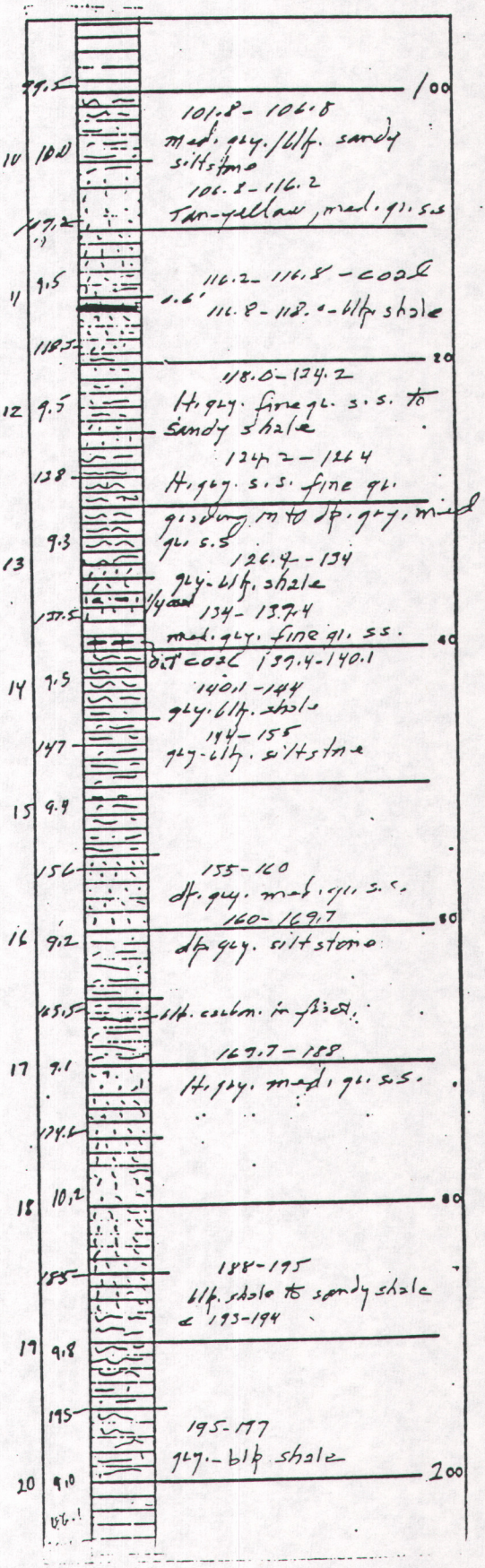
Drilling Started 9-19-89

Drilling Finished 9-22-89

Total Depth 481

Logged by LL. 9-28-89





HOLE NO. DH-4

Ore Body

Coordinates

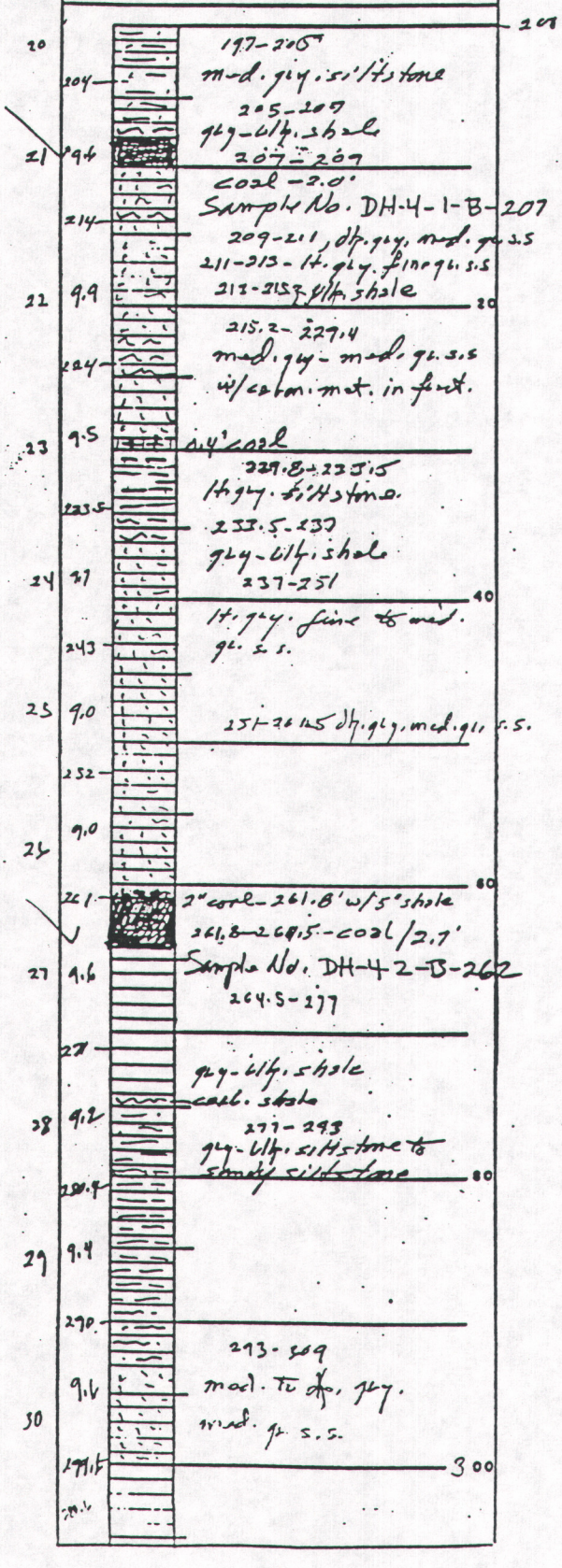
Elevation

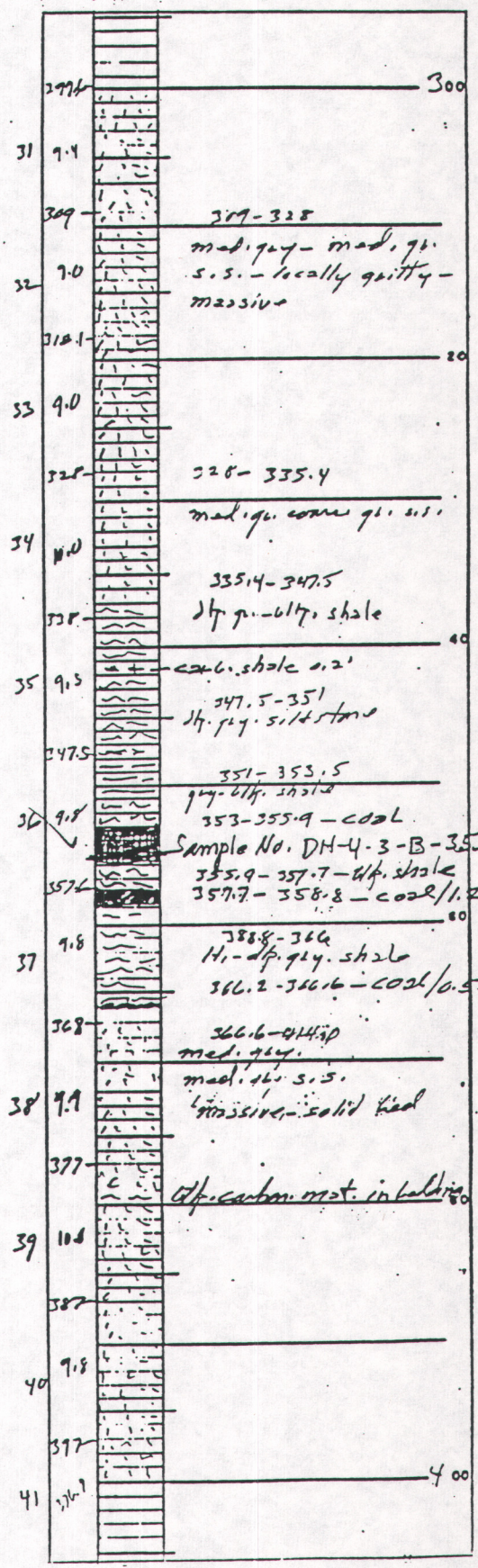
Drilling Started

Drilling Finished

Total Depth

Logged by





HOLE NO. DH-4

Ore Body _____

Coordinates _____

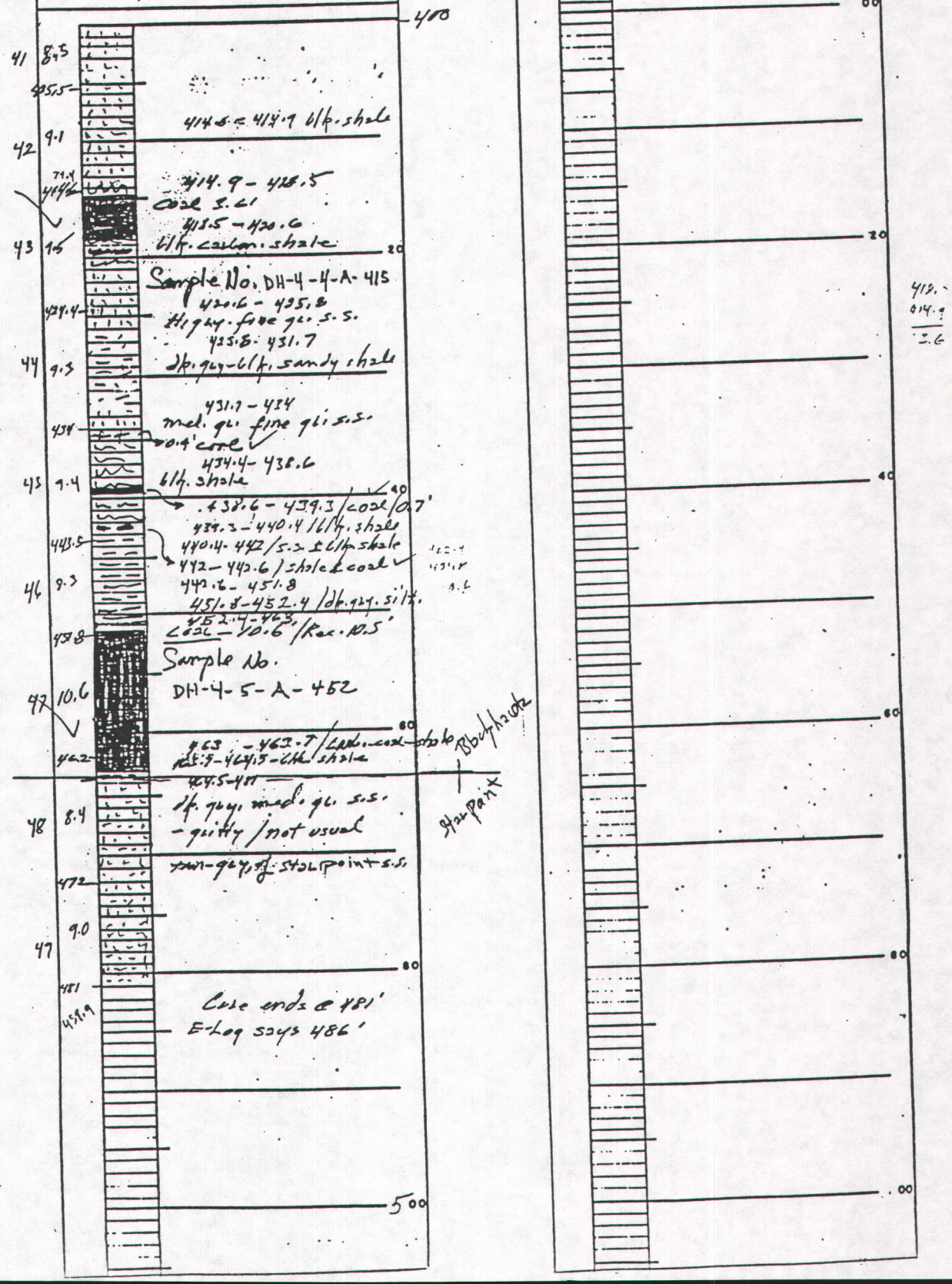
Elevation _____

Drilling Started _____

Drilling Finished _____

Total Depth _____

Logged by _____



Geologic Log

EarthFax

East [illegible]

PROJECT No.: UC 27 HOLE No.: DH-5

DATE BEGIN: 8-17-91 DATE END:

DRILLER: LA LOGGER: JRP FIRST WATER AT:

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
began drilling at 1500	NX [illegible]		0.0		7.5-14 Sandstone, Med-Fine grained, mod wx, $CaCO_3$ mod react in joints & lings, light olive brown color 2.5Y 5/4, 1-4 mm [illegible] fracture; 20-30% Quartz, [illegible] hornblende, biotite, Hard, laminated, Fe staining, mod sorting [illegible] SA-SR, X-stratified
0.0-7.5' 2' return					0-7.5 Heavy silty vfg SS [illegible] HCL Rxn. X-stratified
			5		
3:50					
			10		
405					
			15		14-24 lt. brown to lt. greenish brown x-stratified, med-grained Iron staining along fractures. Very porous mod HCL Rxn
			20		
4:45					
			25		

EarthFax

Geologic Log

EarthFax

PROJECT No.: [illegible] HOLE No.: DH-5

DATE BEGIN: [illegible] DATE END:

DRILLER: [illegible] LOGGER: [illegible] FIRST WATER AT:

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
6:30 pm			25		24.5 - 28.5 lt. grey salt & pepper med. gr. ss. v. slightly [illegible] slight HCL Rxn.
			30		28.5 - 32.5 yellow brown v-strat of HCL med - fine gr. sandstone v. porous violent HCL rxn.
					32.5 - 35 soft, [illegible] grained [illegible] no rxn w/ HCL dark [illegible], carbonaceous no HCL Rxn
			35		35 - 38, no HCL rxn. clean, light grey sandstone, [illegible] fine grained, [illegible]
7:00 pm					38 - 41 dark [illegible] shale, friable laminated no HCL Rxn
change over to night drill crew			40		41 - 45 orange & buff white silty ss. wavy & unforted bedding moderate HCL Rxn.
			45		45 - 51.5 sandstone [illegible] brown [illegible] m-fine grained [illegible] Fe [illegible] [illegible] carb material along fractures & bedding planes.
8:00 pm			50		

EarthFax

Geologic Log

EarthFax

PROJECT No.: _____ HOLE No.: DH-5

DATE BEGIN: 5/--/-- DATE END: _____

DRILLER: _____ LOGGER: _____ FIRST WATER AT: _____

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			50		
					51.5 - 58.5 white to lt. tan med - fine gr. SS contorted & wavy bedding weak HCl rxn. vuggy & carb material along cracks & fracture planes
			55		
8:20					58.5 - 62.5 brn y-stratified mud - fine grained SS, iron staining, wavy bedding carb material along bedding planes violent HCl rxn porous
			60		
Darkness making logging difficult					62.5 - 67.5 green carb rich silty sh. no HCl Rxn.
			65		
9:00 pm					67.5 - 75 buff white to yellow brown fine gr. SS, natural fractures carb material abundant along bedding planes mod - HCl rxn. very porous
			70		
			75		

EarthFax

Geologic Log

EarthFax

PROJECT No.: Enr... HOLE No.: DH-5

DATE BEGIN: ... DATE END: ...

DRILLER: ... LOGGER: ... FIRST WATER AT: ...

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			75		75-78 pinkish red med to fg sandstone ripple & x-stratification present calc. rich mod HCl Rxn.
1000 pm			79		
			80		78-85 ft grey carb rich vfg sltst mod HCl Rxn
			85		85-89 white vussy carb rich med-fg sdst stone violent HCl Rxn porous
1150 pm			90		89-91.5 brown carb. rich med gr. ss. very porous - vussy ft iron staining violent HCl rxn
					91.5-104 white carb. rich sltly ss. x-stratified violent HCl rxn. very porous
			95		
1220 pm			100		

EarthFax

Geologic Log

EarthFax

PROJECT No.: HOLE No.: DH-5

DATE BEGIN: DATE END:

DRILLER: LOGGER: FIRST WATER AT:

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			100		
			105		104 - 107.5 lt brown crystalline fine - vf-g sandstone vuggy hi ø - very high violent HCl rxn.
1:00 AM					107.5 - 115 white to lt. tan x-stratified ss. vuggy - very porous carb. material along bedding planes violent HCl rxn.
			110		
			115		115 - 123 brown to orange brown med - fine gr ss. soft very porous ripple x stratification no HCl rxn.
4:00 AM					
			120		
			125		

EarthFax

Geologic Log

EarthFax

PROJECT No.: [illegible] HOLE No.: DH-5

DATE BEGIN: 6/14 DATE END: _____

DRILLER: [illegible] LOGGER: JTD FIRST WATER AT: _____

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			125		
					123-127 buff white to grey stnd. no HCL rxn. High porosity
					127-132 Grey to lt-brown-sty vfg ss. Convoluted bedding carb. material along fractures
			130		
					132-137 buff white to limey f-g. ss vident HCL rxn.
			135		137-143 lt-green to lt. brn med-fg ss. massive — very high φ vigorous HCL rxn. friable, carb material along bedding planes.
			139		
			140		
					143-144 [illegible] soft friable med. gr. ss, very fissiles x-stratified vident HCL rxn. iron staining along bedding planes.
			145		
7.15			150		

EarthFax

Geologic Log

EarthFax

PROJECT No.: E-27 Ext HOLE No.: DH-5

DATE BEGIN: 8/19/91 DATE END: _____

DRILLER: Ton LOGGER: PFS FIRST WATER AT: _____

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
[illegible]			150		149-151 [illegible]
					[illegible] to H grey - mod weathered
			155		Can-Dom [illegible]
3/20/91 8:15 Am					
10' Run			160		159.6-161 Can-Dom [illegible]
					162 - a few vugs
			165		[illegible]
					[illegible]
1:21 Pm					
10' Recovery			170		[illegible]
					171-173 [illegible]
					Massive bedded
			175		

EarthFax

Geologic Log

C-27

PROJECT No.: [illegible] HOLE No.: DH-5

DATE BEGIN: 8/19/91 DATE END: _____

DRILLER: [illegible] LOGGER: [illegible] FIRST WATER AT: _____

EarthFax

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			175		H grey [illegible]
8/20/91 9:20			180		[illegible]
					[illegible]
					Compact [illegible]
					187 - H grey
9.45			190		Limestone [illegible]
			195		Sandstone - [illegible]
10.15			200		

EarthFax

Geologic Log

EarthFax

C-27

PROJECT No.: Ekati HOLE No.: DH-5

DATE BEGIN: 8/14/01 DATE END: _____

DRILLER: Rob LOGGER: L.A. FIRST WATER AT: _____

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			200		Sandstone - Grey, coarse + [illegible]
			205		
10:55 10' Run			210		Sandstone Lt grey - FG [illegible]
			215		
11:10 10' Run			220		
			225		

EarthFax

Geologic Log

C-27

EarthFax

PROJECT No.: East Mtn HOLE No.: DH-5

DATE BEGIN: 8/19/91 DATE END:

DRILLER: Ron LOGGER: [illegible] FIRST WATER AT:

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
10' Recov.			225		Sandstone w/ clay clasts [illegible] brown to lt grey calcite cement
					Clay / siltstone [illegible]
			230		
			235		
11:45 10' Recovery					239 ½ clay [illegible] .25' thick
			240		
					Limestone w/ carbon ferrous material laminated
			245		
					Sandstone - med grained lt grey
12:20 10' Recovery			250		

EarthFax

Geologic Log

C-27

PROJECT No.: [illegible] HOLE No.: DH-5

DATE BEGIN: 8/19/91 DATE END:

DRILLER: [illegible] LOGGER: [illegible] FIRST WATER AT:

EarthFax

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			250		Sandstone - lt olive brown [illegible] grained [illegible] fractures at 251-257 [illegible] for 1/2-3/4" [illegible] cement
8/20/91 12:50 pm 10' Recovery			260		259.5 Claystone [illegible] 261 Coarse grained [illegible] w/ clay lugs [illegible] brown
1:20 10' Recovery					268 - Sandstone fine grained lt gray
			270		Sandstone - Fine grained 266-277 277-279 Coarse grained 270-275 lt gray 275-279 yellow brown
1:45 10' Recovery			280		As above w/ [illegible] at 279.5 / 280 : 280.5-281 Claystone [illegible] 282-288.5 288.5-289 - Zone laminated [illegible] w/ sandstone
B+29					
2:10 pm 10' Recovery			290		Sandstone w/ fine coal [illegible] 293-297 296-299 Lt gray - some fine clay w/ [illegible] at 295-297 [illegible] Med - Coarse grained
2:45 pm 10' Recovery			300		299-300 SS w/ [illegible]

No Reaction to HCL

EarthFax

Geologic Log

C-27

PROJECT No.: East [illegible] HOLE No.: DH-5

DATE BEGIN: [illegible] DATE END:

DRILLER: [illegible] LOGGER: [illegible] FIRST WATER AT:

EarthFax

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			300		302 [illegible] partly [illegible] No Reaction to HCl Thin to [illegible] bedded Lt grey Carbon[illegible] Laminae [illegible]
3:30 10' Recov			310		309-310 & 311-312 [illegible] [illegible]-319 Lt olive brown Sandstone No Reaction to HCL
3:55 10' Recov			320		Sandstone - soft zones - clayey/claystone at 320.5-323 328-329 w/ Carboniferous partings 323-328 sandstone - [illegible] olive brown No Reaction to HCL
4:27 10' Recovery As above			330		Sandstone - fine [illegible] olive brown thin to med bedded 339-341 341-349 massive bedded
4:55 9' Recovery			340		
5:20			350		

EarthFax

Geologic Log

EarthFax

PROJECT NO.: [illegible] HOLE NO.: DH-5

DATE BEGIN: [illegible] DATE END:

DRILLER: [illegible] LOGGER: [illegible] FIRST WATER AT:

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
11' Recovery			350		[illegible] – [illegible] – [illegible] mild reaction to HCl
5:55					
10' Recov			360		[illegible] Carbon[illegible] [illegible] at 362–362.5, 365–366
					365 strong reaction to HCl
6:23					
10' Recov			370		371–374 Vugs 1/8" [illegible] 1/4" Carboniferous limestone – 371 375 – Carboniferous limestone – laminar, [illegible] bedding – mod dark grey, [illegible] hard, 80% RQD.
8/20/91 6:54 pm					
			380		379–381 Yellow brown [illegible] bedded SS, 381–383 [illegible] with wavy dark laminations hard, [illegible] locally varied, no reaction with HCl
9:25 pm 10' recov					
			390		
10:45 10' recov					sandstone, yellow brown, [illegible] locally to massive carbonaceous [illegible] reaction to HCl, hard
			400		

EarthFax

Geologic Log

EarthFax

PROJECT No.: ______ HOLE No.: DH-5

DATE BEGIN: ______ DATE END: ______

DRILLER: ______ LOGGER: ______ FIRST WATER AT: ______

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
8-21-91			400		yellow brown – grey black sandy limestone, massive and wavy bedded, low fracture content, hard vuggy texture in yellow brown units, varved. parallel and wavy laminations, ↑ alteration [illegible] 4" shale @ 408', carbonaceous material in vugs 400–402
1230 AM 10' recov [illegible]					
out of water 4:00 AM 10' recov.			410		Limestone or dolostone, weak HCl rxn, hard, grey, massive, 1/2" coal seam at ≈413
hard to drill due to rock hardness					
5:10 AM 10' recov			420		419–420 – slickenlines, 419–426 limestone or dolostone weak HCl rxn, massive – wavy bedding, Hard. 426–429 – Buff colored sandy limestone, mod HCl RXN vuggy, hard
6:00 AM 10' recov			430		Sandy limestone, [illegible] – grey, black, vuggy, cross and wavy laminations, low to mod HCl rxn, hard. Buff sandstone
6:30 AM 10' recov			440		Buff sandstone, F–Crs grained mod sorted Fe stained, 440–449 dark carbon rich bed, high [illegible] [illegible] carbon and clays, wavy and [illegible] bedded sandy limestone low reaction to HCl – to mod weak RXN
7:52 am [illegible] drilling			450		

EarthFax

Geologic Log

C-27

PROJECT No.: [illegible] HOLE No.: DH-5

DATE BEGIN: [illegible]/91 DATE END:

DRILLER: [illegible] LOGGER: [illegible] FIRST WATER AT:

EarthFax

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
10' Recovery			450		449-453 - [illegible] - [illegible] [illegible] [illegible] Coal laminae at 453.8
8/21/91 8:17 AM					453-458 Sandstone [illegible] [illegible] - [illegible] [illegible] 458 - [illegible] - [illegible] dk green [illegible]
10' Recovery			460		[illegible] Sandstone 460 - 464 dk green [illegible] [illegible] to HCL - [illegible] [illegible] [illegible] - [illegible] [illegible] [illegible] 466-469 Sandstone [illegible] - [illegible] [illegible]
9:52					
10' Recovery			470		Sandstone - med. [illegible] [illegible] Mod React to HCL 469-472' [illegible] laminae [illegible] [illegible] [illegible] 100% RQD
9:25 Am					
10' Recovery Bx 49: 50			480		Sandstone - as above except [illegible] zones of laminated Clays 481-482 & 482.5-48.5 Sst - very friable med gr at 486.5-487 Clay Casts in upper 5' Clay zones are non reactive ss is mod reactive to HCL [illegible]
9:54					
9.5' return			490		Sandstone - very soft med grained Mod React to HCL weakly cemented Very friable - [illegible] [illegible]
10:15 Am			500		Coal - last .5' of core return probably coal

EarthFax

Geologic Log

C-27

PROJECT No.: [illegible] HOLE No.: DH-5

DATE BEGIN: [illegible] DATE END: _____

DRILLER: Tom LOGGER: [illegible] FIRST WATER AT: _____

EarthFax

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
10' Return			500		499- Sandstone - fine grained [illegible]
10:48			505		505- Sandstone - med grained [illegible]
10' Recover			510		Sandstone 510 4" Coal [illegible]
11:15			520		[illegible]
10' Recov'y					Sandstone [illegible]
8/21/91 11:45AM			530		Limestone - calcite [illegible]
10' recovery					535 Sandstone [illegible]
8/21/91 12:15pm			540		[illegible]
10' Recovery					Sandstone [illegible]
12:35pm			550		[illegible]

EarthFax

Geologic Log

EarthFax

PROJECT No.: [illegible] HOLE No.: DH-5

DATE BEGIN: [illegible] DATE END: [illegible]

DRILLER: [illegible] LOGGER: [illegible] FIRST WATER AT [illegible]

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			550		[illegible]
10' Recovery					Sandstone - dark grey [illegible]
					Coarse [illegible]
					454-456 - [illegible]
5/21/91					
7:05 am			560		Color change to [illegible]
					[illegible]
					[illegible]
					[illegible]
					[illegible]
2:28 pm			570		
10' Recovery					572 - 572.3 blk dk laminae, 572.3-572.7 H. olive blk med ss
					572.7 - 573 blk sh laminae
					573-579 light olive brown med-fine ss. HCL effervescence
					574-574.5 moist unconsolidated sand, light olive brn.
1:59 pm			580		no HCL reaction from
10' recovery					585 - 589.5 slight HCL reaction, [illegible]
					bedding (sh & vfg ss diff units to sltst - vfg ss)
2:17 PM			590		589.5-590 lt. olive brown med gr. ss
10' recovery					590 - 591 - [illegible] bedding, blk dk/grey calc frags w/
					white silty vfg ss. no HCL reaction
					591 - 594 med-fg H. olive brown ss
					594 - 598 olive yellow med gr. sandstone, moderate
					HCL effervescence
					598 - 598.2 black dark grey silt HCL reaction
2:45 PM			600		598.2 - 601.5 lt olive gray fine med. gr sandstone
					pebble chips up to 1/4" diam. HCL reaction

EarthFax

Geologic Log

C-27

PROJECT No.: C-MTA HOLE No.: DH-5

DATE BEGIN: 8/19/91 DATE END: _____

DRILLER: BCA LOGGER: BKB FIRST WATER AT: _____

EarthFax

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			600		
10ft recovery					601.5 - 603.5 convoluted bedding blk carb. shale laminae w/ vfg. sandy sh ad. slight HCl reaction
					603.5 - 610.5 light grey med gr. ss. w/ vugs, slight HCl phizz trace amts of carb fracs along bedding planes
5:10 PM					
			610		
10 ft recovery					610.5 - 612 blk carb. rich laminated shale slight HCl phizz, abundant carb. fracs along bedding planes
					612 - 617.5 very dark grey vfg. sandy sh ad. slight HCl phizz carb fracs. abundant along bedding planes.
					617.5 - 619 grey vfg. to fg sandstone V4" Bal. seam @ 617'
3:40 PM					
			620		
10' recovery					619 - 628 lt. grey fine - v.f.g. sandstone carb. fracs along bedding planes. Natural fracture dipping 50° from 621 - 622! Iron staining along fracture, trace amts of convoluted bedding 625 - 628. No HCl phizz
					628 - 632 Convoluted bedding, black carb. rich sh. interbedded w/ vfg. lt grey sandstone HCl phizz minor amts of laminated bedding also present.
4:10 PM					
			630		
10' recovery					632 - 633 light grey med-to fine grained sandstone
					633 - 633.8 convoluted bedding as @ 625 - 632
					633.8 - 637 med. grained pale yellow sandstone, vugs, v. carb. rich, massive. no HCl phizz
					637 - 637.3 black shale sh. ad. carb rich no HCl phizz
4:35 PM					639 3 - 640.5 light grey fine - v fg. sandstone, mod. HCl phizz
			640		
10' recovery					640.5 - 641 black silty coal, friable
					641 - 642 silty vfg. sandstone, very dark grey, HCl phizz v. carb. rich. convoluted and planar bedded
					642 - 644 lt. grey fine to vfg. sandstone, massive no HCl phizz
5:05					644 - 646.5 lt. grey vfg ss convoluted bedded w/ black silty shale, carb rich, no HCl phizz
					646.5 - 646.6 black coal, friable
			650		646.6 - 654 lt. grey fine to vfg massive sandstone minor HCl phizz

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Geologic Log

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C-27

PROJECT No.: E. MTN HOLE No.: DH-5

DATE BEGIN: 8/19/91 DATE END: 8/22/91

DRILLER: Rm LOGGER: BKB/ FIRST WATER AT: ____

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			650		
10' Recovery					see previous page description from 648.6' to 654.
5:35 PM					654-658 fine to vfg sandstone, convoluted bedding. Carb. trace moderately abundant moderate HCl phizz.
			660		658-668.5 massive, light grey med-fine grained sandstone moderate HCl phizz. very trace amts of carb. material present
10' recovery					668.5-668 fine to vfg sandstone, grey good HCl phizz very little carb. material massive bedding vugs @ bts.
6:15 PM					
			670		668-669.5 grey, fine to vfg sandstone crossbedding, moderate HCl phizz, carb frags present 669.5-670.5 H. grey fine-vfg sandstone, v. wk HCl phizz 670.5-670.6 blk shaley siltst. HCl phizz 670.6-674 H. grey fine grained SS interbedded w/ dark grey silty siltst 674-675 massive H. grey sandstone, shrkats, HCl phizz 675-676 H. grey SS interbedded w/ dk grey sh. 676-677.5 massive H. grey SS Good HCl phizz 677.5-679 dk grey silty sh HCl phizz
6:45					
			680		
JRP 8:45 pm 10' recov					siltstone, wavy bedded, v.f.g - black - brown, Hard, Weak - no HCl rxn, few fractures, vugs, very thin carbonaceous laminations.
			690		689-694 buff colored sandstone, no HCl rxn, wavy bedded highly fractured, carbonaceous lams and fractures
9:45 pm 10' recov					691-695 very carbonaceous friable, no HCl Rxn 694-699 coal, grey siltstone, very weak HCl Rxn Massive bedding
					696.5-699 core sample was stuck in core barrel, was destroyed during recovery
			700		

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Geologic Log

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PROJECT No.: C-27 HOLE No.: DH-5

DATE BEGIN: 8/19/91 DATE END: _____

DRILLER: _____ LOGGER: Jeff FIRST WATER AT: _____

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			700		s - lone, no HCl, wavy - parallel laminations
1045 pm 10' recov.					Buff sandstone, weak HCl, massive, carbonaceous laminations, fractured,
			710		limestone, massive, green/black alternating layers hard to drill, some carbon material mod HCl Rxn
8-22-91 1230 Am 10' recov					
			720		Shale 719-720 720-729 limestone, color varies from light grey to brown, buff, dk grey, massive bedded mostly recrystallized, Ca along fractures, mod HCl no notable carbonaceous zones. Hard.
130 Am 10' recov					
			730		Buff color silty limestone mod HCl x-bed. wavy bed.
230 10' recov					
			740		Sandstone, yellow, soft, mild HCl Massive, carbonaceous lines at 745-749
345 10' recov					
			750		

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Geologic Log

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PROJECT No.: C-27 HOLE No.: ZH-5
DATE BEGIN: 8/19/91 DATE END:
DRILLER: [illegible] LOGGER: Jeff/[illegible] FIRST WATER AT.

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
500 AM 10' recov			750		AA, carbonaceous alteration in joints, soft, yellow sandstone - siltstone weak HCL Rxn
545 AM 10' recov			760		sand, limestone [illegible] high fracture density, high alteration within fractures carbonaceous material Massive bedded
630 AM 10' Recov			770		AA ~~7??-776~~ green siltstone m-fine grained, massive 77?-779 - siltstone and shale, fractured, altered dark grey/black, striated [illegible] bedded Hard
10' Recovery			780		779-789 light grey fine to med. grained SS. x-bedded, slight HCL phizz, soft natural fracture dipping ≈80° from 783' to 785' Iron staining along fracture and x-bedding
7:45 AM 10' recovery 8:15 AM			790		789-791 reddish yellow med gr. sandstone, well sorted x-stratification, very porous, No HCL phizz 791-795 light brown med - fine grained SS x-stratified, Moderate HCL phizz 795-803.5 pinkish grey med - fine gr. SS, x-stratified moderately strong HCL phizz x-strat sets ½" - 2" thick Calcite cemented fractures
			800		

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Geologic Log

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PROJECT No.: C-27 HOLE No.: DH-5

DATE BEGIN: 8/19/91 DATE END:

DRILLER: Ken LOGGER: BKB FIRST WATER AT:

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
10' recovery			800		803.5 - 804 reddish yellow fine - vfg sandstone w/ shaly slt. laminae, strong HCL phizz
					804 - 806.50 light grey fine to med gr sandstone x-stratified vuggy, mod HCL phizz carb. frags along bedding planes
8:50 AM					806.5 - 809 light grey, wavy bedding, vfg sltyss interbedded w/ dark grey sltst beds v. carb rich along bedding planes, mod HCL phizz
10' recovery			810		809 - 810 carb rich sltst dk grey HCL rxn
					810 - 814.5 lt. grey vfg sltst ss, sh laminae from 813.5 - 814.5 nat. fracture, no HCL rxn, coal stringers up to 1/4" thick present
					814.5 - 817 grey laminated shaly slt. mod HCL RXN. carb. rich
					817 - 820.5 grey COAL, friable, pyrite present fracd parts of slt lenses 1/2" diam. NO HCL RXN
9:30 AM					
10' recovery			820		820.5 - 821.5 lt grey laminated sltst - carb frags abundant
					821.5 - 821.7 black friable slty coal, no HCL RXN
					821.7 - 824 lt. grey laminated sltst, carb rich, strong HCL rxn coal filling fractures
					824 - 824.2 dark grey slty. coal.
10:15 AM					824.2 - 827 lt. grey slty vfg laminated SS, mod HCL RXN carb rich.
10' recovery			830		827 - 830 light grey slty vfg SS, contorted bedding, weak HCL rxn
					830 - 833.5 med grey sandy sltst, very carb. rich, laminated No HCL RXN
					833.5 - 837.5 silty vfg ss. lt. grey, contorted bedding mod HCL RXN, pyrite along bedding planes very carb rich
10:50 AM					
10' recovery			840		839.5 - 841 dk grey laminated shaly sltst. interbedded coal clasts common. mod HCL RXN.
					841 - 841.3 slty coal, friable, dark grey
					841.3 - 845.5 lt. grey slty vfg. sandstone, carb frags along bedding planes mod HCL RXN.
					845.5 - 846 slty vfg sandstone carb rich, abundant coal along bedding planes
					846 - 848 lt grey slty vfg sandstone, carb rich
11:30 AM					848 - 849.5 wavy bedding, slty vfg ss interbedded w/ slty sh laminae. mod HCL RXN.
			850		

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Geologic Log

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PROJECT No.: C-27 HOLE No.: DH-5

DATE BEGIN: 3/19/91 DATE END:

DRILLER: RDN LOGGER: [illegible] FIRST WATER AT:

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			850		849.5 – 850.5 lt grey to black carb rich sh laminated, mod HCL Rxn
10' recovery					850.5 – 853 lt grey fine grained sandstone, massive fracturing, dip ~80° Good HCL Rxn
					853 – 857 lt grey vf to fine grained sandstone, wavy bedded. Moderate HCL Rxn
					857 – 859 lt grey fine grained sandstone, massive minor HCL Rxn.
12:00 NOON			860		859 – 863.5 yellow [illegible] grained ss x-stratified, mod HCL Rxn; iron staining, 859 to 863.5 partially calcite filled natural fracture – vuggy, fractures dip ~80°
10' recovery					863.5 – 867 wavy bedded lt grey vfg ss and slty shale carb frags common. Mod HCL Rxn
					867 – 869 lt tan fine to v-fg sandstone, x-stratified Mod HCL Rxn
1250 PM			870		869 – 879 med-fine grained sandstone, very pale brown, x-stratified carb frags along bedding planes. Moderate HCL Rxn.
10' recovery					
1:15 PM			880		879 – 888.5 med – fine grained sandstone light grey, x-stratified carb. frags common along bedding planes. minor amt. of iron staining present along bedding planes good HCL Rxn very pale brown shale intraclasts present along some bedding planes. Mod HCL Rxn.
10' recovery					888.5 – 889 contorted – wavy bedding, lt tan vfg ss w/ black slty shale
1:40 PM			890		889 – 890.5 lt grey silty vfg ss, x-strat., strong HCL Rxn.
10' recovery					890.5 – 893 grey laminated slty sh, strong HCL Rxn carb rich
					893 – 894.2 black blocky coal, friable, pyrite spherulites present
					894.2 – 897.5 dk grey slty vfg ss. Mod HCL Rxn. carb rich
					897.5 – 898.5 grey vfg ss carb frags on bedding plane. mod HCL Rxn –
2:10 PM			900		898.5 – 900.5 wavy bedded dk grey slty vfg ss HCL Rxn Mod

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Geologic Log

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PROJECT No.: C-27 HOLE No.: DH-5

DATE BEGIN: 8/19/91 DATE END:

DRILLER: KCN LOGGER: BKB FIRST WATER AT:

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			900		900.5 - 900.7 black slty coal
10' recovery					900.7 - 902 dk grey shaley silt, no HCL Rxn, carb rich
					902 - 902.1 black slty coal
					902.1 - 903 grey shaley sltst. slight HCL Rxn
					903 - 906.5 lt grey slty vfg ss mod HCL Rxn, x-strat. & laminated
					906.5 - 908 carb. rich shaley sltst, slight HCL Rxn. Nat fractures dip ≈85°
					908 - 909.2 Black coal. blocky, vitreous luster, friable
2:50 PM					
10' recovery			910		909.2 - 910.5 dk grey carb rich shaley sltst. No HCL Rxn
					910.5 - 915 grey laminated slty vfg SS.
					915 - 916 lt. grey convoluted bedding, vfg SS & shaley sltst Hi HCL Rxn
					916 - 919 lt. grey fine to vfg slty SS. coal clasts along bedding planes. High HCL Rxn.
3:30 PM					
10' recovery			920		919 - 931.5 grey, sandy sltst. pyrite spherulites & coal seams up to 1/4" thick present laminated carb. frags abundant slight HCL Rxn. disseminated carbon abundant
4:15 PM					
10' recovery			930		931.5 - 933.8 lt. tan vfg sandstone wavy bedding, carb frags abundant along bedding planes. High HCl Rxn.
					933.8 - 935 black coal, vitreous luster
					935 - 936 darkgrey sltst, very carb rich, bedding planes up to 1/4" thick coal.
					936 - 938 lt. grey fine - vfg sandstone, wavy bedding, No HCL Rxn
4:50 PM					938 - 939.5 lt grey vfg SS. convoluted bedding slight HCL Rxn.
10' recovery			940		939.5 - 940.5 lt. grey fine - vfg sandstone
					940.5 - 942.3 grey to lt. grey vfg silty SS convoluted bedding. slight HCL Rxn
					942.3 - 943.5 lt. brown-tan wavy bedded, med - fine grained SS "HCL"
					943.5 - 943. lt grey vfg SS w/ shale (blk) laminae convoluted bedding
					943 - 947 lt. brown to tan med - fine gr. SS. wavy bedding abundant carb. frags along bedding planes "Mod HCL Rxn"
5:25					947 - 949 grey to lt. grey vfg SS interbedded w/ slty shale, carb. rich, High HCL Rxn
			950		

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Geologic Log

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PROJECT No.: C-27 HOLE No.: DH-5

DATE BEGIN: 5/19/91 DATE END: _____

DRILLER: RDN LOGGER: BKB FIRST WATER AT: _____

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
10' recovery			950		949 - 950.5 tan f ine grained ss., irregular calcite filled fractures ~80° to HCl Rxn 950.5 - 952.5 grey vfg ss cemented tabular. No HCl Rxn 952.5 - 957 lt tan very med- fine gr ss, carb frags throughout slight HCl rxn
5:55 PM					957 - 959 dark grey fine gr - ss. - md gr. dark grey sh laminae, slight HCl rxn.
10' recovery			960		959 - 960.5 tan - orange med - fine gr ss. sh & coal int fractures No HCl Rxn 960.5 - 961.5 lt grey vfg ss w/ sh intervals very broken No HCl rxn 961.5 - 965 lt tan med gr. ss, carb frag along bedding planes, ½" coal @ 964
6:25 PM					965 - 965 grey silty sh. No HCl rxn. 965 - 974 tan to orange med gr. ss. naturally fractured ½ vertical massive & x-stratified, porous & permeable mild HCl rxn, friable
			970		
					974 - 977.5 lt tan med - coarse gr sandstone carb. frags along bedding planes massive & x-stratified v. mild HCl rxn.
6:5 DPM					977.5 - 979 dark grey laminated silty shale mild HCl rxn. carb rich
			980		
JRP 8:40pm					980 12" coal bed, black, bituminous sandy limestone, light & dark, pebble lams, wavy and x-bedded, some pebble lams mod HCl, Hard
			990		
water delay 7-25-91					AA sandstone, light grey fine gr ss, HCl rxn, carbon lams
1200 AM 10' recov					dark grey micaceous silty shale, no HCl Rxn
			1000		

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Geologic Log

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PROJECT No.: C-27 HOLE No.: DH-5

DATE BEGIN: [illegible] DATE END: ______

DRILLER: ______ LOGGER: ______ FIRST WATER AT: ______

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
			1000		limestone, massive, dark brown-black, mild HCl rxn; sandy limestone, massive, green-gray, mild HCl rxn
1:15 AM 9.5 recov					Coal, thin bed ≈ 2"; Shale, [illegible], silt, no HCl Rxn
225 Am 10' recov			1010		AA; massive [illegible]; mod HCl Rxn; light [illegible] gray
330 AM 9.5 Recov			1020		AA, limestones, [illegible]; [illegible]
4:15 Am [illegible] recov			1030		Sandstone [illegible] cross and [illegible] laminations [illegible]; no HCl Rxn
5:30 AM			1040		[illegible]
			1050		

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Geologic Log

EarthFax

PROJECT No.: _____ HOLE No.: DH 5

DATE BEGIN: _____ DATE END: _____

DRILLER: _____ LOGGER: _____ FIRST WATER AT: _____

Comments	Sample Method	Drilling Rate	Depth	Graphic Log	Lithologic Description
10' recovery			1050		AA
6:40 AM					[illegible]
5' recovery			1060		-1061 [illegible] 1061-1065 -1065.5 ft [illegible]
7:00 AM					
10.2' recovery					1065.5-1067.2 light [illegible]
			1070		[illegible]
8:00 AM					
1.8' recovery 8:30 AM			1077.2		1077.2-1079 ltgy silty SltSt.
10' recovery					1079-1080.5 lt [illegible] 1080.5-1081 blk [illegible] 1081-1082 blk [illegible] 1082-1084 [illegible] 1084-1085.5 [illegible] 1085.5-1086 [illegible] 1086-1089 carb-rich sltygy sh [illegible]
9:20 AM					
10' recovery			1096		1089.5-1090.5 blk dk gray carb. rich. slty sh. 1090.5-1091 blk carb. blocky 1091-1093.5 gray sltst vfg S.S. 1093.5-1094.5 lt [illegible] 1094.5-1095 dk gray slty sh. 1095-1095.5 [illegible]
10:00 AM					1095.5-1098 gray laminated slty sh. 1098-1104.5 lt. gray [illegible]
			1177		

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GEOLOGIC DRILL HOLE LOG

SHEET 2 OF 24

EarthFax

PROJECT No.: C-27 LOCATION: E MW

HOLE No.: DH-5 LOGGED BY: DKB DRILLER: Rick

DATE BEGAN: 8/19/91 DATE ENDED: _____ FIRST WATER AT: _____

COMMENTS (e.g. DRILLING RATES METHODS, BLOW COUNTS, ETC.)	SAMPLE METHOD ①	SAMPLE RECOVERY	DEPTH (FEET)	GRAPHIC LOG	CLASSIFICATION AND PHYSICAL DESCRIPTION
10' recovery					1109.5 - 1107.5 grey vfs ...
11:00 AM					1107.5 - 1109 tan fine sandstone ...
10' recovery			1110		1110 - 1113 fine grained tan HFF grey ss. ...
11:30					1113 - 1113.5 black coal ...
10' recovery			1120		1113.5 - 1118 lt. grey ...
1:05					1118 - 1117.5 black coal ...
10' recovery			1130		1119.5 - 1121 dk grey ...
1:15 PM					1121 - 1124 lt. grey ...
10' recovery			1140		1124 - 1129.7 lt. grey silts, laminated ...
2:25 PM					1129.7 - 1132 grey coal ...
10' recovery			1150		1132 - 1134.5 vfg sandstone ...
2:50 PM					1134.5 - 1139 dk grey ...
10' recovery			1160		1139 - 1143 dk grey ...
3:40					1143 - 1144 lt. grey ...
			1170		1144 - 1150 lt. grey vfs ss ...
					1150 - 1153.5 lt. tan to lt. grey fine grained ss ...
					1153.5 - 1155.8 ...
					1155.8 - 1157 ...
					1157 - 1159 lt. tan sandy silst ...
					1159 - 1164 ...
					1164 - 1166 ...
					1166 - 1169 ...
					1169 - 1173 lt. grey vfg sandy silst. laminated. Calcite filled fractures at 1171' Numerous fracture dips ~80° @ 1170 - 1175

① G: GRAB, SS: SPLIT SPOON, C: CORED, UT: UNDISTURBED THINWALL, O: OTHER _____

GEOLOGIC DRILL HOLE LOG

EarthFax

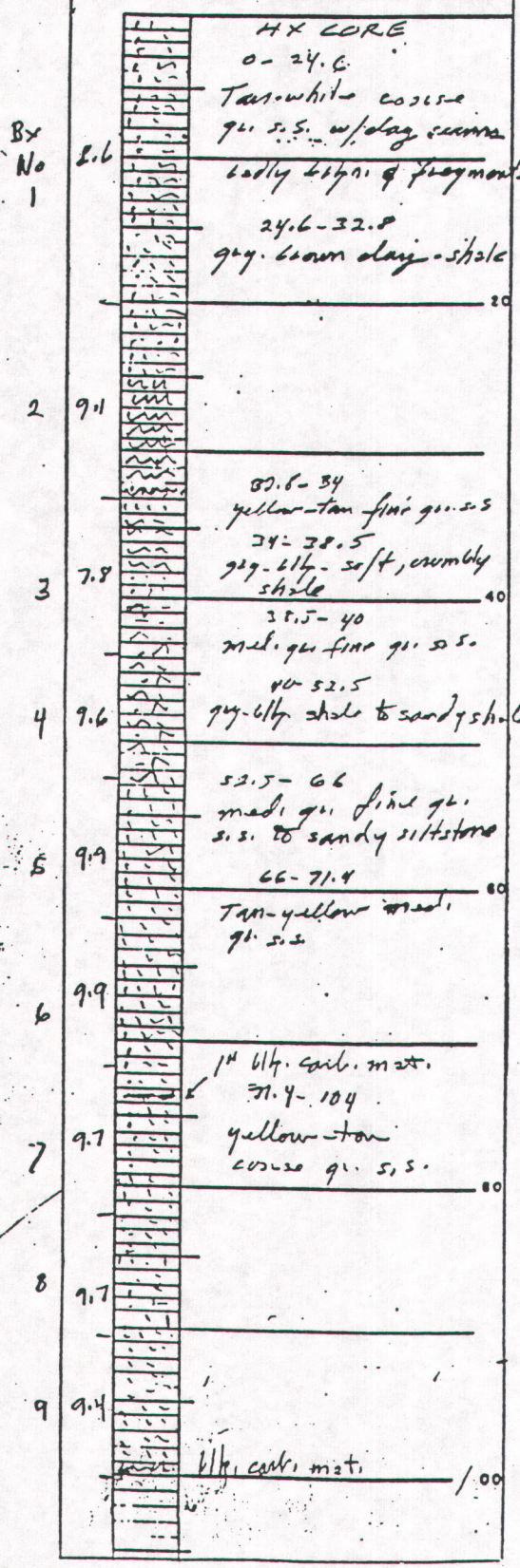
SHEET 29 OF 29

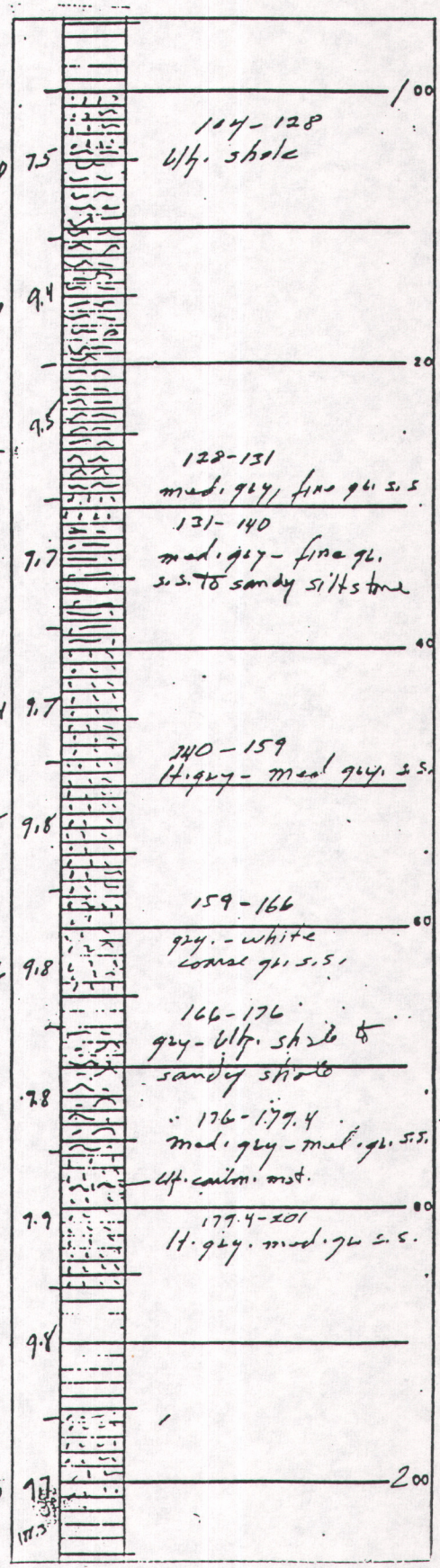
PROJECT No.: C-27 LOCATION: E. NTL
HOLE No.: DH-5 LOGGED BY: BKB DRILLER: Rok
DATE BEGAN: 8/19/91 DATE ENDED: 8/2?/91 FIRST WATER AT:

COMMENTS (e.g. DRILLING RATES METHODS, BLOW COUNTS, ETC.)	SAMPLE METHOD ①	SAMPLE RECOVERY	DEPTH (FEET)	GRAPHIC LOG	CLASSIFICATION AND PHYSICAL DESCRIPTION
			1174		
10' recovery					1177-1179 gray fine ss. wavy bedded, carb material present along bedding planes.
4:10 PM					
10' recovery			1180		1179-1184 lt. tan vf grain sltst. laminated wavy bedding carb. frags along bedding planes
					1184-1187 yellow tan fine gr. ss. x-stratified
					1187-1187.7 lt. grey v.f. ss interlaminated w/ dk grey sh. contorted bedding
4:45					1187.7-1193 yellow tan fine gr. ss, x-stratified
10' recovery			1190		1193-1194 carb rich slty shale, laminated, coal seam upto 1/2" thick
					1194-1195 dark brown bony coal
				[graphic]	1195-1199 Black coal, bright, blocky, ... = Hiawatha
?:30 PM				[graphic]	Lab Sample #1 1197.5-1199
? recovery			1200	[graphic]	1199-1199'8" black coal, bright, blocky, ... = Hiawatha
					1199'8"-1200.5 carb rich slty sh. dk grey
					1200.5-1201.3 dark grey shaley sltst
					1201.3-1202.6 lt. grey laminated slty vfg ss
					1202.6-1203 white f.med gr. salt & pepper ss wavy lamin & massive
					1203-1203.5 lt grey to white wavy lamin. vfg ss
					1203.5-1209 grey & tan fine gr. laminated ss natural fracture dipping ~70° @ 1207'
7:15 PM					
11' recovery			1210		1209-1215 grey sltst. ... shale ... wavy bedding, natural fracture dipping ~55° E @ 1209'
					1215-1218.5 grey to white sandy sltst - shaley laminae present but not ... joints. carb material present along bedding planes
8 PM					1218.5-1219 lt. grey sandy sltst laminated & convoluted bedding.
			1220		
			1230		
			1240		

① G: GRAB, SS: SPLIT SPOON, C: CORED, UT: UNDISTURBED THINWALL, O: OTHER

HOLE NO. DH-6
Ore Body East Mtn.
Coordinates SW¼ SE¼ SW¼ Sec. 25 T 1S R 6E
Elevation 9913'
Drilling Started 10-1-89
Drilling Finished 10-25-89
Total Depth 1679
Logged by [illegible]





HOLE NO. DH-6

Ore Body _____

Coordinates _____

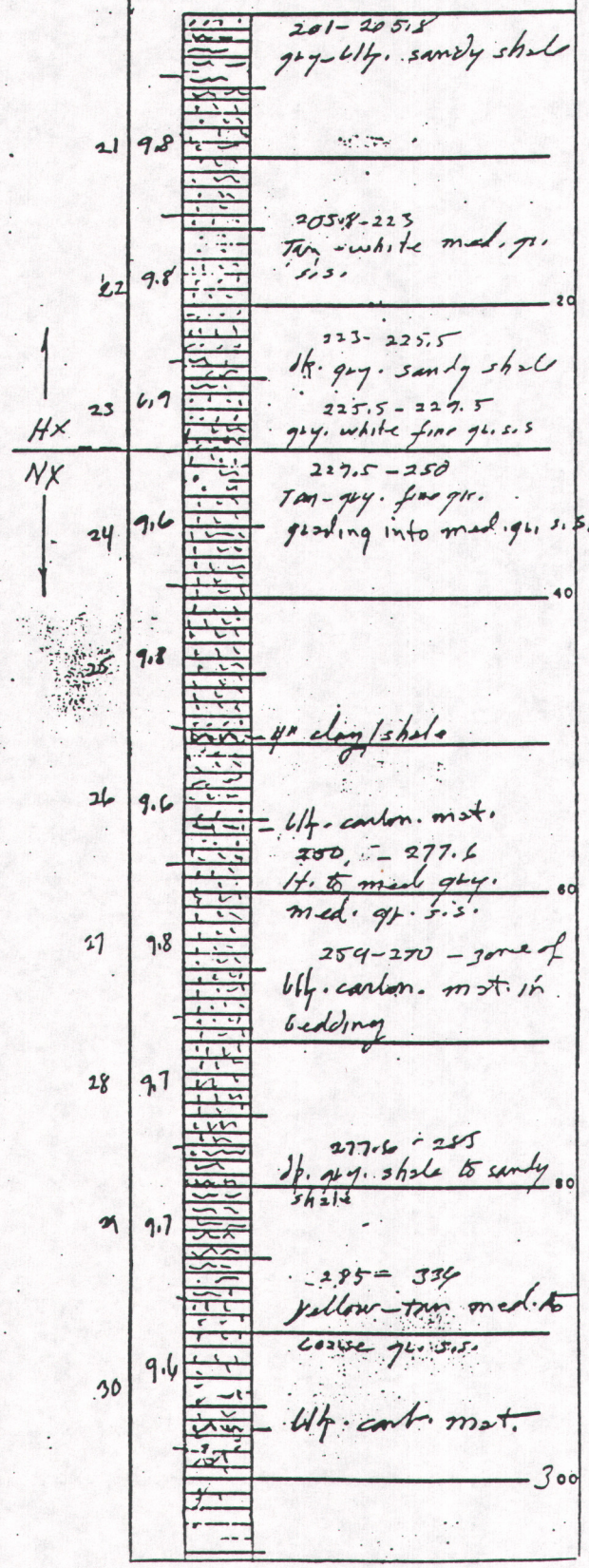
Elevation _____

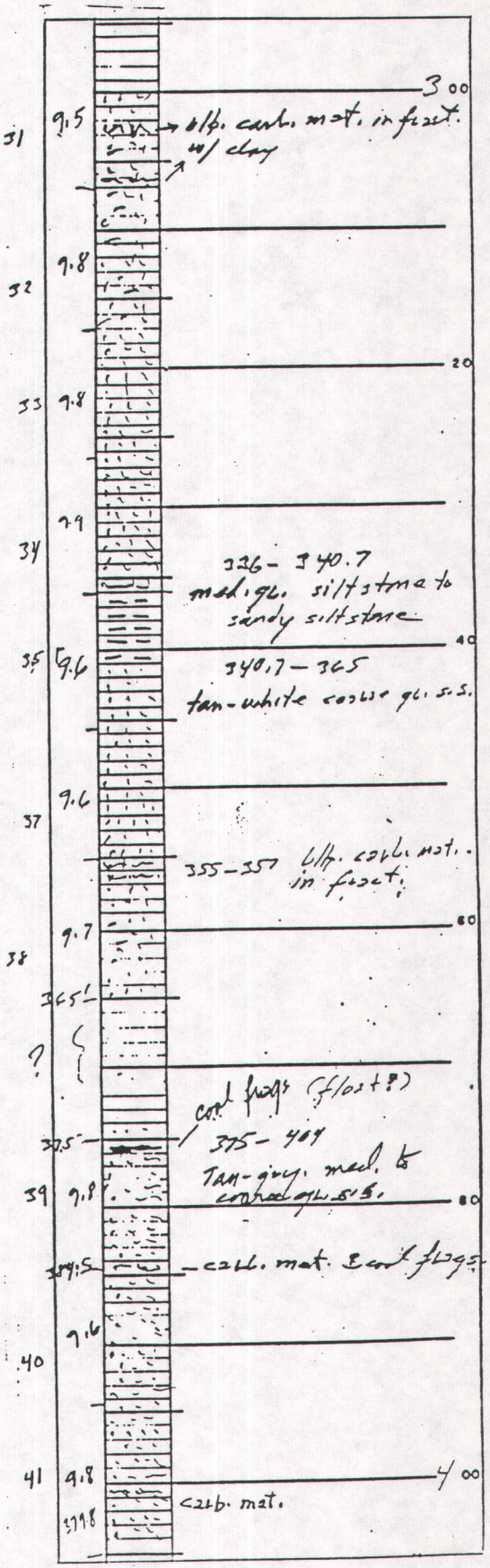
Drilling Started _____

Drilling Finished _____

Total Depth _____

Logged by _____





HOLE NO. DH-6

Ore Body _____

Coordinates _____

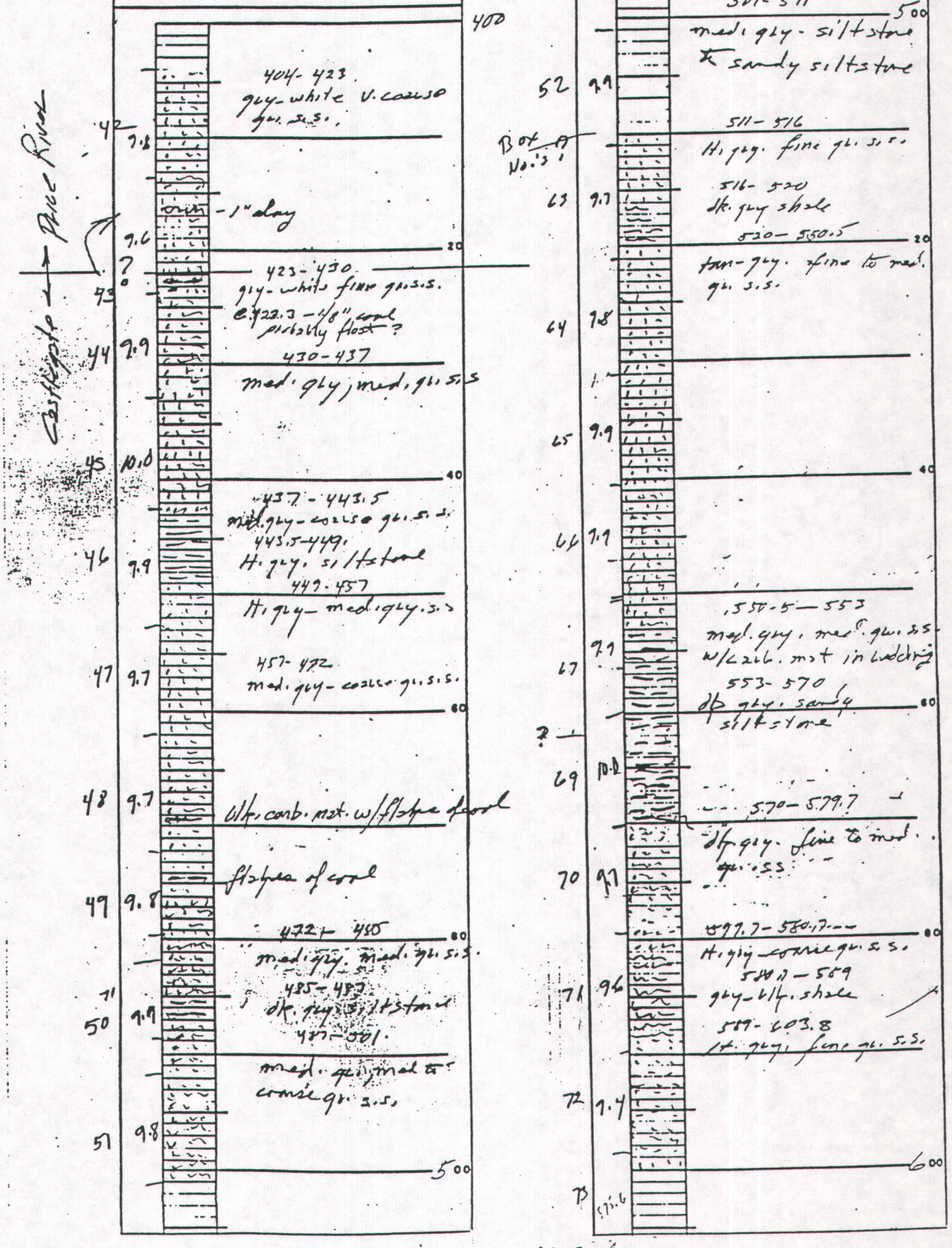
Elevation _____

Drilling Started _____

Drilling Finished _____

Total Depth _____

Logged by _____

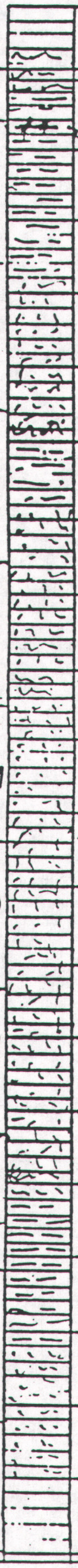


HOLE NO. DH-6

Page 4/9

Ore Body ______
Coordinates ______
Elevation ______
Drilling Started ______
Drilling Finished ______
Total Depth ______
Logged by ______

Black bore ← ? → Costigate



600

? 9.9 — 603.8 – 605.7 dk. gry - blk. sandy shale, 1/8" coal

74 9.9 — 605.7 – 618.5 med. gry. siltstone to sandy siltstone

618.5 – 629.2 lt. gry med. gr. s.s. (20)

75 9.9

629.2 – 629.6 / blk. shale

76 9.9 — 629.6 – 634.7 blk. sandy siltstone

629.5 – 644.6 gry-white fine gr. s.s. (40)

77 9.7 — 644.6 – 647.4 blk. shale

647.4 – 657 lt. gry. fine gr. s.s.

78 9.9

657 – 679.6 lt. gry. fine gr. s.s. (60)

79 10.0 — 679.6 – 681 gry - blk. shale

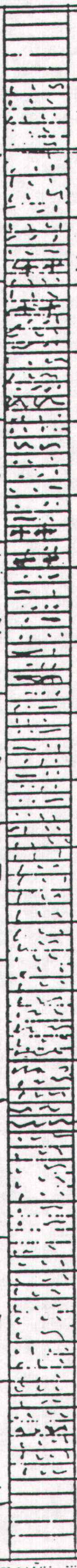
9.7

80

81 9.9 — 681 – 691.5 med. gry siltstone (80)

82 10.0 — 691.5 – 723 med. gry – med. gr. s.s.

83 9.7 — 700



700

83

84 10.0 — 713.6 – 714.6 / carb. w/coal flakes; 4" carb. mat. w/coal flakes

85 10.0 — 723 – 724.4 blk. shale (20)

724.4 – 726 dk. gry. med. gr. s.s.

86 9.7 — 726 – 726.6 - blk. shale

726.6 – 755 med. gry. fine gr. s.s. to sandy siltstone

87 9.6 — @ 733.3 – 1/4" coal; @ 735 – 2" coal (40)

743 – 6" carb. shale & coal

88 9.7

755 – 773.2 med. gry – med. gr. s.s.

9.9

89 (60)

91 9.9

773.2 – 775.2 dk. gry - shale

91 9.9 — 7752 – 832.5 med. gry, med gr. s.s. (80)

92 9.9

93 9.9 — blk. carb. mat. in bed.

19.5 — 800

p. 4 # 9

HOLE NO. DH-6

Ore Body _____

Coordinates _____

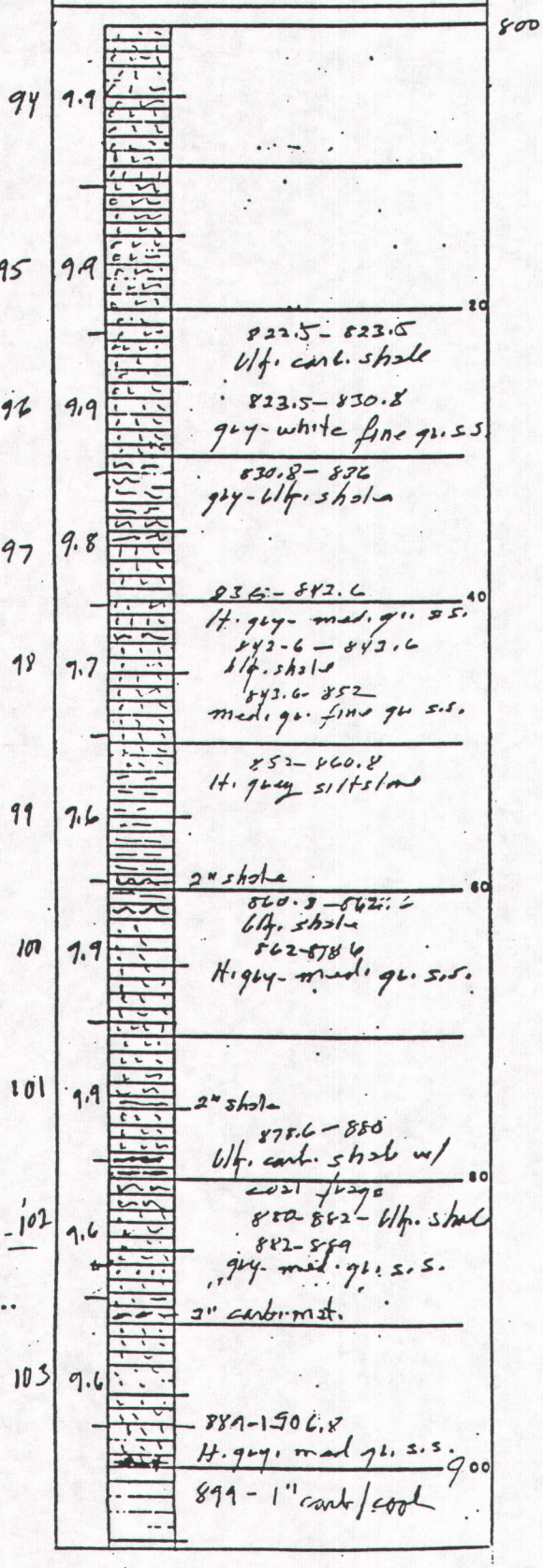
Elevation _____

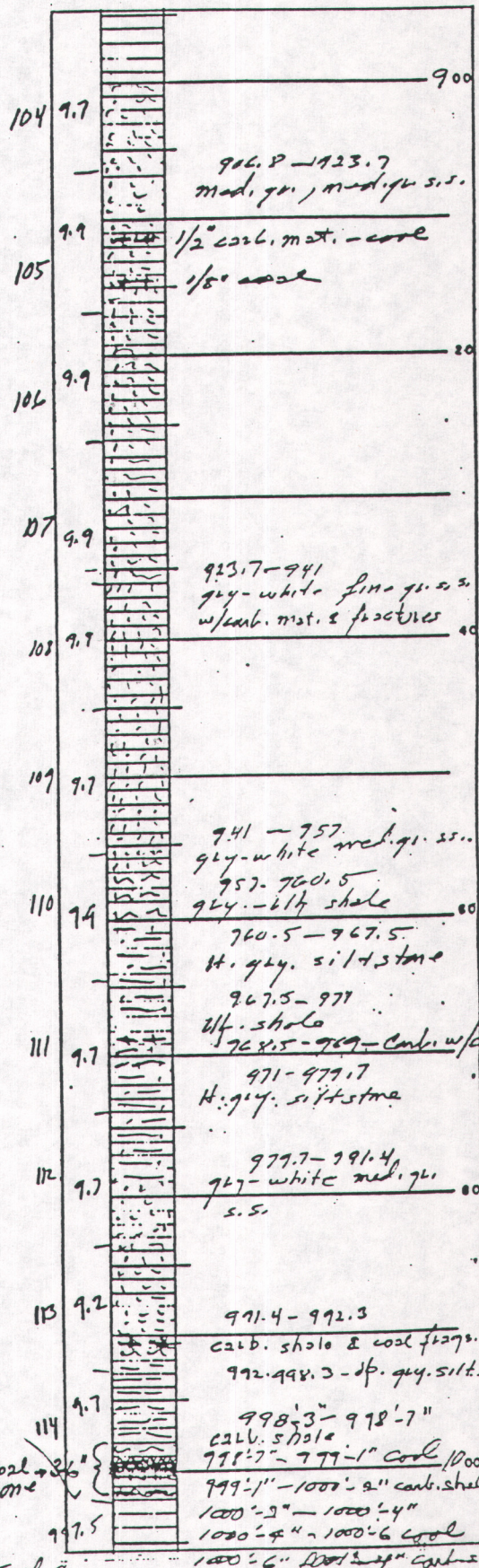
Drilling Started _____

Drilling Finished _____

Total Depth _____

Logged by _____





HOLE NO. DH-6

Ore Body

Coordinates

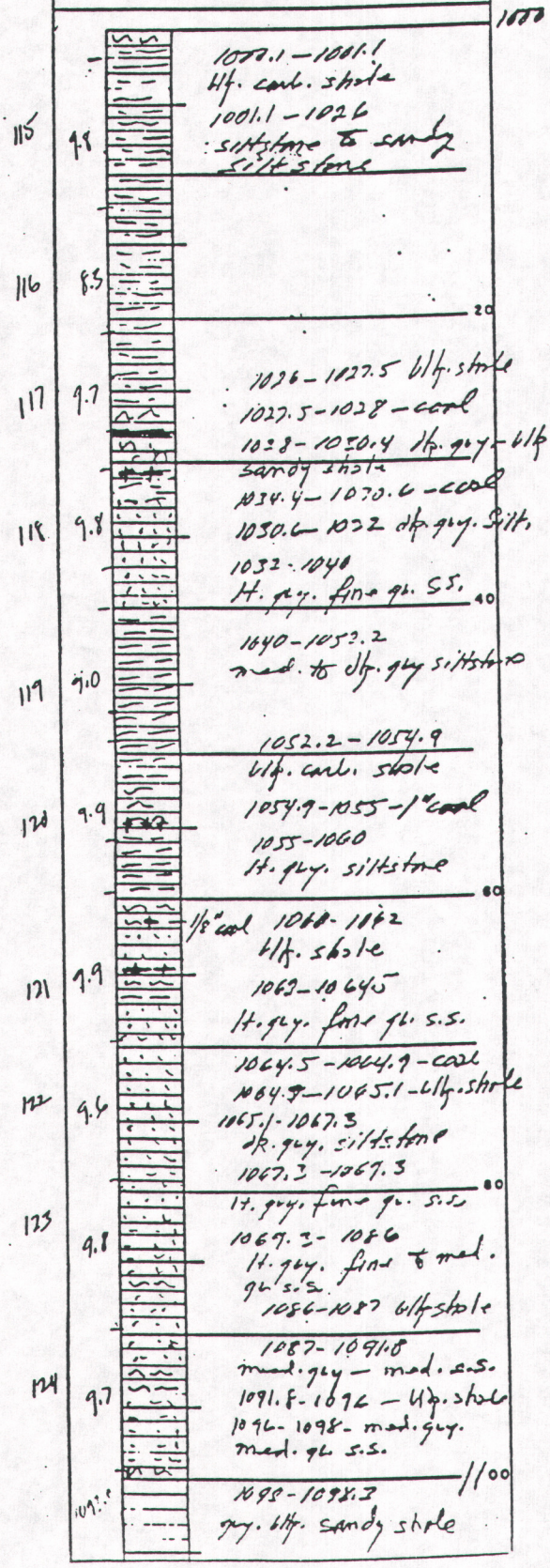
Elevation

Drilling Started

Drilling Finished

Total Depth

Logged by



HOLE NO. DH-6

Ore Body

Coordinates

Elevation

Drilling Started

Drilling Finished

Total Depth

Logged by

1200

1216.8-1208.
lt. shale

136 9.7

1208 - 1211.6
coal
Sample DH-6-1A-B-1208

137 9.7

1211.6-1219
lt. gry. siltstone

1219-1221.9
gry-blk-sandy shale

138 9.8

1221.9-1231.4
dk. gry. siltstone

1231.4-1235.6
lt. gry-white fine gr. s.s.

139 10.0

1235.6-
dk. gry. med. gr. s.s.

1243.4-1247
lt. gry-, coarse gr. s.s.

140 9.5

1247-1247.6
blk. carb. shale

1247.6-1249.4
coal-Light/shimmery
(not wrapped for sample)

141 9.8

1249.9-1250.6
2" Carb. shale blk. shale

1258.6-1261.1
med. gry. siltstone

142 9.9

1261.1-1273
H. gry. med. gr. s.s.
fracture/coal in floor?

1273-1289
H. gry. fine gr. s.s.
to sandy siltstone

143 9.9

1289-1298.4
interbedded med. gry & gry-white med. gr. s.s.

144 9.9

1298.4-1302.
dk. gry-blk shale

145 9.9

3" Coal 1300.8
to sandy shale 1300
1301.3-1301.9-Coal

1300

1302.1-1303
lt. gry. fine gr. s.s.

146 9.8

1303-1306.8
gry-blk shale

1306.8-1318.1
gry-white fine gr. s.s.

147 9.6

1318.1-1319.1
carb. mat. w/coal seams

1319.1-1330
lt. to med. gry. fine gr. s.s.

148 9.7

1330-1330.8
gry. blk. shale

1330.8-1332.9
blk. carb. shale w/
1/2" & 4" beds of coal

149 9.7

1332.9-1336.8-?
coal DH-6-2-A-1336

1336.8-1339.4
dk. gry. siltstone

150 9.9

1339.1-1351.5
gry-blk-silt. to
sandy silt.

1351.5-1357.4
gry-blk. shale

151 9.9

1357.4-1373.6
H. gry. med. gr. s.s.

152 9.9

1373.6-1377
blk. shale

153 9.9

1377-1393.7
dk. gry. fine gr. s.s.
to sandy siltstone

154 9.9

155 9.8

4.8' 1393.7-1398.5
coal-Sample No.
DH-6-3-A-1398

1400

HOLE NO. DH-6

Ore Body _____

Coordinates _____

Elevation _____

Drilling Started _____

Drilling Finished _____

Total Depth _____

Logged by _____

Black Hawk

Star Point

Note: Star Point Projected depths ± 1810'

1395.5 – 1410.8
tan-gry coarse gl. s.s.

1410.8 – 1429.8
med-dk. gry. coarse gl. s.s.

1429.8 – 1448.6
lt. to med. gy., med. gl. s.s.

1448.6 – 1453
gry. med. s.s.

1453 – 1455
gry-dk. sandy shale

1455 – 1495
lt. gy. fine to med. gl. s.s.

1495 – 1507.5
lt. gry-f fine gl. s.s. to sandy siltstone

@ 1449.4 = 1/8" coal

1507.5 – 1510.6
lt. gl. s. lt stone

1510.6 – 1515
tan-gry med. gl. s.s

1515 – 1550.6
lt. & med. gry coarse gl. s.s.

y" streak zone of carb. mat.?

1550.6 – 1555
gl. white fine gl. s.s. w/ ½" to 1" dk. shale beds

1555 – 1564.5
lt. gry. med. gl. ss

1564.5 – 1575.8
lt. gry. fine gl. s.s.

1575 – 1605
lt. gry. fine gl. s.s

GEOLOGIC LOG

NEICO EAST MTN. EXPLORATION PROGRAM

WELL NO: DH-7

DATE BEGIN: 7-31-89 DATE END: 8-25-89
DRILLER: SMITH LOGGER: IL
GROUND WATER EL: 8266' SURFACE EL: 9669'
COORDINATES: NE1/4 SW1/4 SE1/4, SEC 36, T15S R6E
FIRST WATER AT: 1403'

EarthFax

FORMATION	AGE	SAMPLE METHOD (ST = SHELBY TUBE, SS = SPLIT SPOON, CR = CORE, C = CUTTINGS)	DEPTH	GRAPHIC LOG	LITHOLOGIC DESCRIPTION
NORTH HORN	LOWER TERTIARY - UPPER CRETACEOUS	CR	0		Sandstone: fine-grained, white to light tan, dark grey shale seams 1/4 to 1/2 in. thick and shale clasts 1/16 to 1/2 in. in length. Surface casing to 8.5 ft.
					Sandstone: medium- to coarse-grained, white to light grey, shale clasts.
					Shale: black, carbonaceous.
					Sandstone: medium-grained, grey to white, yellow-tan staining, carbonaceous fragments.
			50		Sandstone: medium-grained, white, light tan, yellow, dark grey, carbonaceous fragments, dark grey shale beds up to 1 in. thick.
					Siltstone - Sandy Siltstone: light to dark grey.
			100		Sandstone: fine- to medium-grained, light to medium grey, shale clasts.
					Shale: grey to black, soft.
PRICE RIVER	UPPER CRETACEOUS	CR	150		Sandstone: medium-grained, yellow, grey, massive, carbonaceous fragments abundant along bedding planes.
					Sandstone: medium-grained, light grey, dark grey shale beds up to 1.5 ft. thick.
					Shale: light to dark grey, minor amounts of fine-grained grey to white sandstone.
					Sandstone: fine- to medium-grained, yellow, grey, fractures filled with carbonaceous matter.
			200		Sandstone: medium- to coarse-grained, gritty, light tan to white, minor amounts of pebbles 1/4 to 1/2 in. diameter and coal fragments from 227.1 to 227.5 ft.
			250		Sandstone: fine-grained, light grey, carbonaceous fragments, fractures filled with carbonaceous matter, carbonaceous seams up to 1/8 in. thick.

GEOLOGIC LOG

NEICO EAST MTN. EXPLORATION PROGRAM
WELL NO: DH-7
DATE BEGIN: 7-31-89 DATE END: 8-25-89
DRILLER: SMITH LOGGER: I.L.
GROUND WATER EL: 8266' SURFACE EL: 9669'
COORDINATES: NE1/4 SW1/4 SE1/4, SEC 36, T15S R6E
FIRST WATER AT: 1403'

EarthFax

FORMATION	AGE	SAMPLE METHOD (ST = SHELBY TUBE, SS = SPLIT SPOON, CR = CORE, C = CUTTINGS)	DEPTH	GRAPHIC LOG	LITHOLOGIC DESCRIPTION
PRICE RIVER	UPPER CRETACEOUS	CR	250		
					Sandstone: medium-grained, dark grey, yellow, tan, contains 1/16 to 1/8 in. thick coal laminae, minor amounts of dark grey variegated sandy shale.
			300		Sandstone: fine- to medium-grained, light tan to white, yellow, fractures filled with carbonaceous material.
					Shale: sandy, dark grey.
			350		Sandstone: fine- to medium-grained, grey, white, trace amounts of shale and siltstone.
		CR	400		Sandstone: coarse-grained, gritty, light grey to white, fractures filled with coal fragments.
			450		Sandstone: medium- to coarse-grained, grey-white to yellow-tan, pebble conglomerates locally present, carbonaceous fragments along bedding planes, carbonaceous rich shale filling fractures.
			500		

GEOLOGIC LOG

NEICO EAST MTN. EXPLORATION PROGRAM
WELL NO: DH-7
DATE BEGIN: 7-31-89 DATE END: 8-25-89
DRILLER: SMITH LOGGER: I.L.
GROUND WATER EL: 8266' SURFACE EL: 9669'
COORDINATES: NE1/4 SW1/4 SE1/4, SEC 36, T15S R6E
FIRST WATER AT: 1403'

EarthFax

FORMATION	AGE	SAMPLE METHOD (ST = SHELBY TUBE, CR = CORE, SS = SPLIT SPOON, C = CUTTINGS)	DEPTH	GRAPHIC LOG	LITHOLOGIC DESCRIPTION
PRICE RIVER	UPPER CRETACEOUS	CR	500		
			550		Siltstone: sandy, medium grey, minor amounts of light grey shale.
					Sandstone: fine- to coarse-grained, tan, grey, white, carbonaceous material along bedding planes and locally filling fractures.
			600		Shale: grey to black.
					Sandstone: fine-grained, light to medium grey, yellow, tan, carbonaceous fragments abundant along bedding planes.
			650		Sandstone: coarse-grained, gritty, yellow, tan.
					Siltstone: medium grey, interbedded with grey sandy shale and fine-grained light grey sandstone.
			700		Sandstone: fine-grained, light grey, carbonaceous fragments along bedding planes, carbonaceous-rich shales up to 3 in. thick.
CASTLEGATE	UPPER CRETACEOUS	CR			Sandstone: fine- to coarse-grained, light grey to white, medium to dark grey siltstone present from 726 to 743 ft. grades into overlying sandstone.
			750		

GEOLOGIC LOG

NEICO EAST MTN. EXPLORATION PROGRAM
WELL NO: DH-7
DATE BEGIN: 7-31-89 DATE END: 8-25-89
DRILLER: SMITH LOGGER: I.L.
GROUND WATER EL: 8266' SURFACE EL: 9669'
COORDINATES: NE1/4 SW1/4 SE1/4, SEC 36, T15S R6E
FIRST WATER AT: 1403'

EarthFax

FORMATION	AGE	SAMPLE METHOD (ST = SHELBY TUBE, SS = SPLIT SPOON, CR = CORE, C = CUTTINGS)	DEPTH	GRAPHIC LOG	LITHOLOGIC DESCRIPTION
CASTLEGATE	UPPER CRETACEOUS	CR	750		Sandstone: fine-grained, grey to white.
					Shale: sandy, dark grey, interbedded with white fine-grained sandstone, coal beds up to 1 in. thick.
					Sandstone: fine-grained, dark grey with grey mottling, carbonaceous fragments.
			800		Shale: sandy, light grey, carbonaceous-rich laminae.
					Sandstone: fine-grained, grey, tan, white, fractures filled with carbonaceous-rich shale.
					Sandstone: medium-grained, light grey, interbedded with grey to white sandy shale, carbonaceous fragments common along bedding planes.
			850		Sandstone: medium-grained, light grey.
					Shale: sandy, light to dark grey, coal bed 4 in. thick at 886 ft.
			900		Sandstone: fine- to medium-grained, grey to white, fractures filled with carbonaceous matter.
					Sandstone: coarse, dark grey.
			950		Siltstone: white to light grey, interbedded with dark grey sandy shale.
BLACKHAWK	UPPER CRETATEOUS	CR	1000		Sandstone: medium- to coarse-grained, gritty, tan-white to white, massive, dark grey siltstone intraclasts present from 1008 to 1011.3 ft.

GEOLOGIC LOG

NEICO EAST MTN. EXPLORATION PROGRAM

WELL NO: DH-7

DATE BEGIN: 7-31-89 DATE END: 8-25-89
DRILLER: SMITH LOGGER: I.L.
GROUND WATER EL: 8266' SURFACE EL: 9669'
COORDINATES: NE1/4 SW1/4 SE1/4, SEC 36, T15S R6E
FIRST WATER AT: 1403'

EarthFax

FORMATION	AGE	SAMPLE METHOD (ST = SHELBY TUBE, SS = SPLIT SPOON, CR = CORE, C = CUTTINGS)	DEPTH	GRAPHIC LOG	LITHOLOGIC DESCRIPTION
BLACKHAWK	UPPER CRETACEOUS	CR	1000		
			1050		Siltstone: grey to dark grey, medium-grained sandstone and sandy siltstone beds present from 1054 to 1057.6 ft.
					Sandstone: fine-grained, light grey.
			1100		Siltstone - Sandy Siltstone: grey.
					Sandstone: fine-grained, grey to white, minor amounts of dark to medium grey siltstone and shale beds, 4 in. thick coal at 1126 ft.
			1150		Siltstone: light grey, minor amounts of fine-grained light grey sandstone.
		CR			Coal.
					Siltstone: light grey, thin lenses of black shale containing coal fragments.
			1200		Sandstone: fine-grained, grey, white.
					Shale: sandy, dark grey, interbedded with minor amounts of sandy dark grey siltstone.
					Sandstone: fine-grained, light grey.
			1250		

GEOLOGIC LOG

NEICO EAST MTN. EXPLORATION PROGRAM
WELL NO: DH-7
DATE BEGIN: 7-31-89 DATE END: 8-25-89
DRILLER: SMITH LOGGER: I.L.
GROUND WATER EL: 8266' SURFACE EL: 9669'
COORDINATES: NE1/4 SW1/4 SE1/4, SEC 36, T15S R6E
FIRST WATER AT: 1403'

EarthFax

FORMATION	AGE	SAMPLE METHOD (ST = SHELBY TUBE, SS = SPLIT SPOON, CR = CORE, C = CUTTINGS)	DEPTH	GRAPHIC LOG	LITHOLOGIC DESCRIPTION
BLACKHAWK	UPPER CRETACEOUS	CR	1250		Siltstone: sandy, light grey, 2 in. shale and 1 in. thick coal beds present.
					Sandstone: fine-grained, light grey.
					Siltstone: dark grey.
			1300		Sandstone: medium-grained, light to medium grey, carbonaceous fragments common and fill fractures.
					Siltstone: light grey.
					Sandstone: medium-grained, light grey.
			1350		Siltstone: dark grey, interbedded with grey-white sandy siltstone, coal beds up to 4 in. thick and shale beds up to 2 in. thick present in minor amounts.
					Sandstone: fine-grained, grey, white, black carbonaceous-rich shale present from 1377.5 to 1379.1 ft.
					Coal.
			1400		Siltstone: sandy, dark grey, coal beds up to 4 in. thick and sandstone beds up to 8 in. thick present from 1381 to 1389 ft.
		CR			Coal.
			1450		Siltstone: light grey, coal and carbonaceous shale beds up to 4 in. thick, fine-grained sandstone present from 1468 to 1468 ft.
					Coal: black, vitreous.
					Shale: sandy, dark grey to black.
			1500		Siltstone: light to medium grey, 2 in. thick coal at 1491 ft.

GEOLOGIC LOG

NEICO EAST MTN. EXPLORATION PROGRAM
WELL NO: DH-7
DATE BEGIN: 7-31-89 DATE END: 8-25-89
DRILLER: SMITH LOGGER: I.L.
GROUND WATER EL: 8266' SURFACE EL: 9669'
COORDINATES: NE1/4 SW1/4 SE1/4, SEC 36, T15S R6E
FIRST WATER AT: 1403'

EarthFax

FORMATION	AGE	SAMPLE METHOD (ST = SHELBY TUBE, SS = SPLIT SPOON, CR = CORE, C = CUTTINGS)	DEPTH	GRAPHIC LOG	LITHOLOGIC DESCRIPTION
BLACKHAWK	UPPER CRETACEOUS	CR	1500		Coal.
					Shale: dark grey to black, carbonaceous rich.
					Coal.
					Sandstone: fine- to medium-grained, light grey to white, shale and coal beds up to 1.2 and 3 in. thick, respectively, are present in minor amounts.
			1550		Coal.
					Siltstone: light grey, dark grey to black shale beds up to 2 ft. thick present in minor amounts.
					Coal.
					Siltstone: light to medium grey.
					Sandstone: fine-grained, tan, grey.
			1600		Coal: black, no parting, sharp upper and lower contacts. Hiawatha Coal Seam.
STAR POINT	UPPER CRETACEOUS	CR			Sandstone: medium-grained, tan, grey.
			TD: 1628 ft.		
			1650		

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

September 26, 1989

Date Sampled : 9/25/89

Date Received : 9/25/89

Sampled by : NEICO

Identification by : NEICO

Analysis Report # : 5064

Sample Identification :

NEICO Corp. DH-2-1-B

CERTIFICATE OF ANALYSIS

Short Proximate

	As Received Basis	Dry Basis
% Moisture	4.90	-----
% Ash	11.83	12.44
% Sulfur	0.70	0.73
Btu/Lb.	12277	12909

Moisture Ash Free Btu/Lb. 14743

Respectfully submitted,
HORIZON LABORATORIES, INC.

Victor M Jarrett

Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

October 24, 1989

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

Date Sampled : 9/25/89

Date Received : 9/25/89

Sampled by : GMA

Identification by : GMA

Analysis Report # : 5061

Sample Identification :

NEICO CO. DH2-2-A

CERTIFICATE OF ANALYSIS

Proximate	As Received Basis	Dry Basis
% Moisture	6.51	-----
% Ash	12.39	13.25
% Volatile	41.14	44.01
% Fixed Carbon	39.96	42.74
	-----	-----
	100.00	100.00
% Sulfur	0.69	0.74
Btu/Lb.	11999	12835

Fusion Temperatures of Ash

Reducing Atmosphere

Initial Def.	2550 Degrees F.
H = W	2640 Degrees F.
H = 1/2 W	+2700 Degrees F.
Fluid	+2700 Degrees F.

Moisture Ash Free Btu/Lb. 14795

Sodium Oxide Ignited Basis= 2.24%

Water Soluable Sodium 0.009%
Water Soluable Potassium 0.004%

Free Swelling Index= 3

Respectfully Submitted,
HORIZON LABORATORIES, INC.

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

October 24, 1989

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

Date Sampled : 9/25/89

Date Received : 9/25/89

Sampled by : GMA

Identification by : GMA

Analysis Report # : 5062

Sample Identification :

NEICO CO. DH2-3-A

CERTIFICATE OF ANALYSIS

Proximate

	As Received Basis	Dry Basis
% Moisture	5.87	-----
% Ash	6.66	7.07
% Volatile	43.81	46.54
% Fixed Carbon	43.66	46.39
	-----	-----
	100.00	100.00
% Sulfur	0.71	0.75
Btu/Lb.	12938	13745

Fusion Temperatures of Ash

Reducing Atmosphere

Initial Def.	2380 Degrees F.
H = W	2440 Degrees F.
H = 1/2 W	2480 Degrees F.
Fluid	2550 Degrees F.

Moisture Ash Free Btu/Lb. 14790

Sodium Oxide Ignited Basis= 0.69%

Water Soluable Sodium 0.008%
Water Soluable Potassium 0.003%

Free Swelling Index= 3

Respectfully Submitted,
HORIZON LABORATORIES, INC.

Victor D. Jarrett

Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

September 26, 1989

Date Sampled : 9/25/89

Date Received : 9/25/89

Sampled by : NEICO

Identification by : NEICO

Analysis Report # : 5065

Sample Identification :

NEICO Corp. DH-2-4-B

CERTIFICATE OF ANALYSIS

Short Proximate

	As Received Basis	Dry Basis
% Moisture	5.32	-----
% Ash	6.83	7.21
% Sulfur	0.85	0.89
Btu/Lb.	12898	13622

Moisture Ash Free Btu/Lb. 14680

Respectfully submitted,
HORIZON LABORATORIES, INC.

Victor M. Janett

Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

October 24, 1989

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

Date Sampled : 9/25/89

Date Received : 9/25/89

Sampled by : GMA

Identification by : GMA

Analysis Report # : 5063

Sample Identification :

NEICO CO. DH2-5-A

CERTIFICATE OF ANALYSIS

	Proximate	
	As Received Basis	Dry Basis
% Moisture	4.89	-----
% Ash	14.50	15.25
% Volatile	39.84	41.89
% Fixed Carbon	40.77	42.86
	100.00	100.00
% Sulfur	0.78	0.82
Btu/Lb.	11683	12284

Fusion Temperatures of Ash

Reducing Atmosphere

Initial Def.	+2700 Degrees F.
H = W	+2700 Degrees F.
H = 1/2 W	+2700 Degrees F.
Fluid	+2700 Degrees F.

Moisture Ash Free Btu/Lb. 14494

Sodium Oxide Ignited Basis= 1.09%

Water Soluable Sodium 0.006%
Water Soluable Potassium 0.005%

Free Swelling Index= 4

Respectfully Submitted,
HORIZON LABORATORIES, INC.

Victor W. Jones

Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

September 27, 1989

Date Sampled : Core

Date Received : 9/11/89

Sampled by : NEICO

Identification by : NEICO

Analysis Report # : 4860

Sample Identification :

Neico Co. DH-3-1-A

CERTIFICATE OF ANALYSIS

	Proximate As Received Basis	Dry Basis
% Moisture	8.62	-----
% Ash	8.41	9.20
% Volatile Matter	41.53	45.45
% Fixed Carbon	41.44	45.35
	100.00	100.00
% Water Soluble Na2O	>0.01	>0.01
% Water Soluble K2O	0.002	0.002
% Sulfur	0.63	0.69
Btu/Lb.	11785	12897
Moisture Ash Free Btu/Lb.	14203	

Fusion Temperatures of Ash
Reducing Atmosphere

Initial Deformation	2460 Degrees F.
Height = Width	2560 Degrees F.
Height = 1/2 Width	2610 Degrees F.
Fluid	2670 Degrees F.

Free Swellin Index = 1
% Na2O, Ignited Basis = 1.20

Respectfully submitted,
HORIZON LABORATORIES, INC.

Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

September 27, 1989

Date Sampled : Core

Date Received : 9/11/89

Sampled by : NEICO

Identification by : NEICO

Analysis Report # : 4864

Sample Identification :

Neico Co. DH-3-2-A

CERTIFICATE OF ANALYSIS

	Proximate As Received Basis	Dry Basis
% Moisture	5.91	-----
% Ash	6.19	6.58
% Volatile Matter	45.40	48.25
% Fixed Carbon	42.50	45.17
	100.00	100.00
% Water Soluble Na20	0.01	0.01
% Water Soluble K20	0.001	0.001
% Sulfur	0.57	0.61
Btu/Lb.	12740	13540
Moisture Ash Free Btu/Lb.	14494	

Fusion Temperatures of Ash
Reducing Atmosphere

Initial Deformation	2560 Degrees F.
Height = Width	2620 Degrees F.
Height = 1/2 Width	2680 Degrees F.
Fluid	+2700 Degrees F.

Free Swelling Index = 2
% Na20, Ignited Basis = 2.60

Respectfully submitted,
HORIZON LABORATORIES, INC.

Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

September 27, 1989

Date Sampled : Core

Date Received : 9/11/89

Sampled by : NEICO

Identification by : NEICO

Analysis Report # : 4861

Sample Identification :

Neico Co. DH-3-3-A

CERTIFICATE OF ANALYSIS

	Proximate As Received Basis	Dry Basis
% Moisture	7.54	-----
% Ash	6.61	7.15
% Volatile Matter	43.41	46.95
% Fixed Carbon	42.44	45.90
	100.00	100.00
% Water Soluble Na2O	0.02	0.02
% Water Soluble K2O	0.001	0.001
% Sulfur	0.53	0.57
Btu/Lb.	12157	13149
Moisture Ash Free Btu/Lb.	14161	

Fusion Temperatures of Ash
Reducing Atmosphere

Initial Deformation	2305 Degrees F.
Height = Width	2410 Degrees F.
Height = 1/2 Width	2480 Degrees F.
Fluid	2570 Degrees F.

Free Swellin Index = 1
% Na2O, Ignited Basis = 2.09

Respectfully submitted,
HORIZON LABORATORIES, INC.

Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

September 27, 1989

Date Sampled : Core

Date Received : 9/11/89

Sampled by : NEICO

Identification by : NEICO

Analysis Report # : 4862

Sample Identification :

Neico Co. DH-3-4-A

CERTIFICATE OF ANALYSIS

	Proximate As Received Basis	Dry Basis
% Moisture	4.77	-----
% Ash	11.87	12.47
% Volatile Matter	41.20	43.27
% Fixed Carbon	42.16	44.26
	100.00	100.00
% Water Soluble Na2O	0.01	0.01
% Water Soluble K2O	0.002	0.002
% Sulfur	0.71	0.74
Btu/Lb.	12220	12812
Moisture Ash Free Btu/Lb.	14638	

Fusion Temperatures of Ash
Reducing Atmosphere

Initial Deformation	2680 Degrees F.
Height = Width	+2700 Degrees F.
Height = 1/2 Width	+2700 Degrees F.
Fluid	+2700 Degrees F.

Free Swelling Index = 2 1/2
% Na2O, Ignited Basis = 0.93

Respectfully submitted,
HORIZON LABORATORIES, INC.

Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

September 27, 1989

Date Sampled : Core

Date Received : 9/11/89

Sampled by : NEICO

Identification by : NEICO

Analysis Report # : 4863

Sample Identification :

Neico Co. DH-3-5-A

CERTIFICATE OF ANALYSIS

	Proximate As Received Basis	Dry Basis
% Moisture	5.42	-----
% Ash	6.82	7.21
% Volatile Matter	41.89	44.29
% Fixed Carbon	45.87	48.50
	100.00	100.00
% Water Soluble Na20	0.01	0.01
% Water Soluble K20	0.001	0.001
% Sulfur	0.56	0.59
Btu/Lb.	12856	13624
Moisture Ash Free Btu/Lb.	14683	

Fusion Temperatures of Ash
Reducing Atmosphere

Initial Deformation	2240 Degrees F.
Height = Width	2350 Degrees F.
Height = 1/2 Width	2440 Degrees F.
Fluid	2550 Degrees F.

Free Swelling Index = 2 1/2
% Na20, Ignited Basis = 1.55

Respectfully submitted,
HORIZON LABORATORIES, INC.

Laboratory Manager

OCT 27 89 8:15 PRICE, UTAH

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

October 24, 1989

Date Sampled : 10/02/89

Date Received : 10/02/89

Sampled by : GMA

Identification by : GMA

Analysis Report # : 5162

Sample Identification :

NEICO Core Sample
DH-4-1-B

CERTIFICATE OF ANALYSIS

Short Proximate

	As Received Basis	Dry Basis
% Moisture	4.04	-----
% Ash	12.00	12.51
% Sulfur	0.34	0.35
Btu/Lb.	12323	12842

Moisture Ash Free Btu/Lb. 14678

Respectfully submitted,
HORIZON LABORATORIES, INC.

Victor W. Daniels

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

October 24, 1989

Date Sampled : 10/02/89

Date Received : 10/02/89

Sampled by : GMA

Identification by : GMA

Analysis Report # : 5161

Sample Identification :

NEICO Core Sample
DH-4-2-B

CERTIFICATE OF ANALYSIS

Short Proximate

	As Received Basis	Dry Basis
% Moisture	4.23	-----
% Ash	12.69	13.25
% Sulfur	0.33	0.34
Btu/Lb.	12208	12747

Moisture Ash Free Btu/Lb. 14694

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

October 24, 1989

Date Sampled : 10/02/89

Date Received : 10/02/89

Sampled by : GMA

Identification by : GMA

Analysis Report # : 5163

Sample Identification :

NEICO Core Sample
DH-4-3-B

CERTIFICATE OF ANALYSIS

Short Proximate

	As Received Basis	Dry Basis
% Moisture	3.80	-----
% Ash	21.23	22.07
% Sulfur	0.70	0.73
Btu/Lb.	10989	11423

Moisture Ash Free Btu/Lb. 14658

Respectfully submitted,
HORIZON LABORATORIES, INC.

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

October 24, 1989

Date Sampled : 10/02/89

Date Received : 10/02/89

Sampled by : GMA

Identification by : GMA

Analysis Report # : 5159

Sample Identification :

NEICO Core Sample
DH-4-4-A

CERTIFICATE OF ANALYSIS

Proximate	As Received Basis	Dry Basis
% Moisture	3.85	-----
% Ash	14.21	14.78
% Volatile	42.12	43.81
% Fixed Carbon	39.82	41.41
	100.00	100.00
% Sulfur	0.66	0.69
Btu/Lb.	14649	12484

Fusion Temperatures of Ash

Reducing Atmosphere

Initial Def.	2490 Degrees F.
H = W	2580 Degrees F.
H = 1/2 W	2640 Degrees F.
Fluid	+2700 Degrees F.

Moisture Ash Free Btu/Lb. 14649

Sodium Oxide Ignited Basis= 1.23%

Water Soluable Sodium 0.006%
Water Soluable Potassium 0.003%

Free Swelling Index= 2 1/2

Respectfully Submitted,
HORIZON LABORATORIES, INC.

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

October 24, 1989

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

Date Sampled : 10/02/89

Date Received : 10/02/89

Sampled by : GMA

Identification by : GMA

Analysis Report # : 5160

Sample Identification :

NEICO Core Sample
DH-4-5-A

CERTIFICATE OF ANALYSIS

Proximate

	As Received Basis	Dry Basis
% Moisture	4.78	-----
% Ash	5.58	5.86
% Volatile	44.43	46.67
% Fixed Carbon	45.21	47.47
	100.00	100.00
% Sulfur	0.38	0.39
Btu/Lb.	13309	13977

Fusion Temperatures of Ash

Reducing Atmosphere

Initial Def.	2260 Degrees F.
H = W	2310 Degrees F.
H = 1/2 W	2370 Degrees F.
Fluid	2420 Degrees F.

Moisture Ash Free Btu/Lb. 14847

Sodium Oxide Ignited Basis= 2.82%

Water Soluable Sodium 0.006%
Water Soluable Potassium 0.002%

Free Swelling Index= 2 1/2

Respectfully Submitted,
HORIZON LABORATORIES, INC.

Laboratory Manager

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (708) 953-9300

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1020, HUNTINGTON, UT 84528
TELEPHONE: (801) 653-2311
FAX: (801) 653-2479

September 9, 1991

GENWAL COAL CO.
P.O. BOX 1201
HUNTINGTON UTAH 84528

Sample identification by
GENWAL COAL CO.

Kind of sample reported to us: Coal

Sample taken at: Genwal — 1197.5'-1199'

Sample taken by: Genwal — ~~H-1~~ Sample #1
DH5

Date sampled: ------

Date received: August 29, 1991

Analysis Report No. 59-136226

PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	4.55	xxxxx
% Ash	10.72	11.23
% Volatile	41.84	43.83
% Fixed Carbon	42.89	44.94
	100.00	100.00
Btu/lb	12444	13037
% Sulfur	0.63	0.66
MAF Btu		14686
lk. as Sodium Oxide	0.37	0.39

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	4.55	xxxxx
% Carbon	69.22	72.52
% Hydrogen	4.82	5.05
% Nitrogen	1.38	1.45
% Sulfur	0.63	0.66
% Ash	10.72	11.23
% Oxygen(diff)	8.68	9.09
	100.00	100.00

FUSION TEMPERATURE OF ASH, (°F)

	Reducing	Oxidizing
Initial Deformation (IT)	2352	xxxx
Softening (ST)	2390	xxxx
Hemispherical (HT)	2430	xxxx
Fluid (FT)	2603	xxxx

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Huntington Laboratory

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

RECEIVED
NOV 0 8 1989
COAL SYSTEMS, Inc.

November 2, 1989

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

Date Sampled : 11/01/89

Date Received : 11/01/89

Sampled by : GMA

Identification by : GMA

Analysis Report # : 5475

Sample Identification :

NEICO DH6-1-A-1000

CERTIFICATE OF ANALYSIS

Short Proximate

	As Received Basis	Dry Basis
% Moisture	4.15	-----
% Ash	37.70	39.33
% Sulfur	0.84	0.87
Btu/Lb.	8243	8600

Moisture Ash Free Btu/Lb. 14175

Fusion Temperatures of Ash
Reducing Atmosphere

Initial Deformation	2230 Degrees F.
Height = Width	2290 Degrees F.
Height = 1/2 Width	2340 Degrees F.
Fluid	2400 Degrees F.

Respectfully submitted,
HORIZON LABORATORIES, INC.

Victor M. Jarrett

Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

October 26, 1989

Date Sampled : 11/25/89

Date Received : 11/25/89

Sampled by : GMA

Identification by : GMA

Analysis Report # : 5418

Sample Identification :

DH6-2-A-1340

CERTIFICATE OF ANALYSIS

	Proximate As Received Basis	Dry Basis
% Moisture	4.00	-----
% Ash	9.20	9.58
% Volatile Matter	41.62	43.36
% Fixed Carbon	45.18	47.06
	100.00	100.00
% Sulfur	0.77	0.80
Btu/Lb.	12553	13077
Moisture Ash Free Btu/Lb.	14462	

Free Swelling Index = 3

Fusion Temperatures of Ash
Reducing Atmosphere

Initial Deformation	2520 Degrees F.
Height = Width	2600 Degrees F.
Height = 1/2 Width	2680 Degrees F.
Fluid	+2700 Degrees F.

Respectfully submitted,
HORIZON LABORATORIES, INC.

Victor M. Jarrett

Laboratory Manager

RECEIVED
NOV 0 2 1989

HORIZON LABORATORIES
COAL SYSTEMS, Inc. General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

October 26, 1989

Date Sampled : 11/25/89

Date Received : 11/25/89

Sampled by : GMA

Identification by : GMA

Analysis Report # : 5419

Sample Identification :

DH6-3-A-1398

CERTIFICATE OF ANALYSIS

	Proximate As Received Basis	Dry Basis
% Moisture	4.08	-----
% Ash	6.39	6.66
% Volatile Matter	44.16	46.03
% Fixed Carbon	45.37	47.31
	100.00	100.00
% Sulfur	0.56	0.58
Btu/Lb.	13161	113721

Moisture Ash Free Btu/Lb. 14700

Free Swelling Index = 2

Fusion Temperatures of Ash
Reducing Atmosphere

Initial Deformation	2270 Degrees F.
Height = Width	2340 Degrees F.
Height = 1/2 Width	2400 Degrees F.
Fluid	2450 Degrees F.

Respectfully submitted,
HORIZON LABORATORIES, INC.

Victor M. Jarrett

Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2836 So. Jones
Las Vegas, Nevada 89102

September 11, 1989

Date Sampled : Core

Date Received : 9/01/89

Sampled by : NEICO

Identification by : NEICO

Analysis Report # : 4830

Sample Identification :

NEICO Co. DH-7-1-B

CERTIFICATE OF ANALYSIS

Short Proximate

	As Received Basis	Dry Basis
% Moisture	4.25	-----
% Ash	20.85	21.77
% Sulfur	0.74	0.77
Btu/Lb.	10754	11231

Moisture Ash Free Btu/Lb. 14357

Respectfully submitted,
HORIZON LABORATORIES, INC.

Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4965

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

September 11, 1989

Date Sampled : Core

Date Received : 9/01/89

Sampled by : NEICO

Identification by : NEICO

Analysis Report # : 4831

Sample Identification :

NEICO Co. DH-7-2-B

CERTIFICATE OF ANALYSIS

Short Proximate

	As Received Basis	Dry Basis
% Moisture	4.17	----
% Ash	16.10	16.80
% Sulfur	0.69	0.72
Btu/Lb.	11679	12187

Moisture Ash Free Btu/Lb. 14647

Respectfully submitted,
HORIZON LABORATORIES, INC.

Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

September 11, 1989

Date Sampled : Core

Date Received : 9/01/89

Sampled by : NEICO

Identification by : NEICO

Analysis Report # : 4829

Sample Identification :

NEICO Co. DH-7-9-A

CERTIFICATE OF ANALYSIS

	Proximate As Received Basis	Dry Basis
% Moisture	5.31	-----
% Ash	13.01	13.74
% Volatile Matter	39.96	42.20
% Fixed Carbon	41.72	44.06
	100.00	100.00
% Sulfur	0.89	0.94
Btu/Lb.	11838	12502
Moisture Ash Free Btu/Lb.	14494	

Fusion Temperatures of Ash
Reducing Atmosphere

Initial Deformation	2620 Degrees F.
Height = Width	2690 Degrees F.
Height = 1/2 Width	+2700 Degrees F.
Fluid	+2700 Degrees F.

Free Swelling Index 2 1/2

Respectfully submitted,
HORIZON LABORATORIES, INC.

Victor M. Lovell
Laboratory Manager

HORIZON LABORATORIES

General Offices: 583 East Main St., Price, Utah 84501
Laboratory: Depot Building, Hiawatha, Utah 84527, 801-637-4955

Submitted to :

Nevada Electric Investment
2835 So. Jones
Las Vegas, Nevada 89102

September 11, 1989

Date Sampled : Core

Date Received : 9/01/89

Sampled by : NEICO

Identification by : NEICO

Analysis Report # : 4828

Sample Identification :

NEICO Co. DH-7-4-A

CERTIFICATE OF ANALYSIS

	Proximate As Received Basis	Dry Basis
% Moisture	4.73	-----
% Ash	7.01	7.36
% Volatile Matter	42.69	44.81
% Fixed Carbon	45.57	47.83
	100.00	100.00
% Sulfur	0.51	0.54
Btu/Lb.	12977	13621
Moisture Ash Free Btu/Lb.	14703	

Fusion Temperatures of Ash
Reducing Atmosphere

Initial Deformation	2240 Degrees F.
Height = Width	2290 Degrees F.
Height = 1/2 Width	2350 Degrees F.
Fluid	2420 Degrees F.

Free Swelling Index 2 1/2

Respectfully submitted,
HORIZON LABORATORIES, INC.

Laboratory Manager