

HC-HAT CREEK 57(3)A

00121

DRILL HOLE LOGS  
OF THE HAT CREEK  
COAL PROJECT

R.T. TRENAMAN

SEPT. 25<sup>th</sup>, 1957



# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Coordinates 9000.51 N, 10519.56 E

Hole begun Friday, August 23, 1957.  
 Contractor Boyles Bros. Drillers.  
 Inspector R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 2  
 of \_\_\_\_\_ Sheets  
 Hole No. 8

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dips	Remarks	
26/8/57 8 AM		103			Med hard Coal			65-75	Core recovery complete. Dull brown-black compact lignite.	
		108			Broken Coal	11.8	11.0		Pulverized brown coal	
		109			Med hard Coal				Dense black "pitch"	
		109			Broken Coal			70	Pulverized brown-black	
		110			Med hard Coal			70	Good coring. Brown-black with stringers "pitch" 0-1/8 in.	
		114			Med hard Coal			70-75		
		114			Broken Coal			"	Bands of med hard dense coal interbanded	
		115			Med hard Coal			"	with soft porous brown coal	
		116			Broken Coal	9.0	7.7			
		117			Broken Coal			55		
		120			Clay and Coal			?	Very narrow stringers of clay in coal	
		121			Broken Coal			75-90	Very porous, lily, "pitch" stringers	
		123			Med hard Coal			60	Bands of med hard lignite interbanded	
	125			Broken Coal (crush)			40	with pulverized, poor coring, soft		
	126			Broken Coal (fract)	17.5	5.5	70-90	brown coal.		
	129			Med hard Coal			75			
26/8/57 4 PM		130			Broken Coal			?		
					Med hard Coal	6.0	5.8	90-75	Fair compact core. Med hard dull brown-black coal with stringers of "pitch" 0-1/4 in. Some minor porous bands.	
		136			Med hard Coal			90-75	Stringers of "pitch" to 1/4 in.	
		138			Broken Coal			?	Pulverized tan coal	
		138					10.5	10.5	90	
					Med hard Coal			60	Good core. Compact brown-black with "pitch" bands 0-3/4 in.	
		145			Broken Coal			60	Same as above but fractured.	
		147			Med hard Coal			?	"Pitch" stringers 0-1/4 in.	
		149			Broken Coal			?	Soft brown-black. Pulverized.	
		149			Med hard Coal	10.0	8.5	85	Fair compact core. "Pitch" stringers to 1/4 in.	
26/8/57 12 PM		157			Med hard Coal				Good compact core. "Pitch" stringers 0-1/4 in.	
								75		
								75		
		155			Porous gray "bone"	10.0	10.0		Lily. Lacks somewhat like spher.	
		156			Med hard Coal			?		
		157			Med hard Coal	2	2	78	Pitch stringers 0-1/2 in.	
		159						90	Good compact core except for 3 in. crushed @ 176.5 ft. Brown-black coal with "pitch" stringers 0-1/2 in.	
				Med hard Coal	10	10	75			
	179						79			
27/8/57 8 AM		190			Med hard Coal			75		
		190			Broken Coal			?	Fractured	
		190					8	8	90	Good compact core. Med hard dark brown coal with stringers of "pitch" 0-1/4 in.
					Med hard Coal			90		
		197						75-90		
								88		
					Med hard Coal	10	10	90	Good compact core except for 6 in. crushed @ 180 ft. One in. gray-brown shale @ 185 ft. Brown-black coal with stringers of "pitch" 0-1/2 in.	
								25		
	197						90			
				Med hard coal.			85	Good compact coal - brown with stringers of "pitch" to full core width. Minor stringers of gray brown shale 0-1/4 in @ 187 and 200 ft.		
				Little Shale	10	10	65			
	200									
	202				Crushed Coal & Shale			90	Hard gray-brown shale - stratigraphic thickness approximately 4 in. cuts compact	
					Interbanded Coal			90	brown-black coal 0-5" to core.	
27/8/57 4 PM		207			ord. Shale					

**LEGEND**

- Coal
- Broken Coal
- Shale
- Broken Coal
- Lily or silicious bands.

**SUMMARY**

- El Ground
- El Bottom of Hole
- Net Depth of Hole
- Core Drill Depth
- Core Recovery
- % Core Recovery

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.  
 Western Development and Power Limited  
 Client \_\_\_\_\_  
 Prepared by R. T. Trenaman  
 Checked by V. Dolmage  
 Submitted September 25, 1957.



# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Coordinates 9000.51 N, 10515.56 E.

Hole begun Friday, August 23, 1957  
 Contractor Moyns Bros. Drillers  
 Inspector H. T. Trenaman

Sheet No. 4  
 \_\_\_\_\_ Sheets  
 Hole No. B

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Feet	Core Length	DIPS	Remarks
		303							
		305			No Core	2	0		"N" casing to 305 ft.
					Med hard coal interbedded with broken coal	18	10	90 90-60 60-70	Med hard brown-black coal in lenth up to 1 ft. interbedded with pulverized soft brown coal. Total med hard core = 7 ft. Total pulverized and missing - 11 ft.
								Twist 45 90 90	Med hard coal contains resin nodules up to 1/4 in. dia. (fraction of 1/2 of core) and pitch stringers 0 - 1/4 in. - about 25% of core. Pulverized areas show indications of shearing.
		323						75-90	
					Med hard Coal	9	9	90 75-80	Good compact core except for 6 in. pulverized coal between 229.5-330. Coal brown-black - brittle and tends to fracture easily. Pitch 0 - 1 in. stringers - 35% of core.
		332			Med hard Coal				Brown-black with "pitch" stringers 0 - 1 in. About 40% of core. Streak-brown.
		335			Broken Coal			85-90	Pulverized.
		336			Med hard Coal	8.5	8.5	90	"Pitch" stringers 0 - 1/2 in.
		337			Broken Coal				Pulverized.
		338			Broken Coal				Pulverized coal containing about 15% red-brown sticky clay.
		340			Broken Coal				Soft brown pulverized.
		342			Med hard Coal			60-90	"Pitch" bands about 40% of core, 0 - 1/2 in.
		343			Broken Coal	10	9.5		Med hard fractured. "Pitch" to 2 in.
		346						90-60	6 in. band of gray brown shaley coal - 30% of core cuts med hard brown-black 2-30°.
		350			Shaley Coal				Fractured med hard coal.
		350			Broken Coal				Pulverized.
		351						80-85	
					Med hard Coal	10	10	70-90 70-75 90	Very good compact core. Med hard brown-black - "pitch" stringers 0 - 3/4 in. form 35% of core.
		360							
					Med hard Coal	10	10		Good compact core. Nearly perfect. "Pitch" stringers 0 - 1/4 in. form about 30% of core. Med hard brown-black coal. Slickenside @ 30° between 361 and 362 ft. and @ 0° between 370 and 370.5 ft. to cor
		370							
		371			Broken Coal			90	Pulverized.
					Med hard Coal			90	"Pitch" stringers 0 - 1/4 in. Resin nodules to 1 in. dia. - fraction of 1/2.
		375			Med hard Coal	10	10	90	"Pitch" stringers 0 - 1/2 in. Slickenside @ 20° to core @ 372 ft.
		377			Med hard Coal				Pulverized.
		379			Broken Coal			90	Gray-brown very soft shaley coal.
		380			Shaley Coal			90	
					Med hard Coal	10	10	90 90 90	Good compact core. Med hard brown-black coal except for band of gray-yellow silicified rock 7 1/2 in. wide. Vuggy appearance with botryoidal surfaces. Occurs between 182 and 182.5 ft. "Pitch" stringers 0 - 1/2 in. - 30% of core.
		390						75-80	
					Med hard Coal			80	"Pitch" stringers 0 - 1 in. - 35% of core.
		395							
					Broken Coal	10	10		Med hard brown that has been fractured. Contains "pitch" stringers 0 - 1 in.
		399						90	
		400			Broken Shaley Coal				Light gray-brown shale - 1/16 in. bands - 40%

**LEGEND**

- Coal
- Broken Coal
- Shaley Coal
- Broken Shaley Coal

**SUMMARY**

- El Ground \_\_\_\_\_
- El Bottom of Hole \_\_\_\_\_
- Net Depth of Hole \_\_\_\_\_
- Core Drill Depth \_\_\_\_\_
- Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B C

Client Western Development and Power Limited.

Prepared by H. T. Trenaman

Checked by V. Dolmage

September 25, 1957.

# DRILL HOLE LOG

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 Elev. Top of Casing \_\_\_\_\_  
 Co-ordinates 9000.51 N, 10519.56 E.

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Sheet No. 2  
 of \_\_\_\_\_ Sheets  
 Hole No. 8

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dips	Remarks
	400.5				Med hard Coal				Compact brown-black. "Pitch" about 35% of core
	401.2				Broken Coal	9.5	5	90	Soft brown and "pitch" pulverized.
	408.5				Med hard Coal			75	Brown-black "pitch" stringers about 35% of core
	410				Broken Coal				Pulverized.
	413				Med hard Coal	10	5	90	"Pitch" stringers 0 - 1/4 in. - 30% of core.
	415				Broken Coal				Twist. "Pitch" of 1/8 in. - 30% of core.
	416				Med hard Coal				Pulverized.
	417				Broken Coal				
	420				Med hard Coal			75-80	Brown-black - "pitch" stringers 0 - 1/4 in. form 20% of core. Yellow resin - 1/4 in. nodules - fraction of 1% of core.
	424				Broken Coal	10	6		Fractured rather than pulverized. Coal med. brown. "Pitch" stringers 0 - 1/8 in. Slickenside @ 20° to core @ 429.5 ft.
	430				Med hard Coal	10	10	90	Good compact core. Med hard brown-black except for 2 in. band of gray-brown sandy shale @ 435.6 - 436. "Pitch" stringers 0 - 1 in. form 60% of coal. Twist. Yellow resin 1/4 in. nodules and hairline stringers - about 1% of core.
	440				Shaley Coal	1	1	90	Narrow stringers yellow shale. "Pitch" - 45%
	441				Med hard Coal				Brown-black compact coal. "Pitch" stringers to 1 in. - 40% of core.
	445.5				Shaley Coal	10	9	90	Brown-black "Pitch" 0 - 3/4 in. - about 40% of core. Soft yellow-brown shale (clay) stringers form 40% of core. Pulverized - 450-
	451				Med hard Coal (little Shale)	10	10	60-70	Good compact core. Med hard brown-black coal interbedded with narrow stringers of yellow-brown soft shale. Form about 10% of core. "Pitch" stringers 0 - 1/4 in. - 40% of core.
	461				Broken Shaley Coal	10	4.5	90	Med hard bands brown-black to 1 ft. thick containing narrow (1/4 - 1 1/2 in.) stringers of yellow-brown shale interbedded with bands of soft brown coal and shale pulverized. Shale about 40% of core. "Pitch" stringers 0 - 1 in. - 40% of coal.
	471				Shaley Coal			85	Brown-black coal with 2" band shale 40% of
	473				Broken Coal			90?	Pulverized brown-black coal
	477				Med hard Coal	12	10.5	90	Compact brown-black very little "pitch".
	481				Shaley Coal			85	2" band yellow shale - 40% of core.
	483				Med hard Coal	10	10	Twist 70	Fair compact core. Brown-black with "pitch" stringers 0 - 1 in. - 50% of core.
	493				Med hard Coal			Twist 90	Fair compact core. Brown-black with "pitch" stringers 0 - 1/2 in. - 40% of core. Yellow resin nodules to 1/2 in. - less than 1% of coal. Bedding is quite twisted.
	503							Twist	

**LEGEND**

- Coal
- Broken Coal
- Shaley

**SUMMARY**

- El Ground
- El Bottom of Hole
- Net Depth of Hole
- Core Pull Depth

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client Western Development and Power Limited,

Prepared by R. T. Trenaman

Checked by V. Dolmage

August 24, 1957.



# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Coordinates 9000.51 N, 10519 E.

Hole begun Friday, August 23, 1957.  
 Contractor Boyles Bros. Drillers.  
 Inspector R. T. Tronaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 5  
 of \_\_\_\_\_ Sheets  
 Hole No. B

Date & Time	Elevation	Depth	Log Sample	Material	Length Pull	Core Length	X.M.M.M. of X.X.X.	Remarks
							Dip	Remarks
		503		Broken Coal				Pulverized - few nodules of resin.
		504		Med hard Coal			Twist	Med hard brown-black coal. Compact core. "pitch" stringers to 1 in. - 40% of core.
		508		Broken Coal	10	10	30	Slickensides 2-3" - 9" - 10" to core.
		509		Med hard Coal			90	Fractured brittle "pitch" mostly Compact brittle brown-black coal. "Pitch" stringers 0 - 1 in. - 40% of core. Resin nodules to 1/4 in. - fraction of 1%.
		513		Med hard Coal	10	7.5		Brown-black compact coal except for pulverized 1 1/2 ft. between 513 and 514 ft. "Pitch" stringers 0 - 1 in. - 25% of core. Bedding quite twisted.
		523		Med hard Coal			60-70	Brown-black with "pitch" stringers 0 - 1/8 in 25% of core.
		528		Broken Coal	10	8	Twist	Fractured and pulverized brown-black in place. Many of fractures contain hairline stringers of chalky lime.
		533		Med hard Coal	10	9.5	70 Twist	Compact brown-black coal. "Pitch" stringers 0 - 1 in. - 50% of core. Hairline stringers light gray sandy shale interbedded with coal between 534 and 535 ft. - 5% of core.
		540		Shaly Coal			50	0 - 1" stringers light gray sandy shale - 20% same as above
		540		Med hard Coal			Twist	Very good compact core. Dense brown-black with "pitch" stringers 0 - 1/2 in. - 60% of core. Resin nodules to 1/4 in. - fraction of 1% between 544 and 549 ft.
		543		Med hard Coal	10	10	90	
		553		Med hard Coal	10	10	60-65	Twist Good compact core. Brown-black coal with "pitch" stringers 0 - 2 in. - 60% of core. Resin nodules to 1/4 in. - fraction of 1%.
		563		Med hard Coal	10	10	90	Twist Near perfect core. Brown-black compact coal. Streak - Chocolate brown. "Pitch" stringers 0 - 1/2 in. - 50% of core. Resin to 1/4 in. - fraction of 1%.
		571		Coal and Shale				Light gray sandy shale - about 80% of core.
		573		Coal and Shale				Same as above. - interbedded with porous coal.
		573		Med hard Coal	10	10	Twist	Brown-black compact coal. Hairline stringers light gray shale - about 5% of core - between 573-6 and 578 ft. "Pitch" stringers 0 - 1/2 in. - 40% of core. Resin nodules to 1/4 in. - fraction of 1%. Bedding quite twisted.
		583		Med hard Coal	10	10	Twist	Core nearly perfect. Brown-black with "pitch" bands 0 - 2 in. - 80% of core. Resin nodules to 1/4 in. - fraction of 1%. Streak - brown approaching black.
		593		Med hard Coal	10	9.5	Twist	Compact quite hard coal except for 0.4 ft. between 593 and 0.5 ft. between 602 - 602.5 ft. "Pitch" stringers 0 - 3/4 in. - 40% of coal. Resin nodules to 1/4 in. - fraction of 1%.
		603					75?	

**LEGEND**

- Coal
- Broken Coal
- Shaly Coal
- Coal

**SUMMARY**

- El Ground \_\_\_\_\_
- El Bottom of Hole \_\_\_\_\_
- Net Depth of Hole \_\_\_\_\_
- Core Drill Depth \_\_\_\_\_
- Core Recovery \_\_\_\_\_

**VICTOR BOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.  
 Client Western Development and Power Limited,  
 Prepared by R. T. Tronaman  
 Checked by V. Bolmage

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Co-ordinates 9000.51 N, 10619.56 E

Hole begun Friday, August 23, 1957.  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 7  
 of \_\_\_\_\_ Sheets  
 Hole No. 8

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Box No. Log	Remarks
		603						Dips	
					Med hard Coal	10	10	60 75 70 75-90 48-50	Brown-black vary brittle coal-compact. Core nearly perfect; 1/2 in. band of light brown sandy shale cuts core @ 45° between 612 and 613 ft. "Pitch" stringers 0 - 3/4 in. although most less than 1/16 in. - about 40% of core. Resin nodules to 1/2 in. - fraction of 1%.
		613			Med hard Coal	10	10	65 80 70 90 70 90	Perfect Core. Brown-black brittle fractures readily. Streak-brown. "Pitch" to 3/4 in. - mostly less than 1/16 in. - 20% of core. Resin nodules to 1/2 in. @ 620 - 621 - fraction of 1% - tendency to cross cut bedding - maybe major change in dip or minor fold.
		623			Med hard Coal	10	9.8	80 60 65-90 90 Drag 70-90	Core nearly perfect. Brown-black brittle coal. "pitch" stringers to 40% of core. - 0-2 Resin nodules to 1/2 in. Streak-chocolate bro
		633			Med hard Coal	20	18.6	90-0 70-85 Twist 48-90	Core between 633 and 653 nearly perfect. Brown-black brittle - "pitch" stringers to 3/4 in. - 25% of coal. Resin to 1/2 in. nodules predominately between 648 and 649 ft.
		644			Shaley Coal			60	Gray brown bands - about 40% of core.
		645			Med hard Coal			60	See above
		649			Shaley Coal			85-90	Gray-brown bands to 1/2 in. - about 20% of core
		649			Med hard Coal			90	See above
		652			Shaley Coal			30	Gray brown bands - about 20% of core
		653			Med hard Coal			7	Brown-black somewhat brittle coal - black shiny "pitch" to 1/2 in. - about 25% of coal.
		658			Shaley Coal	7	7	30-45	1/2" stringers gray-brown shales - about 40% of
		659			Med hard Coal				See above.
		660						Twist 60-65 55	
					Med hard Coal	20	19	90-90 60	Core nearly perfect. Compact brown-black coal - "pitch" stringers to 1/2 in. - 35% of total core. Resin nodules to 1/2 in. form small fraction of 1%.
		660			Broken Coal			60	
		660			Med hard Coal			45 60	Fractured coal compacted with fine crack str. Compact core except for 0.5 ft. - see.
		665			Shaley Coal	16	11.5	45	Core loss probably due to poor coring practice.
		666			Med hard Coal			60	Brown-black brittle coal - "pitch" stringer to 1 in. - 45% of core. Resin to 1/2 in. dia. small fraction of 1%.
								60	Gray brown shaley coal between 665 and 666 Shale about 10% of core.
		696						60	

**LEGEND**

- Coal
- Broken Coal
- Shaley Coal
- 
- 

**SUMMARY**

- El. Ground \_\_\_\_\_
- El. Bottom of Hole \_\_\_\_\_
- Net Depth of Hole \_\_\_\_\_
- Core Drill Depth \_\_\_\_\_
- Core Recovery \_\_\_\_\_

**VICTOR D'OLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 7, B.C.

Client Western Development and Power Limited,  
 Prepared by R. T. Trenaman  
 Checked by V. Delmage





# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Caping \_\_\_\_\_  
 Coordinates 9000.51 N. 10519.56 E.

Hole began Friday, August 27, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 9  
 of \_\_\_\_\_ Sheets  
 Hole No. 8

Core & Time	Elevation	Depth	Loss	Sample	Material	Length Feet	Core Length	Rings 20% of core	Remarks
		792						Dip	
								50	
								50	Brown-black compact brittle coal. Fractures easily. Core loss probably a result of tendency to fracture.
					Med hard Coal			70	"Pitch" stringers to 1 in. - 60% of core.
						19.5	16	Twist 70 50	
		808			Shaly Coal			60	Fine stringers gray shale - 10% of core.
		806.5			Med hard Coal			50	See above.
		812			Med hard Coal			45	Brown-black compact coal. Streak - brown-black to black. Quite brittle. "Pitch" stringers to 1 in. - 60% of core.
		816						50	Gray sandy shale to 1 in. interbedded with coal - 10% of core. Basis to 3/4 in. - 5% of core.
		815			Shaly Coal	13	12.5	50	
					Med hard Coal			65	See above
		825						50	
								Twist 80-90	Perfect compact core. Brown-black brittle. Conchoidal fracture. Streak - chocolate brown, in places shiny black. "Pitch" stringers to 1 in. - 60% of core.
					Med hard Coal	21	20.5	60	
								45	
								45	
		845			Shaly Coal			60	1/16 in. bands gray sandy shale - 5% of core.
					Med hard Coal			60	Perfect compact core. Brown-black quite brittle coal except for shaly areas noted. "Pitch" stringers to 2 in. - 80% of core.
		853				14	14	60	Soft chocolate brown slightly shaly coal.
		854			Shaly Coal			40	See above.
					Med hard Coal			45	
		860						65	Compact brown-black quite brittle coal. Core loss probably due to tendency to fracture easily. Streak - chocolate brown. Very fine stringers of gray sandy shale at intervals along core - less than 5% of core.
					Med hard Coal	15	11.5	Twist 45	"Pitch" stringers to 3/4 in. - 35% of core.
								50	
								50	
		875						45	Solid compact core. Brown-black brittle coal. Core loss probably result of tendency to fracture easily. Fractured surface - glossy black. Streak - chocolate brown to black. "Pitch" to 1/2 in. - 60% of core.
					Med hard Coal			50	
						19	14	50	Gray sandy shale to 1/2 in. bands in coal - about 50% of core.
		883			Shaly Coal			50	
		884						50	See above.
					Med Hard Coal			Twist 50	
		894							

**LEGEND**

- Coal
- Broken Coal
- Shaly Coal
- 
- 

**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client Western Development and Power Ltd.  
 Prepared by R. T. Trenaman  
 Checked by V. Dolmage

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Coordinates 3000.51 N., 10512.56 E.

Hole begun Friday, August 23, 1967  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Treuman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 10  
 of \_\_\_\_\_ Sheets  
 Hole No. B

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Block TWXXX	Remarks	
	894								Dip	
	896				Med hard Coal	2	1.5		45	Compact brittle brown-black coal. "Pitch" to 1/2 in. stringers - 60% of core.
									45	
									50	Perfect compact core. Brown-black brittle coal. Streak - chocolate brown.
					Med hard Coal				45	936-937: Resin nodules to 1/2 in. - 1% of core. 914-5- 917: "Pitch" stringers to 2 in. - 30% of core.
						21	20.5		45	Remainder of core: "Pitch" stringers to 1 in. - 60% of core.
									45	
									50	
									45	
	917				Med hard Coal				45	Wear perfect compact core. Brown-black except for areas noted.
									Twist 45-90	917-936: "Pitch" to 1/2 in. stringers - 50% of core.
										936-937: "Pitch" stringers to 1/8 in. - 10% of core.
	926				Clay and Coal	20	19.5		50	1 in. band light gray limy clay - 40% of core.
	927								45	
					Med hard Coal				45	See above.
									45	
	936				Shaly Coal				47	Soft brown, slightly porous - "pitch" to 1/8 in. About 20% of core.
	937				Med hard Coal				40	Light gray limy clay - about 60% of core.
	938				Clay and Coal				40	Soft brown, slightly porous - "pitch" to 1/8 in. - 10% of core.
	940				Soft Coal				45	Compact brittle brown-black "pitch" to 1 in. About 10% of core.
	941				Med Hard Coal	11	8.5		50	Black very brittle coal - mainly "pitch" fractured. Maybe broken in drilling.
	944				Broken Coal				50	
									45	
									45	Perfect compact core. Med hard brown-black "pitch" stringers to 1/4". About 30% of core.
					Med hard Coal	21	20.5		50	
									45	
									45	
	962				Broken Coal				70	Soft to med hard brown-black - fractured. Tends to part easily. "Pitch" to 1/4" stringers 20% of core. Resin to 1/4" dia nodules. Fractured.
						8	7.5		40	Pulverized brown-black to soft black coal.
	975				Broken Coal				40	
	977								45	
									50	Compact core. Brittle brown-black coal. Streak - chocolate brown.
					Med hard Coal	12	8		45	"Pitch" stringers to 1/2" but mostly less than 1/32" and very closely spaced. About 50% of the core. Resin nodules to 1/4" - 1% fraction of 1/2".
									45	Core less probably due to brittle nature of coal.
									40	
	883									

**LEGEND**

- Coal
- Broken Coal
- Shaly Coal
- \_\_\_\_\_
- \_\_\_\_\_

**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Co. Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client Western Development and Power Ltd.,

Prepared by E. T. Treuman

Checked by V. Dolmage

September 25, 1967.

# DRILL HOLE LOG

Project Hnt. Grenk. Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Coordinates 9000.51 N, 10519.56 E.

Hole begun Friday, August 23, 1957  
 Contractor Boylus Bros. Drillers  
 Inspector R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 11  
 of \_\_\_\_\_ Sheets  
 Hole No. B

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	REMARKS	Remarks
		989			Med hard Coal	15.5	11.5	50	Compact brittle brown-black coal. "Pitch" stringers to 1" but most less than 1/32" and closely spaced. About 50% of core. Streak: dull brown-black.
		995			Broken soft Coal			55	
		996			Med hard Coal			50	Soft brown slightly porous easily broken coal. See above (989-995)
		1000			Broken soft Coal			45	Same as 996-998. S. parts easily. Very little "pitch". Slightly shaly.
		1004			Med hard Coal			45	See above (989-998)
		1004			Med hard Coal	7	6.5	60	Good compact core. Brown-black brittle coal. "Pitch" to 1" - 25% of core. Resin nodules to 1/4" - fraction of 1%.
		1011						twist 60-90	
		1011			Med hard Coal	10.5	10	60	Good compact core. Brown-black brittle coal - fractures easily. "Pitch" stringers to 1" but most closely spaced and less than 1/32". About 50% of core. Resin nodules to 1/4" dia. - fraction of 1%.
		1022			Med hard Coal			50	
		1022			Med hard Coal			45	Brittle brown-black coal. "Pitch" stringers to 1/2" - 50% of core.
		1026			Broken shaly Coal	2	6	60	Pulverized soft (almost plastic) brown shaly coal. Shale and coal are closely interbedded - perhaps 50% shale. Strong odor.
		1030			Med hard Coal	3	2.5	50	Compact brown-black coal. "Pitch" stringers to 1/8" - 40% of core.
		1033			Med hard Coal			45	Compact brown-black "pitch" to 1/4" - 40% of core
		1036			Shaly Coal			45	Gray-brown shale and coal finely bedded - 50% shale
		1037			Med hard Coal			45	See above 1033-1036
		1038			Shaly Coal	12	11.5	45	Gray-brown shale - 40% of core. Resin to 1/4" dia.
		1039			Med hard Coal			45	See above - 1033 - 1036.
		1045			Soft Coal	2	1.5	50	Brown-black coal "pitch" to 1/2" - 20% of core. Quite fractured from drilling.
		1047			Soft Coal	1.5	1.5	45	Brown-black parts easily "pitch" to 1/2" - 20% of core
		1048			Clay and Coal	5.5	2		Core recovered is med hard brown-black coal. Sludge indicated that core lost was primarily light gray clay.
		1054			Clay and Coal			45	1/4" bands of soft brown-black coal and light gray soft clay interbedded - 50% clay.
		1056			Clayey Shale	10	10		Light gray clay (hardness 1 1/2). No bedding indicated. Streak: Light gray-brown.
		1060			Clay and Coal			65	Finely interbedded clay and coal - clay about 20% of core. Resin to 1/4" dia. - 1% of core.
		1062			Clay and Coal			65	Light gray clay. Saw narrow coal stringers.
		1064			Clayey Shale				Dark gray soft clay with interbedded 1/4" band of coal - about 10% of core.
		1066			Sandy Clay				Quite porous. Sand particles to 2mm. - 40% of core
		1067			Clayey Shale	10	10		Light gray soft clay. Becomes plastic when wetted. Few stringers to 1/8" of brown carbonaceous material.
		1074			Clayey Shale				Light gray compact clay - hardness 1 1/2. No bedding.
		1080			Shaly Coal	19	14.5		Compact brown-black closely interbedded coal and carbonaceous shale - 50% shale. Resin to 1/4" dia. - fraction of 1%. "Pitch" to 1/2".
		1084			Clayey Shale				Chiefly sandstone interbedded with narrow bands (to 2") of light gray clay. Sandstone particles to 4mm loosely bound with limy cement. Appears quite porous.
		1093			Clay and Sandstone				

**LEGEND**

- Coal
- Broken Coal
- Shaly Coal
- Broken Shaly
- Clayey Shale
- Sandstone

**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 El. Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER I. B. C.

Client \_\_\_\_\_ Western Development and Power Ltd.  
 Prepared by R. T. Trenaman  
 Checked by V. Dolmage  
 Submitted October 17, 1957.

# DRILL HOLE LOG

Project Hat Creek Coal Project

Flw. Ground Surface \_\_\_\_\_

Hole begun Friday, August 23, 1957

Sheet No. 12

Elev. Top of Casing \_\_\_\_\_

Contractor Boyles Bros. Drillers

of 12 Sheets

Co-ordinates 9000.51 N, 10519.56 E

Inspector H. T. Trenaman

Hole No. B

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
		1093			Clayey shale	10	10		Compact light clay. No appreciable coaly component.
		1103			Clayey shale			45	Dark gray clay. Very fine stringers of carbonaceous material finely interbedded with clay - about 10% carbonaceous.
		1109			Sandstone				Light gray.
		1110			Clayey shale				Light gray clay.
		1118			Bottom of Hole				

**LEGEND**

- Sandstone
- Clayey shale
- 
- 

**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 No. Core Recoveries \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING • VANCOUVER I. B.C.

Client Western Development and Power Ltd.  
 Prepared by R. T. Trenaman  
 Checked by V. Dolmage  
 Submitted October 17, 1957.







# DRILL HOLE LOG

Project: Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Co-ordinates \_\_\_\_\_

Hole begun September 26, 1957  
 Contractor Boyls Bros. Drillers  
 Inspector R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 3  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Angle	Dip	Remarks
		208							25	Brown-black. "Pitch" in twisted stringers to 1" - 25% of core. Considerable slipping // to bedding.
	212.7				Med hard Coal	7	7		20	
	212.9				Shaley Coal					4" band gray-brown interbedded coal and shale. Quite porous. Tends to part // to bedding.
	215				Soft Coal				20	Much shearing. Tends to part // to bedding.
					Med hard Coal	6	5		25	Compact brown-black coal. Tends to be brittle between 217 and 221, hence fractured by drill
	221								40	Streak - chocolate brown. "Pitch" to 1" - 50% of core. "white siliceous band" 2 1/8" ft.
	223				Med hard Coal				20	Brown-black. "Pitch" stringers to 1" - 40% of
	226				Soft Coal	13	7.5		25	Dark earthy colour. Partly easy // to bed. Scraggy. Plant skeletons faintly visible. "Pitch" to 1" - 10% of core.
	229.5				Shaley Coal					Narrow bands of dark brown shale and coal interbedded, also finely mixed. Very crumbly. 60% coal.
	231				Med hard Coal				40	Brown-black. "Pitch" to 1/8" - 25% of core.
	234				Med hard Coal					Brown-black. "Pitch" to 1/8" - 25% of coal.
	240.5					10	8			Soft gray-brown shale with scattered bands of coal to 1/2". Coal about 15% of core.
	241				Shaley Coal					
	241				Med hard Coal					Compact brittle. "Pitch" to 1/8" - 50% of core.
	245				Med hard Coal				35	Compact brown-black. Streak-chocolate brown. "Pitch" to 1/8" - 10% of core.
	247.5				Soft Coal	10	8.5		40	Soft brown coal - quite porous. Partly // to bedding. Evidence of shearing. "Pitch" to 1/8" - 10% of core.
	251				Med hard Coal				40	Brown-black. "Pitch" to 1/8" - 25% of core.
										Very plastic cement-gray clay. Contains some particles of soft coal. Material probably clayey shale originally.
					Clayey Shale ?	10	2.5			
	261				Med hard Coal				6	
	262				Sandy Shale					Cement gray colour.
	263									Cement gray colour. Particles generally about 2mm dia; except at 269 ft. where size ranges to 4mm. Quite porous in places. Silica deficient. Fica, soft blue-gray particles common.
	269				Shaly shale	10	10		15-60	
	271				Med hard Coal				10	Brown-black, very little "pitch".
	273				Soft Coal					Spotty, brown. No "pitch".
	273								20	Dark gray clayey shale and soft coal interbedded. Coal tends to part very easily. About 40% coal.
	285				Shaley Coal	9	8			
	285								45	
	285.6				Med hard Coal				25	Compact brown-black. Resin to 1/4" dia. - fract of 1/2". "Pitch" to 1/8" stringers.
	286				Shaley Coal	6	6		25	50% coal & 50% waxy lime & siliceous bands.
	286.5				Shaley Coal				50	Same as 285.5-286.5. Bands 5-5.
	292.5				Soft Coal (Shaley)				15	Bands to 1/2" of soft coal and dark brown shale interbedded. About 60% coal. Coal parts easily "Pitch" to 1/2" in stringers - 20% of core. Plant skeletons faintly visible. Much shearing.
	294				Scale	11	10		25	Gray brown shale. Coal stringers about 10%. Soft brown - parts easily. "Pitch" twisted knots and stringers to 1/2" - 50% of core. Shearing // to bedding.
	297				Soft Coal				30	
	297.5				Med hard Coal ?	3	0.5		40	Core recovered is med hard brown-black. Sludge indicates that lost core is shaley coal.
	300				Shaley Coal ?					
	302				Soft Coal (Broken)				40	Brown. "Pitch" to 1/2" - 50% of core.
	305				Med hard Coal	5	4		45	Compact brown-black. "Pitch" to 1" - 40% of core. Resin to 1/4" - fraction of 1/2".

LEGEND	
<input type="checkbox"/>	<input type="checkbox"/>
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SUMMARY	
El. Ground	_____
El. Bottom of Hole	_____
Net Depth of Hole	_____
Core Drill Depth	_____
Core Recovery	_____
% Core Recovery	_____

**VICTOR DOLMAGE - GEOLOGIST**  
 1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client: Western Development and Power Ltd.  
 Prepared by: R. T. Trenaman  
 Checked by: V. Dolmage  
 Submitted: October 17, 1957.

# DRILL HOLE LOG

Project Nat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Co-ordinates \_\_\_\_\_

Hole begun September 26, 1957  
 Contractor Boylas Bros. Drillers  
 Inspector R. T. TRENNAN  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 4  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Date & Time	Elevation	Depth	Log	Sample	Material	Length Ft.	Core Length	REMARKS DIP	REMARKS
		305			Soft and Med hard Coal	9	9	45	Soft coal about 50%. Quite porous, parts easily. Considerably sheared in soft zones. Med hard is brown-black. "Pitch" in twisted bands and knots. About 20%.
		314			Soft to Med hard Coal			20	
		317			Broken Shaley Coal		7	30	Brown-black. Some porosity. "Pitch" in twisted bands and knots to 1" - 15% of core.
		316			Soft to Med hard Coal			5	60% coal. Dark gray-brown shale, coal bedded.
		322			Broken Soft Coal			20	Brown-black. "Pitch" bands and stringers to 1" - 25% of core.
		321			Shale			20	
		323.2			Soft Coal			30	Brown "Pitch" to 1" - 30% of core. Pulverized light gray shale.
		325			Broken Soft Coal	10	8	15	Same as 322-323 ft. Much shearing.
		326			Soft Coal				
		327			Shale				Rust brown shale.
		327.7			Soft Coal			Twist 0-30	
		330			Med hard Coal	6.5	6.5	10-35	Twist 10-35
		338.7			Shaley Coal			20	Brittle brown-black. "Pitch" to 1/2" but most less than 1/16". About 40% of core. Slickenside @ 334.
		339			Soft Coal	7.5	7.5	40	
		345.5			Shaley Coal			30	60% shale - dark gray shale, coal interbedded
		346			Soft Coal			35	Soft, quite porous. "Pitch" in knots and stringers to 1/2". 25% of core. Streak-chocolate brown. Pulverized for 1 ft. 340-341 & 344-345
		347			Shale			20	60% coal. Dark gray shale & coal interbedded
		350.5			Shaley Coal	9	7	35	Pulverized parts easily. "Pitch" to 1/2" - 10% of dark gray shale. Perhaps 5% coal as cor 1/16" stringers.
		352			Shaley Coal				Dark brown shale & coal interbedded. "Pitch" to 1/2" in. 20-8% coal
		355			Shale			15	Dark gray brown shale. Few 1/4" coal stringers
		355.8			Soft Coal	10	9	20	Dark brownish gray blending into coal @ 355. Few 1/2" stringers of dark gray shale - about 5%.
		357.7			Shale			Twist 20-45	
		364.5			Med hard Coal				Brownish-gray - few coal stringers - about 10%.
		365			Shaley Coal				Med hard brittle "pitch"
		365.8			Med hard Coal				Gray-brown shale - 75% of core.
		369			Broken Shaley Coal	9	9		Brown-black - "Pitch" in bands and knots to 3/4" - 30% of core.
		373			Med hard Coal				Bands of soft coal interbedded with light to dark grayish-brown clayey shale. Coal - 20% of core.
		374			Shaley Coal	4	4	30	Brittle brown-black. "Pitch" 30% as stringer less than 1/16" in.
		375			Med hard Coal			40	Brownish-gray shale & coal finely mixed - 50% Streak-chocolate brown. "Pitch" to 2" - concoidal fracture, 40% of coal.
		378			Med hard Coal			30	Brittle brown-black. "Pitch" to 1/2" - 40% of core.
		380			Shaley Coal	10	6	Twist 0-30	30% coal. Dark gray-black clayey shale and soft coal interbedded. Coal parts easily.
		386			Med hard Coal			40	Brown-black. "Pitch" as stringers and knots to 2" - 40% of core.
		388			Soft and Med hard Coal	5	4.5	25	Soft brown bands and med hard bands interbedded. About 50% of each. Soft bands to crumble. Med hard - brittle. "Pitch" to 2" - 40% of coal. Much shearing 45 to 90 degrees.
		393			Shaley Coal ?	4	0.5		Core recovered was coal and vuggy lime-silic bands interbedded. Coal about 30% of core.
		397			Shaley Coal			30	50% coal. 1 ft. band of dark gray-brown shale and remainder same shale and coal mixed.
		400			Med hard Coal	8	7.5	20	Brown-black. Complete core. "Pitch" in bands to 1/2" - 30% of core.
		405						45	

**LEGEND**

- El. Ground
- El. Bottom of Hole
- Net Depth of Hole
- Core Drill Depth
- Core Recovery

**SUMMARY**

- El. Ground
- El. Bottom of Hole
- Net Depth of Hole
- Core Drill Depth
- Core Recovery

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING VANCOUVER 1, B.C.

Client Western Development and Power Ltd.

Prepared by R. T. Trennan

Checked by V. Dolmage

October 17, 1957.

# DRILL HOLE LOG

Project Hot Creek Coal Project

Elev. Ground Surface \_\_\_\_\_

Hole begun September 26, 1957

Sheet No. 5

Elev. Top of Casing \_\_\_\_\_

Contractor Boyles Bros. Drillers

of \_\_\_\_\_ Sheets

Coordinates \_\_\_\_\_

Inspector R. T. Tronaman

Hole No. 9

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
	405				Clayey Shale			25	Dark Gray
	406.5				Med hard Coal			45	Brown-black
	407				Shaley Coal	9	8.5		70% coal. Dark brown shale and coal mixed.
	407.5				Med hard Coal			30	Good compact coal. Streak-chocolate brown. "Pitch" in twisted stringers and knots to 1" - 50% of core.
	414				Clayey Shale			45	Dark gray-brown clayey shale with narrow stringers of coal-about 10% coal.
	417				Med hard Coal	8	6	35	Good compact core. Brown-black. "Pitch" to 1" - 40% of core. Resin - about 1% in nodules to 1/2" between 419 and 420.
	422				Shaley Coal			30	50% coal. Gray-brown shale and coal mixed.
	423.5				Shale	5.5	4.5	20	Dark gray-brown shale. Few 1/16" stringers of coal.
	428.5				Shale				Gray-brown shale - few 1/16" coal stringers.
	431.5				Shaley Coal	7.5	6	26	50% coal. Coal and gray-brown shale interbedded.
	433				Med hard Coal			35	Brittle brown-black. "Pitch" stringers to 1/16" - 40% of core.
	438				Shaley Coal				50% coal. Gray-brown shale & soft coal interbedded.
	437.5				Shale (sandy)	7	6.5	30	Gray-brown with few 1/16" coal stringers. Shale has also a small component of small soft sandy particles.
	443				Med hard Coal				Brown-black. "Pitch" to 1" - 40% of core.
	444.5				Shaley Coal				Coal and waxy lime-silica bands.
	445				Soft to Med hard Coal	9	8		50% soft coal interbedded with brown-black med hard. Soft parts easily. Plant skeletons visible. Med hard bands - "pitch" to 1/2" - 30% of coal.
	452				Shaley Coal				50% coal. Gray-brown shale & coal interbedded.
	453.5				Shaley Coal				Gray-brown shale and coal interbedded.
	455				Shale	10.5	8		50% coal. Med gray coloured shale. Few stringers coal to 1/16".
	459				Shaley Coal			45	Shale and coal finely mixed. 50% coal.
	460.5				Hard Coal			30	Very compact brittle - chiefly "pitch" streak - chocolate brown.
	464				Shaley Coal			30	50% coal. Gray-brown shale & soft coal mixed.
	464.5				Hard Coal	8	8	40	Brittle brown-black to black. Streak-chocolate brown. Chiefly "pitch". Resin to 1/2" nodules - fraction of 1%. 1" band of rust coloured shale 466. "Pitch" - 20% of coal.
	472				Hard Coal and Shaley Coal ?	4	1	10	Core recovered is brittle hard black "pitch", chiefly. "Pitch" to 1/2" bands - over 70% of core. Assume lost core shaley coal.
	476				Broken Shaley Coal			45	60% coal. Brownish-gray shale & soft coal in bands to 1/2" interbedded. Crushed.
	478				Soft and Med hard Coal	10	9.5	35	20% soft brown coal. Parts easily along bedding. 80% med-hard. Resin in med hard to 1/2" nodules - about 1% of core. "Pitch" to 1" bands - 50% of core.
	486				Broken Clayey Shale			40	Pulverized dark brownish gray clayey shale with fragments of coal - perhaps 10% coal.
	490				Med hard Coal	9	8		Brown-black. "Pitch" to 1/2" - 20% of core. Shearing.
	491				Coal & Shale				20% coal. 3" bands soft brown coal & 6" bands gray-brown shale interbedded.
	493				Med hard Coal				Brown-black. "Pitch" stringers to 1/2" - 35% of core.
	495				Broken Clayey Shale ?	7	8		Drillers report some caving of hole somewhere above this point. Material recovered is badly pulverized dark brownish-gray clay with fragments of soft to med hard coal - perhaps 10% of core.
	502				Broken Clayey Shale	3	2		Pulverized dark brownish-gray shale - few coal fragments - perhaps 10%.
	504.5				Shaley Coal				60% coal. Soft brown coal & dark brown shale interbedded.
	505								

LEGEND	
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SUMMARY	
El. Ground _____	
El. Bottom of Hole _____	
Net Depth of Hole _____	
Core Drill Depth _____	
Core Recovery _____	
% Core Recovery _____	

**VICTOR DOLMAGE - GEOLOGIST**  
 1119 MARINE BUILDING VANCOUVER I. B. C.

Client Western Development and Power Ltd.

Prepared by R. T. Tronaman

Checked by V. Dolmage

Submitted October 17, 1957.

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_

Hole begun September 26, 1957

Sheet No. 6

Elev. Top of Casing \_\_\_\_\_

Contractor Koyles Bros. Drillars.

of \_\_\_\_\_ Sheets

Co-ordinates \_\_\_\_\_

Inspector R. T. Trenaman

Hole No. 9

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Feet	Core Length	Block Cores	Dip	Remarks
	505	505.5			Shaley Coal				30	70% coal. Med hard coal, br-gray shale bedded. Brittle brown-black. "Pitch" to 3/4" - 50% of c
					Med hard Coal	8	8			
		513			Med hard Coal				30	
					and Clayey Shale ??	5	0.5			0.5 ft core recovered is med hard brown-black coal. "Pitch" to 3/4" - 50% of core. Sludge suggests remainder maybe clayey shale.
		516			Med hard Coal					Core recovered is brittle brown-black coal. Few 1/2" light gray stringers of shale - about 10% of coal. "Pitch" to 2" - 60% of core. Evidence of shearing. Lost core maybe light gray shale.
					and Shale ??	13	4			
		531			Shaley Coal				45	Shaley coal ranges from 60% coal - 20% dark brown shale to dark brown shale containing 10% coal as small stringers and pockets.
					and Coal	9	8.5		80	Shaley coal is interspaced with four 1/2" band of soft to med hard coal containing "pitch" to 1" stringers - 50% of med hard. Coal probably 40% of total core, shale 60%.
									25	50% coal. Dark brown-gray shale, coal bedded
	540	540.5			Shaley Coal					
		542.5			Med hard Coal					
					Shaley Coal	9	9			60% coal. Dark gray to brown-gray shale & co bedded in 1/16" stringer bands to 1" bands - 30% of core
		544.5			Med hard Coal					50% to 75% nodules to 1" bands - 30% of core
		545			Shaley Coal					70% coal. Soft coal & shale finely bedded.
		547			Soft Coal					brown. Parts readily along bedding.
		549			Clayey Shale					Gray-brown clayey shale with 1/16" stringers of coal - perhaps 15% of core.
		555			Soft Coal	9.5	7.5			Brown. Parts easily // to bedding. "Pitch" to 1/2" as stringers and knots. 20% of core. Few narrow stringers of gray shale. 10% of c
		558.5			Soft Coal				30	Parts easily // to bedding. 10% of c
		560.5			Shale				20	Brownish-gray. Few coal particles - less than 5%.
		563.5			Shaley Coal	9.5	8.5		Twist 30-35	Soft brown coal and brownish-gray shale in 1" bands interbedded. Coal porous, parts easily.
		566			Soft to Med hard Coal				25	Soft bands slightly porous, part // to bedding. Med hard - "pitch" as knots & bands to 1" - 30%.
		569			Med hard Coal and Shaley Coal	8	7		40	569-569.5: 70% coal. Med hard brown-black coal inter-banded with light gray stringers of shale to 1/2".
		576			Shaley Coal	8	1.5		Twist 40-60	569-569.5 and 569.5-576: Brittle dense brown-b twisted "pitch" to 1" - 50%. Resin- nodules - 75% coal. Soft coal containing small fractio shaley material finely mixed. "pitch" to 1/2"
		579			Clayey Shale				40	Dark brownish-gray
		581			Shaley Coal					50% coal. Soft coal and shale finely mixed.
		582			Clayey Shale	10	10		20	Very crumbly light brownish-gray clayey shal
					Med hard Coal				20	Dull black. "Pitch" to 1/8" - 40% of coal.
		588			Med hard Coal				10	Brown
		590.5			Shale					Light brownish-gray.
		591.5			Soft Coal	6	6		20	Brown. Twisted "pitch" in knots, bands to 3/4"
		594			Med hard Coal				20	Dull black. "Pitch" to 1/8" - 40% of core.

**LEGEND**

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**SUMMARY**

- El. Ground \_\_\_\_\_
- El. Bottom of Hole \_\_\_\_\_
- Net Depth of Hole \_\_\_\_\_
- Core Drill Depth \_\_\_\_\_
- Core Recovery \_\_\_\_\_
- % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER I. B. C.

Client Western Development and Power Ltd.

Prepared by R. T. Trenaman

Checked by V. Dolmage

Submitted October 17, 1957.

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3120.9  
 Elev. Top of Casing 3122.4  
 Coordinates 8969.3 N, 9188.4 E

Hole begun September 26, 1967  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman

Sheet No. 7  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Rock X X X X X	Dip	Remarks
	594				Clayey Shale					Dark brownish-gray.
	594.5				Hard Coal	6	6	30 45 70		Black. Streak - black with slight brownish cast. "Pitch" to 2" as knots and twisted stringers - 20% of core. Shearing // to bed. Med brown-gray - no coal component.
	600				Clayey Shale					
	604				Soft and Med hard Coal	10	10	Twist 70-90		Soft brown coal, somewhat porous, parts easily, as 2" bands interpaced with med hard brown-black. 50% soft. Med hard "pitch" bands to 3/4" - 30% of core. 1" band of light brown shale - 2% of core.
	610				Soft and Med hard Coal			80		Similar to 604-610. Soft component crumbles and has a slight shaly fraction.
	614				Shaly Coal	10	10			Very soft. 70% coal. Thoroughly mixed.
	615				Med hard Coal			45		Brown-black. Twisted "pitch" to 1" - 40% of core.
	617				Shaly Coal					Gray-black shale & coal crushed to 1/2" & compacted. 30% coal. Few knots of "pitch".
	618				Shale			45		Brownish-gray fragments of coal - less than 5%.
	620				Clayey Shale					Brownish-black - Plastic.
	621				Soft and Med hard Coal	10	10	20 25		70% med hard coal - competent dull black. Separated by 2 - 6" bands of soft brown that is somewhat porous and parts easily.
	628.5				Carbonaceous Shale			35		Dark brownish-gray to dull black. Coal and shale thoroughly mixed.
	630				Broken Shaly Coal	6	3			70% coal Gray black to black. Coal and shale mixed. Core badly pulverized.
	634				Med hard Coal					Brown-black. Mostly "pitch". Badly fractured.
	636				Med hard Coal			30		Compact brown-black coal. Resin to 1/2" nodules 1% of core. "Pitch" to 1/8" bands - 40% of core.
	639				Shale			30		Coal changes abruptly to brownish-gray shale @ 639 ft.
	641				Med hard Coal	10	9.5			Compact brown-black. Resin to 1/2" nodules from top of 10" - 12" interval.
	643.5				Shale and Sandstone					Top 6" brown-gray shale. Next 0.5" fine (or less than 2mm) gray sandstone. Bottom 1.2" coarse ss. (part to 3mm clay binder with blue-green to gray green shale and 1/2" at 5ft abrupt change from coarse ss to coal).
	646				Shale & Sandstone			30		Compact brown-black. "Pitch" to 1/8" - 50% of core.
	647				Med hard Coal			45		Brownish gray shale.
	650				Med hard Coal	10	9			Brown-black. Resin between 653 and 654 ft. in nodules to 1" - 5% of core. "Pitch" to 1/8" - 40% of core.
	656				Broken Shaly Coal & Clayey Shale			25 45		Crushed brownish-gray shale and dull brown shaly coal - Coal component about 30%.
	660				Med hard Coal	10	10			Brittle brown-black. "Pitch" to 2" - 50% of core.
	661				Shale and Coal			40		50% coal with waxy silty-siliceous bands to 1/2" thick.
	661.7				Med hard Coal			45		Brown-black. "Pitch" to 1" in twisted stringers and knots - 40% of core.
	666				Shaly Coal	10	10	45		70% coal. Bands of soft brown coal and brown gray shale 1/2" - 4" interbanded.
	674				Med hard Coal			30		Compact brittle brown-black. "Pitch" to 1/2" - 50% of core.
	676				Soft and Med hard Coal			30		50% soft coal. Interbanded soft brown and med hard brown-black coal. Soft parts easily.
	681				Shale	10	9.5			Dark brownish gray shale.
	682				Shaly Coal			30		6" bands of med hard brown-black coal interbedded with 6" bands of dull black carbonaceous shale. Med hard has "pitch" to 3/4" - 70% of core.
	686				Sandy Shale			50		Very compact hard light brown.
	685.6				Med hard Coal	9	7.5	Twist 20-30		Compact brittle brown-black. "Pitch" as lens and bands to 1/2" thick.
	693				Shaly Coal			25		70% coal. Interbanded dark brown-gray shale.
	694				Med hard Coal					Compact. "Pitch" to 1/2" - 20% of core.
	695									

<p><b>LEGEND</b></p> <p><input type="checkbox"/> El. Ground</p> <p><input type="checkbox"/> El. Bottom of Hole</p> <p><input type="checkbox"/> Net Depth of Hole</p> <p><input type="checkbox"/> Core Drill Depth</p> <p><input type="checkbox"/> Core Recovery</p> <p><input type="checkbox"/> Core Recovery</p>	<p style="text-align: center;"><b>SUMMARY</b></p> <p>El. Ground _____</p> <p>El. Bottom of Hole _____</p> <p>Net Depth of Hole _____</p> <p>Core Drill Depth _____</p> <p>Core Recovery _____</p> <p>Core Recovery _____</p>	<p style="text-align: center;"><b>VICTOR DOLMAGE - GEOLOGIST</b></p> <p style="text-align: center;">1119 MARINE BUILDING - VANCOUVER I, B.C.</p> <p>Client <u>Western Development and Power Ltd.</u></p> <p>Prepared by <u>R. T. Trenaman</u></p> <p>Checked by <u>V. Dolmage</u></p> <p>Submitted <u>October 23, 1967.</u></p>
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# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3120.2  
 Elev. Top of Casing 3122.4  
 Coordinates 8259.3 N, 9422.4 E.

Hole begun September 26, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman

Sheet No. 8  
 of        Sheets  
 Hole No. 9

Reference to Plan No.                     

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
	695				Med hard Coal	8	8	Twist 45	Brittle brown-black. "Pitch" as knots and twisted stringers to 2" - 50% of core. Evidence of much shearing and later compaction.
	703				Shaley Coal			Twist 45-90	65% coal. Alternate 4" bands of hard black "pitch", soft brown and med brown coloured shales. 1/3 of each. Soft parts easily.
	707				Shale	8	8		Cement gray coloured shale containing small fragments of similar coloured but harder shale.
	710.5				Shale				Hard light brown. Fractured 1/8" wide openings lined with calcite crystal
	711				Shale				Dark dull gray shale. Few hairline stringers of "pitch" between 714 and 716 ft.
	716				Shaley Coal	10	10	40	30% coal. Dark brownish-gray shale with twisted stringers of "pitch" to 1/4" thick.
	721				Med Hard Coal			45	Brittle brown-black coal. "Pitch" bands to 1 1/2" thick - 30% of core.
	727				Shaley Coal	10	10	45	Dull med dark gray shale bands of coal to 1" - 30% coal
	728				Med hard Coal			45	Compact brittle brown-black. "Pitch" to 2" thick - 30% of core.
	731				Med-hard Coal			40	Compact brittle brown-black. Streak chocolate brown. "Pitch" in bands to 1/2" but most less than 1/8" - 40% of core.
	736				Shaley Coal	20	20	40	40% coal. Stringers of coal from 1/16" to 4" interbanded randomly with light gray hard shale. One section between 337 and 339 has practically no coaly component.
	744.5				Shale			70 Twist	Light gray to creamy white shale. Some portions quite hard-hardness about 5. Practically no coal component.
	751				Shale	20	12		Light gray med hard shale. Cement colour. Few isolated 1/8" stringers of "pitch". Badly ground by drilling. Assume lost core is clayey shale.
	765.5				Sandstone			45 20 45	Cement gray coloured sandstone. Particles to 2 mm. Light gray shaly cement. Particles rounded, blue-gray, gray, few bluish-green. All quite soft. No noticeable quartz component.
	769.5				Shaley Coal			35	60% coal. Med hard coal and waxy lime-silica bands.
	771				Med hard Coal	11	10	35 35	Core recovered is compact brown-black coal. "Pitch" 1/16" to 2" bands-most about 1/16" - 30% of core. Streak brownish-black.
	782				Med hard Coal	18	12	Twist 50	Brown-black. Much shearing between 783 and 784 ft. "Pitch" in bands to 1/2" thick - 35% of core. Resin to 1/4" nodules between 785 and 786 ft. - fraction of 1%.
	800							45	

**LEGEND**

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**SUMMARY**

El. Ground                       
 El. Bottom of Hole                       
 Net Depth of Hole                       
 Core Drill Depth                       
 Core Recovery                     

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING · VANCOUVER 1, B. C.  
 Client Western Development and Power Ltd.  
 Prepared by R. T. Trenaman  
 Checked by V. Dolmage  
 S. Dated October 23, 1957.

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3120.9  
 Elev. Top of Casing 3122.4  
 Co-ordinates 8269.3 N, 9488.4 E

Hole begun September 26, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trepanan

Sheet No. 9  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core length	Block X X X X X	Remarks
		800							Dip
					Med hard Coal			35	Brown-black. "Pitch" to 1/4" thick bands-30% of core.
		805			Shaley Coal	15	11	45	60% coal. Dark gray-brown shale and soft coal bands to 1/4" thick. Very gassy sour.
		808			Med hard Coal			45	Brittle brown-black coal. "Pitch" bands to 1/4" thick - 40% of core. Cream colored resin in nodules to 1/4" dia. - fraction of 1%.
		815			Soft Coal			45	Soft dull black. Parts easily. "Pitch" to 1/4" bands - 15% of core.
		818			Med hard Coal	14	10	55	Dull brownish black compact brittle coal. "Pitch" bands to 1/2" thick - 25% of core.
		826			Shaley Coal			45	40% coal. Brownish black shale to 1/2" thick mixed with black carbonaceous bands. Shale to 1/2" thick.
		827			Med hard Coal			45	Brown-black. "pitch" to 1/4" - 40% of core.
		829			Shaley Coal			45	75% coal. Creamy white hard bands of shale banded with coal.
		830			Med hard Coal	15	11	45	Med hard brown-black (dull) with a few stringers of shaley coal (aggregate thickness - 1 ft.). Shaley coal is gray-black with interbedded stringers of coal. Med hard coal contains "pitch" stringers to 1/4" - 35% of core & resin in nodules to 1/4" dia. - fraction of 1%.
		844			Med hard Coal			45	Dull black. Quite brittle in places. "Pitch" in bands to 1/4" - 40% of core. Resin as nodules to 1/4" dia. 1% of core between 866 and 868 ft.
		865			Med hard Coal	8	4	40	Med hard brown-black. "Pitch" as knots and stringers to 1" thick - 50% of core. 2" bands of creamy white hard shale occur @ 866 and 868 ft.
		873			Med hard Coal			30	Quite compact brownish black. "Pitch" in bands to 1/4" thick - 30% of core.
		875			Shale			25	Light brown med hard.
		875			Med hard Coal	11	10	45	Same as 873 to 875. Much shearing and later compaction between 863 and 864 ft.
		884			Soft to Med hard Coal			45	Dull brown-black. "Pitch" stringers to 1/4" thick - 20% of core.
		886			Shaley Coal			90	Soft waxy grayish-black carbonaceous shale.
		887			Med hard Coal	12	10	90	Compact brittle brownish black coal. "Pitch" bands to 1/4" thick - 30% of core. Few scattered 1/4" dia. resin nodules. Dip changes from 45° @ 886 ft. to 90° @ 887.5 ft. Much twisted and broken "pitch" in this interval.
		896			Soft to Med hard Coal			40	Mainly soft brown with isolated 1/4" bands of "pitch". Tends to part. A few narrow bands waxy brown carbonaceous shale.
		901			Shaley Coal	11	9.5	55	Dull gray-brown carbonaceous shale, soft, waxy
		902			Shaley Coal			45	50% coal band light gray shale, interbedded with coal.
		903			Soft to Med hard Coal			45	Dull brownish-black soft to med hard coal. Similar to 886-901.5 ft. Broken @ 896 ft.

**LEGEND**

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**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client Western Development and Power Ltd.

Prepared by R. T. Trepanan

Checked by V. Dolmage

# DRILL HOLE LOG

Project Hat Creek Coal Project.

Elev. Ground Surface 3120.9  
 Elev. Top of Casing 3122.4  
 Coordinates 8989.3 N, 9488.4 E

Hole begun September 26, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman

Sheet No. 10  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sam- ple	Material	Length Pull	Core Length	Dip	Remarks
		907						45	
					Med hard Coal	15	11	50	Dull brownish black. Few bands to 6" of soft coal. Tends to be porous. "Pitch" in bands to 1/4" - 30% of core.
		981.5			Shaley Coal			40	30% coal. Hard creamy white shale and coal in
		982			Hard Coal				Hard black brittle. Mostly "pitch".
		926			Shaley Coal			50	Dull gray-black carbonaceous shale.
		927			Soft to Med hard Coal	14	10.5	Twist 45	Dull black. Tends to part. "Pitch" in twisted bands and knots - 30% of core. Few scattered resin nodules to 1/8" dia.
		936			Med hard Coal			Twist 45	
		938			Soft Coal			40	Brown-black, quite shiny. "Pitch" to 1/2" stri- ers - 40% of core.
		941.5			Shaley Coal				Dull brown-black. In places tends to crumble "Pitch" as small isolated bands.
		943			Shale			45	Soft dull brownish gray shale with intermix- ed coal as narrow stringers and small frag- ments of coal.
		945			Shaley Coal	19	14.5		Same as 941.5 to 943. 50% coal.
		947			Med hard Coal			55	Dull to lustrous black. Compact, brittle. "Pitch" to 1/2" as stringers - 50% of core.
		955			Med hard Coal			45	
		957			Shale and Coal	11	10.5	50	Brittle dull black. 50% "pitch" as bands to 2" thick. 70% coal. Med hard brown-black in bands to 1 ft. thick interbedded with 6" bands of soft brownish gray shale.
		954			Shaley Coal			45	Hard cream to gray shale interbedded with hard coal - 50% coal. Bedding slickensided
		966			Med hard Coal	7	6.5	45	Brittle brown-black. Resin (amber) in nodules to 1/2" - fraction of 1%. "Pitch" to 1/2" bands 50% of core.
		973			Med hard Coal			50	
		974			Soft Coal			45	Shiny black. 50% "pitch" as 2" bands - 1/2" of fract.
		975			Soft Shale				Dull black, compact. No "pitch".
		976			Soft to Med hard Coal	8	7	50	Soft brownish gray. Dull black. Quite compact. Stringers of "pitch" to 1/2" - 20% of core. Also occasional 2" "pitch" stringer.
		981			Hard limy Shale.			45	Light gray to white shale. 981 grades to tan finely bedded limy brownish gray shale. 983 Many fractures filled with calcite crystals.
		983			Soft Shale			60	20% coal as narrow stringers - complex interbe- ded.
		987			Shaley Coal	14	6.5	50	10% coal. Soft grayish brown shale. 50% coal. Soft brown clayey shale and soft coal interoven.
		990			Broken Clayey Shale				Badly pulverized clayey shale. No noticeable coal component.
		995			Shaley Coal	10	10	60	50% coal. Soft grayish brown shale - stringer hairline to 4" thick interbedded with bands of soft coal and carboniferous shale in band hairline to 1 ft. thick. 1 ft. band of narrow stringers of limy shale (hard) and hard coal interbedded. Has been fractures and openings filled with calcite.
		1005							
					Total Core - 108.5				

**LEGEND**

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**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Nat. Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.  
 Client Western Development and Power Ltd.  
 Prepared by R. T. Trenaman  
 Checked by V. Dolmage  
 Submitted October 13, 1957



# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Coordinates \_\_\_\_\_

Hole begun September 26, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 2  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Date & Time	Elevation	Depth	Log	Sample	Material	Length Ft.	Core Length	XXXX XXXX	Dip	Remarks
		103			No-Core Clayey Shale ?	6	0			Sludge indicates same type of material as 89 - 103 ft.
		109			Clayey Shale	3	1.5			1 ft. dark gray clayey shale
		112			Shale					6" light gray compact shale.
		114			Clayey Shale	2	2			Dark gray, badly crushed.
					Clayey Shale	10	8			Dark gray to greenish-gray compact. Greenish cast may be due to small amount of finely divided carbonaceous material. Crumbles when wetted.
		124			Clayey Shale	6.5	6		25	Light greenish-gray. 2" band of brown sandy clay (small flakes of mica include @ 128. Dips @ 25 degrees.
		130.5			Clayey Shale	4	2			Compact brownish-gray.
		134.5			Clayey Shale	9	7			Crumbles when wetted. Dark brownish-gray Part of small carbonaceous fossil @ 140
		143.5			Clayey Shale	9.5	9.5		30-35	Dark brownish-gray with 6" bands of light brown @ 145 and 148 ft, also 150.5 ft.
		152.5			Clay (rawoked)				30-35	Plastic with fragments dark brownish-gray shale
		153			Carbonaceous Clayey Shale	10	9.5			Dark brownish-gray material of above blends into dark olive green to dull bl clayey shale. Crumbles when wetted. Contains fine particles of black carbonaceous material, perhaps 20%.
		163			Carbonaceous Clayey Shale.	10	9.5		15	Same as 153 - 163 ft. 6" bands of light brown sandy shale cut core @ 164 and 166
		173			Carbonaceous Clayey Shale	8.5	7.5		25	Compact - grades from dark olive green dark brownish-gray. Few 1/32" carbonaceous bands @ 181 ft. Crumbles when wetted. Carbonaceous material about 25%.
		181.5			Clayey Shale.					Dark olive-green.
		182.5			Soft Coal	10	10		20	Clayey shale grades into 3 ft brown coal @ 182.5 ft. No "pitch". Coal cut by 1/2" b of blue-gray sulfides - marcasite? @ 184 185.5 ft.
		185.5			Clay and Coal				30	Med hard 6" bands yellow-brown clay @ 185.5 ft.
		191.5			Shale and Coal	4.5	1.5		40	6" battleship gray colour clayey shale 1 ft med hard brown black coal core. As ft clayey shale. Coal "pitch" to 1" - 40%
		196			Med hard Coal	7	6.5		20	Compact brittle brown-black. "Pitch" to 40% of core.
		203			Med hard Coal	5	5		25	1 ft. zone of shearing @ 205 ft. leaving quite porous. Movement parallel to beds. Most compact brown-black "pitch" to 1"
		206								

**LEGEND**

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**SUMMARY**

H Ground \_\_\_\_\_  
 H Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING VANCOUVER I. B. C.  
 Client Western Development and Power Ltd.,  
 Prepared by R. T. Trenaman  
 Checked by V. Dolmage  
 October 17, 1957.

# DRILL HOLE LOG

Project: Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Coordinates \_\_\_\_\_

Hole begun: September 26, 1957  
 Contractor: Boyles Bros. Drillers  
 Inspector: H. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 3  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	REMARKS	Dip	Remarks
		206							25	Brown-black. "Pitch" in twisted stringers to 1/4" - 25% of core. Considerable slipping / to bedding.
	212.7				Med hard Coal	7	7		20	
	212.9				Shaley Coal					4" band gray-brown interbedded coal and shal. Quite porous. Tends to part // to bedding. Much shear in twisted stringers.
	215				Soft Coal				20	
					Med hard Coal	6	5		25	Compact brown-black coal. Tends to be brittle between 217 and 221, hence fractured by dri
	221								40	Streak - chocolate brown. "Pitch" to 1/4" - 5% of core. 1" white siliceous band at 216.5 ft
	223				Med hard Coal				30	Brown-black. "Pitch" stringers to 1/4" - 40% of
	226				Soft Coal	13	7.5		25	Will earthy colour. Partly easy // to bedding. Fine siliceous skeletons faintly visible. "Pitch" to 1/8" - 10% of core.
	229.5				Shaley Coal					Narrow bands of dark brown shale and coal interbedded, also finely mixed. Very crumbly 60% coal.
	331				Med hard Coal				40	Brown-black. "Pitch" to 1/16" - 25% of core
	234				Med hard Coal					Brown-black. "Pitch" to 1/4" - 25% of coal.
	240.0				Shaley Coal	10	8			Soft gray-brown shale with scattered bands of coal top. Coal about 15% of core.
	241				Med hard Coal					Compact brittle. "Pitch" to 1/8" - 50% of core.
	245				Med hard Coal				30	Compact brown-black. Streak - chocolate brown. "Pitch" to 1/8" - 10% of core.
	247.5				Soft Coal	10	8.5		40	Soft brown coal - quite porous. Partly // to bedding. Evidence of shearing. "Pitch" to 1/4"
	251				Med hard Coal				40	Brown-black. "Pitch" to 1/4" - 25% of core.
					Clayey Shale	10	2.5			Very plastic cement-gray clay. Contains some particles of soft coal. Material probably clayey shale originally.
	261				Med hard Coal				6	
	262				Sandy Shale					Cement gray colour.
	263				Gray shale	10	10		5-60	Cement gray colour. Particles generally about 2mm dia. except at 263 ft. where size ranges to 4mm. Quite porous in places. Silica deficient. Vica, soft blue-gray particles.
	269				Med hard Coal				10	Brown-black, very little "pitch".
	271				Soft Coal					Sooty, brown. No "pitch".
	273				Shaley Coal	9	8		20	Dark gray clayey shale and soft coal interbedded. Coal tends to part very easily. About 40% coal.
	280				Med hard Coal				25	Compact brown-black. Resin to 1/4" dia. - fr of 1/4". "Pitch" to 1/8" stringers.
	285.6				Shaley Coal	6	6		25	50% coal & 50% vuggy lime & siliceous band
	286				Shaley Coal				60	
	286.5				Soft Coal (Shaley)				15	Same as 285.5-286. Hardness 5-5. Bands to 1/4" of soft coal and dark brown sh interbedded. About 60% coal. Coal parts as "Pitch" to 1/4" in stringers. 20% of core. Fine skeletons faintly visible. Much shearing.
	292.5				Soft Coal				25	Gray brown shale. Coal stringers about 10%. Soft brown - parts easily. "Pitch" twisted knots and stringers to 1/4" - 30% of core. Shearing // to bedding.
	294				Soft Coal	11	10		30	
	297				Med hard Coal	3	0.5		40	Core recovered is med hard brown-black. Sl indicates that lost core is shaley coal.
	297.5				Shaley Coal					
	300				Soft Coal (Broken)				40	Brown. "Pitch" to 1/4" - 20% of core.
	302				Med hard Coal	5	4		45	Compact brown-black. "Pitch" to 1/4" - 40% of core. Resin to 1/4" - fraction of 1/4".
	305									

<p><b>LEGEND</b></p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> _____</p>	<p><b>SUMMARY</b></p> <p>El Ground _____</p> <p>El Bottom of Hole _____</p> <p>Net Depth of Hole _____</p> <p>Core Drill Depth _____</p> <p>Core Recovery _____</p> <p>% Core Recovery _____</p>	<p><b>VICTOR DOLMAGE - GEOLOGIST</b>                  1119 MARINE BUILDING VANCOUVER 1, B.C.</p> <p>Client: <u>Western Development and Power Ltd.</u></p> <p>Prepared by: <u>H. T. Trenaman</u></p> <p>Checked by: <u>V. Dolmage</u></p> <p>Submitted: <u>October 17, 1957.</u></p>
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# DRILL HOLE LOG

Project: Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Coordinates \_\_\_\_\_

Hole begun: September 26, 1957  
 Contractor: Boylan Bros. Drillers  
 Inspector: R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 4  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Date & Time	Elevation	Depth	Log	Sample	Material	Length Feet	Core Length	Dip	Remarks
	305				Soft and Med Hard Coal	9	9	45	Soft coal about 50%. Quite porous, parts easily. Considerably sheared in soft zone. Med hard is brown-black. "Pitch" in twist bands and knots. About 20%.
	314				Soft to Med hard Coal			20	
	317				Broken Shaley Coal		7	30	Brown-black. Some porosity. "Pitch" in twisted bands and knots to 1" - 15% of core
	318				Soft to Med hard Coal			20	60% coal. Dark gray-brown shale, coal bands to 1" - 25% of core.
	322				Broken Soft Coal			20	Brown "Pitch" to 1" - 30% of core. Pulverized
	323				Shale			30	light gray shale
	323.2				Soft Coal			5	
	325				Broken Soft Coal	10	P	15	Same as 322-323 ft. Much shearing.
	326				Soft Coal			20	
	327				Shale			20	Rust brown shale.
	327.3				Soft Coal			Twist 0-30	
	332				Med hard Coal	6.5	6.5	10-55	Brittle brown-black. "Pitch" to 1/2" but no less than 1/16". About 40% of core. Side @ 334.
	338.5				Shaley Coal			20	
	339				Soft Coal	7.5	7.5	40	60% shale - dark gray shale, coal interbedded. Soft, quite porous. "Pitch" in knots and stringers to 1/2". 25% of core. Strack-choco. brown. Pulverized for 1 ft. 340-341 & 344.
	345.5				Shaley Coal			35	60% coal. Dark gray shale & coal interbedded. Pulverized. Parts easily. "Pitch" to 1/2" - 10%
	348				Soft Coal			20	Dark gray shale. Perhaps 6% coal as 1/16" stringers.
	347				Shale			35	Dark brown shale & coal interbedded. "Pitch" to 1/2" - 20% of coal.
	350.8				Shaley Coal	9	7	20	Dark gray brown shale. Few 1/2" coal stringers.
	352				Shale			15	Dark brownish gray blending into coal. 2.3% Few 1/2" stringers of dark gray shale - about;
	355				Soft Coal	10	9	20	
	363.8				Shale			Twist 30-10	Brownish-gray - few coal stringers - about 10%
	364.5				Med hard Coal			40	Med hard brittle "pitch"
	365				Shaley Coal			40	Gray-brown shale - 75% of core.
	365.5				Med hard Coal			45	Brown-black "pitch" in bands and knots to 3/4" - 30% of core.
	369				Broken Shaley Coal	9	9	40	Bands of soft coal interbedded with light to dark grayish-brown clayey shale. Coal - 20% of core.
	373				Med hard Coal			40	Brittle brown-black. "Pitch" 30% as stringers in 1/16" in.
	374				Shaley Coal	4	4	30	Brownish-gray shale & coal finely mixed. Strack-chocolate brown. "Pitch" to 2"
	375				Med hard Coal			40	conchoidal fracture, 60% of coal.
	376				Med hard Coal			30	Brittle brown-black. "Pitch" to 1/2" - 40% of
	380				Shaley Coal	10	6	Twist 0-30	30% coal. Dark gray-black clayey shale and soft coal interbedded. Coal parts easily.
	386				Med hard Coal			40	Brown-black "Pitch" as stringers and knots to 2" - 40% of core.
	388				Soft and Med hard Coal	5	4.5	25	Soft brown bands and med hard bands interbedded. About 50% of each. Soft tends to crumble. Med hard brittle. "Pitch" to 2" - 45%
	393				Shaley Coal ?	4	0.5	45	Core recovered was coal and vuggy limestone bands interbedded. Coal about 30% of core
	397				Shaley Coal			30	50% coal. 1 ft. band of dark gray-brown shale and remainder same shale and coal
	400				Med hard Coal	8	7.5	20	Brown-black. Complete core. "Pitch" in bands to 1/2" - 30% of core.
	405							45	

**LEGEND**

- El. Ground
- El. Bottom of Hole
- Net Depth of Hole
- Core Drill Depth
- Core Recovery

**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING ; VANCOUVER I. B. C.  
 Client: Western Development and Power Ltd.  
 Prepared by: R. T. Trenaman  
 Checked by: V. Dolmage  
 October 17, 1957.

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Coordinates \_\_\_\_\_

Hole begun September 26, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Troneman

Sheet No. 5  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Strat. No.	Dip	Remarks
	405				Clayey Shale					Dark Gray
	405.5				Med hard Coal	9	8.5		25	Brown-black
	407				Shaley Coal				45	70% coal. Dark brown shale and coal mixed.
	407.5				Med hard Coal				30	Good compact coal. Streak-chocolate brown. "Pitch" in twisted stringers and knots to 1" - 50% of core.
	414				Clayey Shale				45	Dark gray-brown clayey shale with narrow stringers of coal-about 10% coal.
	417				Med hard Coal	8	6		35	Good compact core. Brown-black. "Pitch" to 1"-40% of core. Resin- about 1% in nodule to 1/4" between 419 and 420.
	422				Shaley Coal				30	50% coal. Gray-brown shale and coal mixed.
	423.5				Shale	6.5	4.5		20	Dark gray-brown shale. Few 1/16" stringers of coal.
	428.5				Shale					Gray-brown shale- few 1/16" coal stringers
	431.6				Shaley Coal	7.5	6		35	50% coal. Coal and gray-brown shale interbedded.
	433				Med hard Coal				35	Brittle brown-black. "Pitch" stringers to 1/16"- 40% of core.
	438				Shaley Coal				30	50% coal. Gray-brown shale & soft coal int.
	437.5				Shale (sandy)	7	6.5		30	Gray-brown with few 1/16" coal stringers. Shale has also a small component of small soft sandy particles.
	443				Med hard Coal					Brown-black. "Pitch" to 1/4"-40% of core.
	444.5				Shaley Coal					Coal and vuggy lime-silica bands.
	445				Soft to Med hard Coal	9	8		30	50% soft coal interbedded with brown-black med hard. Soft parts easily. Plant skeleton visible. Med hard bands- "pitch" to 1/4"-30% of coal.
	452				Shaley Coal					50% coal. Gray-brown shale & coal interbedded.
	453.5				Shaley Coal					Gray-brown shale and coal interbedded.
	455				Shale	10.5	8		45	50% coal.
	459				Shaley Coal				30	Med gray coloured shale. Few stringers coal to 1/16".
	460.5				Hard Coal				30	Shale and coal finely mixed. 50% coal.
	464				Shaley Coal				30	Vary compact brittle- chiefly "pitch" streak- chocolate brown.
	464.5				Hard Coal	8	8		40	50% coal. Gray-brown shale & soft coal mixed.
	472				Hard Coal and Shaley Coal ?	4	1		10	Brittle brown-black to black. Streak-chocolate brown- chiefly "pitch". Resin to 1/4" nodules- fraction of 1%. 1" band of rust coloured shale 466. "pitch" - 80% of coal.
	475				Broken Shaley Coal				45	Core recovered is brittle hard black "pitch" chiefly. "Pitch" to 1/4" bands cover 70% of assured lost core shaley coal.
	478				Soft and Med hard Coal	10	8.5		35	60% coal. Brownish-gray shale & soft coal bands to 1/4" interbedded. Crushed.
	486				Broken Clayey Shale				40	20% soft brown coal. Parts easily along bed. 60% med hard resin in med hard to 1/4" nodules- about 1% of core. "Pitch" to 1" band. 50% of core.
	490				Med hard Coal	9	8			Pulverized dark brownish gray clayey shale with fragments of coal- perhaps 10% coal.
	491				Coal & Shale					Brown-black. "Pitch" to 1/4"-20% of core. Shaley coal.
	493				Med hard Coal					20% coal. 1/4" bands soft brown coal & 6" bands gray-brown shale interbedded.
	495				Broken Clayey Shale	7	8			Brown-black. "Pitch" stringers to 1/4"-35% of core.
	502				Broken Clayey Shale	3	2			Drillers report some caving of hole somewhere above this point. Material recovered is badly pulverized dark brownish-gray clay with fragments of soft to med hard coal- perhaps 10% of core.
	504.5				Shaley Coal					Pulverized dark brownish-gray shale- few coal fragments- perhaps 10%.
	505									60% coal. Soft brown coal & dark brown shale interbedded.

**LEGEND**

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**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client Western Development and Power Ltd.

Prepared by R. T. Troneman

Checked by V. Dolmage

Submitted October 17, 1957.

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface \_\_\_\_\_  
 Elev. Top of Casing \_\_\_\_\_  
 Coordinates \_\_\_\_\_

Hole begun September 26, 1957  
 Contractor Boyles Bros. Drillers.  
 Inspector R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 6  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Date & Time	Elevation	Depth	Leg	Sample	Material	Length Pull	Core Length	Remarks	Dip
	505	505.5			Shaley Coal			70% coal, bed hard coal, br-gray shale bands	30
					Med hard Coal	8	8	Brittle brown-black. "Pitch" to 3/4" - 50% of	
	513				Med hard Coal				30
					and Clayey Shale ??	5	0.5	0.5 ft core recovered is med hard brown-black coal. "Pitch" to 3/4" - 50% of core. Sludgy suggests remainder maybe clayey shale.	
	518				Med Hard Coal and Shale ??	13	4	Core recovered is brittle brown-black coal. Few 1/2" light gray stringers of shale - about 10% of coal. "Pitch" to 2" - 6" of core. Evidence of shearing. Last core maybe light gray shale.	
	531				Shaley Coal and Coal	9	8.5	Shaley coal ranges from 60% coal - 20% dark brown shale to dark brown shale containing 10% coal as small stringers and pockets. Shaley coal is interspaced with four 6" of soft to med hard coal containing "pitch" to 1" stringers - 50% of med hard. Coal probably 40% of total core, shale 60%	46
	540	540.5			Shaley Coal			50% coal. Dark brown-gray shale, coal bed	50
	542.5				Med hard Coal			60% coal. Dark gray to brown-gray shale & bedded in 1/16" bands	25
	544.5				Shaley Coal	9	9	Dark brown-black "pitch" to 1" bands - 30% of core	
	548				Med hard Coal			70% coal. Soft coal & shale finely bedded	
	547				Shaley Coal			brown. Partly readily along bedding.	
	549				Soft Coal			gray-brown clayey shale with 1/16" string of coal - perhaps 15% of core.	
	555				Clayey Shale				
	558.5				Soft Coal	9.5	7.5	Brown. Parts easily // to bedding. "Pitch" to 1/2" as stringers and knots. 20% of core	
	560.5				Soft Coal			Few narrow stringers of gray shale - 10% of core. Parts easily // to bedding. 10% of	30
	563.5				Shale			Light shaly material. Much shearing. Brownish-gray. Few coal particles - less than 5%.	20
	566				Shaley Coal	9.5	8.5	Soft brown coal and brownish-gray shale - 1/2" bands interbedded. Coal porous, parts easily	Twist 30-35
	566				Soft to Med hard Coal			Soft bands slightly porous, part // to bedding. Red dark "pitch" as knots & bands to 1/2"	25
	569				Med hard Coal and Shaley Coal	8	7	568-569.5: 70% coal. Med hard brown-black coal inter banded with light gray stringers of shale to 1/2".	40
	576				Shaley Coal	2	1.5	568-569 and 569.5-576: Brittle dense brown twisted "pitch" to 1" - 50%. Resin. nodules	Twist 40-60
	576				Clayey Shale			75% coal. Soft coal containing small frac shaley material finely mixed. "Pitch" to	40
	579				Shaley Coal			Dark brownish-gray	
	581				Clayey Shale	10	10	60% coal. Soft coal and shale finely mixed	20
	582				Med hard Coal			Very crumbly light brownish-gray clayey shale	
	588				Med hard Coal			Dull black. "Pitch" to 1/8" - 40% of coal.	20
	590				Shale			Brown	10
	590.5				Soft Coal	6	6	Light brownish-gray	
	591.5				Med hard Coal			Brown. Twisted "pitch" in knots. Bands to	20
	594							Dull black. "Pitch" to 1/8" - 40% of core.	20

**LEGEND**

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**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.  
 Client Western Development and Power Ltd.  
 Prepared by R. T. Trenaman  
 Checked by V. Dolmage  
 Submitted October 17, 1957.

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3120.9  
 Elev. Top of Casing 3122.4  
 Coordinates R969.3 N, 9482.4 E

Hole begun September 20, 1957.  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Tronaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 7  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Block RX 100%	Remarks
	594							Dip	
	594.5				Clayey Shale				Dark brownish-gray.
					Hard Coal	6	6	30 45 70	Black. Streak - black with slight brown cast. "Pitch" to 2" as knots and twisted stringers - 20% of core. Shearing // to b Med brown-gray - no coal component.
	600				Clayey Shale				
	604				Soft and Med hard Coal	10	16	Twist 70-90	Soft brown coal, somewhat porous, parts easily, as 2" bands interspaced with med hard brown-black. 50% soft. Med hard- "pitch" bands to 3/4" - 30% of core. 1" E of light brown shale - 5% of core.
	610				Soft and Med hard Coal			60 35	Similar to 604-610. Soft component crumb and has a slight shaley fraction.
	614				Shaley Coal	10	10		Very soft. 70% coal. Thoroughly mixed.
	615				Med hard Coal			45	Brown-black. Twisted "pitch" to 1" - 40%.
	617				Shaley Coal				Gray-black shale & coal crushed to 1/2" approx. 30% coal. Few spots of pitch.
	618				Shale			45	Brownish-gray fragments of coal-less the
	620				Clayey Shale				Brownish-black. Plastic.
	621				Soft and Med hard Coal	10	10	20 25	70% med hard coal - competent dull black
	628.5				Carbonaceous Shale			35	Separated by 2 - 6" bands of soft brown is somewhat porous and parts easily. Dark brownish-gray to dull black. Coal shale thoroughly mixed.
	630				Broken Shaley Coal	6	3		70% coal Gray black to black. Coal and shale mixed. Core badly pulverized.
	634				Med hard Coal				Brown-black. Mostly "pitch". Badly fract brittle.
	636				Med hard Coal			30	Compact brown-black coal. Resin to 1/2" no 1% of core. "Pitch" to 1/8" bands - 40%.
	639				Shale			30	Coal changes abruptly to brownish-gray shale.
	641				Med hard Coal	10	9.5		Compact brown-black. Resin to 1/2" nodules. Top 6" brown-gray shale. Next 0.8" fine. Less than med hard gray sandstone. Bottom coarse ss. Part to 10" clay binder with blue-green to gray green shale and light
	646				Shale & Sandstone			30	abrupt change from coarse ss to coal shale
	647				Med hard Coal			45	Compact brown-black. "Pitch" to 1/8" - 50% core.
	650				Shale	10	9		Brownish gray shale.
	650.8				Med hard Coal			25	Brown-black. Resin between 651 and 654 in nodules to 1/2" - 5% of core. "Pitch" to 1/8" - 40% of core.
	656				Broken Shaley Coal & Clayey Shale			45	Crushed brownish-gray shale and dull brown shaley coal. Coal component about 30%.
	660				Med hard Coal	10	10		Brittle brown-black. "Pitch" to 2" - 50% 50% coal with waxy siliceous bands
	661				Shale and Coal			40	Brown-black. "Pitch" to 1" in twisted st and knots - 40% of core.
	666				Med hard Coal			45	70% coal. Bands of soft brown coal and b gray shale 1/4 - 1/2" interbanded.
					Shaley Coal	10	10	45	
	674				Med hard Coal			30	Compact brittle brown-black. "Pitch" to 50% of core.
	676				Soft and Med hard Coal			30	50% soft coal. Interbanded soft brown ar med hard brown-black coal. Soft parts ea
	681				Shale	10	9.5		Dark brownish gray shale.
	682				Shaley Coal			30	6" bands of med hard brown-black coal in bedded with 5" bands of dull black carb shale. Med hard has "pitch" to 3/4" - 70%.
	686				Sandy Shale			30	Very compact hard light brown.
	686.6				Med hard Coal	9	7.5	Twist 20-30	Compact brittle brown-black. "Pitch" as and bands to 1/2" thick.
	693				Shaley Coal			25	70% coal. Interbanded dark brown-gray st
	694				Med hard Coal				Compact. "Pitch" to 1/2" - 20% of core.
	695								

**LEGEND**

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- \_\_\_\_\_
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**SUMMARY**

H. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 C. A. Primary \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIS**

1119 MARINE BUILDING - VANCOUVER B.C.

Client Western Development and Power Ltd.  
 Prepared by R. T. Tronaman  
 Checked by V. Dolmage  
 Submitted October 23, 1957.

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3180.9  
 Elev. Top of Casing 3122.4  
 Coordinates E969, 3 N, 9422, 4 E.

Hole begun September 26, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector H. T. Tronaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 6  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	DIP	Remarks
		695			Med hard Coal	6	6	Twist 45	Brittle brown-black. "Pitch" as knots and twisted stringers to 2" - 50% of core. Evidence of much shearing and later compaction.
		703			Shaley Coal			45-90	65% coal. Alternate 4" bands of hard black "pitch", soft brown and med brown coloured shale. 1/3 of each. Soft parts easily.
		707			Shale	8	8		Cement gray coloured shale containing small fragments of similar coloured but harder shale.
		710.5			Shale				Hard light brown, fractured 1/8" wide - open lined with calcite crystals.
		711			Shale				Dark dull gray shale. Few hairline stringers of "pitch" between 714 and 716 ft.
		716			Shaley Coal	10	10	40	30% coal. Dark brownish-gray shale with twisted stringers of "pitch" to 1/2" thick.
		721			Med hard Coal			45	Brittle brown-black coal. "Pitch" bands to 1 1/2" thick - 30% of core.
		727			Shaley Coal	10	10	45	Dull med dark gray shale bands of coal to 1/2" thick.
		728			Med hard Coal			45	Compact brittle brown-black. "Pitch" to 2" thick - 30% of core.
		731			Med hard Coal			40	Compact brittle brown-black. Streak chocolate brown. "Pitch" in bands to 1/2" but most less than 1/8" - 40% of core.
		736			Shaley Coal	20	20	40	40% coal. Stringers of coal from 1/16" to 4" interbanded randomly with light gray hard shale. One section between 337 and 339 has practically no coaly component.
		744.5			Shale			70 Twist	Light gray to creamy white shale. Some portions quite hard-hardness about 5. Practically no coal component.
		751			Shale	20	12		Light gray med hard shale. Cement colour. Few isolated 1/8" stringers of "pitch". Badly ground by drilling. Assume lost core is clayey shale.
		765.5			Sandstone			45 30 45	Cement gray coloured sandstone. Particles to 2 mm. Light gray shaley cement. Particles rounded, blue-gray, gray, few bluish-green. All quite soft. No noticeable quartz component.
		769.5			Shaley Coal			35	65% coal. Med hard coal and vuggy lime-silt bands.
		771			Med hard Coal	11	10	45 35	Core recovered is compact brown-black coal. "Pitch" 1/16" to 2" bands-most about 1/16" - 30% of core. Streak-brownish-black.
		782			Med hard Coal	18	12	Twist 50	Brown-black. Much shearing between 782 and 784 ft. "Pitch" in bands to 1/2" thick - 25% of core. Resin to 1/4" nodules between 795 and 796 ft. - fraction of 1%.
		800						45	

**LEGEND**

- El. Ground
- El. Bottom of Hole
- Net Depth of Hole
- Core Drill Depth
- Core Recovery

**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER I, B. C.  
 Client Western Development and Power Ltd.  
 Prepared by R. T. Tronaman  
 Checked by V. Dolmage  
 Dated October 23, 1957.

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3120.0  
 Elev. Top of Casing 3122.4  
 Coordinates 8969.3 N, 9482.4 E

Hole begun September 26, 1957.  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 3  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	MOISTURE % X X X X X	REMARKS
		800						Dip	Remarks
					Med hard Coal			25	Brown-black. "Pitch" to 1/4" thick bands - 30% of core.
		805			Shaley Coal	15	H		50% coal. Dark gray-brown shale and soft coal bands to 1/4" thick. Very gassy odour.
		808			Med hard Coal			45	Brittle brown-black coal. "Pitch" bands to 1/4" thick - 40% of core. Cream coloured resin in nodules to 1/4" dia. - fraction of 1%.
		815			Soft Coal			45	Soft dull black. Parts easily. "Pitch" to 1/4" bands - 15% of core.
		816			Med hard Coal	14	10		Dull brownish black compact brittle coal. "Pitch" bands to 1/4" thick - 25% of core.
								55	
		826			Shaley Coal				40% coal. Brownish gray shale throughout with black carbonaceous bands. Slightly cherty.
		827			Med hard Coal			45	Brown-black. "pitch" to 1/4" - 40% of core.
		829			Shaley Coal			45	70% coal. Creamy white hard bands of shale bedded with coal.
		830							
					Med hard Coal	15	11	45	Med hard brown-black (dull) with a few stringers of shaley coal (aggregate thickness: 1 ft.). Shaley coal is gray-black with interbedded stringers of coal. Med hard coal contains "pitch" stringers to 1/4" - 35% of core & resin in nodules to 1/4" dia. - fraction of 1%.
								45	
		844							
								45	
					Med hard Coal				Dull black. White brittle in places. "Pitch" in bands to 1/4" - 40% of core. Resin in nodules to 1/4" dia. is 1% of core between 866 and 868 ft.
								30	
						21	10.5		
								25	
		865			Med hard Coal	8	4	40	Med hard brown-black. "Pitch" as knots and stringers to 1/4" thick - 50% of core. 2" band of creamy white hard shale occurs at 866 and 868 ft.
								30	
		873			Med hard Coal			25	Quite compact brownish black. "Pitch" in bands to 1/4" thick - 30% of core.
		875			Shale				Light brown med hard.
		875.5			Med hard Coal	11	10	45	Same as 873 to 875. Much shearing and later compaction between 883 and 884 ft.
		884			Soft to Med hard Coal			45	Dull brown-black. "Pitch" stringers to 1/4" thick - 20% of core.
		886			Shaley Coal			90	Soft waxy grayish-black carbonaceous shale.
		887			Med hard Coal	12	10	90	Compact brittle brownish black coal. "Pitch" bands to 1/4" thick - 30% of core. Few scatter 1/4" dia. resin nodules. Dip changes from 45° at 886 ft. to 90° at 887.5 ft. Much twisted and broken "pitch" in this interval.
								45	
		896			Soft to Med hard Coal			40	Mainly soft brown with isolated 1/4" bands of "pitch". Tends to part. A few narrow band waxy brown carbonaceous shale.
		901.5			Shaley Coal	11	9.5	55	Dull gray-brown carbonaceous shale, soft coal
		902			Shaley Coal			45	CO2 coalbed light gray shale interbedded w
		903			Soft to Med hard Coal			45	Dull brownish-black soft to med hard coal. Similar to 886-901.5 ft. broken at 896
		907							

**LEGEND**

**SUMMARY**

- El Ground
- El Bottom of Hole
- Net Depth of Hole
- Core Drill Depth
- Core Recovery

El Ground \_\_\_\_\_  
 El Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client Western Development and Power Ltd.

Prepared by R. T. Trenaman

Checked by V. Dolmage



# DRILL HOLE LOG

Project Nat. Creek Coal Project.

Elev. Ground Surface 3120.9  
 Elev. Top of Casing 3122.4  
 Coordinates E969.3 N, 946P.4 E

Hole begun September 26, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Treneman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 10  
 of \_\_\_\_\_ Sheets  
 Hole No. 9

Date & Time	Elevation	Depth	Log Sample	Material	Length Pull	Core Length	DIP	REMARKS	
									Remarks
		907		Med hard Coal	15	11	45	Dull brownish black. Few bands to 6" of coal. Tends to be porous. "Pitch" in band 1/2" - 30% of core.	
		921.5		Shaley Coal			40	30% coal. Hard creamy white shale and coal	
		922		Hard Coal				Hard black brittle. Mostly "pitch".	
		926		Shaley Coal			50	Dull gray-black carbonaceous shale.	
		927		Soft to Med hard Coal	14	10.5	Twist 45	Dull black. Tends to part. "Pitch" in twi bands and knots - 30% of core. Few scatte resin nodules to 1/8" dia.	
		936		Med hard Coal			45	Brown-black, quite shiny. "Pitch" to 1/2" s	
		938		Soft Coal			40	Dull brown-black. In places tends to crum "Pitch" as small isolated bands.	
		941.5		Shaley Coal			45	Soft dull brownish-gray shale with intern coal as narrow stringers and small fragme	
		943		Shale			50	Dull brown gray, soft.	
		945		Shaley Coal	19	14.5		Same as 941.5 to 943. 50% coal.	
		947		Med hard Coal			55	Dull to lustrous black. Compact, brittle "pitch" to 1/2" as stringers - 50% of core.	
		955		Med hard Coal			45	Brittle dull black. 50% "pitch" as bands	
		957		Shale and Coal			50	70% coal. Med hard brown-black in bands t 1 ft. thick interbedded with 6 bands of soft brownish gray shale.	
		964		Shaley Coal			45	Hard cream to gray shale interbedded with hard coal - 60% coal. Bedding shows drab	
		966		Med hard Coal	7	6.5	45	Brittle brown-black. Resin (amber) in no to 1/2" - fraction of 1%. "Pitch" to 1/2" t 50% of core.	
		973		Med hard Coal			45	Shiny black. 50% "pitch" as 2" bands - 1/2"	
		974		Soft Coal				Dull black, compact. No "pitch".	
		975		Soft Shale				Soft brownish gray.	
		976		Soft to Med hard Coal	8	7	50	Dull black. Quite compact. Stringers of p to 1/2" - 20% of core. Also occasional 2" p stringer.	
		981		Hard limy Shale.			60	Light gray to white shale. 981 grades to finely bedded 1/2" brownish gray shale. Many fractures filled with calcite cr.	
		983		Soft Shale				20% coal as narrow stringers - complex into	
		987		Shaley Coal	14	6.5	50	10% coal. Soft grayish brown shale. 50% coal. Soft brown clayey shale and soft coal interoven.	
		990		Broken Clayey Shale				Badly pulverized clayey shale. No notice coal component.	
		995		Shaley Coal	10	10		50% coal. Soft grayish brown shale - str: hairline to 4" thick interbedded with bar of soft coal and carboniferous shale in 1 hairline to 1 ft. thick. 1 ft. band of stringers of limy shale (hard) and hard cc interbedded. Has been fractures and open filled with calcite.	
		1005		Total depth - 1047.5					

LEGEND	
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

SUMMARY	
El. C. and	_____
El. Bottom of Hole	_____
Net Depth of Hole	_____
Core Drill Depth	_____
Core Recovery	_____

**VICTOR DOLMAGE - GEOLOGIST**  
 1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client Western Development and Power Ltd.  
 Prepared by R. T. Treneman  
 Checked by V. Dolmage  
 Date October 23, 1957

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3120.9  
 Elev. Top of Casing 3122.4  
 Co-ordinates 8969.3 N, 9488.4 E

Hole begun September 26, 1957.  
 Contractor Boyles Bros. Drillers  
 Inspector R.T. Trenaman

Sheet No. 11  
 of 11 Sheets  
 Hole No. 9

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
		1005			Soft Shale				Soft light brownish-gray
		1007			Shaley Coal				
		1008			Soft Shale			65	40% coal. Coal and shale intermixed.
		1009			Soft Shale	10	10		Soft light brownish-gray. few coal stringers.
					Shaley Coal			45	40% coal. soft dull brown-black coal in bands to 2" bedded with soft gray-brown shale.
		1015			Soft Shale	3	2.5		Light brownish-gray - few isolated coal stringers.
		1018			Med hard Shale				Light brownish gray.
		1019			Shaley Coal				35% coal. "Pitch" and dull black coal as stringers 1-2" interbedded in light gray med hard shale.
		1023			Med hard Coal	18.5	17.5	30	Brownish black. "Pitch" as knots and stringers badly twisted. hairline to a thick. 40% of core
		1025			Shaley Coal			40	40% coal. Bands of soft to med hard coal hairline to 5" thickness in part interbedded and in part thoroughly mixed with creamy white to light brownish gray med hard shale. Small occurs as bands fraction of inch to 4" thick.
								35	
								45	
		1030			Med hard Coal			45	Dull to shiny black. "Pitch" in knots to 2" thick. 50% of coal.
		1038.5			Shale				Dull brownish gray med hard shale. No appreciable coal component.
		1041.5			Shaley Coal	11.5	11	40	60% coal. Soft black coal containing hairline stringers of light brownish-gray shale.
		1042.5			Med hard Shale.				Dull brownish gray med hard shale slightly carboniferous. Bottom 6" contains soft white particles to 1/2" - 20% of shale.
		1045.5			Med hard Coal			45	Dull brown-black. "Pitch" stringers to 4" thick - 40% of coal.
		1048.5			Clayey Shale				Dull brownish gray - pulverized.
		1052			Soft and Med hard Coal			50	80% med hard. Brown-black interspaced with 2" bands of porous, soft dull brown. Parts easily
		1052.5			Shaley Coal	11	10.5	45	Dull grayish-black soft carboniferous shale.
					Med hard Coal			45	Compact dull black coal. "Pitch" as stringers and knots in thicknesses/fraction to 2". 30% of core.
		1059			Med hard Coal			45	Brownish black. Few hairline stringers of light gray shale. "Pitch" 40% as bands less than 1".
		1061			Shaley Coal	15.5	10.5	45	70% coal. Med hard Brown black coal in bands to 1 ft. thick (5 bands 1 ft thick) interbedded with dull brownish black carboniferous shale and bands of shaley coal ( med hard coal and hard light gray shale-interbedded bands up to 4" thick).
								60	
		1074.5			Bottom of Hole				



# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3180.9  
 Elev. Top of Casing 3182.4  
 Coordinates 2975.5 N., 9929.9 E.

Hole begun October 26, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector H.T. Treneman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 2  
 of 6 Sheets  
 Hole No. 10

Date & Time	Elevation	Depth	Log Sample	Material	Length Full	Core Length	Recovery %	Dip	Remarks
		92.5		Dull light brown to reddish-brown Shale	21.5	3			Hardness: 3 - 4. Chalky lustre. Material severely crushed and ground, partially in by drilling. Largest pieces about 1" dia.
		114		Bands of rust-red, orange and chocolate brown Clay	10	8			Some zones have plasticity similar to plasticine.
		123		Chalk-white Clay				20	
		124		Chalk-white Clay					
		125		Grayish-green Clay	7	2.5			
		130		Purple-red Clay					
		131		Carboniferous Clay					
		134		Med hard Shale	8	4			Jet black, somewhat plastic. Dull gray-black. Contains minute white flak throughout. No cleavage. Hardness about 3.
		139		Hard Coal					Brittle shiny black. Streak - black. Badly fractured with chalky white stain on fracture planes. Bedding cannot be distinguished.
		144		No Core	5	0			
		147		Soft to Med hard Clayey Shale	7	3.5		45	Brown-black containing many hairline streaks light gray shale. Perhaps 20% shale. Soft brownish-gray. Few narrow bands of med hard coal.
		151		Shaley Coal					30% coal. Soft brownish gray clay and brittle hard coal interbanded.
		156		Clayey Shale	12	6			Badly crushed brownish gray.
		161		Hard Shale				35	Very hard, light gray, approaching slate.
		162		Broken Clayey Shale					Pulverized dull brown-gray. Few coal stringers.
		163		Clay and Coal?					Fragments of med hard coal. White lime filling hairline fractures. Core severely ground. Evidence of soft clay. Probably constitutes most of lost core.
		168		Clayey Shale and Coal?	12	3			60% clayey shale. Soft dull brownish gray clayey shale with many fragments of soft and med hard coal. Suggests that material is mix clayey shale and coal.
		175		No Core					
		178		Med hard and Soft Coal				80	brown-black, badly crushed.
		181		Coal and Shale	6	5		50	60% coal. Med hard brown black coal grading into dull black carboniferous shale grading into med hard dull gray-black shale.
		184		Med hard Shale	2	2			Dull gray. Few hairline stringers of coal.
		186		Med hard Shale	4	3			Dull gray. Few isolated hairline stringers of coal.
		190		Shale & Sandstone	2	2		50	6" dull gray shale grades into brownish gray sandstone. Max. particle 0.5 mm. Many coal stringers.
		191		Carboniferous Shale				45	50% coal. Dull gray shale & coal intermixed.
		192		Soft Clayey Shale	3	3		65	Dull brownish gray. Few 1/8" coal stringers.
		193		Hard Shale				60	10% coal. Brownish gray with 1/4" coal bands. Fractures containing calcite.

SAMPLE # 15729  
 MOISTURE 5.2%  
 VOL. MATTER 84.2%  
 FIXED CARBON 29.2%  
 ASH 3.6%  
 SULPHUR 0.80  
 S.T.U. 66.0

SAMPLE # 16730  
 MOISTURE 10.7%  
 VOL. MATTER 85.7%  
 FIXED CARBON 12.6%  
 ASH 53.0%  
 SULPHUR 0.80  
 S.T.U. 66.0

NOTE: CONSIDERABLE LAG BETWEEN TIME CORE TAKEN AND TIME SAMPLE ANALYZED.

NOTE: CONSIDERABLE INTERVAL BETWEEN TIME CORE TAKEN FROM HOLE AND TIME SAMPLE ANALYZED.

**LEGEND**

- 
- 
- 
- 
- 

**SUMMARY**

- El. Ground \_\_\_\_\_
- El. Bottom of Hole \_\_\_\_\_
- Net Depth of Hole \_\_\_\_\_
- Core Drill Depth \_\_\_\_\_
- Core Recovery \_\_\_\_\_
- % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.

- Client \_\_\_\_\_
- Prepared by \_\_\_\_\_
- Checked by \_\_\_\_\_
- S. Logged \_\_\_\_\_

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3100.9

Hole begun October 26, 1957

Sheet No. 3

Elev. Top of Casing 3182.4

Contractor Boyles Bros. Drillers

of 6 Sheets

Coordinates 8975.5 N., 8998.9 E

Inspector R.T. Trenaman

Hole No. 10

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	DIP	Remarks
	195				Hard Shale				Light gray to brown. Same as 193.5 to 195 ft. Indications of drag folding. Coal is light brown.
	196				Med hard Coal	7	5		Compact brown-black. Streak chocolate brown. Resin in nodules to 1/8" dia - fraction of 1%. "Pitch" approximately 60%.
	202				Med hard Coal	1	1		Same as 198 to 202 ft.
	203				Med hard Coal			50	Brittle brown-black. Broken by drilling. "Pitch" in bands to 2" - 60% of core.
	206				Broken Shaley Coal	6	6		70% coal. Pulverized dull black.
	206				Med hard Coal			70	Brown-black, some soft bands. "Pitch" in bands to 1/2" thick - 40% of core.
	209				Med hard Coal	6	2	50	Core recovered is badly fractured brittle brown-black coal. Resin in nodules to 1/2" dia - fraction of 1%. "Pitch" in bands 1/8" - 2" (most about 1/8") - 40% of core.
	215				Soft to Med hard Coal			69	Brown-black, med hard ("pitch" about 50%) with brownish gray soft bands.
	217				Clayey Shale				
	218				Med hard Coal	6	6	20	Brittle brown-black. "Pitch" - 30% as bands to 1/2" thick.
	220				Clayey Shale				Soft brownish gray.
	220				Med hard Coal				Brittle - mostly "pitch".
	221				Med hard Coal			55	Brittle brown-black except for 2" band of whitish gray soft shale @ 227 ft. "Pitch" in stringers to 1/2" - 45% of core. Very few nodules of resin maximum 1/8" dia.
	229				Clayey Shale & Coal			55	30% coal. Dark gray shale and soft coal as bands.
	230				Clayey Shale				Brownish gray. Few fragments of coal.
	231				Broken soft Coal				Pulverized.
	232				Med hard to hard Coal	11	8	60	Brown-black. "Pitch" in stringers to 1/2" - most less than 1/16" - 50% of core. Yellow resin nodules maximum 1/8" dia. - fraction of 1%.
	241				Med hard Coal			45	Brittle brown-black - fractures easily. 4" band of rust-brown soft clayey shale @ 242.5 ft. "Pitch" in bands to 1/8" - one 5" wide - 5% of core. Streak chocolate brown.
	247				Carboniferous Shale	6	6	40	50% coal. Brown-black clayey shale.
	248				Med hard Coal				Same as 241 - 247 ft.
	249				Med hard to hard Coal	10	10	30	Brittle brown-black except for 2" band of soft dull brown clayey shale @ 254.5 ft. "Pitch" in bands to 2" - 60% of core. scattered yellow resin nodules of 1/4" maximum dia.
	259				Med hard Coal			65	Compact near perfect core. Brown-black coal. "Pitch" as stringers to 1/2" thick - 60% of core.
	266				Clayey Shale	9	8.5	40	10% coal. Brownish gray. Few 1/4" stringers of coal.
	266				Med hard Coal				Same as 259 - 266 ft.
	269				Clayey Shale				Gray-brown. Few fragments of "pitch".
	270				Med hard Coal	10	6	30	Good compact core. Brittle brown-black. "Pitch" as knots and stringers to 1/2" thick - 50% of core.
	276.8				Shaley Coal			40	60% coal. Med hard coal with waxy hairlike stringers of white med hard shale.
	277.5				Med hard Coal				Same as 270 - 276.8 ft.
	279				Clayey Shale				10% coal. Brown-black - contains fragments "pitch".
	279				Med hard Coal			40	50% coal. Soft brown coal and clayey shale mixed.
	279				Shaley Coal			45	Brown-black. "Pitch" - 60% as stringers.
	279				Med hard Coal				Brittle brown-black. "Pitch" to 1" bands - 50%.
	281				Med hard Coal				brown-black. "Pitch" 60%.
	283				Shaley Coal			40	Soft brown coal and gray-brown clayey shale interbedded. 60% coal.
	284				Med hard Coal	6	5	40	Brittle brown-black. "Pitch" as stringers to 2" thickness - 60% of core.
	285				Med hard Coal				
	287				Shaley Coal				
	290				Med hard and Soft Coal	4	4	35	Interbedded 1 ft. bands of med hard brown-black and soft brown coal. Soft contains slight gray-brown clay component - parts easily.
	294				Soft to Med hard Coal			40	"Pitch" in stringers to 1/2" thick - 20% of core - separated by dull black softer bands that tend to part parallel to bedding.
	300				Carboniferous Shale			55	50% coal. Soft dull black shale and soft coal. Tends to crumble readily.
	302								

SAMPLE 16724-A DESIGNATED A

SAMPLE 16724-B DESIGNATED B

SAMPLE 16724-C DESIGNATED C

SAMPLE 16724-D DESIGNATED D

LEGEND	
<input type="checkbox"/>	El. Ground
<input type="checkbox"/>	El. Bottom of Hole
<input type="checkbox"/>	Net Depth of Hole
<input type="checkbox"/>	Core Drill Depth
<input type="checkbox"/>	Core Recovery
<input type="checkbox"/>	% Core Recovery

SUMMARY	
El. Ground	_____
El. Bottom of Hole	_____
Net Depth of Hole	_____
Core Drill Depth	_____
Core Recovery	_____
% Core Recovery	_____

**VICTOR DOLMAGE - GEOLOGIST**  
1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client \_\_\_\_\_

Prepared by \_\_\_\_\_

Checked by \_\_\_\_\_

Submitted \_\_\_\_\_

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3180.9  
 Elev. Top of Casing 3182.4  
 Coordinates R975.5 N, 8998.9 E

Hole begun October 26, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R.T. Treneman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 4  
 of 6 Sheets  
 Hole No. 10

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	D&A 77X32K	Remarks
								Dip	
		302			Soft Coal			50	Brown-black coal - crumbles easily. Isolated stringers of "pitch" to 1/8" - 20% of core.
		304			Clayey Shale & Coal	7			Soft rust-brown shale and soft coal mixed - 50% coal.
		305			Soft and Med hard Coal			55	60% med hard coal interbanded with soft bands that parts easily. Med hard - "pitch" to 1/8" -
		310			Soft Coal				Dull brown-black. Parts easily. 15% "pitch".
		310			Shaley Coal Broken	8		70	50% coal. Soft coal & soft brown-gray shale mix
		311			Clayey Shale			60	Soft grayish brown clayey shale. Low thin band
		313			Soft Coal				Dull brown-black. 10% "pitch". Parts soft coal
		315			Clayey Shale				Dull brownish-black gray. 10% "pitch" as "see
		317			Clayey Shale				tered bands.
		319			Shale and Coal	3	3	40	70% coal. Soft shale and soft to med hard coal
		320							band
					Med hard Coal	9	7	40	Compact core. Brittle brown-black. "Pitch" in bands and knots to 1/2" - 40% of core
								30	Isolated nodules of yellow resin - maximum 1/4" dia.
		329			Med hard Coal	6	5	45	Brittle brown-black except for 4" band of dull brown carboniferous clayey shale @ 334 ft. "Pitch" in bands and knots to 1/4" thick - 30% of core.
		335							
					Med hard Coal	9	8	65	Brownish black coal except for 4" band of off colour white soft shale @ 337 ft. "Pitch" as bands and knots to 1/2" thick - 35% of core.
		344						55	
		345			Med hard Coal				Brown-black. "Pitch" to 1/2" - 40%. Resin -
		346			Clayey Shale				Elastic brownish gray. Few 1/8" coal bands.
		347			Shaley Coal	10	10		Twist. Grumbly brown-black with thin shale bands. 60% coal
					Med hard Coal			45	Brittle brown-black. "Pitch" in twisted stringers to 1/2" thick - 40% of core. Resin nodules to 1/4" dia. - fraction of 1%.
		354			Med hard Coal			45	Brittle brown-black. Twisted "pitch" to 1/2" -
		356			Shaley Coal-Broken	10	7		80% coal. Soft brown coal and brownish-black soft carboniferous shale intermixed. Pulverize
		359			Med hard Coal			40	Brown-black. "Pitch" in twisted bands to 1/2" thick - 50% of core. Isolated nodules of resin to 1/4" dia. -
		364						30	
					Soft and Med hard Coal	6	4.5		60% med hard. Soft and med hard coal as separate bands. Soft parts readily into thin sheets parallel to bedding. Few stringers of white-yellow sulfide // to bedding - marcasite. Nuc.
		370			Shaley Coal Broken	3	2.5	2	60% coal. Brownish gray clayey shale sheering and soft coal - few larger fragments of "pitch"
		372			Med hard Shale				light yellow brown.
		373						35	
					Soft to Med hard Coal	8.5	8.5	40	Brown-black coal except for 2" band porous whitish-gray shale @ 372 ft. Black shiny "pitch" in bands to 1/2" thick - 35% of core.
		381						40	
		382			Clayey Shale				Brown-gray. Parts readily. Blends into coal.
		382			Med hard Coal				Brown-black. Bands to part // to "pitch" bands
		383			Broken Clayey Shale	9.5	7.5	45	Pulverized brown-gray containing few coal part
					Med hard and Soft Coal			25	Brown-black. Mostly med hard with few soft bands. "Pitch" in bands to 1/8" thick - 20% of core.
		391						50	
		392			Med hard Coal	5	3.5		Brittle brown-black. Broken considerably. "Pitch" bands to 1/2" thick - 40% of core -
					Broken Shaley Coal				70% coal. Pulverized soft, med hard coal and dull brown soft carboniferous shale interbanded
		396							
		397			Broken Shaley Coal				70% coal. Pulverized. Same as 392, 393 - 395 ft.
		398			Med hard Coal				Brittle compact cores. "Pitch" to 1/8" - 40% of
		399			Med hard Shale				Gray and creamy white. Hardness 4 - 5 ft. cor
		400			Shale and Coal	7	6		Banded softy brown coal and warty hard gray and creamy white shale. 40% coal.
		402							
		403			Med hard Coal				Dull brown-black. Resin nodules to 1/4" dia. - 1%

SAMPLE #16725A DESIGNATED 'A'

MOISTURE - 20.8%  
 VOL. MATERIAL - 16.1%  
 FIXED CARBON - 27.7%  
 ASH - 23.4%  
 SULPHUR - 0.78%  
 S.P.U. - 0.580

SAMPLE #16725B DESIGNATED 'B'

MOISTURE - 18.0%  
 VOL. MATERIAL - 28.8%  
 FIXED CARBON - 20.1%  
 ASH - 28.1%  
 SULPHUR - 0.43%  
 S.P.U. - 0.480

**LEGEND**

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**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.  
 Client \_\_\_\_\_  
 Prepared by \_\_\_\_\_  
 Checked by \_\_\_\_\_  
 Submitted \_\_\_\_\_



# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3180.9  
 Elev. Top of Casing 3192.4  
 Coordinates R975.5 N, R999.9 E

Hole begun October 26, 1957  
 Contractor Boylas Bros. Drillers  
 Inspector F.T. Trenaman

Sheet No. 5  
 of 6 Sheets  
 Hole No. 10

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
	403				Soft Shale				
	404				Med hard Coal	5	5	45	Dull gray-brown. Compact brown-black coal. "Pitch" in bands to 6" - 60% of core.
	407				Carboniferous Shale				60% coal. Dull brownish gray to black.
	408				Med hard Coal			Twist	Compact core. Brittle brown-black. "Pitch" in stringers and lenses to 2" thick - 80% of core. Resin nodules to 1/4" dia. - fraction of 1%.
						10	7	40	
								35	
	418				Clay				Approximately 30% of the core recovered. was pulverized grayish green sticky clay. Because core loss is likely greater in this material a thickness of 5 ft. has been assumed.
	423				Med hard and Soft Coal	9	4	60	Core badly broken. Interbedded brittle black and soft black coal. Soft tends to part readily. Med hard - "pitch" to 2" thick - 80% of core.
	427				Med hard Coal			45	Perfect core. Brown-black coal. "Pitch" in lenses and stringers to 1/2" thick - 40% of core.
	432				Shaley Coal	11	10.5		80% coal. Interbedded dull brown to black carboniferous soft shale and soft and med hard coal.
	436				Med hard Coal			50	Brown-black. "Pitch" in bands to 1/2" - 40% of core.
	439				Med hard Coal			45	Near perfect core. Brown-black. "Pitch" in stringers to 1/2" - 50% of core.
						10	9		
	445				Shale and Coal			40	70% coal. 2" bands of soft, med hard and soft. Brown-black. "Pitch" - 25% of core. Brown shale.
	446.5				Med hard Coal				
	448				Soft Shale				Dull brownish gray.
	448.5				Soft to Med hard Coal	8	8	35	Brown-black. Streak chocolate brown to dull black. Few narrow bands of soft coal - tends to crumble.
	455							50	
	460				Med hard and Shaley Coal	7	6	40	1 ft bands of med hard and shaley coal interbedded. 50% of each. Med hard: "Pitch" to 3" bands - 50% of core. Shaley coal: Dull brownish gray soft shale and soft coal as 1/16" bands interbedded. 60% coal. Tends to crumble readily into thin plates. Soft dull brownish gray. Res. coal fragments.
	463				Gleyey Shale				
	463.5				Clayey Shale	9	7.5		Dull "battleship" gray. Few hairline carboniferous stringers. Smooth texture except between 468 and 469 where texture is gritty.
	472				Clayey Shale				Dull "battleship" gray
	474				Clayey Shale				Pulverized dull brownish gray. Contains fragments of "pitch" - perhaps 5%.
	479				Shaley Coal				Soft coal and dull brown-black
	480.5				Hard Shale & Coal			35	50% coal. carboniferous clayey shale interbedded. Waxy off colour white shale and hard coal. 30% shaley coal - 30% coal followed by coal.
	481				Shaley coal & Shale	1		35	an hard gray and off colour white banded shale
	482				Soft to Med hard Coal			40	Brown-black. "Pitch" as bands 1/2" - 1" - 20% of core.
						9	7.5	40	
	488				Clayey Shale				Light brownish gray - few 1/8" "pitch" stringer
	489.5				Shaley Coal			40	50% coal. "Pitch", soft brown coal & gray-brown clayey shale interbedded
	491				Shaley Coal			45	60% coal. Bands of dull black soft coal and gray-brown clayey shale.
	493				Soft Shale	10	10		Dull gray-green. Few narrow stringers of "pitch" and soft coal.
	501								

SAMPLE W 16726  
 S.T.U. 53.90  
 SULPHUR 0.50%  
 ASH 55.0%  
 FIXED CARBON 20.5%  
 VOL. MATTER 27.4%  
 MOISTURE 17.5%

**LEGEND**

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**SUMMARY**

- El. Ground \_\_\_\_\_
- El. Bottom of Hole \_\_\_\_\_
- Net Depth of Hole \_\_\_\_\_
- Core Drill Depth \_\_\_\_\_
- Core Recovery \_\_\_\_\_
- % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING VANCOUVER I. B. C.

- Client \_\_\_\_\_
- Prepared by \_\_\_\_\_
- Checked by \_\_\_\_\_
- Submitted \_\_\_\_\_



# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3180.9  
 Elev. Top of Casing 3182.4  
 Coordinates 8977.5 N, 8999.9 E

Hole begun October 26, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman

Sheet No. 6  
 of 6 Sheets  
 Hole No. 10

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	XXXX XX XX	Remarks
								Dip	
		501			Soft Shale	4	4		Dull grayish green.
		505			Clayey Shale to Soft Shale	5	3.5		Dull grayish green; Pulverized in part.
		510			Soft Shale				Dull light gray. Few carboniferous fragment
		510			Clayey Shale	4	4		Dull brown-black shale falling into soft brown coal
		513			Soft Coal			45	green coal with few stringers of hard brown
		514			Soft Clay	2	1		Brownish gray changing to sandy coal shale
		516			Broken Coal				Fragments of med hard coal.
		516			Clayey Shale				Soft brownish gray changing to med hard coal
		518			Med hard Coal	8	8	45	Brown-black. "Pitch" as isolated bands.
		519			Clayey Shale				"Battleship" gray clayey shale changing to dark chocolate brown carboniferous shale & c
		522			Med hard Coal			40	Brown. "Pitch" as bands to 2" - 40% 1 core.
		524			Clayey Shale and Coal ?	10	3		Core recovered consists of "pitch" and dull brown shale in fragments to 1" dia surrounded by brownish-black clay. Assume 1 ft. coal and rest clayey shale.
		533			Hard Shale				Very hard black shale containing few stringers of creamy white shale and narrow stringers
		534			Shale ? and Coal	7	1	45 ?	Fragments of med hard black brittle coal to 2" dia. Some evidence of light brown-gray soft shale. Assume 1 ft. coal and rest shale
		541			Med hard Shale	1	0.5		Much caving and squeezing of hole.
		542							Light gray brown to gray-green. Caving and so Bottom of Hole

**LEGEND**

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- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**SUMMARY**

El Ground \_\_\_\_\_  
 El Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client \_\_\_\_\_  
 Prepared by \_\_\_\_\_  
 Checked by \_\_\_\_\_  
 Submitted \_\_\_\_\_

# DRILL HOLE LOG

# 121

Project Hat Creek Coal Project

Elev. Ground Surface 3023.3  
 Elev. Top of Casing 3025.3  
 Coordinates 7915.2 N, 11155.8 E

Hole begun October 28, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R.T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 1  
 of 6 Sheets  
 Hole No. 11

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
		0							Top of Casing
					Clay,				No core 0 to 70 feet. Log of hole obtained from sludge specimens.  Details of Drilling Size of hole - "NX" Dip - Vertical "NX" casing was driven to 149 ft. Attempts were made to remove casing. 20 ft. was removed from top after which casing slipped back down hole. Top of casing is now 20 ft. below surface. Attempts to fish were unsuccessful. Hole 11 was lost at 421 ft. through caving. Subsequent work on Hole 13 suggests that caving may have been prevented in Hole 11 if more attention had been paid to maintaining a mud viscosity of at least 60 cc. Mud, with a viscosity in the order of 45, cc. and at times water were used in drilling the hole. Bits: Through overburden - Tricone. Shales and coal - Tungsten-stellite saw-tooth bit. Core Barrel: 6 ft. fixed tube practically entire hole. Core recovery with 19 ft. fixed tube very poor. Machine: BBS 2 with Friction head was used first 200 ft. Crew did not like it because of inability to control rate of penetration. BBS 2 with hydraulic feed was used below 200 ft.
					Gravel				
					and				
					Boulders				
		70			Clay, Gravel and Coal Fragments	7	1		Light dull black coal fragments to 1 1/2" dia. Yellow gray clay containing pebbles and coal fragments to 1/2" dia.
		77			Boulders, Pebbles and Coal Fragments	8	1		Pebbles to 1" dia., coal fragments to 1 1/2" dia. Also core from basaltic boulders.
		85			Clay, Sand and Boulders	7	1.5		Limestone and volcanic pebbles and boulders. Clay and sand.
		92			Clay, Pebbles, Boulders and Coal Fragments	18	2		Coal fragments to 1 1/2" dia. Pebbles and boulders and clay.
		110							

<b>LEGEND</b> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<b>SUMMARY</b> El Ground _____ El Bottom of Hole _____ Net Depth of Hole _____ Core Drill Depth _____ Core Recovery _____ % Core Recovery _____	<b>VICTOR DOLMAGE - GEOLOGIST</b> 1119 MARINE BUILDING - VANCOUVER 1, B.C. Client _____ Prepared by _____ Checked by _____ Submitted _____
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# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3023.3  
 Elev. Top of Casing 3025.3  
 Co-ordinates 7915.2 N, 11155.8 E

Hole begun October 28, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R.T. Trenaman

Sheet No. 3  
 of 5 Sheets  
 Hole No. 11

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length P.H.	Core Length	RCR XOXOXOX	Dip	Remarks
		203			Med hard Coal	3	3	45		Brittle brown-black. "Pitch" as stringers to 1/2" thick - 40% of core.
		206			Med hard Coal	5	5	35		Brown-black coal. "Pitch" as stringers and knots to 1/2" thick - 40% of core. Bedding too distorted to record dip.
		211			Med hard and Broken Coal	5	5	30		Brown-black. Fairly badly sheared and broken between 213 and 215 ft. "Pitch" as knots and stringers to 1/2" thick. 40% of core. Resin in nodules to 1/8" dia. - fraction of 1%.
		216			Med hard Coal ?	9	1			Core consists of broken and ground med hard to hard brittle brown-black coal. Loss is attributed to poor drilling practice. A 10' length of "BX" casing was used as a core barrel rather than standard core barrel which had been damaged.
		225			Med hard to Hard Coal	4	4	25		Brownish black brittle. "Pitch" as stringers and lenses to 3/4" thickness. Resin in nodules to 1/2" dia. Fraction of 1%.
		229			Med hard Coal	5	5	70		Med hard coal - dull black - separated by 2-4" shear zones of pulverized coal. "Pitch" as knots and lenses at random dips - 40% of core. Streak - chocolate brown.
		234			Med hard and Broken Coal	6	5	60-90	Twist	Interbanded med hard and pulverized coal - each. Pulverized zones result of shearing. Med hard: 60-80% "pitch" as bands 3-6" thick. Whitish gray.
		239			Med hard Shale			30		Brown-black. "Pitch" in bands 1/8 - 1 1/2" - 40% of core. Isolated nodules of resin to 1/16" dia. Evidence of shearing between 242 and 245 ft.
		240			Med hard Coal	5	5	20		6" bands of med hard brown-black separated by 2-4" softer brown-black that tends to part easily. Some bands of shale. Gray and creamy white shale & "pitch" bands. 80% "pitch" as knots and lenses. 50% of core.
		245			Soft to Med hard Coal			60		Brittle brown-black. Shear planes in all attitudes between 251 and 253 ft. "Pitch" as stringers to 1/2" - 30% of core. Isolated nodules of resin to 1/4" dia.
		247.5			Hard Shale & Coal	5.5	5	45		Brown-black. Core almost complete - unbroken "Pitch" as stringers and lenses to 2" thick - 40% of core. Resin in nodules to 1/4" dia. - fraction of 1%.
		249			Med hard Coal			30		Almost complete unbroken core except for broken coal in shear zone between 252 and 253 ft. Yellow resin in nodules to 1/4" dia. - fraction of 1%. "Pitch" as knots and stringers to 1/2" thick.
		250.3			Med hard Coal			45		Compact brown-black. Few shear planes 60-90° dip between 269 and 270 ft. Resin in nodules to 1/4" dia. - fraction of 1%. 50% "pitch" as bands to 2" thick.
		255			Med hard Coal	5	5	70		2 - 2" bands cream-white separated by dull brown coal and creamy white shale as bands. Shale broken between 272-273 and 274-275 ft. by shear planes dipping 60°. Resin - fraction of 1%. "Pitch" as lenses and stringers - 35% of core.
		256			Med hard Coal	5	5	45		Brown-black. Broken between 276-277 and 279-281 ft. by shear planes dipping 60° - 90°. "Pitch" in stringers and lenses to 1" thick - 45% of core. Resin - fraction of 1%.
		261			Med hard Coal	5	4.5	45		Dull to shiny black. Badly broken by shearing at random dips between 284-285 ft. "Pitch" as knots and stringers randomly arranged - 35% of core. Resin as isolated nodules to 1/4" dia.
		266			Med hard Coal	5	5	45		Med hard dull to shiny black - badly sheared. Shear planes 45-60° dips. "Pitch" as lenses and stringers to 1/2" thick - 35% of core. Resin nodules to 1/4" dia.
		270.5			Med hard Shale	5	5	70		Med hard shiny black coal - broken by shearing. Streak - black with brownish tinge. Resin as isolated nodules. "Pitch" as knots and lenses to 1/2" thick - 50% of core.
		271			Shale and Coal			45		Med hard dull to shiny black coal - badly broken by shearing. Isolated resin nodules to 1/4" dia.
		271.5			Med hard and Broken Coal	5	5	45		Med hard dull to shiny black - badly broken by shearing. Twisted lenses and stringers of "pitch" to 1/2" thickness. Isolated resin nodules to 1/4" dia.
		276			Med hard and Broken Coal	5	5	50		
		281			Med hard and Broken Coal	5	5	45		
		286			Broken Coal	5	5			
		291			Broken Coal	5	5			
		296			Broken Coal	5	5	60		
		301			Broken Coal	5	4.5			
		305.5			Broken Coal	4.5	4	60-90		

SAMPLE # 16727-B Designated "B"  
 MOISTURE 20.5%  
 VOL. MATTER 27.5%  
 FIXED CARBON 30.0%  
 ASH 1.0%  
 SULPHUR 0.10%  
 B.T.U. 970

SAMPLE # 16728-A Designated "A"  
 MOISTURE 23.5%  
 VOL. MATTER 31.6%  
 FIXED CARBON 26.2%  
 ASH 1.4%  
 SULPHUR 0.10%  
 B.T.U. 980

<b>LEGEND</b> <input type="checkbox"/> El. Ground <input type="checkbox"/> El. Bottom of Hole <input type="checkbox"/> Net Depth of Hole <input type="checkbox"/> Core Drill Depth <input type="checkbox"/> Core Recovery <input type="checkbox"/> % Core Recovery	<b>SUMMARY</b> El. Ground _____ El. Bottom of Hole _____ Net Depth of Hole _____ Core Drill Depth _____ Core Recovery _____ % Core Recovery _____	<b>VICTOR DOLMAGE - GEOLOGIST</b> 1119 MARINE BUILDING - VANCOUVER 1, B.C. Client _____ Prepared by _____ Checked by _____ Submitted _____
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# DRILL HOLE LOG

Project Hat Creek Coal Project

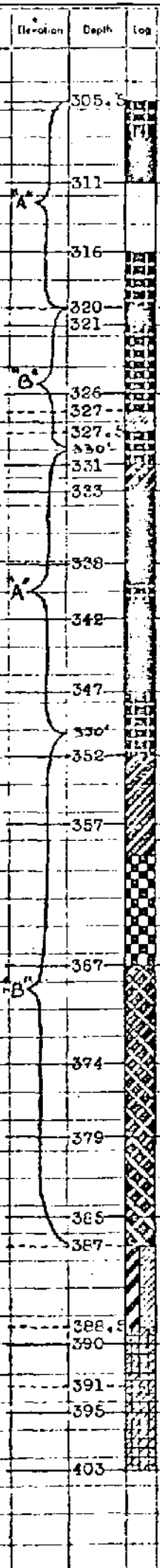
Elev. Ground Surface 3023.3  
 Elev. Top of Casing 3025.3  
 Co-ordinates 7915.2 N, 11155.8E

Hole begun October 28, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. P. Trepanier  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 4  
 of 5 Sheets  
 Hole No. 11

Date & Time	Elevation	Depth	Log	Sample	Material	Length P.M.	Core Length	Dip	Remarks
		305.5			Med hard and Broken Coal	5.5	3	60	Med hard dull to shiny black brittle coal. Broken between 305.5 and 308 Ft. by shearing "Pitch" as stringers to 1/2" thick.
		311			No Core				Probably badly broken coal. Temporary squeezing of hole made drilling difficult.
		316			Broken Coal	5	3		Pulverized sooty med hard coal - broken by shearing.
		320			Med hard Coal			30-?	"Pitch" as knots & stringers to 1/2" - 3/4" of
		321			Broken Coal	5	5	70-80	broken and pulverized soft to med hard brown-black coal. Coal fragments exhibit typical fault zone shapes. "Pitch" as twisted knots and lenses to 3/4" thick - 40% of coal.
		326			Broken Coal				Pulverized soft brownish black.
		327			Med hard Shale			60-90	2" band of grayish white shale outcrops + 30% dips 5-60°
		330			Broken Coal	5	5	40-?	Dull to shiny black coal. Badly broken by shearing. Resin nodules - fraction of 1/2"
		331			Coal and Shale	2	1		70% coal. Med hard brown-black coal with hair line stringers of grayish brown shale.
		333			Med hard Coal	5	3.5	60-70	Brittle brown-black. Few shear planes dipping 70-90°. 1/2" resin as 1/2" nodules between 336 and 337 ft. "Pitch" stringers to 1/2" thick
		338			Med hard and Broken Coal	4	2	40-?	Brittle dull to shiny black coal. Core appears severely ground by drilling. Also considerable breaking by shearing. Resin 3/4"
		342			Med hard Coal	5	3.5		Brittle black. "Pitch" in twisted lenses and stringers to 1/2" thick - 50% of core. Resin in nodules to 3/16" dia. - fraction of 1/2%.
		347			Broken Coal	5	4.5		Med hard brown-black to black in fragments of about 2" dia. Broken by shearing. Between 347 and 348 completely pulverized. Fraction
		352			Shaley Coal	5	5		60% coal. Hard brown-black coal containing narrow stringers of gray-black shale. Total core has been fractured leaving a network of fissures from hairline to 1/2" wide which have been filled with gray-white calcite and silic
		357			Shaley Coal and Broken Clay and Coal ??	10	2		Core recovered is hard brittle black coal containing hairline stringers of grayish brown shale and hairline fissures filled with white calcite. 70% coal. Some evidence that missing core is brown clayey shale and soft coal intermixed.
		367			Broken Shaley Coal	7	3		Fragments of "pitch" to 2" dia surrounded by pulverized grayish brown clay and carboniferous matter intermixed. The intermixed material contains few nodules of resin to 1/2" dia and also a few 1/2" dia pockets of marcasite. 50% coal.
		374			Broken Shaley Coal	5	5		60% coal. Fragments of "pitch" to 2" dia separated by black carboniferous ooze. Many slickensided surfaces coated with marcasite.
		379			Broken Coal and Shale	6	4	30	60% coal. Fragments of soft and med hard brown black coal surrounded by carboniferous ooze and pulverized coal.
		385			Broken Shaley Coal				Fragments of med hard coal to 1 1/2" dia and crushed coal and clay mixed.
		387			Shaley Coal and Shale	5	5	90	30% coal. Core shows vertical contact hard grayish black shaley coal - containing fine stringers of calcite - and hard (4 to 5) gray limy shale. Near 388.5 ft. angular fragments of gray shale are contained in the shaley clay. Angular fragments of olive green-gray clay
		388.5			Reworked Clay				matrix of same
		390			Reworked Clayey Shale	5	5		Olive green-gray clayey shale with many narrow zones dipping 70-90° containing angular fragments of gray shale to 1/2" dia. Many fracture planes dipping 45-90° surfaces but not much reworked material.
		391			Clayey Shale				Dark gray. Slight carboniferous component. Few fragments of med hard coal to 1" dia may be seen.
		395			Clayey Shale	8	1.5		
		403							

SAMPLES # 16728-B DESIGNATED "B"  
 MOISTURE 18.5%  
 VOL MATTER 30.7%  
 FIXED CARBON 52.7%  
 CALORIFIC 11,050 B.T.U.  
 PULVERIZER #1660



**LEGEND**

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**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING VANCOUVER 1, B.C.  
 Client \_\_\_\_\_  
 Prepared by \_\_\_\_\_  
 Checked by \_\_\_\_\_  
 Submitted \_\_\_\_\_



# DRILL HOLE LOG

# 121

Project Kat. Creek Coal Project

Elev. Ground Surface 3061.57  
 Elev. Top of Casing 3063.07  
 Coordinates 10132.1 N., 9359.9 E.

Hole begun November 19, 1957  
 Contractor Boyles Bros. Drillers.  
 Inspector R. T. Trenaman

Sheet No. 1  
 of \_\_\_\_\_ Sheets  
 Hole No. 12

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Full	Core Length	Dip	Remarks
		0			Gravel and Clay				Top of Casing No core 0 - 22 ft. Log of hole dependent on sludge specimens and drillers experience.
		7			Boulders and Gravel				
		10			Olive-green gray Clay				
		15			Broken red, yellow and orange soft and med hard Shales				
		22			Pinkish-red hard Shales.	9	1		Hardness 4 to 5. Sludge specimen: Particles of red, pink and buff shales.
		31			Pinkish red and yellow Shales.	5	2		Hard shales. Sludge specimen: Particles of of yellow, red, orange and gray shales.
		37			Shales and Clayey Shales	5	1		1 in. fragments of dull pink and yellow hard shales. Also white and yellow brown crumbly clayey shales.
		42			Shales and Clayey Shales	5	1		Fragments of dull pink and yellow hard shales. White and yellow-brown clayey shales.
		47			Shales	5	0		Sludge specimens: Particles of hard dull pink, whitish-yellow and rust red shales. Also a few particles of soft gray shales.
		58			Shales	9	0		No core. Sludge specimen: Rust red, buff hard shales. Also few particles of soft gray shale.
		61			Shales	3	1		Fragments of buff and dull pink hard shales. Also reddish-purple siliceous stringers. Sludge
		64			Shales ?	2	1		rust-red, buff, purple and blue gray shales. No core.
		66			Shales and Siliceous Bands.	3	1		Intertwisted stringers of gray siliceous material and rust red & buff clayey shales (crumbly)
		69				2	0.5		Fragments to 2" of gray black siliceous material with rust red, yellow and buff clay shales
		71			Shales	5	1		Fragments to 2" dia. of buff, yellow brown and purple brown shales grading into sooty pulverized coal at 76 ft.
		75			hard Coal	1	0.5		Dull gray-black lustre similar to coke.
		77			No core.	1	0		
		78.5			Broken hard Coal	1	0.5		Fragments of hard black with some sooty black coal.
					Coal ? and Clayey Shale?	15.5	0		No core. Sludge specimen: Particles of black coal and brownish black carboniferous shale. Few particles of rust red shale.
		94			Hard Coal	2	1.5	50	Broken brittle silty black.
		95.5			Hard Shaley Coal				Gray-brown waxy shale and coal interbedded. 30 coal
		96			Coal and Shale ??	4	0		Sludge specimen: Particles of black "pitch" and soft black coal. Also brown ooze.
		100			Clayey Shale	3	0	45	Olive green-brown Parts // to bedding.
		101.5			Clayey Shale				grayish brown clayey shale containing stringers of soft coal to 1/8 in. Grades to coal & rock
		103							

<p><b>LEGEND</b></p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> _____</p>	<p><b>SUMMARY</b></p> <p>El. Ground _____</p> <p>El. Bottom of Hole _____</p> <p>Net Depth of Hole _____</p> <p>Core Drill Depth _____</p> <p>Core Recovery _____</p> <p>% Core Recovery _____</p>	<p><b>VICTOR DOLMAGE - GEOLOGIST</b>                  1119 MARINE BUILDING - VANCOUVER 1, B. C.</p> <p>Client _____</p> <p>Prepared by _____</p> <p>Checked by _____</p> <p>Submitted _____</p>
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# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3061.57  
 Elev. Top of Casing 3063.07  
 Coordinates 10152.1 N, 9359.9 E

Hole begun November 19, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R.T. Tremaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 2  
 of \_\_\_\_\_ Sheets  
 Hole No. 12

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	XXX XXXX	Dip	Remarks
		103			Coal and Clayey Shale	7	3.5			Fragments of "pitch" to 1" dia in pulverized dark brown clayey shale coal matrix. 40% coal.
		110			Broken hard and soft Coal	6	1.5			Broken brittle bands of black coal bedded with broken bands of soft coal. Numerous shear planes. Much evidence of grinding. Hard fragments contain stringers of "pitch" to 1/8" thick. 10% of core. Some resin.
		116			Coal (Med Hard)	3	1	40		Brittle dull black. Few shear planes dip at 70 degrees. "Pitch" as stringers to 1/8" - 50% of core.
		119			Shaley Coal					60% coal. Soft to med hard brown-black and hard. 10-15% med gray soft shale bedded.
		121			Shaley Coal	5	5			15% coal. Gray brown soft shale with narrow brittle dull black. Few shear planes dip at 70 degrees. "Pitch" as stringers to 1/8" - 50% of core.
		122			Coal and Clayey Shale					Soft dull black coal and carboniferous clayey shale bedded.
		124			Med hard Coal	5	5	Twisted 45-90		Brittle black coal-somewhat broken due to shearing. "Pitch" as stringers to 2" as knots and lenses - 70% of core. Yellow resin-1% of c.
		129			Med hard Coal	5	5	52		Brittle dull to shiny black. "Pitch" as stringers to 1" thick - 50% of core. Few bands of soft dull brown-tends to part easily, Gray Brown.
		133			Clayey Shale					Gray Brown.
		134			Clayey Shale			45		Grayish brown-few carboniferous stringers @ 1/8" - 20% of core.
		135			Soft Coal					Brown-black. Grades into med hard @ 136 ft.
		135			Hard Coal	5	4.5	45		Brown-black. "Pitch" stringers to 1/4" - mostly less than 1/8" - 60% of core. Few resin nodules.
		139			Med hard Coal					Brown black coal-except for med hard and soft bands interbedded between 139 and 140 ft.
		145			Clay	7	5			Plastic brown-gray. Few carboniferous bands.
		146			Carboniferous ? Clayey Shale ?					Lost core probably between 146 and 150 ft. 10 to 50% coal.
		150			Broken black Soft and Med hard Coal	0.5	5	30		Badly broken interbedded soft and med hard coal - 50% of each. Soft component has slight shaley component. "Pitch" stringers to 1/4" - 20% of core.
		154			Coal and Shale			35		90% coal. Med hard white shale & "pitch" interbedded.
		155			Hard Shale	1.5	1.5			Hard (hardness 4) gray to brown-gray shale containing scattered stringers of "pitch". Some open fissures with calcite and silica.
		157			Hard Shale			80-90		Same as above. Evidence of drag folding.
		159			Clayey Shale ?	5	2			Lost core assumed hard shale specimen. Part of brown-black clay and black coal.
		162			Clayey Shale and Coal	3	1.8			Pulverized brown clayey shales containing fragments of "pitch" to 1/4" dia.
		165			Med hard Coal	3	1.5	45		Brittle black. "Pitch" as stringers as stringers to 1/4" thick - 50% of core. Shear planes dip 45 de.
		168			Soft to Med hard Coal	6	5.5	45		Brown-black coal. Tends to part readily in narrow zones. Some shear planes // to bed "Pitch" to 1/4" thickness lenses and stringers 30% of core.
		174			Soft Coal					Dull black - parts readily. Contains slight clayey shale component in narrow bands.
		176			Soft Coal and Clayey Shale	8	8			60% coal. Soft dull black coal and soft grayish black to greenish brown clayey shale alternating bands. Coal parts readily. Shale contains "pitch" stringers of soft coal.
		180			Med hard Coal					Brown-black except for 2" band of hard vuggy gray shale @ 181 ft. Isolated resin nodules.
		182			Med hard Coal	4.5	4.5	50		Brown-black brittle. Core compact, nearly perfect. Resin in nodules to 1/8" dia. Fracture of 1/2" "Pitch" in stringers and lenses to 1/4" - 60% of core.
		186			Med hard Shale	2.5	2.5	40		Light gray colour.
		187			Soft to Med hard Coal			45		Softer bands part easily. "Pitch" stringers to 1/4" - 50% of core.
		189			Clayey Shale					Grayish green clayey shale grading into completely pulverized grayish black carboniferous clay.
		192			Soft and Med hard Coal	10	10	40		Bands of soft and med hard coal interbedded 50% of each. 3" band of vuggy hard (5-6) cream coloured shale intertwined with coal. Isolated resin nodules. Streak-chocolate brown.
		199			Med-hard Coal	2	2	35		Brittle brown-black. Streak-chocolate brown "Pitch" stringers to 2" - 80% of core.
		201								

**LEGEND**

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- \_\_\_\_\_

**SUMMARY**

El Ground \_\_\_\_\_  
 El Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING VANCOUVER B.C.

Client \_\_\_\_\_  
 Prepared by \_\_\_\_\_  
 Checked by \_\_\_\_\_  
 Submitted \_\_\_\_\_

# DRILL HOLE LOG

Project Net Creek Coal Project

Elev. Ground Surface 3061.57  
 Elev. Top of Casing 3063.07  
 Coordinates 10132.1 N, 9359.9 E

Hole begun November 19, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R.T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 3  
 of \_\_\_\_\_ Sheets  
 Hole No. 12

Date & Time	Elevations	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
		201			Shaley Coal (Broken)				60% coal, broken dull black coal and greenish brown shale
		202			Clayey Shale	11	8		Light greenish brown. Completely broken between 206 and 208 ft.
		208			Soft and Med-hard Coal			Twist 45-70	Soft dull brown coal at 208 ft. grades into med hard brittle black. Some shear planes at 70 dip. "Pitch" lenses and stringers to 2" - 40%
		212			Med hard Coal	8	7	35	Dull to shiny black. Core quite compact. Some shear planes dip @ 45° at 215 and 213 ft. "Pitch" as stringers to 1" - most less than 1/8". Resin nodules @ 216 ft. to 1" dia. - 1%.
		220			Shaley Coal			60	40% coal. Streak-waxy brown. Dull black soft carboniferous shale in places blending into soft black coal. Parts readily // to bedding.
		223			Soft Shale	9	8	45	Dull greenish gray. Few carboniferous stringer
		226.5			Soft to Med-hard Coal			45	Dull black. Some shear planes
		228			Shaley Coal				Coal disintegrates into pulverized carboniferous
		229			Shaley Coal				60% coal. "Pitch" & gray shale
		229.5			Hard Shale				10% coal. Dense hard(?) gray silica with vugs.
					Soft to Med hard Coal	9	6.5	40-65	Brown-black coal except for 2" band of dull brownish gray carboniferous shale @ 233 ft. 6" shear areas @ 231 and 233 ft. "Pitch" as stringers to 1/16" - 50% of core.
		238			Med hard Shale			40	Brownish gray-few carboniferous stringers.
		239			Med hard Coal			50	Dull to shiny black. "Pitch" as stringers to 1 in. thick. 40% of coal. Streak-brown-black.
		240			Shaley Coal	7	5.5		60% coal. Approximately 1 ft. bands of med hard coal and grayish brown soft shale interbedded. Shale has bedded stringers of "pitch" and soft coal.
		245			Soft Coal			40	Dull black. Parts readily.
		246			Shaley Coal	9	7.5	50	20% coal. 2 ft. bands of soft gray brown shale with isolated stringers of "pitch" to 1/8" thick separated by 6" bands of soft coal. Shale crumbles readily. Coal parts // to bedding.
		252			Soft Coal & Shale			45	Dull black. Some soft brown gray shale as narrow stringers.
		254			Med hard Coal			40	Black. Somewhat broken by shearing. "Pitch" - 2
		255			Carboniferous Shale				Brown-gray. Crumbles readily.
		255.5			Shaley Coal				60% coal. Soft to med hard coal and dull soft brown shale interbedded as above.
		258			Med hard Coal	9	9	50	Dull black - "pitch" stringers to 1/2" - 40% of c
		260			Shaley Coal			50	70% coal. Brown-black coal separated by 2-6" bands of brownish black soft carboniferous shale.
		263			Med hard Shale			70	Dark to light gray. Few narrow stringers of "pitch" between 263-264 and 269-270 ft.
								20	
						10	7	30	
		271			Soft Coal & Shale				40% coal. Narrow bands dull black coal separated by narrow bands of light gray shale.
		271.5			Med hard Shale				Light gray.
		273			Med hard Shale			42	Light gray. Few narrow stringers of "pitch".
		274			Shale & Coal				Soft dull black coal with isolated stringers "pitch" except for 6" gray-brown soft shale
		277			Soft Shale				Gray-brown. 275-275
		278			Soft Coal	10	10	40	Dull black.
		279			Clay				Light gray brown.
		281			Med-hard Shale				Light gray to olive green-gray
		283			Med hard Shale	9	9		Light gray. Some slickenside dipping at 90 degrees. Some evidence of reworking.
		250			Coal and Shale			Twist	30% coal. Stringers of soft coal and "pitch" intertwined with olive green-gray shale and dark brown carboniferous soft shale. Resin
		292			Coal and Shale				50% coal. Soft crumbly coal & med hard gray shale interbedded.
		293			Med hard Coal	10	10		Dull to shiny black. "Pitch" seams to 1/2" thick 30% of core.
		302							

**LEGEND**

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- \_\_\_\_\_
- \_\_\_\_\_

**SUMMARY**

El Ground \_\_\_\_\_  
 El Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**  
 1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client \_\_\_\_\_  
 Prepared by \_\_\_\_\_  
 Checked by \_\_\_\_\_  
 Submitted \_\_\_\_\_



# DRILL HOLE LOG

Project: Hat Creek Coal Project

Elev. Ground Surface 3061.57  
 Elev. Top of Casing 3063.02  
 Coordinates 10132.1 N, 9359.9 E

Hole began November 19, 1957  
 Contractor Boyles Bros. Drillers.  
 Inspector R. T. Trenaman  
 Reference to Plan No.

Sheet No 5  
 of \_\_\_\_\_ Sheets  
 Hole No 12

Date & Time	Elevation	Depth	Log	Sample	Material	Length Full	Core Length	RRX XXXXX	Dip	Remarks
	405				Hard Coal				70	Shiny black. Mostly "pitch" (90%). 10% soft coal
	407				Shaley Coal				50	90% coal. Med hard black coal interbedded with bands of clayey shale and crushed coal and shale mixed.
	415				Shaley Coal	10	7			Med hard black coal with "pitch" stringers to interbedded with bands of soft clayey shale and broken coal.
	425				Coal and Clayey Shale	7	1			Main reason for core loss- Drillers used core barrel alone instead of conventional barrel and tube. Hard black coal grading into brownish clayey clayey shale and broken coal. Assume 15ft. coal
	432				Coal and Clayey Shale	7.5	5		50	60% coal. Hard black coal with interbedded layers of black soft clayey shale containing fragments to 1/4" of hard coal.
	439.5				Med hard Coal and Shale					60% coal. Brownish black coal with "pitch" stringers 1 to 2 in. thick. Hard silicified band at 441 ft.
	443				Soft Shale	8.5	8.5		45	Reworked brownish gray.
	444				Med-hard to hard Coal					Black.
	448				Med hard to hard Coal					Hard black coal interbedded with bands of softer brownish black coal containing stringers of "pitch". 80% "pitch".
	455.5				Little Shale	7.5	7.5		45	Narrow seams of brown shale and broken coal. 90% coal.
	465.5				Med hard to hard Coal	10	10		40	Hard black coal (mostly "pitch") interbedded with bands of softer brownish coal with narrow "pitch" stringers. 90% black coal.
	466.5				Med hard Coal					Hard black coal interbedded with bands of med hard brownish black coal with narrow stringers of "pitch". 6" band of hard
	467				Hard Shale					vuggy silicified shale at 466.5 90% of hard black coal.
	475				Med hard to hard Coal	9.5	9.5			
	476				Med hard Coal					
	476.5				Clayey Shale ?					Med hard black coal interbedded with narrow bands of soft and broken coal. Evidence of brown clayey shale at 476 and 483 ft. Assume
	480.5				Med hard Coal	10	5		40	lost core is brown clayey shale and occurs as shown. Slickensided surfaces common throughout core.
	483				Clayey Shale ?					
	485				Med hard Coal					
	488				Clayey Shale ?					Core shows clayey shale contacts at 485 and 494 ft. ends of core. Assume core loss as shown. Probably very soft clayey shale, somewhat carboniferous. Core recovered is med hard black coal with narrow bands of soft coal with few "pitch" stringers. Much evidence of shearing - dip 10 degrees.
	491.5				Soft to Med hard Coal	9	4		40	
	494				Clayey Shale ?					1.5 ft. of core recovered is soft blackish gray carboniferous shale (clayey). Assume core loss here.
	499				Clayey Shale	10	6			
	504				Med hard Coal				60	Med hard black coal with interbedded soft coal containing narrow "pitch" stringers.

LEGEND	
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SUMMARY	
Elev. Ground	.....
Elev. Bottom of Hole	.....
Net Depth of Hole	.....
Core Drill Depth	.....
Core Recovery	.....
% Core Recovery	.....

**VICTOR DOLMAGE - GEOLOGIST**  
 1117 MARINE BUILDING - VANCOUVER 1, B.C.

Client: \_\_\_\_\_

Prepared by: \_\_\_\_\_

Checked by: \_\_\_\_\_

Submitted: \_\_\_\_\_

# DRILL HOLE LOG

Project Mat. Creek Coal Project

Elev. Ground Surface 3061.97  
 Elev. Top of Casing 3063.97  
 Coordinates 10132.1 N, 9359.9 E.

Hole begun November 19, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 6  
 of 7 Sheets  
 Hole No. 12

Date & Time	Elevation	Depth	Loc	Sample	Material	Length Pull	Core Length	XXX RYXX	Remarks
									Dip
									Remarks
		504			Shaley Coal			Twist	40% coal. Broken dark slate gray to light waxy brown soft carboniferous shale with stringers of soft black coal. Crumbles readily.
		507			Med hard Coal	8	8	50	Brittle dull to shiny black. Broken into fragments three inches or less by shear planes at 45 degrees and by brittle nature. "Pitch" as twisted lenses and stringers to 1/4" thick. Some narrow black carboniferous bands. 95% coal.
		512			Shaley Coal				60% coal. Soft shale & 2" coal shale
		513			Broken Coal	3	2.5	Twist 50-70	Fragments to 3" dia. of med hard brittle black coal. Twisted lenses and stringers of "pitch" to 1/4" thick - 30% of coal.
		515			Hard Coal				Fragments to 2" dia. of hard brittle black coal. Shaly to silky lustre. Pitch - twisted 70% of core.
		517			Soft Coal				Broken grayish brown. Crumbles readily.
		518.5			Med hard Coal	6.5	5		Fragments to 3" long of dull to shiny black coal. "Pitch" stringers to 1/4" thick - 30% of core.
		521.5			Med hard Coal (Broken)				Fragments to 2" dia. dull black coal. Broken into one to three 35-20 pieces. Shale 50%.
		523			Med hard Coal				Black. Some breaking along shears @ 60 dip. "Pitch" as 1/16" bands - 30%. Streak - chocolate brown.
		525			Shaley Coal	9.5	9		30% coal. Soft dull black coal and gray brown soft shale bedded. Very crumbly.
		526			Med hard Coal and Shaley Coal			Twist 70	70% coal. Med hard black coal @ 526 becoming black "pitch" and black to gray black hard sandy shale as bands interbedded with 531 ft. fractures between 528 & 531 ft. - 1/16" wide filled.
		531			Shaley Coal			Twist 60	60% coal. Same as 528-531. with white calcite.
		532			Med hard Shale			15	Cream white smooth textured. fragments coal to 30% coal. Zones containing bands of soft coal and "pitch" - 1/16-2" interbedded with cream white soft shale, hairline - 1" thickness and zones of dull brownish black carboniferous shale
		541			Broken Clayey Shale			70	Pulverized grayish brown clayey shale.
		542			Soft Shale			0-30	Light to dark gray soft shale with isolated narrow stringers of soft carboniferous shale. (black)
		546			Soft Coal	10	10		Dull black
		546.5			Soft Shale			75-90	Dark gray to off colour white soft shale. Isolated stringers of "pitch" and soft coal to 1" thick. Carboniferous shale is dull black.
		551			Carboniferous Shale and Coal			80-90	20% coal. Dull grayish black carboniferous shale, soft black coal and light gray soft shale as bands to 1" interbedded. Abrupt change in bedding dip at 556 ft.
		556			Sandstone	6	6	0	3-3" bands of hard brownish gray to gray sandstone separated by 1 to 2" bands of dull black
		557			Shaley Coal			25	30% coal. Soft dull carboniferous shale. Black coal and soft dull brown shale as beds
		559			Med hard Shale				Light to dark gray. 4" med hard 1/16-1/4" coal and shale mixed at 560 ft.
		561			Shaley Coal	10	10	40	80% gray brown shale to 1/8" in. Isolated stringers of gray coal with 1/4" thick
		563			Med hard Shale				Dull gray shale & dull black carboniferous mixed
		565			Shaley Coal			35	Soft dull black and carboniferous shale bedded intermixed. 40% coal.
		566			Carboniferous Clay				Dull brown black.
		567			Shale				Dull brown gray shale (soft) grading into light brown med hard carboniferous shale. Light brown part dull to shiny black.
		568			Med hard Coal				Twisted knobs and stringers of pitch to 1/4" thick. Gray shale fractured with thin bands of calcite.
		569.5			Shaley Coal Sulfide	10	10	45	40% coal. Soft coal and maficite. Dull black carboniferous shale bedded. Crumble
		570.5			Shaley Coal			40	Brittle dull to shiny black. Few hairline stringers of cream to gray med hard shale between 578 and 579 ft. "Pitch" as lenses and stringers to 1/4" thick.
		571.5			Med hard Coal			50	Dull black soft coal interbedded with soft to hard brown to gray shale. 30% coal.
		578			Shaley Coal			50	Dull to shiny black. "Pitch" as stringers to 1/4" thick. Resin as nodules to 1/4" @ 580-581.
		581			Med hard Coal			45	40% of core. Resin as nodules to 1/4" @ 580-581.
		583			Shaley Coal	10	10	45	60% coal. Med hard dull to shiny black coal interbedded with hairline - 1" med hard shale band
		586			Shaley Coal				25% coal. Gray brown shale containing numerous fragments and twisted stringers of black and med hard coal.
		587			Soft to med hard Coal	70-80		20	Dull brown black. "Pitch" stringers to 1/4" - 25%. Brown black. 2-3" bands of dull brown black crumbly carboniferous shale at 590.5 and 591 ft. Shiny to silky "pitch" stringers hairline to 1/4" of core.
		591			Soft to med hard Coal	10	10	30	50% coal. Soft to med hard coal as bands 1 to 2" thick with bands 1 to 1/4" brownish gray
		593			Shale and Coal			35	75% coal. Med hard brown-black as bands to 8" separated by stringers of gray brown shale and dull black carboniferous shale to 1" thick. Evidence of movement on shale-coal contacts.
		597							

**LEGEND**

- El Ground
- El Bottom of Hole
- Net Depth of Hole
- Core Drill Depth
- Core Recovery
- % Core Recovery

**SUMMARY**

El Ground \_\_\_\_\_  
 El Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client \_\_\_\_\_  
 Prepared by \_\_\_\_\_  
 Checked by \_\_\_\_\_  
 Submitted \_\_\_\_\_

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3061.57  
 Elev. Top of Casing 3063.07  
 Coordinates 10132.1 N, 9359.9 E.

Hole begun November 19, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 7  
 of 7 Sheets  
 Hole No. 12

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
		597			Med hard Coal				Brown-black coal except for 2" of gray brown med hard shale at 600ft. "Pitch" as knots and stringers to 1" thick - 90% of coal. Shear planes between 600 and 602 ft. dip at 55 degrees.
		602			Shaley Coal	10	10		50% coal. Soft to med hard coal as bands hairline to 1/2" thick separated by hairline to 1/2" bands brown to brownish gray med hard shale. 50% bands - 50% of coal.
		607			Soft Shale				Very gray shale.
		608			Med hard Coal			40	Brown-black. "Pitch" as hairline shiny to silky black bands - 70% of core. Few cream hairline shale stringers at 611.5 ft.
		612			Soft Shale	10	9		10% coal. Dull gray black shale with stringers "pitch" to 1/2". Shale-coal contacts slickensided.
		612.5			Med hard Coal			60	Brown-black. "Pitch" as twisted lenses and stringers - 30% of coal.
		617			Soft Shale				Dull gray black. Few fragments of "pitch".
		617.5			Med hard Coal	10	9.5	30	Compact nearly perfect core. Dull to shiny black coal. "Pitch" as stringers hairline to 1/2" - mostly hairline - 50% of core.
		625			Soft Shale			45	Dull gray black shale at 625 ft. becoming dull gray brown at 627 ft. Stringers and fragments of coal between 625 and 626 ft.
		627			Clayey Shale				Dull gray black.
		627.5			Med hard Coal			45	Brown-black to dull black. "Pitch" content from 30 to 80% as hairline to 1/2" stringers.
		631			Hard Shale				Light gray. Few "pitch" bands. Fractures filled with white calcite.
		632			Shaley Coal	10	10		80% coal. Dull black shaley coal except for 2" band of hard gray shale & siliceous material @ 634 ft. Shaley coal - dull black soft coal with dull gray black to black intermixed and as fine interbedded bands.
		637			Soft Shale			50	Dull gray black. Isolated carboniferous stringers.
		637.5			Shaley Coal	10	10	25	80% coal. Broken 641-641.5 and 645-647. Soft to med hard dull black coal intermixed and occasionally interbedded with dull gray-black to black carboniferous shale. Shaley component gives coal earthy lustre.
		647			Shaley Coal	7	7	45	85% coal. Broken 648-649 and 652-653.5 ft. Dull sooty black med hard coal with "pitch" stringers (silky black) 25% of coal. Shaley component as intermixed black carboniferous shale. Coal parts readily along bedding planes.
		653.5			Hard Shale			50	20% coal. Gray to brown shale and coal inter-twisted.
		654			Hard Shale				Cream to light gray shale. Few coal stringers.
		654.5			Shaley Coal	10	9.5	45	65% coal. Dull black med hard coal with dull brownish gray shale to dull black carboniferous shale intermixed and occasionally interbedded. Isolated resin nodules. "Pitch" as knots and stringers to 1/2" thickness - 40% of coal.
		664						Twist	
					Med hard Coal			40	Near perfect compact core. Dull black coal except for 1/2" stringer of soft brown-gray shale @ 670 ft. "Pitch" as stringers and knots to 2" dia. - mostly hairline stringers - 40% of core.
		671			Shaley Coal	10	10		40% coal. Med hard dull black coal and "pitch" as stringers less than 1/2" interbedded and intermixed with gray brown to dull black carboniferous shale.
		674							Bottom of Hole

**LEGEND**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING • VANCOUVER 1, B.C.

Client \_\_\_\_\_  
 Prepared by \_\_\_\_\_  
 Checked by \_\_\_\_\_  
 Submitted \_\_\_\_\_







# DRILL HOLE LOG

Project: Hat Creek Coal Project

Elev. Ground Surface 3149.9  
 Elev. Top of Casing 3152.4  
 Coordinates 7917.15 N, 9997.93 E.

Hole begun November 25, 1957  
 Contractor: Boyles Bros. Drillers  
 Inspector: R.T. Tromman

Sheet No. 2  
 of \_\_\_\_\_ Sheets  
 Hole No. 13

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Core pic	Material	Length Pull	Core Length	Recovery XXXXX	Dip	Remarks
		107			Soft Shale and Clayey Shale	8	3			Fragments of waxy greenish gray soft shale and clayey shale. Plant fossil at 107 ft.
		115			Soft Shale and Clayey Shale	16	3			Fragments of grayish-green (dries light grayish brown) soft shale and clayey shale. Drillers report that material occurs as narrow bands of soft shale interbedded with thicker bands of sticky clay.
		131			Soft Shale	10	4			Greenish gray (dries light grayish brown) soft shale. Few 2" bands of soft waxy yellow clay bands. Plant fossils scattered throughout core.
		141			Clay and Shale	2	2			Greenish brown soft shale grading into same coloured clay at 143 ft.
		143			Clay	1	1			Greenish brown clay. Few carboniferous particles
		144			Soft Shale	3	3	45		Greenish gray (dries grayish brown) soft shale. Breaks with conchoidal fracture. Plant fossils.
		147			Soft Shale	3	3			Brownish gray. Traces of bedding -45 degree dip. Conchoidal fracture.
		150			Clay and Soft Shale	5	5			Light gray-brown clayey shale (broken) surrounding fragments to 2" dia. of same material. Evidence of crushing along certain zones.
		155			Soft Shale and Clayey Shale	10	10			Olive green-black soft shale interbedded with narrow bands of same coloured clayey shale. Dark colour caused by finely divided carboniferous matter. Clayey shale appears to be reworked soft shale.
		165			Soft shale and Clay					Olive green-black soft shale interbedded with narrow bands of similar coloured clay. Dark colour attributed to carboniferous matter.
		168			Carboniferous Shale	3	2			Fragments to 2" dia. of dull black carboniferous soft shale grading into olive green shale at 171 ft. Slight cleavage exhibited.
		171			Soft Shale and Carboniferous Shale	3	3	45		Olive green soft shale grading into waxy carboniferous shale at 174 ft. Definite cleavage exhibited.
		174			Med hard Carboniferous Shale	5	5			Dull black to dull brown black. Breaks with uneven to conchoidal fracture.
		177			Med hard Coal			45		Compact shiny black coal except for 2" band of hard waxy cream shale and coal bedded.
		179			Med hard Coal	3	2	7		Brown-black coal except for 1" band of soft yellow clay @ 180 ft. 90% pitch as thin stringers.
		181			Shale and Coal					hard light gray waxy shale and coal mixed waxy yellow.
		182.5			Soft Clayey Shale Broken hard Coal	3	2.5	7		brittle black. Broken by drilling. 90% pitch.
		185			Hard Coal	4	3.5			Compact nearly perfect core. Hard brittle black coal with narrow stringers of brown coal. 90% "pitch" as fine closely spaced stringers.
		189			Med hard Coal	3	2.5	45		Brownish-black to black. "Pitch" as stringers to 1/16" - 30% of coal.
		192			Med hard Coal	3	2.5			brownish-black brittle. "Pitch" as stringers to 1" thick - 40% of core. Resin nodules to 1/2" dia.
		195			Med hard Coal	5	4.5	Total 45-70		Compact nearly perfect core. Brownish black. "Pitch" stringers and lenses to 1" - 90% of core.
		200			Med hard Coal					Perfect core. Med hard brown-black. "Pitch" as stringers to 1" thick - 40% of core. Isolated resin nodules to 1/2" dia.
		202.5			Soft Shale & Coal	5	5	45		40% coal. Brownish gray carboniferous shale & pulverized coal with fragments "Pitch" to 1" dia.
		205								

LEGEND	
<input type="checkbox"/>	El Ground
<input type="checkbox"/>	El Bottom of Hole
<input type="checkbox"/>	Net Depth of Hole
<input type="checkbox"/>	Core Drill Depth
<input type="checkbox"/>	Core Recovery
<input type="checkbox"/>	% Core Recovery

SUMMARY	
El Ground	_____
El Bottom of Hole	_____
Net Depth of Hole	_____
Core Drill Depth	_____
Core Recovery	_____
% Core Recovery	_____

**VICTOR DOLMAGE - GEOLOGIST**  
 1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client: \_\_\_\_\_

Prepared by: \_\_\_\_\_

Checked by: \_\_\_\_\_

Submitted: \_\_\_\_\_

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3149.0  
 Elev. Top of Casing 3152.4  
 Coordinates 79.7.15 N, 9997.93 E.

Hole begun November 25, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R.T. Trenaman

Sheet No. 3  
 of        Sheets  
 Hole No. 13

Reference to Plan No.       

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
	205				Med Hard Coal	5	4.5	45	Brown-black coal - broken by shear planes between 209 and 210. 2" band of cream hard waxy shale and coal intermixed @ 206.5 ft. "Pitch" as twisted bands & lenses to 1" - 50
	210				Clayey Shale			50	20% coal, brown waxy shale separated by 3" of brittle brown-black shale broken by shearing between 213 and 214.5 ft. 50% "pitch" between 214.5 and 215.5 ft. 20% "pitch" as stringers to 1"
	211.5				Med hard Coal	5	5	45	Brittle brown-black. Fractured by shearing. 70-90% "pitch" as stringers of 1/16" - 1/8" thick. Streak - chocolate brown very waxy hard green to gray.
	215				Hard Coal			70-90	Same as 215 to 219 ft.
	218				Hard Shale			45	
	218.5				Hard Coal			45	
	220				Med hard Coal	10	9.5	45	Dull black coal at 220 ft becoming soft dull black by 230 ft. "Pitch" as stringers to 1" decreases from 40% at 220ft. to 10% at 230 ft. Coal sheared between 222.5 - 223.5 and 228.5-229 ft. Some dark brown soft carboniferous sh. in shear zones.
	230				Soft Coal	4	2	55	Dull black. Parts readily coal above blends into dull brown-gray soft carboniferous shale that crumbles into thin shiny flakes.
	230.5				Soft Shale				
	234				Soft Shale	5	2		6" of core recovered is brown-gray crumbly carboniferous shale same as 230.5 - 234. Assume lost core between 234 and 236.5 ft.
	237				Med hard Shale				237 - 239: Sandy textured light brown-gray med hard shale somewhat sandy. hard shale. Textured shale. narrow streaks and small fragments of carboniferous material throughout.
	239				Med hard sandy Shale	3	2	45	Fragments of gray-brown sandy textured shale with thin stringers of carboniferous material becoming smooth olive green-gray shale.
	242				Sandy to Smooth Shale	3	0.5		Dark gray with numerous fine carboniferous stringers and fragments.
	245				Soft Shale	5	5	40	Dark dull gray sandy textured shale. Added to dark olive-gray plastic carboniferous shale. See description 251-252.5
	247				Sandy Shale				Olive-green gray. Numerous hairline stringers of carboniferous material.
	248.5				Clay				Same as 248.5 - 250 ft. Gray, brown, and white particles to 2mm max. dia. in soft gray clay matrix. Sandy particles can be dislodged with fingernail. Isolated hairline carboniferous b.
	250				Soft Sandstone	10	6.5	40	Olive green-gray soft shale in places clayey shale. Numerous plant fossils throughout.
	251				Clayey Shale				
	252.5				Soft Sandstone				
	258				Soft to Med hard Coal			55	Soft black coal at 258 ft. becoming med hard black at 260 ft. Isolated "pitch" stringers and resin nodules. Streak - brown.
	260				Shale and Coal	5	4.5	50	40% coal. Bands of soft black coal to 1/2" thick separated by equivalent bands of dull brown-gray shale and lenses to 1" (mostly soft shale) by bands to 1/2" in. to brown to dull black shale.
	262				Shale and Coal			40	Broken carboniferous clayey shale 20% coal with numerous narrow carboniferous stringers. Light gray. Numerous narrow carboniferous bands. Dark brown-gray carboniferous shale grading into black "pitch" between 262.5 and 268 ft.
	265				Clayey Shale	5	2	45	Fragments of olive green-gray med hard shale surrounded by same coloured broken clayey shale.
	268				Soft Shale and Clayey Shale	5	2.5	Twisted	Twisted - 8" band of cream to light gray sandy shale.
	275				Clayey Shale				Olive green-gray reworked clayey shale.
	276.5				Hard sandy Shale			45	Yellow-brown fractured after compaction-filled light brown to dark olive white line coating. Green-gray crusty shale. Breaks into typical fault zone shapes.
	277				Broken Clayey Shale	10	10	45	Brown-black to black. "Pitch" as fine closely spaced stringers. Streak-dark brown-black. 80% "pitch".
	279				Soft to Med hard Coal				
	285				Soft to med hard Coal	10	10	45	Dull black to brown-black. "Pitch" as twisted stringers and lenses to 1" thick - 35% of core
	292.5				Med Hard Shale			40	Dull brown-gray. Isolated spots & stringers of pitch
	293.5				Med hard Coal				Dull black. "Pitch" stringers 1/16 - 1/8" - 35%
	295				No Core				Much evidence of grinding. Assume core loss as shown.
	303				Soft Coal	10	2		
	304				Soft Shale				Soft black coal grading into olive green-gray soft shale @ 304 ft.
	305				Soft Shale				Olive green-gray soft shale.

LEGEND

<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

SUMMARY

El. Ground	_____
El. Bottom of Hole	_____
Net Depth of Hole	_____
Core Drill Depth	_____
Core Recovery	_____

**VICTOR DOLMAGE - GEOLOGIST**  
 1119 MARINE BUILDING - VANCOUVER 7, B.C.

Client \_\_\_\_\_  
 Prepared by \_\_\_\_\_  
 Checked by \_\_\_\_\_

# DRILL HOLE LOG

# 121

Project Net Creek Coal Project

Elev. Ground Surface 3070.2  
 Elev. Top of Casing 3071.2  
 Coordinates 7917.9 N, 10580.2 E

Hole began December 10, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector H. T. Trenaman

Sheet No. 1  
 of 7 Sheets  
 Hole No. 14

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Leg	Sample	Material	Length Ft./l	Core Length	MXX XXXXX	Remarks
		0							Dip
									Top of Casing
									Log of hole, 0 to 79 feet, obtained from drillers' reports and sludge specimens
					Clay,				
					Sand,				
					Gravel,				
					Randomly spaced Boulders				
		51			Sand				
					and				
					Gravel				
		66			Gravel and Broken Coal				
		69			Gravel and Sand				
		73			Clay				
		75			Coal				
		79			Med-hard Coal			45	(Brown-black coal) "Pitch" as lenses and twist stringers to 1/4" - 40% of coal.
		84			Clayey Shale	7	6	50	Soft olive green-brown shaly shale. Crumbles into fine particles. With water puddles into brown sticky mud.
		86			Soft and Med-hard Coal			40	Dull brown-black. Broken between 87.5 and 88, and 89.5 and 90.5 ft. by shearing. "Pitch" hairline to 1/4" lenses - 50% of coal. Streak brown-black. 1" band of hard vuggy white shale @ 92 ft.
		95			Broken Coal			35	Soft coal, slight carbonaceous clay component crushed into small pieces by shearing.
		95.5			Med-hard Coal			45	Dull brown-black. Hairline to 1/4" thick "pitch" stringers - 25%. Bead nodules to 1/4" dia. fraction of 1%. Olive green-gray soft shale reworked into clay.
		99			Clay				
		101							

**LEGEND**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**SUMMARY**

El Ground \_\_\_\_\_  
 El Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client Western Development and Power Limited,

Prepared by R. Trenaman

Checked by V. Dolmage

Dec 27, 1957.

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3070.2  
 Elev. Top of Casing 3071.2  
 Coordinates 7917.9 N, 10580.2 E

Hole begun December 10, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R.T. Trenaman

Sheet No. 2  
 of 7 Sheets  
 Hole No. 14

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
	101				Clay				Olive green-gray broken clayey shale reworked into clay. Crumbled into olive brown crumbly clayey shale.
	102.5				Shaley Coal	6	6	45	70% coal. Soft sooty black coal with narrow stringers of "pitch" as 2 to 4" bands separated by 2 to 4" bands black soft carboniferous shale - in most places sheared to clay.
	107				Shaley Coal			40	Partially broken soft black coal & shale mixed.
	108				Clay				Olive green-brown soft shale reworked into soft sticky clay.
	110				Shaley Coal	8	7.5	45	60% coal. Soft sooty black coal & 1" bands soft cream brown carboniferous shale.
	111				Med hard Shale			45	Dull brittle black and brown black coal. "Pitch" lenses and stringers to hairline-40% of coal.
	112				Med hard Coal			45	
	115				Clay				Olive green-gray plastic.
	116				Clay and Coal				40% coal. Same plastic clay above interbedded with narrow bands of soft coal and carboniferous shale.
	117				Soft to Med hard Coal			35	Dull black to brown-black coal except top 5" band of crumbly olive green-brown crushed soft shale @ 122 ft. "Pitch" as knots and twisted stringers to 1" thick - 30% of coal.
	122				Clay	11	9.5		
	123				Soft to med hard Coal			45	Isolated 3/16" dia. resin nodules. Streak-dull brown. Random dip shear planes @ 2 to 4" intervals.
	126				Soft to med hard Coal			50	Core recovered is soft to med hard coal. Assume core loss as clay between 131 and 133 feet.
	131				Clay ??	7	5	45	Soft bands part readily. Quite broken by shearing 126 to 128 feet.
	133				Clay and Shaley Coal				
	135				Med hard Coal	6	6	45	Olive green-gray clayey shale - lenses to crumbly soft shale mixed to med hard dull black coal.
	139				Med hard Coal			45	Dull black. "Pitch" to 1" stringers - 30% of coal.
	144				Clay ??	10	5	40	Core recovered is coal. No evidence of severe grinding. Therefore assume lost core as pulverized soft shale or clay, probably between 144 and 149 feet. Med hard brittle dull brown-black coal @ 139 ft. grades into soft crumbly dull brown-black coal @ 144 ft. Resin nodules to 1/2" dia. - fraction of 1" "pitch" between 139 and 142 ft. - lenses to 3/4" thick - 40% of coal.
	149				Shaley Coal			45	Soft dull black coal intermixed and interbedded with soft olive brown shale. 50% coal.
	150				Med hard Coal	9	8	Twist 70	Brittle-dull to shiny black, except for 2" band of waxy hard cream coloured shale and coal intertwined @ 153 ft. "Pitch" as lenses and knots to 1 1/2" thick - 70% of coal.
	156				Clay			70	Olive green-brown soft shale sheared into thin slickensided flakes. Crumbled readily.
	158				Clay				Olive green-brown soft clay grades into shaley coal @ 159 ft.
	159				Shaley Coal			45	Partially broken soft shale and soft coal. Sheared as thin bands, also intermixed.
	160				Med hard Coal	10	10	45	Brittle dull black. Broken by shearing and because of brittle nature - 164 to 164.6 and 165 to 167 ft. "Pitch" as bands to 1/2" thick - 40% of coal.
	168				Med hard Coal			45	Near perfect core. Brittle dull to shiny black coal. "Pitch" as closely spaced hairline stringers and occasional 1" bands. Resin as nodules to 1/2" dia. between 170 and 172 ft. - 12%.
	174.5				Shaley Coal	10	10	45	Pulverized by shearing between 172 and 172.5 ft. 40% coal. Dark olive green-brown to dull black. Can be carboniferous shale. Crumbles readily.
	175				Med hard Coal				Dull black. Hairline "pitch" stringers - 30% of coal.
	177				Clayey Shale				Dark olive green-brown soft shale @ 177 ft. - grades into similar colored clay @ 179 ft.
	178				Shaley Coal			50	30% coal. Dark olive green-brown to dull black somewhat crumbly shale with narrow "pitch" bands. Brittle brown-black. Silky black "pitch" stringers to 1/2" - 30% of core. Streak-brown tinted shale. Streak-chocolate brown. 25% coal.
	180				Med hard Coal			45	Dull brown-black. Resin nodules to 1/2" - 1% between 184 and 185 ft. 2" pulverized zones @ 186 and 187 caused by shearing. Hard shiny "pitch" @ 182-183. Fractured fissures filled with waxy brittle brown-black shale and calcite.
	188				Med hard Coal				Broken by shearing.
	189				Clay	5	2.5		Assume core loss in clay zone. Dark olive green brown soft shale @ 189 as above as olive plastic.
	191.5				Med hard Coal			70	Dull black. 30% "pitch" as 1/6" lenses.
	192.5				Med hard Shale				Light gray brown.
	193				Med hard Shale				Light gray brown.
	193.5				Clay				Olive green-gray plastic clay.
	196				Soft Coal	9	8.5	50	Dull black. Broken 196 to 197 by shear planes parts readily. "Pitch" as fine lenses and stringers - 15% of coal.
	201.5				Clay and Coal			45	Olive green-brown clay interbedded with narrow "pitch" stringers. 20% coal.
	202								

LEGEND	
<input type="checkbox"/>	El Ground
<input type="checkbox"/>	El Bottom of Hole
<input type="checkbox"/>	Net Depth of Hole
<input type="checkbox"/>	Core Drill Depth
<input type="checkbox"/>	Core Recovery

SUMMARY	
El Ground	_____
El Bottom of Hole	_____
Net Depth of Hole	_____
Core Drill Depth	_____
Core Recovery	_____

**VICTOR DOLMAGE - GEOLOGIST**  
 1119 MARINE BUILDING VANCOUVER I. B. C.  
 Client Western Development and Power Limited.  
 Prepared by R. Trenaman  
 Checked by V. Dolmage  
 Date December 27, 1957.

Elev. Ground Surface 3070.2  
 Elev. Top of Casing 3071.2  
 Coordinates 7917.9 N, 10580.2 E

Hole begun December 10, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman

Sheet No. 3  
 of 7 Sheets  
 Hole No. 14

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Feet	Core Length	Dip	Remarks
		202			Shaley Coal			45	Core is severely ground. Assume some of lost core is coal. 30% coal, 70% pitch.
		205			Med hard Coal	10	6"	45	2" pieces of med hard coal - dull coal stringers. Much evidence of grinding. "Pitch" as silky black stringers to 1/8" thick - 50% of coal.
		210			Shaley Coal			45	50% coal, shiny black "pitch" containing fissures filled with light brown waxy shale & calcite.
		211			Hard Shale			45	Hardness 5. Silty-gray shale. Some fissures with calcite.
		212			Med hard Coal			45	Black, broken into 2" discs by shearing. "Pitch" as 1/8" bands - silky black.
		213			Clay			45	Olive green-brown crushed soft shale reduced to brittle brown-black, somewhat broken, sticky clay.
		214			Med hard Coal	10	10	45	Clay
		215			Clay			45	Clay
		216			Med hard Coal			45	Light gray-brown sandy textured. Few coal pieces.
		216.5			Clay			45	Same as 215. 1/8" dia.
		217			Clay and Coal			45	Pulverized coal and olive green-brown clay mixed.
		217.5			Hard Coal			45	Brittle brown-black. "Pitch" - 90% as thick bands.
		222						60	Brittle brown-black coal. Pulverized 225-225.5 and 231-231.5ft. "Pitch" as hairline to 1/8" bands - 50% of coal. Scattered 1/4" dia. nodules of resin.
					Med hard Coal	10	9	70	
								70	
		232						70-80	Brittle dull to shiny black coal. Same as 222 to 232 ft.
					Med hard Coal	8	6.5	70	
		239			Clay and Coal			65	50% coal. Plastic mixture of pulverized coal and brown-black clay.
		240			Med hard Coal			65	Brittle brown-black. 80% "pitch".
		240.5			Clay			65	6" of core recovered is crumbly olive green-brown clay. Very moist. Puddles into sticky mass. Assume most of core lost is this material and occurs between 240.5 and 241.5 ft.
		244.5				10	5.5	45	Core shows considerable evidence of grinding. Therefore some of lost core is probably coal. Brittle brown-black coal. Silky black "pitch" ranging from 30 to 50% of core.
		250						45	Brittle dull to shiny black. "Pitch" as bands 3" thick or less - silky black. 70% of coal.
					Med hard Coal			45	
		253.5			Coal and Clay	5	6	45	70% coal. Pulverized coal intermixed with brown black clay.
		254			Med hard Coal			45	Same as 253-253.5 ft.
		254.5			Clay			45	Pulverized coal mixed with chocolate brown powdery silt.
		255			Shaley Coal			45	Light gray to dull brown-black soft shale - fragments of coal and narrow bands.
		257						90	Brown-black. "Pitch" ranges from 10% in 25% coal softer zones to 90% between 259 and 260 ft.
					Soft to med hard Coal	10	10	50	259-260 ft. "Pitch" fractured - 90 degree dip. Fissures filled with cream to light gray hard shale and calcite.
								40	
		265			Clay and Coal			45	Pulverized olive green-brown clay and coal mixed.
		265.5			Med hard Coal			45	Brittle black coal. "Pitch" mostly hairline to 1/8" thick. 40% coal.
		266			Soft Shale			45	Dull brown-gray - crumbly. 50% of core.
		268.5			Med hard Coal	10	10	45	Same as 266.5 - 268 ft.
		270			Clay and Coal			50	Pulverized coal and dull brown clay mixed - 50% coal.
		270.5			Med hard Coal			30	Brittle brown-black coal. "Pitch" as twisted stringers to 1/2" thick - 30%. Broken by random dip shear planes @ 2 to 4" intervals.
		275				3	3	45-70	Dull to shiny black coal. "Pitch" as hairline to 1/8" thick lenses and twisted stringers - 45%. Isolated resin nodules.
		279						50	Brittle dull to shiny black coal, except for 3" band of olive green-brown completely sheared soft shale. "Pitch" as silky black stringers and lenses forming 40 to 90% of coal. Scattered resin nodules to 1/2" dia. Streaks brown tinted black. Some evidence of grinding.
					Med hard Coal	9	9	60	
								70	
		282						40	Brittle dull to shiny black. Same as 279 to 282. Broken into 3" pieces by random dip shear plane between 283 and 284 ft.
					Med hard Coal			50	
		284			Shaley Coal	10	9.5	50	Dull brown-black soft carboniferous clay shale interbedded with twisted "pitch" bands to 1/8" thick.
		284.5			Med hard Coal			60	Dull black. Broken into 1/2" nubbins bet. coal between 285.5 and 286.5. 30% "pitch". 1/2" resin between 287 and 288.
		288							

LEGEND

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

SUMMARY

El. Ground	_____
El. Bottom of Hole	_____
Nat. Depth of Hole	_____
Core Drill Depth	_____
Core Recovery	_____
% Core Recovery	_____

VICTOR DOLMAGE - GEOLOGIST  
 1119 MARINE BUILDING - VANCOUVER B.C.

Client Western Development and Power Limited,  
 Prepared by R. T. Trenaman  
 Checked by V. Dolmage  
 Dated December 27, 1957.

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3071.2  
 Elev. Top of Casing 3071.2  
 Coordinates 70° 7.9 N, 105° 0.2 E

Hole begun December 10, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 4  
 of 7 Sheets  
 Hole No. 14

Date & Time	Elevation	Depth	Top	Sample	Material	Length Pull	Core Length	REX DXXNXX	Dip	Remarks
	290								40	Dull brown-black. Broken into 1 to 6" cylinders by shear planes. Lenses of resin to 1/2" thick between 300 and 301 ft. - 2% of core. "Pitch" as fine lenses evenly distributed - 20% of core.
					Soft to med hard Coal	11	10		40	
	309				Hard Coal	1.5	1		55	Brittle black coal - 90% "pitch". Somewhat broken because of brittle nature.
	310.5				Med hard Coal				70-20	All core is coal except for 2" of pulverized soft shale @ 310.5 ft. Assume loss as this material 314.5 - 316.5 ft. Coal: Brittle dull to shiny black 310.5 and 313.5 ft. Soft to med hard dull black 313.5-314.5 and 316.5-317.5 ft. "Pitch" in med hard - 50%; in soft - 15% of coal.
	314.5				Clay??	7	5		70-80	Live green-gray.
	316.5				Med hard Coal				70-90	Brown-black. Shear zone 2" wide - dip 70 degrees at 320 ft. "Pitch" as lenses and stringers to 3/16" thick - 30% of coal. Scattered resin nodules to 1/4" dia.
	317.5				Med hard Shale	5.5	5.5		40-75	
	318				Med hard Coal				45	All core is coal except for 1" soft completely sheared olive green-brown clayey shale @ 324 ft. Very moist. Puddles into sticky clay. Assume core loss in this zone. Med hard coal: Dull black - same as 318 to 323 ft. Broken by shearing 329.5 to 330 ft.
	327				Clay	7	5		60	
	327				Med hard Coal				45	
	330				Soft to med hard Coal	6	6		70-50	Dull brown-black coal. "Pitch" as stringers and lenses to 1/2" - 40% - 10" solid "pitch" 334 to 335 ft.
	336								45	
									35	Compact, nearly perfect core. Dull brown-black coal except for 2" bands of pulverized coal and clay mixture @ 336.5 and 337 ft. "Pitch" as twisted stringers and lenses to 1/2" thick - 40% of coal. Resin nodules to 1/2" dia. - fraction of 1%. Few shear planes // to bedding.
	346				Med hard Coal	10	10		60	
									50	
									60-80	Brittle dull to shiny black. "Pitch" as silky black twisted stringers to 1/2" thick - 50% of coal. Broken somewhat by shearplanes. Resin nodules to 1/4" dia. - fraction of 1%.
						10	9.5		70	
	355				Shaley Coal				15	70% coal. 1" bands of soft coal interbedded with 1" bands of pulverized coal with shale component.
	356				Med hard Coal				10	Brown-black.
	356.5				Shale				10	5" soft cream brown shale bordered on top and bottom by 1/2" band of green-gray soft shale.
	357				Med hard Coal	8	7.5		40	Brown-black coal except for 3" vuggy hard shale at 353 ft. and 1 in. band of similar material at 351 ft. Core broken into 2 to 4" cylinders by shear planes. Resin-fraction of 1% "pitch" - 35%.
	364								40	
									60-90	Dull to shiny black coal except for 3" bands of sticky plastic coal and clay mixed @ 269 and 270 ft. Broken somewhat by shear planes // to bedding. Silky black "pitch" stringers to 1/2" thick and lenses to 1" thick. 45% of coal. Scattered resin nodules to 1/4" dia.
					Med hard Coal	9	8.5		60-45	
	373								45	
									60	
					Med hard to hard Coal	10	8		70-90	Brittle med hard to hard dull to shiny black coal. Silky black "pitch" as bands to 2" thick - 65%. Some breakage due to brittle nature.
	383								60	
					Med hard Coal				60	Brown-black coal except for 2" band sheared soft olive green-brown shale and coal mixed.
	385				Clay and Coal				60	Sheared crumbly olive green-black soft shale. Few coal stringers - 5% of core.
	385.5				Med hard Coal	10	10		60	Dull brown-black. Same as 383-385 ft. 2" band of sheared brown-black soft shale and coal mixed @ 20% coal. Same as 385-389.5 ft.
	389				Clay and Coal				20	
	389.5				Soft to med hard Coal				20	Brown-black coal except for 1" band sheared coal and clay mixed @ 391.5 and 392.5 ft. pulverized coal and clay mixed @ 393 ft.
	393								60	
					Clay??				60	All core recovered is med hard coal fairly compact. Not much evidence of akersit grinding. Assume lost core as sticky clay or crumbly soft shale between 393 and 396.5 ft.
	396.5				Med hard Coal	10	6.5		45	Dull brittle brown-black coal. "Pitch" lenses to 3/16" thick - closely spaced - with occasional 1" dia knots. 50% of coal.
									60	White-yellow resin nodules to 1/4" dia. - fraction of 1%.
	403								60	

**LEGEND**

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**SUMMARY**

El Ground \_\_\_\_\_  
 El Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.  
 Client Western Development and Power Limited,  
 Prepared by R. T. Trenaman  
 Checked by V. Dolmage  
 Submitted December 27, 1957.



# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3070.2  
 Elev. Top of Casing 3071.2  
 Coordinates 7917.9 N, 10580.2 E

Hole begun December 10, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman

Sheet No. 1  
 of 7 Sheets  
 Hole No. 14

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
	403				Med hard Coal			50	Brown-black coal. Broken and recombined 403-405 ft. Few cream hairline stringers med hard coal mixed @ 414 and 4" band @ 420 ft.
	405				Shaley Coal			45	30% coal. Crumbly soft brown-black carboniferous shale. Few pitch stringers.
	405.5				Med hard Coal	10	10	45	Brown-black - broken into cylinders 2 to 8" long by random shear planes. "Pitch" - 40% as stringers - hairline to 1".
	413							25 50	
					Med-hard Coal	10	10	50	Dull brown-black to black coal except for 2" band of pulverized brown-black clay and coal mixed @ 414 and 4" band @ 420 ft. Silky black. "Pitch" as hairline to 1/4" stringers and occasional knots to 3/4" dia. - 40% of coal.
	423							45 70-90	
					Med-hard Coal				Brown-black to dull black. Quite broken by shearing 427-428 ft. Same as 413 - 423 ft. Isolated resin nodules to 1/4" dia.
	428.5				Shaley Coal	9	9		60% coal. Hard black "pitch" with many twisted stringers of wuffy gray shale to 3/16" thick. Brittle. Many of voids filled with calcite.
	429.5				Med hard Coal				Brown black. Broken by closely spaced shear planes.
	432							45	Med hard is brittle dull brown-black.
					Soft to med hard Coal	10	10	50	Broken somewhat by shear planes at random angles. "Pitch" as stringers to 1/4" - 30% of coal. Resin nodules to 3/16" dia. - lenses to 1/4" thick between 437 and 438 ft. - 1%.
	442							45	
					Soft to med hard Coal			45	Dull black coal. Somewhat broken by shear planes. Twisted "pitch" stringers and lenses to 1/4" thick. 30-50% of coal. Scattered resin nodules to 1/4".
	447				Clay and Coal	10	9.5	45	Soft coal. Sheared dark olive green-brown soft shale mixed with pulverized coal. Puddles into plastic clay.
	448				Med hard Coal			60	Dull black coal.
	452								Same as 442-447 ft. except for 2" band "pitch" & hard cream waxy shale interbedded @ 451 ft.
					Clay ?? and Coal				Core loss assumed to be in clay zones. Completely sheared olive green-brown clayey shale. Very moist. Puddles into soft sticky clay. This is intermixed with fragments of "pitch" to 2" dia. and pulverized coal - much evidence of shearing. 50% coal.
	457				Med hard Coal	10	7	70	Med hard coal: dull brown. Brittle in "pitchy" bands. "Pitch" hairline to 1/4" bands - 50%.
	461				Clay			60	Dull brown plastic clay (sticky) mixed with coal particles - 10% coal.
	462							55	
					Med hard Coal	10	10	45	Brittle brown-black to dull black. Partially broken 462-463ft. by shearing. 2" pulverized zones 464 and 471.5 ft. "Pitch" as bands to 1/4" thick as isolated knots to 1" thick - 40% of coal.
	472							70	
					Med hard Coal	10	10	65	Brown-black coal. Broken into 2 to 8" cylinder by shear planes // to bedding. 2" crumbly sheared olive green-brown soft shale @ 478 ft. "Pitch" as bands to 1 1/2" thick (mostly less than 3/16" thick). Finer stringers are silky black. "Pitch" - 25-30% of coal.
	482							50	
					Med hard Coal			70	Dull to shiny black coal. "Pitch" as bands to 1/2" thick - 30% of coal.
	484.5				Shaley Coal	6	6	45	40% coal. Light gray to olive green-gray soft shale as stringers hairline to 1/4" interbedded with dull black soft coal and carboniferous bands - hairline to 1/4" thick less than 1".
	488				Soft & med hard Coal				Soft and med hard coal as 6" bands. Soft parts readily somewhat broken by shearing.
	490				Shaley Coal				Olive green-gray soft shale and soft coal with "pitch" stringers interbedded as 1 to 2" beds.
	491.5				Med hard Coal	9	9		Brown-black. 3/16" "pitch" stringers 50% coal.
	493				Clay and Coal				50% coal. Olive green-gray to off colour white soft shale hairline to 2" bands interbedded with bands of soft dull black coal.
	493.5				Shaley Coal				Dull brown-black. 35% "pitch" as bands to 3/4"
	497				Med hard Coal				Soft olive green-gray to off colour white soft shale interbedded with completely mixed same soft shale and dull black carboniferous shale.
	498.5				Shaley Coal				80% coal. Dull brown-black coal - 20% coal. Intermixed with brownish gray shale. Broken somewhat by shearing // to bedding.
	503.5				Shaley Coal	10	10		Brown-black coal, except for 4" band hard waxy gray brown shale @ 505.5 ft. Calcite-filled fissures.
	505				Med hard Coal				
	507								

LEGEND	
<input type="checkbox"/>	El Ground
<input type="checkbox"/>	El Bottom of Hole
<input type="checkbox"/>	Net Depth of Hole
<input type="checkbox"/>	Core Drill Depth
<input type="checkbox"/>	Core Recovery

SUMMARY	
El Ground	_____
El Bottom of Hole	_____
Net Depth of Hole	_____
Core Drill Depth	_____
Core Recovery	_____

**VICTOR DOLMAGE - GEOLOGIST**  
 1119 MARINE BUILDING - VANCOUVER 1, B.C.

Client Development and Power Limited,

Prepared by R. T. Trenaman

Checked by V. Dolmage  
 December 27, 1957.



# DRILL HOLE LOG

Project Hay Creek Coal Project

Elev. Ground Surface 3070.2  
 Elev. Top of Casing 3071.2  
 Coordinates 7917.9 N, 10580.2 E

Hole begun December 10, 1957  
 Contractor Scyles Bros. Drillers  
 Inspector W.T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 6  
 of 7 Sheets  
 Hole No. 14

Date & Time	Elevation	Depth	Log	Sample	Material	Length Put	Core Length	Dip	Remarks
		507			Shaley Coal	10	9.5		80% coal; Dull black to gray-black soft coal with small component of gray-brown soft shale completely intermixed. Much evidence of shearing // to bedding. Pulverized between 515 and 516 ft.
		517			Soft Coal			70-90	Dull brown-black. Parts readily "pitch" - 10% as 3/16" dia. stringers.
		518.5			Soft Shale			70-90	Olive green-gray to dull black partially sheared into shaly fragments. "Pitch" as 1/8" twisted bands.
		520			Med hard Coal				Dull to shiny black. "Pitch" as 1/8" twisted bands.
		521			Soft Shale & Clay	10	10	20	Olive green-gray soft shale same as 518.5-520. Slight shaly component. Pulverized sticky clay.
		523			Soft Shale				Light brown mottled with soft cream particles.
		524			Hard Coal			70	Brittle brown-black. "Pitch" hairline to 2" - 60% of core.
		527			Med hard Coal			70	Brown-black coal. "Pitch" as closely spaced hairline stringers - 20%.
		529			Shaley Coal			90	60% coal. Soft coal interbedded with olive green gray soft shale as hairline to 1/8" bands. Badly broken and completely pulverized in places by shearing // to bedding which dips vertically.
		534			Soft Coal			80	Assume lost core here.
		535.5			Soft Shale			60	Dull black. "Pitch" as 1/8" thick - 10%.
		536			Med hard Coal			50	Olive green-gray to dull black. Coal stringers broken into 1-4" cylinders by shearing // to bedding.
		536			Med hard Coal			?	Brown-black. "Pitch" as twisted stringers to 1/8" - 20% of coal. 2" bands hard gray shale fractured-fissures filled with white calcite @ 50% coal. Very plastic clay. 230 and 241 ft.
		541.5			Clay and Coal	8	8		Brown-black coal. Streak chocolate brown. "Pitch" as isolated 1/8" stringers.
		543			Soft to med hard Coal			45	
		546			Soft Coal			70-80	Dull black. Parts readily // to bedding. Slight shaley component. Isolated "pitch" to 1/8" thick.
		548.5			Shaley Coal			50	50% coal. Dull olive green-brown to dull black soft carbonaceous shale - few coal bands (incl).
		549.5			Soft Coal	10	10	90	Dull brown-black. "Pitch" as twisted stringers and knots to 1/8" - 30% of core.
		556			Med hard Coal			80-90	
		556.5			Soft Clay			50	Assume core loss in clay zones. Same composition little more compact than 549.5-556. Gray-brown sticky coze. Originally sheared soft gray-brown shaly shale.
		558			Med hard Coal				Dull black. Broken into 2-4" cylinders by shearing. Knots of silky black "pitch" to 1/8" dia. twisted stringers to 1/8" thick - 60% of core.
		560			Shaley Coal				50% coal. Coal as bands to 2" interbedded with light gray brown shale bands to same width.
		561			Med hard Coal	8	6.5	45	Brown-black. Same as 549.5 to 556 - little more compact.
		563			Broken Shaley Coal				Sheared soft coal and soft shale. Minor portion pulverized to silty coze.
		564			Shaley Coal				80% coal. Soft coal with narrow stringers light gray shale. Also intermixed shale and coal.
		567			Shaley Coal	10	10		80% coal. Soft coal. Slight shaley component intermixed. Sheared into cylinders 4" and smaller by planes // to bedding.
		571			Clay				black coze. Pulverized clay and coal. 50% coal.
		571.5			Shaley Coal				Silky black "pitch" to 3/16" thick bands - 20% slight shaley component. 90% coal.
		574			Soft and med hard Coal	10	8.5	35	Soft dull brown-black to med hard dull to shiny black. 60% soft-"pitch" scattered hairline stringers-10%. Med hard-"pitch" as bands to 4" (most less than 1/8") - 40%.
		584			Med hard Coal			70	
		585			Hard Sandstone			45	Same as 574-584 ft.
		585.5			Soft to med hard Coal				Gray. Like sandstone.
		587			Shaley Coal	10	8	60	Brownish-black. Slight shaley component as dull gray black shale interbedded with 50% coal.
		589			Soft to med hard Coal			60	Olive green-gray to dull black wax lustred soft shale interbedded with "pitch" bands. 50% coal.
		594			Soft Coal			60	Dull black. "Pitch" stringers silky black coze hairline to 1/8" - 25% of coal. Slight shaley component as intermixed gray black shale.
		595			Clayey Shale			60	Brown-black-no "pitch".
		597.5			Shaley Coal				Coal above grades into soft gray-brown to olive green-brown soft shale. Harpers. 20% of clay.
		600			Soft to med hard Coal			60	Same shale as above interbedded with "pitch" bands and soft coal. 40% coal. Grades into c. Brown-black. "Pitch" as stringers at 600 ft to 1/16" - 10% of coal.
		603.5			Med hard Shale			60	Cream brown. Mottled with rounded particles cream soft shale.
		604							

**LEGEND**

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**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_  
 % Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

119 MARINE BUILDING - VANCOUVER 1, B.C.  
 Client Western Development and Power Limited,  
 Prepared by H. T. Trenaman  
 Checked by V. Dolmage  
 Submitted December 27, 1957.





# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3199.5  
 Elev. Top of Casing 3190.0  
 Co-ordinates 7917.5 N., 9247.9 E.

Hole begun December 17, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R. T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 3  
 of 6 Sheets  
 Hole No. 15

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	XXXX XXXXXX	Dip	Remarks
		106			Soft Shale	10	10			Olive green soft shale. Few bands of clay having thicknesses up to 2in.
		116			Soft Shale	10	10			Olive green soft shale. Few narrow bands of clay - same material as shale.
		126			Soft Shale and Clay	7	7			Olive green soft shale. 50% as 1 ft. bands reworked to clay.
		133			Clay					Olive green to blue-green sticky clay.
		137			Soft Shale	10	9			Soft olive green shale. Fractured between 137 and 138 ft. Fissures filled with lime-lives material cherty appearance.
		140			Soft Shale and Clay					Soft olive green shale. Reworked to clay in narrow bands. Shale breaks with rough conchoidal fracture. Few minute carboniferous
		143			Soft Shale and Clay	9	6.5	45		Bands of approximately 1 ft. thickness of olive green soft shale and olive green to blue green clay. Shale exhibits some bedding - 45
		152			Soft Shale and Clay	9	8			Olive green soft shale and clay as bands to foot thick. Clay is reworked shale.
		161			Soft Shale	10	9	50		Olive green to greenish gray soft shale. Few narrow bands of clay. Some evidence of bedding - 50 degrees.
		171			Soft Shale and Clay	6	6			Olive green soft shale - reworked to clay in zones to 1 ft. wide.
		177			Clay	3	2.5			Mushy and sticky clay.
		180			Soft Shale and Clay ??	10	1	45		Rounded fragments of olive green shale. (soft) Lost core probably sticky clay.
		190			Soft Shale	4	4			Olive green soft shale. Part of plant fossil observed - same as that found at 140 ft. in hole 13.
		194			Clay	3	3			Very plastic olive green clay. Few nodules soft shale included in clay.
		197			Soft Shale and Clay	10	10			Olive green to blue green very plastic clay in zones 1 ft thick interbedded with olive green soft shales. Between 204 and 205 ft. shale has been fractured and fissures coated with lime to give shaly appearance.
		207								

**LEGEND**

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**SUMMARY**

El. Ground \_\_\_\_\_  
 El. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 2, B.C.  
 Western Development & Power Ltd.

Client R. T. Trenaman

Prepared by V. Dolmage

Checked by January 27, 1958.

# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3180.5  
 Elev. Top of Casing 3190.0  
 Co-ordinates 7917.5 N, 9247.9E

Hole begun December 17, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R.T. Trenaman

Sheet No. 3  
 of 6 Sheets  
 Hole No. 15

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	DIP	REMARKS
		207			Soft Shale	10	9	30	Olive green soft shale. Few yellowish green sandy streaks indicate bedding.
		217			Soft Shale and Clay	8	8	15	Olive green soft shale. Few 6" clay bands of same material as shale. 8" yellow green soft sandy shale band at 219 ft. Few fine carboniferous particles.
		225			Soft Shale	8	8	15-20	Olive green soft shale. Few narrow bands yellow-green sandy shale.
		233			Soft Shale and Clay ??	4	0.5		Mubbins of olive green soft shale. Assume lost core is plastic clay.
		237			Soft Shale	1	1		Olive green
		238			Soft Shale	8	8	15	Olive green soft shale. Few narrow bands of clay-same material as shale. Few fine carboniferous particles. Bedding - 15 degrees.
		246			Soft Shale	6	6	15	Olive green-brown soft shale. Breaks with uneven conchoidal fracture. Plant fossil at 247 ft.
		252			Soft Shale	6	5	15	Olive green soft shale. Indistinct bedding at 254 ft. Dark gray streaks between 254 and 255 ft. Probably finely divided carboniferous material.
		258			Reworked soft Shale	7	2		Angular fragments of soft olive green shale to 2" dia in matrix of same material pulverized. 258-260: Shale contains high iron bearing material which on exposure to air rusts, leaving surface of shale speckled red.
		265			Soft Shale	1	1	10	Light gray to gray green soft shale; faint bedding. Few carboniferous particles.
		266			Soft Shale	11	10	5	Olive green-gray soft shale except for 4" band of off colour white soft shale with smooth waxy texture.
		277			Clay				Olive green plastic
		278			Soft Shale	8	7	20	Gray green to olive green soft shale. Few carboniferous particles. Indistinct bedding dip 20 degrees.
		283			Clay				Olive green clay.
		285			Soft Shale and Clay	10	10	20	Gray-green to olive green soft shale except for 1 ft. plastic clay (olive green) between 293.5 and 294.5 ft.
		295			Soft Shale	1	1	15	285-287: 1 to 2" bands in this zone contain mineral that rusts yellow-red. Same as 258-260 ft.
		296			Soft Shale			15	Olive green soft shale. Isolated plant fossils. 4" band of yellow white soft waxy textured shale at 297 ft.
		307							

**LEGEND**

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**SUMMARY**

- (l) Ground \_\_\_\_\_
- (l) Bottom of Hole \_\_\_\_\_
- Net Depth of Hole \_\_\_\_\_
- Core Drill Depth \_\_\_\_\_
- Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

119 MARINI BUILDING - VANCOUVER, B.C.

Client Westport Development & Power Ltd.  
 Prepared by R. T. Trenaman  
 Checked by V. Dolmage  
January 27, 1958.





# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3148.5  
 Elev. Top of Casing 3190.0  
 Co-ordinates 7917.5 N, 9247.9 E

Hole begun December 17, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R.T. Trenaman

Sheet No. 5  
 of 6 Sheets  
 Hole No. 15

Reference to Plan No. \_\_\_\_\_

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
		405			Med hard to hard Coal	10	10	20	Med hard to hard brittle brown black coal. "Pitch" as closely spaced silky black hairline stringers 60% of coal. Isolated resin nodules to 1/4" dia. between 408 and 409 ft.
		412			Clay			30	Pulverized olive green-brown shale. Passes to 60 mesh.
		412.5			Med hard Coal			20	Dull to shiny black coal. Silky black "pitch" as twisted hairline to 1/4" thickness stringers.
		415			Med hard Coal			20	Dull to shiny black coal "pitch" as silky black twisted stringers hairline to 1/4" 10% of coal.
		419.5			Shaley Coal	10	10	20	Resin as nodules to 3/4" dia. between 416 and 418 ft. - 1% of core.
		420.5			Med hard to hard Coal			25	50% coal. Soft dull black coal and olive green brown soft shale intermixed.
		425			Hard to med hard Coal			20	Brown-black coal. "Pitch" as stringers - hairline to 1/4" thick - 40% of coal. Isolated resin nodules.
		430			Shaley Coal	10	9	20	Hard brittle brown-black coal @ 425 ft. gra. into med hard dull to shiny black coal @ 430 ft. "Pitch" as twisted stringers (silky black) hairline to 1" thick - 50% of core.
		433			Med hard Coal			20	80% coal. 8 - 12" bands of soft to med hard dull black coal separated by dull black waxy textured carboniferous shale 2 - 4" thick bands. "Pitch" as hairline to 1/8" silky black string in coal.
		435			Med hard Coal			20	Brown-black coal. "Pitch" as hairline to twisted stringers and lenses.
		439			Med hard Coal			15	Med hard brown-black coal @ 435 grades into med hard dull black @ 439 ft. Slight shaley component 438-439 ft. "Pitch" as hairline to 1/8" silky black stringers. 30% of coal.
		442			Clayey Shale and Clay	10	9	10	Olive green brown clayey shale. Broken into soft thin stringers of "pitch" scattered throughout. Soft med brown shale interbedded with stringers of "pitch" to 1/16" thick - 10% coal. Shale has slight sandy texture.
		443.5			Clay			25	Pulverized soft olive green-brown clayey shale. Shiny black coal. "Pitch" 90% as hairline silk black stringers.
		445			Med hard Coal			30	Dull to shiny black coal. Broken into 2 - 4" cylinders by shear planes // to bedding.
		451			Clay	10	7.5	15	Assume core loss in clay area. "Pitch" - silky black lenses and stringers hairline to 1/4" twisted - 50% of core.
		454			Soft to med hard Coal			25	Broken dull black carboniferous shale. Most reduced to clay. 6" core recovered in this area. Dull black coal. "Pitch" as silky black twisted stringers hairline to 1/4" - 15% of coal.
		456			Soft Shale			20	Olive green-brown soft shale. Isolated fragments of "pitch".
		457			Coal, Shale and Clay			20	2" dull to shiny black med hard coal (30% "pitch" followed by 6" olive green soft shale followed by 4" pulverized olive green brown soft shale (plastic clay now).
		459			Clay			15	1" band dull to shiny black coal followed by 2" pulverized olive green-brown soft shale (now plastic clay). Core recovery was 1 ft.
		459.5			Med hard Coal	10	8	20	Dull black coal. Silky black "pitch" stringers 10% of coal. Slight shaley component.
		460.5			Clay			20	Sheared olive green-brown soft shale (now clay). Core recovery was 6.5 ft.
		461.5			Soft to med hard Coal			20	Dull to shiny black coal. Silky black "pitch" hairline to 1/8" as twisted lenses & stringers. Slight shaley component.
		462			Clay			20	Sheared olive green-brown soft shale (now clay).
		465			Soft Shale			20	Olive green to gray-green soft shale. Scattered "pitch" fragments. 2" band of med hard dull to shiny black coal @ 462.5 ft.
		466			Shale, Coal, and Clay			20	4" band soft olive green shale intermixed and interbedded with coal followed by 2" of med hard dull black coal (hairline "pitch" stringers) followed 6" pulverized olive green-brown soft shale (now clay).
		473			Med hard Coal	10	10	15	Med hard Coal. Brown-black. Silky black "pitch" hairline to 1" as twisted stringers and lenses 60% of coal. Isolated resin nodules to 1/16" dia.
		474			Broken shaley Coal			30	Sheared coal with soft dull black carboniferous shale intermixed. Strong odour of gas. 70% coal.
		475			Hard Coal			20	Brown-black coal. Twisted stringers of "pitch" to 2" thick - 80% of coal.
		475.5			Broken Coal and hard Coal			40	Broken coal fragments between 475 and 475.5 ft. comes hard brown-black coal 475.5 to 476.5 ft. Strong odour gas in broken material. "Pitch" twisted lenses and stringers to 1/4" - 50% streak-brown-black.
		476.5			Soft Shale			20	Olive green-brown soft shale. Partly reduced to dull to shiny black coal. Slight shaley component. Lenses & short stringers "pitch" to 1/4" dia.
		478.5			Med hard Coal	10	10	20	Olive green to gray-green soft shale. Twisted stringers to 1/4" dia. - 30% of coal.
		481.5			Med hard Coal			25	Brown-black coal. "Pitch" twisted stringers to 1/4" dia. - 30% of coal. Isolated resin nodules.

**LEGEND**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**SUMMARY**

E. Ground \_\_\_\_\_  
 E. Bottom of Hole \_\_\_\_\_  
 Net Depth of Hole \_\_\_\_\_  
 Core Drill Depth \_\_\_\_\_  
 Core Recovery \_\_\_\_\_

**VICTOR DOLMAGE - GEOLOGIST**

1119 MARINE BUILDING - VANCOUVER 1, B.C.  
 Client Western Development & Power Ltd.  
 Prepared by R. T. Trenaman  
 Checked by V. Dolmage  
 Date January 27, 1958.



# DRILL HOLE LOG

Project Hat Creek Coal Project

Elev. Ground Surface 3188.5  
 Elev. Top of Casing 3190.0  
 Co-ordinates 7917.6 N, 9247.9 E

Hole begun December 17, 1957  
 Contractor Boyles Bros. Drillers  
 Inspector R.T. Trenaman  
 Reference to Plan No. \_\_\_\_\_

Sheet No. 6  
 of 6 Sheets  
 Hole No. 16

Date & Time	Elevation	Depth	Log	Sample	Material	Length Pull	Core Length	Dip	Remarks
		485						35	Brown-black to shiny black coal. "Pitch" hairline to 1/4" lenses and stringers - 45% coal. Coal broken into 1 to 6" cylinders by shear planes // to bedding. Isolated nodules to 3/16" dia.
		495			Med hard Coal	10	10	20	
		499			Soft to med hard Coal			5	Dull black coal. Silky black "pitch" streaks 10% of coal. 2" pulverized zones @ 495 and 497.5 ft. consist of pulverized coal, soft shale mixed. Strong occur of gas fractured zones.
		501			Soft Shale	10	8	5	Assume core loss here and in soft shale. Dull grayish black and olive green soft shale containing fragments of "pitch" and terminated with fine carboniferous material.
		503			Sandy Shale and Sandstone			20	12" olive green soft sandy shale grades into rounded particles to 1/2" max. in olive matrix. Particles - white feldspar chiefly some light coloured micas and few particles of orthoclase. Streaks of finely divided carboniferous material throughout.
		505			Sandstone and Conglomerate			30	Particles to max of 8mm as bands to 2" thick as isolated pockets in sandstone matrix ascribed above. Particles subangular to round of orthoclase albite gray-black and brown volcanic? and tourmaline coloured soft shale isolated carboniferous particles and streaks.
		507.5			Soft to med hard Shale	10	10		Olive green to gray green soft shale. Streaks of finely divided carboniferous material. Isolated fragments of coal fractured between 506 and 507.5 ft. - breaks with rough coal fracture.
		508.5			Clay			5	Olive green-brown clay. Very moist. Puddles to sticky ooze. Many plant fossils included.
		515			Soft to med hard Coal			0-10	
		525			Med hard Coal	10	9	10	Dull black coal. Broken into 1 - 5" cylinders by shear planes // to bedding. 3" bands of brownish clusky shale and coal interbedded (break into mush) @ 516, 518, 520, and 523. Shiny black "pitch" hairline to 1/8" streaks 30% of coal.
		531			Shaley Coal	10	10	20	Dull black coal. "Pitch" as hairline to 1/8" stringers and lenses - 30% of coal. 3" bands of waxy brown soft shale @ 527 ft.
		532			Med hard Coal			30	Dull black coal. Hairline to 3/16" "pitch" as stringers and lenses - 30% of coal. Broken into 1-6" cylinders by shear planes // to bedding.
		533.5			Broken Shaley Coal			20	Soft black coal with intermixed shale component. Broken by shearing. Some Pt.
		534			Soft Coal			20	Dull black coal. Same as 532-533.8 ft. - isolated resin nodules to 1/2" dia.
		540			Soft to med hard Coal			20	Dull black coal. 1" band of olive green-brown soft shale @ 536.5 ft. "Pitch" stringers and lenses to 1/16" thick - 10% of coal. Broken into 2-8" cylinders by shear planes // to bedding.
		541			Soft Shale	10	9.5	20	Grayish black soft shale.
		545			Soft to med hard Coal			Twist 4E-20	Dull black coal. Slight shaley component @ 541.5 ft. "Pitch" as twisted knots and lenses to 1" thick - 40% of coal. Bottom of Hole

<p><b>LEGEND</b></p> <p><input type="checkbox"/> B. Ground</p> <p><input type="checkbox"/> B. Bottom of Hole</p> <p><input type="checkbox"/> Net Depth of Hole</p> <p><input type="checkbox"/> Core Drill Depth</p> <p><input type="checkbox"/> Core Recovery</p> <p><input type="checkbox"/> % Core Recovery</p>	<p><b>SUMMARY</b></p> <p>B. Ground _____</p> <p>B. Bottom of Hole _____</p> <p>Net Depth of Hole _____</p> <p>Core Drill Depth _____</p> <p>Core Recovery _____</p> <p>% Core Recovery _____</p>	<p><b>VICTOR DOLMAGE - GEOLOGIST</b>                  1119 MARINE BUILDING - VANCOUVER 1, B.C.</p> <p>Client <u>Western Development &amp; Power Ltd.</u></p> <p>Prepared by <u>R. T. Trenaman</u></p> <p>Checked by <u>V. Dolmage</u>                  January 27, 1958.</p> <p>Submitted _____</p>
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BRITISH COLUMBIA HYDRO AND POWER AUTHORITY  
HAT CREEK PROJECT - DRILL RECORD

Coordinates : 80,128' N Length : 674' Hole No. : 27-12  
 Reference Elev. : 19,365' E Azimuth : Date : NOV 1957  
 Ground Elev. : 3041.0' Dip : -90° Logged by : RT Trenomon  
 Core Size : NX Sheet : 1 of 4

ELEVATION IN FEET DEPTH IN FEET	STRAT MOT	STRATIGRAPHY		DETAIL & STRUCTURE		SAMPLE No.	ASH AT 20% MOISTURE							
		MAJOR ROCK UNITS	SYMBOL	DESCRIPTION	1		2	3	4					
0	Datum													
0-10		WEERBURDEN, Gravel & clay Boulders and gravel												
10-20		MIXED UNIT CLAY, olive green		Soft and medium hard										
20-40		SHALE Pinkish red yellow and orange, soft to hard, clayey		Particles of red pink and buff, hard Particles of yellow and olive and grey, hard Clayey - thin bedded shale in a shaly shale shale. Thin white and grey brown crumbly clayey shale Hard dull, with particles of soft grey shale										
40-80		COAL AND CLAYEY SHALE Black dull, hard coal and brownish black carb. shale		Rust red dull, in places grey with shaly bands Grading to pulverised coal Hard dull grey black to the coal (10.5) Fragments of hard black with some red black coal.										
80-100		CLAYEY SHALE Olive green-brown, parallel to bedding, with bands of shaly coal		(10.5) broken brittle shiny black hard coal with thin black coal bands Fragments of pulverised dark brown shaly coal.		1								
100-120		COAL Brittle, black to brown-black soft to medium hard		(10.5) broken brittle black of black coal bedded with bands of soft brown coal. Soft to red hard shaly (10.5) with clayey shale bands										
120-140		INTERBEDDED COAL AND SHALE		(10.5) grey brown clayey shale, carb.		2								
140-160		COAL Brown black, brittle, medium hard, with some soft to hard grey black, clayey shale bands		Clay carb Carb. clayey shale Brittle broken soft and med. hard coal, shaly shale Grey to brown grey, hard shale Clayey shale Pulverised clayey shale with fragments										
160-180		SHALE Med hard, dark to light grey with narrow stringers of coal and shaly coal		Soft dull black coal and soft grey black to greenish brown clayey shale										
180-200		COAL AND SHALE Med. hard, dull to shiny black coal and med. hard to hard grey to grey black shale		(10.5) light grey med hard shaly greyish green clayey shale soft to med. hard, pulverised greyish black carb. clay.										
200-220		COAL Shiny black, soft to medium hard to hard		(11.0) broken shaly Light grey broken clayey shale										
220-240		SHALE Med hard, dark to light grey with narrow stringers of coal and shaly coal		Streaky brownish carb shale Greenish grey soft shale, carb Shaly, pulverised (10.5) hard shale, siliceous		3								
240-260		COAL AND SHALE Med. hard, dull to shiny black coal and med. hard to hard grey to grey black shale		(11.0) brownish grey, hard shale carb Shaly Soft Soft grey brown shale with thin bands of soft coal shale, sandy coal parts parallel to bedding Carb. shaly										
260-280		SHALE Med hard, dark to light grey with narrow stringers of coal and shaly coal		Carb. shaly (10.5) soft coal with soft dull coal (11.0) soft dull black coal Light grey brown clay										
280-300		COAL AND SHALE Med. hard, dull to shiny black coal and med. hard to hard grey to grey black shale		Interbedded with soft coal		4								
300-320		COAL Shiny black, soft to medium hard to hard		Hard grey shale Grey, med hard to hard shale Clayey soft shale banding in soft black coal										
320-340		SHALE Med hard, dark to light grey with narrow stringers of coal and shaly coal		Greyish brown soft to med. hard, clayey shale Med. hard coal Clayey (10.5) med. hard coal Clayey with coal fragments										
340-360		COAL Shiny black, soft to medium hard to hard		Med. hard sandy shale, siliceous		5								
360-380		SHALE Med hard, dark to light grey with narrow stringers of coal and shaly coal		Soft crumbly brownish black interbedded with soft carb shale Medium hard black interbedded with bands of clayey shale and crushed coal and shale in bed Grading into brownish clayey shale and broken coal.		6								
380-400		COAL AND SHALE Med. hard, dull to shiny black coal and med. hard to hard grey to grey black shale		Hard black with interbedded layers of black soft clayey shale containing fragments of hard (10.5) reworked soft shale										
400-420		SHALE Med hard, dark to light grey with narrow stringers of coal and shaly coal		(10.5) hard ruggy siliceous shale		7								
420-440		COAL AND SHALE Med. hard, dull to shiny black coal and med. hard to hard grey to grey black shale		Soft to med hard black coal interbedded with brown soft clayey shale, slickensides carb. and narrow bands of soft coal.		6								
440-460		SHALE Med hard, dark to light grey with narrow stringers of coal and shaly coal		Shaly Fragments to 3" diameter		8								
460-480		COAL AND SHALY COAL Brittle dull to shiny black, mixed soft med. hard to hard Broken into fragments to 2" diameter.		(11.5) dull black, broken (11.0) shaly Shaly Med hard shale Interbedded with creamy soft shale										
480-500		INTERBEDDED COAL AND SHALE Soft to med hard black coal interbedded with brown soft clayey shale, slickensides carb. and narrow bands of soft coal.		Light to dark grey soft shale with stringers of soft carb. shale (10.5) soft coal Soft, carb. shale Med shale and coal (10.5) soft Med shale Med shale shaly coal Carb. shale shaly coal Shaly carb.										
500-520		COAL AND SHALY COAL Medium hard, brittle dull to shiny black with many bands grey brown shale interbedded		(11.0) shaly Med hard dull to shiny, shaly										
520-540		MIXED SHALY COAL AND SHALE Med hard, dark to light grey with narrow stringers of coal and shaly coal		Med hard brown black inter- bedded with bands of brownish grey soft shale Shaly (11.0) dull grey black, soft shale (10.5) soft shale (10.5) soft shale		9								
540-560		SHALE Med hard, dark to light grey with narrow stringers of coal and shaly coal		Soft, dull grey black shale (10.5) clayey shale (11.0) hard, fractured, grey shale (10.5) soft shale										
560-580		COAL AND SHALY COAL Medium hard, brittle dull to shiny black with many bands grey brown shale interbedded		(11.0) shaly Med hard dull to shiny, shaly										
580-600		SHALE Med hard, dark to light grey with narrow stringers of coal and shaly coal		Med hard brown black inter- bedded with bands of brownish grey soft shale Shaly (11.0) dull grey black, soft shale (10.5) soft shale (10.5) soft shale										
600-620		COAL AND SHALY COAL Medium hard, brittle dull to shiny black with many bands grey brown shale interbedded		Soft, dull grey black shale (10.5) clayey shale (11.0) hard, fractured, grey shale (10.5) soft shale										
620-640		SHALY COAL Soft to medium hard, dull to sandy black interbedded with bands of soft, grey brown shale; broken.		(11.0) grey to brown hard shale		9								
640-660		SHALE Med hard, dark to light grey with narrow stringers of coal and shaly coal		Dull black coal except for 0.5 stringer of soft brown grey shale.										
660-680		END OF HOLE AT 674 feet												

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BRITISH COLUMBIA HYDRO AND POWER AUTHORITY  
 RAT CREEK PROJECT — DRILL RECORD

Coordinates : 78,973' N Length : 1074.5' Hole No. : 57-9  
 Reference Elev. : 19,481' E Azimuth : — Date : SEPT 1957  
 Ground Elev. : 3102.9' Dip : 90° Logged by : R.T. Troneman  
 Core Size : NX Sheet : 1 of 6

ELEVATION IN FEET	STRATIGRAPHY		DETAIL & STRUCTURE		CORRECTIONS	SAMPLE NO.	ASH AT 20% MOISTURE
	SYMBOL	MAJOR ROCK UNITS	SYMBOL	DESCRIPTION			
0		OVERBURDEN					
20		Gravel and sand					
40		Boulders, gravel and sand					
60		Sand and coal particles Clay and gravel					
80		REWORKED CLAY Blue-grey to grey brown		Contains minor amount of pulverised coal. Contains abundant angular fragments of light grey clay, reddish brown clay and yellow bedded clay Fibbing and gravel, lost boulders			
100		CLAYEY SHALE Brownish grey, crumbles when wetted.		Earthen grey, blocky, disintegrates readily in water.			
120				No core, sludge indicates same as 100' Dark grey with silty clay Dark grey, highly crushed Dark grey to greenish grey, silty, silty, finely bedded, silty Light greenish grey with 2" band of brown sandy clay			
140				Carb.			
160				10-5) plastic with fragments dark brownish grey shaly clay Blends into dark olive green to black clayey shale with 6" bands of light brown sandy shale			
180				Compact, grades from dark olive green to dark brownish grey, carb. with 6" bands of yellow brown clay with 6" bands of buffish grey clayey shale.			
200		COAL Brown black, medium hard with numerous bands of shaly coal and carb. shale throughout		Soft With 6" bands of yellow brown clay with 6" bands of buffish grey clayey shale.			
220				10-4) shaly			
240				With narrow bands of dark brown shale, finely mixed Soft grey brown shale with scattered bands of coal to 2"			
260		SHALE, clayey GREYWACKLE		Very plastic cement grey clay containing some particles of soft coal. Silty clayey shale. (10-5) hard coal (10-5) cement grey, sandy shale			
280		COAL		Soft, sooty brown Dark grey clayey shale and soft coal in 6" bands			
300				Bands 4" to 6" of soft shale and 2" to 4" of shale interbedded with thin brown shale, coal stringers Shaly Soft blocky.			
320				10-4) brown shaly, blocky Medium pulverised, soft 10-5) soft, pulverised shaly 10-5) soft brown shale			
340				10-5) dark grey shaly.			
360				10-5) shaly. Soft pulverised Dark grey shale 10-5) shaly Dark brownish grey shale Soft, with few 1/2" stringers of dark grey shale 10-5) brownish grey shale Bands of soft coal interbedded with light to dark greyish brown clayey shale Brownish grey shale and coal finely mixed.			
380				Dark grey - black clayey shale and soft coal interbedded			
400				Coal and juggy fine silty bands interbedded, coaly shale 10-5) dark grey clayey shale 10-5) shaly			
420				Dark grey brown clayey shale with narrow stringers of coal.			
440				Grey brown shale and coal mixed Dark grey brown shale with few 1/2" stringers of coal			
460				Coal and grey brown shale mixed Grey brown shale and soft coal mixed 10-5) shaly, vuggy, fine Soft to med hard			
480				Interbedded with grey brown shale 10-5) grey shale with few 1/2" coal 10-5) finely mixed coal and shale 10-5) soft shaly			
500				Hard and shaly Crushed, shaly.			
520				Pulverised, dark brownish grey clayey shale with coal fragments Clayey shale			
540				Badly pulverised dark brownish grey clayey shale with coal fragments. Pulverised clayey shale 10-5) shaly			
560				Or clayey shale?			
580				Or shale??			
600				Shaly with 4" bands of 1" to 6" of med. hard coal			
620				Shaly 10-5) soft and shaly finely bedded Grey brown clayey shale with 1/2" stringers of coal. Soft Brownish grey shale Interbedded with brownish grey shale Interbedded with light grey stringers of shale to 6"			
640				Soft, shaly 10-5) brownish grey clayey shale 10-5) shaly 10-5) dark brownish grey clayey shale			
660				Medium brown grey clayey shale.			
680				Very soft mixed with shale Grey black, shaly, crushed Brownish grey shaly 10-5) shaly with vuggy fine silty 10-5) shaly Bands of soft brown coal and brownish grey shale 1/2" - 6" interbedded.			
700				Dark brownish grey shale Carb. shaly 10-5) hard light brown sandy shale			
720		SHALE Dark dull grey		Shaly 4" bands of hard dark soft brown coal and med brown shale.			
740		COAL		Coaly 10-5) coaly shale			
760		SHALY COAL		Stringers of coal from 1/2" to 4" interbedded randomly with light grey, hard shale.			
780		SHALE Light grey to creamy white, medium hard.		Cement grey sst Shaly			
800		COAL		Dark grey brown shaly soft coal bands to 6" thick, very silty colour.			
820				10-5) coaly shale 10-5) creamy white hard bands, shale bedded with coal.			
840				10-5) light brown medium hard shale.			
860				Soft waxy greyish black carb. shale.			
880				Shaly			
900				10-5) hard creamy white coaly shale Dull black grey carb. shale			
920				Soft Soft dull brownish grey shale Med hard brownish black in bands 1/2" thick interbedded with 6" bands of soft brown grey shale			
940				Soft brownish grey shale			
960				Hard limy shale Soft shale with stringers of coal Shaly Badly pulverised clayey shale			
980		COALY SHALE Soft to med hard, light grey to light brownish grey		Carb. shale, bedded 10-5) mixed with coal Bedded with soft dull brownish black coal in bands to 2". Soft to med hard			
1000				Brownish black med hard coal			
1020		COALY SHALE Light grey med hard, with coal stringers 1/2" to 2"		2-5) dull to shaly, med hard coal 10-5) shaly coal			
1040		SHALE		10-5) pulverised, clayey shale 10-5) carb. shale			
1060		COAL		Interbedded with dull brownish black carb. shale and shaly coal.			
1080		END OF HOLE AT 1074.5 feet					

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[DOLMAGE CAMPBELL AND ASSOCIATES LTD.]

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY  
HAT CREEK PROJECT - DRILL RECORD

Coordinates: 83,495' N Length: 100' Hole No: 25-7  
18,018' E Azimuth: \_\_\_\_\_ Date: 1925  
 Reference Elev.: 2791' Dip: -90° Logged by: \_\_\_\_\_  
 Ground Elev.: 2791' Core Size: \_\_\_\_\_ Sheet: \_\_\_\_\_ of \_\_\_\_\_

ELEVATION IN FEET	DEPTH IN FEET	STRATIGRAPHY		DETAIL & STRUCTURE		CORE LOSS	SAMPLE NO.	ASH AT 20% MOISTURE		
		SYMBOL	MAJOR ROCK UNITS	SYMBOL	DESCRIPTION			0	20	40
0			Datum							
			<i>OVERBURDEN</i> <i>Boulders and clay</i>							
20										
40										
60										
80										
100										
			END OF HOLE AT 100 Feet							
120										
140										
160										
180										
180										

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DRILL HOLE : 25-7  
SHEET NO : 1 OF 1

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY  
HAT CREEK PROJECT - DRILL RECORD

Coordinates :  $78^{\circ} 55' N$  Length : 336' Hole No. : 25-5  
 Reference Elev. : 21129' E Azimuth : - Date : 1978  
 Broad Chm. : 2878' Dip : 80° Logged by :  
 Core Size : Sheet : 1 of 2

ELEVATION IN FEET CENTRE OF CORE	STRATIGRAPHY		DETAIL & STRUCTURE		CORE LOSS SAMPLE NO.	ASH AT 20% MOISTURE
	STRAT PLOT	MAJOR ROCK UNITS	SYMBOL	DESCRIPTION		
0		OVERBURDEN Sand and gravel Boulders Gravel and boulders				
2800		SHALEY COAL				
40		Coal				
60		Coal				
80				Very shaly and broken		
100				Broken		
120						
140		COAL		Very broken		
160		Shaly coal		Shaly Broken and shaly		
180						
200				Broken		
220						
240		Mixed coal and shale		Shaly		
260		No core recovered				
2800		SHALEY COAL		Very broken		
280				Broken		
300						
320		Coal dust				
340		END OF HOLE AT 335 feet				

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BRITISH COLUMBIA HYDRO AND POWER AUTHORITY  
HAT CREEK PROJECT - DRILL RECORD

Coordinates : 78,976' N Length : 542 Hole No : 57-10  
 Reference Elev : 19,001' E Azimuth : - Date : OCT 1957  
 Ground Elev. : 3162.5 Dip : -90° Logged by : R.T. Trendeman  
 Core Size : NX Sheet : 1 of 3

ELEVATION IN FEET	DEPTH IN FEET	STRATIGRAPHY		DETAIL & STRUCTURE		SAMPLE NO	ASH AT 20% MOISTURE							
		SYMBOL	MAJOR ROCK UNITS	SYMBOL	DESCRIPTION		1	2	3	4				
0			OVERBURDEN Clay, sand and gravel											
20			MIXED UNITS CLAY Whitish yellow to rust-red, with bands of grading soft sst and shale		Reddish shaly									
40			SHALE		W. whitish gray clayey shale, some purple, red sst, clay, weathered. Fine mottled to fine up ptm.									
60			CLAY Dull yellow to rust red, grades into bluish green to reddish purple like plasticine		Dull light brown to reddish brown, shaly luster, coarse and ground. Largest pieces about 1"									
80			SHALE, dull gray black, med hard		No cleavage with flecks of red, or the shaly black, fine luster with shaly white stains	1								
100			COAL		No core									
120			CLAYEY SHALE Sst brownish gray, with few narrow bands of medium hard coal		Brown black, soft to med hard with few narrow bands of coal included with brittle horizontal									
140			COAL		Badly crushed (10) hard, light gray clay with fragments of hard coal	2								
160			SHALE Gray green medium hard		With many fragments of soft and hard coal									
180			COAL		No core									
200			COAL Brown-black, compact medium hard, part in band up to 2" thick; Resin nodules from 1/4" to 1/2" in diameter. Dips vary from 20° to 65°		Brown black, med hard, badly crushed to a grading medium hard with few narrow stringers of coal									
220					(15) shaly and sst									
240					Soft clayey									
260					(15) with black pulverized	3								
280					(20) soft brownish gray clayey shale	4								
300					(20) dark gray shale and soft coal (10) brown gray shale with coal stringers, pulverized	5								
320					Carb shale									
340					Carb shale	3								
360					Brownish gray shale with few stringers of coal (10) clayey shale	4								
380					(10) shaly (10) shaly shale with flag of coal	5								
400					Brown black, shaly shaly	4								
420					Shaly	3								
440					Sst dull black carb. shale with fine coal stringers, thin med coal stringers, med brown shale and soft coal	6								
460					(10) shaly (10) shaly shale with flag of coal									
480					Brown black, shaly shaly	4								
500					Shaly brownish gray shale	6								
520					5-11 brown coal with brown black soft carb. shale interbedded, pulverized	7								
540					Shaly, broken (10) shaly (10) shaly shale with flag of coal	6								
560					(10) shaly (10) shaly shale with flag of coal									
580					Int-bedded of soft med hard fine and med brown carb shale, pulverized									
600					Medium hard with hard resinous sst shale									
620					(10) shaly, carb & gray & black									
640					Gray-green, pulverized, shaly clay									
660					Coal interbedded with dull brown to black carb soft shale									
680					(15) with 2 bands of soft brown shale (10) shaly brown gray soft shale									
700					Med hard coal interbedded with soft brownish gray soft shale and soft coal									
720					SHALE Dull gray to green, clayey to light gray, medium hard with fragments and bands of medium hard coal									
740					Reddish to dull brownish gray inter-bedded with soft, dull brown black coal									
760					Shaly coal with bands of clayey shale									
780					Soft with narrow stringers of "partic" and soft coal									
800					Pulverized									
820					Soft									
840					(10) soft coal (10) shaly gray med hard coal									
860					Med, hard coal									
880					Hard with narrow stringers shaly with fragments of med, hard, brittle coal									
900					END OF HOLE AT 542 FEET									
920														
940														
960														
980														
1000														

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BRITISH COLUMBIA HYDRO AND POWER AUTHORITY  
 MAT CREEK PROJECT — DRILL RECORD

Coordinates : 77,915' N Length : 421' Hole No. : 57-11  
 Reference Elev. : 21,186' E Azimuth : Date : OCT. 1957  
 Ground Elev. : 3008' Dip : -90° Logged by : R.T. Franzen  
 Core Size : NK Sheet : 1 of 3

ELEVATION IN FEET DEPTH IN FEET	STRATIGRAPHY		DETAIL & STRUCTURE		CORE SAMPLE No.	ASH AT 20% MOISTURE			
	STRAT. PLOT	MAJOR ROCK UNITS	SYMBOL	DESCRIPTION		0	20	40	60
0		Datum							
0-20		OVERBURDEN							
20-40		Clay, gravel and boulders							
40-60									
60-80		Clay, gravel and coal fragments							
80-100		Boulders, pebbles and coal fragments. Clay sand and boulders							
100-120		Clay, pebbles, boulders and coal fragments							
120-140		Carb. mud and sand							
140-160		Clay, sand and carb. matter		Triconed.					
160-180		CARB. CLAY		Triconed					
180-200		INTERREDEDDED COAL AND CLAY Pulverised coal and brown-gray clay		Carb. With slickensided surfaces Hard shale grading to silt	1				
200-220		COAL Medium hard, brown black, brittle, many zones of fracturing. With much evidence of shearing. Some minor amounts of shale and clayey shale.		Brittle brown-black, badly fractured. (15) shaly (10) with 2" of hard wuggy dull gray shale.	2 1 (201)				
220-240				3X casing was used as a core barrel. Int-bedded medium hard and pulverised. Pulverised result of shearing.	2 1 (202)				
240-260				(15) with gray and creamy white shale	1 (203)				
260-280				Dull black, hard shale (10) shaly Like bedded with broken coal, badly broken by shear planes dipping 60° to 40°.	3				
280-300				Medium hard, dull to shiny black, badly sheared; resin lumps from 6" x 1" in diameter.					
300-320				No core (badly broken coal?) Pulverised sooty, broken by shearing.					
320-340				(15) shale Shaly Pulverised soft brownish black, badly sheared.	4 3 (204)				
340-360		SHALY COAL		Med hard brown black to black in clay veins, 2" diameter, broken by shearing. Hard with stringers of gray black shale Hard little black with stringers of broken clay, calcite.	4 1 (205)				
360-380				Fragments of medium hard coal to 2" diameter surrounded by pulverised coal and carb. ooze. Tends to cave.					
380-400		SHALE		Clayey, slightly carb. Fragments of coal.					
400-420		Howard olive, green gray, clayey shale and grading into medium hard shale.		Soft to med. hard, whitish gray. My Core clayey					
420-440		END OF HOLE At 421 feet							

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BRITISH COLUMBIA HYDRO AND POWER AUTHORITY  
HAT CREEK PROJECT — DRILL RECORD

Coordinates : 78,980' N Length : 504'  
Reference Elev. : 19,960' E Azimuth : — Hole No. : 25-6  
Ground Elev. : 3039' Dip : -90° Logged by :  
Core Size : Sheet : 1 of 3

ELEVATION IN FEET	DEPTH IN FEET	STRATIGRAPHY		DETAIL & STRUCTURE		CORE LINES	SAMPLE NO.	ASH ANAL. MOIST.
		STRAT. PLAT.	MAJOR ROCK UNITS	SYMBOL	DESCRIPTION			
0		0	DETERM.					
			OVERBURDEN					
		20	COAL		Coal and shale			
			Broken, w. shale and sand interbedded		Coal and sand			
40			MIXED UNIT					
			Shale, coal and claystone, broken					
60			COAL		Shale and coal			
					Broken coal			
80			SHALE AND CLAYSTONE					
			clayey shale					
			Coal, broken					
100			Claystone					
120			SHALEY COAL		Clean coal			
					Shale			
140								
160					Claystone			
180			SHALE AND CLAYSTONE					
			Coal		Detrital rock			
200								
220			SANDSTONE					
240			CLAYSTONE					
260			COAL					
			SHALE AND CLAYSTONE					
280			COAL					
			Shaly coal, broken					
300			SHALE AND CLAYSTONE					
			Coal					
320			COAL					
			SHALE AND CLAYSTONE					
340			COAL					
			with shale and clst. interbeds					
360			Claystone					
380			Shale and claystone					
400			SHALE AND CLAYSTONE					
			CLAYSTONE					
420			COAL					
			Shale		Mixed coal and claystone			
440			Shale					
460								
480								
500			END OF HOLE AT 504 feet					
520								

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BRITISH COLUMBIA HYDRO AND POWER AUTHORITY  
HAT CREEK PROJECT - DRILL RECORD

Coordinates: 77,916' N Length: 545' Hole No.: 57-15  
 Reference Elev.: 5171' Azimuth: --- Date: DEC. 1957  
 Ground Elev.: 5168' Core Size: NX Dip: -90° Logged by: R.T. Treiman  
 Sheet: 1 of 3

ELEVATION IN FEET	DEPTH IN FEET	STRATIGRAPHY		DETAIL & STRUCTURE		CORE LOSS SAMPLE NO.	ASH AT 20% MOISTURE	
		SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION		0	100
0	0		<b>OVERBURDEN</b>					
	0-20		Mixed clay sand gravel and boulders					
	20-40		Boulders, coarse gravel and sands					
	40-50		Clay					
	50-60		Clay and coarse sand					
	60-80		Coarse gravel and boulders					
	80-100		Sand, gravel and boulders					
	100		<b>SHALE (AND CLAY)</b>					
	100-120		Light brown to olive green soft, with few narrow bands of yellow green shale and clay interbedded. Numerous plant fossil at depth increased.					
	120-140				Olive green soft with thin bands reworked to clay Olive green to blue green sticky clay Carb.			
	140-160				Bands of 1' of olive green soft shale and olive green to blue green clay Same as above clay is reworked shale			
	160-180				Reworked clay			
	180-200				Mushy and sticky clay Rounded fragments of olive green shale soft, last core probably sticky clay.			
	200-220				Very plastic olive green clay with few rubbers of soft shale Olive green to blue green very plastic clay interbedded with olive green soft shale, fractured, clay			
	220-240				With few 6" clay bands and 2" yellow green soft sandy band			
	240-260				Nibbles of olive green soft shale Assume last core is plastic clay			
	260-280				(10) olive green clay			
	280-300				Olive green clay			
	300-320				Containing white chalky lime and broken white Fragment of soft shale separated by plastic olive green clay.			
	320-340				Bands of equal thickness, 4" of olive green soft shale and olive green clay Olive green plastic			
	340-360				(10) olive green plastic clay Olive green soft shale as in 26' separated by 0.5" of clay, 2 band of yellow brown waxy soft shale			
	360-380							
	380-400				Clayey, micaceous.			
	400		<b>COAL</b>		(05) soft shale			
	400-420		Brownish black to black, dull to shiny, 8-16% moisture, hard with many bands of olive green to gray green shale clayey shale					
	420-440				8" 2" bands of soft to hard and dull black to olive green soft shale Olive green clayey shale 0.5" micaceous, olive green soft shale Broken shell carb. shale no trace of clay Olive green clayey soft shale with some small hard cl. at Olive green to gray green soft shale with thin bands of clay (10) broken shale (10) broken shale (10) soft shale Olive green brown soft shale			
	440-460				Soft shale grades to soft sandy shale, highly green, light gray, 7-15% moisture, hard, shale (10) olive green brown clay			
	460-480				Dull black, broken into 1-2" cylinders by shear planes parallel to bedding. 3" bands of olive brownish clayey shale (10) shaly (05) broken soft shale (10) gray to black soft shale			
	480-500							
	500-520							
	520-540							
	540		<b>END OF HOLE AT 545 feet</b>					

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BRITISH COLUMBIA HYDRO AND POWER AUTHORITY  
HAT CREEK PROJECT -- DRILL RECORD

Coordinates : 77,918' N Length : 554' Hole No. : 57-14  
 Reference Elev. : 20,578' E Azimuth : Date : DEC. 1957  
 Ground Elev. : 3050' Core Size : NX Logged by : R T Trenaman  
 Sheet : 1 of 4

ELEVATION IN FEET	DEPTH IN FEET	STRATIGRAPHY		DETAIL & STRUCTURE		CORE LOSS	SAMPLE NO.	ASH AT 20% MOISTURE									
		SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION			1	2	3	4						
0	0		OVERBURDEN														
	20		Clay, sand, gravel and irregularly spaced boulders														
	40																
3000	60		Sand and gravel														
	80		Gravel and broken coal Gravel and sand Clay														
	80		COAL														
	100		Brown-black, brittle soft and medium hard; some with interbedded of olive green grey soft shale and dull black shale		Soft olive green brown shale Clayey shale (10.5) soft, broken Olive green clay soft shale with thin black clay Olive green grey soft shale with 0.5" bands of soft carb. shale Olive green grey plastic clay with bands of soft coal and carb. shale (10.5) clay		1 2 3										
	120																
	140				Olive green grey clayey shale grades to dull brown black shaly coal?		2	(201)									
	160				Adversized soft shale and clay shaly		3	(202)									
	180				Olive green to brown soft shale shaly with thin bands, and grades to shaly coal?		2	(203)									
	200				(10.5) shaly Clayey shale shaly		3	(204)									
	220				Brown plastic clay (10) soft grey brown med hard (10) green grey plastic shale clay		2	(205)									
	240				(10.5) clayey shaly		4										
	260				(10) shaly (10) hard shale (10) shaly clay Olive green grey clay mixed with pulverised coal and med. hard shale		5										
	280				Plastic mixture of pulverised coal and brown black clay Olive green brown clay, grades into sticky ooze		4	(206)									
	300				(10.5) clayey (10.5) shaly		5	(207)									
	320				(10.5) pulverised clayey (10.5) soft shale (10.5) pulverised coaly clay		6										
	340				(10.5) soft, carb. clayey shale												
	360				Clay (10.5) olive green grey, med. hard shale Olive green brown clayey shale												
	380				With shale component (10.5) shale												
	400				(10.5) coaly clay (10.5) shaly clay shaly clay												
	420				(10.5) shaly carb.												
	440				(10.5) shaly		7										
	460				(10.5) clay med-hard shaly Coal Compactly shaly olive green to brown clayey shale		8										
	480				(10.5) shaly clay		7	(208)									
	500				Clayey shale (10.5) coaly shale (10.5) clayey shaly		8	(209)									
	520				Soft olive green grey to off colour white, soft and dull carb. shale (10.5) med-hard with grey shale Dull black to grey black soft shaly with small component of grey brown soft shale, parallel to bedding, pulverised. (10.5) soft shale Soft shale grades into sticky clay, mottled.		9										
	540				Soft olive blacked with olive green grey soft shale, pulverised. (10.5) soft shale												
	560				Mixed with very plastic clay (10) mixed with dull carb. soft shale												
	580				Grey brown sticky ooze shaly with narrow stringers light grey shale (10.5) black ooze												
	600				(10.5) grey hard soft shaly with dull black soft shale												
	620				Clayey shale Clayey shale with hard soft coal (10.5) med. hard shale shaly (10.5) shaly (10.5) hard shale (10.5) shaly (10.5) broken shaly												
	640				Interbeds of olive green brown soft shale and soft coal		10										
	660				shaly Soft shale with bands of soft black coal												

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BRITISH COLUMBIA HYDRO AND POWER AUTHORITY  
HAT CREEK PROJECT — DRILL RECORD

Coordinates : 82,198' N Length : 93' Hole No : 25-1  
 Reference Elev. : 19,395' E Azimuth : Date : 1973  
 Ground Elev. : 2811' Dip : -90° Logged by :  
 Core Size : Sheet : 1 of 1

ELEVATION IN FEET	DEPTH IN FEET	STRATIGRAPHY		DETAIL & STRUCTURE		SAMPLE NO.	ASH AT 100° MOISTURE							
		START PLOT	MAJOR ROCK UNITS	SYMBOL	DESCRIPTION		0	20	40	60				
0			Return											
0-20			OVERBURDEN Boulder clay											
20-100														
100			END OF HOLE AT 93 feet											
120														
140														
160														
180														

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DRILL HOLE : 25-1  
SHEET NO : 1 OF 1

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY  
HAT CREEK PROJECT — DRILL RECORD

Coordinates : 78,898' N      Length : 291'      Hole No. : 25-3  
 Reference Elev. : 2250' E      Azimuth :      Date : 1925  
 Ground Elev. : 2280'      Dip : 90°      Logged by :  
    Core Size :      Sheet : 1 of 2

ELEVATION IN FEET	DEPTH IN FEET	STRATIGRAPHY		DETAIL & STRUCTURE		CAT. OR SAMPLE NO.	ASH AT 20% MOISTURE	
		STRAT. PLOT	MAJOR ROCK UNITS	SYMBOL	DESCRIPTION			
0			OVERBURDEN					
			tuff					
20			clay					
40								
60								
80								
100								
120								
140			SHALE					
160			CLAYSTONE AND SAND					
180								
200								
220								
240								
260								
280								
300			END OF HOLE AT 291 Feet					

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