Pages 27- 31 and Appendix C of this report remain confidential under the terms of the Coal Act Regulation, Section 2(1), and have been removed from the public version.

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REPORT ON

2009 EXPLORATION WORK

RAVEN PROJECT

(TSABLE RIVER COALFIELD)

COVERING COAL EXPLORATION LICENCE

TENURE NO. 392561

and

FEE SIMPLE COAL RIGHTS HOLDINGS

(southern Comox Coal Basin)

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July 30, 2010

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1.0 Location

The Raven Project occurs in the Tsable Coalfield at the southern end of the Comox Coal Basin which lies parallel to and along the east coast of Vancouver Island. The property is directly west of Baynes Sound separating Denman Island from Vancouver Island and extends from the communities of Union Bay in the north to Fanny Bay in the south – Figures 1 and 2.

The area is located on NTS map sheets (1:50,000) 92F10W and 92F7W or within BCGS (1:20,000) map sheets 092F056 (north) and 092F046 (south). The area lies within the Nanaimo Mining Division and the Nanaimo; Nelson & Newcastle Land Districts. Coordinates at the centre of the project footprint are 49° 30' 8.0742" latitude and 124° 52' 36.4074" west longitude.

The closest city is the city of Courtenay approximately 20 km to the north on the east coast of Vancouver Island. Access to the area is via the Inland Highway which runs parallel to and in part crosses the eastern limits of the area. Local access to all parts of the property is provided by forestry roads and private logging and resource roads. Figure 3 is a general infrastructure and site layout map.

2.0 Lease Information

The Raven project area is at the southern end of the Comox Joint Venture (CJV) (previously West Fraser) fee simple coal rights area and is part of the Tsable River coal field at the southern end of the Comox Coal Basin (Figure 2). The present area of interest comprises about 3,100 ha (9 km by 3½ km) all of which is part of the CJV fee simple except a small fraction (approximately 142 ha) held directly by the CJV through crown coal licence tenure # 392561 (Figure 4A). Information on the licence and fee simple coal rights are tabulated below:

Table 1 - Raven Project Area – Crown Coal Licence

Tenure #	Coal Licence/Application	Legal Description	Registered Owner	Area (ha)	Anniversary Date
392561	C.L.	Lots 22G, 23G, 29G and 30G Nelson Land District, Nanaimo Mining Division	Compliance Coal Corporation[1]	142	April 8

[1] 60% owner with LG International (20%) and Itochu Corporation (20%)

Table 2 - Raven Project Area - Fee Simple Coal Rights Holdings

Parcel Identifier (PID)	Legal Description	Charge Number				
		Undersurface Rights	Statutory Right of Way	Right of Entry	Transferred	
					Except NG	Minerals
009-697-331	Sec 1, of Sec 2-A Nelson District except that part within theboundaries of Bl 34 Plan 691-J except part coloured Red onPlan 538-R and except part outlined in Red on Plan 644RW	**EB 7097**			FB210342	
009-697-241	That part of Sec 1, Sec 2-A Nelson District shown oulined in Red on Plan 644RW	**325218G**			FB210343	
009-941-673	That part of District Lot 35G Sec 2A Nelson District shown coloured Red on Plan 538R	**325219G**			FB210344	
009-941-690	That part of District Lot 36G Sec 2A Nelson District shown coloured Red on Plan 538R except shown on Plan VIP70014					
009-941-711	That part of District Lot 38G Sec 2A Nelson District shown coloured Red on Plan 538R					
009-941-720	That part of District Lot 39G Sec 2A Nelson District shown coloured Red on Plan 538R					
008-745-897	District Lot 32 G of Sec 2A Nelson District except that part in Plan 691J	**325220G**			FB210345	
008-745-978	District Lot 33 G of Sec 2A Nelson District except that part in District Lots 12, 23 and 27 Nelson District and except part in Plans VIP66877 and VIP69915					
024-102-652	District Lot 33 G of Sec 2A Nelson District Plan VIP66877 except part in Plan VIP70429					
008-745-994	District Lot 35G of Sec 2A Nelson District except that part in District Lot 27 Nelson District and except that part shown in Red on Plan 538R					
008-746-001	District Lot 36G of Sec 2A Nelson District except that part in District Lot 27 Nelson District and except that part shown in Red on Plan 538R and except part shown in Red on Plan VIP70014					
024-840-564	Lot A District Lot 36G Sec 2A Nelson District Plan VIP70014					
009-949-755	District Lot 34G of Sec 2A Nelson District except part in Block 34 Plan 691J	**325221G**			FB210346	
009-950-141	District Lot 38G of Sec 2A Nelson District except that part coloured Red on Plan 538R and except parts in Plans VIP62546, VIP66735, VIP70013 and VIP70014					
009-950-273	District Lot 39 G of Sec 2A Nelson District except part coloured Red on Plan 538R					
001-546-406	Block 34 Nelson and Newcastle Districts Plan 691J including those parts thereof lying within Section 1 of Section 2A Nelson District within 32G of Section 2A Nelson District and with 34G of Section 2A Nelson District said parts containing 103.3 acres more or less, 112.4 acres more or less, and 16.5 acres more or less respectively, but except that part of said Block 34, lying within Section 2A Nelson District and not included in	**109233G**			FB210347	
		109265G				FB210330
		144622G				FB210331
		R46814				FB210332
				37228G		FB210329
006-802-745	Lot 88 Newcastle District Plan 1871 except part in Plan 293RW and except part lying to the east of the westerly boundary of Lot 48 Newcastle District produced southerly to the southerly boundary of said Lot 88, and excpt parts in Plans VIP62249 and VIP67926	**ED112818**				FB210333
024-304-646	Lot A District Lot 88 Newcastle District Plan VIP67926					
002-481-324	That part of Lot 88 Newcastle District Plan 1871 included in Plan 293RW and containing 9.35 acres more or less except in Plan VIP62219					
006-802-681	That part of Lot 88 Newcastle District Plan 1871 lying to the east of the westerly boundary of Lot 48 Newcastle District produced southerly to the south boundary of said Lot 88 except parts in Plans VIP62893, VIP67282, VIP69003 and VIP70223					
007-261-985	Block 33 Nelson District Plan 691J except those parts shown coloured Red and Blue on Plan DD8595 and that part shown coloured Red on Plan DD25642G except part in Plans VIP66876 and VIP70297	**R46807**				FB210334
009-703-896	Block 1359 Nelson District	**R46809**				FB210335
006-675-956	Block 385 Nelson District	**EJ49175**			FB210348	
		EK101252				FB210336
			EJ49176			FB210326
			EJ49177			FB210327
			EK101253			FB210328
006-675-824	Block 299 Nelson District	EJ49175				
		EK101252				
			EJ49176			
			EJ49177			
			EK101253			
006-642-551	Block 296 Nelson District except in Plan VIP67319	EJ49175			FB210348	
		EK101252				FB210336
			EJ49176			FB210326
			EJ49177			FB210327
			EK101253			FB210328
000-491-934	Block 527 Nelson District containing 428 acres more or less	**214494G**				FB210337
		R46811				FB210338
006-675-221	Block 324 Nelson District	EJ49175			FB210348	
		EK101252				FB210336
			EJ49176			FB210326
			EJ49177			FB210327
			EK101253			FB210328
009-685-766	Block 234 Newcastle District except that part shown coloured Red on Plan 241R	**R46815**				FB210339
009-685-642	That part of Block 234 Newcastle District shown coloured Red on Plan 241R	R46815				
009-688-242	Block 1362 Newcastle District	R46815				
009-685-791	Block 263 Newcastle District except that part shown coloured Red on Plan 241R	R46815				
009-683-771	District Lot 106 Newcastle District	R46815				FB210339
009-683-666	District Lot 105 Newcastle District shown coloured Red on Plan deposited under DD22792N	R46815				
009-685-561	That part of Block 263 Newcastle District shown coloured Red on Plan 241R	R46815				
009-685-278	Lot 267 Newcastle District	**R46817**				FB210340
009-685-219	Lot 198 Newcastle District	R46817				
009-685-243	Block 256 Newcastle District	R46817				
No PID AFB 38.157.R46818	Block 223 Newcastle District	**R46818**				FB210341

The property boundaries have been obtained from government sources and compiled for CJV by McElhanney Associates (professional land surveyors) and others (Figure 4B). The author of this report has accepted the outlines as presented.

The fee simple lands held at the Raven Project carry the right to explore for, develop, mine and win coal and fireclay and they also convey the ancillary right to surface access for purposes of exploring for, developing, mining and winning the coal resource.

Surface Rights over the property reside with timber companies with the exception of Lot 88 which resides with the Crown as 'titled land'. Surface Rights owners are tabulated below in Table 3 and keyed to the attached map Figure 5 by Block or lot numbers.

Table 3: Table of Surface Rights Holders by Block and Lot Nos

Block/Lot Nos	Surface Rights Holders	'Titled Lands'
Block 1359	TimberWest/Pacific Forests Products Ltd.	
Block 1362	TimberWest/Pacific Forests Products Ltd.	
Block 223	Island Timberlands	
Block 234	Island Timberlands	
Block 256	Island Timberlands	
Block 263	Island Timberlands	
Block 296	John Hancock	
Block 299	John Hancock	
Block 324	John Hancock	
Block 33	Island Timberlands	
Block 34	Island Timberlands	
Block 385	John Hancock	
Block 527	Island Timberlands	
Lot 105	Island Timberlands	
Lot 106	TimberWest/Pacific Forests Products Ltd.	
Lot 198	Island Timberlands	
Lot 22G	Island Timberlands	
Lot 23G	Island Timberlands	
Lot 267	Island Timberlands	
Lot 29G	Island Timberlands	
Lot 30G	Island Timberlands	
Lot 32G	Island Timberlands	
Lot 33G	Island Timberlands	
Lot 34G	Island Timberlands	
Lot 35G	Island Timberlands	
Lot 36G	Island Timberlands	
Lot 38G	Island Timberlands	
Lot 39G	Island Timberlands	
Lot 88		Crown
Sec 1 of Sec 2-A	Island Timberlands	
Sec 1 of Section 2-A	Island Timberlands	

3.0 History of Exploration

The Raven project area (Tsable River Coalfield) has a long history of exploration and development for coal mining dating back to the late 1800's. Table 4 presents a summary of historical and present exploration and development activities.

The Comox Basin area has a history of coal mining centred around Cumberland some 20 km to the north of the Raven property. The only mine in the actual project area was the Baynes Sound Mine which was operated from 1875 – 1877 the location of which was only alluded to but not found on any maps. During field mapping and prospecting by Compliance in 2006, what is believed to be the Baynes Mine was located on the north bank of the Tsable River (Figure 3) by Berkshire Geological Services. There were two portals and considerable tonnes of coal and coal refuse in piles nearby. The area has been logged over at least twice and is still very overgrown. The author is unaware of actual coal tonnage mined and removed from the site – however, the mine operated for only a short time before economic conditions forced the closing and dismantling of the mine and support facilities.

The only other mine in the vicinity is the abandoned underground Tsable River Mine to the west of the project area on the north bank of the Tsable River (Figure 3). The Tsable River Mine was operated from 1949 – 1966 from which approximately 2.0 mt of coal were extracted.

Extensive drilling was done in the area by Canadian Collieries (Dunsmuir) during the period 1905 to 1957 which outlined a potential resource base south of the Tsable River and guided the more recent exploration commencing in 1975. The pre-1975 drilling was done using both rotary and coring methods, however, only drillers' logs and/or summary geological descriptive logs are available for this drilling. Also, during the Dunsmuir phase, test adits were excavated along the banks of the Tsable River and tributaries, Cowie Creek, and along the subcrop trace extending north from the Tsable River. Owing to the downturn in coal demand following the worldwide switch to petroleum and petroleum derivatives no further work was done until 1975.

In 1973 the B.C. government implemented a resource land tax which precipitated Weldwood engaging Michele Curcio to embark on a coal resource evaluation study to determine what fee simple lands they could relinquish to the crown in order to reduce the liability due to the new resource land tax. A regional drilling program was carried out including several drillholes in the current project area. The Tsable River project south of the river was again earmarked as a significant coal deposit. Results of Curcio's exploration is contained in a few reports *'Coal Resource Study of Comox-Nanaimo Series, Vancouver Island - British Columbia'* and *'Summary Reports on Weldwood Coal Properties and on Topics Pertinent to Coal Development'* and *'Preliminary Evaluation of Coal Reserves for Campbell River Area, Cumberland Area and Tsable River-Cowie Creek Area, Within the Comox Basin, Vancouver Island, British Columbia '.* The author had access to these reports, however, some of the appendicies, maps and figures were not found.

No further exploratory work was done until 1990 when Consolidated Brinco acquired an option from Weldwood to explore for coal in the southern Comox Basin and specifically in the Tsable River coal field. Brinco carried out drilling, refractive seismic, VLF-EM and mapping in the area south of the Tsable River and outlined what they considered a mineable resource. Results of this work were documented in two reports *'Tsable River Project Report – 1991'* and *'Tsable River Property Conceptual Mining Plan'.* Both reports have been reviewed in detail by the author of this report.

In 1991 Consolidated Brinco merged with Hillsborough and in 1996/97 Hillsborough carried out further investigative drilling and reflective seismic over the Tsable River project extending the area of resources east and north including north across to the north side of the Tsable River. Results of

this work are documented in a report *'Report on 1996 Exploration Work, Tsable River Coal Project'*. This report has been reviewed by the author, however, some of the appendicies and attachments most notably some geophysical logs of the drilling were not available. In 1998 Hillsborough made plans to go underground with a test mine near Cowie Creek and obtained a mine permit in 1998. Due to a downturn in coal marketing opportunities nothing further was done until 2001 when Hillsborough re-activated their mine permit, did some additional drilling for ground water monitoring in the test mine area and completed a NI 43-101 compliant resource report *'Technical Report on the Tsable River Coal Property, Central Vancouver Island, British Columbia'*. The author has reviewed this report. No further work was done and Hillsborough relinquished their option with Weldwood in 2002.

Data collected from 1975 to 2001 generally comprises drillers' logs, core descriptions over cored intervals, and downhole geophysical logs. Geophysical logs have been found for drilling carried out in 1975 and 1990/91. Some of the logs for drillholes drilled in 1996 have not yet been located; however, copies of sections of geophysical logs through the coal seams of economic significance are available for all of the 1996 drill holes which intersected significant coal seams. Only summary coal intercepts have been found for five holes drilled in 1997.

Five drillholes drilled in the Cowie Creek area in the vicinity of the proposed test mine (Hillsborough) in 2001 have been located on the ground – all appear to have been drilled for ground water studies and have piezometers installed, however, records as to depth and lithology encountered have not been found. These holes were tested by AMEC in 2009 with a water level depth probe and the following information recorded:

Hole No	AMEC's ID designation	Total Depth Reached (m)	Piezometers Installed
TS-01-01	MW1	26.25	2": Water = 1.48m , TD = 11.84m
			1": Water = 1.85m, TD = 26.25m
TS-01-02	MW2	29.29	2": Water = 2.63m, TD = 6.10m
			1": Water = 1.84m, TD = 29.29m
TS-01-03	MW3	4.61	1": Water = 3.20m, TD = 4.61m
TS-01-04	MW4	24.02	2": Water = 3.92m, TD = 6.98m
			1": Water = 3.50m, TD = 24.02m
TS-01-05	MW5	8.85	2": Water = 4.30m, TD = 8.85m

It would appear from the data that the shallower piezometers were established in surficial material and that the deeper piezometers were established in bedrock. The total depth reached is not indicative of the total depth of the holes.

Surface geological mapping has been done variously over the history of the area, however, prior to the present mapping (2009) geological mapping of the area had been derived from mapping done by Michele Curcio circa 1975 and by Steve Gardner and Gwyneth Cathyl-Bickford in the 1990's. The Gardner and Cathyl-Bickford maps were obtained from the B.C. Ministry of Mines and Petroleum Resources (BCMEMPR) (OF 1999-8 and OF 1998-7 respectively).

In 2005, Compliance Energy Corporation entered into an option agreement with West Fraser Mills Corp. (successor company to Weldwood) to acquire the fee simple coal rights in the southern half of the Comox coal basin. Subsequently, Compliance carried out a drilling, seismic and bulk sampling program over the Raven Project Area (formerly the Tsable River Property) May to October, 2006.

Twelve holes for a total of 2850m were drilled using rotary core drilling. The drilling was done by Drillwell Enterprises Limited out of Duncan, Vancouver Island, using a rotary core truck-mounted drill. Three holes, RAV-06-09, -010 and -011 were terminated prior to intersecting the coal seam zone and were completed in the 2009 program.

Drillholes were geophysically logged with gamma, neutron, resistivity, density, caliper and sonic tools. Also deviation surveys were run in all holes and dip meter was run in two holes only as a check on measured core dips. It should be noted that due to hole stability problems, drillhole RAV-06-04 was only partially logged and RAV-06-05 was not logged at all.

A high resolution seismic reflection investigation of the Raven Property was conducted by Emerald Exploration Consultants (Emex) over approximately 21 line kilometers in a series of seven (7) parallel lines spaced 1200m apart. The objective was to help interpret and map geological structure such as folds and faults and the continuity, depth and thickness of coal seams. Interpretation of the seismic reflections was accomplished through correlation to drillholes by comparing reflection characteristics against synthetic seismograms developed from sonic and density logs run in approximately 50 drillholes (90/91 , 96/97 and 06 drilling programs) and actual check shots run in 3 drillholes RAV-06-01, RAV-06-02 and RAV-06-09. The data shows that the various coal seams produce strong reflections; weak reflections exist in the seismic data related to rock/rock interfaces where the coal is deep enough to see a moderate thickness of sedimentary strata. The resultant reflectance characteristics were then used to correlate coal seams between drill holes and extrapolate beyond drillholes. The seismic thus demonstrated the continuity of the coal seams over most of the current project area and showed the potential for the property to be open to the north and south.

An adit site for bulk sampling was selected based on knowledge of Seam 1 subcrop from drillhole information and the existence of an adit previously excavated prior to Curcio's work in 1975. The actual site was located by Berkshire Geological Services while prospecting for Compliance in April, 2006. Adit construction and excavation was carried out by Devrial Resources Inc., of Grande Cache, Alberta. A 13 tonne bulk sample was extracted from a crosscut in the adit and shipped to Hazen Research in Golden, Colorado for washability analysis and bulk washing at their pilot plant.

The adit was re-entered in September 2007 and a further sample of 1100kg extracted.

In 2008 Compliance Energy Corporation (Compliance) finalized a transaction with West Fraser Mills Ltd. (WFM) whereas Compliance along with its Joint Venture partners Itochu Corporation and LG International exercised its option with WFM for their Vancouver Island coal and mineral holdings. Through this series of transactions Compliance acquired a 60% ownership interest in fee simple coal and mineral rights centred in the Comox Coal Basin with Itochu Corporation and LG International each owning 20%..

The Comox Joint Venture (CJV) was formed in February 2009 to develop the Raven Underground Coal Project. It is 60% owned by Compliance Coal Corporation, 20% owned by I–Comox Coal Inc.(100% subsidiary of Itochu Corporation), and 20% owned by LG International Investments (Canada) Ltd.

The present exploration on the property commenced in May, 2009 and is detailed in the following section 4 of this report.

Table 4: History of Exploration and Development – Raven Project (Tsable River Coalfield)

Work History Raven

				Drilling		Drilling						
				Rotary		Core / Rotary Core		Resources (million tonnes)			Reserves (million tonnes	
Company / Entity	Date	Work Done	Surface	# Holes	Total metres	# Holes	Total metres	Measured & Indicated	Inferred	Speculative	Proven	Mined
Baynes Sound Coal Co.	1875 - 1877											
		Mapping, Drifting and Adit Mining										
Canadian Collieries (Dunsmuir) Ltd. [Wellington Collieries Ltd.] & [Comox Mining Co.]	1900 - 1966											
	1905 - 1910	Mapping & drilling		4	921							
	1920's to '40's	Drilling - north of Tsable R.		41	5900							
	1947	Drifting & Portal Construction - Tsable River										
	1948	Drifting & Portal Construction - Cowie Creek										
	1949 -1966	Mining - Tsable River Mine (north) (approx. 2.0m st mined)										~2.0
	1950 - 1957	Drilling - north of Tsable R		9	2200							
	1950 - 1957	Drilling - south of Tsable R. to Cowie Crk		25	3637				6 - 7			
	1956	Adits put in by US Steel										
Weldwood [now West Fraser]	1965 - present											
	1974	Dolmage Campbell Rpt						60.6	132.2			
	1975	Regional Mapping						63.0	41.0	285.0		
	1975	Drilling - nrth of Tsable R		6	750							
	1975	Drilling - sth of Tsable R		10	1000							
	1976	Adit on Cowie Creek										
	1988	Smokey River Coal study										
Consolidated Brinco / Western Canadian Mining	Optioned 1989-2002											
	1990 - 1991	Diamond Drilling				20	3614					
	1991	Seismic (refractive)	1.5 km lines									
	1991	VLM-EM	41 km lines									
	1991	Conceptual Mining Plan						11.0	20.3			
Hillsborough / Tsable River Coal Corp.	Brinco merged with Hillsborough 1991											
	1996	Drilling				27	6543					
	1996	Seismic (reflectance)	13.6 km lines									
	1997	Drilling				5	770	32.5	7.0			
	1997	Planned Drilling and Bulk Sampling / permitting Test Mine										
	2001	Drilling / re-permitting Test Mine				5	880	32.5	7.0			
	2002	Hillsborough relinquished Tsable River property/option										
Compliance Energy Corp.	Option Agreement 2005 - 2008	Data Review, Assessment										
	2006	Seismic	21 km lines									
	2006	Drilling				12	2848					
	2006	Bulk sampling	13 tonne sample									
	2007	Technical Report NI43-101						39.093	59.004			
	2007	Bulk sampling	1100 kg sample									
Compliance Energy Corp / Comox Joint Venture	2008	Compliance , Itochu Corp. & LG International exercised option with West Fraser Mills to acquire FeeSimple Coal Lands in Comox Basin										
	2009	Exploration Drilling				35	9,424					
	2009	Large Diameter Coring (Coal Quality)				4	177					
	2009	Hydro-Geological Drilling		2	233							
	2009	Commenced Feasibility Study										
	2009	Commenced EIA										
	2010	Technical Report NI43-101						72.0	59.4			

4.0 Exploration by Comox Joint Venture – 2009

.Exploration during 2009 comprised:

- Flying the property for topographical mapping;
- Drilling for geological information and coal quality;
- Bulk sampling using large diameter core drilling for coal quality and carbonization testing;
- Coal gas quantity and compositional analysis;
- Drilling for geotechnical information;
- Drilling for hydrogeological information; and,
- Surface Geological mapping.

4.1 Flying the property for topographical mapping

Topographical mapping was undertaken to provide adequate control to support geological mapping, for mine planning and to provide a base map for environmental work. The area was flown for LIDAR capture, and colour photography using an Intergraph digital camera. Prior to flying, ground control was acquired using precision GPS receivers to coordinate targets for the fly over.

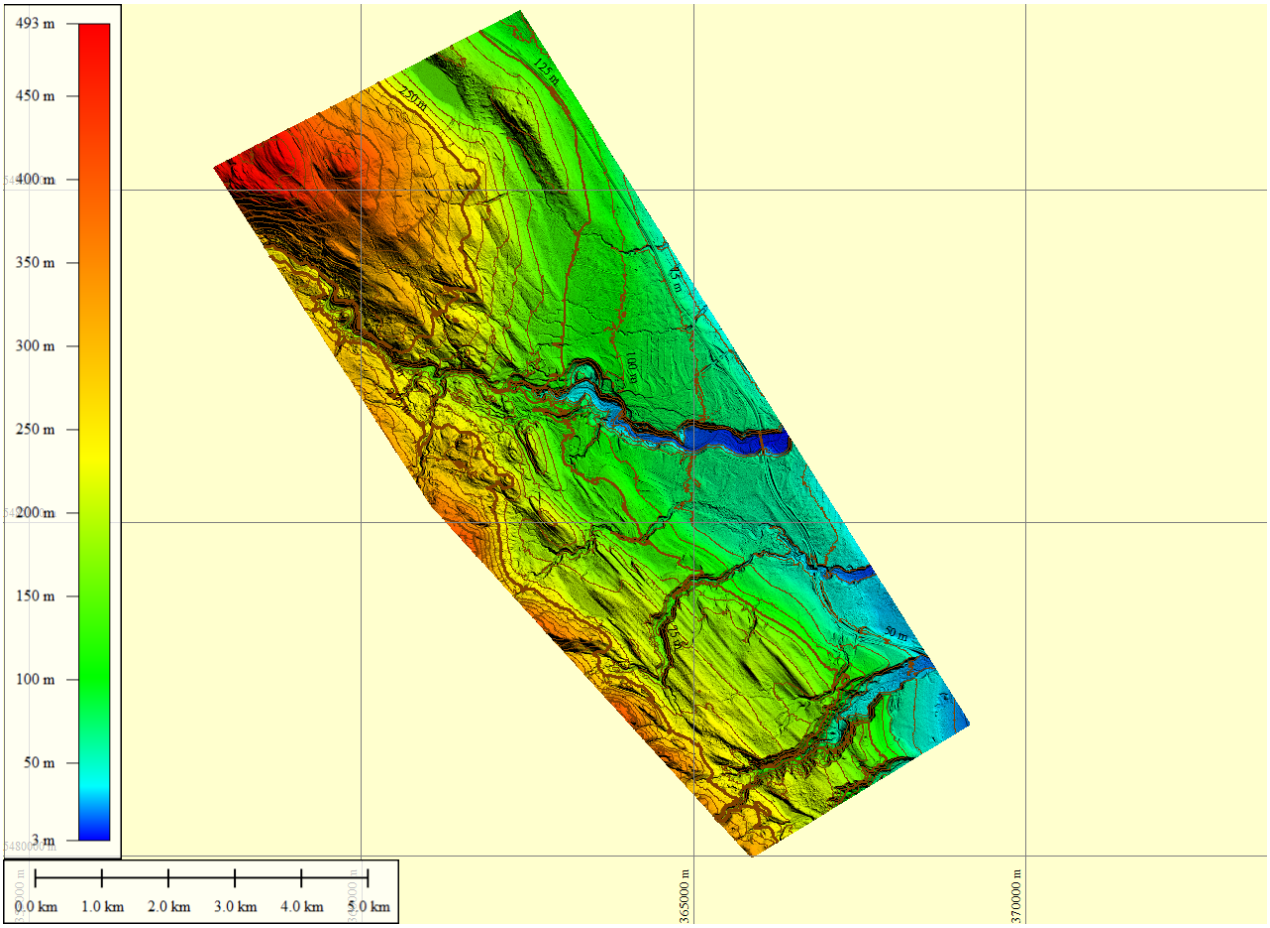
A 1:10,000 colour Orthophoto of the area, was produced with planimetry; Lidar data and a 1m contour map were produced.

The flying and mapping was provided by Aero Geometrics Ltd. of Vancouver, BC.

The orthophoto, Lidar, planimetry and topography data were imported into Global Mapper® GIS presentation software.

Figure 6 – Orthophoto of Raven Project Area

Figure 7 – Lidar Image of Raven Project Area



4.2 Drilling For Geological Information and Coal Quality

Exploratory drilling over the Raven Project was carried out by the CJV from May through October, 2009.

Drilling commenced May 26, 2009 and was terminated October 16, 2009, after drilling 41 holes and completing 3 others from 2006 for a total of 10,132 metres. Two additional holes were drilled from late February through March 2010 for an additional 638metres. Three drilling companies were selected to carry out the drilling over the Raven project:

- Drillwell Enterprises Ltd., of Duncan, Vancouver Island, B.C.
- Alliance Drilling Ltd., of Victoria, Vancouver Island, BC; and,
- Peak Drilling Ltd., of Courtenay, Vancouver Island, BC.

Drillwell provided a 1996 Driltech D25KW rotary core rig equipped to hammer drill with air, tricone with fluids and/or core drilling to recover 3” core. The coring procedure used the Christensen coring system. Drillwell also provided a 6” coring barrel and recovered 5 7/8 inch large diameter core for coal quality and carbonization testing. Drillwell also provided a 2007 Foremost DR-12 Dual Rotary drill which was used on site to hammer down casing through areas of thick surficial material and was also used to advance the drilling to core point. Drillwell is an experienced water well drilling

company and also drilled all the hydrogeological holes, installed piezometers where requested and carried out pump tests.

Alliance provided a T3W Rotary Coring Drill equipped to drill with downhole hammer, tricone and to core to recover 3" core.

Peak provided an EF-50 185 hp hydraulic skid-mounted diamond drill equipped for coring to recover HQ core using the Longyear coring system.

The following tables (Tables 5 to 7) summarize the drilling and provide a summary of intersections of main coal seam targets; drillholes are located by Figure 8:

Five of the holes were targeted for sampling coal for gas quantity and compositional analyses to be used for safety and ventilation design of the underground mining. The holes are highlighted on the attached Table 5.

Six holes were targeted for groundwater monitoring and had piezometers installed and two holes were twinned to enable pumping tests for transmissivity testing. All holes used for hydrogeological testing are highlighted on Table 5.

All drillholes were geotechnically logged by the site geologists. In addition, nine holes were targeted for sampling for geotechnical testing of which one hole RAV-09-028 was selected for SIGRA horizontal stress test measurements. The 9 holes are highlighted on the attached Table 5.

Table 5: Drillhole Summary Table

Drillhole ID	Drillsite ID	Contractor	Date Started	Dated Completed	TD (m)	Logs Run	Coal Seam Zones Intersected
RAV-06(09)-009	Z-2009	Drillwell	26-May-09	28-May-09	244	Gamma, Resistivity, Caliper, Density, Sonic, Deviation	Seam 3, Seam 1, Seam 1 Sub
RAV-06(09)-010	AF-2009	Drillwell	28-May-09	29-May-09	170	Gamma, Resistivity, Caliper, Density, Sonic, Deviation	Seam 4, Seam 3, Seam 1, Seam 1 Sub
RAV-06(09)-011	AE-2009	Drillwell	29-May-09	06-Jun-09	463	Gamma, Resistivity, Caliper, Density, Sonic, Deviation	Seam 5, Seam 4, Seam 3, Seam 1
RAV-09-001	A-2009	Peak	01-Jun-09	03-Jun-09	108	Gamma, Resistivity, Caliper, Density, Sonic, Dip Metre, Acoustic Televiewer	Seam 3, Seam 2, Seam 1
RAV-09-002	F-2009	Alliance	03-Jun-09	24-Jun-09	417.7	Gamma, Neutron, thru pipe, Open Hole Gamma, Resistivity, Caliper, Density, Sonic, Deviation	Seam 4, Seam 3, Seam 2, Seam 1
RAV-09-003	B-2009	Peak	03-Jun-09	Jun-06	69	Gamma, Resistivity, Caliper, Density	Seam 1
RAV-09-004	C-2009	Peak	Jun-06	17-Jun-09	308.5	Gamma, Resistivity, Caliper, Density, Sonic, Dip Metre, Acoustic Televiewer	Seam 4, Seam 3, Seam 2, Seam 1
RAV-09-005	S-2009	Drillwell	06-Jun-09	14-Jun-09	373	Gamma, Neutron, thru pipe, Open Hole Gamma, Resistivity, Caliper, Density	Seam 5, Seam 4, Seam 3, Seam1
RAV-09-006	X-2009	Drillwell	14-Jun-09	17-Jun-09	179.05	Gamma, Neutron, thru pipe, Open Hole Gamma, Resistivity, Caliper, Density	Seam 1, Seam 1 Sub
RAV-09-007	H-2009	Peak	17-Jun-09	20-Jun-09	255.7	Gamma, Resistivity, Caliper, Density	Seam 5, Seam 4, Seam 3, Seam1, Seam 1 Sub
RAV-09-008	T-2009	Drillwell	17-Jun-09	20-Jun-09	251.7	Gamma, Neutron, thru pipe, Open Hole Gamma, Resistivity, Caliper, Density	Seam 4, Seam 3, Seam 1
RAV-09-009	Q-2009	Drillwell	20-Jun-09	24-Jun-09	222.9	Gamma, Resistivity, Caliper, Density, Sonic, Deviation	Seam 4, Seam 3, Seam 1
RAV-09-010	M-2009	Peak	20-Jun-09	23-Jun-09	201.6	Gamma, Resistivity, Caliper, Density, Sonic	Seam 4, Seam 3, Seam 1
RAV-09-011	L-2009	Peak	23-Jun-09	26-Jun-09	115.5	Gamma, Resistivity, Caliper, Density, Deviation	Seam 1
RAV-09-012	U-2009	Drillwell	24-Jun-09	30-Jun-09	324.16	Gamma, Resistivity, Caliper, Density, Deviation, Neutron, Sonic	Seam 4, Seam 3, Seam 1
RAV-09-013	J-2009	Alliance	24-Jun-09	30-Jun-09	347.2	Gamma, Resistivity, Caliper, Density, Neutron, Deviation	Seam 4, Seam 3, Seam 1
RAV-09-014	HH-2009	Peak	26-Jun-09	27-Jun-09	112.5	Gamma, Resistivity, Caliper, Density, Sonic, Deviation, Acoustic Televiewer	Seam 3, Seam 1
RAV-09-015	I-2009	Peak	27-Jun-09	01-Jul-09	360	Gamma, Resistivity, Caliper, Density, Deviation	Seam 4, Seam 3, Seam 1
RAV-09-016	K-2009	Alliance	30-Jun-09	14-Jul-09	405	Gamma, Resistivity, Caliper, Neutron, Density, Sonic, deviation, Dip Meter	Seam 4, Seam 3, Seam 1
RAV-09-017	Y-2009	Drillwell	30-Jun-09	04-Jul-09	356	Gamma, Resistivity, Caliper, Density, Deviation, Temperature	Seam 5, Seam 4, Seam 3, Seam 1
RAV-09-018	E-2009	Peak	01-Jul-09	02-Jul-09	81.6	Gamma, Resistivity, Caliper, Density, Neutron, Sonic, Dip Metre, Acoustic Televiewer	Seam 1
RAV-09-019	G-2009	Peak	03-Jul-09	10-Jul-09	386.2	Gamma, Resistivity, Caliper, Density, Deviation, Temperature	Seams 5, 4, 3, and 1
RAV-09-020	V-2009	Drillwell	04-Jul-09	12-Jul-09	348	Gamma, Resistivity, Caliper, Density, Neutron, Sonic, Dip Metre, Acoustic Televiewer	Seams 5, 4, 3, and 1
RAV-09-021	P-2009	Peak	10-Jul-09	12-Jul-09	367.6	Gamma, Resistivity, Caliper, Density, Sonic, Deviation, Temperature	Seams 4, 3.
RAV-09-022	AA-2009	Drillwell	12-Jul-09	13-Jul-09	168.3	Gamma, Resistivity, Caliper, Density, Neutron, Sonic, Dip Metre, Acoustic Televiewer	Seams 4, 3, & 1
RAV-09-023	NF-2009	Peak	12-Jul-09	17-Jul-09	228	Gamma, Resistivity, Caliper, Density, Deviation, Temperature	Seams 4, 3 &1
RAV-09-024	AC-2009	Drillwell	13-Jul-09	17-Jul-09	221	Gamma, Resistivity, Caliper, Density, Neuron, Sonic, Acoustic Televiewer, Dip Meter	Seams 4, 3,& 1
RAV-09-025	R-2009	Drillwell	17-Jul-09	20-Jul-09	275.5	Gamma, Resistivity, Caliper, Density, Sonic, Dip Metre	Hit a normal fault displacing Seams 3 and 1
RAV-09-026	NE-2009	Peak	17-Jul-09	18-Jul-09	92.7	Gamma, Resistivity, Caliper, Density,	Seams 3 & 1
RAV-09-027	NJ-2009	Peak	18-Jul-09	20-Jul-09	179.5	Gamma, Resistivity, Caliper, Density, Neutron, Sonic, Acoustic Televiewer	Seams 3 and 1
RAV-09-028	NG-2009	Peak	July 20, 2009, & August 23, 2009	19-Sep-09	530	Gamma, Resistivity, Caliper, Density, Sonic, Neutron, Deviation	Seams 4, 3, 2 & 1
RAV-09-029	P-2009	Drillwell	20-Jul-09	30-Jul-09	397	Gamma, Resistivity, Caliper, Density, Deviation, Temperature	Seams 4, 3, and 1
RAV-09-030	NI-2009	Peak	21-Jul-09	23-Jul-09	77.4	Gamma, Resistivity, Caliper, Density, Deviation, Sonic	Seams 3 & 1
RAV-09-031	NN-2009	Peak	23-Jul-09	25-Jul-09	85	Gamma, Resistivity, Caliper, Density, Deviation	Seams 3 & 1
RAV-09-032	NO-2009	Peak	25-Jul-09	28-Jul-09	105.6	Gamma, Resistivity, Caliper, Density, Sonic, deviation, Dip Meter, Acoustic Televiewer	Seams 3 & 1
RAV-09-033	NA-2009	Peak	30-Jul-09	Aug 23,2009	447	Gamma, Resistivity, Caliper, Density, Sonic, Deviation	Seams 3, & 1
RAV-09-034	N-2009	Drillwell	12-Aug-09	Aug 21,2009	187	Gamma, Resistivity, Caliper, Density, Sonic, deviation, Dip Meter	Seams 4, 3, and 1
RAV-09-035	D-2009	Drillwell	21-Aug-09	12-Sep-09	334	Gamma, Resistivity, Caliper, Density, Sonic, Neutron, Dip Meter, Deviation	Seams 4, 3, and 1
RAV-09-036CQ	HH-2009	Drillwell	20-Sep-09	23-Sep-09	71.12	Density, Deviation	Seams 3 & 1
RAV-09-037CQ	HH-2009	Drillwell	23-Sep-09	24-Sep-09	32.9	not logged	Seam 3
RAV-09-038CQ	L-2009	Drillwell	24-Sep-09	26-Sep-09	36.85	not logged	Seam 1
RAV-09-039CQ	L-2009	Drillwell	26-Sep-09	27-Sep-09	35.64	not logged	Seam 1
RAV-09-040	N-2009	Drillwell	05-Oct-09	08-Oct-09	121.92	not logged	Seams 4, 3, and 1
RAV-09-041	N-2009	Drillwell	08-Oct-09	16-Oct-09	110.93	not logged	Seams 4, 3, and 1
RAV-09-042	V-2009	Drillwell	23-Feb-10	05-Mar-10	339.5	Gamma, Resistivity, Caliper, Density, Sonic, Neutron, Dip Meter, Deviation	Seams 5, 4, 3 & 1
RAV-09-043	V-2009	Drillwell	15-Mar-10	29-Mar-10	298	not logged	Pump Test - Seams 5 & 4 only

Notes:
- Designated Geotech Hole
- Designated Coal Gas Testing Hole
- Designated for Piezometer Installation
- Designated Geotech and for Piezometer Installation

Table 6: Drilling Summary By Contractor and Type

DrillSite	Contractor	DrillHole	Surficial(depth)	Casing(depth)	Chip (depth)	Chip (thk)	Core (depth)	Core (thk)	Total Depth
Z-2009	Drillwell	RAV-06(09)-009	91.00	91.00	168.60	77.60	243.84	75.24	243.84
AF-2009	Drillwell	RAV-06(09)-010	54.80	54.80	97.50	42.70	171.00	73.50	171.00
AE-2009	Drillwell	RAV-06(09)-011	103.20	103.20	257.50	154.30	463.14	205.64	463.14
A-2009	Peak	RAV-09-001	4.20	4.20	na	na	108.20	104.00	108.20
F-2009	Alliance	RAV-09-002	4.80	4.80	250.00	245.20	417.70	167.70	417.70
B-2009	Peak	RAV-09-003	6.50	6.50	na	na	69.00	62.50	69.00
C-2009	Peak	RAV-09-004	54.50	54.50	na	na	308.50	254.00	308.50
S-2009	Drillwell	RAV-09-005	5.00	5.00	219.50	214.50	372.50	153.00	372.50
X-2009	Drillwell	RAV-09-006	68.00	68.00	169.00	101.00	179.05	10.05	179.05
H-2009	Peak	RAV-09-007	6.00	6.00	na	na	255.70	249.70	255.70
T-2009	Drillwell	RAV-09-008	72.00	72.00	165.00	93.00	251.70	86.70	251.70
Q-2009	Drillwell	RAV-09-009	18.60	18.60	127.00	108.40	222.90	95.90	222.90
M-2009	Peak	RAV-09-010	6.10	15.00	na	na	201.60	186.60	201.60
L-2009	Peak	RAV-09-011	18.25	18.25	na	na	115.50	97.25	115.50
U-2009	Drillwell	RAV-09-012	70.00	70.00	159.00	89.00	324.16	165.16	324.16
J-2009	Alliance	RAV-09-013	12.00	12.00	210.50	198.50	347.20	136.70	347.20
HH-2009	Peak	RAV-09-014	20.00	24.00	na	na	112.50	88.50	112.50
I-2009	Peak	RAV-09-015	16.00	16.00	na	na	360.00	344.00	360.00
K-2009	Alliance	RAV-09-016	12.00	12.00	210.50	198.50	405.00	194.50	405.00
Y-2009	Drillwell	RAV-09-017	22.20	23.00	233.00	210.00	356.00	123.00	356.00
E-2009	Peak	RAV-09-018	20.50	23.00	na	na	81.59	58.59	81.59
G-2009	Peak	RAV-09-019	11.00	11.00	na	na	386.20	375.20	386.20
V-2009	Drillwell	RAV-09-020	2.00	2.00	225.00	223.00	348.00	123.00	348.00
P-2009	Peak	RAV-09-021	14.00	21.30	na	na	368.20	346.90	368.20
AA-2009	Drillwell	RAV-09-022	77.50	77.50	119.00	41.50	168.30	49.30	168.30
NF-2009	Peak	RAV-09-023	44.20	44.20	na	na	228.30	184.10	228.30
AC-2009	Drillwell	RAV-09-024	70.20	70.20	101.20	31.00	221.00	119.80	221.00
R-2009	Drillwell	RAV-09-025	15.00	15.00	188.67	173.67	275.50	86.83	275.50
NE-2009	Peak	RAV-09-026	12.60	12.60	na	na	92.70	80.10	92.70
NJ-2009	Peak	RAV-09-027	36.60	36.60	na	na	179.50	142.90	179.50
NG-2009	Peak	RAV-09-028	50.29	50.29	na	na	530.00	479.71	530.00
P-2009	Drillwell	RAV-09-029	10.00	10.60	346.00	335.40	397.00	51.00	397.00
NI-2009	Peak	RAV-09-030	5.00	9.00	na	na	77.40	68.40	77.40
NN-2009	Peak	RAV-09-031	1.50	3.00	na	na	85.00	82.00	85.00
NO-2009	Peak	RAV-09-032	20.00	20.00	na	na	106.00	86.00	106.00
NA-2009	Peak	RAV-09-033	25.30	25.30	na	na	447.00	421.70	447.00
N-2009	Drillwell	RAV-09-034	11.00	12.00	99.80	87.80	187.30	87.50	187.30
D-2009	Drillwell	RAV-09-035	14.00	15.00	222.50	207.50	334.00	111.50	334.00
HH-2009	Drillwell	RAV-09-036(CQ)	9.91	9.91	18.29	63.38	71.12	14.71	71.12
HH-2009	Drillwell	RAV-09-037(CQ)	8.84	8.84	26.45	17.61	32.90	6.45	32.90
L-2009	Drillwell	RAV-09-038(CQ)	2.13	2.13	24.99	22.86	36.85	11.86	36.85
L-2009	Drillwell	RAV-09-039(CQ)	1.21	1.21	28.04	26.83	35.64	7.60	35.64
N-2009	Drillwell	RAV-09-040(HYD)	11.00	15.54	121.92	106.38			121.92
N-2009	Drillwell	RAV-09-041(HYD)	11.00	13.40	110.93	97.53			110.93
V-2009	Drillwell	RAV-09-042(HYD)	5.00	5.00	324.00	319.00	339.50	15.50	339.50
V-2009	Drillwell	RAV-09-043(HYD)	5.00	5.00	298.00	293.00			298.00
W	Drillwell DR		58.00	58.00	58.00	0.00			58.00
AB	Drillwell DR		47.20	47.20	47.20	0.00			47.20
AD	Drillwell DR		58.00	58.00	74.00	16.00			74.00
NC	Drillwell DR		40.80	40.80	40.80	0.00			40.80
NB	Drillwell DR		27.70	27.70	34.40	6.70			34.40
NG	Drillwell DR	RAV-09-028	50.29	50.29	51.82	1.53			51.82
TOTALS		**47**	**1441.92**	**1480.46**	**4828.11**	**3803.39**	**10314.19**	**5884.29**	**11151.26**
	Peak	**19**	**352.25**	**400.74**	**0.00**	**0.00**	**4112.89**	**3712.15**	**4112.89**
	Drillwell	24	758.59	768.93	3850.89	3136.96	5031.40	1673.24	5562.25
	Drillwell DR	6	281.99	281.99	306.22	24.23	0.00	0.00	306.22
	Alliance	**3**	**28.80**	**28.80**	**671.00**	**642.20**	**1169.90**	**498.90**	**1169.90**
	Drillwell Adjust	**24**	**791.58**	**801.92**	**3775.21**	**3028.29**	**5031.40**	**1673.24**	**5486.57**
ADJUSTED TOTALS		**46**	**1172.63**	**1231.46**	**4446.21**	**3670.49**	**10314.19**	**5884.29**	**10769.36**

Table 7: Summary of Principal Coal Seam Intervals

DrillHole	Casing (m)	Seam 1			Seam 3/3U*			Seam 3L			Seam 4		
		from (m)	to (m)	thick (m)	from (m)	to (m)	thick (m)	from (m)	to (m)	thick (m)	from (m)	to (m)	thick (m)
RAV-06(09)-009	91.00	201.95	203.85	1.90	167.20	168.50	1.30						
RAV-06(09)-010	54.80	130.23	132.20	1.97	96.32	97.30	0.98				58.93	59.48	0.55
RAV-06(09)-011	103.20	444.33	447.63	3.30	425.81	427.59	1.78				393.12	394.17	1.05
RAV-09-001	4.20	54.30	57.43	3.13	7.67	9.22	1.55						
RAV-09-002	4.80	357.81	359.05	1.24	330.14	331.96	1.82	332.99	333.57	0.58	254.50	255.44	0.94
RAV-09-003	6.50	12.30	16.29	3.99									
RAV-09-004	54.75	faulted			222.26	224.50	2.24				133.58	135.32	1.74
RAV-09-005	5.00	311.00	313.09	2.09	282.72	285.55	2.83				249.01	250.23	1.22
RAV-09-006	68.00	97.76	101.48	3.31/3.72									
RAV-09-007	6.00	190.35	194.39	4.04	161.02	163.50	2.48				123.72	125.27	120/1.55
RAV-09-008	72.00	225.86	228.96	3.10	200.59	202.28	1.69				161.37	163.55	2.18
RAV-09-009	18.60	212.07	214.42	2.35	186.03	186.33	0.30	187.19	188.53	1.34	151.52	152.03	0.51
RAV-09-010	15.00	117.45	119.69	2.24	95.50	97.02	1.52				53.37	54.52	1.15
RAV-09-011	18.25	31.69	35.55	3.10/3.86									
RAV-09-012	29.50	272.92	276.61	3.24/3.69	236.07	238.25	2.18	240.29	240.98	0.69	200.01	201.19	1.18
RAV-09-013	10.50	331.27	334.38	3.11	308.56	310.54	1.98				272.14	273.33	1.19
RAV-09-014	24.00	58.08	60.40	2.32	26.29	27.93	1.64						
RAV-09-015	13.50	302.26	306.35	4.09	279.06	282.42	3.36				237.50	238.15	0.65
RAV-09-016	6.00	358.37	359.71	1.34	335.33	337.15	1.82	337.65	338.40	0.75	298.00	299.42	1.42
RAV-09-017	23.00	335.82	339.03	3.21	306.63	308.83	2.20				272.90	274.01	1.11
RAV-09-018	23.00	27.62	32.68	5.06									
RAV-09-019	11.00	367.66	369.98	2.32	342.05	343.82	1.77	345.18	345.78	0.60	308.44	310.12	1.68
RAV-09-020	2.00	329.27	330.90	1.63	296.85	300.06	3.21				261.20	261.77	0.57
RAV-09-021	21.30	nd	nd	nd	356.90	359.64	2.44/2.74				321.34	323.16	1.82
RAV-09-022	77.50	161.31	163.16	1.85	138.18	139.51	1.33	140.75	141.86	1.11	119.80	120.45	0.65
RAV-09-023	44.20	186.84	187.79	0.95	137.70	139.48	1.78	148.89	149.32	0.43	96.76	97.35	0.59
RAV-09-024	70.20	205.58	208.45	2.87	177.25	180.61	1.35/3.35				145.75	146.97	1.22
RAV-09-025	15.00	*Note: Lower Seams displaced by faulting*											
RAV-09-026	12.60	69.05	70.80	1.75	22.85	25.27	2.42	25.72	26.59	0.87			
RAV-09-027	36.60	147.41	154.07	6.66	113.73	114.73	1.00				80.14	80.95	0.81
RAV-09-028	50.29	479.40	482.55	2.56/3.15	442.36	443.68	1.32	455.37	456.02	0.65	395.90	396.67	0.77
RAV-09-029	10.60	372.85	375.58	2.19/2.73	348.30	351.20	2.40/2.90				312.65	313.60	0.95
RAV-09-030	9.00	65.08	66.78	1.70	36.15	37.35	1.20						
RAV-09-031	3.00	59.37	59.95	0.58	24.32	24.76	0.44				15.12	15.46	0.34
RAV-09-032	20.00	83.42	85.62	2.20	26.93	27.78	0.85				17.89	18.23	0.34
RAV-09-033	25.30	389.02	392.08	3.06	356.65	359.39	1.51/2.74				311.60	312.76	1.16
RAV-09-034	13.00	135.95	138.52	2.27/2.57	111.13	111.82	0.69				73.82	74.86	1.04
RAV-09-035	15.00	308.12	312.68	3.92/4.56	279.92	281.00	1.08	281.46	284.87	3.41	239.93	241.87	1.94
RAV-09-036CQ	9.91	61.89	64.19	2.30	29.34	31.28	1.94						
RAV-09-037CQ	8.84				29.74	31.81	2.07						
RAV-09-038CQ	2.13	29.96	34.33	4.37									
RAV-09-039CQ	1.21	29.56	33.80	4.24									
RAV-09-042	8.20	328.55	330.10	1.55	295.67	297.76	2.09				260.59	261.31	0.72

* Note: Where Seam 3U and 3L are not well defined the interval is Seam 3 and is correlated with Seam 3U pending further study.

[1] No density log for Seam 1. Picks from core log augmented with e-log

nd Not determined. Hole aborted prior to intersecting Seam 1

All core logging and sampling of coal intervals took place at the drill rig on both day and night shifts. Core was retrieved directly from the core tube by drilling personnel and placed in core boxes (Peak) or where split tubes were used (Drillwell and Alliance) prior to disturbing the core, recovery measurements were made and a quick log of the core made by the site geologist. Here, it was cleaned of excess mud, then geotechnically and geologically logged. Core runs were measured for recovered length *vs.* drilled length as recorded by the driller, and sample recovery calculated. Rock quality (RQD) was determined by summing all intact core intervals that exceed 10cm in length (within a general lithology unit and within a cored run interval) and dividing the sum by the overall run length.

All coal intervals were sampled and roof and floor samples taken for Seams 1 and 3 and any other seams where the intersected thickness was considered potentially mineable. Coal sample intervals were based on litho types. In-seam partings were not sampled if they were in excess of 0.30 m. Partings less than or equal to 0.30 m and greater than 0.05 m were sampled separately; partings less than or equal to 0.05 m were included with the coal sample. Roof and floor samples were usually taken of the 0.1 m interval immediately above and below a coal seam. Samples were photographed, described, then as per industry standard, placed whole into plastic bags along with a sample tag. The bags were immediately sealed with tape to prevent moisture loss, and placed into plastic tubs for shipping.

Samples were sent to Birtley Coal and Minerals Science Laboratory (a division of GWIL Industries) in Calgary, AB, for analyses. The following table (Table 8) indicates the type of sample analyses done and Figures 9 to 11 present flow charts of process and analyses.

Table 8 – Record of Sample Analyses

	Incremental							Composite Washabilities				Composite Product Analyses				X-Hole Composites Metallurgical, Petrographics & Trace Element			
DRILLHOLE	Seam1 Sub	Seam 1	Seam 2	Seam 3U	Seam 3L	Seam 4	Seam 5	Seam 1	Seam 3U	Seam 3L	Seam 4	Seam 1	Seam 3U	Seam 3L	Seam 4	Grouping	Seam 1	Grouping	Seam 3
RAV-06(09)-009	x	x						x				x				A, Super Comp	x , X		
RAV-06(09)-010	x	x						x				x				A, Super Comp	x , X		
RAV-06(09)-011		x		x		x	x	x	x			x	x			E	x		
RAV-09-001		x	x	x				x				x				F	x		
RAV-09-002		x		x	x	x			x				x						
RAV-09-003		x						x				x				F	x		
RAV-09-004	x			x		x			x		x		x		x				
RAV-09-005		x		x		x	x	x	x			x	x			G	x		
RAV-09-006	No Samples							No Samples				No Samples							
RAV-09-007	x	x		x		x	x	x	x			x	x			C, Super Comp	x , X		
RAV-09-008	x	x		x		x		x	x			x	x			A, Super Comp	x , X		
RAV-09-009		x		x				x	x			x	x			A, Super Comp	x , X		
RAV-09-010		x		x		x		x	x			x	x			C, Super Comp	x , X		
RAV-09-011		x						x				x							
RAV-09-012	x	x		x	x	x		x	x	x	x	x	x	x		E	x		
RAV-09-013		x		x		x	x	x	x			x	x			B, Super Comp	x , X		
RAV-09-014		x		x				x				x				C, Super Comp	x , X		
RAV-09-015		x		x		x	x	x	x			x	x			B, Super Comp	x , X		
RAV-09-016		x		x		x					x								
RAV-09-017		x		x		x	x	x	x			x	x			E	x		
RAV-09-018		x						x				x				C, Super Comp	x , X		
RAV-09-019		x		x	x	x	x	x	x		x	x	x		x	B, Super Comp	x , X		
RAV-09-020		x		x				x	x			X	x			A-1, Super Comp	x , X		
RAV-09-021				x		x			x		x		x		x				
RAV-09-022		x		x		x		x				X				E	x		
RAV-09-023		x		x				x	x		x	x	x		x	D, Super Comp	x , X		
RAV-09-024	x	x		x				x				x				A, Super Comp	x , X		
RAV-09-025	No Samples							No Samples				No Samples							
RAV-09-026		x		x	x			x	x	x		x	x	x					
RAV-09-027		x						x				x				D, Super Comp	x , X		
RAV-09-028	x	x	x	x		x	x	x	x			x	x			D, Super Comp	x , X		
RAV-09-029		x		x				x	x			x	x			G	x		
RAV-09-030		x		x				x	x			x	x			D, Super Comp	x , X		
RAV-09-031		x				x		na											
RAV-09-032		x		x				x				x							
RAV-09-033		x				x	x	na											
RAV-09-034		x		x				x				x				C, Super Comp	x , X		
RAV-09-035		x	x	x		x		x	x	x	x	x	x	x	x	B, Super Comp	x , X		
RAV-09-036CQ	Large Diameter Bulk Samples - no incremental analyses							x	x				X						X
RAV-09-037CQ	Large Diameter Bulk Samples - no incremental analyses																		
RAV-09-038CQ	Large Diameter Bulk Samples - no incremental analyses							x				X					X		
RAV-09-039CQ	Large Diameter Bulk Samples - no incremental analyses																		
RAV-09-042		X						X				X							

	indicates coal subjected to geotechnical physical tests prior to laboratory analysis
	indicates selected coal samples degassed prior to laboratory analysis
x	indicates testing done

Figure 9 – Incremental Raw Coal and Composite Head Raw Processing and Analyses

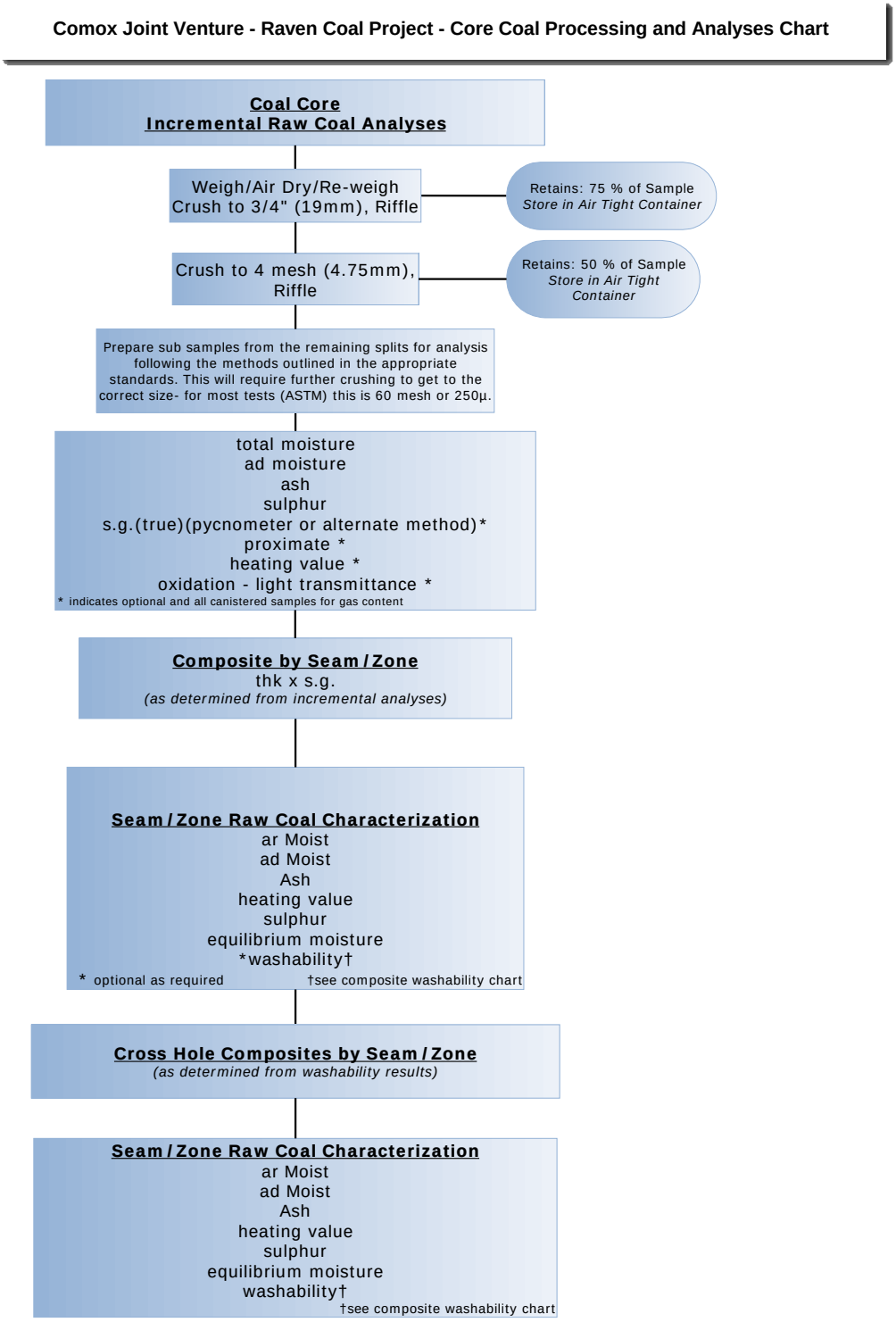


Figure 10 – Composite Washability Process Flow Chart

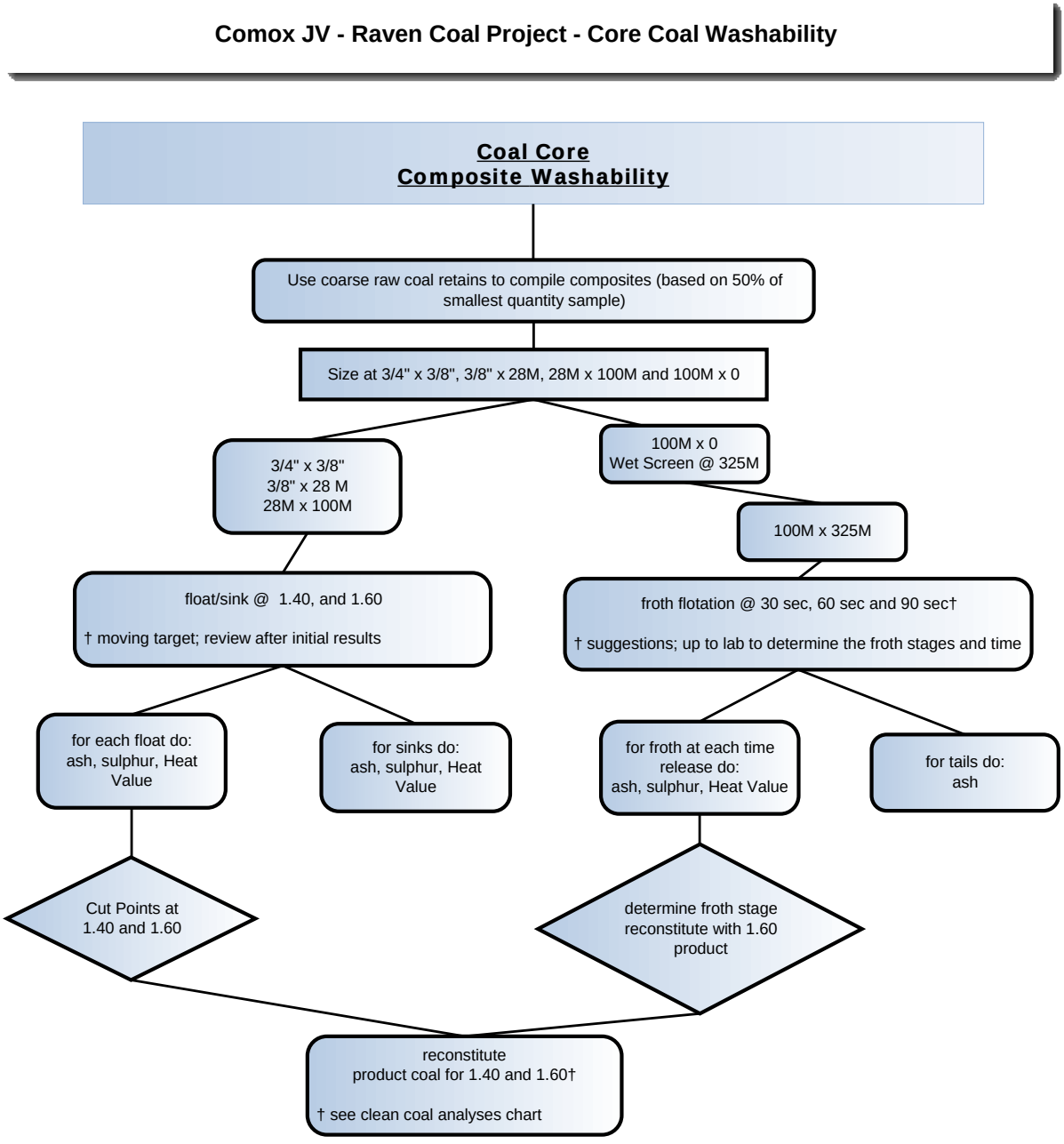
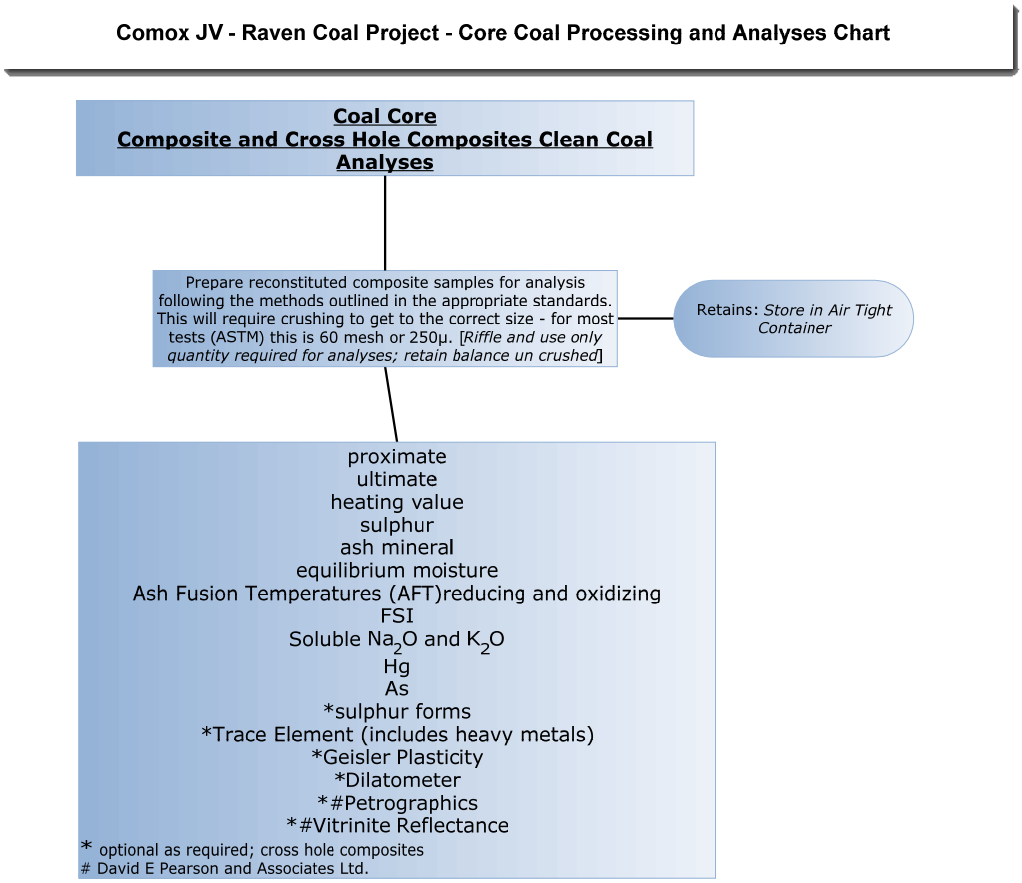


Figure 11 – Composite and Cross-Hole Composite Clean Coal Analyses



Drillholes were routinely geophysically logged with gamma, resistivity, density, caliper and deviation tools with options on sonic, dip metre, acoustic televiewer and neutron. The sonic was run for all drillholes located on seismic lines and holes targeted for geotechnical investigations. The acoustic televiewer was run in drillholes where fracturing and/or faulting and irregular dips were encountered in the core. Decisions on optional logs was made on a hole by hole basis by the supervising geologist in consultation with the senior supervising geologist. A listing of logs run is provided on Table 5 and a summary chart of logs run is provided as Table 9. Geophysical Logging was done by Weatherford International Ltd.

It should be mentioned that drillholes RAV-06(09)-09, RAV-06(09)-10 and RAV-06(09)-11 were started in 2006 and drilled to core point but were only completed during the current program hence the (09) after the 06.

Table 9: Summary Chart of Geophysical Logs Run

	Logs Run									
Drillhole ID	**Gamma**	**Caliper**	**Density**	**Resistivity**	**Dipmeter**	**Deviation**	**Sonic**	**Neutron**	**temp**	**acoustic televiewer**
RAV-06(09)-009	x	x	x	x		x	x			
RAV-06(09)-010	x	x	x	x		x				
RAV-06(09)-011	x	x	x	x		x	x			
RAV09-01	x	x	x	x	x	x	x	x		x
RAV09-02	x	x	x	x	x	x	x			
RAV09-03	x	x	x	x						
RAV09-04	x	x	x	x	x	x	x	x		x
RAV09-05	x	x	x	x	x	x	x	x		
RAV09-06	x	x	x	x		x		x		
RAV09-07	x	x	x	x						
RAV09-08	x	x	x	x		x	x	x		
RAV09-09	x	x	x	x		x	x			
RAV09-010	x	x	x	x			x			
RAV09-011	x	x	x	x		x				
RAV09-012	x	x	x	x		x	x	x		
RAV09-013	x	x	x	x		x		x		
RAV09-014	x	x	x	x		x	x	x		x
RAV09-015	x	x	x	x		x				
RAV09-016	x	x	x	x	x	x	x	x		
RAV09-017	x	x	x	x		x			x	
RAV09-018	x	x	x	x	x		x	x		x
RAV09-019	x	x	x	x		x	x	x	x	
RAV09-020	x	x	x	x	x	x	x	x		x
RAV09-021	x	x	x	x		x	x		x	
RAV09-022	x	x	x	x	x	x	x	x		x
RAV09-023	x	x	x	x		x			x	
RAV09-024	x	x	x	x	x	x	x	x		x
RAV09-025	x	x	x	x	x	x				
RAV09-026	x	x	x	x		x				
RAV09-027	x	x	x	x	x	x	x	x		x
RAV09-028	x	x	x	x	x	x	x	x		
RAV09-029	x	x	x	x		x			x	
RAV09-030	x	x	x	x		x	x			
RAV09-031	x	x	x	x		x				
RAV09-032	x	x	x	x	x	x	x	x		x
RAV09-033	x	x	x	x		x	x	x		
RAV09-034	x	x	x	x	x	x	x	x		
RAV09-035	x	x	x	x	x	x	x	x		
RAV09-036	x	x	x			x				
RAV09-037	**No Geophysical Logs Run**									
RAV09-038										
RAV09-039										
RAV09-040										
RAV09-041										
RAV09-042	x	x	x	x	x	x	x			

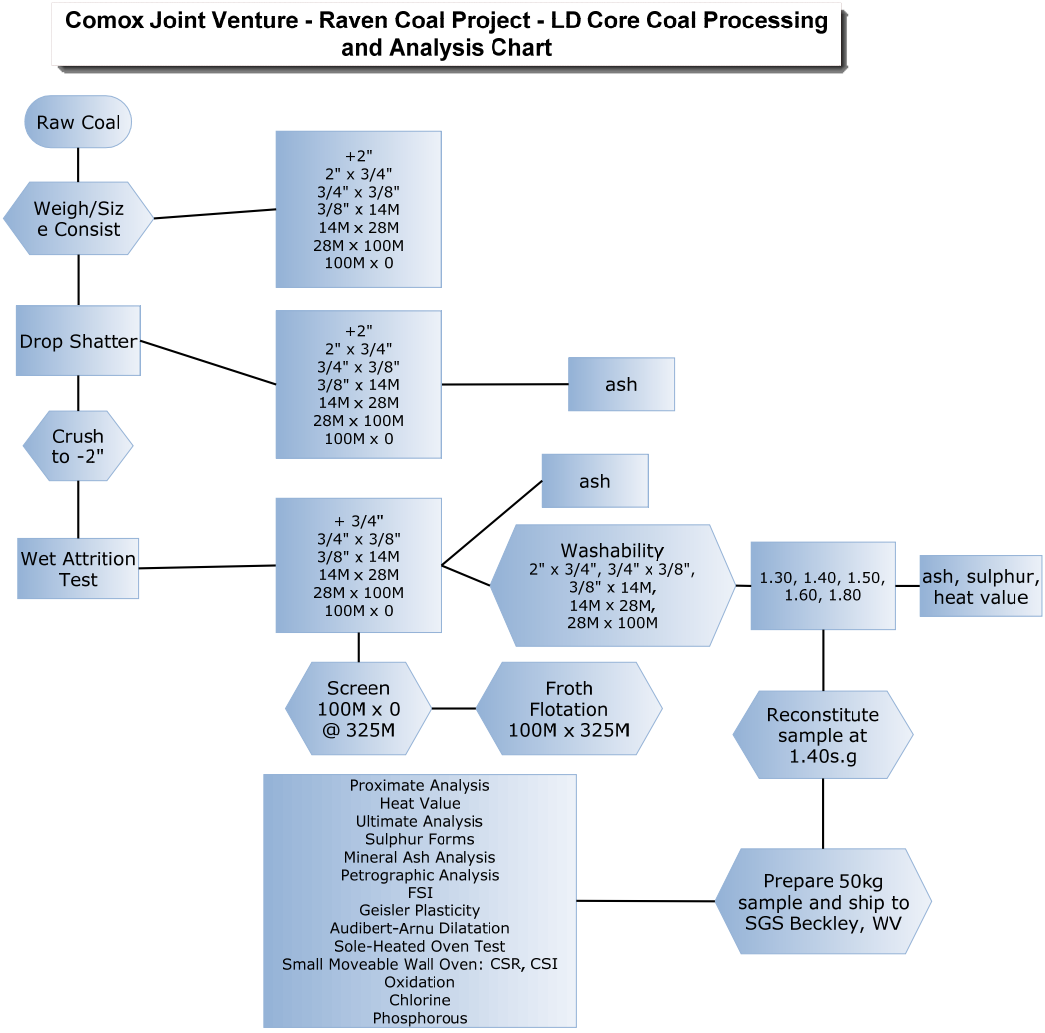
Drillhole descriptive logs are attached as Appendix A and geophysical logs for the drillholes are included as Appendix B.

The drilling programme was managed and supervised by the writer with the day-to-day supervision of the drilling and geological services by Mr. Ernest Popyk. Ernie has been involved with exploration of the Raven Project and other exploration in the area since 2005.

Bulk Sampling Using Large Diameter Core Drilling for Coal Quality and Carbonization Testing

Four drillholes were drilled using a 6" core barrel and recovered 5 7/8 inch large diameter core for coal quality and carbonization testing. Two holes RAV-09-036 and -037 were drilled at Drillhole site RAV-09-014 to intersect Seam 3 and two holes RAV-09-038 and -39 were drilled at Drillhole site RAV-09-011 to intersect Seam 1. Seam samples were from each of the holes were combined into a single sample and sent to Birtley Coal Science and Minerals Testing in Calgary for washing and preparation of bulk clean coal samples for carbonization testing by SGS Beckley in West Virginia, USA. Figure 12 presents a flow chart of the sampling process and analyses run.

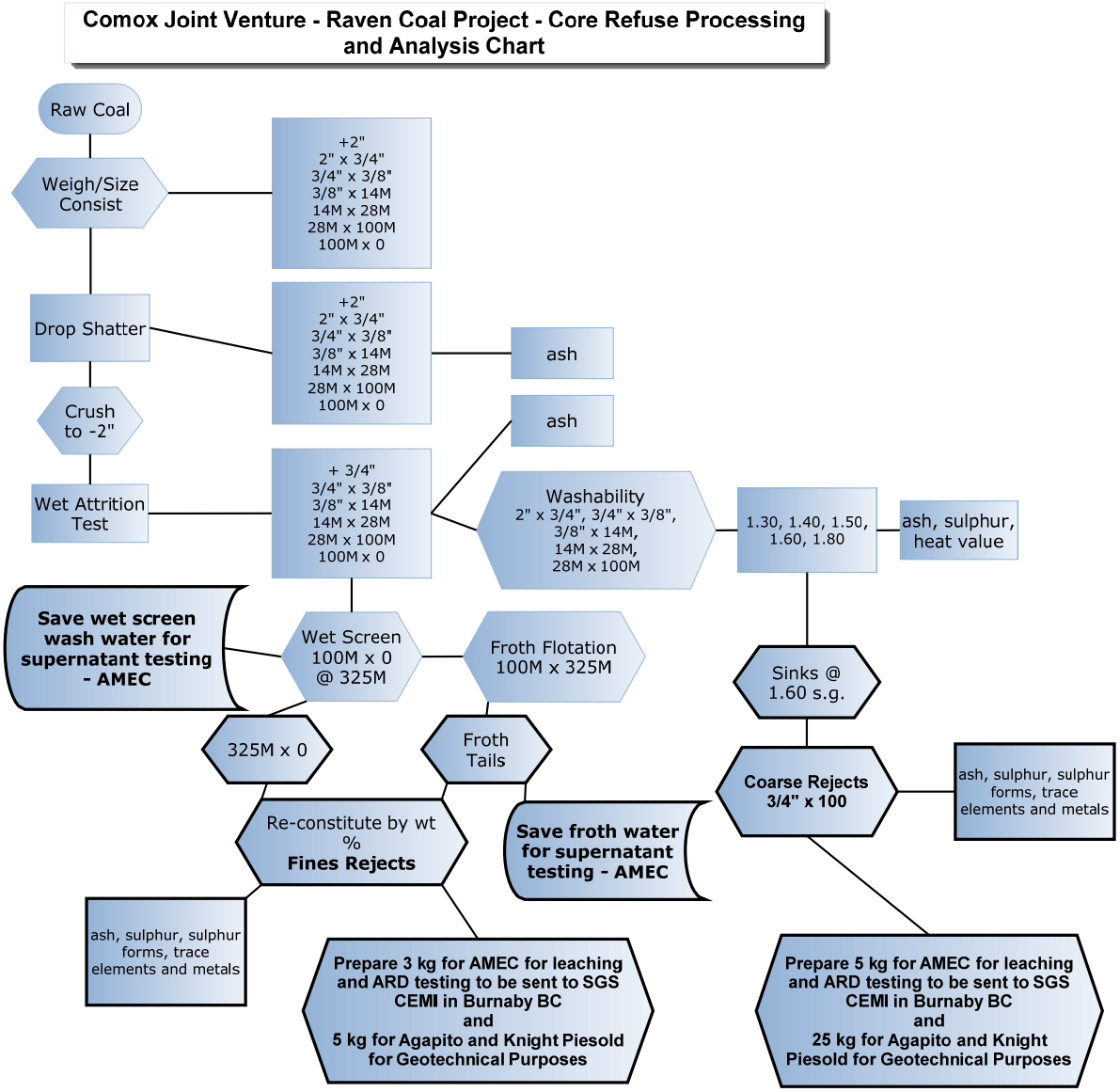
Figure 12 – Bulk Sample Large Diameter Core Processing and Analyses Chart



4.3 Coal Refuse Testing

Testing of coal refuse material was necessary for geotechnical properties as well as environmental purposes. Refuse from the large diameter drilling were used for this purpose. Additional samples of refuse material were provided from cross hole composite samples. The sampling and process flow chart for refuse testing is attached as Figure 13 following:

Figure 13 – Coal Refuse Processing and Sampling Chart



4.4 Coal Gas Quantity and Compositional Analysis

Five of the holes were targeted for sampling coal for gas quantity and compositional analyses to be used for safety and ventilation design for underground mining. The holes are highlighted on the attached Table 5.

Gas collection, processing and reporting was carried out by Petro-Logic Services Inc. of Calgary, AB.

Total gas contents are varied reflecting the varied coal quality and the depth of the coal seams. Gas contents for coal (less than 40% ash) range from 60.3 to 274.4 scf/t on an as received basis.

4.5 Drilling For Geotechnical Information

All drillholes were geotechnically logged by the site geologists and nine holes were targeted for core sampling for geotechnical testing of which one hole RAV-09-028 was selected for SIGRA horizontal stress test measurements. The 9 holes are highlighted on the attached Table 5. Geotechnical sampling and testing was under the supervision of Agapito Geotechnical Engineering of Denver CO; sampled sections of drillholes were sent to their lab in Grand Junction CO for testing and processing. Agapito will be reporting on the results as part of a feasibility study

4.6 Drilling for Hydrogeological Information

Hydrogeological data and information was required for mine planning purposes and for environmental purposes. Five of the exploration drillholes were targeted for groundwater monitoring and had piezometers installed and one other was twinned to enable pumping tests for transmissivity testing. All holes used for hydrogeological testing are highlighted on Table 5. The Hydrogeological testing was under the supervision of AMEC of Vancouver, BC with input from HIC of Denver CO. A summary of the piezometer installation is provided below:

Table 10: Summary of Hydrogeological Drilling, Testing and Monitoring

DrillHole	Type	Total Depth (m)	Depths & Comments	Depth Relative to Seams
RAV-09-006	2" standpipe	179	screen and sandpack at 132.3m to 136.0m	Seam 1 Sub
RAV-09-012	4" standpipe	324	open hole (no sandpack or seal)	
RAV-09-022	2" standpipe	168	screen and sandpack at 158.5m to 164.6m	in Seam 1
RAV-09-034	2" standpipe	187	screen and sandpack at 134.1m to 140.5m	in Seam 1
RAV-09-040	VWP*	122	installed at 90m, 111m, and 119m below grade	thru Seam 3
RAV-09-041	4" standpipe	111	screen and sandpack at 101.8m to 111m	Seam 3
RAV-09-042	VWP	339	installed at 280m, 314m, 326m below grade	above Seam 3, Below Seam 3, above Seam 1
RAV-09-043	6" standpipe	298	open hole (we have the option of sealing the top water strike using fine sand as a formation packer was installed below this water strike)	top of Seam 3

Note: * Vibrating Wire Piezometer

4.7 Surface Geological Mapping

One of the goals of the 2009 exploration programme was to geologically map the property to produce a surface geological map. Two mapping teams carried out the mapping during August, September and October. Mapping data was imported into Global Mapper® software and a geological map was prepared utilizing mapping data and drillhole information, Figure 14.

4.8 Site Supervision and Logistical Support

Dan Berkshire of Berkshire Geological Services acted as project Manager for the Comox Joint Venture and supervised drillhole site preparation and access, construction and reclamation. All access roads were constructed using a policy of "avoidance" – meaning with as little disturbance as possible and followed old roads wherever existed and generally avoided cutting or destroying trees unless absolutely necessary.

Dan also looked after safety and security and provided logistical support for the duration of the exploration. Berkshire Geological was also the main liaison support with the timber companies active in the area.

Berkshire also provided a prospecting service and was instrumental in locating old workings, as well as mapping old resource railway and road grades. Dan Berkshire was instrumental in helping to locate suitable sites for potential surface facilities in support of mine planning.

Berkshire Geological also provided mapping and GIS support for the project.

4.10 Survey Control

Surveying for locating drilloles and other control points was done by Pacific Land Surveying Ltd., of Nanaimo, Vancouver Island. Surveying was done to conform to the NAD 83 survey base system. Ltd.

4.11 Statement of Expenditures

Table 11 summarizes exploration expenditures at the Raven Project during 2009.

Table 11: Raven Project – Statement of Expenditures for 2009 Exploration

Drilling[1]	2,263,000
Consulting[2]	721,000
Sampling and Testing[3]	647,000
TOTAL	$3,631,000

Notes:
[1] Includes access, site preparation, reclamation, surveying, abandonment, and geophysical logging
[2] Includes geological planning, supervision, and assessment (including travel, vehicle rentals, room and board, casual labour, safety and security,and aerial photography and planimetry.
[3] Includes coal testing and analyses, coal gas and compositional testing and analyses, hydrogeological testing (excluding drilling), geotechnical testing, and geochemical testing and analyses.

5.0 Geology

Coal is present in the Upper Cretaceous Nanaimo Group which outcrops extensively on the eastern side of Vancouver Island. The Comox coalfield comprises the lower most Comox Formation, which dips north-east with the regional dip complicated by broad folds, thrusts and normal faults. The regional dip is 10 to 15 degrees northeast with dips locally steepening to 25 – 26 degrees especially in the west adjacent to the erosional edge. Generally deformation is more intense along the western margin of the basin where the erosional edge of the basin abuts the underlying uplifted volcanics forming the Beaufort Mountains.

Cathyl-Bickford[2] identified 3 sets of faults as characterizing the structure in the Tsable River area: (i) sub-parallel, northwest striking faults with " various combinations of extensional and dextral strike slip displacement"; (ii) easterly to northeasterly striking cross faults; and (iii) bedding-plane shear zones. The coalfield structure as depicted by Cathyl-Bikford is portrayed on 1:20,000 scale maps [3] as part of the BCMMPR Open File Report 1998-7. Some of the faults have been recognized on the property and others are inferred from drilling, areal photography and Lidar mapping. Bedding plane shear zones are recognized in core; however, are difficult to trace laterally but are structures to be expected associated mainly with the coal seams, carbonaceous zones and mudstones.

VLF-EM run in 1991 and high resolution reflective seismic run in 1996 and 2006 has assisted in interpreting the general structure over the property and continuity of coal zones; however the current geological depiction is more reliant on the drilling interpretation.

Pincock Allen & Holt (PAH) developed a geological model as part of a 43-101 compliant technical geological resource report[4] and sections drawn from the report are used to depict the general deposit geology Figures 15 and 16. Locations of the sections are shown on Figure 17.

Depositional sequences are well covered in the literature and the author has relied extensively on the work done by Cathyl-Bickford et al[5] to define the stratigraphy and structural setting of the Comox coal basin. Table 12 following shows the typical lithologic assemblages and suggested Formation names to be applied to the basin.

[2] Bickford, C.G.C., 1992
[3] Bickford, C.G.C., Hoffman, G., 1998
[4] Pincock Allen & Holt, June 4, 2010
[5] Bickford, C.G.C., 1992

Table 12
LITHOSTRATIGRAPHY OF LATE CRETACEOUS ROCKS WITHIN THE COMOX BASIN[6]

Formation	Member	Description Unit
Lambert		Mudstone and siltstone, minor sandstone and argillaceous limestone. > 115 m
Abrupt contact		
Denman	Norman Point	Sandstone; minor sandstone and siltstone. 25 to 40m
Intertonguing Contact		
	Graham	Conglomerate; minor sandstone and siltstone. 65 to 80m
Erosional contact		
	Madigan	Sandstone; minor conglomerate and siltstone. 55 to 75m
Intertonguing contact		
Trent River	Willow Point	Mudstone and siltstone; minor sandstone. 120 to 150m
Abrupt contact		
	BaynesSound	Sandstone and siltsone; minor conglomerate 10 to 60m
Abrupt contact		
	Royston	Mudstone and siltstone; minor sandstone. 150 to 220m
Intertonguing contact		
	Tsable	Mud-matrix conglomerate and pebbly siltstone. 5 to 140m.
Erosional contact		
	Browns	Sandstone. 10 to 45m
Intertonguing contact		
	Puntledge	Mudstone and siltstone; minor sandstone. 100 to 130m
Abrupt contact		
	Cowie	Sandstone. 12 to 15m
Abrupt contact		
	Cougarsmith	Mudstone and siltstone; minor sandstone. 18 to 22m.
Intertonguing contact		
Comox	Dunsmuir	Sandstone; minor siltstone and coal. 120 to 190m
Erosional contact		
	Cumberland	Siltstone, shale and coal; minor sandstone and gritstone. 30 to 90m.
Intertonguing contact		
	Benson	Conglomerate; minor red shale and siltstone. 0 to 220m
Erosional contact		
Pre-Cretaceous Basement Complex		
Karmutsen		Basalt, basaltic breccias and tuff

The significant assemblage over the Raven Project is the Comox Formation. The Trent River Formation occurs over the eastern area of the property.

The Comox Formation is deposited unconformably on basalts, gabbros and volcanic breccias of the Triassic Karmutsen Formation. The Triassic volcanics form an irregular basement topography which strongly influenced the deposition of the coal bearing sediments causing relatively rapid lateral and vertical facies changes and variable coal thicknesses.

The Comox Formation is subdivided into three Members from oldest to youngest:

- Benson Member

[6] After Bickford, C.G.C., 1992

- Cumberland Member
- Dunsmuir Member

The Benson Member is comprised of coarse sediments siltstones to conglomerates and occur over a relatively restricted areal extent. Thickness of this member is reported as varying up to 200m.

The Cumberland Member is the main coal bearing member and is comprised of siltstone, shale, and coal and contains the only economically significant coal on the Raven property.

The Dunsmuir Member consists of sandstone, conglomerates, with minor shales and thin coals.

The Comox Formation is locally intruded with sills and dikes although none are reported for the immediate area nor have any been observed.

Up to 10 coal seams have been variously described in the Comox basin, although, most literature refer to four seams or seam zones. The thickest coal and most persistent occurs in the Cumberland Member and usually occur as two seam zones. Coals are generally thin to medium thickness and individually coal seam zones rarely exceed 3.0 m; aggregate seam thickness varies from 2.0 to 8.0m with occasional isolated data points showing greater than 8.0m.

There are five coal seams – coal zones - identified as occurring in the prospect area; two coal seams are considered to be of economic interest. Both are contained in the Cumberland Member of the Comox Formation (Figure 18). Continuity of the Comox Formation and included coal zones are established from drilling and seismic and despite inter and intra variability the seam zones are relatively persistent throughout the deposit area. Figure 19 is a north-south correlation section (hung on Seam 1) using gamma/density log signatures to demonstrate correlation. Figure 20 shows the line of section.

Surficial material over the property varies in thickness from less than 2m with infrequent outcropping of bedrock along ridges in the west, to over 100m in the south. Surficial material is comprised of glacial drift to glacio-fluvial deposits of sand and gravel; the latter are especially prevalent in the south and south-east areas of the project area. Other bedrock outcrops are limited to periodic exposures along creek and river valleys.

Pages 27- 31 and Appendix C of this report remain confidential under the terms of the Coal Act Regulation, Section 2(1), and have been removed from the public version.

http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/10_251_2004

7.0 Coal Resources

Coal resources have been determined by Pincock Allen Holt (PAH) engineering consultants out of Denver CO (43-101 report issued)[11].

Coal resources underlying the Raven Project area have been determined in accordance with *National Instrument (NI) 43-101*, and the referenced documents *Definition Standards on Mineral Resources and Reserves* adopted by the Canadian Institute of Mining, Metallurgy and Petroleum, December 11, 2005, and, as appropriate, *A Standardized Coal Resource/Reserve Reporting System for Canada*, published as Paper 88-21 by the Geological Survey of Canada.

The following is a discussion of the parameters and criteria that are considered in a resource estimate as presented in GSC Paper 88-21.

The rank of coal underlying the Raven project area is classified as *High Volatile A Bituminous (ASTM)* and has an average mean maximum reflectance of 0.88%.

The *geology type* at the Raven Project is considered by the author to be *'moderate'* bordering on 'complex'. The Vancouver Island coal deposits are omitted from the discussion of the complexity of coal deposits in Paper 88-21, however, from analogy, the Comox coal field is not that dissimilar to the structural style of Obed, Bullmoose and McLeod River in the mountains and foothills of Alberta and British Columbia described as moderate in Paper 88-21.

The Raven project area should be considered as an underground mining *deposit type*. All resources determined for the Raven Project are considered for exploitation using underground mining, however, the writer notes that there may be small areas localized along the western subcrop limits of the deposit amenable to surface mining. There has been no attempt to delineate surface mining potential in the project area at this time.

A guideline for determining acceptable minimum seam thickness, included partings and coal to rock ratios is provided by GSC Paper 88-21:

Table 18: Criteria for Determining Resources for Potential Underground Mining

	Resources of immediate interest
Maximum rock partings included in thickness	0.3m
Minimum coal bed thickness to be included	0.6 m
Minimum aggregate seam thickness	1.5 m
Coal to rock thickness ratio	2:1 or greater
Maximum depth from surface	600m

All available data has been reviewed to make sure only those data points selected for use in a resource estimate adhere to the recommended requirements listed in paper 88-21.

All resources determined for the Raven project area are less than 600 metres depth from surface.

Areal extent of the coal deposit and seam continuity used for calculating resources has been provided from drillholes and high resolution reflection seismic. Drillholes and seismic together have been used to enhance geological interpretation of the structure and to provide assurance of seam

[11] Pincock Allen & Holt, June 4, 2010

continuity. Sections constructed perpendicular to strike at 600 m intervals were used to confirm seam subcrop boundaries and or fault controlled deposit boundaries.

Drillholes have been used to determine data points for classification of resources. For a 'moderate' *geology type* deposit Paper 88-21 recommends the following drillhole/data spacing for categorizing coal resources in assurance of existence categories:

Table 19: Assurance of Existence Criteria (from GSC Paper 88-21)

	Measured	Indicated	Inferred
Distance from closest data point	0 – 450 m	450 – 900 m	900 – 2400 m

For the purposes of defining measured and indicated resources only data from drillholes supported by geophysical logs has been used to confirm thickness and coal to rock ratio. Maximum distances from data points used are within the range suggested by GSC Paper 88-21 and are:

Table 20 Assurance of Existence Criteria Used for the Raven Project

	Measured	Indicated	Inferred
Maximum Distance from data point	150 m	300 m	1800 m

The measured and indicated resource classification area for Seam 1 is shown by Figure 26.

For the purpose of defining inferred resources all drillholes have been used. The maximum distance from a data point is 1800 m however rarely exceeds 1200 m and therefore is well within the guidelines suggested by Paper 88-21. Extrapolation of resource continuity along strike to the north and south has been projected a maximum of 600 m from the most northerly and southerly seismic lines both of which have a minimum of 2 drillholes. Down-dip projection to the east is within the seismic control area and is within 1200 m of a drillhole data point. The eastern limit is also a minimum of 200m west from the property coal rights boundary and/or the Inland Highway which parallels and in part cuts across the property.

A description of the software and process for resource determination is extracted from PAH's 43-101 report as follows:

> *To facilitate estimation of resources at Raven, PAH generated a digital geological model for Raven using Gemcom Software International's Minex® geological modeling software. Key horizons or "surfaces" of each seam were modeled to provide the necessary limits for volume estimation. These surfaces (roof and floor elevations and seam thickness) are created as 25m-mesh 2-D grids, and calculated using the Minex® proprietary growth algorithm – a combination of inverse distance squared and trending formulas. Limits for areal extent polygons, acceptable depth range, minimum thickness, and resource distance from a given drill hole were used to create secondary grids used in the actual resource calculations.*

A bulk density factor of 1.50 tonnes per cubic metre was applied to volumes to obtain tonnage.

Resources are summarized below:

Table 21: In Situ Coal Resources for Raven Project - Tsable Coal Field

Area	Deposit Type	ASTM Rank Classification	Coal Zone / Seam	In Situ Coal Resources (kt)		
				Measured	Indicated	Inferred
Raven Coal Project Tsable River Coal Field Comox Basin	Surface	*Not Determined for This Report*				
	Underground	high volatile A bituminous	Seam 1	20,546	32,319	50,125
			Seam 3	7415	11,724	9,306
		Totals		Measured and Indicated		Inferred
				71,998		59,431

The calculated coal resources are in situ resources and are considered a resource base for underground mining. The resources as reported have not been subject to a detailed economic analysis nor do they have demonstrated economic viability. Localized complex structure (frequency and nature of faulting) suggested from seismic, variability of seam and roof and floor conditions, and localized wash-outs or wash-ins will complicate mining and may contribute to reductions in 'mineable coal reserves'.

References

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2001	Bickford, C.G.C.	Lithostratigraphy of the Comox and Trent River Formations in the Comox Coalfield, Vancouver Island (92F/7, 10, 11, 14). British Columbia Ministry of Energy, Mines and Petroleum Resources, Geological Fieldwork, 2000. Paper 2001-1, pages 363-370
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1988	Bickford, C.G.C. and Kenyon, C.	Coalfield Geology of Eastern Vancouver Island (92F). British Columbia Ministry of Energy, Mines and Petroleum Resources, Geological Fieldwork, 1987. Paper 1988-1, pages 441-450
2001	British Columbia Ministry of Energy, Mines and Petroleum Resources	British Columbia Mineral Exploration Review 2001 - Exploration Projects - Vancouver Island. British Columbia Geological Survey Information Circular 2002-1, page 13
1991	Butterworth, B.P. and Casselman, S.G.	Tsable River Project - 1991 - Text, Maps and Appendices - NTS 92F/7 and 10 - Nanaimo Mining Division
2001	Canadian Securities Administrators	National Instrument 43-101 - Standards of Disclosure for Mineral Projects
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1991	Consolidated Brinco Limited, Exploration Department	Summary Report on the Tsable River Property
2007	Cullingham, O	Technical Report: Raven Coal Property – Comox Basin, Vancouver Island
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1973	Curcio, M.P.	Preliminary Evaluation of Coal Reserves for Campell River Area, Cumberland Area and Tsable River-Cowie Creek Area, Within the Comox Basin, Vancouver Island, British Columbia

1974	Curcio, M.P.	Summary Reports on Weldwood Coal Properties and on Topics Pertinent to Coal Development
1975	Curcio, M.P.	Coal Resource Study of Comox-Nanaimo Series, Vancouver Island - British Columbia
1976	Dolmage Campbell and Associates Ltd.	Part 2 - Comox Coalfield
1997	Emerald Exploration Consultants Inc.	High Resolution Seismic Survey, Tsable River and Quinsam Mine
1997	Emerald Exploration Consultants Inc.	Tsable River Seismic Data (Raw Data in Two Brown Envelopes)
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1975	EPEC Consulting Western Ltd.	Coal Resource Study, Preliminary Environmental Assessment
1995	Gardener Exploration Consultants Ltd.	Tsable River / Allen Lake Exploration Proposal
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2001	Gardener Exploration Consultants Ltd.	Overview - Tsable River Seismic Data
2001	Gardener, S. / McMillan, J.	Examination of Potential Entry Points for a 100,000 t. Bulk Sample
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1996	Gardner, S.L.	Tsable River Coal Project - Drillhole Intersections (1996) and Proposed Work (1st Quarter 1997)
1997	Gardner, S.L.	Report on 1996 Exploration Work - Tsable River Coal Project
1999	Gardner, S.L.	Vancouver Island Coal Study. British Columbia Ministry of Energy, Mines and Petroleum Resources; Geological Survey Branch Open File 1999-8
2001	Gardner, S.L.	Technical Report on the Tsable River Coal Property, Central Vancouver Island, British Columbia
2001	Golder Associates	Acid Rock Drainage (ARD) Review and Waste Rock Disposal Strategy, Proposed Tsable River Bulk Sample Project, Fanny Bay
2001	Hermann, F.W.	Amendment to Coal Exploration Permit Approving Work

		System and Reclamation Program
1996	Hillsborough Resources Limited	Tsable River Project 1996 Exploration Program
1997	Hillsborough Resources Limited	Annual Information Form for the Fiscal Year Ended December 31, 1996
1997	Hillsborough Resources Limited	Preliminary Feasibility Study, Sept.1997
1997	Hillsborough Resources Limited	Tsable River Coal Corporation, Application for Bulk Sample
1997	Hillsborough Resources Limited	Tsable River Coal Load-out Facility, Pre-Planning Study
1998	Hillsborough Resources Limited	Annual Information Form for the Fiscal Year Ended December 31, 1997
1999	Hillsborough Resources Limited	Annual Information Form for the Fiscal Year Ended December 31, 1998
2000	Hillsborough Resources Limited	Annual Information Form for the Fiscal Year Ended December 31, 1999
2001	Hillsborough Resources Limited	Annual Information Form for the Fiscal Year Ended December 31, 2000
2002	Hillsborough Resources Limited	Annual Information Form for the Fiscal Year Ended December 31, 2001
2003	Hillsborough Resources Limited	Annual Information Form for the Fiscal Year Ended December 31, 2002
1997	Hillsborough Resources Ltd.	Tsable River Coal Corporation, Application for Bulk Sample
1989	Hughes, J.D., Klatzel-Mudry, L. and Nikols, D.J.	A Standardized Coal Resource/Reserve Reporting System for Canada. GSC Paper 88-21
2006	Khan, M.A.	Quality Evaluation of Raven Project
1996	Loring Laboratories	Tsable River Analytical Work (1996 Program)
1997	M.R. Renauld Associates	Tsable River Coal Load-out Facility, Pre-Planning Study
1997	Mraz, D.	Tsable River Coal Corporation - Application for Bulk Sample Program at the Tsable River Coal Property, Newcastle and Nelson District, Vancouver Island
1995	Parkes, D.M.	Review of Mining Operation and Planning of the Quinsam Coal Corporation, Campbell River, B.C.
1991	Parkes, D.M.	Tsable River Property - A Conceptual Mining Plan for

		Consolidated Brinco Limited
2010	Pincock Allen & Holt	Technical Report: Raven Coal Property – Comox Coal Basin, Vancouver Island, British Columbia
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1995	Ryan, B. D.	Calcite in Coal from the Quinsam Mine, British Columbia, Canada; Its Origin, Distribution and Effects on Coal Utilization (92F/13, 14). British Columbia Ministry of Energy, Mines and Petroleum Resources, Geological Fieldwork, 1994. Paper 1995-1, pages 243-259
1997	Ryan, B. D.	Coalbed Methane in the Comox Formation - Tsable River Area, Vancouver Island. British Columbia Ministry of Energy, Mines and Petroleum Resources, Geological Fieldwork, 1996. Paper 1997-1, pages 353-361
2002	Ryan, B. D.	Note on Desorption Results of Comox Formation Coals from the Courtenay Area, Vancouver Island, British Columbia. British Columbia Ministry of Energy, Mines and Petroleum Resources, Geological Fieldwork, 2001. Paper 2002-1, pages 319-328
2003	Ryan, B. D.	A Summary of Coalbed Methane Potential in British Columbia; Canadian Society of Exploration Geophysicists Recorder, Vol.28, No.9, November 2003, pages 32-40.
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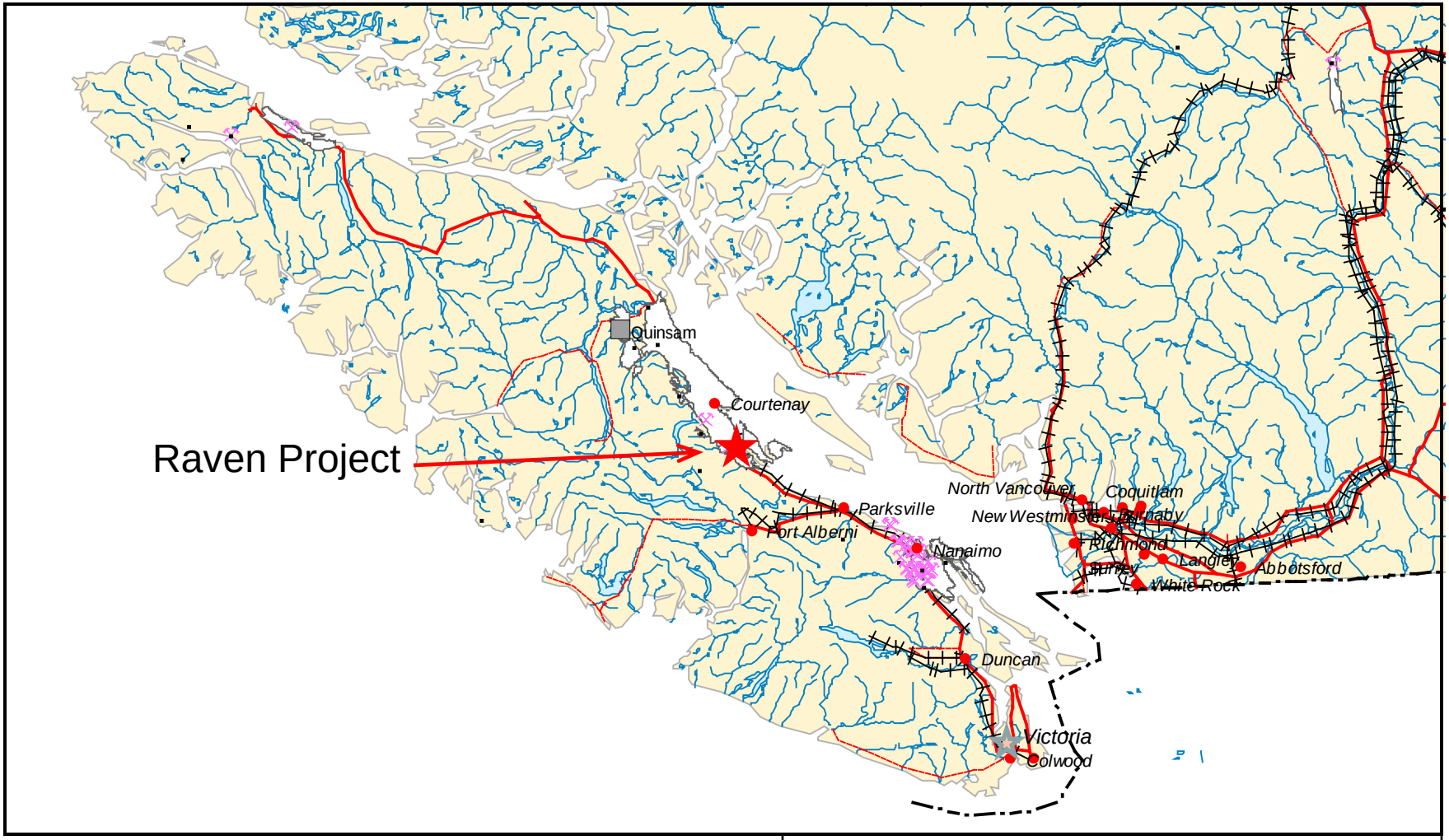
2004	Ryan, B. D.	Coalbed Gas Potential in British Columbia, Petroleum Geology Paper 2004, 76 pages
1994	Ryan, B.D. and Dawson, F.M.	Coalbed Methane Desorption Results from the Quinsam Coal Mine and Coalbed Methane Resource of the Quinsam Coalfield, British Columbia, Canada (92F/13, 14); in Geological Fieldwork 1993, B.C. Ministry of Energy, Mines and Petroleum Resources, Paper 1994-1, pages 215-224.
2002	Slater, D.J.	Tsable River Coal Property
1989	Smith, G.G.	Coal Resources of Canada; Geological Survey of Canada, Paper 89-4.
1989	Smith, G.G.	Theoretical Estimations of In Situ Bulk Density of Coal, Canadian Institute of Mining Bulletin

2002	Standbrook, M.	Tsable River Coal Property
1960	Tibbetts, T.E. and Montgomery, W.J.	Analysis Directory of Canadian Coals, Supplement No.2 - 1960; page 52
2001	VWVulcan Energy of Canada, Ltd.	Owners of Coal Rights in the Comox Coal Field
1975	Weldwood of Canada Limited	Coal Resource Study, Maps and Sections
1975	Weldwood of Canada Ltd.	Weldwood of Canada Ltd., Coal Resource Study, Maps and Sections
2006	West Fraser / VWVulcan Energy of Canada, Ltd.	Exhibit A - Description of Leased Premises
1975		Coal Resource Study, Preliminary Environmental Assessment

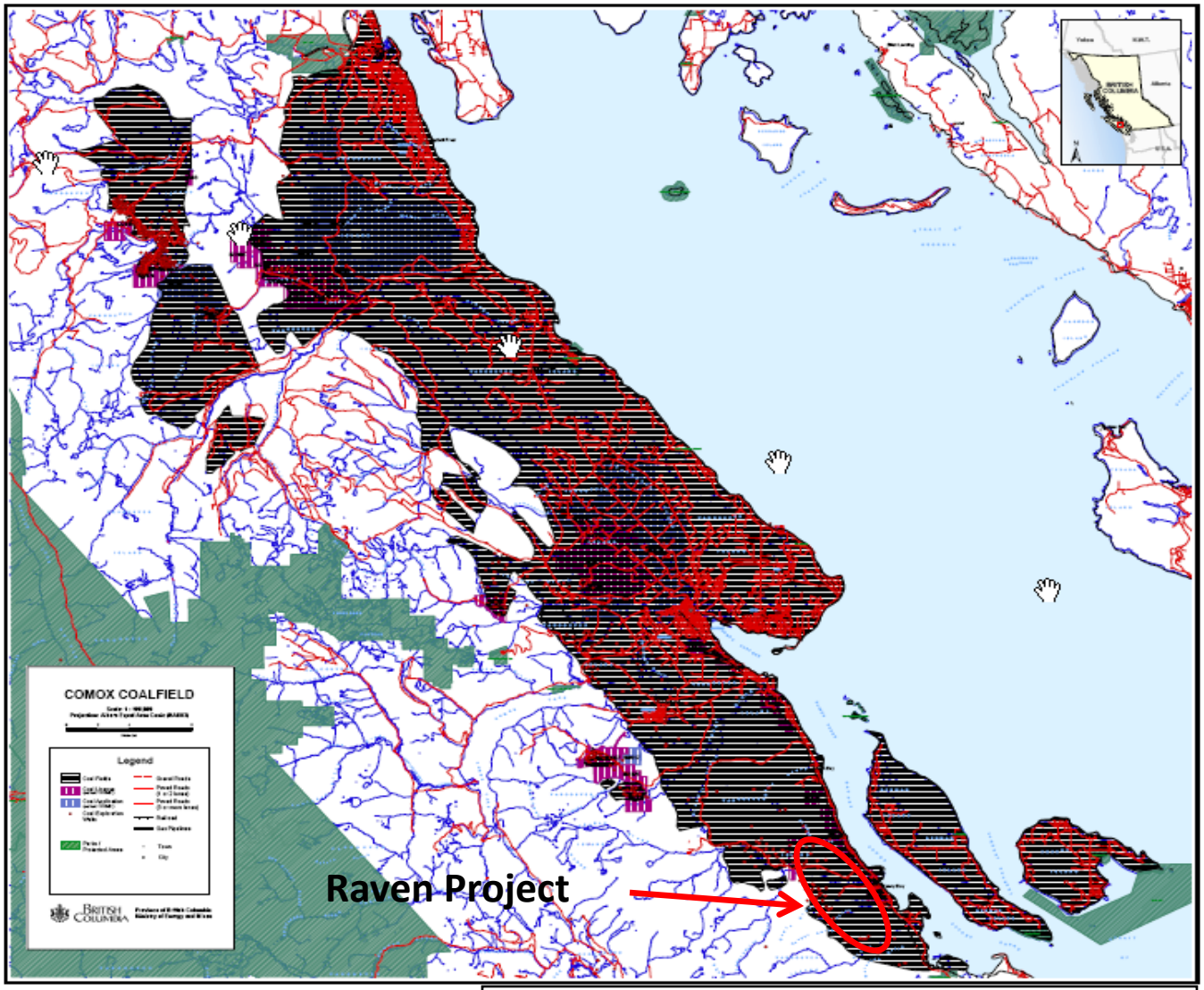


Compliance Coal CORPORATION
DBA Comox Joint Venture

RAVEN PROJECT

Vancouver Island, British Columbia

Figure 1

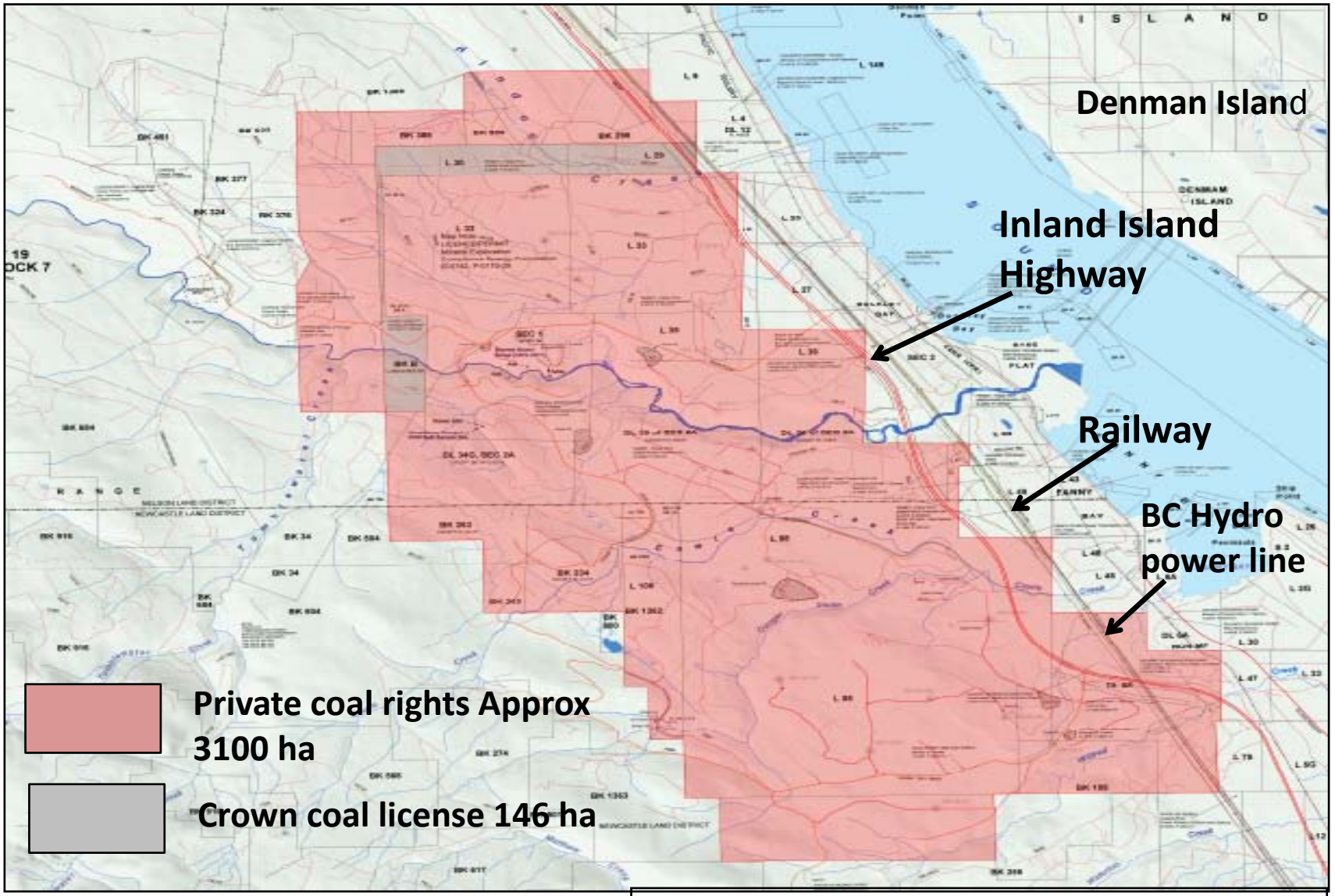


Compliance Coal CORPORATION
DBA Comox Joint Venture

RAVEN PROJECT

Location Map – Comox Coal Basin

Figure 2

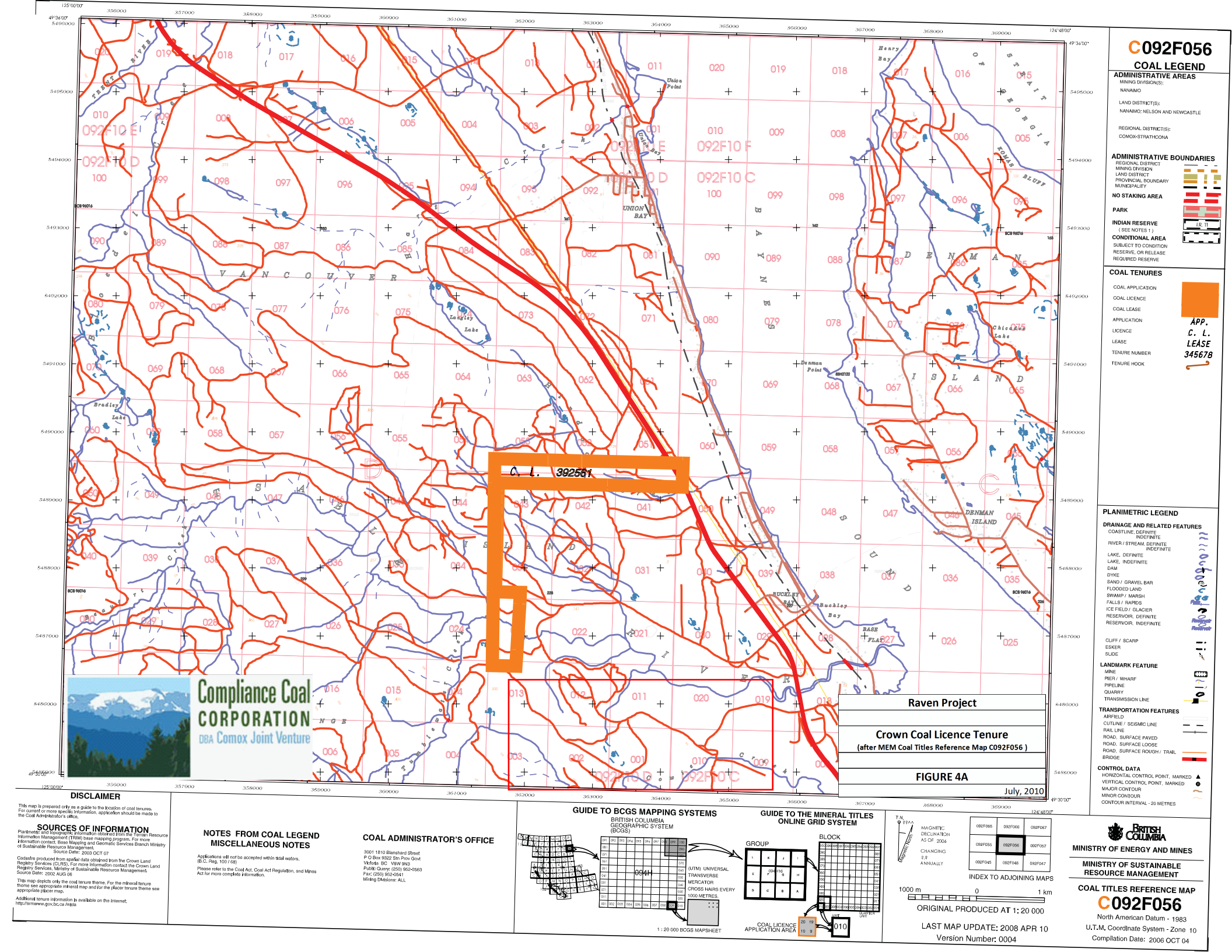


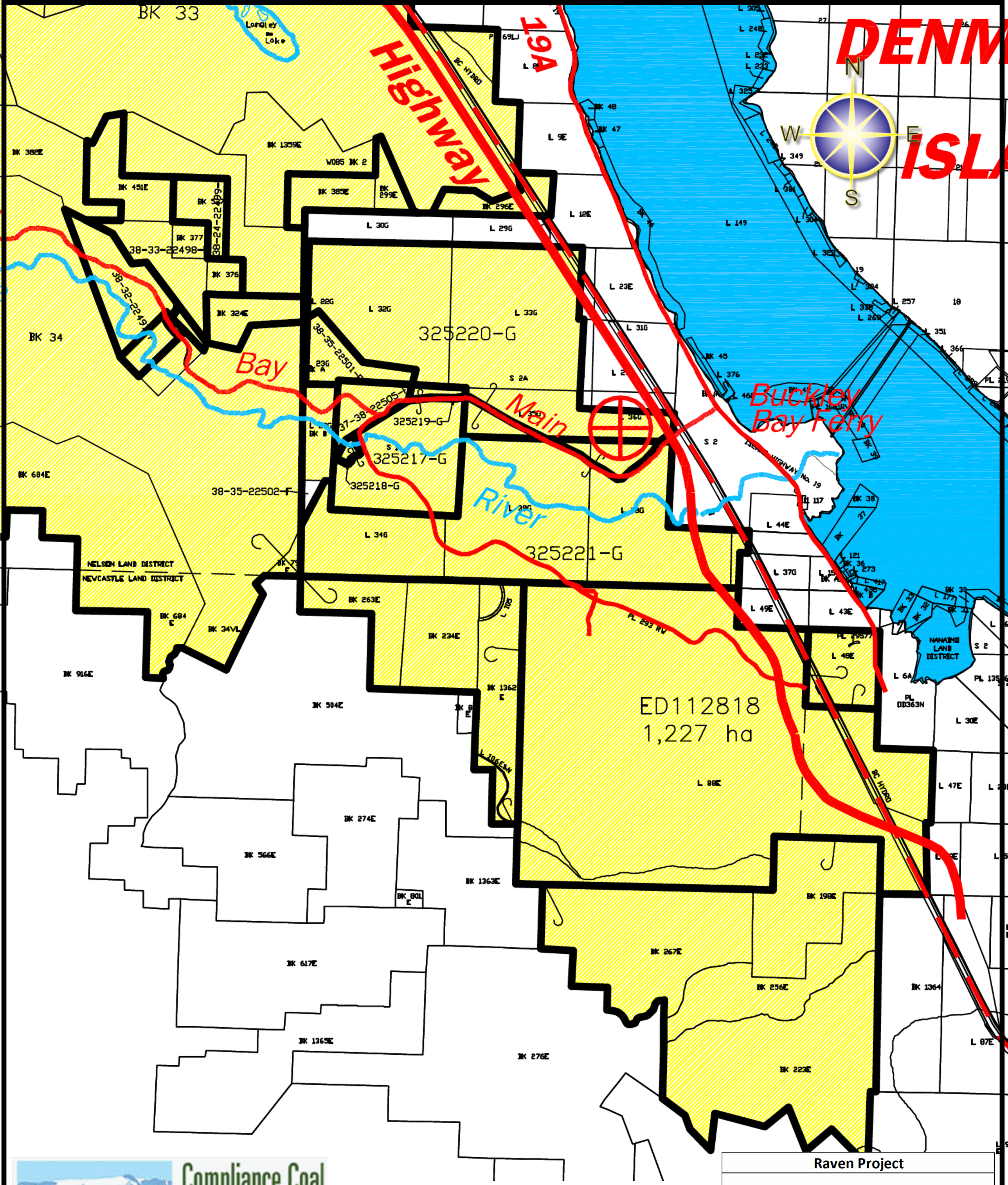
Compliance Coal CORPORATION
DBA Comox Joint Venture

RAVEN PROJECT

Vancouver Island, British Columbia

Figure 3


C. L. 392561
Raven Project
Crown Coal Licence Tenure
(after MEM Coal Titles Reference Map C092F056)
FIGURE 4A
July, 2010
Compliance Coal
CORPORATION
DBA Comox Joint Venture
C092F056
COAL LEGEND
ADMINISTRATIVE AREAS
MINING DIVISION(S):
NANAIMO
LAND DISTRICT(S):
NANAIMO: NELSON AND NEWCASTLE
REGIONAL DISTRICT(S):
COMOX-STRATHCONA
ADMINISTRATIVE BOUNDARIES
REGIONAL DISTRICT
MINING DIVISION
LAND DISTRICT
PROVINCIAL BOUNDARY
MUNICIPALITY
NO STAKING AREA
PARK
INDIAN RESERVE
(SEE NOTES 1)
CONDITIONAL AREA
SUBJECT TO CONDITION
RESERVE, OR RELEASE
REQUIRED RESERVE
COAL TENURES
COAL APPLICATION
COAL LICENCE
COAL LEASE
APPLICATION
LICENCE
LEASE
TENURE NUMBER
TENURE HOOK
APP. C. L. LEASE 345678
PLANIMETRIC LEGEND
DRAINAGE AND RELATED FEATURES
COASTLINE, DEFINITE
INDEFINITE
RIVER / STREAM, DEFINITE
INDEFINITE
LAKE, DEFINITE
LAKE, INDEFINITE
DAM
DYKE
SAND / GRAVEL BAR
FLOODED LAND
SWAMP / MARSH
FALLS / RAPIDS
ICE FIELD / GLACIER
RESERVOIR, DEFINITE
RESERVOIR, INDEFINITE
CLIFF / SCARP
ESKER
SLIDE
LANDMARK FEATURE
MINE
PIER / WHARF
PIPELINE
QUARRY
TRANSMISSION LINE
TRANSPORTATION FEATURES
AIRFIELD
CUTLINE / SEISMIC LINE
RAIL LINE
ROAD, SURFACE PAVED
ROAD, SURFACE LOOSE
ROAD, SURFACE ROUGH / TRAIL
BRIDGE
CONTROL DATA
HORIZONTAL CONTROL POINT, MARKED
VERTICAL CONTROL POINT, MARKED
MAJOR CONTOUR
MINOR CONTOUR
CONTOUR INTERVAL - 20 METRES
DISCLAIMER
This map is prepared only as a guide to the location of coal tenures. For current or more specific information, application should be made to the Coal Administrator's office.
SOURCES OF INFORMATION
Planimetric and topographic information obtained from the Terrain Resource Information Management (TRIM) base mapping program. For more information contact, Base Mapping and Geomatic Services Branch Ministry of Sustainable Resource Management.
Source Date: 2003 OCT 07
Cadastre produced from spatial data obtained from the Crown Land Registry Services (CLRS). For more information contact the Crown Land Registry Services, Ministry of Sustainable Resource Management.
Source Date: 2002 AUG 06
This map depicts only the coal tenure theme. For the mineral tenure theme see appropriate mineral map and for the placer tenure theme see appropriate placer map.
Additional tenure information is available on the Internet:
http://srmwww.gov.bc.ca /mpa
NOTES FROM COAL LEGEND
MISCELLANEOUS NOTES
Applications will not be accepted within tidal waters. (B.C. Reg. 100 / 68)
Please refer to the Coal Act, Coal Act Regulation, and Mines Act for more complete information.
COAL ADMINISTRATOR'S OFFICE
3001 1810 Blanshard Street
P O Box 9322 Stn Prov Govt
Victoria BC V8W 9N3
Public Query: (250) 952-0563
Fax: (250) 952-0541
Mining Divisions: ALL
GUIDE TO BCGS MAPPING SYSTEMS
BRITISH COLUMBIA GEOGRAPHIC SYSTEM (BCGS)
092H
1 : 20 000 BCGS MAPSHEET
GUIDE TO THE MINERAL TITLES ONLINE GRID SYSTEM
GROUP
BLOCK
(UTM) UNIVERSAL TRANSVERSE MERCATOR CROSS HAIRS EVERY 1000 METRES.
COAL LICENCE APPLICATION AREA
MAGNETIC DECLINATION AS OF 2006
CHANGING 9.8 ANNUALLY
INDEX TO ADJOINING MAPS
092F065 092F066 092F067
092F055 092F056 092F057
092F045 092F046 092F047
1000 m 0 1 km
ORIGINAL PRODUCED AT 1: 20 000
LAST MAP UPDATE: 2008 APR 10
Version Number: 0004
BRITISH COLUMBIA
MINISTRY OF ENERGY AND MINES
MINISTRY OF SUSTAINABLE RESOURCE MANAGEMENT
COAL TITLES REFERENCE MAP
C092F056
North American Datum - 1983
U.T.M. Coordinate System - Zone 10
Compilation Date: 2006 OCT 04



Compliance Coal CORPORATION
DBA Comox Joint Venture

Raven Project
Fee Simple Coal Rights (after McElhanney March 31, 2006)
FIGURE 4B
July, 2010

Raven Exploration and Surface Rights Plan

N

Langley Lake
Creek
River
Tsable Creek
Buckley Bay
Fanny Bay
Cowie Creek
Cougar Smith Creek
Wilfred Creek
Waterloo Creek
Hindoo
HWY 19
Tumbleweed Creek
Bayne Sound Mine Portal
Coal Exploration Adit
Exploration Adit
Raven Adit
Raven Perimeter
Lot 88

BK 33.shp
BK 451.shp
BK 1359.shp
BK 299.shp
BK 385.shp
BK 527.shp
BK 377.shp
L 30.shp
L 29.shp
BK 324.shp
DL 22 G.shp
L 32.shp
L 33.shp
PL 1011.shp
DL 23 G BK A.shp
DL 23 G BK B.shp
BK 34.shp
SEC 1 of SEC 2A except PL 619-F 538-R 644RW.shp
DL 34G, SEC 2A except BK 34 PL 619-I.shp
BK 799.shp
DL 39 of SEC 2A except PL 538-R.shp
L 38 of SEC 2A.shp
L 36.shp
L 37.shp
L 48.shp
BK 263.shp
BK 234 except PL 241-R.shp
PL 105 - PL DD 22792-N.shp
BK 504.shp
BK 800.shp
BK 1362.shp
BK 274.shp
BK 1363.shp
BK 267.shp
BK 223.shp
BK 198.shp

Line 1
Line 2
Line 3
Line 4
Line 4A
Line 6
Line 7

RAV-06-01
RAV-06-02
RAV-06-03
RAV-06-04
RAV-06-05
RAV-06-06
RAV-06-07
RAV-06-08
RAV-06(09)-09
RAV-06(09)-10
RAV-06(09)-11
RAV-06-12
RAV-09-001
RAV-09-002
RAV-09-003
RAV-09-004
RAV-09-005
RAV-09-006
RAV-09-007
RAV-09-008
RAV-09-009
RAV-09-010
RAV-09-011
RAV-09-012
RAV-09-013
RAV-09-015
RAV-09-016
RAV-09-017
RAV-09-018
RAV-09-019
RAV-09-020
RAV-09-021
RAV-09-022
RAV-09-023
RAV-09-024
RAV-09-025
RAV-09-026
RAV-09-027
RAV-09-028
RAV-09-029
RAV-09-030
RAV-09-031
RAV-09-032
RAV-09-033
RAV-09-035

NB-2009
NC-2009
AB-2009
AD-2009

Compliance Coal CORPORATION DBA Comox Joint Venture	**Raven Project**
	Block and Lot Outlines and Numbers for 'Titled' and Surface Rights Holders
	FIGURE 5
	July, 2010

125 m 375 m 625 m 875 m

May 19, 2010

Easting

360,000 362,000 364,000 366,000 368,000

Northing

5,488,000 5,486,000 5,484,000 5,482,000

N W E S

HWY 19

Hindoo Creek

Tsable Mine

Coal Exploration Adit

Exploration Adit

Exploration Adit

Tsable River

Portal

Baynes Sound Mine

Raven Adit

Lambert Creek

Buckley Bay

Fanny Bay

Cowie Creek

Conger Smith Creek

Wilfred Creek

RAV-09-032
RAV-09-031
RAV-09-027
RAV-09-030
RAV-09-028
RAV-09-026
RAV-09-023
RAV-09-003
RAV-09-004
RAV-09-001
RAV-09-033
RAV-09-035
RAV-09-019
RAV-09-002
RAV-09-007
RAV-09-015
RAV-09-016
RAV-09-013
RAV-09-018
RAV-09-036
RAV-09-014
RAV-09-037
RAV-09-010
RAV-09-011
RAV-09-040
RAV-09-034
RAV-09-038
RAV-09-039
RAV-09-041
RAV-09-029
RAV-09-021
RAV-09-025
RAV-09-005
RAV-09-042
RAV-09-020
RAV-09-009
RAV-09-012
RAV-09-008
RAV-09-017
RAV-09-006
RAV-06(09)-09
RAV-09-022
RAV-06(09)-11
RAV-09-024
RAV-06(09)-10

50.0 100.0 150.0 200.0 250.0

Compliance Coal CORPORATION
DBA Comox Joint Venture

RAVEN PROJECT

Surface Plan with 2009 Drillholes Highlighted

FIGURE 8

July 2010

Surface Geology Map

N

Raven Project Area Boundary

HWY 19

Langley Lake

Hindoo Creek

Buckley Bay

Fanny Bay

Tsable River

Tsable Creek

Tumbler Ridge

Cougar Smith Creek

Wilfred Creek

Waterloo Creek

Buckley Bay 6Km

Buckley Bay 4Km

Weather Station Tower

Tsable Portal1

Exploration Adit

Raven Adit

Coal

Seam 3 Subcrop

Seam 2 Subcrop

Seam 1 Subcrop

Line 1

Line 2

Line 3

Line 4

Line 6

Line 7

Line 44

Stn 010 Stn 011 Stn 012 Stn 013 Stn 014 Stn 015 Stn 016 Stn 017 Stn 018 Stn 019 Stn 020 Stn 021 Stn 022 Stn 023 Stn 025 Stn 026 Stn 027 Stn 028 Stn 029 Stn 030 Stn 032 Stn 034 Stn 035 Stn 036 Stn 037 Stn 038 End Stn 038 Start Stn 039 Stn 040 Stn 041 Stn 042 Stn 043 Stn 045 Stn 048 Stn 050 Stn 051 Stn 052 Stn 053 Stn 054 Stn 055 Stn 057 Stn 059 Stn 060 Stn 061 Stn 062 Stn 063 Stn 065 Stn 067 Stn 068 Stn 069 Stn 071 Stn 072 Stn 073 Stn 074 Stn 075 Stn 076 Stn 077 Stn 078 Stn 080 Stn 081 Stn 082 Stn 084 Stn 085 Stn 086 Stn 088 Stn 091 Stn 092 Stn 093 Stn 094 Stn 096 Stn 099 Stn 100 Stn 101 Stn 102

TR-15 TR-20 TR-22 TR-23 TR-24 TR-25 TR-26 TR-27 TR-29 TR-30 TR-32 TR-33 TR-34 TR-36 TR-37 TR-38 TR-40 TR-42 TR-43 TR-44 TR-45 TR-46 TR-48 TR-49 TR-50/50A TR-51 TR-52 TR-53X TR-54 TR-55 TR-56 TR-57 TR-58 TR-59 TR-60 TR-61 TR-62 TR-63 TR-64 TR-66 TR-67 TR-68 TR-69 TR-70 TR-70X TR-71 TR-72 TR-73 TR-74 TR-75 TR-76 TR-77 TR-78 TR-79 TR-82 TR-85

TSR-1 TSR-2 TSR-3

TS-96-01 TS-96-02 TS-96-04 TS-96-05 TS-96-06 TS-96-07 TS-96-08 TS-96-09 TS-96-10 TS-96-11 TS-96-12 TS-96-13 TS-96-14 TS-96-15 TS-96-16 TS-96-17 TS-96-18 TS-96-19 TS-96-20 TS-96-21 TS-96-22 TS-96-23 TS-96-24 TS-96-25 TS-96-26 TS-96-27 TS-97-01 TS-97-02 TS-97-04

TS-01-01 TS-01-02 TS-01-04 TS-01-05

DD90-01 DD90-02 DD90-03 DD90-04 DD90-05

DD91-01 DD91-02 DD91-03 DD91-04 DD91-05 DD91-06 DD91-07 DD91-08 DD91-09 DD91-10 DD91-11 DD91-12 DD91-13 DD91-14 DD91-15 DD91-16 DD91-17 DD91-18 DD91-19 DD91-20

RAV-06-01 RAV-06-02 RAV-06-03 RAV-06-04 RAV-06-07 RAV-06-08 RAV-06(09)-09 RAV-06(09)-10 RAV-06(09)-11 RAV-09-001 RAV-09-002 RAV-09-003 RAV-09-004 RAV-09-005 RAV-09-006 RAV-09-007 RAV-09-008 RAV-09-009 RAV-09-010 RAV-09-011 RAV-09-012 RAV-09-013 RAV-09-015 RAV-09-016 RAV-09-017 RAV-09-018 RAV-09-019 RAV-09-020 RAV-09-021 RAV-09-022 RAV-09-023 RAV-09-024 RAV-09-025 RAV-09-026 RAV-09-027 RAV-09-028 RAV-09-029 RAV-09-030 RAV-09-031 RAV-09-032 RAV-09-033 RAV-09-034 RAV-09-035 RAV-09-036 RAV-09-037 RAV-09-038 RAV-09-039 RAV-09-040 RAV-09-041 RAV-09-042 RAV-09-043

LL-2

NB-2009 NC-2009 AB-2009 AD-2009

CWC-1 CWC-2B

CC-2 CC-3 CC-4

LEGEND

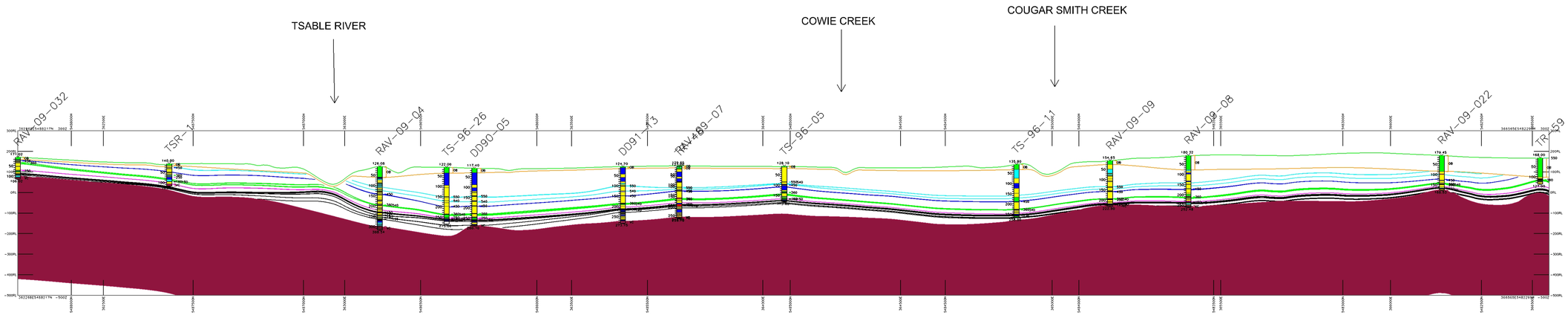
Comox Formation	Shale/Mudstone
	Coal/Shaly Coal
	Siltstone
	Sandstone
	Benson Conglomerate
Karmutsen Volcanics	
Exploration Adit or 'Old' Mine	
Coal Seam Zone defined, Indicated, Inferred	
Fault - Indicated, Inferred	
Stn 035	Mapping Station and No.
RAV-09-035	Drillhole and No.Compliance, Hillsborough, Dunsmuir & Curcio

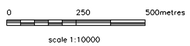
Compliance Coal CORPORATION
DBA Comox Joint Venture

RAVEN COAL PROJECT
SURFACE GEOLOGY MAP
FIGURE 14
July, 2010

0 m 250 m 500 m 1000 m

after Pincock Allen & Holt Technical Report: Raven Coal Property – Comox Coal Basin, Vancouver Island, British Columbia; June, 2010



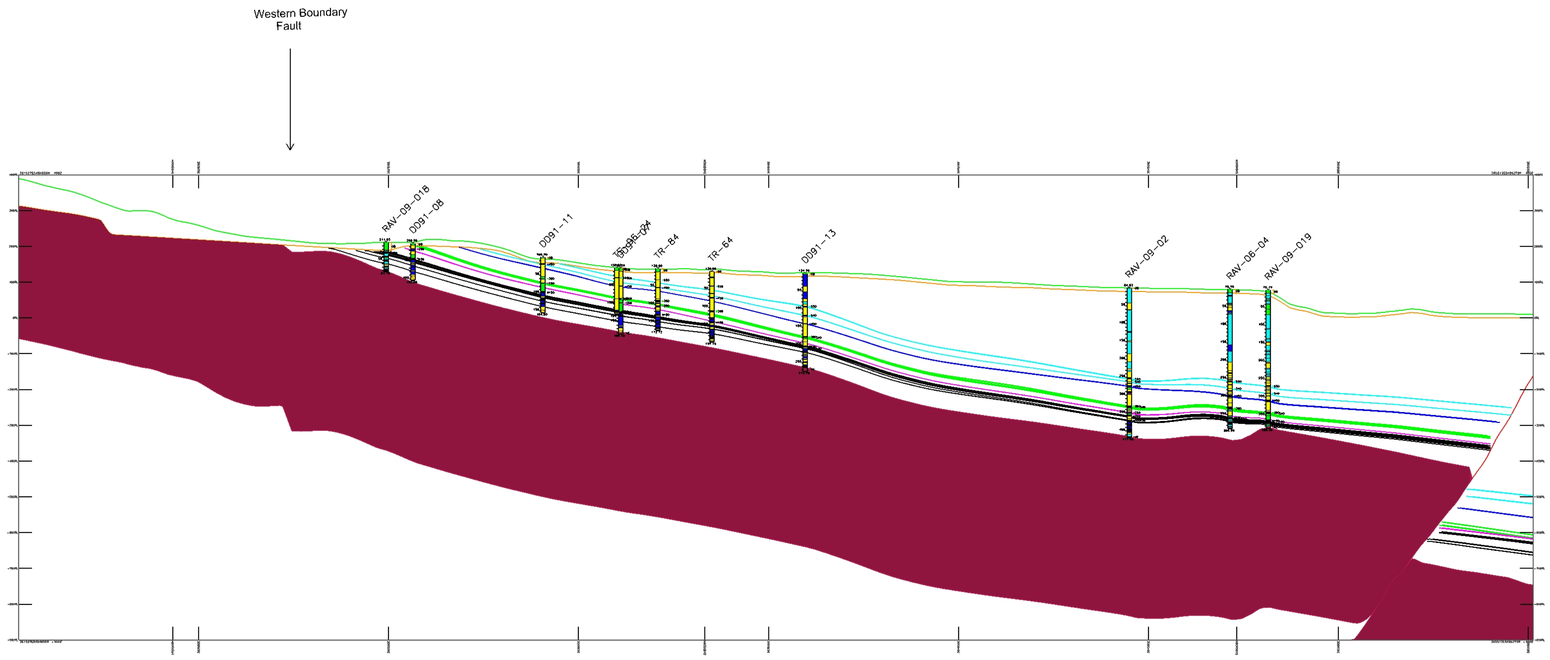


Raven Coal Project
Cross-Section NS6 along strike

Compliance Coal CORPORATION
DBA Comox Joint Venture

RAVEN PROJECT
LINE OF SECTION 1 - 1'
FIGURE 15
July,2010

after Pincock Allen & Holt Technical Report: Raven Coal Property – Comox Coal Basin, Vancouver Island, British Columbia; June, 2010



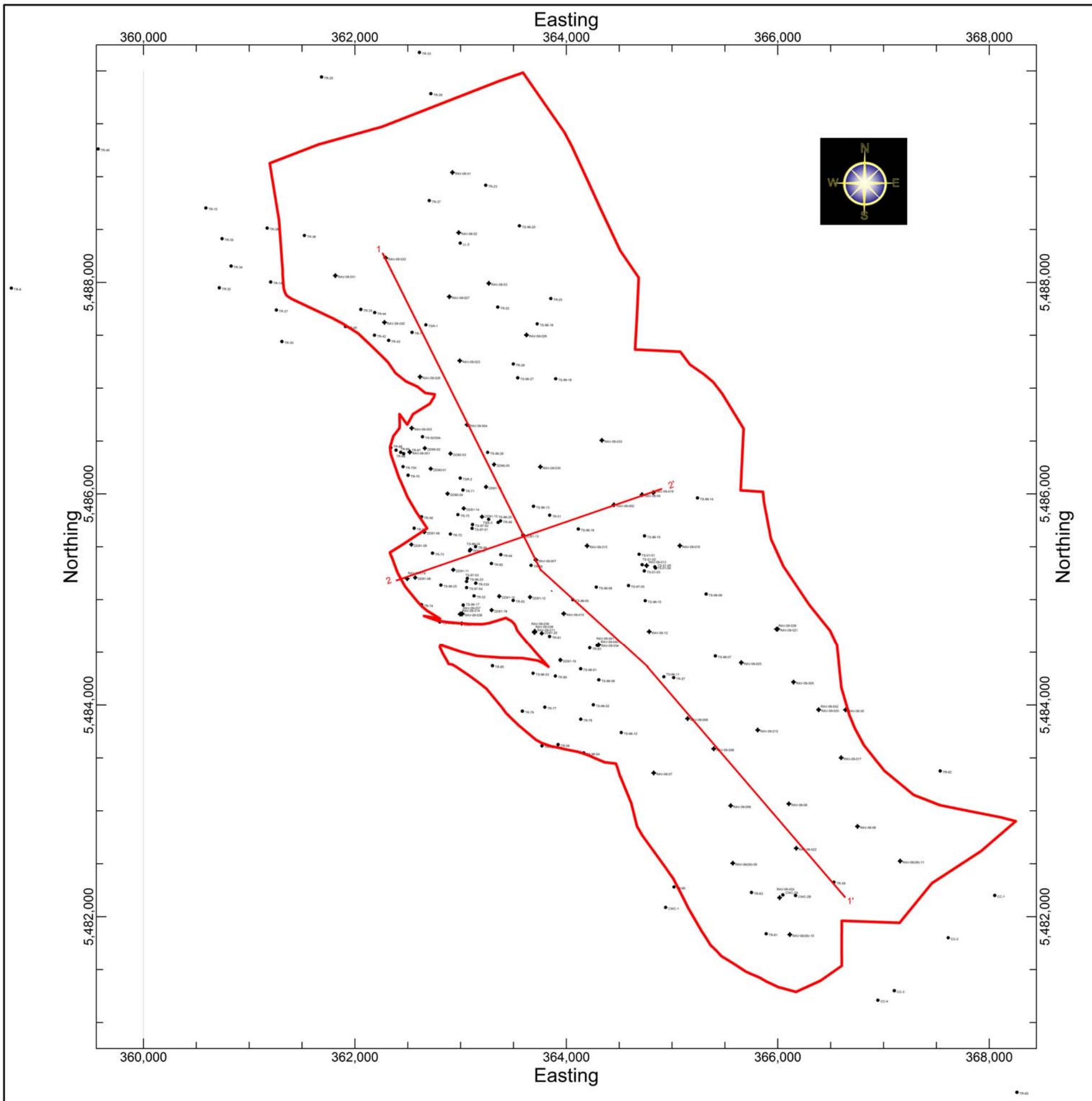
Seam 550
Seam 530
Seam 520
Seam 450
Seam 440
Seam 430
Seam 420
Seam 360
Seam 350
Seam 340
Seam 260
Seam 250
Seam 240
Seam 150
Seam 145
Seam 140
Seam 135
Seam 130
Seam VCL
Seam 550L
Seam 540L
Seam 450L
Seam 440L
Seam 360L
Seam 350L
Seam 340L
Seam 260L
Seam 250L
Seam 240L
Seam 150L
Seam 145L
Seam 140L
Seam 135L
Seam VCL

0 250 500metres
scale 1:5000

Raven Coal Project
Cross-Section SeisLN4 along Dip

Compliance Coal CORPORATION
DBA Comox Joint Venture

RAVEN PROJECT
LINE OF SECTION 2 - 2'
FIGURE 16
July, 2010



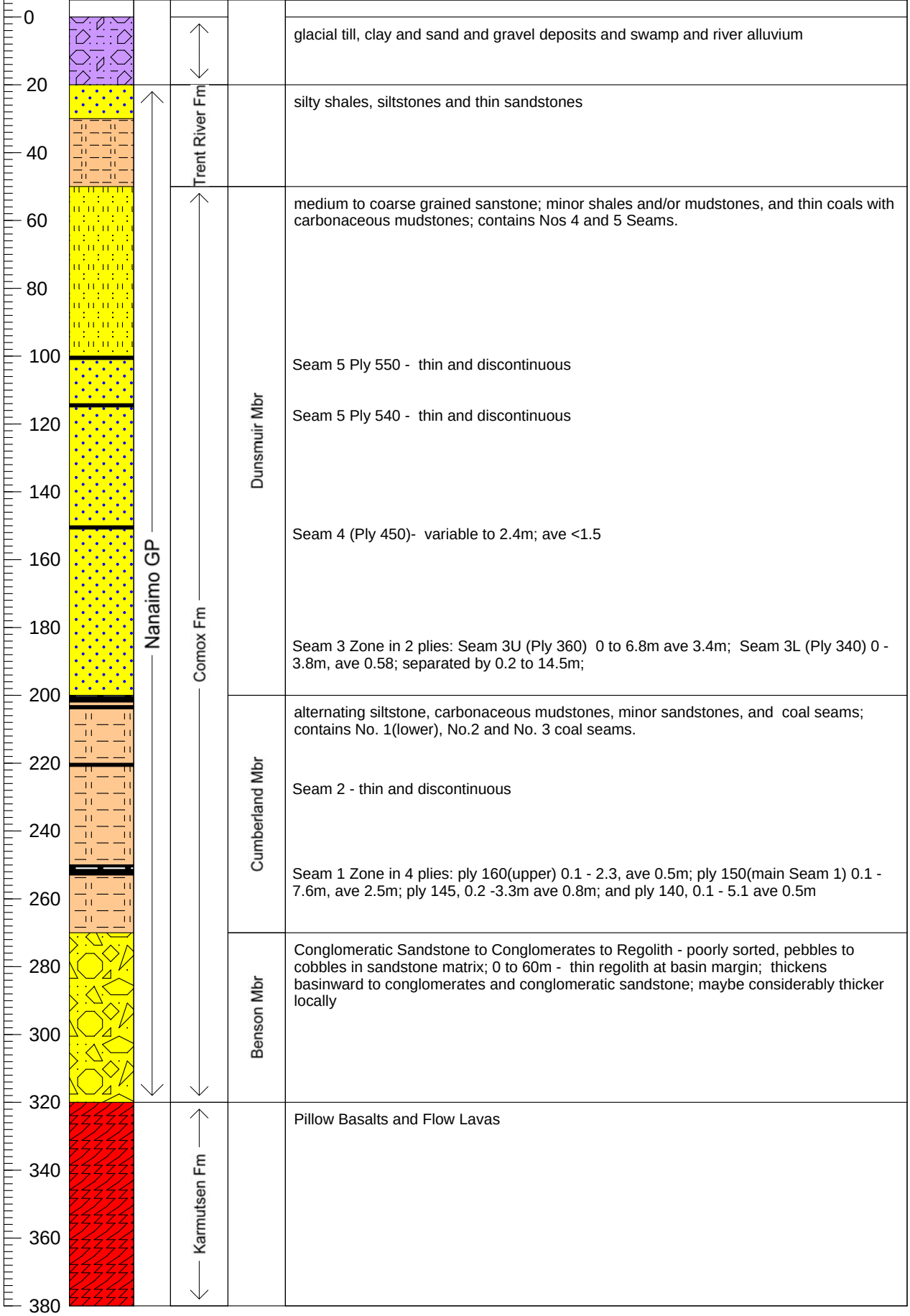
Compliance Coal CORPORATION
DBA Comox Joint Venture

RAVEN PROJECT

LOCATION OF SECTION LINES

FIGURE 17

July 2010



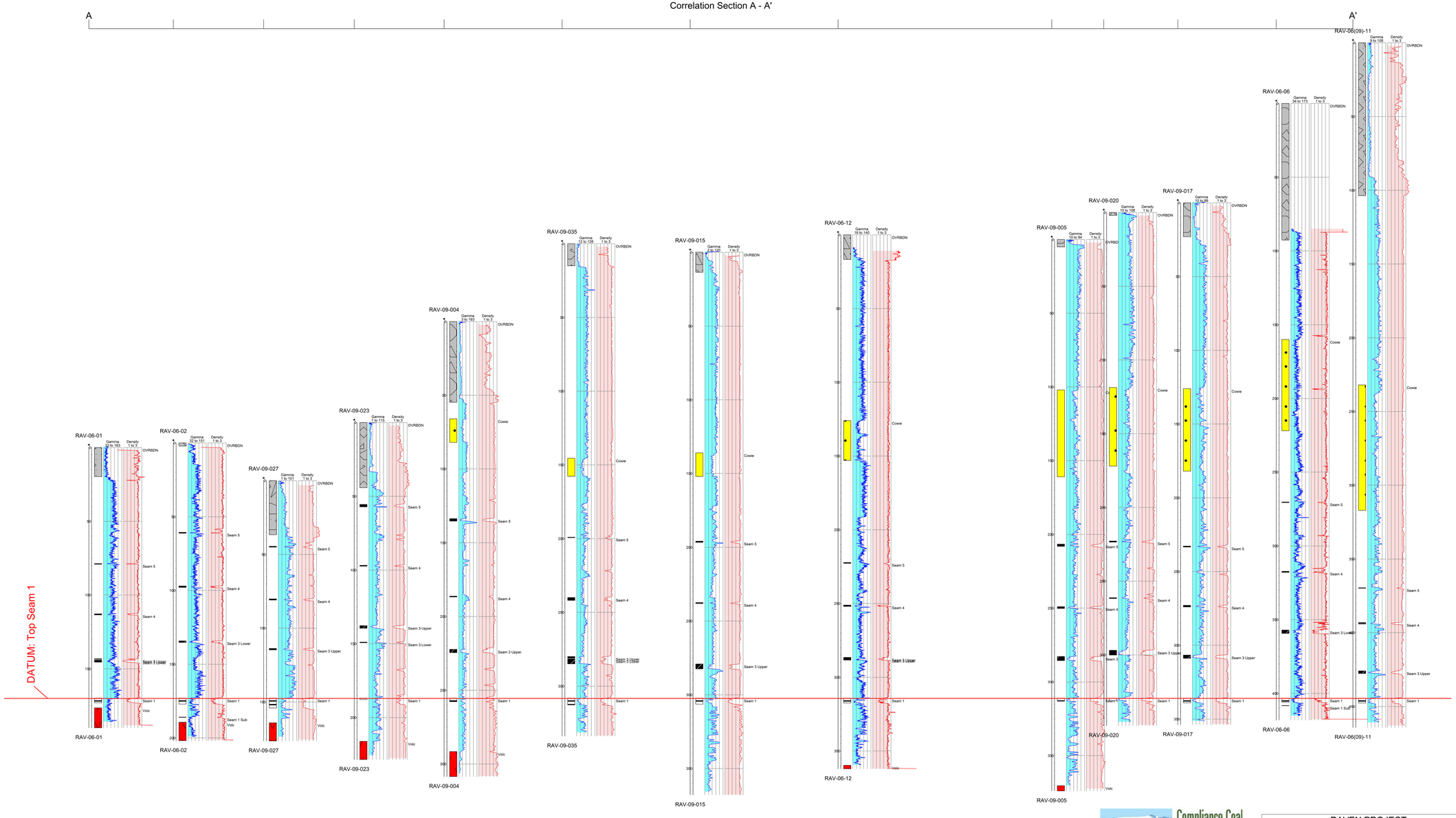
Compliance Coal CORPORATION
DBA Comox Joint Venture

Compliance Coal Corp dba Comox Joint Venture

Raven Project

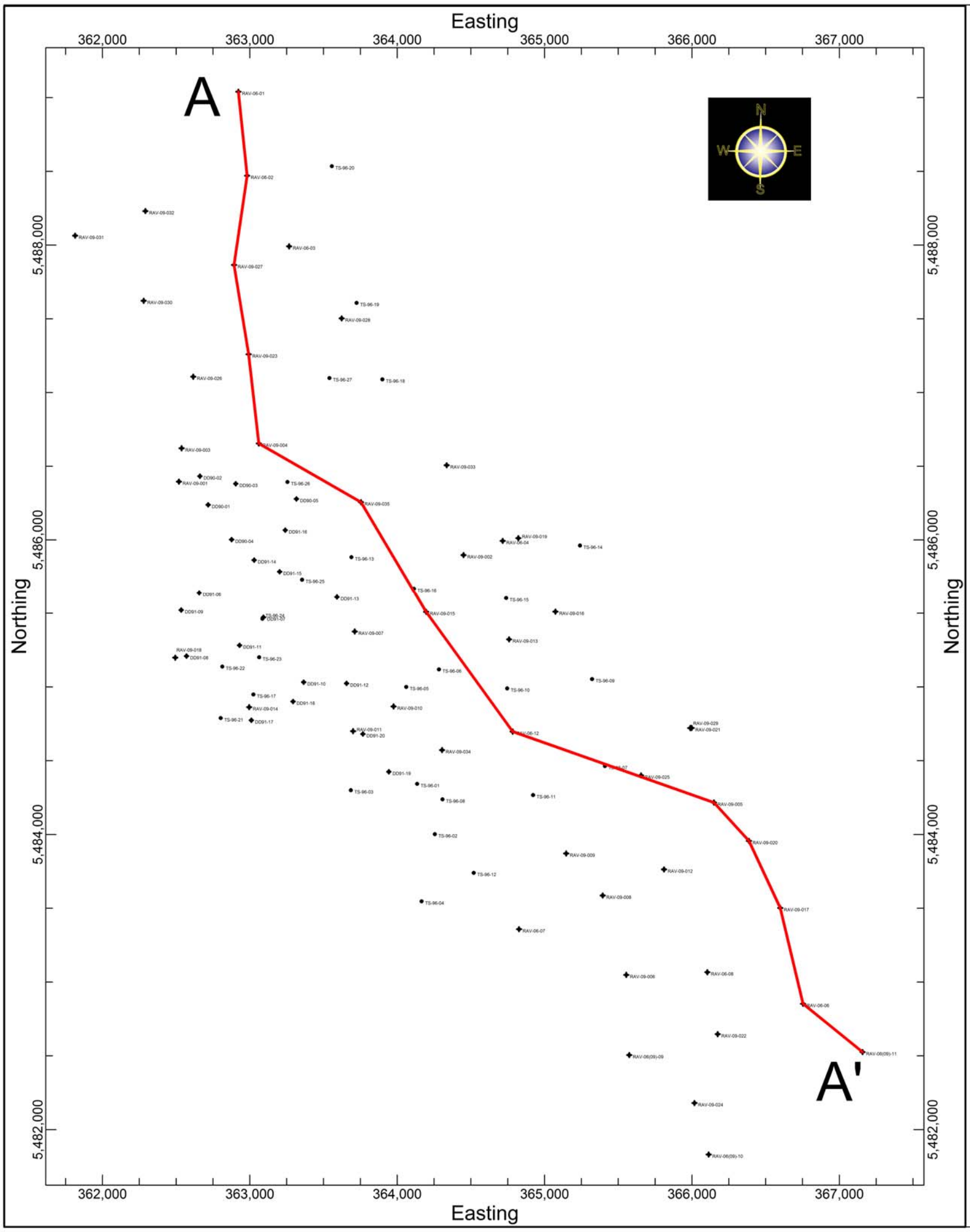
Generalized Stratigraphic Section

May, 2010 | FIGURE 18



Compliance Coal CORPORATION
DBA Comox Joint Venture

RAVEN PROJECT
NORTH-SOUTH CORRELATION SECTION A - A'
FIGURE 19
July 2010



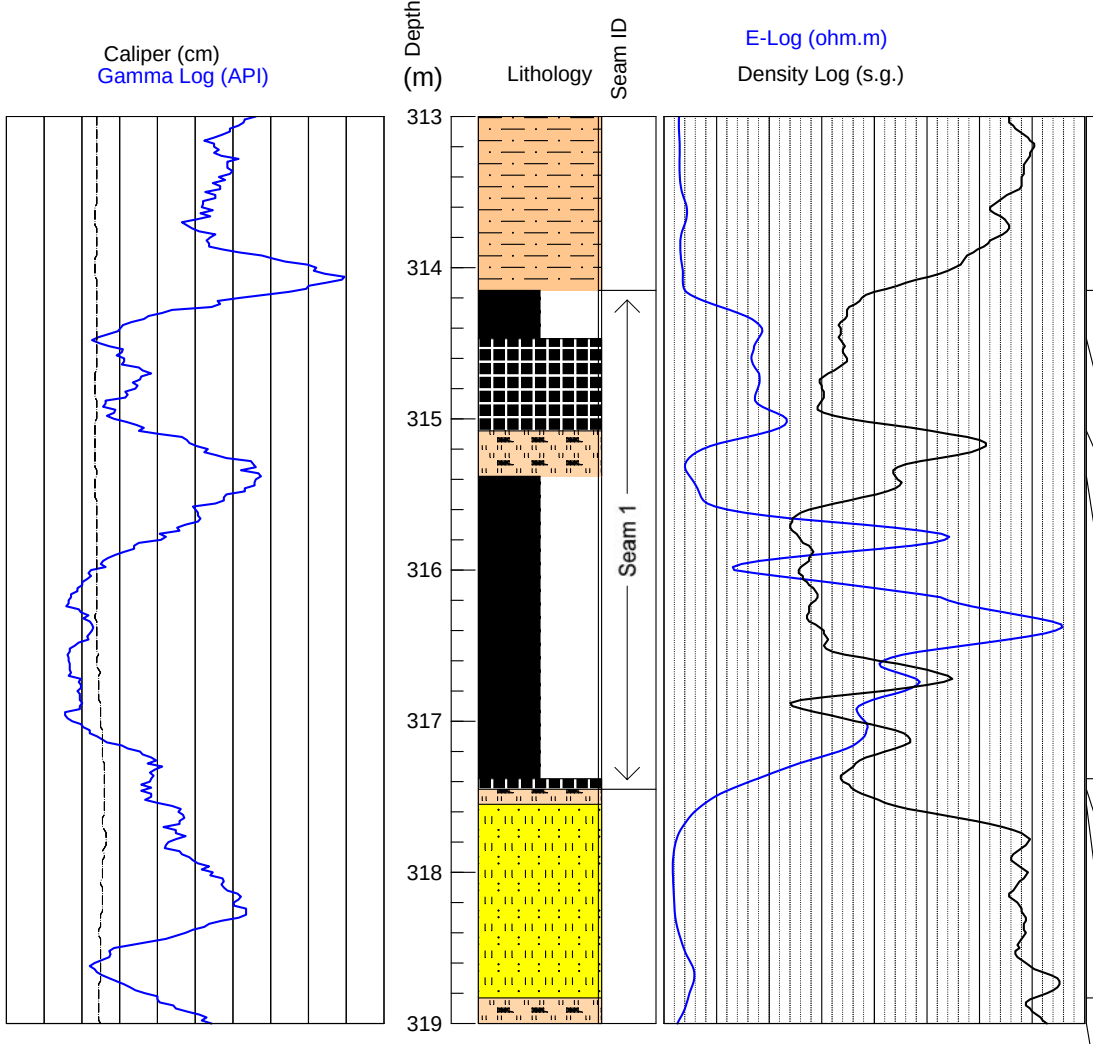
Compliance Coal CORPORATION
DBA Comox Joint Venture

RAVEN PROJECT

LOCATION OF NORTH-SOUTH CORRELATION SECTION A - A'

FIGURE 20

July 2010



SANDY MUDSTONE: Roof: 80% MST & 15% SLT & 5% SST. Coal spars and beds. Sharp lower contact.

BANDED COAL: Black, semi- vitreous sheen, hard, but brittle; thin 0.5cm cleating, pyrite smears, and slickenslides. Evidence of shearing and deformation. Thin shale beds through out.

BANDED DULL COAL: Black, semi-vitreous, thinly cleated in places, pyrite smears on cleats.

CARBONACEOUS SILTSTONE: Parting: Blackish grey, very fine grained, numerous coal spars & laminations, very carbonaceous. Distinct lower and upper contacts

BANDED COAL: Black, vitreous sheen, solid. Thinly cleated in places, numerous shale beds. Several 1cm thick siltstone laminationss.

BANDED DULL COAL: uneven lower contact, Three 1cm thick siltstone beds.

CARBONACEOUS SILTSTONE: Floor: Blackish grey, very fine grained, numerous coal spars & beds.

SILTY SANDSTONE: 60% SLT & 40% SST. Numerous coal spars and shale stringers, calcite vein @ 75 degrees BCN.

CARBONACEOUS SILTSTONE: Very black, numerous coal spars and beds, soft. At top of run, there is a 7cm zone that is very carboneous. Last 20cm broken, when taken out of the shoe.

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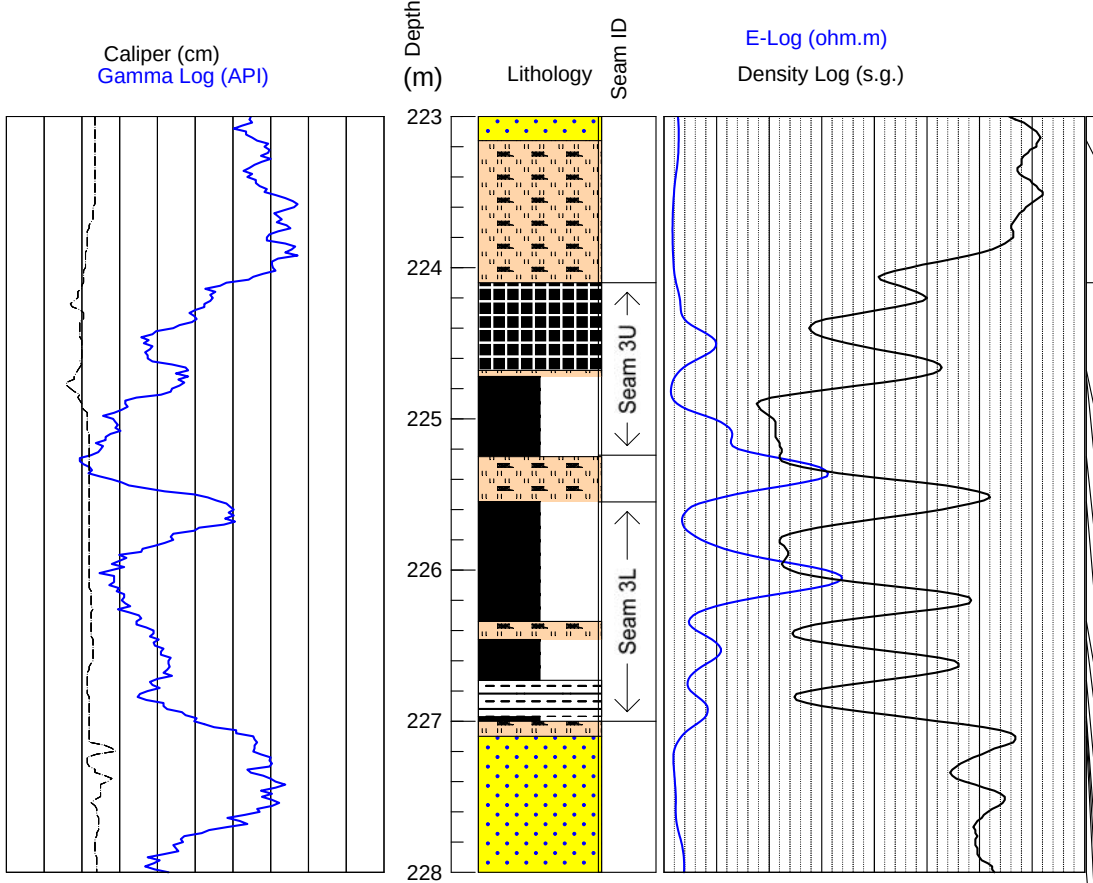
Compliance Coal Corporation DBA Comox Joint Venture		
Raven Project		
Seam 1 Stratigraphy (after DHL RAV-06-12)		
July, 2010		FIGURE 21



SANDSTONE: Part of above Interval

CARBONACEOUS SILTSTONE: Roof: Dark grey to black, fine grained to very fine grained, coal spars and coal beds, and shale stingers

BANDED DULL COAL: Black, broken, sheared, foliations (planar, parallel discontinuities in coal), but for the most part it resembles a melange (blocks of resistent, competent, dull coal protruding from a matrix of non-resistent friable shiny coal). Slickensided. Very soft for the shiny, and very hard for the dull. Semi bright luster. No visible cleating. Pyrite smears in places.

CARBONACEOUS SILTSTONE: Parting: uneven upper contact, brownish black, fine grained, very carbonaceous.

BANDED COAL: Black, solid, but soft and friable, powerdery in places,semi-bright luster, numerous calcite veins @ 0 degrees BCN.

CARBONACEOUS SILTSTONE: Parting blackish brown, very carbonaceous, coal spars, shale stringers, fossils, hard, bur easily broken

BANDED COAL: Black, solid but friable, vitreous sheen, pyrite smears,

CARBONACEOUS SILTSTONE: Parting, as above Parting

BANDED COAL: Black, solid, but soft and friable, bright luster, numerous micro fractures infilled with calcite, and pyrite.

COALY SHALE: Greyish brown, fine to very fine grained, massive, coal spars, numerous shale beds.

BANDED COAL: dull, shale partings and enses

CARBONACEOUS SILTSTONE: Floor: whitish grey, Shale stringers, coal spars,

SANDSTONE: Greyish white, very coarse to coarse grained, massive.

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Compliance Coal Corporation DBA Comox Joint Venture		
Raven Project		
Seam 3 Stratigraphy (after dhl RAV-06-08)		
July, 2010		FIGURE 22

APPENDIX A

DRILLERS AND GEOLOGICAL DESCRIPTIVE LOGS CUTTINGS AND CORE

Client: CJV
Project: Raven
Logged By: EP,Parviz

Hole Number: RAV-06(09)-009
Date Hole Started: May 26 2009
Date Hole Finished:
Hole Orientation:

Total Hole Depth: 244.6m
Depth of Casing:
Core Size:

Geological Borehole Log: RAV-06(09)-009

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
SS= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery		RQD		Fractures		Alt'n & Weath.	Hardness		G.P.L. Corrected			Intervals Logged					Samples (Driller's Depths)			Description
					Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage		Prefix	Core Quality	From (m)	To (m)		Lithology	Interval Length	Core Loss	Strat		Number	From (m)	To (m)	
														0.00	91.44	OVERBURDEN	OB	91.44							Setting Casing
														91.44	109.79	SANDY SHALE	SLT/SST	18.35					91.44	109.79	80% SLT dark grey fine grained SLT & 20% light grey course grained SST
														109.79	112.79	SANDY SHALE	SST	3.00					109.79	112.79	Light grey
														112.79	115.82	SANDY SHALE	SLT/SST	3.03					112.79	115.82	80% SLT dark grey fine grained SLT & 20% light grey course grained SST
														115.82	128.02	SANDY SHALE	SST/SH	12.20					115.82	128.02	SST: light grey, course to very course grained, SH: black massive
														128.02	137.10	SANDY SHALE	SLT/SH	9.08					128.02	137.10	SLT: dark grey, fine to medium grained, SH: black, massive
														137.10	149.35	SANDY SHALE	SST/SH	12.25					137.10	149.35	SST: light grey, course to very course grained, SH: black massive
														149.35	152.40	SANDY SHALE	SLT/SH	3.05					149.35	152.40	As above SLT/SH, but with a minor amount of coal
														152.40	166.60	SANDY SHALE	SST/SH	14.20					152.40	167.64	SST: light grey, course to very course grained, SH: black massive
														166.60	167.20	DALY MUDSTON	SH/Coal	0.60					167.64	168.24	80% shale and 20% coal
														167.20	168.50	COAL	Coal	1.30		Seam 3			168.24	168.55	Bright shiny chunks of coal, therefore core pointed was called.
1	1	168.55	171.45	2.90	1.61	90.69%	3	1.50	25	15	W6	R6	4	168.50	170.11	SANDY SHALE	sst	1.61							Light grey, mg-fg, sst, 80cm from top many stringers coal and spots(thinly laminated) bedding ~85° plant fossils
2	1	171.45	171.45	0.00	1.02		3	1.02	25	15	W6	R5	4	170.11	171.13	SANDY SHALE	sst	1.02							tried to recover core from last run. Same as above
3	1,2	171.45	174.03	2.58	2.55	98.84%										#N/A									
					0.17		-	0.17	-	-	W6	R5	5	171.13	171.30	SANDY SHALE	sst	0.17							sst same as above
					0.07		0	0.00	-	-	W6	R6	0	171.30	171.37	COAL	coal	0.07							crushed coal, dull. Washed out
					0.10		1	0.10	25	15	W6	R6	5	171.37	171.47	CLAYSTONE	clyst	0.10							grey, fg, massive
					0.40		0	0.40	-	-	W6	R6	5	171.47	171.87	SANDY SHALE	slt	0.40							mg-fg, bedding 80°, thinly laminated
					1.81		2	1.81	25	10	W6	R6	5	171.87	173.68	SANDY SHALE	sst	1.81							light grey, mg-fg, from top 77cm finger of slt, thinly laminated
4	3	174.04	176.94	2.90	2.30	79.31%	1	2.80	25	15	W6	R6	4	173.68	175.98	SANDY SHALE	sst	2.30							mg-fg, sst, core loss at the bottom, massive
5	3	176.99	178.21	1.22	1.23	100.82%	-		-	-	W6	R6	4	175.98	177.21	SANDY SHALE	sst	1.23							sst, same as above
6	3,4	178.16	180.44	2.28	1.31	57.46%	0	1.31	-	-	W6	R6	4	177.21	178.52	SANDY SHALE	sst	1.31							light grey, mg-fg, massive, solid core
7	4,5	180.44	181.05	0.61	2.18	357.38%	0	2.18	-	-	W6	R6	4	178.52	180.45	SANDY SHALE	sst	1.93							Light grey, mg-cg, sst
8	5,6	181.05	183.79	2.74	2.61	95.26%	4	2.61	25	15	W6	R6	4	180.45	183.06	SANDY SHALE	sst	2.61							light gry, mg-cg, thin stringer of shale, thinly laminated sh and massive sst, plant material, coal spars
9	6,7	183.79	186.53	2.74	3.08	112.41%	-	3.08	-	-	W6	R6	4	183.06	186.14	SANDY SHALE	sst	3.08							same as above, very solid, one piece of core
10	7,8	186.53	189.43	2.90	2.90	100.00%	-	2.90	-	-	W6	R6	4	186.14	189.04	SANDY SHALE	sst	2.90							sst same as above, core solid piece
11	8,9	189.43	192.33	2.90	2.94	101.38%	-	2.94	-	-	W6	R6	4	189.04	191.98	SANDY SHALE	sst	2.94							fg-cg, sst, one piece core
12	9,10	192.32	195.22	2.90	2.90	100.00%	-	2.90	-	-	W6	R7	4	191.98	194.88	SANDY SHALE	sst	2.90							as above, sst, several coal spots, plant material, wispy coal beds (thinly laminated) @ 90°,
13	10,11	195.23	198.13	2.90	2.85	98.28%	-	2.85	-	-	W6	R7	4	194.88	197.73	SANDY SHALE	sst	2.85							light grey, cg-v.cg, can see indivisual grains, lacks structure, massive, rare coal spars, plant material
14	11,12	198.13	201.03	2.90	2.87	98.97%	-	2.87	-	-	W6	R7	4	197.73	200.60	SANDY SHALE	sst	2.87							as above sst, thin >1mm, rare mud layers, oriented perpendicular to core axiz, rare plant material
15	12,13	201.30	203.13	1.83	1.87	102.19%										#N/A									
					1.12		-	1.12	-	-	W6	R7	4	200.60	201.72	SANDY SHALE	SST	1.12							sst, as above, but w/ abundant thin wispy dark grey shale layer parallel TCA, massive interbedded sst and shale, shale layers fange from 80-90° TCA, contact 80° TCA, sulphides along shart contact plain
	12				0.23		3	11.00	10	3	W5	R2	3	201.72	201.95	CLAYSTONE	CST	0.23							Claystone w/ coalbeds in it; dark grey-black beds 1-5 cm apart; sulphide layer 1 cm thick oriented 85 TCA 2% sulphides, 5% coal
	12				0.09		-	0.90	-	-	W5	R3	4	201.95	202.04	COAL	Coal	0.09		Seam 1	7501	202.44	202.53	Black, fine gravel, micro fracture 85 TCA. Calcite above contact 10%, contact 85 TCA.
	12				0.33		>25	0.00	10	6	W5	R2	2	202.04	202.37	COAL	Coal	0.33		Seam 1	7502	202.53	202.86	Black crumbled bright coal, numerous slick n slides on jointing surfaces, hissed vigorously for a few minutes 2cm sulphide layer near top, micro-cleating, 1% pyrite, >1% calcite
					0.10				0		W5	R3	4	202.37	202.47	SANDY SHALE	SLST	0.10		Seam 1	7503	202.86	202.96	SLTST: dk.gy., massive, fine wispy coal spars with micro cleating, >1% calcite
16	13	202.96	205.86	2.90	2.90	100.00%										#N/A									
					0.17		5	0.17	10	5	W5	R4	3	202.47	202.64	COAL	Coal	0.17		Seam 1	7504	202.96	203.13	Black, massive, minor disseminated sulphides >1%, dull, minor hissing, contact 85 TCA. Most of the jointing at the contact.
	13				0.09		-	-	-	-	W4	R4	4	202.64	202.73	SANDY SHALE	SLT	0.09		Seam 1	7505	203.13	203.22	Brown SLT parting, oxidized soft brown; calcite along contact. Contact 40 TCA, massive, Some weath & alt
	13				0.36		4	0.20	10	6	W6	R3	4	202.73	203.09	COAL	Coal	0.36		Seam 1	7506	203.22	203.58	Jointing 45 TCA, dill black coal w/ thin calcite stringers running parallel TCA
	13				0.09		-	-	-	-	W6	R4	4	203.09	203.18	CLAY	Clay	0.09		Seam 1	7507	203.58	203.67	Clay parting, massive, finely laminated, very fine grained, brown clay
	13				0.67		>25	0.00	20	3	W5	R2	3	203.18	203.85	COAL	Coal	0.67		Seam 1	7508	203.67	204.34	Black, hissed for a few minutes; bring and dull; calcites >1% near bottom contact; sharp contact 90 TCA Crushed w/ very shiney surfaces; joints oriented 75-80
	13				1.52		3	1.45	10	14	W6	R5	4	203.85	204.00	MUDSTONE	MST	0.15			7509	204.34	204.49	Pale brown-gray, tightly bedded very fine grained SLT; lacks carb; bedding 85-90 TCA
														204.00	205.37	MUDSTONE	MST	1.37							Pale brown-gray, tightly bedded very fine grained SLT; lacks carb; bedding 85-90 TCA
17	14	205.86	208.76	2.90	2.96	102.07%										#N/A									
					0.10		-	-	-	-	W6	R5	4	205.37	205.47	MUDSTONE	MST	0.10							As above, contact 70 TCA
					2.86		4	2.79	20	15	W6	R6	4	205.47	208.33	SANDY SHALE	SST	2.86							Dark gray, coarse-med grained SST, possisbly weak clay alteration, joints oriented 50-60 TCA, bedding apparent in thin silt layer near top 80-85 TC; massive
18	15	208.76	211.66	2.90	2.90	100.00%										#N/A									
					0.22		-		-	-	W6	R5	4	208.33	208.55	SANDY SHALE	SST	0.22							As above SST, cg-mg, massive
	15				1.70		5	1.70	20	13	W6	R5	4	208.55	210.25	CLAYSTONE	CST	1.70							Grey, fine grained mudstone, carbonate in joints 80 & 45 TCA. >1% carbonate, sharp contact 80 TCA
	15 & 16				0.98		8	0.44	20	8	W5	R4	4	210.25	211.23	SANDY SHALE	SST	0.98							Grey cg-mg sandstone w/ green tinge, possibly reworked volcanics? Stepped fracture 20 cm long roughly 30 TCA. Bedding 55-50 TCA. Smalling stepping
19	16	211.66	214.56	2.90	2.89	99.66%										#N/A									
					0.27		1	0.27	20	10	W6	R5	4	211.23	211.50	SANDY SHALE	SST	0.27							Grey cg-mg SST w/ minor darks wispy layers along bedding, 60, fractured along bedding, carbonate healed joint cuts bedding 40 TCA. Sharply contacted w/
					0.08		-	-	-	-	W2	C2	3	211.50	211.58	CLAY	Clay	0.08							Clay seam, soft, finger easily indents, sharp contact w/ SST below, 90 TCA
					2.50		5	2.50	20	14	W6	R5	4	211.58	214.08	SANDY SHALE	SST	2.50							Grey cg-mg SST, >1% calcite strings, shallow TCA 0-2. Minor silty layers bedding avg 80-85
20	16 & 17	214.56	215.76	1.20	1.36	113.33%	7	0.95	20	13	W6	R4	4	214.08	215.44	SANDY SHALE	SST	1.36							Cg-mg grey SST, beds of alternating cg & mg grains. Mg has wisps of mica rich mud bedding 85 TCA and
21	17 & 18	215.76	217.46	1.70	1.46	85.88%	>25	1.04	10	3	W6	R4	4	215.44	216.90	SANDY SHALE	SST	1.46							Grey, cg-mg SST with uniform composition. Minor calcite, joints oriented 50 tca. Small fault w/ large angular chunks 5-7 cm big at 217.10-217.30. High degree
														216.90	217.02	LOST CORE	LOST CORE	0.12							
22	18	217.46	220.36	2.90	2.76	95.17%										#N/A									
					1.66		8	1.33	20	13	W6	R4	4	217.02	218.68	SANDY SHALE	SST	1.66							As above cg-mg grey SST, possibly small fault at top of section bedding 80 TCA. Jointing at 70 TCA, Calcite along some jointing surfaces. Irregular shaped
					1.10		>25	0.43	10	3	W6	R4	4	218.68	219.78	SANDY SHALE	SLT-SST	1.10							Green grey silty SST w/ minor wispy silt layers bedding consistant through unit w/ joints oriented parallel to bedding, 65 TCA. Small minor fault at 219.80-
23	19 & 20	220.36	223.26	2.90	2.90	100.00%										#N/A									
					0.35		1	0.35	20	8	W6	R5	4	219.78	220.13	SANDY SHALE	SST	0.35							SST med to fine grain
					0.83		5	0.83	20	10	W6	R3	4	220.13	220.96	CLAYSTONE	CLST	0.83							Carbonaceous mudstone 0.10m at the top. IB w/ SST at 85 TCA.
					0.42		2	0.42	20	10	W6		4	220.96	221.38	SANDY SHALE	SLT-SST	0.42							SST IB w/ silt
					1.30		5	1.30	20	10	W6		4	221.38	222.68	SANDY SHALE	SST	1.30							Med grained light gray SST w/ coal stringers
24	20 & 21	223.26	226.16	2.90	2.78	95.86%										#N/A									
					1.05		1	1.05	20	15	W6	R5		222.68	223.73	SANDY SHALE	SST	1.05							SST med grained - close spacing of coal stringers
					1.73		11	1.16	20	10	W6	R3		223.73	225.46	CLAYSTONE	CLST	1.73							(From top ~ 15 cm broken core) - Carbon claystone w/ stringers of coal Slicken slides, 2-10 cm spacing (fault zone).
25	21	226.16	229.06	2.90	2.97	102.41%										#N/A									
														225.46	225.93	MUDSTONE	MST	0.47							Mudstone - dark grey, coal stringers at top. 10 cm roof
					0.57		4	0.53	20	10	W6	R4	4	225.93	226.03	MUDSTONE	MST	0.10			7510	283.06	283.16	Mudstone - dark grey, coal stringers at top. 10 cm roof
					0.16				20	9	W5	R2	4	226.03	226.15	COAL	Coal	0.12		Seam 1Sub	7511	283.16	283.28	Coal, dull. 12cm
					0.04				20		W5	R4	4	226.15	226.23	ERENTIATED BE	Rockband	0.08		Seam 1Sub	7512	283.28	283.36	Claystone
					0.23				20	9	W5	R2	4	226.23	226.41	COAL	Coal	0.18		Seam 1Sub	7513	283.36	283.54	Coal, dull hard, carbonate stringer
					0.04				20		W5	R4	4	226.41	226.46	ERENTIATED BE	Rockband	0.05		Seam 1Sub	7514	283.54	283.59	Rockband
					0.68				20	9	W5	R2	4	226.46	227.18	COAL	Coal	0.72		Seam 1Sub	7515	283.59	283.8	0.21 dull coal, 0.03 rockband, 0.46 coal.
					1.25		3	1.19	20	10	W6	R4	4	227.18	227.28	CLAYSTONE	CST	0.10			7516	284.29	284.39	Claystone, dark grey - sample 10 cm as bottom of the coal
														227.28	228.43	CLAYSTONE	CST	1.15							Claystone, dark grey - sample 10 cm as bottom of the coal
26	22 & 23	229.06	231.96	2.90	3.02	104.14%										#N/A									
					0.38		4	0.28	25	10	W6	R2	4	228.43	228.81	CLAYSTONE	CST	0.38			7517	229.72	229.82	CLST-carb
					0.15									228.81	228.96	COAL	Coal	0.15		Seam 1Sub a	7518	229.82		Dull, hard
					0.20									228.96	229.16	CLAYSTONE	CST	0.20		Seam 1Sub a	7518			CLST-carb
					0.09									229.16	229.25	COAL	Coal	0.09		Seam 1Sub a	7518			
					0.05									229.25	229.30	DALY MUDSTON	Hi Carb CL	0.05		Seam 1Sub a	7518			Coal stringers, very broken
					0.10									229.30	229.40	COAL	Coal	0.10		Seam 1Sub a	7518		230.12	
					0.08									229.40	229.48	CLAYSTONE	CST	0.08			7519	230.12	230.24	
					1.95		7	1.95	25	10	W6	R5	4	229.48	231.43	SANDY SHALE	SST	1.95							SST med grained w/ coal stringers at 85 TCA

														231.43	231.91	LOST CORE	LOST CORE	0.48						
27	23 & 24	231.96	234.86	2.90	2.90	100.00%										#N/A								
					0.29		1	0.29	25	10	W6	R3	4	231.91	232.20	SANDY SHALE	SST	0.29						
					1.61		4	1.61	25	10	W6	R3	4	232.20	233.81	CLAYSTONE	CST	1.61						CST- dark grained - from 232.96-233.36, 40 cm of sample - high carb CST
					1.00		6	0.80	25	10	W6	R5	4	233.81	234.81	SANDY SHALE	SST	1.00						SST - med grey - fine grained - 20 cm from top is broken & less than 5 cm
28	24 & 25	234.86	237.13	2.27	2.27	100.00%										#N/A								
					1.93		6	1.93	25	14	W6	R5	4	234.81	236.74	SANDY SHALE	SST	1.93						Coarse grained - light grey SST - 4 cm at the bottom pebbly SST
					0.34		1	0.34	25	14	W6	R5	4	236.74	237.08	SANDY SHALE	SST	0.34						Med grained - med grey SST
29	25 & 26	237.13	238.80	1.67	1.60	95.81%										#N/A								
					0.50		3	0.41	25	14	W6	R5	4	237.08	237.58	SANDY SHALE	SST	0.50						Med grained - light grey SST
					0.40		1	0.40	25	14	W6	R4	4	237.58	237.98	SANDY SHALE	SLT	0.40						Fine grained med grey
					0.70		7	0.49	25	10	W6	R5	4	237.98	238.68	SANDY SHALE	SST	0.70						Med to coarse grained - coal stringers SST
30	25 & 30	238.80	241.60	2.80	3.00	107.14%										#N/A								
					0.14		-	0.14	-	-	W6	R5	4	238.68	238.82	SANDY SHALE	SST	0.14						SST light grey med grained.
					2.86		8	25.00	14	W6	R5	4		238.82	241.68	SANDY SHALE	SLT	2.86						SLT med grey - fine grained
31	26 & 27	241.60	244.50	2.90	2.82	97.24%	8	2.73	25	14	W6	R5	4	241.68	244.50	SANDY SHALE	VOL CGL	2.82						Dark green volcanics, CGL - parst w/ clasts up to 2 cm and calcite veining.
																								EOH @ 244.60 m

Geological Borehole Log: RAV-06(09)-010

Client: CJV
Project: Raven
Logged By: Henry

Hole Number: RAV-06(09)-010
Date Hole Started: May 28 2009
Date Hole Finished:
Hole Orientation:

Total Hole Depth: 170.67m
Depth of Casing:
Core Size:

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
SS= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)	Intervals Logged	Lithology	Interval Length	Core Loss	Strat	Samples (Driller's Depths) Number	From (m)	To (m)	Description
														0.00	54.25	OVERBURDEN	OVERBURDEN	54.25				0.00	54.25	Setting Casing
														54.25	55.25	SANDSTONE	SANDSTONE	1.00				54.25	55.25	Light to dark grey course to very course grained
														55.25	58.93	SILTY SANDSTONE	SILTY SANDSTONE	3.68				55.25	58.93	SST: dark grey, course grained. SLT dark grey blackish, very fine grained. 55% SST & 45% SLT
														58.93	59.48	Coal	Coal	0.55		Seam 4	ns	58.93	59.48	
														59.48	76.27	SANDSTONE	SANDSTONE	16.79				59.48	76.27	Light to dark grey course to very course grained
														76.27	79.25	SANDSTONE	SANDSTONE	2.98				76.27	79.25	Light grey, course to very course grained
														79.25	96.32	SANDSTONE	SANDSTONE	17.07				79.25	96.32	Light grey, course to very course grained
														96.32	97.30	COAL	COAL	0.98		Seam 3	ns	96.32	97.70	Black chunks of coal with bits of very fine grained shale
														97.30	97.70	ARBONACEOUS MUDSTON	Carb Shale	0.40						
1	1	97.70	100.60	2.90	2.66	91.72%																		
					1.66		5	1.66	25	12	W5	R6	4	97.70	99.36	SHALY SANDSTONE	sst	1.66						Light grey, mg-cg, darker grey interbeddings ~20cm, thin coal seam ~3cm thick, coal lens ~few mm thick, possible calc within bedding (angle 80-90°)
					0.05		1	0.00	0	1	W6	R2	4	99.36	99.41	COAL	coal	0.05						Black, bright 2/ dull bands, micro cleats visible along the core axis, light, almost 90° contact angle w/ upper sst. ~80° contact angle w/ lower slt (fault?)
					0.95		4	0.95	20	12	W6	C3-4	4	99.41	100.36	SHALY SANDSTONE	slt	0.95						Light brown, fg, slt. Coal lens (bedding) running 80-85°, ~1cm thick coal lens visible along fracture surfaces, v.thin calc veins visible, joint angle ~85°
2	1,2	100.60	103.50	2.90	3.04	104.83%	10	2.90	10~20	14	W6	R6	4	100.36	103.40	SHALY SANDSTONE	sst	3.04						Light grey, interbedding sst, mg-cg, near top low angle joints ~20°, ~3cm thick slt dark grey bedding angle ~75°, joint angle from 85=90°, near the bottom low angle joints ~10°, smooth slickensided, plant materia
3	3	103.50	106.40	2.90	3.01	103.79%	6	2.90	20	13-14	W6	R6	4	103.40	106.41	SHALY SANDSTONE	sst	3.01						light grey, mg-cg, sst, bedding angle ~90° measured from thin coal beddings, smooth possible slicken sided, minor sulphides, overall joint angles ~80-90°
4	3,4	106.40	108.23	1.83	1.76	96.17%	5	1.62	25	13	W6	R6	4	106.41	108.17	SHALY SANDSTONE	sst	1.76						light grey, mg, sst, 20cm from the top broken, filled with calc&slicken side
5	4,5	108.23	111.13	2.90	2.76	95.17%	3	2.76	25	14	W6	R6	4	108.17	110.93	SHALY SANDSTONE	sst	2.76						sst same as above, 9.6cm from the bottom vertical fracture, some with calc
6	5,6	111.13	114.03	2.90	2.36	81.38%	5	2.10	25	14	W6	R6	4	110.93	113.29	SHALY SANDSTONE	sst	2.36						sst same as above
7	6,7	114.03	116.16	2.18	2.77	127.06%	5	2.84	25	14	W6	R6	4	113.29	116.06	SHALY SANDSTONE	sst	2.77						sst same as above, coal stringers 85° TCA
8	7,8	116.16	118.59	2.43	2.58	106.17%	5	2.58	25	14	W6	R6	4	116.06	118.64	SHALY SANDSTONE	sst	2.58						sst same as above
9	8,9	118.59	120.72	2.13	2.10	98.59%	2	2.10	25	14	W6	R6	4	118.64	120.74	SHALY SANDSTONE	sst	2.10						sst same as above
10	9,10	120.72	123.62	2.90	2.75	94.83%	3	2.75	25	14	W6	R6	4	120.74	123.49	SHALY SANDSTONE	sst	2.75						sst same as above, calc in fracture, 25cm from the top
11	10,11	123.62	126.52	2.90	2.36	81.38%	-	2.36	25	14	W6	R6	4	123.49	125.85	SHALY SANDSTONE	sst	2.36						sst same as above, one solid piece
12	11,12	126.52	128.96	2.43	2.71	111.52%	2	2.87	25	15	W6	R6	4	125.85	128.56	SHALY SANDSTONE	sst	2.71						same as above
13	12,13	128.96	131.86	2.90	3.00	103.45%										#N/A								
					1.67		1	1.67	25	14	W6	R6	4	128.56	130.13	SHALY SANDSTONE	sst	1.57						sst same as above, 10cm sampled as roof
														130.13	130.23	SHALY SANDSTONE	sst	0.10			7520	130.17	130.27	sst same as above, 10cm sampled as roof
					0.03									130.23	130.26	COAL	coal	0.03		Seam 1	7521	130.27	130.30	coal, soft, dull, coal sample
					0.04									130.26	130.30	DIFFERENTIATED BEDR	rock band	0.04		Seam 1	7521	130.30	130.34	
					0.46									130.30	130.76	COAL	coal	0.46		Seam 1	7521	130.34	130.80	coal, soft, dull
					0.10									130.76	130.86	DIFFERENTIATED BEDR	rock band	0.10		Seam 1	7522	130.80	130.90	
					0.10									130.86	130.96	COAL	coal	0.10		Seam 1	7523	130.90	131.00	dull
					0.08									130.96	131.04	DIFFERENTIATED BEDR	rockband	0.08		Seam 1	7524	131.00	131.08	
					0.24									131.04	131.28	COAL	coal	0.24		Seam 1	7525	131.08	131.60	dull
					0.25									131.28	131.53	DIFFERENTIATED BEDR	rock band	0.25		Seam 1	7526	131.60	131.85	
					0.03									131.53	131.56	COAL	coal	0.03		Seam 1	7527	131.85	132.88	
14	13,14	131.86	134.48	2.90	2.53	87.24%	18	2.20	20	10	W6	R4				#N/A								
														131.56	131.67	LOST CORE	LOST CORE	0.11		Seam 1	ns			probably lost coal
					0.53									131.67	132.20	COAL	coal	0.53		Seam 1	7527	131.88	132.41	dull coal
					0.11		-							132.20	132.31	CLAYSTONE	clst	0.11			7528	132.41	132.51	med grey, sampled for floor
					0.74		2							132.31	133.05	SHALY SANDSTONE	slt	0.74						light grey
					0.24		-							133.05	133.29	SHALY SANDSTONE	sst	0.24						light-med grey, mg
					0.42		-							133.29	133.71	SHALY SANDSTONE	slt	0.42						dark to med grey
					0.50		1							133.71	134.21	RBONACEOUS SILTSTO	cbr, clst	0.50						dark grey to black, some gauge ~90° TCA
														134.21	134.41	LOST CORE	LOST CORE	0.20						
15	14,15	134.48	137.52	3.04	2.83	93.09%	3	2.83	25	13	W6	R6	4	134.41	137.24	SHALY SANDSTONE	sst	2.83						light grey, sst, mg
16	15,16	137.52	140.42	2.90	3.14	108.28%	1	3.14	20	13	W6	R5	4	137.24	140.38	SHALY SANDSTONE	sst	3.14						light grey, sst w/ coal stringers at the top 40cm
17	16,17	140.42	142.25	1.83	1.71	93.44%	3	1.83	20	13	W6	R6	4	140.38	142.09	SHALY SANDSTONE	sst	1.71						light grey, sst, mg, thin bedded, clst@85° TCA
18	17	142.25	145.15	2.90	2.59	89.31%	1	2.59	25	14	W6	R6	4	142.09	144.68	SHALY SANDSTONE	sst	2.59						sst: lt.gy., m-c.gr.,
19	18	145.15	147.74	2.59	3.06	118.15%										#N/A								
					1.00		-	1.00	25	14	W6	R6	4	144.68	145.68	SHALY SANDSTONE	sst	1.00						sst, cg uptp 2cm, slt bands
					2.06		4	2.06	25	14	W6	R6	4	145.68	147.74	SHALY SANDSTONE	sst	2.06						sst, fg-mg, 90cm from top w/ bands of siltst, uptp 5cm at 80° TCA, at 147.25m a fracture 80° TCA, with some gauge
20	18,19	147.74	150.64	2.90	2.85	98.28%	5	2.85	25	14	W6	R6	4	147.74	150.59	SHALY SANDSTONE	sst	2.85						mg-fg sst, with 1-3cm thick bands of slt, 70-80° TCA, minor plant material, trace calc along slt beds bedding angle ~70° TCA
21	19,20	150.64	153.54	2.90	2.53	87.24%	17	1.90	20	10	W6	R6	4	150.59	153.12	SHALY SANDSTONE	sst	2.53						clean grey mg sst with cross bedding 50° TCA at the top of interbal, minor silty layer 2-3mm, trace coal fragments, bedding averages 80° TCA, heavy grinding thining by drill at 152.04-152.63m, low angle fault at b
22	20,21	153.54	156.27	2.73	2.84	104.03%										#N/A								
					2.67		9	2.41	25	14	W6	R6	4	153.12	155.68	SHALY SANDSTONE	sst	2.56						as above, grey, mg, sst, joints parallel to 80° TCA, with minor jointing at 25° TCA, at the lower part of them interval, shale layers increase in abundance down section, with trace coal gragments, contact angle 80°
														155.68	155.79	SHALY SANDSTONE	sst	0.11			7529	155.99	156.10	as above, grey, mg, sst, joints parallel to 80° TCA, with minor jointing at 25° TCA, at the lower part of them interval, shale layers increase in abundance down section, with trace coal gragments, contact angle 80°
					0.17		5	0.00	10	5	W4	R3	3	155.79	155.96	SHALY COAL	shaley coal	0.17		Seam 1 Sub1	7530	156.10	156.27	shaley coal layer, dull with a high % sulphide and carbonates ~10%, escaping gas
23	21	156.27	159.17	2.90	2.90	100.00%										#N/A								
					0.30		2	0.13	10	7	W5	R3	4	155.96	156.26	COAL	coal	0.30		Seam 1 Sub1	7530	156.27	156.57	black coal, bright-dull, bedding 70°TCA, trace carbonates and sulphides, bubbles when soap solution
														156.26	156.35	SHALY SANDSTONE	slt	0.09			7531	156.57	156.66	pale grey, fg, slt, joints oriented 80°TCA, trace carbonate and coal gragments
					0.92		3	0.82	20	13	W6	R5	4	156.35	157.18	SHALY SANDSTONE	slt	0.83						pale grey, fg, slt, joints oriented 80°TCA, trace carbonate and coal gragments
					0.13		1	0.00	10	5	W4	R3	4	157.18	157.31	SHALY COAL	shaley coal	0.13						shaley coal layer, interbedded w/ dark brown slt, and bright coal, micro cleats visible on core surface
					1.23		7	1.23	20	13-14	W6	R5	4	157.31	158.54	SHALY SANDSTONE	slt	1.23						dark brown slt w/coal lens ~3cm thick running @70°, mostly bright coal w/ micro cleats visible 3-4cm dull black coal beddings, very soft and brittle 90°TCA
					0.10		0	0.10			W5	R3	4	158.54	158.64	COAL	coal	0.10						50% bright ~50% dull coal, interbedded ~0.5cm thick, micro cleats within bright coal w/ minor calc along bedding angle ~90°TCA
					0.22		4	0.00	20	13	W6	R5	4	158.64	158.86	SHALY SANDSTONE	slt	0.22						same as above slt, coal lens running ~90°TCA, bright coal w/ micro cleats w/ micro cleats within joints ~70°
24	23	159.17	162.07	2.90	2.96	102.07%										#N/A								
					1.47		2	1.47	25	14	W6	R5	4	158.86	160.33	SHALY SANDSTONE	slt	1.47						as above, slt, small coal lens 70° TCA, shart contact with coal seam below 80° TCA
					0.18		1	0.00	10	6	W5	R4	4	160.33	160.51	COAL	coal	0.18		Seam 1 Sub2	ns			black coal, cull bright w/ heavy carbonate filling of cleats along core axis, beds 85-90° TCA
					0.24		0	-	-	-	W6	R4	4	160.51	160.75	SHALY SANDSTONE	slt	0.24			7532	160.90	161.00	as above slt, fg, grey w/ minor coal lens, bedding 90° TCA
					0.74		2	0.74	10	10	W5	R3	4	160.75	161.49	COAL	coal	0.74		Seam 1 Sub2	7533	161.00	161.74	bright dull coal, bubbled for a few minutes, carbonate along cleats and cracks
					0.33									161.49	161.82	SHALY SANDSTONE	silty slt	0.33			7534	161.74	161.85	brown grey w/ calcite filling pore spaces silty sst fg-mg w/ abundant carbonate 1-2% and coal lends bedding 85° TCA, silty rich matrix
25	24	162.07	164.97	2.90	2.90	100.00%	8	2.82	25	15	W5	R5	4	161.82	164.72	SHALY SANDSTONE	sst	2.90						as above, mg-cg, silty sst, part of above material, this sst fines upwards very dirty, abundant clay and calcite in matrix bedding difficult to identify, joint 85° TCA large green possibly volcanic clusts and sst clasts 2-5
26	24,25	164.97	167.87	2.90	2.87	98.97%										#N/A								
					1.77		4	1.77	25	14	W6	R5	4	164.72	166.49	CONGLOMERATE	cgl	1.77						as above, sst graded down into this congl unit, rounded clasts 2-5cm, sst and volc clasts, some granite clasts, bluish-green tinge to clasts, ends in faulted contact 40° TCA with calcite bandings filling the fracture sp
	25				1.10		4	1.00	25	13	W6	R5	4	166.49	167.59	CONGLOMERATE	cgl	1.10						grey-green congl, with red and green clasts, calcite stringers, and halo around clasts, matrix is cg sand, joints 90°TCA, >1% calcite, 8minor iron staining on clasts ~2% was not apparent above the fault
27		167.87	170.67	2.80	2.86	102.14%	6	2.80	25	14	W6	R5	4	167.59	170.45	CONGLOMERATE	cgl	2.86						mg congl, as above grafments are round 3-5cm averast clast size, grey congl w/ abundant red matrix and igneous clasts calcite rich matrix, joints are rough breaks ~90°TCA, through section
																								EOH 170.67m

Client: CJV
Project: Raven
Logged By: EP, Henry, Parviz, Farshad, Sarah

Hole Number: RAV-06(09)-011
Date Hole Started: 29-May-09
Date Hole Finished: 05-Jun-09
Hole Orientation:

Total Hole Depth: 463.14
Depth of Casing:
Core Size:

Geological Borehole Log: RAV-06(09)-011

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
SS= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Intervals Logged Lithology	Intervals Logged Interval Length	Intervals Logged Core Loss	Intervals Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	103.63	OVERBURDEN	OB	103.63				0.00	103.63	Setting Casing
														103.63	107.80	SHALY SANDSTONE	SLT/SH	4.17				103.63	107.80	medium dark grey ,n4: sl sandy
														107.80	109.73	SHALY SANDSTONE	SLT/SH	1.93				107.80	109.73	As Above
														109.73	112.78	MUDSTONE	MST	3.05				109.73	112.78	medium dark grey ,n4: silty to sandy
														112.78	115.82	MUDSTONE	MST	3.04				112.78	115.82	medium dark grey ,n4: silty to sandy
														115.82	117.34	SHALY SANDSTONE	SLTST	1.52				115.82	117.35	Dark grey SLT
														117.34	118.87	SHALY SANDSTONE	SLTST	1.52				117.35	118.87	Dark grey SLT
														118.87	120.39	SHALY SANDSTONE	SLTST	1.52				118.87	120.40	Medium grey SLT
														120.39	121.92	SHALY SANDSTONE	SLTST	1.52				120.40	121.92	Dark medium grey SLT
														121.92	123.44	MUDSTONE	MST	1.52				121.92	123.44	Mudstone - grey/brown
														123.44	124.96	MUDSTONE	MST	1.52				123.44	124.97	Mudstone - grey/brown
														124.96	126.49	SHALY SANDSTONE	SLT/SH	1.52				124.97	126.49	SLT, Shale (?) - grey (dark)
														126.49	128.01	MUDSTONE	MST	1.52				126.49	128.02	Mudstone - grey/brown
														128.01	129.54	CLAYSTONE	CLST	1.52				128.02	129.54	Clastone - grey
														129.54	131.06	MUDSTONE	MST	1.52				129.54	131.06	Grey mudstone
														131.06	132.58	SHALY SANDSTONE	SLTST	1.52				131.06	132.59	Grey SLT
														132.58	134.11	SHALY SANDSTONE	SLTST	1.52				132.59	134.11	Grey SLT
														134.11	135.63	SHALY SANDSTONE	SLTST	1.52				134.11	135.64	Grey SLT
														135.63	137.16	SHALY SANDSTONE	SLTST	1.52				135.64	137.16	Grey SLT
														137.16	138.68	SHALY SANDSTONE	SLTST	1.52				137.16	138.68	Grey SLT
														138.68	140.20	SHALY SANDSTONE	SLTST	1.52				138.68	140.21	Grey SLT
														140.20	141.73	SHALY SANDSTONE	SLTST	1.52				140.21	141.73	Grey SLT
														141.73	143.25	SHALY SANDSTONE	SLTST	1.52				141.73	143.26	Grey SLT
														143.25	144.78	SHALY SANDSTONE	SLTST	1.52				143.26	144.78	Medium grey CLST
														144.78	146.30	SHALY SANDSTONE	SLTST	1.52				144.78	146.30	SLT (grey - dark/med)
														146.30	147.82	SHALY SANDSTONE	SLTST	1.52				146.30	147.83	SLT (grey)
														147.82	149.35	CLAYSTONE	CLST	1.52				147.83	149.35	Claystone - grey
														149.35	150.87	CLAYSTONE	CLST	1.52				149.35	150.88	Grey CLST
														150.87	152.40	CLAYSTONE	CLST	1.52				150.88	152.40	Grey CLST/Shale
														152.40	153.92	CLAYSTONE	CLST	1.52				152.40	153.92	CLST, Shale; Flaky; grey/brown?
														153.92	155.44	CLAYSTONE	CLST	1.52				153.92	155.45	Grey claystone - mud is dark from well
														155.44	156.97	CLAYSTONE	CLST	1.52				155.45	156.97	Grey clayst
														156.97	158.49	SHALY SANDSTONE	SLT/SH	1.52				156.97	158.50	Brown/grey siltst, shale
														158.49	160.02	MUDSTONE	MST	1.52				158.50	160.02	Brown/grey shale
														160.02	161.54	CLAYSTONE	CLST	1.52				160.02	161.54	Brown/grey (dark) claystone, Cbr (?)
														161.54	163.06	CLAYSTONE	CLST	1.52				161.54	163.07	Dark grey clast, probably Cbr
														163.06	164.59	CLAYSTONE	CLST	1.52				163.07	164.59	Med to dark grey CLST
														164.59	166.11	CLAYSTONE	CLST	1.52				164.59	166.12	Dark grey clst
														166.11	167.64	CLAYSTONE	CLST	1.52				166.12	167.64	Grey clst, shale (some flaky)
														167.64	169.16	CLAYSTONE	CLST	1.52				167.64	169.16	Grey clst, shale (some flaky)
														169.16	170.68	SHALY SANDSTONE	SLT/SH	1.52				169.16	170.69	Shale, siltst, (grey, brown)
														170.68	172.21	CLAYSTONE	CLST	1.52				170.69	172.21	Clst, shale, grey
														172.21	173.73	SHALY SANDSTONE	SLT/SH	1.52				172.21	173.74	Med, grey slt/sst
														173.73	175.26	SHALY SANDSTONE	SLTST/CLST	1.52				173.74	175.26	Grey slt, clst
														175.26	176.78	SHALY SANDSTONE	SLTST/CLST	1.52				175.26	176.78	Grey slt, clst
														176.78	178.30	SHALY SANDSTONE	SLTST/CLST	1.52				176.78	178.31	Dark grey clst
														178.30	179.83	SHALY SANDSTONE	SLTST/CLST	1.52				178.31	179.83	Dark grey slt/clst
														179.83	181.35	CLAYSTONE	CLST	1.52				179.83	181.36	Dark grey clst/slt
														181.35	182.88	CLAYSTONE	CLST	1.52				181.36	182.88	Grey clst
														182.88	184.40	CLAYSTONE	CLST	1.52				182.88	184.40	Grey clst
														184.40	185.92	SHALY SANDSTONE	SLTST/CLST	1.52				184.40	185.93	Grey, slst, clst
														185.92	187.45	SHALY SANDSTONE	SLTST	1.52				185.93	187.45	Grey, slt
														187.45	188.97	SHALY SANDSTONE	SLTST	1.52				187.45	188.98	SLT, grey, fg
														188.97	190.50	SHALY SANDSTONE	SLTST	1.52				188.98	190.50	SLT, grey, fg
														190.50	192.02	SHALY SANDSTONE	SLTST	1.52				190.50	192.02	SLT, grey, fg
														192.02	193.54	SHALY SANDSTONE	SLTST	1.52				192.02	193.55	Grey SLT fg
														193.54	195.07	SHALY SANDSTONE	SLTST	1.52				193.55	195.07	Grey SLT fg
														195.07	196.59	SHALY SANDSTONE	SLTST	1.52				195.07	196.60	Grey SLT fg
														196.59	198.12	SHALY SANDSTONE	SLTST	1.52				196.60	198.12	Grey SLT fg
														198.12	199.64	SHALY SANDSTONE	SLTST	1.52				198.12	199.64	Grey SLT fg
														199.64	201.16	SHALY SANDSTONE	SLTST	1.52				199.64	201.17	Gray SLT with minor SST
														201.16	202.69	SHALY SANDSTONE	SLTST	1.52				201.17	202.69	Grey SLT with minor medium grained SST
														202.69	204.21	SHALY SANDSTONE	SLTST	1.52				202.69	204.22	Grey SLT fg
														204.21	205.74	SHALY SANDSTONE	SLTST	1.52				204.22	205.74	Grey SLT fg
														205.74	207.26	SHALY SANDSTONE	SLTST	1.52				205.74	207.26	Grey fg SLT & minor mg SST
														207.26	208.78	SHALY SANDSTONE	SLTST	1.52				207.26	208.79	Grey SLT fg
														208.78	210.31	SHALY SANDSTONE	SLTST	1.52				208.79	210.31	Grey SLT fg
														210.31	211.83	SHALY SANDSTONE	SLTST	1.52				210.31	211.84	Grey SLT & Slight grey mg SST (50%)
														211.83	213.36	SHALY SANDSTONE	SLTST	1.52				211.84	213.36	Grey SLT, minor v.fg mudstone
														213.36	214.88	SHALY SANDSTONE	SLTST	1.52				213.36	214.88	Grey fg SLt, Light grey mg SST
														214.88	216.40	SHALY SANDSTONE	SLTST	1.52				214.88	216.41	Grey fg SLT, Light grey SST (20%)
														216.40	217.93	SHALY SANDSTONE	SLTST	1.52				216.41	217.93	Grey fg SLT, minor light grey SST
														217.93	219.45	SHALY SANDSTONE	SLTST	1.52				217.93	219.46	Grey fg SLT, Light grey mg SST (20%)
														219.45	220.98	SHALY SANDSTONE	SLTST	1.52				219.46	220.98	Grey fg SLT, minor v.fg mudstone
														220.98	222.50	SHALY SANDSTONE	SLTST/SST	1.52				220.98	222.50	Light grey mg SST, minor grey SLT (10&)
														222.50	224.02	SHALY SANDSTONE	SLT/SH	1.52				222.50	224.03	Grey SLT fg, minor v.fg mudstone
														224.02	225.55	SHALY SANDSTONE	SLTST	1.52				224.03	225.55	Grey fg SLT, Light grey v.fg mudstone
														225.55	227.07	SHALY SANDSTONE	SLTST/SST	1.52				225.55	227.08	Light grey SST, minor grey fg SLT
														227.07	228.60	SHALY SANDSTONE	SLTST	1.52				227.08	228.60	Grey fg SLT
														228.60	230.12	SHALY SANDSTONE	SLTST	1.52				228.60	230.12	Grey fg SLT
														230.12	231.64	SHALY SANDSTONE	SLTST/SST	1.52				230.12	231.65	Grey fg SLT, Light grey v.fg mudstone
														231.64	233.17	SHALY SANDSTONE	SLTST	1.52				231.65	233.17	Grey fg SLT
														233.17	234.69	SHALY SANDSTONE	SLTST	1.52				233.17	234.70	Grey fg SLT
														234.69	236.22	SHALY SANDSTONE	SLTST	1.52				234.70	236.22	Grey fg SLT
														236.22	237.74	SHALY SANDSTONE	SST	1.52				236.22	237.74	Grey fg - mg SST
														237.74	239.26	SHALY SANDSTONE	SST	1.52				237.74	239.27	Lght grey mg-cg SST
														239.26	240.79	SHALY SANDSTONE	SST	1.52				239.27	240.79	Grey fg SLT & Light grey mg SST (50%)
														240.79	242.31	SHALY SANDSTONE	SST	1.52				240.79	242.32	Light grey mg SST grey fg SLT (10%)
														242.31	243.84	SHALY SANDSTONE	SST	1.52				242.32	243.84	Light grey mg-cg SST
														243.84	245.36	SHALY SANDSTONE	SST	1.52				243.84	245.36	Light grey mg-cg SST
														245.36	246.88	SHALY SANDSTONE	SST	1.52				245.36	246.89	Light grey mg-cg SST w. minor SLT
														246.88	248.41	SHALY SANDSTONE	SST	1.52				246.89	248.41	Light grey mg-cg SST w. minor SLT
														248.41	249.93	SHALY SANDSTONE	SST	1.52				248.41	249.94	Light grey mg-cg SST

													249.93	251.46	SHALY SANDSTONE	SST	1.52				249.94	251.46	Light grey mf-cf SST, grey SLT (& Hit water)
													251.46	252.98	SHALY SANDSTONE	SST	1.52				251.46	252.98	Light grey mg-cg SST, minor SLT
													252.98	254.50	SHALY SANDSTONE	SST	1.52				252.98	254.51	Light grey mg-cg SST, minor SLT
													254.50	256.03	SHALY SANDSTONE	SST	1.52				254.51	256.03	Light grey - light brown mg-cg SST
													256.03	257.53	SHALY SANDSTONE	SST	1.50				256.03	257.55	Light grey mg-cg SST
1	1	257.55	260.45	2.90	1.74	60.00%				15	W6	R6	4	257.53	259.27	SHALY SANDSTONE	SST	1.74						Medium to fine grained sandstone. Light grey to green, massive, one solid piece of core. No bedding, grains more Quarts and some FeMg dark minerals (mica?). Quarts is subrdouned, feldspars abundant.
2	1/2	260.45	261.97	1.52	2.40	157.89%				15	W6	R6	4	259.27	261.67	SHALY SANDSTONE	SST	2.40						Medium to coarse grained, light grey sandstone. One solid piece of core with no bedding. Quarts and feldspare aboundant. Spots of FeMg minerals, possibly biotite.
3	2	261.97	263.94	1.97	0.72	36.55%				15	W6	R6	4	261.67	262.39	SHALY SANDSTONE	SST	0.72						Medium grained light grey sandstone. No fracture or bedding, only stringers of organic dark material. Graines finer than above with no biotite. One singel solid piece of core. Massive.
4	2/3	263.94	265.15	1.21	2.60	214.88%				15	W6	R5	4	262.39	264.99	SHALY SANDSTONE	SST	2.60						Medium to fine grained light grey sandstone. Massive, with stringers of coal (?). Some at 20 degrees TCA. Stringers and patches of dark material increasing, SST is decreasing in biotite graines. Stringers of calcite, quartz also common.
5	3/4	265.15	266.82	1.67	1.52	91.02%		100.00		15	W6	R6	4	264.99	266.51	SHALY SANDSTONE	SST	1.52						Medium to fine graines SST. Light grey ans some biotite grains. Feldspars abundant, quarts main mineral. Subraounded , massive (no bedding).
6	4	266.82	269.72	2.90	3.07	105.86%										#N/A								
					1.00									266.51	267.51	SHALY SANDSTONE	SST	1.00						Light grey medium graines SST, hard in drilling, massive (no bedding) at 266.82 and 266.92m. Filled joints at 25-30 degres TCA, darger margins.
					2.07		0	100.00		14	W6	R6	4	267.51	269.58	SHALY SANDSTONE	SST	2.07						Sharp contact with SST above. Fine grained and silty SST, dark grey to brown, massive. Anuglar joints (filled with calcite) common.
7	5/6	269.72	272.62	2.90	1.85	63.79%	0	100.00		15	W6	R6	4	269.58	271.43	SHALY SANDSTONE	SST	1.85						Medium grey SST, fine grained, gets coarser to the bottom. Coal stringers and traces of plant fossils common.
8	7	272.62	272.9	0.30	1.26	420.00%	9	0.56	20	7	W6	R6	3	271.43	272.69	SHALY SANDSTONE	SST	1.26						Medium grey SST with pale brown hue, medum- coarse grained, trace coal and plant fragments at top of section, brown hue likely due to high feldspar content. Some grinding from the drill noticable. Bedding 90 degrees TCA, massive.
9	7	272.9	275.82	2.90	2.45	84.48%	0	100.00			W6	R5	4	272.69	275.14	SHALY SANDSTONE	SST	2.45						As above SST. Coarse- medium grained, massive with thin wispy mud layers >1mm, dominantly feldspar with aboundant biotite, bedding 90 degrees TCA.
10	7/8	275.82	278.42	2.60	3.00	115.38%	0	100.00			W6	R5	3	275.14	278.14	SHALY SANDSTONE	SST	3.00						As above but with more abundant plant material.
11	8/9	278.42	281.32	2.90	2.99	103.10%	2	100.00	20	14	W6	R5	3	278.14	281.13	SHALY SANDSTONE	SST	2.99						Hard drilling. As above, grey brown medium- coarse grained SST, massive. Minor wispy biotite rich layers, trace plant material
12	9/10	281.32	284.22	2.90	2.41	83.10%	0				W6	R5	3	281.13	283.54	SHALY SANDSTONE	SST	2.41						As above, but with slightly higher concentraion of wispy biotite rich and mud layers all <1mm, trace plant material. Massive.
13	10	284.22	286.22	2.60	3.00	115.38%	2	100.00			W6	R5	4	283.54	286.54	SHALY SANDSTONE	SST	3.00						As above, massive coarse- medium grained grey SST. 95 cm low angle joint starting at top of interval, splays off at 60 cm oriented 10 & 5 degreees TCA. Hoint is vuggy, filled with sulphides (>1%) mainly pyrite and clacite.
14	10/11	286.22	289.12	2.90	2.97	102.41%	0	100.00			W6	R5	4	286.54	289.51	SHALY SANDSTONE	SST	2.97						Grey, coarse grianed SST with trace plant materail. Massive, biotite rich.
15	12/13	289.12	292.02	2.90	2.65	91.38%	1	100.00	25	15	W6	R5	4	289.51	292.16	SHALY SANDSTONE	SST	2.65						As above massive grey mg-cg SST, but with a noticible increasein plant material and silty wisps oriented 90 deg TCA.
16	13	292.02	295.36	2.74	3.09	112.77%	2	100.00	10	15	W6	R5	4	292.16	295.25	SHALY SANDSTONE	SST	3.09						As above, but wispy silt layers and coal fragments have no set orientation. Joints oriented 40 degrees TCA. SST is darker than above due to increased silty wisps and biotitic content.
17	14/15	295.36	298.25	2.90	2.76	95.17%	2	100.00	25-30	15	W6	R5	4	295.25	298.01	SHALY SANDSTONE	SST	2.76						SST, fine grained, medium grey, aboundant plant fragments/coal. SST is dense and no biotie. A low angle fracture from top oto 60 cm down with (very rough) to surface. The fracture is partly in the last run, makes it about 1m long, 0-5 deg TCA. Massive bedding (MBE), plant fragments oriented from 50 to 90 degrees TCA. TCA. Massive bedding (MBE), plant fragments
18	15	298.25	300.39	2.13	2.30	107.98%	1	100.00	25	15	W6	R6	4	298.01	300.31	SHALY SANDSTONE	SST	2.30						Fine to medium grained light to MGR sandstone, amount and size of the organic fragments are increasing relatively.
19	16	300.39	303.29	2.90	2.83	97.59%	0	100.00		15	W6	R6	4	300.31	303.14	SHALY SANDSTONE	SST	2.83						Intervals of light and MGR SST, med grained plant fragments present, massive SST. Once solid piece of core in the core barrel. A filled fracture (with calcite) close to the bottom at ~ 30 deg TCA.
20	17	303.29	306.19	2.90	2.76	95.17%	1	100.00	25	15	W6	R6	4	303.14	305.90	SHALY SANDSTONE	SST	2.76						Light to med grey SST, fine to med. Grained, plant fragments present, santstone is massive and hard to drill, some parts are coarse grained.
21	18	306.19	309.09	2.90	3.13	107.93%	0	100.00		15	W6	R6	4	305.90	309.03	SHALY SANDSTONE	SST	3.13						Light grey medium grained SST. Color is ligher and the amount of plant and organic fragments are less than above. Run massive SST shows no bedding but a hammer breakage displayed a planer break with 85 deg TCA (bedding?).
22	19/20	309.09	311.99	2.90	3.00	103.45%	1	100.00	30	15	W6	R6	4	309.03	312.03	SHALY SANDSTONE	SST	3.00						Light grey medium to fine grained SST, intervals of darker grey SST due to increas in the percentage of organic materail. Stringers of coal (?) are also prsent. A probable filled joint with low angel and calcite filling in the bottom.
23	20/21	311.99	314.89	2.90	2.92	100.69%	1	100.00	25	13	W6	R6	4	312.03	314.95	SHALY SANDSTONE	SST	2.92						Along low angle joint at the top of the run, filled with calcite. Fine to med grained ST, light grey, massive SST. Plant fragments present.
24	21/22	314.89	317.79	2.90	2.85	98.28%	1	100.00	25	15	W6	R6	4	314.95	317.80	SHALY SANDSTONE	SST	2.85						Fine to med grained, light grey SST. The percentage of organic fragments are relatively decreasing. Calcite filled fracture at the middle of the run is present. SST is massive with no noticable bedding.
25	22/23	317.79	320.69	2.90	3.00	103.45%	3	93.33		15	W6	R5	3	317.80	320.80	SHALY SANDSTONE	SST	3						Fine grained SST, med grey. Broken core arund the depth of 320m (80cm from bottom). A low angle fractre, close spacing (~10cm) fractures about the end of the run. Water lost reported by driller.
26	23/24	320.69	323.59	2.90	2.79	96.21%	6	93.19		15	W6	R5	4			#N/A								A low angle fracture, about 6cm from top (~320m depth). Fault and gouge (90 deg TCA) at the depth of 323.64, low angle (~30 deg TCA) fracutre at the depth of 321.5m. Medum grey SST, SLT and sandy SLT.
					1.40									320.80	322.20	SHALY SANDSTONE	SST	1.40						
					0.45									322.20	322.65	SHALY SANDSTONE	SLT	0.45						
					0.94									322.65	323.59	UNDIFFERENTIATED BEDROCK	sandy SLT	0.94						
27	24`	323.59	326.02	2.45	2.32	94.69%	1	100.00	25	15	W6	R6	3	323.59	325.91	SHALY SANDSTONE	SST	2.32						Medium grey fine grained SST. Matrix has 0.50cm at the bottom more silty and fine grained.
28	24/25	326.02	327.85	1.83	1.78	97.27%		100.00			W6	R5	4	325.91	327.69	SHALY SANDSTONE	SST	1.78						SST, medium to fine grained. Medium grey with 0.6m from top with plants remains at the bottom with few silty bands at 90 degrees to core axis. The rest is massive SST.
29	25/26	327.85	330.75	2.90	3.09	106.55%	2	100.00	25	11	W6	R6	4	327.69	330.78	SHALY SANDSTONE	SST	3.09						SST medium grained , medium grey. 0.26m from top comglomerate about 10cm. 40 cm from top, 30cm stringers of CLST at 10 degrees TCA.
30	26/27	330.75	332.27	1.52	1.42	93.42%	3	96.48	3	12	W6	R6	4	330.78	332.20	SHALY SANDSTONE	SST	1.42						SST, medium grained, medium grey as above with few dark grey silty stringers at 90 degrees.
31	27	332.27	333.48	1.21	1.14	94.21%	1	100.00	225	15	W6	R6	3	332.20	333.34	SHALY SANDSTONE	SST	1.14						Sandstone med grained massive, med grey. Plant frag.
32	27/28	333.48	336.80	3.01	2.99	99.34%										#N/A								
					2.08		0	100.00	25	14	W5	R6	3	333.34	335.42	SHALY SANDSTONE	SST	2.08						Medium grey, medim grained, masssive, carbonate stringer.
					0.91		2	97.80	25	15	W5	R6	3	335.42	336.33	SHALY SANDSTONE	SST	0.91						Medium to dark grey, medium grained, massive. 2 joints at 46 to 49 cm from bottom. Jjoint average 80 degrees. Smells of sulphides. Light altered circles from 68-89m from bottom.
33	28/29	336.80	339.28	2.90	2.85	98.28%	3	97.89	25	15	W5	R6	3	336.33	339.18	SHALY SANDSTONE	SST	2.85						25 cm of top has light alaltered spots. Medium -dark grey, med graiend, massive. Trace carbonate.
34	30	339.28	342.18	2.90	3.07	105.86%	2	99.02	25	14	W5	R6	3	339.18	342.25	SHALY SANDSTONE	SST	3.07						Med to dark grey, med grained. Chaotic mix of either light coloured alteration spots or rip up clasts from an adjacent rock sources. Fossils and plant fragments.
35	30/31	342.18	345.08	2.90	2.80	96.55%	3	100.00	25	15	W6	R6	3	342.25	345.05	SHALY SANDSTONE	SST	2.80						Med-dark grey, med grained. Lots of fossils. Burrowing traces and carbonate shells. Said alteration above maybe fossils.
36	31/32	345.08	348.10	2.90	3.02	104.14%	4	100.00								#N/A								
					1.03		0	100.00	25	15	W6	R5	3	345.05	346.08	SHALY SANDSTONE	SST	1.03						Med-dark grey, med grained fossils and burrowing traces.
					0.46		1	100.00	25	15	W6	R5	3	346.08	346.54	SANDY SHALE	SHALE	0.46						"stepped" fault surface. Dary grey, bubbled slightly.
					1.53		3	100.00	25	15	W6	R5	3	346.54	348.07	SHALY SANDSTONE	SST	1.53						Gradational/ stringer change between upper shale unit with med- dark grey, med grained SST. Numberous coal stringers.
37	32	348.10	350.88	2.36	2.43	102.97%	10	88.89	25	12	W6	R6	3	348.07	350.50	SHALY SANDSTONE	SST	2.43						Top 97cm silty and coal stringers (vitrain and durain). Medium- dark grey SST. Medium grained.
38	33/34	350.88	353.32	2.44	2.90	118.85%	5	96.55	25	13	W6	R5	4	350.50	353.40	SHALY SANDSTONE	SST	2.90						SST medium grained, light grey. 1.34m from top, 5cm max broken with stringers of coal at 90 throughout the core.
39	34	353.32	355.15	1.83	1.30	71.04%	1	100.00	25	13	W6	R5	4	353.40	354.70	SHALY SANDSTONE	SST	1.30						SST as above with coal stringers all over the core at 85 degrees.
40	34/35	355.15	357.59	2.44	2.89	118.44%	2	97.58	25	15	W6	R5	4	354.70	357.59	SHALY SANDSTONE	SLT	2.89						SLT as medium grey, 0.7m from the top. With close space of high carbonate veining (???) 1-2mm at 85 degrees TCA
41	35/36	357.59	360.49	2.90	2.93	101.03%	3	100.00	25	15	W6	R5	4	357.59	360.52	SHALY SANDSTONE	SST	2.93						SST medium grained, medium grey, 0.4cm fm from the top, 0.72m ??? Close spacing of high carbonate clay ??? Stringers interbedded with SST at 85 degrees TCA.
42	36/37	360.49	362.17	1.68	1.50	89.29%	1	100.00	25	15	W6	R6	4	360.52	362.02	SHALY SANDSTONE	SST	1.50						Coarse grained, light grey, massive SST, 3cm coal band on the top of the run.
43	37/38	362.17	346.30	2.13	1.80	84.51%	1	100.00	25	15	W6	R6	4	362.02	363.82	SHALY SANDSTONE	SST	1.80						Coarse grained, light grey massive sandstone.
44	38	346.30	366.74	2.40	2.13	88.75%		100.00			W6	R6	4	363.82	365.95	SHALY SANDSTONE	SST	2.13						Coarse grained light grey massive SST.
45	38/39	366.74	368.87	2.13	2.68	125.82%	1	100.00	30	15	W5	R6	4	365.95	368.63	SHALY SANDSTONE	SST	2.68						SST as above, undulos joints with calcite, 0.20m at the top with stringers of hight carb clayst at 85 degrees TCA.
46	40	368.87	369.62	2.54	1.40	55.12%										#N/A								
		369.62	369.82		0.80						W5	R4	4	368.63	369.43	SHALY SANDSTONE	SST	0.80						SST as above
														369.33	369.43	CLAYSTONE	CLST	0.10						HCCST mg carb cl?? Roof ??? 0.10 cm roof sample
		369.82	370.13		0.20						W5	R4	4	369.43	369.53	CLAYSTONE	CLST	0.10			7535	369.72	369.82	HCCST mg carb cl?? Roof ??? 0.10 cm roof sample
		370.13	370.22		0.36									369.53	369.89	COAL	COAL	0.36		Seam 5	7536	369.82	370.18	Dull hard coal, possible of coal loss at the bottom.
														369.89	369.91	LOST CORE	LOST CORE	0.02			ns			
		370.22	371.46		0.04									369.91	369.95	DULL COAL	HCCST	0.04			7537	370.18	370.22	HCCST hight carb clay seam, floor sample.
47	40/41	371.46	372.98	2.74	2.74	100.00%										#N/A								
														369.95	370.01	CLAYSTONE	CLST	0.06			7537	370.22	370.28	Claystone, dark grey, 0.60m from top interveded units SST lamination. 6cm floor sample.
					1.50		1	100.00	25	15	W6	R4	4	370.01	371.45	CLAYSTONE	CLST	1.44						Claystone, dark grey, 0.60m from top interveded units SST lamination. 6cm floor sample.
					1.24		2	100.00	30	9	W6	R5	4	371.45	372.69	SHALY SANDSTONE	SST	1.24						SST, light grey, medium grained. Some stringers of coal at 85 degrees TCA.
48	41/42	372.98	375.72	2.74	3.18	116.06%	4	100.00	25	13	W6	R5	3	372.69	375.87	SHALY SANDSTONE	SST	3.18						Medium grianed, medium grey SST. Silty and coal stringers at 1.27m from top is a 1-2cm coal stringer.
49	42/43	375.72	378.62	2.90	2.91	100.34%	7	96.22	25	13	W6	R5	3	375.87	378.78	SHALY SANDSTONE	SST	2.91						MeMedium grianed, med grey SST. Silty stringers. Top 69cm. And also at 150 from top. Plant fragments and burrow traces.
50	43/44	378.62	381.52	2.90	2.89	99.66%	1	100.00	25	15	W6	R6	4	378.78	381.67	SHALY SANDSTONE	SST	2.89						Med graine, med grey SST. Dark strigners. 75cm carbonate vein at 20-50 degrees <. Bubbling. Pyrite stringer 3cm from top.

51		381.52	384.42	2.90	2.84	97.93%	2	100.00	25	15	W6	R5	3	381.67	384.51	SHALY SANDSTONE	SST	2.84						Med grained, medium grey SST. Pyrite and plant lenses. Carbonate vein at 0-30 degrees <.
52	45/46	384.42	387.32	2.9	2.80	96.55%										#N/A								
					1.37		1	100.00	25	15	W6	R5	4	384.51	385.88	SHALY SANDSTONE	SST	1.37						137cm of med grained, grey SST. W ligher grains, from top, 11cm of coal stringers and lenses which bubble.
					1.43		0	100.00		15	W6	R5	4	385.88	387.31	SHALY SANDSTONE	SST	1.43						Distinct change at 137cm from top from above lithology, leads to dark grey fine grey siltyysandstone. This lothology is 9cm before gradually grading into a light colourd finer grained lith.
53	46/47	387.32	390.22	2.90	2.69	92.76%	1	53.16	25	15	W6	R5	4	387.31	390.00	SHALY SANDSTONE	SST	2.69						Med grey, fine graiend SST. Bottom 1.29m a bit ligher than above. Thin coal stringers. Carbonate lenses and pinkish discolorment.
54	48	390.22	392.96	2.74	3.12	113.87%	0	100.00		15	W6	R5	4	390.00	393.02	SHALY SANDSTONE	SST	3.02						Med grey, med-fine greianed SST. Thin coal/ plant fragments. Bottom 9cm grades into dark grey with bubbling coal stringers and lenses.
	48													393.02	393.12	SHALY SANDSTONE	SST	0.10			7538	392.86	392.96	Med grey, med-fine greianed SST. Thin coal/ plant fragments. Bottom 9cm grades into dark grey with bubbling coal stringers and lenses.
55	48	392.96	395.86	2.90	2.87	98.97%										#N/A								
					1.39		>25	0.00	10	3	W5	R2	3	393.12	394.17	COAL	coal	1.05		Seam 4	7539	393.31	394.35	Seam # 1? 5% blk massive shale 95% coal. Bright and dull. Cleats >1mm, 2% pyrite. Concentrated along fracture. 4 sks @ 90 degres includes upper contact with sh. Numberous very thin
	48						9	87.84	20	10	W5	R4	3	394.17	394.27	SHALE	sh	0.10			7540	394.35	394.45	Shale 30% SLTST >0% shale black, massive, thinly laminated beds at 90 degress. SLTST: light grey, fg to mg, thinly to medium laminated beds at 90 degrees, 2 ss @ 45 degrees.
	48				1.48		9	87.84	20	10	W5	R4	3	394.27	395.65	SHALE	sh	1.38						Shale 30% SLTST >0% shale black, massive, thinly laminated beds at 90 degress. SLTST: light grey, fg to mg, thinly to medium laminated beds at 90 degrees, 2 ss @ 45 degrees.
														395.65	395.74	LOST CORE	LOST CORE	0.09						
56	50	395.86	397.99	2.13	2.11	99.06%										#N/A								
					1.23		0	100.00			W5	R6	4	395.74	396.97	SHALY SANDSTONE	SST	1.23						Massive salt and pepper SST. Medium to coarse grained, lower contact at 75 degrees, a wispy sh beds at 0 degrees.
					0.88		0	100.00			W5	R6	4	396.97	397.85	UNDIFFERENTIATED BEDROCK	SCTST	0.88						Massive, dark grey , medium to fine grained 1 fr @ 50 degrees. Selverl very thinly laminated clacite veinslets.
57	51	397.99	400.89	2.90	2.83	97.59%	6	100.00								#N/A								Light grey motteled appearance buut massive fine graineed to medium grained, very thinly laminated betting at 45 degrees.
					0.45						W5	R6	4	397.85	398.30	SHALY SANDSTONE	SLTST	0.45						Alternating SLST/SST. SLTST as above, thinly laminated beds at 90 degrees. SST light grey, coarse grained, thinly laminated to medium. All fr 85 to 90 deg. Bedding at 90 deg, calcite filling fractures. Plant materail in SST. 85% SST and 15% SCTST.
					2.38		6	100.00	20	13	W5	R6	4	398.30	400.68	UNDIFFERENTIATED BEDROCK	SCTST	2.38						
58	51	400.89	401.37	0.48	0.63	131.25%										#N/A								Lost circulation on Rub 58 (right @ fr in run 58)
					0.63		1	0.63	20	15	W6	R7	4	400.68	401.31	SHALY SANDSTONE	SLT	0.63						Same as above unit, fr @ ~ 85 & planar. Increasing amount of plant material & coal spars. Massive pyrite infilling the fr.
59	51 & 52	401.37	403.96	2.59	2.60	100.39%	3	2.60	25	15	W6	R7	4	401.31	403.91	SHALY SANDSTONE	SST	2.60						light grey massive 2 fr @ 15° . 1 15° Fr healed and filled with calcite (1mm diametre). The other 15° fr filled with rock flower, both planar, very coarse grained. Each 15 ° fr 35 cm in length. Plant material & cool spars
60	52	403.96	406.86	2.90	2.67	92.07%	0	2.67	-	-	W6	57	4	403.91	406.58	SHALY SANDSTONE	SST	2.67						As above SST
61	53	406.86	409.45	2.59	2.12	81.85%	2	2.12	20	15	W6	R7	4	406.58	408.70	SHALY SANDSTONE	SST	2.12						As above SST, 1 planar fr @ 90° , 1 planar fr @ 85°
62	53 & 54	409.45	411.58	2.13	2.69	126.29%	0	2.69	-	-	W6	R7	4	408.70	411.39	SHALY SANDSTONE	SST	2.69						As above SST
63	54 & 55	411.58	414.48	2.90	3.12	107.59%	0	3.12	-	-	W6	R5	4	411.39	414.51	SHALY SANDSTONE	SST	3.12						Light-med grey, med grained SST. A single dark stringer 35 cm from top
64	55 & 56	414.48	417.22	2.74	2.74	100.00%	3	2.70	25	15	W6	R6	4	414.51	417.25	SHALY SANDSTONE	SST	2.74						As above SST. The end piece at 417.22 m depth is very smooth like it was cut.
65	56 & 57	417.22	420.12	2.90	2.09	72.07%	8	1.87	25	13	W6	R5	4	417.25	419.34	SHALY SANDSTONE	SST	2.09						As above SST. At 16 cm from bottom, there is a joint with mobilized clay from the sand's matrix. A bit crumbly; prob from water intrusion and how they lost circulation here.
66	57 & 58	420.12	422.10	1.98	2.71	136.87%	5	2.71	25	14	W6	R6	4	419.34	422.05	SHALY SANDSTONE	SST	2.71						As above SST. Dark stringer in 2 of the joints.
67	58 7 59	422.10	425.00	2.90	2.97	102.41%	1	2.97	25	15	W6	R6	4	422.05	425.02	SHALY SANDSTONE	SST	2.97						As above SST. Bottom 10 cm grades into dark shale; pyrite blebs; bubbling. Gauge clay in joint, possibly slicks
68	59 & 60	425.00	427.90	2.90	2.28	78.62%	>25									#N/A								
					0.79		6	0.71	20	11	W6	R6	4	425.02	425.71	SHALY SANDSTONE	SLTST	0.69						Fine grained, med grey.
														425.71	425.81	SHALY SANDSTONE	SLTST	0.10			7549	425.70	425.80	Fine grained, med grey.
														425.81	425.96	SHALY SANDSTONE	SHYCOAL	0.15		Seam 3	7550	425.80	425.95	Dull black fibrous coal
					0.26		1	0.26	20	13	W6	R5	4	425.96	426.07	COAL	COAL	0.11		Seam 3	7541	425.95	426.06	Dull black fibrous coal
					0.38		>25							426.07	426.45	SHALY SANDSTONE	SHYCOAL	0.38		Seam 3	7542	426.06	426.44	Dark grey shale. Bubbling, Carb stringers. Roof.
					0.13									426.45	426.58	COAL	COAL	0.13		Seam 3	7543	426.44	426.57	Dull black fibrous coal
					0.33									426.58	426.91	COAL	COAL	0.33		Seam 3	7544	426.57	426.90	Dark black crushy coal, bubbling
					0.16									426.91	427.01	SHALE	SH	0.10		Seam 3	7545	426.90	427.00	Parting. Med grain med grey SST
														427.01	427.07	SHALE	SH	0.06		Seam 3	7546	427.00	427.06	Parting shale black massive, crushed, broken,
														427.07	427.46	LOST CORE	LOST CORE	0.39		Seam 3	ns			
					0.13									427.46	427.59	COAL	COAL	0.13		Seam 3	7547	427.06	427.19	Dull coal, 0.5% calcite stringers, broken chunks
					0.10									427.59	427.69	CARBONACEOUS MUDSTONE	CARBSH	0.10			7548	427.19	427.29	Carb SH/SLTST
69		427.90	430.80	2.90	2.56	88.28%	11									#N/A								
														427.69	427.74	LOST CORE	LOST CORE	0.05						
					1.07		8	0.81	25	13	W6	R5	4	427.74	428.81	SHALY SANDSTONE	SLST	1.07						Dark grey SLT/SST
					1.49		3	1.44	25	15	W6	R5	4	428.81	430.30	SHALY SANDSTONE	SST	1.49						Med grey, med grain SST, Dark grey stringers
70	61	430.80	432.93	2.13	2.62	123.00%	3	100.00	25	15	W6	R7	4	430.30	432.92	SHALY SANDSTONE	SST	2.62						Salt n Pepper colour, light gr, very coarse grained. All fr @ 90 ° , plant material, coal spars a few wispy shale beds @ ~90°
71	61 & 62	432.93	435.83	2.90	2.79	96.21%										#N/A								
					1.24		2	1.25	25	15	W6	R7	4	432.92	434.16	SHALY SANDSTONE	SST	1.24						As above SST, 2 fr @ 90° , several wispy Sh beds @ 90° .
					0.11		2	0.00	10	5	W6	R4	3	434.16	434.27	CARBONACEOUS MUDSTONE	Carb Sh	0.11						Black massive calcite along the Fr. 1 SS @ 45° , very fine grained
					1.55		1	100.00	25	15	W6	R7	4	434.27	435.82	SHALY SANDSTONE	SST	1.55						As above SST
72		435.83	438.73	2.90	2.38	82.07%										#N/A								
	62 & 63				2.26		1	2.26	25	15	W6	R7	4	435.82	438.08	SHALY SANDSTONE	SST	2.26						As above SST fr @ 90° , rock flower.
	63				0.06		2	-	10	5	W6	R3	4	438.08	438.14	SHALY SANDSTONE	SLT	0.06						Dark gr. Med to fine, ss @ 55°
	63				0.06		-	-	-	-	W6	R7	4	438.14	438.20	SHALY SANDSTONE	SST	0.06						As above SST
73	63	438.73	440.56	1.83	2.33	127.32%										#N/A								
					0.74		1	0.74	25	15	W6	R6	4	438.20	438.94	SHALY SANDSTONE	SST	0.74						As above SST, except for increasing amount of plant material, cool spars.
	63				0.09		1	-	18	15	W6	R4	3	438.94	439.03	SHALY SANDSTONE	SLT	0.09						1 fr @ ~ 90° , wispy shale beds @ 90°. Almost planar contacts above & below dark grey, fine to medium grained, massive. 2cm crushed zone @ base. All fr & bedding.
	63 & 64				1.50		5	1.45	25	7	W6	R5	3	439.03	440.53	SHALY SANDSTONE	SST	1.50						As above SST except for SH beds & fr @ 65°
74		440.56	443.46	2.90	2.93	101.03%										#N/A								
	64 & 65				2.71		4	2.71	10	15	W6	R6	4	440.53	443.24	SHALY SANDSTONE	SST	2.71						As above SST, all SS @ 45° . Bedding @ 90° . As above SST except several medium laminated CLT & Sh beds
	65				0.22		>25	0.00	10	2	W6	R6	1	443.24	443.46	CARBONACEOUS SILTSTONE	Carb-MST	0.22						Broken crushed coal w/ Mdst discs. Dark brownish black Mdst that is fine grained with numerous SS. The entire interval is a fault zone. 90% Mdst, 10% coal
75		443.46	446.36	2.90	1.88	64.83%										#N/A								
	65				0.87		19	0.00	10	5	W6	R2	2	443.46	444.23	SHALY SANDSTONE	SLST	0.77						As above SST. 60% SLTST & 40% SST. IB SS & SCTST. SLST: med laminated, light grey. 75° bedding, mdium grained massive with numerous thinly to medium shale bed. @ 70° all SS @ 75°
	65						19	0.00	10	5	W6	R2	2	444.23	444.33	SHALY SANDSTONE	SLST	0.10			7901	444.23	444.33	As above SST. 60% SLTST & 40% SST. IB SS & SCTST. SLST: med laminated, light grey. 75° bedding, mdium grained massive with numerous thinly to medium shale bed. @ 70° all SS @ 75°
	65 & 66				1.01		>25	0.00	3	0	W6	R0	2	444.33	444.96	COAL	Coal	0.63		Seam 1	7902	444.33	444.96	Bright & dull, crushed & broken into small clasts; very soft, bubbled & hissed vigorously for 10min.
													2	444.96	445.34	COAL	Coal	0.38		Seam 1	7903	444.96	445.34	Bright & dull, crushed & broken into small clasts; very soft, bubbled & hissed vigorously for 10min.
														445.34	446.10	LOST CORE	LOST CORE	0.76		Seam 1	ns			Probably Coal
														446.10	446.40	LOST CORE	LOST CORE	0.30		Seam 1	ns			Parting - Probably Carbonaceous Mudstone
76		446.36	448.80	2.44	2.43	99.59%										#N/A								
	66				1.23		>25	100.00	25	9	W6	R2	4	446.40	447.03	COAL	Coal	0.63		Seam 1	7904	446.36	446.99	Dull & bright coal black 1/2 mm cleating in placer: 0.5% calcite veins along fr. All fr @ 80° to 90° . Very hard for
														447.03	447.63	COAL	Coal	0.60		Seam 1	7905	446.99	447.62	coal. No partings. Hissed/bubbled for 20 minutes. Very hard for coal, but light.
	66						>25	0.79	25	12	W6	R4	4	447.63	447.73	SHALY SANDSTONE	SLST	0.10			7906	447.62	447.72	Clark grey, med to fine, all fr ~ 90° . Last 15 cm broken in the shoe. Carb material; several coal stringers. 1-2 cm coal bed (crushed)
	66				1.20		>25	0.79	25	12	W6	R4	4	447.73	448.83	SHALY SANDSTONE	SLST	1.10						Clark grey, med to fine, all fr ~ 90° . Last 15 cm broken in the shoe. Carb material; several coal stringers. 1-2 cm coal bed (crushed)
77		448.80	451.54	2.74	2.73	99.64%										#N/A								
	66 & 67				0.52		8	0.00	20	9	W6	R5	3	448.83	449.35	SHALY SANDSTONE	SLT	0.52						Light grey, fine to med grained; numerous fractures @ 55° . 2% calcite infilling. Fr coal spars
	67				0.15		4	0.00	25	5	W6	R3	3	449.35	449.50	CARBONACEOUS MUDSTONE	Carb Sh	0.15						Brown/Black 30% thinly laminated coal beds. Bubbled and hissed. 3 fr @ 90° . 1 SS @ 90° . Calcite along fr.
	67				1.68		7	1.56	25	14	W6	R4	3	449.50	451.18	UNDIFFERENTIATED BEDROCK	SCTST	1.68						Brownish grey, med to fine, massive, vuggy places. Several medium laminated coal beds @ 90° .
	67				0.38		3	0.20	25	8	W6	R7	3	451.18	451.56	SHALY SANDSTONE	SST	0.38						Light grey, coarse to very coarse grained. Broken along shale beds. Shale beds @ 90° . Coal spars, plant material.
78		451.54	454.44	2.90	2.96	102.07%										#N/A								
	67 & 68				1.19		6	1.06	25	9	W6	R7	3	451.56	452.75	SHALY SANDSTONE	SST	1.19						As above SST. All fr @ 75° to 90° .
	68				0.06		-	-	-	-	W6	R0	4	452.75	452.81	COAL	Coal	0.06						Dull black, calcite along fr. Fr @ 90°
	68				0.99		4	0.71	25	15	W6	R4	3	452.81	453.80	SHALY SANDSTONE	SLT	0.99						Dark grey, fine to med grained, massive.
	68				0.04		5	-	25	7	W6	R0	3	453.80	453.84	COAL	Coal	0.04						
	68				0.68		4	-	25	7	W6	R4	3	453.84	454.52	SHALY SANDSTONE	SLT	0.68						As above SLT, 1 SS @ 45° . 1 SS @ 75° , 2 Fr @ 90°

79		454.44	457.34	2.90	2.94	101.38%										#N/A								
					2.94		9	2.74	10	10	W6	R4	3	454.52	457.46	CARBONACEOUS MUDSTONE	Carb Sh	2.94						SLT with shale & coal beds. CST light gray, massive, fine to medium grained. 3 (2cm thick) coal beds @ 90° 2 SS @ 45° , all other fr @ 90° .
80 (78	69 & 70	457.34	460.24	2.90	2.74	94.48%										#N/A								
					2.42		13	2.18	25	14	W6	R5	4	457.46	459.88	SHALY SANDSTONE	SST>SLT	2.42						Dark med gray, med grain SST grading into dark grey SLT. Very thin dark grey strings 80 cm from top. At 120cm from top, med shiny black coal stringers. 1-10mm; cleats. At 135cm from top, 5cm shaley-coal w/ cm-long flakes of pyrite
					0.32		6	0.00	10	7	W6	R2	1 to 2	459.88	460.20	MUDSTONE	MDST	0.32						Dark grey mudstone, smooth, no visible grains. Carb vein, crushed. Joint @ 25° .
81 (79	70 & 71	460.24	463.14	2.90	2.74	94.48%	14									#N/A								
					0.91		6	0.77	25	13	W6	R5	4	460.20	461.11	SHALY SANDSTONE	SST	0.91						Fine grained SST, med to dark grey. Carb veins in joints 5 - 15 cm from top. Light, thin bedding into SLST aroung 80-90cm from top.
					0.52		3	0.52	25	11	W6	R5	3	461.11	461.63	SHALY SANDSTONE	SST	0.52						SLST strings grade quickly into med grey, med grain SST. Carb flecks in SST, Pyrite flecks in joints.
					1.31		5	1.22	20	14	W6	R5	3	461.63	462.94	SHALY SANDSTONE	SLT	1.31						Med grey SLST. 5cm dark mudstone 20 cm from Bottom. Has pyrite leafs and white carb strings; bubbles. Bottom 5 cm is med grey, med grained SST.

Geological Borehole Log: RAV-09-001

Client: CJV
Project: Raven
Logged By: Henry Kim, Farshad Shirmoh

Hole Number: RAV-09-001
Date Hole Started: Jun 01 2009
Date Hole Finished: Jun 03 2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 106.55m
Depth of Casing: 4.60m
Core Size: Modified PQ (3 1/4')
Page: 1 of 4

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
SS= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quaility	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Lithology	Length	Lost Core	Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0	1.08	OVERBURDEN	OVBDN							0.00-1.31m Overburden
1	1	0.76	3.20	2.44	2.60	106.56%																		
							12	0.85	25	13	W4	R6	4	1.08	3.68	SHALY COAL	Sst	2.60						Light grey, mg-cg, massive Sst, joints ~90, light brown to red bandings(?) or staining on the rock angled @ 75°, v.thin (~2mm) dark coal (?) seam running @75°,
2	1,2	3.20	6.25	3.05	2.38	78.03%										#N/A								
							>25	0.55	0-20	7	W3-5	R3-6	4	3.68	6.06	SHALY COAL	Sst	2.38						*Rock Loss*
														6.06	6.73	LOST CORE	Lost Core	0.67	0.67					*Rock Loss*
3	2	6.25	9.30	3.05	2.36	77.38%							4			#N/A								
							0	100.00%			W6	R6		6.73	7.57	SHALY COAL	Sst	0.84						Light
														7.57	7.67	SHALY COAL	Sst	0.10	0.10		07551	7.04	7.14	*Roof*
														7.67	8.31	LOST CORE	Lost Core	0.64	0.64	Seam 3	ns			*Coal Loss*
							>25	0.00%	10	5	W5	R1		8.31	9.17	COAL	Coal	0.86		Seam 3	07552	7.14	8.00	Bright
														9.17	9.22	LOST CORE	Lost Core	0.05	0.05	Seam 3	ns			*Coal Loss*
														9.22	9.32	MUDSTONE	Mdst	0.10	0.10		07553	8.00	8.10	*Floor*
							4	60.71%	25	13	W5	R5		9.32	9.78	MUDSTONE	Mdst	0.46						Light
4	2,3	9.30	12.35	3.05	2.98	97.70%										#N/A								
							17	58.97%	25	13	W5	R5	4	9.78	11.73	MUDSTONE	Mdst	1.95						Water
														11.73	11.80	LOST CORE	Lost Core	0.07	0.07					*Rock Loss*
							2	80.58%	25	15	W6	R5		11.80	12.83	SHALY COAL	Sst	1.03						Light
5	3,4	12.35	15.40	3.05	2.93	96.07%										#N/A								
							10	89.76%	20	13	W5	R5	4	12.83	15.76	SHALY COAL	Sst	2.93						Light grey, thin bedded, Sst, fg.-mg., fractures at different angles, bedding about 85°-90° TCA
														15.76	15.88	LOST CORE	Lost Core	0.12	0.12					*Rock Loss*
6	4,5	15.40	18.45	3.05	2.95	96.72%										#N/A								
							9	93.22%	20	15	W5	R5	4	15.88	18.83	SHALY COAL	Sst	2.95						Light grey, mg., Sst, thinly bedded, bedding at about 85°-90° TCA, thin stringers of coal are present Fracture surfaces are sometimes stained with iron oxide.
														18.83	18.93	LOST CORE	Lost Core	0.10	0.10					*Rock Loss*
7	5,6	18.45	21.50	3.05	3.00											#N/A								
						98.36%	3	100.00%	25	15	W6	R6	4	18.93	21.93	SHALY COAL	Sst	3.00						Mg.-Fg., Sst, thinly bedded with less coal stringers than above, more fresh surfaces on the fractures
														21.93	21.98	NDIFFERENTIATED BEDROC	Rock	0.05	0.05					*Rock Loss*
8	5,6	21.50	24.55	3.05	2.84	93.11%										#N/A								
								100.00%			W6	R6	4	21.98	22.43	SHALY COAL	Sst	0.45						Massive, light grey, mg., Sst with trace fossils and fossil fragments
														22.43	22.53	SHALY COAL	Sst	0.10			07554	21.67	21.77	*Roof*
														22.53	22.65	LOST CORE	Lost Core	0.12	0.12		ns			*Rock Loss*
														22.65	22.79	COAL	Coal	0.14		Seam 2	07555	21.77	21.91	bright and some dull, about 70% bright
														22.79	23.34	LOST CORE	al, Rock Ba	0.55		Seam 2	07556	21.91	22.46	bright coal veins in the dull coal(or matbe v.fg. carbonaceous rock)
														23.34	23.46	COAL	Coal	0.12		Seam 2	07557	22.46	22.58	bright with some dull coal, light and >80% bright coal
														23.46	23.55	LOST CORE	Lost Core	0.09	0.09	Seam 2	ns			*Coal Loss*
														23.55	24.13	LOST CORE	al, Rock Ba	0.58			07558	22.58	23.16	veining of coal in the rock
														24.13	24.23	SHALY COAL	Sst,Sltst	0.10			07559	23.16	23.26	*Floor*
														24.13	24.93	SHALY COAL	Sst,Sltst	0.80						brown to light grey, sandy siltstone(floor)
9	6,7	24.55	27.60	3.05	3.00											#N/A								
						98.36%	>25	2.30	25	10	W6	R5	4	24.93	27.93	MUDSTONE	Mdst	3.00						Grey, fg. - mg., mudstone with thin bedding planes
														27.93	27.98	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
10	7	27.60	30.65	3.05	2.96											#N/A								
						97.05%	15	2.56	20	15	W6	R5	4	27.98	30.94	MUDSTONE	Mdst	2.96						Med. to dark grey, mudstone and silty mudstone, low angle fracture at the depth of ~28m, and next to it iron oxide, surface for a 75° TCA fracture, also 90° TCA, calcite filled fracture at around 29m depth
														30.94	31.03	LOST CORE	Lost Core	0.09	0.09					*Rock Loss*
11	7,8	30.65	33.70	3.05	3.00	98.36%										#N/A								
							5	0.93	25	15	W6	R6	4	31.03	34.03	SHALY COAL	Sltst	3.00						Light to med. grey, siltstone to silty mudstone, v.thin bedded, rough surface in some fractures (75° TCA) and some smooth surface fracture along bedding, coal stringers along the bedding at 85-90° TCA
														34.03	34.08	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
12	8,9	33.70	36.75	3.05	2.98	97.70%										#N/A								
							4	0.97	25	15	W6	R6	4	34.08	37.06	SHALY COAL	Sltst	2.98						Light to medium grey, fine grained, siltstone grading to silty mudstone,thinly bedded, numerous very thin coal stringers Along bedding, a 2mm filled maybe fault gouge, giving the fracture
														37.06	37.13	LOST CORE	Lost Core	0.07	0.07					*Rock Loss*
13	9	36.75	39.80	3.05	3.00	98.36%										#N/A								
							12	0.90	10	13	W5	R5	4	37.13	40.13	SHALY COAL	Sltst	3.00						Med. grey, siltstone and silty mudstone, increasing amount of coal stringers, A 0° (vertical) fracture,about 1m long starts at the beginning of the run (36m depth), fault gouge with about 90° TCA at about 37.50m depth
														40.13	40.18	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
14	9,10	39.80	42.85	3.05	2.95	96.72%										#N/A								
							5	100.00%	25	15	W6	R6	4	40.18	43.13	SHALY COAL	Sst	2.95						Light
														43.13	43.23	LOST CORE	Lost Core	0.10	0.10					*Rock Loss*
15	10,11	42.85	45.90	3.05	3.05	100.00%										#N/A								
							2	100.00%	25	15	W6	R6	4	43.23	46.28	SHALY COAL	Sst	3.05						Light grey to med. grey, massive Sst with decreasing amount of organic material at start, but quickly increasing amount of plant fossils towards the end. As well there is a spotty pattern with bedding @~80-85° TCA
16	11,12	45.90	48.95	3.05	2.98	97.70%										#N/A								
							3	100.00%	25	15	W6	R6	4	46.28	49.26	SHALY COAL	Sst	2.98						Medium grey, massive, mg. Sst, with intervals (up to 50cm thick) that are concentrated with plant fragments making a spotty pattern on the core
														49.26	49.33	LOST CORE	Lost Core	0.07	0.07					*Rock Loss*
17	12	48.95	52.00	3.05	3.05	100.00%										#N/A								
							2	98.36%	25	15	W6	R6	4	49.33	52.38	SHALY COAL	Sst	3.05						Medium grey, mg., massive Sst, with intervals of increased amount of organic materials (plant fragments)materials (plant fragments) which gives a spotty pattern to the parts of the core
18	12,13	52.00	55.05	3.05	2.40	78.69%										#N/A								
								100.00%			W6	R6	4	52.38	53.73	SHALY COAL	Sst	1.35						Light to medium grey, medium grained, Sst
								100.00%			W6	R5	4	53.73	54.05	SHALY COAL	Sltst	0.32						Medium grey to brown Sltst with mudstone
														54.05	54.18	SHALY COAL	Sltst	0.13			07560	53.47	53.60	*Roof*
														54.18	54.30	LOST CORE	Lost Core	0.12	0.12		ns			*Rock Loss*
														54.30	54.83	LOST CORE	Lost Core	0.53	0.53	Seam 1	ns			*Coal Loss*
							>25	0.00%	10	5	W6	R1	0	54.83	55.43	COAL	Coal	0.60		Seam 1	07561	53.60	54.20	Dark black, Bright(?), light coal
19	13	55.05	58.10	3.05	2.38	78.03%										#N/A								
							>25	0.00%	10	5	W6	R1	0	55.43	56.13	COAL	Coal	0.70		Seam 1	07562	54.20	54.90	Black, bright(?), light coal, traces of sulphides(py) observed
														56.13	56.63	COAL	Coal	0.50		Seam 1	07563	54.90	55.40	*Part of above Coal*
														56.63	57.07	COAL	Coal	0.44		Seam 1	07564	55.40	55.84	*Part of above Coal*
														57.07	57.43	LOST CORE	Lost Core	0.36	0.36	Seam 1	ns			*Coal Loss*
														57.43	57.74	LOST CORE	Lost Core	0.31	0.31		ns			*Rock Loss*
														57.74	57.86	SHALY COAL	Sltst	0.12			07565	55.84	55.96	*Floor*
							>25	24.32%	10	7	W6	R6	0	57.86	58.48	SHALY COAL	Sltst	0.62						Dark grey, v.fg., interbedded (90°), Sltst & Coal, joint angle 45°
20	13,14	58.10	61.15	3.05	3.00	98.36%										#N/A								

							>25	43.33%	10	10	W6	R6	0	58.48	61.48	SHALY COAL	Sltst	3.00						Dark grey, v.fg., interbedded w/ brown layer Sltst and Mdst. Black Shaley Coal on the bottom 10cm, joints ~47°, bedding ~90°
														61.48	61.53	LOST CORE	Lost Core	0.05	0.05				*Rock Loss*
21	14,15	61.15	64.20	3.05	2.85	93.44%										#N/A							
							>25	15.00%	20	8	W6	R5	0	61.53	62.53	SHALY COAL	Sltst	1.00						Dark grey to dark brown, v.fg., Sltst, interbedded, bedding angle ~90°, highly fractured
														62.53	62.73	LOST CORE	Lost Core	0.20	0.20				*Rock Loss*
							10	71.35%	25	12	W6	R6	4	62.73	64.58	SHALY COAL	Sst	1.85						Light grey, mg.-cg. Sst, massive, vertical joints as well as joints @ ~45°.
22	15	64.20	67.25	3.05	3.00	98.36%										#N/A							
								100.00%			W6	R7	4	64.58	64.75	SHALY COAL	Sst	0.17						Light grey, mg.-cg. Sst, massive
							>25	63.60%	25	11	W6	R6	2	64.75	67.58	SHALY COAL	Sltst	2.83						Dark grey, fg.-mg., Sltst, interbedded w/ fg. Sst, joints mostly @ ~90°, two low angle joints @25°, highly fractured near bottom
														67.58	67.63	LOST CORE	Lost Core	0.05	0.05				*Rock Loss*
23	16	67.25	70.30	3.05	3.00	98.36%										#N/A							
							>25	28.65%	10	6	W6	R6	0	67.63	69.48	SHALY COAL	Sltst	1.85						Dark
							9	78.26%	25	11	W6	R7	4	69.48	70.63	SHALY COAL	Sst	1.15						Light grey, mg.-cg. Sst, contact angle w/ Sltst @ ~45°, massive, ~2mm Sltst or Mdst layer near bottom
														70.63	70.68	LOST CORE	Lost Core	0.05	0.05				*Rock Loss*
24	16,17	70.30	73.35	3.05	2.90	95.08%										#N/A							
							2	88.89%	25	13	W6	R7	4	70.68	71.22	SHALY COAL	Sst	0.54						Light grey, mg.-cg., massive Sst, thin coal lens ~1cm thick at 90°
							>25	0.00%	25	6	W6	R6	0	71.22	71.47	SHALY COAL	Sltst	0.25						Dark
														71.47	71.62	LOST CORE	Lost Core	0.15	0.15				*Rock Loss*
							>25	0.00%	25	7	W6	R7	0	71.62	72.17	SHALY COAL	Sst	0.55						Sst same as above, joints @ ~30°, some @ ~90°, sulphides (py?) along joints, seems affected by fluid
							10	73.04%	25	11	W6	R6	3	72.17	73.32	SHALY COAL	Sltst	1.15						Slt, same as above, bedding ~90
							2	41.46%	25	11	W6	R7	2	73.32	73.73	SHALY COAL	Sst	0.41						Sst, same as above
25	17,18	73.35	76.40	3.05	3.00	98.36%										#N/A							
							3	96.49%	20	14	W6	R7	4	73.73	74.87	SHALY COAL	Sst	1.14						Light grey, mg.-cg., massive Sst, ~2cm thick coal seam w/ sulphide,(py?) and thin calcite veins, contact angle ~45°
														74.87	74.92	LOST CORE	Lost Core	0.05	0.05				*Rock Loss*
							7	88.71%	10	14	W6	R6	3	74.92	76.78	SHALY COAL	Sltst	1.86						Dark grey, fg. Sltst, massive, sulphide along joints (~10°), near contact w/ sst, other joints ~80-90°
26	18	76.40	79.45	3.05	3.05	100.00%										#N/A							
							4	94.12%	10 to 20	13	W6	R6	4	76.78	78.48	SHALY COAL	Sltst	1.70						Dark grey, fg.-cg., massive Sltst, joints ~90°
							1	0.00%	10	-	W6	R7	0	78.48	78.58	SHALY COAL	Sst	0.10						Light grey, mg.-cg., massive Sst, joint w/disseminated massive py, coal and calc
							3	0.00%	20	5	W6 R6	R6	0	78.58	78.88	SHALY COAL	Sltst	0.30						Sltst same as above, joint w/ possible slickenside, minor disseminated, py
							2	61.11%	20	5	W6	R7	3	78.88	79.06	SHALY COAL	Sst	0.18						Sst same as above, irregular (~90°) w/ thin coal seam and massive py, highly altered
							2	100.00%	10	14	W6	R6	4	79.06	79.83	SHALY COAL	Sltst	0.77						Sltst same as above, no py or alteration along joints, interbedded w/ brown Mdst and Sst, joints ~90°
27	18,19	79.45	82.50	3.05	3.05	100.00%										#N/A							
							7	94.34%	25	14	W6	R6	4	79.83	82.48	SHALY COAL	Sltst	2.65						Dark grey, fg.-mg. Sltst, interbedded w/ dark brown mudstone (~1mm thick), bedding ~90°
							2	87.50%	10	8	W5	R7	4	82.48	82.88	SHALY COAL	Sst	0.40						Light grey, cg. Sst, massive, appeared to be altered by fluid, dark grey angular anhedral qtz(~0.5-1mm)
28	19,20	82.50	85.55	3.05	3.05	100.00%										#N/A							
							2	100.00%	25	14	W5	R7	4	82.88	83.88	SHALY COAL	Sst	1.00						Light grey, cg. Sst, fg. matrix w/ qtz(0.5-1mm) seam altered by fluid, irregular joints (~90°), w/ Coal seam (0.2-0.5cm), very soft Coal
							6	92.68%	10	14	W6	R6	4	83.88	85.93	SHALY COAL	Sltst	2.05						Dark
29	20,21	85.55	88.60	3.05	3.05	100.00%										#N/A							
							22	72.13%	20	9	W6	R6	4	85.93	88.98	SHALY COAL	Sltst	3.05						Light grey to dark grey, fg. Sltst, interbedded w/ altered Sst, 50% of joints @ ~90° , 50% of joints @ ~ 0-10° jointslow angle joints w/ disc. Sulphide, v. thin ~0° angle clacite veins visible
30	21	88.60	91.65	3.05	2.97	97.38%										#N/A							
								100.00%			W6	R7	4	88.98	89.26	SHALY COAL	Sst	0.28						Light grey, cg., altered Sst w/ angular qtz upto 1mm, near the top ~3cm Coal seam
							10	45.16%	10	8	W7	R6	2	89.26	89.88	SHALY COAL	Sltst	0.62						Dark grey, fg. Sltst interbedded w/ dark brown Mdst, joints ~90°, one joint ~45°, minor sulphide in joints
														89.88	89.96	LOST CORE	Lost Core	0.08	0.08				*Rock Loss*
							5	66.00%	20	8	W6	R7	2	89.96	90.46	SHALY COAL	Sst	0.50						Sst same as above
							8	87.26%	25	13	W7	R6	3	90.46	92.03	SHALY COAL	Sltst	1.57						Sltst same as above
	21,22	91.65	94.70	3.05	3.00	98.36%										#N/A							
							>25	66.00%	25	13	W6	R6	4	92.03	95.03	SHALY COAL	Sltst	3.00						Dark grey fine grained Sltst interbedded with very fine grained Mdst. Bedding @ 90°. Highly fractured zone @ 90.80m. One vertical (zero degrees) joint set.
														95.03	95.07	LOST CORE	Lost Core	0.04	0.04				*Rock Loss*
32	22,23	94.70	97.75	3.05	3.00	98.36%										#N/A							
							10	50.00%	25	13	W6	R5	3	95.07	96.77	MUDSTONE	Mdst	1.70						Dark to med grey, interbedded Sltst and Mdst, bedding ~90° TCA
							6	100.00%	25	15	W6	R6	4	96.77	98.07	SHALY COAL	Sst	1.30						Light grey, fg. - mg. Sst, mainly massive, low angle (0-5°) fracture at about 95.7m depth
33	23,24	97.75	100.80	3.05	2.95	96.72%										#N/A							
								100.00%			W6	R6	4	98.07	98.32	SHALY COAL	Sst	0.25						Light
							1	100.00%	25	15	W6	R6	4	98.32	98.82	MUDSTONE	Mdst	0.50						Dark
							9	100.00%	25	15	W6	R6	4	98.82	99.22	SHALY COAL	Sst	0.40						Light to
							9	83.33%	25	13	W5	R5	4	99.22	101.02	MUDSTONE	Mdst	1.80						Dark
34	24	100.80	103.85	3.05	3.05	100.00%										#N/A							
							13	100.00%	25	12	W5	R6	4	101.02	103.27	SHALY COAL	Sst	2.25						Light
							5	75.00%	20	10	W5	R6	4	103.27	104.07	SHALY COAL	Sltst	0.80						Dark
35	24,25	103.85	106.90	3.05	3.05	100.00%										#N/A							
							>25	41.67%	25	7	W5	R6	4	104.07	105.75	SHALY COAL	Sltst	1.68						Dark
							7	97.37%	25	13	W5	R6	4	105.75	107.12	SHALY COAL	Volc	1.37						Green,
36	25	106.90	109.95	3.05	3.05	100.00%										#N/A							
							13	96.55%	25	14	W5	R6	4	107.12	110.17	SHALY COAL	Volc	3.05						Same

Geological Borehole Log: RAV-09-002

Client: CJV
Project: Raven
Logged By: Parviz Rajaei, Sarah Newma

Hole Number: RAV-09-002
Date Hole Started: 03-Jun-09
Date Hole Finished: 24-Jun-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 417.96m
Depth of Casing: 4.60
Core Size: Modified PQ (3 1/4')

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
SS= Slickenslides, ~= approximately, $HC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)	G.P.L. Corrected	Lithology	Length	Core Loss	Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	1.97	OVERBURDEN	OVBDN					0.00	3.00	Overburden
																					Chip Sampling			
														1.97	3.47	SILTSTONE	Sltst				1	3.00	4.50	Med grey, fine grained gravel Sltst
														3.47	4.97	SILTSTONE	Sltst				2	4.50	6.00	"
														4.97	6.47	SILTSTONE	Sltst				3	6.00	7.50	"
														6.47	7.97	SILTSTONE	Sltst				4	7.50	9.00	"
														7.97	9.47	SILTSTONE	Sltst				5	9.00	10.50	"
														9.47	10.97	SILTSTONE	Sltst				6	10.50	12.00	"
														10.97	12.47	SILTSTONE	Sltst				7	12.00	13.50	"
														12.47	13.97	SILTSTONE	Sltst				8	13.50	15.00	"
														13.97	15.47	SILTSTONE	Sltst				9	15.00	16.50	"
														15.47	16.97	SILTSTONE	Sltst				10	16.50	18.00	"
														16.97	18.47	SILTSTONE	Sltst				11	18.00	19.50	"
														18.47	19.97	SILTSTONE	Sltst				12	19.50	21.00	"
														19.97	21.47	SILTSTONE	Sltst				13	21.00	22.50	"
														21.47	22.97	SILTSTONE	Sltst				14	22.50	24.00	"
														22.97	24.47	SILTSTONE	Sltst				15	24.00	25.50	"
														24.47	25.97	SILTSTONE	Sltst				16	25.50	27.00	"
														25.97	27.47	SILTSTONE	Sltst				17	27.00	28.50	"
														27.47	28.97	SILTSTONE	Sltst				18	28.50	30.00	"
														28.97	30.47	SILTSTONE	Sltst				19	30.00	31.50	"
														30.47	31.97	SILTSTONE	Sltst				20	31.50	33.00	"
														31.97	33.47	SILTSTONE	Sltst				21	33.00	34.50	"
														33.47	34.97	SILTSTONE	Sltst				22	34.50	36.00	"
														34.97	36.47	SILTSTONE	Sltst				23	36.00	37.50	"
														36.47	37.97	SILTSTONE	Sltst				24	37.50	39.00	" Please note, there was a labelling error. There is NO sample 25.
														37.97	39.47	SILTSTONE	Sltst				26	39.00	40.50	Slst Dark grey Please note, there was a labelling error. There is NO sample 25.
														39.47	40.97	SILTSTONE	Sltst				27	40.50	42.00	Slst, same as above
														40.97	42.47	SILTSTONE	Sltst				28	42.00	43.50	Sltst, same as above
														42.47	43.97	CLAYSTONE	Clyst				29	43.50	45.00	Sltst & Clyst
														43.97	45.47	SILTSTONE	sst				30	45.00	46.50	Fine grained Sst
														45.47	46.97	SILTSTONE	sst				31	46.50	48.00	Sst dark grey
														46.97	48.47	SILTSTONE	sst				32	48.00	49.50	Sst, medium to fine grained
														48.47	49.97	SILTSTONE	sst				33	49.50	51.00	Sst, medium grained
														49.97	51.47	SILTSTONE	sst				34	51.00	52.50	Sst as above
														51.47	52.97	SILTSTONE	sst				35	52.50	54.00	Sst as above
														52.97	54.47	SILTSTONE	sst				36	54.00	55.50	Sst as above
														54.47	55.97	SILTSTONE	sst				37	55.50	57.00	Sst as above, except for dark grey to medium grey
														55.97	57.47	SILTSTONE	sst				38	57.00	58.50	Sst as above
														57.47	58.97	SILTSTONE	sst				39	58.50	60.00	Sst as above
														58.97	60.47	SILTSTONE	sst				40	60.00	61.50	Sst as above
														60.47	61.97	SILTSTONE	sst				41	61.50	63.00	Sst, light grey
														61.97	63.47	SILTSTONE	Sst/Sltst				42	63.00	64.50	Sst/Sltst
														63.47	64.97	SILTSTONE	Sltst				43	64.50	66.00	Sltst
														64.97	67.97	SILTSTONE	Sst/Sltst				44	66.00	69.00	Sst/Sltst
														67.97	70.97	SILTSTONE	Sst/Sltst				45	69.00	72.00	Sst/Sltst
														70.97	73.97	SILTSTONE	Sst/Sltst				46	72.00	75.00	Sst/Sltst
														73.97	76.97	SILTSTONE	Sltst				47	75.00	78.00	Sltst
														76.97	79.97	SILTSTONE	Sltst				48	78.00	81.00	Sltst
														79.97	82.97	SILTSTONE	Sltst				49	81.00	84.00	Sltst
														82.97	84.97	SILTSTONE	Sltst				50	84.00	86.00	Sltst
														84.97	86.97	SILTSTONE	Sltst				51	86.00	88.00	Sltst
														86.97	88.97	SILTSTONE	Sltst				52	88.00	90.00	Sltst
														88.97	90.97	SILTSTONE	Sltst				53	90.00	92.00	Sltst
														90.97	92.97	SILTSTONE	Sltst				54	92.00	94.00	Sltst
														92.97	94.97	SILTSTONE	Sltst				55	94.00	96.00	Sltst
														94.97	96.97	SILTSTONE	Sltst				56	96.00	98.00	Sltst
														96.97	98.97	SILTSTONE	Sltst				57	98.00	100.00	Sltst
														98.97	100.97	SILTSTONE	Sltst				58	100.00	102.00	Sltst
														100.97	102.97	SILTSTONE	Sltst				59	102.00	104.00	Sltst
														102.97	104.97	SILTSTONE	Sltst				60	104.00	106.00	Sltst
														104.97	106.97	SILTSTONE	Sltst				61	106.00	108.00	Sltst with minor Sst
														106.97	108.97	SILTSTONE	Sltst				62	108.00	110.00	Sltst
														108.97	110.97	SILTSTONE	Sltst				63	110.00	112.00	Sltst
														110.97	112.97	SILTSTONE	Sltst				64	112.00	114.00	Sltst
														112.97	114.97	SILTSTONE	Sltst				65	114.00	116.00	Sltst
														114.97	116.97	SILTSTONE	Sltst				66	116.00	118.00	Sltst
														116.97	118.97	SILTSTONE	Sltst				67	118.00	120.00	Sltst
														118.97	120.97	SILTSTONE	Sltst				68	120.00	122.00	Sltst
														120.97	122.97	SILTSTONE	Sltst				69	122.00	124.00	Sltst
														122.97	124.97	SILTSTONE	Sltst				70	124.00	126.00	Sample not logged
														124.97	126.97	SILTSTONE	Sltst				71	126.00	128.00	Sltst
														126.97	128.97	SILTSTONE	Sltst				72	128.00	130.00	Sltst
														128.97	130.97	SILTSTONE	Sltst				73	130.00	132.00	Sltst
														130.97	132.97	SILTSTONE	Sltst				74	132.00	134.00	Sltst
														132.97	134.97	SILTSTONE	Sltst				75	134.00	136.00	Sltst
														134.97	136.97	SILTSTONE	Sltst				76	136.00	138.00	Sltst
														136.97	138.97	SILTSTONE	Sltst				77	138.00	140.00	Sltst
														138.97	140.97	SILTSTONE	Sltst				78	140.00	142.00	Sltst
														140.97	142.97	SILTSTONE	Sltst				79	142.00	144.00	Sltst
														142.97	144.97	SILTSTONE	Sltst				80	144.00	146.00	Sltst
														144.97	146.97	SILTSTONE	Sltst				81	146.00	148.00	Sltst
														146.97	148.97	SILTSTONE	Sltst				82	148.00	150.00	Sltst
														148.97	150.97	SILTSTONE	Sst/Sltst				83	150.00	152.00	Sst with Sltst
														150.97	152.97	SILTSTONE	Sltst				84	152.00	154.00	Sltst
														152.97	154.97	SILTSTONE	Sltst				85	154.00	156.00	Sltst
														154.97	156.97	SILTSTONE	Sltst				86	156.00	158.00	Sltst
														156.97	158.97	SILTSTONE	Sltst				87	158.00	160.00	Sltst
														158.97	160.97	SILTSTONE	Sltst				88	160.00	162.00	Sltst
														160.97	162.97	SILTSTONE	Sltst				89	162.00	164.00	Sltst

														162.97	164.97	SILTSTONE	Sltst				90	164.00	166.00	Sltst
														164.97	166.97	SILTSTONE	Sltst				91	166.00	168.00	Sltst
														166.97	168.97	SILTSTONE	Sltst				92	168.00	170.00	Sltst
														168.97	170.97	SILTSTONE	Sltst				93	170.00	172.00	Sltst
														170.97	172.97	SILTSTONE	Sltst				94	172.00	174.00	Sltst
														172.97	174.97	SILTSTONE	Sltst				95	174.00	176.00	Sltst
														174.97	176.97	SILTSTONE	Sltst				96	176.00	178.00	Sltst
														176.97	178.97	SILTSTONE	Sltst				97	178.00	180.00	Sltst
														178.97	180.97	SILTSTONE	Sltst				98	180.00	182.00	Sltst
														180.97	182.97	SILTSTONE	Sltst				98	182.00	184.00	Sltst
														182.97	184.97	SILTSTONE	Sltst				99	184.00	186.00	Sltst
														184.97	186.97	SILTSTONE	Sst				100	186.00	188.00	
														186.97	188.97	SILTSTONE	Sst				101	188.00	190.00	
														188.97	190.97	SILTSTONE	Sst				102	190.00	192.00	
														190.97	192.97	SILTSTONE	Sst				103	192.00	194.00	
														192.97	194.97	SILTSTONE	Sst				104	194.00	196.00	
														194.97	196.97	SILTSTONE	Sst				105	196.00	198.00	
														196.97	198.97	SILTSTONE	Sst				106	198.00	200.00	
														198.97	200.97	SILTSTONE	Sst				107	200.00	202.00	
														200.97	202.97	SILTSTONE	Sst				108	202.00	204.00	
														202.97	204.97	SILTSTONE	Sst				109	204.00	206.00	
														204.97	206.97	SILTSTONE	Sst				110	206.00	208.00	
														206.97	208.97	SILTSTONE	Sst				111	208.00	210.00	
														208.97	210.97	SILTSTONE	Sst				112	210.00	212.00	
														210.97	212.97	SILTSTONE	Sst				113	212.00	214.00	
														212.97	214.97	SILTSTONE	Sst				114	214.00	216.00	
														214.97	216.97	SILTSTONE	Sst				115	216.00	218.00	
														216.97	218.97	SILTSTONE	Sst				116	218.00	220.00	
														218.97	220.97	SILTSTONE	Sst				117	220.00	222.00	
														220.97	222.97	SILTSTONE	Sst				118	222.00	224.00	
														222.97	224.97	SILTSTONE	Sst				119	224.00	226.00	
														224.97	226.97	SILTSTONE	Sst				120	226.00	228.00	
														226.97	228.97	SILTSTONE	Sst				121	228.00	230.00	
														228.97	230.97	SILTSTONE	Sst				122	230.00	232.00	
														230.97	232.97	SILTSTONE	Sst				123	232.00	234.00	
														232.97	234.97	SILTSTONE	Sst				124	234.00	236.00	
														234.97	236.97	SILTSTONE	Sst				125	236.00	238.00	
														236.97	238.97	SILTSTONE	Sst				126	238.00	240.00	
														238.97	240.97	SILTSTONE	Sst				127	240.00	242.00	
														240.97	242.97	SILTSTONE	Sst				128	242.00	244.00	
														242.97	244.97	SILTSTONE	Sst				129	244.00	246.00	
														244.97	246.97	SILTSTONE	Sst				130	246.00	248.00	
														246.97	248.97	SILTSTONE	Sst				131	248.00	250.50	
1	1	250.50	253.50	3.00	2.81	93.67%										#N/A								
							4	98.22%	20	14	W6	R6	4	248.97	251.78	SILTSTONE	Sst	2.81						Start of Coring f.g-mg light gray massive Sst w/ an 8cm dark gray clay seam. 55cm from the bottom has high carb content~10%. Joints oriented 80˚ TCA. Trace 2-5cm burrowing fossils.
														251.78	251.97	LOST CORE	Lost Core	0.19	0.19					*Rock Loss*
2		253.50	256.55	3.05	2.76	90.49%										#N/A								
														251.97	252.01	LOST CORE	Lost Core	0.04	0.04					*Rock Loss*
	2						3	100.00%	20	15	W6	R7	4	252.01	252.62	SILTSTONE	Sst	0.61						As above Sst. All fr @ 90˚.
	2						>25	98.31%	20	15	W6	R6	3	252.62	254.40	LAMINITE	IB Sltst/Sh	1.78						Black, massive, c.f.g. to fg. Top 15cm.Water zone. Fault gouge present. Fr at 90˚. 1 SS @ 50˚. 2 calcite veins. Medium laminated @ 90˚. IB Sltst Sh 60% Sh, 40% Sltst V.f.g. to f.g. Dark gray thin to med laminated.Sltst, all beds @ 90˚
	2													254.40	254.50	LAMINITE	IB Sltst/Sh	0.10			07601	256.18	256.28	*Roof*
	2						>25	0.00%	0	3	W6	R0	2	254.50	254.77	COAL	Coal	0.27		Seam 4	07602	256.28	256.55	Blk, powdery, crushed. Dull & bright coal. (>5% dull, 25% bright). Seam 5? No partings. No sulphides, calcite.
3		256.55	258.99	2.44	2.29	93.85%										#N/A								
	3						>25	0.00%	0	3	W6	R0	2	254.77	255.44	COAL	Coal	0.67		Seam 4	07603	256.55	257.22	As above coal. Except for chunks of sh (at least two partings).
	3													255.44	255.54	SILTSTONE	Sst	0.10			07604	257.22	257.32	Floor Sample, part of the below Sst
	3						>25	0.00%	2	10	W6	R7	1	255.54	257.06	SILTSTONE	Sst	1.52						Light gray. C.g. to v.c.g. massive. All fr @ 90˚. Bottom 1m of interval, chucks of SST, several 10˚ fr can be seen. Last 40cm. rock flower along most fractures. As well the last meter of interval is a major FAULT ZONE. N.B.
4		258.99	262.04	3.05	3.00	98.36%										#N/A								
	4 & 5						17	70.00%	25	10	W6		4	257.06	260.06	SILTSTONE	Sst	3.00						Drill med on top run (not included in recovery, not rock flour). Sst light gray massive. Several fr with rounded edges (sign of water movement). 10 SS, 7 fr, 1 fr @ 90˚. 2 fr @ 20˚. Rest of fr & SS @ 90˚. Calcite veins along fr, rock flower as well. Plant material. Coal spars. Minor amount of bioturbation. Several Sh beds, very thinly laminated.
5		262.04	262.88	0.84	0.81	96.43%										#N/A								
	5						3	96.43%	25	15	W6		3	260.06	260.87	SILTSTONE	Sst	0.81						Sst as above. Broken in the shoe. 2 fr @ 90˚. 1 SS @ 45˚.
6		262.88	265.88	3.00	2.91	97.00%										#N/A								
	5 & 6						2	100.00%	25	15	W6		4	260.87	262.82	SILTSTONE	Sst	1.95						Sst as above
	6						>25	0.00%	0	2	W6		4	262.82	262.93	SHALY COAL	SHC	0.11						Crushed clasts of coal. 60% coal, 40%. Slightly bubbled hissed dull & bright coal.
														262.93	262.98	LOST CORE	Lost Core	0.05	0.05					*Rock*
	6						4	92.94%	3	11	W6		3	262.98	263.83	SILTSTONE	Sst	0.85						As above Sst. Except for btween 265.47 & 265.52. soft gouge infilling f. All fr & contacts @ 90˚.
7		265.88	268.88	3.00	2.89	96.33%										#N/A								
	6 & 7						7	95.85%	10	15	W6		3	263.83	266.72	SILTSTONE	Sst	2.89						Sst as above Sst except for 80cm & 206cm from top of interval. Small fault zone, with rounded fr ends (H2O)
8		268.88	271.88	3.00	2.46	82.00%										#N/A								
														266.72	267.26	LOST CORE	Lost Core	0.54	0.54					*Rock*
	7 & 8						7	96.75%	25	14	W6			267.26	269.72	SILTSTONE	Sst	2.46						Sst, as above. Except for 15cm from the top. A rubbly zone of "subgranular" Sst clasts - water zone. 1 SS @ 45˚, 5 fr @ 90˚. 30cm "healed" fr @ 15˚, some calcite infill on vertical fr.
9		271.88	273.38	1.50	1.81	120.67%										#N/A								
	8						5	77.35%	20	10	W6			269.72	271.53	SILTSTONE	Sst	1.81						As above Sst. Except for first 20cm. Broken crushed, chunks of Sst.
10		273.38	274.99	1.61	1.53	95.03%										#N/A								
	8 & 9						2	100.00%	20	15	W6			271.53	273.06	SILTSTONE	Sst	1.53						As above Sst, except for a series at healed fr filled with calcite (1mm thick). These fr are curviplanar. Fractures start at 15˚ and go to 30˚. Then flatten up to 45˚. As well numerous SS @ 0˚ to 10˚ fr filled with calcite. Several thinly laminated Sh beds @ 90˚.
11		274.99	277.79	2.80	2.05	73.21%										#N/A								
														273.06	273.18	LOST CORE	Lost Core	0.12	0.12					*Rock*
	9 & 10						1	1.58	20	15	W6			273.18	274.76	SILTSTONE	Sst	1.58						As above Sst
	9 & 10													274.76	274.85	CLAYSTONE	Clyst	0.09			07605	277.42	277.51	Light gray, f.g. to m.g. Roof Sample
	9 & 10													274.85	274.93	COAL	Coal	0.08			07606	277.51	277.59	Dull & bright coal blk.
														274.93	275.56	LOST CORE	Lost Core	274.87	0.63		ns			*Coal*
	9 & 10													275.56	275.76	COAL	Coal	0.20			07607	277.59	277.79	Dull & bright coal blk.
	9 & 10													275.76	275.86	SHALE	Sh	0.10			07608	277.79	277.89	Light gr, massive, f.g. to m.g. Floor Sample
12		277.79	277.99	0.20	0.54	270.00%										#N/A								
	10						6	27.78%	25	19	W6	R3	4	275.86	276.40	SHALE	Sh	0.54						Black massive very fine grained shale. Last 14cm broken crushed from drilling. All fr. @ 90˚.
13		277.99	280.99	3.00	2.75	91.67%										#N/A								
	10						>25	72.36%	10	7	W6			276.40	279.15	SHALE	Sh	2.75						Shale black massive, very fine grained. Last 44cm is made up of a fault zone. The zone starts with 1 SS at 45 calcite along fr. It was this SS that "belly whaled" the tube preventing its release. The rest of zone is made up of 0˚ fr and crushed rock, chunks of shale. It looks like two vertical fractures cross cut by SS @ 0˚ & 45˚. It was at the bottom of this zone we has the CORE LOSS. Vertical to curviplanar
14		280.99	282.99	2.00	2.39	119.50%										#N/A								
	10 & 11						4	96.23%	25	10	W6	R7	4	279.15	281.54	LAMINITE	IB Sltst/Sh	2.39						40% Sh. 65% SLTST. Sh black thinly to medium laminated SLST. Light gray mg. to fg carbonaceous thinly laminated, all bedding & fr @ 90˚.
15		282.99	285.99	3.00	2.89	96.33%										#N/A								
	12 & 13						10	71.28%	10	9	W6	R7	4	281.54	284.43	LAMINITE	IB Sltst/Sh	2.89						Sst 90% SH 10%. Sst: c.g. to v.c.g. light grayish white. Thinly to medium laminated. Sh: 2cm thick blk massive beds. Beds @ 80˚. Two 30cm fr @ 90˚. Massive pyrite. Vertical fr. Numerous "s" shaped calcite veins, plant material, coal spars.
16		285.99	286.99	1.00	1.13	113.00%										#N/A								

	13							100.00%			W6	R5	4	284.43	285.56	SILTSTONE	Sst	1.13							As above Sst
17		286.99	289.99	3.00	3.06	102.00%										#N/A									
	13 &14						8	87.58%	25	9	W6	R5	4	285.56	288.62	SILTSTONE	Sst	3.06							Sst, med to coarse grained, light gray. 0.90m from bottom, 0.40m of core is broken around 10cm pieces.
18		289.99	292.94	2.95	2.03	68.81%										#N/A									
	14 & 15						1	100.00%	25	13		R5	4	288.62	290.22	SILTSTONE	Sst	1.60							Sst as above w/ joints filled w/ calcite.
	14 & 15						1	100.00%	26	13		R4	4	290.22	290.65	CARBONACEOUS CLAYSTONE	Carb. Clyst	0.43							Carb. Claystone, Dark gray
														290.65	291.38	LOST CORE	Lost Core	0.73	0.73						*Rock*
19		292.94	295.94	3.00	1.60	53.33%										#N/A									
														291.38	292.78	LOST CORE	Lost Core	1.40	1.40						*Rock*
	14 & 15						10	76.25%	10	9	25	R3	4	292.78	294.38	CARBONACEOUS CLAYSTONE	Carb. Clyst	1.60							Carb Clyst. Dark gray. 0.46 cm at bottom broken 9cm pieces.
20		295.94	297.94	2.00	2.00	100.00%										#N/A									
	16 & 17						4	90.00%			25	R2	4	294.38	296.38	CLAYSTONE	Clyst	2.00							Claystone dark gray. 0.57cm from top 63cm high carb claystone. Very soft and crumbly w/ coal stringers rest Claystone, dark gray.
21		297.94	298.88	0.94	0.92	97.87%										#N/A									
	17							100.00%				R5	4	296.38	297.30	SILTSTONE	Sst	0.92							
22		298.88	301.88	3.00	3.10	103.33%										#N/A									
	17 & 18							100.00%				R4	4	297.30	298.48	CLAYSTONE	Clyst	1.18							Claystone, med gray, 0.30 m at bottom very soft.
								100.00%				R5	4	298.48	300.40	SILTSTONE	Sst	1.92							Sst, medium to coarse grained,medium gray, massive
23		301.88	304.88	3.00	3.06	102.00%										#N/A									
	18 & 19						6	96.41%	25	15	W6	R7	4	300.40	303.46	SILTSTONE	Sst	3.06							Massive light gray Sst. C.g. to c.c.g.. Some calcite veining @ 45˚. Coal spars plant material. Sh beds at 90˚.
24		304.88	307.88	3.00	2.95	98.33%										#N/A									
	19 & 20						1	100.00%	25	15	W6	R7	4	303.46	306.41	SILTSTONE	Sst	2.95							As above Sst. Except for two large (65cm long) calcite veins @ 0˚. Plant material, coal spars.
25		307.88	310.88	3.00	2.87	95.67%										#N/A									
	20 & 21						0	100.00%			W6	R7	4	306.41	309.28	SILTSTONE	Sst	2.87							As above Sst, except no calcite veining. Solid hard core.
26		310.88	313.88	3.00	3.12	104.00%										#N/A									
	21 & 22						1	99.36%	25	15	W6	R7	4	309.28	312.40	SILTSTONE	Sst	3.12							As above Sst, except 6 large calcite veins @ 0˚. 1 fr @ 90˚, minor amount of bioturbation.
27		313.88	316.88	3.00	2.92	97.33%										#N/A									
	22 & 23						2	100.00%	25	15	W6	R7	4	312.40	315.32	SILTSTONE	Sst	2.92							As above Sst. 1 fr @ 78˚. 1 fr @ 90˚. Vertical fr filled with rock flour. 2 wispy shale beds @ 63˚. 3 shale beds at 90˚.
28		316.88	319.88	3.00	2.89	96.33%										#N/A									
	23 & 24						0	100.00%			W6	R7	4	315.32	318.21	SILTSTONE	Sst	2.89							Fell out of barrel on to the pad. As above Sst, very solid (fell out of barrel in 1 piece).
29		319.88	322.91	3.03	3.12	102.97%										#N/A									
	24 & 25						3	92.95%	25	10	W6	R7	4	318.21	321.33	SILTSTONE	Sst	3.12							Sst, as above. 2 fr @ 90˚. 1 fr @ 30˚. 2 fr @ 0˚. Sh beds @ 70 to 80˚. 1 3cm vug filled w/ calcite.
30		322.91	325.91	3.00	2.91	97.00%										#N/A									
	25 & 26							100.00%			W6	R7		321.33	324.24	SILTSTONE	Sst	2.91							As above Sst, one solid piece.
31		325.91	328.91	3.00	3.05	101.67%										#N/A									
	26 & 27						3	100.00%	25	14	W6	R6	4	324.24	327.29	SILTSTONE	Sst	3.05							Medium to coarse grained Sst. Light gray, massive.
32		328.91	331.91	3.00	2.85	95.00%										#N/A									
	27 & 28						2	100.00%	25	14	W6	R6	4	327.29	330.04	SILTSTONE	Sst	2.75							Sst as above
														330.04	330.14	SILTSTONE	Sst	0.10			07609	330.78	330.88	*Roof Sample, part of above Sst*
														330.14	330.29	LOST CORE	Lost Core	0.15	0.15	Seam 3U	ns			*Coal* *Loss*
33		331.91	334.91	3.00	2.93	97.67%										#N/A									
	29 & 30													330.29	330.36	COAL	Coal	0.07		Seam 3U	07610	330.88	330.95	Coal, dull hard
	29 & 30													330.36	330.39	CLAYSTONE	Clytst	0.03		Seam 3U	07610	330.95	330.98	Carbaceous Claystone
	29 & 30													330.39	330.87	COAL	Coal	0.48		Seam 3U	07610	330.98	331.46	Coal, dull
	29 & 30													330.87	330.93	CLAYSTONE	Clytst	0.06		Seam 3U	07611	331.46	331.62	Medium gray Claystone
														330.93	331.00	LOST CORE	Lost Core	0.07	0.07	Seam 3U	ns			*Rock* *Loss*
	29 & 30													331.00	331.96	COAL	Coal	0.96		Seam 3U	07612	331.52	332.48	Coal, dull, 0.25m at the top very soft and crumbled
	29 & 30													331.96	332.06	CLAYSTONE	Clytst	0.10			07613	332.48	332.58	Light carb. Claystone (Floor sample)
	29 & 30													332.06	332.89	CLAYSTONE	Clytst	0.83			ns			Medium gray claystone. 0.20 at top H CLST
	29 & 30													332.89	332.99	CLAYSTONE	Clytst	0.10			07614	333.41	333.51	Medium gray Clyst. 0.10 Roof sample.
	29 & 30													332.99	333.29	COAL	Coal	0.30		Seam 3L	07615	333.51	334.10	Coal, dull
34		334.91	335.71	0.80	0.58	72.50%										#N/A									
	30													333.29	333.57	COAL	Coal	0.28		Seam 3L	07615	334.10	334.38	Coal, dull
	30													333.57	333.67	CLAYSTONE	Clytst	0.10			07616	334.38	334.48	0.10 m as Floor.
	30													333.67	333.87	CLAYSTONE	Clytst	0.20						Clyst, medium gray broken. Very soft.
35		335.71	337.36	1.65	1.85	112.12%										#N/A									
	30						8	68.65%	25	8	W6	R6	3	333.87	335.72	SHALE	Sh	1.85							Shale: black massive, v.f.g. to f.g. al fr. 90˚, 2 calcite veins @ 80˚.
36		337.36	338.96	1.60	1.60	100.00%										#N/A									
	30 & 31						5	91.25%	25	9	W6	R6	3	335.72	337.32	LAMINITE	IB Sltst/Sh	1.60							70% Sltst, 30% Sst. Sltst: light gray f.g. to m.g. thinly to medium laminated beds @ 90˚. Sst light gray v.c.g. to c.g. thinly to medium laminated all beds @ 90˚.
37		338.96	340.96	2.00	1.89	94.50%										#N/A									
	31						1	100.00%	20	15	W6	R6	4	337.32	339.21	LAMINITE	IB Sltst/Sh	1.89							80% Sst, 20% Shale. Sst: light gray medium to thick laminated v.c.g. to c.g. Sh: black thinly laminated. Several "mud drapes" shale beds & fr @ 90˚. The Sst is fining toward the bottom.
38		340.96	341.96	1.00	0.98	98.00%										#N/A									
	32						2	94.00%	25	15	W6	R6	4	339.21	340.19	LAMINITE	IB Sltst/Sh	0.98							As above IB Sst/Sh, except there is a fair bit of bioturbation. Rock flour in rougher fr. All fr. @ 90˚.
39		341.96	344.96	3.00	3.07	102.33%										#N/A									
	32 & 33						3	97.39%	25	7	W6	R7	4	340.19	343.26	SILTSTONE	Sst	3.07							Light gray massive v.c.g. to c.g. all fr. & bedding @ 90˚.
40		344.96	347.56	2.60	2.01	77.31%										#N/A									
														343.26	343.30	LOST CORE	Lost core	0.04	0.04					*Rock* *Loss*
	33 & 34						4	86.57%	25	14	W6	R7	4	343.30	345.31	SILTSTONE	Sst	2.01							As above Sst.
41		347.56	349.48	1.92	1.87	97.40%										#N/A									
														345.31	345.36	LOST CORE	Lost core	0.05	0.05					*Rock* *Loss*
	33 & 34						2	98.40%	25	15	W6	R7	4	345.36	347.23	SILTSTONE	Sst	1.87							As above Sst
42		349.48	351.48	2.00	1.89	94.50%										#N/A									
	34						1	100.00%	0.2	15	w6	R7	4	347.23	347.88	SILTSTONE	Sst	0.65							As above Sst.
	34						3	104.44%	20	13	W6	R6	3	347.88	348.33	LAMINITE	IB Sltst/Sh	0.45							50% Sltst / 50% Sh. Sltst: light gray, m.g. to f.g. thinly laminated. Sh: black very thinly laminated all beds & fr @ 90˚.
	34													348.33	348.43	LAMINITE	IB Sltst/Sh	0.10			07617	348.90	349.00	*Roof Sample, part of above IB Sh & Sst*
	34						>25	0.00%	3	0	W6	R0	1	348.43	349.12	COAL	Coal	0.69		Seam 1R	07618	349.00	349.69	Dull & bright, crushed sugary. 65% dull & 35% bright. Trace pyrite, some very bright spots cleats >1mm, sheared numerous SS.
														349.12	349.16	LOST CORE	Lost Core	0.04	0.04	Seam 1R	ns			*Coal* *Loss*
														349.16	349.23	LOST CORE	Lost Core	0.07	0.07		ns			*Rock* *Loss*
43		351.48	353.39	1.91	1.85	96.86%										#N/A									
														349.23	349.29	LOST CORE	Lost Core	0.06	0.06		ns			*Rock* *Loss*
	35													349.29	349.39	SHALE	SH	0.10			07619	349.69	349.79	*Floor Sample, part of the below shale.*
	35						3	89.89%	20	8	W6	R6	3	349.39	350.18	SHALE	SH	0.79							Black, massive, carb, coal spars. Plant material.
	35						22		25	7	W6	R6	2	350.18	351.14	LAMINITE	IB Sltst/Sh	0.96							70% Sh. 30% Sltst. Sh: black c.f.g. to f.g. thinly laminated. Sltst: light gray very thinly laminated to thinly laminated. All bedding and fr @ 90˚. Several 4cm long fault
44		353.39	356.39	3.00	2.90	96.67%										#N/A									
														351.14	351.24	LOST CORE	Lost Core	0.10	0.10					*Rock* *Loss*
	36						>25	72.41%	25	7	W6	R6	2	351.24	354.14	LAMINITE	IB Sh & Sltst	2.90							60% Sltst. 40% Sh. Sltst: Dark gray f.g. to m.g. thinly to medium laminated. Bubbled, hissed. All bedding and fr @ 90˚. SH: black very thin to thinly laminated 6 fr 45^{o} all other Fr @ 90^{o} Sh beds @ 90^{o}
45		356.39	359.04	2.65	2.53	95.47%										#N/A									

														354.14	354.26	LOST CORE	Lost Core	0.12	0.12					*Rock Loss*
	37						7	94.47%	10	14	W6	R6	3	354.26	356.79	LAMINITE	IB Sltst/Sh	2.53						As above: interval, except for 3 SS @ 45˚. 4 SS @ 90˚. Calcite along SS.
46		359.04	362.09	3.05	3.06	100.33%										#N/A								
							2	100.00%	10	14	W6	R6	4	356.79	357.27	SILTSTONE	Sst	0.48						Light gray, m.g. to c.g. massive all SS @ 90˚.
	37						3	83.33%	10	14	W6	R6	3	357.27	357.81	LAMINITE	IB Sltst/Sh	0.54						70% Sh, 30% Sltst. Sltst: dark gray f.g. to m.g. thinly laminated. Sh: black v.f.g. to f.g. thinly to very thinly laminated all beds @ 90˚.
	38						7	71.43%	10	8	W6	R0	3	357.81	358.41	CARBONACEOUS MUDSTONE	Carb. Shale	0.60		Seam 1	ns			Sh: black, massive. Bubbled. Py (2%). Numerous calcite veins @ 90, 3 SS @ 45˚, two small 3cm long fault zones, 1 small 5cm long fault zone, numerous 2 to 3 cm. MDST partings over whole interval.
	38													358.41	358.51	SANDY SHALE	Shale	0.10		Seam 1	07620	358.07	358.17	*Roof Sample part of above Shale Unit*
	38						>25	0.00%	0	3	W6	R0	1	358.51	358.63	COAL	Coal	0.12		Seam 1	07621	358.17	358.29	Crushed broken, dull & bright coal. Bubbled vigorously, massive py. 1% calcite. No cleats.
	38						>25	0.00%	10	6	W6	R5	1	358.63	359.05	COAL	Coal	0.42		Seam 1	07621	358.29	358.71	As above coal, except numerous thin MDST beds and stringers. Calcite veins @ 90 all over fr @ 90˚, sheared, SS every cm, bubbled with vigour.
	38													359.05	359.15	LAMINITE	IB Sltst/Sh	0.10			07622	358.71	358.81	Floor Sample, part of below IB Sh & Sltst
	38						7	59.18%	10	7	W6	R6	2	359.15	359.64	LAMINITE	IB Sltst/Sh	0.49						3 fr @ 0˚, rest @ 90˚. 80% Sh 20% Sltst.
	38						5	0.00%	20	6	W6	R6	3	359.64	359.85	SILTSTONE	Sltst	0.21						Light gray, m.g. to f.g. 3 fr at 0˚ cutting up whole interval, massive, py.
47		362.09	365.09	3.00	3.02	100.67%										#N/A								
	39 & 40						3	100.00%	25	10	W6	R7	4	359.85	362.87	SILTSTONE	Sst	3.02						Light gray v.c.g. to c.g. massive, numerous shale stringers @ 90˚, coal spars, plant material.
48		365.09	365.99	0.90	0.85	94.44%										#N/A								
	40						4	88.24%	20	10	W6	R7	3	362.87	363.72	SILTSTONE	Sst	0.85						As above Sst, except for 1 SS @ 70˚, rest of fr @ 90˚. Top 10cm broken crushed chunks of Sst.
49		365.99	368.99	3.00	3.07	102.33%										#N/A								
	40						4	100.00%	25	15	W6	R7	3	363.72	366.79	SILTSTONE	Sst	3.07						As above Sst, 1 fr @ 45˚, 3 fr @ 90˚.
50		368.99	371.10	2.11	2.00	94.79%										#N/A								
														366.79	366.90	LOST CORE	Lost Core	0.11	0.11					*Rock Loss, this Core Run was drilled to the length of 2.11m, but was reported by the driller as 2.00m*
	40 & 41						10	61.50%	20	9	W5	R7	4	366.90	368.90	SILTSTONE	Sst	2.00						Very coarse grained, almost crystalline, light gr massive, 2 wispy SH beds @ 90˚. 3 fr @ 45˚. 75cm fr @ 0˚. Several veins @ 0˚, 45˚. Strange green infilling. With a hardness of qtz (could be ctz) this green material also fills in vugs and is on fr faces.
51		371.10	374.10	3.00	2.30	76.67%										#N/A								
	41						5	0.00%	20	15	W6	R7	4	368.90	369.87	SILTSTONE	Sst	0.97						At above Sst, except massive py (strongly bubbled).
	41													369.87	369.97	SILTSTONE	Sst	0.10			07623	369.44	369.54	*Roof Sample, part of above Sst*
	41						>25	0.00%	0	2	w6	r6	2	369.97	370.25	COAL	Coal	0.28		Seam 1Sub1	07624	369.54	369.72	Dull & bright, crushed to bits, black.
														370.25	370.49	LOST CORE	Lost Core	0.24	0.24	Seam 1Sub1	ns			Coal Loss
														370.49	370.59	CARBONACEOUS MUDSTONE	Carb Mdst	0.10			07625	369.72	369.82	*Part of below Carb. Mdst*
														370.59	370.73	LOST CORE	Lost Core	0.14	0.14					*Rock Loss*
	41						8	75.76%	20	7	W6	R6	2	370.73	371.06	CARBONACEOUS MUDSTONE	Carb Mdst	0.33						Dull gray, v.g. to f.g. massive, 4 fr @ 45˚. Rest at 90˚, contacts @ 90˚.
	41													371.06	371.16	CARBONACEOUS MUDSTONE	Carb Mdst	0.10			07626	370.88	370.98	*Part of above Carb Mdst unit*
														371.16	371.48	LOST CORE	Lost Core	0.32	0.32	Seam 1 Sub1	ns			*Coal Loss*
	41						>25	0.00%	0	2	W6	R0	0	371.48	371.90	COAL	Coal	0.42		Seam 1 Sub1	07627	370.98	371.40	As above coal, except numerous calcite weins @ 90˚ (1% calcite), massive py, bubbled loudly for 20min
52		374.10	374.70	0.60	0.81	135.00%										#N/A								
	42													371.90	372.00	CARBONACEOUS MUDSTONE	Carb. Sh	0.10			07628	371.40	371.50	*Floor Sample, part of below Carb. Sh*
	42						2	0.00%	20	11	W6	R6	2	372.00	372.06	CARBONACEOUS MUDSTONE	Carb. Sh	0.06						Black, gray, massive, v.g. to f.g. numerous coal spars, plant material, calcite veins
	42						2	84.62%	25	11	W6	R6	3	372.06	372.71	SILTSTONE	Sltst	0.65						Light gray, m.g. to f.g. massive, 1 calcite veins @ 85˚, all fr @ 90˚.
53		374.70	377.56	2.86	2.66	93.01%										#N/A								
	42						6	94.77%	0/25	2/15	W6	R7	3	372.71	374.24	LAMINITE	IB Sltst/Sh	1.53						Sltst: 5%. Sh: 95%. Black v.f.g. to f.g. Thinly to medium. Sltst: light gray thinly laminated f.g. to m.g. All fr @ 90˚ two small fault zones (broken clasts of rock) each 3cm long.
	42 & 43						0	100.00%			W6	R7	4	374.24	375.37	SILTSTONE	Sst	1.13						Broken in shoe. Light gray, massive v.c.g. a few shale beds @ 90˚, coal spars, plant material.
54		377.56	379.56	2.00	1.21	60.50%										#N/A								
	43 & 44							100.00%	0	0	W6	R7	4	375.37	375.50	SILTSTONE	Sst	0.13						As above Sst.
														375.50	375.57	LOST CORE	Lost Core	0.07	0.07					*Rock Loss*
	43 & 44						10	66.67%	10	10	W6	R6	3	375.57	376.65	MUDSTONE	Mdst	1.08						Light gray, f.g. to v.f.g. massive, 2 SS @ 0˚, 8 fr @ 90˚. Bubble zone 20cm from bottom.
55		379.56	382.56	3.00	3.20	106.67%										#N/A								
	44 & 45						>25	47.19%	25	7	W6	R6	3	376.65	379.85	MUDSTONE	Mdst	3.20						As above Mdst
56		382.56	385.56	3.00	0.57	19.00%										#N/A								
														379.85	382.28	LOST CORE	Lost Core	2.43	2.43					*Rock Loss*
	45						>25	0.00%	25	6	W6	R6	2	382.28	382.85	MUDSTONE	Mdst	0.57						As above Mdst. It was at this depth (380.29m) during night shift, they had to trip out, b/c they could not get the barrel back. (Belly Whaled Core Tube??)
57		385.56	386.56	1.00	1.01	101.00%										#N/A								
	45						9	76.24%	10	13	W6	R6	2	382.85	383.86	SHALE	Sh	1.01						Shale: dark gray, m.g. to f/g/ massive all fr @ ~ 90˚.
58		386.56	389.56	3.00	3.11	103.67%										#N/A								
	46										W6	R3	4	383.86	383.90	SHALE	Sh	0.04						Dark gray f.g. to m.g. massive, coal spars, plant material.
	46							100.00%			W6	R6	4	383.90	384.20	SILTSTONE	Sst	0.30						Light gray c.g. to v.c.g. Massive
	46 & 47						5	100.00%	25	8	W6	R3	3	384.20	385.48	SHALE	Sh	1.28						As above shale, all fr at 90º, a calcite vein at 75º,
	47							100.00%			W6	R7	4	385.48	385.69	SILTSTONE	Sst	0.21						As above Sst.
	47						6	70.31%	25	10	W6	R3	3	385.69	386.97	SHALE	Sh	1.28						Dark gray shale. A 2cm, coaly zone at 90º. 52cm from the top of the interval. 2cm (8cm) coal beds, several coal spars. F.g. to v.f.g.
59		389.56	391.56	2.00	2.92	146.00%										#N/A								
	47 & 48						4	2.92	25	10	W6	R3		386.97	389.89	SHALE	Sh	2.92						As above Shale, 2 calcite veins at 90º all fr at 90º
60		391.56	393.56	2.00	1.81	90.50%										#N/A								
	48							100.00%			W6	R3		389.89	390.17	SHALE	Sh	0.28						As above Sh, but becoming blacker and less gray. 1 fr at 15, 25cm long.
														390.17	390.26	LOST CORE	Lost Core	0.09	0.09					Rock Loss
	48						4	100.00%	25	15	W6	R6		390.26	391.42	SILTSTONE	Sst	1.16						Sst light gray, massive. V.c.g. to c.g. All fr 85º to 90º, a few coal spars.
	48						2	100.00%	25	15	W6	R3		391.42	391.79	SHALE	Sh	0.37						As above Sh, but becoming blacker and less gray. 1 fr at 15, 25cm long.
61		393.56	395.56	2.00	2.14	107.00%										#N/A								
	49						3	100.00%	25	15	W6	R3		391.79	393.93	SHALE	Sh	2.14						As above Sh, except one Sst bed (3cm thick) Sst at 90º
62		395.56	397.89	2.33	2.39	102.58%										#N/A								
	49 & 50						10	44.22%	25	10	W6	R7	2	393.93	395.30	LAMINITE	IB Sltst/Sh	1.37						2 fr at 0˚. Rest at 90˚. 2 SS at 45˚. light gray v.g.c. to c.g. Sst. Thinly to medium laminated. Sh: black massive v.f.g. to f.g. all beds at 90˚.
	50													395.30	395.40	LAMINITE	IB Sltst/Sh	0.10			07629	395.21	395.31	*Roof Sample, part of above IB Sh & Sst*
	50						>25	0.00%	2	10	W4	R2	0	395.40	396.22	CARBONACEOUS CLAYSTONE	Carb. Clyst	0.82			07630	395.31	396.13	Broken crushed coal w/ shear diskes of claystone. Coal 20% clyst 80%. Some very weathered 1/2mm cleats to dark brown
	50							100.00%			W6	R3	0	396.22	396.32	CLAYSTONE	Clyst	0.10			07631	396.13	396.26	Floor Sample, Gray, fine grained massive
63		397.89	400.69	2.80	2.70	96.43%										#N/A								
	50						1	0.00	10	7	W6	R3	2	396.32	396.52	SHALE	Sh	0.20						Rock borken in shoe. Black massive v.f.g. to f.g. SS at 45˚.
	50										W6	C2	3	396.52	396.62	CLAY	Clay	0.10						Gray soft clay could be rock flour
	50						>25	63.16%	25	12	W6	R3	3	396.62	398.90	SHALE	Sh	2.28						As above Sh, most fr at 90º. one small rubbly fault zone (4cm long). 46cm from top of shale interval. Calcite veins at 45º. right below the above unit. 2 fr at 45º. 6 fr at 90º. 4 fr at 15 (35cm long).
	50										W6	C2	3	398.90	398.95	CLAY	Clay	0.05						As above clay.
	50													398.95	399.02	SHALE	Sh	0.07						Broken & crushed from being in shoe
64		400.69	403.49	2.80	2.77	98.93%										#N/A								
	51 & 52						6	100.00%	25	15	W6	R3	3	399.02	401.49	SHALE	Sh	2.47						Shale: black gray massive. V.f.g. to f.g.
											W6	C3		401.49	401.79	CLAY	Clay	0.30						Black soft consolidated, but easily molded
65		403.49	406.49	3.00	2.77	92.33%										#N/A								
														401.79	402.02	LOST CORE	Lost Core	0.23	0.23					*Rock Loss*
	52						>25	31.51%	0	7	W6	R3	1	402.02	403.48	MUDSTONE	Mdst	1.46						Black massive very friable crumbly falling apart mostly broken up. F.g. to v.f.g.
	53						>25	0.00%	10	8	W6	R6	1	403.48	404.79	SILTSTONE	Sst	1.31						Light gray m.g. to c.g. Sst. Numerous 0º degree fr, numerous 90º , last few cms broken xlasts
66		406.49	409.49	3.00	2.66	88.67%										#N/A								
														404.79	405.13	LOST CORE	Lost Core	0.34	0.34					*Rock Loss*
	53 & 54						21	62.03%	25	9	W6	R6	1	405.13	407.79	SILTSTONE	Sst	2.66						As above Sst, 2 fr at 10º, rest at 90º
67		409.49	410.49	1.00	1.01	101.00%										#N/A								
	54						>25	26.73%	20	6	W6	R6	1	407.79	408.80	SILTSTONE	Sst	1.01						As above Sst, except for first 34cm are fractured 1 sheared to bits, 2 SS at 45º
68		410.49	413.49	3.00	2.73	91.00%										#N/A								
	54						>25	0.00%	20	6	W6	R6	1	408.80	409.08	SILTSTONE	Sst	0.28						As above Sst, but this interval is made up of broken & crushed chunks of Sst
														409.08	409.35	LOST CORE	Lost Core	0.27	0.27					*Rock Loss*

	54 & 55						>25	20.41%	20	6	W6	R4	1	409.35	411.80	SILTSTONE	Sltst	2.45						Light gray,fg to cg massive broken crushed
69		413.49	415.49	2.00	1.83	91.50%										#N/A								
	55 & 56						8	34.43%	25	9	W6	R4	2	411.80	413.63	SILTSTONE	Sltst	1.83						Sltst light grey fg. 0-20cm at top very broken (5cm pieces). Fault zone started 408.77-411.97m.
70		415.49	417.49	2.00	2.14	107.00%										#N/A								
	56 & 57						5	28.97%	25	14	W6	R5	3	413.63	415.77	SILTSTONE	Sltst	2.14						Sltst med grey fg
71		417.49	419.49	2.00	2.19	109.50%										#N/A								
	57						4	2.19	25	14	W6	R5	4	415.77	417.96	SILTSTONE	Volc	2.19						Greenish grey volcanic tuff, w/ calcite veins, fg. EOH

Geological Borehole Log: RAV-09-003

Client: CJV
Project: Raven
Logged By: Henry Kim, Farshad Shirmohamed

Hole Number: RAV-09-003
Date Hole Started: Jun 03 2009
Date Hole Finished: Jun 04 2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 69.55m
Depth of Casing: 6.0m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
SS= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To (m)	Length of Run (m)	Recovery		RQD		Fractures		Alt'n & Weath.	Hardness		G.P.L. Corrected							Samples (Driller's Depths)			Description
					Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage		Prefix	Core Quailty	From (m)	To (m)		Lithology	Length	Core Loss	Strat	Number	From (m)	To (m)	
														0.00	5.80	OVERBURDEN	ovbdn					0.00	5.50	OB
														5.80	6.30	OVERBURDEN	ovbnd					5.50	6.00	Lost due to casing set up
1		6.00	9.00	3.00	2.75	91.67%										#N/A								
	1						>25	3.64%	25	10	W5	R6	2	6.30	9.05	CLAYEY SILTSTONE	Sst	2.75						Med to dark grey, silty sst and v.fg Sst, containing plant fossils and fragments in some sections, coal stringers and coalified leaves and plants gragments, Sst is v.thick bedded to massive, a 1m long 0° angle fracture from 8.0-9.0m
														9.05	9.30	LOST CORE	Core Loss	0.25	0.25					*Rock*
2		9.00	12.00	3.00	2.70	90.00%										#N/A								
	2						>25	56.52%	25	10	W5	R5	3	9.30	11.60	CLAYEY SILTSTONE	Sst	2.30						roof, light to med grey, massive sst, fg-mg, 40cm above coal is medstone
	2						4	75.00%	25	13	W6	R5	4	11.60	11.90	MUDSTONE	Mdst	0.30						
	2													11.90	12.00	MUDSTONE	Mdst	0.10			07566	11.60	11.70	Roof Sample, part of above Mdst
														12.00	12.30	LOST CORE	Core Loss	0.30	0.30		ns			*Coal Loss*
3		12.00	15.00	3.00	2.60	86.67%										#N/A								
	2													12.30	13.00	COAL	Coal	0.70		Seam1	07567	12.00	12.70	bright, broken and crushed in some parts, py observed, slickensided, some parts are powdery (gauge?)
														13.00	13.30	LOST CORE	Core Loss	0.30	0.30	Seam1	ns			*Rock*
	2 & 3													13.30	14.25	COAL	Coal	0.95		Seam1	07568	12.70	13.65	coal with interbeds of carbonaceous mudstone, py, slickenside
														14.25	14.53	COAL	Coal	0.28		Seam1	07569	13.65	13.93	
														14.53	14.67	FFERENTIATED BEDI	Parting	0.14		Seam1	07569	13.93	14.07	
														14.67	14.83	COAL	Coal	0.16		Seam1	07569	14.07	14.23	
														14.83	15.04	FFERENTIATED BEDI	Parting	0.21		Seam1	07569	14.23	14.44	
	2 & 3													15.04	15.20	COAL	Coal	0.16		Seam1	07569	13.65	13.81	coal some interbeds of thin carbonaceous mudstone, 3cm gauge @ 14.30m, ~90° TCA
														15.20	15.25	LOST CORE	Core Loss		0.05	Seam1	ns			*Coal*
														15.25	15.30	LOST CORE	Core Loss		0.05	Seam1	ns			*Rock Loss*
4		15.00	18.00	3.00	2.68	89.33%										#N/A								
														15.30	15.42	LOST CORE	Core Loss		0.12	Seam1	ns			*Rock Loss*
	3 & 4						>25		25	10	W5	R5	3	15.42	15.62	COAL	Coal	0.20		Seam1	07570	15.00	15.20	Coal w/ interbeds of carbonaceous mudstone
	3 & 4						>25		25	10	W5	R5	2	15.62	15.72	MUDSTONE	Mdst	0.10		Seam1	07571	15.20	15.30	carbonaceous mudstone, py in fractures, floor
														15.72	15.92	LOST CORE	Core Loss		0.20	Seam1	ns			Coal
	3 & 4						4		25	15	W6	R5	4	15.92	16.02	MUDSTONE	Mdst	0.10		Seam1	07572	15.40	15.50	carbonaceous mudstone, sampled as roof
	3 & 4						>25		25	7	W6	R1	4	16.02	16.22	COAL	Coal	0.20		Seam1	07573	15.50	15.70	coal, shaley, disc py ~5%
														16.22	16.29	LOST CORE	Core Loss		0.07	Seam1	ns			*Coal*
	3 & 4													16.29	16.39	MUDSTONE	Mdst	0.10			07574	15.70	15.80	Floor Sample, part of below Mdst
	3 & 4						>25		25	12	W6	R6	4	16.39	18.37	MUDSTONE	Mdst	1.98						Carbonaceous mudstone, vertical joints near bottom. This interval was over measured by 7cm (Changed based on pictures, RQD, & accounting of recoveries)
5		18.00	21.00	3.00	3.00	100.00%										#N/A								
	4						20	76.67%	25	12	W6	R6	4	18.37	21.37	CLAYEY SILTSTONE	Sltst	3.00						Dark gery, fg, Sltst, massive, appears to have ~90° bedding, joints ~90°, some ~40°
6		21.00	24.00	3.00	3.10	103.33%										#N/A								
	4 & 5						9	99.35%	25	14	W6	R6	4	21.37	24.47	CLAYEY SILTSTONE	Sltst	3.10						Dark grey, fg, Sltst, same as above, joints ~90°
7		24.00	27.00	3.00	3.05	101.67%										#N/A								
	5 & 6						>25	77.38%	25	14	W6	R6		24.47	27.52	CLAYEY SILTSTONE	Sltst	3.05						Dark grey, fg, Sltst, same as above, joints mostly ~90°, ~25m soft mud layer about 10cm thick
8		27.00	30.00	3.00	2.90	96.67%										#N/A								
	6 & 7						8	40.00%	25	7	W6	R6	4	27.52	28.02	CLAYEY SILTSTONE	Sltst	0.50						Dark grey, fg, Sltst, massive, ~90° contact angle w/ lower Sst, mostly ~90° joints, one ~30°
	6 & 7						2	93.02%	25	13	W6	R6	4	28.02	28.88	CLAYEY SILTSTONE	Sst	0.86						Light grey, mg-cg, massive Sst, ~2cm coal nens, joints ~55°, and 90°
	6 & 7						10	84.42%	10,25	14	W6	R6	4	28.88	30.42	CLAYEY SILTSTONE	Sltst	1.54						Sltst same as above, slickenside joints
9		30.00	33.00	3.00	3.00	100.00%										#N/A								
	7						>25	56.67%	25	13	W6	R6	4	30.42	33.42	LAMINITE	IB Sltst & Sst	3.00						Light grey, fg-mg, interbedded Sltst and Sst, 10° low angle joints @ 30.5m, mostly ~90° joints, gradual change in grain size - course downwards, clear Sltst/Sst contact # 31.5m, ~2cm coal lens within slt, ~6cm thick mud layer @ 32.1m, heavely fractured zone @ 32.5m
10		33.00	36.00	3.00	3.00	100.00%										#N/A								
	7 & 8						12	96.67%	10,25	14	W6	R6	4	33.42	36.42	CLAYEY SILTSTONE	Sltst	3.00						Dark grey, fg, massive Sltst, 2cm thick calcite @ 33.8m @ ~45°, massive sulphide along most joints w/calcite, Sltst to volcanic transition zone near bottom, most joints ~90°
11		36.00	39.00	3.00	3.00	100.00%										#N/A								
	8 & 9						>25	76.67%	25	9	W6	R6	4	36.42	39.42	CLAYEY SILTSTONE	Volc	3.00						Green to dark green volcanic breccia, thin calcite veins, joints ~90°, dark brown angular zenolith
12		39.00	42.08	3.08	3.10	100.65%										#N/A								
	9						10	96.77%	25	13	W6	R6	4	39.42	42.52	CLAYEY SILTSTONE	Volc	3.10						Green to dark green volc, same as above, trace py. Based on the Reconciliation Process, Peak Drilling cored 3.08m, and NOT 3 meters
13		42.08	45.18	3.10	3.10	100.00%										#N/A								
	9 & 10						18	79.03%	25	11	W6	R6	4	42.52	45.62	CLAYEY SILTSTONE	Volc	3.10						Green to dark green volc, same as above, many jotins ~20°, 85-90° Green to dark green volc, same as above, trace py. Based on the Reconciliation Process, Peak Drilling cored 3.10m, and NOT 3 meters
14		45.18	48.25	3.07	3.07	100.00%										#N/A								
	10 & 11						9	87.95%	20	14	W6	R6	4	45.62	48.69	CLAYEY SILTSTONE	Volc	3.07						Green to dark green, massive volc, thin veins visible ~1mm, less brecciated than the upper volc, joints mostly ~85°, some shallow angle joints ~25°,45°, jotins mod-high altered, shows dark brown
15		48.25	51.25	3.00	3.05	101.67%										#N/A								
	11 & 12						20	73.11%	20	13	W6	R6		48.69	51.74	CLAYEY SILTSTONE	Volc	3.05						Green to dark green, massive volc, same as above, most joints ~85°, some shallow angle joints ~20°, brown color w/ calc along joints, heavely fractured near bottom Based on the
16		51.25	54.25	3.00	3.00	100.00%										#N/A								
	12						20	74.33%	20	13	W6	R6	4	51.74	54.74	CLAYEY SILTSTONE	Volc	3.00						Green to dark green, massive volc, 51.8-53.6m highly fractured zone, jotins ~80°, 60°, 15°, calc vein ~10cm thick running @ 35°
17		54.25	57.25	3.00	3.00	100.00%										#N/A								
	12 & 13						20	83.33%	25	10	W6	R6	4	54.74	57.74	CLAYEY SILTSTONE	Volc	3.00						Green to dark green, massive volc, jotins ~70°, some ~90°
18		57.25	60.25	3.00	3.00	100.00%										#N/A								
	13 & 14						18	81.67%	25	11	W6	R6	4	57.74	60.74	CLAYEY SILTSTONE	Volc	3.00						Green to dark green, massive volc, shallow angle ~10°, joints near top, ~10cm thick white to pink veins ~10cm thick running @ 35°
19		60.25	63.25	3.00	3.00	100.00%										#N/A								
	14 & 15						10	96.67%	25	13	W6	R6	4	60.74	63.74	CLAYEY SILTSTONE	Volc	3.00						Green to dark green, massive, volc breccia, 61.4m - 62.1m light brown to white alteration, most joints ~85°-90°
20		63.25	66.25	3.00	2.90	96.67%										#N/A								
	15						12	96.55%	25	13	W6	R6	4	63.74	66.64	CLAYEY SILTSTONE	Volc	2.90						Green to dark green, massive volc breccia, top 10cm whicte discolored zone w/ joints ~55°. Another low angle joint 25° @ 64m, others are mostly 85° - 90°
21		66.25	69.25	3.00	2.90	96.67%										#N/A								
	15 & 16						25	2.80	25	12	W6	R6	4	66.64	69.54	CLAYEY SILTSTONE	Volc	2.90						Green to dark green, massive brecciated volc, mostly ~90° joints
														69.54	69.55	LOST CORE	Core Loss		0.01					*Rock Loss*

Geological Borehole Log: RAV-09-004

Client: CJV
Project: Raven
Logged By: Henry Kim & Farshad Shirmohamed

Hole Number: RAV-09-004
Date Hole Started: Jun 06 2009
Date Hole Finished: Jun 16 2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 308.54m
Depth of Casing: 54.00m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Fractures Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)	G.P.L. Corrected	Lithology	Length	Core Loss	Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	52.48	OVERBURDEN	ovbdn					0.00	53.12	OB
1		53.12	56.17	3.05	2.68	87.87%																		
														52.48	52.85	LOST CORE	Lost Core	0.37	0.37					*Rock Loss*
	1						>25	63.43%	25	9	W5	R5	4	52.85	55.53	MUDSTONE	Mdst	2.68						Medium grey, mudstone and silty mudstone, low angle joints, mainly filled with calcite, ~20-30°TCA, mg and massive, makes sharp edges when breaking
2		56.17	59.22	3.05	2.75	90.16%										#N/A								
	1 & 2						>25	80.00%	25	10	W5	R3	3	55.53	58.28	SANDY SILTSTONE	Sltst	2.75						Med to dark grey Sltst, massive, fg - mg, with broken core (~5cm) at the beginning of the run, shiny, massive, makes sharp edges when breaking
														58.28	58.58	LOST CORE	Lost Core	0.30	0.30					*Rock Loss*
3		59.22	62.27	3.05	3.00	98.36%										#N/A								
	2 & 3						9	93.33%	25	15	W6	R5	4	58.58	61.58	SANDY SILTSTONE	Sltst	3.00						Dark grey, massive sandy Sltst, fg-mg, a fault gauge at the depth of 60cm, 25°TCA, with parallel joints filled with calcite is noticiable, more clac filling also in joints close to the end of the run
														61.58	61.63	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
4		62.27	65.32	3.05	2.90	95.08%										#N/A								
	3						10	96.55%	25	15	W6	R5	4	61.63	64.53	SANDY SILTSTONE	Sltst	2.90						Massive dark grey sandy Sltst, fg-mg, joints mainly filled with calcite w/25-30° TCA, change in the angle and direction of the joints might indicate sedimentary faulting(?)
5		65.32	68.37	3.05	3.20	104.92%										#N/A								
	3 & 4						>25	61.11%	10	2	W5	R5	3	64.53	66.33	SANDY SILTSTONE	Sltst	1.80						Dark grey, fg-mg, sandy silt, massive, core is broken w/ signs of gauge (fault) and slickensided
							7	92.86%	25	15	W6	R6	4	66.33	67.73	SANDY SILTSTONE	Sst	1.40						Medium to light grey, massive sst, mg, subangular grains, joints filled w/ calcite. A low angle (20° TCA) joint fault(?) at ~67.7m, filled w/ caicite and black materials, breccia texture is noticiable
6		68.37	71.42	3.05	3.05	100.00%										#N/A								
	4 & 5						5	98.36%	25	15	W6	R6	4	67.73	70.78	SANDY SILTSTONE	Sst	3.05						Light to medium grey, mg-cg sst, massive, angular to sub angular grains, joints filled w/ calcite mainly 25-30° TCA
7		71.42	74.47	3.05	3.05	100.00%										#N/A								
	5 & 6						5	98.36%	25	15	W6	R6	4	70.78	73.83	SANDY SILTSTONE	Sst	3.05						Light to medium grey, mg-cg, massive, joints filled w/ calcite and ~25° TCA, grains are mainly sub angular
8		74.47	77.52	3.05	3.00	98.36%										#N/A								
	6						3	100.00%	25	15	W6	R6	4	73.83	76.83	SANDY SILTSTONE	Sst	3.00						Light grey, mg-cg, massive Sst, calcite filled gractures, mainly 25-30° TCA, grains are subangular and biotite & feldspars presen
														76.83	76.88	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
9		77.52	80.57	3.05	3.00	98.36%										#N/A								
	6 & 7						5	100.00%	25	15	W6	R6	4	76.88	79.88	SANDY SILTSTONE	Sst	3.00						Light to medium grey, mg-cg, sst, massive, calcite filled fractures, one at 77.80m is ~45° TCA, ~5mm thick, biotite & feldspars present
														79.88	79.93	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
10		80.57	83.62	3.05	2.95	96.72%										#N/A								
	7 & 8							100.00%			W6	R6	4	79.93	81.81	SANDY SILTSTONE	Sst	1.88						Light grey, mg-cg, sst, massive, biotite & feldspars present, round clasts (upto 5cm in diameter) of underlying unit (carbonaceous Sltst & Clyst) are present in the Sst, sharp contact w/ the lower unit at the depth of 82.08m, is a fault gauge about 5cm thick and 55° TCA
	7 & 8						7	90.65%	25	13	W6	R5	4	81.81	82.88	LAMINITE	IB Sltst & Mdst	1.07						Carbonaceous Slstt and Mdst, sharp fault, contact w/ above Sst, 55° TCA, calcite filled fractures
														82.88	82.98	LOST CORE	Lost Core	0.10	0.10					*Rock Loss*
11		83.62	86.67	3.05	3.00	98.36%										#N/A								
	8						9	96.00%	25	15	W6	R5	4	82.98	85.98	CARBONACEOUS SILTSTONE	Carb Sltst & Mdst	3.00						Dark grey, carbonaceous Sltst and silty mudstone, massive with calcite filled fractures
														85.98	86.03	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
12		86.67	89.72	3.05	3.00	98.36%										#N/A								
	8 & 9						9	91.00%	25	14	W6	R5	4	86.03	89.03	SANDY SILTSTONE	Sltst & Mdst	3.00						Dark grey, fg-v.fg, silty mudstone same as above, calcite filled joints and fractures
														89.03	89.08	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
13		89.72	92.77	3.05	3.00	98.36%										#N/A								
	9 & 10						5	96.67%	25	15	W6	R6	4	89.08	92.08	SANDY SILTSTONE	Sltst & Mdst	3.00						Dark grey, fg-v.fg, silty mudstone same as above, calcite filled joints funning 40-65° TCA
														92.08	92.13	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
14		92.77	95.82	3.05	3.03	99.34%										#N/A								
	10 & 11						13	88.12%	25	13	W6	R6	4	92.13	95.16	SANDY SILTSTONE	Sltst & Mdst	3.03						Dark grey, fg, silty mudstone, same as above, 95.4m series of thin calcite filled joints running 75° TCA near bottom more calcite filled joints (veins?) running ~60° TCA
														95.16	95.18	LOST CORE	Lost Core	0.02	0.02					*Rock Loss*
15		95.82	98.87	3.05	3.01	98.69%										#N/A								
	11						8	86.38%	25	14	W6	R6	4	95.18	98.19	SANDY SILTSTONE	Sltst & Mdst	3.01						Dark grey, fg, silty mudstone, same as above, top of the hole ~33cm vertical joint, many calcite veins few mm thick
														98.19	98.23	LOST CORE	Lost Core	0.04	0.04					*Rock Loss*
16		98.87	101.92	3.05	3.05	100.00%										#N/A								
	11 & 12						10	86.89%	25	14	W6	R6	4	98.23	101.28	SANDY SILTSTONE	Sltst & Mdst	3.05						Dark grey, fg, silty mudstone, same as above, calc veins running 85° TCA, most joints 85-90° TCA
17		101.92	104.97	3.05	3.00	98.36%										#N/A								
	12 & 13						5	86.21%	25	13	W6	R5	4	101.28	102.73	SANDY SILTSTONE	Sltst & Mdst	1.45						Dark grey, fg, silty mudstone w/calc vein and filling fractures, joints 85-90° TCA
	12 & 13						4	100.00%	25	14	W6	R6	4	102.73	104.28	SANDY SILTSTONE	Sst	1.55						Light grey, mg Sst, thick calc vei 40cm from the top running almost vertical to TCA joints 85-90° TCA no sharp contact between upper mudstone and lower Sst, gradual coarsening downwards
														104.28	104.33	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
18		104.97	108.02	3.05	3.05	100.00%										#N/A								
	13						9	56.72%	25	13	W6	R6	4	104.33	107.38	SANDY SILTSTONE	Sst	3.05						Light grey, fg-mg Sst, grain size gradually gets finer @105.2m, slickensided joints below and becomes coarser @106.3m, few almost 0° calcite veins and lower angle joints near bottom
19		108.02	111.07	3.05	3.05	100.00%										#N/A								
	13 & 14						7	98.08%	25	13	W6	R6	4	107.38	109.98	SANDY SILTSTONE	Sst	2.60						Light grey, mg Sst, low angle joints 30-45° TCA
	13 & 14						>25	0.00%	30	11	W6	R5	4	109.98	110.43	SANDY SILTSTONE	Sltst & Mdst	0.45						Dark grey, fg, silty mudstone, ~9cm thick clay bedding, ~90° TCA joints
20		111.07	114.12	3.05	2.98	97.70%										#N/A								
	14 & 15						1	0.00%	25	14	W6	R6	4	110.43	110.75	SANDY SILTSTONE	Sltst & Mdst	0.32						Med grey, silty mudstone, bit sandy, one low angle joint running 20° TCA filled w/ calc.
	14 & 15						8	89.10%	25	14	W6	R6	4	110.75	113.41	SANDY SILTSTONE	Sst	2.66						Light grey, mg Sst, become finer grains near bottom, bedding 70° TCA, low angle joints near bottom ~40° TCA
														113.41	113.48	LOST CORE	Lost Core	0.07	0.07					*Rock Loss*
21		114.12	117.17	3.05	3.05	100.00%										#N/A								
	15						16	74.75%	25	13	W6	R6	4	113.48	116.53	SANDY SILTSTONE	Sltst	3.05						Light grey, mg Sst, vertical to low angle joints are common, 10~30° TCA
22		117.17	120.22	3.05	3.10	101.64%										#N/A								
	15 & 16						8	96.77%	25	15	W6	R6	4	116.53	119.63	SANDY SILTSTONE	Sst	3.10						Light grey, mg Sst, joint angle ~45° TCA, calcite filled joints (veins), ~85° TCA
23		120.22	123.27	3.05	2.47	80.98%										#N/A								
	16 & 17						1	100.00%	25	15	W6	R6	4	119.63	120.88	SANDY SILTSTONE	Sst	1.25						Light to med grey, fg-mg Sst, some very thin bedding, calcite filled fractures
	16 & 17						>25	50.82%	0	2	W5	R1-3	2	120.88	122.10	CARBONACEOUS MUDSTONE	Carb Mdst	1.22						Dark grey, massive, soft core in most parts, numerous thin calcite filled fractures, Carbonaceous Mudstone and Claystone
														122.10	122.58	LOST CORE	Lost Core	0.48	0.48					*Rock Loss*
24		123.27	126.32	3.05	3.10	101.64%										#N/A								
	17 & 18						8	94.74%	25	13	W5	R5	4	122.58	124.48	CARBONACEOUS MUDSTONE	Carb, Mdst	1.90						Dark grey, Carbonaceous Mdst, massive, numerious calcite filled gractures, fault contact with lower unit
	17 & 18						3	91.67%	25	15	W5	R6	4	124.48	125.68	SANDY SILTSTONE	Sst	1.20						Medium grey to light grey, Sst, massive, some organic fragments, sharp fault contact ~50 TCA w/ upper unit
25		126.32	129.37	3.05	3.05	100.00%										#N/A								
	18						4	100.00%	25	15	W6	R6	4	125.68	128.73	SANDY SILTSTONE	Sst	3.05						Light to med grey Sst, fg-mg, massive plant fossil fragments, some calcite filled fragments
26		129.37	132.42	3.05	3.00	98.36%										#N/A								
														128.73	128.78	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
	18 & 19						5	100.00%	25	15	W6	R6	4	128.78	131.78	SANDY SILTSTONE	Sst	3.00						Light to med grey, mg-cg, Sst, mainly massive, increasing in plant fragments in lower part of the core
27		132.42	135.47	3.05	3.00	98.36%										#N/A								
	19 & 20						3	100.00%	25	15	W6	R6	4	131.78	133.13	SANDY SILTSTONE	Sst	1.35						Light to med and dark grey Sst, some bedding (thin) at 70-80° TCA, plant fragments mg-cg, about 30cm at the bottom is coarse grained
	19 & 20						2	85.71%	25	13	W5	R5	4	133.13	133.48	CARBONACEOUS MUDSTONE	Carb Mdst	0.35						Dark grey, massive, some thin bedding 70-80 TCA
	19 & 20													133.48	133.58	CARBONACEOUS MUDSTONE	Carb Mdst	0.10			07575	133.70	133.80	Roof Sample, part of above Carb Mdst

	19 & 20													133.58	134.78	COAL	Coal	1.20		Seam 4	07576	133.80	134.40	Coal, almost bright
														134.78	134.83	LOST CORE	Lost Core	0.05	0.05	Seam 4	ns			*Coal Loss*
28		135.47	138.52	3.05	2.81	92.13%										#N/A								
	20													134.83	135.23	COAL	Coal	0.40		Seam 4	07577	134.40	135.40	Coal, mainly powdery and crushed
														135.23	135.32	LOST CORE	Lost Core	0.09	0.09	Seam 4	ns			*Coal Loss*
	20													135.32	135.42	CARBONACEOUS MUDSTONE	Carb Mdst	0.10			07578	135.40	135.50	*Floor Sample, part of below Carb Mdst*
	20						>25	0.00%	0	2	W5	R2	3	135.42	135.57	CARBONACEOUS MUDSTONE	Carb Mdst	0.15						Dark grey to black, some bedding, gouge at contact with lower unit
	20						1	100.00%	25	15	W6	R6	4	135.57	137.73	SANDY SILTSTONE	Sst	2.16						Light grey, mg-cg (at the bottom), some calcite filled gractures, massive
														137.73	137.88	LOST CORE	Lost Core	0.15	0.15					*Rock Loss*
29		138.52	141.57	3.05	3.00	98.36%										#N/A								
	21						3	100.00%	25	15	W6	R7	4	137.88	140.88	SANDY SILTSTONE	Sst	3.00						Light to medium grey, mg-cg, very thin bedded to massive Sst, bedding 85° TCA, calcite filled fractures mainly along bedding planes, special pattern on the core, showing current (paleo current?) or other sedimentalogical process
														140.88	140.93	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
30		141.57	144.62	3.05	3.05	100.00%										#N/A								
	21 & 22						5	100.00%	25	15	W6	R6	4	140.93	143.98	SANDY SILTSTONE	Sst	3.05						Light grey, mg-cg, massive Sst, fractures filled with calcite, from 15° to 90° TCA, some slickedsided, minor Coal stringer at 144.10m
31		144.62	147.67	3.05	3.05	100.00%										#N/A								
	22 & 23						6	95.08%	25	15	W6	R6	4	143.98	147.03	SANDY SILTSTONE	Sst	3.05						Light grey, mg-cg, sst, same as above, near bottom finer grain almost appears to be slt, calcite filled joints and veins, joints ~85° TCA
32		147.67	150.72	3.05	3.10	101.64%										#N/A								
	23						7	87.10%	25	15	W6	R6	4	147.03	150.13	SANDY SILTSTONE	Sst	3.10						Light grey, mg-cg, Sst, calcite filled joints some show slicken sided, joint angle 40-70° TCA
33		150.72	153.77	3.05	2.96	97.05%										#N/A								
	23 & 24						7	95.95%	25	14	W6	R6	4	150.13	153.09	SANDY SILTSTONE	Sst	2.96						Light grey, mg-cg, Sst, same as above, near bottom finer grain almost appears to be slt, calcite filled joints and veins, joints ~85° TCA
														153.09	153.11	LOST CORE	Lost Core	0.02	0.02					*Rock Loss*
34		153.77	156.82	3.05	3.06	100.33%										#N/A								
	24 & 25						9	94.77%	25	14	W6	R6	4	153.11	156.17	SANDY SILTSTONE	Sst	3.06						Light grey, fg-cg, interbedded Sst, 154.5m calcite vein and calcite filled joints within finer grain Sst near bottom cg Sst
35		156.82	159.87	3.05	3.06	100.33%										#N/A								
	25						9	94.77%	25	14	W6	R6	4	156.17	159.23	SANDY SILTSTONE	Sst	3.06						Light grey, cg, Sst, massive, some w/ slicken sided, joints angles from 50°-85° TCA
36		159.87	162.92	3.05	3.00	98.36%										#N/A								
	25 & 26						6	93.42%	25	13	W6	R6	4	159.23	161.66	SANDY SILTSTONE	Sst	2.43						Light grey, cg, Sst massive, most joints are ~45° TCA, ~3mm thick calcite vein near the bottom running ~0° TCA
	25 & 26						4	61.40%	25	9	W6	R5	4	161.66	162.23	SANDY SILTSTONE	Sltst	0.57						Dark grey w/ light grey-brown band, fg, Sltst, interbedded w/ fg sst, ~90° bedding angle, joints along bedding plane
														162.23	162.28	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
37		162.92	165.97	3.05	3.05	100.00%										#N/A								
	26 & 27						2	80.49%	25	13	W6	R5	4	162.28	163.10	SANDY SILTSTONE	Sltst	0.82						Dark grey w/ light grey-brown band, fg Sltst interbedded w/ fg Sst, same as above, bedding ~85-90° TCA contact angle ~90° TCA w/ lower contact Sst
	26 & 27						13	66.84%	25	12	W6	R6	4	163.10	164.87	SANDY SILTSTONE	Sst	1.77						Light grey, mg-cg, massive Sst w/ interbedded coal lens and dark grey Sltst, Sltst layer gets higher in % near bottom fracture, ~164m depth vertical joints ~0° TCA about 65cm long, other joints 80-90° TCA w/coal lens
	26 & 27													164.87	164.97	SANDY SILTSTONE	Sst	0.10			07579	165.09	165.19	*Roof Sample, part of above Sst*
	26 & 27						>25	0.00%				S4	0	164.97	165.07	COALY MUDSTONE	Coaly Sh	0.10			07580	165.19	165.29	Black, powdered Coal seam, about 50% shale, 50% coal, small bits of bright Coal visible
	26 & 27													165.07	165.17	SANDY SILTSTONE	Sltst	0.10			07581	165.29	165.39	*Floor Sample part of below Sltst*
	26 & 27						5	0.00%	25	6	W6	R5	4	165.17	165.33	SANDY SILTSTONE	Sltst	0.16						Black, fg, Sltst w/ Coal(?) lens visible on fracture plane
38		165.97	169.02	3.05	3.04	99.67%										#N/A								
	27 & 28						8	95.39%	25	15	W6	R6	4	165.33	168.37	SANDY SILTSTONE	Sst	3.04						Light grey, mg-cg, Sst, top 60cm interbedded w/ Sltst, rest massive Sst most joints ~50° TCA
														168.37	168.38	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
39		169.02	172.07	3.05	3.02	99.02%										#N/A								
	28						3	98.01%	25	15	W6	R6	4	168.38	171.40	SANDY SILTSTONE	Sst	3.02						Light grey, mg-cg, massive Sst, joints w/ thick Coal lens, other coal lenses are visigle and gassy.
														171.40	171.43	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
40		172.07	175.12	3.05	3.08	100.98%										#N/A								
	28 & 29						6	100.00%	25	15	W6	R6	4	171.43	174.51	SANDY SILTSTONE	Sst	3.08						Light grey, cg, Sst, massive, Coal visible along joints, Coal lenses visible, few joints and Coal lenses ~55° TCA
41		175.12	178.17	3.05	3.02	99.02%										#N/A								
	29 & 30						3	100.00%	25	15	W6	R6	4	174.51	177.53	SANDY SILTSTONE	Sst	3.02						Light grey, gm-cg Sst, massive, calcite filled fractures and same Coal stingers, bedding is present in some parts, ~80° TCA
42		178.17	181.22	3.05	3.00	98.36%										#N/A								
	30						5	96.67%	25	15	W6	R6	4	177.53	180.53	SANDY SILTSTONE	Sst	3.00						Massive light grey, mg-cg, Sst, calcite filled fractures, coal stringers mainly at 80-85° TCA, are present
														180.53	180.58	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
43		181.22	184.27	3.05	2.97	97.38%										#N/A								
	30 & 31						2	100.00%	25	15	W6	R6	4	180.58	183.55	SANDY SILTSTONE	Sst	2.97						Light to med grey, mg-cg, Sst, some coal stringers, mainly massive, calcite crystals in a mg at ~181.7m
														183.55	183.63	LOST CORE	Lost Core	0.08	0.08					*Rock Loss*
44		184.27	187.32	3.05	2.40	78.69%										#N/A								
	31 & 32						2		25	15	W6	R6	4	183.63	185.93	SANDY SILTSTONE	Sst	2.30						Med grey, mg-cg, Sst, more Coal stringers compare to the above unit, mainly at 80-90° TCA, massive and some parts bedded, lower parts carbonaceous and rich in organic materials, Coal, Carb Sst, Sst
														185.93	186.03	SANDY SILTSTONE	Sst	0.10			07582	186.10	186.20	*Roof Sample, part of above Sst*
														186.03	186.68	LOST CORE	Lost Core	0.65	0.65		ns			*Coal Loss*
45		187.32	190.37	3.05	2.35	77.05%										#N/A								
	32 & 33													186.68	187.38	COALY MUDSTONE	Coaly SH	0.70			07583	186.20	186.90	Coal, partly dull with some rock bands, **N.B.** T*his Coal Seam does not appear on the Geophysical Logs for this hole, but these two Seams do appear in adjacent Geophysical Logs and Core Logs.*
	32 & 33													187.38	187.48	CARBONACEOUS SANDSTONE	Carb Sst	0.10			07584	186.40	187.00	Carb Sst , with some Coal, floor
	32 & 33													187.48	187.93	CARBONACEOUS SANDSTONE	Carb Sst	0.45			07585	187.00	187.45	Rock Band and Coal
	32 & 33													187.93	188.03	CARBONACEOUS SANDSTONE	Carb Sst	0.10			07586	187.45	187.55	Carb Sst, with some Coal, roof
	32 & 33													188.03	188.53	COALY MUDSTONE	Coaly SH	0.50			07587	187.55	188.15	Coal, dull with rock bands **N.B.** *This Coal Seam does not appear on the Geophysical Logs for this hole, but these two Seams do appear in adjacent Geophysical Logs and Core Logs.*
	32 & 33													188.53	188.63	CARBONACEOUS SANDSTONE	Carb Sst	0.10			07588	188.15	188.25	Carb Sst, floor
	32 & 33													188.63	188.73	CARBONACEOUS SANDSTONE	Carb Sst	0.10			07589	188.60	188.70	Carb Sst, roof
	32 & 33													188.73	188.93	COALY MUDSTONE	Coaly SH	0.20			07590	188.70	188.90	Coal, dull with rock band **N.B.** *This Coal Seam does not appear on the Geophysical Logs for this hole, but these two Seams do appear in adjacent Geophysical Logs and Core Logs.*
	32 & 33													188.93	189.03	CARBONACEOUS SANDSTONE	Carb Sst	0.10			07591	188.90	189.00	Carb Sst, floor
														189.03	189.73	LOST CORE	Lost Core	0.70	0.70					*Rock Loss*
46		190.37	193.42	3.05	3.00	98.36%										#N/A								
	33						5	98.33%	25	15	W6	R6	4	189.73	192.73	SANDY SILTSTONE	Sst	3.00						Light to med grey, mg-cg Sst, massive and some parts thin bedded, Coal stringers and calcite filled fractures are also present (0° TCA _191.5m depth)
														192.73	192.78	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
47		193.42	196.47	3.05	3.05	100.00%										#N/A								
	33 & 34						3	98.36%	25	15	W6	R6	4	192.78	195.83	SANDY SILTSTONE	Sst	3.05						Light grey, massive, mg-cg Sst, a low angle ~ vertical calcite filled fracture ~9m long at 193.5m
48		196.47	199.52	3.05	2.95	96.72%										#N/A								
	34 & 35						16	93.22%	25	10	W6	R6	3	195.83	198.78	SANDY SILTSTONE	Sst	2.95						Light grey, mg-cg Sst, massive w/ some Coal stringers, a long (1.5m) vertical (0° TCA) calcite filled gractures starts at 196.0m, other low angle are also common, a fault gouge (~30-40° TCA), and broken core at about 198.5m depth is noticiable
														198.78	198.88	LOST CORE	Lost Core	0.10	0.10					*Rock Loss*
49		199.52	202.57	3.05	2.90	95.08%										#N/A								
	35						13	86.21%	25	10	W6	R6	4	198.88	201.78	SANDY SILTSTONE	Sst	2.90						Light grey, massive, fg-mg Sst, broken at the beginning of the run, coal stringers and low angle calcite filled fractures are present
														201.78	201.93	LOST CORE	Lost Core	0.15	0.15					*Rock Loss*
50		202.57	205.62	3.05	3.00	98.36%										#N/A								
	35 & 36						5	93.33%	25	15	W6	R6	4	201.93	204.93	SANDY SILTSTONE	Sst	3.00						Light grey, cg, massive Sst, Coal lenes and Coal at joints, joints ~85-90° TCA
														204.93	204.98	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
51		205.62	208.67	3.05	3.00	98.36%										#N/A								
	36 & 37						8	100.00%	25	15	W6	R6	4	204.98	207.98	SANDY SILTSTONE	Sst	3.00						Light grey, cg, massive Sst, same as above, most joints ~90° TCA, small Coal lenses
														207.98	208.03	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
52		208.67	211.72	3.05	3.02	99.02%										#N/A								
	37 & 38						7	97.35%	25	15	W6	R6	4	208.03	211.05	SANDY SILTSTONE	Sst	3.02						Light grey, cg, massive Sst, same as above, vertical joints w/ calc filled near top and 210.0m, other joints near 90° TCA
														211.05	211.08	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*

53		211.72	214.77	3.05	3.05	100.00%								238.53	241.56	#N/A								
	38						6	93.44%	25	15	W6	R6	4	211.08	214.13	SANDY SILTSTONE	Sst	3.05						Light grey, cg, massive, Sst, same as above, joints mostly 85-90° TCA
54		214.77	217.82	3.05	3.02	99.02%								214.13	217.15	#N/A								
	38 & 39						3	100.00%	25	15	W6	R6	4	214.13	217.15	SANDY SILTSTONE	Sst	3.02						Light grey, mg-cg, Sst, Coal stringers at the fractures (bedding planes?) ~85° TCA
														217.15	217.18	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
55		217.82	220.87	3.05	3.05	100.00%								217.18	220.23	#N/A								
	39 & 40						6	100.00%	25	15	W6	R6	4	217.18	220.23	SANDY SILTSTONE	Sst	3.05						Med grey, mg-cg Sst, increasing in the amount of organic materials and Coal stringers ~85° TCA
56		220.87	224.09	3.22	3.17	98.45%								220.23	221.32	#N/A								
	40													220.23	221.32	SANDY SILTSTONE	Sst	1.09						Med grey, mg-cg, Sst *Please see interval 221.42-221.72m, Coal for an important Correction*
	40													221.32	221.42	SANDY SILTSTONE	Sst	0.10			07592	221.57	221.67	*Roof Sample, part of above Sst*
														221.42	221.72	COAL	Coal	0.30		Seam 3 R	ns			***N.B.** This Core Run was sampled incorrectly in the field. From the Geophysical Log, this faulted ply of Seam 3 should be 0.50m thick, and not 0.20m. Therefore the misssing Coal was inserted at the expense of the above Sst.*
	40													221.72	221.92	SHALY COAL	SHY Coal	0.20		Seam 3 R	07593	221.67	221.87	Coal bright
	40													221.92	222.02	CARBONACEOUS MUDSTONE	Carb Mdst	0.10			07594	221.87	221.97	Floor, Carb Mdst
	40													222.02	222.22	COALY MUDSTONE	Coaly Mdst	0.20			07595	221.97	222.17	Roof, Carb Mdst
														222.22	222.26	LOST CORE	Lost Core	0.04	0.04		ns			*Rock Loss*
	40													222.26	222.56	COAL	Coal	0.30		Seam 3	07596	222.17	222.47	Coal bright
	40													222.56	222.66	CARBONACEOUS MUDSTONE	Carb Mdst	0.10		Seam 3	07597	222.47	222.57	Floor Carb Mdst (As well, Roof for lower unit)
	40													222.66	223.44	COAL	Coal	0.78		Seam 3	07598	222.57	223.35	Coal bright bubbling
														223.44	223.45	LOST CORE	Lost Core	0.01	0.01	Seam 3	ns			*Rock Loss*
57		224.09	227.04	2.95	2.95	100.00%								223.45	223.75	#N/A								
	40 & 41													223.45	223.75	COAL	Coal	0.30		Seam 3	07599	223.40	223.70	Coal bright bubbling
	40 & 41													223.75	223.80	CARBONACEOUS MUDSTONE	Carb Mdst	0.05		Seam 3	07600	223.70	223.75	Carb Mdst, (floor roof for lower unit)
	40 & 41													223.80	224.50	COAL	Coal	0.70		Seam 3	07751	223.75	224.45	Coal bright pyrite present
	40 & 41													224.50	224.60	COALY MUDSTONE	Coaly Shale	0.10			07752	224.50	224.60	Carb
	40 & 41													224.60	224.70	CARBONACEOUS MUDSTONE	Carb Mdst	0.10						Carb Mdst
	40 & 41													224.70	226.40	CARBONACEOUS MUDSTONE	Carb Mdst	1.70						At the depth of 225.70m, ~90° TCA fault gouge, ~10cm thick, dark lamination on light to med grey Carb Sst, fg-mg
58		227.04	230.02	2.98	2.98	100.00%								226.40	229.38	#N/A								
	41 & 42						6	100.00%	25	15	W6	R6	4	226.40	229.38	SANDY SILTSTONE	Sst	2.98						Med to light grey, Sst, and some parts dark black because of organic materials, fg-mg, w/ numerous coal stringers
59		230.02	233.07	3.05	3.05	100.00%								229.38	232.43	#N/A								
	42						4	99.02%	25	15	W6	R6	4	229.38	232.43	SANDY SILTSTONE	Sst	3.05						Light grey, mg-cg, Sst, coal stringer/laminae very common, mainl 85-90 TCA
60		233.07	236.12	3.05	2.90	95.08%								232.43	235.06	#N/A								
	43						9	2.75	25	15	W6	R6	4	232.43	235.06	SANDY SILTSTONE	Sst	2.63						Light grey, mg-cg, Sst, w/ thin Sltst layer, from 235.0m, interbedded w/ Sltst, bottom 7cm Coal (sampled)
														235.06	235.20	SANDY SILTSTONE	Sst	0.14			07753	235.33	235.47	*Roof Sample, part of above Sst*
														235.20	235.33	COAL	COAL	0.13		Seam 2	07754	235.47	235.60	Shaley
														235.33	235.48	LOST CORE	Lost Core	0.15	0.15	Seam 2	ns			*Coal Loss*
61		236.12	239.17	3.05	2.86	93.77%								235.48	235.85	#N/A								
	43 & 44						7	32.43%		7	W6	R1	4	235.48	235.85	COAL	Coal	0.37		Seam 2	07555	235.60	235.97	Black, 70% bright, 39% dull Coal, interbedded w/ slt, bubbly, disc. Pyrite along bedding 70 TCA
														235.85	235.91	LOST CORE	Lost Core	0.06	0.06		ns			*Coal Loss*
														235.91	236.01	CARBONACEOUS MUDSTONE	CARB SH	0.10			07556	235.97	236.07	*Floor Sample, part of below Sltst*
	43 & 44						10	82.86%	25	13	W6	R5	4	236.01	237.06	SANDY SILTSTONE	Sltst	1.05						Dark brown to black, fg, Sltst, w/ thin Coal lens
	43 & 44						2	100.00%	25	14	W6	R6	4	237.06	238.40	SANDY SILTSTONE	Sst	1.34						Light grey, cg, massive Sst, joints ~90TCA, w/ horizontal calc veins
														238.40	238.53	LOST CORE	Lost Core	0.13	0.13					*Rock Loss*
62		239.17	242.22	3.05	3.03	99.34%								238.53	241.56	#N/A								
	44 & 45						5	98.35%	25	14	W6	R6	4	238.53	241.56	SANDY SILTSTONE	Sst	3.03						Light grey, cg, massive Sst, brown bi(?) band ~90TCA, joints ~90TCA
														241.56	241.58	LOST CORE	Lost Core	0.02	0.02					*Rock Loss*
63		242.22	245.27	3.05	3.03	99.34%								241.58	244.61	#N/A								
	45						8	92.74%	25	14	W6	R6	4	241.58	244.61	SANDY SILTSTONE	Sst	3.03						Light grey, cg, massive Sst, same as above, joints ~90TCA
														244.61	244.63	LOST CORE	Lost Core	0.02	0.02					*Rock Loss*
64		245.27	248.32	3.05	2.97	97.38%								244.63	245.83	#N/A								
	45 & 46						2	91.67%	25	14	W6	R6	4	244.63	245.83	SANDY SILTSTONE	Sst	1.20						Light grey, cg, massive, Sst, same as above, Coal & plant material along joints near bottom, interbedded Sst & Sltst, Coal lens at bottom 10cm
	45 & 46							100%			W6	R5	4	245.83	245.94	SANDY SILTSTONE	Sltst	0.11						Dark grey, fg, interbedded w/ Sst, Sltst. Sulphide on core surface 1x4cm, massive
	45 & 46													245.94	246.04	SANDY SILTSTONE	Sltst	0.10			07757	246.08	246.18	*Roof Sample, part of above Sst*
	45 & 46						>25				W6	R1	2	246.04	246.58	SHALY COAL	Shaly Coal	0.54		Seam 2L	07758	246.18	246.22	Black, 70% bright, 30% dull, w/ Mdst or Sltst layers, bubbly, ~50% solid core, 50% broken, micro cleat visible
														246.58	246.66	LOST CORE	Lost Core	0.08	0.08	Seam 2L	ns			*Coal Loss*
	45 & 46													246.66	246.76	COALY MUDSTONE	Coaly Shale	0.10			07759	246.22	246.82	*Floor Sample, part of below Sltst*
	45 & 46						>25		10	5	W6	R5	4	246.76	247.68	SANDY SILTSTONE	Sltst	0.92						Dark grey to brown, fg, Sltst, heavealy fractured and all fractures show slicken sided
65		248.32	251.19	2.87	2.87	100.00%								247.68	249.18	#N/A								
	46 & 47						>25		10	5	W6	R5	4	247.68	249.18	SANDY SILTSTONE	Sltst	1.50						Dark grey to black, fg, massive Sltst thin Coal seam @ 248.1m, 3cm thick , most joints ~90TCA, some filled w/ calcite, slicken sided joints
							3		25	15	W6	R6	4	249.18	250.55	SANDY SILTSTONE	Sst	1.37						Light grey, cg, interbedded w/ Sltst, near top and botton joints ~90TCA w/ coal @ 85TCA, w/ calc, beddings ~90TCA
66		251.19	254.24	3.05	3.04	99.67%								250.55	253.59	#N/A								
	47						22		25	11	W6	R6	4	250.55	253.59	SANDY SILTSTONE	Sst	3.04						Light grey, cg, interbedded w/ Sltst, small coal lens, joints ~90TCA, bedding ~85TCA, w/ Coal and plant material
														253.59	253.60	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
67		254.24	257.29	3.05	3.00	98.36%								253.60	254.02	#N/A								
	47 & 48													253.60	254.02	SANDY SILTSTONE	Sst	0.42						Med dark grey Sst, mg, Coal stringers. The whole core run is broken core with a major amount of fault gouges
	47 & 48													254.02	254.12	SANDY SILTSTONE	Sst	0.10			07760	254.32	254.42	*Roof Sample, part of above Sst*
														254.12	254.16	CARBONACEOUS MUDSTONE	Carb Shale	0.04			07761	254.42	254.46	**N.B.***The Core Logger logged both Intervals (254.12 to 254.16, Shale & 254.16 to 254.37 Coal), as Coal but the Geophysical Logs shows that the fomer interval is Shale, therefore the change in Core Log.*
	47 & 48													254.16	254.37	CARBONACEOUS MUDSTONE	Carb Shale	0.21			07761	254.46	254.67	Coal w/ some rock bands. **N.B.***The Core Logger logged both Intervals (254.16 to 254.37 Coal & 254.37 to 254.64 Shale), as Coal but the Geophysical Logs shows that the latter interval is Shale, therefore the change in Core Log.*
														254.37	254.64	SANDY SHALE	Shale	0.27			07761	254.67	254.94	**N.B.***The Core Logger logged both Intervals (254.16 to 254.37 Coal & 254.37 to 254.64 Shale), as Coal but the Geophysical Logs shows that the latter interval is Shale, therefore the change in Core Log.*
	47 & 48													254.64	254.74	CARBONACEOUS MUDSTONE	Carb Mdst	0.10			07762	254.94	255.04	Carb Mdst, Coal stringers (floor/roof)
	47 & 48													254.74	255.11	COALY MUDSTONE	Coaly Shale	0.37			07763	255.04	255.41	*Coal w/ some rock bands* **N.B.***The Core Logger logged from 254.74 to 255.51 (Sample 07763) as "Coal w/ some rock bands" the Geophysical Logs shows a rock band or parting between 254.37 to 254.64m, therefore the change in Core Log.*
														255.11	255.34	SANDY SHALE	Shale	0.23			07763	255.41	255.64	**N.B.***The Core Logger logged from 254.74 to 255.51 (Sample 07763) as "Coal w/ some rock bands" the Geophysical Logs shows a rock band or parting between 254.37 to 254.64m, therefore the change in Core Log.*
														255.34	255.51	COAL	Coal	0.17		Seam 1	07763	255.64	255.41	**N.B.***The Core Logger logged from 254.74 to 255.51 (Sample 07763) as "Coal w/ some rock bands" the Geophysical Logs shows a rock band or parting between 254.37 to 254.64m, therefore the change in Core Log.*
														255.51	255.54	LOST CORE	Lost Core	0.03	0.03	Seam 1	ns			*Coal Loss*
	47 & 48													255.54	255.64	SANDY SILTSTONE	Sst	0.10			07764	255.41	255.51	*Floor Sample, part of below Sst*
	47 & 48													255.64	256.63	SANDY SILTSTONE	Sst	0.99			ns			Carb Mdst & Sst
														256.63	256.65	LOST CORE	Lost Core	0.02	0.02		ns			*Rock Loss*
68		257.29	260.38	3.09	2.93	94.82%								256.65	256.91	#N/A								
	48 & 49													256.65	256.91	SANDY SILTSTONE	Sst	0.26			ns			Med grey, med gr, Sst
														256.91	257.01	SANDY SILTSTONE	Sst	0.10			7765	257.16	257.26	*Roof Sample, part of above Sst*
														257.01	257.11	SHALY COAL	SHY Coal	0.10		Seam 1	7766	257.26	257.36	Bright Coal
														257.11	257.19	LOST CORE	Lost Core	0.08	0.08	Seam 1	ns			*Coal Loss*
														257.19	257.29	SANDY SILTSTONE	Sst	0.10			7767	257.36	257.46	Sst, fg, some Carb, Mdst, (floor/roof)
														257.29	257.37	LOST CORE	Lost Core	0.08	0.08		ns			*Rock Loss*
														257.37	257.73	COAL	Coal	0.36		Seam 1	7768	257.46	257.82	Bright Coal, some rock bands at the bottom
														257.73	257.83	CARBONACEOUS MUDSTONE	Carb Mdst	0.10			7769	257.82	257.92	*Floor Sample, part of below Carb Mdst*
														257.83	257.90	SHALY COAL	SHC	0.07						***N.B.** The Core Logger logged this interval as part of the below Carb Mdst, but Geophysical Logs shows SHC , therefore the Core Log was changed.*

														257.90	259.38	CARBONACEOUS MUDSTONE	Carb Mdst	1.48						Carb Mdst, Coal stringers
														259.38	259.58	SHALY COAL	SHC	0.20						***N.B.*** *The Core Logger logged this interval as part of the above Carb Mdst, but Geophysical Logs shows SHC , therefore the Core Log was changed.*
														259.58	259.74	CARBONACEOUS MUDSTONE	Carb Mdst	0.16						As above Carb Mdst.
69		260.38	263.43	3.05	3.00	98.36%										#N/A								
	49						3	100.00%	25	15	W6	R5	4	259.74	261.34	SANDY SILTSTONE	Sst	1.60						Core is mainly brown in the middle of the run
	49						>25							261.34	261.50	CARBONACEOUS MUDSTONE	Carb Mdst	0.16						Dark grey, Carb Mdst, with Coal stringer
	49													261.50	261.60	CARBONACEOUS MUDSTONE	Carb Mdst	0.10			07770	261.75	261.85	*Roof Sample, part of the above Mdst*
														261.60	261.65	LOST CORE	Lost Core	0.05	0.05		ns			*Coal Loss*
	49													261.65	261.80	COAL	Coal	0.15			07771	261.85	262.00	Bright Coal, some minor rock bands
	49													261.80	261.90	CARBONACEOUS MUDSTONE	Carb Mdst	0.10			07772	262.00	262.10	*Floor Sample, part of the below Carb Mdst*
	49						5	75.00%	25	12	W6	R5	3	261.90	262.79	CARBONACEOUS MUDSTONE	Carb Mdst	0.89						Dark grey to brown Carb Mdst, thin bedded ~90TCA
70		263.43	266.48	3.05	3.03	99.34%										#N/A								
	50													262.79	264.37	CARBONACEOUS MUDSTONE	Carb Mdst	1.58						Dark grey, mainly broken, Coal stringers / vein present
	50													264.37	264.90	SANDY SILTSTONE	Sst	0.53						Med grey, mg, Sst, sharp contact w/ lower unit
	50													264.90	265.82	CARBONACEOUS MUDSTONE	Carb Mdst	0.92						Dark grey, Carb Mdst
														265.82	265.84	LOST CORE	Lost Core	0.02	0.02					*Rock Loss*
71		266.48	269.53	3.05	3.05	100.00%										#N/A								
	50 & 51						7	95.08%	25	15	W6	R6	4	265.84	268.89	MUDSTONE	Mdst	3.05						Dark grey, Mudstone, massive w/ vertical (~0TCA) fracture (dry) at the depth of ~267.5m (~50cm long)
72		269.53	272.58	3.05	3.00	98.36%										#N/A								
	51 & 52						10	90.00%	25	15	W6	R6	4	268.89	271.89	MUDSTONE	Mdst	3.00						Dark grey, massive Mudstone w/ set of 90TCA fractures ~270m, with some fault gouge
														271.89	271.92	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
73		272.58	275.63	3.05	3.07	100.66%										#N/A								
	52						10	97.72%	25	15	W6	R6	4	271.92	274.99	SANDY SILTSTONE	Sltst	3.07						Dark brown, fg, massive slt, w/ layers of fg sst, near top shows slickedsided joints, at 273.3m thin mud layer @90TCA, most joints 85-90TCA
74		275.63	278.68	3.05	3.04	99.67%										#N/A								
	52 & 53						>25	75.00%	25	14	W6	R6	4	274.99	278.03	SANDY SILTSTONE	Sltst	3.04						Dark grey to brown fg, massive, Sltst, w/ thin Coal lens, ~273.6m highly fractured zone w/ vertical joints and rubbles, near bottom thin mud/slt layer w/ calc and slicken sided joint
														278.03	278.04	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
75		278.68	281.73	3.05	3.00	98.36%										#N/A								
	53 & 54						12	92.67%	25	14	W6	R6	4	278.04	281.04	SANDY SILTSTONE	Sltst	3.00						Dark grey to brown, fg, massive Sltst, same as above, 279.85-280.45m, coarser grain almost like fg Sst, slicken sided joints, 90TCA, small coal lens, plant material along joints
														281.04	281.09	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
76		281.73	284.78	3.05	3.00	98.36%										#N/A								
	54 & 55						20	78.33%	25	13	W6	R6	4	281.09	284.09	SANDY SILTSTONE	Sltst	3.00						Dark grey, fg, massive Sltst, vertical joints at the beginning of the run, 281.95m possible fault gouge, most joints ~90TCA, some slicken sided
														284.09	284.14	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
77		284.78	287.83	3.05	3.04	99.67%										#N/A								
	55						14	89.80%	25	14	W6	R6	4	284.14	287.18	SANDY SILTSTONE	Sltst	3.04						Dark grey, fg, massive slt, 288.9m heavely gractured area, mostly ~90TCA, 288.2m ~45TCA joints some slicken sided joints, coal lens ~90TCA
														287.18	287.19	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
78		287.83	290.88	3.05	2.90	95.08%										#N/A								
	55 & 56						>25	58.62%	25	10	W6	R6	4	287.19	290.09	SANDY SILTSTONE	Sltst	2.90						Dark grey, fg, massive Sltst, 288.9m heavly fractured area, mostly ~90TCA, 288.2m ~45TCA joints some slicken sided joints, Coal lens ~90TCA some slicken sided joints, coal lens ~90TCA
														290.09	290.24	LOST CORE	Lost Core	0.15	0.15					*Rock Loss*
79		290.88	293.93	3.05	3.00	98.36%										#N/A								
	56 &57						>25	28.33%	25	12	W6	R6	4	290.24	291.59	CARBONACEOUS SILTSTONE	Carb Sltst	1.35						Dark grey, Carb Sltst, and silty Mdst, Coal stringers and veins upto 3cm thick, are present, rich in organic materials mainly plant fragments
	56 &57						>25	28.00%	25	12	W6	R6	4	291.59	293.24	SANDY SILTSTONE	Volc Breccia	1.65						First 1m is an organic rich dark grey breccia with white and green clasts, then last part of the run is mainly green volcanic breccia and conglomerate
														293.24	293.29	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
80		293.93	296.98	3.05	2.98											#N/A								
	57						2		25	15	W6	R6	4	293.29	293.59	SANDY SILTSTONE	Volc Ash	0.30						Red brown to dark red fg volcanic ash?
	57						2		25	15	W6	R6	4	293.59	294.19	SANDY SILTSTONE	Volc Breccia	0.60						Green volcanic conglomerate and breccia, sharp contact with lower unit
	57						2		25	15	W6	R6	4	294.19	295.39	SANDY SILTSTONE	Volc Ash	1.20						Red brown to dark red, fg, vol ash?
	57						2		25	15	W6	R6	4	295.39	296.27	SANDY SILTSTONE	Volc Breccia	0.88						Green volcanic conglomerate and breccia, smaller clasts mainly white
														296.27	296.34	LOST CORE	Lost Core	0.07	0.07					*Rock Loss*
81		296.98	300.03	3.05	3.00	98.36%										#N/A								
	57 & 58						7		25	15	W6	R6	4	296.34	299.34	SANDY SILTSTONE	Volc	3.00						Green volcanic rock with calc filled fractures, mostly low angle
														299.34	299.39	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
82		300.03	303.08	3.05	3.02	99.02%										#N/A								
	58 &59						2	100.00%	25	15	W6	R6	4	299.39	302.41	SANDY SILTSTONE	Volc	3.02						Green volcanic rock calcite filled fractures
														302.41	302.44	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
83		303.08	306.13	3.05	3.00	98.36%										#N/A								
							3	3.00	25	15	W6	R6	4	302.44	305.44	SANDY SILTSTONE	Volc	3.00						Green volcanic rocks calcite filled fractures
														305.44	305.49	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
84		306.13	309.18	3.05	3.05	100.00%										#N/A								
							4	100.00%	25	15	W6	R6	4	305.49	308.54	SANDY SILTSTONE	Volc	3.05						Green volcanics, calcite filled joints

Geological Borehole Log: RAV-09-005

Client: CJV
Project: Raven
Logged By: Parviz R. Amber Brown, Ernest Popyk

Hole Number: RAV-09-005
Date Hole Started: 06-Jun-09
Date Hole Finished: 14-Jun-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 373.94m
Depth of Casing: 4.57m
Core Size: modified PQ (3")

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)	G.P.L. Corrected	G.P.L. Corrected Lithology	G.P.L. Corrected Length	G.P.L. Corrected Core Loss	G.P.L. Corrected Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	3.94	OVERBURDEN	OVB	3.94				0.00	4.50	OVB: casing set to 4.57m
														3.94	5.46	SILTSTONE	Sltst	1.52				4.50	6.02	Sltst
														5.46	6.98	SILTSTONE	Sltst	1.52				6.02	7.54	Sltst
														6.98	8.50	SILTSTONE	Sltst	1.52				7.54	9.06	Sltst
														8.50	10.02	SILTSTONE	Sltst	1.52				9.06	10.58	Sltst
														10.02	11.54	SILTSTONE	Sltst	1.52				10.58	12.10	Sltst
														11.54	13.06	SILTSTONE	Sltst	1.52				12.10	13.62	Sltst
														13.06	14.58	SILTSTONE	Sltst	1.52				13.62	15.14	Sltst
														14.58	16.10	SILTSTONE	Sltst	1.52				15.14	16.66	Sltst
														16.10	17.62	SILTSTONE	Sltst	1.52				16.66	18.18	Sltst
														17.62	19.14	SILTSTONE	Sltst	1.52				18.18	19.70	Sltst
														19.14	20.66	SILTSTONE	Sltst	1.52				19.70	21.22	Sltst
														20.66	22.18	SILTSTONE	Sltst	1.52				21.22	22.74	Sltst
														22.18	23.70	SILTSTONE	Sltst	1.52				22.74	24.26	Sltst
														23.70	25.22	SILTSTONE	Sltst	1.52				24.26	25.78	Sltst
														25.22	26.74	SILTSTONE	Sltst	1.52				25.78	27.30	Sltst
														26.74	28.26	SILTSTONE	Sltst	1.52				27.30	28.82	Sltst
														28.26	29.78	SILTSTONE	Sltst	1.52				28.82	30.34	Sltst
														29.78	31.30	SILTSTONE	Sltst	1.52				30.34	31.86	Sltst
														31.30	32.82	SILTSTONE	Sltst	1.52				31.86	33.38	Sltst
														32.82	34.34	SILTSTONE	Sltst	1.52				33.38	34.90	Sltst
														34.34	35.86	SILTSTONE	Sltst	1.52				34.90	36.42	Sltst
														35.86	37.38	SILTSTONE	Sltst	1.52				36.42	37.94	Sltst
														37.38	38.90	SILTSTONE	Sltst	1.52				37.94	39.46	Sltst
														38.90	40.42	SILTSTONE	Sltst	1.52				39.46	40.98	Sltst
														40.42	41.94	SILTSTONE	Sltst	1.52				40.98	42.50	Sltst
														41.94	43.46	SILTSTONE	Sltst	1.52				42.50	44.02	Sltst
														43.46	44.98	SILTSTONE	Sltst	1.52				44.02	45.54	Sltst
														44.98	46.50	SILTSTONE	Sltst	1.52				45.54	47.06	Sltst
														46.50	48.02	SILTSTONE	Sltst	1.52				47.06	48.58	Sltst
														48.02	49.54	SILTSTONE	Sltst	1.52				48.58	50.10	Sltst
														49.54	51.06	SILTSTONE	Sltst	1.52				50.10	51.62	Sltst
														51.06	52.58	SILTSTONE	Sltst	1.52				51.62	53.14	Sltst
														52.58	54.10	SILTSTONE	Sltst	1.52				53.14	54.66	Sltst
														54.10	55.62	SILTSTONE	Sltst	1.52				54.66	56.18	Sltst
														55.62	57.14	SILTSTONE	Sltst	1.52				56.18	57.70	Sltst
														57.14	58.66	SILTSTONE	Sltst	1.52				57.70	59.22	Sltst
														58.66	60.18	SILTSTONE	Sltst	1.52				59.22	60.74	Sltst
														60.18	61.70	SILTSTONE	Sltst	1.52				60.74	62.26	Sltst
														61.70	63.22	SILTSTONE	Sltst	1.52				62.26	63.78	Sltst
														63.22	64.74	SILTSTONE	Sltst	1.52				63.78	65.30	Sltst
														64.74	66.26	SILTSTONE	Sltst	1.52				65.30	66.82	Sltst
														66.26	67.78	SILTSTONE	Sltst	1.52				66.82	68.34	Sltst
														67.78	69.30	SILTSTONE	Sltst	1.52				68.34	69.86	Sltst
														69.30	70.82	SILTSTONE	Sltst	1.52				69.86	71.38	Sltst
														70.82	72.34	SILTSTONE	Sltst	1.52				71.38	72.90	Sltst
														72.34	73.86	SILTSTONE	Sltst	1.52				72.90	74.42	Sltst
														73.86	75.38	SILTSTONE	Sltst	1.52				74.42	75.94	Sltst
														75.38	76.90	SILTSTONE	Sltst	1.52				75.94	77.46	Sltst
														76.90	78.68	SILTSTONE	Sltst	1.78				77.46	79.24	Sltst
														78.68	80.20	SILTSTONE	Sltst	1.52				79.24	80.76	Sltst
														80.20	81.72	SILTSTONE	Sltst	1.52				80.76	82.28	Sltst
														81.72	83.24	SILTSTONE	Sltst	1.52				82.28	83.80	Sltst
														83.24	84.76	SILTSTONE	Sltst	1.52				83.80	85.32	Sltst
														84.76	86.28	SILTSTONE	Sltst	1.52				85.32	86.84	Sltst
														86.28	87.80	SILTSTONE	Sltst	1.52				86.84	88.36	Sltst
														87.80	89.32	SILTSTONE	Sltst	1.52				88.36	89.88	Sltst
														89.32	90.84	SILTSTONE	Sltst	1.52				89.88	91.40	Sltst
														90.84	92.36	SILTSTONE	Sltst	1.52				91.40	92.92	Sltst
														92.36	93.88	SILTSTONE	Sltst	1.52				92.92	94.44	Sltst
														93.88	95.40	SILTSTONE	Sltst	1.52				94.44	95.96	Sltst
														95.40	96.92	SILTSTONE	Sltst	1.52				95.96	97.48	Sltst
														96.92	98.44	SILTSTONE	Sltst	1.52				97.48	99.00	Sltst
														98.44	99.96	SILTSTONE	Sltst	1.52				99.00	100.52	Sltst
														99.96	101.48	SILTSTONE	Sltst	1.52				100.52	102.04	Sltst
														101.48	103.00	SILTSTONE	Sltst	1.52				102.04	103.56	Sltst
														103.00	104.52	SILTSTONE	Sst	1.52				103.56	105.08	Sst
														104.52	106.04	SILTSTONE	Sst	1.52				105.08	106.60	Sst
														106.04	107.56	SILTSTONE	Sst	1.52				106.60	108.12	Sst
														107.56	109.08	SILTSTONE	Sst	1.52				108.12	109.64	Sst
														109.08	110.60	SILTSTONE	Sst	1.52				109.64	111.16	Sst
														110.60	112.12	SILTSTONE	Sst	1.52				111.16	112.68	Sst
														112.12	113.64	SILTSTONE	Sst	1.52				112.68	114.20	Sst
														113.64	115.16	SILTSTONE	Sst	1.52				114.20	115.72	Sst
														115.16	116.68	SILTSTONE	Sst	1.52				115.72	117.24	Sst
														116.68	118.20	SILTSTONE	Sst	1.52				117.24	118.76	Sst
														118.20	119.72	SILTSTONE	Sst	1.52				118.76	120.28	Sst
														119.72	121.24	SILTSTONE	Sst	1.52				120.28	121.80	Sst
														121.24	122.76	SILTSTONE	Sst	1.52				121.80	123.32	Sst
														122.76	124.28	SILTSTONE	Sst	1.52				123.32	124.84	Sst
														124.28	125.80	SILTSTONE	Sst	1.52				124.84	126.36	Sst
														125.80	127.32	SILTSTONE	Sst	1.52				126.36	127.88	Sst
														127.32	128.84	SILTSTONE	Sst	1.52				127.88	129.40	Light - med grey, med grained Sst
														128.84	130.36	SILTSTONE	Sst	1.52				129.40	130.92	Med grey, med grain Sst
														130.36	131.88	SILTSTONE	Sst	1.52				130.92	132.44	Med grey, med grain Sst
														131.88	133.40	SILTSTONE	Sst	1.52				132.44	133.96	Med grey, med grain Sst
														133.40	134.92	SILTSTONE	Sst	1.52				133.96	135.48	Med grey, med grain Sst
														134.92	136.44	SILTSTONE	Sst	1.52				135.48	137.00	Med grey, med grain Sst
														136.44	137.96	SILTSTONE	Sst	1.52				137.00	138.52	Light - med grey, med grained Sst
														137.96	139.48	SILTSTONE	Sst	1.52				138.52	140.04	Light - med grey, med grained Sst

														139.48	141.00	SILTSTONE	Sst	1.52				140.04	141.56	Light - med grey, med grained Sst
														141.00	142.52	SILTSTONE	Sst	1.52				141.56	143.08	Med grey, med grain Sst
														142.52	144.04	SILTSTONE	Sst	1.52				143.08	144.60	Med grey, med grain Sst
														144.04	145.56	SILTSTONE	Sst	1.52				144.60	146.12	Med - dark grey, med grain Sst
														145.56	147.08	LAMINITE	IB Sst & Sltst	1.52				146.12	147.64	Med - dark grey, med grain Sst, w/ some dark Sltst
														147.08	148.60	SILTSTONE	Sst	1.52				147.64	149.16	Light - med grey, med grained Sst
														148.60	150.12	SILTSTONE	Sst	1.52				149.16	150.68	Light - med grey, med grained Sst
														150.12	151.64	SILTSTONE	Sst	1.52				150.68	152.20	Light - med grey, med grained Sst
														151.64	153.16	SILTSTONE	Sst	1.52				152.20	153.72	Light - med grey, med grained Sst
														153.16	154.89	SILTSTONE	Sst	1.73				153.72	155.45	Light - med grey, med grained Sst
														154.89	156.41	SILTSTONE	Sst	1.52				155.45	156.97	Med grey, med grain Sst
														156.41	157.93	SILTSTONE	Sst	1.52				156.97	158.49	Light-med grey, med grain Sst
														157.93	159.45	SILTSTONE	Sst	1.52				158.49	160.01	Med-dark grey, med grain Sst
														159.45	160.97	SILTSTONE	Sst	1.52				160.01	161.53	Light-med grey, med grain Sst
														160.97	162.49	SILTSTONE	Sst	1.52				161.53	163.05	Dark grey, med grain Sst, some Sltst
														162.49	164.01	SILTSTONE	Sst	1.52				163.05	164.57	Dark grey, med grain Sst, some Sltst
														164.01	165.53	SILTSTONE	Sst	1.52				164.57	166.09	Dark grey, med grain Sst. Driller says: Getting a lot of water here
														165.53	167.05	SILTSTONE	Sst	1.52				166.09	167.61	Dark grey, med grain Sst
														167.05	168.57	SILTSTONE	Sst	1.52				167.61	169.13	Med grey, med grain Sst, w/Carb
														168.57	170.09	SILTSTONE	Sst	1.52				169.13	170.65	Med grey, med grain Sst
														170.09	171.61	SILTSTONE	Sst	1.52				170.65	172.17	Med grey, med grain Sst, w/dark Sltst
														171.61	173.13	SILTSTONE	Sst	1.52				172.17	173.69	Dark-med grey, med grain Sst w/ bits of pyrite
														173.13	174.65	SILTSTONE	Sst	1.52				173.69	175.21	Med-dark grey, med grain Sst w/ little bit of Carb
														174.65	176.17	SILTSTONE	Sst	1.52				175.21	176.73	Med-dark grey, med grain Sst
														176.17	177.69	SILTSTONE	Sst	1.52				176.73	178.25	Dark grey, med-fine grain Sst
														177.69	179.21	SILTSTONE	Sst	1.52				178.25	179.77	Dark grey, med-fine grain Sst
														179.21	180.73	SILTSTONE	Sst	1.52				179.77	181.29	Dark grey, med-fine grain Sst
														180.73	182.25	SILTSTONE	Sst	1.52				181.29	182.81	Dark grey, med-fine grain Sst w/Carb
														182.25	183.77	SILTSTONE	Sst	1.52				182.81	184.33	60% light grey Sst, 40% Dark grey Sst, med grain
														183.77	185.29	SILTSTONE	Sst	1.52				184.33	185.85	60% light grey Sst, 40% Dark grey Sst, med grain
														185.29	186.81	SILTSTONE	Sst	1.52				185.85	187.37	Light-med grey, med grain Sst + 10% Sltst
														186.81	188.33	SILTSTONE	Sst	1.52				187.37	188.89	Light-med grey, med grain Sst + 10% Sltst
														188.33	189.85	SILTSTONE	Sst	1.52				188.89	190.41	Med grey, medium grain Sst
														189.85	191.37	SILTSTONE	Sst	1.52				190.41	191.93	Med grey, med grain Sst; A few light & dark grey ones too
														191.37	192.89	SILTSTONE	Sst	1.52				191.93	193.45	Med grey, med grain Sst; A few light & dark grey ones too
														192.89	194.41	SILTSTONE	Sst	1.52				193.45	194.97	Med-dark grey, med grain Sst. Couple of random light bits Sst
														194.41	195.93	SILTSTONE	Sst	1.52				194.97	196.49	Med-dark grey, med grain Sst. Couple of random light bits Sst
														195.93	197.45	SILTSTONE	Sst	1.52				196.49	198.01	Med-dark grey, med grain Sst. Couple of random light bits Sst
														197.45	198.97	SILTSTONE	Sst	1.52				198.01	199.53	Med-dark grey, med grain Sst. Couple of random light bits Sst; w/ some small pink/white Carb bits
														198.97	200.49	SILTSTONE	Sst	1.52				199.53	201.05	Med-dark grey, med grain Sst. Couple of random light bits Sst; w/ some small pink/white Carb bits
														200.49	202.01	SILTSTONE	Sst	1.52				201.05	202.57	Med-dark grey, med grain Sst. Couple of random light bits Sst; w/ some small pink/white Carb bits
														202.01	203.53	SILTSTONE	Sst	1.52				202.57	204.09	Med-dark grey, med grain Sst. Couple of random light bits Sst; w/ some small pink/white Carb bits
														203.53	205.05	SILTSTONE	Sst	1.52				204.09	205.61	Med-dark grey, med grain Sst. Couple of random light bits Sst; w/ some small pink/white Carb bits
														205.05	206.57	SILTSTONE	Sst	1.52				205.61	207.13	Med-dark grey, med grain Sst. w/pink-brown Carb. At 682 black dull COALY Shale. Soft, crushes under fingers
														206.57	208.09	SHALY COAL	SHC	1.52		Seam 5	ns	207.13	208.65	Shaley coal
														208.09	209.61	BONACEOUS SANDY SI	SHC & Sst	1.52				208.65	210.17	Mix. Dark grey med grain Sst, Sltst, & Shaley Coal.
														209.61	211.13	BONACEOUS SANDY SI	SHC & Sst	1.52				210.17	211.69	Light grey med grain Sst. 20% Shaley Coal
														211.13	212.65	BONACEOUS SANDY SI	SHC & Sst	1.52				211.69	213.21	Light grey med grain Sst. 20% Shaley Coal
														212.65	214.17	SILTSTONE	Sst	1.52				213.21	214.73	Light grey med grain Sst. 20% Shaley Coal
														214.17	215.69	SILTSTONE	Sst	1.52				214.73	216.25	Light grey med grain Sst. Less shale.
														215.69	217.21	SILTSTONE	Sst	1.52				216.25	217.77	Light grey med grain Sst
														217.21	218.89	SILTSTONE	Sst	1.68				217.77	219.45	Light grey med gain Sst w/ some brown bits,End of Chip Samplings *Core Point*
1		219.12	220.94	1.82	1.69	92.86%																		
	1						1	100.00%	25	13	W6	R6	4	218.89	220.58	SILTSTONE	Sst	1.69						Static water at this hole is 10 feet. Sst, light grey med to fine grained. Massive
														220.58	220.71	LOST CORE	Lost Core	0.13	0.13					*Rock Loss*
2		220.94	223.23	2.29	1.89	82.53%																		
														220.71	221.06	LOST CORE	Lost Core	0.35	0.35					*Rock Loss*
	1 & 2						11	100.00%	25	14	W6	R5	4	221.06	222.95	SILTSTONE	Sst	1.89						Sst med grey, med to fine grain. Massive. 40 cm of pink-tinge alteration 40 cm from top.
3		223.23	225.67	2.44	2.49	102.05%																		
	2 & 3						8	96.39%	25	14	W6	R6	4	222.95	225.44	SILTSTONE	Sst	2.49						Sst med grey, med grain. Massive. 30 joint. The bottom 54cm abrubtly turns more dark grey, perhaps silty Sst
4		225.67	228.11	2.44	2.62	107.38%																		
	3 & 4						1	100.00%	25	15	W6	56	4	225.44	226.81	SILTSTONE	Sst	1.37						Med grey, med grain massive Sst. Wisps of Coal. Lenses of pyrite
	3 & 4													226.81	226.91	SILTSTONE	Sst	0.10			07907	227.52	227.62	*Roof Sample, part of above Sst*
	3 & 4						3	41.67%		7	W6	R2	4	226.91	227.15	COAL	Coal	0.24			07908	227.62	227.86	Dark black. Bubbling. Thin silt stringers. Mostly dull. Bottom 4cm is fibrous, full (fusane).
	3 & 4													227.15	227.25	MUDSTONE	Mdst	0.10			07909	227.86	227.96	*Floor Sample, part of below Mdst*
	3 & 4						6	76.92%	25	13	W6	R5	4	227.25	228.06	MUDSTONE	Mdst	0.81						*Med-dark grey mudstone. One gouge-ish joint fault*
5		228.11	231.01	2.90	2.72	93.79%																		
	4 & 5						13	88.97%	25	13	W6	R5	4	228.06	230.78	SILTSTONE	Sst	2.72						Med grey, med grain SST IB w. 90 TCA thin silty beds. Mostly continuous subparallel and gently undulating. Some discontinuous wisps. 2 small carb beds (90 TCA) at 38 & 55 cm from top. 1 large Carb b
6		231.01	231.92	0.91	0.93	102.20%																		
	5						3	93.55%	25	15	W6	R5	4	230.78	231.71	SILTSTONE	Sst	0.93						Med grey, med grain Sst w/ ~70 TCA silty stringers. 4 cm band of pinky alteration 55 cm from top
7		231.92	234.82	2.90	2.74	94.48%																		
	5 & 6						12	95.62%	25	14	W6	R5	4	231.71	234.45	SILTSTONE	Sst	2.74						Med grey, med grain massive Sst. 15 cm light (altered?) section 5 cm from top. ~70 TCA coaly shale stringers. A 15 cm section is altered, 20 cm from bottom. Next to 5 cm of multiple stringers.
														234.45	234.53	LOST CORE	Lost Core	0.08	0.08					*Rock Loss*
8		234.82	237.56	2.74	2.80	102.19%																		
	6 & 7						4	93.57%	25	15	W6	R6	4	234.53	237.33	SILTSTONE	Sst	2.80						Med grey, med grain massive Sst. ~70 TCA thin Coal stringers, bubbling; pyrite & Carb, plant fragments
9		237.56	240.46	2.90	2.15	74.14%																		
	7 & 8							100.00%			W6	R5	4	237.33	239.48	SILTSTONE	Sst	2.15						Sst, light gray, medium to coarse grained, massive at 70 TCA with few Coal stringers
														239.48	240.23	LOST CORE	Lost Core	0.75	0.75					*Rock Loss*
10		240.46	243.20	2.74	2.70	98.54%																		
	8 & 9						8	92.96%	25	10	W6	R5	3	240.23	242.93	SILTSTONE	Sst	2.70						Sst as above, 50cm at ht ebottom core broken with stringers and 5-10 cm with Coal stringers at 65 TCA
														242.93	242.97	LOST CORE	Lost Core	0.04	0.04					*Rock Loss*
11		243.20	245.18	1.98	1.64	82.83%																		
	9						12	95.12%	25	10	W6	R5	3	242.97	244.61	SILTSTONE	Sst	1.64						Sst as above, light and coarse grained w/ few joints filled with calcite
														244.61	244.95	LOST CORE	Lost Core	0.34	0.34					*Rock Loss*
12		245.18	247.77	2.59	2.13	82.24%																		
	10						2	100.00%	25	12	W6	R5	4	244.95	247.08	SILTSTONE	Sst	2.13						Sst, med grain, light grey w/ stringers of Coal at 75 TCA
13		247.77	250.21	2.44	3.05	125.00%																		
	11													247.08	248.81	SILTSTONE	Sst	1.73						Sst, med grain, w/ Coal stringers
	11													248.81	248.91	CLAYSTONE	Clyst	0.10						Clyst IB w/ Coal stringers
	11													248.91	249.01	COALY MUDSTONE	Coaly Shale	0.10			07910	248.03	248.13	*Roof Sample, part of above Clyst*
	11													249.01	249.52	COAL	Coal	0.51		Seam 4	07911	248.13	248.64	Coal (Dull w/ pyrite and thin layers of gypsum or calcite)
	11													249.52	249.79	CLAYSTONE	Clyst	0.27		Seam 4	07912	248.64	248.91	High carb, Clyst Floor Sample, part of below Clyst
	11													249.79	250.13	COAL	Coal	0.34		Seam 4	07913	248.91	249.25	Coal, dull
14		250.21	252.95	2.74	2.53	92.34%																		
	11 & 12													250.13	250.23	COAL	Coal	0.10		Seam 4	07913	249.35	249.45	Coal, dull
	11 & 12													250.23	250.33	CLAYSTONE	Clyst	0.10			07914	249.35	249.48	*Floor Sample, part of below Clyst*
	11 & 12													250.33	250.58	CLAYSTONE	Clyst	0.25						Med gray Clyst

	11 & 12						3	100.00%	25	13		R5	4	250.58	252.66	SILTSTONE	Sst	2.08						Sst, med grain, Light grey, w/coal stringers
15		252.95	255.85	2.90	3.06	105.52%																		
	12 & 13							100.00%				R5	4	252.66	253.06	SILTSTONE	Sst	0.40						Sst, as above
	12 & 13													253.06	253.13	COAL	Coal	0.07						Coal, dull
	12 & 13						4	78.72%	25	9		13	3	253.13	253.60	CLAYSTONE	Clyst	0.47						Dark grey Clyst
	12 & 13						2	89.62%	25	13		R5	4	253.60	255.72	SILTSTONE	Sst	2.12						Sst, medium to coarse grained, massive. 0.30m at the top w/ Coal stringers
16		255.85	258.75	2.90	2.77	95.52%																		
	13 & 14						4	2.77	25	13		R5	4	255.72	258.49	SILTSTONE	Sst	2.77						Sst, med grained, light grey
17		258.75	261.49	2.74	0.60	21.90%																		
	14						0	100.00%		15	W6	R5	4	258.49	259.09	SILTSTONE	Sst	0.60						Med grey, med grain massive Sst. Small wisps of black Sltst
														259.09	259.95	LOST CORE	Lost Core	0.86	0.86					*Rock Loss*
18		261.49	262.71	1.22	1.52	124.59%																		
	14 & 15						0	100.00%		15	W6	R5	4	259.95	261.47	SILTSTONE	Sst	1.52						Med grey, med grain massive Sst. Small wisps of balck Sltst
19		262.71	264.23	1.52	1.50	98.68%																		
	15 & 16							100.00%		15	W6	R5	4	261.47	262.97	SILTSTONE	Sst	1.50						As above. 1 circular plant frag/fossil
20		264.23	267.13	2.90	2.63	90.69%																		
	16 & 17						2	2.63	25	15	W6	R6	4	262.97	265.60	SILTSTONE	Sst	2.63						As above. Plant fossils in joints: lines of pyrites Sltst w/ swirls of shiney coal. Thiin carb vein at 10 TCA
														265.60	265.71	LOST CORE	Lost Core	0.11	0.11					*Rock Loss*
21		267.13	269.72	2.59	2.75	106.18%																		
	17 & 18						5	100.00%	25	15	W6	R5	4	265.71	268.46	SILTSTONE	Sst	2.75						Med grey, med grain massive Sst. A few black wisps and plant fragments
22		269.72	272.46	2.74	2.38	86.86%																		
	18						6	100.00%	25	15	W6	R5	4	268.46	270.84	SILTSTONE	Sst	2.38						As above
23		272.46	274.59	2.13	0.88	41.31%																		
	18 & 19						1	100.00%	25	15	W6	R5	4	270.84	271.72	SILTSTONE	Sst	0.88						Med grey, med grain massive Sst
24		274.59	275.81	1.22	2.83	231.97%																		
	19 & 20						2	100.00%	25	15	W6	R6	4	271.72	274.55	SILTSTONE	Sst	2.83						As above. 1 joint ~60 TCA. Carb vein ~ 10 TCA.
25		275.81	278.25	2.44	2.53	103.7%																		
	20 & 21						4	100.00%	25	13	W6	R6	4	274.55	277.08	SILTSTONE	Sst	2.53						Sst, med to coarse grained, light grey, massive
26		278.25	280.69	2.44	2.09	85.66%																		
	21						2	96.65%	25	13	W6	R6	4	277.08	279.17	SILTSTONE	Sst	2.09						Sst as above w/ a few coal stringers at 7° TCA
27		280.69	283.09	2.40	2.66	110.83%																		
	21 & 22						1	97.74%	25	13	W6	R6	4	279.17	281.83	SILTSTONE	Sst	2.66						Sst as above, med to coarse, light grey, massive
28		283.09	285.99	2.90	2.85	98.28%																		
	22 & 23						1	100.00%	25	13	W6	R6	4	281.83	282.57	SILTSTONE	Sst	0.74						Sst as above
														282.57	282.67	SILTSTONE	Sst	0.10			07915	284.84	284.94	*Roof Sample, part of above Sst*
														282.67	282.72	LOST CORE	Lost Core	0.05	0.05		ns			*Rock Loss*
														282.72	282.99	COAL	Coal	0.27		Seam 3	07916	284.94	285.21	Coal, dull, hard
														282.99	283.02	CLAYSTONE	Clyst	0.03		Seam 3	07916	285.21	285.24	Clyst
														283.02	283.61	COAL	Coal	0.59		Seam 3	07916	285.24	285.83	Coal, dull w/ less than 10% bright bands
														283.61	283.82	CLAYSTONE	Clyst	0.21		Seam 3	07917	285.83	286.04	Clyst
														283.82	284.73	COAL	Coal	0.91		Seam 3	07918	286.04	286.95	Coal, dull
29		285.99	288.89	2.90	2.59	89.31%																		
	23 & 24													284.73	285.41	COAL	Coal	0.68		Seam 3	07918	286.95	287.63	Coal, dull
	23 & 24													285.41	285.51	CLAYSTONE	Clyst	0.10		Seam 3	07919	287.61	287.71	Clyst, med gray very soft
	23 & 24													285.51	285.55	COAL	Coal	0.04		Seam 3	07920	287.71	287.75	Coal
	23 & 24													285.55	285.65	CLAYSTONE	Clyst	0.10			07921	287.75	287.85	*Floor Sample, part of below Clyst*
	23 & 24													285.65	285.84	CLAYSTONE	Clyst	0.19						Clyst, med gray
	23 & 24													285.84	287.32	SILTSTONE	Sst	1.48						Sst, med grained, light gray
														287.32	287.60	LOST CORE	Lost Core	0.28	0.28					*Rock Loss*
30		288.89	291.79	2.90	2.94	101.38%																		
	24 & 25						1	100.00%	25	13	W6	R6	4	287.60	290.54	SILTSTONE	Sst	2.94						Sst, med grained, light gray, massive
31		291.79	294.70	2.91	3.05	104.81%																		
	25 & 26						1	100.00%	25	13	W6	R6	4	290.54	293.59	SILTSTONE	Sst	3.05						Sst, massive as above
32		294.70	297.14	2.44	2.60	106.56%																		
	26 & 27						4	96.15%	25	13	W6	R6	4	293.59	296.19	SILTSTONE	Sst	2.60						Sst, as above 1.20 m from Top 10 cm of sample broken 75° TCA
33		297.14	299.73	2.59	2.28	88.03%																		
	27 & 28						5	96.93%	25	15	W6	R6	4	296.19	298.47	SILTSTONE	Sst	2.28						Med gray, med grain massive Sst. Sltst-Sst thin strings in joints. ~ 90°
34		299.73	301.38	1.65	1.65	100.00%																		
	28 & 29						5	92.73%	25	13	W6	R5	4	298.47	300.12	SILTSTONE	Sst	1.65						As above. 2 joints ~ 30°. Flecks of carb,
35		301.38	303.91	2.53	2.53	100.00%																		
	29 & 30						4	100.00%	25	15	W6	R6	4	300.12	302.65	SILTSTONE	Sst	2.53						As above Sst. Very thin wedge of Sltst in a joint. Specks of shiney coal.
36		303.91	306.65	2.74	2.74	100.00%																		
	30						5	98.54%	25	13	W6	R5-6		302.65	305.39	SILTSTONE	Sst	2.74						As above Sst. Sltst banding. Carb veins. 90° .
37		306.65	307.62	0.97	0.97	100.00%																		
	31						6	71.13%	25	9		R6		305.39	306.36	SILTSTONE	Sst	0.97						Med light gray Sst
38		307.62	309.85	2.23	2.23	100.00%																		
	31 & 32						6	95.52%	25	13	W6	R5	4	306.36	308.59	SILTSTONE	Sst	2.23						Top 2 cm is dark coaley platey shale. 10 cm at top is med grain dark grey Sltst-Sst. The rest is med gray, med grain Sst. Thin carb vein. Flecks & strings of shaley coal. Bottom 83 cm is same Sst IB w/ mo
39		309.85	312.62	2.77	2.67	96.39%																		
	32 & 33						>25	52.94%	25	11	W6	R2	3	308.59	310.80	MUDSTONE	Mdst	2.21						Mudstone.
	32 & 33													310.80	310.90	MUDSTONE	Mdst	0.10						*Roof Sample, part of above Mdst*
														310.90	311.00	MUDSTONE	Mdst	0.10			07924	312.48	312.58	*Rock Loss*
														311.00	311.10	COAL	Coal	0.10		Seam 1	07922	312.58	312.68	
	32 & 33						5	0.00%		7	W6	R1	4	311.10	311.36	COAL	Coal	0.26		Seam 1	07923	312.68	312.94	Coal w/ mudstone stringers
40		312.62	315.10	2.48	2.48	100.00%																		
	33													311.36	311.71	COAL	Coal	0.35		Seam 1	07925	313.48	313.83	Black, dull & shiney coal. Laminated carb strings. Small % py strings & blebs. Bubbling. 23 - 39 from top very hard, but light. 40 - 47 powdery. Lacks cleats. Lacks partings
	33													311.71	311.87	SANDY SHALE	Shale	0.16		Seam 1	07925	313.83	313.99	***N.B.** This interval was logged & sampled at the rig as Coal, but after examining Geophysical Logs and pictures, it was determined to be Shale.*
	33						>25	171.43%						311.87	312.29	COAL	Coal	0.42		Seam 1	07925	313.99	314.42	Black, dull & shiney coal. Laminated carb strings. Small % py strings & blebs. Bubbling. 23 - 39 from top very hard, but light. 40 - 47 powdery. Lacks cleats. Lacks partings
	33													312.29	313.09	COAL	Coal	0.80		Seam 1	07926	314.42	315.31	*Coal, part of above Coal.*
	33						7	25.76%	25	12	W6	R5	3	313.09	313.19	MUDSTONE	Mdst	0.10			07927	315.31	315.41	*Floor Sample, part of below Mdst*
	33						0							313.19	313.75	MUDSTONE	Mdst	0.56						Dark grey mudstone. 5 mm bands of coal (70 - 80°) w/ 0.5% py. Carb stringers. Bubbling.
	33													313.75	313.84	COAL	Coal	0.09						As above coal.
41		315.10	317.25	2.15	2.33	108.37%																		
	33 & 34													313.84	314.10	COALY MUDSTONE	IB	0.26						*Part of the below IB Interval*
	33 & 34													314.10	314.47	SHALY COAL	SHC	0.37						***N.B.** This interval was logged at the rig "IB with Coal", but on the Geophysical Logs it is clearly SHC*
	33 & 34						>25	75.00%	25	12	W6	R4	3	314.47	315.55	COALY MUDSTONE	IB	1.08						Dark brown mudstone IB w/coal ribbons mm-3cm. Coal as above. Pyr & carb stringers.
	33 & 34						2	85.48%	25					315.55	316.17	SILTSTONE	Sltst	0.62						Med brown Sltst. Contact w/ upper lithology has SS and blebs of py.
42		317.25	319.08	1.83	1.77	96.72%																		
														316.17	316.23	LOST CORE	Lost Core	0.06	0.06					
	34 & 34						>25	55.37%	25	9	W6	R5	3	316.23	318.00	SILTSTONE	Sst	1.77						Med gray, med grain Sst. IB w/ 90° TCA. Laminated beds of shaley coal & calcite. Bottom 80 cm is the most fractured. Fracures range from 40 - 70° TCA.
43		319.08	321.98	2.90	2.78	95.86%																		
														318.00	318.11	LOST CORE	Lost Core	0.11	0.11					
	35 & 36						>25	97.48%	25	11	W6	R4	3	318.11	320.89	SILTSTONE	Sst	2.78						Fine grained, med grey Sst. Top 4 cm is coaley shale w/ SS. Carb stringers most 90° TCA, some 20° . 0-95 cm from bottom has IB 90° TCA laminated coal. 3 cm section is powdery coal. Most coal stringe
44		321.98	324.88	2.90	2.90	100.00%																		
	36 & 37						6	86.96%	25	15	W6	R6	4	320.89	323.79	SILTSTONE	Sst	2.90						Med gray, med grain Sst. Grains fine in the bottom 98 cm. 3 laminated calcite veins ~ 90° TCA.
45		324.88	327.62	2.74	2.75	100.36%																		
	37 & 38						2	100.00%	25	10	W6	R5	4	323.79	324.52	SILTSTONE	Sltst	0.73						Sltst, med gray fine grained. .30 m at the bottom more sandy, med grained.

	37 & 38						6	91.58%	25	13	W6	R6	4	324.52	326.54	SILTSTONE	Sst	2.02						Sst, med to coarse grained light gray w/ a few stringers @ ~ 85° .
46		327.62	330.52	2.90	2.89	99.66%																		
	38 & 39						2	90.00%	25	9	W6	R5	4	326.54	327.44	SILTSTONE	Sltst	0.90						Sltst, med gray, fine grain, .10m at the bottom more sand.
	38 & 39							100.00%			W6	R6	4	327.44	327.69	SILTSTONE	Sst	0.25						Coarse grained, light gray Sst.
	38 & 39						3	79.73%			W6	R2	4	327.69	328.43	MUDSTONE	Mdst	0.74						Mdst light gray, very soft; at bottom more silty.
	38 & 39						5	76.00%	25	10	W6	R5	4	328.43	329.43	SILTSTONE	Sst	1.00						Sst med grain light gray. 0.20m at the bottom more silty.
47		330.52	333.42	2.90	2.60	89.66%																		
	39 & 40						7	75.00%	25	10	W6	R6	4	329.43	330.43	SILTSTONE	Sst	1.00						Sst, Coarse grained, med gray, broken.
	39 & 40						3	100.00%	25	10	W6	R4	4	330.43	332.03	SILTSTONE	Sltst	1.60						Slitstone medium grey, fine grained, massive, 0.30m at the bottom is broken
														332.03	332.33	LOST CORE	Lost Core	0.30	0.30					*Rock Loss*
48		333.42	336.16	2.74	2.43	88.69%																		
														332.33	332.64	#N/A		0.31	0.31					
	40 & 41						7	97.12%	7	13	W6	R5	4	332.64	335.07	SILTSTONE	Sltst	2.43						Slitstone medium grey, fine grained, massive
49		336.16	337.89	1.73	2.10	121.39%																		
	41 & 42							95.81%			W6	R4	4	335.07	336.74	SILTSTONE	Sltst	1.67						Slitstone medium grey, fine grained, massive, At the end of the run there is 2cm of coal and the bottom 10.07cm is broken & crushed
							3	86.05%	25	6	W6	R6	4	336.74	337.17	SILTSTONE	Sst	0.43						Sst medium grey coarse grained with stringers of Coal
50		337.89	340.48	2.59	2.53	97.68%																		
	42						6	0.00%	25	5	W6	R6	2	337.17	337.31	SILTSTONE	Sltst	0.14						Hole is making 7 gpm. Fr are planar @ 90º, mg to cg, medium grey, several Shale beds @ 90º
														337.31	337.38	LOST CORE	Lost Core	0.07	0.07					
	42						>25	1.48%	20	5	W6	R7	3	337.38	339.77	SILTSTONE	Sst	2.39						Sst, light greyish white, cg to vcg, first 25cm are broken chunks of Sst, massive, 8 thin clcite stringers, 6 fr @ 90º, 1 SS @ 45º, calcite along fr, A thin clay beds (5cm thick) 10 cm from bottom, coal spars, p
51		340.48	343.22	2.74	2.30	83.94%																		
	42						4	0.00%	20	7	W6	R7	3	339.77	340.34	SILTSTONE	Sst	0.57						Light grey vcg to cg, 1 fr @ 0º running the length of the interval, all other fr @ 90º,massive, Coal spars, plant material
	42						>25	54.65%	20	3	W6	R7	3	340.34	341.20	LAMINITE	IB Sh & Sltst	0.86						80% Sltst & 20% Sh, Sltst: fg to mg, thinly to thickly laminated, Sh: black, thinly laminated. All beds @ 90º. Coal spars, irregular calcite veining over the first 10cm, Last 10cm are crushed & broken. Rock flo
	42						>25	55.10%	20	3	W6	R7	3	341.20	341.69	SILTSTONE	Sst	0.49						Sst Breccia: Sst matrix with small clasts of quartz, Sh, Sltst, Irregular quartz and calcite veining, (the interval is made up of 3% calcite veining) A 6cm long broken crushed zone 11 cm from top of interval. 1
	43						7	86.36%	20	3	W6	R6	3	341.69	342.07	SILTSTONE	Sltst	0.38						5 fr @ 90º with rock flower, 1 fr @ 0º, 2 fr @ 45º, light grey, thinly laminated, fg to mg beds @ 90º
														342.07	342.51	LOST CORE	Lost Core	0.44	0.44					*Rock Loss*
52		343.22	345.81	2.59	2.89	111.58%																		
	43 & 44						>25	8.89%	20	6	W6	R6	3	342.51	343.86	SILTSTONE	Sltst	1.35						As above, except more calcite in fr (last 15 cm); 3 SS @ 45°. I large fr. Small fault zone (23 cm) @ 15°. Large amount of "rock flour" in fr. Last 15 cm broken & crushed.
	44						4	100.00%	25	10	W6	R7	3	343.86	345.40	SILTSTONE	Sst	1.54						Light grey, massive numerous coal spars. Thin irregular shale beds. All fr @ ~ 90°. Cg to v.cg 5 sh beds @ 90°
53		345.81	346.87	1.06	1.06	100.00%																		
							1	100.00%	25	13	W6	R6	4	345.40	346.46	SILTSTONE	Sst	1.06						Sst, coarse grained light grey, w/ few coal stringers at 85 ° TCA
54		346.87	349.77	2.90	3.06	105.52%																		
							8	96.45%	25	13	W6	R6	4	346.46	348.43	SILTSTONE	Sst	1.97						Coarse grained Sst as above
							2	100.00%	25	13	W6	R6	4	348.43	349.19	SILTSTONE	Sltst	0.76						Medium grey, fine grained siltstone. 0.20m at the bottom w/ 5 cm band of Sst
							1	100.00%	13		W6	R6	4	349.19	349.52	SILTSTONE	Sst	0.33						Light gray, coarse grained Sst
55		349.77	352.67	2.90	2.75	94.83%																		
	46 & 47						1	83.78%	25	10	W6	R6	4	349.52	349.89	SILTSTONE	Sst	0.37						Light gray, coasre grained Sst
	46 & 47						3	94.87%	25	13	W6	R5	4	349.89	350.67	SILTSTONE	Sltst	0.78						Medium gray, fine grained Sltst
														350.67	350.82	LOST CORE	Lost Core	0.15	0.15					
	46 & 47						5	95.00%	25	10	W6	R6	4	350.82	352.42	SILTSTONE	Sst	1.60						Light gray coarse grained Sst
56		352.67	355.57	2.90	2.85	98.28%																		
	47 & 48						5	94.29%	25	13	W6	R6	4	352.42	353.47	SILTSTONE	Sst	1.05						Sst, light gray, coarse grained
	47 & 48						5	58.33%	25	13	W6	R6	4	353.47	355.27	SILTSTONE	Sltst	1.80						Sltst, medium gray, fine grained, massive. Partly sandy
57		355.57	358.47	2.90	3.05	105.17%																		
	48 & 49						20	87.87%	25	14	W6	R6	4	355.27	358.32	SILTSTONE	Sltst	3.05						Sltst, med gray, fine grained, massive. Most joints @ 90°. 3 fr @ 50-70°, w/calcite veins. 2 cm IB Sltst w/cacite
58		358.47	361.06	2.59	2.42	93.44%																		
							>25	71.07%	25	10	W6	R6	4	358.32	360.74	SILTSTONE	Sst	2.42						Med-fine grained med gray Sst, massive. Multiple calcite-healed fractures ~ 0-40° TCA
														360.74	360.80	LOST CORE	Lost Core	0.06	0.06					*Rock Loss*
59		361.06	363.80	2.74	2.55	93.07%																		
							>25	70.59%	20	10	W6	R6	4	360.80	363.35	SILTSTONE	Sst	2.55						Med grey, coarse grain Sst. 46 cm section of med gray fine grain silt.
														363.35	363.54	LOST CORE	Lost Core		0.19					*Rock Loss*
60		363.80	366.54	2.74	2.71	98.91%																		
	50 & 51						7	98.15%	25	13	W6	R6		363.54	366.25	SILTSTONE	Sst	2.71						Sst light grey coarse grained. 0.54 cm from top, 14 cm SLT. 0.70m from top 1.20 m coarse grain size between ~ 2mm.
														366.25	366.28	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
61		366.54	368.37	1.83	1.82	99.45%																		
	51 & 52						6	71.43%	25	13	W6	R6		366.28	368.10	SILTSTONE	Sst	1.82						Sst, coarse grain as above.
														368.10	368.11	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
62		368.37	371.27	2.90	2.87	98.97%																		
	52 & 53						4	100.00%	25	13	W6	R6		368.11	369.51	SILTSTONE	Sst	1.40						Sst, coarse grained light grey
	52 & 53						3	100.00%	25	13	W6	R6		369.51	370.38	BRECCIA	Breccia	0.87						0.30m from the top Breccia w/ angular boulder up to 7 cm toward conglomerate and coarse Sst the size of grain up to 1 cm
	52 & 53						9	20.00%	25	5	W6	R6		370.38	370.98	SILTSTONE	Volc Ash	0.60						Fine grained Tuff greenish gray
														370.98	371.01	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
63		371.27	374.17	2.90	2.57	88.62%																		
	53 & 54						18	0.63	25	6	W6	R7		371.01	373.58	SILTSTONE	Volc Ash	2.57						Fine grained green tuff w/ some feldspar mineral. 0.42cm at the bottom are coarser. EOH
														373.58	373.94	LOST CORE	Lost Core	0.36	0.36					*Rock Loss*

Geological Borehole Log: RAV-09-006

Client: CJV
Project: Raven
Logged By: Amber Brown

Hole Number: RAV-09-006
Date Hole Started: 17-Jun-09
Date Hole Finished: 17-Jun-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 179.08m
Depth of Casing: 67.97m
Core Size: Modified HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Lithology	Length	Core Loss	Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	4.57	OVERBURDEN	OVB	4.57				0.00	4.57	Brown sand & gravel dry, some cobbles
														4.57	9.75	OVERBURDEN	OVB	5.18				4.57	9.75	Brown sand & gravel, water bearing coarse
														9.75	10.67	OVERBURDEN	OVB	0.91				9.75	10.67	Grey silty sand & gravel, coarse
														10.67	12.19	OVERBURDEN	OVB	1.52				10.67	12.19	Brown sand & gravel, water bearing, coarse,
														12.19	16.76	OVERBURDEN	OVB	4.57				12.19	16.76	Grey silty sand & gravel, water bearing, coarse,
														16.76	28.96	OVERBURDEN	OVB	12.19				16.76	28.96	Grey silty sand, dense,fine
														28.96	41.45	OVERBURDEN	OVB	12.50				28.96	41.45	Grey silty sand & gravel, coarse
														41.45	49.38	OVERBURDEN	OVB	7.92				41.45	49.38	Brown silty sand & gravel, water bearing coarse
														49.38	50.21	OVERBURDEN	OVB	0.83				49.38	50.21	Brown silty sand & gravel, water bearing coarse
														50.21	54.86	OVERBURDEN	OVB	4.66				50.21	54.86	Grey sand & gravel, water bearing
														54.86	58.52	OVERBURDEN	OVB	3.66				54.86	58.52	Grey sand & gravel, water, coarse
														58.52	65.53	OVERBURDEN	OVB	7.01				58.52	65.53	Grey sand, fine, water
														65.53	67.67	OVERBURDEN	OVB	2.13				65.53	67.67	Grey sand & gravel,water bearing, coarse
														67.67	94.49	SANDY SILTSTONE	Sst	26.82				67.67	94.49	Light grey Sst
														94.49	96.89	SHALE	Sh	2.40				94.49	96.89	Dark brown shale, fractured, water bearing
														96.89	97.03	COAL	Coal	0.14				96.89	97.03	Picked from Geophysical Log
														97.03	97.76	SHALE	Sh	0.73				97.03	97.76	Picked from Geophysical Log
														97.76	97.96	COAL	Coal	0.20		Seam 1	ns	97.76	97.96	Picked from Geophysical Log
														97.96	98.14	SHALE	Sh	0.18		Seam 1	ns	97.96	98.14	Picked from Geophysical Log
														98.14	98.47	COAL	Coal	0.33		Seam 1	ns	98.14	98.47	Picked from Geophysical Log
														98.47	98.88	SHALE	Sh	0.41		Seam 1	ns	98.47	98.88	Picked from Geophysical Log
														98.88	99.22	COAL	Coal	0.34		Seam 1	ns	98.88	99.22	Picked from Geophysical Log
														99.22	99.51	SHALE	Sh	0.29		Seam 1	ns	99.22	99.51	Picked from Geophysical Log
														99.51	99.95	COAL	Coal	0.44		Seam 1	ns	99.51	99.95	Picked from Geophysical Log
														99.95	100.09	SHALE	Sh	0.14		Seam 1	ns	99.95	100.09	Picked from Geophysical Log
														100.09	100.48	COAL	Coal	0.39		Seam 1	ns	100.09	100.48	Picked from Geophysical Log
														100.48	100.75	SHALE	Sh	0.27		Seam 1	ns	100.48	100.75	Picked from Geophysical Log
														100.75	100.97	COAL	Coal	0.22		Seam 1	ns	100.75	100.97	Picked from Geophysical Log
														100.97	101.13	SHALE	Sh	0.16		Seam 1	ns	100.97	101.13	Picked from Geophysical Log
														101.13	101.48	COAL	Coal	0.35		Seam 1	ns	101.13	101.48	Picked from Geophysical Log
														101.48	103.15	SHALE	Sh	1.67				101.48	103.15	Picked from Geophysical Log
														103.15	103.41	COAL	Coal	0.26				103.15	103.41	Picked from Geophysical Log
														103.41	103.63	SHALE	Sh	0.22				103.41	103.63	Dark brown shale, fractured, water bearing
														103.63	126.49	SANDY SILTSTONE	Sst	22.86				103.63	126.49	Light grey Sst
														126.49	128.55	SANDY SILTSTONE	Sst	2.06				126.49	128.55	Grey Sst
														128.55	129.31	SHALY COAL	Shaly Coal	0.76		Seam 1 Sub 1	ns	128.55	129.47	Picked from Geophysical Log: badly caved; could be carbmdstn
														129.31	131.54	SHALE	Sh	2.23				129.47	131.54	Dark brown shale
														131.54	132.74	SHALY COAL	Shaly Coal	1.20		Seam 1 Sub 1	ns	131.54	132.94	Picked from Geophysical Log
														132.74	136.20	SHALE	Sh	3.46				132.94	136.20	Dark brown shale-some coal
														136.20	136.70	SHALY COAL	Shaly Coal	0.50		Seam 1 Sub 1	ns	136.20	137.23	Picked from Geophysical Log
														136.70	149.09	SHALE	Sh	12.39				137.23	149.09	Dark brown shale
														149.09	149.98	SHALY COAL	SHC	0.89				149.09	149.98	Dark brown shale: Cave
														149.98	152.40	SHALE	Sh	2.42				149.98	152.40	Dark brown shale
														152.40	157.89	SANDY SILTSTONE	Sst	5.49				152.40	157.89	Grey Sst
														157.89	169.16	SANDY SILTSTONE	Volc	11.28				157.89	169.16	Dark Green Volc.
														169.16	169.93	LOST CORE	Lost Core	0.77				169.16	169.93	Lost Rock due to switch over from rotary to coring
1		169.93	172.37	2.44	2.31	94.67%										#N/A								
	1						>25	60.17%	25	10	W6	R7		169.93	172.24	SANDY SILTSTONE	Volc	2.31				169.93	172.24	Green basalt, maybe andesite. Chloritized-looking fractures. >7 fr @ 50-60°. >8 fr @ 030°.
														172.24	172.37	LOST CORE	Lost Core	0.13	0.13			172.24	172.37	*Rock Loss*
2		172.37	174.35	1.98	1.90	95.96%										#N/A								
	1 & 2						>25	36.32%	25	8	W6	R7		172.37	174.27	SANDY SILTSTONE	Volc	1.90						As above rock. 25-95cm from bottom is full of fr healed w/ green tinted gauge-looking calcite. Calcite veins ~ 40°. Calcite
3		174.35	176.94	2.59	2.64	101.93%										#N/A								
	2 & 3						>25	70.45%	25	9	W6	R7		174.27	176.91	SANDY SILTSTONE	Volc	2.64						As above rock. 25-95cm from bottom is full of fr healed w/ green tinted gauge-looking calcite. Calcite veins ~ 40°. Calcite
4		176.94	179.08	2.14	2.17	101.40%										#N/A								
	3 & 4						13	57.14%	25	14	W6	R7		176.91	179.08	SANDY SILTSTONE	Volc	2.17						As above. 6 fr. @ ~ 90°. 7 fr. @ 20-40°. EOH

Geological Borehole Log: RAV-09-007

Client: CJV
Project: Raven
Logged By: FarShad Shirmohammd, Henry Kim

Hole Number: RAV-09-007
Date Hole Started: Jun 16 2009
Date Hole FiniShed: Jun 20 2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 249.80m
Depth of Casing: 5.90m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensided, ~= approximately, ShC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)	G.P.L. Corrected	Lith	Thickness (m)	Lost Core (m)	Seam Code	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	4.25	OVERBURDEN	ovbdn							0-4.5m overburden, casing at 4.5m
1		4.50	5.80	1.30	1.10	84.62%																		
	1						13	33.64%	25	9	W6	R6	4	4.25	5.35	SILTSTONE	Sltst	1.10						Dark grey, fg, massive sltst, joints mostly 90TCA, ove vertical joint neat top
														5.35	5.55	LOST CORE	Lost Core	0.20	0.20					*Rock loss*
2		5.80	8.85	3.05	3.05	100.00%										#N/A								
	1,2						>25	67.87%	25	10	W6	R6	4	5.55	8.60	SILTSTONE	Sltst	3.05						Dark grey, fg, massive sltst, same as above, joints ranges from 35-90TCA, highly fractured area 8.2-8.4m
3		8.85	11.90	3.05	3.10	101.64%										#N/A								
	2,3						23	84.84%	25	13	W6	R6	4	8.60	11.70	SILTSTONE	Sltst	3.10						Dark grey, fg, massive sltst, same as above, possible fault gauge at 11.1m, joints ~85TCA, vertical joints at 10.6m
4		11.90	14.95	3.05	3.02	99.02%										#N/A								
	3,4						>25	43.05%	25	10	W6	R6	4	11.70	14.72	SILTSTONE	Sltst	3.02						Dark grey, fg, massive sltst, same as above, heavely fractured to small pieces in many places
5		14.95	18.00	3.05	2.87	94.10%										#N/A								Same sltst as above, hightly fractured near top, interbedding of sltst and mg, sst from 16.7m, no particular bedd
	4						>25	49.83%	25	10	W6	R6	4	14.72	17.59	SILTSTONE	Sltst	2.87						Same sltst as above, hightly fractured near top, interbedding of sltst and mg, sst from 16.7m, no particular bedd
														17.59	17.75	LOST CORE	Lost Core	0.16	0.16					*Rock loss*
6		18.00	21.05	3.05	3.00	14.25%										#N/A								
	4,5						12	65.83%	25	9	W6	R5	4	17.75	18.95	SILTSTONE	Sltst	1.20						Same sltst as above, with chunks of angular sst breccia
	4,5						6	88.89%	25	9	W6	R5	4	18.95	20.75	SANDY SILTSTONE	Sst	1.80						Light grey, mg sst, 0.4m at the bottom 0.2m of core broken 5-10cm chunk
														20.75	20.80	LOST CORE	Lost Core	0.05	0.05					*Rock loss*
7		21.05	24.10	3.05	2.98	97.70%										#N/A								
	5,6						8	67.11%	25	13	W6	R5	4	20.80	23.78	SANDY SILTSTONE	Sst	2.98						Light grey, mg, sst
														23.78	23.85	LOST CORE	Lost Core		0.07					*Rock loss*
8		24.10	27.15	3.05	3.04	99.67%										#N/A								
	6,7						2	100.00%	25	13	W6	R5	4	23.85	26.89	SANDY SILTSTONE	Sst	3.04						Sst same as above
														26.89	26.90	LOST CORE	Lost Core	0.01	0.01					*Rock loss*
9		27.15	30.20	3.05	2.99	98.03%										#N/A								
	7						2	1.08	25	13	W6	R5	4	26.90	27.98	SANDY SILTSTONE	Sst	1.08						light grey, mg, sst, massive
	7						3	0.50	25	5	W6	R5	4	27.98	28.54	SILTSTONE	Sltst	0.56						med grey, fg, sltst, massive
	7						2	0.92	25	5	W6	R5	4	28.54	29.46	SANDY SILTSTONE	Sst	0.92						med grey, mg, sst
	7							0.43	25		W6	R4	3	29.46	29.89	SILTSTONE	Sltst	0.43						med grey, fg, sltst, massive
														29.89	29.95	LOST CORE	Lost Core	0.06	0.06					*Rock loss*
10		30.20	33.25	3.05	3.02	99.02%										#N/A								
	7,8						1	100.00%	25	14	W6	R5	4	29.95	31.78	SANDY SILTSTONE	Sst	1.83						Light grey, mg, sst, massive
	7,8						5	74.79%	25	9	W6	R4	4	31.78	32.97	SILTSTONE	Sltst	1.19						Med grey, fg, slt, massive, 0.10m at the top is broken
														32.97	33.00	LOST CORE	Lost Core	0.03	0.03					*Rock loss*
11		33.25	36.30	3.05	3.02	99.02%										#N/A								
	8,9						4	100.00%	25	14	W6	R4	4	33.00	36.02	SILTSTONE	Sltst	3.02						Sltst same as above, massive, 0.10cm at the top with some calc joints
														36.02	36.05	LOST CORE	Lost Core	0.03	0.03					*Rock loss*
12		36.30	39.35	3.05	2.91	95.41%										#N/A								
	9						12	93.13%	25	14	W6	R4	4	36.05	38.96	SILTSTONE	Sltst	2.91						Sltst same as above, samples are broken with some calc joints all over the cores
														38.96	39.10	LOST CORE	Lost Core	0.14	0.14					*Rock loss*
13		39.35	42.40	3.05	3.01	98.69%										#N/A								
	10						2	97.34%	25	14	W6	R4	4	39.10	42.11	SILTSTONE	Sltst	3.01						Med grey, fg sltst, massive
														42.11	42.15	LOST CORE	Lost Core	0.04	0.04					*Rock loss*
14		42.40	45.45	3.05	3.05	100.00%										#N/A								
	10,11						20	72.13%	25	15	W6	R5	4	42.15	45.20	SILTSTONE	Sltst	3.05						Dark grey, fg, massive sltst, most joints ~85TCA, thin calcite vein 90TCA, 44.6m thick calc vein runnint 70 TCA, rig
15		45.45	48.50	3.05	3.10	101.64%										#N/A								
	11,12						13	88.06%	25	15	W6	R5	4	45.20	48.30	SILTSTONE	slt	3.10						Same sltst as above, top 70cm more fractured, ~85TCA joints ~90TCA calc veins
16		48.50	51.55	3.05	3.05	100.00%										#N/A								
	12						6	98.36%	25	15	W6	R5	4	48.30	51.35	SILTSTONE	Sltst	3.05						Sltst same as above, soild core, ~90TCA calcite veins and vertical stringers
17		51.55	54.60	3.05	3.00	98.36%										#N/A								
	12,13						8	90.33%	25	14	W6	R5	4	51.35	54.35	SILTSTONE	Sltst	3.00						Dark grey, fgm sltst same as above, calc veins ~65-70TCA, ~54m highly fractured zone, 5cm thick
18		54.60	57.65	3.05	3.02	99.02%										#N/A								
	13,14						8	0.76	25	13	W6	R5	4	54.35	55.75	SILTSTONE	Sltst	1.40						slt same as above, fractures along calc veins ~70TCA, contact angle w/ lower sst ~85TCA
	13,14						1	100.00%	25	15	W6	R6	4	55.75	57.37	SANDY SILTSTONE	Sst	1.62						Light grey, mg-cg, massive sst, top 10cm interbedded w/ sltst, solid core
														57.37	57.40	LOST CORE	Lost Core	0.03	0.03					*Rock loss*
19		57.65	60.70	3.05	3.03	99.34%										#N/A								
	14						8	100.00%	25	15	W6	R6	4	57.40	60.43	SANDY SILTSTONE	Sst	3.03						Sst same as above, ~55.8m series of low anble (10TCA) calc veins (1mm-3cm thick) at same orientations. 58.65m
														60.43	60.45	LOST CORE	Lost Core	0.02	0.02					*Rock loss*
20		60.70	63.75	3.05	3.05	100.00%										#N/A								
	14,15						4	100.00%	25	15	W6	R6	4	60.45	63.50	LAMINITE	IB Sst & Sltst	3.05						Top 1.2m med grey, fg-mg, silty sst, massive, joints 90TCA, rest of the core is light grey, mg-cg, silty sst. no clear
21		63.75	66.80	3.05	2.97	97.38%										#N/A								
	15,16						4	95.96%	25	15	W6	R6	4	63.50	66.47	SANDY SILTSTONE	Sst	2.97						Light grey, mg-cg, massive sst, solid core, 66.3m clear contact, change to silty sst, contact angle 60TCA med grey
														66.47	66.55	LOST CORE	Lost Core	0.08	0.08					*Rock loss*
22		66.80	69.85	3.05	3.05	100.00%										#N/A								
	16,17						7	95.08%	25	15	W6	R6	4	66.55	69.60	LAMINITE	IB Sltst Sst	3.05						Med grey, fg-mg, massive silty sst, joints 85-90TCA
23		69.85	72.90	3.05	3.03	99.34%										#N/A								

	17						2	100.00%	10,25	15	W6	R6	4	69.60	72.63	SANDY SILTSTONE	Sst	3.03						Med grey, fg-mg, massive silty sst, gradually change to mg-cg sst, light grey, low angle joints, some slicken sided
24		72.90	75.95	3.05	3.10	101.64%										#N/A								
	17,18						4	100.00%	25	15	W6	R6	4	72.63	75.73	SANDY SILTSTONE	Sst	3.10						Light grey, mg-cg, massive sst, w/ calc stringers, some part w/ slt layer, stringers, most joints 85-90TCA, some ~7
25		75.95	79.00	3.05	2.52	82.62%										#N/A								
	18,19						2	92.00%	25	14	W6	R6	4	75.73	76.65	SANDY SILTSTONE	Sst	0.92						Sst same as above, 76.20m interbedded w/ sltst, joints 70TCA w/ calc, coal lens.
	18,19						>25	47.00%			W6	R6	3	76.65	76.87	SILTSTONE	Sltst	0.22						Dark grey-brown, fg, slt w/ calc vein 70TCA, 73.4m sandy, muddy possible coal seam(?) but most coal is washed
														76.87	77.94	COALY MUDSTONE	Sltst/coal bands	1.07						*Originally Logged as part of above Sst, but according to the Geophysical Log this is a badly caved zone and could*
														77.94	78.41	LOST CORE	Lost Core	0.47	0.47					*Core Loss: possible claystone or coaly mdst*
														78.41	78.72	SILTSTONE	Sltst	0.31						*Part of above Sltst unit*
26		79.00	82.05	3.05	3.08	100.98%										#N/A								
	19						2	100.00%	25	15	W6	R5	4	78.72	79.82	SILTSTONE	Sltst	1.10						Dark grey to brown, fg, sltst, massive w/ calc vein 75TCA, joints along the vein
	19						1	100.00%	25	15	W6	R6	4	79.82	81.80	SANDY SILTSTONE	Sst	1.98						Light grey, mg-cg, massive, sst, one solid core, one 90TCA fracture
27		82.05	85.10	3.05	3.05	100.00%										#N/A								
	20						7	98.36%	25	14	W6	R6	4	81.80	84.85	SANDY SILTSTONE	Sst	3.05						Light grey, mg-cg, massive sst, joints 85TCA, some w/ plant material (dark seams)
28		85.10	88.15	3.05	3.04	99.67%										#N/A								
	20,21						4	97.04%	25	14	W6	R6	4	84.85	87.89	SANDY SILTSTONE	Sst	3.04						Light grey, mg-cg, massive sst, solid core, joints 90TCA, some w. plant material
														87.89	87.90	LOST CORE	Lost Core	0.01	0.01					*Rock loss*
29		88.15	91.20	3.05	3.02	99.02%										#N/A								
	21						6	99.34%	25	15	W6	R6	4	87.90	90.92	SANDY SILTSTONE	Sst	3.02						Sst same as above, near top shaley coal seam ~2cm thick, 80TCA, most joints ~90TCA, some w/ plant material
														90.92	90.94	LOST CORE	Lost Core	0.02	0.02					*Rock loss*
30		91.20	94.25	3.05	3.06	100.33%										#N/A								
	21,22						6	95.10%	25	15	W6	R6	4	90.94	94.00	SANDY SILTSTONE	Sst	3.06						Sst same as above, joints 90-60TCA, w/ plant material
31		94.25	97.30	3.05	3.02	99.02%										#N/A								
	22,23						1	100.00%	25	15	W6	R6	4	94.00	97.02	SANDY SILTSTONE	Sst	3.02						Sst same as above, one joint 90TCA, v thin silty layer, oriented to 60TCA
														97.02	97.05	LOST CORE	Lost Core	0.03	0.03					*Rock loss*
32		97.30	100.35	3.05	3.10	101.64%										#N/A								
	23						6	94.19%	25	15	W6	R6	4	97.05	100.15	SANDY SILTSTONE	Sst	3.10						Sst same as above, thin silty or plant material within joints ~60TCA
33		100.35	103.40	3.05	3.00	98.36%										#N/A								
	23,24						5	100.00%	25	15	W6	R6	4	100.15	103.15	SANDY SILTSTONE	Sst	3.00						Sst same as above, solid core, 85-90TCA fracture w/ coal lens or plant material
34		103.40	106.45	3.05	3.01	98.69%										#N/A								
	24,25						1	100.00%	25	15	W6	R6	4	103.15	104.00	SANDY SILTSTONE	Sst	0.85						Light grey, mg-cg, massive sst, one 90TCA, joint w/ calc veins
	24,25						>25	51.43%	25	7	W6	R5	4	104.00	104.25	MUDSTONE	Mdst	0.25						Dark brown fg mdst, top 5cm highly broken, possibly contain some coal bits
	24,25													104.25	104.35	MUDSTONE	Mdst	0.10			07773	104.40	104.50	*Roof Sample, part of above Mdst*
	24,25						5							104.35	104.65	COAL	Coal	0.30		Seam 5	07774	104.50	104.80	Black, 90% bright, light, cleats clearly visible, massive and high % of py, and calc film,
	24,25													104.65	104.66	LOST CORE	Lost Core	0.01	0.01		ns			*Rock Loss*
	24,25													104.66	104.76	MUDSTONE	Mdst	0.10			07775	104.80	104.90	*Floor sample, part of below Mdst*
	24,25						5	96.69%	25	14	W6	R5	4	104.76	106.17	MUDSTONE	Mdst	1.41						Dark brown, fg, mdst, massive, joints 90TCA, some w/ thin calc vein
														106.17	106.21	LOST CORE	Lost Core	0.04	0.04					*Rock loss*
35		106.45	109.50	3.05	2.99	98.03%										#N/A								
	25,26						2	68.97%	25	9	W6	R5	4	106.21	106.50	MUDSTONE	Mdst	0.29			07776	106.59	106.69	dark brown, fg, massive slt
	25,26						>25							106.50	106.80	COAL	Coal	0.30		Seam 5	07777	106.69	106.99	black, 90% bright, clat visible, light, py and pink calc film,
	25,26													106.80	106.90	SANDY SILTSTONE	Sst	0.10			07778	106.99	107.09	*Floor sample, part of below Sst*
	25,26						6	93.48%	25	13	W6	R6	4	106.90	109.20	SANDY SILTSTONE	Sst	2.30						light grey, mg-cg, massive sst, near top interbedded w/ mdst 70TCA, joints along bedding angle
														109.20	109.21	LOST CORE	Lost Core	0.01	0.01					*Rock loss*
36		109.50	112.55	3.05	3.10	101.64%										#N/A								
	26						9	95.16%	25	14	W6	R6	4	109.21	112.31	SANDY SILTSTONE	Sst	3.10						Sst same as above, joints 90TCA, bedding at the same angle, interbedded w/ mdst near top, at 110.5m 10cm sar
37		112.55	115.60	3.05	3.30	108.20%										#N/A								
	26,27						5	100.00%	25	15	W6	R6	4	112.31	115.61	SANDY SILTSTONE	Sst	3.30						Light grey, mg-cg, 35cm thick interbedded layer w/ coal/mdst at 113.5m, bedding and contact angle 65TCA
38		115.60	118.65	3.05	2.81	92.13%										#N/A								
	27,28						4	94.31%	25	15	W6	R6	4	115.61	118.42	SANDY SILTSTONE	Sst	2.81						Light grey, mg-cg, massive sst, same as above, most joints 90TCA, 50cm thick interbedded w/ mdst/coal at 118.(
														118.42	118.44	LOST CORE	Lost Core	0.02	0.02					*Rock loss*
39		118.65	121.70	3.05	3.05	100.00%										#N/A								
	28						6	96.72%	25	15	W6	R6	4	118.44	121.49	SANDY SILTSTONE	Sst	3.05						Light grey, mg-cg, massive sst, same as above. Most joints ~90TCA, @~118.0m - 50cm thick interbedded w/ mds
40		121.70	124.75	3.05	3.07	100.66%										#N/A								
	28,29						4							121.49	123.62	SANDY SILTSTONE	Sst	2.13						Light grey, mg-cg, massive sst, same as above, w/ thin coal lens
	28,29													123.62	123.72	SANDY SILTSTONE	Sst	0.10			07779	123.73	123.83	*Roof Sample, part of above Sst*
	28,29													123.72	124.11	COAL	Coal	0.39		Seam 4	07780	123.83	124.22	Black, light, ~80% bright coal
														124.11	124.19	COAL	Coal	0.08		Seam 4	07781	124.22	124.30	*Originally Logged as part of below Mdst, but according to the Geophysical Log this interval is coal.*
	28,29													124.19	124.31	MUDSTONE	Mdst	0.12		Seam 4	07781	124.30	124.42	Dark brown, fg, massive mdst
	28,29													124.31	124.56	COAL	Coal	0.25		Seam 4	07782	124.42	124.67	Black, highly fractured, ~80% bright, fractured part appears dusty
41		124.75	127.80	3.05	2.93	96.07%										#N/A								
	29,30						>25				W6	R6	3	124.56	124.91	MUDSTONE	Mdstn	0.35		Seam 4	07783	124.70	125.05	Dark brown, fg, massive mdst, parting
														124.91	124.97	LOST CORE	Lost Core	0.06	0.06	Seam 4	ns			*Coal Loss*
	29,30													124.97	125.27	COAL	Coal	0.30		Seam 4	07784	125.11	125.41	Black, 75-80% bright, cleating visible, light, disc py ~5py
	29,30													125.27	125.37	SANDY SILTSTONE	Sst	0.10			07785	125.41	125.51	*Floor sample, part of below Sst*
	29,30						1	100.00%	25	15	W6	R6	4	125.37	126.75	SANDY SILTSTONE	Sst	1.38						Light grey, mg0cg, massive sst, joints ~70TCA, contact w/ upper coal seam ~70TCA,
	29,30						1	100.00%	25	15	W6	R6	4	126.75	127.55	SILTSTONE	Sltst	0.80						Dark grey to drak brown, fg, massive sltst
??		127.80	130.74	2.94	0.00	0.00%										#N/A								
														127.55	130.49	LOST CORE	Lost Core	2.94	2.94					*Rock Loss, Based on the interburden thickness between Seam 4 & Seam 3 on the Geophysical log (34.84m), and j*
??		130.74	133.68	2.94	0.00	0.00%										#N/A								
														130.49	133.43	LOST CORE	Lost Core	2.94	2.94					*Rock Loss, Based on the interburden thickness between Seam 4 & Seam 3 on the Geophysical log (34.84m), and j*
42		133.68	136.73	3.05	2.91	95.41%										#N/A								
	30						5		25	7	W6	R5	4	133.43	133.81	MUDSTONE	Mdst	0.38						black, fg, massive mdst w/ coal seams, micro cleating,
	30						1	2.53	25	15	W6	R6	4	133.81	136.34	SANDY SILTSTONE	Sst	2.53						light grey, mg-cg, massive sst

																								Rock Loss
44	31,32	136.73	139.78	3.05	2.98	97.70%									136.34	136.48	LOST CORE	Lost Core	0.14	0.14					
	31,32						4	100.00%	25	15	W6	R6	4	136.48	139.46	#N/A								
														139.46	139.53	SANDY SILTSTONE	Sst	2.98						Light grey, mg-cg, massive sst, same as above
														139.53	139.55	LOST CORE	Lost Core	0.07	0.07					*Rock Loss*
45		139.78	142.83	3.05	3.02	99.02%										#N/A								
	32,33						1	100.00%	25	15	W6	R6	4	139.53	142.55	SANDY SILTSTONE	Sst	3.02						Light grey, mg-cg, massive sst
														142.55	142.58	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
46		142.83	145.88	3.05	3.01	98.69%										#N/A								
	33						3	99.00%	25	15	W6	R6	4	142.58	145.59	SANDY SILTSTONE	Sst	3.01						Light grey, mg-cg, massive sst, same as above
														145.59	145.63	LOST CORE	Lost Core	0.04	0.04					*Rock Loss*
47		145.88	148.93	3.05	3.02	99.02%										#N/A								
	33,34						5	94.68%	25	15	W6	R6	4	145.63	148.65	SANDY SILTSTONE	Sst	3.02						Light grey, mg-cg, massive sst, same as above
														148.65	148.68	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
48		148.93	151.98	3.05	3.02	99.02%										#N/A								
	34,35						5	94.04%	25	15	W6	R6	4	148.68	151.70	SANDY SILTSTONE	Sst	3.02						Light grey, mg-cg, massive sst, coal lens w/ fracture ~85TCA
														151.70	151.73	LOST CORE	Lost Core		0.03					*Rock Loss*
49		151.98	155.03	3.05	3.02	99.02%										#N/A								
	35						3	98.34%	25	15	W6	R6	4	151.73	154.75	SANDY SILTSTONE	Sst	3.02						Light grey, cg, massive sst, much coarser grain size than above, joints 75TCA
	35													154.75	154.78	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
50		155.03	158.08	3.05	2.97	97.38%										#N/A								
	35,36						8	8.28%	25	14	W6	R6	4	154.78	157.75	SANDY SILTSTONE	Sst	2.97						Light grey, cg, massive sst, w/ mud lens ~85TCA
														157.75	157.83	LOST CORE	Lost Core	0.08	0.08					*Rock Loss*
52	37	158.08	161.13	3.05	2.97	97.38%										#N/A								
	37						4	100.00%	25	13	W6	R6	4	157.83	160.01	SANDY SILTSTONE	Sst	2.18						Light grey, cg, massive sst, w/ mud layer, joints along thin mud bands ~65TCA
														160.01	160.11	SANDY SILTSTONE	Sst	0.10			07786	160.41	160.51	*Roof Sample, part of above Sst*
	37							100.00%						160.11	160.23	SHALY COAL	Shaly Coal	0.12			07787	160.51	160.63	Black, 80% bright coal, w/ disc. Py and calc
														160.23	160.31	LOST CORE	Lost Core	0.08	0.08		ns			*Coal Loss*
	37						2		25	6	W6	R6	4	160.31	160.50	MUDSTONE	Mdst	0.19			07788	160.63	160.82	Brown, fg, massive mdst, parting
	37						16		26	5	W6	R1	4	160.50	160.88	SHALY COAL	Shaly Coal	0.38			07789	160.82	161.20	Black, 50% bright, cleats within bright coal seams
53	38	161.13	164.18	3.05	2.97	97.38%										#N/A								
	38						2		25	5	W6	R5	4	160.88	161.02	MUDSTONE	Mdst	0.14			07790	161.20	161.34	brown, fg, mdst, parting
	38						>25							161.02	161.52	COAL	Coal	0.50		Seam 3	07791	161.34	161.84	bright coal 75-80%, gassy w/ disc. Py and calc, micro cleats
														161.52	161.60	LOST CORE	Lost Core	0.08	0.08	Seam 3	ns			*Rock Loss*
	38													161.60	162.30	COAL	Coal	0.70		Seam 3	07792	161.84	162.54	*Part of above Coal*
	38						1	75.00%	10	6	W6	R5	4	162.30	162.50	MUDSTONE	Mdst	0.20		Seam 3	07793	162.54	162.74	brown, fg, massive mdst, 30TCA, joints w/ slicken sided
	38						>25		10,25	5	W6	R1	4	162.50	163.00	COAL	Coal	0.50		Seam 3	07794	162.74	163.24	black, bright coal 80-85%, light, mod gassy, cleat clearly visible, disc py and calc
	38													163.00	163.50	COAL	Coal	0.50		Seam 3	07795	163.24	163.74	*Part of above Coal*
	38													163.50	163.60	MUDSTONE	Mdst	0.10			07796	163.74	163.84	*Floor sample, part of below Mdst*
	38						20		25	5	W6	R6	4	163.60	163.93	MUDSTONE	Mdst	0.33						Dark brown, fg, massive mdst
54		164.18	167.23	3.05	3.01	98.69%										#N/A								
	38,39						3	100.00%	25	13	W6	R5	4	163.93	164.73	MUDSTONE	Mdst	0.80						Light grey, fg, massive mdst(sltst?), calc vein ~85TCA
	38,39						6	51.58%	25	14	W6	R6	4	164.73	166.94	SANDY SILTSTONE	Sst	2.21						Light grey, mg-cg, massive sst, interbedded w/ black v.fg mdst (upto 40cm thick), bedding angle from 55,75,85,9
														166.94	166.98	LOST CORE	Lost Core	0.04	0.04					*Rock Loss*
55		167.23	170.28	3.05	3.05	100.00%										#N/A								
	39,40						6	98.36%	25	14	W6	R6	4	166.98	170.03	SANDY SILTSTONE	Sst	3.05						Light grey, mg-cg, massive sst, interbeddede w/ black mdst (upto 10cm), 80TCA, from 169.0m massive sst, no in
56		170.28	173.33	3.05	3.05	100.00%	7									#N/A								
	40						7	98.36%	25	15	W6	R6	4	170.03	173.08	SANDY SILTSTONE	Sst	3.05						Light grey, mg-cg, massive sst
57		173.33	176.39	3.06	3.06	100.00%										#N/A								
	41,42						3	100.00%	25	15	W6	R6	4	173.08	176.14	SANDY SILTSTONE	Sst	3.06						Light, cg, massive sst
58		176.39	179.45	3.06	3.06	100.00%										#N/A								
	42						5	97.06%	25	15	W6	R6	4	176.14	179.20	SANDY SILTSTONE	Sst	3.06						Light grey, mg-cg, massive sst, interbedded w/ mdst near top, bedding ~80TCA
59		179.45	182.50	3.05	3.07	100.66%										#N/A								
	42						13	89.90%	13	13	W6	R6	4	179.20	182.27	LAMINITE	IB Mdst & Sst	3.07						50% light grey, mg-cg sst, interbedded w/ 50% black fg mgst, bedding ~70-85TCA, bedding thickkess
60		182.50	185.55	3.05	3.03	99.34%										#N/A								
	42,43						14	91.42%	25	13	W6	R6	4	182.27	185.30	LAMINITE	IB Mdst & Sst	3.03						50% sst, 50% mdst, same as above, fractures from 70-790TCA
61		185.55	188.65	3.1	3.10	100.00%										#N/A								
	43,44						14	90.00%	25	12	W6	R6	4	185.30	188.40	LAMINITE	IB Mdst & Sst	3.10						10% sst, 90% mdst, same as above
62		188.65	191.70	3.05	3.05	100.00%										#N/A								
	44,45						8	98.92%	25	12	W6	R5	4	188.40	190.25	LAMINITE	IB Mdst & Sst	1.85						20% sst, 80% slt, same as above, joints 65-70TCA, joints w/ calc veins, plant material w/ disc py near bottom
	44,45													190.25	190.35	LAMINITE	IB Mdst & Sst	0.10			07797	190.56	190.66	*Roof Sample, part of above IB Mdst & Sst*
	44,45													190.35	191.10	COAL	Coal	0.75		Seam 1	07798	190.66	191.41	dull, hard, at top with few stringers of clst
														191.10	191.25	MUDSTONE	Mdst	0.15		Seam 1	07798	191.41	191.56	*Originally sampled as part of above coal seam, mdst inserted based on the geophysical log*
	44,45													191.25	191.45	MUDSTONE	Mdst	0.20		Seam 1	07799	191.56	191.76	high carb cly stone with coal stringers at the bottom
63		191.70	194.75	3.05	3.04	99.67%										#N/A								
	45													191.45	192.08	COAL	Coal	0.63		Seam 1	07800	191.76	192.39	Coal, dull, hard
	45													192.08	192.28	COALY MUDSTONE	Coaly Mdstn	0.20		Seam 1	07801	192.39	192.59	Med grey, clyst with coal stringers
	45													192.28	193.18	COAL	Coal	0.90		Seam 1	07802	192.59	193.49	Coal, dull, hard
	45													193.18	194.08	COAL	Coal	0.90		Seam 1	07803	193.49	194.39	*Part of above Coal ply*
	45													194.08	194.14	MUDSTONE	Mdst	0.06		Seam 1	07804	194.39	194.45	Med grey, clyst with coal stringers
	45													194.14	194.39	COAL	Coal	0.25		Seam 1	07805	194.45	194.70	Coal, dull, hard
	45													194.39	194.49	COALY MUDSTONE	Coaly Mdst	0.10			07806	194.70	194.80	*Parting Sample*
														194.49	194.50	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
64		194.75	197.80	3.05	2.70	88.52%										#N/A								
	45,46													194.50	195.10	MUDSTONE	Mdst	0.60						Clay stone,

	45,46													195.10	195.20	MUDSTONE	Mdst	0.10			07807	195.37	195.47	Clyst, Roof Sample
														195.20	195.25	LOST CORE	Lost Core	0.05	0.05		ns			*Rock Loss*
	45,46													195.25	195.70	COAL	Coal	0.45		Seam 1 Sub 1	07808	195.47	195.92	Coal, dull, hard, 0.22m from top 0.03m clay stone
	45,46													195.70	195.80	MUDSTONE	Mdst	0.10			07809	195.92	196.92	*Floor Sample, part of below Mdst*
														195.80	195.94	LOST CORE	Lost Core	0.14	0.14					*Rock Loss*
														195.94	196.10	LOST CORE	Lost Core	0.16	0.16					*Coal Loss*
	45,46													196.10	197.55	MUDSTONE	Mdst	1.45						Dark grey, fg, massive, possible fault gauge neat top, slicken sided joint, right below, joints ~85-90TCA
65		197.80	200.85	3.05	3.10	101.64%										#N/A								
	46,47						7	76.43%	25,10	7	W6	R6	4	197.55	198.95	SANDY SILTSTONE	Sst	1.40						Light grey, v,cg, mostly qtz and plag, altered sst, interbedded w/ mdst, joints w/ plant material. Some w/slicked
							7	92.35%	25	8	W6	R5	4	198.95	200.65	MUDSTONE	Mdst	1.70						Dark grey to black, fg, massive joints 85-90TCA, two thin clay layers 3-4cm, possible fault gouge(?)
66		200.85	203.90	3.05	2.95	96.72%										#N/A								
	47						20	86.44%	25	13	W6	R5	4	200.65	203.60	MUDSTONE	Mdst	2.95						Dark grey to black, massive, same as above, two possible fault gauge w/ clay layer and slicken sided some w/ cal
														203.60	203.65	LOST CORE	Lost Core	0.05	0.05					*Rock loss*
67		203.90	206.95	3.05	2.84	93.11%										#N/A								
	47,48						7	87.75%	25	12	W6	R5	4	203.65	205.69	MUDSTONE	Mdst	2.04						Dark grey, fg, interbedded w/ thin altered sst, 204.7m vertical joint 15cm long, 90TCA joints w/plant material
	47,48							62.50%			W6	R6	4	205.69	206.49	SANDY SILTSTONE	Sst	0.80						light grey, almost wihte, cg, altered sst w/ qtz and plag, thin coal/mdst lenses w/ plant material 75TCA
														206.49	206.70	LOST CORE	Lost Core	0.21	0.21					*Rock loss*
68		206.95	210.00	3.05	3.00	98.36%										#N/A								
	48,49						8	1.25	25	12	W6	R5	4	206.70	208.15	MUDSTONE	Mdst	1.45						Dark grey, fg, massive mdst, joints 79-85TCA
	48,49						5	1.52	25	14	W6	R6	4	208.15	209.70	SANDY SILTSTONE	Sst	1.55						Light grey, almost white, v.cg, mostly qtz and plag, joints 75-85TCA w/ plant material and some w/ py thin mdst
														209.70	209.75	LOST CORE	Lost Core	0.05	0.05					*Rock loss*
69		210.00	213.05	3.05	3.07	100.66%										#N/A								
	49						12	97.72%	25	14	W6	R6	4	209.75	212.82	SANDY SILTSTONE	Sst	3.07						Light to with, v.cg, altered sst w/ qtz and plag, angular qtz 2-3mm, fractures along mdst beds and coal lens near
70		213.05	216.10	3.05	3.03	99.34%										#N/A								
	49,50						4		25	8	W6	R6	4	212.82	213.65	SANDY SILTSTONE	Sst	0.83						Light grey to white, altered sst, same as above, vertical fracture most of the formation,disc py along the vertical
	49,50						7	100.00%	25	13	W6	R6	4	213.65	215.85	MUDSTONE	Mdst	2.20						Dark grey to white, fg-mg, mdst, gradually coarsening downwards, near bottom altered mg sst within sst joints v
71		216.10	219.15	3.05	3.08	100.98%										#N/A								
	50,51						23	70.45%	25	12	W6	R6	4	215.85	218.93	LAMINITE	IB Mdst & Sst	3.08						Dark grey, fg, massive mdst, interbedded w/ white v.cg, altered sst w/ qtz and plag, coal lenses within altered ss
72		219.15	222.20	3.05	3.00	98.36%										#N/A								
	52						13	93.67%	25	14	W6	R6	4	218.93	221.93	LAMINITE	IB Mdst & Sst	3.00						Dark grey, fg, massive mdst, interbedded w/ white v.cg altered sst, same as above, most joints 85-90TCA altered
														221.93	221.98	LOST CORE	Lost Core	0.05	0.05					*Rock loss*
73		222.20	225.25	3.05	3.11	101.97%										#N/A								
	52						13	80.71%	25	14	W6	R5	4	221.98	225.09	MUDSTONE	Mdst	3.11						Dark grey to black, fg, massive mdst, most joints 90TCA
74		225.25	228.30	3.05	2.96	97.05%										#N/A								
	52,53						10	100.00%	25	15	W6	R5	4	225.09	228.05	MUDSTONE	Mdst	2.96						Dark grey to black, fg, massive mdst, same as above, most joints ~90TCA, possible fault gouge
75		228.30	231.35	3.05	3.05	100.00%										#N/A								
	53,54						11	81.40%	25	13	W6	R5	4	228.05	229.27	MUDSTONE	Mdst	1.22						Dark grey to black, fg, massive mdst, same as above, ~85-90TCA
	53,54						3	100.00%	25	15	W6	R6	4	229.27	231.10	SANDY SILTSTONE	Sst	1.83						Light grey to white, v.cg, mostly qtz/plag, altered sst, most joints ~90TCA, one ~40TCA @230m, filled w/ plant m
76		231.35	234.40	3.05	3.09	101.31%										#N/A								
	54						8	97.73%	25	15	W6	R6	4	231.10	234.19	SANDY SILTSTONE	Sst	3.09						Light grey to white, v.cg, mostly qtz and plag, altered sst, qtz 2-4mm angular 50-60TCA, joints w/plant material (
77		234.40	237.45	3.05	3.00	98.36%										#N/A								
	55						1	100.00%	25	15	W6	R6	4	234.19	236.19	SANDY SILTSTONE	Sst	2.00						Altered sst, same as above, bedding ~60TCA, ~5mm green volc frags visible
	55						>25		25	8	W6	R5	4	236.19	237.19	MUDSTONE	Mdst	1.00						Dark grey, fg, massive, mdst, ~60-90TCA joints, highly fractured area near bottom
														237.19	237.20	LOST CORE	Lost Core	0.01	0.01					*Rock loss*
78		237.45	240.50	3.05	3.05	100.00%										#N/A								
	55,56						7	79.34%	25	8	W6	R5	4	237.20	238.41	MUDSTONE	Mdst	1.21						Dark grey, fg, massive mdst, same as above, 40-60TCA joints, calc vein 70-85TCA, ~85TCA contact angle w/ lowe
	55,56						3	97.42%	25	15	W6	R6	4	238.41	240.25	SANDY SILTSTONE	Sst	1.84						Light grey to white, altered sst w/ green volc fracs upto 1cm, angular
79		240.50	243.55	3.05	3.05	100.00%										#N/A								
	56						4	0.92	25	15	W6	R6	4	240.25	241.34	SANDY SILTSTONE	Sst	1.09						Altered sst same as above
	56						2	1.33	25	15	W6	R5	4	241.34	242.67	MUDSTONE	Mdst	1.33						Dark grey to black, fg, mdst
							1	0.63	25	15	W6	R6	4	242.67	243.30	SANDY SILTSTONE	Sst	0.63						Altered sst same as above
80		243.55	246.60	3.05	3.00	98.36%										#N/A								
	56,57							100.00%			W6	R6	4	243.30	245.33	SANDY SILTSTONE	Sst	2.03						Altered sst, same as above
	56,57							100.00%			W6	R5	4	245.33	246.30	MUDSTONE	Mdst	0.97						Massive mdst, same as above, bottom 30cm is in brown-red color
														246.30	246.33	LOST CORE	Lost Core	0.03	0.03					*Rock loss*
81		246.60	249.65	3.05	3.07	100.66%										#N/A								
	57,58							100.00%			W6	R6	4	246.33	249.27	MUDSTONE	Mdst	2.94						Brown-red, fg, altered mdst, color changes to greenish grey at 248m, highly altered, appears to be sst greenish c
	57,58							100.00%			W6	R6	4	249.27	249.40	SANDY SILTSTONE	Sst	0.13						Highly altered, appears to be sst, greenish color w/ veins and zenoliths (angular)
82		249.65	252.70	3.05	2.97	97.38%										#N/A								
	58,59							100.00%			W6	R6	4	249.40	249.60	SANDY SILTSTONE	Sst	0.20						Altered sst, same as above, dark veins running ~55TCA, contact angle w/ lower unit ~60TCA
	58,59							100.00%			W6	R5	4	249.60	251.41	MUDSTONE	Mdst	1.81						Mdst(?)pale brown, khaki color, fg, w/ volc zenoliths, angular 4-10cm, qtz and other rock frags, massive, ~90TCA
	58,59						4	100.00%	25	10	W6	R6	4	251.41	252.37	SANDY SILTSTONE	Volc	0.96						Green volc breccia
														252.37	252.45	LOST CORE	Lost Core	0.08	0.08					*Rock loss*
83		252.70	255.75	3.05	2.93	96.07%										#N/A								
	59						7	97.95%	25	15	W6	R6	4	252.45	255.38	SANDY SILTSTONE	Volc	2.93						Green volc breccia
														255.38	255.50	LOST CORE	Lost Core	0.12	0.12					*Rock loss*

Client: CJV
Project: Raven
Logged By: Amber Brown, Parviz

Hole Number: RAV09-008
Date Hole Started: 07-Jun-09
Date Hole Finished: 18-Jun-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 252.48m
Depth of Casing: 71.90m
Core Size: 8.25cm

Geological Borehole Log: RAV09-008

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
SS= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Length of Run (m)	Recovery		RQD		Fractures			Hardness		G.P.L. Corrected			Interval Logged				Samples (Driller's Depths)			Description
					Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage	Alt'n & Weath.	Prefix	Core Quailty	From (m)	To (m)		Lith	Length	Lost Core	Strat	Number	From (m)	To (m)	
														0.00	5.92	OVERBURDEN	OVB	6.10				0.00	6.10	Brown Silts with Sand and Gravel, dry, start of chip sampling
														5.92	18.11	OVERBURDEN	OVB	12.19				6.10	18.29	Brown Sand & Gravel, silty coarse, cobbles
														18.11	23.60	OVERBURDEN	OVB	5.49				18.29	23.77	Brown silts with some sand, fine
														23.60	27.25	OVERBURDEN	OVB	3.66				23.77	27.43	Grey Silts, some clay
														27.25	28.78	OVERBURDEN	OVB	1.52				27.43	28.95	Brown silts with interbeded sands & gravel
														28.78	57.43	OVERBURDEN	OVB	28.65				28.95	57.61	Brown sand & gravel, silty dry until 150 feet, water bearing at 150 feet
														57.43	60.48	OVERBURDEN	OVB	3.05				57.61	60.65	Grey silty sand water bearing
														60.48	65.36	OVERBURDEN	OVB	4.88				60.65	65.53	Green Sand and gravel, silty, coarse,water bearing
														65.36	69.93	OVERBURDEN	OVB	4.57				65.53	70.11	Green Sand and gravel, silty, coarse,water bearing
														69.93	76.03	SILTSTONE	Sltst	6.10				70.11	76.20	Dark grey siltstone
														76.03	82.12	SANDSTONE	Sst	6.10				76.20	82.30	Grey Sandstone
														82.12	85.17	SANDSTONE	Sst	3.05				82.30	85.35	Light Grey Sandstone
														85.17	91.87	SHALE	Sh	6.71				85.35	92.05	Dark grey Shale
														91.87	97.36	SANDSTONE	Sst	5.49				92.05	97.54	Grey Sandstone
														97.36	98.89	SANDSTONE	Sst	1.52				97.54	99.06	Dark Grey Sandstone
														98.89	111.08	SANDSTONE	Sst	12.19				99.06	111.25	Grey Sandstone
														111.08	124.79	SANDSTONE	Sst	13.72				111.25	124.97	Light Grey Sandstone
														124.79	129.37	SHALE	Sh	4.57				124.97	129.54	Dark grey Shale
														129.37	140.03	SANDSTONE	Sst	10.67				129.54	140.21	Grey Sandstone making 8 gpm
														140.03	141.56	SHALE	Sh	1.52				140.21	141.73	Dark brown shale
														141.56	143.08	SANDSTONE	Sst	1.52				141.73	143.26	Grey Sandstone
														143.08	161.37	SANDSTONE	Sst	18.29				143.26	161.55	Dark Grey Sandstone
														161.37	161.93	COAL	Coal	0.56		Seam 4	ns	161.55	162.11	Coal & Core Point, end of chip sampling
1		162.76	165.66	2.90	2.72	93.79%										#N/A								
														162.93	163.11	LOST CORE	Lost Core	0.18	0.18	Seam 4	ns	162.11	162.29	*Lost Coal*
	1													163.11	163.68	COAL	Coal	0.57		Seam 4	07928	162.29	162.86	Fibrous black coal. Light. No gasses. Dull & bright
	1													163.68	164.03	COAL	Coal	0.35			07929	162.86	163.21	As above, but as slightly harder partings. Still light. Breaks are smooth like SS. Pyrite blebs 0.5%
	1													164.03	164.23	SANDSTONE	Sst	0.20			07930	163.21	163.41	Floor Sample, part of below Sst
	1						4	85.56%	25	15	W6	R5		164.23	165.83	SANDSTONE	Sst	1.60				163.41	165.01	Med gray, med grained Sst. Fr @ 90° w/calcite veins. Coal stringers, spars & calcite veins, more abundant closer to coal contact
2		165.66	168.56	2.90	2.22	76.55%										#N/A								
	1 & 2						3	100.00%	25	15	W6	R7		165.83	168.05	SANDSTONE	Sst	2.22				165.01	167.23	Med gray, med grain Sst. Darkens ~ 1.33 m from top & gradually grades back into med gray. 1.25m from top is an 8 cm section of black hard coal. Dull & bright. Degassing. 0.5% calcite veins. Coal stringer & spars throughout top 1.25m w/calcite veins. Coal stringer & spars throughout top 1.25m w/calcite veins.
3		168.56	169.78	1.22	2.01	164.75%										#N/A								
	2 & 3													168.05	170.06	SANDSTONE	Sst	2.01				167.23	169.24	Med gray, coarse grained Sst. 3 calcite veins @ 65°. One of these is in a 3cm wide wispy bed of dark gray Sltst. Top 45cm is clouded w/finer grained Sst. Bottom 90cm has long darker gray stringers @ 10-20° TCA.
4		169.78	172.22	2.44	2.33	95.49%										#N/A								
	3 & 4						3	100.00%	25	15	W6	R7		170.06	172.39	SANDSTONE	Sst	2.33				169.24	171.57	Med gray, coarse grained Sst.
5		172.22	175.12	2.90	2.95	101.72%										#N/A								
	4 & 5							100.00%	7	13	W6	R6	4	172.39	175.34	SANDSTONE	Sst	2.95				171.57	174.52	Sst, coarse grained, light gray w/ a few stringers of coal.
6		175.12	178.02	2.90	2.91	100.34%										#N/A								
	5 & 6							100.00%	5	13	W6	R6	4	175.34	178.25	SANDSTONE	Sst	2.91				174.52	177.43	Coarse grained Sst as above
7		178.02	180.92	2.90	2.85	98.28%										#N/A								
	6 & 7							100.00%	2	14	W6	R6	4	178.25	181.10	SANDSTONE	Sst	2.85				177.43	180.28	Coarse grained, light gray Sst
8		180.92	183.82	2.90	2.79	96.21%										#N/A								
	7 & 8							100.00%	4	14	W6	R6	4	181.10	183.89	SANDSTONE	Sst	2.79				180.28	183.07	Coarse grained, light gray, massive Sst w/ few coal stringers
														183.89	183.99	LOST CORE	Lost Core	0.10	0.10			183.07	183.17	*Lost Core*
9		183.82	186.72	2.90	3.01	103.79%										#N/A								
	8 & 9						7	100.00%	25	15	W6	R6	4	183.99	187.00	SANDSTONE	Sst	3.01				183.17	186.18	Coarse grained, light gray, massive Sst. Hard
10		186.72	189.62	2.90	2.69	92.76%										#N/A								
	9 & 10						6	100.00%	21	15	W6	R6	4	187.00	189.69	SANDSTONE	Sst	2.69				186.18	188.87	As above Sst. Many dk Sltst stringers 70 - 90°. A little black coal spar w/ cleats
11		189.62	192.52	2.90	3.02	104.14%										#N/A								
	10 & 11						7	100.00%	25	15	W6	R6		189.69	192.71	LAMINITE	IB Sst & Mdst	3.02				188.87	191.89	Dark Mdst flasered w/ beds and lenses of the coarse grained, light gray Sst. ~ 70-90°.
12		192.52	195.42	2.90	2.88	99.31%										#N/A								
	11 & 12						4	100.00%	25	15	W6	R6		192.71	195.59	LAMINITE	IB Sst & Sltst	2.88				191.89	194.77	Coarse grained, light gray Sst flasered w/ Sltst beds
13		195.42	198.32	2.90	2.75	94.83%										#N/A								
	12 & 13						14	91.27%	25	13	W6	R5		195.59	198.34	LAMINITE	IB Sst & Sltst	2.75				194.77	197.52	As Above
14		198.32	200.22	1.90	2.05	107.89%										#N/A								
	13													198.34	199.97	SANDSTONE	Sst	1.63				197.52	199.15	As above Sst
	13													199.97	200.07	SANDSTONE	Sst	0.10			07931	199.15	199.25	Roof Sample, part of above Sst
	13													200.07	200.21	COAL	Coal	0.14		Seam 3	07932	199.25	199.39	Powdery to hard. Light in weight. Black. 0.5% pyrite. Dull & bright. No cleats. No bubbles.
	13													200.21	200.39	MUDSTONE	Mdst	0.18		Seam 3	07933	199.39	199.57	Brown Mdst
15		200.22	203.12	2.90	2.90	100.00%										#N/A								
	14 & 15													200.39	200.59	SILTSTONE	Sltst	0.20		Seam 3	07934	199.57	199.77	*Roof Sample, Dk gray Sltst.*
	14 & 15													200.59	201.17	COAL	Coal	0.58		Seam 3	07935	199.77	200.35	Dk black coal. Kinda heavy. 0.5% calcite stringers. Dull & bright. Blebs of pyrite. Bubbling.
	14 & 15													201.17	201.33	MUDSTONE	Mdst	0.16		Seam 3	07936	200.35	200.51	Dk Brown Mdst. Hard
	14 & 15													201.33	201.46	COAL	Coal	0.13		Seam 3	07937	200.51	200.64	Dk black coal. Light & powdery. <0.5% pyrite. Bubbling. Dull & bright.
	14 & 15													201.46	201.60	COAL	Coal	0.14		Seam 3	07938	200.64	200.78	As above coal. But harder. Still light in weight.
	14 & 15													201.60	201.80	MUDSTONE	Mdst	0.20		Seam 3	07939	200.78	200.98	Dk Brown Mdst. Hard
	14 & 15													201.80	202.28	COAL	Coal	0.48		Seam 3	07940	200.98	201.46	As coal above
	14 & 15													202.28	202.38	SHALY COAL	SHC	0.10			07941	201.46	201.56	Dk black-brown coaly-shale w/ calcite veins.
	14 & 15													202.38	203.29	SILTSTONE	Sltst	0.91				201.56	202.47	Dk gray Sltst.
16		203.12	206.02	2.90	2.72	93.79%										#N/A								

	15 & 16						5	100.00%	25	15	W6	R6		203.29	206.01	LAMINITE	IB Mdst & Sst	2.72				202.47	205.19	Dk gray Mdst flasered w/ med gray, med grained Sst. Lenses of blk coal 90 cm from top. Hard.
														206.01	206.19	LOST CORE	Lost Core	0.18	0.18			205.19	205.37	*Rock Loss*
17		206.02	208.92	2.90	2.84	97.93%										#N/A								
	15 & 16						1							206.19	209.03	SANDSTONE	Sst	2.84				205.37	208.21	Med gray, med grained Sst w/ discontinuous Sltst laminations.
														209.03	209.09	LOST CORE	Lost Core	0.06	0.06			208.21	208.27	*Rock Loss*
18		208.92	211.82	2.90	2.67	92.07%										#N/A								
	16 & 17						3		25	14	W6	R6		209.09	211.76	SANDSTONE	Sst	2.67				208.27	210.94	Med gray, med grained Sst w/ laminated Sltst & Coal. First 95cm a bit darker gray. Thick laminations of 0°
														211.76	211.91	LOST CORE	Lost Core	0.15	0.15			210.94	211.09	*Rock Loss*
19		211.82	214.41	2.59	2.67	103.09%										#N/A								
	17 & 18						8	100.00%	25	15	W6	R6		211.91	214.58	SANDSTONE	Sst	2.67				211.09	213.76	As above Sst. Fr @ 50° TCA. Some @ 90°. 1 faulty-gauge @ 50° TCA.
20		214.41	217.31	2.90	2.57	88.62%										#N/A								
	18 & 19						5	100.00%	25	15	W6	R6		214.58	214.63	LOST CORE	Lost Core	0.05	0.05			213.76	213.81	*Rock Loss*
														214.63	217.20	SANDSTONE	Sst	2.57				213.81	216.38	As above Sst. Massive. A few worm hole fossils
21		217.31	219.90	2.59	2.87	110.81%										#N/A								
	19 & 20						3	100.00%	25	14	W6	R6		217.20	220.07	SANDSTONE	Sst	2.87				216.38	219.25	Medium grained, light gray, massive Sst.
22		219.90	222.80	2.90	2.76	95.17%										#N/A								
	20 & 21						4	96.03%	25	14	W6	R6		220.07	222.59	SANDSTONE	Sst	2.52				219.25	221.77	Sst, medium to coarse grained. Light gray.
	20 & 21							0.00%	25	4	W6	R3		222.59	222.83	CLAYSTONE	Clyst	0.24				221.77	222.01	Light gray, fine grained Clyst
23		222.80	224.28	1.48	1.13	76.35%										#N/A								
	21 & 22						18	61.95%	25	4	W6	R3		222.83	223.96	CLAYSTONE	Clyst	1.13				222.01	223.14	Light gray, fine grained Clyst
24		224.28	226.52	2.24	2.73	121.88%										#N/A								
	22 & 23						6	100.00%	25	14	W6	R3		223.96	225.86	CLAYSTONE	Clyst	1.90				223.14	225.04	Light gray, fine grained Clyst.
	22 & 23													225.86	226.03	CLAYSTONE	Clyst	0.17			07942	225.04	225.21	Very soft and crumbly Clyst, light gray.
	22 & 23													226.03	226.46	COAL	Coal	0.43		Seam 1	07943	225.21	225.64	Coal, dull, hard.
	22 & 23													226.46	226.56	CARBONACEOUS CLAYSTONE	Carb. Clyst	0.10		Seam 1	07944	225.64	225.74	Carb Clyst, soft, crumbly.
	22 & 23													226.56	226.69	COAL	Coal	0.13		Seam 1	07945	225.74	225.87	Coal, dull, hard.
25		226.52	229.59	3.07	3.07	100.00%										#N/A								
	23 & 24													226.69	227.49	COAL	Coal	0.80		Seam 1	07945	225.87	226.67	Coal, dull, hard. 0.30m at the bottom very soft.
	23 & 24													227.49	227.56	CLAYSTONE	Clyst	0.07		Seam 1	07946	226.67	226.74	Clyst
	23 & 24													227.56	227.76	COAL	Coal	0.20		Seam 1	07947	226.74	226.94	Coal, dull, hard.
	23 & 24													227.76	227.96	CLAYSTONE	Clyst	0.20		Seam 1	07948	226.94	227.14	Hight carb Clyst
	23 & 24													227.96	228.67	COAL	Coal	0.71		Seam 1	07949	227.14	227.85	Coal, dull.
	23 & 24													228.67	228.79	CLAYSTONE	Clyst	0.12		Seam 1	07950	227.85	227.97	Clyst, med gray
	23 & 24													228.79	228.96	COAL	Coal	0.17		Seam 1	07951	227.97	228.14	Coal, dull
	23 & 24													228.96	229.06	CLAYSTONE	Clyst	0.10			07852	228.14	228.24	Floor sample.
	23 & 24													229.06	229.76	CLAYSTONE	Clyst	0.70			ns	228.24	228.94	Clyst, light gray, 0.10m
26		229.59	232.49	2.90	2.90	100.00%										#N/A								
														229.76	229.82	CLAYSTONE	Clyst	0.06			07853	228.94	229.00	Clyst med gray, Roof sample
														229.82	229.92	COAL	Coal	0.10		Seam 1Sub	07854	229.00	229.10	Coal, dull, broken
														229.92	229.97	CLAYSTONE	Clyst	0.05			07855	229.10	229.15	Clyst
														229.97	230.31	COAL	Coal	0.34		Seam 1Sub	07856	229.15	229.49	Coal, dull broken
														230.31	230.36	CARBONACEOUS CLAYSTONE	Carb Clyst	0.05			07857	229.49	229.54	High carb Clyst. Floor sample
							4	100.00%	25	14	W6	R4	4	230.36	231.15	CLAYSTONE	Clyst	0.79				229.54	230.33	Medium gray Clyst
							6	100.00%	25	14	W6	R6	4	231.15	232.66	SANDSTONE	Sst	1.51				230.33	231.84	Sst light gray, coarse grained
27		232.49	235.39	2.90	2.87	98.97%										#N/A								
							4	100.00%	25	14	W6	R6	4	232.66	233.50	SANDSTONE	Sst	0.84				231.84	232.68	Sst, light gray coarse grained.
														233.50	233.53	LOST CORE	Lost Core	0.03	0.03			232.68	232.71	*Rock Loss*
							6	100.00%	25	14	W6	R4	4	233.53	235.56	SILTSTONE	Sltst	2.03				232.71	234.74	Sltst, med grained fine grained massive.
28		235.39	238.29	2.90	2.54	87.59%										#N/A								
							7	100.00%	25	14	W6	R4	4	235.56	238.10	SILTSTONE	Sltst	2.54				234.74	237.28	Sltst as above
														238.10	238.29	LOST CORE	Lost Core	0.19	0.19			237.28	237.47	*Rock Loss*
29		238.29	241.19	2.90	3.07	105.86%										#N/A								
							11	96.65%	25	14	W6	R5	4	238.29	240.68	SILTSTONE	Sltst	2.39				237.47	239.86	Sltst as above
							6	67.65%	25	14	W6	R6	4	240.68	241.36	SANDSTONE	Sst	0.68				239.86	240.54	Med-coarse grained, med gray Sst
30		241.19	244.09	2.90	2.88	99.31%										#N/A								
	28 & 29						10	87.85%	20	14	W6	R6	4	241.36	244.24	SANDSTONE	Sst	2.88				240.54	243.42	As above Sst w/ a 70cm section of MST. 4 SS @ 50°. Top section has laminated coaly-dk stings
														244.24	244.26	LOST CORE	Lost Core	0.02	0.02			243.42	243.44	*Rock Loss*
31		244.09	246.99	2.90	2.44	84.14%										#N/A								
	29 & 30						10	100.00%	25	14	W6	R6	3	244.26	246.70	SANDSTONE	Volc	2.44				243.44	245.88	Slst w/ rip up clasts of dark volc. 75-100cm from top is a cloud of cream-coloured igneous rock.
														246.70	247.16	LOST CORE	Lost Core	0.46	0.46			245.88	246.34	*Rock Loss*
32		246.99	249.58	2.59	2.57	99.23%										#N/A								
	30 & 31						5		25	15	W6	R6	3	247.16	249.73	SANDSTONE	Volc	2.57				246.34	248.91	Like the basalt @ RAV09-06 but less green and lacking the black specks.
														249.73	249.75	LOST CORE	Lost Core	0.02	0.02			248.91	248.93	*Rock Loss*
33		249.58	252.31	2.73	2.73	100.00%										#N/A								
	31 & 32													249.75	252.48	SANDSTONE	Volc	2.73				248.93	251.66	EOH

Geological Borehole Log: RAV-09-009

Client: CJV
Project: Raven
Logged By: AJ & Farshad

Hole Number: RAV-09-009
Date Hole Started: 20-Jun-09
Date Hole Finished: 24-Jun-09
Hole Orientation:

Total Hole Depth: 222.90
Depth of Casing: 19.0m
Core Size: modified PQ (3")

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Intervals Logged Lithology	Intervals Logged Interval Length	Intervals Logged Core Loss	Intervals Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	18.50	OVERBURDEN	OVBDN							Overburden: Casing set to 19.0m
														18.50	19.81	SANDSTONE	SST							Med grey, fg Sst. Fe staining.
														19.81	21.34	SANDSTONE	SST							Med grey, fg Sst. Minor Fe staining.
														21.34	22.86	SANDSTONE	SST							Med grey, fg Sst. Minor Fe staining.
														22.86	24.38	SANDSTONE	SST							Med grey, fg Sst. Minor Fe staining.
														24.38	25.91	SANDSTONE	SST							Dark grey, fg, silty Sst. 1% qtz.
														25.91	27.43	SANDSTONE	SST							Light-med grey, fg Sst. Minor Fe staining.
														27.43	28.96	SANDSTONE	SST							Light-med grey, fg Sst. Minor Fe staining.
														28.96	30.48	SANDSTONE	SST							Light-med grey, fg Sst. Minor Fe staining.
														30.48	32.00	SANDSTONE	SST							Light-med grey, fg Sst.
														32.00	33.53	SANDSTONE	SST							Light-med grey, fg Sst.
														33.53	35.05	SANDSTONE	SST							Light-med grey, fg Sst.
														35.05	36.58	SANDSTONE	SST							Light-med grey, fg Sst.
														36.58	38.10	SANDSTONE	SST							Light-med grey, fg Sst. Minor Fe staining.
														38.10	39.62	SANDSTONE	SST							Light-med grey, fg Sst. Minor Fe staining.
														39.62	41.15	SANDSTONE	SST							Med grey, fg Sst.
														41.15	42.67	SILTSTONE	SLTST							Sltst.
														42.67	44.20	SILTSTONE	SLTST							Sltst.
														44.20	45.72	SILTSTONE	SLTST							Sltst.
														45.72	47.24	SILTSTONE	SLTST							Sltst.
														47.24	48.77	SILTSTONE	SLTST							Sltst.
														48.77	50.29	SILTSTONE	SLTST							Sltst.
														50.29	51.82	SILTSTONE	SLTST							Sltst.
														51.82	53.34	SILTSTONE	SLTST							Sltst.
														53.34	54.86	SILTSTONE	SLTST							Sltst.
														54.86	56.39	SILTSTONE	SLTST							Sltst.
														56.39	57.91	SILTSTONE	SLTST							Sltst.
														57.91	59.44	SILTSTONE	SLTST							Sltst.
														59.44	60.96	SILTSTONE	SLTST							Sltst.
														60.96	62.48	SILTSTONE	SLTST							Sltst.
														62.48	64.01	SILTY SANDSTONE	SLTYSS							Dk grey, fg, silty Sst.
														64.01	65.53	SANDSTONE	SST							Med grey, mg Sst.
														65.53	67.06	SILTSTONE	SLTST							Sltst.
														67.06	68.58	SILTSTONE	SLTST							Sltst.
														68.58	70.10	SILTSTONE	SLTST							Sltst.
														70.10	71.63	SILTSTONE	SLTST							Sltst.
														71.63	73.15	SANDSTONE	SST							Med grey, fg Sst. Minor Fe staining.
														73.15	74.68	SANDSTONE	SST							Med grey, fg Sst. Minor Fe staining.
														74.68	76.20	SILTY SANDSTONE	SLTYSS							Dk grey, fg, silty Sst.
														76.20	77.72	SANDSTONE	SST							Med grey, mg Sst. 5% calcite.
														77.72	79.25	SANDSTONE	SST							Med grey, mg Sst. 1% calcite.
														79.25	80.77	SANDSTONE	SST							Med grey, mg Sst.
														80.77	82.30	SANDSTONE	SST							Med grey, mg Sst.
														82.30	83.82	SANDSTONE	SST							Dark-med grey, mg Sst.
														83.82	85.34	SANDSTONE	SST							Med grey, mg Sst.
														85.34	86.87	SANDSTONE	SST							Med grey, mg Sst.
														86.87	88.39	SANDSTONE	SST							Dark-med grey, mg Sst.
														88.39	89.92	SILTY SANDSTONE	SLTYSS							Dark grey, mg, silty Sst.
														89.92	91.44	SILTY SANDSTONE	SLTYSS							Dark grey, mg, silty Sst.
														91.44	92.96	SILTY SANDSTONE	SLTYSS							Dark grey, mg, silty Sst.
														92.96	94.49	SILTY SANDSTONE	SLTYSS							Dark grey, mg, silty Sst.
														94.49	96.01	SILTY SANDSTONE	SLTYSS							Dark grey, mg, silty Sst.
														96.01	97.54	SILTY SANDSTONE	SLTYSS							Dark grey, mg, silty Sst.
														97.54	99.06	SILTY SANDSTONE	SLTYSS							60% med grey, mg Sst; 40% Sltst.
														99.06	100.58	SANDSTONE	SST							Med grey, mg Sst.
														100.58	102.11	SILTY SANDSTONE	SLTYSS							Dark grey, fg silty Sst.
														102.11	103.63	SILTY SANDSTONE	SLTYSS							Dark grey, mg silty Sst.
														103.63	105.16	SANDSTONE	SST							Med grey, mg Sst.
														105.16	106.68	SANDSTONE	SST							Med grey, mg Sst.
														106.68	108.20	SANDSTONE	SST							Med grey, mg Sst.
														108.20	109.73	SANDSTONE	SST							Med grey, mg Sst.
														109.73	111.25	SANDSTONE	SST							Med grey, mg Sst. Minor Fe staining.
														111.25	112.78	SANDSTONE	SST							Med grey, mg Sst. Minor Fe staining.
														112.78	114.30	SANDSTONE	SST							Med grey, mg Sst. Minor Fe staining.
														114.30	115.82	SANDSTONE	SST							Med grey, mg Sst. Minor Fe staining.
														115.82	117.35	SANDSTONE	SST							Med grey, mg Sst. Minor Fe staining.
														117.35	118.87	SANDSTONE	SST							Med grey, mg Sst. Minor Fe staining.
														118.87	120.40	SANDSTONE	SST							Med grey, mg Sst. Minor Fe staining.
														120.40	121.92	SANDSTONE	SST							Med grey, mg Sst. Minor Fe staining.
														121.92	123.44	SANDSTONE	SST							Med grey, mg Sst.
														123.44	124.97	SANDSTONE	SST							Med grey, mg Sst.
														124.97	127.48	SANDSTONE	SST							Med grey, mg Sst. 1% calcite.
														127.48	127.97	COAL	Coal	0.49		Seam 5	ns			Chip sampled to coal - called core point
														127.97	128.00	SILTSTONE	SLTST	0.03						SLST, med gray, fine grained
1	1	128.00	129.98	1.98	1.18	59.60%										#N/A								
					1.11		2	1.11	25	15	W6	R5		128.00	129.11	SILTSTONE	SLTST	1.11						SLST, med gray, fine grained
					0.67		3	0.67	25	12	W6	R6		129.11	129.78	SANDSTONE	SST	0.67						SST, light gray, coarse grained w/ a few stringers of coal
														129.78	129.98	LOST CORE	LOST CORE	0.20						*Lost Core: Prbly SS*
2	1 & 2	129.98	132.88	2.90	2.88	99.31%	10	2.68	25	10	W6	R6		129.98	132.86	SANDSTONE	SST	2.88						light gray, coarse grained SST as above. 0.87m from bottom is 0.05m of core broken
3	2 & 3	132.88	135.31	2.43	2.42	99.59%	5	2.42	25	10	W6	R6		132.86	135.28	SANDSTONE	SST	2.42						SST as above w/ few coal stringers at top.
4	3 & 4	135.31	138.21	2.90	2.82	97.24%	15	2.42	25	13	W6	R6		135.28	138.10	SANDSTONE	SST	2.82						Light gray, med-coarse grained SST. A few 60° coal stringers.
5	4 & 5	138.21	141.11	2.90	2.78	95.86%	15	2.43	25	13	W6	R6		138.10	140.88	SANDSTONE	SST	2.78						As above SST. Coal stringers & calcite veins 60cm and 100cm from bottom. 6mm py veins.
6	5 & 6	141.11	142.79	1.68	1.66	98.81%	6	1.51	25	14	W6	R6		140.88	142.54	SANDSTONE	SST	1.66						As above SST
7	6	142.79	143.40	0.61	0.63	103.28%	1	0.63	25	15	W6	R6		142.54	143.17	SANDSTONE	SST	0.63						As above SST
8	6 & 7	143.40	145.53	2.13	2.04	95.77%	>25	1.34	25	13	W6	R6		143.17	145.21	SANDSTONE	SST	2.04						As above SST. A few laminated calcite veins. 1cm thick calcite vein at 10°. 20cm crushed zone 45cm from bottom
9	7	145.53	148.58	3.05	1.17	38.36%	2	0.60	25	19	w6	R6		145.21	146.38	SANDSTONE	SST	1.17						Run brought up 0m core. Drillers figure core is stuck sideways. Tripped out to try and fix./SST MG-CG, 0.5M AT THE TOP BOTTOM AVERAGE PIECS ~5CM, FAULT ZONE ?
														146.38	148.22	LOST CORE	LOST CORE	1.84						Lost Core: probably clyst
10	7,8	148.58	150.41	1.83	1.74	95.08%	16	1.30	25	9	w6	R2		148.22	149.96	CLAYSTONE	CST	1.74						carb clst, med dark at 0.5cm at the bottom with stripes of calc veins at 85TCA
11	8,9	150.41	153.31	2.90	2.90	100.00%										#N/A								
					1.56		15	1.40	25	9	W6	R2		149.96	151.52	CLAYSTONE	CST	1.56			7858	151.87	151.97	cst, med grey, 0.10m roof sampled
					0.51									151.52	152.03	COAL	COAL	0.51		Seam 4	7859	151.97	152.48	0.16 at the top very broken, dull
					0.28		1	0.28	25	14	W6	R2		152.03	152.31	CLAYSTONE	CST	0.28			7860	152.48	152.58	cst, med grey, 0.10m floor sampled
					0.55		1	0.56	25	14	W6	R6		152.31	152.86	SANDSTONE	SST	0.55						mg-cg, light grey sst
12	9,10	153.31	156.21	2.90	3.01	103.79%	3	3.01	25	15	W6	R6	4	152.86	155.87	SANDSTONE	SST	3.01						cg sst, light grey, with few lens of coal, 0.7m from bottom 0.04m of coal
13	10,11	156.21	159.11	2.90	2.78	95.86%	2	2.78	25	15	W6	R6	4	155.87	158.65	SANDSTONE	SST	2.78						sst as above, massive, cg
14	11 & 12	159.11	162.00	2.90	2.93	101.03%	4	2.93	25	15	W6			158.65	161.58	SANDSTONE	SST	2.93						Med-coarse grained, med gray SST
15	12 & 13	162.00	164.90	2.90	3.05	105.17%	2	2.91	25	15	W6			161.58	164.63	SANDSTONE	SST	3.05						SST as above. 2cm thick coal layer at top. Hard, black, w/ cleats
16	13 & 14	164.90	167.80	2.90	2.90	100.00%	1	2.90						164.63	167.53	SANDSTONE	SST	2.90						SST as above. A few coal stingers / spars
17	14	167.80	169.79	1.99	2.01	101.01%	4	2.01	25	15	W6	R6		167.53	169.54	SANDSTONE	SST	2.01						SST as above. Coal stingers at 90°
18	14 & 5	169.79	172.69	2.90	2.90	100.00%	2	2.46	25	15	W6	R6		169.54	172.44	SANDSTONE	SST	2.90						SST as above. Coal stringers, plant frags.
19	15 & 16	172.69	175.13	2.44	2.44	100.00%	1	2.90	25	15	W6			172.44	174.88	SANDSTONE	SST	2.44						As above. Coal stringers at 50°.

20	16 & 17	175.13	178.03	2.90	2.54	87.59%	>25	2.36	25	14	W6	R6		174.88	177.42	SANDSTONE	SST	2.54						As above. 63cm from bottom is a 20 cm crushed section.
21	17 & 18	178.03	180.77	2.74	2.67	97.45%	2	2.67	25	15	W6	R6		177.42	180.09	SANDSTONE	SST	2.67						A above SST. Coal spars & stringers.
22	18 & 19	180.77	183.21	2.44	2.59	106.15%	2	2.59	25	15	W6	R6		180.09	182.68	SANDSTONE	SST	2.59						As above SST
23	19 & 20	183.21	185.80	2.59	2.59	100.00%	2	2.50						182.68	185.27	SANDSTONE	SST	2.59						As above SST
24	20 & 21	185.80	187.93	2.13	2.31	108.45%										#N/A								
														185.27	185.60	MUDSTONE	MDST	0.33						
					0.37									185.60	185.88	COALY MUDSTONE	CLYMDST	0.28						Dk brow MDST. Coal stringers.
														185.88	185.93	MUDSTONE	MDST	0.05						
														185.93	186.03	MUDSTONE	MDST	0.10			7861	186.07	186.17	dk brn mdstn
					0.30									186.03	186.33	COAL	Coal	0.30		Seam 3U	7862	186.17	186.47	Black coal. Light, powdery. <0.5% calcite. Degassing. Red/brown stringers/blebs
					1.25									186.33	186.58	MUDSTONE	MDST	0.25			7863	186.47	186.62	Dk brown MDST. Coal stringers. Calcite veins. Pyrite blebs.
														186.58	186.99	MUDSTONE	MDST	0.41			ns			Dk brown MDST.
														186.99	187.19	MUDSTONE	MDST	0.20			7864	187.72	187.92	Dk brown MDST.
					0.39									187.19	187.58	COAL	COAL	0.39		Seam 3L	7865	187.92	188.21	Black coal. Hard w/ some powdery parts. Light in weight. Dull and bright. No cleats. Degassing.
25	21	187.93	190.83	2.90	2.49	85.86%										#N/A								
														187.58	187.78	MUDSTONE	MDST	0.20		Seam 3L	7866	187.93	188.13	Dark gray MDST.
														187.78	188.53	COAL	Coal	0.75		Seam 3L	7867	188.13	188.88	Black coal. Bright and dull. Firm but breaks into flakes / powder. 0.5% calcite
														188.53	188.68	SILTSTONE	SLTST	0.15			7868	188.88	189.03	Med gray, fie grained SST. Calcite vein.
														188.68	189.18	SILTSTONE	SLTST	0.50			ns			SLTST Med gray, fie grained SST. Calcite vein.
														189.18	189.30	SILTSTONE	SLTST	0.12			7869	189.53	189.65	As SLST above.
														189.30	189.50	COALY MUDSTONE	MDST/coal	0.20			7970	189.65	189.85	Dk gray/black coal. Dull and bright. <0.5% calcite. Firm, breaks into large pieces. Light.
														189.50	189.70	MUDSTONE	MDST	0.20			7871	189.85	190.05	Dk brown MDST. Calcite veins.
														189.70	190.07	MUDSTONE	MDST	0.37						Dk brown MDST. Calcite veins.
26	22 & 23	190.83	193.57	2.74	2.98	108.76%	2	2.98	25	15	W6	R6		190.07	193.05	SANDSTONE	SST	2.98						Med gray, fine-med grained SST. SLT wisps
27	23 & 24	193.57	196.47	2.90	2.98	102.76%	6	2.92	25	15	W6	R6		193.05	196.03	SANDSTONE	SST	2.98						As above
28	24 & 25	196.47	199.37	2.90	2.97	102.41%	3	2.97	25	15	W6			196.03	199.00	SANDSTONE	SST	2.97						As above SST
29	25	199.37	201.04	1.67	0.50	29.94%								199.00	199.50	SANDSTONE	SST	0.50						SST, med to coarse grained, light gray. Driller lost the core in the hole and grounded part of it
30	25	201.04	201.95	0.91	0.65	71.43%								199.50	200.15	SANDSTONE	SST	0.65						SST as above
														200.15	201.83	LOST CORE	LOST CORE	1.68						*Lost core: prbly ss*
31	25	201.95	202.71	0.76	0.82	107.89%		0.65				R6	4	201.83	202.65	SANDSTONE	SST	0.82						SST, coarse grained, light gray, massive.
32	25 & 26	202.71	205.61	2.90	2.80	96.55%	1	2.80	25	15	W6	R6	4	202.65	205.45	SANDSTONE	SST	2.80						As above SST
33		205.61	208.51	2.90	3.06	105.52%	2	3.06	25	15	W6	R6	4	205.45	208.51	SANDSTONE	SST	3.06						As above SST
34		208.51	211.41	2.90	2.27	78.28%										#N/A								
														208.51	208.73	SANDSTONE	SST	0.22			7872	208.51	208.73	As above SST
														208.73	209.01	SHALY COAL	SHYCOAL	0.28			7873	208.73	209.01	Black, hard coal. 0.5% calcite veinlets. Somewhat heavy. Dull & bright
														209.01	209.23	COALY MUDSTONE	CLYSH	0.22			7874	209.01	209.23	Dark gray/black coal. Powdery/flaky. Dull. Bubbling
														209.23	209.53	ARBONACEOUS MUDSTON	CARBSH	0.30			7875	209.23	209.53	Dark gray MDST. Calcite veinlets
														209.53	209.63	COALY MUDSTONE	CLYSH	0.10			7876	209.53	209.63	Dark gray-black coal. Dull & bright. Little flaky.
														209.63	209.73	ARBONACEOUS MUDSTON	CARBSH	0.10			7877	209.63	209.73	Dark gray-brown MDST. Calcite veinlets.
														209.73	210.78	MUDSTONE	MDSTN	1.05						Dark gray-brown MDST. Calcite veinlets.
35		211.41	213.54	2.13	2.67	125.35%										#N/A								
														210.78	211.97	MUDSTONE	MDSTN	1.19						Dark gray-brown MDST. Calcite veinlets.
														211.97	212.07	COALY MUDSTONE	CLYSH	0.10			7878	213.18	213.28	Dk gray MDST. Calcite veinlets. Pyrite blebs.
														212.07	212.87	COAL	COAL	0.80		Seam 1	7879	213.28	214.08	Black coal. Powdery/flaky. Bright & dull. Red/brown minerals
36		213.54	215.98	2.44	1.64	67.21%										#N/A								
														212.87	212.95	LOST CORE	LOST CORE	0.08		Seam 1	ns			Lost Core : prbly Coal
														212.95	213.24	COAL	COAL	0.29		Seam 1	7880	213.54	213.83	Black coal. Firm. Light in weight. Red/brown blebs. Bright & dull.
														213.24	213.36	COALY MUDSTONE	CLYSH	0.12		Seam 1	7881	213.83	213.95	As above coal. A little bit lighter.
														213.36	213.46	ARBONACEOUS MUDSTON	CARBSH	0.10		Seam 1	7882	213.95	214.05	Dark gray MDST. Coal blebs.
														213.46	213.64	ARBONACEOUS MUDSTON	CARBSH	0.18		Seam 1	ns			*Lost Core :* Dark gray MDST. Coal blebs.
														213.64	213.72	LOST CORE	LOST CORE	0.08		Seam 1	ns			*Lost Core :* Prbly COAL
														213.72	214.42	COAL	COAL	0.70		Seam 1	7884	214.34	215.04	As coal above. Also a little heavy. Pyrite blebs. Dull & bright.
														214.42	214.52	MUDSTONE	mdst	0.10			7885	215.04	215.14	Dark gray MDST. Coal blebs.
														214.52	214.62	MUDSTONE	mdst	0.10			7883	215.61	215.71	As above MDST. No coal stringers.
														214.62	215.00	LOST CORE	LOST CORE	0.38			ns			Lost Core: prbly mdstn
														215.00	215.09	LOST CORE	LOST CORE	0.09		Seam 1 Sub	ns			Lost Core: prbly Coaly sh
														215.09	215.32	COALY MUDSTONE	CLYSH	0.23		Seam 1 Sub	7886	215.71	215.94	Firm, heavy, black coal. Pyrite blebs. Dull & bright.
37		215.98	218.60	2.62	2.33	88.93%										#N/A								
														215.32	215.57	ARBONACEOUS MUDSTON	CARBSH	0.25		Seam 1 Sub	7887	215.98	216.23	Dark gray MDST w/ coal stringers.
														215.57	215.92	SHALY COAL	SHYCOAL	0.35		Seam 1 Sub	7888	216.23	216.58	Firm but light in weight. Black coal. Pyrite blebs. Dull & bright.
														215.92	216.07	ARBONACEOUS MUDSTON	CARBSH	0.15			7889	216.58	216.73	Dark SLTST which contacts w/ med gray Volcanics at 1.87m from bottom.
														216.07	218.32	LOST CORE	LOST CORE	2.25						
38		218.60	221.19	2.59	2.72	105.02%	3	2.72	25	15	W6	R6	4	218.32	221.04	SANDSTONE	VOL	2.72						VOL
39		221.19	222.87	1.68	1.83	108.93%	4	1.83	25	15	W6	R6	4	221.04	222.87	SANDSTONE	VOL	1.83						VOL
																								E.O.H.

Geological Borehole Log: RAV-09-010

Client: CJV
Project: Raven
Logged By: Henry Kim, Parviz

Hole Number: RAV-09-010
Date Hole Started: June 20 2009
Date Hole Finished: June 22 2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 201.47m
Depth of Casing: 15.01m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Interval Logged Lith	Interval Logged Length	Interval Logged Lost Core	Interval Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	14.37	OVERBURDEN	ovbdn					0.00	15.00	OVB
1		15.00	18.05	3.05	2.93	96.07%																		
	1 & 2						20	76.11%	25	12	W6	R6	4	14.37	17.30	SANDSTONE	Sst	2.93				15.00	17.93	0-15m casing. Light to med grey, fg-mg, mixed w/ Sltst, massive Sst. Most joints ~85°. Possible sed fault within low angle joint (~10°). Low angle calce vein (~40°).
														17.30	17.42	LOST CORE	Lost Core	0.12	0.12			17.93	18.05	*Lost Rock*
2		18.05	21.10	3.05	3.02	99.02%										#N/A								
	2						2	100.00%	25	14	W6	R6	4	17.42	18.92	SANDSTONE	Sst	1.50				18.05	19.55	Sst as above, joints (50-65°) along the calc vein contact w/ lower Sltst (90°).
	2						10	82.24%	25	15	W6	R6	4	18.92	20.44	SILTSTONE	Sltst	1.52				19.55	21.07	Light grey to brown, fg massive Sltst. Joints ~45°. Highly fractured bottom 20cm w/ calc vein (~90°).
														20.44	20.47	LOST CORE	Lost Core	0.03	0.03			21.07	21.10	*Lost Rock*
3		21.10	24.15	3.05	3.03	99.34%										#N/A								
	2 & 3						19	78.22%	25	15	W6	R6	4	20.47	23.50	SANDSTONE	Sst	3.03				21.10	24.13	Top 20cm highly fractured w/ calc veins. Joints ~60°. 23.6m -5cm calc vein (10°).
														23.50	23.52	LOST CORE	Lost Core	0.02	0.02			24.13	24.15	*Lost Rock*
4		24.15	27.20	3.05	3.05	100.00%										#N/A								
	3 & 4						9	97.09%	25	13	W6	R6	4	23.52	26.57	SANDSTONE	Sst	3.05				24.15	27.20	Light grey fg-mg massive Sst. Two low angle 15-10° joints - one near top, one near bottom. 40-50cm long w/ thick calce veins. Other joints ~85° w/ some angle calce veins.
5		27.20	30.25	3.05	3.05	100.00%										#N/A								
	4 & 5						10	58.25%	25	13	W6	R6	4	26.57	29.62	SANDSTONE	Sst	3.05				27.20	30.25	Sst as above. 30-45° fractures. 29.60m thick calc veins, highly fractured around the veins.
6		30.25	33.30	3.05	3.03	99.34%										#N/A								
	5						14	69.31%	25	12	W6	R6	4	29.62	32.65	SANDSTONE	Sst	3.03				30.25	33.28	Light grey fg-mg Sst w/ thin Sltst layers in every direction. 3.05m ~10cm fault gouge (?) Many calc veins and Sltst layers, highly fractured. 31.2m ~50m vertical joints w/calc veins.
														32.65	32.67	LOST CORE	Lost Core	0.02	0.02			33.28	33.30	*Lost Rock*
7		33.30	36.35	3.05	2.92	95.74%										#N/A								
	5 & 6							100.00%			W6	R6	4	32.67	33.43	SANDSTONE	Sst	0.76				33.30	34.06	Light grey fg-mg massive Sst w/ calc veins.
	5 & 6						5	93.22%	25	10	W6	R4	4	33.43	34.02	SILTSTONE	Sltst	0.59				34.06	34.65	Med brown; fg Sltst mixed w/ fg Sst. Joints ~85°
	5 & 6						2		25	9	W6	R6	4	34.02	34.20	SANDSTONE	Sst	0.18				34.65	34.83	Sst as above, 50° facture.
	5 & 6						13	47.24%	25	12	W6	R4	4	34.20	35.47	SILTSTONE	Sltst	1.27				34.83	36.10	Sltst as above, fractures ~60° (possible bedding angle).
	5 & 6										W6	R6	4	35.47	35.59	SANDSTONE	Sst	0.12				36.10	36.22	Sst as above w/calc veins
														35.59	35.72	LOST CORE	Lost Core	0.13	0.13			36.22	36.35	*Lost Rock*
8		36.35	39.40	3.05	2.94	96.39%										#N/A								
	6 & 7						>25	22.11%	25	10	W6	R6	4	35.72	38.66	SANDSTONE	Sst	2.94				36.35	39.29	Med grey mg Sst IB w/ black Sltst. 3 possible fault gouge (?) soft mud layer. Highly fractured (70°)
														38.66	38.77	LOST CORE	Lost Core	0.11	0.11			39.29	39.40	*Lost Rock*
9		39.40	42.45	3.05	2.96	97.05%										#N/A								
	7 & 8						18	82.43%	25	13	W6	R6	4	38.77	41.73	SANDSTONE	Sst	2.96				39.40	42.36	Light-med grey mg-cg massive Sst. IB/ Sltst. Bedding 55°. Joints along bedding. 40.6m thick Sltst layer. Some calc veins perpendicular to beddings.
														41.73	41.81	LOST CORE	Lost Core	0.08	0.08			42.36	42.44	*Lost Rock*
10		42.45	45.50	3.05	3.06	100.33%										#N/A								
	8						11	76.14%	25	14	W6	R6	4	41.81	44.87	SANDSTONE	Sst	3.06				42.44	45.50	Light grey mg-cg massive Sst. Joints 40-60°. Calc veins same orientations. 43.5m vertical calc veins (80cm) & joint (50cm).
11		45.50	48.55	3.05	3.02	99.02%										#N/A								
	8 & 9						13	82.78%	25	13	W6	56	4	44.87	47.89	SANDSTONE	Sst	3.02				45.50	48.52	Sst as above. Joints ~60° w/ calc veins in some orientation. 47.5m vertical joint (30cm long).
														47.89	47.92	LOST CORE	Lost Core	0.03	0.03			48.52	48.55	*Lost Rock*
12		48.55	51.60	3.05	3.03	99.34%										#N/A								
	9 & 10						7	100.00%	25	15	W6	R6	4	47.92	50.95	SANDSTONE	Sst	3.03				48.55	51.58	Light grey fg-mg, top 1.0m; rest mg-cg, massive Sst. 40-60° joints, same w/calc veins, some joints w/ plant materials.
														50.95	50.97	LOST CORE	Lost Core	0.02	0.02			51.58	51.60	*Lost Rock*
13		51.60	54.65	3.05	3.10	101.64%										#N/A								
	10						3	100.00%	25	14	W6	R6	4	50.97	52.67	SANDSTONE	Sst	1.70				51.60	53.30	Sst as above, massive. Low angle joints.
	10										W6	R3	4	52.67	53.27	MUDSTONE	Mdst	0.60						Brown fg very soft Mdst. SS pieces. Highly fractured.
	10													53.27	53.37	MUDSTONE	Mdst	0.10			07810	53.76	53.86	*Roof Sample, part of above Mdst*
	10													53.37	53.77	COAL	Coal	0.40		Seam 4	07811	53.86	54.26	*Coal, part of below Coal* **NB PICKED OFF GAMMA LOG**
	10													53.77	53.86	COALY MUDSTONE	Coaly Shale	0.09		Seam 4	07812	54.26	54.35	*Coal, part of below Coal* **NB PICKED OFF GAMMA LOG**
	10										W6	R4	4	53.86	54.07	SHALY COAL	Shaly Coal	0.21		Seam 4	07813	54.35	54.60	Coal, black. Top half is solid core (mixed w/ Mdst); bottom half highly fractured. 90% bright. Little-med gassy, light, up to 5% py, calc. **NB PICKED OFF GAMMA LOG**
14		54.65	57.70	3.05	2.95	96.72%										#N/A								
	10 & 11						>25				W6	R6	4	54.07	54.52	COAL	Coal	0.45		Seam 4	07814	54.60	55.05	Coal, black, 90% shiny. ~3% py. All broken. **NB PICKED OFF GAMMA LOG**
														54.52	54.57	LOST CORE	Lost Core	0.05	0.05		ns			*Lost Rock*
	10 & 11													54.57	54.67	MUDSTONE	Mdst	0.10			07815	55.05	55.15	Floor Sample, part of below Mdst
	10 & 11						>25				W6	R3	4	54.67	55.87	MUDSTONE	Mdst	1.20						Dark brown, SS fragments, Mdst.
	10 & 11						1	100.00%			W6	R6	4	55.87	56.47	SANDSTONE	Sst	0.60				56.50	57.10	Light grey, massive Sst, contact angle (20°).
	10 & 11						>25				W6	R3	4	56.47	57.07	MUDSTONE	Mdst	0.60				57.10	57.70	Mdst as above. Fragments w/SS
15		57.70	60.75	3.05	2.99	98.03%										#N/A								
	11 & 12						>25	90.30%	25	13	W6	R6	4	57.07	60.06	SANDSTONE	Sst	2.99				57.70	60.69	Lightg rey mg-cg massive Sst. Top 60cm IB w/ Mdst, highly fractured (40°). Rest some low angle fracture (~40°) w/ calc veins.
														60.06	60.12	LOST CORE	Lost Core	0.06	0.06			60.69	60.75	*Lost Rock*
16		60.75	63.80	3.05	3.00	98.36%										#N/A								
	12 & 13						7	97.33%	25	15	W6	R6	4	60.12	63.12	SANDSTONE	Sst	3.00				60.75	63.75	Sst as above. At 62.0m depth, thick valc veins 90°, 40°.
														63.12	63.17	LOST CORE	Lost Core	0.05	0.05			63.75	63.80	*Lost Rock*
17		63.80	66.85	3.05	2.90	95.08%										#N/A								
	13						7	100.69%	25	15	W6	R6	4	63.17	66.07	SANDSTONE	Sst	2.90				63.80	66.70	Sst as above. Thick calc joints 64.50m. 65.6m to bottom, IB w/ Mdst thici mud layer at 65.6m contact angle 20°, med-hi fractured.
														66.07	66.22	LOST CORE	Lost Core	0.15	0.15			66.70	66.85	*Lost Rock*
18		66.85	69.90	3.05	3.05	100.00%										#N/A								
							17	83.28%	25	11	W6	R6	4	66.22	69.27	SANDSTONE	Sst	3.05				66.85	69.90	Sst same as above med fractured (80-85 TCA) Calc veins
19		69.90	72.95	3.05	2.98	97.70%										#N/A								
	13 & 14						2	91.53%	25	12	W6	R6	4	69.27	69.86	SANDSTONE	Sst	0.59				69.90	70.49	Sst as above. Not calc veins. 90°.
	13 & 14						11	74.56%	25	11	W6	R5	4	69.86	71.00	MUDSTONE	Mdst	1.14				70.49	71.63	Brown fg Mdst. Top 8cm coal 45°. Contact angle w/ upper Sst. Joins ~60°.
	13 & 14						4	100.00%	25	13	W6	R6	4	71.00	72.25	SANDSTONE	Sst	1.25				71.63	72.88	Sst as above, massive. ~50° joints, calc veins.
														72.25	72.32	LOST CORE	Lost Core	0.07	0.07			72.88	72.95	*Lost Rock*
20		72.95	76.00	3.05	3.02	99.02%										#N/A								
	15						7	100.00%	25	15	W6	R6	4	72.32	75.34	SANDSTONE	Sst	3.02				72.95	75.97	Light grey cg massive Sst. Joints ~45-50°. Few calc veins, same orientation.
														75.34	75.37	LOST CORE	Lost Core	0.03	0.03			75.97	76.00	*Lost Rock*
21		76.00	79.05	3.05	3.03	99.34%										#N/A								
	16						5	92.41%	25	15	W6	R6	4	75.37	78.40	SANDSTONE	Sst	3.03				76.00	79.03	Sst as above. Cg-v.cg. ~85° joints w/ calc veins.
														78.40	78.42	LOST CORE	Lost Core	0.02	0.02			79.03	79.05	*Lost Rock*
22		79.05	82.10	3.05	2.90	95.08%										#N/A								
	16 & 17						18	77.59%	23	13	W6	R6	4	78.42	81.32	SANDSTONE	Sst	2.90				79.05	81.95	Sst as above. Bottom 50cm med-high fractured. Joints 25-75°
														81.32	81.47	LOST CORE	Lost Core	0.15	0.15			81.95	82.10	*Lost Rock*
23		82.10	85.15	3.05	3.05	100.00%										#N/A								
	17 & 18						10	95.16%	25	15	W6	R6	4	81.47	84.52	SANDSTONE	Sst	3.05				82.10	85.15	Sst as above. 82.7m vertical calc vein ~1m long. From 84.0m low angle joints (~30°). Some w/ plant materials.
24		85.15	88.20	3.05	3.08	100.98%										#N/A								
	18						7	97.42%	25	15	W6	R6	4	84.52	87.60	SANDSTONE	Sst	3.08				85.15	88.23	Sst as above. ~50° joints w/ 2.5cm calc veins. Possible 40° bedding w/ some orientation joints.
25		88.20	91.25	3.05	3.02	99.02%										#N/A								
	18 & 19						8	90.73%	25	15	W6	R6	4	87.60	90.62	SANDSTONE	Sst	3.02				88.23	91.25	Light grey mg-cg massive Sst. Joints 55-90° w/ calc veins. Micro-faulting visible.
26		91.25	94.30	3.05	3.01	98.69%										#N/A								
	19 & 20						13	80.08%	25	13	W6	R6	4	90.62	93.28	SANDSTONE	Sst	2.66				91.25	93.91	Sst as above. 20-90° joints.
	19 & 20						20		10, 25	9	W6	R5	4	93.28	93.63	MUDSTONE	Mdst	0.35				93.91	94.26	Dark brown fg highly fractured w/ SS Mdst. Plant material at the joint w/ upper Sst.
														93.63	93.67	LOST CORE	Lost Core	0.04	0.04			94.26	94.30	*Lost Rock*
27		94.30	97.35	3.05	3.00	98.36%										#N/A								

	28 & 29						12	81.08%	10	10	W6	R1	4	130.14	130.25	LOST CORE	Lost Core	0.11	0.11					*Lost Rock*
39		130.81	133.86	3.05	2.94	96.39%										#N/A								
	29 & 30						5	33.33%	25	11	W6	R6	4	130.25	130.63	SILTSTONE	Sltst	0.38						Med grey to brown fg highly fractured w/ calc sampled at ROOF.
														130.63	130.74	LOST CORE	Lost Core	0.11	0.11					*Lost Rock*
														130.74	130.84	SILTSTONE	Sltst	0.10			07828	131.20	131.28	*Roof Sample, part of above Sltst*
	29 & 30						>25		10	5	W6	R1	2	130.84	131.20	COALY MUDSTONE	IB Coal SH	0.36		Seam 1 Sub 1	07829	131.29	131.64	Black, some parts dark brown, 70% bright, 3-5% py (disc, massive) Badly caved.
	29 & 30						>25				W6	R1	1	131.20	131.35	COALY MUDSTONE	IB Coal SH	0.15		Seam 1 Sub 1	07830	131.64	131.79	Brown, very soft, crumbles w/ finger, fg, contains some coal, Mdst Badly caved.
	29 & 30						>25				W6	R1	2	131.35	132.10	COALY MUDSTONE	IB Coal SH	0.75		Seam 1 Sub 1	07831	131.79	132.54	Black highly fractured into small chips ~80% bright, w/ 3-5% py (disc). Badly caved.
	29 & 30													132.10	132.20	MUDSTONE	Mdst	0.10			07832	132.54	132.64	Floor Sample, part of below Mdst
	29 & 30						>25	58.33%	10	10	W6	R5	4	132.20	133.30	MUDSTONE	Mdst	1.10						Med brown to med grey, fg massive highly broken near the top and bottom w/ SS joints w/ calc veins.
40		133.86	136.91	3.05	2.96	97.05%										#N/A								
	30 & 31						>25		10	10	W6	R5	4	133.30	136.26	SILTSTONE	Sltst	2.96				133.86	136.82	Med grey-brown fg Sltst (carb?) w/ SS joints, highly fractured.
														136.26	136.28	LOST CORE	Lost Core	0.02	0.02			136.82	136.91	*Lost Rock*
41		136.91	139.96	3.05	2.90	95.08%										#N/A								
	31						>25	18.97%	10	2	W6	R2	1	136.28	139.18	SILTSTONE	Sltst	2.90				136.91	139.81	Sltst as above 90% broken w/ SS, possibly fault gouge (?)
														139.18	139.33	LOST CORE	Lost Core	0.15	0.15			139.81	139.96	*Lost Rock*
42		139.96	143.01	3.05	3.10	101.64%										#N/A								
	31 & 32						>25	29.03%	10	10	W6	R5	4	139.33	142.43	SILTSTONE	Sltst	3.10				139.96	143.06	Sltst as above, highly fractured. 65-80° near joints.
43		143.01	146.06	3.05	3.00	305.00%										#N/A								
	32 & 33						>25	35.00%	10	9	W6	R5	3	142.43	145.43	SILTSTONE	Sltst	3.00				143.06	146.06	Sltst as above, 60° joints. Bottom 1.0m highly fractured into small pieces. Some calc veins.
44		146.06	149.11	3.05	2.90	95.08%										#N/A								
	33 & 34						>25		10	8	W6	R5	3	145.43	146.93	SILTSTONE	Sltst	1.50				146.06	147.56	Sltst as above. Highly fractured w/ calc veins SS joints contact angle ~50°.
	33 & 34						6	91.82%	25	13	W6	R6	4	146.93	148.03	SANDSTONE	Sst	1.10				147.56	148.66	Light grey, cg, massive Sst, joints ~60° w/plant material.
	33 & 34													148.03	148.33	SILTSTONE	Sltst	0.30				148.66	148.96	Sltst dk grey fg fractured most joints SS ~55° over all.
														148.33	148.48	LOST CORE	Lost Core	0.15	0.15			148.96	149.11	*Lost Rock*
45		149.11	152.16	3.05	3.09	101.31%										#N/A								
	34						>25	93.53%	10	14	W6	R5	4	148.48	151.57	SILTSTONE	Sltst	3.09				149.11	152.20	Sltst dk grey fg fractured most joints SS ~55° over all.
46		152.16	155.21	3.05	2.85	93.44%										#N/A								
	34 & 35						>25	73.68%	10	12	W6	R5	4	151.57	154.42	SILTSTONE	Sltst	2.85				152.20	155.05	Sltst as above, fractured ~60°.
														154.42	154.58	LOST CORE	Lost Core	0.16	0.16			155.05	155.21	*Lost Rock*
47		155.21	158.26	3.05	3.00	98.36%										#N/A								
	35 & 36						>25	72.73%	10	12	W6	R5	4	154.58	157.33	SILTSTONE	Sltst	2.75				155.21	157.96	Sltst as above, highly fractured, some fractures and sealed again, SS most joints.
	35 & 36						1	80.00%	25	7	W6	R6	4	157.33	157.58	SANDSTONE	Sst	0.25				157.96	158.21	Light grey cg Sst, massive. 30° contact angle w/ upper Sltst plant material along joints.
														157.58	157.63	LOST CORE	Lost Core	0.05	0.05			158.21	158.26	*Lost Rock*
48		158.26	161.31	3.05	3.05	100.00%										#N/A								
	36 & 37						>25	1.95	25	13	W6	R6	4	157.63	160.68	SANDSTONE	Sst	3.05				158.26	161.31	Sst as above. Cg-v.cg. Appears altered by volc fluid, qtz ~3-5mm, mod- fractured. Some w/ plant materials along joints (40-85°). Mainly qtz & plag, close to quartzite.
49		161.31	164.36	3.05	3.03	99.34%										#N/A								
	37						16	90.76%	10	14	W6	R6	4	160.68	163.71	SANDSTONE	Sst	3.03				161.31	164.34	Altered Sst. As above. Mod-fractured, some SS, plant material (45-70°) joints. Over 95% QTZ, some sulphide (~1%), quartzite.
														163.71	163.73	LOST CORE	Lost Core	0.02	0.02			164.34	164.36	*Lost Rock*
50		164.36	167.41	3.05	3.00	98.36%										#N/A								
	37 & 38						>25	68.00%	10	13	W6	R6	4	163.73	166.73	SANDSTONE	Sst	3.00				164.36	167.36	Altered Sst, as above. SS joints (40-65°), filled w/ softer powder material (gouge ?), some filled w/ plant materials, mainly over 99% QTZ (angular) some sulphide (py) ~2%. Quartzite.
														166.73	166.78	LOST CORE	Lost Core	0.05	0.05			167.36	167.41	*Lost Rock*
51		167.41	170.46	3.05	3.07	100.66%										#N/A								
	38 & 39						18	84.69%	10	12	W6	R6	4	166.78	169.85	SANDSTONE	Sst	3.07				167.41	170.48	V.cg quartzite, massive, mod fractured, as above. 45-85° joints w/ SS, some w/plant material.
52		170.46	173.51	3.05	3.03	99.34%										#N/A								
	39						12	94.06%	25	14	W6	R6	4	169.85	172.88	SANDSTONE	Sst	3.03				170.48	173.51	Quartzite, as above. ~55° joints some w/plant material. Massive
53		173.51	176.56	3.05	3.05	100.00%										#N/A								
	39 & 40						9	78.71%	25	11	W6	R6	4	172.88	174.43	SANDSTONE	Sst	1.55				173.51	175.06	Light grey to white, v.cg mostly qtz/plag w/ green volc. Altered SST. Joints ~75° some w/ plant materials.
	20 & 21						15	82.66%	25	10	W6	R6	3	93.67	95.40	SANDSTONE	Sst	1.73						Sst, cg, light grey, w/ coal stringers at 45°.
	20 & 21													95.40	95.50	SANDSTONE	Sst	0.10			07816	95.93	96.03	0.10 Roof sample.
	20 & 21													95.50	96.40	COAL	Coal	0.90		Seam 3	07817	96.03	96.93	Coal, dull, very broken and SS about .20m from top possibly 5cm of very broken and mixed up Mdst w/ coal.
	20 & 21													96.40	96.67	COAL	Coal	0.27		Seam 3	07818	96.93	97.50	Coal, dull, verybroken and mushy.
														96.67	96.72	LOST CORE	Lost Core	0.05	0.05	Seam 3	ns			*Lost Rock*
28		97.35	100.40	3.05	3.05	100.00%										#N/A								
	21 & 22													96.72	97.02	COAL	Coal	0.30		Seam 3	07818	96.93	97.50	As above.
	21 & 22													97.02	97.12	CLAYSTONE	Clyst	0.10			07819	97.50	97.60	FLOOR sample.
	21 & 22													97.12	98.39	CLAYSTONE	Clyst	1.27						Grey Clyst, 0,15cm at the top., hi carb Clyst w/ coal stringers (coaly shale). The rest, med gray Clyst .30m from top, 0.80m of core very broken. 0.30m from 0.10m
	21 & 22													98.39	99.77	SANDSTONE	Sst	1.38						Sst m-cg, light grey.
29		100.40	103.45	3.05	3.00	98.36%										#N/A								
	22						13	97.67%	25	7	W6	R6	0	99.77	102.77	SANDSTONE	Sst	3.00				100.40	103.40	Sst, light grey, cg. 1.20 from bottom, 5cm gouge.
														102.77	102.82	LOST CORE	Lost Core	0.05	0.05			103.40	103.45	*Lost Rock*
30		103.45	106.50	3.05	3.05	100.00%										#N/A								
	22 & 23						10	95.48%	25	14	W6	R6	0	102.82	105.87	SANDSTONE	Sst	3.05				103.45	106.50	Sst, light grey, cg.
31		106.50	109.55	3.05	3.10	101.64%										#N/A								
	24 & 25						>25	59.94%	25	8	w6	r6	4	105.87	108.97	SANDSTONE	Sst	3.10				106.50	109.60	Sst mg light grey. Mostly broken at 45° and w/ a few calc veins.
32		109.55	112.60	3.05	3.00	98.36%										#N/A								
	24 & 25						10	87.75%	25	14	W5	R6	4	108.97	111.97	SANDSTONE	Sst	3.00				109.60	112.60	Sst as above. 0.60m from top, 0.20m broken to 5cm pieces.
33		112.60	115.56	2.96	2.96	100.00%										#N/A								
	25						>25	18.92%	18	7	W6	R5	1	111.97	114.93	LAMINITE	IB Sst & Sltst	2.96				112.60	115.56	Sst IB w' Sltst at 45°. Amount of SLT more than SST. 0.70m at the top very broken and SS along the jointes. {{THE BLOCKS ARE WRONG POSITION]}
34		115.56	118.61	3.05	2.86	93.77%										#N/A								
	25						7	79.49%	7	8	W6	R5	4	114.93	116.49	SILTSTONE	Sltst	1.56						Sltst med grey w/ bands of Sst ~ 0.5cm at 45°,
	25													116.49	116.59	SILTSTONE	Sltst	0.10			07820	117.06	117.16	0.10cm ROOF sample
	25													116.59	116.89	SHALY COAL	Shaly Coal	0.30			07821	117.16	117.46	Coal, dull, very broken.
														116.89	116.98	LOST CORE	Lost Core	0.09	0.09		ns			*Lost Rock*
	25													116.98	117.38	CLAYSTONE	Clyst	0.40			07822	117.46	117.86	High carb Clyst very broken SS
														117.38	117.45	LOST CORE	Lost Core	0.07	0.07		ns			*Lost Coal*
	25													117.45	117.95	COAL	Coal	0.50		Seam 1	07823	117.86	118.36	Coal, dull, very broken.
														117.95	117.98	LOST CORE	Lost Core	0.03	0.03	Seam 1	ns			*Probably Lost Coal*
35		118.61	121.66	3.05	2.19	71.80%										#N/A								
														117.98	118.30	COAL	Coal	0.32		Seam 1	07823	118.36	118.68	Coal, dull, very broken.
														118.30	118.80	COAL	Coal	0.50		Seam 1	07824	118.68	119.18	*Coal, dull, very broken.*
	26/27													118.80	119.30	COAL	Coal	0.50		Seam 1	07824	118.68	119.18	Coal, dull, very broken.
														119.30	119.69	LOST CORE	Lost Core	0.39	0.39	Seam 1	ns			*Probably Lost Coal and shaly coal*
														119.69	120.15	CLAYSTONE	Clyst	0.46			07825	119.68	120.14	*Originally logged and sampled at the rig as "High carb Clyst very broken",*
	26/27													120.15	120.38	COAL	Coal	0.23			07826	120.14	120.37	Coal, dull, very broken
	26/27													120.38	121.54	LOST CORE	LOST CORE	1.16	1.16		ns			Lost Core probably coal; likely ground - over drilled
	26/27													121.54	121.64	ARBONACEOUS CLAYSTOI	Carb Clyst	0.10			07827	120.37	120.47	*Carbonaceous Claystone*
36		121.66	124.71	3.05	2.60	85.25%										#N/A								
	27 & 28									4	W6	R4	0	121.64	123.66	CLAYSTONE	Clyst	2.02						Clyst, med grey, very broken. 0.50m at the top very broken.
														123.66	124.11	LOST CORE	Lost Core	0.45	0.45					*Lost Rock*
37		124.71	127.76	3.05	3.05	100.00%										#N/A								
	28						2	100.00%	10, 25	13	W6	R6	4	124.11	124.86	SANDSTONE	Sst	0.75						Light grey mg-cg, massive Sst. Calc veins IB w/ Sltst (Clyst). Joints ~65°.
	28						>25	22.22%	10	4	W6	R5	4	124.86	125.76	SILTSTONE	Sltst	0.90						Dk grey-brown, fg, Sltst. Highly fractured w;/ SS joints near bottom, joints 70-90°.
	28						6	72.86%	25	13	W6	R6	4	125.76	127.16	SANDSTONE	Sst	1.40						Sst as above. Near top IB w/ Sltst. Joint angle 65-90°. Massive.
38		127.76	130.81	3.05	2.98	97.70%										#N/A								
	28 & 29						6	86.67%	25	12	W6	R6	4	127.16	128.66	SANDSTONE	Sst	1.50						Sst as above. Joints ~60° w/ plant material. 128.35m small coal seam ~2cm thick. Contact angle w/ lower Sltst ~65°.
	28 & 29						12	81.08%	10	10	W6	R1	4	128.66	130.14	SILTSTONE	Sltst	1.48						Dk grey fg Sltst w/ all joints SS
														130.14	130.25	LOST CORE	Lost Core	0.11	0.11					*Lost Rock*
39		130.81	133.86	3.05	2.94	96.39%										#N/A								
	29 & 30						5	33.33%	25	11	W6	R6	4	130.25	130.63	SILTSTONE	Sltst	0.38						Med grey to brown fg highly fractured w/ calc sampled at ROOF.
														130.63	130.74	LOST CORE	Lost Core	0.11	0.11					*Lost Rock*
														130.74	130.84	SILTSTONE	Sltst	0.10			07828	131.20	131.28	*Roof Sample, part of above Sltst*
	29 & 30						>25		10	5	W6	R1	2	130.84	131.20	COALY MUDSTONE	IB Coal SH	0.36		Seam 1 Sub 1	07829	131.29	131.64	Black, some parts dark brown, 70% bright, 3-5% py (disc, massive) Badly caved.
	29 & 30						>25				W6	R1	1	131.20	131.35	COALY MUDSTONE	IB Coal SH	0.15		Seam 1 Sub 1	07830	131.64	131.79	Brown, very soft, crumbles w/ finger, fg, contains some coal, Mdst Badly caved.
	29 & 30						>25				W6	R1	2	131.35	132.10	COALY MUDSTONE	IB Coal SH	0.75		Seam 1 Sub 1	07831	131.79	132.54	Black highly fractured into small chips ~80% bright, w/ 3-5% py (disc). Badly caved.
	29 & 30													132.10	132.20	MUDSTONE	Mdst	0.10			07832	132.54	132.64	Floor Sample, part of below Mdst
	29 & 30						>25	58.33%	10	10	W6	R5	4	132.20	133.30	MUDSTONE	Mdst	1.10						Med brown to med grey, fg massive highly broken near the top and bottom w/ SS joints w/ calc veins.
40		133.86	136.91	3.05	2.96	97.05%										#N/A								
	30 & 31						>25		10	10	W6	R5	4	133.30	136.26	SILTSTONE	Sltst	2.96				133.86	136.82	Med grey-brown fg Sltst (carb?) w/ SS joints, highly fractured.
														136.26	136.28	LOST CORE	Lost Core	0.02	0.02			136.82	136.91	*Lost Rock*
41		136.91	139.96	3.05	2.90	95.08%										#N/A								
	31						>25	18.97%	10	2	W6	R2	1	136.28	139.18	SILTSTONE	Sltst	2.90				136.91	139.81	Sltst as above 90% broken w/ SS, possibly fault gouge (?)
														139.18	139.33	LOST CORE	Lost Core	0.15	0.15			139.81	139.96	*Lost Rock*
42		139.96	143.01	3.05	3.10	101.64%										#N/A								
	31 & 32						>25	29.03%	10	10	W6	R5	4	139.33	142.43	SILTSTONE	Sltst	3.10				139.96	143.06	Sltst as above, highly fractured. 65-80° near joints.
43		143.01	146.06	3.05	3.00	305.00%										#N/A								
	32 & 33						>25	35.00%	10	9	W6	R5	3	142.43	145.43	SILTSTONE	Sltst	3.00				143.06	146.06	Sltst as above, 60° joints. Bottom 1.0m highly fractured into small pieces. Some calc veins.
44		146.06	149.11	3.05	2.90	95.08%										#N/A								
	33 & 34						>25		10	8	W6	R5	3	145.43	146.93	SILTSTONE	Sltst	1.50				146.06	147.56	Sltst as above. Highly fractured w/ calc veins SS joints contact angle ~50°.
	33 & 34						6	91.82%	25	13	W6	R6	4	146.93	148.03	SANDSTONE	Sst	1.10				147.56	148.66	Light grey, cg, massive Sst, joints ~60° w/plant material.
	33 & 34													148.03	148.33	SILTSTONE	Sltst	0.30				148.66	148.96	Sltst dk grey fg fractured most joints SS ~55° over all.
														148.33	148.48	LOST CORE	Lost Core	0.15	0.15			148.96	149.11	*Lost Rock*
45		149.11	152.16	3.05	3.09	101.31%										#N/A								
	34						>25	93.53%	10	14	W6	R5	4	148.48	151.57	SILTSTONE	Sltst	3.09				149.11	152.20	Sltst dk grey fg fractured most joints SS ~55° over all.
46		152.16	155.21	3.05	2.85	93.44%										#N/A								
	34 & 35						>25	73.68%	10	12	W6	R5	4	151.57	154.42	SILTSTONE	Sltst	2.85				152.20	155.05	Sltst as above, fractured ~60°.
														154.42	154.58	LOST CORE	Lost Core	0.16	0.16			155.05	155.21	*Lost Rock*
47		155.21	158.26	3.05	3.00	98.36%										#N/A								
	35 & 36						>25	72.73%	10	12	W6	R5	4	154.58	157.33	SILTSTONE	Sltst	2.75				155.21	157.96	Sltst as above, highly fractured, some fractures and sealed again, SS most joints.
	35 & 36						1	80.00%	25	7	W6	R6	4	157.33	157.58	SANDSTONE	Sst	0.25				157.96	158.21	Light grey cg Sst, massive. 30° contact angle w/ upper Sltst plant material along joints.
														157.58	157.63	LOST CORE	Lost Core	0.05	0.05			158.21	158.26	*Lost Rock*
48		158.26	161.31	3.05	3.05	100.00%										#N/A								
	36 & 37						>25	1.95	25	13	W6	R6	4	157.63	160.68	SANDSTONE	Sst	3.05				158.26	161.31	Sst as above. Cg-v.cg. Appears altered by volc fluid, qtz ~3-5mm, mod- fractured. Some w/ plant materials along joints (40-85°). Mainly qtz & plag, close to quartzite.
49		161.31	164.36	3.05	3.03	99.34%										#N/A								
	37						16	90.76%	10	14	W6	R6	4	160.68	163.71	SANDSTONE	Sst	3.03				161.31	164.34	Altered Sst. As above. Mod-fractured, some SS, plant material (45-70°) joints. Over 95% QTZ, some sulphide (~1%), quartzite.
														163.71	163.73	LOST CORE	Lost Core	0.02	0.02			164.34	164.36	*Lost Rock*
50		164.36	167.41	3.05	3.00	98.36%										#N/A								
	37 & 38						>25	68.00%	10	13	W6	R6	4	163.73	166.73	SANDSTONE	Sst	3.00				164.36	167.36	Altered Sst, as above. SS joints (40-65°), filled w/ softer powder material (gouge ?), some filled w/ plant materials, mainly over 99% QTZ (angular) some sulphide (py) ~2%. Quartzite.
														166.73	166.78	LOST CORE	Lost Core	0.05	0.05			167.36	167.41	*Lost Rock*
51		167.41	170.46	3.05	3.07	100.66%										#N/A								
	38 & 39						18	84.69%	10	12	W6	R6	4	166.78	169.85	SANDSTONE	Sst	3.07				167.41	170.48	V.cg quartzite, massive, mod fractured, as above. 45-85° joints w/ SS, some w/plant material.
52		170.46	173.51	3.05	3.03	99.34%										#N/A								
	39						12	94.06%	25	14	W6	R6	4	169.85	172.88	SANDSTONE	Sst	3.03				170.48	173.51	Quartzite, as above. ~55° joints some w/plant material. Massive
53		173.51	176.56	3.05	3.05	100.00%										#N/A								
	39 & 40						9	78.71%	25	11	W6	R6	4	172.88	174.43	SANDSTONE	Sst	1.55				173.51	175.06	Light grey to white, v.cg mostly qtz/plag w/ green volc. Altered SST. Joints ~75° some w/ plant materials.

	39 & 40						>25		25	7	W6	R5	4	174.43	175.23	SILTSTONE	Sltst	0.80				175.06	175.86	Brown, fg-mg Sltst. Highly fractured some w/ SS.
	39 & 40						5	85.71%	25	10	W6	R6	4	175.23	175.93	SANDSTONE	Sst	0.70				175.86	176.56	Altered Sst, as above. 65-85° joints.
54		176.56	179.61	3.05	3.00	98.36%										#N/A								
	40 & 41						20	80.00%	25	13	W6	R6	4	175.93	178.93	SANDSTONE	Sst	3.00				176.56	179.56	Altered Sst as above. IB w/ fg Sltst. Sst contains angular green zenolith (volc frag?), other black rounded zenolith w/ py (2cm), cg-v.cg Quartzite.
														178.93	178.98	LOST CORE	Lost Core	0.05	0.05			179.56	179.61	*Lost Rock*
55		179.61	182.66	3.05	3.00	98.36%										#N/A								
	41 & 42						9	92.34%	25	14	W6	R6	4	178.98	181.33	CONGLOMERATE	Congl	2.35				179.61	181.96	Conglomerate matrix supported green size 1-2mm, 0.10cm at the bottom pebbles 3-4mm
	41 & 42						9	15.38%	25	7	W6	R4	3	181.33	181.98	SILTSTONE	Sltst	0.65				181.96	182.61	Sltst, mad grey, fg broken to 7-8cm pieces.
														181.98	182.03	LOST CORE	Lost Core	0.05	0.05			182.61	182.66	*Lost Rock*
56		182.66	185.71	3.05	3.00	98.36%										#N/A								
	42						11	36.00%	25	7	W6	R4	3	182.03	182.78	SILTSTONE	Sltst	0.75				182.66	183.41	Sltst, med grey, 0.13m at top Sst as the bottom w/ pamination of Sst.
	42						7	100.00%	25	14	W6	R6	4	182.78	184.23	SANDSTONE	Sst	1.45				183.41	184.86	Sst mg light grey, 1.10m from top 0.10m conglomerate.
	42						2	100.00%	25	14	W6	R6	4	184.23	185.03	CONGLOMERATE	Congl	0.80				184.86	185.66	Conglomerate matrix supported, pebbles 2-3 cm angular sharp,and tuff
														185.03	185.08	LOST CORE	Lost Core	0.05	0.05			185.66	185.71	*Lost Rock*
57		185.71	188.76	3.05	3.00	98.36%										#N/A								
	43						9	96.73%	25	14	W6	R4	3	185.08	187.83	CONGLOMERATE	Congl	2.75				185.71	188.46	Conglomerate, as above the pebble size up to 5cm and distrubuted in irregularly along the core.
	43						2	84.00%	25	14	W6	R5	4	187.83	188.08	SANDSTONE	Sst	0.25				188.46	188.71	Sandy Sltst med grey fg
														188.08	188.13	LOST CORE	Lost Core	0.05	0.05			188.71	188.76	*Lost Rock*
58		188.76	191.81	3.05	3.04	99.67%										#N/A								
	43 & 44						6	74.74%	25	14	W6	R5	4	188.13	189.08	SANDSTONE	Sst	0.95				188.76	189.71	Med grey, fg Sst
							8	100.00%	25	14	W6	R6	4	189.08	191.17	CONGLOMERATE	Congl	2.09				189.71	191.80	Conglomerate, matrix supported, size of pebbles up to 3cm angular sharp.
														191.17	191.18	LOST CORE	Lost Core	0.01	0.01			191.80	191.81	*Lost Rock*
59		191.81	194.86	3.05	2.94	96.39%										#N/A								
	43 & 44													191.18	193.25	CONGLOMERATE	Congl	2.07				191.81	193.88	Conglomerate as above, pebbles are more uniform distrubuted on core
	43 & 44							100.00%	1	14	25	R5	6	193.25	194.12	SILTSTONE	Sltst	0.87				193.88	194.75	Sltst dk grey fg
														194.12	194.23	LOST CORE	Lost Core	0.11	0.11			194.75	194.86	*Lost Rock*
60		194.86	197.91	3.05	3.05	100.00%										#N/A								
	44 & 45						>25	45.95%	25		25	R5	6	194.23	196.08	SILTSTONE	Sltst	1.85				194.86	196.71	Sltst dk grey, 0.20m from top 0.23m of core very broken, 0.80m from top, fg greenish grey.
	44 & 45						8	75.00%	25	14	25	R6	4	196.08	197.28	SANDSTONE	Sst	1.20				196.71	197.91	Sst cg light grey w/ stringers of Clyst and coal at 80°.
61		197.91	200.96	3.05	3.04	99.67%										#N/A								
	45 & 46						4	100.00%	25	14	W6	R6	6	197.28	200.32	CONGLOMERATE	Congl	3.04				197.91	200.95	Conglomerate matrix supported pebbles, one rounded up to 6-7cm and come more than 80% of the core. 0.20m of the core of the top Sst.
														200.32	200.33	LOST CORE	Lost Core	0.01	0.01			200.95	200.96	*Lost Rock*
62		200.96	202.10	1.14	1.14	100.00%										#N/A								
	45 & 46													200.33	201.47	CONGLOMERATE	Congl	1.14				200.96	202.10	Conglomerate as above the amount of pebbles increase toward the bottom of hole pebbles are volcanic tuff. EOH

Geological Borehole Log: RAV-09-011

Client: CJV
Project: Raven
Logged By: Henry Kim

Hole Number: RAV-09-011
Date Hole Started: 23-Jun-09
Date Hole Finished: 25-Jun-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 114.95m
Depth of Casing: 18.30m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Recovery			RQD		Fractures			Hardness		G.P.L. Corrected			Interval Logged					Samples (Driller's Depths)			Description
		Depth From (m)	Depth To	Length of Run (m)	Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage	Alt'n & Weath.	Prefix	Core Quailty	From (m)	To (m)		Lith	Length	Lost Core	Strat	Number	From (m)	To (m)	
														0.00	17.65	OVERBURDEN	OVB	18.00				0.00	18.00	OVB
1		18.00	21.05	3.05	2.88	94.43%																		
	1 & 2						5	82.14%	0	10	W6	R6	4	17.65	18.21	SANDSTONE	Sst	0.56				18.00	18.56	Light grey mg-cg massive Sst
	1 & 2						11	91.81%	25	14	W6	R5	4	18.21	20.53	SILTSTONE	Sltst	2.32				18.56	20.88	Dk grey to black, fg sltst IB w/ mg-cg sst (20%). Bedding 1-5cm thick, angles from 65-80°. Joint angle same as bedding.
														20.53	20.70	LOST CORE	Lost Core	0.17	0.17			20.88	21.05	Lost Rock
2		21.05	24.10	3.05	3.01	98.69%																		
							23	89.70%	25	13	W6	R5	4	20.70	23.71	SILTSTONE	Sltst	3.01				21.05	24.06	SLTST IB w/ SST. Same as above same joint and bedding angles.
3		24.10	27.15	3.05	3.09	101.31%																		
	3 & 4						11	92.23%	25	14	W6	R5	4	23.71	26.80	SILTSTONE	Sltst	3.09				24.06	27.15	Sltst IB w/ Sst ~90% SLT. Thin Sst beds (1-3cm). 75-85° bedding and joints.
4		27.15	30.20	3.05	3.05	100.00%																		
	4 & 5						11	98.36%	25	15	W6	R5	4	26.80	29.85	SILTSTONE	Sltst	3.05				27.15	30.20	Sltst IB w/ Sst ~90% Sltst. Same as above, same bedding contain >50% py ~1-3cm thick.
5		30.20	33.25	3.05	2.92	95.74%																		
	4 & 5						2	100.00%	25	15	W6	R5	4	29.85	29.98	SILTSTONE	Sltst	0.13				30.20	30.33	IB w/ Sltst same as above
	4 & 5						0	100.00%			W6	R6	5	29.98	30.34	SANDSTONE	Sst	0.36				30.33	30.69	Light grey mg-cg massive Sst
	4 & 5						3	100.00%	25	15	W6	R5	4	30.34	31.36	MUDSTONE	Mdst	1.02						Dk brown (mdst) and black (sltst) IB, fg, near bottom mostly mdst. 1-3% py dis.
	4 & 5													31.36	31.57	MUDSTONE	Mdst	0.21						Dk brown (mdst) and black (sltst) IB, fg, near bottom mostly mdst. 1-3% py dis.
														31.57	31.69	CARBONACEOUS MUDSTONE	Carb Mdst	0.12			07833	31.86	31.98	*Roof Sample, part of above Mdst*
	4 & 5						<25							31.69	32.45	COAL	Coal	0.76		Seam 1	07834	31.98	32.91	90% bright, IB w/ brown fg mdst. Massive sulphide (py) up to 20% mostly 1-5% light littly gassy. Probably over measured doesn't correlate with geophysical log
	4 & 5													32.45	32.55	SILTSTONE	Sltst	0.10		Seam 1	07835	32.91	33.01	*Floor Sample. Part of below Sltst*
	4 & 5													32.55	32.73	SILTSTONE	Sltst	0.18		Seam 1	ns			Black fg Sltst w/ coal lenses, Roof Sample
	4 & 5													32.73	32.83	SILTSTONE	Sltst	0.10		Seam 1	07836	33.10	33.20	Part of above Sltst
														32.83	32.86	LOST CORE	Lost Core	0.03	0.03	Seam 1	ns			*Rock Loss*
6		33.25	36.30	3.05	1.85	60.66%																		
														32.86	33.29	LOST CORE	Lost Core	0.43	0.43	Seam 1	ns			*Coal Loss*
	5													33.29	34.79	COAL	Coal	1.50		Seam 1	07837	33.20	34.70	Coal, 90% bright. Light, little gas.
	5													34.79	34.89	MUDSTONE	Mdst	0.10		Seam 1	07838	34.70	34.80	Floor, Brown fg mdst sks joints
									10					34.89	35.14	MUDSTONE	Mdst	0.25		Seam 1	ns			*Part of above Mdst*
														35.14	35.55	LOST CORE	Lost Core	0.41	0.41	Seam 1	ns			*Coal Loss*
														35.55	35.65	LOST CORE	Lost Core	0.10	0.10			35.10	35.50	*Rock Loss*
7		36.30	39.35	3.05	2.38	78.03%																		
	5 & 6						12	56.42%	25	12	W6	R5	4	35.65	37.83	MUDSTONE	Mdst	2.18				35.50	37.68	Brown fg IB w/ Sst, Sltst, Mdst. Bubbling joints ~85-90°
	5 & 6						0	100.00%			W6	R	4	37.83	38.03	SILTSTONE	Sltst	0.20				37.68	37.88	Light to light brown mg-cg massive Sst coal lenses/bedding ~65°.
														38.03	38.68	LOST CORE	Lost Core	0.65	0.65			37.88	38.53	*Rock Loss*
8		39.35	42.40	3.05	3.07	100.66%																		
	6						2	88.00%	25	11	W6	R5	4	38.68	40.18	SILTSTONE	Sltst	1.50				38.53	40.03	Light to grey mg-fg Sst, IB w/ Mdst. Some low (~30°) sks joints mostly ~90° joints.
	6						6	86.62%	25	13	w6	R5	4	40.18	41.75	MUDSTONE	Mdst	1.57				40.03	41.60	Brown, fg massive Mdst w/ coal lenses 85°. Joints mostly ~85°. One (~45°) sks joint.
9		42.40	45.45	3.05	2.63	86.23%																		
	6 & 7						4	98.86%	25	16	W6	R6	4	41.75	44.38	SANDSTONE	Sst	2.63				41.60	44.23	Light grey to light brown cg mostly qtz altered Sst. Vertical fracture w/ py. Mostly ~75° coal lenses/fractures.
														44.38	44.80	LOST CORE	Lost Core	0.42	0.42			44.23	44.65	*Rock Loss*
10		45.45	48.50	3.05	3.00	98.36%																		
	7 & 8						8	93.33%	25	13	W6	R5	4	44.80	47.80	MUDSTONE	Mdst	3.00				44.65	47.65	Dark-med brown fg mdst. Same are above. Coal lenses ~90°. Bedding ~90°, massive.
														47.80	47.85	LOST CORE	Lost Core	0.05	0.05			47.65	47.70	*Rock Loss*
11		48.50	51.55	3.05	3.05	100.00%																		
	8 & 9						9	97.95%	25	15	W6	R6	4	47.85	50.77	MUDSTONE	Mdst	2.92				47.70	50.62	Med browm, fg some IB w/Sltst (90°). Mdst, bedding/coal lenses 90°.
	8 & 9						0	100.00%			W6	R6	4	50.77	50.90	SANDSTONE	Sst	0.13				50.62	50.75	Light grey light brown, cg mostly qtz) altered Sst (?) massive. Joints w/plane material + py (~15%) dis.
12		51.55	54.60	3.05	3.03	99.34%																		
	9							100.00%			W6	R6	4	50.90	51.40	SANDSTONE	Sst	0.50				50.75	51.25	Altered Sst. Same as above more Sltst & Coal bandings near top (!65°).
	9						2	94.62%	25	5	w6	R5	4	51.40	52.70	MUDSTONE	Mdst	1.30				51.25	52.55	Dk brown fg mdst IB w/ Sltst and Coal lenses (70°). ~2cm green layer w/ py at the bottom contact.
	9										W6	R6	4	52.70	53.50	SANDSTONE	Sst	0.80				52.55	53.35	Light grey cg massive Sst (altered) vertical joints all the way, qtz plag ~3cm.
	9							100.00%			W6	R5	4	53.50	53.93	MUDSTONE	Mdst	0.43				53.35	53.78	Med brown fg massive mdst. Near bottom IB w/ Sltst (75°)
														53.93	53.95	LOST CORE	Lost Core	0.02	0.02			53.78	53.80	*Rock Loss*
13		54.60	57.65	3.05	3.05	100.00%																		
	10						2	84.33%	25	13	W6	R6	4	53.95	56.12	SANDSTONE	Sst	2.17				53.80	55.97	Light grey vcg massive Sst (altered). Qtz ~5mm, Coal lens (~65°).
	10						3	96.59%	25	14	W6	R5	4	56.12	57.00	MUDSTONE	Mdst	0.88				55.97	56.85	Med brown fg massive mdst. Coal lens (~70°).
14		57.65	60.70	3.05	3.07	100.66%																		
	10 & 11						2	92.75%	25	12	W6	R5	4	57.00	57.69	MUDSTONE	Mdst	0.69				56.85	57.54	Med grey fg Mdst. IB w/ mg-cg Sst. Bedding at ~80°.
	10 & 11						8	90.37%	25	13	W6	R6	4	57.69	59.87	SANDSTONE	Sst	2.18				57.54	59.72	Light grey, mg-cg massive altered Sst w/ angular green volcanic fragments. Joints ~90°.
	10 & 11						1	100.00%	25	10	w6	R5	4	59.87	60.07	MUDSTONE	Mdst	0.20				59.72	59.92	Mdst as above. Coal lenses visibles. Joints ~90.
15		60.70	63.75	3.05	3.02	99.02%																		
	11						12	97.68%	25	5	W6	R5	4	60.07	63.09	MUDSTONE	Mdst	3.02				59.92	62.94	Mdst, same as above. Bedding ~ 85°. w/ calc vein (90°) most joints ~85-90° coal lenses (~1cm) at 90°.
														63.09	63.10	LOST CORE	Lost Core	0.01	0.01			62.94	62.95	*Rock Loss*
16		63.75	66.80	3.05	3.07	100.66%																		
	11 & 12						4	95.43%	25	15	W6	R5	4	63.10	65.25	MUDSTONE	Mdst	2.15				62.95	65.10	Light-dark grey, fg, Mdst. Gradual grain size coarsening near bottom. No clear contact w lower Sst. 90° joints/calc veins.
	11 & 12						9	93.48%	25	15	W6	R6	4	65.25	66.17	SANDSTONE	Sst	0.92				65.10	66.02	Light grey vcg altered Sst. 85-90° joints & Mdst/Coal band.
17		66.80	69.85	3.05	3.03	99.34%																		
	12 & 13						9	100.00%	25	15	W6	R6	4	66.17	69.20	SANDSTONE	Sst	3.03				66.02	69.05	Altered Sst, as above. Mainly coarse qtz, plag w/ anglular volc fragments. Plant material along joints, 70-85° joints and coal.mdst stringer layers.
18		69.85	72.90	3.05	3.05	100.00%																		
	13						12	77.05%	25	14	W6	R6	4	69.20	72.25	SANDSTONE	Sst	3.05				69.05	72.10	Altered Sst, same as above. Most joints 80-90°. 30cm long vertical joint near bottom w/ plant material.
19		72.90	75.95	3.05	3.01	98.69%																		
	13 & 14						14	83.39%	25	14	W6	R6	4	72.25	75.26	SANDSTONE	Sst	3.01				72.10	75.11	Altered Sst, as above. Some part IB w/ coal. 75-85° most joints w/plant material (75-85°).
20		75.95	79.00	3.05	3.09	101.31%																		
	14 & 15						2	92.75%	25	15	W6	R6	4	75.26	76.64	SANDSTONE	Sst	1.38				75.11	76.49	Altered Sst, as above. Vcg sizes, qtz, plag) more volc frags visible. Coal lenses near bottom. Finer grain size near bottom.
	14 & 15						3	100.00%	25	15	W6	R6	4	76.64	78.35	MUDSTONE	Mdst	1.71				76.49	78.20	Med grey fg Mdst, bedding/joints ~85°.
21		79.00	82.05	3.05	3.03	99.34%																		
	15 & 16						7	100.00%	25	15	W6	R6	4	78.35	81.38	SANDSTONE	Sst	3.03				78.20	81.23	Altered Sst as above. Joints 65-85°. Clasts/zenoliths upto 4cm, volc mdst fragments. Some joints w/ plant material, coal lenses.
22		82.05	85.10	3.05	3.08	100.98%																		
	16						5	100.00%	25	15	W6	R5	4	81.38	84.46	MUDSTONE	Mdst	3.08				81.23	84.31	Drk grey fg mdst, massive. Joints/bedding 85°.
23		85.10	88.15	3.05	3.03	99.34%																		
	16 & 17						5	92.86%	25	14	W6	R6	4	84.46	85.16	MUDSTONE	Mdst	0.70				84.31	85.01	Dark grey, fg mdst, same as above
	16 & 17						6	100.00%	25	14	W6	R6	4	85.16	87.24	SANDSTONE	Sst	2.08				85.01	87.09	Light grey, cg-vcg altered Sst. 86.53m almost conglomerate. Rounded clasts ~4cm. Joints ~85-90°.
	16 & 17						1	100.00%	25	10	W6	R6	4	87.24	87.49	MUDSTONE	Mdst	0.25				87.09	87.34	Mdst, same as above, bedding/joints ≈80 to 90 TCA, plant material along fractures
														87.49	87.50	LOST CORE	Lost Core	0.01	0.01			87.34	87.35	*Rock Loss*
24		88.15	91.20	3.05	3.05	100.00%																		
	17 & 18						10	95.08%	25	15	W6	R6	4	87.50	90.55	SANDSTONE	Sst	3.05				87.35	90.40	Altered Sst as above. Rounded qtz up to 5mm. Few volc frags. Joints ~85°.
25		91.20	94.25	3.05	3.04	99.67%																		
	18						6	100.00%	25	15	26	R6	4	90.55	93.59	SANDSTONE	Sst	3.04				90.40	93.44	Altered Sst as above. 95.7-96.7m conglom layer. Bottom .75m almost appears Mdst. Joints w/coal, plant materials ~75°.
26		94.25	97.30	3.05	3.06	100.33%																		
	18 & 19						3	100.00%	25	15	W6	R6	4	93.59	96.65	UNDIFFERENTIATED BEDROCK	Vol cong	3.06				93.44	96.50	Green volc conglomerate clasts rounded up to 10cm. Matrix is mg-cg Sst.
27		97.30	100.35	3.05	3.07	100.66%																		
	19 & 20						8	97.72%	25	15	W6	R6	4	96.65	99.72	UNDIFFERENTIATED BEDROCK	Vol cong	3.07				96.50	99.57	Volc conglomerate as above.
28		100.35	103.40	3.05	3.07	100.66%																		
	20 & 21						5	97.72%	25	15	w6	R6	4	99.72	102.79	UNDIFFERENTIATED BEDROCK	Vol cong	3.07				99.57	102.64	As above
29		103.40	106.45	3.05	2.90	95.08%																		
	21						>25	58.62%	25	10 & 25	W6	R6	4	102.79	105.69	UNDIFFERENTIATED BEDROCK	Volc	2.90				102.64	105.54	Green w/angular white clasts (about 3mm) highly fractured (20-45°) joints, some SS.

														105.69	105.80	LOST CORE	Lost Core	0.11	0.11			105.54	105.65	*Rock Loss*
30		106.45	109.50	3.05	3.03	99.34%																		
	21 & 22						11	3.03	25	13	W6	R6	4	105.80	108.83	UNDIFFERENTIATED BEDROCK	Volc	3.03				105.65	108.68	Volc as above. 107.9m more calc vein, dark green.
														108.83	108.85	LOST CORE	Lost Core	0.02	0.02			108.68	108.70	*Rock Loss*
31		109.50	112.55	3.05	3.05	100.00%																		
	22 & 23						10	100.00%	25	14	W6	R6	4	108.85	111.90	UNDIFFERENTIATED BEDROCK	Volc	3.05				108.70	111.75	Volc as above.
32		112.55	115.60	3.05	3.05	100.00%																		
	23						7	0.98	25	14	W6	R6	4	111.90	114.95	UNDIFFERENTIATED BEDROCK	Volc	3.05				111.75	114.80	Volc as above. EOH

Client: CJV
Project: Raven
Logged By: Henry Kim, Parviz

Hole Number: RAV-09-012
Date Hole Started: 23-Jun-09
Date Hole Finished: 29-Jun-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 324.16 m
Depth of Casing: 29.20m
Core Size: Modified PQ (3.0")

Geological Borehole Log: RAV-09-012

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Interval Logged Lith	Interval Logged Length	Interval Logged Lost Core	Interval Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	5.18	OVERBURDEN	OVB	5.18				0.00	5.79	Brown Silty Sand & Gravels with a few Cobbles, making water @ 15 feet
														5.18	14.63	OVERBURDEN	OVB	9.45				5.79	15.24	Grey Silts with sand and gravel
														14.63	19.20	OVERBURDEN	OVB	4.57				15.24	19.81	Grey Silts
														19.20	21.34	OVERBURDEN	OVB	2.13				19.81	21.95	Brown sand & gravel, water bearing 5 gpm
														21.34	22.25	OVERBURDEN	OVB	0.91				21.95	22.86	Brown silty clay, with some gravels
														22.25	23.77	OVERBURDEN	OVB	1.52				22.86	24.38	Brown silty Sand & Gravels water bearing 2 gpm
														23.77	28.04	OVERBURDEN	OVB	4.27				24.38	28.65	Grey silty clay with some gravel
														28.04	41.15	SILTSTONE	Sltst	13.11				28.65	41.76	Dark Grey Siltstone
														41.15	54.25	SANDSTONE	Sst	13.11				41.76	54.86	making 4 gpm @ 145 feet, and 10 gpm @ 175 feet
														54.25	66.75	SANDSTONE	Sst	12.50				54.86	67.36	Grey Sandstone making 15 gpm
														66.75	71.32	SHALE	Sh	4.57				67.36	71.93	Dark brown shale
														71.32	92.35	SANDSTONE	Sst	21.03				71.93	92.96	Grey Sandstone
														92.35	93.88	SILTSTONE	Sltst	1.52				92.96	94.49	Dark Brown Siltstone
														93.88	126.49	SANDSTONE	Sst	32.61				94.49	127.10	Dark Grey Sandstone, making 25gpm and salty, therefore core point called
														126.49	158.49	SANDSTONE	Sst	32.00				127.10	159.10	Sst hit coal @ 159.10
1		159.10	161.89	2.79	1.50	53.76%										#N/A								
														158.49	158.75	LOST CORE	LOST CORE	0.26	0.26					
	1						2	52.38%	25	9	W6	R3	4	158.75	159.17	CLAYSTONE	Clyst	0.42				159.10	159.52	Carb Clyst
														159.17	159.39	LOST CORE	LOST CORE	0.22		Seam 5	ns			Lost Core: Coal Interpreted from geophysical log
	1													159.39	159.57	COAL	Coal	0.18		Seam 5	ns	159.52	159.70	Coal, dull
	1						3	65.79%	25	10	W6	R3	4	159.57	160.33	CLAYSTONE	Clyst	0.76				159.70	160.46	Carb Clyst, .12m at the top very soft.
	1													160.33	160.47	CLAYSTONE	Clyst	0.14				160.46	160.60	Med grey Clyst
2		161.89	163.87	1.98	0.64	32.32%										#N/A								
	1							100.00%				R5	4	160.47	161.11	LAMINITE	IB Sltst & Sst	0.64				160.86	161.50	Med grey, fg Sltst at the 0.37 Sst at the bottom.
3		163.87	164.63	0.76	3.13	411.84%										#N/A								
	1 & 2											R6	4	161.11	164.24	SANDSTONE	Sst	3.13				161.50	164.63	Sst mg light grey massive one piece core.
4		164.63	166.76	2.13	1.43	67.14%										#N/A								
	2 & 3						1	100.00%	25	13	W6	R6	4	164.24	165.67	SANDSTONE	Sst	1.43				164.63	166.06	Sst as above w/ some Clyst stringers at 90°.
														165.67	166.37	LOST CORE	Lost Core	0.70	0.70			166.06	166.76	*Rock Loss*
5		166.76	169.04	2.28	1.57	68.86%										#N/A								
	3							87.26%			W6	R6	4	166.37	167.94	SANDSTONE	Sst	1.57				166.76	168.33	Sst m-cg, light grey most of joints in this run is broken by drillers.
														167.94	168.65	LOST CORE	Lost Core	0.71	0.71			168.33	169.04	*Rock Loss*
6		169.04	171.44	2.40	2.17	90.42%										#N/A								
	3 & 4						3	100.00%	25	12	W6	R6	4	168.65	170.82	SANDSTONE	Sst	2.17				169.04	171.21	Sst m-cg massive
														170.82	170.91	LOST CORE	Lost Core	0.09	0.09			171.21	171.44	*Rock Loss*
7		171.44	174.34	2.90	2.90	100.00%										#N/A								
	4 & 5						3	100.00%	25	13	W6	R6	4	170.91	173.81	SANDSTONE	Sst	2.90				171.44	174.34	Sst as above cg
8		174.34	176.01	1.67	1.67	100.00%										#N/A								
	5 & 6						2		25	9	W6	R6	4	173.81	175.48	SANDSTONE	Sst	1.67				174.34	176.01	Sst cg w/ few coal stringers at 90°
9		176.01	178.75	2.74	2.29	83.58%										#N/A								
	6 & 7											R6	4	175.48	177.77	SANDSTONE	Sst	2.29				176.01	178.30	Cg light grey massive Sst
10		178.75	180.42	1.67	1.67	100.00%										#N/A								
	7													177.77	178.25	SANDSTONE	Sst	0.48				178.75	179.23	Cg light grey Sst
														178.25	178.49	LOST CORE	LOST CORE	0.24						Interpreted as Coal from geophysical log
														178.49	178.74	COAL	Coal	0.25			07890	179.23	179.48	Coal, dull
														178.74	179.68	SILTSTONE	Sltst	0.94				179.48	180.42	Med grey fg Sltst
11		180.42	183.16	2.74	2.52	91.97%										#N/A								
	7 & 8							100.00%				R6	4	179.68	180.34	SANDSTONE	Sst	0.66				180.42	181.08	Med grey silty Sst
	7 & 8													180.34	182.20	SANDSTONE	Sst	1.86				181.08	182.94	Sst m-cg light grey
														182.20	182.22	LOST CORE	Lost Core	0.02	0.02			182.94	182.96	*Rock Loss*
12		183.16	185.90	2.74	2.88	105.11%										#N/A								
	8 & 9													182.22	185.10	SANDSTONE	Sst	2.88				182.96	185.84	Sst m-cg light grey .93m from top w/ sringers of dark grey Clyst at 90°.
13		185.90	188.18	2.28	2.34	102.63%										#N/A								
	9 & 10						3	100.00%	25	14	W6	R6	4	185.10	187.44	SANDSTONE	Sst	2.34				185.84	188.18	Sst m-cg light grey, massive.
14		188.18	191.08	2.90	2.89	99.66%										#N/A								
	10 & 11						3	100.00%	25	14	W6	R6		187.44	190.33	SANDSTONE	Sst	2.89				188.18	191.07	Sst as above, w/ few stringers of dk Clyst at 70°.
														190.33	190.34	LOST CORE	Lost Core	0.01	0.01			191.07	191.08	*Rock Loss*
15		191.08	193.98	2.90	2.52	86.90%										#N/A								
	11 & 12						1	100.00%	25	14	W6	R6		190.34	192.86	SANDSTONE	Sst	2.52				191.08	193.60	Sst as above, massive light grey m-cg.
16		193.98	196.57	2.59	3.04	117.37%										#N/A								
	12 & 13						2	100.00%	25	14	W6	R6		192.86	195.90	SANDSTONE	Sst	3.04				193.60	196.64	Sst as above, solid piece. Joint along the core from 194.7-195.6m
17		196.57	199.47	2.90	2.14	73.79%										#N/A								
	13 & 14						2	100.00%	25	14	W6	R6		195.90	198.04	SANDSTONE	Sst	2.14				196.64	198.78	Sst as above, cg light grey.
														198.04	198.23	LOST CORE	Lost Core	0.19	0.19			198.78	198.97	*Rock Loss*
18		199.47	201.75	2.28	2.56	112.28%										#N/A								
	14 & 15													198.23	199.30	SANDSTONE	Sst	1.07				198.97	200.04	Sst cg light grey
	14 & 15													199.30	199.40	SANDSTONE	Sst	0.10			07891	200.54	200.64	(0.10m roof)
	14 & 15													199.40	199.56	COAL	Coal	0.16			07892	200.64	200.80	Coal, dull
	14 & 15													199.56	200.01	CLAYSTONE	Clyst	0.45			07893	200.80	201.25	Clyst, high carb at the bottom w/ coal stringers
	14 & 15													200.01	200.79	COAL	Coal	0.78		Seam 4	07894	201.25	202.03	Coal, dull hard w/ two rock bands mixed w/ coal.
19		201.75	203.58	1.83	2.05	112.02%										#N/A								
	15													200.79	201.19	COAL	Coal	0.40		Seam 4	07895	201.45	202.15	Coal, Dull hard, ***NB*** *Sample interval os 0.70m, but core log has the interval as 0.4m*
	15													201.19	201.28	CLAYSTONE	Clyst	0.09			07896	202.15	202.24	Clyst med grey (FLOOR sample)
	15						2	100.00%	25	14	W6	R6	4	201.28	202.84	SANDSTONE	Sst	1.56				202.02	203.58	Sst cg med grey w/ stringers of coal
20		203.58	206.48	2.90	3.04	104.83%										#N/A								
	15 & 16						2	100.33%	25	14	W6	R6	4	202.84	205.88	SANDSTONE	Sst	3.04				203.58	206.62	Sst cg med grey w/ coal stringers
21		206.48	209.38	2.90	2.76	95.24%										#N/A								
	16 & 17						2	94.86%	25	14	W6	R6	4	205.88	208.64	SANDSTONE	Sst	2.76				206.62	209.38	Sst cg light grey massive
22		209.38	211.99	2.61	3.03	116.09%										#N/A								
	16 & 17							100.00%	25			R6	4	208.64	211.67	SANDSTONE	Sst	3.03				209.38	212.41	Cg light grey Sst solid piece

23		211.99	214.89	2.90	2.48	85.52%										#N/A								
	18							100.00%				R6	4	211.67	214.15	SANDSTONE	Sst	2.48				212.41	214.89	Cg light grey Sst
24		214.89	216.99	2.10	2.40	114.29%										#N/A								
	19 & 20							16.67%			W6	R6	4	214.15	216.55	SANDSTONE	Sst	2.40				214.89	217.29	Light grey mg-cg massive Sst. One solid core.
25		216.99	219.89	2.90	2.51	86.55%										#N/A								
	20 & 21							100.00%			W6	R6	4	216.55	219.06	SANDSTONE	Sst	2.51				217.29	219.80	Sst as above, massive. One joint at 90° w/ plant material
														219.06	219.15	LOST CORE	Lost Core	0.09	0.09			219.80	219.89	*Rock Loss*
26		219.89	222.14	2.25	2.25	100.00%										#N/A								
	21							100.00%			W6	R6	4	219.15	221.40	SANDSTONE	Sst	2.25				219.89	222.14	Sst as above massive one solid core. Thin coal lenses near bottom ~90°.
27		222.14	223.66	1.52	1.52	100.00%										#N/A								
	21 & 22						2	98.68%	25	15	W6	R6	4	221.40	222.92	SANDSTONE	Sst	1.52				222.14	223.66	Sst as above, coal lens ~90°. Joint ~90° w/ plant materials. Very hard rock.
28		223.66	225.36	1.70	1.60	94.12%										#N/A								
	22 & 23							100.00%			W6	R6	4	222.92	224.52	SANDSTONE	Sst	1.60				223.66	225.26	Sst same as above. Big Sltst clast (?) near top. 90° coal lens / plant material near bottom.
														224.52	224.59	LOST CORE	Lost Core	0.07	0.07			225.26	225.33	*Rock Loss*
29		225.36	227.89	2.53	2.56	101.19%										#N/A								
	33 & 34							100.00%			W6	R6	4	224.59	227.15	SANDSTONE	Sst	2.56				225.33	227.89	Sst as above w/ coal-plant material. 1 solid core.
30		227.89	230.42	2.53	2.56	101.19%										#N/A								
	24 & 25						1	100.00%	25	15	W6	R6	4	227.15	229.71	SANDSTONE	Sst	2.56				227.89	230.45	Sst as above. 20° joint near top.
31		230.42	233.32	2.90	2.33	80.34%										#N/A								
	25 & 26							100.00%			W6	R6	4	229.71	232.04	SANDSTONE	Sst	2.33				230.45	232.78	Sst as above. One solid core, massive.
														232.04	232.66	LOST CORE	Lost Core	0.62	0.54			232.78	233.32	*Rock Loss*
32		233.32	235.45	2.13	2.02	94.84%										#N/A								
	26						1	100.00%	25	15	W6	R6	4	232.66	234.68	SANDSTONE	Sst	2.02				233.32	235.34	Light grey mg-cg massive Sst. One joint near bottom (90°) w/ plant material.
33		235.45	238.05	2.60	2.71	104.23%										#N/A								
	26 & 27							100.00%			W6	R6	4	234.68	235.97	SANDSTONE	Sst	1.29				235.34	236.63	Sst as above.
	26 & 27													235.97	236.07	SANDSTONE	Sst	0.10			07897	236.63	236.73	*Roof Sample, part of above Sst*
	26 & 27						>25	0.00%			W6	R1	4	236.07	236.79	COAL	Coal	0.72		Seam 3U	07898	236.73	237.45	Black light little-mod gassy
														236.79	237.32	COAL	Coal	0.53		Seam 3U	07899	237.45	237.98	Over 90% bright coal. Massive py throughout the coal. Up to 40%. Planar surface.
														237.32	237.39	COALY MUDSTONE	Coaly Shale	0.07		Seam 3U	07899	237.98	238.05	*NB Originally logged at the rig as part of below coal. But the Geophysical Logs indicate shale.*
34		238.05	238.71	0.66	0.80	121.21%										#N/A								
	27							100.00%			W6	R5	4	237.39	237.56	CARBONACEOUS MUDSTONE	Carb Mdst	0.17		Seam 3U	07900	237.47	237.64	Parting, brown-blk, fg massive Mdst
	27						>25				W6	R1	4	237.56	237.94	COAL	Coal	0.38		Seam 3U	07656	237.64	238.02	Coal, Blk, more than 90% bright coal. Light, little gas, massive py ~40%.
	27							100.00%			W6	R5	4	237.94	238.04	MUDSTONE	Mdst	0.10		Seam 3U	07657	238.02	238.12	Mdst, parting, as above.
	27						>25				W6	R1	4	238.04	238.19	COAL	Coal	0.15		Seam 3U	07658	238.12	238.27	Coal, as above
35		238.71	241.55	2.84	2.70	95.07%										#N/A								
														238.19	238.25	SHALY COAL	Shaly Coal	0.06		Seam 3U	07659	238.07	238.12	Changed the top 6cm from mdstn to shaly coal from geophysical log interpretation and after looking at photographs.
	28													238.25	238.55	MUDSTONE	Mdst	0.30			07659	238.12	238.43	Brown fg massive 45° SS joints.
	28													238.55	239.25	COAL	Coal	0.70		Seam 3M	07660	238.43	239.13	Black light med gassy 80-90% bright ~35% py (massive)
	28													239.25	239.99	COAL	Coal	0.74		Seam 3M	07661	239.13	239.87	As above. ~20% py (massive0. bottom 15cm appears 60-80% dull, fragments
	28													239.99	240.29	MUDSTONE	Mdst	0.30			07662	239.87	240.17	Mdst as above, low angle (30-45°) SS joints.
	28													240.29	240.57	COAL	Coal	0.28		Seam 3L	07663	240.17	240.45	Black light med gassy 80% bright coal. ~10% py (massive).
	28													240.57	240.67	MUDSTONE	Mdst	0.10		Seam 3L	07664	240.45	240.55	Mdst as above
	28													240.67	240.89	COAL	Coal	0.22		Seam 3L	07665	240.55	240.77	Blk light coal. As above.
36		241.55	244.45	2.90	2.95	101.72%										#N/A								
	29													240.89	240.98	COAL	Coal	0.09		Seam 3L	07666	240.91	241.00	Black bright (80%) 20-30% py
	29													240.98	241.08	MUDSTONE	Mdst	0.10			07667	241.00	241.10	FLOOR Brown fg massive Mdst
	29													241.08	241.34	CLAYSTONE	Clyst	0.26			ns	241.10	241.36	Carb Clyst. Part of below Clyst
	29													241.34	241.44	CLAYSTONE	Clyst	0.10			07668	241.36	241.46	Carb Clyst. Roof sample.
	29													241.44	241.95	SHALY COAL	Shaly Coal	0.51		Seam 3L	07669	241.46	241.97	Coal
	29													241.95	242.01	CLAYSTONE	Clyst	0.06		Seam 3L	07669	241.97	242.03	Clyst
	29													242.01	242.84	COAL	Coal	0.83		Seam 3L	07670	242.03	242.86	Coal, dull hard w/ 5% py. Very heavy, high ash, 0.86m very soft.
	29													242.84	242.94	CLAYSTONE	Clyst	0.10			07671	242.86	242.96	*Floor Sample, part of below Clyst*
	29													242.94	243.84	CLAYSTONE	Clyst	0.90				243.60	244.50	Clyst, weakly carb. Med grey, 0.10m floor.
37		244.45	247.35	2.90	2.76	95.17%										#N/A								
	30													243.84	244.73	CLAYSTONE	Clyst	0.89				244.50	245.39	Med grey Clyst.
	30													244.73	246.60	SANDSTONE	Sst	1.87				245.39	247.26	Cg light grey massive, Sst.
														246.60	246.69	LOST CORE	Lost Core	0.09	0.09			247.26	247.35	*Rock Loss*
38		247.35	249.48	2.13	2.05	96.24%										#N/A								
	30 & 31						3	100.00%	25	13	W6	R6	4	246.69	248.74	SANDSTONE	Sst	2.05				247.35	249.40	Sst as above. Light grey massive.
														248.74	248.82	LOST CORE	Lost Core	0.08	0.08			249.40	249.48	*Rock Loss*
39		249.48	252.22	2.74	2.73	99.64%										#N/A								
	31 & 32						1	100.00%	25	13	W6	R6	4	248.82	251.55	SANDSTONE	Sst	2.73				249.48	252.21	Sst as above light grey massive.
														251.55	251.56	LOST CORE	Lost Core	0.01	0.01			252.21	252.22	Rock Loss
40		252.22	255.12	2.90	2.66	91.72%										#N/A								
	32 & 33						4	100.00%	25	14	W6	R6	4	251.56	254.22	SANDSTONE	Sst	2.66				252.22	254.88	Sst cg massive light grey.
41		255.12	258.02	2.90	2.90	100.00%										#N/A								
	33 & 34						2	100.00%	25	14	W6	R6	4	254.22	257.12	SANDSTONE	Sst	2.90				254.88	257.78	Massive light grey cg Sst.
42		258.02	260.92	2.90	2.98	102.76%										#N/A								
	34 & 35							100.00%			W6	R6	4	257.12	260.10	SANDSTONE	Sst	2.98				257.78	260.76	Sst as above solid piece
43		260.92	263.82	2.90	2.74	94.48%										#N/A								
	35 & 36						11	94.53%	25	14	W6	R5	4	260.10	262.84	SANDSTONE	Sst	2.74				260.76	263.50	Sst w/ dark grey bands of Clyst at 0.45m in toward the bottom at 75°. 0.30m from top 0.5m Clyst.
44		263.82	266.72	2.90	3.03	104.48%										#N/A								
	36 & 37						5	100.00%	25	14	W6	R5	4	262.84	265.87	LAMINITE	IB Sst & Sltst	3.03				263.50	266.53	Sst IB w/ dark grey Sltst bands up to 3cm. Almost equal amount.
45		266.72	269.62	2.90	3.02	104.14%										#N/A								
	37 & 38						10	92.72%	25	14	W6	R5	4	265.87	268.89	SANDSTONE	Sst	3.02				266.53	269.55	Sst IB w/ bands of dark grey Sltst, 0.72m at the bottom. Light grey Sst dominated.
46		269.62	272.15	2.53	2.73	107.91%										#N/A								
	38 & 39						15	98.53%	25	19	W6	R5	4	268.89	271.62	LAMINITE	IB Sst & Sltst	2.73				269.55	272.28	Sst IB w/ Sltst bands at 75°.
47		272.15	275.05	2.90	3.05	105.17%										#N/A								
	39 & 40						4		25	9	W6	R4	4	271.62	272.82	CLAYSTONE	Clyst	1.20				272.28	273.48	Med grey Clyst, 0.10m ROOF
	39 & 40													272.82	272.92	CLAYSTONE	Clyst	0.10			07975	273.12	273.22	0.10m ROOF
	39 & 40													272.92	273.92	COAL	Coal	1.00		Seam 1	07976	273.22	274.22	Coal
	39 & 40													273.92	274.67	COAL	Coal	0.75		Seam 1	07977	274.22	274.97	Coal
48		275.05	277.79	2.74	2.68	97.81%										#N/A								
														274.67	274.75	LOST CORE	LOST CORE	0.08		Seam 1	ns			Lost Core interpreted as coal from geophysical log
	40 & 41													274.75	275.05	CLAYSTONE	Clyst	0.30			ns	275.23	275.53	Clyst, med grey fg
	40 & 41													275.05	275.20	CLAYSTONE	Clyst	0.15			07978	274.97	275.12	*Mis-sampled Parting Sample, part of above Clyst*
	40 & 41													275.20	275.36	COAL	Coal	0.16		Seam 1	07979	275.12	275.28	Coal, dull

	40 & 41													275.36	275.40	CLAYSTONE	Clyst	0.04		Seam 1	07979	275.28	275.32	Clyst
	40 & 41													275.40	275.52	COAL	Coal	0.12		Seam 1	07979	275.32	275.44	Coal, dull
	40 & 41													275.52	275.56	CLAYSTONE	Clyst	0.04		Seam 1	07979	275.44	275.48	Clyst
	40 & 41													275.56	276.61	COAL	Coal	1.05		Seam 1	07980	275.48	276.53	Coal, dull
	40 & 41													276.61	276.71	CLAYSTONE	Clyst	0.10			07981	276.53	276.63	Floor Sample, part of below Clyst
	40 & 41													276.71	277.43	CLAYSTONE	Clyst	0.72				277.19	277.91	Clyst
														277.43	277.44	LOST CORE	Lost Core	0.01	0.01			277.91	277.92	*Rock Loss*
49		277.79	279.01	1.22	1.16	95.08%										#N/A								
	41 & 42						2	55.56%						277.44	277.62	CLAYSTONE	Clyst	0.18				277.92	278.10	Clyst
	41 & 42													277.62	277.82	COAL	Coal	0.20				278.10	278.30	Coal, some bands of Clyst
														277.82	277.88	LOST CORE	Lost Core	0.06	0.06			278.30	278.36	*Coal Loss*
	41 & 42						1	100.00%						277.88	278.24	CLAYSTONE	Clyst	0.36				278.36	278.72	Clyst dark grey
	41 & 42													278.24	278.36	CLAYSTONE	Clyst	0.12				278.72	278.84	Clyst w/ coal stringers
	41 & 42						3	50.00%						278.36	278.66	CLAYSTONE	Clyst	0.30				278.84	279.14	Clyst dark grey
50		279.01	281.54	2.53	2.43	96.05%										#N/A								
	42						5	81.08%						278.66	279.40	SANDSTONE	Sst	0.74				279.14	279.88	Sst med grey cg
	42						4	102.38%						279.40	279.82	CLAYSTONE	Clyst	0.42				279.88	280.30	Clyst med grey partly carb
	42						3	101.59%						279.82	280.45	SANDSTONE	Sst	0.63				280.30	280.93	Sst med grey fg
	42						6	35.94%						280.45	281.09	SILTSTONE	Sltst	0.64				280.93	281.57	Med grey Sltst
51		281.54	284.31	2.77	2.54	91.70%										#N/A								
	43						>25	54.35%	25	6	W5	R5	3	281.09	281.91	CLAYSTONE	Clyst	0.82				281.57	282.39	Clyst - dark brown. Sst & Clyst.
	43													281.91	282.01	CLAYSTONE	Clyst	0.10			07651	281.68	281.78	ROOF
	43													282.01	282.43	COAL	Coal	0.42		Seam1 Sub	07652	281.78	282.20	COAL - powdery - rich py. 30cm Shale from 282.2-282.5
														282.43	282.49	LOST CORE	Lost Core	0.06	0.06	Seam1 Sub	ns	282.91	282.97	Coal Loss
														282.49	282.66	LOST CORE	Lost Core	0.17	0.17	Seam1 Sub	ns	282.97	283.14	Rock Loss
	43													282.66	282.76	CLAYSTONE	Clyst	0.10		Seam1 Sub	07653	282.78	282.88	ROOF- Clyst. Sst - med grey mg
														282.76	283.17	SANDY SHALE	Shale	0.41		Seam1 Sub	07654	282.88	283.29	***NB*** *Originally logged at the rig as part of below coal. But the Geophysical Logs indicate shale.*
	43													283.17	283.76	COAL	Coal	0.59		Seam1 Sub	07654	283.29	283.88	COAL - powdery - pyrite vein
														283.76	283.86	CLAYSTONE	Clyst	0.10			07655	283.88	283.98	FLOOR - Clyst, Shale
52		284.31	287.17	2.86	2.43	84.97%										#N/A								
	44						12	97.12%	25	10	W5	R5	4	283.86	286.29	LAMINITE	IB Sst & Sh	2.43				284.34	286.77	.20m of Shale on the top. Calcite filled fractures, med grey, m-c Sst, plant fossils common.
														286.29	286.71	LOST CORE	Lost Core	0.42	0.42			286.77	287.19	*Rock Loss*
53		287.17	289.17	2.00	2.01	100.50%										#N/A								
	45						>25	79.60%	25	6	W5	R6	4	286.71	288.72	CARBONACEOUS SANDSTONE	Carb Sst	2.01				287.19	289.20	Carb Sst and some Sh sections, at ~287.25 and 288.0m, Low angle frac. At 2.88.50 m. Sst is Carb w/ plant fossils and some parts are coarse grained, mainly med grey.
54		289.17	292.17	3.00	2.92	97.33%										#N/A								
	45 & 46						>25	82.19%	25	10	W5	R5	4	288.72	291.64	CARBONACEOUS SILTSTONE	Carb Sltst	2.92				289.20	292.12	Med grey fg Carb Sltst and partly shale, ~30cm at the btm of the run is Sale and calcite in fractures, ~289.2, broken core and soft Shale as well, at ~291.5 for about 30cm & Crb shale.
														291.64	291.72	LOST CORE	Lost Core	0.08	0.08			292.12	292.20	*Rock Loss*
55		292.17	295.17	3.00	2.92	97.33%										#N/A								
	46 & 47						>25	29.11%	10	2	W5	R5	3	291.72	294.64	LAMINITE	IB Sst & Sltst	2.92				292.20	295.12	Gouges at: 292.35, 293.40, 293.70 in Sltst and silty Sst. A 30cm thick calcite in a fault (frac?) gouge / vein (w/ brecciation) at 294.20 is noticable - coal stringers
														294.64	294.72	LOST CORE	Lost Core	0.08	0.08			295.12	295.20	*Rock Loss*
56		295.17	296.84	1.67	2.81	168.26%										#N/A								
	47 & 48						3	55.87%	25	15	W6	R6	4	294.72	297.53	SANDSTONE	Sst	2.81				295.20	298.01	Dark to med grey Sst, fg, frac. Surfaces are SS ~50^{o}. Coal stringers are present. Mainly massive.
57		296.84	299.50	2.66	1.52	57.14%										#N/A								
	48 & 49						3		25	15	W6	R6	4	297.53	299.05	SILTSTONE	Sltst	1.52				298.01	299.53	Light to med grey, f-mg Sltst w/ coal stringers, plant fossils and some calcite in the fractures, mainly massive.
58		299.50	300.90	1.40	1.30	92.86%										#N/A								
	49						1	100.00%	25	15	W6	R6	4	299.05	300.35	SILTSTONE	Sltst	1.30				299.53	300.83	Dark grey to brown Sltst, massive, very hard to drill, dense. Plant fossils present.
														300.35	300.45	LOST CORE	Lost Core	0.10	0.10			300.83	300.93	*Rock Loss*
59		300.90	303.80	2.90	2.86	98.62%										#N/A								
	49 & 50						8	91.61%	25	12	W6	R3	4	300.45	303.31	SILTSTONE	Sltst	2.86				300.93	303.79	Sltst, med grey, massive
														303.31	303.35	LOST CORE	Lost Core	0.04	0.04			303.79	303.83	*Rock Loss*
60		303.80	306.08	2.28	2.06	90.35%										#N/A								
	51							100.00%			W6	R6	4	303.35	303.95	SANDSTONE	Sst	0.60				303.83	304.43	Sst light grey, cg
	51							100.00%			W6	R5		303.95	304.66	SILTSTONE	Sltst	0.71				304.43	305.14	Sltst med grey fg
	51							86.67%			W6	R5		304.66	305.41	CLAYSTONE	Clyst	0.75				305.14	305.89	Clyst, med gray, 0.10m at the top gouge.
														305.41	305.60	LOST CORE	Lost Core	0.19	0.19			305.89	306.11	*Rock Loss*
61		306.08	307.92	1.84	1.84	100.00%										#N/A								
	51 & 52						3	100.00%	25	15	W6	R6	4	305.60	307.44	SILTSTONE	Sltst	1.84				306.11	307.95	Massive med to dk grey Sltst w/ some intervals of Sst and coal stringers (~306.0 - 306.25m depth).
62		307.92	309.75	1.83	1.87	102.19%										#N/A								
	52						2		25	15	W6	R6	4	307.44	309.31	SILTSTONE	Sltst	1.87				307.95	309.82	Dark grey, massive Sltst. Difficult to drill, hard and dense, some plant and other organic fragments present. Manly Sst from ~308.50m, massive light grey.
63		309.75	312.67	2.92	2.20	75.34%										#N/A								
	53						8	90.91%	25	14	W6	R6	4	309.31	311.51	LAMINITE	IB Sst & Sh	2.20				309.82	312.02	Massive med to light grey, mg Sst w/ a 2cm Shalr (soft, gouge?) at the top of the run (309.81m) plant fossils are also present.
														311.51	311.60	LOST CORE	Lost Core	0.09	0.09			312.02	312.11	*Rock Loss*
64		312.67	314.80	2.13	2.72	127.70%										#N/A								
	53 & 54						1	100.00%	25	15	W6	R6	4	311.60	312.73	SILTSTONE	Sltst	1.13				312.11	313.24	Massive dense Sltst (dk grey/brown) to the depth of 313.14m,
	53 & 54						>25	56.60%	10	3	W4	R4	3	312.73	314.32	SANDSTONE	Sst	1.59				313.24	314.83	With a sharp contact, light grey organic rich, calcite filled fractured Sst. A ~5^{o} calcite filled fracture, ~2cm thick at 313.64m, some frac are SS and py films present.
65		314.80	317.54	2.74	2.88	105.11%										#N/A								
	54 & 55						>25	26.04%	10	3	W4	R4	2	314.32	317.20	LAMINITE	IB Sst & Sltst	2.88				314.83	317.71	Cg Sst, massive, light grey. Sltst is med grey to brown, massive and hard intervals w/ some Sh parts. Plant fossils and calcite in the fractures are common.
66		317.54	319.82	2.28	1.50	65.79%										#N/A								
	55 & 56						4	0.00%	25	9	W6	R6	4	317.20	317.75	SANDSTONE	Sst	0.55				317.71	318.26	Sst, cg light grey broken
	55 & 56						5	52.63%	25	10	W6	R4	4	317.75	318.70	CLAYSTONE	Clyst	0.95				318.26	319.21	Clyst medium grey, 0.38 at the top broken.
														318.70	319.34	LOST CORE	Lost Core	0.64	0.64			319.21	319.85	*Rock Loss*
67		319.82	321.65	1.83	1.54	84.15%										#N/A								
	56						3	82.61%	25	14	W6	R5	4	319.34	319.80	CLAYSTONE	Clyst	0.46				319.85	320.31	Dark grey, fine grained the joint drilled w/ calcite.
	56						7	83.33%	25	9	W6	R6	4	319.80	320.88	SANDSTONE	Sst	1.08				320.31	321.39	Sst, medium to fg
														320.88	321.04	LOST CORE	Lost Core	0.16	0.16			321.39	321.55	*Rock Loss*
68		321.65	324.09	2.44	2.40	98.36%										#N/A								
							3	78.00%	25	9	W6	R6	4	321.04	321.54	SANDSTONE	Sst	0.50				321.55	322.05	Sst m-fg, med grey
							5	100.00%	25	14	W6	R6	4	321.54	323.44	UNDIFFERENTIATED BEDROCK	Volc	1.90				322.05	323.95	Greenish grey volcanic tuff w/ joints fill w/ calcite.

														323.44	323.48	LOST CORE	Lost Core	0.04	0.04			323.95	323.99	Rock Loss, EOH @325.36

Geological Borehole Log: RAV-09-013

Client: CJV
Project: Raven
Logged By: Ernest Popyk, Fergal, Sarah Neuman

Hole Number: RAV-09-013
Date Hole Started: 24/06/2009
Date Hole Finished: 28/06/2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 347.03m
Depth of Casing: 10.50m
Core Size: Modified PQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Interval Logged Lith	Interval Logged Length	Interval Logged Lost Core	Interval Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	10.50	OVERBURDEN	OVBDN	10.50						OVB
														10.50	17.03	SILTSTONE	sltst	6.53				0.00	20.00	OVB
														17.03	19.03	SILTSTONE	Sltst	2.00			1	20.00	22.00	Start of Chip SamplingLight grey, SLST, medium greained to very fine grained
														19.03	21.03	SILTSTONE	Sltst	2.00			2	22.00	24.00	as above
														21.03	23.03	SILTSTONE	Sltst	2.00			3	24.00	26.00	as above
														23.03	25.03	SHALE	Sh	2.00			4	26.00	28.00	shale, black, very fine grained to fine grained
														25.03	27.03	SHALE	Sh	2.00			5	28.00	30.00	as above
														27.03	29.03	SHALE	Sh	2.00			6	30.00	32.00	as above, trace calcite
														29.03	31.03	SHALE	Sh	2.00			7	32.00	34.00	as above, trace coarse SST
														31.03	33.03	SANDSTONE	Sst	2.00			8	34.00	36.00	SST, light grey, coarse grained to very coarse grained
														33.03	35.03	SANDSTONE	Sst	2.00			9	36.00	38.00	as above
														35.03	37.03	SHALE	Sh	2.00			10	38.00	40.00	shale, black, very fine grained to fine grained, with 2% calcite
														37.03	39.03	SANDSTONE	Sst	2.00			11	40.00	42.00	SST, ligth grey, coarse grained to very coarse grained
														39.03	41.03	SILTSTONE	Sltst	2.00			12	42.00	44.00	SLTST, dark grey, medium grained to fine grained
														41.03	43.03	LAMINITE	IB Sltst & Sh	2.00			13	44.00	46.00	40% SLTST, 60^ black shale
														43.03	45.03	SILTSTONE	Sltst	2.00			14	46.00	48.00	SLTST, light grey, medium to fine grained
														45.03	47.03	SILTSTONE	Sltst	2.00			15	48.00	50.00	as above
														47.03	49.03	SILTSTONE	Sltst	2.00			16	50.00	52.00	as above
														49.03	51.03	SILTSTONE	Sltst	2.00			17	52.00	54.00	as above
														51.03	53.03	SILTSTONE	Sltst	2.00			18	54.00	56.00	as above
														53.03	55.03	SILTSTONE	Sltst	2.00			19	56.00	58.00	as above
														55.03	57.03	SILTSTONE	Sltst	2.00			20	58.00	60.00	as above
														57.03	59.03	SILTSTONE	Sltst	2.00			21	60.00	62.00	as above
														59.03	61.03	SILTSTONE	Sltst	2.00			22	62.00	64.00	as above
														61.03	63.03	SILTSTONE	Sltst	2.00			23	64.00	66.00	as above
														63.03	65.03	SILTSTONE	Sltst	2.00			24	66.00	68.00	as above
														65.03	67.03	SILTSTONE	Sltst	2.00			25	68.00	70.00	medium grey, medium-fine grained Sltst
														67.03	69.03	SILTSTONE	Sltst	2.00			26	70.00	72.00	as above
														69.03	71.03	SILTSTONE	Sltst	2.00			27	72.00	74.00	as above
														71.03	73.03	SILTSTONE	Sltst	2.00			28	74.00	76.00	as above
														73.03	75.03	SILTSTONE	Sltst	2.00			29	76.00	78.00	as above with quartz graines
														75.03	77.03	SILTSTONE	Sltst	2.00			30	78.00	80.00	medium grey fine-medium graines Sltst
														77.03	79.03	SILTSTONE	Sltst	2.00			31	80.00	82.00	as above
														79.03	81.03	SILTSTONE	Sltst	2.00			32	82.00	84.00	as above
														81.03	83.03	SILTSTONE	Sltst	2.00			33	84.00	86.00	as above
														83.03	85.03	SILTSTONE	Sltst	2.00			34	86.00	88.00	as above
														85.03	87.03	SILTSTONE	Sltst	2.00			35	88.00	90.00	as above
														87.03	89.03	SILTSTONE	Sltst	2.00			36	90.00	92.00	as above
														89.03	91.03	SILTSTONE	Sltst	2.00			37	92.00	94.00	as above
														91.03	93.03	SILTSTONE	Sltst	2.00			38	94.00	96.00	as above
														93.03	95.03	SILTSTONE	Sltst	2.00			39	96.00	98.00	as above
														95.03	97.03	SILTSTONE	Sltst	2.00			40	98.00	100.00	as above
														97.03	99.03	SILTSTONE	Sltst	2.00			41	100.00	102.00	as above
														99.03	101.03	SILTSTONE	Sltst	2.00			42	102.00	104.00	medium grey, fine grained Sltst with angular quartz
														101.03	103.03	SILTSTONE	Sltst	2.00			43	104.00	106.00	medium grey, fine grained Sltst with 5% light grey, medium greaines SST
														103.03	105.03	SILTSTONE	Sltst	2.00			44	106.00	108.00	as above
														105.03	107.03	SILTSTONE	Sltst	2.00			45	108.00	110.00	medium grey, fine grained Sltst
														107.03	109.03	SILTSTONE	Sltst	2.00			46	110.00	112.00	as above with calcite vein
														109.03	111.03	SILTSTONE	Sltst	2.00			47	112.00	114.00	medium grey, fine grained Sltst
														111.03	113.03	SILTSTONE	Sltst	2.00			48	114.00	116.00	as above
														113.03	115.03	SILTSTONE	Sltst	2.00			49	116.00	118.00	Medium grey, fine grained Sltst with calcite veing and 1% Sst
														115.03	117.03	SILTSTONE	Sltst	2.00			50	118.00	120.00	As above
														117.03	119.03	SILTSTONE	Sltst	2.00			51	120.00	122.00	Medium grey, fine grained Sltst
														119.03	121.03	SILTSTONE	Sltst	2.00			52	122.00	124.00	As above
														121.03	123.03	SILTSTONE	Sltst	2.00			53	124.00	126.00	As above
														123.03	125.03	SILTSTONE	Sltst	2.00			54	126.00	128.00	As above
														125.03	127.03	SILTSTONE	Sltst	2.00			55	128.00	130.00	As above with 1% quartz and Sst (medium grained light grey)
														127.03	129.03	SILTSTONE	Sltst	2.00			56	130.00	132.00	Medium grey, fine grained Sltst
														129.03	131.03	SILTSTONE	Sltst	2.00			57	132.00	134.00	As above with 3% quartz
														131.03	133.03	SILTSTONE	Sltst	2.00			58	134.00	136.00	medium grey, fine grained Sltst
														133.03	135.03	SILTSTONE	Sltst	2.00			59	136.00	138.00	As above
														135.03	137.03	SILTSTONE	Sltst	2.00			60	138.00	140.00	As above
														137.03	139.03	SILTSTONE	Sltst	2.00			61	140.00	142.00	As above
														139.03	141.03	SILTSTONE	Sltst	2.00			62	142.00	144.00	As above
														141.03	143.03	SILTSTONE	Sltst	2.00			63	144.00	146.00	As above
														143.03	145.03	SILTSTONE	Sltst	2.00			64	146.00	148.00	As above
														145.03	147.03	SILTSTONE	Sltst	2.00			65	148.00	150.00	As above
														147.03	149.03	SILTSTONE	Sltst	2.00			66	150.00	152.00	As above
														149.03	151.03	SILTSTONE	Sltst	2.00			67	152.00	154.00	As above
														151.03	153.03	SILTSTONE	Sltst	2.00			68	154.00	156.00	As above
														153.03	155.03	SILTSTONE	Sltst	2.00			69	156.00	158.00	As above
														155.03	157.03	SILTSTONE	Sltst	2.00			70	158.00	160.00	As above
														157.03	159.03	SILTSTONE	Sltst	2.00			71	160.00	162.00	As above
														159.03	161.03	SILTSTONE	Sltst	2.00			72	162.00	164.00	As above
														161.03	163.03	SILTSTONE	Sltst	2.00			73	164.00	166.00	medium greay, fine grained Sltst
														163.03	165.03	SILTSTONE	Sltst	2.00			74	166.00	168.00	As above
														165.03	167.03	SILTSTONE	Sltst	2.00			75	168.00	170.00	Medium grey fine grained, Sltst with hilght grey medium grined Sst (30%)
														167.03	169.03	SILTSTONE	Sltst	2.00			76	170.00	172.00	50% Sst, %0% Sst
														169.03	171.03	SILTSTONE	Sltst	2.00			77	172.00	174.00	90% Sst, 10% Sltst
														171.03	173.03	SILTSTONE	Sltst	2.00			78	174.00	176.00	80% Sst, 20% Sltst
														173.03	175.03	SILTSTONE	Sltst	2.00			79	176.00	178.00	light grey, medium grianed Sst
														175.03	177.03	SILTSTONE	Sltst	2.00			80	178.00	180.00	As above
														177.03	179.03	SILTSTONE	Sltst	2.00			81	180.00	182.00	Medium grey, fine graines Sltst
														179.03	181.03	SILTSTONE	Sltst	2.00			82	182.00	184.00	As above with 5% medium grey, fine grained Sltst
														181.03	183.03	SILTSTONE	Sltst	2.00			83	184.00	186.00	light grey, medium to coarse grained Sst
														183.03	185.03	SILTSTONE	Sltst	2.00			84	186.00	188.00	medium grey, fined grained Sltst with 5% light grey, mediumg grained Sst
														185.03	187.03	SILTSTONE	Sltst	2.00			85	188.00	190.00	medium greasy, fine grained Sltst
														187.03	189.03	SILTSTONE	Sltst	2.00			86	190.00	192.00	as above with 1% quartz
														189.03	191.03	SILTSTONE	Sltst	2.00			87	192.00	194.00	medium grey, fine grained Sltst
														191.03	193.03	SILTSTONE	Sltst	2.00			88	194.00	196.00	as above
														193.03	195.03	SILTSTONE	Sltst	2.00			89	196.00	198.00	as above
														195.03	197.03	SILTSTONE	Sltst	2.00			90	198.00	200.00	As above
														197.03	199.03	SILTSTONE	Sltst	2.00			91	200.00	202.00	as above
														199.03	201.03	SILTSTONE	Sltst	2.00			92	202.00	204.00	as above with 1% quarts/calcite

														201.03	203.03	SILTSTONE	Sltst	2.00			93	204.00	206.00	mediumg grey fine grained Sltst
														203.03	205.03	SILTSTONE	Sltst	2.00			94	206.00	208.00	medium grey, fine grained Sltst
														205.03	207.03	SILTSTONE	Sltst	2.00			95	208.00	210.00	as above
														207.03	207.60	SILTSTONE	Sltst	0.57			96	210.00	210.57	Coal, Sst, Sltst
1		210.57	212.57	2.00	1.11	55.50%										#N/A								
	1						0	100.00%	0	1	W6	R5	4	207.60	208.71	SANDSTONE	Sst	1.11				210.57	211.68	Light grey, medium grained, surface smooth
														208.71	209.60	LOST CORE	Lost Core	0.89	0.89			211.68	212.57	*Rock Loss*
2		212.57	215.57	3.00	2.54	84.67%										#N/A								
	2						2	100.00%	0	1	W6	R5	4	209.60	212.14	SANDSTONE	Sst	2.54				212.57	215.11	Same as above
														212.14	212.50	LOST CORE	Lost Core	0.36	0.36			215.11	215.47	*Rock Loss*
3		215.57	217.57	2.00	1.61	80.50%										#N/A								
	2						3	98.76%	0	2	W6	R5	4	212.50	214.11	SANDSTONE	Sst	1.61				215.47	217.08	Same as above
4		217.57	219.57	2.00	2.25	112.50%										#N/A								
	2,3						0	100.00%	0	1	W6	R5	4	214.11	216.36	SANDSTONE	Sst	2.25				217.08	219.33	Same as above
5		219.57	221.57	2.00	2.12	106.00%										#N/A								
	3,4						7	94.81%	10	2	W6	R5	3	216.36	218.48	SANDSTONE	Sst	2.12				219.33	221.45	Same as above
6		221.57	223.57	2.00	2.12	106.00%										#N/A								
	4,5						2	97.17%	25	10	W6	R7	4	218.48	220.60	SANDSTONE	Sst	2.12				221.45	223.57	Light grey Sst, medium-coarse grained, massive, coal spars and plant material, some fossil shell molds, quite a bit of bioturbations. All fractures at 90 degrees, several wispy shaley beds at ~90 deg.
7		223.57	223.71	0.14	0.00	0.00%										#N/A								
														220.60	220.74	LOST CORE	Lost Core	0.14	0.14			223.57	223.71	*Rock Loss Most likely still in hole, will plu next run.*
8		223.71	225.71	2.00	0.66	33.00%										#N/A								
	5						1	100.00%	10	15	W6	R3	4	220.74	221.40	SANDSTONE	Sst	0.66				223.71	224.37	Sst: light grey 'mottled appearance', lots of bioturbation, medium-coarse grained, massive. All fractures at 90 deg TCA. Several vugs filled with calcite.
														221.40	221.61	LOST CORE	Lost Core	0.21	0.21			224.37	224.58	*Rock Loss*
9		225.71	226.97	1.26	2.39	189.68%										#N/A								
	5						1	100.00%	25	15	W6	R3	4	221.61	223.47	SILTSTONE	Sltst	1.86				224.58	226.44	Sltst. Dark grey, fine to medium grained, massive. One or two coal spars, fractures at 90 degress, several thinly laminated SLT beds at 90 deg TCA.
	5,6							100.00%			W6	R5	4	223.47	223.74	SANDSTONE	Sst	0.27				226.44	226.71	Light grey, coarse to very coarse grained, massive, one healed fracture at 7 deg TCA, minor amount of bioturbation
	6							100.00%			W6	R3	4	223.74	224.00	SILTSTONE	Sltst	0.26				226.71	226.97	As above Sltst, (broken in shoe)
10		226.97	229.73	2.76	2.73	98.91%										#N/A								
	6, 7						1	100.00%	10	15	W6	R4	4	224.00	226.73	SANDSTONE	Sst	2.73				226.97	229.70	Light grey, coarse to very coarse grained, massive, calcite (1mm thick) infilling fracture, vugs filled with calcite sks at 85 degrees. 1 fracture at 90 degrees, coal spars, plant material, mior amount of bioturbation. Two healed fractures at 7 degrees filled with calcite. No bedding angles.
														226.73	226.76	LOST CORE	Lost Core	0.03	0.03			229.70	229.73	*Rock Loss*
11		229.73	231.43	1.70	1.29	75.88%										#N/A								
	7						1	100.00%	25	15	W6	R4	4	226.76	228.05	SANDSTONE	Sst	1.29				229.73	231.02	As above Sst
														228.05	228.46	LOST CORE	Lost Core	0.41	0.41			231.02	231.43	*Rock Loss*
12		231.43	233.79	2.36	1.89	80.08%										#N/A								
	7,8							100.00%			W6	R4	4	228.46	229.99	SANDSTONE	Sst	1.53				231.43	232.96	As above Sst
	7,8										W6	C2	2	229.99	230.13	CLAY	Clay	0.14				232.96	233.10	Clay: brownish black, fine to medium grained, sticky, massive chunks of below unit mixed in.
	8						4	82.00%	25	13	W6	R3	3	230.13	230.35	LAMINITE	IB Sh & Sltst	0.22				233.10	233.32	85% Sltst, 20 % Sh. Sltst: dark grey, fine grained to medium grained. Thinly laminated beds at 90 degrees plant material, coal spars. SH: black, very fine to fine grained, thinly laminated beds at 90 deg, all fractures 90 deg.
														230.35	230.82	LOST CORE	Lost Core	0.47	0.47			233.32	233.79	*Rock Loss*
13		233.79	236.79	3.00	2.89	96.33%										#N/A								
	9						8	89.97%	10	12	W6	R4	3	230.82	233.71	LAMINITE	IB Sh & Sltst	2.89				233.79	236.68	As above. IB Sltst with Sh, except for 70% Sltst and 30% Sh. One calcite vein at 45 deg TCA, 2 sks at 90 deg all fractures 90 deg TCA, several >1cm thick coal beds. Bubbled loudly for 10min.
														233.71	233.82	LOST CORE	Lost Core	0.11	0.11			236.68	236.79	*Rock Loss*
14		236.79	239.79	3.00	2.99	99.67%										#N/A								
	9						1		25	15	W6	R4	3	233.82	233.91	LAMINITE	IB Sh & Sltst	0.09				236.79	236.88	As above, IB Sltst/Sh
	9						3	95.65%	25	14	W6	R4	3	233.91	235.06	LAMINITE	IB Sst & Sh	1.15				236.88	238.03	85% Sst, 15% Sh, Sst thin to medium laminated, coarse to very coares grained, light grey, all fractures and bedding at 90 deg. SH: black, massive, very fine to fine grained, bedding at 90 deg.
	9,10						12	91.73%	25	14	W6	R5	3	235.06	236.39	SANDSTONE	Sst	1.33				238.03	239.36	Light grey, massive, vuggy, calcite filled vugs, 7 sks at 45 deg, all other fractures at 90 deg, coal spars, plant material.
														236.39	236.49	SANDSTONE	Sst	0.10			07632	238.71	238.81	Roof Sample, part of above Sst
	10						>25	0.00%	20	3	W6	R0	2	236.49	236.81	SHALY COAL	Shaly Coal	0.32		Seam 5	07633	238.81	239.13	Dull and bright (65/35) sheared, numerous sks (all at 90 deg), massive py on SS, black light, several (>1mm) thick SH beds. Bubbled loudly for 10 min.
														236.81	236.82	LOST CORE	Lost Core	0.01	0.01		ns	239.78	239.79	*Rock Loss*
15		239.79	240.21	0.42	0.63	150.00%										#N/A								
	10						1	0.00%	25	15	W6	R3	1	236.82	236.98	SILTSTONE	Sltst	0.16			07634	239.13	239.29	Dark grey, medium to fine grained, massive.
														236.98	237.22	SANDY SHALE	Shale	0.24			07635	239.29	239.53	***NB,** Originally logged at the rig as coal, but the Geophysical Logs show Shale*
	10						>25	0.00%	19	3	W6	R0	1	237.22	237.45	COAL	Coal	0.23		Seam 5	07635	239.53	239.76	Dull and bright (65/35) crushed, broken, sheared chunks of coal with sks faces. Minor amount of massive py --> no calcite. Black, light.
16		240.21	241.65	1.44	1.28	88.89%										#N/A								
	10, 11						>25	0.00	10	3	W6	R0	1	237.45	237.95	COAL	Coal	0.50		Seam 5	07636	239.84	240.39	As above coal except for two 1cm thick calcite veins (broken and crushed as well) calcite veins at 45 degrees.
	10, 11													237.95	238.44	SHALY COAL	Shaly Coal	0.49		Seam 5	07637	240.39	240.95	*Part of above Coal*
	11						3	68.97%	25	10	W6	R4	1	238.44	238.54	SILTSTONE	Sltst	0.10			07638	240.95	241.05	Sltst: dark grey, fine to medium grained calcite filled fracture at 15 deg, massive.
	11													238.54	238.73	SILTSTONE	Sltst	0.19			07639	241.05	241.24	*Part of above Sltst*
17		241.65	243.65	2.00	2.04	102.00%										#N/A								
	11						>25	0.00%	10	5	W6	R0	0	238.73	239.33	CARBONACEOUS MUDSTONE	Carb Shale	0.60			07640	241.84	242.44	Dull, 70% bright, 30% crushed broken but as above coal except less bright coal. Crushed parting mixed in. Analyse indicates carb shale or coaly shale
	11													239.33	239.82	COALY MUDSTONE	Coaly Shale	0.49			07641	242.44	242.93	*Part of above Coal*
	11,12													239.82	239.92	SANDSTONE	Sst	0.10			07642	242.93	243.03	*Floor Sample, part of below Sst*
	11,12						6	70.53%	25	8	W6	R6	3	239.92	240.77	SANDSTONE	Sst	0.85				242.89	243.74	Sst, light grey, coarse to very coarse grained, massive, 3 sks at 45 deg (filled with calcite), 3 fractures at about 90 deg TCA. 1 large vein of calcite (2.5cm thick) at 70 deg TCA.
18		243.65	244.65	1.00	0.93	93.00%										#N/A								
	12						3	93.55%	25	12	W6	R6	3	240.77	241.70	SANDSTONE	Sst	0.93				243.74	244.67	As above Sst
														241.70	241.77	LOST CORE	Lost Core	0.07	0.07			244.67	244.74	*Rock Loss*
19		244.65	247.65	3.00	1.13	37.67%										#N/A								
	12						>25	29.20%	20	4	W6	R6	1	241.77	242.90	SANDSTONE	Sst	1.13				244.74	245.87	As above Sst, but judging from the coal and misks shaped core, it was mostly broken durning coring (broken chunks of Sst).
														242.90	244.61	LOST CORE	Lost Core	1.71	1.71			245.87	247.58	*Rock Loss*
20		247.65	249.65	2.00	1.75	87.50%										#N/A								
	12, 13						5	100.00%	10	15	W6	R6	2	244.61	246.36	SANDSTONE	Sst	1.75				247.58	249.33	As above Sst, but 5 sks at 45 degrees TCA.
21		249.65	250.65	1.00	1.41	141.00%										#N/A								
	13						3	95.04%	10	15	W6	R6	3	246.36	247.77	SANDSTONE	Sst	1.41				249.33	250.74	As above Sst but 3 sks at 36 deg TCA.
22		250.65	253.65	3.00	2.92	97.33%										#N/A								
	13,14						11	69.52%	10	9	W6	R6	2	247.77	250.69	SANDSTONE	Sst	2.92				250.74	253.66	As above Sst, except for 2 sks at 26 deg, 2 sks at 45 deg, all other fractures at 90 degrees.
														250.69	250.77	LOST CORE	Lost Core	0.08	0.08			253.66	253.74	*Rock Loss*
23		253.65	256.65	3.00	2.95	98.33%										#N/A								
	14,15						15	63.73%	10	9	W6	R6	2	250.77	253.72	SANDSTONE	Sst	2.95				253.74	256.69	As above Sst, except for 4 large fractures (30cm long) at 0 degrees, rest at 90 degress. 1 calctie vein at 24 deg
														253.72	253.77	LOST CORE	Lost Core	0.05	0.05			256.69	256.74	*Rock Loss*
24		256.65	259.65	3.00	2.67	89.00%										#N/A								
	15,16						6	100.00%	10	10	W6	R6	3	253.77	256.21	SANDSTONE	Sst	2.44				256.74	259.18	As above Sst, except 5 sks at 27 degrees, 1 fracture at 90 degrees.
	15,16						>25	0.00%	0	3	W6	R1	0	256.21	256.44	CARBONACEOUS MUDSTONE	Carb Sh	0.23				259.18	259.41	Broken, crushed, chunks of coal and shale, 60% Shale, 40% coal
														256.44	256.64	LOST CORE	Lost Core	0.20	0.20			259.41	259.61	*Rock Loss*
25		259.65	262.65	3.00	3.13	104.33%										#N/A								
	16,17						19	81.470%	10	13	W6	R3	3	256.64	259.77	LAMINITE	IB Sltst/SH	3.13				259.61	262.74	65% Sltst, 35% Sh. Sltst: thinly to very thinly laminated, dark grey, medium to fine grained. 3 sks at 15 deg, all other fractures at 90 deg. All beds at 90, several
26		262.65	263.51	0.86	0.82	95.35%										#N/A								
	18						4	81.71%	25	8	W6	R3	3	259.77	260.59	LAMINITE	IB Sltst/SH	0.82				262.74	263.56	60% Sltst, 40% Sh. Sltst light, the rest is like above unit. 2 Fractures at 90 degrees, 2 sks at 45 degrees TCA.
														260.59	260.63	LOST CORE	Lost Core	0.04	0.04			263.56	263.60	*Rock Loss*
27		263.51	265.91	2.40	2.39	99.58%										#N/A								
	18,19						8	78.66%	25	9	W6	R3	3	260.63	263.02	LAMINITE	IB Sltst/SH	2.39				263.60	265.99	As above IB Sltst/Sh, 3 sks at 45 degrees, the rest of the fractures are 90 degrees TCA. Becoming coarser grained towards the bottom of the run. One calcite vein at 45 deg TCA.
														263.02	263.03	LOST CORE	Lost Core	0.01	0.01			265.99	266.00	*Rock Loss*
28		265.91	268.04	2.13	2.13	100.00%										#N/A								
	18,19						6	89.20%	10	13	W6	R6	3	263.03	265.16	LAMINITE	IB Sst/Sh	2.13				266.00	268.13	85% Sst, 15% Sh. Sst: light grey, coarse to very coarse grained. Thin to medium laminated, 3 sks at 45 deg, 3 stepped fractures at 90 deg. SH: thinly laminated, black, very fine to fine grained. 3 calcite veins at 70, two (3cm) rubbly zones. 1 vertical calcite vein, all bedding ~90 deg. Plant material, coal spars. Lesks shale beds toward the btm
29		268.04	269.70	1.66	1.66	100.00%										#N/A								
	19,20						3	86.75%	25	5	W6	R6	3	265.16	266.82	SANDSTONE	Sst	1.66				268.13	269.79	Sst: coarse to very coarse grained, massive, 1 fracture at 80 degrees, 2 fractures at 90 degrees, all planar fractures SH beds at 90 degrees, coal spars, plant material. The fractre oriented 80 deg TCA is 30cm long.

30		269.70	271.33	1.63	1.52	93.25%										#N/A								
	20							100.00%			W6	R6	4	266.82	267.92	SANDSTONE	Sst	1.10				269.79	270.89	As above Sst
	20						>25	64.29%	10	2	W6	R3	3	267.92	268.34	CARBONACEOUS MUDSTONE	Carb Sh	0.42				270.89	271.31	Shale: blackish grey, very fine to fine grained, mumerous coal spars, several thin coal beds. The top and bottom of the interval are crushed and broken. Shiney, smooth pieces of shale, 1 fracture at 70 degrees.
														268.34	268.45	LOST CORE	Lost Core	0.11	0.11			271.31	271.42	*Rock Loss*
31		271.33	273.48	2.15	1.99	92.56%										#N/A								
	20, 21						>25	34.17%	10	8	W6	R3	4	268.45	270.44	SHALE	Sh	1.99				271.42	273.41	Shale, black, very fine to fine grained, massive. Sheared and fractured, numerous sks at 45, several zones of brokenshale (fault zone) some calcite along fracture (shoe was packed).
														270.44	270.60	LOST CORE	Lost Core	0.16	0.16			273.41	273.57	*Rock Loss*
32		273.48	274.12	0.64	0.56	87.50%										#N/A								
	21						>25	50.00%	10	3	W6	R4	2	270.60	271.16	SHALE	Sh	0.56				273.57	274.13	As above shale exept for first 28cm are broken and crushed chunks of SH, many chunks have sks on them.
														271.16	271.24	LOST CORE	Lost Core	0.08	0.08			274.13	274.21	*Rock Loss*
33		274.12	276.07	1.95	1.78	91.28%										#N/A								
	21/22						4	80.00%	25	10	W6	R4	2	271.24	272.04	SHALE	Sh	0.80				274.21	275.01	As above, shale all fr at 90.
	21/22													272.04	272.14	SHALE	Sh	0.10			07644	273.88	273.98	*Roof Sample, part of above Sh*
	22						2	81.82%	20	8	W6	R0	3	272.14	272.36	COAL	Coal	0.22		Seam 4	07645	273.98	294.20	Dull and bright, bard solid, bubbled vigarosly, massive pyrite about 0.5%
	22										W6	R4	1	272.36	272.41	SILTSTONE	Sltst	0.05		Seam 4	07646	274.20	274.25	Grey, medium to fine grained, massive
														272.41	272.51	LOST CORE	Lost Core	0.10	0.10	Seam 4	ns	275.38	275.48	*Rock Loss*
	22						>25	0.00%	10	4	W6	R0	0	272.51	272.73	COAL	Coal	0.22		Seam 4	07647	274.25	274.47	Crushed coal, but like above
	22										W6	R4	1	272.73	272.78	SILTSTONE	Sltst	0.05		Seam 4	07648	274.47	274.52	As above Sltst
	22/23						4	44.12%			W6	R0	2	272.78	273.12	COAL	Coal	0.34		Seam 4	08643	274.52	274.86	As above coal
														273.12	273.19	LOST CORE	Lost Core	0.07	0.07	Seam 4	ns	276.09	276.16	*Coal Loss*
34		276.07	277.97	1.90	1.51	79.47%										#N/A								
														273.19	273.33	LOST CORE	Lost Core	0.14	0.14	Seam 4	ns	276.16	276.30	*Coal Loss*
	23													273.33	273.43	SHALE	Sh	0.10			07649	275.03	275.13	Floor Sample, part of below Sh
	23						7	38.64%	25	10	W6	R3	2	273.43	273.77	SHALE	Sh	0.34				276.30	276.64	Shale, blackish brown, medium to fine grained. Massive, top 5cm broken, bottom 15cm broken, fractures, all fractures at 90 deg TCA. fractures at 90 deg TCA.
	23						1	93.46%	25	12	W6	R6	3	273.77	274.84	SANDSTONE	Sst	1.07				276.64	277.71	Sst. Light grey, massive, coarse to very coarse grained, plant material, coal spars, shale bed at 90 deg, two large calcite veins at 70 deg TCA.
														274.84	275.09	LOST CORE	Lost Core	0.25	0.25			277.71	277.96	*Rock Loss*
35		277.97	279.97	2.00	2.00	100.00%										#N/A								
	23						4	68.12%	25	11	W6	R7	3	275.09	275.78	SANDSTONE	Sst	0.69				277.96	278.65	Light grey, coarse to very coarse grained, massive, 1 sks at 45 degrees, 3 fractures at 90 degrees, 1 very large (covers whole core).
	23						2	0.00%	10	8	W6	R7	3	275.78	275.89	COAL	Coal	0.11				278.65	278.76	Dull and bright, black, bubbled for 15min.
	23						4	96.67%	10	15	W6	R7	3	275.89	277.09	SANDSTONE	Sst	1.20				278.76	279.96	As above Sst, except more plant materail and coal spars.
36		279.97	281.97	2.00	2.00	100.00%										#N/A								
	23, 24						1	100.00%	30	15	W6	R7	4	277.09	279.09	SANDSTONE	Sst	2.00				279.96	281.96	Sandstone, white grey, coarse grained
37		281.97	284.97	3.00	1.84	61.33%										#N/A								
	24						6	100.00%	25	15	W6	R7	4	279.09	280.93	SANDSTONE	Sst	1.84				281.96	283.80	Sst: light grey, massive, very coarse to coarse grained, minor amount of plant material "stick up core" very solid.
														280.93	280.98	LOST CORE	Lost Core	0.05	0.05			283.80	283.85	*Rock Loss*
38		284.97	285.97	1.00	1.99	199.00%										#N/A								
	24, 25						3	100.00%	25	15	W6	R7	4	280.98	282.97	SANDSTONE	Sst	1.99				283.85	285.84	As above Sst, all fractures 90 degrees TCA.
39		285.97	287.85	1.88	2.00	106.38%										#N/A								
	25, 26						2	106.00%	25	15	W6	R7	4	282.97	284.97	SANDSTONE	Sst	2.00				285.84	287.84	As above Sst, all fractures 90 degrees TCA.
40		287.85	290.85	3.00	2.92	97.33%										#N/A								
	26, 27						1	100.00%	25	15	W6	R7	4	284.97	287.89	SANDSTONE	Sst	2.92				287.84	290.76	As above Sst all fractures at 90 degrees TCA.
														287.89	287.97	LOST CORE	Lost Core	0.08	0.08			290.76	290.84	*Rock Loss*
41		290.85	293.85	3.00	2.98	99.33%										#N/A								
	27,28						4	100.00%	25	15	W6	R7	4	287.97	290.95	SANDSTONE	Sst	2.98				290.84	293.82	As above Sst except numberous coal spars, all fracutures at 90 degrees TCA
														290.95	290.97	LOST CORE	Lost Core	0.02	0.02			293.82	293.84	*Rock Loss*
42		293.85	296.81	2.96	2.95	99.66%										#N/A								
	28, 29						3	96.27%	25	15	W6	R7	4	290.97	293.92	SANDSTONE	Sst	2.95				293.84	296.79	As above Sst, all fractures at 90 degrees TCA.
														293.92	293.93	LOST CORE	Lost Core	0.01	0.01			296.79	296.80	*Rock Loss*
43		296.81	299.73	2.92	2.92	100.00%										#N/A								
	29, 30						3	96.58%	25	15	W6	R7	4	293.93	296.85	SANDSTONE	Sst	2.92				296.80	299.72	As above Sst, all fractures at 90 degrees TCA.
44		299.73	302.35	2.62	2.62	100.00%										#N/A								
	30, 31						1	100.00%	25	15	W6	R7	4	296.85	299.47	SANDSTONE	Sst	2.62				299.72	302.34	As above Sst, 1 fracture at 90 degrees TCA.
45		302.35	304.15	1.80	1.80	100.00%										#N/A								
	31						1	100.00%	25	15	W6	R7	4	299.47	301.27	SANDSTONE	Sst	1.80				302.34	304.14	As above Sst, 1 fracture at 90 degrees TCA.
46		304.15	305.85	1.70	1.58	92.94%										#N/A								
	31, 33						3	100.00%	25	15	W6	R7	4	301.27	302.85	SANDSTONE	Sst	1.58				304.14	305.72	As above Sst, all fractures 90 degrees TCA.
47		305.85	308.35	2.50	2.62	104.80%										#N/A								
	32, 33						3	100.00%	25	15	W6	R7	4	302.85	305.47	SANDSTONE	Sst	2.62				305.72	308.34	As above Sst, all fracutres 90 degrees TCA.
48		308.35	309.37	1.02	1.02	100.00%										#N/A								
	33						2	100.00%	25	15	W6	R7	4	305.47	306.49	SANDSTONE	Sst	1.02				308.34	309.36	As above Sst, all fractures 90 degrees TCA.
49		309.37	311.86	2.49	2.50	100.40%										#N/A								
	34						5	81.64%	25	15	W6	R7	4	306.49	308.46	SANDSTONE	Sst	1.97				309.36	311.33	Plant material, light grey very coarse to corase grained, massive. 1 large fracture at 70 deg TCA. Rest off the fractures at 90 degrees TCA. A few thinly laminated shale beds at 90 degrees.
	34													308.46	308.56	SANDSTONE	Sst	0.10			07951	311.37	311.52	Roof Sample, part of above Sst
	34						>25	0.00	20	7	W6	R0	4	308.56	308.99	COAL	Coal	0.43		Seam 3	07650	311.52	311.95	Black, dull and bright (60/40), bubbled for 10 min. Numberous SS, solid but sheared. Minor amount of massive py--> no calcite.
50		311.86	314.86	3.00	3.10	103.33%										#N/A								
	34						3	64.52%	25	6	W6	R0	4	308.99	309.30	COAL	Coal	0.31		Seam 3	07952	311.94	312.25	As above coal.
	34						2	56.00%	25	7	W6	R3	4	309.30	309.55	SILTSTONE	Sltst	0.25		Seam 3	07953	312.25	312.50	Dark grey, medium to fine grained, carbionatious material, coal spars.
	34													309.55	310.15	COAL	Coal	0.60		Seam 3	07954	312.50	313.10	As above coal
	34													310.15	310.54	COAL	Coal	0.39		Seam 3	07955	313.10	313.49	As above coal
	35													310.54	310.64	COALY MUDSTONE	Coaly Sltst	0.10			07956	313.49	313.59	Floor Sample, part of below Carb Sltst
														310.64	310.76	COALY MUDSTONE	Coaly Sltst	0.12						Coaly siltstone, dark grey medium to fine grained, mumerous coal beds/stringers/spars under the coal, thinning towards the bottom. All sks at 90 degres, all fractures at 90 degrees.
	35						14	62.58%	20	10	W6	R3	4	310.76	312.09	CARBONACEOUS SILTSTONE	Carb Sltst	1.33				313.51	314.96	Carbonatious siltstone, dark grey medium to fine grained, mumerous coal beds/stringers/spars under the coal, thinning towards the bottom. All sks at 90 degres, all fractures at 90 degrees.
51		314.86	317.86	3.00	1.90	63.33%										#N/A								
	35							100.00%			W6	R3	3	312.09	312.90	SILTSTONE	Sltst	0.81				314.96	315.77	Dark grey, medium to fine grained, massive, two large healed fractures at 10 degrees. Filled with calcite.
	35						2	0.00%	25	7	W6	R3	3	312.90	313.02	CLAYSTONE	Clyst	0.12				315.77	315.89	Light grey, massive, 2 fractures at 90 degrees
	35						1	91.49%	10	1	W6	R4	3	313.02	313.49	SANDSTONE	Sst	0.47				315.89	316.36	Light grey, coarse to very coarse grained, massive, 15cm zone of rock flour
	36							100.00%			W6	R4	4	313.49	313.74	SHALE	Sh	0.25				316.36	316.61	Black, massive very fine to fine grained.
	36						3	84.00%	25	7	W6	R3	3	313.74	313.99	SILTSTONE	Sltst	0.25				316.61	316.86	As above Sltst, all beds at 90 degrees, 2 fractures at 90 degrees.
52		317.86	318.21	0.35	1.34	382.86%										#N/A								
	36, 37						2	94.78%	25	9	W6	R7	4	313.99	315.33	SANDSTONE	Sst	1.34				316.86	318.20	Light grey, coarse to very coarse grained, massive, there is a series of thin laminated shale beds at 85 degrees, plant material, coal spars.
53		318.21	320.87	2.66	2.66	100.00%										#N/A								
	37						4	84.62%	20	10	W6	R4	3	315.33	315.98	SILTSTONE	Sltst	0.65				318.20	318.85	Dark grey, medium to fine grained, massive. 3 healed fractures at 45 degrees TCA. One 5 cm fault zone filled with rock flower.
	37						3	100.00%	20	15	W6	R7	4	315.98	317.99	SANDSTONE	Sst	2.01				318.85	320.86	As above Sst
54		320.87	322.03	1.16	1.41	121.55%										#N/A								
	38						1	93.46%	20	15	W6	R7	4	317.99	319.06	SANDSTONE	Sst	1.07				320.86	321.93	As above Sst
	38						1	67.65%	25	7	W6	R4	4	319.06	319.40	SHALE	Sh	0.34				321.93	322.27	Dark grey, medium to fine grained, massive. One fracture at 90 degrees TCA. Broken in the shoe.
55		322.03	323.52	1.49	1.14	76.51%										#N/A								
	38						>25	39.34%	25	6	W6	R4	4	319.40	320.01	SILTSTONE	Sltst	0.61				322.27	322.88	As above Sltst.
	38						5	64.15%	25	6	W6	R7	3	320.01	320.54	SANDSTONE	Sst	0.53				322.88	323.41	As above Sst.
														320.54	320.64	LOST CORE	Lost Core	0.10	0.10			323.41	323.51	*Rock Loss*
56		323.52	326.47	2.95	2.92	98.98%										#N/A								
	38,39						5	89.73%	25	15	W6	R7	3	320.64	323.56	SANDSTONE	Sst	2.92				323.51	326.43	As above Sst, except first 30cm is rubbly and broken. One sks at 45 degrees, 2 fracrures at 90°.
														323.56	323.59	LOST CORE	Lost Core	0.03	0.03			326.43	326.46	*Rock Loss*
57		326.47	329.47	3.00	2.99	99.67%										#N/A								

	40						16	69.90%	25	10	W6	R4		323.59	326.58	LAMINITE	IB Sh/Sst	2.99				326.46	329.45	Interbedded 60% Sst, 40% Sh. Sst: light grey, coarse to very coarse grained. Thin to thinly laminated, beds at 90 degrees TCA. Sh: black, very fine grained, thinly laminated beds at 90 degrees. All fractures are planar at 90 degrees.
														326.58	326.59	LOST CORE	Lost Core	0.01	0.01			329.45	329.46	*Rock Loss*
58		329.47	332.47	3.00	3.07	102.33%										#N/A								
	41/42						>25		10	2	W6	C2		326.59	326.64	COAL	Coal	0.05				329.46	329.51	Broken/sheared/falling appart, dull bright coal.
	41/42						12	91.72%	25	14	W6	R4		326.64	329.66	LAMINITE	IB Sh/Sst	3.02				329.51	332.53	As above Sltst/Sh unit. All fractures at 90 degrees (planar). Two calcite veins at 90 degrees. Falls apart along bedding, planar.
59		332.47	335.47	3.00	2.41	80.33%										#N/A								
	42						>25	0.00%	20	7	W5	R5	3	329.66	331.07	SILTSTONE	Sltst	1.41				332.53	333.94	Medium grey, fine grained Sltst, possible fault at top of interval, low angle joints 15 degrees TCA.
	42													331.07	331.27	SILTSTONE	Sltst	0.20			07957	334.30	334.50	*Roof Sample, part of above Sltst*
	42						>25	0.00%	10	3	W5	R2	1	331.27	331.89	COAL	Coal	0.62		Seam 1	07958	334.50	335.12	Crushed, very light, dominantly bright coal with poor recovery, possible inclusions of Sltst due to high degree of crushing.
														331.89	332.05	SANDY SHALE	Shale	0.16		Seam 1	07958	335.12	335.28	***NB** Originally logged at the rig as coal, but the Geophysical Logs show Shale for this interval*
														332.05	332.07	COAL	Coal	0.02		Seam 1	07958	335.28	335.30	*Part of above Coal*
														332.07	332.59	LOST CORE	Lost Core	0.52	0.52	Seam 1	ns	334.76	335.28	*Coal Loss*
60		335.47	337.47	2.00	1.24	62.00%										#N/A								
	42, 43						>25	0.00%	10	3	W5	R2	1	332.59	332.80	COAL	Coal	0.21		Seam 1	07958	335.30	336.10	Coal continued from above, crushed, mainly bright, very light, trace sulphides.
														332.80	333.06	LOST CORE	Lost Core	0.26	0.26	Seam 1	ns	335.54	335.80	*Coal Loss*
														333.06	333.20	LOST CORE	Lost Core	0.14	0.14	Seam 1	ns	335.80	335.94	*Rock Loss*
														333.20	333.28	LOST CORE	Lost Core	0.08	0.08	Seam 1	ns	335.94	336.02	*Coal Loss*
	42, 43						1	100.00%	25	7	W5	R5		333.28	333.68	COAL	Coal	0.40		Seam 1	07959	336.10	336.50	Logged as Medium grey, fine grained Sltst, massive; however, analysis indicates coal as does geophysical log.
	42, 43						>25	0.00%	10	3	W5	R2		333.68	333.76	COAL	Coal	0.08		Seam 1	07960	336.50	336.58	Black, crushed, muddy coal with hight % of brights (60/40)
	42, 43						1	100.00%	25	7	W5	R5		333.76	333.98	COAL	Coal	0.22		Seam 1	07961	336.58	36.80	Logged as Medium grey, fine grained Sltst, massive; however, analysis indicates coal as does geophysical log.
	42, 43						>25	0.00%	10	3	W5	R2		333.98	334.08	SHALY COAL	Shaly Coal	0.10		Seam 1	07962	336.80	336.90	Black, crushed, bright dull with trace sulphides, no bubbling.
	42, 43						1	100.00%	25	7	W5	R5		334.08	334.30	COAL	Coal	0.22		Seam 1	07963	336.90	337.12	Logged as Medium grey, fine grained Sltst, massive; however, analysis indicates coal as does geophysical log.
	42, 43						>25	0.00%	10	3	W5	R2		334.30	334.38	COALY MUDSTONE	Coaly Shale	0.08		Seam 1	07964	337.81	337.89	Black, crushed, bright/dull coal, no gasses escaping (likely) goes into next run, samaple measured back from blockdue to poor recovery on run, there is not a gap in sampling.
														334.38	334.42	LOST CORE	Lost Core	0.04	0.04		ns	337.05	337.33	*Rock Loss*
61		337.47	338.27	0.80	0.75	93.75%										#N/A								
	43						8		10	9	W6	R3	3	334.42	335.17	COALY MUDSTONE	Coaly Sh	0.75				337.33	338.08	Shale: black, massive very fine to fine grained, very carbonacious. Lots of thin coal beds, coal spars (30% of interval is coal) All fractures at 90 degrees.
														335.17	335.39	LOST CORE	Lost Core	0.22	0.22			338.08	338.13	*Rock Loss*
62		338.27	339.12	0.85	0.84	98.82%										#N/A								
	43						7	0.74	10	10	W6	R3	3	335.39	336.23	SHALE	Sh	0.84				338.13	338.97	Shale, light grey/black, very fine grained to fine grained. Massive. Carbonacious section 15cm from the bottom. All fractures at 90 degrees, massive pyrite along fractures (70% average).
														336.23	336.24	LOST CORE	Lost Core	0.01	0.01			338.97	338.98	*Rock Loss*
63		339.12	341.91	2.79	2.69	96.42%										#N/A								
	44						16	24.11%	25	7	W6	R3	3	336.24	337.36	SHALE	Sh	1.12				338.98	340.10	Shale as above, but two small broken zones, one right at the top, and the other 25cm from the bottom, all fractures as 90 degrees TCA.
	44						1	65.00%	20	15	W6	R3	3	337.36	337.76	SILTSTONE	Sltst	0.40				340.10	340.50	Dark grey, medium to fine grained, massive, 1 fracture at 11 degrees filled with calcite.
	44						3	92.86%	25	15	W6	R6	3	337.76	338.46	SANDSTONE	Sst	0.70				340.50	341.20	Light grey, coarse to very coarse grained, massive, a few shale beds at 90 degrees, all fractures at 90 degrees TCA.
	44						1	100.00%	10	15	W6	R3	4	338.46	338.93	SILTSTONE	Sltst	0.47				341.20	341.67	As above Sltst, except for 1 calcite vein at 18 degrees, and another at 90. One sks at 45 degrees TCA.
														338.93	338.95	LOST CORE	Lost Core	0.02	0.02			341.67	341.69	*Rock Loss*
64		341.91	344.03	2.12	2.20	103.77%										#N/A								
	44/45						3	77.42%	10	10	W6	R3	3	338.95	339.26	SILTSTONE	Sltst	0.31				341.69	342.00	As above Sltst, 2 sks at 45 degrees, 1 fracture at 90 degrees.
	45						5	100.00%	10	15	W6	R7	4	339.26	340.93	SANDSTONE	Sst	1.67				342.00	343.67	Light grey coarse to very coarse grained thinly to medium laminated, SH beds at 60 degrees, fracture at 68 degrees numerous coal spears and plant materal.
	45						2	45.45%	10	9	W6	R3	3	340.93	341.15	SHALE	Sh	0.22				343.67	343.89	Black, massive, very fine grained, fractures at 90 degrees TCA.
65		344.03	346.60	2.57	2.67	103.89%										#N/A								
	45						7	44.26%	10	6	W6	R3	3	341.15	341.76	LAMINITE	IB Sltst/SH	0.61				343.89	344.50	90% Sh, 10% Sltst. Shale: thinly to medium laminated, fine to very fine grained. Sltst: dark grey, medium grained, beds at 90 degrees TCA. 6 fractures at 50 degrees , 1 sks at 45.
	45/46						4	100.00%	25	15	W6	R6	3	341.76	343.67	SANDSTONE	Sst	1.91				344.50	346.41	Light grey, coarse to very coarse grained. Medium to thickly laminated with numerous coal spars and SH beds. 2 SLT at 90 degrees TCA. 6 fractures at 50 degrees , 1 sks at 45. beds at 80 degrees, 1 fracture at 45 degrees, the rest are at 90 degrees TCA.
	46							100.00%			W6	R3	3	343.67	343.82	SILTSTONE	Sltst	0.15				346.41	346.56	Dark grey, medium to fine grained, massive.
66		346.60	347.60	1.00	0.78	78.00%										#N/A								
	46										W6	R3	2	343.82	344.50	SILTSTONE	Sltst	0.68				346.56	347.24	Same as above, but broken up during drilling
	46										W6	R3	1	344.50	344.60	SHALE	Sh	0.10				347.24	347.34	Black, very fine grained shale
														344.60	344.72	LOST CORE	Lost Core	0.12	0.12			347.34	347.46	*Rock Loss*
67		347.60	348.00	0.40	0.25	62.50%										#N/A								
	46						4	0.00%	25	10	W6	R3	1	344.72	344.97	SILTSTONE	Sltst	0.25				347.46	347.71	Darkish brown massive, medium to fine grained. Two fractures at 70 degrees, two fractures at 90 degrees.
														344.97	345.03	LOST CORE	Lost Core	0.06	0.06			347.71	347.77	*Rock Loss*
68		348.00	350.00	2.00	2.00	100.00%										#N/A								
	46						6	0.00%	20	10	W5	R3	1	345.03	345.56	SILTSTONE	Sltst	0.53				347.77	348.30	Same as above, except 3 fractures at 75 degrees, 2 fractures at 90 degrees.
	46						>50	37.18%	25	9	W6	R3	1	345.56	347.03	LAMINITE	IB Sltst/Sst	1.47				348.30	349.77	Broken and crushed, numerous rubble zones, 2 fractures at 75 degrees, 3 fractures at 45 degrees, 8 fractures of 90 degrees TCA. Stopped fractures, irregular fractured Sst: light grey, coarse to very coarse grained, thinly tomedium laminated. Sltst: dark grey, fine to medium grained, thin to medium laminated. Coal spars and shale beds in Sst. Shale beds in Sst. Shale bed at 75 degres TCA. Irregular calcite in both Sst and Sltst. EOH

Geological Borehole Log: RAV-09-014

Client: CJV
Project: Raven
Logged By: Henry Kim, Sarah Newman

Hole Number: RAV-09-014
Date Hole Started: 25-Jun-09
Date Hole Finished: 27-Jun-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 111.95m
Depth of Casing: 24.00m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Interval Logged Lith	Interval Logged Length	Interval Logged Lost Core	Interval Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	24.41	OVERBURDEN	OVB	24.41						OVB
1		24.00	27.05	3.05	2.50	81.97%																		
	2						>25	95.24%	25	13	W6	R6	4	24.41	26.19	SANDSTONE	Sst	1.78						Light grey mg-cg massive Sst. Joints ~85°. Some w/ plant material. Coal lenses ~75°.
														26.19	26.29	SANDSTONE	Sst	0.10			07839	26.60	26.70	Roof Sample, part of above Sst
	2						>25				W6	R1	3	26.29	26.91	COAL	Coal	0.62		Seam 3	07840	26.70	27.10	Black, 70% bright, no gas, light, py up to 20% along joints.
														26.91	27.46	LOST CORE	Lost Core	0.55	0.55	Seam 3	ns			*Coal Loss*
2		27.05	29.63	2.58	2.47	95.74%										#N/A								
	2 & 3						>25				W6	R1	3	27.46	27.93	COAL	Coal	0.47		Seam 3	07841	27.10	27.57	Black, 80% bright, no gas, light, py (massive & stringers) up to 5%.
														27.93	28.03	SILTSTONE	Sltst	0.10			07842	27.57	27.67	Floor Sample, part of below Sltst
	2 & 3						15	70.00%	10 & 25	11	W6	R5	4	28.03	29.93	SILTSTONE	Sltst	1.90						Dark grey to black, fg, massive Sltst. Thin mud layer at 28.0m, joints 75-90°, some sks .
														29.93	30.04	LOST CORE	Lost Core	0.11	0.11					*Rock Loss*
3		29.63	32.68	3.05	3.05	100.00%										#N/A								
	3						2	100.00%	25	12	W6	R5	4	30.04	30.49	SILTSTONE	Sltst	0.45						Dark grey to black, fg, massive Sltst. Joints ~85°.
	3						6	96.92%	10 & 25	15	W6	R6	4	30.49	33.09	SANDSTONE	Sst	2.60						Light grey,mg-cg massive Sst. Most joints 85-90°. Two 30° sks . Coal lenses/stringers along 3 joints.
4		32.68	35.73	3.05	3.07	100.66%										#N/A								
	3 & 4						5	67.43%	10	15	W6	R6	4	33.09	36.16	SANDSTONE	Sst	3.07						Light grey, mg-cg, massive Sst. Coal lenses near top. Joints ~90. vertical calc. Veins near bottom and along sks joints (40°).
5		35.73	38.78	3.05	2.98	97.70%										#N/A								
	4 & 5						9	91.95%	25	15	W6	R6	4	36.16	39.14	SANDSTONE	Sst	2.98						Sst same as above. 20cm long vertical joint at top. Thick calc vein & vug & diss py at 36.8m, most joints 45-75°.
														39.14	39.19	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
6		38.78	41.83	3.05	2.57	84.26%										#N/A								
	5						1	100.00%	25	15	W6	R6	4	39.19	41.49	SANDSTONE	Sst	2.30						Sst, same as above, massive.
	5						3	74.07%	25	8	W6	R5	4	41.49	41.76	SHALY COAL	SHC	0.27		Seam 2	ns			***NB*** *Geophysical Log shows SHC for this interval.* Dark grey to black, fg Sltst w/coal lens, seams. Partly IB w/ Sst. Possible coal seam but all washed out.
														41.76	42.24	LOST CORE	Lost Core	0.48	0.48	Seam 2	ns			*SHC Loss*
7		41.83	44.88	3.05	2.82	92.46%										#N/A								
														42.24	42.47	LOST CORE	Lost Core	0.23	0.23	Seam 2	ns			*SHC Loss*
	5 & 6						>25		25	8	W6	R5	4	42.47	44.29	SILTSTONE	Sltst	1.82						Sltst as above. Highly fractured. Some coal lenses/seams.
	5 & 6						10		25	9	W6	R6	4	44.29	45.29	SANDSTONE	Sst	1.00						Light grey mg-cg Sst IB w/ Sltst. 45-90° joints w/plant material.
8		44.88	47.72	2.84	2.83	99.65%										#N/A								
	6 & 7						19	75.50%	25	10	W5	R5	3	45.29	47.78	SANDSTONE	Sst	2.49						Light grey fg-mg tighly bedded Sst w/ thin >1mm SLT beds. Bedding avg 80°. Trace qtz stringers and sulphides jointing parallel to bedding and 60°. 10cm gradational contact 70°.
	6 & 7						4	50.00%	25	7	W6	R5	3	47.78	48.12	SILTSTONE	Sltst	0.34						Med grey, vfg-fg, tightly bedded Sltst with trace sulphides along bedding >1%.
														48.12	48.13	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
9		47.72	50.77	3.05	3.05	100.00%										#N/A								
	7 & 8						13	91.80%	25	13	W5	R5	4	48.13	51.18	SILTSTONE	Sltst	3.05						As above mg fg tigtly bedde Sltst w/ beds oriented 70-85°. Joints 25-30°. Sharp 8 smooth with some sks .
10		50.77	53.82	3.05	3.10	101.64%										#N/A								
	8						4	90.00%	20	8	W5	R4	4	51.18	51.38	SILTSTONE	Sltst	0.20						As above but with thin coal beds and carb stringers along jointing plane. 40°.
	8													51.38	51.52	SILTSTONE	Sltst	0.14			07843	51.70	51.84	*Roof Sample, part of above Sltst*
	8						8	0.00%	20	6	W5	R4	3	51.52	51.75	SHALY COAL	SHC	0.23			07844	51.84	52.07	***NB*** *Originally logged at the rig as coal, but the Geophysical Log show SHC.* Black dull coal w/ thin bright bands trace microcleats, trace carb.
	8						11	0.00%	20	5	W5	R4	3	51.75	52.38	CLAYSTONE	Clyst	0.63			07845	52.07	52.70	Dark grey Sltst with abundant plant material. Trace sulphides on fracture surfaces ~ 2-5%. Thin bright coal beds hard to differentiate dull coal from Sltst, poor quality (?). Joints cut
	8						>25	0.00%	20	4	W5	R4	3	52.38	52.85	SHALY COAL	SHC	0.47			07846	52.70	53.17	***NB*** *Originally logged at the rig as coal, but the Geophysical Log show SHC.* Black dull coal w/ >5% bright bands. Fairly heavy. Trace microcleats. Trace sulphides.
	8						6	26.09%	20	8	W5	R4	3	52.85	53.31	SILTSTONE	Sltst	0.46			07847	53.17	53.63	Medium grey fg tightly bedded Sltst w/ trace plant material joints 80 & 60°. Trace sulphides.
	8						>25	0.00%	0	3	W4	R4	1	53.31	54.16	SHALY COAL	SHC	0.85			07848	53.63	54.48	***NB*** *Originally logged at the rig as coal, but the Geophysical Log show SHC.* Dull-bright (90/10) black crushed coal. High silt content. Very heavy. Possibly CST but difficult to tell due to high
	8						0				W4	R4	3	54.16	54.28	SILTSTONE	Sltst	0.12			07849	54.48	54.60	Dull medium grey Sltst. Appears to be slightly clay altered.
11		53.82	56.64	2.82	2.72	96.45%										#N/A								
	8 & 9						15	69.30%	20	20	W5	R4	4	54.28	56.56	SILTSTONE	Sltst	2.28						Med grey vfg-fg Sltst. Very tightly bedded smooth fracture surfaces, trace carbonated stringers and plant material.
	8 & 9													56.56	56.70	SILTSTONE	Sltst	0.14			07850	57.16	57.30	*Roof Sample, part of above Sltst*
	8 & 9						3	33.33%	20	8	W5	R4	4	56.70	57.00	COALY MUDSTONE	Coaly Shale	0.30			07701	57.30	57.60	***NB*** *Not shown on the Geophysical Log, Geophysical Log shows Shale.* Black dull bright coal (80/20) trace carb stringers.
														57.00	57.05	LOST CORE	Lost Core	0.05	0.05		ns			*Rock Loss*
12		56.64	59.69	3.05	2.26	74.10%										#N/A								
	9										W5	R4	4	57.05	57.10	COALY MUDSTONE	Coaly Shale	0.05			07701	57.60	57.64	***NB*** *Not shown on the Geophysical Log, Geophysical Log shows Shale.* As coal above.
	9						11	37.76%	25	8	W5	R4	3	57.10	58.08	CARBONACEOUS MUDSTONE	Carb SH	0.98			07702	57.64	58.62	Dark grey/black Clyst dirty brown appearance. 5% bright. Mostly dul w/ abundant thin silty laters. Trace carb.
	9 & 10						>25	20.33%	10	6	W5	R3	1	58.08	58.61	COAL	Coal	0.53		Seam 1	07703	58.62	60.00	#1 seam? Much lighter, dominantely bright coal w/ 15cm gougy zone, does not appear to have carb or sulphides.
	9 & 10													58.61	59.31	COAL	Coal	0.70		Seam 1	07704	60.00	60.70	*Part of above Coal*
														59.31	60.14	LOST CORE	Lost Core	0.83	0.83	Seam 1	ns			*Coal Loss*
13		59.69	62.74	3.05	2.85	93.44%										#N/A								
	10						10	0.00%	25	7	W5	R3	2	60.14	60.40	COAL	Coal	0.26		Seam 1	07704	60.70	60.96	As above coal, but less crushed. Still highly broken. Dominantly bright coal, not as light.
	10													60.40	60.54	SILTSTONE	Sltst	0.14			07705	60.12	60.26	*Floor Sample, part of below Sltst*
	10						>25	24.39%	25	6	W4	R4	3	60.54	62.63	SILTSTONE	Sltst	2.09						Med grey, vfg-fg Sltst w/ minor plant material, broken core, transitions into Sst, coarsens downwards. Massive w/ clay alteration and minor gouge.
	10						0	0.00%			W5	R4	4	62.63	62.99	SANDSTONE	Sst	0.36						Light grey, fg massive Sst.
														62.99	63.15	LOST CORE	Lost Core	0.16	0.16					*Rock Loss*
14		62.74	65.79	3.05	3.00	98.36%										#N/A								
	10						6	66.67%	25	13	W5	R5	4	63.15	63.93	SANDSTONE	Sst	0.78						Grey fg-mg weakly bedded 70° Sst. Contact sharp 80°. Trace plant material.
	11						13	74.32%	25	13	W5	R5	4	63.93	66.15	SILTSTONE	Slst	2.22						Med grey, fg massive Sltst w/ trace plant material.
														66.15	66.18	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
15		65.79	68.84	3.05	3.07	100.66%										#N/A								
	11 &						10	87.95%	25	13	W5	R5	4	66.18	69.25	SILTSTONE	Slst	3.07						Med grey fg massive Sltst w/ periodic sandy beds.
16		68.84	71.89	3.05	3.05	100.00%										#N/A								
	12						4	100.00%	25	13	W5	R5	4	69.25	72.30	SILTSTONE	Slst	3.05						As above Sltst. Trace carb. Massive rough jointing surfaces.
17		71.89	74.94	3.05	3.05	100.00%										#N/A								
	12 &						12	96.72%	25	13	W5	R5	4	72.30	75.35	SILTSTONE	Slst	3.05						As above joints 70°, sks on some joint planes.
18		74.94	77.99	3.05	3.05	100.00%										#N/A								
	13 &						1	100.00%	25	11	W5	R5	4	75.35	75.79	SILTSTONE	Slst	0.44						As above Sltst, med grey fg massive wk bedding 85°. Sharp contact w/ Sst 70°.
	13 &						3	100.00%	25	13	W5	R5	4	75.79	76.86	SANDSTONE	Sst	1.07						Light grey massive fg Sst. Wk bedding 85°. Sharp contact 85°.
	13 &						5	93.51%	25	14	W6	R5	4	76.86	78.40	SILTSTONE	Slst	1.54						Med grey fg massive Sltst.
19		77.99	81.04	3.05	3.10	101.64%										#N/A								
	14						8	91.94%	25	14	W6	R5	4	78.40	81.50	SILTSTONE	Slst	3.10						As above med grey fg massive Sltst.
20		81.04	84.09	3.05	3.00	98.36%										#N/A								
	15						14	0.93	25	14	W6	R5	4	81.50	84.50	SILTSTONE	Slst	3.00						As above, med grey fg massive Sltst w/ trace carb string weak bedding 90°.
21		84.09	87.14	3.05	3.04	99.67%										#N/A								
	15						3	100.00%	25	14	W6	R5	4	84.50	85.39	SILTSTONE	Slst	0.89						As above, med grey fg massive weakly bedding Sltst. Coarsens downwards to fg Sst.
	15						1	100.00%	25	14	W6	R5	4	85.39	86.99	SANDSTONE	Sst	1.60						Grey, fg-cg Sst, coarsens downards. Ending in a sharp irregular shaped contact 80°. Trace plant material wk bedding 80°.
	15						2	63.64%	25	10	W6	R5	4	86.99	87.54	SILTSTONE	Slst	0.55						Med grey, fg massive Sltst
22		87.14	90.19	3.05	3.08	100.98%										#N/A								
	16 &						4	91.45%	25	12	W6	R5	3	87.54	88.71	SILTSTONE	Slst	1.17						As above w/ slight coarsening downwards contact 85°.
	16 &						10	95.29%	25	13	W6	R5	4	88.71	90.62	SANDSTONE	Sst	1.91						Light mg-cg Sst with trace plant material. Wk bedding 80°, jointing 80 & 25°. Trace carbonates.
23		90.19	93.24	3.05	3.00	98.36%										#N/A								
	17						1	87.18%	25	13	W6	R5	4	90.62	91.01	SANDSTONE	Sst	0.39						As above massive cg Sst, jointing 25° with carbonate mineralization along jointing plane, ends in sharp contact 90°.
	17						5	96.69%	25	12	W6	R5	4	91.01	92.52	SILTSTONE	Slst	1.51						Fg massive Sltst coarsens downwards with increasing abundance of sand. Sharp contact 75°.
	17						3	93.59%	25	11	W6	R5	4	92.52	93.30	SANDSTONE	Sst	0.78						Light grey fg-mg Sst with trace plant material in sharp but irregular contact with Sltst abrupt contact ~90°.
	17						2	100.00%	25	10	W6	R5	4	93.30	93.62	SILTSTONE	Slst	0.32						Med grey fg massive Sltst.

														93.62	93.65	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
24		93.24	96.29	3.05	3.00	98.36%										#N/A								
	17 &						9	91.23%	25	13	W5	R5	3	93.65	95.93	SILTSTONE	Slst	2.28						Drill marks and thinning of core. As above Sst. Contact is broken.
	17 &						4	100.00%	25	12	W5	R5		95.93	96.65	SANDSTONE	Sst	0.72						Light grey fg-mg massive Sst w/ trace plant material. Long 50cm low angle joint 5°. Coarsens downwards, trace sulphides along joints plane.
														96.65	96.70	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
25		96.29	99.34	3.05	3.02	99.02%										#N/A								
	18 &						8	85.38%	25	11	W6	R5	4	96.70	98.00	SANDSTONE	Sst	1.30						Light grey cg-fg Sst fires downward ending in an abrubt contact 90°. Trace plant material. Massive weakly bedded 85° trace sulphides.
	18 &						16	76.74%	20	9	W6	R5	4	98.00	99.72	SILTSTONE	Slst	1.72						Med. Grey fine grained massive Sltst
26		99.34	102.39	3.05	3.08	100.98%										#N/A								
	19						3	70.00%	20	11	W6	R5	3	99.72	100.62	SILTSTONE	Slst	0.90						As above Sltst w/ weak coarsening downwards. LC sharp but irregular shape. Join 20°.
	19						8	87.16%	25	12	W6	R5	4	100.62	102.80	SANDSTONE	Sst	2.18						Light grey, mg-cg Sst massive with a series of small (>5cm) low angle joints (~15-30°). Trace sulphides carbonates. And plant material. Wk bedding 85°.
27		102.39	105.44	3.05	2.90	95.08%										#N/A								
	19 &						>25	56.90%	20	7	W4	R5	3	102.80	105.70	UNDIFFERENTIATED BEDROCK	Volc Ash	2.90						Red Sst like, likely due to volcanic mud and ash. Fg massive, red colour increases with depth, small amount of white clasts, bombs (?)
														105.70	105.85	LOST CORE	Lost Core	0.15	0.15					*Rock Loss*
28		105.44	108.49	3.05	2.72	89.18%										#N/A								
	20 &						15	80.88%	25	12	W5	R5	3	105.85	108.57	UNDIFFERENTIATED BEDROCK	Volc Ash	2.72						As above red fg volc ash w/ more abuandant white clasts (1-2mm) then above. Jointing at 70°.
														108.57	108.90	LOST CORE	Lost Core	0.33	0.33					*Rock Loss*
29		108.49	111.54	3.05	3.05	100.00%										#N/A								
	21 &						1	100.00%	25	9	W5	R4	3	108.90	109.32	UNDIFFERENTIATED BEDROCK	Volc Ash	0.42						Red and green mixed fg-cg ash w/ abundant white clasts, broken contact with lower conglomerate.
	21 &						>25	49.43%	20	7	W5	R4	2	109.32	111.95	CONGLOMERATE	Congl	2.63						Core very broken mainly due to difficultues get it out of the tube. Green volc conglomerate. Mg trace carb >1%. EOH

Client: CJV
Project: Raven
Logged By: Henry, Sarah

Hole Number: RAV-09-015
Date Hole Started: June 27 2009
Date Hole Finished: July 1, 2009
Hole Orientation: -90 degrees

Total Hole Depth: 368.50m
Depth of Casing: 13.5 m
Core Size: HQ

Geological Borehole Log: RAV-09-015

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery		RQD		Fractures		Alt'n & Weath.	Hardness		G.P.L. Corrected			Intervals Logged				Samples (Driller's Depths)			Description
					Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage		Prefix	Core Quality	From (m)	To (m)		Lithology	Interval Length	Core Loss	Strat	Number	From (m)	To (m)	
														0.00	13.50	OVERBURDEN	OVBDN	13.50						Overburden
1	1	13.50	14.90	1.40	1.02	72.86%	5	0.85	25	10	W5	R5	4	13.50	14.52	SILTSTONE	SLT	1.02						Light - med grey IB w/ SLT and SST, finly IB, coarsening downwards as a general trend. Likely gradational contact zone. Joint 70°. Dominantly SLT (70/30).
														14.52	15.16	LOST CORE	LOST CORE	0.64						Lost Core: Prbly Sltst
2	1 & 2	14.90	17.95	3.05	3.00	98.36%										#N/A								
					0.34		1		25	10	W5	R5	4	15.16	15.50	SILTSTONE	SLT	0.34						Med grey fg SLT, massive joint 80°.
					2.33		7		25	14	W5	R5	4	15.50	17.83	SANDSTONE	SST	2.33						Light grey fg SST. Bedding 80°. Very tighly bedded almost massive. Jointing repeats at 70°. IB w/ thin SLT layers as above.
					0.28		1	0.24	25	10	W6	R5	4	17.83	18.11	SILTSTONE	SLT	0.28						Med grey fg-v.fg SLT wé |5% thin SST beds, weakly crossbeds, bedding avg 80°.
3	2	17.95	21.00	3.05	3.05	100.00%										#N/A								
					0.45		0	-	-	-	W6	R5	4	18.11	18.56	SANDSTONE	SST	0.45						Light grey fg SST weakly bedded 80°
					0.65		0	0.65	25	12	W6	R5	4	18.56	19.21	SILTSTONE	SLT	0.65						As above, med grey fg SLT, IB w/ 2-5cm bands of fg SST ~80°.
					0.38		1	-	25	12	W6	R5	4	19.21	19.59	SANDSTONE	SST	0.38						Light grey fg SST w/ high $ SLT in matriz. Trace plant material.
					1.16		5	1.03	25	13	W6	R5	4	19.59	20.75	SILTSTONE	SLT	1.16						Med grey fg-.v.fg SLT, lacks SST beds found above, massive.
					0.41		2	-	20	10	W5	R5	4	20.75	21.16	SANDSTONE	SST	0.41						Light grey fg SST massive.
4	2 & 3	21.00	24.05	3.05	2.93	96.07%										#N/A								
					1.95		3	-	20	14	W6	R5	4	21.16	23.11	SANDSTONE	SST	1.95						Light grey fg SST massive. Small silty layers (5cm) w/ possibly worm burrows at top of section. Round sand lenses in silt layer.
					0.98		>25	0.43	10					23.11	24.09	SILTSTONE	SLT	0.98						Med grey fg massive SLT, SS on joints at 2 orientations: low angle ~10° and ~70°.
5	3 & 4	24.05	27.10	3.05	2.85	93.44%	>25		20	9	W6	R5	4	24.09	26.94	SILTSTONE	SLT	2.85						Med grey fg massive SLT as above. Broken core w/ possible 15cm fault at 24.36m. Low angle joints 10-40°.
6	4	27.10	30.15	3.05	2.80	91.80%	>25	0.14	20	6	W6	R5	3	26.94	29.74	SILTSTONE	SLT	2.80						As above fg med grey massive SLT.
7	5	30.15	33.20	3.05	2.95	96.72%	8	2.95	25	14	W6	R5	4	29.74	32.69	SILTSTONE	SLT	2.95						Med-dk grey fg massive SLT, most joints ~90°. 25° joints at 31.7m and 33.2m.
8	5 & 6	33.20	36.25	3.05	2.95	96.72%	10	2.71	25	13	W6	R5	4	32.69	35.64	SILTSTONE	SLT	2.95						Dk grey fg massive SLT. Joints 75-90°.
9	6 & 7	36.25	39.30	3.05	3.20	104.92%	18	2.75	25	12	W6	R4	4	35.64	38.84	SILTSTONE	SLT	3.20						SLT as above. Few calc veins.
10	7	39.30	42.35	3.05	3.06	100.33%	8	3.06	25	14	W6	R5	4	38.84	41.90	SILTSTONE	SLT	3.06						SLT as above, all joints ~90°. Coal lens w/ mdst and py near bottom.
11	7 & 8	42.35	45.40	3.05	2.97	97.38%	4	2.91	25	14	W6	R5	4	41.90	44.87	SILTSTONE	SLT	2.97						SLT as above
12	8 & 9	45.40	48.45	3.05	3.10	101.64%	12	2.86	25	12	W6	R5	4	44.87	47.97	SILTSTONE	SLT	3.10						SLT as above. ~90° joints.
13	9	48.45	51.50	3.05	3.10	101.64%	11	2.87	25	12	W6	R5	4	47.97	51.07	SILTSTONE	SLT	3.10						SLT as above.
14	9 & 10	51.50	54.55	3.05	3.04	99.67%	10	2.76	25	11	W6	R5	4	51.07	54.11	SILTSTONE	SLT	3.04						SLT as above. 35° joint w/ calc. Py at 53.0m All other joints ~90°.
15	10 & 11	54.55	57.60	3.05	3.00	98.36%	11	2.58	25	14	W6	R5	4	54.11	57.11	SILTSTONE	SLT	3.00						SLT as above. Joints ~90°. SS joints w/ 1-2cm calc vein at 57.1m.
16	11 & 12	57.60	60.65	3.05	3.08	100.98%	7	3.08	25	15	W6	R5	4	57.11	60.19	SILTSTONE	SLT	3.08						SLT as above. ~90° joints, massive.
17	12	60.65	63.70	3.05	3.04	99.67%	10	2.76	25	14	W6	R4	4	60.19	63.23	SILTSTONE	SLT	3.04						Dk grey fg massive SLT. Most joints ~90°. One low angle joint (~25°) at 62.5m.
18	12 & 13	63.70	66.75	3.05	3.04	99.67%	17	2.81	25	13	W6	R5	4	63.23	66.27	SILTSTONE	SLT	3.04						SLT as above. Low angle 30-60° joints near top. Rest ~90°.
19	13 & 14	66.75	69.80	3.05	3.04	99.67%	9	3.04	25	15	W6	R5	4	66.27	69.31	SILTSTONE	SLT	3.04						SLT as above. ~40° joint at 68.8m.
20	1 4	69.80	72.85	3.05	3.06	100.33%	8	3.06	25	15	W6	R5	4	69.31	72.37	SILTSTONE	SLT	3.06						SLT as above, massive. All joints ~90°.
21	14 & 15	72.85	75.90	3.05	3.01	98.69%	7	2.94	25	14	W6	R5	4	72.37	75.38	SILTSTONE	SLT	3.01						SLT as above. Massive. Two ~50° joints, rest 90°.
22	15 & 16	75.90	78.95	3.05	3.01	98.69%	7	2.94	25	14	W6	R5	4	75.38	78.39	SILTSTONE	SLT	3.01						SLT as above. 40° joints near top and bottom.
23	16 & 17	78.95	82.00	3.05	3.05	100.00%	>25	1.70	20	5	W6	R5	4	78.39	81.44	SILTSTONE	SLT	3.05						SLT as above. Highly fractured small pieces w/ SS surface from 80.6m. Possible fault zone? Thin calc films along fracture surfaces.
24	17	82.00	85.05	3.05	3.00	98.36%										#N/A								
					2.00		>25	-	10	2	W6	R6	1	81.44	83.44	SILTSTONE	SLT	2.00						Dark grey fg SLT highly fractured into small pieces. Fault zone? Thin calc films along fracture surfaces.
					0.23		1	0.23	25	10	W6	R6	4	83.44	83.67	SANDSTONE	SST	0.23						Light grey mg-cg massive SST. 90° contact w/ lower, upper SLT, joint 45°.
					0.77		7	0.69	10, 25	14	W6	R5	4	83.67	84.44	SILTSTONE	SLT	0.77						SLT as above, joints ~40°.
25	17 & 18	85.05	88.10	3.05	3.00	98.36%	14	2.25	25	13	W6	R5	4	84.44	87.44	SILTSTONE	SLT	3.00						SLT as above. Vertical fracture 24cm long at top w/ calc film. 25cm long low angle fracture (20°) at 85.55m w/ calc film. Other joints ~90°.
26	18 & 19	88.10	91.15	3.05	3.02	99.02%	8	2.91	25	14	W5	R5	4	87.44	90.46	SILTSTONE	SLT	3.02						Med grey fg massive SLT.
27	19	91.15	94.20	3.05	3.05	100.00%	5	3.02	25	14	W6	R5	4	90.46	93.51	SILTSTONE	SLT	3.05						Med grey fg massive SLT traee carb along jointing surface 75°.
28	20	94.20	97.25	3.05	3.10	101.64%	3	3.05	25	15	W6	R5	4	93.51	96.61	SILTSTONE	SLT	3.10						As above SLT.
29	20 & 21	97.25	100.30	3.05	2.98	97.70%	8	2.68	25	15	W6	R5	4	96.61	99.59	SILTSTONE	SLT	2.98						As above SLT.
30	21 & 22	100.30	103.35	3.05	3.09	101.31%	5	2.84	25	15	W6	R5	4	99.59	102.68	SILTSTONE	SLT	3.09						Med grey fg massive SLT w/ trace plant material joints 70°.
31	22	103.35	106.40	3.05	3.08	100.98%	2	3.06	25	15	W6	R5	4	102.68	105.76	SILTSTONE	SLT	3.08						As above SLT.
32	22 & 23	106.40	109.45	3.05	3.05	100.00%	5	3.05	25	15	W6	R5	4	105.76	108.81	SILTSTONE	SLT	3.05						Med grey massive fg SLT w/ a series of low angle joints 70 & 30°. Trace carb, mineralization along jointing plane.
33	23 & 24	109.45	112.50	3.05	3.02	99.02%	12	2.60	25	10	W5	R5	4	108.81	111.83	SILTSTONE	SLT	3.02						As above med grey fg SLT w/ a series of low angle joints 45-50°. Abundant carb stringers (1%) in wekly clay altered zone. SS on joint planes.
34	24	112.50	115.55	3.05	3.03	99.34%	6	2.96	25	12	W6	R5	3	111.83	114.86	SILTSTONE	SLT	3.03						Med grey fg massive SLT.
35	24 & 25	115.55	118.60	3.05	2.97	97.38%	7	2.85	25	14	W6	R5	3	114.86	117.83	SILTSTONE	SLT	2.97						Minor drill wear at top of interval. Med grey fg massive SLT. Joints 80°.
36	25 & 26	118.60	121.65	3.05	3.04	99.67%	7	2.63	25	13	W6	R5	4	117.83	120.87	SILTSTONE	SLT	3.04						As above SLT, jointing at 70°, trace carb, possoble fossilized shells.
37	26 & 27	121.65	124.70	3.05	3.12	102.30%	3	3.08	25	15	W6	R5	4	120.87	123.99	SILTSTONE	SLT	3.12						Med grey fg massive SLT, jointing 45°.
38	27	124.70	127.75	3.05	3.13	102.62%	8	2.96	25	14	W6	R5	4	123.99	127.12	SILTSTONE	SLT	3.13						As above, but w/ trace carb stringers. Jointing 80°.
39	27 7 28	127.75	130.80	3.05	3.02	99.02%	5	2.94	25	14	W6	R5	4	127.12	130.14	SILTSTONE	SLT	3.02						As above.
40	28 7 29	130.80	133.85	3.05	3.07	100.66%	9	2.89	25	14	W6	R5	4	130.14	133.21	SILTSTONE	SLT	3.07						Med grey fg massive SLT w/ small irregular shaped sand lenses and trace carb.
41	29	133.85	136.90	3.05	2.90	95.08%										#N/A								
					2.29		>25	1.59	10	9	W6	R5	3	133.21	135.50	SILTSTONE	SLT	2.29						Broken core 5-10cm pieces, irregular. Fractures and SS. Some gouge. Med grey fg SLT massive, jointing 30-40°.
					0.61		4	0.57	25	11	W6	R5	4	135.50	136.11	SANDSTONE	SST	0.61						Light grey fg massive SST w/ angular to sub-rounded blocks of SLT (rip up clasts of slump?)
42	30	136.90	139.95	3.05	3.01	98.69%	>25	2.38	20	14	W6	R5	3	136.11	139.12	SANDSTONE	SST	3.01						Light grey fg massive SST broken near top of section, abundance of SLT clasts, decreases down section. Joints 50°.
43	30 & 31	139.95	143.00	3.05	2.98	97.70%	0	-	-	15	W6	R5	4	139.12	142.10	SANDSTONE	SST	2.98						As above light grey fg massive SST w/ trace carb stringers 30°.
44	31 & 32	143.00	146.05	3.05	3.00	98.36%	4	2.80	25	13	W6	R5	4	142.10	145.10	SANDSTONE	SST	3.00						As above SST, carb stringers 30°, joints 70°.
45	32	146.05	149.10	3.05	3.00	98.36%	4	2.80	25	13	W6	R5	4	145.10	148.10	SANDSTONE	SST	3.00						As above SST, light grey fg massive w/ trace carb stringers at low angle and joitning 60°. Small 7cm SLT bed,
46	32 & 33	149.10	152.15	3.05	2.85	93.44%	6	2.75	25	15	W6	R5	4	148.10	150.95	SANDSTONE	SST	2.85						Light grey fg massive SST w/ trace carb stringers.
47	33 & 34	152.15	155.20	3.05	3.09	101.31%										#N/A								
					0.38		0	-	-	15	W6	R5	4	150.95	151.33	SANDSTONE	SST	0.38						As above.
					2.71		>25	1.30	25	7	W6	R5	3	151.33	154.04	SILTSTONE	SLT	2.71						Med grey fg massive SLT. Very broken but lacks SS, trace carb.
48	34/35	155.20	158.25	3.05	3.10	101.64%	10	2.85	25	12	W6	R5	4	154.04	157.14	SILTSTONE	SLT	3.10						As above, med grey fg massive SLT w/ trace carb along joints 70° and 90°.
49	35	158.25	161.30	3.05	3.09	101.31%	12	2.79	25	14	W6	R5	4	157.14	160.23	SILTSTONE	SLT	3.09						As above SLT, trace carb stringers, joints 80°.
50	35 & 36	161.30	164.35	3.05	3.10	101.64%	20	2.64	10,25	13	W6	R5	4	160.23	163.33	SILTSTONE	SLT	3.10						Dark grey fg massive SLT most joints 90°. Highly fractured zone from 163.4-163.8m SS fracture surfaces. Low angle ~25° joints.
51	36 & 37	164.35	167.40	3.05	3.10	101.64%	11	3.05	25	15	W6	R5	4	163.33	166.43	SILTSTONE	SLT	3.10						SLT as above. All joints 85-90°.
52	37	167.40	170.45	3.05	3.00	98.36%	6	2.93	25	15	W6	R5	4	166.43	169.43	SILTSTONE	SLT	3.00						Massive SLT as above, calc veins running 85-90°, 2mm thick along joints.
53	37 & 38	170.45	173.50	3.05	3.09	101.31%										#N/A								
					1.80		5	1.80	25	15	W6	R5	4	169.43	171.23	SILTSTONE	SLT	1.80						SLT as above. ~90° joints, some w/ calc veins (~90°, 1-2mm thick), ~90° contact angle w/ lower SST.
					1.29		3	1.29	25	15	W6	R6	4	171.23	172.52	SANDSTONE	SST	1.29						Light grey mg-cg massive SST. ~90° joints IB w/ SLT near top.
54	38 & 39	173.50	176.55	3.05	2.95	96.72%	4	2.95	25	15	W6	R6	4	172.52	175.47	SANDSTONE	SST	2.95						Light grey mg-cg massive SST. Al joints ~90°, Silty SST near bottom at 78°.
55	39	176.55	179.60	3.05	3.05	100.00%	9	2.90	25	15	W6	R6	4	175.47	178.52	SANDSTONE	SST	3.05						Light-med grey fg-cg massive silty SST. ~90° joints. 20-40° joints near bottom.
56	39 & 40	179.60	182.65	3.05	3.08	100.98%	7	3.08	25	15	W6	R6	4	178.52	181.60	SANDSTONE	SST	3.08						Light grey mg-cg massive SST. ~90° joints, SLT stringers near bottom.
57	40 & 41	182.65	185.70	3.05	3.00	98.36%	6	2.91	25	15	W6	R6	4	181.60	184.60	SANDSTONE	SST	3.00						SST as above. ~90° joints SLT stringers visible.
58	41 & 42	185.70	188.74	3.04	3.11	102.30%	10	2.92	25	15	W6	R6	4	184.60	187.71	SANDSTONE	SST	3.11						SST as above. ~90° joints. SLT stringers visible.
59	42	188.74	191.79	3.05	3.10	101.64%	5	3.13	25	15	W6	R6	4	187.71	190.81	SANDSTONE	SST	3.10						SST as above
60	42 & 43	191.79	194.84	3.05	3.10	101.64%	10	2.70	25	15	W6	R6	4	190.81	193.91	SANDSTONE	SST	3.10						SST as above. SLT layer 194.2 - 194.6m IB w/ SST.
61	43 & 44	194.84	197.89	3.05	2.53	82.95%										#N/A								
					1.93		6	1.40	25	13	W6	R6	5	193.91	195.74	SANDSTONE	SST	1.83						Light-med grey mg-cg massive SST. Joints ~90° w/ plant material near bottom. Coal lenses/stringers and py
														195.74	195.84	SANDSTONE	SST	0.10			7706	196.13	196.23	Light-med grey mg-cg massive SST. Joints ~90° w/ plant material near bottom. Coal lenses/stringers and py
														195.84	196.24	LOST CORE	LOST CORE: COAL	0.40			ns			Lost Core: Prbly Coal
					0.40		>25	-	-	-	W6	R1	3	196.24	196.64	SHALY COAL	Shaly COAL	0.40		Seam 5	7707	196.23	196.63	Black light little gassy. 50% solid core. 50% broken dusty coal. Solid core ~70% bright, trace py (~5% planar surface).
					0.70		>25	-	-	-	W6	R2	3	196.64	196.74	MUDSTONE	MDST	0.10			7708	196.63	196.73	Med - dark brown, fg, highly fractured w/ SS surface
														196.74	197.34	MUDSTONE	MDST	0.60						Med - dark brown, fg, highly fractured w/ SS surface
														197.34	197.85	LOST CORE	LOST CORE	0.51						LOST CORE: Prbly Mdstn
62	44 & 45	197.89	200.94	3.05	3.07	100.66%	9	2.62	25	14	W6	R6	4	197.85	200.92	SANDSTONE	SST	3.07						Light grey mg-cg massive SST. Joints ~90°. Some w/ plant material. Evidence of healed joints/faults (>) ~20-25°.
63	44	200.94	203.99	3.05	3.02	99.02%	20	2.36	25	11	W6	R6	4	200.92	203.94	SANDSTONE	SST	3.02						SST as above. Med-highly fracture zone 201.6-202.0m (~10-75°) coal/SLT stringers.
64	45 & 46	203.99	207.04	3.05	3.01	98.69%	6	2.90	25	15	W6	R6	4	203.94	206.95	SANDSTONE	SST	3.01						SST as above, 90° joints.
65	46	207.04	210.09	3.05	2.98	97.70%	5	2.96	25	15	W6	R6	4	206.95	209.93	SANDSTONE	SST	2.98						SST as above. ~90° joints.
66	46 & 47	210.09	213.14	3.05	3.02	99.02%	5	2.89	25	15	W6	R6	4	209.93	212.95	SANDSTONE	SST	3.02						Light grey mg-cg massive SST. All joints ~90°

67	47 & 48	213.14	216.19	3.05	3.00	98.36%	9	2.82	25	15	W6	R6	4	212.95	215.95	SANDSTONE	SST	3.00						Light grey mg-cg massive SST. Most joints ~90°. Coal lens (75°) at 214.81m. Belown 214.81m med grey cg massive SST
68	48 & 49	216.19	219.24	3.05	3.08	100.98%										#N/A								
					2.30		2	25.00	25	15	W6	R6	4	215.95	218.25	SANDSTONE	SST	2.30						Med grey, cg-v.cg massive SST. Joints ~90° w/ plant materials, 25° joint at bottom. 90° contact angle w/ lower MDST
					0.78		10	0.37	10	10	W6	R5	4	218.25	219.03	SILTSTONE	SLT	0.78						Dark grey fg SLT. Fault gouge (?) or soft mud layer at contact w/ upper SST. Below the contact highly fractured w/ SS. Other joints ~90°.
69	49	219.24	222.29	3.05	2.87	94.10%										#N/A								
					0.24		3	-	25	9	W6	R5	4	219.03	219.27	SILTSTONE	SLT	0.24						SLT as above w/ py along beddings
					2.63		10	2.40	25	13	W6	R6	4	219.27	221.90	SANDSTONE	SST	2.63						Light-med grey mg-cg SST IB w/ SLT. Joints/bedding ~75-85° w/ SLT & plant material.
70	49 & 50	222.29	225.34	3.05	3.09	101.31%	15	2.34	20	14	W6	R5	4	221.90	224.99	SANDSTONE	SST	3.09						Grey fg SST w/ thin SLT beds decreasing in abundance down section bedding 80°.
71	50	225.34	228.39	3.05	3.07	100.66%	4	2.95	20	14	W6	R5	4	224.99	228.06	SANDSTONE	SST	3.07						Grey f-mg, massive, SST. Trace plant material along jointing plane 90°.
72	51	228.39	231.42	3.03	3.07	101.32%	11	2.82	20	12	W6	R5	4	228.06	231.13	SANDSTONE	SST	3.07						Grey fg-mg SST. Mostly massive w/ weak bedding 85°. Trace plant material along bedding planes. Trace SLT laminations.
73	2	231.42	234.47	3.05	2.97	97.38%	9	2.70	20	15	W6	R5	4	231.13	234.10	SANDSTONE	SST	2.97						Grey fg-mg weakly bedded 60° jointing parallel bedding. Trace SLT laminae increasing in abundance down section, trace plant material.
74	52 & 53	234.47	237.52	3.05	3.10	101.64%										#N/A								
					0.28		0	-	-	-	W6	R5	4	234.10	234.38	SANDSTONE	SST	0.28						Grey fg-mg weakly bedded SST, w/ sharp irregular shaped contact w/ SLT below.
					2.82		1	2.39	20	15	W6	R4	4	234.38	237.20	CLAYSTONE	CST	2.82						Dk grey, c.fg-fg massive CST w/ trace carb stringers.
75	53	237.52	240.55	3.03	2.98	98.35%										#N/A								
					0.30		2	0.20	10	10	W6	R4	4	237.20	237.35	CLAYSTONE	CST	0.15						Dk grey, v.fg-fg massive CST.
														237.35	237.50	CLAYSTONE	CST	0.15			7709	237.55	237.70	Dk grey, v.fg-fg massive CST.
														237.50	237.65	LOST CORE	LOST CORE: COAL	0.15		Seam 4	ns			Lost Core: Prbly Coal
					0.50		>25	0.10	10	7	W6	R2	3	237.65	238.15	COAL	COAL	0.50		Seam 4	7710	237.70	238.20	Black, dull-bright (60/40) coal, feels heavy, mostly solid, small chunks, micro cleating along bright bands.
					2.18		10	1.98	20	13	W6	R5	4	238.15	238.25	SANDSTONE	SST	0.10			7711	238.20	238.40	Grey, f.g. weakly IB SST w/ minor CST partings and trace plant material, mainly oriented 85°.
														238.25	240.33	SANDSTONE	SST	2.08						Grey, f.g. weakly IB SST w/ minor CST partings and trace plant material, mainly oriented 85°.
76	53 & 54	240.55	243.60	3.05	2.93	96.07%	10	2.54	20	15	W6	R5	4	240.33	243.26	SANDSTONE	SST	2.93						Grey fg massive SST w/ minor silty layers >2cm
77	54	243.60	246.65	3.05	3.09	101.31%	9	2.95	20	14	W6	R5	4	243.26	246.35	SANDSTONE	SST	3.09						Grey mg-cg massive - weakly bedded; bedding decreases in strength down section. Avg bed 85°. Trace SLT and plant material.
78	55	246.65	249.70	3.05	2.95	96.72%	5	2.83	20	13	W6	R5	4	246.35	249.30	SANDSTONE	SST	2.95						Light grey fg-mg SST clearer han before, less clays; silty matrix, massive.
79	56	249.70	252.75	3.05	2.87	94.10%	8	2.02	20	13	W6	R5	4	249.30	252.17	SANDSTONE	SST	2.87						As above but w/ carb material along jointing plane 85°, weakly developed bedding ~85°, possibly cross-beds
80	56 & 57	252.75	255.80	3.05	3.04	99.67%	8	2.98	20	15	W6	R5	4	252.17	255.21	SANDSTONE	SST	3.04						Light grey, fg tightly bedded 70-85°. Possibly cross-beds. Trace plant material and SLT rich laminae. Jointing 70-85°.
81	57 & 58	255.80	258.85	3.05	3.05	100.00%	9	2.99	20	14	W6	R5	4	255.21	258.26	SANDSTONE	SST	3.05						As above light grey, fg-mg tightly bedded 85° SST w/ trace material, jointing 70-85°.
82	58	258.85	261.90	3.05	2.98	97.70%	5	-	20	15	W6	R5	4	258.26	261.24	SANDSTONE	SST	2.98						As above SST.
83	58 & 59	261.90	264.95	3.05	3.05	100.00%	8	2.85	20	15	W6	R5	4	261.24	264.29	SANDSTONE	SST	3.05						As above SST. Light grey mg-cg SST, weakly bedded 75°, jointing 75°. Trace plant material.
84	59	264.95	268.00	3.05	3.06	100.33%	6		20	15	W6	R5	4	264.29	267.35	SANDSTONE	SST	3.06						As above SST. w/ plant material along jointing plane 75°.
85	60	268.00	271.05	3.05	3.01	98.69%	6	-	20	15	W6	R4	4	267.35	270.36	SANDSTONE	SST	3.01						Light grey mg massive SST w/ trace plant material.
86	6 1	271.05	274.10	3.05	3.00	98.36%	9	2.77	20	14	W6	R4	4	270.36	273.36	SANDSTONE	SST	3.00						Grey mg-cg weakly bedded 70° SS w/ 1cm coal seam at 272.6m Carb adjacent to caol jointing 60°
87	61 & 62	274.10	277.15	3.05	2.96	97.05%	5	2.96	25	13	W6	R6	4	273.36	276.32	SANDSTONE	SST	2.96						Light grey, cg-c.cg massive SST. Joints 65-90°. IB w/ SLT from 276m, joints w/plant materials.
88	62 & 63	277.15	280.20	3.05	2.74	89.84%	8	2.74	25	13	W6	R6	4	276.32	278.96	SANDSTONE	SST	2.64						SST as above. Joints ~75-85°
														278.96	279.06	SANDSTONE	SST	0.10			7712	280.00	280.10	SST as above. Joints ~75-85°
														279.06	279.32	LOST CORE	LOST CORE	0.26			ns			LOST CORE - SST
89	63	280.20	283.25	3.05	2.53	82.95%										#N/A								
														279.32	279.86	LOST CORE	LOST CORE: COAL	0.54		Seam 3	ns			Lost Core: Prbly Coal
					0.36		-	-						279.86	280.22	COAL	COAL	0.36		Seam 3	7713	280.10	280.46	Black light 80-90° bright, mod gassy, disc py
					0.12		-	0.12	-	-	W6	R5	4	280.22	280.34	SILTSTONE	SLT	0.12		Seam 3	7714	280.46	280.58	Brown, fg massive, parting
														280.34	280.50	LOST CORE	LOST CORE	0.16		Seam 3	ns			LOST CORE: Parting
														280.50	280.80	LOST CORE	LOST CORE: COAL	0.30		Seam 3	ns			Lost Core: Prbly Coal
					1.62		-	-						280.80	282.42	COAL	COAL	1.62		Seam 3	7715	280.58	282.20	Coal as above
					0.43		-	0.40	-	-	W6	R5	4	282.42	282.52	SILTSTONE	SLT	0.10			7716	282.20	283.30	Med-dark grey, fg-mg IB w/ SST, FLOOR.
														282.52	282.85	SILTSTONE	SLT	0.33						Med-dark grey, fg-mg IB w/ SST, FLOOR.
90	63/64	283.25	286.30	3.05	2.83	92.79%	8	2.83	25	13	W6	R6	4	282.85	285.68	SANDSTONE	SST	2.83						m.gy., f-m.gr., sst intbd with sltst; joints 70 - 90 c/a, minor plant material
91	64/65	286.30	289.35	3.05	3.03	99.34%	14	2.76	25	10	W6	R5	4	285.68	288.71	SANDSTONE	SST	3.03						lt.gy., m-c.gr., massisve, near base intbd with sltst; bdg 75 degc/a; joints along same angle.
92	65	289.35	292.40	3.05	3.00	98.36%	>25	1.30	10	9	W6	R5	4	288.71	291.71	BEDDED SANDSTONE MUDSTONE SILT	INTBD SST/SLTST	3.00						lt.gy., m-c.gr., intbd with sltst; bdg @ 70 - 90 deg c/a; bdg thkness 1 - 30 cm; occassional coal lams and lenses
93	66	292.40	295.45	3.05	3.06	100.33%	>25	1.70	10	10	W6	R5	4	291.71	294.77	BEDDED SANDSTONE MUDSTONE SILT	INTBD SST/SLTST	3.06						AA, bdg @ 65 - 75 deg c/a; bdg plane joints; sks; calc along joints
94	66/67	295.45	298.50	3.05	3.00	98.36%	10	2.94	10	14	W6	R5	4	294.77	297.77	BEDDED SANDSTONE MUDSTONE SILT	INTBD SST/SLTST	3.00						AA, bdg @ 75 - 80 deg c/a; bdg plane joints; sks;
95	67	298.50	301.55	3.05	3.12	102.30%	12	3.00	10	14	W6	R5	4	297.77	300.89	BEDDED SANDSTONE MUDSTONE SILT	INTBD SST/SLTST	3.12						black, f.gr.sltst intbd with sst~ 10%; bdg 75-85 deg c/a; bdg plane joints; sks; calcite along joints
96	67	301.55	304.60	3.05	3.02	99.02%										#N/A								
					1.18		6	0.98	20	10	W6	R5	4	300.89	302.07	SILTSTONE	SLTST	1.18			ns			dk.gy., f.gr., sst with calc vein @ 80 deg c/a; massive py layer near base; intbd with coal lenses near base (roof)
														302.07	302.26	LOST CORE	LOST CORE	0.19			ns			Lost Core - prbly sltst
														302.26	302.36	SHALY COAL	Shaly Coal	0.10		Seam 1	7717	302.48	302.58	dk.gy., f.gr., sst with calc vein @ 80 deg c/a; massive py layer near base; intbd with coal lenses near base (roof)
					0.66		>25		20		W6	R1	2	302.36	303.02	COAL	COAL	0.66		Seam 1	7718	302.58	303.24	bright, (90%); light wt.; mod.gassy; solid core; trace py
					0.08		3		20		W6	R5	3	303.02	303.10	SILTSTONE	SLTST	0.08		Seam 1	7719	303.24	303.32	parting, slt as above
														303.10	303.30	CARBONACEOUS SILTSTONE	Carbonaceous Sltst	0.20		Seam 1	7720	303.32	303.52	parting, slt as above
					1.10		>25		20		W6	R1	2	303.30	303.38	COAL	Coal	0.08		Seam 1	7720	303.52	303.60	dull (95%); hvy., light to mod gassy; minor calcite
														303.38	304.26	COAL	COAL	0.88		Seam 1	7721	303.60	304.44	dull (95%); hvy., light to mod gassy; minor calcite
97	67/68	304.60	307.65	3.05	2.91	95.41%										#N/A								
					1.22		>25		10		W6	R1	3	304.26	304.76	COAL	COAL	0.50		Seam 1	7722	304.50	305.00	bright (90%), light wt., mod gassy, solid core; sks joints
														304.76	305.48	COAL	COAL	0.72		Seam 1	7723	305.00	305.72	bright (90%), light wt., mod gassy, solid core; sks joints
														305.48	305.64	LOST CORE	LOST CORE: COAL	0.16		Seam 1	ns			Lost Core: Prbly Coal
														305.64	305.86	SHALY COAL	Shaly Coal	0.22		Seam 1	7724	305.72	305.94	black, 90% bright, 30% dull, mod gassy,
					0.71		>25		10		W6	R1	3	305.86	306.35	COALY MUDSTONE	Coaly Shale	0.49		Seam 1	7724	305.94	306.43	black, 90% bright, 30% dull, mod gassy,
														306.35	306.45	CARBONACEOUS SILTSTONE	Carbonaceous SILTST	0.10			7725	306.43	306.53	sltst floor dk.gy., f.gr.,
					0.98		>25		20		W6	R5	4	306.45	307.33	SILTSTONE	SLTST	0.88			ns			sltst floor dk.gy., f.gr.,
98	69/70	307.65	310.70	3.05	2.83	92.79%										#N/A								
					0.42		13		20	7	W6	r4	4	307.33	307.65	SILTSTONE	SLTST	0.32			ns			dk.gy., f.gr., mostly 85 deg c/a
														307.65	307.75	SILTSTONE	SLTST	0.10			7726	307.82	307.92	dk.gy., f.gr., mostly 85 deg c/a
					0.15		5		20		W6	R1	4	307.75	307.90	SHALY COAL	ShalyCOAL	0.15		Seam 1 Sub	7727	307.92	308.07	black, light, 85 - 90 % bright; good cleating, calcite films
					0.20		4		20	4	W6	R4	4	307.90	308.10	CARBONACEOUS SILTSTONE	Carbonaceous SILTST	0.20		Seam 1 Sub	7728	308.07	308.27	parting, sltst, AA
					0.11		>25		20		W6	R1	4	308.10	308.21	COAL	COAL	0.11		Seam 1 Sub	7729	308.27	308.38	black, light, 85 - 90 % bright; good cleating, calcite films
														308.21	308.35	LOST CORE	LOST CORE: COAL	0.14		Seam 1 Sub	ns			Lost Core: Prbly Coal
														308.35	308.45	SHALY COAL	SILTST	0.10			7730	308.38	308.48	sltst; Floor, As above
					1.95		>25		20		W6	R4	4	308.45	310.30	SHALY COAL	SILTST	1.85						sltst; Floor, As above
99	70	310.70	313.75	3.05	2.97	97.38%	20	2.70	20	10	W6	R6	4	310.30	313.27	BEDDED SANDSTONE MUDSTONE SILT	INTBD SST/SLTST	2.97						lt.gy., f-m.gr., joints at 70 - 90 deg c/a; some plant remn on bdg plane , clac veinlets
100	70 & 71	313.75	316.80	3.05	3.02	99.02%										#N/A								
					0.63		3	.61M	20	9	W5	R4	3	313.27	313.90	CLAYSTONE	CST	0.63						Dark grey v.fg CST, massive in sharp contact w/ unit below 60°.
					0.50		3	0.41	20	10	W6	R5	4	313.90	314.40	SANDSTONE	SST	0.50						Grey fg SST w/ clay rich matrix jointing at 30° and 80°. Trace carb small 1cm coal seam on contact
					1.89		8	1.77	20	11	W6	R5	4	314.40	316.29	SILTSTONE	SLT	1.89						Sandy SLT, dark grey, fg, massive to weakly bedded.
101	7	316.80	319.85	3.05	2.91	95.41%										#N/A								
					0.07		-	-	-	-	W6	R5	4	316.29	316.36	SILTSTONE	SLT	0.07						As above contact sharp, 70°
					0.80		3	0.80	20	10	W6	R5	4	316.36	317.16	SANDSTONE	SST	0.80						Grey, cg-mg SST w/ trace plant material jointing 60 & 80°.
					2.04		13	1.32	20	9	W6	R4	4	317.16	319.20	SILTSTONE	SLT	2.04						Grey fg massive SLT w/ small SST IB ~ 5cm and trace plant material along jointing plane.
102	72	319.85	322.90	3.05	3.13	102.62%										#N/A								
					0.29		1	-	20	11	W6	R5	4	319.20	319.49	SILTSTONE	SLT	0.29						As above Sandy SLT grey massive to weakly bedded
					0.50		2	0.47	20	1	W6	R5	4	319.49	319.99	SANDSTONE	SST	0.50						Grey silty SST, weak irregular bedding ~85°. Trace plant material, possibly trace carb
					2.34		9	2.14	20	12	W5	R4	3	319.99	322.33	SILTSTONE	SLT	2.34						Small drill wear. Weakly clay altered. Dark grey fg massive SLT becomes slightly sandy towards the end of the interval
103	73	322.90	325.95	3.05	2.99	98.03%										#N/A								
					0.95		4	0.90	20	10	W6	R5	4	322.33	323.28	SANDSTONE	SST	0.95						Grey massive - weakly foliated SST. Decreases in abundance of SLT down section and becomes more massive and coarser grained. Fg-Cg. Bedding ~75°.
					2.04		7	1.86	20	12	W6	R5	4	323.28	325.32	SILTSTONE	SLT	2.04						Dark grey fg massive SLT, becomes slightly sandy down sction.
104	73 & 74	325.95	329.00	3.05	3.06	100.33%										#N/A								
					1.60		5	1.53	20	12	W6	R5	4	325.32	326.92	SILTSTONE	SLT	1.60						Sand SLT fired downards weakly bedded ~85°. Grades into massive fg grey SLT.
					1.46		4	-	20	14	W6	R5	4	326.92	328.38	SANDSTONE	SST	1.46						Grey mg-cg massive SST w/ trace plant material.
105	74	329.00	332.05	3.05	2.92	95.74%										#N/A								
					1.41		3	-	20	15	W6	R5	4	328.38	329.79	SANDSTONE	SST	1.41						Light grey poorly sorted mg-cg SST w/ trace plant material.
					0.05		-	-	-	-	W6	R2	4	329.79	329.84	COAL	COAL	0.05						Small coal len acting as a contact b/w units above and below, irregular shaped contacts with both units. Bright-dull, light weight
					0.45		2	0.40	20	10	W6	R5	4	329.84	330.29	SILTSTONE	SLT	0.45						Med grey fg massive SLT. Jointing 70°
					1.01		1	1.01	20	11	W6	R5	4	330.29	331.30	SANDSTONE	SST	1.01						Grey fg-mg SST coarsens downward.

106	75	332.05	335.10	3.05	3.06	100.33%									#N/A								
					0.05		-	-	-	7	W6	R5	4	331.30	331.35	SANDSTONE	SST	0.05						SST as above, in sharp contact w unit below, 90°.
					1.70		5	1.70	20	12	W6	R5	4	331.35	333.05	SILTSTONE	SLT	1.70						Dark grey fg massive SLT w/ trace carb, jointing 70-80°
					1.31		9	0.88	15	9	W6	R5	4	333.05	334.36	SANDSTONE	SST	1.31						Grey mg-cg massive SST, coarsens downward plant material on most jointing plants ~70°. Healed low angle joint at 30°.
107	75 & 76	335.10	338.15	3.05	2.90	95.08%									#N/A								
					1.00		3	1.00	20	9	W6	R5	4	334.36	335.36	SANDSTONE	SST	1.00						Light grey mg-fg SST, fines and pales downawrd, trace carb and plant material, healed low angle joint 10°. Contact 65°.
					1.90		14	1.18	15	8	W6	R4	4	335.36	337.26	CLAYSTONE	CST	1.90						Dark grey fg, massive CSTjointing surfaces are shiny possibly SS. 2 distinct jointing planes at 70 and 160°.
108	76	338.15	341.20	3.05	2.83	92.79%									#N/A								
					1.18		1	0.68	15	7	W6	R4	4	337.26	338.44	CLAYSTONE	CST	1.18						As above CST, contact sharp, 70°
					1.65		5	1.47	20	12	W6	R5	4	338.44	340.09	SANDSTONE	SST	1.65						Grey mg-cg SST massive w/ trace plant material.
109	77	341.20	344.25	3.05	2.98	97.70%									#N/A								
					1.46		3	1.46	20	15	W6	R5	4	340.09	341.55	SANDSTONE	SST	1.46						Grey fg-cg SST massive coarsens and pales down section. Angular nclusions of unit below near cotact; sharp contact 80°.
110	78	344.25	347.30	3.05	2.90	95.08%									#N/A								
					1.23		8	1.23	20	10	W6	R5	4	341.55	342.78	SILTSTONE	SLT	1.23						Dark grey fg-mg massive SLT. Coarsens downward towards contact. Trace carb and sulphides.
					1.67		8	1.52	20	13	W6	R5	4	342.78	344.45	SANDSTONE	SST	1.67						Grey fg-cg poorly sorted SST with a weak alignment of grains 80° coarsens downwards.
111	78 & 79	347.30	350.35	3.05	3.06	100.33%	5	3.06	20	15	W6	R5	4	344.45	347.51	SANDSTONE	SST	3.06						As above grey fg-cg poorly sorted SST w/ weak alignment of grains 70-80°. High of qtz clasts possibly carb in matrix, trace plant material.
112	79 & 80	350.35	353.40	3.05	2.49	81.64%	7	2.99	20	12	W6	R6	4	347.51	350.00	SANDSTONE	SST	2.49						White-light grey cg-v.cg altered SST qtz matrix w/ volcanic clasts qtz up to 5mm, clasts rounded near top ~20°, joint filled w/ SLT & py. Most joints ~90°, some w/ plant material
113	80	353.40	356.45	3.05	3.01	98.69%	11	2.83	20	13	W6	R6	4	350.00	353.01	SANDSTONE	SST	3.01						Altered SST as above. Plant materials along joints, coal lenses, joints ~75°
114	80 & 81	356.45	359.50	3.05	2.96	97.05%	15	2.53	20	11	W6	R6	4	353.01	355.97	SANDSTONE	SST	2.96						Altered SST as above. Large Qtz and other clasts. IB w/ MDST near top. Joints 35-45°. Some w/ plant materials. Quartzite matrix w/ volc, slt and mdst clasts.
115	81 & 82	359.50	362.55	3.05	3.06	100.33%	4	3.00	25	14	W6	R6	4	355.97	359.03	SANDSTONE	SST	3.06						Altered SST as above. Matrix w/ volc, mdst, slt clasts. ~90° joints.
116	82	362.55	365.60	3.05	3.04	99.67%	5	3.04	25	15	w6	r6	4	359.03	362.07	UNDIFFERENTIATED BEDROCK	VOL CONG	3.04						Light grey qtz matriz w/ sub-rounded clasts up to 5cm volc conglomerate.
117	82 & 83	365.60	368.65	3.05	3.04	99.67%	8	3.00	25	15	w6	r6	4	362.07	365.11	UNDIFFERENTIATED BEDROCK	VOL CONG	3.04						Volc conglomerate as above. SLt layer near bottom. Joints w/ plant materials.
																								E.O.H. 368.5m

Geological Borehole Log: RAV-09-016

Client: CJV
Project: RAVEN
Logged By: Ernest Popyk, Sarah Newman

Hole Number: RAV-09-016
Date Hole Started: 30-Jun-09
Date Hole Finished: 13-Jul-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 403.33m
Depth of Casing: 8.53m
Core Size: Modified PQ (3 1/4')
Page: 1 of 10

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth from (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	G.P.L. Corrected Core Quailty	From (m)	To (m)		Lith	Thickness	Lost Core	Samples (Driller's Depths) Seam ID	Number	From (m)	To (m)	Description
														0.00	7.00	OVERBURDEN	OVB	7.00				0.00	7.00	Overburden
																				Chip Sampling				
														7.00	13.61	LOST CORE	Lost Core	6.61				7.00	15.99	*Lost due to Casing Set up*
														13.61	15.61	SILTSTONE	Sltst	2.00				15.99	17.99	Light grey, fg to mg Slst
														15.61	17.61	SANDSTONE	Sst	2.00				17.99	19.99	Light grey Sst cg to mg
														17.61	19.61	SANDSTONE	Sst	2.00				19.99	21.99	As above Sst
														19.61	21.61	SANDSTONE	Sst	2.00				21.99	23.99	Light grey Sst, cg to vcg
														21.61	23.61	SILTSTONE	Sltst	2.00				23.99	25.99	Light grey fg to mg Slst
														23.61	25.61	SILTSTONE	Sltst	2.00				25.99	27.99	As above
														25.61	27.61	SANDSTONE	Sst	2.00				27.99	29.99	Light grey Sst, cg to mg
														27.61	29.61	SANDSTONE	Sst	2.00				29.99	31.99	As above Sst
														29.61	31.61	SANDSTONE	Sst	2.00				31.99	33.99	As above Sst
														31.61	33.61	SANDSTONE	Sst	2.00				33.99	35.99	As above Sst
														33.61	35.61	SANDSTONE	Sst	2.00				35.99	37.99	As above Sst
														35.61	37.61	SANDSTONE	Sst	2.00				37.99	39.99	As above Sst
														37.61	39.61	SILTSTONE	Sltst	2.00				39.99	41.99	70% greyish black Sltst, 30% as above Sst
														39.61	41.61	SILTSTONE	Sltst	2.00				41.99	43.99	Greyish black Sltst, fg to mg
														41.61	43.61	SILTSTONE	Sltst	2.00				43.99	45.99	As above Slst
														43.61	45.61	SILTSTONE	Sltst	2.00				45.99	47.99	As above Slst
														45.61	47.61	SILTSTONE	Sltst	2.00				47.99	49.99	As above Slst
														47.61	49.61	SILTSTONE	Sltst	2.00				49.99	51.99	As above Slst
														49.61	51.61	SILTSTONE	Sltst	2.00				51.99	53.99	As above Slst
														51.61	53.61	SILTSTONE	Sltst	2.00				53.99	55.99	As above Slst
														53.61	55.61	SILTSTONE	Sltst	2.00				55.99	57.99	As above Slst
														55.61	57.61	SILTSTONE	Sltst	2.00				57.99	59.99	As above Slst
														57.61	59.61	SILTSTONE	Sltst	2.00				59.99	61.99	Med grey, fg Sltst
														59.61	61.61	SILTSTONE	Sltst	2.00				61.99	63.99	As above Slst
														61.61	63.61	SILTSTONE	Sltst	2.00				63.99	65.99	As above Slst
														63.61	65.61	SILTSTONE	Sltst	2.00				65.99	67.99	As above Slst
														65.61	67.61	SILTSTONE	Sltst	2.00				67.99	69.99	As above Slst
														67.61	69.61	SILTSTONE	Sltst	2.00				69.99	71.99	As above Slst
														69.61	71.61	SILTSTONE	Sltst	2.00				71.99	73.99	As above Slst
														71.61	73.61	SILTSTONE	Sltst	2.00				73.99	75.99	70% Sltst, 30% cg light grey Sst
														73.61	75.61	SILTSTONE	Sltst	2.00				75.99	77.99	As above
														75.61	77.61	SILTSTONE	Sltst	2.00				77.99	79.99	As above
														77.61	79.61	SILTSTONE	Sltst	2.00				79.99	81.99	Mg light grey Sltst
														79.61	81.61	SILTSTONE	Sltst	2.00				81.99	83.99	As above Slst
														81.61	83.61	SILTSTONE	Sltst	2.00				83.99	85.99	As above Slst
														83.61	85.61	SILTSTONE	Sltst	2.00				85.99	87.99	As above Slst
														85.61	87.61	SILTSTONE	Sltst	2.00				87.99	89.99	As above Slst
														87.61	89.61	SILTSTONE	Sltst	2.00				89.99	91.99	As above Slst
														89.61	91.61	SILTSTONE	Sltst	2.00				91.99	93.99	As above Slst, but 10% cg light grey Sst
														91.61	93.61	SILTSTONE	Sltst	2.00				93.99	95.99	Light grey mg Sltst
														93.61	95.61	SILTSTONE	Sltst	2.00				95.99	97.99	As above Slst
														95.61	97.61	SILTSTONE	Sltst	2.00				97.99	99.99	As above Slst
														97.61	99.61	SILTSTONE	Sltst	2.00				99.99	101.99	As above Slst
														99.61	101.61	SILTSTONE	Sltst	2.00				101.99	103.99	As above Slst
														101.61	103.61	SILTSTONE	Sltst	2.00				103.99	105.99	As above Slst
														103.61	105.61	SILTSTONE	Sltst	2.00				105.99	107.99	As above Slst
														105.61	107.61	SILTSTONE	Sltst	2.00				107.99	109.99	As above Slst
														107.61	109.61	SILTSTONE	Sltst	2.00				109.99	111.99	As above Slst
														109.61	111.61	SILTSTONE	Sltst	2.00				111.99	113.99	As above Slst
														111.61	113.61	SILTSTONE	Sltst	2.00				113.99	115.99	As above Sltst, with trace amount of calcite
														113.61	115.61	SILTSTONE	Sltst	2.00				115.99	117.99	As above but no calcite
														115.61	117.61	SILTSTONE	Sltst	2.00				117.99	119.99	As above Slst
														117.61	119.61	SILTSTONE	Sltst	2.00				119.99	121.99	As above Slst
														119.61	121.61	SILTSTONE	Sltst	2.00				121.99	123.99	As above Slst
														121.61	123.61	SILTSTONE	Sltst	2.00				123.99	125.99	As above Slst
														123.61	125.61	SILTSTONE	Sltst	2.00				125.99	127.99	As above Slst
														125.61	127.61	SILTSTONE	Sltst	2.00				127.99	129.99	As above Slst
														127.61	129.61	SILTSTONE	Sltst	2.00				129.99	131.99	As above Slst
														129.61	131.61	SILTSTONE	Sltst	2.00				131.99	133.99	As above Slst
														131.61	133.61	SILTSTONE	Sltst	2.00				133.99	135.99	As above Slst
														133.61	135.61	SILTSTONE	Sltst	2.00				135.99	137.99	As above Slst
														135.61	137.61	SILTSTONE	Sltst	2.00				137.99	139.99	As above Slst
														137.61	139.61	SILTSTONE	Sltst	2.00				139.99	141.99	As above Slst
														139.61	141.61	SILTSTONE	Sltst	2.00				141.99	143.99	As above, but 20% light grey, cg Sst
														141.61	143.61	SILTSTONE	Sltst	2.00				143.99	145.99	80% Slst, 20% Sst
														143.61	145.61	SANDSTONE	Sst	2.00				145.99	147.99	New formation! Light grey cg Sst
														145.61	147.61	SANDSTONE	Sst	2.00				147.99	149.99	As above Sst 90%, 10% Sltst
														147.61	149.61	SANDSTONE	Sst	2.00				149.99	151.99	As above (90% Sst, 10% Sltst)
														149.61	151.61	SANDSTONE	Sst	2.00				151.99	153.99	As above (90% Sst, 10% Sltst)
														151.61	153.61	SANDSTONE	Sst	2.00				153.99	155.99	100% light grey, cg to v.cg Sst
														153.61	155.61	SANDSTONE	Sst	2.00				155.99	157.99	As above Sst

														155.61	157.61	LAMINITE	IB Sst& Sh	2.00				157.99	159.99	Light grey and light brown cg to vcg Sst
														157.61	159.61	LAMINITE	IB Sst& Sh	2.00				159.99	161.99	65% light grey cg to vcg Sst, 35% blck, very fg Shale
														159.61	161.61	LAMINITE	IB Sst& Sh	2.00				161.99	163.99	As above
														161.61	163.61	LAMINITE	IB Sst& Sh	2.00				163.99	165.99	As above
														163.61	165.61	LAMINITE	IB Sst& Sh	2.00				165.99	167.99	As above
														165.61	167.61	LAMINITE	IB Sst& Sh	2.00				167.99	169.99	As above, but with traces of calcite
														167.61	169.61	LAMINITE	IB Sst& Sh	2.00				169.99	171.99	as above, except for 95% SST, 5% Shale
														169.61	171.61	LAMINITE	IB Sst& Sh	2.00				171.99	173.99	60% Sst, 50% Shale
														171.61	173.61	LAMINITE	IB Sst& Sh	2.00				173.99	175.99	30% Sst, 70% Shale
														173.61	175.61	LAMINITE	IB Sst& Sh	2.00				175.99	177.99	50% Sst, 50% Shale, very fractured rock
														175.61	178.12	LAMINITE	IB Sst& Sh	2.51				177.99	180.50	50% Sst, 50% Shale
														178.12	178.83	COALY MUDSTONE	Coaly Clay	0.71				180.50	181.21	possible Coaly Zone: Inserted off the Geophysical Log; however hole is badly caved through interval
														178.83	179.61	LAMINITE	IB Sst& Sh	0.78				181.21	181.99	As above
														179.61	181.61	LAMINITE	IB Sst& Sh	2.00				181.99	183.99	As above
														181.61	183.61	SHALE	Sh	2.00				183.99	185.99	Shale, fg, med grey
														183.61	184.52	SHALE	Sh	0.91				185.99	186.90	Shale, fg, med grey
														184.52	184.97	ARBONACEOUS MUDSTON	CARB SH	0.45				186.90	187.35	possible carbonaceous zone: Inserted off the Geophysical Log; however hole is badly caved through interval
														184.97	187.61	LAMINITE	IB Sst& Sh	2.64				187.35	189.99	Shale, fg, med grey
														187.61	189.61	LAMINITE	IB Sst& Sh	2.00				189.99	191.99	50% Shale, 50% fg-mg Sst - oily black bubbling, looks like shale, not coal, checked shovel full of chip samples, no coal
														189.61	191.61	LAMINITE	IB Sst & Sltst	2.00				191.99	193.99	95% fg Sst, 5% Shale
														191.61	193.61	SANDSTONE	Sst	2.00				193.99	195.99	80% Sltst, 20% Sst
														193.61	195.61	SANDSTONE	Sst	2.00				195.99	197.99	brown grey fg Sst
														195.61	197.61	SANDSTONE	Sst	2.00				197.99	199.99	Fg Sst 95%, 5% Sltst
														197.61	199.61	SANDSTONE	Sst	2.00				199.99	201.99	Fg Sst
														199.61	201.61	SANDSTONE	Sst	2.00				201.99	203.99	Grey, fg-mg Sst
														201.61	203.61	SILTSTONE	Sltst	2.00				203.99	205.99	as above Sst
														203.61	205.61	SANDSTONE	Sst	2.00				205.99	207.99	98% fg Sst, 2% Sltst
														205.61	207.61	SANDSTONE	Sst	2.00				207.99	209.99	Grey-brown Sst, fg
														207.61	209.61	SANDSTONE	Sst	2.00				209.99	211.99	90% fg Sst, 10% Sltst
														209.61	211.61	SILTSTONE	Sltst	2.00				211.99	213.99	95% Sltst, 5% Sst
														211.61	213.61	SILTSTONE	Sltst	2.00				213.99	215.99	Sltst, fg, dark grey
														213.61	215.61	SILTSTONE	Sltst	2.00				215.99	217.99	Dark grey fg Sltst
														215.61	217.61	SILTSTONE	Sltst	2.00				217.99	219.99	Dark grey fg Sltst hit oily stuff again, still no sign of Coal in chip possibly very small Coal seam?
														217.61	219.61	SILTSTONE	Sltst	2.00				219.99	221.99	Dark grey fg Sltst
														219.61	221.61	SILTSTONE	Sltst	2.00				221.99	223.99	Dark grey fg Sltst
														221.61	223.61	SILTSTONE	Sltst	2.00				223.99	225.99	Dark grey, fg Sltst, looks a bit sandy
														223.61	225.61	SILTSTONE	Sltst	2.00				225.99	227.99	Dark grey, sandy-Sltst, fg
														225.61	227.61	LAMINITE	IB Sst & Sltst	2.00				227.99	229.99	As above, sandy Sltst, grey, fg
														227.61	229.61	LAMINITE	IB Sst & Sltst	2.00				229.99	231.99	60% Sst, 40% Slst, again black bubbles right at time of sample, but no Coal
														229.61	231.61	SANDSTONE	Sst	2.00				231.99	233.99	Grey, fg, silty Sst (90%), 10% light grey Sst
														231.61	233.61	SILTSTONE	Sltst	2.00				233.99	235.99	As above, grey Sltst, sandstone with minor Sst
														233.61	235.61	LAMINITE	IB Sst & Sltst	2.00				235.99	237.99	Sltst, 60%, Sst 40%
														235.61	237.61	LAMINITE	IB Sst & Sltst	2.00				237.99	239.99	90% grey fg Sltst, 10% light grey fg Sst
														237.61	239.61	LAMINITE	IB Sst & Sltst	2.00				239.99	241.99	As above
														239.61	241.61	LAMINITE	IB Sst & Sltst	2.00				241.99	243.99	90% light grey Sst, 20% fg Sltst
														241.61	243.61	LAMINITE	IB Sst & Sltst	2.00				243.99	245.99	Sst, light grey, fg, 90%, 10% fg grey Sltst
														243.61	245.61	SANDSTONE	Sst	2.00				245.99	247.99	As above but 80% Sst & 20% Sltst
														245.61	247.61	SANDSTONE	Sst	2.00				247.99	249.99	Light grey, fg Sst
														247.61	249.61	SANDSTONE	Sst	2.00				249.99	251.99	Grey Sst, fg
														249.61	251.61	SANDSTONE	Sst	2.00				251.99	253.99	Grey Sst w. trace qtz fragments
														251.61	253.61	SANDSTONE	Sst	2.00				253.99	255.99	Light grey-grey fg Sst hit water
														253.61	255.61	LAMINITE	IB Sst & Sltst	2.00				255.99	257.99	Light grey, fg Sst with 5% Sltst
														255.61	257.61	SANDSTONE	Sst	2.00				257.99	259.99	light grey fg Sst
														257.61	258.42	SANDSTONE	Sst	0.81				259.99	261.99	Light grey, fg Sst w. 1% qtz fragments
														258.42	259.26	LOST CORE	Coal Zone	0.84		Seam 5	ns			Picked from geophysical Log
														259.26	259.61	SANDSTONE	Sst	0.35						Light grey, fg Sst w. 1% qtz fragments
														259.61	261.61	SANDSTONE	Sst	2.00				261.99	263.99	As above w 3% qtz fragemnts
														261.61	263.61	LAMINITE	IB Sst & Sltst	2.00				263.99	265.99	60% fg dk grey Sltst, 40% brown-grey fg Sst
														263.61	265.61	LAMINITE	IB Sst & Sltst	2.00				265.99	267.99	70% brown grey fg Sst, 30% dk grey Sltst
														265.61	267.61	LAMINITE	IB Sst & Sltst	2.00				267.99	269.99	60% brown grey fg Sst, 39% Sltst, 1% qtz
														267.61	269.61	LAMINITE	IB Sst & Sltst	2.00				269.99	271.99	90% brown grey SST, 10% Sltst
1		271.99	273.99	2.00	2.00	100.00%										#N/A										
	1						0	99.50%			W6	R7	4	269.61	271.61	SANDSTONE	Sst	2.00						Light grey/black Sst, cg to vcg, no fr, no bedding, anglular. Minor amount of plant material, massive, "stick-up core"
2		273.99	275.41	1.42	1.62	114.08%										#N/A										
	1,2						1	96.30%	25	15	W6	R7	3	271.61	273.23	SANDSTONE	Sst	1.62						As above Sst, except for two cm broken on top and two cm broken on bottom, fr at 90 º.
3		275.41	278.26	2.85	2.85	100.00%										#N/A										
	2,3						4	100.00%	25	15	W6	R7	3	273.23	276.08	SANDSTONE	Sst	2.85						Same as above except for 1 large calcite vein at 0º, 3 planar fractures at 90º, 1 stepped fr @ 85º 1 Sh bed @ 85º (thinly laminated) minor amount of coal spars. Minor amount of bioturbation
4		278.26	281.26	3.00	1.71	57.00%										#N/A										
	3						5	98.83%	10	14	W6	R3	4	276.08	277.79	LAMINITE	IB sh & Sst	1.71						35% Sst, 65% Sh. Sst: cg to mg, light grey/white, thinly to medium laminations, bedding at 90 º Sh: black, thinly laminated, bedding at 90º,
														277.79	279.08	LOST CORE	Lost Core	1.29	1.29					*Rock Loss*
5		281.26	281.76	0.50	0.00	0.00%										#N/A										
														279.08	279.37	LOST CORE	Lost Core	0.29	0.29					Will attempt recovery of core on next run.
6		281.76	281.76	0.00	0.43	N/A										#N/A										
	3						>25	0.00%	0	2		R3	1	279.37	279.80	LAMINITE	IB Sh/SsT	0.43						Went back down to retrieve the core. As above interval, except broken chunks of core. Maybe due to drilling, stepped fracture at 27º.
														279.80	279.87	LOST CORE	Lost Core	0.07	0.07					*Rock Loss*
7		281.76	282.26	0.50	0.00	0.00%										#N/A										
														279.87	280.37	LOST CORE	Lost Core	0.50	0.50					*Rock Loss No recovery*
8		282.26	283.52	1.26	0.00	0.00%										#N/A										
														280.37	281.63	LOST CORE	Lost Core	1.26	1.26					No recovery
9		283.52	285.42	1.90	0.00	0.00%										#N/A										

														281.63	282.14	LOST CORE	Lost Core	0.51	0.51					No recovery
10		285.42	286.64	1.22	0.10	8.20%										#N/A								
	4						1	0.00%			W5	R5	1	282.14	282.24	SANDSTONE	Sst	0.10						Grey, fine grained, massive Sst, broken and worn by drilling. Very poor core quality. Core was picked up at the bottom of the run when switched to 'dry drilling'.
11		286.64	286.64	0.00	0.72	N/A										#N/A								
	4										W5	R5	1	282.24	282.96	SANDSTONE	Sst	0.72						Grey, Sst, tightly interbedded with silt rich layers ~1-2mm, ~85° TCA, possible weak cross bedding (?) rock is broken and worn due to drilling, this was recovered from the tube after tripping out.
12		286.64	286.64	0.00	0.21	N/A										#N/A								
	4										W5	R5	1	282.96	283.17	SANDSTONE	Sst	0.21						As above, attempt to recover core left in the hole.
13		286.64	286.64	0.00	0.58	N/A										#N/A								
	4						2	84.48%	20	10	W5	R5	4	283.17	283.75	SANDSTONE	Sst	0.58						Grey, fine grained Sst with silty layers and pland material. Calcite &quartz stringers running roughly parallel TCA.
14		286.64	286.64	0.00	0.58	N/A										#N/A								
	4						1	100.00%	20	15	W5	R5	4	283.75	284.33	SANDSTONE	Sst	0.58						As above, grey Sst, f.g. with abundant silty layers ~ 90° TCA. Depth checked here. Adam drilled to a connection, then measured where we are (282) plus the depth of the core barrel (4.64) = 286.64m.
15		286.64	287.64	1.00	0.80	80.00%										#N/A								
	5						2	87.00%	25	15	W6	R5	4	284.33	285.13	SANDSTONE	Sst	0.80						As above Sst, except for one large calcite vein at 19 °.
														285.13	285.33	LOST CORE	Lost Core	0.20	0.20					*Rock Loss*
16	5	287.64	289.64	2.00	2.09	104.50%										#N/A								
	5						6	95.22%	25	14	W6	R5	4	285.33	287.42	SANDSTONE	Sst	2.09						Sst, light grey/white, cg to vcg. Massive, wispy Sh beds 1 Sh bed at 90°, 5 planar fracture at 90°, coal spars, plant material, 1 stepped fracture at 90° and 80°.
17		289.64	292.64	3.00	2.89	96.33%										#N/A								
	5,6						6	96.33%	25	15	W6	R7	4	287.42	290.31	SANDSTONE	Sst	2.89						As above Sst, except harder, all fractures at 90°. 1 shale stringer at 90°.
														290.31	290.33	LOST CORE	Lost Core	0.02	0.02					*Rock Loss*
18		292.64	295.64	3.00	3.11	103.67%										#N/A								
	6,7						9	89.71%	25	15	W6	R7	3	290.33	293.44	SANDSTONE	Sst	3.11						As above Sst, except for 1 (20cm long) fracture at 6°, all other fr are planar and at 90°.
19		295.64	298.64	3.00	2.91	97.00%										#N/A								
	8						6	95.19%	25	15	W6	R7	4	293.44	296.35	SANDSTONE	Sst	2.91						As above Sst except for increasing amount of plant material all fractures are planar and @ 90°.
														296.35	296.44	LOST CORE	Lost Core	0.09	0.09					*Rock Loss*
20		298.64	301.64	3.00	2.88	96.00%										#N/A								
	9,10						3	100.00%	25	15	W6	R7	4	296.44	297.41	SANDSTONE	Sst	0.97						Sst as above. Core Point, end of open hole pricing.
	9,10						0	100.00%			W6	R3	4	297.41	297.90	SHALE	Sh	0.49						Black, massive, vfg-fg, coal spars
														297.90	298.00	SHALE	Sh	0.10			07966	300.10	300.20	Roof Sample, part of above Shale
														298.00	298.10	LOST CORE	Lost Core	0.10	0.10	Seam 4	ns			*Coal Loss*
	9,10						>25	0.00%	10	3	W6	R0	0	298.10	298.50	COAL	Coal	0.40		Seam 4	07967	300.20	300.60	Dull 65%, bright 35%, broken, crushed, sulphide averaged 5% py, numerous irregular fractures. 4 sks at 45° sheared, broken. Fizzed for 10 min.
	9,10						1	0.00%	25	15	W6	R3	2	298.50	298.80	COALY MUDSTONE	Coaly Mdst	0.30		Seam 4	07968	300.60	300.90	Light grey, massive, mg-fg, irrecular calcite veining, 2 fr at 45° TCA
	9,10						10	58.06%	20	9	W6	R0	2	298.80	299.42	COAL	Coal	0.62		Seam 4	07969	300.90	301.52	As above coal.
21		301.64	304.12	2.48	2.65	106.85%										#N/A								
	10,11						>25	0.00%	20	4	W6	R3	0	299.42	299.54	SHALE	Sh	0.12			07970	301.64	301.76	Broken Chunks, half disks of black massive vfg. to fg. Sh, several pieces with sks on them.
							5	97.63%	20	11	W6	R7	3	299.54	302.07	SANDSTONE	Sst	2.53						Light grey/white, cg to vcg, massive, numerous shale beds at 90°. All fractures at 90°. Coal spars, plant material. Cored too much.
22		304.12	305.08	0.96	0.89	92.71%										#N/A								
	11						-	100.00%	-	-	W6	R7	4	302.07	302.96	SANDSTONE	Sst	0.89						As above Sst. It was a solid piece but while breaking it to fit into the core box, a large vertical fracture came about.
23		305.08	307.65	2.57	2.57	100.00%										#N/A								
	12,13						4	91.44%	25	15	W5	R7	3	302.96	305.53	SANDSTONE	Sst	2.57						As above Sst except for 1 fracture at 0 degrees (filled with rock flour) and 3 at 90°. Several calcitve veins at 14°.
24		307.65	309.65	2.00	1.84	92.00%										#N/A								
	13						5	0.78	25	10	W5	R7	3	305.53	307.37	SANDSTONE	Sst	1.84						As above Sst except for 1 fracture at 10°, 1 fr at 15°, 1 at 0°. Rest of the fr at 90°, 1 calcite vein at 10°.
														307.37	307.53	LOST CORE	Lost Core	0.16	0.16					*Rock Loss*
25		309.65	311.20	1.55	1.07	69.03%										#N/A								
	13						1	100.00%	25	15	W6	R7	4	307.53	308.60	SANDSTONE	Sst	1.07						As above Sst except for there is quite a bit of bioturbation in the core. 1 fr at 90°.
														308.60	308.83	LOST CORE	Lost Core	0.23	0.23					*Rock Loss*
26		311.20	313.20	2.00	2.16	108.00%										#N/A								
	14						9	88.43%	25	12	W6	R7	4	308.83	310.99	SANDSTONE	Sst	2.16						As above Sst with a long joint (50cm) 0° TCA and joints at 20°, 30° and 90° TCA. Trace carbonate along jointing plane. Heavy bioturbation.
27		313.20	315.20	2.00	1.90	95.00%										#N/A								
	14,15						3	95.79%	25	15	W6	R7	4	310.99	312.89	SANDSTONE	Sst	1.90						As above, light grey, fg Sst
														312.89	312.95	LOST CORE	Lost Core	0.06	0.06					*Rock Loss*
28		315.20	317.20	2.00	2.04	102.00%										#N/A								
	15,16						3	93.14%	25	15	W6	R7	4	312.95	314.99	SANDSTONE	Sst	2.04						Slow drilling, very hard rock. As above, well sorted, light grey, fg Sst, massive.
29		317.20	320.20	3.00	2.67	89.00%										#N/A								
	16,17						7	100.00%	25	15	W6	R7	4	314.99	317.66	SANDSTONE	Sst	2.67						As above, light grey, fine grained, well sorted, massive Sst with trace plant material.
30		320.20	322.20	2.00	2.35	117.50%										#N/A								
	17						6	82.98%	25	15	W6	R7	4	317.66	320.01	SANDSTONE	Sst	2.35						As above, broken core at top of section recovered from last run. Trace plan material.
31		322.20	323.20	1.00	0.99	99.00%										#N/A								
	18						0	100.00%	-	15	W6	R7	4	320.01	321.00	SANDSTONE	Sst	0.99						As above.
32		323.20	326.20	3.00	2.97	99.00%										#N/A								
	19						7	96.97%	20	14	W6	R6	4	321.00	323.97	SANDSTONE	Sst	2.97						As above Sst, with small, 3cm gougy zone at 325.56m. Light grey, massive fg Sst.
														323.97	324.00	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
33		326.20	328.90	2.70	2.56	94.81%										#N/A								
	19,20						7	100.00%	25	15	W6	R7	3	324.00	326.56	SANDSTONE	Sst	2.56						As above Sst, except for 6 fr at ≈ 90 °. Coal spars, plant material.
														326.56	326.63	LOST CORE	Lost Core	0.07	0.07					*Rock Loss*
34		328.90	329.90	1.00	1.07	107.00%										#N/A								
	20						2	100.00%	25	15	W6	R7	4	326.63	327.70	SANDSTONE	Sst	1.07						Fg, grey, massive Sst
35		329.90	332.90	3.00	3.02	100.67%										#N/A								
	21						10	100.00%	25	12	W6	R7	4	327.70	330.72	SANDSTONE	Sst	3.02						Fine grained to medium grained, pale grey Sst with abundant thin <1mm coal stringers 70° TCA.Jointing consitantly at 85° TCA.
36		332.90	335.21	2.31	2.32	100.43%										#N/A								
	22						5	100%	25	12	W6	R7	4	330.72	333.04	SANDSTONE	Sst	2.32						Bottom two breaks are from opening the split tube, not joints. Fg grey, massive Sst. Lacks plant material found above.
37		335.21	337.98	2.77	2.56	88.81%										#N/A								
	22,23						7	89.33%	25	13	W6	R6	4	333.04	334.72	SANDSTONE	Sst	1.68						Fg, light grey, Sst, massive, in sharp contact with the unit below. Jointing at 70° TCA, clay filled.

														334.72	334.82	SANDSTONE	Sst	0.10			03394	335.03	335.13	*Roof Sample, part of above Sst*
	22,23						>25	0.00%	0	5	W6	R6	4	334.82	335.02	COALY MUDSTONE	Coaly SH	0.20			03395	335.13	335.33	Crushed, dull coal w. 5cm carb. Sltst parting, does not bubble, 70% dull, 30% bright.
														335.02	335.08	LOST CORE	Lost Core	0.06	0.06		ns			*Coal Loss*
	22,23						>25	0.00%	0	5	W5	C3	1	335.08	335.33	SILTSTONE	Sltst	0.25			03396	335.64	335.89	Crushed Sltst parting with thin Coal bands
	22,23						>25	69.70%	0	5	W5	C3	1	335.33	335.66	COALY MUDSTONE	Coaly SH	0.33		Seam 3U	03397	335.89	336.22	Dull bright, mixed with crushed Sltst.
38		337.98	340.43	2.45	0.97	39.59%										#N/A								
	23						0	100.00%	0	2	W5	S2	0	335.66	335.99	SHALY COAL	SHC	0.33		Seam 3U	03398	336.22	336.55	Crushed but competent, very light Coal, puggy, bright/dull
	23						0	100.00%	-	-	W3	C3	2	335.99	336.34	CLAYSTONE	Clyst	0.35		Seam 3U	03399	337.08	337.43	Brown grey, massive Claystone with thin Coal beds.
														336.34	336.53	LOST CORE	Lost Core	0.19	0.19	Seam 3U	ns			*Coal Loss*
	23						>25	100.00%	0	2	W5	S2	0	336.53	336.82	SHALY COAL	SHC	0.29		Seam 3U	03400	337.62	337.91	As above, dull bright Coal (70/30) crushed, very light, not bubbling
														336.82	337.15	LOST CORE	Lost Core	0.33	0.33	Seam 3U	ns			*Coal Loss N.B. Adjusted Depths*
														337.15	337.65	LOST CORE	Lost Core	0.50	0.50		ns			*Rock Loss as interpreted from geophysical logs*
39		340.43	341.58	1.15	0.49	42.61%										#N/A								
														337.65	338.40	LOST CORE	Lost Core	0.75	0.75	Seam 3L	ns			COAL - as interpreted from geophysical log
														338.40	338.50	COALY MUDSTONE	Coaly Sltst	0.10			03251	337.91	338.01	*Floor Sample, part of below Sltst*
	24						>25	0.00%	0	6	W5	R3	1	338.50	338.89	SILTSTONE	Sltst	0.39						Broken, dark grey, fg, massive Sltst.
														338.89	339.53	LOST CORE	Lost Core	0.64	0.64					*Rock Loss*
40		341.58	343.58	2.00	2.02	101.00%										#N/A								
	24						>25	0.00	0	2	W4	C1	0	339.53	339.63	SHALY COAL	Shaly Coal	0.10			03252	339.80	339.90	Gougey dull black Coal. Has consistancy of rock flour.
	24						9	74.48%	20	7	W5	R4	3	339.63	341.55	SILTSTONE	Sltst	1.92						Grey-brown fg, slightly sandy siltstone, tighly bedded 85°. Some clay gouge on jointing surfaces, from drilling? trace carbonates. Plant material, extremely friable.
41		343.58	346.58	3.00	2.80	93.33%										#N/A								
							8	95.00%	25	14	W6	R7	3	341.55	344.35	SANDSTONE	Sst	2.80						Sst, 2.20m from top a 7cm thick grey clayzone (small fault?). All fr at 90°, shale beds at 90°. Core was broken at 345m to fit into box.
														344.35	344.55	LOST CORE	Lost Core	0.20	0.20					*Rock Loss*
42		346.58	347.35	0.77	0.58	75.32%										#N/A								
	26							100.00%			W6	R7	4	344.55	344.80	SANDSTONE	Sst	0.25						Light grain, cg to v.cg. Heavily bioturbated. Numerous irregular beds of Sh at bottom of run.
	26						1	66.67%	0	2	W6	R0	1	344.80	344.95	SHALE	Sh	0.15						Black v.fg to fg thinly to thin laminations. Sst beds at 85-90°. Fr at 90°.
	26						0	100.00%			W6	R7	4	344.95	345.13	SANDSTONE	Sst	0.18						As above SST, except for only a minor amount of bioturbation. Sh beds at 90°.
														345.13	345.31	LOST CORE	Lost Core	0.18	0.18					*Rock Loss*
43		347.35	349.58	2.23	2.24	100.45%										#N/A								
	26						3	100.00%	25	15	W6	R6	4	345.31	346.59	SANDSTONE	Sst	1.28						Several v. thin calc veins at 90°. As above Sst except for coal spars, & plant material in core. All fr @ 90° & planar.
	26										W6	C3	3	346.59	346.66	CLAY	Clay	0.07						Light grey fg-v.fg massive, hard for clay.
	26						12	100.00%	0.44	9	W6	R7	4	346.66	347.55	SANDSTONE	Sst	0.89						Broken in shoe! As above SST w/ a few thinly laminated shale beds at 90°. All fr are planar, along bedding, 90°.
44		349.58	352.58	3.00	2.98	99.33%										#N/A								
	27/28						>25	0.63	25	8	W6	R5	3	347.55	350.53	SANDSTONE	Sst	2.98						As above Sst except for 4 planar fr at 45°, 3 at 0°, rest at 90°. 5 small fault zones at 36, 68, 94, 150, 262cm from top of interval. The fault zones at 150, 262, are filled w/ "rock flour".
45		352.58	355.48	2.90	2.92	100.69%										#N/A								
	28/29						7	98.18%	25	15	W6	R7	3	350.53	353.28	SANDSTONE	Sst	2.75						As above Sst, 5 fr are more or less planar at 90°. 2 small planar fr at 45°. Bedding at 80-90° in shale stringers.
	29						>25	0.00%	3	8	W6	R3	2	353.28	353.45	MUDSTONE	Mdst	0.17						Fault zone on top of interval, chunks of mdst and rock flour. Mdst black, fg to v.fg massive.
46		355.48	357.48	2.00	1.74	87.00%										#N/A								
	29						7	60.34%	25	6	W6	R5	4	353.45	355.19	SANDSTONE	Sst	1.74						Dk grey Slst w/ 2-10cm sandy layers periodically throughout interval; becomes more broken down section. Fg massive joints avg 80°.
	29													355.19	355.39	LOST CORE	Lost Core	0.20	0.20					*Rock Loss*
47		357.48	358.48	1.00	1.06	106.00%										#N/A								
	30										W6	R5	3	355.39	355.42	SILTSTONE	Sltst	0.03						Dk grey massive fg Sltst
	30						3	36.36%	25	7	W6	R6	3	355.42	355.75	SANDSTONE	Sst	0.33						Light grey massive fg Sst
	30						9	22.86%	20	6	W6	R5	3	355.75	356.45	SILTSTONE	Sltst	0.70						Dk grey fg massive Sltst w/ calcite filled jointing 45° TCA. Highly broken (drilling?) breaks filled with mud, likely from drililng. Trace plant material.
48		358.48	359.69	1.21	1.04	85.95%										#N/A								
														356.45	358.17	LOST CORE	Lost Core	1.72	0.17					*LOST CORE- needed for adjustment for depth and*
							2	0.00%	25	7	W6	R5	4	358.17	358.27	SILTSTONE	Sltst	0.10						Dk grey, massive fg Sltst jointing 85°. (Driller says rock is very fractured)
	30													358.27	358.37	SILTSTONE	Sltst	0.10			03391	357.51	357.61	Roof Sample, part of above Sltst
	30						>25	0.00%	10	3	W5		1	358.37	359.21	COAL	Coal	0.84		Seam 1	03392	357.61	358.45	Crushed dull-bright Coal, powdery w/ some angular fragments.
														359.21	359.71	LOST CORE	LOST CORE	0.50		Seam 1	ns			COAL - interpreted from e-log
49		359.69	361.69	2.00	2.26	113.00%										#N/A								
														359.71	359.81	SILTSTONE	Sltst	0.10			03393	358.45	358.55	*Floor Sample, part of below Sltst*
	30/31						>25	0.00%	10	5	W3	S5	1	359.81	361.72	SILTSTONE	Sltst	1.91						Dk grey heavily clay alteration, fiberous & fissile, w/ clay like texture. More solid 3-10cm pieces of Sltst towards the end of the section. Original fabris not apparent. Likely massive. Some plant material.
							1	25.00%	25	10	W6	R7	4	361.72	361.97	SANDSTONE	Sst	0.25						Medium grey, cg. Massive Sst
50		361.69	363.95	2.26	2.02	93.81%										#N/A								
	32						3	100.00%	25	13	W6	R7	4	361.97	363.39	SANDSTONE	Sst	1.42						Grey Sst both qtz filled brecciated zones, large angular clasts. Otherwise mg and massive.
	32						>25	0.00%	10	5	W3	S3	1	363.39	363.72	SILTSTONE	Slst	0.33						Crushed, clay altered, massive med-dk grey Slst. w/ some small competent pieces.
	32						>25	0.00%	10	4	W5	C4	1	363.72	363.99	COAL	Coal	0.27		Seam 1 Sub	ns			Black, crushed, needly like, dull-bright Coal.
51		363.95	365.95	2.00	1.94	97.00%										#N/A								
	32						6	93.75%	25	10	W6	R5	4	363.99	364.79	SILTSTONE	Slst	0.80						Dark grey, massive-weakly bedded (80°), fg, weakly sandy towards the end of the interval.
	33						3	92.98%	25	12	W6	R6	4	364.79	365.93	SANDSTONE	Sst	1.14						Light grey Sst IB w/ thin layers of Sltst of variable orientation. Sltst layers decrease in abundance down hole. Sst is mg, bedding angles are 70-80°.
														365.93	365.99	LOST CORE	Lost Core	0.06	0.06					*Rock Loss*
52		365.95	366.26	0.31	0.29	93.55%										#N/A								
	33						4	0.00%	20	7	W6	R7	2	365.99	366.18	SANDSTONE	Sst	0.19						As above Sst except for 3 fr at 90°, 1 fr at 12°.
	33						>25	0.00%	25	3	W6	R3	2	366.18	366.28	SHALE	Sh	0.10						Broken chunks of Sh (might be from drilling). Black massive v.fg-fg.
														366.28	366.30	LOST CORE	Lost Core	0.02	0.02					*Rock Loss*
53		366.26	368.26	2.00	1.64	82.00%										#N/A								
	33						2	90.91%	25	12	W6	R7	3	366.30	366.85	SANDSTONE	Sst	0.55						Light grey cg to v.cg thin to med. laminations separated by thin laminations of Sh. 2 planar fr at 90°, sh beds@ ≈ 90°.
	33						1	100.00%	25	15	W6	R7	2	366.85	367.15	LAMINITE	IB Sst/Sh	0.30						Alternating bands of above Sst w/ thin laminations of Sh. 60% Sst & 40% Sh. All fr and beds at 90°.

	33						>25	0.00%	20	4	W6	R7	1	367.15	367.56	COAL	Coal	0.41						Dull (70%) and bright (30%), broken crushed coal w/ discs of hard coal. Bubble for 10min. No cleating. Powdery, trace of py and calcite. Fr at 90°. Lots of irregular fractures.
														367.56	367.92	LOST CORE	Lost Core	0.36	0.36					*Coal Loss*
	33						18	31.58%	25	6	W6	R3	1	367.92	368.30	SILTSTONE	Sltst	0.38						Dark grey fg to mg massive. All fr at 90°.
54	34	368.26	370.76	2.50	2.34	93.60%										#N/A								
							10	86.75%	25	14	W6	R7 - R5	3	368.30	370.64	LAMINITE	IB Sltst/Sst	2.34						Sltst 65%, SST 30%, 5%. Sh Thinly to med laminations of dark mg Sltst, IB w/ thinly to med laminations of v.cg. Light grey Sst wispy sh beds throught out ~90°. All fr more or less planar and at 90°, except 2 fr at 60°.Coal spars and plant Coal spars and plant material.
														370.64	370.80	LOST CORE	Lost Core	0.16	0.16					*Rock Loss*
55		370.76	371.76	1.00	0.87	87.00%										#N/A								
	34						>25	80.00%	0	1	W6	R3	3	370.80	371.05	LAMINITE	IB Sh/Sltst	0.25						60% Sltst, 40% Sh. Sltst: mg thin laminations. Sh: black, v.fg. thinly laminated. All beds at 90°. Last 5cm mostly fault gouge w/ bit of Sltst
	34						>25	0.00%	0	1	W6	R0	0	371.05	371.25	COAL	Coal	0.20						Dull (65%) and bright (35%). No bubbling! Powdery, crushed. Sheared. No sulphides.
	34													371.25	371.38	LOST CORE	Lost Core	0.13	0.13					*Coal Loss*
	35						2	80.95%	25	15	W6	R3	3	371.38	371.80	SILTSTONE	Sltst	0.42						Dark grey mg massive Sltst.
56		371.76	372.27	0.51	0.51	100.00%										#N/A								
	35						2	100.00%	25	9	W6	R4	3	371.80	372.31	SANDSTONE	Sst	0.51						Cg to v.cg Sst, light grey, massive except for a few Sst beds at 90°. Lots of qtz (veining and in the matrix) but stangely soft. 2 somehwhat irregular fr at 90°.
57		372.27	373.27	1.00	0.98	98.00%										#N/A								
	35						2	100.00%	20	14	W6	R4	3	372.31	373.29	SANDSTONE	Sst	0.98						As above Sst except for 3 fr at 90°. Thin Sh beds in Sst at 90°. N.B. Driller lost his mark on the steel. So we attemped to measure off pipe. So the length of run and depth are off. I will regain proper depth at end of pipe.
														373.29	373.31	LOST CORE	Lost Core	0.02	0.02					*Rock Loss*
58		373.27	375.44	2.17	1.92	88.48%										#N/A								
	36						4	93.67%	25	14	W6	R4	2	373.31	374.10	SANDSTONE	Sst	0.79						As above Sst except for 3 fr at 90°. Thin Sh beds in Sst at 90°. N.B. Driller lost his mark on the steel. So we attemped to measure off pipe. So the length of run and depth are off. I will regain proper depth at end of pipe.
	36						>25	0.00%	25	7	W6	R3	1	374.10	375.23	SHALE	Sh	1.13						Black massive v.fg broken into "discs" . All fr at 90°. Last 12cm are broken chunks of Sh w/ drill mud.
59		375.44	377.94	2.50	2.76	112.40%										#N/A								
	36						>25	0.00%	2	7	W6	R3	1	375.23	375.77	SILTSTONE	Sltst	0.54						First 20cm broken, crushed. Numerous fr filled w/ calc at 45°. Light grey, mg-fg massive. 5 fr at 90°.
	36/37						>25	0.00%	0	1	W6	R0	0	375.77	377.11	CLAYSTONE	Clyst	1.34						Clyst, broken into small clasts. Light grey v.fg. Numerous SS, Crushed, soft.
														377.11	377.17	LOST CORE	Lost Core	0.06	0.06					*Rock Loss*
	37						4	65.91%	25	11	W6	R6	2	377.17	378.05	SANDSTONE	Sst	0.88						Light grey cg-v.cg massive, odd Sh bed at 85°, 1 35cm fr at 45° filled w/ calc.
60		377.94	380.44	2.50	2.50	100.00%										#N/A								
	37							90.91%			W6	R6	2	378.05	378.16	SANDSTONE	Sst	0.11						As above Sst.
	37/38						>25	0.00%	0	2	W6	R0	0	378.16	379.82	MUDSTONE	Mdst	1.66						First 61cm are sheared to bits. Numerous sks at 45° filled w/ calc. 11 fr at 90°. Sltst is greyish black, v.fg, massive.
	38						10	26.03%	25	7	W6	R6	0	379.82	380.55	SANDSTONE	Sst	0.73						As above Sst.
61		380.44	382.94	2.50	2.45	98.00%										#N/A								
	39						12	0.62	25	11	W6	R6	2	380.55	383.00	SANDSTONE	Sst	2.45						As above Sst. 7 planar fr at 90°. 5 sks at 50°. Sh beds 70-85°.
														383.00	383.05	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
62		382.94	385.94	3.00	2.86	95.33%										#N/A								
	39/40						>25	16.09%	20	7	W6	R6	1	383.05	383.92	SANDSTONE	Sst	0.87						As above Sst. Numerous fr. 2 fr at 45°, 3fr at 0°, broken crushed chunks of Sst.
														383.92	384.06	LOST CORE	Lost Core	0.14	0.14					*Rock Loss*
	40						>25	20.10%	25	6	W6	R3	1	384.06	386.05	SILTSTONE	Sltst	1.99						Dark grey massive fg-mg all fr at 90°.
63		385.94	386.53	0.59	0.54	91.53%										#N/A								
	40/41						>25	0.00%	25	6	W6	R3	1	386.05	386.59	SILTSTONE	Sltst	0.54						As above unit, all fr at 90°.
														386.59	386.64	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
64		386.53	389.53	3.00	1.97	99.00%										#N/A								
	41						>25	0.00%	25	6	W6	R3	1	386.64	387.51	SILTSTONE	Sltst	0.87						As above Sltst, all fr at 90°.
	41						2	68.97%	25	7	W6	R7	2	387.51	387.80	SANDSTONE	Sst	0.29						Light grey cg to v.cg massive Sst.
	41/42						>25	0.00%	25	6	W0	R3	1	387.80	388.61	SILTSTONE	Sltst	0.81						As above SLT, except for the SLT is more recessive. It's broken up & crushed.
														388.61	388.64	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
65		389.53	392.53	3.00	2.63	87.67%										#N/A								
	42						4	40.00%	25	8	W6	R3	1	388.64	388.94	SILTSTONE	Sltst	0.30						Dark grey mg to fg massive. 4fr at 90°. Several Coal spars.
	42						13	75.97%	25	12	W6	R7	1	388.94	391.27	SANDSTONE	Sst	2.33						30cm from top,a 6cm broken Sltst layer. Contact angle is 75°. Light grey cg- v.cg. Bedding at 80°. Calcite vein at 45°. Sst mostly qtzite/qtz eyes. 3 fr at 45°, rest at 90°.
														391.27	391.64	LOST CORE	Lost Core	0.37	0.37					*Rock Loss*
66		392.53	394.53	2.00	1.87	93.50%										#N/A								
	43						>25	0.00%	25	4	W6	R3	0	391.64	391.82	SILTSTONE	Sltst	0.18						Broken chunks of massive mg Sltst.
	43						6	81.07%	25	13	W6	R7	2	391.82	393.51	SANDSTONE	Sst	1.69						As above Sst. Except for SH beds at 68°. 1 large ft at 24°, 2 small fr at 5°, all other fr at 90°.
														393.51	393.64	LOST CORE	Lost Core	0.13	0.13					*Rock Loss*
67		394.53	397.53	3.00	3.00	100.00%										#N/A								
	43/44						10	92.96%	25	15	W6	R7	2	393.64	396.34	SANDSTONE	Sst	2.70						As above Sst except for all fr at 90°.
	43/44						>25	0.00%	20	5	W6	R3	1	396.34	396.64	SILTSTONE	Sltst	0.30						Massive greyish black mg Sltst. A 7cm section, 16 cm from bottom, broken-crushed, "clast" size pieces of Sltst. 2 fr at 90°.
68		397.53	399.78	2.25	1.96	87.11%										#N/A								
	44						3	89.47%	25	10	6	R7	1	396.64	397.21	SANDSTONE	Sst	0.57						As above Sst.
	44/45						>25	37.31%	20	10	W6	R3	1	397.21	397.88	SILTSTONE	Sltst	0.67						Dark grey mg broken up massive.
	45						>25	55.56%	25	9	W6	R7	3	397.88	398.60	SANDSTONE	Sst	0.72						As above Sst all fr at 90°. Last 30cm crushed/broken, chunks of Sst.
														398.60	398.89	LOST CORE	Lost Core	0.29	0.29					*Rock Loss*
69		399.78	402.03	2.25	1.67	74.22%										#N/A								
	45						>100	0.00%	0	5.00	W6	R7	0	398.89	399.16	SANDSTONE	Sst	0.27						As above Sst except for it is broken, chunks of Sst.
	45						>25	31.43%	20	9	W6	R3	1	399.16	400.56	SILTSTONE	Sltst	1.40						Dark grey massive mg in places only broken "clast" size chunks. 4 fr at 90°. 3 fr at 45°. All fr filled w/ calc
														400.56	401.14	LOST CORE	Lost Core	0.58	0.58					*Rock Loss*
70	N/A	402.03	402.10	0.07	0.00	0.00%										#N/A								
														401.14	401.21	LOST CORE	Lost Core	0.07	0.07					*Rock Loss, Blocked off pulled tube to unblock.*
71		402.10	404.61	2.51	2.15	85.66%										#N/A								
	46						>100	46.41%	20	3	W6	R3	1	401.21	403.02	SILTSTONE	Sltst	1.81						Sltst dark grey massive, mg-fg. Top 30cm broken crushed. From top of interval 81-114cm broken crushed clast of Sltst and calcite. Thick calcite vein at 45°. 3 fr @ 90°.This zone is 5% calcite!

	46						1	100.00%	25	15	W4	R7	2	403.02	403.36	SANDSTONE	Sst	0.34						Sst light grey but weathered dark black at base. Cg-v.cg massive, but almost crystalline. Several very thin (>0.5mm) calcite veins at 70°, 2 Sh beds at 80°.
														403.36	403.72	LOST CORE	Lost Core	0.36	0.36					*Rock Loss*
72		404.61	405.71	1.10	1.07	97.27%										#N/A								
	46						>100	11.21%	10	9	W6	R7	1	403.72	404.79	SILTSTONE	Sltst	1.07						Sltst dark grey massive broken to bits (more towards bottom of run). 3 fr at 90°, several irregular calcite veins. 1 calc vein at 70°, 1 sks at 70°, 1 sks at 45°.
														404.79	404.82	LOST CORE	Lost Core	0.03	0.03					*Rock Loss EOH @ 405.71 Driller's Depth & 403.33 Geophyiscal Log Depth*

Client: CJV
Project: Raven
Logged By: Farshad Shirmohammad, Parviz Rajaei

Hole Number: RAV-09-017
Date Hole Started: June 30 2009
Date Hole Finished:
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 355.68m
Depth of Casing: 24.90m
Core Size: Modified PQ

Geological Borehole Log: RAV-09-017

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Recovery: Length of Run (m)	Recovery: Length (m)	Recovery: (%)	RQD: Joints	RQD: % by Lith	Fractures: Joint Condition	Fractures: Degree of Breakage	Alt'n & Weath.	Hardness: Prefix	Hardness: Core Quailty	G.P.L. Corrected: From (m)	G.P.L. Corrected: To (m)		Interval Logged: Lith	Interval Logged: Length	Interval Logged: Lost Core	Interval Logged: Strat	Samples (Driller's Depths): Number	Samples (Driller's Depths): From (m)	Samples (Driller's Depths): To (m)	Description
														0.00	0.18	LOST CORE	Lost Core	0.18						Lost due to Casing Set up.
														0.18	14.80	OVERBURDEN	OB	14.62				0.00	14.62	Brown
														14.80	15.96	OVERBURDEN	OB	1.16				14.62	15.78	Grey silty sands & gravels waterbearing 5 gpm
														15.96	24.55	OVERBURDEN	OB	8.59				15.78	24.37	Grey Silts with gravel and some clay, cobbles.
														24.55	40.71	SILTSTONE	Sltst	16.16				24.37	40.53	Dark grey
														40.71	42.23	SANDSTONE	Sst	1.52				40.53	42.05	Grey, 1 gpm
														42.23	121.48	SILTSTONE	Sltst	79.25				42.05	121.30	Dark grey
														121.48	126.05	SILTSTONE	Sltst	4.57				121.30	125.87	Dark grey
														126.05	147.39	SANDSTONE	Sst	21.34		Cowie		125.87	147.21	Grey, 2 gpm
														147.39	156.53	SANDSTONE	SST	9.14				147.21	156.35	Dark grey 15 gpm salty
														156.53	171.77	SANDSTONE	Sst	15.24				156.35	171.59	Grey with quartz
														171.77	173.30	SANDSTONE	Sst	1.53				171.59	173.12	Brown
														173.30	183.96	SANDSTONE	Sst	10.66				173.12	183.78	Light Grey, 20 gpm salty
														183.96	191.58	SANDSTONE	Sst	7.62				183.78	191.40	Dark Grey
														191.58	193.11	SANDSTONE	Sst	1.53				191.40	192.93	Brown
														193.11	-209.87	SANDSTONE	Sst	16.76				192.93	209.69	Dark Grey Sst 20 gpm salty
														209.87	232.73	SANDSTONE	Sst	22.86				209.69	232.55	Dark Grey 20-25 gpm salty water
														232.73	233.12	COAL	Coal	0.39		Seam 5	ns	232.55	232.94	Coal, stopped drilling & started Coring. The 0.39cm of coal was lost during chip sampling.
1	1	232.94	235.21	2.27	1.70	74.89%										#N/A								
														233.12	233.37	COAL	Coal	0.25		Seam 5	07672	232.86	233.11	Coal, solid and bright. ~10cm on the top, rst is powdery and dull - Seam 4?
														233.37	233.47	CLAYSTONE	Clyst	0.10			07673	233.11	233.21	Floor Sample, part of below Clyst
														233.47	234.04	LOST CORE	Lost Core	0.57	0.57					*Rock*
							>25		25	3	W5	R5		234.04	235.39	CLAYSTONE	Clyst	1.35						Clyst and some Sltst//Sh. Calcite filled fractures common. Rock is grey to brown (med) and massive - plant fossils.
2	1/2	235.21	237.15	1.94	1.70	87.63%										#N/A								
														235.39	235.63	LOST CORE	Lost Core	0.24	0.24					*Rock*
							>25		25	4	W6	R5		235.63	237.33	SANDSTONE	Sst	1.70						Massive med grey f-mg SS, plant fossils present, low angle fractures common.
3	2	237.15	239.28	2.13	2.38	111.74%										#N/A								
							12		25	13	W6	R6		237.33	239.71	SANDSTONE	Sst	2.38						Massive dark to light grey f-mg Sst. Calcite, coal stringers and plant fossils are common.
4	3	239.28	242.07	2.79	2.40	86.02%										#N/A								
							13	87.92%	25	13	W6	R6		239.71	242.11	SANDSTONE	Sst	2.40						Sst mg ight grey w/ stringers of dark grey Sltst at 90°
5	3 /4	242.07	243.44	1.37	1.48	108.03%										#N/A								
							9	60.81%	25	13	W6	R6		242.11	243.59	SANDSTONE	Sst	1.48						Sst as above 0.54 from top a 30 mad sample broken into 5cm pieces parting crushed.
6	4	243.44	245.87	2.43	1.05	43.21%										#N/A								
														243.59	243.68	LOST CORE	Lost Core	0.09	0.09					*Rock*
							3	90.48%	25	9	W6	R6		243.68	244.73	SANDSTONE	Sst	1.05						Sst m-cg, med grey massive.
7	4 /5	245.87	247.09	1.22	2.36	193.44%										#N/A								
							1	86.02%	25	9	W6	R6	4	244.73	247.09	SANDSTONE	Sst	2.36						Sst m-cg light grey. Joints ~ SLTy concentrated 0.60m at the bottom
8	5/6	247.09	249.83	2.74	2.32	84.67%										#N/A								
							22	93.97%	25	9	W6	R6	4	247.09	249.41	SANDSTONE	Sst	2.32						Sst as above
9	6/ 7	249.83	251.96	2.13	2.22	104.23%										#N/A								
							13.00	77.46%	25	14	W6	R6	4	249.41	251.53	SANDSTONE	Sst	2.12						Sst, cg light grey. 0.45m at the bottom, 0.27m of core broken to pieces less than 5cm.
														251.53	251.63	CARBONACEOUS SILTSTONE	Carb. SST	0.10			07674	251.17	251.27	Roof sample, part of above Sst
10	7	251.96	254.43	2.47	1.47	59.51%										#N/A								
														251.63	252.08	COAL	Coal	0.45			07675	251.27	251.72	Coal, dull hard
														252.08	252.14	CLAYSTONE	Clyst	0.06			07676	251.72	251.78	Clyst very broken, 0.10 floor sample
														252.14	252.84	SILTSTONE	Sltst	0.70						Sltst med grey fg
														252.84	253.10	SANDSTONE	Sst	0.26						Sst mg light grey
11	7 /8	254.43	256.10	1.67	2.46	147.31%										#N/A								
								100.00%				R6	4	253.10	253.24	SANDSTONE	Sst	0.14						Sst, med grey, mg
								100.00%				R4	4	253.24	254.28	SILTSTONE	Sltst	1.04						Sltst med grey fg solid
							3	89.06%	25	14	W6	R6	4	254.28	255.56	SANDSTONE	Sst	1.28						Sst mg light grey
12	8 /9	256.10	258.01	1.91	1.55	81.15%										#N/A								
							8	98.71%	25	14	W6	R6	4	255.56	257.11	SANDSTONE	Sst	1.55						Sst coarse grained, light grey, w/ coal stringers at 90°
13	9/10	258.01	260.29	2.28	2.12	92.98%										#N/A								
														257.11	257.23	LOST CORE	Lost Core	0.12	0.12					*Rock*
							13	91.98%	25	14	W6	R6	4	257.23	259.35	SANDSTONE	Sst	2.12						Sst as above w/ coal stringers at 90°
14	10	260.29	262.73	2.44	2.78	113.93%										#N/A								
							7	97.84%	15	14	W6	R6	4	259.35	262.13	SANDSTONE	Sst	2.78						Sst as above, cg med gray w/ few oal stringers ~ 85°
15	10/11	262.73	264.08	1.35	1.35	100.00%										#N/A								
							7	94.81%	25	14	W6	R6	4	262.13	263.48	SANDSTONE	Sst	1.35						Sst as above coal stringers at 90°
16	11 & 12	264.08	265.45	1.37	2.52	183.94%										#N/A								
							4	92.06%	25	15	W6	R5	4	263.48	266.00	SANDSTONE	Sst	2.52						Light grey m-cg Sst, massive. Organic and plant fragment are common and are mainly 90°.
17	12/13	265.45	268.19	2.74	2.41	87.96%										#N/A								
							0	100.00%	-	-	W6	R5	4	266.00	267.65	SANDSTONE	Sst	1.65						Massive m-cg Sst, light to med grey w/ plant fossils and fragments; mainly oriented ~90°.
														267.65	267.98	LOST CORE	Lost Core	0.33	0.33					*Rock*
							2	100.00%	25	15	W5	R5	4	267.98	268.74	CLAYSTONE	Clyst	0.76						Massive brown to grey/brown med dark Clyst and Mdst, some plant fossils are present
18	13/14	268.19	270.85	2.66	2.32	87.22%										#N/A								
														268.74	269.08	LOST CORE	Lost Core	0.34	0.34					*Rock*
							7							269.08	271.40	CLAYSTONE	Clyst	2.32						Massive brown med dark clyst, calcite filled fractures, some coal stringers also present.
19	14	270.85	272.52	1.67	1.73	103.59%										#N/A								
							7	99.29%	35	14	W5	R4	4	271.40	272.80	CLAYSTONE	Clyst	1.40						Dark grey Clyst (0.10m Roof sample)
														272.80	272.90	CLAYSTONE	Clyst	0.10			07677	273.96	274.06	*Roof Sample, part of above Clyst*
														272.90	273.13	COAL	Coal	0.23		Seam 4	07678	274.06	274.29	Coal
														273.13	273.22	LOST CORE	Lost Core	0.09	0.09	Seam 4	ns			Coal
20	14 /15	272.52	274.65	2.13	2.06	96.71%										#N/A								
														273.22	273.25	COAL	Coal	0.03		Seam 4	07678	274.29	274.32	Coal

															273.25	273.35	CLAYSTONE	Clyst	0.10		Seam 4	07679	274.32	274.42	*Floor Sample, part of below Clyst*
															273.35	273.44	CLAYSTONE	Clyst	0.09		Seam 4	ns			Clyst, brownish gray, solid
															273.44	273.51	LOST CORE	Lost Core	0.07	0.07	Seam 4	ns			*Lost*
															273.51	273.61	COAL	Coal	0.10		Seam 4	07680	274.51	274.61	Coal moderately soft, fissile, dirty
															273.61	273.91	COAL	Coal	0.30		Seam 4	Can 1	274.61	274.91	Coal: hard, solid banded to banded dull
															273.91	273.96	COAL	Coal	0.05		Seam 4	07680	274.91	274.96	Coal: hard, dull, dirty
															273.96	274.01	COAL	Coal	0.05		Seam 4	ns			
															274.01	274.11	CLAYSTONE	Clyst	0.10			07681	274.86	274.96	*Floor*
															274.11	274.24	CLAYSTONE	Clyst	0.13						Clyst Dark grey, 0.05m at the top 0.03m Clyst. 0.10 Foor sample
							6		25	10	W6	R6	4		274.24	275.35	SANDSTONE	Sst	1.11						Sst med grey, mg, 0.50m at the top w/ coal stringers at 90^{o}
21	15/16	274.65	276.58	1.93	1.93	100.00%											#N/A								
							12	63.73%	25	9	W6	R6	4		275.35	277.28	SANDSTONE	Sst	1.93						Sst med grey, mg. 1.20m from to 0.30m Clyst very soft the bottom part broken
22	16 & 17	276.58	279.00	2.42	2.14	88.43%											#N/A								
							10	84.11%	25	14	W6	R6	4		277.28	279.42	SANDSTONE	Sst	2.14						Sst cg,
23	16 & 17	279.00	280.83	1.83	1.81	98.91%											#N/A								
															279.42	279.99	LOST CORE	Lost Core	0.57	0.57					*Rock*
							4	98.90%	25	14	W6	R6	4		279.99	281.80	SANDSTONE	Sst	1.81						Sst mg,
24	17 & 18	280.83	283.73	2.90	2.90	100.00%											#N/A								
							16	92.41%	25	14	W6	R6	4		281.80	284.70	SANDSTONE	Sst	2.90						Sst cg
25	18/19	283.73	286.63	2.90	2.78	95.86%											#N/A								
							15	87.77%	25	13	W6	R6	4		284.70	287.48	SANDSTONE	Sst	2.78						Sst as above light grey cg massive
															287.48	287.60	LOST CORE	Lost Core	0.12	0.12					*Rock*
26	19/20	286.63	289.53	2.90	2.78	95.86%											#N/A								
															287.60	287.72	LOST CORE	Lost Core	0.12	0.12					*Rock*
							27	67.63%	25	10	W6	R6	4		287.72	290.50	SANDSTONE	Sst	2.78						Sst as above. 60cm from bottom 0.20m broken.
27	21 /22	289.53	292.43	2.90	2.76	95.17%											#N/A								
															290.50	290.64	LOST CORE	Lost Core	0.14	0.14					*Rock*
							5	97.46%	25	14	W6	R6	4		290.64	293.40	SANDSTONE	Sst	2.76						Sst cg light grey massive almost solid
28	22	292.43	295.33	2.90	2.93	101.03%											#N/A								
								100.00%				R6	4		293.40	296.33	SANDSTONE	Sst	2.93						Sst cg light grain solid piece
29	22 /23	295.33	298.25	2.92	2.70	92.47%											#N/A								
															296.33	296.55	LOST CORE	Lost Core	0.22	0.22					*Rock*
								100.00%			W6	R6	4		296.55	299.25	SANDSTONE	Sst	2.70						Massive light grey Sst. M-cg. Solid and hard to drill. Qtz and feldspars main components. Black masfic materials/minerals
30	23/24	298.25	300.99	2.74	2.74	100.00%											#N/A								
								100.00%			W6	R6	4		299.25	301.99	SANDSTONE	Sst	2.74						A massive solid light grey m-cg Sst. It looks the same as about run and has the characteristics of the SS above seam 3 (?)
31	24 /25	300.99	302.23	1.24	1.00	80.65%											#N/A								
								100.00%			W6	R6	4		301.99	302.99	SANDSTONE	Sst	1.00						Massive light grey m-cg Sst. It seeams to have been silicified. Very hard in drilling and timewise. It took twice thant he above run to cut through.
32	25 /26	302.23	305.15	2.92	3.07	105.14%											#N/A								
								100.00%			W6	R6	4		302.99	306.06	SANDSTONE	Sst	3.07						Light grey to med grey Sst, massive, mg w/ more organic materials. Some coal stringers are also present.
33	26 /27	305.15	308.07	2.92	2.87	98.29%											#N/A								
								100.00%			W6	R5	4		306.06	306.63	SANDSTONE	Sst	0.57			ns			As above.
															306.63	307.03	COAL	Coal	0.40		Seam 3	Can 2	307.73	308.13	Coal: hard, common, pyrite nodules Fracture Density(F.C.): weak to non
															307.03	307.43	COAL	Coal	0.40		Seam 3	Can3	308.13	308.53	Coal: soft, gas samples taken. Fracture Density (F.C.): weak to non
															307.43	307.83	COAL	Coal	0.40		Seam 3	Can 4	308.53	308.93	Coal: Fracture Density (F.C.): weak to non
															307.83	308.23	COAL	Coal	0.40		Seam 3	Can 5	308.93	309.33	Coal: mostly hard Bright Coal (bright laminae>80%) to Banded Bright Coal (bright laminae 60% to 80%) Fracture Density (F.C.) weak to non
															308.23	308.63	COAL	Coal	0.40		Seam 3	Can 6	309.33	309.73	Coal: Fracture Density (F.C.): weak to non
															308.63	308.71	COAL	Coal	0.08		Seam 3	076682	309.73	309.81	Farshad S."Coal - bright, bubbling - almost solid for ~2m, ~20cm at the bottom is dusty and powdery and ~10cm at the bottom > CLST (floor) NOTE: 2m of coal was sampled by petrologic for CBM, 0.20m of coal at the bottom, plus 10cm of CLST was sampled by compliance." Peter Graham " soft fissile, not sampled Fracture Density (F.C.)weak to non"
															308.71	308.78	SHALY COAL	SHC	0.07		Seam 3	076682	309.81	309.88	Shaley Coal: soft, fissile, dark brown to black
															308.78	308.83	COAL	Coal	0.05		Seam 3	076682	309.88	309.93	Soft broken Brightly Banded Coal
															308.83	308.93	CLAYSTONE	Clyst	0.10			076683	309.98	310.08	*Floor Sample*
34	27	308.07	309.78	1.71	1.68	98.25%											#N/A								
							>25	63.16%	10	3	W6	R5			308.93	310.61	LAMINITE	IB Sst & Mdst	1.68						Sst, fg and Mdst, grey to med brown, massive. A muddy section, ~20cm thick (gouge ?) at the depth of 311.26m
35	27 /28	309.78	311.79	2.01	1.99	99.00%											#N/A								
							6	91.46%	25	15	W6	R6			310.61	312.60	SANDSTONE	Sst	1.99						Med grey massive Sst, m-cg, calcite filled fractures, mainly 85-90^{o}
36	28/29	311.79	313.77	1.98	1.96	98.99%											#N/A								
							2	98.53%	25	15	W6	R6			312.60	313.28	SANDSTONE	Sst	0.68						Light grey, cg. Sst
											W6	R6			313.28	314.56	SANDSTONE	Sst	1.28						Medium grey, fg. Sst, partly laminated at 90^{o}
37	29	313.77	315.75	1.98	1.90	95.96%											#N/A								
							12	78.95%	25	7	W6	R5	4		314.56	316.46	SANDSTONE	Sst	1.90						Light grey cg Sst. 0.60m from top, core is broken
															316.46	316.51	LOST CORE	Lost Core	0.05	0.05					*Rock*
38	30	315.75	317.73	1.98	1.92	96.97%											#N/A								
							12	88.54%	25	9	W6	R5	4		316.51	318.43	SANDSTONE	Sst	1.92						Sst med grey, mg. 0.90m from top, 0.15m gouge most of joints concentrate to 0.9 from top.
39	30/31	317.73	320.47	2.74	2.50	91.24%											#N/A								
							6	100.00%	25	15	W6	R6	4		318.43	320.93	SANDSTONE	Sst	2.50						Sst, cg light grey massive
															320.93	321.17	LOST CORE	Lost Core	0.24	0.24					*Rock*
40	31 /32	320.47	323.26	2.79	2.74	98.21%											#N/A								
							11	85.40%	25	9	W6	R5	4		321.17	323.91	SANDSTONE	Sst	2.74						Sst, med grey, mg. 0.50m at the bottom w/ bands of Sltst at 90^{o} up to 3cm thick.
41		323.26	325.39	2.13	2.00	93.90%											#N/A								
							13	12.00%	25	7	W6	R5	4		323.91	325.91	LAMINITE	IB SST & SLT	2.00						Sst bands are IB w/ SLT (dominates), bands 2-3cm
42	33	325.39	327.19	1.80	1.80	100.00%											#N/A								
							>25	0.00%	10	3	W5	R5	1		325.91	327.71	SILTSTONE	Sltst	1.80						Sltst and thin bedded core MDST. Fractures mainly along the bedding plane ~80^{o} -90^{o} Sst, med grey, mg. 0.50m at the
43	33 /34	327.19	330.11	2.92	2.97	101.71%											#N/A								
							>25	0.00%	10	3	W5	R5	1		327.71	330.68	SILTSTONE	Sltst	2.97						Sltst brown and grey with IB Sh, cbr Mdst and coal stringers. Calc is the main component in fractures.
44	35	330.11	331.23	1.12	1.10	98.21%											#N/A								
							>25	0.00%	10	3	W5	R5			330.68	331.78	SILTSTONE	Sltst	1.10						Sltst thin bedded cbr mdst and some shale. (mainat 332.5m), core is broken. Sltst is dense, med brown/grey w/ dark black
45	35/36	331.23	333.97	2.74	2.70	98.54%											#N/A								
							5	99.63%	25	14	W6	R5			331.78	334.48	SANDSTONE	Sst	2.70						Sst, like grey mg, 0.80m from top w/ SLT bands at 85SST, med grey, mg. 0.50m at the bottom w/ bands of Sltst at 90^{o} up to
															334.48	334.52	LOST CORE	Lost Core	0.04	0.04					*Rock*

46		333.97	335.34	1.37	1.35	98.54%										#N/A								
							4	98.46%	25	14	W6	R6		334.52	335.82	SANDSTONE	Sst	1.30			ns			Sst, m-cg at the bottom, 0.05m coal, one joint runs 0.70m along the core.
														335.82	335.87	COAL	Coal	0.05		Seam 1	07684	337.21	337.26	
47	36/37	335.34	338.24	2.90	2.68	92.41%										#N/A								
														335.87	336.27	COAL	Coal	0.40		Seam 1	Can 7	337.28	337.68	Coal: hard, thin clay lenses, Cleat Density(mm) Face cleat weak to non
														336.27	336.67	COAL	Coal	0.40		Seam 1	Can8	337.68	338.08	Coal: hard, gas bubbling common in whole seam, gas samples taken. Face cleat density(mm) weak to non.
														336.67	337.07	COAL	Coal	0.40		Seam 1	Can9	338.08	338.48	Coal: hard, cleat face density(mm) is weak to non
														337.07	337.47	COAL	Coal	0.40		Seam 1	Can 10	338.48	338.88	Coal: softer, cleat face density(mm) is weak to non
														337.47	337.87	COAL	Coal	0.40		Seam 1	Can 11	338.88	339.28	Coal: top 6cm soft, 34cm hard, cleat face density is weak to non
														337.87	337.90	COAL	Coal	0.03		Seam 1	07684	339.28	339.31	Coal: hard, banded, not gas sampled. Face cleat density(mm) is weak to non.
														337.90	338.16	COALY MUDSTONE	Coaly Sh	0.26		Seam 1	07685	339.31	339.57	Coaly Shale: hard, dark brown, not gas sampled.
														338.16	338.34	COAL	Coal	0.18		Seam 1	Can 12	339.57	339.75	Coal Hard, cleat face density(mm) is weak to non
														338.34	338.42	COAL	Coal	0.08		Seam 1	07686	339.75	339.83	Coal hard, banded, not gas sampled cleat face density(mm) is weak to non
														338.42	338.47	COALY MUDSTONE	Coaly Sh	0.05		Seam 1	07686	339.83	339.88	As above Coaly Shale, not gas sampled
														338.47	338.55	COAL	Coal	0.08		Seam 1	07686	339.88	339.96	Coal hard, banded, some pyrite on bedding planes, not gas sampled. Face cleat density(mm) is weak to non.
48	38	338.24	340.73	2.49	2.38	95.58%										#N/A								
														338.55	338.63	COAL	Coal	0.08		Seam 1	07686	340.18	340.26	Coal: hard broken, banded, not gas sampled
														338.63	339.03	COAL	Coal	0.40		Seam 1	Can 13	340.26	340.66	Coal: hard, occasional very thin carbonaceous shale layers. Face cleat density(mm) is weak to non. End of Seam 1
							5	100.00%	25	14	W6	R4		339.03	340.93	CLAYSTONE	Clyst	1.90			ns			Clyst, med grey w/ coal stringer at the top 0.10cm
49	38/39	340.73	343.22	2.49	2.44	97.99%										#N/A								
							6	73.53%	25	9	W6	R6	4	340.93	341.61	CLAYSTONE	Clyst	0.68						Clyst med grey massive
														341.61	343.37	SANDSTONE	Sst	1.76						Sst, 0.90m at the top mg light grey, the rest cg massive
50	39/30	343.22	346.02	2.80	2.80	100.00%										#N/A								
							13	88.57%	25	4	W6	R4	4	343.37	346.17	SILTSTONE	Sltst	2.80						Sltst, med grey massive. 1.10m from top is 0.05m coal broken.
51	40/41	346.02	348.56	2.54	2.65	104.33%										#N/A								
							>25	45.28%	25	5	W6	R5	3	346.17	348.82	SILTSTONE	Sltst	2.65						Med to dk grey Sltst and very fg Sst, massive. Some IB of Sh present. Gouges a 349.35m and 349.80m depth (5-10cm thick).
52	41/42	348.56	351.37	2.81	2.81	100.00%										#N/A								
							>25	60.50%	25	5	W6	R5	3	348.82	351.63	LAMINITE	IB Sltst & Sst	2.81						Med grey massive Sltst and IB of light grey f-mg Sst. Fractures are mainly calcite filled and some are SS. Some o- materials in SS present.
53	42 & 43	351.37	353.66	2.29	2.21	96.51%										#N/A								
							>25	72.85%	10	2	W6	R5	3	351.63	353.84	LAMINITE	IB Sltst & Sh	2.21						Light to med grey Sltst and IB of Sh, gouges at: ~355m depth. EOH

Geological Borehole Log: RAV-09-018

Client: CJV
Project: Raven
Logged By: Henry Kim, Sarah Newman

Hole Number: RAV-09-018
Date Hole Started: July 01 2009
Date Hole Finished: July 02 2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 81.78m
Depth of Casing: 22.50 m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To (m)	Length of Run (m)	Recovery		RQD		Fractures			Hardness		G.P.L. Corrected			Interval Logged				Samples (Driller's Depths)			Description
					Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage	Alt'n & Weath.	Prefix	Core Quailty	From (m)	To (m)		Lith	Length	Lost Core	Strat	Number	From (m)	To (m)	
														0.00	22.23	OVERBURDEN	ovbdn							0.00m - 21.19m Overburden. Casing depth at 22.50m
1	1	22.50	24.10	1.60	1.74	108.75%																		
							>25	0.00%	20	9	W6	R5	4	22.23	23.97	LAMINITE	IB Sst	1.74						Light to medium grey, fine grained to medium grained Sst interbedded with black fine grained Sltst. Bedding and joints ~80-90° TCA, vertical fracture near bottom.
2	1,2	24.10	27.15	3.05	3.01	98.69%					W6	R5	4			#N/A								
							15	83.06%		12				23.97	26.98	SILTSTONE	Slst	3.01						Dark grey, fine grained, Sltst. Most joints ~ 85° TCA. Some lower angle joints.
3	2	27.15	30.20	3.05	1.14	57.05%										#N/A								
							5	56.25%	-	9	W6	R5	4	26.98	27.52	SILTSTONE	Slst	0.54						Sltst same as above, vertical joint near bottom. Coal lenses at 75° TCA.
														27.52	27.62	SILTSTONE	Slst	0.10			03384	27.52	27.62	
														27.62	28.12	COAL	Coal	0.50		Seam1	03385	27.62	28.12	
							>25	0.00%	-	4	W6	R1	2	28.12	28.72	COAL	Coal	0.60		Seam1	03386	28.12	28.72	Black, light, little gassy, 90-95% bright coal. Massive pyrite along joint and planar surfaces.
														28.72	28.94	LOST CORE	Lost Core	0.22	0.22	Seam1	ns			*Coal loss.*
														28.94	29.31	LOST CORE	Lost Core	0.37	0.37	Seam1	ns			*Rock loss.*
														29.31	29.91	LOST CORE	Lost Core	0.60	0.60	Seam1	ns			*Coal loss.*
														29.91	30.03	LOST CORE	Lost Core	0.12	0.12	Seam1	ns			*Rock loss.*
4	2,3	30.20	33.25	3.05	0.50	55.08%										#N/A								
							>25	0.00%	-	4	W6	R1	2	30.03	30.53	COAL	Coal	0.50		Seam1	03387	30.03	30.53	Black, light, little gassy, 90-95% bright coal, massive pyrite on planar surfaces.
														30.53	31.03	COAL	Coal	0.50		Seam1	03388	30.53	31.03	
														31.03	31.71	COAL	Coal	0.68		Seam1	03389	31.03	31.71	
														31.71	31.81	SILTSTONE	SLTST	0.10			03390	31.71	31.81	
														31.81	32.14	LOST CORE	Lost Core	0.33	0.33	Seam1	ns			*Coal loss.*
														32.14	32.29	LOST CORE	Lost Core	0.15	0.15	Seam1	ns			*Rock loss.*
														32.29	32.68	LOST CORE	Lost Core	0.39	0.39	Seam1	ns			*Coal loss.*
														32.68	33.02	LOST CORE	Lost Core	0.34	0.34					*Rock loss.*
5	3,4	33.25	36.30	3.05	3.05	100.00%	>25	29.51%	-	6	W6	R4	4			#N/A								Dark grey, fine grained Sltst hightly fractured from ~ 34.0m with slickensided joints.
														33.02	36.07	SILTSTONE	Slst	3.05						From 35.00m most joints ~90° TCA.
6	4,5	36.30	39.35	3.05	2.95	96.72%	>25	29.15%	20	7	W6	R5	4			#N/A								
														36.07	39.02	SILTSTONE	Slst	2.95						Dark grey, fine grained Sltst interbedded with Sst. Joints 65-85° TCA, some with pyrite. Sltst From 35.00m most joints ~90° TCA.
														39.02	39.12	LOST CORE	Lost Core	0.10	0.10					*Rock loss.*
7	5	39.35	42.40	3.05	3.04	99.67%										#N/A								
							9	95.71%	25	15	W6	R5	4	39.12	41.22	SILTSTONE	Slst	2.10						Sltst, same as above. Joints ~75-85° TCA. One 50° TCA joint ~41.0m, plant material along joint near top.
							3	95.74%	25	14	W6	R6	4	41.22	42.16	SANDSTONE	Sst	0.94						Light grey, medium grained to coarse grained, some parts interbedded with Sltst, joints 85° TCA.
														42.16	42.17	LOST CORE	Lost Core	0.01	0.01					*Rock loss.T85*
8	5,6	42.40	45.45	3.05	3.05	100.00%	10	98.36%	25	15	W6	R6	4			#N/A								
														42.17	45.22	LAMINITE	IB Sst	3.05						Light grey, medium grained to coarse grained Sst interbedded with Slst, joints ~85-90° TCA. Possible bedding ~70-75° TCA. Some joints with plant materials. Coal lenses near top ~75° TCA.
9	6,7	45.45	48.50	3.05	3.05	100.00%	>25	40.00%	25	9	W6	R5	4			#N/A								
														45.22	48.27	SILTSTONE	Slst	3.05						Dark grey, fine grained, Slst, medium to lightly fractured with slickensided joints. Joint angle from 55-90° TCA. Vertical joints at 47.50m.
10	7	48.50	51.55	3.05	2.97	97.38%										#N/A								
							4	83.33%	25	15	W6	R5	4	48.27	49.11	SILTSTONE	Slst	0.84						Dark grey, fine grained Slst. Top 3cm coal lenses, 48.90m vertical joint, gradually change to Sst going down the hole.
							3	100.00%	25	15	W5	R6	4	49.11	50.77	SANDSTONE	Sst	1.66						Light grey, coarse grained to very coarse grained, altered Sst. Large (~5cm) quartz eyes, plagioclase (?)
							2	89.36%	25	10	W6	R5	4	50.77	51.24	SILTSTONE	Slst	0.47						Slst, same as above, ~90° TCA joints.
														51.24	51.32	LOST CORE	Lost Core	0.08	0.08					*Rock loss*
11	7,8	51.55	54.60	3.05	3.00	98.36%										#N/A								
							2	100.00%	25	15	W5	R6	4	51.32	52.82	SANDSTONE	Sst	1.50						Altered Sst, same as above. ~90° TCA joints, some joints with plant materials 90° TCA contact angle with lower Slst.
							10	88.00%	25	10	W6	R5	4	52.82	54.32	SILTSTONE	Slst	1.50						Slst, same as above, most joints ~ 90° TCA, one 40° TCA joint at 53.6m.
														54.32	54.37	LOST CORE	Lost Core	0.05	0.05					*Rock loss.*
12	8,9	54.60	57.65	3.05	3.05	100.00%	>25	44.92%	25	13	W6	R5	4			#N/A								
														54.37	57.42	SILTSTONE	Slst	3.05						Sltst, same as above, hightly fractured zone ~55.6m, most joints ~90° TCA.
13	9,10	57.65	60.70	3.05	2.90	95.08%	>25	63.79%	25	12	W6	R5	4			#N/A								
														57.42	60.32	SILTSTONE	Slst	2.90						Sltst same as above, hightly fractured area from 59.40 - 60.10m.
														60.32	60.47	LOST CORE	Lost Core	0.15	0.15					*Rock loss.*
14	10	60.70	63.75	3.05	3.00	98.36%										#N/A								
							>25	78.33%	20	12	W6	R5	4	60.47	63.47	SILTSTONE	Slst	3.00						Medium to dark grey, fine grained Sltst. Joints ~75 -85° TCA. Hightly fractured area ~63.00m. Possible bedding ~65° TCA.
														63.47	63.52	LOST CORE	Lost Core	0.05	0.05					*Rock loss.*
15	10,11	63.75	66.80	3.05	2.97	97.38%	>25	76.77%	20	12	W5	R5	3			#N/A								
														63.52	66.49	SANDSTONE	Sst	2.97						Light grey, fine grained to medium grained, well sorted Sst with trace plant material along weak bedding 85 ° TCA. Possible fault at 65.15m, rock here is dark grey and weakly clay altered, possibly higher percentage of p
														66.49	66.57	LOST CORE	Lost Core	0.08	0.08					*Rock loss.*
16	11,12	66.80	69.85	3.05	2.94	96.39%										#N/A								
							12	78.54%	20	13	W6	R5	3	66.57	68.90	SANDSTONE	Sst	2.33						Slighthly darker grey than above Sst, fine grained to medium grained with abundant plant material, particularily in crushed zones. Jointing parallels weak bedding 85° TCA and one low angle joint 10cm long 20° TCA. Fines
							2	90.16%	20	12	W6	R5	3	68.90	69.51	SILTSTONE	Slst	0.61						Grey, sandy Sltst, fine grained, massive.
														69.51	69.62	LOST CORE	Lost Core	0.11	0.11					*Rock loss.*
17	12,13	69.85	72.90	3.05	3.03	99.34%	>25	80.20%	20	13	W4	R5	3			SILTSTONE	Slst							
														69.62	72.65	SILTSTONE	Slst	3.03						Grey-red grey, volcanic altered Sltst. Likely an ash deposit. Fine grained, massive with trace carbonate. Crushed 15cm zone of rock at 71.60m with slickensides, clay altered, likely a fault zone
														72.65	72.67	LOST CORE	Lost Core	0.02	0.02					*Rock loss.*
18	12	72.90	75.95	3.05	2.95	96.72%										#N/A								
							10	85.94%	20	14	W4	R5	4	72.67	75.16	SILTSTONE	Slst	2.49						Red-grey, fine grained, massive Sltst, pitted appearance to some of the core (Clay or calcite alteration(?). Red color becomes less distinct down section, massive.
							1	100.00%	20	13	W6	R5	4	75.16	75.62	SANDSTONE	Sst	0.46						Light grey, fine grained Sst, massive to weakly bedded, trace plant material.
														75.62	75.72	LOST CORE	Lost Core	0.10	0.10					*Rock loss.*
19	13,14	75.95	79.00	3.05	2.95	96.72%										#N/A								
							1	100.00%	20	13	W6	R5	4	75.72	76.33	SANDSTONE	Sst	0.61						Grey, dirty Sst with minor silty layers. Weakly bedded with variable orientation 70-85° TCA.
							7	86.32%	20	15	W4	R5	4	76.33	78.67	UNDIFFERENTIATED VOLCANICS	Ash	2.34		Volc				Massive, very fine grained, pale grey grading into rusty red down section. Likely volcanic ash, red zone has abundant white clasts (bombs? Qtz?)
														78.67	78.73	LOST CORE	Lost Core	0.06	0.06	Volc				*Rock loss.*
20	14,15	79.00	82.05	3.05	2.95	96.72%										#N/A								
							1	75.86%	20	10	W6	R5	4	78.73	79.02	UNDIFFERENTIATED VOLCANICS	Ash	0.29		Volc				Red, fine grained, massive volcanic ash/ Slst, jointing 50° TCA.
							2	100.00%	20	12	W6	R5	4	79.02	80.12	SANDSTONE	Sst	1.10		Volc				Light grey, very fine grained-medium grained Sst. Massive. Jointing 35-40° TCA.
							5	100.00%	20	10	W6	R5	4	80.12	81.68	UNDIFFERENTIATED BEDROCK	VolcCong	1.56		Volc				Green-grey, fine grained to coarse grained massive volcanic conglomerate. Upper 80cm thickly interbedded with Sst above.
														81.68	81.78	LOST CORE	Lost Core	0.10	0.10	Volc				*Rock loss.*

Geological Borehole Log: RAV-09-019

Client: CJV
Project: Raven
Logged By: Henry Kim, Farshad Shirmoh

Hole Number: RAV-09-019
Date Hole Started:
Date Hole Finished:
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 386.30m
Depth of Casing: 9.70m
Core Size: Modified PQ (3 1/4')

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery		RQD		Fractures			Hardness		G.P.L. Corrected			Lith	Length	Lost Core	Strat	Samples (Driller's Depths)			Description
					Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage	Alt'n & Weath.	Prefix	Core Quailty	From (m)	To (m)						Number	From (m)	To (m)	
														0.00	1.61	OVERBURDEN	ovbdn							
														1.61	9.70	OVERBURDEN	ovbdn							Casing set
1	1	10.50	11.90	1.40	1.10	78.60%										#N/A								
														9.70	10.00	LOST CORE	LOST CORE	0.30	0.30					*Rock Loss*
							20	70.91%	20	9	W6	R5	4	10.00	11.10	SILTSTONE	Sltst	1.10						Dark grey, fg, Sltst, highly fractured near the top. Joints 35-90 deg TCA.
2	1, 2	11.90	14.95	3.05	3.05	100.00%										#N/A								
							>25	47.87%	20	9	W6	R5	4	11.10	14.15	SILTSTONE	Sltst	3.05						Sltst, same as above, most joints ~ 90 deg TCA ~13.40m vertical joints, highly fractured zone
3	2	14.95	18.00	3.05	3.10	101.64%										#N/A								
							>25	74.84%	10-25	12	W6	R5	4	14.15	17.25	SILTSTONE	Sltst	3.10						Sltst, same as above. Top 60m joints ~90 deg TCA, 15.50m highly fractured zone w/ slicken sided joint surfaces, small pieces (fault?) bottom of the fracture @ 15.90m w/ 45 deg TCA joint slicken sided below is solid core.
4	2,3	18.00	21.05	3.05	2.95	96.72%										#N/A								
														17.25	17.29	LOST CORE	Lost Core	0.04	0.04					*Rock Loss*
							13	81.36%	25	14	W6	R5	4	17.29	20.24	SILTSTONE	Sltst	2.95						SLT same as above, top 1.04m is intervedded w/ SST. ~30deg joint at 19.10m. Other joints ~90deg TCA calcite vein near bottom.
5	3,4	21.05	24.10	3.05	3.10	101.64%										#N/A								
							12	65.16%	20	10	W6	R5	4	20.24	23.34	SILTSTONE	Sltst	3.10						Dark gray, fine grained, massive SLT with a series of low angle joints 5-15 deg TCA and 70 deg TCA. Trace carbonate stringers.
6	4	24.10	27.15	3.05	3.01	98.69%										#N/A								
														23.34	23.38	LOST CORE	Lost Core	0.04	0.04					*Rock Loss*
							10	90.03%	20	13	W6	R5	4	23.38	26.39	SILTSTONE	Sltst	3.01						Dark grey, fine grained massive SLT as above.
7	4,5	27.15	30.20	3.05	2.99	98.03%										#N/A								
														26.39	26.43	LOST CORE	Lost Core	0.04	0.04					*Rock Loss*
							7	100.00%	20	14	W6	R5	4	26.43	29.42	SILTSTONE	Sltst	2.99						As above.
8	5,6	30.20	33.25	3.05	3.07	100.66%										#N/A								
							7	3.07	20	12	W6	R5	4	29.42	32.49	LAMINITE	IB Sltst	3.07						As above dark grey, fine grained SLT but increasingly intervedded with sandy layers down section. Layers 1-12cm, 90 deg TCA often with irregular shapped contacts.
9	6,7	33.25	36.30	3.05	3.07	100.66%										#N/A								
							10	86.64%	20	14	W6	R5	4	32.49	35.56	SILTSTONE	Sltst	3.07						Dark grey, fine grained, massive SLT, small 7cm sandy bed at end of interval.
10	7	36.30	39.35	3.05	2.99	98.03%										#N/A								
							9	87.96%	20	14	W6	R5	4	35.56	38.55	SILTSTONE	Sltst	2.99						Dark grey, fine grained, massive SLT, low angle joint 10cm TCA. Trace carbonate.
														38.55	38.61	LOST CORE	Lost Core	0.06	0.06					*Rock Loss*
11	7, 8	39.35	42.40	3.05	3.04	99.67%										#N/A								
							8	90.13%	20	14	W6	R5	4	38.61	41.65	SILTSTONE	Sltst	3.04						As above SLT but with 20cm broken zone at end of interval.
12	8, 9	42.40	45.45	3.05	3.04	99.67%			20	14	W6	R5	4			#N/A								
							7	96.71%	20	14	W6	R5	4	41.65	44.69	LAMINITE	IB Sltst	3.04						Dark grey, fine grained SLT interbedded with fine grained SLT. Layers are in rough contact with one another at 90 degrees TCA.
13	9	45.45	48.50	3.05	3.10	101.64%										#N/A								
							6	96.77%	20	14	W6	R5	4	44.69	47.79	LAMINITE	IB Sltst	3.10						As above but with carbonate stringers ~ 85 degrees TCA.
14	10	48.50	51.55	3.05	2.99	98.03%										#N/A								
							4	91.97%	20	15	W6	R5	4	47.79	50.78	LAMINITE	IB Sltst	2.99						As above but with more abundant sandy layers ~ 30 deg TCA at irregular contacts with the SLT ~ 85 deg TCA.
15	10, 11	51.55	54.60	3.05	3.04	99.67%										#N/A								
							7	86.51%	20	15	W5	R5	3	50.78	53.82	LAMINITE	IB Sltst	3.04						As above but sandy layers decrease in abundance down section, small 20cm gougy layer at 52.95m. Trace carbonate stringers.
16	11, 12	54.60	57.65	3.05	2.93	96.07%										#N/A								
														53.82	53.94	LOST CORE	Lost Core	0.12	0.12					*Rock Loss*
							10	77.47%	25	11	W6	R5	4	53.94	56.87	LAMINITE	IB Sltst	2.93						Dark grey, fine grained thickly interbedded SLT with healed low angle stepped joint (fault offset?) at 55.96m, 0.68m long 10 deg TCA. Bedding ~ 85 deg TCA, a few small 1-2cm gauge layers parallel bedding.
17	12	57.65	60.70	3.05	3.03	99.34%										#N/A								
							12	86.47%	20	10	W6	R5	4	56.87	59.90	LAMINITE	IB Sltst	3.03						Dark grey, fine grained, Ib Sltst ~40% sandy layers, mostly thick ~30cm. Thick gouge at 59.29m. Jointing at 15 and 70 degrees TCA.
18	12,13	60.70	63.75	3.05	3.07	100.66%										#N/A								
							7	93.81%	15	15	W6	R5	4	59.90	62.97	LAMINITE	IB Sltst	3.07						Dark grey, fine grained IB Sltst with a decreased abundance of snady layers (10%) with depth. Sandly layers are less distinct, joint at 30 deg TCA.
19	13,14	63.75	66.80	3.05	2.97	97.38%										#N/A								
							5	100.00%	20	13	W6	R5	4	62.97	65.94	LAMINITE	IB Sltst	2.97						Dark grey, fine grained, Sltst with abundant weakly sandy layers. Trace sulphides and plant material. Small 10cm section with possible rip up clasts at the end of the interval.
20	14, 15	66.80	69.85	3.05	3.01	98.69%										#N/A								
							6	99.67%	25	15	W6	R5	4	65.94	68.95	LAMINITE	IB Sltst	3.01						Dark grey, fine grained Sltst interbedded with light grey fine grained to medium grained SST with ~90 deg TCA bedding. Joints ~90, near top Sltst clasts within Sst w calc. ~5 cm mud clay layer near top.
21	15	69.85	72.90	3.05	3.12	102.30%										#N/A								
							11	86.54%	25	13	W6	R5	4	68.95	72.07	SILTSTONE	Sltst	3.12						Dark grey, fine grained, massive Sltst ~30 deg TCA joint near top. All other joints are ~90 degres TCA.
22	15, 16	72.90	75.95	3.05	3.07	100.66%										#N/A								
							5	93.81%	25	15	W6	R5	4	72.07	75.14	SILTSTONE	Sltst	3.07						Sltst, same as above, massive all 90 deg TCA joints, occasional Sst clasts.
23	16, 17	75.95	79.00	3.05	2.99	98.03%										#N/A								
							6	96.99%	25	15	W6	R5	4	75.14	78.13	SILTSTONE	Sltst	2.99						Sltst, same as above, massive, 90 deg TCA joints. Bi-valve fossils at the bottom.
24	17	79.00	82.05	3.05	3.07	100.66%										#N/A								
							8	97.39%	25	15	W6	R5	4	78.13	81.20	SILTSTONE	Sltst	3.07						Sltst, same as above as above two low angle (~15 degTCA) joints. Others are 90 deg TCA massive.
25	17,18	82.05	85.10	3.05	3.10	101.64%										#N/A								
							5	100.00%	25	15	W6	R5	4	81.20	84.30	SILTSTONE	Sltst	3.10						Sltst, same as above. All ~90 deg joints. Occaasional calcite stringers, fragments -> with, soft, some angular.
26	18, 19	85.10	88.15	3.05	3.03	99.34%										#N/A								
							5	100.00%	25	15	W6	R5	4	84.30	87.33	SILTSTONE	Sltst	3.03						Sltst, same as above, massive. All joints ~ 90 deg TCA except 10 deg TCA at the bottomw few calcite stringers and fragments.
27	19, 20	88.15	91.20	3.05	3.00	98.36%										#N/A								
							11	95.00%	25	15	W6	R5	4	87.33	90.33	SILTSTONE	Sltst	3.00						Sltst, same as above, massive. All joints ~ 90 deg TCA except 10 deg TCA at the bottomw few calcite stringers and fragments.
28	20	91.20	94.25	3.05	2.97	97.38%										#N/A								
							8	100.00%	25	14	W6	R5	4	90.33	93.30	SILTSTONE	Sltst	2.97						Dark grey, fine grained. Massive Sltst. 10 deg TCA joint near top, all other joints ~90 deg TCA.
29	20, 21	94.25	97.30	3.05	3.12	102.30%										#N/A								
							4	97.76%	25	14	W6	R4	4	93.30	96.42	SILTSTONE	Sltst	3.12						Medium grey, massive Sltst.
30	21, 22	97.30	100.35	3.05	3.12	102.30%										#N/A								
							6	94.55%	25	14	W6	R4	4	96.42	99.54	SILTSTONE	Sltst	3.12						Medium grey Sltst as above.
31	22	100.35	103.40	3.05	3.00	98.36%										#N/A								
							2	95.67%	25	14	W6	R4	4	99.54	102.54	SILTSTONE	Sltst	3.00						Medium grey, fine grained, Sltst.
32	22, 23	103.40	106.45	3.05	3.05	100.00%										#N/A								
							>25	82.95%	25	3	W6	R4	2	102.54	105.59	SILTSTONE	Sltst	3.05						Medium grey Sltst, as above 10-20m at the bottom very broken.
33	23, 24	106.45	109.50	3.05	3.00	98.36%										#N/A								
							>25	16.00%	25	1	W6	R2	3	105.59	108.59	SILTSTONE	Sltst	3.00						Sltst as above 0.55m from top core is very broken, 6 pieces less than 5cm. 0.50m from the bottom 0.15m fault gouge.
														108.59	108.64	LOST CORE	Lost Core	0.05	0.05					Rock Loss
34	24, 25	109.50	112.55	3.05	2.81	92.13%										#N/A								

							>25	74.73%	25	14	W6	R4	4	108.64	111.45	SILTSTONE	Sltst	2.81						Sltst, as above 0.48m at the top of run core is largely broken, the rest of the core is mostly intact.
														111.45	111.69	LOST CORE	Lost Core	0.24	0.24					Rock Loss
35	25, 26	112.55	115.60	3.05	3.06	100.33%										#N/A								
							7	100.00%	25	14	W6	R4	4	111.69	114.75	SILTSTONE	Sltst	3.06						Sltst, dark grey, fine grained, 1.20m from top is 0.10m ligh grey Sst.
36	26	115.60	118.65	3.05	3.00	98.36%										#N/A								
							25	100.00%	25	14	W6	R4	4	114.75	117.75	SILTSTONE	Sltst	3.00						Medium
37	26, 27	118.65	121.70	3.05	3.13	102.62%										#N/A								
							4	94.89%	25	14	W6	R4	4	117.75	120.88	SILTSTONE	Sltst	3.13						Sltst, as above, 0.21m at the top broken
38	27, 28	121.70	124.75	3.05	2.98	97.70%										#N/A								
							14	91.61%	25	13	W6	R4	4	120.88	123.86	SILTSTONE	Sltst	2.98						Sltst, same as above, most joints ~90 deg TCA. Few joints ~30 deg TCA, vertiacl joint at 123.80m.
39	28	124.75	127.80	3.05	3.08	100.98%							4			#N/A								
							9	98.70%	25	14	W6	R4	4	123.86	126.94	SILTSTONE	Sltst	3.08						Sltst, same as above. 45 deg TCA joints near the top, all below are ~90deg TCA joints. Occasional calcite stringers and fragments, massive.
40	28, 29	127.80	130.85	3.05	3.06	100.33%										#N/A								
							10	88.56%	25	14	W6	R4	4	126.94	130.00	SILTSTONE	Sltst	3.06						Sltst, same as above, highly fractured at bottom, rest massive joints ~90deg TCA. Occasiotnal calcite stringers.
41	29, 30	130.85	133.90	3.05	3.07	100.66%										#N/A								
							5	94.46%	25	15	W6	R4	4	130.00	133.07	SILTSTONE	Sltst	3.07						Sltst, same as above, 20cm long vertical calctie vein/joint at top. Massive. 40 deg TCA joint at 133.0m with calcite film
42	30,31	133.90	136.95	3.05	3.00	98.36%										#N/A								
							>25	53.33%	10	10	W6	R4	3	133.07	136.07	SILTSTONE	Sltst	3.00						Dark grey, fg Sltst. Solid core up to 135.4m highly fractured below until the end of the run. Small pieces 1-10cm with slicken sided fracture surface, possible fault (?)
														136.07	136.12	LOST CORE	Lost Core	0.05	0.05					Rock Loss
43	31	136.95	140.00	3.05	3.05	100.00%										#N/A								
							23	81.97%	20	11	W6	R4	4	136.12	139.17	SILTSTONE	Sltst	3.05						Sltst, same as above, 45-60 deg TCA joints, some with slicken sided, throughout the run. A few calcite veins same orientations. 80-90 deg TCA joints near bottom.
44	31, 32	140.00	143.05	3.05	3.02	99.02%										#N/A								
														139.17	139.20	LOST CORE	Lost Core	0.03	0.03					Rock Loss
							14	74.17%	10	12	W6	R4	4	139.20	142.22	SILTSTONE	Sltst	3.02						Sltst, same as above. Joints 45-70 deg TCA with calcite film and slicken sided. Vertical fractures (also moderatly fractured) near bottom. Thin calcite veins visible.
45	32, 33	143.05	146.10	3.05	2.83	92.79%										#N/A								
							14	98.94%	20	13	W6	R4	4	142.22	145.05	SILTSTONE	Sltst	2.83						Sltst, same as above, thick calcite veins at top (~50 deg TCA), horizontal fracture at 143.70m, other joints 70-90^{o} TCA, thin calcite veins.
														145.05	145.11	LOST CORE	Lost Core	0.06	0.06					*Rock Loss*
46	33, 34	146.10	149.15	3.05	3.21	105.25%										#N/A								
							>25	36.36%	10	7	W6	R4	4	145.11	146.76	SILTSTONE	Sltst	1.65						Sltst, same as above, highly fractured from 146.70m with slicken sided, calcite veins.
							5	100.00%	25	14	W6	R6	4	146.76	148.32	SANDSTONE	Sst	1.56						Light grey, medium grained to coarse grained Sst with thin Sltst beds (90 deg TCA).
47	34	149.15	152.20	3.05	3.00	98.36%										#N/A								
							6	90.00%	25	14	W6	R6	4	148.32	151.32	SANDSTONE	Sst	3.00						Light grey, medium grained to coarse grained Sst. Joints 75-85 deg TCA, Sltst layer ~151.90m (contact ~70^{o} TCA) toward the bottom Sltst increases (medium grey).
48	34, 35	152.20	155.25	3.05	3.04	99.67%										#N/A								
							6	87.83%	25	14	W6	R6	4	151.32	154.36	SANDSTONE	Sst	3.04						Sst, same as above, joints 40 and 90 degrees TCA. Some calcite veins, massive.
49	35, 36	155.25	158.30	3.05	2.96	97.05%										#N/A								
							2	95.59%	25	15	W6	R6	4	154.36	155.72	SANDSTONE	Sst	1.36						Sst, same as above, massive, 90 deg TCA joints. One calcite vein 15 deg TCA at 155.5m.
														155.72	155.81	LOST CORE	Lost Core	0.09	0.09					*Rock Loss*
							>25			4	W6	R5	0	155.81	157.41	SILTSTONE	Sltst	1.60						Dark grey, fine grained Sltst with mud. Hightly broken, 1-10cm rubble with thick mud. Slicken sided, fault?
50	36, 37	158.30	161.35	3.05	3.00	98.36%										#N/A								
							>25	28.00%	10	5	W6	R5	2	157.41	160.41	SILTSTONE	Sltst	3.00						Sltst, same as above. Top 1.9m is all broken into small pices with slicken sided. Extension of above fault (?) Bottom 1.1m solid, joint with slicken sided, calcite film.
51	37, 38	161.35	164.40	3.05	3.00	98.36%										#N/A								
							>25	56.67%	10	10	W6	R5	4	160.41	163.41	SILTSTONE	Sltst	3.00						Sltst, same as above. Medium-highly fractured joints from 35-90 degrees TCA with slicken sided.
52	38	164.40	167.45	3.05	3.10	101.64%										#N/A								
							>25	52.90%	10	9	W6	R5	4	163.41	166.51	SILTSTONE	Sltst	3.10						Dark grey, fine grained Sltst. Medium to highly fractured. Joints 45-85 deg TCA with slicken sided surfaces. Few clacite veins along joints ~5cm Sst bed at 165.80m, contact angle ~ 40 deg TCA.
53	38, 39	167.45	170.50	3.05	3.10	101.64%										#N/A								
							>25	40.97%	10	10	W6	R5	4	166.51	169.61	SILTSTONE	Sltst	3.10						Sltst, same as above. Highly fractured from 168.5-169.5m, small fragments with calcite vein. Other core also with veins along joints ~5cm Sst bed at 165.80m, slicken sided joints 75-90 deg TCA.contact angle ~ 40 deg TCA.
54	39, 40	170.50	173.55	3.05	3.03	99.34%										#N/A								
														169.61	169.63	LOST CORE	Lost Core	0.02	0.02					*Rock Loss*
							>25	66.01%	10	13	W6	R5	4	169.63	172.66	SILTSTONE	Sltst	3.03						Sltst same as above, joints ~85 deg TCA with slicken sided. Bottom 80cm highly fractured in small rubbles.
55	40, 41	173.55	176.60	3.05	2.94	96.39%										#N/A								
														172.66	172.77	LOST CORE	Lost Core	0.11	0.11					*Rock Loss*
							5	98.64%	25	14	W6	R5	4	172.77	175.71	SILTSTONE	Sltst	2.94						Dark grey, massive Sltst.
56	41	176.60	179.65	3.05	3.05	100.00%										#N/A								
							3	96.72%	25	14	W6	R5	4	175.71	178.76	SILTSTONE	Sltst	3.05						Dark grey, massive, fine grained Sltst.
57	41, 42	179.65	182.70	3.05	2.98	97.70%										#N/A								
														178.76	178.83	LOST CORE	Lost Core	0.07	0.07					*Rock Loss*
							5	100.00%	25	14	W6	R5	4	178.83	181.81	SILTSTONE	Sltst	2.98						Sltst as above, joints planar at 45 deg TCA.
58	42, 43	182.70	185.75	3.05	3.00	98.36%										#N/A								
														181.81	181.86	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
							6	90.00%	25	14	W6	R5	4	181.86	184.86	SILTSTONE	Sltst	3.00						Sltst, as above, 0.36m from top, core is borken into 5cm pieces some joints at 45 deg TCA, slicken slided walls with calcite veins.
59	43, 44	185.75	188.80	3.05	3.08	100.98%										#N/A								
							3	100.00%	25	9	W6	R5	4	184.86	187.94	SILTSTONE	Sltst	3.08						Dark grey, fine grianed, massive Sltst.
60	44	188.80	191.85	3.05	3.05	100.00%										#N/A								
							1	100.00%	25	15	W6	R5	4	187.94	190.99	SILTSTONE	Sltst	3.05						Sltst as above, core solid.
61	45	191.85	194.90	3.05	3.03	99.34%										#N/A								
														190.99	191.01	LOST CORE	Lost Core	0.02	0.02					*Rock Loss*
							10	93.40%	25	10	W6	R5	4	191.01	194.04	SILTSTONE	Sltst	3.03						Sltst as above, planar joints @ 30^{o} to 40^{o}
62	45, 46	194.90	197.95	3.05	3.05	100.00%										#N/A								
							7	98.36%	25	12	W6	R5	4	194.04	197.09	SILTSTONE	Sltst	3.05						Sltst, dark grey, massive.
63	46, 47	197.95	201.00	3.05	3.08	100.98%										#N/A								
							7	89.94%	25	9	W6	R5	4	197.09	200.17	SILTSTONE	Sltst	3.08						Sltst, as above. Joints concentrated from 198.65-199.15m.
64	47, 48	201.00	204.05	3.05	2.49	81.64%										#N/A								
							>25	63.11%	10	5	W6	R5	2	200.17	201.20	SILTSTONE	Sltst	1.03						Sltst, dark grey, mast of the core is broken with calcite veins.
														201.20	201.76	LOST CORE	Lost Core	0.56	0.56					*Rock Loss*
							0	100.00%				R6	4	201.76	203.22	SANDSTONE	Sst	1.46						Sst, light grey, coarse grains.
65	47, 48	204.05	207.10	3.05	3.05	100.00%										#N/A								
							2	52.17%	25	10	W6	R5	4	203.22	203.91	SANDSTONE	Sst	0.69						Sst, medium grey, fine grained, jointing 10 degress TCA, massive.
							2	90.99%	25	13	W6	R5	4	203.91	205.02	SILTSTONE	Sltst	1.11						Dark grey, fine grained, massive Sltst. Coarsens down section. Jointing (2) at 70 degrees TCA.
							7	76.80%	25	9	W6	R5	4	205.02	206.27	SANDSTONE	Sst	1.25						As above Sst, but with jointing 90 and 70 degrees TCA, calcite stringers roughly parallel the core axis.
66	48, 48	207.10	210.15	3.05	2.99	98.03%										#N/A								
							6	93.98%	25	15	W6	R5	4	206.27	209.26	SANDSTONE	Sst	2.99						Grey, fine grained to medium grained, massive Sst with jointing at 70 and 90 degrees TCA.
67	49	210.15	213.20	3.05	3.11	101.97%										#N/A								
							7	97.75%	25	15	W6	R5	4	209.26	212.37	SANDSTONE	Sst	3.11						As above but with jointing at 45 degrees TCA and carbonate stringers at 30-45 degrees TCA.

68	50	213.20	216.25	3.05	3.03	99.34%										#N/A								
							2	100.00%	25	15	W6	R5	4	212.37	215.40	SANDSTONE	Sst	3.03						Small slightly silty zone on top of the interval (40cm) otherwise grey, fine grained, massive Sst with carbonate stringers 30-45 degrees TCA
69	50/51	216.25	219.30	3.05	3.05	100.00%										#N/A								
							1	100.00%	25	15	W6	R5	4	215.40	218.45	SANDSTONE	Sst	3.05						As above, grey, fine grained massive Sst with low angle calcite stringers.
70	52	219.30	222.35	3.05	3.10	101.64%										#N/A								
							1	100.00%	25	14	W6	R5	4	218.45	219.00	SANDSTONE	Sst	0.55						As above but lacks calctie stringers. Small 2cm gradational contact with unit below oriented 85 deg TCA.
							6	100.00%	25	13	W6	R5	4	219.00	221.55	SILTSTONE	Sltst	2.55						Dark grey, fine grained, massive Sltst. Joints 70 and 80 degrees TCA.
71	52	222.35	225.40	3.05	2.96	97.05%										#N/A								
														221.55	221.64	LOST CORE	Lost Core	0.09	0.09					Rock Loss
							>25	91.89%	25	10	W6	R5	4	221.64	224.60	SILTSTONE	Sltst	2.96						Dark grey, fine grain, massive Sltst. Jointing at 40 degrees TCA and 20 degrees TCA. Small 30 cm broken zone along jointing plane.
72	52, 53	225.40	228.45	3.05	3.05	100.00%										#N/A								
							>25	86.23%	25	15	W6	R5	3	224.60	227.65	SILTSTONE	Sltst	3.05						As above.
73	53	228.45	231.50	3.05	3.11	101.97%										#N/A								
							7	86.82%	20	15	W6	R5	4	227.65	230.76	SILTSTONE	Sltst	3.11						Dark grey, fine grained massive Sltst with weakly sandy zones.
74	54	231.50	234.55	3.05	3.01	98.69%										#N/A								
														230.76	230.80	LOST CORE	Lost Core	0.04	0.04					*Rock Loss*
							>25	80.73%	25	15	W6	R5	3	230.80	233.81	SILTSTONE	Sltst	3.01						Dark grey, fine grained massive Sltst with small 20cm angular broken zone.
75	55	234.55	237.60	3.05	3.03	99.34%										#N/A								
														233.81	233.82	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
							8	100.00%	25	14	W6	R5	4	233.82	236.85	SILTSTONE	Sltst	3.03						Dark grey, fine grained, massive Sltst with trace carbonate stringers.
76	55, 56	237.60	240.65	3.05	3.03	99.34%	6	3.05	25	15	W6	R5	4			#N/A								
														236.85	236.87	LOST CORE	Lost Core	0.02	0.02					*Rock Loss*
							6	100.00%	25	15	W6	R5	4	236.87	239.90	SILTSTONE	Sltst	3.03						Dark grey, fine grained, massive Sltst. All joints ~ 90 deg TCA. Near bottom interbedded with fine grained to medium grained SST ~90 deg TCA bedding.
77	56	240.65	243.70	3.05	2.95	96.72%										#N/A								
							1	94.12%	25	15	W6	R5	4	239.90	240.75	SILTSTONE	Sltst	0.85						Dark grey, fine grained Sltst interbedded with Sst ~90 deg bedding. 25 deg joint near top filled with calcite.
								100.00%			W6	R5	4	240.75	241.22	SANDSTONE	Sst	0.47						Light grey, medium grained, Sst, massive.
														241.22	241.32	LOST CORE	Lost Core	0.10	0.10					*Rock Loss*
								100.00%			W6	R5	4	241.32	242.95	SILTSTONE	Sltst	1.63						Sltst, same as above intervedded near top. Occasional calcite fragments.
78	56, 57	243.70	246.75	3.05	3.07	100.66%										#N/A								
							2	100.00%	25	15	W6	R5	4	242.95	244.42	SILTSTONE	Sltst	1.47						Sltst, same as above, massive, ~90deg joints intebedded with Sst near bottom.
							3	100.00%	25	15	W6	R6	4	244.42	246.02	SANDSTONE	Sst	1.60						Light grey, medium grained, massive Sst, joints 90 deg TCA
79	57, 58	246.75	249.80	3.05	3.05	100.00%										#N/A								
							5	98.36%	25	15	W6	R6	4	246.02	249.07	SANDSTONE	Sst	3.05						Sst, same as above, joints 90 deg TCA. Bottom 1m interbedded with SLT (90 deg TCA). 248.3-248.5m altered Sst with quartz and fossils.
80	58, 59	249.80	252.85	3.05	3.03	99.34%										#N/A								
														249.07	249.09	LOST CORE	Lost Core	0.02	0.02					*Rock Loss*
							5	100.00%	25	15	W6	R6	4	249.09	252.12	SANDSTONE	Sst	3.03						Sst interbedded with SLT (90 deg TCA), joints ~90 deg TCA.
81	59, 60	252.85	255.90	3.05	3.02	99.02%										#N/A								
														252.12	252.15	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
							6	100.00%	25	15	W6	R6	4	252.15	255.17	SANDSTONE	Sst	3.02						Light grey, mg-cg Sst. Joints ~ 90 deg TCA. Some parts mixed with Sltst (like stringers) --> round and trubulant clasts.
82	60	255.90	258.95	3.05	2.97	97.38%										#N/A								
														255.17	255.25	LOST CORE	Lost Core	0.08	0.08					*Rock Loss*
							4	99.33%	25	15	W6	R6	4	255.25	258.22	SANDSTONE	Sst	2.97						Sst, same as above mixed with Sltst stringers, round turbulant clasts joints with coal/ plant materials.
83	60, 61	258.95	262.00	3.05	3.09	101.31%										#N/A								
							4	98.71%	25	15	W6	R6	4	258.22	261.31	SANDSTONE	Sst	3.09						Sst, mg-cg, top is mixed with Sltst, as above. Bottom is cg-vcg, massive Sst, light grey, joints 90 deg TCA
84	61, 62	262.00	265.05	3.05	3.00	98.36%										#N/A								Light grey, cg-vcg, massive Sst, vertical calcite vein near top
														261.31	261.36	LOST CORE	Lost Core	0.05	0.05					Rock Loss
							3	98.33%	25	15	W6	R6	4	261.36	264.36	SANDSTONE	Sst	3.00						Light grey, cg-vcg, massive Sst, vertical calcite vein near top
85	62	265.05	268.10	3.05	3.12	102.30%										#N/A								
							7	96.15%	25	15	W6	R6	4	264.36	267.38	SANDSTONE	Sst	3.02						Sst, same as above near bottom, interbedded with SLT (2-3cm) at 75-80 deg TCA with calcite veins.
														267.38	267.48	SANDSTONE	Sst	0.10			07731	267.80	267.90	Roof Sample, part of above Sst
86	62, 63	268.10	271.15	3.05	2.66	87.21%										#N/A								
														267.48	267.56	LOST CORE	Lost Core	0.08	0.08	Seam 5	ns			*Coal loss*
							1	58.82%	20	10	W6	R1	4	267.56	267.73	COAL	Coal	0.17		Seam 5	07732	267.90	268.07	Black, 95% bright, moderate amount of gas, light, trace pyrite
														267.73	267.83	SILTSTONE	Sltst	0.10			07733	268.07	268.17	Sample taken CCC Geologist, part of below unit.
							6	97.01%	25	12	W6	R5	4	267.83	269.17	SILTSTONE	Sltst	1.34			07734	269.41	269.51	Dark grey, fg, Sltst interbedded with coal (~1mm) at 90 deg TCA.
														269.17	269.22	LOST CORE	Lost Core	0.05	0.05		ns			Rock Loss
														269.22	269.28	LOST CORE	Lost Core	0.06	0.06	Seam 5	ns			*Coal Loss*
							>25		20	7	W6	R1	4	269.28	269.68	COAL	Coal	0.40		Seam 5	07735	269.51	269.91	Black, moderate amount of gas, 75-85% bright coal; trace pyr; calc.
														269.68	269.78	SILTSTONE	Sltst	0.10			07736	269.91	270.01	Sample taken CCC Geologist, part of below unit.
							9	57.33%	20	6	W6	R5	4	269.78	270.53	SILTSTONE	Sltst	0.75						Sltst, same as above. Bottom wixed with Sst, small coal lenses and seams.
87	63, 64	271.15	274.20	3.05	3.10	101.64%										#N/A								
							7	99.03%	25	25	W6	R5	4	270.53	273.63	SANDSTONE	Sst	3.10						Light grey, cg Sst, massive, Sltst/Coal stringers ~ 85 deg TCA.
88	64	274.20	277.25	3.05	3.03	99.34%										#N/A								
														273.63	273.65	LOST CORE	Lost Core	0.02	0.02					Rock Loss
							7	100.00%	25	25	W6	R5	4	273.65	276.68	SANDSTONE	Sst	3.03						Sst same as above, Coal/Sltst stringers, lenses ~ 90 deg TCA. (1-2mm thick).
89	64, 65	277.25	280.30	3.05	2.98	97.70%										#N/A								
														276.68	276.75	LOST CORE	Lost Core	0.07	0.07					Rock Loss
							5	95.64%	25	15	W6	R6	4	276.75	279.73	SANDSTONE	Sst	2.98						Sst, same as above, Coal/Sltst stringers, lenses ~ 90 deg TCA.
90	65, 66	280.30	283.35	3.05	3.02	99.02%										#N/A								
														279.73	279.76	LOST CORE	Lost Core	0.03	0.03					Rock Loss
							7	100.00%	25	15	W6	R6	4	279.76	282.78	SANDSTONE	Sst	3.02						Sst, more grequent coal/ Sltst lenses, stringers, joints ~85 deg TCA with plant materials.
91	66/67	283.35	286.40	3.05	3.03	99.34%										#N/A								
														282.78	282.80	LOST CORE	Lost Core	0.02	0.02					Rock Loss
							9	100.00%	25	15	W6	R6	4	282.80	285.83	SANDSTONE	Sst	3.03						Sst, interbedded with Sltst (Coal) near bottom. Joints 85 deg TCA with plant material.
92	67	286.40	289.45	3.05	3.02	99.02%										#N/A								
							7	98.34%	25	15	W6	R6	4	285.83	288.85	SANDSTONE	Sst	3.02						Sst, same as above. Joints ~85 deg TCA with plant material, Coal lenses/Sltst stringers near bttom. (~75-85 deg TCA).
93	67, 68	289.45	292.50	3.05	3.04	99.67%										#N/A								
							1	100.00%	25	9	W6	R6	4	288.85	289.13	SANDSTONE	Sst	0.28			07737	289.48	289.58	Light grey, cg, Sst with Coal/Sltst stirngers (~85 deg TCA)
							5	45.45%	25	5	W6	R1	4	289.13	289.35	COAL	Coal	0.22		Sub Set Seam 5	07738	289.58	289.80	Black, light, 90-95% bright Coal. Massive py along bedding/planar surfaces. Calcite film, little gassy.
														289.35	289.36	LOST CORE	Lost Core	0.01	0.01		ns			Coal Loss
							3	100.00%	25	12	W6	R5	4	289.36	290.02	SILTSTONE	Sltst	0.66			07739	289.80	289.88	Dark grey, fg, Sltst some parts interbedded with Sst
							3	100.00%	25	15	W6	R6	4	290.02	291.90	SANDSTONE	Sst	1.88						Sst same as above. Joints ~85 deg TCA, near bottom parts interbedded with Sltst/Coal lenses ~ 30% SLT.
94	68, 69	292.50	295.55	3.05	3.00	98.36%										#N/A								
							3	98.67%	25	15	W6	R6	4	291.90	294.90	SANDSTONE	Sst	3.00						Sst same as above, interbeded with Sltst, gradually turns into Sandstone, near the bottom Sltst/Coal stringers. Joints, at 85 TCA with plant material
														294.90	294.95	LOST CORE	Lost Core	0.05	0.05					Rock Loss
95	69	295.55	298.60	3.05	3.00	98.36%										#N/A								
							6	96.67%	25	15	W6	R6	4	294.95	297.95	SANDSTONE	Sst	3.00						Light grey, cg, Sst, massive top 2cm small coal seam interbedded with Sltst, coal/ Sltst stringers throughout. Joints 70-80 TCA
														297.95	298.00	LOST CORE	Lost Core	0.05	0.05					Rock Loss
96	69, 70	298.60	301.65	3.05	3.04	99.67%										#N/A								
														298.00	298.01	LOST CORE	Lost Core	0.01	0.01					Rock Loss
							4	100.00%	25	15	W6	R5	4	298.01	301.05	SANDSTONE	Sst	3.04						Light grey, fine grained, massive Sst with trace Coal lenses ~ 1mm thick, slighlty silty in region with hightest concentraion of plant material.
97	70	301.65	304.70	3.05	3.06	100.33%										#N/A								

							4	100.00%	25	15	W6	R5	4	301.05	304.11	SANDSTONE	Sst	3.06						As above.
98	71	304.70	307.75	3.05	3.05	100.00%										#N/A								
							8	94.10%	25	15	W6	R5	4	304.11	307.16	SANDSTONE	Sst	3.05						As above.
99	71/72	307.75	310.85	3.10	2.81	90.65%										#N/A								
														307.16	307.54	SANDSTONE	Sst	0.38				307.50	307.88	Sst vfg ., with thin shale and coal laminations
														307.54	307.64	SANDSTONE	Sst	0.10			70740	307.88	307.98	Roof Sample, part of above Sst
														307.64	308.26	SHALE	Sh	0.62			07741	307.98	308.60	Shale carbonaceous, faint siltsones laminations
														308.26	308.44	LOST CORE	Lost Core	0.18	0.18		ns			Rock Loss
														308.44	308.51	COAL	Coal	0.07		Seam 4	07741	308.60	308.67	Coal Broken Soft Dirty
														308.51	308.79	COAL	Coal	0.28		Seam 4	07741	308.67	308.95	Coal hard bright
														308.79	308.88	COALY MUDSTONE	Coaly Sh	0.09		Seam 4	07741	308.95	309.04	Coally Shale soft, fissile, mushed
														308.88	308.93	CARBONACEOUS MUDSTONE	Carb. Sh	0.05		Seam 4	07741	309.04	309.09	Coal: soft mushed core loss?
														308.93	309.13	COAL	Coal	0.20		Seam 4	07741	309.09	309.29	Coal: hard bright banded
														309.13	309.21	LOST CORE	Lost Core	0.08	0.08	Seam 4	ns			Rock Loss
														309.21	309.31	CARBONACEOUS MUDSTONE	Carb. Sh	0.10		Seam 4	07742	309.29	309.39	Carbonaceous Shale: hard solid, dark brown, some pyrite
														309.31	309.35	LOST CORE	Lost Core	0.04	0.04	Seam 4	ns			Coal Loss
														309.35	309.39	COAL	Coal	0.04		Seam 4	ns	309.39	309.43	Coal: hard banded to to banded dull
														309.39	309.54	COAL	Coal	0.15		Seam 4	ns	309.43	309.58	Coal: soft mushed
														309.54	309.74	COAL	Coal	0.20		Seam 4	ns	309.58	309.78	Coal: Hard, broken
														309.74	310.04	COAL	Coal	0.30		Seam 4	CAN 1	309.78	310.08	Coal: hard banded (ID in photo as 14)
														310.04	310.12	COAL	Coal	0.08		Seam 4	ns	310.08	310.16	Coal: hard, dull, broken, shalely
							>25	0.00%	0	6	W6	R5	2	310.12	310.27	CARBONACEOUS MUDSTONE	Carb. Sh	0.15				310.16	310.31	Carbonaceous Shale
100	72, 73	310.85	313.90	3.05	3.00	98.36%										#N/A								
							2	45.45%	25	10	W6	R5	3	310.27	310.60	SILTSTONE	Sltst	0.33						Dark grey, fine grained Sltst, massive.
							1	100.00%	25	15	W6	R5	4	310.60	311.97	LAMINITE	IB Sst	1.37						Grey Sst, finely interbedded with Sltst. Increasintly silty down section, bedding 80 deg TCA.
							4	100.00%	25	15	W6	R5	4	311.97	313.27	SILTSTONE	Sltst	1.30						Dark grey Sltst, weakly bedded-massive. Bedding 80 deg TCA, trace carbonates along bedding, planar.
101	73	313.90	316.95	3.05	2.99	98.03%										#N/A								
							0	100.00%		11	W6	R5	4	313.27	313.42	SILTSTONE	Sltst	0.15						As above Sltst
							1	100.00%	25	15	W6	R5	4	313.42	316.26	SANDSTONE	Sst	2.84						Light grey, medium grained, massive Sst.
102	74	316.95	320.00	3.05	3.03	99.34%										#N/A								
							3	100.00%	25	15	W6	R6	4	316.26	319.29	SANDSTONE	Sst	3.03						Light grey, fg-mg massive Sst
103	74, 75	320.00	323.05	3.05	3.00	98.36%										#N/A								
							3	100.00%	25	15	W6	R5	4	319.29	322.29	SANDSTONE	Sst	3.00						As above Sst.
104	75, 76	323.05	326.10	3.05	3.10	101.64%	5	310.00%	25	15	W6	R6	4			#N/A								
							5	100.00%	25	15	W6	R6	4	322.29	325.39	SANDSTONE	Sst	3.10						Light grey, medium grained, massive Sst.
105	76	326.10	329.15	3.05	3.04	99.67%	1	304.00%	25	15	W6	R6	4			#N/A								
							1	100.00%	25	15	W6	R6	4	325.39	328.43	SANDSTONE	Sst	3.04						As above.
106	76, 77	329.15	332.20	3.05	3.06	100.33%	1	304.00%	25	15	W6	R6	3			#N/A								
							1	99.35%	25	15	W6	R6	3	328.43	331.49	SANDSTONE	Sst	3.06						As above, some drill wear noticble.
107	77, 78	332.20	335.25	3.05	3.03	99.34%	2	100.00%	25	15	W6	R6	4			#N/A								
							2	303.00%	25	15	W6	R6	4	331.49	334.52	SANDSTONE	Sst	3.03						Light grey, medium grained, massive Sst.
108	78	335.25	338.30	3.05	3.03	99.34%	13	303.00%	30	15	W6	R6	4			#N/A								
							13	100.00%	30	15	W6	R6	4	334.52	337.55	SANDSTONE	Sst	3.03						Grey, fg, Sst with aboundant thin 1-3mm Sltst and Coal beds/lenses oriented 70-85 deg TCA. Rock is borken along Coal rich layers. Sltst/ coal >2% of the interval.
														337.55	337.62	LOST CORE	Lost Core	0.07	0.07					Rock loss
109	78. 79	338.30	341.35	3.05	3.03	99.34%										#N/A								
							5	96.04%	20	15	W6	R6	4	337.62	340.65	SANDSTONE	Sst	3.03						As above, Sst with thin coal beds, >1% of the rock
														340.65	340.67	LOST CORE	Lost Core	0.02	0.02					Rock Loss
110	79	341.35	344.40	3.05	2.01	65.90%										#N/A								
							10	85.19%	20	11	W6	R6	4	340.67	342.02	SANDSTONE	Sst	1.35			ns			Peter Graham wrote "Sandstone Grey v.f.g. with thin shale and coal laminations", fg Sst with thin coal beds (1mm) increasingl in abundance down section. Bedding 80 deg TCA.
														342.02	342.05	LOST CORE	Lost Core	0.03	0.03		ns			Rock Loss
														342.05	342.21	LOST CORE	Lost Core	0.16	0.16	Seam 3U	ns			*Coal loss*
							>25		10	5	W5	R2		342.21	342.31	COAL	Coal	0.10		Seam 3U	CAN 2	342.40	342.50	Peter Graham wrote "Coal: broken, rubble"Crumbly coal with small cohesive pieced sominantly bright. Bubbles moderatly, CBM canister #2 sample taken.
											W5	R3	4	342.31	342.40	CARBONACEOUS MUDSTONE	Carb. Sh	0.09		Seam 3U	ns			Peter Graham wrote "Carbonaceous Shale, not sampled" Dark grey, fine grained, massive Sltst.
														342.40	342.57	COAL	Coal	0.17		Seam 3U	CAN 2	342.59	342.76	Peter Graham wrote "mostly hard, broken"
							>25		10	5	W5	R2	2	342.57	342.87	COAL	Coal	0.30		Seam 3U	CAN 3	342.76	343.06	Peter Graham wrote "mostly hard, broken" Larger cohesive pieces than above. Dominatly bright, very light weight coal. CBM#3 canister taken. Poor recovery
														342.87	343.03	LOST CORE	Lost Core	0.16	0.16	Seam 3U	ns			Lost Rock
														343.03	343.23	LOST CORE	Lost Core	0.20	0.2	Seam 3U	ns			Lost Coal
														343.23	343.46	LOST CORE	Lost Core	0.23	0.23	Seam 3U	ns			Lost Rock
														343.46	343.72	LOST CORE	Lost Core	0.26	0.26	Seam 3U	ns			Lost Coal
111	80	344.40	345.93	1.53	1.50	98.04%										#N/A								
							6	0.00%	20	5	W6	R2	2	343.72	343.82	COAL	Coal	0.10		Seam 3U	ns			Peter Graham wrote"Coal" broken, rubble" Bright dull coal with micro cleats
														343.82	344.54	COALY MUDSTONE	Coaly Shale	0.72			ns			Peter Graham wrote"Coaly Shale: gas bubbling noted from fissures." Black-brown, fg, massive carbonaceous SLT. Jointing at 50, 60 and 70 degrees TCA. Bubbling weakly, sample taken for CBM
														344.54	344.84	COALY MUDSTONE	Coaly Shale	0.30			CAN 4	344.92	345.12	Peter Graham wrote"Coaly Shale: dark brown"
							12	57.14%	20	10	W6	R2	4	344.84	345.18	CARBONACEOUS SILTSTONE	Carb. Sltst	0.34			ns			Black/brown fg carbonaceous Sltst. Jointing @ 50º, 60º, & 70º
														345.18	345.21	LOST CORE	Lost Core	0.03	0.03	Seam 3L	ns			*Coal loss*
							0				W6	R2	2	345.21	345.25	COAL	Coal	0.04		Seam 3L	ns			Peter Graham wrote"hard, bright banded "Bright dull coal, solid small piece, weakly bubbling.
112	80	345.93	347.45	1.52	1.14	75.00%										#N/A								
														345.25	345.40	LOST CORE	Lost Core	0.15	0.15	Seam 3L	ns			*Coal loss*
							>25		20	6	W6	R3	2	345.40	345.78	COAL	Coal	0.38		Seam 3L	CAN 5	345.60	345.98	Peter Graham wrote"Coal: hard, broken to solid"Bright dull, maily solid core with large broken fragments, weak bubbling.
														345.78	346.24	COALY MUDSTONE	Coaly Shale	0.46			ns			Peter Graham wrote"Coaly Shale dark brown"
							16	86.67%	20	8	W6	R2	4	346.24	346.54	CARBONACEOUS SILTSTONE	Carb. Sltst	0.30						Peter Graham wrote"Shale: medium to dark grey, very fine silt laminations" Dark grey, fine grained, massive SLT with trace carbonates. Jointing at 60, 75 and 90 deg TCA. Minor slicken lines on jointing planes.
113	80, 81	347.45	350.50	3.05	3.06	100.33%										#N/A								
							17	80.72%	25	11	W6	R5	4	346.54	349.60	LAMINITE	IB Sltst	3.06						Light to medium grey, fine grained to medium grained Sst, interbedded/ mixed with Sltst bedding ~90deg TCA. Joints mostly ~90 deg TCA, one low angle (~30 deg TCA) at 348.20m, occasional calcite veins.
114	81, 82	350.50	353.55	3.05	2.85	93.44%										#N/A								
							23	0.63	20	9	W6	R5	4	349.60	352.45	LAMINITE	IB Sst	2.85						Interbedded Sst, same as above bedding 75-85 deg TCA, joints 75-85 deg TCA.
														352.45	352.71	LOST CORE	Lost Core	0.26	0.26					*Rock loss*
115	82, 83	353.55	356.60	3.05	3.00	98.36%										#N/A								
														352.71	352.76	LOST CORE	Lost Core	0.05	0.05					*Rock loss*
							11	90.00%	25	13	W6	R6	4	352.76	355.76	LAMINITE	IB Sst	3.00						Interbedded Sst, same as above. Joints 75-85 deg TCA, some with plant materials. Bedding/Sltst, Coal stringers ~ 75-80 deg TCA.
116	83	356.60	359.65	3.05	3.10	101.64%										#N/A								
							6	98.39%	25	15	W6	R6	4	355.76	358.86	LAMINITE	IB Sst	3.10						Interbedded, cg-vcg Sst, same as above. Interbeds such as SLT, mdst (brown, fg), coal stringers at ~75-85º TCA. Joins same angle as bedding.
117	83, 84	359.65	362.70	3.05	3.05	100.00%										#N/A								
							7	0.99	25	15	W6	R6	4	358.86	361.91	LAMINITE	IB Sst	3.05						Interbedded Sst, same as above. Brown alteratoin/ disscoloration zones, some finer Sst layers with Sltst stringers.
118	84, 85	362.70	365.75	3.05	2.95	96.72%										#N/A								
							10	51.28%	20	12	W6	R6	4	361.91	363.86	LAMINITE	IB Sst	1.95						Interbedded Sst, same as above bedding 70-90 deg TCA. Thicker Sltst beds near the bottom.
							8	70.00%	20	10	W5	R5	4	363.86	364.86	SILTSTONE	Sltst	1.00						Brown-black, interbedded Sltst, bedding ~90 deg TCA.
														364.86	364.96	LOST CORE	Lost Core	0.10	0.10					*Rock loss*
119	85	365.75	368.80	3.05	2.70	88.52%										#N/A								
							15		20	5	W6	R5	4	364.96	365.31	SILTSTONE	Sltst	0.35						Dark brown to black, fg with Coal stringers, ~90 deg bedding
							>25		20	4	W6	R1	4	365.31	365.66	COAL	Coal	0.35		Seam 1 R	CAN 6	365.90	366.25	Black, moderatly-highly gassy, 80-90% bright coal, higly fractured, trace py
							20	0.60	25	9	W6	R5	4	365.66	365.80	SANDY SHALE	Shale	0.14		Seam 1 R	ns			Sh interbedded with coal stringers, same as above. Bottom 3-4cm bright coal. Trace pyrite.
														365.80	365.99	COAL	Coal	0.19		Seam 1 R	ns			Originally logged as Sltst, but after inspecting the boxes and seeing the coal in this interval the log was changed this was not sampled
							20	0.60	25	9	W6	R5	4	365.99	366.66	SANDY SHALE	Shale	0.67						Sh interbedded with coal stringers, same as above. Bottom 3-4cm bright coal. Trace pyrite.
							20	60.00%	25	9	W6	R5	4	366.66	367.66	SANDY SHALE	Shale	1.00						Sh interbedded with coal stringers, same as above. Bottom 3-4cm bright coal. Trace pyrite.

														367.66	368.01	LOST CORE	Lost Core	0.35	0.35	Seam 1	ns			*Coal loss.*
120	86	368.80	371.85	3.05	2.32	76.07%										#N/A								
														368.01	368.64	LOST CORE	Lost Core	0.63	0.63	Seam 1	ns			*Coal loss.*
							>25		10	4	W6	R1	2	368.64	368.67	CARBONACEOUS MUDSTONE	Carb. Shale	0.03		Seam 1	ns			Peter Graham wrote " Carbonaceous shale, hard"
														368.67	369.07	COAL	Coal	0.40		Seam 1	CAN 7	368.53	368.93	Peter Graham wrote "Coal: hard, dull to banded dull"Black, bright, med-high gassy, trace py
														369.07	369.37	COAL	Coal	0.30		Seam 1	07745	368.95	369.25	Peter Graham wrote "broken, dull to dull banded, some dirtier sections "80-90% bright coal
														369.37	369.42	COALY MUDSTONE	Coaly Shale	0.05		Seam 1	07745	369.25	369.3	Peter Graham wrote "Coaly Shale: broken " Coal dull hard
														369.42	369.52	COAL	Coal	0.10		Seam 1	07745	369.30	369.4	Peter Graham wrote "Coal: hard, dull to banded dull"
														369.52	369.61	COAL	Coal	0.09		Seam 1	ns			Peter Graham wrote "Coal: hard, dull to banded dull" Not Sampled
														369.61	369.71	SILTSTONE	Sltst	0.10		Seam 1	07746	369.49	369.59	Sltst, Floor sample
														369.71	369.81	SILTSTONE	Sltst	0.10		Seam 1	ns			Dark brown to black Sltst with coal stringers and lenses, highly broken, gas bubbles from fractures/ seams.
														369.81	369.98	COAL	Coal	0.17		Seam 1	ns			Originally logged as Sltst, but after inspecting the boxes and seeing the coal in this interval the log was changed this was not sampled
							>25		20	6	W6	R3	4	369.98	370.96	SILTSTONE	Sltst	0.98			ns			Dark brown to black Sltst with coal stringers and lenses, highly broken, gas bubbles from fractures/ seams.
														370.96	371.06	LOST CORE	Lost Core	0.10	0.10					Rock Loss
121	86, 87	371.85	374.90	3.05	2.78	91.15%										#N/A								
							>25		20	5	W6	R5	4	371.06	372.74	SILTSTONE	Sltst	1.68						Dark grey with thin brown band, fg SLT, hightly fractured.
														372.74	373.01	LOST CORE	Lost Core	0.27	0.27	Seam 1 Sub	ns			Coal Loss
								100.00%	25					373.01	374.11	SANDSTONE	Sst	1.10						Light grey, dg-v.cg, altered SST clasts, interbedded with SLT stringers.
122	87	374.90	377.95	3.05	3.05	100.00%	14	2.75	25	15	W6	R5	4			#N/A								
														374.11	377.16	LAMINITE	IB Sltst	3.05						Light brown to black, fg Sltst interbedded with altered Sst. Contact angle ~90 deg TCA. Bedding ~90 deg TCA.
123	87, 88	377.95	381.00	3.05	2.95	96.72%	12	2.10	20	11	W6	R5	4			#N/A								
														377.16	377.20	LOST CORE	Lost Core	0.04	0.04					
														377.20	380.15	LAMINITE	IB Sltst	2.95						Interbedded Sltst, same as above. Thick altered Sst near the bottom. Joints ~90 deg TCA. Some with possible fault gauge (?)
124	88, 89	381.00	384.05	3.05	3.05	100.00%	10	2.72	25	15	W6	R6	4			#N/A								
														380.15	383.20	SILTSTONE	Sltst	3.05						Light brown-grey fg, Sltst, joints ~ 90 deg TCA, possible fault gouge at 381.8m.
125	89, 90	384.05	387.10	3.05	3.10	101.64%	11	2.92	25	15	W6	R6	4			#N/A								
														383.20	386.30	NDIFFERENTIATED VOLCANIC	Volc	3.10		Volc				Light-med green Volc. Rock. Top 1m is red altred Sltst. Rest green volc, mixed with Sltst stringers. - EOH 386.30m -

Client: CJV
Project: Raven
Logged By: Parviz Rajaei
Farshad Shirmohammad

Hole Number: RAV-09-020
Date Hole Started: July 4 2009
Date Hole Finished: July 11 2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 348.13m
Depth of Casing: 2.00m
Core Size: Modified PQ (3 1/4')

Geological Borehole Log: RAV-09-020

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Intervals Logged Lithology	Intervals Logged Interval Length	Intervals Logged Core Loss	Intervals Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	1.60	OVERBURDEN	OB	1.60				0.00	1.81	OB
														1.60	3.12	SILTSTONE	Sltst	1.52				1.81	3.33	Sltst From 1.60m to 225.04m, the hole was chip sampled. From 225.04 to 347.92m, is the cored interval.
														3.12	4.64	SILTSTONE	Sltst	1.52				3.33	4.85	Sltst
														4.64	6.16	SILTSTONE	Sltst	1.52				4.85	6.37	Sltst
														6.16	7.68	SILTSTONE	Sltst	1.52				6.37	7.89	Sltst
														7.68	9.20	SILTSTONE	Sltst	1.52				7.89	9.41	Sltst
														9.20	10.72	SILTSTONE	Sltst	1.52				9.41	10.93	Sltst
														10.72	12.24	SILTSTONE	Sltst	1.52				10.93	12.45	Sltst
														12.24	13.76	SILTSTONE	Sltst	1.52				12.45	13.97	Sltst
														13.76	15.28	SILTSTONE	Sltst	1.52				13.97	15.49	Sltst
														15.28	16.80	SILTSTONE	Sltst	1.52				15.49	17.01	Sltst
														16.80	18.32	SILTSTONE	Sltst	1.52				17.01	18.53	Sltst
														18.32	19.84	SILTSTONE	Sltst	1.52				18.53	20.05	Sltst
														19.84	21.36	SILTSTONE	Sltst	1.52				20.05	21.57	Sltst
														21.36	22.88	SILTSTONE	Sltst	1.52				21.57	23.09	Sltst
														22.88	24.40	SILTSTONE	Sltst	1.52				23.09	24.61	Sltst
														24.40	25.92	SILTSTONE	Sltst	1.52				24.61	26.13	Sltst
														25.92	27.44	SILTSTONE	Sltst	1.52				26.13	27.65	Sltst
														27.44	28.96	SILTSTONE	Sltst	1.52				27.65	29.17	Sltst
														28.96	30.48	SILTSTONE	Sltst	1.52				29.17	30.69	Sltst
														30.48	32.00	SILTSTONE	Sltst	1.52				30.69	32.21	Sltst
														32.00	33.52	SILTSTONE	Sltst	1.52				32.21	33.73	Sltst
														33.52	35.04	SILTSTONE	Sltst	1.52				33.73	35.25	Sltst
														35.04	36.56	SILTSTONE	Sltst	1.52				35.25	36.77	Sltst
														36.56	38.08	SILTSTONE	Sltst	1.52				36.77	38.29	Sltst
														38.08	39.60	SILTSTONE	Sltst	1.52				38.29	39.81	Sltst
														39.60	41.12	SILTSTONE	Sltst	1.52				39.81	41.33	Sltst
														41.12	42.64	SILTSTONE	Sltst	1.52				41.33	42.85	Sltst
														42.64	44.16	SILTSTONE	Sltst	1.52				42.85	44.37	Sltst
														44.16	45.68	SILTSTONE	Sltst	1.52				44.37	45.89	Sltst
														45.68	47.20	SILTSTONE	Sltst	1.52				45.89	47.41	Sltst
														47.20	48.72	SILTSTONE	Sltst	1.52				47.41	48.93	Sltst
														48.72	50.24	SILTSTONE	Sltst	1.52				48.93	50.45	Sltst
														50.24	51.76	SILTSTONE	Sltst	1.52				50.45	51.97	Sltst
														51.76	53.28	SILTSTONE	Sltst	1.52				51.97	53.49	Sltst
														53.28	54.80	SHALY SILTSTONE	Sltst, Sh	1.52				53.49	55.01	Sltst
														54.80	56.32	SILTSTONE	Sltst	1.52				55.01	56.53	Sltst, Sh
														56.32	57.84	SILTSTONE	Sltst	1.52				56.53	58.05	Sltst
														57.84	59.36	SILTSTONE	Sltst	1.52				58.05	59.57	Sltst
														59.36	60.88	SHALY SILTSTONE	Sltst, Sh	1.52				59.57	61.09	Sltst
														60.88	62.40	SHALY SILTSTONE	Sltst, Sh	1.52				61.09	62.61	Sltst, Sh
														62.40	63.92	SILTSTONE	Sltst	1.52				62.61	64.13	Sltst, Sh
														63.92	65.44	CARBONACEOUS MUDSTONE	Carb. Sh, Sltst	1.52				64.13	65.65	Sltst
														65.44	66.96	SILTSTONE	Sltst	1.52				65.65	67.17	Carb. Sh, Sltst
														66.96	68.48	SILTSTONE	Sltst	1.52				67.17	68.69	Sltst
														68.48	70.00	SHALY SILTSTONE	Sltst, Sh	1.52				68.69	70.21	Sltst
														70.00	71.52	SHALY SILTSTONE	Sltst, Sh	1.52				70.21	71.73	Sltst, Sh
														71.52	73.04	SILTSTONE	Sltst	1.52				71.73	73.25	Sltst, Sh
														73.04	74.56	SILTSTONE	Sltst	1.52				73.25	74.77	Sltst
														74.56	76.08	SILTSTONE	Sltst	1.52				74.77	76.29	Sltst
														76.08	77.60	SHALY SILTSTONE	Sltst, Sh	1.52				76.29	77.81	Sltst, Sh
														77.60	79.12	SHALY SILTSTONE	Sltst, Sst	1.52				77.81	79.33	Sltst, Sst
														79.12	80.64	SILTSTONE	Sltst	1.52				79.33	80.85	Sltst
														80.64	82.16	SILTSTONE	Sltst	1.52				80.85	82.37	Sltst
														82.16	83.68	COALY MUDSTONE	mg Sst	1.52				82.37	83.89	mg Sst
														83.68	85.20	CLAYSTONE	Fg Sst, Sltst	1.52				83.89	85.41	Fg Sst, Sltst
														85.20	86.72	SILTSTONE	Sltst	1.52				85.41	86.93	Sltst
														86.72	88.24	SHALY SILTSTONE	Sltst, Sh	1.52				86.93	88.45	Sltst, Sh
														88.24	89.76	SILTSTONE	Sltst	1.52				88.45	89.97	Sltst
														89.76	91.28	SILTSTONE	Sltst	1.52				89.97	91.49	Sltst
														91.28	92.80	SHALY SILTSTONE	Sltst, Sh	1.52				91.49	93.01	Sltst, Sh
														92.80	94.32	SILTSTONE	Sltst	1.52				93.01	94.53	Sltst
														94.32	95.84	SHALY SILTSTONE	Sltst, Sh	1.52				94.53	96.05	Sltst, Sh
														95.84	97.36	SILTSTONE	Sltst	1.52				96.05	97.57	Sltst
														97.36	98.88	CLAYSTONE	Fg Sst, Sltst	1.52				97.57	99.09	Fg Sst, Sltst
														98.88	100.40	SILTSTONE	Sltst	1.52				99.09	100.61	Sltst
														100.40	101.92	CLAYSTONE	Fg Sst, Sltst	1.52				100.61	102.13	Fg Sst, Sltst
														101.92	103.44	SILTSTONE	Sltst	1.52				102.13	103.65	Sltst
														103.44	104.96	SHALY SILTSTONE	Sltst, Sh	1.52				103.65	105.17	Sltst, Sh
														104.96	106.48	SILTSTONE	Sltst	1.52				105.17	106.69	Sltst

														106.48	108.00	SILTSTONE	Sltst	1.52				106.69	108.21	Sltst
														108.00	109.52	SILTSTONE	Sltst	1.52				108.21	109.73	Sltst
														109.52	111.04	SHALY SILTSTONE	Sltst, Sh	1.52				109.73	111.25	Sltst, Sh
														111.04	112.56	SHALY SILTSTONE	Sltst, Sh	1.52				111.25	112.77	Sltst, Sh
														112.56	114.08	SHALY SILTSTONE	Sltst, Sh	1.52				112.77	114.29	Sltst, Sh
														114.08	115.60	SHALY SILTSTONE	Sltst, Sh	1.52				114.29	115.81	Sltst, Sh
														115.60	117.12	SILTSTONE	Sltst	1.52				115.81	117.33	Sltst
														117.12	118.64	SILTSTONE	Sltst	1.52				117.33	118.85	Sltst
														118.64	120.16	SANDSTONE	Sst	1.52		Cowie		118.85	120.37	Light to med grey, fg-mg Sst, Porous Sst, grey. Water 10 Gallon/min, brackish.
														120.16	121.68	SANDSTONE	Sst	1.52				120.37	121.89	Light to med grey, fg-mg Sst
														121.68	123.20	SANDSTONE	Sst	1.52				121.89	123.41	Light to med grey, fg-mg Sst
														123.20	124.72	SANDSTONE	Sst	1.52				123.41	124.93	Light to med grey, fg-mg Sst
														124.72	126.24	SANDSTONE	Sst	1.52				124.93	126.45	Light to med grey, fg-mg Sst
														126.24	127.76	SANDSTONE	Sst	1.52				126.45	127.97	Light to med grey, fg-mg Sst
														127.76	129.28	SANDSTONE	Sst	1.52				127.97	129.49	Light to med grey, fg-mg Sst
														129.28	130.80	SANDSTONE	Sst	1.52				129.49	131.01	Light to med grey, fg-mg Sst
														130.80	132.32	SANDSTONE	Sst	1.52				131.01	132.53	Light to med grey, fg-mg Sst
														132.32	133.84	SANDSTONE	Sst	1.52				132.53	134.05	Light to med grey, fg-mg Sst
														133.84	135.36	SANDSTONE	Sst	1.52				134.05	135.57	Light to med grey, fg-mg Sst
														135.36	136.88	SANDSTONE	Sst	1.52				135.57	137.09	Light to med grey, fg-mg Sst
														136.88	138.40	SANDSTONE	Sst	1.52				137.09	138.61	Light to med grey, fg-mg Sst
														138.40	139.92	SANDSTONE	Sst	1.52				138.61	140.13	Light grey, fg-mg Sst
														139.92	141.44	SANDSTONE	Sst	1.52				140.13	141.65	Light grey, fg-mg Sst
														141.44	142.96	SANDSTONE	Sst	1.52				141.65	143.17	Mix of light and med grey, fg-mg Sst
														142.96	144.48	SANDSTONE	Sst	1.52				143.17	144.69	Light grey, fg-mg Sst
														144.48	146.00	SANDSTONE	Sst	1.52				144.69	146.21	Light grey Sst and dome darker Sltst
														146.00	147.52	SANDSTONE	Sst	1.52				146.21	147.73	Sltst, Sst, Water volume increased sharply (~60 gal/min)
														147.52	149.04	SANDSTONE	Sst	1.52				147.73	149.25	Light grey, fg-mg Sst, crushed
														149.04	150.56	SANDSTONE	Sst	1.52				149.25	150.77	Light grey, fg-mg Sst, crushed
														150.56	152.08	SANDSTONE	Sst	1.52				150.77	152.29	Light grey, fg-mg Sst, crushed w/ dark organic materials
														152.08	153.60	SANDSTONE	Sst	1.52				152.29	153.81	Light grey, fg-mg Sst, crushed w/ less dark organic materials
														153.60	155.12	SANDSTONE	Sst	1.52				153.81	155.33	Dark gery Sltst
														155.12	156.64	SANDSTONE	Sst	1.52				155.33	156.85	Dark gery Sltst
														156.64	158.16	SILTSTONE	Sltst	1.52				156.85	158.37	Sltst
														158.16	159.68	SILTSTONE	Sltst	1.52				158.37	159.89	Sltst
														159.68	161.20	SILTSTONE	Sltst	1.52				159.89	161.41	Sltst
														161.20	162.72	SILTSTONE	Sltst	1.52				161.41	162.93	Sltst
														162.72	164.24	SILTSTONE	Sltst	1.52				162.93	164.45	Sltst
														164.24	165.76	SILTSTONE	Sltst	1.52				164.45	165.97	Sltst
														165.76	167.28	SILTSTONE	Sltst	1.52				165.97	167.49	Sltst
														167.28	168.80	SILTSTONE	Sltst	1.52				167.49	169.01	Sltst
														168.80	170.32	SHALY SILTSTONE	Sltst, Sh	1.52				169.01	170.53	Sltst, Sh
														170.32	171.84	SHALY SILTSTONE	Sltst, Sh	1.52				170.53	172.05	Sltst, Sh
														171.84	173.36	SILTSTONE	Sltst	1.52				172.05	173.57	Sltst
														173.36	174.88	SHALY SILTSTONE	Sltst, Sh	1.52				173.57	175.09	Sltst, Sh
														174.88	176.40	SHALY SILTSTONE	Sltst, Sh	1.52				175.09	176.61	Sltst, Sh
														176.40	177.92	SHALY SILTSTONE	Sltst, Sh	1.52				176.61	178.13	Sltst, Sh
														177.92	179.44	SHALY SILTSTONE	Sltst, Carb. Sh	1.52				178.13	179.65	Sltst, Carb. Sh
														179.44	180.96	SHALY SILTSTONE	Sltst, Sh	1.52				179.65	181.17	Sltst, Sh
														180.96	182.48	SILTSTONE	Sltst	1.52				181.17	182.69	Sltst
														182.48	184.00	SHALY SILTSTONE	Sltst, Sh	1.52				182.69	184.21	Sltst, Sh
														184.00	185.52	CARBONACEOUS MUDSTONE	Carb. Sh, Calci	1.52				184.21	185.73	Carb. Sh, Calcite
														185.52	187.04	SHALY SILTSTONE	Sltst, Sh	1.52				185.73	187.25	Sltst, Sh
														187.04	188.56	SHALY SILTSTONE	Sltst, Sh	1.52				187.25	188.77	Sltst, Sh
														188.56	190.08	SHALY SILTSTONE	Sltst, Sh	1.52				188.77	190.29	Sltst, Sh
														190.08	191.60	SHALY SILTSTONE	Sltst, Sh, Calci	1.52				190.29	191.81	Sltst, Sh, Calcite
														191.60	193.12	SHALY SILTSTONE	Sltst, Calcite	1.52				191.81	193.33	Sltst, Calcite
														193.12	194.64	SHALY SILTSTONE	Sltst, Sh	1.52				193.33	194.85	Sltst, Sh
														194.64	196.16	SHALY SILTSTONE	Sltst, Sh	1.52				194.85	196.37	Sltst, Sh
														196.16	197.68	SHALY SILTSTONE	Sltst, Sh	1.52				196.37	197.89	Sltst, Sh
														197.68	199.20	SILTSTONE	Sltst	1.52				197.89	199.41	Sltst
														199.20	200.72	SHALY SILTSTONE	Sltst, Sh, Calci	1.52				199.41	200.93	Sltst, Sh, Calcite
														200.72	202.24	SHALY SILTSTONE	Sltst, Sh	1.52				200.93	202.45	Sltst, Sh
														202.24	203.76	SHALY SILTSTONE	Sltst, Sh, Calci	1.52				202.45	203.97	Sltst, Sh, Calcite
														203.76	205.28	SHALY SILTSTONE	Sltst, Sh	1.52				203.97	205.49	Sltst, Sh
														205.28	206.80	CLAYSTONE	Dark grey Slts	1.52				205.49	207.01	Dark grey Sltst
														206.80	208.32	LAMINITE	Light grey Sst	1.52				207.01	208.53	Light grey Sst
														208.32	209.84	LAMINITE	Light grey Sst	1.52				208.53	210.05	Light grey Sst
														209.84	211.36	SANDSTONE	Sst	1.52				210.05	211.57	Sst
														211.36	212.88	SANDSTONE	Sst	1.52				211.57	213.09	Sst
														212.88	214.40	SANDSTONE	Sst	1.52				213.09	214.61	Sst
														214.40	215.92	SANDSTONE	Sst	1.52				214.61	216.13	Sst
														215.92	217.44	CLAYSTONE	Dark grey Slts	1.52				216.13	217.65	Dark grey Sltst
														217.44	218.96	CLAYSTONE	Dark grey Slts	1.52				217.65	219.17	Dark grey Sltst
														218.96	220.48	MUDSTONE	N/A	1.52				219.17	220.69	N/A
														220.48	222.00	SILTSTONE	Sltst	1.52				220.69	222.21	Sltst
														222.00	222.72	SILTSTONE	Sltst	0.72				222.21	223.73	Sltst
														222.72	223.49	COAL	Coal	0.77		Seam 5	ns	223.73	225.25	Coal 0.30m thick Chip sampling stopped at 225.25m. Hit coal at this depth.

															223.49	225.04	SILTSTONE	Sltst	1.55						
1	1	225.25	227.08	1.83	1.76	96.17%											#N/A								
								100.00%		15	W6	R6	4	225.04	226.80	SANDSTONE	Sst	1.76						Light
2	1,2	227.08	229.82	2.74	2.77	101.09%											#N/A								
								100.00%		15	W6	R6	4	226.80	229.57	SANDSTONE	Sst	2.77						Light to med grey fg-mg massive Sst w/ some plant fossils
3	2,3	229.82	232.71	2.89	2.83	97.92%											#N/A								
							>25	100.00%	25	15	W6	R6	4	229.57	232.40	SANDSTONE	Sst	2.83						Light to med grey fg-mg massive Sst. Plant fossils are also present. Fractures are at 230.58m (~10°TCA), 231.28 (~15°TCA), 232.08 (~20°TCA) and show the same orientation
4	3,4	232.71	235.60	2.89	2.83	97.92%											#N/A								
								100.00%		15	W6	R6	4	232.40	235.23	SANDSTONE	Sst	2.83						Light to med grey, fg, massive Sst. Solid core, Some coal stringers. Some plant fossils present
5	4,5	235.60	238.03	2.43	2.70	111.11%											#N/A								
							>25	37.04%	10	2	W5	R5	1	235.23	237.93	SANDSTONE	Sst	2.70						Broken and fractured Sst. Light grey fg w/ some organic fragments, massive. At 234.40 and ~234.90m,calcite
6	5,6	238.03	240.92	2.89	2.89	100.00%											#N/A								
							12	93.28%	25	13	W6	R6	4	237.93	240.61	SANDSTONE	Sst	2.68						Light grey, mg, massive Sst
														240.61	240.72	CARBONACEOUS MUDSTONE	Cbr Mdst	0.11			07686	241.17	241.28	Carb Mdst, 0.10m Roof Sample
														240.72	240.82	COAL	Coal	0.10			07687	241.28	241.38	Coal - bright (~80%)
7	6,7	240.92	243.81	2.89	2.89	100.00%											#N/A								
														240.82	240.96	COAL	Coal	0.14			07687	241.38	241.52	Coal - ~75% bright
							1	100.00%	25	14	W6	R5	4	240.96	242.01	CLAYSTONE	Clyst	1.05						Medim grey Clyst
							1	100.00%	25	14	W6	R5	4	242.01	243.71	SILTSTONE	Sltst	1.70						Sandy Sltst
8	8,9	243.81	246.71	2.90	2.90	100.00%											#N/A								
							6	100.00%	25	13	W6	R5	4	243.71	246.61	SANDSTONE	Sst	2.90						Light grey, cg, Sst, 1.5m from top with stringers of dark grey Sltst at 90°TCA
9	10	246.71	249.61	2.90	2.80	96.55%											#N/A								
							4	97.50%	25	13	W6	R5	4	246.61	249.41	SANDSTONE	Sst	2.80						Light grey, cg Sst, as above
10	10	249.61	251.28	1.67	1.53	91.62%											#N/A								
												R6	4	249.41	250.94	SANDSTONE	Sst	1.53						Light grey, cg Sandstone
														250.94	251.01	LOST CORE	Lost Core	0.07	0.07					*Rock Loss*
11	10,11	251.28	254.02	2.74	2.92	106.57%											#N/A								
							1	100.00%	25	14	W6	R6	4	251.01	253.93	SANDSTONE	Sst	2.92						Light grey, cg, Sandstone w/ coal stringers at 90°TCA
12	11,12	254.02	256.92	2.90	2.70	93.10%											#N/A								
							2	100.00%	25	13	W6	R6	4	253.93	256.63	SANDSTONE	Sst	2.70						Light grey, coarse grained Sst w/ few stringers of Sltst
														256.63	256.83	LOST CORE	Lost Core	0.20	0.20					*Rock Loss*
13	12,13	256.92	259.66	2.74	2.70	98.54%											#N/A								
							1	96.84%	25	14	W6	R6	4	256.83	258.73	SANDSTONE	Sst	1.90						Light grey, cg Sst
														258.73	258.80	CLAYSTONE	Clyst	0.07						Carb Mdst
														258.80	258.84	LOST CORE	Lost Core	0.04	0.04					*Coal loss*
														258.84	259.10	COAL	Coal	0.26		Seam 4R	07688	259.26	259.52	Coal, dull
							8	51.06%	25	9	W6	R3	4	259.10	259.57	CLAYSTONE	Clyst	0.47						Light brown Clyst w/coal stringers
14	13	259.66	260.88	1.22	1.01												#N/A								
						82.79%	1	100.00%	25	9	W6	R5	4	259.57	260.58	CLAYSTONE	Clyst	1.01						Dark grey Clyst (only cored 1.01m)
														260.58	260.73	LOST CORE	Lost Core	0.15	0.15					
15	13,14	260.88	263.32	2.44	2.75	112.70%											#N/A								
														260.73	261.10	CLAYSTONE	Clyst	0.37						
`														261.10	261.20	CLAYSTONE	Clyst	0.10			07689	261.62	261.72	Clyst, 0.10 m Roof Sample
												260.2		261.20	261.77	COAL	Coal	0.57		Seam 4	07690	261.72	262.29	Coal, dull
														261.77	262.00	CLAYSTONE	Clyst	0.23			07691	262.29	262.52	Clyst, 0.10m Floor Sample
								98.65%					R6	262.00	263.48	SANDSTONE	SsT	1.48						Light grey, cg Sst, w/ coal stringers
16	14,15	263.32	266.21	2.89	2.89	100.00%											#N/A								
								100.00%		15	W6	R6	4	263.48	263.68	SANDSTONE	Sst	0.20						Light grey, fg, massive Sandstone
														263.68	263.74	COAL	Coal	0.06			028157	263.68	263.74	Coal Dull w/ banding. Faulted.
														263.74	264.09	SHALY COAL	SHC	0.35			028152	263.74	264.09	Brown carb Mdst w/ some coal
							>25	39.47%	25	4	W6	R3	1	264.09	266.37	SANDSTONE	Sst	2.28						Medium grey, massive Sst. Broken and faulted. Fine to medium grained. Fr mostly low angleSst grains are not cemented strongly and turn into sands when broken by hammer
17	16	266.21	269.10	2.89	2.85	98.62%											#N/A								
							1	100.00%	10	15	W6	R6	4	266.37	269.22	SANDSTONE	Sst	2.85						Light to medium grey fine to medium grain Sandstone. Plant fossils, calcite filled stepped-surface low angle Fr at 267.88m
														269.22	269.25	LOST CORE	Lost Core	0.03	0.03					Lost Core
18	17	269.10	270.47	1.37	1.38	100.73%											#N/A								
							6	86.96%	25	15	W6	R6	4	269.25	270.63	SANDSTONE	Sst	1.38						Light grey to green, massive Sst w/ some fossil and organic materials. Fractures are mainly calcite filled. Some coal stringers are also present
19	17,18	270.47	272.30	1.83	1.85	101.09%											#N/A								
							>25	59.46%	25	12	W6	R5	3	270.63	272.48	SANDSTONE	Sst	1.85						Light grey fg Sst, calcite filled fractures. A low angle fr ~25° at around 270.50m depth
20	18,19	272.30	274.89	2.59	2.46	94.98%											#N/A								
							4	100.00%	25	14	W6	R6	4	272.48	274.94	SANDSTONE	Sst	2.46						Light grey, cg, massive Sst.
														274.94	275.07	LOST CORE	Lost Core	0.13	0.13					*Rock Loss*
21	19,20	274.89	277.63	2.74	2.77	101.09%											#N/A								
							5	98.19%	25	14	W6	R6	4	275.07	277.84	SANDSTONE	Sst	2.77						Sst as above
22	20	277.63	280.53	2.90	2.65	91.38%	11										#N/A								
								98.87%	25	14	W6	R6	4	277.84	280.49	SANDSTONE	Sst	2.65						Massive Sst as above
														280.49	280.63	LOST CORE	Lost Core	0.14	0.14					*Rock Loss*
23	21	280.53	282.20	1.67	1.67	100.00%											#N/A								
							4	97.27%	25	13	26	R6	4	280.63	282.30	SANDSTONE	Sst	1.67						Light grey, cg, massive Sst
24	21	282.20	283.11	0.91	0.69	75.82%											#N/A								
							2	97.10%	25	13	W6	R6	4	282.30	282.99	SANDSTONE	Sst	0.69						Sst as above
														282.99	283.00	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*

25	21,22	283.11	284.73	1.62	1.44	88.89%										#N/A									
							>25	0.00%	0	2	W2	R1	1	283.00	284.44	SANDSTONE	Sst	1.44						Medium to light grey, m-fg, massive Sst. Rock is frctured and gouged (fault?), very soft in main part of the core (~0.60m in the middle). Fractured mainly filled with calcite
														284.44	284.62	LOST CORE	Lost Core	0.18	0.18					*Rock loss*
26	22,23	284.73	287.47	2.74	2.68	97.81%										#N/A									
							8	97.01%	25	15	W5	R6	4	284.62	287.30	SANDSTONE	Sst	2.68						Light grey, fg, massive Sandstone. Fractures are mainly 15-25°TCA and calcite filled/Slicksided Some of the closed fractures are ~1cm thick and filled with white calcite
														287.30	287.36	LOST CORE	Lost Core	0.06	0.06					*Rock Loss*
27	23,24	287.47	290.26	2.79	2.55	91.40%										#N/A									
							9	94.12%	25	15	W6	R6	4	287.36	289.91	SANDSTONE	Sst	2.55						Light grey/green, fg, massive, Sandstone. 15-25°TCA fractures, calcite filled/Slickensided
														289.91	289.97	LOST CORE	Lost Core	0.06	0.06					*Rock loss*
28	24,25	290.26	292.85	2.59	2.62	101.16%										#N/A									
							7	92.51%	25	15	W6	R6	4	289.97	292.59	SANDSTONE	Sst	2.62						Massive med grey, fg-mg Sst. Fractures are mainly low angle (~10-20°TCA), calcite filled and SS. Faults are also
29	25	292.85	295.59	2.74	2.44	89.05%										#N/A									
							3	100.00%	25	15	W6	R6	4	292.59	295.03	SANDSTONE	Sst	2.44						Light grey, cg, massive Sst
														295.03	295.24	LOST CORE	Lost Core	0.21	0.21					*Rock loss*
30	26	295.59	297.57	1.98	1.97	99.49%										#N/A									
								100.00%						295.24	296.75	SANDSTONE	Sst	1.51						Light grey, cg, massive Sst
														296.75	296.85	SANDSTONE	Sst	0.10			3208	296.85	296.95	Light grey, cg, massive Sst
														296.85	297.31	COAL	Coal	0.46		Seam 3	3209	296.95	297.41	Coal, dull
31	27	297.57	300.16	2.59	0.98	37.84%										#N/A									
														297.31	297.51	LOST CORE	LOST CORE	0.20		Seam 3	ns			*Lost Core: Prbly Coal and Carb Mdstn*
														297.51	297.64	CLAYSTONE	Clyst	0.13		Seam 3	3201	297.51	297.64	Dark grey Clyst
														297.64	298.49	COAL	Coal	0.85		Seam 3	3202	297.64	298.49	Coal,dull
														298.49	299.09	COAL	Coal	0.60		Seam 3	3203	298.49	299.09	Coal,dull
														299.09	299.44	COAL	Coal	0.35		Seam 3	3204	299.09	299.44	Coal,dull
														299.44	299.86	COAL	Coal	0.42		Seam 3	3205	299.44	299.86	Coal,dull
32	27,28	300.16	302.90	2.74	2.63	95.99%										#N/A									
														299.86	300.06	COAL	Coal	0.20		Seam 3	3206	299.86	300.06	Coal, dull
														300.06	300.18	SILTSTONE	Sltst	0.12			3207	300.06	300.18	Medium grey ,massive Sltst, 0.10m Sst at the bottom
							13	100.00%	25	14	W6	R5	4	300.18	302.61	SILTSTONE	Sltst	2.43						Medium grey ,massive Sltst, 0.10m Sst at the bottom
														302.61	302.74	LOST CORE	Lost Core	0.13	0.11					*Rock Loss*
33	29	302.90	304.88	1.98	1.97	99.49%										#N/A									
							1	100.00%	18	14	W6	R6	4	302.74	304.71	SANDSTONE	Sst	1.97						Light grey, cg, massive Sst
														304.71	304.72	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
34	30	304.88	306.70	1.82	1.77	97.25%										#N/A									
							8	91.76%	25	15	W6	R6	4	304.72	306.49	SANDSTONE	Sst	1.77						Massive fg, massive Sst, w/ calcite filled fractures. Fractures are ~30-50°TCA
														306.49	306.54	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
35	30,31	306.70	309.44	2.74	2.74	100.00%										#N/A									
							>25	97.27%	25	10	W6	R6	4	306.54	309.28	SANDSTONE	Sst	2.74						Light grey, massive Sst, closed calcite-filled fractures. Fg Sst is mainly broken in parallel fractures
36	31,32	309.44	312.33	2.89	2.89	100.00%										#N/A									
							13	95.18%	25					309.28	312.17	SANDSTONE	Sst	2.89						Light grey, massive Sst, w/ coal stringers and plant fragments. A ~55cm gouge from ~310.08 to 310.63m is present
37	33	312.33	315.22	2.89	2.63	91.00%										#N/A									
							4	100.00%	25	15	W6	R6		312.17	314.80	SANDSTONE	Sst	2.63						Light grey, fg, massive Sst. A ~50°TCA at ~312.05m and coal stringers right above it might be a fault, stringers are releasing gas and are ~85°TCA
														314.80	315.06	LOST CORE	Lost Core	0.26	0.26					Rock Loss
38	34,35	315.22	317.96	2.74	2.63	95.99%										#N/A									
							14	100.00%	25	14	W6	R6		315.06	317.69	SANDSTONE	Sst	2.63						V-fg, mainly massive Sst. Fractures are Slicksided (some) and are along the coal stringers. Colour is medium grey
														317.69	317.80	LOST CORE	Lost Core	0.11	0.11					*Rock Loss*
39	35,36	317.96	320.40	2.44	2.44	100.00%										#N/A									
							11	98.81%	25	15	W6	R6		317.80	320.24	SANDSTONE	Sst	2.44						Med grey, v-fg and thin bedded Sst. Calcite filled fractures w/ low angle (317.0m). And plant fossils with some coal stringers
40	36,36	320.40	323.14	2.74	2.95	107.66%										#N/A									
							16	82.03%	25	15	W6	R6		320.24	323.19	SANDSTONE	Sst	2.95						Light grey to green Sst. Fractured mainly on the top of the run. Sst in thin bedded with some coal stringers and calcite filled fractures, again, on the top of the run
41	37	323.14	324.66	1.52	1.52	100.00%										#N/A									
							3	100.00%	25	15	W6	R6		323.19	324.71	SANDSTONE	Sst	1.52						Massive light grey fg-mg Sst. Fractures mainly 80-90°TCA. Sst is solid
42	38,39	324.66	327.40	2.74	2.62	95.62%										#N/A									
							1	100.00%	25	15	w6	R6		324.71	325.50	SANDSTONE	Sst	0.79						Med grey mg Sst w/ laminations of Clyst
							11	71.04%	25	14	W6	R3	4	325.50	327.33	CLAYSTONE	Clyst	1.83						Dark grey, fg Clyst
														327.33	327.41	LOST CORE	Lost Core	0.08	0.08					*Rock Loss*
43	39	327.40	330.31	2.91	1.87	64.26%										#N/A									
														327.41	327.62	LOST CORE	Lost Core	0.21	0.21					*Rock loss*
							3	80.61%	25	15	W6	R3	4	327.62	329.17	MUDSTONE	Mdst	1.55						Carb Mdst, massive, 0.07m at top soft and mudy, 0.05m very broken
														329.17	329.27	MUDSTONE	Mdst	0.10			3211	329.17	329.27	
														329.27	329.59	COAL	Coal	0.32		Seam 1	3210	329.27	329.59	Coal, Dull
														329.59	329.70	LOST CORE	Lost Core	0.11	0.11	Seam 1	ns			*Coal loss*
														329.70	329.80	LOST CORE	Lost Core	0.10	0.10	Seam 1	ns			*Rock Loss*
														329.80	330.29	LOST CORE	Lost Core	0.49	0.49	Seam 1	ns			*Coal loss*
44	40	330.31	332.14	1.83	1.37	74.86%										#N/A									
														330.29	330.33	LOST CORE	Lost Core	0.04	0.14	Seam 1	ns			*Coal loss*

															330.33	330.90	COAL	Coal	0.57		Seam 1	3212	330.33	330.90	Coal, dull, 0.20m at the top broken
															330.90	331.00	CLAYSTONE	Clyst	0.10			3213	330.90	331.00	
							7	88.89%	25	14	W6	R3	4		331.00	331.80	CLAYSTONE	Clyst	0.80						Dark grey Clyst
															331.80	331.81	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
45	40,41	332.14	330.31	1.83	1.59	86.89%											#N/A								
															331.81	331.88	CLAYSTONE	Clyst	0.07						Med grey Clyst
															331.88	331.98	CLAYSTONE	Clyst	0.10			3214	331.88	331.98	
															331.98	332.74	SHALY COAL	Shaly Coal	0.76		Seam 1 Sub 1	3215	331.98	332.74	Coal, dull
															332.74	332.84	CLAYSTONE	Clyst	0.10			3216	332.74	332.84	
							6	100.00%	25	14	W6	R3			332.84	333.60	CLAYSTONE	Clyst	0.76						Clyst
															333.60	333.64	LOST CORE	Lost Core	0.04	0.24					*Rock loss*
46	41,42	333.97	336.87	2.90	2.60	89.66%											#N/A								
															333.64	333.94	LOST CORE	Lost Core	0.30	0.30					*Rock loss*
							12	93.85%	25	15	W6	R3			333.94	336.54	CLAYSTONE	Clyst	2.60						Med grey Clyst
47	42,43	336.87	339.15	2.28	2.37	103.95%											#N/A								
															336.54	336.82	CLAYSTONE	Clyst	0.28						Med grey Clyst
															336.82	336.96	COAL	Coal	0.14						Coal, dull and hard
															336.96	337.33	CLAYSTONE	Clyst	0.37						Highly carbonaceous Clyst
							4	92.41%	25	13	W6	R3			337.33	338.91	SILTSTONE	Sltst	1.58						Medium grey, fg, massive Sltst
48	43,44	339.15	341.89	2.74	2.90	105.84%											#N/A								
							1	100.00%	25	14	W6	R3			338.91	339.21	SILTSTONE	Sltst	0.30						Med grey Sltst
							2	86.00%	9	14	W6	R5			339.21	339.71	SANDSTONE	Sst	0.50						Light grey, cg Sltst
							6	98.57%	25	13	W6	R6			339.71	341.81	SILTSTONE	Sltst	2.10						Med grey, fg, massive Sltst
49	44	341.89	343.56	1.67	1.75	104.79%											#N/A								
							19	25.38%	25	7	W6	R6	4		341.81	343.11	SANDSTONE	Sst	1.30						Mg-cg Sst, broken
							>25	51.11%	25	7	W6	R5	4		343.11	343.56	SILTSTONE	Sltst	0.45						Med grey, fg Sltst at the bottom, very broken
50	45	343.56	346.00	2.44	1.80	73.77%											#N/A								
							3	100.00%	25	15	W6	R6	4		343.56	345.36	SILTSTONE	Sltst	1.80						Med grey, fg, massive sandy Sltst
															345.36	345.59	LOST CORE	Lost Core	0.23	0.23					*Rock Loss*
51	45	346.00	348.13	2.13	2.33	109.39%											#N/A								
							16	81.55%	25	13	W6	R6	4		345.59	347.92	SILTSTONE	Sltst	2.33						Brown to med grey, massive Sltst and some IB of Sst, broken around 348.00m depth EOH @ 348.13m

Geological Borehole Log: RAV-09-021

Client: CJV
Project: Raven
Logged By: Amber Brown, Henry Kim

Hole Number: RAV-09-021
Date Hole Started: July 8, 2009
Date Hole Finished: July 12, 2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 368.20m
Depth of Casing: 21.30m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Interval Logged Lith	Interval Logged Length	Interval Logged Lost Core	Interval Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	17.90	OVERBURDEN	ovbdn							OB to 17.90; casing set to 21.3m
1	2	21.30	24.10	2.80	2.32	82.86%										#N/A								
							9	91.81%	25	14	W6		4	17.90	20.22	SILTSTONE	Sltst	2.32						Grey Sltst
2	2 & 3	24.10	27.15	3.05	3.16	103.61%										#N/A								
							>25	42.55%	25	12	W6		3	20.22	23.38	SILTSTONE	Sltst	3.16						Grey Sltst The geologist at the rig "over" measured this interval, this interval has been deceased by 13cm
3	3 & 4	27.15	30.20	3.05	3.10	101.64%										#N/A								
							>25	79.11%	25	12	W6		3	23.38	26.48	SILTSTONE	Sltst	3.10						Grey Sltst The geologist at the rig "over" measured this interval, this interval has been deceased by 6cm
4	4	30.20	33.25	3.05	3.10	101.64%										#N/A								
							15	93.89%	25	14	W6		4	26.48	29.58	SILTSTONE	Sltst	3.10						Grey Sltst The geologist at the rig "over" measured this interval, this interval has been deceased by 1cm
5	4 & 5	33.25	36.30	3.05	3.06	100.33%										#N/A								
							18	88.24%	25	14	W6		4	29.58	32.64	SILTSTONE	Sltst	3.06						Grey Sltst
6	5 & 6	36.30	39.35	3.05	3.18	104.26%										#N/A								
							17	74.53%	25	12	W6		4	32.64	35.82	SILTSTONE	Sltst	3.18						Grey Sltst
7	6 & 7	39.35	42.40	3.05	3.08	100.98%										#N/A								
							>25	38.48%	25	10	W6		4	35.82	38.90	SILTSTONE	Sltst	3.08						Grey Sltst The geologist at the rig "over" measured this interval, this interval has been deceased by 35cm
8	7	42.40	45.45	3.05	2.92	95.74%										#N/A								
							19	70.89%	25	12	W6		4	38.90	41.82	SILTSTONE	Sltst	2.92						Grey Sltst
9	7 & 8	45.45	48.50	3.05	3.00	98.36%										#N/A								
							>25	43.33%	25	8	W6	R5	4	41.82	44.82	SILTSTONE	Sltst	3.00						Med grey, fg, massive S;tst. ~20 TCA joints near top. Highly broken into small rubbles from 47.60m
10	8 & 9	48.50	51.55	3.05	3.18	104.26%										#N/A								
							>25	73.27%	25	11	W6	R5	4	44.82	48.00	SILTSTONE	Sltst	3.18						Sltst same as above. 20-25 joints near top. Med-broken top and bottom. Rest solid core.
11	9 & 10	51.55	54.60	3.05	2.90	95.08%										#N/A								
							>25	71.72%	25	14	W6	R5	4	48.00	50.90	SILTSTONE	Sltst	2.90						Med - dark grey fg massive Sltst. Most joints ~ 90 TCA. 20 TCA joint @ 53.83m. IB w/ SST @ 53.10 (12 cm thick) ~90 TCA bedding.
12	10	54.60	57.65	3.05	2.90	95.08%										#N/A								
							>25	44.83%	20	8	W6	R5	4	50.90	53.80	SILTSTONE	Sltst	2.90						Sltst, same as above. High;y broken area at 56.10m. IB Sst layer (5 cm) at 56.30m Joints 60-90 TCA
13	10 & 11	57.65	60.70	3.05	3.08	100.98%										#N/A								
							>25	79.55%	20	13	W6	R5	4	53.80	56.88	SILTSTONE	Sltst	3.08						Sltst as above. Highly broken zone at 57.95. Joints ~ 50-90 TCA
14	11& 12	60.70	63.75	3.05	3.08	100.98%										#N/A								
							12	92.53%	25	15	W6	R5	4	56.88	59.96	SILTSTONE	Sltst	3.08						Sltst, same as above. Massive. Joints 85-90 some w/ calc.
15	12 & 13	63.75	66.80	3.05	3.10	101.64%										#N/A								
							11	100.00%	25	14	W6	R5	4	59.96	63.06	SILTSTONE	Sltst	3.10						Slst, same as above. Joints 75-85 TCA w/ occasional calc veins. IB w/ Sst at 65.2m. 90 TCA bedding.
16	13	66.80	69.85	3.05	3.00	98.36%										#N/A								
							20	87.33%	25	13	W6	R5	4	63.06	66.06	SILTSTONE	Sltst	3.00						Sltst same as above. Joints 65-85 TCA w/ calc. Small vertical fractures at bottom (10cm long).
17	13 & 14	69.85	72.90	3.05	3.15	103.28%										#N/A								
							20	73.02%	20	11	W6	R5	4	66.06	69.21	SILTSTONE	Sltst	3.15						Dark grey fg Sltst massive. Calc veins ~ 70 TCA. Top 50cm and 71.5m - highly broken area w/ vertical fractures. Sst matrix w/Sltst clasts at the bottom (~ 4cm thick layer) trace py.
18	14 & 15	72.90	75.95	3.05	3.12	102.30%										#N/A								
							>25	72.12%	20	10	W6	R5	4	69.21	72.33	SILTSTONE	Sltst	3.12						Sltst, same as above. Sst w/ Sltst clasts near top. Below Sst IB w/ Sltst (75 bedding). Vertical fracture at 74.2 (30cm long), trace py
19	15	75.95	79.00	3.05	3.05	100.00%										#N/A								
							8	100.00%	25	15	W6	R5	4	72.33	75.38	SILTSTONE	Sltst	3.05						Dark grey fg massive Sltst. Joints ~90 TCA. Large Sst IB within Sltst at 77.68m.
20	16	79.00	82.05	3.05	3.00	98.36%										#N/A								
							>25	63.33%	20	10	W6	R5	4	75.38	78.38	SILTSTONE	Sltst	3.00						Sltst, same as above Sst patches near top. 60 TCA joint filled w/calc near top. 76.9 - 82.6 mod-highly broken.
21	16 & 17	82.05	85.10	3.05	3.10	101.64%										#N/A								
							>25	77.42%	20	11	W6	R5	4	78.38	81.48	SANDSTONE	Sst	3.10						Sst, same as above. Highly fractured top and bottom. Most joints ~ 90 TCA. Calc veins and stringers.
22	17 & 18	85.10	88.15	3.05	3.06	100.33%										#N/A								
							13	95.10%	25	11	W6	R5	4	81.48	84.54	SILTSTONE	Sltst	3.06						Dark grey fg massive Sltst. All joints ~85. Sst clasts at 86.5m
23	18	88.15	91.20	3.05	3.12	102.30%										#N/A								
							8	96.15%	25	15	W6	R5	4	84.54	87.66	SILTSTONE	Sltst	3.12						Sltst same as above, meassive. All joints ~ 85-90 TCA. Thin calc vein at 89.6m (40 TCA).
24	18 & 19	91.20	94.25	3.05	3.06	100.33%										#N/A								
							15	83.33%	25	15	W6	R5	4	87.66	90.72	SILTSTONE	Sltst	3.06						Sltst, same as above. Massive. Joints at 40-85 TCA.
25	19 & 20	94.25	97.30	3.05	3.01	98.69%										#N/A								
							9	100.00%	25	15	W6	R5	4	90.72	93.73	SILTSTONE	Sltst	3.01						Sltst, massive same as above. Calc veins ~ 85 TCA, one vertical. Joints ~85 TCA.
26	20 & 21	97.30	100.35	3.05	3.09	101.31%										#N/A								
							11	97.09%	25	15	W6	R5	4	93.73	96.82	SILTSTONE	Sltst	3.09						Sltst, same as above. Massive. Joints 30-90 TCA. Occasional calc bits.
27	21	100.35	103.40	3.05	3.04	99.67%										#N/A								
							11	72.37%	25	15	W6	R5	4	96.82	99.86	SILTSTONE	Sltst	3.04						Sltst, same as above. Massive. Joints 30-90 TCA. Occasional calc bits.
28	21 & 22	103.40	106.45	3.05	2.97	97.38%										#N/A								
							7	98.32%	25	15	W6	R5	4	99.86	102.83	SILTSTONE	Sltst	2.97						Sltst as above. Massive. All joints ~90 TCA. Few calc frags/stringers.
29	22 & 23	106.45	109.50	3.05	3.06	100.33%										#N/A								
							8	96.41%	25	15	W6	R5	4	102.83	105.89	SILTSTONE	Sltst	3.06						Sltst, same as above. Massive. Joints 75-90 TCA. Calc bands/stringers.
30	23	109.50	112.55	3.05	3.05	100.00%										#N/A								
							>25	67.21%	20	9	W6	R5	4	105.89	108.94	SILTSTONE	Sltst	3.05						Dark grey fg massive Sltst. Highly broken at top vertical fracture at 110.0m. Joints 75-90 TCA. Tree fossil at bottom
31	23 & 24	112.55	115.60	3.05	3.05	100.00%										#N/A								
							10	88.52%	20	15	W6	R5	4	108.94	111.99	SILTSTONE	Sltst	3.05						Sltst same as above. Vertical fractures at top, calc frags/strings/veins visible. Highly fractured at bottom. Rest solid core 90 TCA joints.
32	24 & 25	115.60	118.65	3.05	3.05	100.00%										#N/A								
							6	100.00%	25	15	W6	R5	4	111.99	115.04	SILTSTONE	Sltst	3.05						Sltst, same as above. Joints ~85. Sst clasts/layer at 116.35m. Calc frags visible.
33	25 & 26	118.65	121.70	3.05	3.10	101.64%										#N/A								
							16	90.32%	25	14	W6	R5	4	115.04	118.14	SILTSTONE	Sltst	3.10						Sltst as above. Joints at 85. One at 45. 1 cm bed of med grain med grey Sst at 120.80m. 12cm bed & clasts of above Sst at 121.10m.
34	26	121.70	124.75	3.05	3.08	100.98%										#N/A								
							>25	71.75%	20	9	W6	R5	4	118.14	121.22	SILTSTONE	Sltst	3.08						Sltst as above. Joints at 85. One at 30. At 122.30m there is a 20cm zone of crushed rock.
35	26 & 27	124.75	127.80	3.05	3.03	99.34%										#N/A								
							24	41.91%	25	11	W6	R5	4	121.22	124.25	SILTSTONE	Sltst	3.03						Sltst as above. Most joints at 85. 4 joints at 25. 6 random finely laminated calc.
36	27 & 28	127.80	130.85	3.05	3.33	109.18%										#N/A								
							>25	52.55%	20	11	W6	R5	4	124.25	127.58	SILTSTONE	Sltst	3.33						Sltst as above. Broken zone (~ 20cm) at 129.60m. Most joints 70-80. One at 55 w/ 1cm thick calc-Sltst marbley bed.
37	28	130.85	133.90	3.05	3.13	102.62%										#N/A								
							8	104.17%	25	15	W6	R5	4	127.58	130.46	SILTSTONE	Sltst	2.88						Sltst as above. Joints at 85. One at 40 at 132.60m. 3 calc strings.
							0	100.00%			W6	R5	4	130.46	130.71	SANDSTONE	Sst	0.25						25cm at bottom is mg light gr Sst. Grades into this new ligh very fast.
38	28 & 29	133.90	136.95	3.05	3.10	101.64%										#N/A								
							1	100.00%	25	15	W6	R5	4	130.71	131.25	SANDSTONE	Sst	0.54						Sst as above
							10	93.75%	25	14	W6	R5	4	131.25	133.81	SILTSTONE	Sltst	2.56						Dk gr massive Sltst. 7 calc strings. Joints at 85 TCA.
39	29 & 30	136.95	140.00	3.05	3.04	99.67%										#N/A								
							12	100.00%	25	15	W6	R5	4	133.81	136.85	SILTSTONE	Sltst	3.04						Sltst as above. Joints at 85. 9 calc strings.
40	30 & 31	140.00	143.05	3.05	3.05	100.00%										#N/A								
							10	97.76%	25	15	W6	R5	4	136.85	139.90	SILTSTONE	Sltst	3.05						Sltst as above. Joints 70-90. 10 calc strings. The geologist at the rig "over" measured this interval, this interval has been deceased by 8cm
41	31	143.05	146.10	3.05	3.08	100.98%										#N/A								
							8	97.08%	25	15	W6	R5	4	139.90	142.98	SILTSTONE	Sltst	3.08						Sltst as above. Joints ~ 85. 6 calc strings at 20 TCA
42	31 & 32	146.10	149.15	3.05	3.03	99.34%										#N/A								
							6	98.35%	25	15	W6	R5	4	142.98	146.01	SILTSTONE	Sltst	3.03						Sltst as above. Joints ~85 TCA. One at 20. 6 calc strings.
43	32 & 33	149.15	152.20	3.05	3.08	100.98%										#N/A								
							19	65.40%	25	13	W6	R5	4	146.01	149.09	SILTSTONE	Sltst	3.08						Dk gr massive Sltst. 13 of the joints are at 30 TCA. The geologist at the rig "over" measured this interval, this interval has been deceased by 7cm

44	33	152.20	155.25	3.05	2.99	98.03%										#N/A								
							11	77.93%	25	14	W6	R5	4	149.09	152.08	SILTSTONE	Sltst	2.99						Sltst as above. 6 of the joints is 30 TCA. Rest is 85. One joint at 152.5 has a 1cm thick cac vein and with gouge.
45	34	155.25	158.30	3.05	3.14	102.95%										#N/A								
							8	95.22%	25	15	W6	R5	4	152.08	155.22	SILTSTONE	Sltst	3.14						Sltst as above. Joints at 85. 6 calc stringers (40-70 TCA)
46	34 & 35	158.30	161.35	3.05	3.10	101.64%										#N/A								
							6	100.00%	25	15	W6	R5		155.22	158.32	SILTSTONE	Sltst	3.10						Sltst as above. Joints at 90. 3 calc stringers @ 45.
47	35 & 36	161.35	164.40	3.05	3.11	101.97%										#N/A								
							7	97.75%	25	15	W6	R5	4	158.32	161.43	SILTSTONE	Sltst	3.11						Sltst as above. Joints at 90. 2 at 50. 7 carb strings.
48	36	164.40	167.45	3.05	3.05	100.00%										#N/A								
							11	88.20%	25	14	W6	R5	4	161.43	164.48	SILTSTONE	Sltst	3.05						Sltst as above. 9 joints at 45 TCA. One 1cm carb vein w/ 11 random strings.
49	36 & 37	167.45	170.50	3.05	3.05	100.00%										#N/A								
							3	100.00%	25	15	W6	R5	4	164.48	165.26	SILTSTONE	Sltst	0.78						Sltst as above. Joints at 85 TCA.
							2	100.00%	25	15	W6	R6	4	165.26	166.47	LAMINITE	IB Sltst & Sst	1.21						Gradually grading from above Sltst to below Sst.
							4	91.51%	25	15	W6	R6	4	166.47	167.53	SANDSTONE	Sst	1.06						Mg, light grey Sst, massive. Joints at 85.
50	37 & 38	170.50	173.55	3.05	3.07	100.66%										#N/A								
							5	100.00%	25	15	W6	R6	4	167.53	170.60	SANDSTONE	Sst	3.07						As above Sst. Joints at 90. At 171.29m is a 20cm very light Sst. Some plant spars.
50	37 & 38	173.55	176.60	3.05	3.07	100.66%										#N/A								
							5	100.00%	25	15	W6	R6	4	170.60	173.67	SANDSTONE	Sst	3.07						As above Sst. Joints at 90. At 171.29m is a 20cm very light Sst. Some plant spars.
51	38	176.60	179.65	3.05	3.07	100.66%										#N/A								
							4	100.00%	25	15	W6	R6	4	173.67	176.74	SANDSTONE	Sst	3.07						As above Sst. Joints ~ 90. Some spars. Very hard.
52	38 & 39	179.65	182.70	3.05	3.09	101.31%										#N/A								
							6	100.00%	25	15	W6	R6	4	176.74	179.83	SANDSTONE	Sst	3.09						As above. 3 joints at 90.
53	39 & 40	182.70	185.75	3.05	3.06	100.33%										#N/A								
							4	100.00%	25	15	W6	R6	4	179.83	182.89	SANDSTONE	Sst	3.06						As above. Joints at 90. very hard, solid core.
54	40 & 41	185.75	188.80	3.05	3.07	100.66%										#N/A								
							5	97.07%	25	15	W6	R6	4	182.89	185.96	SANDSTONE	Sst	3.07						As above Sst.
55	41	188.80	191.85	3.05	3.04	99.67%										#N/A								
							5	100.00%	25	15	W6	R6	4	185.96	189.00	SANDSTONE	Sst	3.04						As above Sst. 4 joints at 60. Carb stringers.
56	41 & 42	191.85	194.90	3.05	3.07	100.66%										#N/A								
							0	100.00%			W6	R6	4	189.00	192.07	SANDSTONE	Sst	3.07						As above Sst. Very hard, solid core.
57	42 & 43	194.90	197.95	3.05	3.04	99.67%										#N/A								
							2	100.00%	25	15	W6	R6	4	192.07	195.11	SANDSTONE	Sst	3.04						Light grey, cg, massive Sst. Small (203 cm) Sltst clasts/bits visible. Joints 90 TCA.
58	43	197.95	201.00	3.05	3.04	99.67%										#N/A								
							3	100.00%	25	15	W6	R6	4	195.11	198.15	SANDSTONE	Sst	3.04						Sst same as above. Massive Sltst clasts. Joints 90 TCA.
59	43 & 44	201.00	204.05	3.05	3.02	99.02%										#N/A								
							11	96.69%	25	14	W6	R6	4	198.15	201.17	SANDSTONE	Sst	3.02						Light grey cg mssive Sst. Joints 70-75. Sltst % increases from 199.25m. Med-dk grey. More fractured. 70-75 TCA calc veins. Calc fille djoints. More Sltst clasts/frags visible.
60	44 & 45	204.05	207.10	3.05	2.98	97.70%										#N/A								
							7	97.32%	25	15	w6	R6	4	201.17	204.15	SANDSTONE	Sst	2.98						Med grey, mg Sst mixed with Sltst. Sltst clasts cals frags visible. Thin calc veins, stringers, joints 85-90 TCA.
61	45	207.10	210.15	3.05	3.07	100.66%										#N/A								
							6	97.72%	25	15	W6	R6	4	204.15	207.22	SANDSTONE	Sst	3.07						Med grey mg Sst same as above. Joints 90 TCA. More Sltst stringer near bottom. Massive/solid core.
62	45 & 46	210.15	213.20	3.05	3.01	98.69%										#N/A								
							4	100.00%	25	15	W6	R6	4	207.22	210.23	SANDSTONE	Sst	3.01						Med grey mg silty Sst, same as above. Sltst stringers visible. Joints 45 90 TCA. 10 join w/calc and slicken slided at bottom (20cm long) w/trace py possibly lateral movement.
63	46 & 47	213.20	216.25	3.05	2.99	98.03%										#N/A								
							9	93.65%	25	15	W6	R6	4	210.23	213.22	SANDSTONE	Sst	2.99						Light grey fg Sst w/silt stringers. Low angle fracture on top (0-10 TCA) w/ calc. Slicken slided. 40cm long other joints ~ 90 TCA. Dispersed py bleb at 211.60m.
64	47 & 48	216.25	219.30	3.05	3.12	102.30%										#N/A								
							2	126.32%	25	15	W6	R6	4	213.22	215.69	SANDSTONE	Sst	2.47						Med grey fg-mg silty Sst. Sltst stringers.
														215.69	215.90	SANDSTONE	Sst	0.21			BM2	215.57	215.78	Sulfide Sample, part of above Sst
														215.90	216.09	SANDSTONE	Sst	0.19						Part of above Sst
														216.09	216.22	SANDSTONE	Sst	0.13			BM1	215.97	216.10	Sulfide Sample, part of above Sst
														216.22	216.34	SANDSTONE	Sst	0.12						Part of above Sst
65	48	219.30	222.35	3.05	3.01	98.69%										#N/A								
								107.12%			W6	R6	4	216.34	219.15	SANDSTONE	Sst	2.81						Top 1m is silty Sst same as above w/ abundant py blebs (fg, disc) and Sltst/Sst layers/stringer containing py. Rest core is wore light grey mg-cg Sst w/ py layers (disc, ~2-3cm thick) 90 TCA.
														219.15	219.35	SANDSTONE	Sst	0.20			BM3	219	219.20	Sulfide Sample, part of above Sst
66	48 & 49	222.35	225.40	3.05	3.04	99.67%										#N/A								
							2	100.00%	25	15	W6	R6	4	219.35	222.39	SANDSTONE	Sst	3.04						Light grey mg massive Sst. Possibl bedding 80-90 near top Sltst stringers (80 TCA) w/ py blebs/disc fg, two joints 90 w/ calc. Shows SS.
67	49 & 50	225.40	228.45	3.05	3.07	100.66%										#N/A								
							6	100.00%	25	15	W6	R6	4	222.39	225.46	SANDSTONE	Sst	3.07						Sst, same as above. Sltst stringers (80 TCA) w/ fg disc py bleb. Joints 80-90 TCA occational calc stringers.
68	50	228.45	231.50	3.05	3.04	99.67%										#N/A								
							10	0.92	25	13	W6	R6	4	225.46	228.50	SANDSTONE	Sst	3.04						Light grey mg-cg Sst massive. Top 40m common w/Sltst stringers (90 TCA) w/py blebs. Rest is massive Sst. Few 80-90. Joints 50 TCA joint w/ plant material near bottom.
69	50 & 51	231.50	234.55	3.05	3.06	100.33%										#N/A								
							7	96.73%	25	15	W6	R6	4	228.50	231.56	SANDSTONE	Sst	3.06						Light gray, mg-cg massive Sst. Three low degree joints at 228.75m (w/calc veins), two at 230.26m (~10 TCA, 30-40cm long), thin calc vein at 229.40m
70	51 & 52	234.55	237.60	3.05	3.10	101.64%										#N/A								
								100%			W6	R6	4	231.56	232.50	SANDSTONE	Sst	0.94						Sst same as above. Massive. IB w/ Sitst near bottom (90 TCA). 90 TCA contact angle.
							7	95%	25	15	W6	R5	4	232.50	234.66	SILTSTONE	Sltst	2.16						Dk grey fg partly IB w/Sst. 90 TCA bedding Sltst stringers visible, minor calc frags.
71	52 & 53	237.60	240.65	3.05	3.02	99.02%										#N/A								
							6	98.34%	25	15	W6	R5	4	234.66	237.68	SILTSTONE	Sltst	3.02						Med-dk gray fg sandy Sltst. Most joints at 90. Two low angle (~10) joints. Total 0.7cm long near bottom. Sltst stringers 90 TCA.
72	53	240.65	243.70	3.05	2.05	67.21%										#N/A								
							14	94.25%	25	12	W6	R5	4	237.68	239.73	SANDSTONE	Sst	2.05						Fm-mg light grey massive Sst. 104cm long carb hea joint at ~10 TCA w/SS feel. A few dk wisps near bottom.
73	53 & 54	243.70	246.75	3.05	3.09	101.31%										#N/A								
							11	90.61%	25	14	W5	R5	4	239.73	242.82	SANDSTONE	Sst	3.09						Sst as above. All joints at 90 except one at 30 TCA. More dk wisps and frags.
74	54 & 55	246.75	249.80	3.05	3.03	99.34%										#N/A								
							9	81.19%	25	14	W6	R5	4	242.82	245.85	LAMINITE	IB Sst & Sltst	3.03						Marbly mixed Sst-Sltst Joints at 90. One at 10, 2 at 20 TCA.
75	55	249.80	252.85	3.05	3.07	100.66%										#N/A								
							8	97.07%	25	15	W6	R5	4	245.85	248.92	LAMINITE	IB Sst & Sltst	3.07						As above Sltst-Sst. Joints at 90. One at 35 TCA.
76	55 & 56	252.85	255.90	3.05	3.14	102.95%										#N/A								
							8	100.00%	25	15	W6	R5	4	248.92	252.06	LAMINITE	IB Sst & Sltst	3.14						As above Sltst-Sst, a bit more Silty. Joints at 35, 2 at 90 TCA.
77	56 & 57	255.90	258.95	3.05	3.14	102.95%										#N/A								
							5	100.00%	25	15	W6	R6	4	252.06	255.20	SANDSTONE	Sst	3.14						Abrubt change to mg, med. grey massive Sst. Plant grads, spars. Joints at 90 TCA but on at 10 TCA.
78	57	258.95	262.00	3.05	2.99	98.03%										#N/A								
							4	97.32%	25.00	15	W6	R6	4	255.20	258.19	SANDSTONE	Sst	2.99						As above Sst. Solid pieces of core. Joints at 85 TCA>
79	58	262.00	265.05	3.05	3.08	100.98%										#N/A								
							3	100.00%	25	15	W6	R6	4	258.19	261.27	SANDSTONE	Sst	3.08						As above Sst. Joints at 85 TCA. Calc vein.
80	58 & 59	265.05	268.10	3.05	3.05	100.00%										#N/A								
							5	94.10%	25	15	W6	R6	4	261.27	264.32	SANDSTONE	Sst	3.05						As above Sst. But goes to mg-dk grey. 1cm thick 20 TCA calc vein at 261.8m. Bottom 50cm has more calc veins, 0-25 TCA. One is thick w/py. Joints at 90 TCA.
81	59 & 60	268.10	271.15	3.05	3.13	102.62%										#N/A								
							4	100.00%	25	15	W6	R6	4	264.32	267.45	SANDSTONE	Sst	3.13						Fg-mg med grey Sst. Joints at 80 TCA. Plant frags & fossils. Calcite veins.
82	60	271.15	274.20	3.05	3.11	101.97%										#N/A								
							9	97.11%	25	14	W6	R6	4	267.45	270.56	SANDSTONE	Sst	3.11						As above Sst. Gets a little lighter at bottom. Silt strings, spars.
83	60 & 61	274.20	277.25	3.05	3.08	100.98%										#N/A								
							7	100.00%	25	15	W6	R6	4	270.56	273.64	SANDSTONE	Sst	3.08						As above Sst. Silt strings, spars. Light coloured plant/fossils.
84	61 & 62	277.25	280.30	3.05	3.05	100.00%										#N/A								
							3	100.00%	25	15	W6	R6	4	273.64	275.74	SANDSTONE	Sst	2.10						As above Sst. Clay stringers. A little coarser grained.
							3	100.00%	25	15	W6	R6	4	275.74	276.69	MUDSTONE	Mdst	0.95						Fast transition to stringy Mdst.
85	62	280.30	283.35	3.05	2.79	91.48%										#N/A								
							12	95.08%	25	14	W6	R6	4	276.69	278.50	MUDSTONE	Mdst	1.81						Grey Mdst w/ 90 TCA carb ceins & coal veins.
														278.50	278.60	MUDSTONE	Mdst	0.10			07747	279.01	279.11	Roof Sample, part of above Mdst

														278.60	279.38	COAL	Coal	0.78		Seam 5	07748	279.11	279.89	Black Coal. Light, hard. Bubbly. Dull & bright. <0.5% carb. One spar of pyrite.
														279.38	279.64	LOST CORE	Lost Core	0.26	0.26	Seam 5	ns			*Coal*
							1	0.00%	25	6	W6	R6	4	279.64	279.74	MUDSTONE	Mdst	0.10			07749	279.89	279.99	Brown Mdst. A little bubbly.
86	62 & 63	283.35	286.40	3.05	3.16	103.61%										#N/A								
							4	46.43%	2	6	W6	R5	4	279.74	280.30	MUDSTONE	Mdst	0.56						Brown Mdst. 10cm of clay gouge at top. Coal & carb strings. Joints at 90 + 45 TCA.
														280.30	282.90	SANDSTONE	Sst	2.60						Mg, med grey massive Sst. Clay stringers. Joints at ~85 TCA. 2 at 35 TCA.
87	63 & 64	286.40	289.45	3.05	3.00	98.36%										#N/A								
														282.90	282.95	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
							>25	8.33%	25	12	W6	R6	4	282.95	285.95	SANDSTONE	Sst	3.00						Light grey, mg, Sst bedding measured by sltst stringers (65 TCA). Joints are some angles. Micro fault near top. Offset distance ~0.5cm (0371.JPG). Low-vertical angle joints filled up w/calc
88	63 & 65	289.45	292.50	3.05	3.02	99.02%										#N/A								
														285.95	285.98	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
							20	52.98%	25	14	W6	R6	4	285.98	289.00	SANDSTONE	Sst	3.02						Sst, as above. 0.6m long vertical joint at top. Another vertical joint at 287.0. rest joints ~ 65-85 TCA. 85 TCA joint w/plant material + fg disc py. Increase in blk, angular, mineral (Hbl?) at
89	65	292.50	295.55	3.05	3.00	98.36%										#N/A								
														289.00	289.05	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
							20	92.33%	25	14	W6	R6	4	289.05	292.05	SANDSTONE	Sst	3.00						Sst as above. ~5 TCA. Calc vein at top and 290.80m. Joints ~80-90 TCA. Some w/plant material & py, massive.
90	65 & 66	295.55	298.60	3.05	3.04	99.67%										#N/A								
														292.05	292.10	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
							9	95.39%	25	15	W6	R6	4	292.10	295.14	SANDSTONE	Sst	3.04						Sst same as above. Coal/Sltst stringers ~85 TCA. 293.65m 1-2cm thick calc within 70 TCA joint. 294.30m 16cm altered Sst (pink w/qtz) w/ massive py. 294.60m massive py w/Sltst.
91	66 & 67	298.60	301.65	3.05	2.96	97.05%										#N/A								
														295.14	295.24	LOST CORE	Lost Core	0.10	0.10					*Rock Loss*
							5	100.00%	25	15	W6	R6	4	295.24	298.20	SANDSTONE	Sst	2.96						Light grey, mg-cg massive Sst. Minor SLT/coal stringers ~65-70 TCA. Joints 75-85 TCA some w/ Sltst/plant material. 0.7m long ~10-15 TCA calc vein near bottom.
92	67	301.65	304.70	3.05	3.01	98.69%										#N/A								
														298.20	298.24	LOST CORE	Lost Core	0.04	0.04					*Rock Loss*
								100.00%			W6	R6	4	298.24	298.60	SANDSTONE	Sst	0.36						Sst, same as above thick coal lenses near bottom w/massive py.
														298.60	298.70	SANDSTONE	Sst	0.10			07750	298.76	298.86	Roof Sample, part of above Sst
							1	0.00%	20	7	W6	R1	4	298.70	298.80	COAL	Coal	0.10			20801	298.86	298.96	
														298.80	298.90	SILTSTONE	Sltst	0.10						Floor Sample, part of below Sltst
							9	91.84%	25	15	W6	R5	4	298.90	301.25	SILTSTONE	Sltst	2.35						Dk grey, fg Sltst. IB w/Sst near bottom. Coal lenses near top. Calc vein (~85) at 299.85m. Joints 75-90 TCA.
93	67 & 68	304.70	307.75	3.05	3.02	99.02%										#N/A								
														301.25	301.28	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
							6	100.00%	25	15	W6	R6	4	301.28	304.30	SANDSTONE	Sst	3.02						Light grey mg-cg massive Sst. Joints 65-75 TCA. Coal/Sltst stringers in same orientations. 1.2m long calc vein (~10 TCA) from 302.60m Occational thick Sltst beds/large clasts.
94	68 & 69	307.75	310.80	3.05	3.04	99.67%										#N/A								
														304.30	304.31	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
							10	95.39%	25	15	W6	R6	4	304.31	307.35	SANDSTONE	Sst	3.04						Light grey, mg-cg, massive, Joints 75°-90°, some w/Sltst-Coal stringers w/ massive py. Calc veins (~10 TCA) at 307.60m.
95	69 & 70	310.80	313.85	3.05	2.99	98.03%										#N/A								
														307.35	307.41	LOST CORE	Lost Core	0.06	0.06					*Rock Loss*
							5	100.00%	25	15	W6	R6	4	307.41	310.40	SANDSTONE	Sst	2.99						Sst same as above. Massive 9fg) py w/ Sltst-Coal stringers along w/ joints at 308.15m. Joints ~ 70-90 TCA.
96	70	313.85	316.90	3.05	3.07	100.66%										#N/A								
							7	97.72%	25	15	W6	R6	4	310.40	313.47	SANDSTONE	Sst	3.07						Sst as above. Cg-v.cg. Joints ~ 75-90 TCA. Some w/ Sltst-coal. Coal/Sltst stringers common (80-85 TCA), some w/ massive py.
97	70 & 71	316.90	319.95	3.05	3.00	98.36%										#N/A								
														313.47	313.52	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
							7	100.00%	25	15	W6	R6	4	313.52	316.52	SANDSTONE	Sst	3.00						Sst as above. Massive top 2m thinly IB (sltst/coal) from 315.60m. Angle ~60 TCA. Bedding changes ~85 near bottom. Joints 60°-85°. some w/ slt-plant materials. Slump structure at
98	71 & 72	319.95	323.00	3.05	3.09	101.31%										#N/A								
							7	100.00%	25	15	W6	R6	4	316.52	319.61	SANDSTONE	Sst	3.09						Sst as above. Sltst calc stringers ~ 75-80 tCA. Joints 65-85 TCA.
99	72	323.00	326.05	3.05	2.63	86.23%										#N/A								
														319.61	320.75	SANDSTONE	Sst	1.14						Sandstone medium grey fg
														320.75	321.21	SHALE	Sh	0.46						Shale: silty and sandy units, fines down, carbonaceous in lower 20cm, hard
														321.21	321.34	COALY MUDSTONE	Coaly Shale	0.13			ns			Coally Shale: hard pyrific, fissle, 2 cm pyrite band.
														321.34	321.41	LOST CORE	Lost Core	0.07	0.07	Seam 4	ns			*Coal Loss*
														321.41	321.43	COAL	Coal	0.02		Seam 4	ns			Coal: hard, bright to bright banded, some weak cleats not gas sampled.
														321.43	321.81	COAL	Coal	0.38		Seam 4	Can 1	321.45	321.83	Coal: hard, bright to bright banded, some weak cleats
														321.81	321.99	COAL	Coal	0.18		Seam 4	Can 2	322.30	322.48	Coal: rubble
														321.99	322.26	COAL	Coal	0.27		Seam 4	Can 2	322.48	322.75	Coal: solid, banded bright, some weak cleats
														322.26	322.48	LOST CORE	Lost Rock	0.22	0.22	Seam 4	ns			*Rock Loss*
														322.48	322.61	LAMINITE	Lost Coal	0.13	0.13	Seam 4	ns			*Coal Loss*
														322.61	322.66	COAL	Coal	0.05		Seam 4	Can 3	322.75	322.80	Coal: hard, solid, bright banded
100	72 & 73	326.05	329.10	3.05	2.80	91.80%										#N/A								
														322.66	322.91	LOST CORE	Lost Core	0.25	0.25	Seam 4	ns			*Coal Loss*
														322.91	323.16	COAL	Coal	0.25		Seam 4	Can 3	322.80	323.05	COAL: hard, solid, bright banded
							>25	78.43%	25	13	W6	R5	4	323.16	325.71	SANDSTONE	Sst	2.55			ns			Med-dk grey fg-cg silt Sst. Highly fractured. Dominated by low (~30 TCA) joints, small (~8cm) at 323.92m. Highly fractured zone at 324.0-324.60m.
101	73 & 74	329.10	332.15	3.05	3.04	99.67%										#N/A								
							4	99.35%	25	15	W6	R6	4	325.71	328.75	SANDSTONE	Sst	3.04						Light grey, cg massive Sst. 30 TCA joint w/ calc vein at 327.10m. Other joints ~ 90 TCA. Some w/ plant material.
102	74	332.15	335.20	3.05	3.05	100.00%										#N/A								
							5	94.46%	25	15	W6	R6	4	328.75	331.80	SANDSTONE	Sst	3.05						Light grey mg-cg, massive Sst. Joints 75-85 TCA. Some w/ plant material.
103	74 & 75	335.20	338.25	3.05	3.07	100.66%										#N/A								
							12	93.91%	25	15	W6	R6	4	331.80	334.87	SANDSTONE	Sst	3.07						Sst as above. Joints 60-90 TCA. A few w/ plant stringers. The geologist at the rig "over" measured this interval, this interval has been deceased by 3cm
104	75 & 76	338.25	341.30	3.05	3.06	100.33%										#N/A								
							6	93.83%	25	15	W6	R6	4	334.87	337.93	SANDSTONE	Sst	3.06						Sst as above. Joints at 75 TCA. Dark stringers in Joints.
105	76 & 77	341.30	344.35	3.05	3.05	100.00%										#N/A								
							15	86.56%	25	15	W6	R6	5	337.93	340.98	SANDSTONE	Sst	3.05						Sst as above. At 339.45 there are 90 TCA joints w/ 5mm coal strings Weird silty honey comb pattern/stringers w/ 5mm calc vein. The geologist at the rig "over" measured this interval,
106	77	344.35	347.40	3.05	3.09	101.31%										#N/A								
							6	97.11%	25	14	W6	R6	4	340.98	344.07	SANDSTONE	Sst	3.09						Sst as above. Joints at 90 TCA. 2cm carb 90 joint w bit of gougey clay. One 70 TCA joint w/ 5mm carb vein.
107	77 & 78	347.40	350.45	3.05	3.03	99.34%										#N/A								
							12	83.61%	25	14	W6	R6	4	344.07	347.10	SANDSTONE	Sst	3.03						Sst as above. Joints at 90 but 3 at 70 tCA. One 70 joitnt has a 1cm carb vein.
108	78 & 79	350.45	353.50	3.05	3.08	100.98%										#N/A								
							8	94.19%	25	15	W6	R6	4	347.10	350.18	SANDSTONE	Sst	3.08						Sst as above Joints at 90 TCA.
109	79	353.50	356.55	3.05	3.06	100.33%										#N/A								
							2	99.35%	25	15	W6	R6	4	350.18	353.24	SANDSTONE	Sst	3.06						Sst as above. One joint 90, on 30 TCA.
110	79 & 80	356.55	359.60	3.05	3.05	100.00%										#N/A								
							1	99.67%	25	15	W6	R6	4	353.24	356.29	SANDSTONE	Sst	3.05						Sst as above. 1 joint at 70 TCA.
111	80	359.60	362.65	3.05	2.03	67.54%										#N/A								
							3	85.94%	25	13	W6	R6	4	356.29	356.90	SANDSTONE	Sst	0.61			ns			Sandstone: light grey, f.g.-m.g., hard, homogenous, Sst as above. Joints at 90 tCA.
														356.90	357.02	COAL	Coal	0.12		Seam 3	28003	356.97	357.09	COAL: hard, common pyrite nodules, bubbling, occasional veins oblique to bedding Dk brown-black coal. Light. Blebs of muddy py (1%) Thinly laminated calc strings (<0.5%). Vigorous
														357.02	357.32	COAL	Coal	0.30		Seam 3	Can 4	357.11	357.41	COAL: hard, banded dull, some broken sectiomns
														357.32	357.43	LOST CORE	Lost Core	0.11	0.11	Seam 3	ns			*Coal Loss*
														357.43	357.72	MUDSTONE	Mdst	0.29		Seam 3	28004	357.39	357.69	medium grey, coaly in top 2 cm Grey Mdst. Heavy. Calc.
														357.72	357.92	COAL	Coal	0.20		Seam 3	28005	257.69	257.89	COAL: bright to bright banded, hard, weak cleating with pyrite on cleat surfaces, not sampled
														357.92	358.48	LOST CORE	Lost Core	0.56	0.56	Seam 3	ns			*Coal Loss*
														358.48	358.66	COALY MUDSTONE	Coaly Shale	0.18		Seam 3	28006	357.89	358.10	Coaly shale: dark brown, hard
														358.66	358.76	COAL	Coal	0.10		Seam 3	Can 5	358.08	358.18	COAL: hard, solid, dull
														358.76	358.99	COAL	Coal	0.23		Seam 3	Can 5	358.18	358.41	COAL: hard, solid, banded dull
														358.99	359.18	LOST CORE	Lost Core	0.19	0.19	Seam 3	ns			*Coal Loss*
														359.18	359.34	LOST CORE	Lost Core	0.16	0.16	Seam 3	ns			*Rock Loss*
112	80 & 81	362.65	364.17	1.52	1.42	93.42%										#N/A								

Client: CJV
Project: Raven
Logged By: Farshad Shirmohammad, Parviz Rajaei

Hole Number: RAV-09-022
Date Hole Started: 11-Jul-09
Date Hole Finished: 12-Jul-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 168.23 m
Depth of Casing: 77.60 m
Core Size: Modified PQ (3 ")

Geological Borehole Log: RAV-09-022

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Fractures Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Interval Logged Lith	Interval Logged lenght	Interval Logged Lost Core	Interval Logged Strat	Samples (Driller's Depths) Number	Samples From (m)	Samples To (m)	Description
														0.00	77.60	OVERBURDEN	ovbdn	77.60						Casing to 77.6m
														77.60	90.00	SANDSTONE	sst	12.40						
														90.00	93.00	CLAYSTONE	CLST	3.00						
														93.00	119.80	SANDSTONE	sst	26.80						
														119.80	120.45	COAL	Coal	0.65		Seam 4	ns			Coal in cuttings - call core point
														120.45	120.54	SILTSTONE	Sltst	0.09						
1	1	120.24	120.85	0.61	0.51											#N/A								
		120.24				83.61%	2		25	9	W6	R5	4	120.54	121.05	SILTSTONE	Sltst	0.51						
														121.05	121.15	LOST CORE	Lost Core	0.10	0.10					*Rock Loss*
2	1 & 2	120.85	123.75	2.90	2.60	89.66%		100%								#N/A								
														121.15	121.38	SILTSTONE	Sltst	0.23						Sltst med grey fg solid.
							12		25	6	W6	R6	4	121.38	123.75	SANDSTONE	Sst	2.37						Light grey cg Sst broken at 23.00m, 1.03m about 0.05m and 1.60m about 0.20m from top.
														123.75	123.81	LOST CORE	Lost Core	0.06	0.06					*Rock Loss*
3	2	123.75	126.19	2.44	2.47	101.23%										#N/A								
							4	0.99	25	14	W6	R6	4	123.81	126.28	SANDSTONE	Sst	2.47						Cg light grey massive Sst. Joints all over the core, filled w/ calcite.
4	3	126.19	128.63	2.44	2.21	90.57%										#N/A								
							7	90.05%	25	14	W6	R6		126.28	128.49	SANDSTONE	Sst	2.21						Cg light grey Sst, calcite all over the core.
5	3 & 4	128.63	131.07	2.44	2.60	106.56%										#N/A								
							7	98.08%	25	14	W6	R6		128.49	131.09	SANDSTONE	Sst	2.60						Cg Sst as above.
6	4 & 5	131.07	132.90	1.83	1.28	69.95%										#N/A								
							6	93.75%	25	15	W6	R6		131.09	132.37	SANDSTONE	Sst	1.28						Light grey mg massive Sst w/ few coal stringers and calcite filled fractures. Plant fragments.
														132.37	133.05	LOST CORE	Lost Core	0.68	0.68					
7	5	132.90	135.34	2.44	2.22	90.98%	5									#N/A								
								100.00%	25	15	W6	R6	4	133.05	135.27	SANDSTONE	Sst	2.22						Massive light grey Sst w/ coal stringers and calcite filled fractures. Some plant fossils.
														135.27	135.33	LOST CORE	Lost Core	0.06	0.06					*Rock loss.*
8	6	135.34	137.78	2.44	2.60	106.56%										#N/A								
							11	82.69%	25	14	W6	R5	4	135.33	137.93	SANDSTONE	Sst	2.60						Very soft mg Sst w/ calcite filled fractures massive and fast to be drilled.
9	7 & 8	137.78	140.22	2.44	2.53	103.69%										#N/A								
														137.93	138.08	SANDSTONE	Sst	0.15						Medium grey, coarse to medium grained sandstone
														138.08	138.18	SANDSTONE	Sst	0.1			03217	138.08	138.18	Medium grey, coarse to medium grained sandstone
														138.18	138.61	COAL	Coal	0.43		Seam 3U	03218	138.18	138.61	Powdery coal
														138.61	139.01	MUDSTONE	Mdst	0.40		Seam 3U	03219	138.61	139.01	Brown/grey, some parts silty
														139.01	139.51	COAL	Coal	0.50		Seam 3U	03220	139.01	139.51	Dull coal
														139.51	140.46	MUDSTONE	Mdst	0.95			03221	139.51	139.61	Brown/grey, with coal stringers
10	8	140.22	142.35	2.13	1.96	92.02%										#N/A								
														140.46	140.55	LOST CORE	Lost Core	0.09	0.09		03222	140.45	140.55	*Rock loss.*
														140.55	140.75	MUDSTONE	Mdst	0.20			03223	140.55	140.75	Grey to brown medium colour Mdst
														140.75	140.95	COAL	Coal	0.20		Seam 3L	03224	140.75	140.95	Coal, dull (~55%)
														140.95	141.20	MUDSTONE	Mdst	0.25		Seam 3L	03225	140.95	141.2	Brown to grey Mdst
														141.20	141.86	COAL	Coal	0.66		Seam 3L	03226	141.2	141.86	Coal, dull, some parts bright
														141.86	141.96	MUDSTONE	Mdst	0.10			03227	141.86	141.96	
														141.96	142.51	MUDSTONE	Mdst	0.55						
11	9	142.35	144.71	2.36	2.40	98.36%										#N/A								
														142.51	143.17	SHALY COAL	SHC	0.66						Coaly Shale. This interval was prorated by 8 cms
							4	92.70%	25	15	W6	R6	4	143.17	144.91	SANDSTONE	Sst	1.74						Med grey massive fine toned grained.
12	9 &	144.71	147.22	2.51	2.46											#N/A								
						98.07%	7	96.46%	25	15	W6	R6	4	144.91	147.37	SANDSTONE	Sst	2.46						Med grey f-mg massive Sst w/ calcite (and sometimes Sst) filled fractures and also some coal stringers. This interval was prorated by 8 cm
13	10 &	147.22	149.27	2.05	2.11											#N/A								
						1.03	14	0.98	25	14	W6	R6	4	147.37	149.48	SANDSTONE	Sst	2.11						Med to light grey, fg massive Sst. Calcite filled fractures are up to 0.01m thick. Fracure's surfaces are mainly sks . This interval was prorated by 8 cm
14	11 &	149.27	151.17	1.90	1.94	102.02%										#N/A								
							15	70.06%	25	14	W6	R6	4	149.48	151.11	SANDSTONE	Sst	1.63						Light to med grey, fg, massive to thinly bedded Sst. This interval was prorated by 8 cm
							21	0.00%	25	9	W6	R5	4	151.11	151.42	SILTSTONE	Sltst	0.31						Dark grey, partly broken, sharp contact, microfaults
15	12	151.17	153.83	2.66	1.52	58.39%										#N/A								
							4	100%	25	10	W6	R6	4	151.42	152.94	SANDSTONE	Sst	1.52						Sst light grey cg 0.85m at the top w/ coal string at 45° This interval was prorated by 8 cm
16		153.83	155.58	1.75	2.82	158.47%										#N/A								
								93%	25					152.94	155.76	SANDSTONE	Sst	2.82						Sst cg 1.20m above the coal 0.36m Sltst w/ coal stringers at 45°. 0.20m at the bottom very broken. This interval was prorated by 8 cm
17	14	155.58	157.33	1.75	1.62	92.90%										#N/A								
							3	96.92%	25	10	W6	R6	4	155.76	156.37	SANDSTONE	Sst	0.61						Sst cg light grey This interval was prorated by 8 cm
							7	93.33%	25	10	W6	R4	4	156.37	157.38	SILTSTONE	Sltst	1.01						Sltst med grey w/ bands of dark grey Sltst at 0.10m at the bottom is broken.
18	14,	157.33	160.15	2.82	2.87	101.72%										#N/A								
							7	92.19%	25	10	W6	R4	4	157.38	159.26	SILTSTONE	Sltst	1.88						Sltst med grey IB w/ dk grey Clyst bands at 45° TCA. This interval was prorated by 8 cm
							7	73.79%	25	10	W6	R4	4	159.26	160.25	CLAYSTONE	Clyst	0.99						Highy Carbonaceous Clyst with tiny laminations of Sltst
19	16	160.15	162.43	2.28	2.19	96.05%										#N/A								
							10	63.21%	25	9	W6	R4	4	160.25	161.21	SILTSTONE	Sltst	0.96						Sltst medium grey with dark grey Clyst bands
														161.21	161.31	SILTSTONE	Sltst	0.10			94551	161.21	161.31	
														161.31	162.44	COAL	Coal	1.13		Seam 1	94552	161.31	161.62	0.30 at the top. Coal dull, hard. 0.30 coal dull, soft.
														162.44	162.53	LOST CORE	Lost Core	0.09	0.09	Seam 1	94553	161.62	162.44	*Coal loss*
20	17,	162.43	165.33	2.90	3.00	103.45%										#N/A								
														162.53	163.16	COAL	Coal	0.63		Seam 1	94554	162.53	163.16	Coal, dull, hard
														163.16	163.26	SILTSTONE	Sltst	0.10			94555	163.16	163.26	

							4	76.92%	25	14	W6	R3		163.26	163.68	SILTSTONE	Sltst	0.42						Sltst med grey
							3	95.12%	25	14	W6	R6		163.68	164.50	SANDSTONE	Sst	0.82						Sst cg light grey
							3	94.17%	25	14	W6	R6		164.50	165.53	CONGLOMERATE	Congl	1.03						Conglomerate, pebbles are rounded, 4-5cm.
21	18	165.33	168.23	2.90	3.00	103.45%										#N/A								
							2	100.00%	25	14	W6	R6		165.53	168.13	CONGLOMERATE	Congl	2.60						Conglomerate w/ rounded pebbles up to 5cm. Matrix supported w/ coarse grain Sst.
														168.13	168.53	UNDIFFERENTIATED VOLCANICS	Volc	0.40						Volcanic greenish basalt.

Client: CJV
Project:
Logged By: Amber Brown & Henry Kim

Hole Number: RAV-09-023
Date Hole Started: July 12 2009
Date Hole Finished: July 16 2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 228.40m
Depth of Casing: 43.50m
Core Size: HQ

Geological Borehole Log: RAV-09-023

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quaility	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Interval Logged Lith	Interval Logged Length	Interval Logged Lost Core	Interval Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	43.58	OVERBURDEN	OVBDN							No description; Casing set to 44m
1	1	43.50	45.40	1.90	1.23	64.74%																		
							>25	0.00	25	7	W6	R5	3	43.58	43.74	SILTSTONE	Sltst	0.16						Dk grey Sltst. Fractured to 3cm pieces.
														43.74	43.97	LOST CORE	Lost Core	0.23	0.23					
							15	64.49%	25	10	W6	R5	4	43.97	45.04	SANDSTONE	Sst	1.07						Light grey, mg Sst
2	3	45.40	48.45	3.05	3.05	100.00%										#N/A								
							5	92.75%	25	14	W6	R5	4	45.04	45.73	SANDSTONE	Sst	0.69						Sst as above. Joints 70-90°.
							8	101.69%	25	14	W6	R5	4	45.73	48.09	LAMINITE	IB Sltst & Sst	2.36						Dk-meg grey fg Sst, massive. Maybe some Sltst in it (20%). Joints 50-70°. This interval was overed measured in the field.
3	2 & 3	48.45	51.50	3.05	3.05	100.00%										#N/A								
							9	100.00%	25	15	W6	R5	4	48.09	51.14	SANDSTONE	Sst	3.05						Med-dk grey fg Sst. Massive (20% Sltst). 4 joints at 90°; 5 joints at 45°. Abundant 2mm 15° carb veins. 2 -1cm thick 45° carb veins. This interval was overed measured in the field.
4	3 & 4	51.50	54.55	3.05	3.05	100.00%										#N/A								
							>25	70.82%	20	7	W6	R4	4	51.14	54.19	SANDSTONE	Sst	3.05						Med grey fg massive Sst. 15cm broken zone at 52.0m. 52.0-52.90m mod brecciated zone still in tact (cemented back together). Frequent carb veins. This interval was overed measured in the field.
5	4	54.55	57.60	3.05	3.05	100.00%										#N/A								
							9	85.92%	20	12	W6	R5	4	54.19	54.90	SANDSTONE	Sst	0.71						Sst as above
							15	65.52%	20	11	W6	R5	4	54.90	55.38	MUDSTONE	Mdst	0.48						Dk grey Mdst massive.
														55.38	55.48	MUDSTONE	Mdst	0.10			28007	55.79	55.79	Roof Sample. Part of above Mdst This Sample Interval was measured incorrectly in the field, originally logged as 55.89
														55.48	55.93	COAL	Coal	0.45		Seam 5	28008	55.79	56.44	Dk black Coal (75% bright/ 25% dull). Cleats present. Massive py blebs (~5%). Calc strings line some cleat surfaces.
														55.93	56.48	COAL	Coal	0.55		Seam 5	28009	56.44	56.99	Dk black Coal (75% bright/ 25% dull). Cleats present. Massive py blebs (~5%). Calc strings line some cleat surfaces.
														56.48	57.14	COAL	Coal	0.66		Seam 5	28010	56.99	57.65	Dk black Coal (75% bright/ 25% dull). Cleats present. Massive py blebs (~5%). Calc strings line some cleat surfaces.
							0	100.00%			W6	R5	4	57.14	57.24	SANDSTONE	Sst	0.10			28011	57.65	57.75	Floor Sample Sst as above.
6	4 & 5	57.60	60.65	3.05	3.05	100.00%										#N/A								
							>25	88.52%	20	10	W6	R6	4	57.24	60.29	SANDSTONE	Sst	3.05						Light grey, mg Sst, massive. Frequent breaks; all angles. This interval was overed measured in the field.
7	5 & 6	60.65	63.70	3.05	3.10	101.64%										#N/A								
							23	75.48%	25	11	W6	R6	4	60.29	63.39	SANDSTONE	Sst	3.10						Light grey mg massive Sst. Joints at 65-90°. This interval was overed measured in the field.
8	6 & 7	63.70	66.75	3.05	3.11	101.97%										#N/A								
							6	100.00%	25	15	W6	R6	4	63.39	66.50	SANDSTONE	Sst	3.11						Sst as above. More coarse. Joints at 85°
9	7	66.75	69.80	3.05	2.97	97.38%										#N/A								
							8	89.56%	25	15	W6	R6	4	66.50	69.47	SANDSTONE	Sst	2.97						Med-light grey cg Sst massive. Joints at 90°; one at 35°; on at 0°.
10	7 & 8	69.80	72.85	3.05	3.10	101.64%										#N/A								
							9	95.48%	20	15	W6	R6	4	69.47	72.57	SANDSTONE	Sst	3.10						As above Sst. Joints 70-90°.
11	8 & 9	72.85	75.90	3.05	3.05	100.00%										#N/A								
							>25	80.98%	20	10	W6	R6	4	72.57	75.62	SANDSTONE	Sst	3.05						As above Sst. Joints from 50-90°. Mod broken zone (50cm) at 75.4m This interval was overed measured in the field.
12	9	75.90	78.95	3.05	3.12	102.30%										#N/A								
							2	90.91%	25	9	W6	R6	4	75.62	75.84	SANDSTONE	Sst	0.22						As above Sst. Joints at 90°. 10° Sltst stringers.
														75.84	75.94	SANDSTONE	Sst	0.10			78012	76.70	76.22	Roof Sample, part of above Sst
														75.94	76.61	COAL	Coal	0.67		Seam5A	78013	76.22	76.89	Black shiny dull (60-40) coal. Light in weight. Mostly crumbly. No cleats, no sulphides, no degassing.
														76.61	76.71	SILTSTONE	Sltst	0.10			78014	76.89	77.01	Floor Sample, part of below Sltst.
							3	99.01%	25	15	W6	R6	4	76.71	78.74	SILTSTONE	Sltst	2.03			ns			Dk brown Sltst. Joints at 60°.
13	10	78.95	82.00	3.05	2.88	94.43%										#N/A								
							0	0.00			W6	R6	4	78.74	78.84	SILTSTONE	Sltst	0.10			28015	78.90	79.00	Roof Sample, As above Sltst.
														78.84	79.18	COAL	Coal	0.34		Seam 5B	78016	79.00	79.34	Black shiny dull (60-40) Coal. Light. Mostly crmbly. Some cleats, no sulphides, no degassing
														79.18	79.38	SANDSTONE	Sst	0.20			28017	79.34	79.54	Floor Sample, part of below Sst.
														79.38	81.62	SANDSTONE	Sst	2.24						Med grey cg massive Sst.
14	10 & 11	82.00	85.05	3.05	3.02	99.02%										#N/A								
														81.62	81.65	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
							8	96.69%	25	15	W6	R6	4	81.65	84.67	SANDSTONE	Sst	3.02						V.cg meg grey massive Sst. Joints at 45°.
15	11 & 12	85.05	88.10	3.05	3.08	100.98%										#N/A								
							14	85.71%	25	14	W6	R6	4	84.67	87.75	SANDSTONE	Sst	3.08						V.cg meg grey massive Sst. Most joints 30-45°. 4 at ~90°.
16	12	88.10	91.15	3.05	3.01	98.69%										#N/A								
														87.75	87.79	LOST CORE	Lost Core	0.04	0.04					*Rock Loss*
							13	89.37%	25	14	W6	R6	4	87.79	90.80	SANDSTONE	Sst	3.01						As above. Joints at 90V.cg meg grey massive Sst. Most joints 30-45°. 4 at ~90°.. But 5 are ~30-45V.cg meg grey massive Sst. Most joints 30-45°. 4 at ~90°..
17	12 & 13	91.15	94.20	3.05	3.04	99.67%										#N/A								
							5	100.00%	25	15	W6	R6	4	90.80	93.84	SANDSTONE	Sst	3.04						As above Sst. Joints at 90V.cg meg grey massive Sst. Most joints 30-45°. 4 at ~90°l one at 40V.cg meg grey massive Sst. Most joints 30-45°. 4 at ~90°..
18	13 & 14	94.20	97.25	3.05	3.07	100.66%										#N/A								
							6	100.00%	25	15	W6	R6	4	93.84	96.66	SANDSTONE	Sst	2.82						As above Sst. One calc string ~10V.cg meg grey massive Sst. Most joints 30-45°. 4 at ~90°.. A couple of Sltst-Coal strings in two 90° joints. Joints at 90°, one at 40°.
														96.66	96.76	SANDSTONE	Sst	0.10			78018	96.96	97.12	Roof Sample, part of above Sst.
														96.76	96.91	COAL	Coal	0.15		Seam 4	78019	97.12	97.27	Dk black Coal. Shiny dull (60-40). Light, somewhat powdery.
19	14	97.25	100.30	3.05	2.94	96.39%										#N/A								
														96.91	97.02	LOST CORE	Lost Core	0.11	0.11	Seam 4	ns			*Lost Coal*
										6				97.02	97.35	COAL	Coal	0.33		Seam 4	78019	97.27	97.60	Dk black Coal. Shiny dull (60-40). Light, somewhat powdery.
														97.35	97.46	SANDSTONE	Sst	0.11			78020	97.60	97.71	Floor Sample, part of below Sst
							8							97.46	99.96	SANDSTONE	Sst	2.50						Cg Sst, med grey massive, w/Sltst stringers. Most joints at 45°. This interval was measured incorrectly in the field, it was 2.56m, but changed to 2.50.
20	15	100.30	103.35	3.05	3.05	100.00%										#N/A								
							10	96.07%	25	14	W6	R6	4	99.96	103.01	SANDSTONE	Sst	3.05						Med grey cg massive Sst. Joints at ~90°. Except 5 at 50°. This interval was overed measured in the field.
21	15 & 16	103.35	106.40	3.05	3.09	101.31%										#N/A								
							10	93.20%	25	14	W6	R6	4	103.01	106.10	SANDSTONE	Sst	3.09						As above Sst. Joints at 70-90°.
22	16 & 17	106.40	109.45	3.05	3.00	98.36%										#N/A								
							10	95.67%	25	14	W6	R6	4	106.10	109.10	SANDSTONE	Sst	3.00						As above Sst. Joints ~85-90°. Shiny coal veins in 4 joints ~109.35m.
23	17	109.45	112.50	3.05	3.05	100.00%										#N/A								
							6	97.38%	25	14	W6	R6	4	109.10	112.15	SANDSTONE	Sst	3.05						As above Sst. Joints ~85-90°. One Sltst stringer. This interval was overed measured in the field.
24	17 & 18	112.50	115.55	3.05	3.05	100.00%										#N/A								
							9	98.69%	25	15	W6	R6	4	112.15	115.20	SANDSTONE	Sst	3.05						As above Sst. Joints ~85-90°. Dk stringers from 112.5-113.0m This interval was overed measured in the field.

25	17	115.55	118.60	3.05	3.02	99.02%										#N/A								
							7	100.00%	25	15	W6	R6	4	115.20	118.22	SANDSTONE	Sst	3.02						As above Sst. Joints 85-90°. Coal lenses at ~115.6m. More Sltst stringers.
26	19	118.60	121.65	3.05	3.05	100.00%										#N/A								
							4	100.00%	25	15	W6	R6	4	118.22	121.27	SANDSTONE	Sst	3.05						As above Sst. Joints 85°. Solid core, Some Sltst stringers This interval was overed measured in the field.
27	20	121.65	124.70	3.05	3.09	101.31%										#N/A								
							4	100.00%	25	15	W6	R6	4	121.27	124.36	SANDSTONE	Sst	3.09						As above Sst. Joints 85. A bit more coarse grained.
28	20 & 21	124.70	127.75	3.05	3.03	99.34%										#N/A								
							2	100.00%	25	15	W6	R6	4	124.36	127.39	SANDSTONE	Sst	3.03						As above Sst. Jointly at 85°. Solid core.
29	21 & 22	127.75	130.80	3.05	3.04	99.67%										#N/A								
							2	100.00%	25	15	W6	R6	4	127.39	130.43	SANDSTONE	Sst	3.04						Light grey cg massive Sst. Two joints ~50° w/ plant materials. Small Coal lenses at same orientations
30	22	130.80	133.85	3.05	3.05	100.00%										#N/A								
							4	100.00%	25	15	W6	R6	4	130.43	133.48	SANDSTONE	Sst	3.05						Sst as above. Joints ~50-60°. Coal lenses and stringer at same orientations. Joints w/ plant materials.
31	22 & 23	133.85	136.90	3.05	3.04	99.67%										#N/A								
							4	100.00%	25	15	W6	R6	4	133.48	136.52	SANDSTONE	Sst	3.04						Sst as above. Joints 60-80°. Some w/ plant materials, coal lenses/stringers at same orientation.
32	23 & 24	136.90	139.95	3.05	2.16	74.75%										#N/A								
														136.52	136.60	LOST CORE	Lost Core	0.08	0.08					*Rock Loss*
							1	1.10	25	15	W6	R6	4	136.60	137.58	SANDSTONE	Sst	0.98						Sst as above. Joint w/ plant material. Coal stringers at 60° near bottom. ~60° contact angle w/ lower coal.
														137.58	137.70	SANDSTONE	Sst	0.12			28223	137.88	138.00	Sst as above. Joint w/ plant material. Coal stringers at 60° near bottom. ~60° contact angle w/ lower coal.
														137.70	137.78	COAL	Coal	0.08		Seam 3U	28222	138.00	138.08	COAL: hard, solid, banded to banded dull
														137.78	138.08	COAL	Coal	0.30		Seam 3U	CAN 1	138.08	138.38	COAL: hard, solid, banded to banded dull
														138.08	138.52	COAL	Coal	0.44		Seam 3U	CAN 2	138.38	138.82	COAL: hard coal (banded to banded dull) interbedded with soft rubble highly fractured, gas samples taken
														138.52	138.96	COAL	Coal	0.44		Seam 3U	CAN 3	138.82	139.26	COAL: hard coal (banded to banded dull) interbedded with soft rubble highly fractured
														138.96	139.48	LOST CORE	Lost Core	0.52	0.52	Seam 3U	ns			*Lost Coal*
														139.48	139.57	LOST CORE	Lost Core	0.09	0.09		ns			*Rock Loss*
33	24	139.95	143.00	3.05	2.92	98.36%										#N/A								
														139.57	139.65	SILTSTONE	Sltst	0.08			28224	139.26	139.34	Dark grey to black. Massive fg Sltst.
							0	100.00%			W6	R4	4	139.65	139.83	SILTSTONE	Sltst	0.18			ns			Dark grey to black. Massive fg Sltst.
											W6	R1	4	139.83	139.88	COAL	Coal	0.05			28225	140.16	140.21	Black light ~95% bright coal. Little gassy. w/calc film and trace sulphide.
														139.88	139.93	LOST CORE	Lost Core	0.05	0.05					*Lost Coal*
							3	96.65%	25	15	W6	R5	4	139.93	142.62	SILTSTONE	Silty Sst	2.69						Dark to light grey fg-cg IB w/ Sltst, ~65-75° bedding. Near top almost Sltstw/coal stringers (60°). Bottom is almost massive Sst. Joints 60-80° some w/ plant material
34	24 & 25	143.00	146.05	3.05	3.02	99.02%										#N/A								
														142.62	142.65	LOST CORE	Lost Core	0.03	0.03					
							8	96.03%	25	15	W6	R6		142.65	145.67	SANDSTONE	Sst	3.02						Light grey mg-cg Sst IB w/ Sltst. Sltst stringers consist (203mm, ~60°). Joints also ~60°, 5cm thick fresh mud layer at 144.60m (60°). Near bottom vertical calc vein ~15cm long.
35	25 & 26	146.05	149.10	3.05	3.03	99.34%										#N/A								
														145.67	145.69	LOST CORE	Lost Core	0.02	0.02					
							10	0.94	25	12	W6	R6	4	145.69	148.72	SANDSTONE	Sst	3.03						Sst as above IB w/ Sltst (stringers, ~65-70°), few calc veins along, joints same orientations. Coal lenses same orientations.
36	26 & 27	149.10	152.15	3.05	3.02	99.02%										#N/A								
								100.00%			W6	R6	4	148.72	148.89	SANDSTONE	Sst	0.17						Light grey cg Sst, w/ Coal/Sltst lenses ~65° contact w/lower coal.
							7		20	4	W6	R1	1	148.89	149.29	COAL	Coal	0.40		Seam 3L	CAN 4	149.22	149.62	COAL: hard, solid, banded to banded dull
														149.29	149.32	LOST CORE	Lost Core	0.03	0.03	Seam 3L	ns			*Lost Coal*
							10	23.53%	10	7	W6	R5	4	149.32	150.17	SILTSTONE	Sltst	0.85						Med-dk grey fg Sltst, mod-highly fractured, low angle (14-30°) w/ SS, top 3cm and 35cm below top another coal seam (2cm). w/ calc vein.
							4	87.50%	25	14	W6	R6	4	150.17	151.77	SANDSTONE	Sst	1.60						Light-med grey fg-mg Silty Sst. Possible bedding ~65°. Three low angle (~30°) joints w/ 151.80, 151.40 and 151.90m SS, highly fractured bottom.
37	27	152.15	155.20	3.05	3.04	99.67%										#N/A								
							10	86.51%	25	15	W6	R6	4	151.77	154.81	SANDSTONE	Sst	3.04						
38	27 & 28	155.20	158.25	3.05	3.02	99.02%										#N/A								
							5	100.00%	25	15	W6	R6	4	154.81	157.83	SANDSTONE	Sst	3.02						Light grey mg-cg Sst w/Coal-Sltst stringers (~60° bedding), massive Sst (no stringers) from 157.50m, above 156.50 ~60° joints, below 90°.
39	28 & 29	158.25	161.30	3.05	2.97	97.38%										#N/A								
							12	97.64%	25	15	W6	R6		157.83	160.80	SANDSTONE	Sst	2.97						Sst as above, massive. 20° joint near top w/ euhedral qtz crystal and calc vein; more low angle joints throughout w/ gouge material (15-30°) 50° joint near bottom. Occational coal-Sltst lens 55-60°.
40	29	161.30	164.35	3.05	3.00	98.36%										#N/A								
							7	100.00%	25	15	W6	R6		160.80	163.80	SANDSTONE	Sst	3.00						Sst as above. Massive near top. Plant-Sltst frags. ~50° joint at 162.60m. Other joints ~85. Rounded (1 ~ 5cm) Sltst clasts at 163.50m.
41	30	164.35	167.40	3.05	3.05	100.00%										#N/A								
							2	95.74%	25	15	W6	R6	4	163.80	166.85	SANDSTONE	Sst	3.05						Sst as above. Massive up to 166.30m Sltst layer at 166.30m, below Sltst clasts (rounded, 3-10cm long). Bottom 18cm w/ vertical fault (healed) more Sltst clasts within.
42	30 & 31	167.40	170.45	3.05	2.62	85.90%										#N/A								
							0				W6	R6	4	166.85	167.00	SANDSTONE	Sst	0.15						Light grey mg-cg Sst w/ vertical fault (healed) and ~5cm Sltst layer at 50°, offset by fault (1.5cm), bottom Coal lenses.
														167.00	167.43	LOST CORE	Lost Core	0.43	0.43	Seam 2	ns			*Lost Coal*
							>25				W6	R1	3	167.43	167.93	COAL	Coal	0.50		Seam 2	CAN 5	167.45	167.95	COAL: soft rubble highly fractured, erosional contact at top (sst above, rip-up clasts and lag)
							4	53.85%	25	8	W6	R2		167.93	168.58	SILTSTONE	Sltst	0.65						Med-dark brown, massive Sltst. All joints ~65-70° calc vein near top soft.
							7	93.94%	25	11	W6	R5	4	168.58	169.90	SANDSTONE	Sst	1.32						Sst as bove, coal/Mdst stringers near top 50-75°, same for joints. Calc veins near bottom.
43	31 & 32	170.45	173.50	3.05	3.10	101.64%										#N/A								
							4		20	6	W6	R6	4	169.90	170.05	SANDSTONE	Sst	0.15						Sst as above, mixed w/ Sltst, joints ~65°.
							10	30.56%	10	6	W6	R5	4	170.05	170.41	SILTSTONE	Sltst	0.36						Med-dk grey, Sltst, w/Coal stringers at top. sks joints mod-fractured.
							11	77.22%	25	11	W6	R6	4	170.41	173.00	SANDSTONE	Sst	2.59						Light grey cg to vcg Sst w Sltst and Coal stringers≈65° Joints also at 65° Almost appears to be altered Sst (?)
44	32	173.50	176.55	3.05	2.96	97.05%										#N/A								
														173.00	173.09	LOST CORE	Lost Core	0.09	0.09					
							19	88.51%	25	13	W6	R6	4	173.09	176.05	SANDSTONE	Sst	2.96						Sst as above, Sltst-coal stringers ~70°. Joints 45-95°. Lightly fractured bottom w/ thick calc veins.
45	32 & 33	176.55	179.60	3.05	3.00	98.36%										#N/A								
														176.05	176.10	LOST CORE	Lost Core	0.05	0.05					
							18	93.00%	25	12	W6	R6	4	176.10	179.10	SANDSTONE	Sst	3.00						Sst as above, appears to be altered (>) mostly qtz crystals, Sltst/Coal bandings ~60-65°, joints in same angle w/ Slts/Coal.
46	33 & 34	179.60	182.65	3.05	3.05	100.00%										#N/A								
							8	98.36%	25	15	W6	R6	4	179.10	182.15	SANDSTONE	Sst	3.05						Sst, as above Sltst-Coal stringers 65-75°. ~40-50° joints near top. ~20° joint at 181.25m joints w/ Coal-Sltst within.
47	34 & 35	182.65	185.70	3.05	2.98	93.77%										#N/A								
							13	89.69%	25	13	W6	R6	4	182.15	184.68	SANDSTONE	Sst	2.53						Sst as above 60-70° Sltst-Coal stringers, joints ~ same angle. Lower (10-20°). Joint near bottom,more fractured.
														184.68	184.78	SANDSTONE	Sst	0.10			28227	185.20	185.30	Sst as above 60-70° Sltst-Coal stringers, joints ~ same angle. Lower (10-20°). Joint near bottom,more fractured.
														184.78	184.90	LOST CORE	Lost Core	0.12	0.12		ns			*Rock Loss*
														184.90	185.14	SHALY COAL	Shaly Coal	0.24		Seam 1R	CAN 6	185.30	185.54	COAL: soft rubble highly fractured, some coal core loss sample over interval COAL: soft rubble highly fractured,
														185.14	185.20	LOST CORE	Lost Core	0.06	0.06	Seam 1R	ns			*Lost Coal*

48	35	185.70	188.75	3.05	2.95	96.72%										#N/A								
														185.20	185.30	LOST CORE	Lost Core	0.10	0.10	Seam 1R	ns			Lost Coal
														185.30	185.50	LOST CORE	Lost Core	0.20	0.20		ns			*Rock Loss*
							20	38.60%	10	5	W6	R4	4	185.50	186.07	CARBONACEOUS MUDSTONE	Carb. Sh	0.57			28226	185.60	186.17	Dark grey-brown, carbonaceous Sltst mod-fractured w/ SS, more fractured at bottom, sks fracture surfaces.
														186.07	186.29	COALY MUDSTONE	Coaly Shale	0.22			CAN 7	186.10	186.32	COAL: soft rubble highly fractured, appears banded to banded dull, minor pyrite
									0.60					186.29	186.43	COALY MUDSTONE	Coaly Shale	0.14			CAN 7	186.32	186.46	Logged as Coal by both CBM & Compliance Geologists, but SHC on the Geophysical Logs.
														186.43	186.84	CARBONACEOUS MUDSTONE	Carb. Sh	0.41			28228	186.54	186.95	Carbonaceous Shale
														186.84	187.11	COAL	Coal	0.27		Seam 1	CAN 8	186.95	187.22	COAL: hard, solid, banded to banded dull, top 23cm coal, 15cm carb shale (not sampled), 24cm coal, 13cm coal/carb
							20				W6	R4	4	187.11	187.25	CARBONACEOUS MUDSTONE	Carb. Sh	0.14		Seam 1	28229	187.22	187.36	Sltst, carbonaceous as above
														187.25	187.50	COAL	Coal	0.25		Seam 1	CAN 8	187.36	187.61	*Please see above Coal Description*
											W6	R4	4	187.50	187.63	CARBONACEOUS MUDSTONE	Carb. Sh	0.13		Seam 1	28230	187.61	187.74	Sltst carbonaceous, as above ~50 joint/contact angle at top, SS.
														187.63	187.79	COAL	Coal	0.16		Seam 1	CAN 8	187.74	187.90	*Please see above Coal Description*
														187.79	188.44	SILTSTONE	Sltst	0.65			28231	187.90	188.55	Sltst, carbonaceously as above
49	35 & 36	188.75	191.80	3.05	2.36	77.38%										#N/A								
														188.44	188.59	LOST CORE	LOST CORE	0.15			ns			
							5	60.61%	10	6	W6	R4	4	188.59	188.92	SILTSTONE	Sltst	0.33			28232	188.70	189.03	Sltst as above w/ sks and thin coal lenses.
											W6	R1	4	188.92	189.32	COAL	Coal	0.40			CAN 9	189.03	189.43	COAL: hard, broken, banded, not sampled
														189.32	189.42	CARBONACEOUS MUDSTONE	Carb. Sh	0.10			28233	189.43	189.53	Carbonaceous Shale
											W6	R1	4	189.42	189.85	COAL	Coal	0.43			CAN 10	189.53	189.93	COAL: hard, solid, banded to banded dull, top 40cm coal, 12cm carb shale (not sampled), 21cm coal, pyrite along fractures, see note 1 below. Note 1: Can 8 and Can 10 depth intervals (columns C & D) had interbedded coal and carb shale, canistered all coal over these intervals, did not canister carb shale zones, no canister spacer used, possible core loss over these intervals, most of coal canistered rubbly and very soft mashed coal.
														189.85	189.98	CARBONACEOUS MUDSTONE	Carb. Sh	0.13			28233	189.86	190.09	Carbonaceous Shale
														189.98	190.12	COAL	Coal	0.14			CAN 10	190.09	190.23	COAL: hard, solid, banded to banded dull, top 40cm coal, 12cm carb shale (not sampled), 21cm coal, pyrite along fractures, see note 1 below. Note 1: Can 8 and Can 10 depth intervals (columns C & D) had interbedded coal and carb shale, canistered all coal over these intervals, did not canister carb shale zones, no canister spacer used, possible core loss over these intervals, most of coal canistered rubbly and very soft mashed coal.
														190.12	190.18	LOST CORE	Lost Core	0.06	0.06		ns			*Coal Loss*
														190.18	190.28	SILTSTONE	Sltst	0.10			28234	192.32	192.42	*Sltst as above, carb w/ SS.*
							1		10	6	W6	R4	4	190.28	190.31	SILTSTONE	Sltst	0.03						Sltst as above, carb w/ SS.
														190.31	190.48	LOST CORE	Lost Core	0.17	0.17					*Rock Loss*
											W6	R1	4	190.48	190.71	COAL	Coal	0.23						Coal 65-80% bright, light IB, calc film, rest dull coal/Sltst light, med gassy, 50cm from top is small parting calc film.
							>25		10	8	W6	R4	4	190.71	191.45	SILTSTONE	Sltst	0.74						Sltst as above, fg most joints w/ SS, colour changes into light grey near bottom.
50	31 & 32	191.80	194.85	3.05	3.05	100.00%										#N/A								
							>25	45.41%	20	9	W6	R5	4	191.45	193.52	SANDSTONE	Sst	2.07						Med grey, cg massive Sst. 192.3-192.8m is broken section. Carb & sks in joints.
							>25	68.37%	20	10	W6	R5	4	193.52	194.50	SILTSTONE	Sltst	0.98						Dk grey, Sltst, fg Sst-Sltst contact at 193.55m 193.55-193.85m broken sone, and 194.60-194.80 broken. This interval was overed measured in the field.
51	37	194.85	197.90	3.05	3.05	100.00%										#N/A								
							>25	85.25%	25	12	W6	R5	4	194.50	197.55	SILTSTONE	Sltst	3.05						Sltst as above. Joints at 45-75°. Laminated carb strings. 2(10cm, 5cm) Mdst sections at 196.19m. Sharp contact. This interval was overed measured in the field.
52	37 & 38	197.90	200.95	3.05	2.31	75.74%										#N/A								
														197.55	198.15	LOST CORE	Lost Core	0.60	0.60					*Rock Loss*
							>25	1.44	25	10	W6	R5	4	198.15	200.46	SILTSTONE	Sltst	2.31						Sltst as above. Most joints ~75-85°. At 198.26m, at 20cm broken Mdst section w/ sharp contact. At 199.91 and 200.46, 2 (10cm) zone same as above.
53	38 & 39	200.95	204.00	3.05	3.35	109.84%										#N/A								
														200.46	202.68	SILTSTONE	Sltst	2.22						Sltst as above. Joints 40-70°.
														202.68	203.04	SILTSTONE	Sltst	0.36						Dk grey-black Sltst. Concrete feel. Scratches grey like Sltst. Softer areas.
														203.04	203.29	SILTSTONE	Sltst	0.25						Sltst as above. Joint at 90 and 45°.
														203.29	203.81	MUDSTONE	Mdst	0.52						As above Dk Sltst. Occassional shine like coal.
54	39 & 40	204.00	207.05	3.05	3.05	100.00%										#N/A								
							>25	0.63	25	8	W6	R6	4	203.81	206.86	SILTSTONE	Sltst	3.05						Dk grey fg Sltst IB w/ small (10cm) sections of a black-grey Sltst, all soft and broken. sks in pieces. Maybe so-called "green beds" b/c of interesting broken pieces and green sheen. This interval was overed measured in the field.
55	40 & 41	207.05	210.10	3.05	3.05	100.00%										#N/A								
							15	87.36%	25	9	W6	R6	4	206.86	208.60	SILTSTONE	Sltst	1.74						Sltst dark grey, massive. Joints from 60-90°.
							>25	22.90%	25	8	W6	R6	4	208.60	209.91	SANDSTONE	Sst	1.31						Med grey, mg massive Sst. Joints 45 -60°. 209.2-202.85m rock is mod-hi broken.
56	41	210.10	213.15	3.05	3.13	102.62%										#N/A								
							>25	13.07%	25	10	W6	R6	4	209.91	211.44	SANDSTONE	Sst	1.53						Sst as above. Joints 45-85 ° Sltst as above. Over a metre broken/crushed. Other joints: ~55-85° w/ carb sks in joints.. 5cm black coal section at 210.30m. Erosional contact between Sst & Coal.
							>25	28.13%	20	8	W6	R5	4	211.44	213.04	SILTSTONE	Sltst	1.60						Sltst as above. Over a metre broken/crushed. Other joints: ~55-85° w/ carb sks in joints. This interval was overed measured in the field.
57	41 & 42	213.15	216.20	3.05	3.10	101.64%										#N/A								
							>25	38.06%	20	8	W6	R5	4	213.04	216.14	SILTSTONE	Sltst	3.10						Sst as above, fractures at 45-90° Sltst as above. Over a metre broken/crushed. Other joints: ~55-85° w/ carb sks in joints. This interval was overed measured in the field.
58	42 & 43	216.20	219.25	3.05	3.10	101.64%										#N/A								
							21	70.65%	25	13	W6	R6	4	216.14	219.24	UNDIFFERENTIATED VOLCANICS	Volc	3.10						Red-green-grey conglomerate. This interval was overed measured in the field.
59	43 & 44	219.25	222.30	3.05	3.10	101.64%										#N/A								
							20	86.77%	25	14	W6	R6	4	219.24	222.34	UNDIFFERENTIATED VOLCANICS	Volc	3.10						Red-green-grey conglomerate. This interval was overed measured in the field.
60	45	222.30	225.35	3.05	3.10	101.64%										#N/A								
							11	91.61%	25	14	W6	R6	4	222.34	225.44	UNDIFFERENTIATED VOLCANICS	Volc	3.10						Red-green-grey conglomerate. This interval was overed measured in the field.
61	45	225.35	228.40	3.05	3.04	99.67%										#N/A								
							20	0.72	25	13	W6	R6	4	225.44	228.48	UNDIFFERENTIATED VOLCANICS	Volc	3.04						Red-green-grey conglomerate. EOH

184.90 181.21

Geological Borehole Log: RAV-09-024

Client: CJV
Project: Raven
Logged By: Sarah Newman, Farshad Shirmohammad

Hole Number: RAV-09-024
Date Hole Started: July 13 2009
Date Hole Finished: July 15 2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 221.81m
Depth of Casing: 70.10m
Core Size: Modified PQ (3")

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth from (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Interval Logged Lithology	Interval Logged Length (m)	Interval Logged Lost Core	Interval Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	70.10	OVERBURDEN	OVBDN	70.10						Cased to 70.1 m
														70.10	71.63	SANDSTONE	SST	1.52						Light-med grey, mg Sst. Minor Fe staining
														71.63	73.15	SANDSTONE	SST	1.52						Light-med grey, mg Sst.
														73.15	74.68	SANDSTONE	SST	1.52						Light-med grey, mg Sst.
														74.68	76.20	SANDSTONE	SST	1.52						Light-med grey, mg Sst. Minor Fe staining
														76.20	77.72	SANDSTONE	SST	1.52						Med grey, mg Sst.
														77.72	79.25	SANDSTONE	SST	1.52						Med grey, mg Sst.
														79.25	80.77	SANDSTONE	SST	1.52						Dark grey, mg, silty Sst.
														80.77	82.30	SANDSTONE	SST	1.52						Dark grey, mg, silty Sst.
														82.30	83.82	SANDSTONE	SST	1.52						Light-med grey, mg Sst.
														83.82	85.34	SANDSTONE	SST	1.52						Dark grey, mg, silty Sst.
														85.34	86.87	SANDSTONE	SST	1.52						Dark grey, mg, silty Sst.
														86.87	88.39	SILTSTONE	SLTST	1.52						Sltst.
														88.39	89.92	SANDSTONE	SST	1.52						Dark grey, mg, silty Sst.
														89.92	91.44	SANDSTONE	SST	1.52						Light-med grey, mg Sst. Minor Fe staining
														91.44	92.96	SANDSTONE	SST	1.52						Light-med grey, mg Sst. Minor Fe staining
														92.96	94.49	SANDSTONE	SST	1.52						Light-med grey, mg Sst. Minor Fe staining
														94.49	96.01	SANDSTONE	SST	1.52						Med grey, mg Sst. Weathered green bits.
														96.01	97.54	SANDSTONE	SST	1.52						Med grey, mg Sst.
														97.54	99.06	SANDSTONE	SST	1.52						Med grey, mg Sst. Trace Fe staining.
														99.06	100.58	SANDSTONE	SST	1.52						Med grey, mg Sst.
														100.58	101.27	SILTSTONE	SLTST	0.69						Sltst. Green weathering., trace coal in cuttings - call core point
1	1	101.20	102.72	1.52	0.55	36.18%										#N/A								
								0.00%				100.32		101.27	101.82	LOST CORE	Coal Mdst	0.55		Seam 5	ns			A few cm broken Sltst and Mdst on the top and the rest (~0.50m) is up to 80% bright Coal.
2	1,2	102.72	104.55	1.83	1.82	99.45%										#N/A								
								0.00%						101.82	101.92	MUDSTONE	Mdst Coal	0.10		Seam 5	ns			A 0.10m section of broken Coal and Mdst on the top of the run. Mdst was soft w/ lots of calcite.
							5	100.00%	25	15	W6	R4	4	101.92	103.64	SANDSTONE	Sst	1.72						Med grey fg Sst w/ numerous Coal stringers and plant fossils. Sst was soft and fractures were mainly ~40-50°
3	2,3	104.55	107.29	2.74	2.51	91.61%										#N/A								
														103.64	103.87	LOST CORE	Lost Core	0.23	0.23					*Rock loss*
							4	92.43%	25	15	W6	R4	4	103.87	106.38	SANDSTONE	Sst	2.51						Light grey to med grey/green massive Sst w/ abundant fossils (plants, bivalves) and organic frags.Fractures were mainly SS and the movements were evident.
4	3	107.29	110.03	2.74	2.02	73.72%										#N/A								
							5	97.52%	25	15	W6	R6	4	106.38	108.40	SANDSTONE	Sst	2.02						Light to
														108.40	108.60	LOST CORE	Lost Core	0.20	0.20					*Rock loss*
5	4	110.03	111.86	1.83	2.48	135.52%										#N/A								
							0	100.00%	25		W6	R7	4	108.60	111.08	SANDSTONE	Sst	2.48						Light grey to med grey massive to thinly bedded Sst. Fractures (?) are closed, filled w/ calcite and py.Organic frags. Solid.
6	5	111.86	114.29	2.43	2.19	90.12%										#N/A								
							3	100.00%	25	15	W6	R7	4	111.08	113.27	SANDSTONE	Sst	2.19						Fg-mg light grey solid and massive Sst. Fractures are mainly calcite filled.
7	5,6	114.29	116.42	2.13	1.23	57.75%										#N/A								
														113.27	113.98	LOST CORE	Lost Core	0.71	0.71					*Rock loss*
							1	100.00%	25	15	W6	R6	4	113.98	115.21	SANDSTONE	Sst	1.23						Light grey fg Sst w/ trace plant material. 1 fr @ 86°, massive.
8	6,7	116.42	118.86	2.44	2.74	112.30%										#N/A								
							2	100.00%	25	15	W6	R6	4	115.21	116.54	SANDSTONE	Sst	1.33						As above Sst w/ 1 fr @ 30°, calcite filled one at 90°.
							3	97.81%	20	15	W5	R5	4	116.54	117.91	CLAYSTONE	Clyst	1.37						Dark grey Clyst. 0.19m at bottom w/ Coal stringers at 90°.
							0	0.00%			W6	R4	4	117.91	117.95	COAL	Coal	0.04						Dull brown-black solid, fairly light, did not bubble.
9	7,8	118.86	120.99	2.13	2.30	107.98%										#N/A								
							0	100.00%			W6	R3	4	117.95	118.35	CLAYSTONE	Clyst	0.40						Dark grey Clyst w/ trace carb stringers 90 & 80°, massive.
							1	100.00%	25	15	W6	R4	4	118.35	119.15	SILTY SANDSTONE	Slty-Sst	0.80						Med grey, fg silty Sst, weakly laminated 85°.
							0	100.00%						119.15	120.25	SANDSTONE	Sst	1.10						M-fg Sst w/ trace carb and plant material. Weakly bedded 85°.
10	8, 9	120.99	123.89	2.90	2.98	102.76%										#N/A								
							3	100.00%	25	15	W6	R6	4	120.25	123.23	SANDSTONE	Sst	2.98						Light grey, fg weakly bedded (85-90°) Sst. Trace calcite stringers at 45 & 90°, trace plant material.
11	9,10	123.89	126.79	2.90	2.64	91.03%										#N/A								
														123.23	123.49	LOST CORE	Lost Core	0.26	0.26					*Rock loss*
							5	97.73%	25	15	W6	R6	4	123.49	126.13	SANDSTONE	Sst	2.64						Light grey, fg Sst w/ abundant thin Coal/Sltst layers >1mm thick on average. 85-90° all fr at 85° except one at 70°.
12	10,11	126.79	129.38	2.59	2.54	98.07%										#N/A								
							4	98.03%	25	15	W6	R6	4	126.13	128.67	SANDSTONE	Sst	2.54						As above Sst except 1 fr at 65°. Rest at 90°. Calcite stringers 20°. Less Coal/Sltst laminations than above. Still ~85°. Slight shallowing of fractures
13	11,12	129.38	131.97	2.59	2.80	108.11%										#N/A								
							4	100.00%	25	15	W6	R6	4	128.67	131.47	SANDSTONE	Sst	2.80						Light
14	12	131.97	134.25	2.28	2.30	100.88%										#N/A								
							>25	49.57%	20	10	W6	R6	3	131.47	133.77	SANDSTONE	Sst	2.30						Pale grey, fg Sst w/ dk zone in upper 0.40m. 0.70m fault at bottom of interval. Trace carb and plant material. Joints along 70-85° w/ same low
15	13	134.25	136.23	1.98	1.96	98.99%										#N/A								
							10	93.88%	25	13	W6	R6	4	133.77	135.73	SANDSTONE	Sst	1.96						Light grey, fg Sst w/ abundant Sltst/Coal laminations, trace carb stringer 45°, laminites and joints avg 85°.
16	13,14	136.23	139.13	2.90	2.67	92.07%										#N/A								
							4	95.51%	25	15	W6	R6	4	135.73	138.40	SANDSTONE	Sst	2.67						As above but fractures at 90°. Bivalve fossils, weakly bioturbated towards the bottom of the interval, healed joint at 45°, carbonate stringer at 0°.
17	14	139.13	142.03	2.90	2.82	97.24%										#N/A								
								100.00%	25	15	W6	R6	4	138.40	141.22	SANDSTONE	Sst	2.82						As above Sst but w/ 0.45m bioturbated (worm burrows) Sltst rich zone near bottom. Calcite stringer 45°, 1 fr at 90°, 1 at 70° and is calcite filled.
18	15,16	142.03	144.77	2.74	2.88	105.11%										#N/A								
							1		25	15	W6	R6	4	141.22	144.10	SANDSTONE	Sst	2.88						Light grey fg-mg bioturbated massive Sst w/ trace plant material.
19	17,18	144.77	147.47	2.70	2.82	104.44%										#N/A								
							1	100.00%	26	15	W6	R6	4	144.10	144.63	SANDSTONE	Sst	0.53						Sst.
							1	100.00%	25	15	W6	R6	4	144.63	145.63	MUDSTONE	Mdst	1.00						Light grey massive Mdst w/ Coal stringers.
														145.63	145.75	COALY MUDSTONE	CLY MDSTN	0.12						IB of Coal and Mdst .
														145.75	146.25	COAL	Coal	0.50		Seam 4	28153	145.75	146.25	Sugary and some parts solid and bright (~60%) coal w/ some py.
														146.25	146.89	COAL	Coal	0.64		Seam 4	28154	146.28	146.92	Sugary and some parts solid and bright (~60%) coal w/ some py.
20	18,19	147.47	149.60	2.13	1.99	93.43%										#N/A								
														146.89	146.97	LOST CORE	Lost Core	0.08	0.08	Seam 4	ns			*Coal*
							1	69.23%	25	15	W6	R6	4	146.97	147.36	COALY MUDSTONE	CLY SLTST	0.39						Brown to dark grey, massive Sltst and IB of Coal stringers.
							2	100.00%	25	15	W6	R6	4	147.36	148.96	SANDSTONE	Sst	1.60						Med grey, mg massive Sst w/ Coal stringers and plant fossils.
21	19	149.60	151.58	1.98	1.71	86.36%										#N/A								
							0	100.00%	-	15	W6	R6	4	148.96	149.86	SANDSTONE	Sst	0.90						Med grey, fg, massive Sst w/ Coal stringers and fossil frags.

							1	87.65%	25	15	W6	R6	4	149.86	150.67	SILTSTONE	sltst	0.81						Med brown Sltst and silty Mdst w/ Coal stringers at the contact w/ above Sst.
22	20	151.58	153.71	2.13	2.50	117.37%										#N/A								
							1	100.00%	25	15	W6	R5		150.67	151.11	SILTSTONE	sltst	0.44						Dark brown, massive to thiny bedded Sltst.
							4	95.15%	25	15	W6	R6		151.11	153.17	SANDSTONE	Sst	2.06						Light to med grey, fg Sst. Very hard to drill, solid and strong.
23	21	153.71	156.30	2.59	2.33	89.96%										#N/A								
							0	100.00%	-	15	W6	R6		153.17	155.50	SANDSTONE	Sst	2.33						One solid piece of core. Light grey massive fg Sst w/ a few Coal stringers.
24	22	156.30	159.04	2.74	2.71	0.99										#N/A								
							0	100.00%	-	15	W6	R6		155.50	158.21	SANDSTONE	Sst	2.71						Light grey, f-mg massive Sst, no fracture (some closed calcite filed), one solid piece of core. Some few plant frags.
25	23	159.04	160.87	1.83	1.77	96.72%										#N/A								
							1	100.00%	25	15	W6	R6	4	158.21	159.98	SANDSTONE	Sst	1.77						Light
26	24	160.87	163.46	2.59	2.36	91.12%										#N/A								
							1	109.75%	25	15	W6	R6	4	159.98	162.34	SANDSTONE	Sst	2.36						As above Sst, fg-mg massive to weakly bedded w/ thin beds and 1 fracture at 80-85°, bottom 0.20m has thin >1mm Coal lenses of various
27	24,25	163.46	166.05	2.59	2.79	107.72%										#N/A								
							1	100.00%	25	15	W6	R7	4	162.34	165.13	SANDSTONE	Sst	2.79						As above Sst, lower break along Coal seam caused by dropping core, break at 0.50m caused to fit core in box. Light grey massive fg-mg Sst,
28	26,27	166.05	168.95	2.90	3.05	105.17%										#N/A								
							0	100.00%	25	15	W6	R7	4	165.13	168.18	SANDSTONE	Sst	3.05						One solid piece of core, all breaks caused to put core in box. Light grey, fg, massive Sst w/ one large (2-3mm) Sst stringer at the end of the run
29	27	168.95	171.23	2.28	1.88	82.46%										#N/A								
							0	100.00%	25					168.18	170.06	SANDSTONE	Sst	1.88						One solid piece, slightly coarser grained than above. Calcite stringers continue from above, trace plant material, had to break core to fit in box.
30	28	171.23	173.06	1.83	1.78	97.27%	0									#N/A								
								100.00%		15	W6	R6	4	170.06	171.84	SANDSTONE	Sst	1.78						Med to light grey, fg, massive Sst. No fractures. A solid piece of core in the tube.
31	28,29	173.06	175.50	2.44	1.96	80.33%	0									#N/A								
								100.00%		15	W6	R6	4	171.84	173.80	SANDSTONE	Sst	1.96						Med to light grey, massive Sst. The amount of organic material increased compared to the above run. Fg w/ some Coal stringers.
32	29,30	175.50	177.63	2.13	3.00	140.85%										#N/A								
							9	96.00%	25	15	W6	R6	4	173.80	176.30	SANDSTONE	Sst	2.50						Med grey, fg Sst w/ Coal stringers and some Sltst IB.
							9	0.00%	25	7	W6	R5	3	176.30	176.80	CARBONACEOUS MUDSTONE	Carb Mdst	0.50						Carb Mdst w/ Coal IB (up to 1cm).
														176.80	176.85	LOST CORE	Lost Core	0.05	0.05					*Rock loss*
33	30,31	177.63	180.37	2.74	2.29	83.58%										#N/A								
														176.85	177.09	MUDSTONE	Mdst Coal	0.24						Broken Mdst w/ Coal IB.
														177.09	177.25	MUDSTONE	Mdst Coal	0.16			03253	177.09	177.25	
														177.25	177.41	LOST CORE	Lost Core	0.16	0.16	Seam 3	ns			*Coal loss.*
														177.41	177.58	COAL	Coal	0.17		Seam 3	03254	177.41	177.58	Coal, ~80% bright
														177.58	177.68	MUDSTONE	Mdst	0.10			03255	177.58	177.68	
														177.68	178.18	MUDSTONE	Mdst	0.50			ns			Brown w/ Coal stringers and IB.
														178.18	178.28	MUDSTONE	Mdst	0.10			03256	178.18	178.28	
														178.28	178.38	LOST CORE	Lost Core	0.10	0.10	Seam 3	ns			*Coal loss*
														178.38	178.53	COAL	Coal	0.15		Seam 3	03257	178.38	178.53	Coal, ~80% bright.
														178.53	178.63	MUDSTONE	Mdst	0.10			03258	178.53	178.63	
														178.63	179.23	MUDSTONE	Mdst	0.60			ns			Dark brown Mdst w/ some Coal stringers.
														179.23	179.33	MUDSTONE	Mdst	0.10			03259	179.23	179.33	
														179.33	179.40	COAL	Coal	0.07		Seam 3	03260	179.33	179.50	Coal, sugary and powdery.
34	31,32	180.37	183.11	2.74	2.63	95.99%										#N/A								
														179.40	179.50	COAL	Coal	0.10		Seam 3	03260	179.33	179.50	Coal, ~80% bright
														179.50	179.60	MUDSTONE	Mdst Coal	0.10			03261	179.50	179.60	
														179.60	179.85	MUDSTONE	Mdst Coal	0.25			ns			Mdst w/ Coal IB.
														179.85	179.95	MUDSTONE	Mdst Coal	0.10			03262	179.85	179.95	
														179.95	180.61	COAL	Coal	0.66		Seam 3	03263	179.95	180.61	Coal, >75% is solid and bright.
														180.61	180.71	SANDSTONE	Sst	0.10			03264	180.61	180.71	
							1	0.00%	25	15	W6	R5	4	180.71	181.87	SANDSTONE	Sst	1.16						Light grey Sst, calcite filled fr. In brown Mdst.
														181.87	181.98	LOST CORE	Lost Core	0.11	0.11					
														181.98	182.14	MUDSTONE	Mdst Coal	0.16						Brown Mdst w/ some sugary Coal.
35	33	183.11	185.24	2.13	2.04	95.77%										#N/A								
							3.00	100.00%	25	15	W6	R6	4	182.14	184.18	SANDSTONE	Sst	2.04						Light grey, fg, massive Sst w/ ~0.30m of silty SS on the top of the run.
36	34	185.24	187.98	2.74	2.81	102.55%										#N/A								
							4	101.07%	25	15	W6	R6	4	184.18	186.99	SANDSTONE	Sst	2.81						Med grey, f-cg Sst. Sharp contact between cg and mg Sst, massive, some fossil frag. Mainly at the bottom. Coal stringers ~85°.
37	35	187.98	190.72	2.74	1.87	68.25%										#N/A								
							3	100.00%	25	15	W6	R6	4	186.99	188.86	SANDSTONE	Sst	1.87						Med grey, f-cg, banded Sst w/ abundant Coal stringers, mainly ~85°. IB of cg Sst is common.
38	36	190.72	192.55	1.83	2.50	136.61%										#N/A								
							8	0.00%	25	10	W6	R6	4	188.86	191.36	SANDSTONE	Sst	2.50						Light grey, cg, massive Sst, joints start from top to the depth of 192.36m.
39	27	192.55	194.53	1.98	2.24	113.13%										#N/A								
							2	100.00%	25	14	W6	R6	4	191.36	193.07	SANDSTONE	Sst	1.71						Cg, massive Sst as above.
							5	66.04%	25	10	W6	R4	4	193.07	193.60	SILTSTONE	Sltst	0.53						Med grey Sltst, 0.48m from bottom 0.05m Clyst very broken.
40	38	194.53	197.43	2.90	2.90	100.00%										#N/A								
							1	100.00%	25	10	W6	R4	4	193.60	193.80	SILTSTONE	Sltst	0.20						Med grey, fg Sltst w/ dark grey 1-2cm bands of Clyst at 85-90°.
							6	100.00%	25	14	W6	R6	4	193.80	196.50	SANDSTONE	Sst	2.70						Light grey, fg Sst w/ minor silty bands and trace plant material.
41	39	197.43	200.33	2.90	2.84	97.93%										#N/A								
														196.50	196.56	LOST CORE	Lost Core	0.06	0.06					
							1	96.48%	25	14	W6	R6	4	196.56	199.40	SANDSTONE	Sst	2.84						0.10m at top ground by drill; light grey, fg, massive Sst.
42	40	200.33	203.23	2.90	2.80	96.55%										#N/A								
							1	100.00%	25	15	W6	R6	4	199.40	201.50	SANDSTONE	Sst	2.10						As above light grey, fg, massive Sst.
														201.50	201.55	LOST CORE	Lost Core	0.05	0.05					*Rock loss*
							1	100.00%	25	10	W6	R5	4	201.55	202.25	CLAYSTONE	Clyst	0.70						Sst IB w/ 1-2cm bands of dk grey Clyst. Driller thinks there is Coal coming as run hit gas.
43	41	203.23	205.51	2.28	2.08	91.23%										#N/A								
							4	53.85%	25	5	W6	R3		202.25	202.41	CLAYSTONE	Clyst	0.16						Dark brown grey, fg Clyst. Breaks 90°.
														202.41	202.51	CLAYSTONE	Clyst	0.10			03265	202.41	202.51	
														202.51	202.71	LOST CORE	Lost Core	0.20	0.20	Seam 1	ns			*Rock loss*
									25	5	W6	R3		202.71	202.91	COAL	Coal	0.20			03266	202.71	202.91	Black
														202.91	203.01	CLAYSTONE	Clyst	0.10			03267	202.91	203.01	
							4	0.00%	25	5	W6	R3		203.01	203.24	CLAYSTONE	Clyst	0.23			03268	203.24	203.34	As above Clyst.
														203.24	203.34	CLAYSTONE	Clyst	0.10			ns			
							-	-	25	5	W6	R3		203.34	203.60	COAL	Coal	0.26			03269	203.34	203.60	As above Coal.
														203.60	203.70	CLAYSTONE	Clyst	0.10			03270	203.60	203.70	
							4	81.72%	25	12	W6	R3		203.70	204.53	CLAYSTONE	Clyst	0.83						As above Clyst.
44	41,42	205.51	208.10	2.59	2.00	77.22%										#N/A								
							2	80.77%	25	12	W6	R3	4	204.53	204.79	CARBONACEOUS CLAYSTONE	Carb Clyst	0.26						Dark grey-brown, fg carbonaceous Clyst.
							4	85.07%	25	12	W6	R3	4	204.79	205.46	SANDSTONE	Sst	0.67						Cg Sst w/ Coal stringers. ~80-90°.
							2	0.00%	25	7	W6	R3	4	205.46	205.58	CLAYSTONE	Clyst	0.12			03271	205.48	205.58	Medium grey, fg, massive Clyst.
														205.58	206.13	LOST CORE	Lost Core	0.55	0.55	Seam 1	ns			*Coal loss.*
							>25	0.00%	10	5	W6	C2	1	206.13	206.63	COAL	Coal	0.50		Seam 1	03272	206.17	206.67	Very broken, crushed dull Coal, didn't bubble.

							0	100.00%	25	12	W6	R3	4	206.63	206.89	COAL	Coal	0.26		Seam 1	03273	206.67	206.93	Dull, hard coal. Solid piece.
														206.89	206.99	CLAYSTONE	Clyst	0.10			03274	206.93	207.03	
							1	100.00%	25	15	W6	R3	4	206.99	207.08	CLAYSTONE	Clyst	0.09			ns			Dark grey, fg, massive Clyst as above.
45	42,43	208.10	209.92	1.82	1.44	87.91%										#N/A								
							1	0.00%	25	7	W6	R3	4	207.08	207.10	CLAYSTONE	Clyst	0.02		Seam 1	ns			As above Clyst.
														207.10	207.11	CLAYSTONE	Clyst	0.01	0.01		03275	207.03	207.24	
							1	100.00%	25	7	W6	R3	4	207.11	207.32	COAL	Coal	0.21		Seam 1	03276	207.24	207.41	Solid, dull Coal.
							0	100.00%			W6	R3	4	207.32	207.47	CLAYSTONE	Clyst	0.15		Seam 1	03276	207.24	207.41	As above dark grey-brown, fg, massive Clyst.
														207.47	207.53	LOST CORE	Lost Core	0.06	0.06	Seam 1	03277	207.41	207.49	*Rock loss.*
							1	0.00%	25	7	W6	R3	4	207.53	207.62	COAL	Coal	0.09		Seam 1	03278	207.55	207.64	Solid, dull Coal.
							0	100.00%	25	7	W6	R3	4	207.62	207.76	CLAYSTONE	Clyst	0.14		Seam 1	03279	207.64	207.78	As above Clyst.
							3	86.11%	25	7	W6	R3	4	207.76	208.12	COAL	Coal	0.36		Seam 1	03280	207.78	208.14	As above Coal.
							0	0.00%	-	-	W6	R3	4	208.12	208.15	CLAYSTONE	Clyst	0.03		Seam 1	03280	208.14	208.17	As above Clyst.
							>25	0.00%	20	7	W6	R3	2	208.15	208.33	COAL	Coal	0.18		Seam 1	03280	208.17	208.35	Broken, dull, black Coal in sharp angled fractures.
														208.33	208.45	COAL	Coal	0.12	0.12	Seam 1	ns			
														208.45	208.55	CLAYSTONE	Clyst	0.10			03281	208.35	208.45	
							>25	0.00%	10	5	W6	R3	2	208.55	208.72	CLAYSTONE	Clyst	0.17						Broken dark brown, massive Clyst.
46	43,44	209.92	211.75	1.83	2.15	117.49%										#N/A								
							1	100.00%	25	7	W6	R3	4	208.72	209.05	CLAYSTONE	Clyst	0.33						As above, dark brown, massive Clyst.
							1	0.00%	25	5	W6	R3	4	209.05	209.13	COAL	Coal	0.08						Dull, solid, black Coal, does not bubble.
							2	100.00%	25	15	W6	R3	4	209.13	210.87	CLAYSTONE	Clyst	1.74						Brown-grey, fg massive Clyst.
47		211.75	214.65	2.90	2.59	89.31%										#N/A								
														210.87	211.18	LOST CORE	Lost Core	0.31	0.31					*Rock loss.*
	44						0	100.00%			W6	R3	4	211.18	211.51	CLAYSTONE	Clyst	0.33			03282	211.31	211.41	As above dk grey, c-fg, massive Clyst.
	44						2	0.00%	25	5	W6	R3	4	211.51	211.68	COAL	Coal	0.17		Seam 1 Sub 1	03283	211.41	211.58	Black, dull, solid, non-gassy Coal.
	44						2	100.00%	25	12	W6	R4	4	211.68	212.08	CLAYSTONE	Clyst	0.40			03284	211.58	211.68	Weakly laminated (~90^{o}) Clyst, slightly more cg than above.
	44						0	100.00%	25	12	W6	R5	4	212.08	212.33	SILTSTONE	Sltst	0.25						Weakly laminated (80-90^{o}) Sltst, some sandy layers.
	45						5	97.22%	25	12	W6	R6	4	212.33	213.77	SANDSTONE	Sst	1.44						Cg massive-weakly laminated Sst (80-90^{o}) w/ abundant thin Coal lenses/Sltst layers.
48	45,46	214.65	217.24	2.59	2.67	103.09%										#N/A								
							1	0.00%	25	5	W6	R6	4	213.77	213.84	SANDSTONE	Sst	0.07						Cg Sst as above w/ Coal/Sltst laminations
							0	100.00%	-	15	W6	R3	4	213.84	214.14	CLAYSTONE	Clyst	0.30						As above grey-brown, fg, massive Clyst.
							6	94.78%	25	14	W6	R6	4	214.14	216.44	CONGLOMERATE	Congl	2.30						Grains up to 0.03m, looks almost like volc cong but lacks green colour, grey, likely close to basement.
49	46	217.24	219.07	1.83	1.80	98.36%										#N/A								
							7	100.00%	25	12	W6	R6	4	216.44	218.24	CONGLOMERATE	Congl	1.80						Volcanic conglomerate, clasts up to 0.20m, avg 2-3cm, subangular, grey-green colours.
50	47	219.07	221.81	2.74	2.74	94.48%										#N/A								
							3	100.00%	25	15	W6	R5	4	218.24	220.98	CONGLOMERATE	Congl	2.74						Volcanic conglomerate as above but more distinct green colour, subrounded, frags & volcanic ash.

Geological Borehole Log: RAV-09-025

Client: CJV
Project: Raven
Logged By: Parviz

Hole Number: RAV-09-025
Date Hole Started: July 16 2009
Date Hole Finished: July 19 2009
Hole Orientation: -90 at start

Total Hole Depth: 275.52m
Depth of Casing: 12.5m
Core Size: Modified PQ (3")

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery		RQD		Fractures		Alt'n & Weath.	Hardness		G.P.L. Corrected			Intervals Logged				Samples (Driller's Depths)			Description
					Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage		Prefix	Core Quailty	From (m)	To (m)		Lithology	Interval Length	Core Loss	Strat	Number	From (m)	To (m)	
														0.00	12.00	OVERBURDEN	Ovbdn							Casing set at 12.0m
														12.00	97.26	SILTSTONE	SLTST							Dominantly siltstone with f.gr.ss. Intbds
														97.26	98.24	SHALY COAL	ShyCoal							Interpreted from geophysical log
														98.24	114.15	SILTSTONE	SLTST							Dominantly siltstone with f.gr.ss. Intbds
														114.15	114.57	CLAYSTONE	Clyst							Claystone -Interpreted from geophysical log likely erosion contact with sst below; switched from air drilling to mud due to water inflow.
														114.57	147.50	SANDSTONE	SST							SST with minor sltst beds
														147.50	149.00	CLAYSTONE	Clyst							Claystone; cave
														149.00	187.90	SANDSTONE	SST							SST with thin intbds of sltst; called core point
														187.90	188.97	LOST CORE	LOST CORE	1.07						
1	1	188.97	190.44	1.47	1.18	80.27%	4	1.15	-	-	-	-	-	188.97	190.15	SANDSTONE	SST	1.18						SST mg light grey, 0.05m at the bottom is broken.
2	1 & 2	190.44	192.93	2.49	2.50	100.40%	8	2.50	25	16	W6	R6	4	190.15	192.65	SANDSTONE	SST	2.50						Cg light grey SST, massive. w/ some joints filled w/ calc mostly at 30 - 40^0.
3	2 & 3	192.93	195.83	2.90	2.68	92.41%	5	2.68	25	13	W6	R6	4	192.65	195.33	SANDSTONE	SST	2.68						Massive cg SST as above. Some angular joints filled w/ calcite all over the core.
4	3 & 4	195.83	198.57	2.74	2.84	103.65%	17	2.89	25	13	W6	R6	4	195.33	198.17	SANDSTONE	SST	2.84						Cg SST as above.
5	4	198.57	201.03	2.46	1.89	76.83%	4	1.89	25	15	W6	R6	4	198.17	200.06	SILTSTONE	SLT	1.89						Dk grey massive SLT, probably cbr, closed calcite-filled fractures w/ a wide range of angles, open fractures mainly 80-85^0. Organic materials (plant mainly).
6	4 & 5	201.03	202.86	1.83	1.83	100.00%	10	1.78	25	13	W6	R6	4	200.06	201.89	SANDSTONE	SST	1.83						Med grey v.fg SST, massive. Abundant plant frags, calcite-filled fractures ~80^0. Some fracture surfaces are sks
7	5 & 6	202.86	205.30	2.44	2.52	103.28%																		
														201.89	202.53	LOST CORE	LOST CORE	0.64						Lost Core from units above - SST/SLTST
					2.42		5	2.42	25	15	W6	R6	4	202.53	204.95	SANDSTONE	SST	2.42						F-m grey SST, calcite-filled fractures ~60^0. Plant frags.
					0.10		-	-	-	-	-	-	-	204.95	205.05	SHALE	SH COAL	0.10						~10cm of dk brown/black coaly SH. The sharp contact w/ the overlying SST is 60^0 and it seems to be sks The depth of the contact is ~205.20m and planar.
8	6 & 7	205.30	207.77	2.47	2.47	100.00%	>25	1.80	25	8	W6	R5	4	205.05	207.52	REGOLITH	SLT SST	2.47						Light to med grey, very thinbedded SLT and SST, w/ calcite-filled fractures throughout the core. Most of the joints surfaces are sks Mainly Shaly on top. The 4cm of shale is on the top, left over from prev run
9	7 & 8	207.77	210.21	2.44	2.54	104.10%																		
					0.20		3	0.00	25	7	W6	R5	-	207.52	207.72	REGOLITH	SLT SH	0.20						Thin bedded IB of SLT and some SH w/ calcite in the fractures, dk grey.
					0.25		>25	0.00	0	3	W6	C4	-	207.72	207.97	SHALE	SH SLT	0.25						SH w/ IB of SLT and calcite n the fractures. Sharp contact w/ underlying SST (~50^0).
					2.09		3	2.09	25	15	W6	R6	-	207.97	210.06	SANDSTONE	SST	2.09						F-mg light grey massive SST. Calcite-filled fractures are ~70-80^0.
10	8 & 9	210.21	212.34	2.13	2.02	94.84%	4	2.02	25	15	W6	R6	4	210.06	212.08	SANDSTONE	SST	2.02						Massive med to light grey, f-mg SST. A set of calcite-filled fractures w/ up to 1cm thickness, almost parallel, 60^0 are at ~209.7m depth. Coal stringers cross the calcite-filled fractures ~90^0
11	9	212.34	215.08	2.74	2.62	95.62%	11	2.98	25	15	W6	R6	4	212.08	214.70	SANDSTONE	SST	2.62						Massive light to med grey, fg SST. Calcite-filled fractures; 75-90^0. coal stringers !40-60^0, sks in some of the fractures.
12	10 & 11	215.08	217.82	2.74	3.09	112.77%	11	2.98	25	15	W6	R6	4	214.70	217.79	SANDSTONE	SST	3.09						Massive mg light -med grey SST, calcite-filled fractures, some coal stringers and patches are common. Fractures surfaces sks
13	11	217.82	220.71	2.89	2.54	87.89%	7	2.54	25	15	W6	R6	4	217.79	220.33	SANDSTONE	SST	2.54						Massive light grey SST, coal stringers ~45^0. Calcite-fille frac. Zones of coarser grained SSt, parallel to the coal stringers (~45^0) up to 3cm thick were also present.
14	12	220.71	223.45	2.74	2.75	100.36%	14	2.29	25	10	W6	R6	4	220.33	223.08	SANDSTONE	SST	2.75						SST, cg light grey massive w/ some joints filled w/ calcite.
15	13	223.45	226.04	2.59	2.79	107.72%	9	2.79	25	12	W6	R6	4											
					2.63		-	-	-	-	-	-	-	223.08	225.71	SANDSTONE	SST	2.63						Cg SST as above
					0.07		-	-	-	-	-	-	-	225.71	225.78	CLAYSTONE	CST	0.07						Dk grey CST
					0.08		-	-	-	-	-	-	-	225.78	225.86	SANDSTONE	SST	0.08						Cg light grey SST
16	14	226.04	228.94	2.90	2.25	77.59%																		
														225.86	226.06	LOST CORE	LOST CORE	0.20		Seam 5				Likely Lost Core - Coal or shaly coal
					0.09		-	-	-	-	-	-	-	226.06	226.15	COAL	COAL	0.09		Seam 5				Coal: Dull, broken
					1.41		7	1.01	25	7	W6	R3	4	226.15	227.56	CARBONACEOUS CLAYSTONE	CARB CST	1.41						CST, med grey broken by cross cut joints, 0.23m at the bottom very broken
					0.72		1	0.72	25	15	W6	R6	4	227.56	228.28	SANDSTONE	SST	0.72						SST m-fg med grey
														228.28	228.94	LOST CORE	LOST CORE	0.66						
17	14 & 15	228.94	230.61	2.67	2.14	80.15%	3	2.14	25	13	W6	R6	4	228.94	231.08	SANDSTONE	SST	2.14						Light grey, cg massive SST. 0.70m at the bottom w/ coal stringers at 45°.
18	15 & 16	230.61	233.51	2.90	2.68	92.41%	8	2.68	25	13	W6	R6	4	231.08	233.76	SANDSTONE	SST	2.68						SST as above w/ coal stringers at 45°.
19	16 & 17	233.51	235.79	2.28	2.18	95.61%	1	2.18	25	15	W6	R6	4	233.76	235.94	SANDSTONE	SST	2.18						Cg SST as above. 0.15m at the top is broken.
20	17 & 18	235.79	237.62	1.83	1.83	100.00%	7	1.24	25	6	W6	R6	4	235.94	237.77	SANDSTONE	SST	1.83						***Major fault displacing lower Comox Fm including Seams 4 3 and 1*** SST as above. 1.20m from top of run 0.63m of rock very broken, fault zone.
21	18	237.62	239.75	2.13	1.93	90.61%	13	1.71	25	10	W6	R6	4	237.77	239.70	SANDSTONE	SST	1.93						SST cg light grey w/ stringers of coal at 50°. 0.70m at the bottom is conglomerate.
22	18 & 19	239.75	242.65	2.90	2.90	100.00%	14	2.42	25	10	W6	R6	4	239.70	242.60	SANDSTONE	SST	2.90						Conglomerate light grey pebbles 1-2mm. The broken zone ends at 1.40m from top.
23	19 & 20	242.65	244.78	2.13	2.27	106.57%	15	1.97	25	13	W6	R6	4	242.60	244.87	COALY MUDSTONE	CONG	2.27						Conglomerate, light grey, matrix supported. Pebbles 1-2mm toward the bottom is more coarse. 0.30m at the bottom very broken.
24	20 7 21	244.78	247.67	2.89	2.70	93.43%	>25	2.10	10	3	W4	R5	1	244.87	247.57	SANDSTONE	SST	2.70						F-mg SST, almost white top top to the depth of 245.85m. Looks altered (clay alt?) w/ coal stringers and coal on the fractures. Cg to pebbly SST at 245.85m. For about 0.4m and then after is a 6cm
25	21 & 22	247.67	250.41	2.74	2.84	103.65%	>25	2.60	25	3	W5	R6	3	247.57	250.41	SANDSTONE	SST CONG	2.84						Fractured and some parts altered (bleached?) sks and conglomerate. Congl. Zones are very local and might be named as pebbly SSt. Coal stringers and coal in frac w/ sks w/ py, calcite, coal
26	22 & 23	250.41	252.24	1.83	1.83	100.00%	15	1.50	25	13	W5	R5	3	250.41	252.24	SANDSTONE	SST CONG	1.83						Cong and pebbly SST, light grey, 30-40° fractures (parallel), sks w/ coal and calc. Coarser congl around 252m depth. Coal stringers.
27	23	252.24	254.37	2.13	2.13	100.00%	>25	1.33	25	3	W6	R5	3											
					0.05		-	-	-	-	-	-	-	252.24	252.29	COALY MUDSTONE	CONG	0.05						Congl w/ clast support, subrounded to rounded.
					1.48		-	-	-	-	-	-	-	252.29	253.77	SANDSTONE	SST CGL	1.48						Light grey, ~80° bedding. Darker at the top.
					0.60		-	-	-	-	-	-	-	253.77	254.37	MUDSTONE	MDST	0.60						Dark grey, sharp contact w/ SST and cgl above. Calc and py in the fractures are common. Coal stringers and partches are also present.
28	23 & 24	254.37	257.11	2.74	2.68	97.81%	18	2.33	25	15	W6	R6	4	254.37	257.05	SILTSTONE	SLT	2.68						Med to dk grey and brown SLT and MDST. w/ some sort cbf shaly zones around 256m depth. Fractures are mainly sks and calc-filled w/ abundant pu.
29	24 & 25	257.11	258.78	1.67	1.65	98.80%																		
					1.30	-	>25	0.51	-	-	-	-	-	257.05	258.35	SANDSTONE	SST SH	1.30						Light grey SST w/ dk grey IB of shale and some cbr MDST.
					0.06	-	-	-	-	-	-	-	-	258.35	258.41	COAL	COAL	0.06						6cm soft sugary coal.
					0.29	-	-	-	-	-	-	-	-	258.41	258.70	SANDSTONE	SST	0.29						SST as above. Fractures are mainly sks and calcite filled w/ abundant py.
30	25	258.78	260.91	2.13	1.88	88.26%																		
					0.07		>25	-	25	3	-	-	0-1	258.70	258.77	SANDSTONE	SST	0.07						C-mg w/ come coal and calc.
					0.80		>25	-	25	3	-	-	0-1	258.77	259.57	NDIFFERENTIATED VOLCANIC	VOL CONG	0.80						Green to green/grey w/ some coal & calc.
					1.01		12	-	25	15	-	-	3	259.57	260.58	NDIFFERENTIATED VOLCANIC	VOL	1.01						Green volcanic rock.
														260.58	260.91	LOST CORE	LOST CORE	0.33						
31	26 & 27	260.91	263.65	2.74	2.62	95.62%	>25	2.21	25	3	W5	R5	4	260.91	263.53	NDIFFERENTIATED VOLCANIC	VOLC	2.62						Green volc, fractured w/ calc filled, throughout the core. A low angle fault gouge (~20-30^0) at 263m is noticeable.
32	27 & 28	263.65	265.17	1.52	1.51	99.34%	15	0.82	25	13	W5	R5	4	263.53	265.04	NDIFFERENTIATED VOLCANIC	VOLC	1.51						Green volc. Parallel joints and fractures (~20-25^0), calc-filled.
33	28	265.17	266.84	1.67	1.48	88.62%	>25	0.92	25	3	W5	R5	3	265.04	266.52	NDIFFERENTIATED VOLCANIC	VOL	1.48						Dk green volc cross cutting joints filled w/ calc allover core. 0.40m end of run the core is very broken.
34	29	266.84	268.06	1.22	0.90	73.77%	>25	0.48	25	3	W6	R5	-	266.52	267.42	NDIFFERENTIATED VOLCANIC	VOL	0.90						Dk green volc rock.
35	29	268.06	268.67	0.61	0.90	147.54%	>25	0.25	25	3	W6	R5	-	267.42	268.32	NDIFFERENTIATED VOLCANIC	VOL	0.90						Volc rock as above, very broken.
36	29 & 30	268.67	269.43	0.76	0.69	90.79%	>25	0.00	25	3	W6	R5	-	268.32	269.01	NDIFFERENTIATED VOLCANIC	VOL	0.69						Very broken volc rock fault zone.
37	30	269.43	270.34	0.91	0.50	54.95%	3	0.55	25	9	W6	R6	4	269.01	269.51	NDIFFERENTIATED VOLCANIC	VOL	0.50						Volc w/ few specs of py
38	30	270.34	271.56	1.22	0.56	45.90%	4	0.48	25	9	W6	R6	4	269.51	270.07	NDIFFERENTIATED VOLCANIC	VOL	0.56						Dk green volc rock
														270.07	271.54	LOST CORE	LOST CORE	1.47						
39	30 & 31	271.56	273.08	1.52	1.58	103.95%	5	1.36	25	13	W6	R6	4	271.54	273.12	NDIFFERENTIATED VOLCANIC	VOL	1.58						Dk green volc.
40	31	273.08	275.52	2.44	2.40	98.36%	19	1.48	25	9	W6	R6	4	273.12	275.52	NDIFFERENTIATED VOLCANIC	VOL	2.40						Volc as bove. There is joint along the core.
																								EOH at 275.52m

Client: CJV
Project: Raven
Logged By: Henry, AJ

Hole Number: RAV-09-026
Date Hole Started: July 16 2009
Date Hole Finished: July 17 2009
Hole Orientation:

Total Hole Depth: 92.70m
Depth of Casing: 12.20m
Core Size: HQ

Geological Borehole Log: RAV-09-026

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
SS= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery		RQD		Fractures		Alt'n & Weath.	Hardness		G.P.L. Corrected			Intervals Logged				Samples (Driller's Depths)			Description
					Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage		Prefix	Core Quailty	From (m)	To (m)		Lithology	Interval Length	Core Loss	Strat	Number	From (m)	To (m)	
														0.00	12.31	OVERBURDEN	OVBDN	12.20		OVBDN				0-12.31m overburden, casing at 15.0m
1	1	12.20	14.90	2.70	2.44	90.37%	15	1.21	25	14	W6	R5	3	12.31	14.75	SANDSTONE	sst	2.44						sst, light grey, m-cg, massive, joints 80-90TCA, two at 50TCA, one at 35TCA, abundant slt stringers, more spars at bottom, one slt clast at 13.3m
2	1,2	14.90	18.00	3.05	3.11	101.97%	17	2.60	25	14	W6	R5	4	14.75	17.86	SANDSTONE	sst	3.11						sst, light grey, cg, massive joints ~90TCA, 4 at 45TCA
3	2,3	18.00	21.00	3.05	2.96	97.05%	10	2.62	25	15	W6	R5	4	17.86	20.82	SANDSTONE	sst	2.96						sst, light grey, v.cg, massive joints ~85-90TCA
4	3,4	21.00	24.10	3.05	2.59	84.92%										#N/A								
					2.03		5	2.03	25	15	W6	R4	4	20.82	22.85	SANDSTONE	sst	2.03			28021	22.89	23.03	sst, light grey,v.cg, massive, joints 85-90TCA
					0.56		-	-	-	-	-	-	-	22.85	23.05	COAL	coal	0.20		Seam 3U	28022	23.03	23.23	black coal, dull/bright(60/40), soft, breaks w/ fingers, no gas, no sulphides, smelly
														23.05	23.41	COAL	coal	0.36		Seam 3U	28023	23.23	23.59	black cosl, dull/bright(70/30). 1cm pieces, hard no gas, no sulphides, but smelly
														23.41	23.87	LOST CORE	LOST CORE	0.46		Seam 3U	ns			
5	4	24.10	27.10	3.05	2.49	81.64%										#N/A								
					0.15		-	-	-	-	-	-	-	23.87	24.02	COAL	coal	0.15		Seam 3U	28023	23.59	23.74	as above
					0.56		-	-	-	-	-	-	-	24.02	24.58	COAL	coal	0.56		Seam 3U	28024	24.25	24.81	black coal. Bright/dull(70/30), hard, a little heavy, py blebs (<1%)
														24.58	25.27	LOST CORE	LOST CORE	0.69		Seam 3U	ns			Lost Core - prbly coal
					0.45		12	0.00	25	6	W6		4	25.27	25.72	SILTSTONE	slt	0.45			28025	24.81	25.26	grey slt, massive but one 2cm coal(hard, black, cleats, no gas) some calc veinslets
					0.27		-	-	-	-	-	-	-	25.72	25.99	COAL	coal	0.27		Seam 3L	28026	25.26	25.53	hard, black, bright dull (70.30), py blebs (<1%), no gas, cleats visible
					0.60		-	-	-	-	-	-	-	25.99	26.59	COAL	coal	0.60		Seam 3L	28027	25.53	26.13	soft, hard, black coal, bright 60%
					0.46		7	0.15	26	8	W6	R5	4	26.59	26.74	SILTSTONE	slt	0.15			28028	26.13	26.28	grey slt, massive
														26.74	27.05	SILTSTONE	slt	0.31						
6	4,5	27.10	30.20	3.05	3.42	112.13%										#N/A								
					1.72		16	1.09	25	11	W6	R5	4	27.05	28.77	SILTSTONE	slt	1.72						grey slt, massive joints ~90TCA, 7 at 45TCA
					2.22		15	0.98	25	12	W6	R5	4	28.77	30.99	SANDSTONE	sst	2.22						gradual coarsending/lightening from above slt to light grey fg, sst, massive joints 90TCA, 2 at 25TCA
7	5,6	30.20	33.20	3.05	3.07	100.66%	9	3.01	25	15	W6	R5	4	30.99	34.06	SANDSTONE	sst	3.07						sst, light grey, f-mg, massive, joints 70-90TCA
8	6	33.20	36.30	3.05	2.72	89.18%										#N/A								
					1.18		11	0.52	25	10	W6	R5	4	34.06	34.28	SANDSTONE	sst	0.22			28029	34.24	34.38	sst, as above, 40cm long 30tca joint
					0.65		-	0.00	-	-	-	-	-	34.28	34.69	COAL	coal	0.41		Seam 2	28030	34.38	34.79	friable to semi solid dk brown boack coal, dull 80%, >1% carb
														34.69	34.93	SANDY SHALE	Shale	0.24			28030	34.79	35.03	logged as coal but interpreted as shale from geophysical log combined with above gives a sample with 70% ash.
														34.93	35.15	SILTSTONE	slt	0.22			28031	35.03	35.25	grey slt massive
					0.89		4	0.85	25	13	W6	R5	4	35.15	36.04	SILTSTONE	slt	0.89						grey slt massive
9	6,7	36.30	39.30	3.05	3.16	103.61%										#N/A								
					1.02		5	0.98	25	14	W6	R5	4	36.04	37.06	COALY MUDSTONE	ib	1.02						ib slt grading quickly (laminated+thin beds) into light grey m-cg sst
					2.14		>25	1.69	25	13	W6	R5	4	37.06	39.20	SANDSTONE	sst	2.14						sst as above, joints at 9TCA except 3-45TCA joints 30cm from bottom, bottom 20cm is broken zone
10	7,8	39.30	42.40	3.05	3.12	102.30%	14	2.86	25	15	W6	R5	4	39.20	42.32	SANDSTONE	SST	3.12						sst light grey, m0ch, massive joints ~90TCA, one Is at 45TCA, 3cm slt bed at 41.5m
11	8	42.40	45.40	3.05	3.20	104.92%	>25	2.09	25	13	W6	R5	4	42.32	45.17	COALY MUDSTONE	IB	2.85						sst as above ib w/ laminated slt beds growing increasingly more silty to the bottom, 2cm of mdst at btm joints ~90TCA, one at 35TCA
														45.17	45.71	COAL	Coal	0.54		Seam 2A	ns			LOST CORE: CoalSeam on Geophysical Log
12	9	45.40	48.50	3.05	2.81	92.13%										#N/A								
					1.59		20	1.30	10	9	W6	R4	4	45.71	47.30	SILTSTONE	slt	1.59						med brown, fg, slt, top 3cm is bright coal, mod gassy, ib w/ slt, joints 60-75TCA w/ sl, calc coal stringers visible
					1.22		4	0.87	20	11	W6	R6	4	47.30	48.52	SANDSTONE	sst	1.22						light grey to brown, cg-v.cg, angular, joints ~85TCA, most w/ plant materials, few coal lenses ~90TCA near bottom, ~30cm long vertical joint/fracture at top
13	9,,10	48.50	51.50	3.05	3.07	100.66%	14	2.74	20	13	W6	R6	4	48.52	51.59	SANDSTONE	sst	3.07						light to brown, cg-v.cg, sst, angular grain, mostly qtz and some coal stringers, joints/fractures mostly 90 TCA w/ coal, many coal lenses/stringers ~90TCA, ~10cm mud layer at 50.0m
14	10,11	51.50	54.60	3.05	3.04	99.67%	13	2.70	25	14	W6	R6	4	51.59	54.63	SANDSTONE	sst	3.04						sst, as above, vertical fracture at top ~20cm long, other joints ~75-90TCA, all joints w/ plant material coal lenses ~85TCa, ~40TCA joint @54.0m, 54.15m, massive, v.cg.
15	11	54.60	57.60	3.05	3.05	100.00%	4	3.05	25	15	W6	R6	4	54.63	57.68	SANDSTONE	sst	3.05						sst, as above, v.cg, massive, angular, euhearal grains upto 2-3mm, mostly qtz and white/soft mineral coal stringers/lenses ~90TCA, joints/fractures ~90TCA w/ plant materials
16	11,12A	57.60	60.70	3.05	3.02	99.02%	17	2.47	25	13	W6	R6	4	57.68	60.70	SANDSTONE	sst	3.02						sst, as above, massive w/ coal lenses ~80TCA, coal lenses increases from 58.35m, color changes to light brown from 58.35m, also more fractures from same depth
17	12A,B	60.70	63.70	3.05	3.15	103.28%	13	2.96	25	15	W6	R6	4	60.70	63.70	SANDSTONE	sst	3.00						light brown-grey, cg-v.cg, sst w/ coal stringers ~80TCA, joints mostly ~90TCA, two low angle 925-35TCA) joints @61.7m, and 62.0m, all joints w/ coal/plant materials
18	12B	63.70	66.80	3.05	3.03	99.34%	11	2.56	25	15	W6	R6	4	63.70	66.73	SANDSTONE	sst	3.03						sst, as above, light brown-grey, cg-v.cg, joints 60-85TCA, many w/ coal stringers, coal stringers 70-85TCA 40cm long ~10TCA joint from 66.4-bottom, another vertical fracture at 64.5m (0.5m long)
19	14	66.80	69.80	3.05	2.85	93.44%										#N/A								
					1.45		6	1.32	25	13	W6	R6	4	66.73	68.15	SANDSTONE	sst	1.42						sst as above, joints and coal/slt stringers 75TCA, occational calc veins
					0.90		6	0.63	10	8	W6	R4	4	68.15	68.95	SILTSTONE	slt	0.80						dark brown-grey, fg, slt, small coal seam near top, thin coal lenses ~85TCA, ~5cm mud layer at bottom
														68.95	69.05	SILTSTONE	slt	0.10			28032	69.20	69.30	dark brown-grey, fg, slt, small coal seam near top, thin coal lenses ~85TCA, ~5cm mud layer at bottom
					0.50		>25	-	10	4	W6	R1	4	69.05	69.55	COAL	coal	0.50		Seam 1	28033	69.30	69.80	blk, bright ~95%, light, little gas, sl joints, trace calc and py
														69.55	69.75	LOST CORE	LOST CORE	0.20		Seam 1	ns			Lost Core: prbly Coal and carb sh
20	14,15	69.80	72.80	3.05	2.51	82.30%										#N/A								
					0.67		>25	-	10	5	W6	R1	4	69.75	70.42	COAL	coal	0.67		Seam 1	28034	69.80	70.47	coal. Blk, light, little gas, trace py and cald, sl joints, ~95 bright, possible bedding ~50TCA, 30TCA clac joints w/py
														70.42	70.80	LOST CORE	LOST CORE	0.38		Seam 1	ns			Lost Core: prbly Coal
					1.84		>25	1.21	25	10	W6	R5	4	70.80	72.64	SILTSTONE	slt	1.84			28035	70.47	70.57	med grey, fg, slt, top 1m is med-highly fractured w/ vertical, low angle (40-50TCA) and 85TCA joints, below ~90TCA, possible 90TCA bedding w/ med layer, near top trace py
														72.64	72.77	LOST CORE	LOST CORE	0.13						
21	15.16	72.80	75.90	3.05	3.10	101.64%	>25	1.90	10	13	W6	R4	4	72.77	75.87	LAMINITE	ib slt	3.10						med-dark grey, fg, slt, interbedded w/ mg sst, 50-65TCA joints w/ sl near top, all others are ~75-85TCA w/ sl, ~74.1m vertical joint w/ calc
22	16	75.90	78.90	3.05	2.97	97.38%	17	2.55	10	12	W6	R4	4	75.87	78.84	LAMINITE	ib slt	2.97						slt, ib w/ sst as above, joints ~70TCA w/ sl, calc vein, coal stringers within sst ~70TCA, occational low angle ~30TCA calc vein, joints within sst w/ coal/plant materials
23	16,17	78.90	82.00	3.05	3.05	100.00%	25	2.13	10	10	W6	R4	4	78.84	81.89	SILTSTONE	slt	3.05						med-dark grey, fg, massive slt, near top 30-40 low angle joints. Others 80-90TCA, all w/ sl, thin coal lenses ~85TCA
24	17,18	82.00	85.00	3.05	3.12	102.30%	>25	2.52	10	10	W6	R5	4	81.89	85.01	LAMINITE	ib slt	3.12						med0dark grey, fg, massive slt in w/ light grey mg-cg sst, joints 60-85TCA, sl within slt, plant material/ coal within sst, highly fractured zone @ 83.0m and near bottom
25	18,19	85.00	88.10	3.05	3.08	100.98%	17	2.58	25	13	W6	R4	4	85.01	88.09	LAMINITE	ib slt	3.08						slt ib w/ sst, as above, joints mostly 45-80TCA, ~10TCA fracture at 87.20m w/ coal, calc vein near bottom slt unit
26	19	88.10	91.10	3.05	3.03	99.34%										#N/A								
					1.28		7	1.20	25	15	W6	R4	4	88.09	89.37	SILTSTONE	slt	1.28						blk, fg, massive w/ white, angular-sub angular clasts, 2cm coal seam at 88.53m, 65TCA, occational calc. vein at same angle
					1.75		6	1.75	25	15	W6	R7	4	89.37	91.12	UNDIFFERENTIATED VOLCANICS	volc	1.75		Volc				green volc w/ massive calc,qtz veins
27	19.2	91.10	92.70	1.50	1.58	105.33%	6	1.55	25	15	W6	R7	4	91.12	92.70	UNDIFFERENTIATED VOLCANICS	volc	1.58						green vc green vc green volc as above
																								EOH 92.70m

Geological Borehole Log: RAV-09-027

Client: CJV
Project: Raven
Logged By: Henry Kim & Amber Brown

Hole Number: RAV-09-027
Date Hole Started: 18-Jul-09
Date Hole Finished: 20-Jul-09
Hole Orientation: -90

Total Hole Depth: 180.02
Depth of Casing: 36.50 m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Intervals Logged Lithology	Intervals Logged Interval Length	Intervals Logged Core Loss	Intervals Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	32.89	OVERBURDEN	OVBDN					0.00	32.89	OB
														32.89	33.06	LOST CORE	Lost Core					32.89	33.06	Lost due drill set up
1	1	36.60	39.30	2.70	1.95	72.22%																		
							17	62.05%	25	12	W6	R6	3	33.06	35.01	SANDSTONE	Sst	1.95						Light grey f-mg massive Sst. All joints ~90°.
														35.01	35.62	LOST CORE	Lost Core	0.61	0.61					*Rock Loss*
2	1 & 2	39.30	42.35	3.05	3.19	104.59%																		
							16	78.37%	25	12	W6	R6	3	35.62	38.81	SANDSTONE	Sst	3.19						Sst as above. Most joints at ~90°, 2 at ~45°.
3	1 & 2	42.35	45.38	3.03	3.08	101.65%																		
							13		25	13	w6	R6	4	38.81	41.79	SANDSTONE	Sst	2.98						V.fg light grey massive Sst. Joints ~90°. One 5mm carb vein (90°). Sst coarsens in some areas like ~45m. This area has some Sltst laminations and plant spars. This area becomes slightly broken, 45 & 90°. And greater silt content.
														41.79	41.84	SANDSTONE	Sst	0.05			028036	45.25	45.30	
							0	0.00%			W6	R5	4	41.84	41.89	MUDSTONE	Mdst	0.05			028036	45.30	45.35	Dk brown Mdst w/ 1cm coal (shiny 90, dull 10) strings,
4	3	45.38	48.43	3.05	2.73	89.51%																		
														41.89	42.03	LOST CORE	Lost Core	0.14	0.14		ns			*Coal Loss*
														42.03	42.23	COAL	Coal	0.25		Seam 5	028037	45.35	45.60	Coal. Black (90% shiny, 10% dull). Friable, sort of clayey feel. Py blebs (<1%). Kind of heavy. Mini fr (not cleats) w/ finely laminated calc (<1%).
														42.23	42.33	MUDSTONE	Mdst	0.10			028038	45.60	45.70	Top of Parting
							21	84%	20	11	W6	R4	4	42.33	44.32	MUDSTONE	Mdst	1.99			ns			Dk brown Mdst. Massive. Re-healed fractures/cracks ? Joints 70-90°.
														44.32	44.42	MUDSTONE	Mdst	0.10			028039	48.11	48.21	Bottom of Parting
														44.42	44.71	COAL	Coal	0.29		Seam 5	028040	48.21	48.50	Black coal (90%-10%, shiny-dull). Friable, sort of clayey feel. No sulphides.
														44.71	44.81	LOST CORE	Lost Core	0.10	0.10		ns			*Coal Loss*
5	3 & 4	48.43	51.48	3.05	3.17	103.93%																		
														44.81	45.06	COAL	Coal	0.25		Seam 5	028040	48.50	48.75	Light.
														45.06	45.16	SANDSTONE	Sst	0.10			028041	48.75	48.86	Floor Sample from below unit
							>25	21.23%	25	8	W6	R6	4	45.16	47.98	SANDSTONE	Sst	2.82						Sst - light-med grey, mg-cg massive. Joints all orientations.
6	4 & 5	51.48	54.53	3.05	3.05	100.00%																		
							>25	78.36%	25	10	W6	R6	4	47.98	51.03	SANDSTONE	Sst	3.05						Sst as above. Joints range 45-90°. 2 low-angle calc-healed fractures each ~50. 00 cm long. Couple of 70° calc-healed fract
7	5 & 6	54.53	57.58	3.05	3.22	105.57%																		
							>25	66%	25	12	W6	R6	4	51.03	54.25	SANDSTONE	Sst	3.22						Sst - light grey, cg massive. Joints 45-90°.
8	7	57.58	60.63	3.05	3.04	99.67%																		
							12	84.21%	25	13	W6	R6	4	54.25	57.29	SANDSTONE	Sst	3.04						Sst as above. Joints mostly at ~90°. 2 at 45°. Trace calc & Sltst stringers.
														57.29	57.30	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
9	8	60.63	63.68	3.05	2.90	95.08%																		
							20	90.34%	25	13	W6	R6	4	57.30	60.20	SANDSTONE	Sst	2.90						Sst as above. But coarsens greatly at btm 1.0m. Joints ~90°. Sltst-COAL stringers.
														60.20	60.35	LOST CORE	Lost Core	0.15	0.15					*Rock Loss*
10	8 & 9	63.68	66.73	3.05	3.04	99.67%																		
							19	92.43%	25.00	14.00	W6	R6	4.00	60.35	63.39	SANDSTONE	Sst	3.04						Sst - v.cg light - med grey. Massive. Most joints ~85°. 4 at 45°. At 65.66m a calcite string/fracture zone (10.00 cm). Mostly hard, solid core.
														63.39	63.40	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
11	9/10	66.73	69.78	3.05	3.01	98.69%																		
							0	100.00%	-	-	W6	R6		63.40	63.66	SANDSTONE	Sst	0.26						Sst - v.cg med-dk grey. Massive.
														63.66	63.76	SANDSTONE	Sst	0.10						Roof Sample from above Sst
							4	0.00%						63.76	63.94	COAL	Coal	0.18			28043	67.16	67.34	Black, shiny-dull (60%-40%) coal. Light in weight. Some friable and calyey feeling. Trace py (<0.5%). No cleating. No degassing.
														63.94	64.04	MUDSTONE	Mdst	0.10						Floor Sample from below Mdst
							16	65.05%	25.00	14.00	W6	R5	4.00	64.04	65.80	MUDSTONE	Mdst	1.76						Dk grey-brown Mdst. Joints ~70-90°. 2 shallow (~10°) joints. w/ SS surfaces.
							4	68.85%	25	13	W6	R6	4	65.80	66.41	SANDSTONE	Sst	0.61						Sst - med grey, cg massive. At 69.43m a clayey fracture fault (?) ~50°.
12	10	69.78	72.83	3.05	3.09	101.31%																		
							16	85.76%	25	14	W6	R6	4	66.41	69.50	SANDSTONE	Sst	3.09						Sst- med grey cg massive. All joints ~85°. But 1~0°. Silty stringers (83°). Carb veins (90, 45°).
13	10 /11	72.83	75.88	3.05	2.97	97.38%																		
							12	68.71%	25	13	W6	R6	4	69.50	71.13	SANDSTONE	Sst	1.63						Sst as above. Joints at 90°; one at 55°. 90° Sltst stringers.
														71.13	71.20	COAL	Coal	0.07			28155	71.13	71.20	Black shiny-dull (75-25) coal. Light in weight. Py blebs (<1%).
														71.20	72.47	SANDSTONE	Sst	1.27						Sst as above. High % Sltst in 20cm below coal.
14	11/12	75.88	78.93	3.05	3.07	100.66%																		
							1							72.47	75.54	SANDSTONE	Sst	3.07						At 76.15m is a 45° calc-healed fractured which shows slightly different Sst lithologies in colour (one more grye, one more blue/white grey). Sst m.cg light grey, massive. Most joints ~85°. 3 at 45°. One at ~30°.
15	11	78.93	81.98	3.05	3.08	100.98%																		
							14	90.26%	25	14	W6	R6	4	75.54	78.62	SANDSTONE	Sst	3.08						Sst -m-cg light grey, massive. All joints 90° but 1 is 40° w/ SS.
16	11/12	81.98	85.03	3.05	2.86	93.77%																		
							6	100.00%	25	15	W6	R6	4	78.62	80.04	SANDSTONE	Sst	1.42						Sst - cg light grey, massive. Joints ~85°. 90° Sltst stringers.
														80.04	80.14	SANDSTONE	Sst	0.10			028045	83.42	83.52	Roof Sample from above Sst
								0.00%						80.14	80.85	COAL	Coal	0.71		Seam 4	028046	83.52	84.23	Black shiny-dull (75%-25%) coal. Light, hard. Trace py (<1%).
														80.85	80.95	LOST CORE	Lost Core	0.10	0.10	Seam 4	ns			*Coal Loss*

															80.95	81.05	SANDSTONE	Sst	0.10			028047	84.23	84.33	Floor Sample from below Sst
							2	100.00%	25	15	W6	R6	4	81.05	81.58	SANDSTONE	Sst	0.53						Sst - as above
														81.58	81.67	LOST CORE	Lost Core	0.09	0.09					*Rock Loss*
17	12/13	85.03	88.08	3.05	2.99	98.03%																		
							3	97.32%	25	15	W6	R6	4	81.67	84.66	SANDSTONE	Sst	2.99						Sst as above. Joints at ~90°; one at 45°.
														84.66	84.72	LOST CORE	Lost Core	0.06	0.06					*Rock Loss*
18	13	88.08	91.13	3.05	3.00	98.36%																		
							8	92.00%	25	15	W6	R6	4	84.72	87.72	SANDSTONE	Sst	3.00						Sst as above. 60cm area of slightly higher silt %, w/ fossils. At 88.40m, a 7cm friable Clyst. Joints at ~90°; one at 30° w/ calcite.
														87.72	87.77	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*
19	13/14	91.13	94.18	3.05	3.04	99.67%																		
							6	100.00%	25	15	W6	R6	4	87.77	90.81	SANDSTONE	Sst	3.04						Light grey, cg-v.cg, massive Sst, all joints ~85° TCA, black, subrounded-rounded clasts w/ small coal lens ~70° TCA, thin calc vein near bottom ~40° TCA, mg-cg near bottom
														90.81	90.82	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
20	14/15	94.18	97.23	3.05	2.92	95.74%																		
							7	95.89%	25	15	W6	R6	4	90.82	93.74	SANDSTONE	Sst	2.92						Sst as above, massive, most joints ~75-85 TCA, ~35° TCA joint with a ~2cm calc vein w/ py @96.1m, ~40° TCA veins at bottom, thin calc veins from 95.8m to bottom, coal stringers ~96.0m (85° TCA), some joints w/ plant material
														93.74	93.87	LOST CORE	Lost Core	0.13	0.13					*Rock Loss*
21	15,16	97.23	100.28	3.05	3.02	99.02%																		
							10	97.02%	25	15	W6	R6	4	93.87	96.89	SANDSTONE	Sst	3.02						Massive Sst as above, 40cm vertical joints near top, 15° TCA SS joints w/ calc @ 98.10m, thin Sltst(?) bed/stringers, ~85° TCA calc veins, thick calc veins ~15° TCA and fractures, highly fractured bottom
														96.89	96.92	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*
22	16	100.28	103.33	3.05	3.04	99.67%																		
							>25	70.07%	25	13	W6	R6	4	96.92	99.96	SANDSTONE	Sst	3.04						Sst, as above, med fractured, joints with plant materials, 65-85° TCA, vertical joints w/ calc @ 101.0m, near top ~80° TCA calc vein w/ py
														99.96	99.97	LOST CORE	Lost Core	0.01	0.01					*Rock Loss*
23	16,17	103.33	106.38	3.05	2.98	97.70%																		
							>25	83.89%	20	12	W6	R6	4	99.97	102.95	SANDSTONE	Sst	2.98						Massive Sst as above, Sltst stringers ~60TCA, low angle stringers, calc veins from 105.0m (~15° TCA),. bottom 1m is highly fractured w/ coal and calc veins
														102.95	103.02	LOST CORE	Lost Core	0.07	0.07					*Rock Loss*
24	17,18	106.38	109.43	3.05	3.00	98.36%																		
							>25	88.00%	20	11	W6	R6	4	103.02	106.02	SANDSTONE	Sst	3.00						Massive Sst as above, highly fractured top, joints 50-75° TCA, joints w/ calc vein @ 108.60m w/ sulphide possible coal stringers near top ~5cm
25	18,19	109.43	112.48	3.05	3.10	101.64%																		*Rock Loss*
							>25	97.74%	20	12	W6	R6	4	106.02	109.12	SANDSTONE	Sst	3.10						Massive Sst, as above, joints 60-75° TCA, highly fractured zone ~111.0-111.75m, many veins and fractured rock frags, med-fractured and low angle joints near bottom
26	19	112.48	115.53	3.05	3.02	99.02%																		
							12	92.72%	25	13	W6	R6	4	109.12	112.14	SANDSTONE	Sst	3.02						Massive Sst, as above, ~10° TCA joints near top and 113.40m, other joints ~65° TCA, some w/ plant materials trace sulphides within some joints, thin coal lenses near bottom ~80° TCA
														112.14	112.17	LOST CORE	Lost Core	0.03	0.03					
27	19,20	115.53	118.58	3.05	2.68	87.87%																		
							4.00	100.00%	25	15	W6	R6	4	112.17	113.56	SANDSTONE	Sst	1.39						Massive Sst as above, joints ~45-60° TCA, coal stringers ~60° TCA near bottom
														113.56	113.66	SANDSTONE	Sst	0.10			03233	113.63	113.73	
														113.66	113.73	LOST CORE	Lost Core	0.07	0.07		ns			*Rock loss*
							20	-	10	5	W6	R1	4	113.73	114.63	COAL	COAL	0.90		Seam 3	03234	113.73	114.63	blk, ~95% bright coal, little gas, trace py, calc, joints ~75-80° TCA w/ SL, light
														114.63	114.73	LOST CORE	Lost Core	0.10	0.10	Seam 3	ns			*Lost Coal*
														114.73	114.83	SILTSTONE	Sltst	0.10			03235	114.63	114.73	
							8	40.82%	10	5	W6	R4	4	114.83	115.22	SILTSTONE	Sltst	0.39						Dark grey, fg, massive Sltst, thin fractures running ~60° TCA in both directions, calc veins ~75-85° TCA
28	20,21	118.58	121.63	3.05	2.93	96.07%																		
							16	92.15%	10	13	W6	R6	4	115.22	118.15	LAMINITE	IB Sst	2.93						Med grey w/ green hue, fg-mg, Sst IB w/ thin Sltst (65-70° TCA), joints also same direction, vertical fracture ~119.50m w/ coal and calc, low angle ~15° TCA joints w/ SL at top, thick oil like bitumen found along joints at top
														118.15	118.27	LOST CORE	Lost Core	0.12	0.12					*Rock loss*
29	21,22	121.63	124.68	3.05	3.00	98.36%																		
							17	92.46%	10	14	W6	R6	4	118.27	121.27	LAMINITE	IB Sst	3.00						Sst IB w/ Sltst, bedding 65-90° TCA, occational Sltst clasts, rounded, 1-2cm, bedding angle changes t0 ~50TCA 40cm from the bottom, few Sltst clasts and some w/ fg py, vertical joints at bottom
														121.27	121.32	LOST CORE	Lost Core	0.05	0.05					*Rock loss*
30	22	124.68	127.74	3.06	3.07	100.33%																		
							23	76.39%	10	12	W6	R6	4	121.32	124.39	LAMINITE	IB Sst	3.07						Sst IB w/ Sltst, as above, bedding changes from 65-85° TCA, Sltst layers from ~mm to 3cm, ~35° TCA joints at/near top w/ SS and clac perpendicular to bedding, other joints ~75-85° TCA, bottom 1.30m is solid core massive Sst, few calc filled joints ~vertical at bottom
31	23	127.74	130.79	3.05	2.92	95.74%																		
							1	100.00%	25	12	W6	R6	4	124.39	124.71	SANDSTONE	Sst	0.32						Light grey, mg-cg, Sst w/ Sltst and coal stringers, massive
														124.71	124.82	LOST CORE	Lost Core	0.11	0.11					Rock loss
							6	-	10	5	W6	R1	4	124.82	124.97	COAL	COAL	0.15			28156	124.82	124.97	blk, light little gas, ~95% bright, joints ~60° TCA w/ SL, trace calc and py
							20	816.33%	11	W6	R4	4		124.97	127.42	SILTSTONE	Sltst	2.45						Dark gery, fg, massive Sltst, most joints ~85° TCA, near top w/ SS, ~130.0m thick calc verin w/ ~20° TCA joints w/ SS
32	23,24	130.79	133.84	3.05	3.02	99.02%																		
							16	90.40%	10	13	W6	R4	4	127.42	130.44	SILTSTONE	Sltst	3.02						dark grey, fg, massive Sltst, 40TCA joints w/ 2cm thick calc verin @ 131.75m, most joints ~85 TCA and 50° TCA w/ SL, possIBle bedding ~80° TCA, possible rip-up clasts/ripple marks near bottom
														130.44	130.47	LOST CORE	Lost Core	0.03	0.03					
33	24,25	133.84	136.89	3.05	3.02	99.02%																		
							20	57.28%	25	13	W6	R4	4	130.47	133.49	SILTSTONE	Sltst	3.02						Light-med grey, fg-mg, Sltst IB w/ Sst, bedding 75-80° TCA, most joints ~75-80° TCA, some w/ plant materials occational thin Sst beds visible

															133.49	133.52	LOST CORE	Lost Core	0.03	0.03					
34	25	136.89	139.94	3.05	3.05	100.00%																			
							20	94.10%	25	15	W6	R4	4	133.52	136.57	SANDSTONE	Sst	3.05						Medium-dark grey, fg, massive Sltst, most joints are 75-85° degree TCA, some with plant materials, occational thin Sst beds visible.
35	26	139.94	142.99	3.05	3.03	99.34%																			
															136.57	139.60	SILTSTONE	Sltst	3.03						Sltst IB with Sst as above. All joints are 75˚ -85˚ TCA. Calcite vein @ 140.50 m, 80° TCA, possible bedding 75˚ -80˚ TCA.
															139.60	139.62	LOST CORE	Lost Core	0.02	0.02					*Rock loss*
36	26,27	142.99	146.04	3.05	2.95	96.72%																			
							19	89.15%	25	14	W6	R4	4	139.62	142.57	SILTSTONE	Sltst	2.95						Sltst as above, massive, joints ~70-80° TCA, 145.4-145.80m highly fractured w/ SS
														142.57	142.58	LOST CORE	Lost Core	0.01	0.01					*Rock loss*
37	27,28	146.04	149.09	3.05	3.01	98.69%																			
							8	100.00%	25	15	W6	R4	4	142.58	145.59	SILTSTONE	Sltst	3.01						Massive Sltst as above, joints ~75-85° TCA, coal stringers ~85° TCA near bottom
														145.59	145.63	LOST CORE	Lost Core	0.04	0.04					*Rock loss*
38	28	149.09	152.14	3.05	3.00	98.36%																			
							7	100.00%	15	13	W6	R4	4	145.63	147.31	SILTSTONE	Sltst	1.68						Med-dk grey fg massive. Joints ~85°. Calc vein near top ~90°. Coal lenses near bottom ~90°.
														147.31	147.41	SILTSTONE	Sltst	0.10			03236	147.31	147.41	
							>25	46.72%	25.00	10	w6	R1	4	147.41	148.63	COAL	Coal	1.22		Seam 1	03237	147.41	148.63	Coal 95% bright. Little gas. Light. Trace py/calc. Mostly solid core.
														148.63	148.69	LOST CORE	Lost Core	0.06	0.06	Seam 1	ns			*Coal Loss*
39	29	152.14	155.19	3.05	3.04	99.67%																			
															148.69	148.95	LOST CORE	Lost Core	0.26	0.26	Seam 1	ns			*Coal Loss*
															148.95	149.50	SHALY COAL	Shaly Coal	0.55		Seam 1	03238	148.94	149.49	After viewing core pictures, Inserted parting into geological log to match to geophysical density/gamma log. This interval was originally logged as coal.
							>25	13.27%	25	10	W6	R1	4	149.50	150.10	COAL	Coal	0.60		Seam 1	03239	149.49	150.09	Black coal 95% bright. No degassing. Light in weight. Py blebs (1%). Mostly solid, just in <10cm
														150.10	150.25	CARBONACEOUS MUDSTONE	Carb Sh	0.15		Seam 1	03240	150.09	150.24	
														150.25	150.73	COAL	Coal	0.48		Seam 1	03240	150.24	150.72	
														150.73	151.39	COAL	Coal	0.66		Seam 1	03241	150.72	151.38	
														151.39	151.45	COAL	Coal	0.06		Seam 1	03242	151.38	151.44	
														151.45	151.60	CARBONACEOUS MUDSTONE	Carb Sh	0.15		Seam 1	03242	151.44	151.59	
														151.60	151.99	COAL	Coal	0.39		Seam 1	03242	151.59	151.98	
40	29, 30	155.19	158.24	3.05	2.71	88.85%																			
															151.99	152.42	SHALY COAL	Shaly Coal	0.43		Seam 1	03243	151.98	152.41	
															152.42	152.74	COAL	Coal	0.32		Seam 1	03243	152.41	152.73	
															152.74	153.77	COAL	Coal	1.03		Seam 1	03244	152.73	153.76	
							>25	32.00%	25	11	W6	R1	4	153.77	154.07	SHALY COAL	Shaly Coal	0.3		Seam 1	03244	153.76	154.06	Coal as above. No degassing. Mostly light in weight except a little heavier in places where there
														154.07	154.47	SILTSTONE	Sltst	0.40			03245	154.06	154.46	After viewing core pictures, Inserted parting into geological log to match to geophysical density/gamma log. This interval was originally logged as coal.
														154.47	154.70	COAL	COAL	0.23			03246	154.46	154.69	
														154.70	154.78	LOST CORE	Lost Core	0.08	0.08		ns			*Coal Loss*
41	30, 31	158.24	161.45	3.21	3.21	100.00%																			
															154.78	154.84	SILTSTONE	Sltst	0.06			03247	154.69	154.75	
							15	78.57%	25	13	W6	R6	4	154.84	155.62	SILTSTONE	Sltst	0.78						Dk grey Sltst, beddd slightly (~10%) w/ Sst.
							7	92.41%	25	15	W6	R6	4	155.62	157.99	SANDSTONE	Sst	2.37						V.cg conglomerate Sst. Browny-grey. Joints ~85°.
42	31	161.45	164.51	3.06	3.06	100.00%																			
							0	100.00%			W6	R6	4	157.99	158.09	SANDSTONE	Sst	0.10						V.cg Sst as above.
							2	100.00%	25	15	W6	R6	4	158.09	158.57	SILTSTONE	Sltst	0.48						Dk grey Sltst as above. Fossil bits.
							2	100.00%	25	15	W6	R6	4	158.57	159.05	SANDSTONE	Sst	0.48						V.cg Sst. 80° Sltst stringers. Grades abruptly to browner vesion 5cm from btm.
							2	100.00%	25	15	W6	R6	4	159.05	159.75	SILTSTONE	Sltst	0.70						Dk grey Sltst. Coal spars.
							1	58.82%	25	14	W6	R6	4	159.75	159.92	SANDSTONE	Sst	0.17						V.cg Sst w/ coaly spars/strings and large (0.5-1cm) qtz grains.
							4	85.71%	25	14	W6	R6	4	159.92	160.55	SILTSTONE	Sltst	0.63						Dk Sltst as above. 0.6cm coal vein in a 70° joint.
														160.55	161.05	SANDSTONE	Sst	0.50						After reviewing the Core Pictures, the core logger omited logging the last .49 of Sst
43	31, 32	164.51	167.57	3.06	3.06	100.00%																			
							11	88.56%	25	15	W6	R6	3	161.05	164.11	UNDIFFERENTIATED VOLCANICS	Vol Congl	3.06						Grey-brown volcanic conglomerate. 2cm coal band at 164.40m. Some dk spars, calc veinlets. Qtz and green rip-up clasts; increasing down section.
44	32, 33	167.57	170.79	3.22	3.22	100.00%																			
							20	47.83%	25	13	W6	R6	3	164.11	167.33	UNDIFFERENTIATED VOLCANICS	VOL	3.22						Green volc. Joints 40-85°.
45	33	170.79	173.84	3.05	2.97	97.38%																			
							9	93.60%	25	15	W6	R6	3	167.33	170.30	UNDIFFERENTIATED VOLCANICS	VOL	2.97						Green volc.
46	34	173.84	176.95	3.11	3.11	100.00%																			
							10	90.68%	25	15	W6	R6	3	170.30	173.41	UNDIFFERENTIATED VOLCANICS	VOL	3.11						Green volc.
47	34, 35	176.95	180.02	3.07	3.07	100.00%																			
							7	98.37%	25	15	W6	R6	3	173.41	176.48	UNDIFFERENTIATED VOLCANICS	VOL	3.07						Green volc.

Geological Borehole Log: RAV-09-028

Client: CJV
Project: Raven
Logged By: Henry, Farshad

Hole Number: RAV-09-028
Date Hole Started: 20-Jul-09
Date Hole Finished: 19-Sep-09
Hole Orientation: -90

Total Hole Depth: 530.00m
Depth of Casing: 53.34m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Intervals Logged Lithology	Intervals Logged Interval Length	Intervals Logged Core Loss	Intervals Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	53.30	OVERBURDEN	OVBDN	53.30						Overburden:
1	1	53.30	54.60	3.05	0.78	25.57%	>25	0.40	25	7	W5	R5	3	53.30	54.08	SILTSTONE	sltst	0.78		Royston				med to dark grey sltst, mainly massive, calcite filled fractures
														54.08	56.35	LOST CORE	Lost Core	2.27						Lost Core: Prbly sltst
2	1,2	54.60	57.60	3.05	2.84	93.11%	>25	0.93	25	10	W5	R5	3	56.35	59.19	SILTSTONE	sltst	2.84						as above, long fractures with very low angle to the core axis are also no tracealbe
3	2	57.60	60.70	3.05	2.92	95.74%	7	2.13	25	13	W5	R5	3	59.19	62.11	SILTSTONE	sltst	2.92						as above, core contains ~0-5TCA (~vertical) fractures which are also long and continuse
4	2,3	60.70	63.70	3.05	2.97	97.38%	>25	1.83	25	6	W5	R5	2	62.11	65.08	SILTSTONE	sltst	2.97						sltst as above but broken and crushed sections (>1m)
5	3,4	63.70	66.80	3.05	3.05	100.00%	>25	1.05	25	6	W5	R5	2	65.08	68.13	SILTSTONE	sltst	3.05						sltst as above with broken and crushed portions and long low angle fractures
6	4,5	66.80	69.80	3.05	2.87	94.10%	10	2.67	25	13				68.13	71.00	SILTSTONE	sltst	2.87						med to dark grey sltst mainly massive w/ calcite filled fractures
7	5,6	69.80	72.80	3.05	2.97	97.38%	4	2.87	25	15				71.00	73.97	SILTSTONE	sltst	2.97						med to dark grey sltst massive in most parts, some fracs filled with calcite
8	6	72.80	75.90	3.05	2.98	97.70%	>25	2.09	25	13				73.97	76.95	SILTSTONE	sltst	2.98						med to dark grey sltst more broken than above, massive, some calc in fractures
9	6,7	75.90	78.90	3.05	3.00	98.36%	>25	2.18	20	9	W5	R4	3	76.95	79.95	SILTSTONE	sltst	3.00						dark grey to black, fg, massive sltst, veins ~80 TCA, 1-3mm thick, occational shell frags, bottom ~25cm highly fractured into rubbles, joints ~75-90TCA
10	7	78.90	82.00	3.05	3.00	98.36%	15	2.69	20	15	W5	R4	3	79.95	82.95	SILTSTONE	sltst	3.00						sltst as above, ~90TCA joints, bottom 20cm Is mod-fractured w/ 30-40TCA joints, occational calc veins ~80-90TCA, 79.35-79.40m is sandy layer w/ 90TCA contact anble
11	8	82.00	85.00	3.05	3.00	98.36%	18	2.44	20	13	W5	R4	3	82.95	85.95	SILTSTONE	sltst	3.00						sltst as above, joints mostly ~90TCA, some 50-70TCA w/ sl, occational thin sandy beds, at bottom ~50TCA calc veins
12	8,9	85.00	88.10	3.05	3.00	98.36%	>25	0.80	10	6	W5	R3	2	85.95	88.95	SILTSTONE	sltst	3.00						sltst as above, near top thin sandy layers, overall mod-highly fractured, most joints ~90TCA, some lower (10-30TCA) among highly fractured zone - top 30cm, 86.20-86.70m, 87.20-88.50m, 0.35m vertical fracture @ 87.50m, occational calc veins ~70-90TCA
13	9,10	88.10	91.10	3.05	3.02	99.02%	>25	1.84	10	7	W5	R3	2	88.95	91.97	SILTSTONE	sltst	3.02						sltst as above, most joints 80-90TCA, some ~30-60TCA w/ sl, calc veinsin same orientations, 3-4cm sandy layers @89.60m, 90.30m
14	10,11	91.10	94.20	3.05	3.00	98.36%	>25	0.18	0	3	W5	R3	0	91.97	94.97	SILTSTONE	sltst	3.00						dark grey to black, fg sltst, overall highly fractured into small rubbles, few calc veins, joints from all degrees, monor soft gauges near bottom
15	11	94.20	97.20	3.05	3.00	98.36%	20	2.44	10	12	W5	R4	3	94.97	97.97	LAMINITE	ib sltst	3.00						sltst as above, massive, joints 75-90TCA w/sl, most w/ calc film layer along joints, ib w/ sst @ 94.65-94.95m, w/ ~20TCA calc veins, few sandy slt layers below
16	11,12	97.20	100.30	3.05	3.00	98.36%	>25	0.40	0	1	W5	R3	0	97.97	100.97	SILTSTONE	sltst	3.00						sltst as above, mostly rock frags, highly fractured w/ sl, calc films visible w/ possible gypsum(?) , bottom 40cm is solid core (20cm each), also sl joints w/ calc and gypsum(?)
17	12,13	100.30	103.30	3.05	3.00	98.36%	18	2.25	10	13	W5	R4	3	100.97	103.97	SILTSTONE	sltst	3.00						sltst as above, joints ~70-90TCA, some w/ slt, and calc, ~20cm sandy slt layer @ 102.60m, w/ calc
18	13	103.30	106.40	3.05	3.05	100.00%	>25	0.94	10	7	W5	R3	2	103.97	107.02	SILTSTONE	sltst	3.05						sltst as above, most joints ~70-90TCA, some low angle 20TCA joints near top and btm, bottom 10cm is highly fractured w/ sl and calc
19	13,14	106.40	109.40	3.05	2.75	90.16%	>25	1.28	10	6	W5	R5	1	107.02	109.77	SILTSTONE	sltst	2.75						med to dark grey sltst, massive and hard, calc filled fractures, ~<5% py was observed in the sltst, broken and crushed from 108.00-109.20m, upto 1cm thick calc in fractures
20	14,15	109.40	112.50	3.05	2.97	97.38%	>25	0.55	10	6	W5	R5	1	109.77	112.74	SILTSTONE	sltst	2.97						med to dark grey sltst, massive, ~5% py, calc in fractures, crused ~111.0-111.5m depth
21	15,16	112.50	115.50	3.05	2.85	93.44%	21	2.40	25	13	W5	R5	3	112.74	115.59	SILTSTONE	sltst	2.85						med to dark grey massive sltst, some gauge in 112.6m depth, and then solid below ~112.7m, with some angular fractures (40-90TCA)
22	16	115.50	118.60	3.05	2.98	97.70%	20	2.28	25	13	W5	R5	4	115.59	118.57	SILTSTONE	sltst	2.98						massive dark to med grey sltst, fractures mainly at the top of the run, some filled w/ calc, some with rough surface, some sl
23	17	118.60	121.60	3.05	3.01	98.69%	5	2.98	25	15	W5	R5	4	118.57	121.58	SILTSTONE	sltst	3.01						sltst as above, massive and solid core, very thin layer of calc infractures
24	17,18	121.60	124.70	3.05	3.00	98.36%	5	2.80	25	15	W6	R5	4	121.58	124.58	SILTSTONE	sltst	3.00						med to dark grey sltst, massive, thin layers of calc in fractures, core is solid and drilling is fast
25	18,19	124.70	127.70	3.05	2.92	95.74%	9	2.75	25	15	W6	R5	4	124.58	127.50	SILTSTONE	sltst	2.92						med to dark grey sltst, fractures some ~45TCA, mainly 80-90TCA, massive, calc in fractures, very thin
26	19	127.70	130.80	3.05	3.03	99.34%	>25	2.06	25	10	W5	R5	3	127.50	130.53	SILTSTONE	sltst	3.03						massive med to dark grey sltst w/ portions of local sst (<10cm), mainly broken at the bottom of the run ~130.4-130.8m, long 0 angle fracture w/ rough surface at ~129.0m depth
27	19,20	130.80	133.80	3.05	2.93	96.07%	>25	2.53	25	10	W5	R5	3	130.53	133.46	SILTSTONE	sltst	2.93						med to dark grey sltst w/ broken portion at the top of the run (130.8-131.0m), a set of ~parallel fractures, ~40-50TCA at ~133.4m depth w/ calc
28	20,21	133.80	136.90	3.05	2.88	94.43%	>25	1.78	25	13	W5	R5	3	133.46	136.34	SILTSTONE	sltst	2.88						med to dark grey sltst, massive w/ calc in most of the fractures, some of the frac are sl
29	21,22	136.90	139.90	3.05	2.96	97.05%	>25	1.53	25	10	W5	R5	2	136.34	139.30	SILTSTONE	sltst	2.96						med to dark grey sltst, massive, calc in fractures, first half of the run solid, second half broken w/ sl and some gauges
30	22,23	139.90	143.00	3.05	2.88	94.43%	>25	1.65	25	13	W5	R5	3	139.30	142.18	SILTSTONE	sltst	2.88						med-dark grey sltst as above, a set of parallel long, 0TCA (vertical) fractures w/ smooth surface at the bottom of the run and also noticeable, some gauges are also present
31	23	143.00	146.00	3.05	2.88	94.43%	16	2.25	25	14	W5	R5	4	142.18	145.06	SILTSTONE	sltst	2.88						med to dark grey sltst, massive, calc filled and sl fractures, frac mainly around the middle of the run
32	23,24	146.00	149.00	3.05	3.04	99.67%	10	2.30	25	15	W5	R5	4	145.06	148.10	SILTSTONE	sltst	3.04						med to dark grey massive sltst, a long zero angle (TCA) fracture w/ smooth surface is located at ~147.60m
33	24,25	149.00	152.10	3.05	2.95	96.72%	4	2.80	25	15	W5	R5	4	148.10	151.05	SILTSTONE	sltst	2.95						med to dark grey, massive sltst, some of the fracs are calc filled and closed
34	25	152.10	155.10	3.05	3.00	98.36%	3	2.90	25	15	W5	R5	4	151.05	154.05	SILTSTONE	sltst	3.00						sltst as above, a fractre at ~153.85m w/ ~35TCA is filled w/ sst and ~1cm thick
35	25,26	155.10	158.20	3.05	2.94	96.39%	11	2.55	25	14	W5	R5	4	154.05	156.99	SILTSTONE	sltst	2.94						med to dark grey sltst, broken from ~5cm at the beginning of the run, massive
36	26,27	158.20	161.20	3.05	3.00	98.36%	6	2.90	25	15	W5	R5	4	156.99	159.99	SILTSTONE	sltst	3.00						med to dark grey massive sltst, mainly solid some calc
37	27	161.20	167.30	3.05	3.08	100.98%	5	3.08	25	15	W5	R5	4	159.99	163.07	SILTSTONE	sltst	3.08						med to dark grey, massive sltst, w/ some calc in fractures, solid core
38	28,29	167.30	167.30	3.05	2.95	96.72%	9	2.75	25	15	W5	R5	4	163.07	166.02	SILTSTONE	sltst	2.95						med to dark grey, massive sltst, fractures filled w/ thin layers of calc
39	28,29	167.30	170.40	3.05	2.95	96.72%	9	2.75	25	15	W5	R5	4	166.02	168.97	SILTSTONE	sltst	2.95						sltst as above, some fractures filled w/ sst, fault gauge at ~169.7m depth, w/ ~40TCA is present
40	29,30	170.40	173.40	3.05	3.00	98.36%	2	3.00	25	15	W5	R5	4	168.97	171.97	SILTSTONE	sltst	3.00						sltst as above, w/ some calc filled fractures, sl, and some sst filled
41	30	173.40	176.50	3.05	3.00	98.36%	4	2.95	25	15	W5	R5	4	171.97	174.97	SILTSTONE	sltst	3.00						sltst as above w/ some fractures filled w/ sst and also sl, calc filled fractured
42	30,31	176.50	179.50	3.05	2.90	95.08%	10	2.60	10	15	W5	R4	3	174.97	177.87	SILTSTONE	sltst	2.90						dark grey to black, fg, massive sltst, joints ~30-40TCA w/ calc filled, sl, 177.50-177.80m is highly fractured, joints ~30-50TCA), w/ thick (2cm) calc veins and small veinlets, possibly w/ mg sandy layers
43	31,32	179.50	182.60	3.05	2.96	97.05%	5	2.70	25	15	W5	R4	3	177.87	180.83	SILTSTONE	sltst	2.96						sltst as above, fg, massive, all joints ~90TCA, except one vertical joint (~26cm) @ 180.50m, thin calc veinlets ~90TCA, possible ib w/ sandy sltst layer within top 1.5-20m
44	32,33	182.60	185.60	3.05	3.05	100.00%	9	3.68	20	13	W5	R4	4	180.83	183.88	SILTSTONE	sltst	3.05						sltst as above, fg, massive, all joints ~90TCA, calc veinlets ~75-90TCA, small (~1-5mm) bivalve fossils visible
45	33	185.60	188.70	3.05	3.03	99.34%	3	3.00	25	15	W5	R4	4	183.88	186.91	SILTSTONE	sltst	3.03						sltst as above, massive and solid core, all joints ~90TCA, calc veinlets ~30-80TCA
46	33,34	188.70	191.70	3.05	3.02	99.02%	12	2.60	20	14	W5	R4	3	186.91	189.93	SILTSTONE	sltst	3.02						sltst as above, massive, fg, solid core, 3 joints @90TCA, 5 joints ~35-50TCA, w/ calc film aong joint surface, rest joints fractured rocks, few calc and fossil frags, bottom 10cm highly
47	34,35	191.70	194.80	3.05	3.05	100.00%	8	2.98	20	14	W5	R4	4	189.93	192.98	SILTSTONE	sltst	3.05						dark grey to black, fg, massive slt, all joints ~75-80TCA, ~30TCA calc veinlet near top other ~50-85TCA
48	35	194.80	197.80	3.05	3.00	98.36%	>25	2.10	10	7	W5	R3	2	192.98	195.98	SILTSTONE	sltst	3.00						sltst as above, shell fossil found near top zones of highly fractured alre w/ sl, 196.0-196.5m, sl and soft mud mixed w/ crushed rock. Above and below this zone w/ 30-50TCA joints w/ calc and sl, rest is solid core
49	35,36	197.80	200.90	3.05	3.00	98.36%	5	2.91	25	15	W5	R4	4	195.98	198.98	SILTSTONE	sltst	3.00						sltst as above, solid core, massive, ~90TCA joints, thin calc veinlets and frags
50	36,37	200.90	203.90	3.05	3.00	98.36%	8	2.87	25	15	W5	R4	4	198.98	201.98	SILTSTONE	sltst	3.00						sltst as above, joints ~80-90TCA, some w/ calc veinlets, trace calc frags
51	37,38	203.90	207.00	3.05	3.01	98.69%	6	2.81	20	15	W5	R4	3	201.98	204.99	SILTSTONE	sltst	3.01						sltst as above, joints 80-9TCA, vertical fracture at top(~8cm), a few clac veinlets ~60-85TCA
52	38	207.00	210.00	3.05	3.02	99.02%	15	2.80	20	15	W5	R4	3	204.99	208.01	SILTSTONE	sltst	3.02						dark grey to black, fg, massive slt, most joints ~85-90TCA, two ~55-65TCA, highly fractured zone @ 208.40-208.55m, possible sl whthin the fractured zone, few calc veinlets and trace fossils
53	38,39	210.00	213.10	3.05	3.05	100.00%	8	3.00	20	15	W5	R4	4	208.01	211.06	SILTSTONE	sltst	3.05						sltst as above, massive, solid core, most joints 70-90TCA, a few calc veinlets and trace fossils visible
54	39,4	213.10	216.10	3.05	3.05	100.00%	12	2.59	20	10	W5	R4	3	211.06	214.11	SILTSTONE	sltst	3.05						sltst as above, small (~2cm) concretion w/ calc, veins near top, another concretion (?) @ 214.80m, most joints ~85TCA, few calc veinlets ~75-85TCA, horizontal fractures @ bottom
55	40	216.10	219.20	3.05	3.00	98.36%										#N/A								
					1.80		10	1.05	10	6	W5	R4	2	214.11	215.91	SILTSTONE	sltst	1.80						sltst as above, ~20TCA joints @217.0m, w/ sl, below is mod-highly fractured zone w/ low angle joints w/ sl, bottom ~5cm is soft mud layer ~90TCA contact
														215.91	217.90	LOST CORE	LOST CORE	1.99		Tsable				LOST CORE: Interval put in place to account for lost core above
					1.20		7	0.81	10	7	W5	R4	4	217.90	219.10	SANDSTONE	sst	1.20						light grey, mg-cg, sst, top is ib w/ sltst, ~90TCA, same angle joints, massive
56	40,41	219.20	222.20	3.05	2.97	97.38%	6	2.52	20	15	W5	R4	4	219.10	222.07	SANDSTONE	sst	2.97		Browns				light grey, mg-cg, massive sst, fractures ~85TCA, ~20TCA joint @220.80m, w/ sl, and possible calc, below ~vertical fracture/calc vein ~1.0m long
57	41,42	222.20	225.20	3.05	3.03	99.34%	2	3.03	25	15	W5	R5	4	222.07	225.10	SANDSTONE	sst	3.03						light grey, fg-mg, sst, fractures both low angle (15-20TCA), at ~223.2m and 225.7m depth w/ calc filled and sl
58	42,43	225.20	228.30	3.05	3.05	100.00%	4	2.95	25	15	W5	R5	4	225.10	228.15	SANDSTONE	sst	3.05						light grey, fg-mg sst, massive, fractures low angle, some closed, calc filled, paralle,
59	43	228.30	231.30	3.05	3.05	100.00%	2	3.05	25	15	W5	R5	4	228.15	231.20	SANDSTONE	sst	3.05						light grey, fg-mg sst, massive and solid core, some calc in irregular fractures, some organic materials
60	43,44	231.30	234.40	3.05	3.05	100.00%	1	3.05	25	15	W5	R5	4	231.20	234.25	SANDSTONE	sst	3.05						light grey, fg-mg, sst, very thin closed fractures, filled w/ calc, some organic frags present
61	44,45	234.40	232.40	3.05	3.00	98.36%	4	2.97	25	15	W5	R5	4	234.25	237.25	SANDSTONE	sst	3.00						light grey, fg-mg, sst, massive, some calc in fractures
62	45	232.40	240.50	3.05	2.98	97.70%										#N/A								
					0.30		0	0.30	-	15	W5	R5	4	237.25	237.55	SANDSTONE	sst	0.30						light grey, fg-mg, massive sst
					2.68		>25	2.33	25	13	W5	R5		237.55	240.23	CARBONACEOUS MUDSTONE	cbr sltst	2.68		Puntledge				dark grey massive sltst, broken in some portions (20cm at 234.0m)
63	45,46	240.50	243.60	3.05	2.98	97.70%	>25	2.08	25	13	W5	R5	4	240.23	243.21	CARBONACEOUS MUDSTONE	cbr sltst	2.98						dark grey massive sltst, some gagues at 241.5m, thin calc in frac
64	46,47	243.60	246.60	3.05	3.05	100.00%	3	3.00	25	15	W5	R5	4	243.21	246.26	SILTSTONE	sltst	3.05						dark grey massive sltst, some thin calc in colsed fracs, open fracs ~45TCA at 245.9m
65	47,48	246.60	249.60	3.05	3.00	98.36%	15	2.67	25	13	W5	R5	4	246.26	249.26	SILTSTONE	sltst	3.00						dark grey massive sltst, thin gauges at 249.4m (85-90TCA) depth

66	48	249.60	252.70	3.05	2.68	87.87%	>25	2.10	25	7	W5	R5	3	249.26	251.94	SILTSTONE	sltst	2.68							dark grey massive sltst, mainly broken at the seond half of the run from 251.0-252.7m
67	48.49	252.70	255.70	3.05	2.90	95.08%	>25	2.50	25	7	W5	R5	3	251.94	254.84	SILTSTONE	sltst	2.90							dark grey massive sltst, mainly broken at the top ~252.7-253.3m, then parallel angular ~35-45TCA fractures in the rest of the core
68	49.5	255.70	258.80	3.05	2.93	96.07%	>25	1.50	0	2	W5	R5	2	254.84	257.77	SILTSTONE	sltst	2.93							dark to med grey, massive sltst has ~4 joins in the first 1.55m of the run (from 255.7-257.25m), then the rest of the run is broken, crushed, and contains also large gauges, representing a possible fault zone, calc is also presnet in the fractures
69	50,51	258.80	216.80	3.05	2.90	95.08%	>25	0.25	0	2	W5	C3	1	257.77	260.67	SILTSTONE	sltst	2.90							med to dark grey sltst, broken, crushed, and contained large gauges representing a fault zone, calc is also present in the fault
70	51,52	216.80	264.90	3.05	2.93	96.07%	>25	2.20	25	13	W5	R5	4	260.67	263.60	SILTSTONE	sltst	2.93							med to dark grey sltst, massive, with thin calc in fractures and portions of sst (sst dike?)
71	52	264.90	267.90	3.05	3.03	99.34%	15	2.90	25	14	W5	R5	4	263.60	266.63	SILTSTONE	sltst	3.03							med to dark grey sltst, massive and thin layers of calc with ~4cm of shell frags accumulation at 256.4m depth
72	52,53	267.90	271.00	3.05	3.01	98.69%	9	3.01	25	15	W5	R5	4	266.63	269.64	SILTSTONE	sltst	3.01							med to dark grey sltst, massive w/ same as above shell frags at 268.0m (~10cm thick)
73	53,54	271.00	274.00	3.05	3.03	99.34%	20	2.51	25	10	W5	R5	4	269.64	272.67	SILTSTONE	sltst	3.03							med to dark grey sltst, massive w/ 0.23m thickness of frag/fault zone at 272.43m, a 0TCA fault in the zone has gauge in spacings
74	54	274.00	277.10	3.05	3.00	98.36%	10	2.77	25	15	W5	R5	4	272.67	275.67	SILTSTONE	sltst	3							med to dark grey massive sltst, some calc in frags and rock itself, which might be thin shell frags
75	54,55	277.10	280.10	3.05	3.06	100.33%										#N/A									
					2.45		>25	1.46	25	13	W5	R5	4	275.67	278.12	SILTSTONE	sltst	2.45							med to dark grey massive sltst, thin layers of calcite, some shell frags
					0.61		0	0.61	-	15	W5	R5	4	278.12	278.73	SANDSTONE	sst	0.61		Cowie					contact at 279.49m, light grey massive sst, fg-mg solid
76	55,56	280.10	283.20	3.05	3.02	99.02%	1	3.02	25	15	W5	R5	4	278.73	281.75	SANDSTONE	sst	3.02							light grey fg-mg sst, massive and porous w/ sharp increase in water volume (ground water) at 282.81m
77	56,57	283.20	286.20	3.05	2.90	95.08%	9	2.70	20	15	W5	R5	4	281.75	284.65	SANDSTONE	sst	2.90							sst as above, joints 70-85TCA massive
78	57	286.20	289.30	3.05	3.05	100.00%	5	2.97	25	15	W5	R5	4	284.65	287.70	SANDSTONE	sst	3.05							light grey mg-cg, sst, massive, gradual change to ib sst and sltst from ~287.75m, no joints within sst, ib layer joints ~70-85TCA, some w/ gauge material
79	57,58	289.30	292.30	3.05	2.98	97.70%	13	2.41	20	10	W5	R5	3	287.70	290.68	LAMINITE	ib sst	2.98							light grey to black, mg-cg sst, massive, top 40cm is ib w/ sltst, bottom 60cm is also mixed w/ sltst, joints from 30-85TCA, ~290.90m vertical fracture w/ gauge material
80	58,59	292.30	295.40	3.05	2.95	96.72%	12	2.14	0	10	W5	R5	3	290.68	293.63	LAMINITE	ib sst	2.95							light grey to black, mg-cg, sst, partly ib w. sltst, top 30m is silty sst to sltst w/ sand, ~30TCA contact angle w/ lower sst, top 2.0m is sst w/ sltst clasts, joints mostly ~30-65TC, rough
81	59	295.40	298.40	3.05	3.03	99.34%	20	2.33	10	11	W5	R5	3	293.63	296.66	SANDSTONE	sst	3.03							light grey, mg-cg, massive sst, partly ib w/ slt joints mostly ~75-90TCA, some w/ gauge material ~15cm thick sltst layer (mod-fractured) @~ 292.0m, stringers of sltst layers visible
82	59.6	298.40	301.40	3.05	2.95	96.72%										#N/A									
					0.35		0	0.35	-	15	W5	R5	4	296.66	297.01	SANDSTONE	sst	0.35							light grey, mg-cg. Massive ~75TCA contact
					2.60		>25	1.12	10	6	W5	R4	2	297.01	299.61	SILTSTONE	sltst	2.60		Cougarsmith					dark grey to black, fg, sltst, overall mod-fractured w/ sl, joints ~50-85TCA, w/ calc and gypsum, thin coal lenses @298.82-299.80m
83	60,61	301.40	304.50	3.05	2.90	95.08%	13	2.49	10	13	W5	R4	4	299.61	302.51	SILTSTONE	sltst	2.90							dark grey, fg, massive sltst, joints ~70-90TCa, w/ sl and calc, calc stringers visible ~70-90TCA, one lower angle joint (~80TCA) w/ sl @~302.60m
84	61,62	304.50	307.50	3.05	3.10	101.64%	6	3.08	25	15	W5	R4	4	302.51	305.61	SILTSTONE	sltst	3.10							sltst as above, massive, solid core, joints ~65-85TCA, some w/ calc, sandy sltst layer ~40cm @305.90m, thin calc veinlets ~60-90TCA
85	62	307.50	310.60	3.05	3.05	100.00%	13	2.78	25	10	W5	R4	4	305.61	308.66	SILTSTONE	sltst	3.05							sltst as above, massive and solid core, joints ~75-85TCA w/ calc, thin calc veinlets ~75-90TCA
86	62,63	310.60	313.60	3.05	3.05	100.00%	5	2.90	25	15	W5	R4	4	308.66	311.71	SILTSTONE	sltst	3.05							sltst as above, massive and solid core, joitns ~75-80TCA w/ calc and gypsum
87	63,64	313.60	316.70	3.05	3.00	98.36%	13	0.64	25	11	W5	R4	4	311.71	314.71	SILTSTONE	sltst	3.00							sltst as above ~70TCA, joints w/ sl and calc near top, all other joints ~75-85TCA, few w/ coal lens along fracture surfaces, thin coal lenses visible, massive, solid core
88	64	316.70	319.70	3.05	2.95	96.72%	5	2.90	25	15	W5	R4	4	314.71	317.66	SILTSTONE	sltst	2.95							dark grey to black, fg, massive sltst, joints ~75-85TCA, some w/ calc (and/or gypsum?), thin calc stringers visible
89	64,65	319.70	322.80	3.05	3.07	100.66%	12	2.84	20	12	W5	R4	4	317.66	320.73	SILTSTONE	sltst	3.07							sltst as above, joints ~60-90TCA, bottom ~30cm is gradual change to silty sst, small coal lenses near bottom, few stringers of calc. veinlets found near bottom
90	65,66	322.80	325.80	3.05	3.05	100.00%	4	3.05	25	15	W5	R5	4	320.73	323.78	SANDSTONE	sst	3.05		Comox					light grey mg-fg, sst, massive, thin calc laminaes, solid core
91	66,67	325.80	328.90	3.05	3.05	100.00%	3	2.05	25	15	W5	R5	4	323.78	326.83	SANDSTONE	sst	3.05							light to med grey, massive sst, fg-mg at 325.9m, there is an interval of 20-30cm richer in organics sst w/ darker grey in color
92	67	328.90	331.90	3.05	3.05	100.00%	4	3.05	25	15	W5	R5	4	326.83	329.88	SANDSTONE	sst	3.05							light to med grey, massive, fg-mg sst w/ rich in organics and shell frags material, some bioturbation is also present
93	67,68	331.90	355.00	3.05	2.98	97.70%	2	2.98	25	15	W5	R5	4	329.88	332.86	SANDSTONE	sst	2.98							light to med grey, fg-mg, massive sst w/ some organic rich parts, especially in the first half of the run, some bioturbation was also observed possible ~85TCA bedding
94	68,69	355.00	338.00	3.05	3.04	99.67%	8	2.95	25	15	W5	R5	4	332.86	335.90	SANDSTONE	sst	3.04							light grey fg massive sst w/ fossil and plant fragments and thin layers of calc, bioturbation was also observed
95	69	338.00	341.10	3.05	2.98	97.70%	3	2.78	25	15	W5	R5	4	335.90	338.88	SANDSTONE	sst	2.98							light to med grey, fg-mg, massive sst, containing more organic materials (shell and plant frags) than above run, long low angle (~20TCA) fracture at 338.1m
96	69,70	341.10	344.10	3.05	3.05	100.00%	1	3.05	25	15	W5	R5	4	338.88	341.93	SANDSTONE	sst	3.05							light to med grey, fg-mg, massive sst, some parts coarse grained, some portions richer in organic materials
97	70,71	344.10	347.20	3.05	3.07	100.66%	5	3.07	25	15	W5	R5	4	341.93	345.00	SANDSTONE	sst	3.07							light grey, fg, massive sst w/ some thin layers of calc and organic materials, specially close to the bottom of the run (347.2m)
98	71	347.20	350.20	3.05	3.06	100.33%	7	3.06	25	15	W5	R5	4	345.00	348.06	SANDSTONE	sst	3.06							med grey, fg-mg-cg, sst, abundant organic frags, cbr sltst stringers, possible ~85TCA bedding
														348.06	349.98	LOST CORE	LOST CORE	1.92							LOST CORE: Interval put in place to account for lost core above
99	72	350.20	353.30	3.05	2.79	91.48%										#N/A									
					0.62		5	0.54	20	10	W5	R4	4	349.98	350.31	SILTY SANDSTONE	stst	0.33							dark grey, fg, slt, ~70TCA joints w/ calc, top ~10cm w/ sst clasts
														350.31	350.46	SILTY SANDSTONE	stst	0.15			oc-191 pin	350.20	350.35	
														350.46	350.60	SILTY SANDSTONE	stst	0.14			oc-191 extra	350.35	350.49	
					0.60		3	0.39	20	8	W5	R5	4	350.60	351.20	LAMINITE	ib sst	0.60							light grey, mg, sst, ib w/ sltst and coal, bedding ~70-75TCA, joints along bedding angle
					0.37		>25	0.00	10	6	W5	R1	2	351.20	351.57	COAL	coal	0.37		Seam 5	28287	351.42	351.79		blk, ~90% bright, high gas, light, top and bottom is highly broken (dusty coal)
														351.57	352.20	LOST CORE	LOST CORE	0.63							Lost Core: prbly coal but hole badly caved
					1.20		3	0.92	10	11	W5	R2	2	352.20	353.40	SILTSTONE	sltst	1.20							light grey, fg, sltst, gradually change to sst near bottom, ib sst/sltst
100	72,73	353.30	356.30	3.05	3.07	100.66%	9	2.96	25	15	W5	R5	4	353.40	356.21	SANDSTONE	sst	2.81							light grey, mg-cg, massive sst, top ~1.5m is silty sst w/ bioturbation, joints ~65-85TCA, some w/ thin sltst layers or coal lenses
														356.21	356.47	SANDSTONE	sst	0.26			oc192	356.30	356.56	light grey, mg-cg, massive sst, top ~1.5m is silty sst w/ bioturbation, joints ~65-85TCA, some w/ thin sltst layers or coal lenses
101	73,74	356.30	359.40	3.05	3.03	99.34%	7	2.90	25	15	W5	R5	4	356.47	359.50	SANDSTONE	sst	3.03							sst as above, top 1m is ib w/ thin sltst stringers, bedding ~65-85TCA, joints follow same angle, rest of massive sst, w/ ~90TCA fracture solid core
102	74	359.40	362.40	3.05	3.00	98.36%	6	2.93	25	15	W5	R5	4	359.50	362.50	SANDSTONE	sst	3.00							light grey, mg-cg, massive sst, solid core, ~75TCA, calc vein at top, ~65TCA joints w/ thin sltst stringer @360.10m rest solid core w/ ~90TCA fractures
103	74,75	362.40	365.50	3.05	3.03	99.34%	2	2.97	25	15	W5	R5	4	362.50	365.53	SANDSTONE	sst	3.03							sst as above, solid core, massive, few stringers of sltst found near 363.21m
														365.53	365.81	SANDSTONE	sst	0.28			oc193	365.50	365.78	sst as above, solid core, massive, few stringers of sltst found near 363.21m
104	75,76	365.50	368.50	3.05	2.96	97.05%	6	2.96	25	13	W5	R5	4	365.81	368.49	SANDSTONE	sst	2.68							sst, as above, solid core, massive, most joints ~90TCA, some w/ plant materials ~55TCA joints @~367.50m, thin dark layers in same orientations, grain size increases near bottom
105	76	368.50	371.60	3.05	2.70	88.52%										#N/A									
														368.49	368.93	SANDSTONE	sst	0.44			oc194	368.50	368.94	
					1.70		4	1.70	20	13	W5	R5	4	368.93	370.19	SANDSTONE	sst	1.26							sst, as above, massive solid core, joints ~85TCA, thin sltst layers/stringers near bottom
					1.00		15	0.27	20	7	W5	R3	3	370.19	371.19	SILTSTONE	sltst	1.00							dark grey to dark brown fg, massive sltst, little gassy in same area, ~90TCA joints, thin white calc(?), bands ~65TCA, top 10cm is highly broken w/ sl
106	76,77	371.60	374.60	3.05	3.08	100.98%	9	2.94	20	14	W6	R5	4	371.19	374.27	LAMINITE	ib sst	3.08							light to dark grey, fg-mg, mostly sst ib w/ sltst, top ~1.0m is v.silty sst, joints ~65TCA, white thin vein in same orientations, near bottom sltst layers ~65-75TCA
107	77,78	374.60	377.60	3.05	3.04	99.67%	17	2.65	20	10	W6	R5	4	374.27	377.31	LAMINITE	ib sst	3.04							ib sst as above sltst layers ~5-20mm thick and bedding angle ~65-75TCA, joints along bedding, same angle w/ beddings ~375.60-376.30m, sst is v. coarse grain
108	78,79	377.60	380.70	3.05	3.05	100.00%	8	2.98	25	15	W6	R5	4	377.31	380.36	LAMINITE	ib sst	3.05							light mg-cg sst, top ~80cm is ib w/ sltst and possible coal stringers, bedding ~65TCA, rest is massive sst w/ occational ~65-75TCA, sltst/coal stringers joints ~65-75TCA w/ sltst/plant
109	79	380.70	383.70	3.05	3.12	102.30%	5	2.96	25	15	W6	R5	4	380.36	383.48	SANDSTONE	sst	3.12							light grey, mg-cg, massive sst, few spots w/ slt/coal stringers ~75-85TCA, all joints ~75-85TCA w/ plant/coal or joints fracture surfaces
110	79,80	383.70	386.80	3.05	3.11	101.97%	6	3.07	25	15	W6	R5	4	383.48	386.59	SANDSTONE	sst	3.11							light-med grey, mg-cg, massive sst, coal/sltst stringers 70-90TCA joints ~same angle, bottom ~70cm vertical white (calc?) vein (~2-3mm thick along joints w/ coal/ plant materials
111	80,81	386.80	389.80	3.05	3.04	99.67%	10	3.00	25	15	W6	R5	4	386.59	389.63	SANDSTONE	sst	3.04							sst as above, sltst/coal lenses ~75-85TCA, joints ~same angle ~50TCA sl joint at bottom partly ib w/ sltst/coal lenses
112	81	389.80	392.90	3.05	3.02	99.02%	6	3.00	25	15	W6	R5	4	389.63	392.65	SANDSTONE	sst	3.02							sst as above, thin sltst/coal lenses ~65-75TCA, joints along those layers, at top ~55TCA sl joints ~30TCA joints w/ calc @390.90m
113	81,82	392.90	393.90	3.05	3.03	99.34%	7	2.98	20	15	W6	R5	4	392.65	395.68	SANDSTONE	sst	3.03							sst as above, sltst/coal layers ~70TCA, joints along thin seams, sst mixed w/ coal at the bottom
114	82,83	393.90	399.00	3.05	2.63	86.23%										#N/A									coal, top 35cm is mixed w/ mud, sampled, separate. Bottom 42cm is bright ~90%
														395.68	395.90	LOST CORE	LOST CORE	0.22							
					0.72		>25	0.00	6	3	W6	R1	0	395.90	396.25	COAL	coal	0.35		Seam 4	28288	395.90	396.25	high gas, light and ~4cm layer of coal mexed w/ mud, trace py
														396.25	396.67	COAL	coal	0.42		Seam 4	28289	396.25	396.67	high gas, light and ~4cm layer of coal mexed w/ mud, trace py
														396.67	396.89	LOST CORE	Lost Core	0.22						LOST CORE: Probably Coal	
					1.91		4	1.91	25	15	W6	R5	4	396.89	398.80	SANDSTONE	sst	1.91							sst, dark brown-med grey, top ~30cm high % of sltst, coal lenses ~75-80TCA
115	83	399.00	402.00	3.05	3.02	99.02%										#N/A									
					1.40		0	1.40	-	-	W6	R5	4	398.80	400.20	SANDSTONE	sst	1.40							light-med grey, mg-cg, massive sst, and one solid core, bottom 10cm mixed w/ slt/coal, ~90TCA bedding
					0.76		7	0.50	10	10	W6	R4	3	400.20	400.96	SILTSTONE	sltst	0.76							dark grey, black, fg, sltst, top 2-3cm is thin coal seam, gassy mixed w/ sst, med weight, bottom ~35cm is mixed w/ sst, sandy sltst, joints ~75-90TCA w/ sl, clac veins within/near top
					0.86		3	0.86	10	15	W6	R5	4	400.96	401.82	SANDSTONE	sst	0.86							sst as above, near top silty sst, few coal/sltst stringers visible ~80TCA, two other joints ~75-85TCA w/ plant materials
116	84	402.00	405.10	3.05	3.04	99.67%	7	2.95	25	15	W6	R6	4	401.82	404.86	SANDSTONE	sst	3.04							light grey, mg-v.cg, massive sst, solid core, joints ~65-85TCA, near top few coal/sltst stringers ~85-90TCA, bottom grain size increases to v.cg
117	84,85	405.10	408.10	3.05	2.99	98.03%	8	2.85	25	15	W6	R6	4	404.86	405.18	SANDSTONE	sst	0.32			oc196	405.10	405.42	sst as above, massive, solid core, joints ~80-90TCA, w/ coal on fracture surface/near fractures, small coal lenses and stringers 80-90TCA
														405.18	407.85	SANDSTONE	sst	2.67						sst as above, massive, solid core, joints ~80-90TCA, w/ coal on fracture surface/near fractures, small coal lenses and stringers 80-90TCA	
118	85,86	408.10	411.20	3.05	3.04	99.67%	8	2.86	25	15	W6	R6	4	407.85	408.22	SANDSTONE	sst	0.37			oc197	408.10	408.47	sst as above, massive, joints ~75-85TCA, occational coal lenses, ~75-85TCA, solid core
														408.22	410.89	SANDSTONE	sst	2.67						sst as above, massive, joints ~75-85TCA, occational coal lenses, ~75-85TCA, solid core	
119	86	411.20	414.20	3.05	3.01	98.69%	6	2.96	25	15	W6	R6	4	410.89	413.90	SANDSTONE	sst	3.01							sst as above, massive, solid core, culster of coal lenses ~412.60m, 80-85TCA, joints ~75-85TCA, some w/ coal
120	86,87	414.20	417.30	3.05	3.04	99.67%	5	3.04	25	15	W6	R6	4	413.90	416.94	SANDSTONE	sst	3.04							sst as above, massive solid core, joints ~70-85TCA, few coal lenses near bottom
121	87,88	417.30	420.30	3.05	3.07	100.66%	5	3.07	25	15	W6	R5	4	416.94	420.01	SANDSTONE	sst	3.07							light-med grey, massive, mg-cg, sst, solid core, joints ~70-90TCA, some w/ coal along joint surfaces, thin coal stringers near top, ~70-80TCA
122	88	420.30	423.40	3.05	3.04	99.67%	5	2.97	25	15	W6	R5	4	420.01	423.05	SANDSTONE	sst	3.04							sst as above, massive, solid core, joints ~85TCA, some w/ coal, small vertical fractures near bottom
123	88,89	423.40	462.40	3.05	3.00	98.36%	3	2.92	25	15	W6	R5	4	423.05	426.05	SANDSTONE	sst	3.00							sst as above, massive solid core, joints ~75TCA, w/ coal, thin bands of coal stringers in same orientations
124	89,90	462.40	429.50	3.05	3.04	99.67%	5	2.96	25	15	W6	R5	3	426.05	429.09	SANDSTONE	sst	3.04							sst as above, massive, solid core, joints ~65-90TCA, some w/ sl(w/ coal), small coal stringers mixed w/ brown mud(?) @428.80m, gassy, small bubbles visible
125	90.91	429.50	432.50	3.05	3.05	100.00%	4	3.05	25	15	W6	R5	4	429.09	429.45	SANDSTONE	sst	0.36			oc198	429.50	429.86	sst as above, massive solid core, joints ~80-90TCA, some w/ coal, coal lenses ~75-90TCA
														429.45	432.14	SANDSTONE	sst	2.69						sst as above, massive solid core, joints ~80-90TCA, some w/ coal, coal lenses ~75-90TCA	

126	91	432.50	435.60	3.05	3.02	99.02%	4	3.02	25	15	W6	R5	4	432.14	435.16	SANDSTONE	sst	3.02						light-med grey, mg-v.cg, massive sst, solid core, joints ~85TCA, some w/ coal, ~20TCA calc vein @ 433.90m, coal stringers ~70TCA,
127	91,92	435.60	438.60	3.05	3.00	98.36%	3	2.91	25	15	W6	R5	4	435.16	438.16	SANDSTONE	sst	3.00						sst as above, mg-cg, massive, joints ~90TCA, possible thin banding (bedding ~85-90TCA)
128	92,93	438.60	441.70	3.05	2.96	97.05%										#N/A								
					2.63		4	2.57	25	15	W6	R6	4	438.16	440.79	SANDSTONE	sst	2.63						sst as above, joints ~75-85TCA, some w/ coal, massive ~90TCA, contact w/ lower sltst
					0.33		>25	0.00	10	5	W6	R3	0	440.79	441.12	COALY MUDSTONE	Coaly Shale	0.33		Cumberland	28291	441.37	441.70	dark brown, fg, highly fractured w/ sl, partly bubbly, weak
129	93	441.70	444.70	3.05	2.05	67.21%										#N/A								
					0.85		>25	0.00	10	5	W6	R3	0	441.12	441.72	COALY MUDSTONE	Coaly Shale	0.60			28292	441.70	442.30	as above, partly bubbly joints in various angles w/ sl
														441.72	441.97	COALY MUDSTONE	Coaly Shale	0.25			28293	442.30	442.55	sltst, as above, partly bubbly joints in various angles w/ sl
														441.97	442.36	LOST CORE	LOST CORE	0.39			ns			Lost Core: Prbly Carb Shale
					0.30		>25	0.00	10	5	W6	R1	0	442.36	442.66	COAL	coal	0.30		Seam 3U	28290	442.55	442.85	black light ~90% bright w/ trace py, high gas
														442.66	443.68	LOST CORE	LOST CORE	1.02		Seam 3U	ns			
														443.68	443.78	SILTSTONE	sltst	0.10			28294	442.85	442.95	sltst as above, joints ~70-80TCA w/ sl
					0.90		16	0.22	10	5	W6	R3	3	443.78	444.58	SILTSTONE	sltst	0.80						sltst as above, joints ~70-80TCA w/ sl
130	93,94	444.70	447.80	3.05	2.96	97.05%	10	2.57	20	15	W4	R4	3	444.58	447.54	LAMINITE	ib sst	2.96						med grey, mg sst, ib w/ med brown to black, fg, sltst, bedding ~70-80TCA, joints along bedding layers, bioturbations in many places
131	94,95	447.80	450.80	3.05	2.92	95.74%	8	2.92	20	15	W4	R4	4	447.54	450.46	SANDSTONE	sst	2.92						light-med grey, mg, sst, partly silty sst, bioturbation, joints 70-90TCA, some w/ coal/sltst
132	95	450.80	453.80	3.05	3.12	102.30%	5	3.08	20	15	W4	R4	4	450.46	450.82	SANDSTONE	sst	0.36			oc200	450.80	451.16	light-med, mg sst, few minor sltst stringers visible, ~70TCA, joints 70-80TCA
														450.82	453.58	SANDSTONE	sst	2.76						light-med, mg sst, few minor sltst stringers visible, ~70TCA, joints 70-80TCA
133	95,96	453.80	456.90	3.05	3.04	99.67%										#N/A								
														453.58	453.97	SANDSTONE	sst	0.39			oc201	453.80	454.19	sst as above, joints ~70-80TCA, few sltst stringers in same orientations
					1.39		3	1.32	20	11	W4	R4	4	453.97	454.97	SANDSTONE	sst	1.00						sst as above, joints ~70-80TCA, few sltst stringers in same orientations
					0.40		4	0.28	20	7	W4	R3	4	454.97	455.27	SILTSTONE	sltst	0.30						dark grey, fg, ib w/ sst as above, bedding ~70-75TCA, bottom ~10cm mixed w/ coal, w/ py
														455.27	455.37	SILTSTONE	sltst	0.10			25295	455.49	455.59	
					0.65		5	0.47	20	7	W4	R1	4	455.37	456.02	COAL	coal	0.65		Seam 3L	25296	455.59	456.24	black, light, gassy, ~90% bright, w/ trace py and calc, joints ~70-80TCA
														456.02	456.26	LOST CORE	LOST CORE	0.24			ns			Lost Core: Prbly Coal although badly caved
														456.26	456.40	SILTSTONE	sltst	0.14			25297	456.24	456.38	sltst, as above, joints ~60-80TCA, calc vein ~55TCA near bottom, joints w/calc and plant materials, coal stringers ~70TCA
					0.60		2	0.60	20	13	W4	R3	4	456.40	456.86	SILTSTONE	sltst	0.46						sltst, as above, joints ~60-80TCA, calc vein ~55TCA near bottom, joints w/calc and plant materials, coal stringers ~70TCA
134	96,97	456.90	459.90	3.05	3.09	101.31%	15	2.36	10	13	W5	R4	4	456.86	459.95	SANDSTONE	sst	3.09						med-dark grey, fg-cg, sst, ib w/ sltst, top ~40cm is darker, almost blk, sandy sltst, vertical joint from ~457.0m ~85-90TCA, joint w/ plant material, some calc veins ~75TCA, bedding
135	97	459.90	464.00	3.05	2.98	97.70%	11	2.90	10	15	W5	R4	4	459.95	462.93	SANDSTONE	sst	2.98						med-dark, fg-mg, partly ib w/ sltst, solid core, joints 70-80TCA, mostly w/ sl, some w/ plant material, clac veins ~75TCA, vertical calc, vein ~@461.5m, bottom ~50cm is sandy sltsy w/
136	98	464.00	466.00	3.05	2.60	85.25%	>25	0.90	10	8	W5	R3	3	462.93	463.83	SILTSTONE	sltst	0.90						dark grey, fg, sltst, top 75cm is solid core w/ calc stringers, possible coal band ~65TCA, rest is mod-highly fractured w/ sl, main joints ~65-80TCA, bottom ~30cm is coaly slt (roof),
														463.83	464.13	COALY MUDSTONE	coaly Sltst	0.30			28298	464.30	464.60	
														464.13	465.13	SILTSTONE	sltst	1.00			ns			
														465.13	465.53	COALY MUDSTONE	cly sltst	0.40			28299	465.60	466.00	
137	98,99	466.00	469.10	3.05	2.98	97.70%										#N/A								
					0.50		>25	0.23	10	5	W5	R1	3	465.53	466.03	COAL	coal	0.50		Seam 2	28300	466.00	466.50	coal, ~70-90% bright coal, ib w/ sltst, high gas, bit heavy in parts, mostly light, bedding ~50-60 TCA, highly py and calc
					0.07		0	0.00	-	-	W5	R3	4	466.03	466.10	COALY MUDSTONE	coaly Sltst	0.07		Seam 2	28051	466.50	466.57	dark grey, fg, sltst, sampled as parting
					0.75		>25	0.47	10	5	W5	R1	4	466.10	466.85	COAL	coal	0.75		Seam 2	28052	466.57	467.32	coal as above, 70-90% bright, rest thin neds of sltst, ~60TCA bedding, high gas, high % py and calc, light-little heavy
					0.20		>25	0.00	10	3	W5	R3	2	466.85	467.05	COALY MUDSTONE	cly mdstn	0.20		Seam 2	28053	467.32	467.52	sltst as above, coal stringers visible, sampled as parting
					0.15		>25	0.00	10	3	W5	R1	1	467.05	467.20	COAL	coal	0.15		Seam 2	28054	467.52	467.67	coal, ~60-90% bright, ib w/ sl, gassy, light-little heavy, py and calc
														467.20	467.50	SILTSTONE	sltst	0.30			28055	467.67	467.97	sltst as above, top ~40cm is highly broken, mixed w/ coal w/ py and calc, rest is solid core ~55-65TCA joints w/ sl, occational coal stringers ~70TCA
					1.31		>25	0.62	10	7	W5	R3	2	467.50	468.51	SILTSTONE	sltst	1.01						sltst as above, top ~40cm is highly broken, mixed w/ coal w/ py and calc, rest is solid core ~55-65TCA joints w/ sl, occational coal stringers ~70TCA
138	99100	469.10	472.10	3.05	2.75	90.16%										#N/A								
					2.10		11	1.80	10	9	W5	R3	4	468.51	470.61	SILTSTONE	sltst	2.10						dark grey, fg, sltst, joints ~80TCA w/ sl, occational coal stringers, and calc veins
					0.65		4	0.21	10	7	W3	R4	4	470.61	471.26	SANDSTONE	sst	0.65						med grey to brown, cg-v.cg, sst, (altered?), partly ib w/ sltst, bedding ~75TCA joints along beddings w/ coal(?), occational coal stringers visible
139	100	472.10	475.20	3.05	3.00	98.36%	9	2.72	10	12	W3	R4	4	471.26	474.26	SANDSTONE	sst	3.00						med grey-brown, cg-v.cg, sst altered? Coal/sltst stringers ~70TCA, joints along bedding layers w/sl
140	100,101	475.20	478.20	3.05	3.00	98.36%	6	3.00	20	15	W3	R5	4	474.26	477.26	SANDSTONE	sst	3.00						med grey to brown, cg-v.cg, sst (altered?), massive, solid core, joints ~70TCA, along coal/sltst stringer layers
141	101102	478.20	481.30	3.05	2.15	70.49%										#N/A								
														477.26	478.20	LOST CORE	LOST CORE	0.94						
					1.20		2	1.15	20	15	W3	R5	4	478.20	479.30	SANDSTONE	sst	1.10						altered(?) sst as above, coal stringers ~70-90TCA, joints along coal layers, bottom ~10cm is mixed w/ coal, sltst
														479.30	479.40	SANDSTONE	sst	0.10			28056	479.30	479.40	altered(?) sst as above, coal stringers ~70-90TCA, joints along coal layers, bottom ~10cm is mixed w/ coal, sltst
														479.40	479.80	LOST CORE	LOST CORE	0.40		Seam 1	ns			Lost Core: Prbly Shaly Coal
					0.95		>25	0.00	10	5	W4	R1	3	479.80	480.75	COAL	coal	0.95		Seam 1	28057	479.40	480.35	coal, ~90% bright, high gas, trace py, calc, light
142	102	481.30	484.30	3.05	2.68	87.87%										#N/A								
					0.35		7	0.15	10	5	W5	R1	4	480.75	481.10	COAL	coal	0.35		Seam 1	28058	481.30	481.65	light ~90% bright, gassy, ~90TCA, joints, trace py, calc
														481.10	481.60	LOST CORE	LOST CORE	0.50		Seam 1	ns			Lost Core: Prbly Coal - hole caved
					0.08		0	0.00	-	-	W5	R3	4	481.60	481.68	SILTSTONE	sltst	0.08		Seam 1	28059	481.65	481.73	dark grey, sltst, parting
					0.15		6	0.00	10	6	W5	R1	3	481.68	481.83	COAL	coal	0.15		Seam 1	28060	481.73	481.88	coal, as above
					0.12		0	0.00	-	-	W5	R3	4	481.83	481.95	SILTSTONE	sltst	0.12		Seam 1	28061	481.88	482.00	sltst, as above, parting, calc vein ~90TCA
					0.50		7	0.12	10	5	W5	R1	4	481.95	482.45	COAL	coal	0.50		Seam 1	28062	482.00	482.50	coal as above
														482.45	482.55	LOST CORE	LOST CORE	0.10		Seam 1	ns			Lost Core: Prbly Coal - hole caved
														482.55	482.65	SILTSTONE	sltst	0.10			28063	482.50	482.60	sltst as above, some highly broken area, some joints ~30TCA w/ sl, mostly ~70-90TCA
					1.30		>25	0.00	10	7	W3	R3	3	482.65	483.75	SILTSTONE	sltst	1.10			ns			sltst as above, some highly broken area, some joints ~30TCA w/ sl, mostly ~70-90TCA
														483.75	483.85	SILTSTONE	sltst	0.10			28064	483.25	483.35	sltst as above, some highly broken area, some joints ~30TCA w/ sl, mostly ~70-90TCA
					0.18		6	0.00	10	5	W3	R1	3	483.85	484.03	COAL	coal	0.18			28065	483.35	483.53	coal as above
143	102103	484.30	487.40	3.05	2.88	94.43%										#N/A								
														484.03	484.23	LOST CORE	LOST CORE	0.20			ns			Lost Core: Prbly Coal - hole caved
					0.13		7	0.00	10	6	W5	R1	3	484.23	484.36	COAL	coal	0.13			28066	484.30	484.43	coal as above
														484.36	484.46	SILTSTONE	sltst	0.10			28067	484.43	484.53	sltst as above, mostly highly crushed w/ sl, top 60cm is more solid, rest crumbles
					1.55		>25	0.00	10	3	W3	R3	0	484.46	484.93	SILTSTONE	sltst	0.47			28068	484.53	485.00	sltst as above, mostly highly crushed w/ sl, top 60cm is more solid, rest crumbles
														484.93	485.91	SILTSTONE	sltst	0.98			28069	485.00	485.98	sltst as above, mostly highly crushed w/ sl, top 60cm is more solid, rest crumbles
					1.20		13	0.52	0	7	W3	R5	3	485.91	487.11	SANDSTONE	sst	1.20						sst, cg-v.cg, altered(?) mostly gauge along joints ~60-90TCA
144	103,104	487.40	490.40	3.05	3.00	98.36%	>25	1.30	10	8	W3	R4	3	487.11	490.11	SANDSTONE	sst	3.00						med-grey-brown, cg-v.cg, altered(?) sst, mod-highly fractured, many w/ sl, dominant fracture ~75-85TCA, vertical fracture near top, coal stringers ~60-80TCA, few calc veins near top
145	104,105	490.40	493.50	3.05	3.05	100.00%	>25	0.73	0	9	W3	R4	3	490.11	493.16	SANDSTONE	sst	3.05						altered(?) sst as above, mainly broken w/ crushed rock, gauge material, and joints, cominant joint ~75TCA, some area vertical fracture and lower joints, 70-90TCA, some area vertical fracture and lower joints, ~70-90TCA coal stringers, some area w/ white, soft mineral along joints, possible fault zone
146	105	493.50	496.50	3.05	3.00	98.36%	>25	0.42	0	8	W3	R4	3	493.16	496.16	SANDSTONE	sst	3.00						altered(?) sst as above, highly broken w/ gauge material, various degrees of joints and crushed rock, possible fault zone, coal stringers ~70-85TCA, coal along joints, most joints ~75TCA w/ gauge material, some places vertical to low angle joints
147	105106	496.50	499.60	3.05	2.97	97.38%										#N/A								
														496.16	496.35	LOST CORE	LOST CORE	0.19						
					2.37		16	1.49	0	10	W3	R4	3	496.35	498.72	SANDSTONE	sst	2.37						altered(?) sst, as above, ~75TCA joints, some areas w/ lower angle joints, top 1.5m w/ highly fractured w/ vertical joints and veins, low angle fractures, gauge materials, rest is more solid, ~85TCA joints w/ coal, ~30TCA joint w/ qtz near bottom
					0.60		>25	0.00	0	2	W5	R1	0	498.72	499.12	COAL	coal	0.40		Seam 1 Sub 1	28070	498.87	499.27	coal, mostly broken, crushed, dull(top~40cm), near bottom ~20cm is more solid, ~90% bright, light w/ trace py, high gas, 2 samples separately
														499.12	499.32	COAL	coal	0.20		Seam 1 Sub 1	28071	499.27	499.47	coal, mostly broken, crushed, dull(top~40cm), near bottom ~20cm is more solid, ~90% bright, light w/ trace py, high gas, 2 samples separately
148	106107	499.60	502.65	3.05	1.70	55.74%										#N/A								
					0.10		>25	0.00	0	2	W5	R1	0	499.32	499.42	COAL	coal	0.10		Seam 1 Sub 1	28072	499.60	499.70	coal, light, ~90% bright, gassy, trace py
														499.42	500.17	LOST CORE	LOST CORE	0.75		Seam 1 Sub 1	ns			Lost Core: Prbly Coal - hole caved - poor definition
					1.70		>25	0.37	0	2	W3	R4	0	500.17	501.87	SANDSTONE	sst	1.70						med grey-brown, cg-v.cg, highly broken into rubbles, top 1.2m is somewhat solid, mod-fractured, dominant joint ~70TCA, w/ coal, some w/ sl, rest is small rubbles, some w/ sl
														501.87	502.37	LOST CORE	LOST CORE	0.50						Lost Core: Prbly intbd mdstn and Coal - hole caved - poor definition
149	106107	502.65	505.70	3.05	1.80	59.02%										#N/A								

					0.30		>25	0.00	0	2	W5	R3	0	502.37	502.67	SILTSTONE	sltst	0.30						dark grey, fg, sltst, highly fractured/broken into rubbles w/ sl
					0.45		>25	0.00	0	2	W5	R1	1	502.67	503.12	COAL	coal	0.45			28073	502.90	503.35	coal ~70cm is crushed in small pieces, ~80-90% bright, light, gassy, trace py
														503.12	505.20	LOST CORE	LOST CORE	2.08						Lost Core: Prbly intbd mdstn and Coal - hole caved - poor definition
					0.50		>25	0.19	0	2	W5	R3	1	505.20	505.70	SILTSTONE	sltst	0.50						sltst as above, trace py from above coal, mostly crushed rubbles w/ sl, one solid core ~19cm long
150	107,108	505.70	508.70	3.05	2.00	65.57%	>25	0.17	10	2	W5	R3	0	505.70	507.70	SILTSTONE	sltst	2.00						dark grey, fg, sltst, highly fractured into small rubbles w/ sl, dominant joint angle ~70-85TCA, some area w/ gauge material
151	108	508.70	511.80	3.05	2.50	81.97%	>25	0.72	10	3	W5	R3	2	507.70	510.20	SILTSTONE	sltst	2.50						sltst as above, bottom ~1.0m is ~75% solid core, rest of the run is highly fractured/broken in rubbles w/ sl, hard to measure recovery in broken sections
152	109	511.80	514.80	3.05	3.10	101.64%	20	1.52	0	10	W5	R3	3	510.20	513.30	SILTSTONE	sltst	3.10						sltst as above partly ib w/ sst, joints ~70-90TCA, w/ broken rocks and gauge material, near bottom w/ sl, ~20cm soft mud (fault gauge), @~513.50m
153	109.11	514.80	517.90	3.05	2.90	95.08%	>25	2.00	2o	14	W5	R3	3	513.30	516.20	SILTSTONE	sltst	2.90						sltst as above, joints ~85-90TCA, ~516.20m, vertical joint (~10cm) w/ sulphide along joint, soft mud layer near bottom
154	110111	517.90	520.90	3.05	2.93	96.07%	13	1.97	20	12	W5	R3	3	516.20	519.13	SILTSTONE	sltst	2.93						sltst as above, joints ~90TCA, w/ plant material/coal, occational calc stringers ~70TCA, gauge(?) zone @518.65m (~10cm) trace py along joints near bottom
155	111	520.90	524.00	3.05	2.90	95.08%	>25	1.00	10	5	W3	R3	2	519.13	522.03	SILTSTONE	sltst	2.90						dark grey to med brown, fg, sltst (altered?), joints ~90TCA, some w/ calc along joints, top 60cm and bottom 60m is more solid core, rest is highly broken into rubble and gauge (mud) materials
156	112	524.00	527.00	3.05	3.06	100.33%	8	3.00	20	15	W3	R4	r	522.03	525.09	UNDIFFERENTIATED VOLCANICS	volc	3.06						light-dark green volc congl
157	112113	527.00	530.00	3.05	3.00	98.36%	3	3.00	20	15	W3	R4	4	525.09	528.09	UNDIFFERENTIATED VOLCANICS	volc	3.00						dark green volc congl
																								EOH @ 530.00m

Geological Borehole Log: RAV-09-029

Client: CJV
Project: Raven
Logged By: Parviz

Hole Number: RAV-09-029
Date Hole Started: 20-Jul-09
Date Hole Finished: 30-Jul-09
Hole Orientation: -90 (at start)

Total Hole Depth: 397.26
Depth of Casing: 10.6m
Core Size: modified PQ (3.0")

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Intervals Logged Lithology	Intervals Logged Interval Length	Intervals Logged Core Loss	Intervals Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	10.60	OVERBURDEN	OVBDN	10.60						
														10.60	162.40	SANDY SILTSTONE	SLTST/SS	151.80						
														162.40	225.53	SANDSTONE	SST	63.13						
														225.53	246.20	SANDY SILTSTONE	SLTST/SS	20.67						
														246.20	255.59	SANDSTONE	SST	9.39						
														255.59	261.05	SANDY SILTSTONE	SLTST/SS	5.46						
														261.05	271.25	SANDSTONE	SST	10.20						
														271.25	271.42	SHALY COAL	SHYCOAL	0.17						
														271.42	271.68	SANDSTONE	SST	0.26						
														271.68	272.22	COAL	COAL	0.54		Seam 5	ns			
														272.22	312.65	SANDSTONE	SST	40.43						
														312.65	313.60	COAL	COAL	0.95		Seam 4	ns			
														313.60	347.96	SANDSTONE	SST	34.36						
1	1	348.38	349.60	1.22	1.00	81.97%										#N/A								Drilled with air and mud to just above Seam 3 - no cuttings collected or logged. See offset drillhole RAV-09-021 cored from surface.
														347.96	348.10	LOST CORE	LOST CORE	0.14						
					0.13		-	-	-	-	-	-	-	348.10	348.23	SANDSTONE	sst	0.13						light grey sst solid
					0.07		-	-	-	-	-	-	-	348.23	348.30	SILTSTONE	sltst	0.07			28201	348.50	348.57	light grey intact
					0.70		-	-	-	-	-	-	-	348.30	349.00	COAL	coal	0.70		Seam 3	28202	348.57	349.27	coal, dull, bubbling gas, at the top broken
					0.10		-	-	-	-	-	-	-	349.00	349.10	CLAYSTONE	cst	0.10		Seam 3	28203	349.27	349.37	light grey, cst, partly broken aplited by joint
														349.10	349.18	LOST CORE	LOST CORE	0.08		Seam 3	ns			*Lost Core - probably clyst*
2	1,2	349.60	352.34	2.74	1.83	66.79%										#N/A								
					0.07		-	-	-	-	-	-	-	349.18	349.25	CLAYSTONE	cst	0.07		Seam 3	28203	349.37	349.67	cst med grey
					0.66		-	-	-	-	-	-	-	349.25	349.91	COAL	coal	0.66		Seam 3	28204	349.67	350.33	coal, dull, solid, 0.25m at the bottom more heavy
					0.26		-	-	-	-	-	-	-	349.91	350.17	CLAYSTONE	cst	0.26		Seam 3	28205	350.33	350.59	cst med grey, solid
					0.84		-	-	-	-	-	-	-	350.17	351.01	COAL	coal	0.84		Seam 3	28206	350.59	351.43	coal dull, 0.20m at the very broken and soft
														351.01	351.17	LOST CORE	LOST CORE	0.16		Seam 3	ns			*Lost Core - probably coal*
3	2	352.34	352.64	0.30	0.30	100.00%										#N/A								
					0.03		-	-	-	-	-	-	-	351.17	351.20	COAL	coal	0.03		Seam 3	28206	351.43	351.46	cst, med-light grey, very broken, 0.10m as floor sample
														351.20	351.30	CLAYSTONE	cst	0.10			28207	351.46	351.56	
					0.27		-	-	-	-	-	-	-	351.30	351.47	CLAYSTONE	cst	0.17						cst carb, 0.10m at the bottom broken, 0.10m floor sample
														351.47	352.49	LOST CORE	LOST CORE	1.02						
4	2	352.64	353.55	0.91	0.47	51.65%	3	0.37	25	10	W6	R6	4	352.49	352.96	MUDSTONE	mdst	0.47						dark brown, mudstone and silty mudstone w/ plant fossils and some coal patches and stringers, core fizzes on the surface and is mainly thin bedded
5	2,3	353.55	355.68	2.13	2.07	97.18%										#N/A								
					0.80		2	0.80	25	15	W6	R6	4	352.96	353.76	SILTSTONE	sltst	0.80						dark to med brown, thin bedded sltst with fossils
					1.27		4	1.15	25	15	W6	R6	4	353.76	355.03	SANDSTONE	sst	1.27						light to med grey, fg, massive sst
6	3	355.68	358.11	2.43	2.13	87.65%	3	2.02	25	15	W6	R5	4	355.03	357.16	SANDSTONE	sst	2.13						massive light grey, fg, sst, plant fragments and rare coal stringers are also present
7	4	358.11	360.55	2.44	2.36	96.72%	-	2.36	-	15	W6	R6	4	357.16	359.52	SANDSTONE	sst	2.36						massive light to med grey, sst, with no fracture, some plant fragments are presnet in some parts are thin bedded w/ thin coal stringers
8	4,5	360.55	362.56	2.01	1.82	90.55%	2	1.82	25	14	W6	R6	4	359.52	361.34	SANDSTONE	sst	1.82						2 fr at the end of interval, 1@90, 1@70, as above, fg sst with small pink(feldspar rich or iron stained) layers and trace plant material, noticable drill wear on core
9	5	362.56	365.30	2.74	2.80	102.19%	5	2.82	25	13	W6	R6	4	361.34	364.14	SANDSTONE	sst	2.80						as above, fg, light grey, sst, but with freequent 1-2cm silty layers (>10%), 80TCA, fr @90TCA, trace plant material and coal lenses, trace carbonate stringers
10	6,7	365.30	368.20	2.90	2.82	97.24%	6	2.82	25	14	W6	R6	4	364.14	366.96	SANDSTONE	sst	2.82						as above sst, bit of drill wears, fr all at 85-90TCA, sltst less abundant than above
11	7,8	368.20	370.64	2.44	2.34	95.90%										#N/A								
					2.14		6	2.86	25	12	W6	R6	4	366.96	369.10	SANDSTONE	sst	2.14						as above sst, gradually into ib sst/sltst, towards end of the interval thinly bedded ~80-90TCA, trace carbonate stringers 1 fr @ 70TCA, rest @90TCA
					0.20		0	-	-	-	W6	R5	4	369.10	369.30	CLAYSTONE	cst	0.20						med grey, v.fg, sltst w/ trace carbonate stringers
12	8,9	370.64	373.38	2.74	2.42	88.32%	>25	2.07	25	12	W6	R4	3	369.30	371.72	CLAYSTONE	cst	2.42						carbonaceous, med grey, v.fg, massive, weakly bedded, cb clay stone w/ thin sandy layers, weakly gassy around 25cm, broken zone @272.06m, trace carbonate stringers are plant material, bedding ~80-90TCA, 1f
13	9	373.38	373.83	0.45	0.66	146.67%	4	0.60	25	9	W5	R5	4	371.72	372.38	CLAYSTONE	cst	0.66						as above, dark grey, v.fg, massive, cst w/ trace, carbonate stringers, not as gassy as above, fr @90TCA
14	9	373.83	375.04	1.21	1.17	96.69%										#N/A								
					0.47		3	0.45	25	15	W6	R5	4	372.38	372.75	CARBONACEOUS MUDSTONE	cbr mdst	0.37						dark brown, grey mdst and cbr mdst w/ coal stringers, roof
														372.75	372.85	COALY MUDSTONE	Coaly mdst	0.10			28209	374.20	374.30	dark brown, grey mdst and cbr mdst w/ coal stringers, roof
					0.70		-	-	-	-	-	-	-	372.85	373.22	COAL	coal	0.37		Seam 1	CANISTER 1	374.30	374.67	bright 50-70% light and solid
														373.22	373.59	COAL	coal	0.37		Seam 1	28208	374.67	375.04	some py in fracture
15	9,10	375.04	377.78	2.74	2.74	100.00%										#N/A								
					0.23		-	-	-	-	-	-	-	373.59	373.82	COAL	coal	0.23		Seam 1	28210	375.04	375.27	~50-70% bright, solid w/ py in fractures, mdst w/ some coal stringers and cbr parts
														373.82	373.95	LOST CORE	LOST CORE	0.13		Seam 1	ns			*Lost Core - probably coal*
					1.00		-	-	-	-	-	-	-	373.95	374.50	MUDSTONE	mdst	0.55			ns			mdst w/ some coal stringers and cbr parts
														374.50	374.95	SHALY COAL	Shaly Coal	0.45			NOT SAMPLED			Shaly Coal
					0.10		-	-	-	-	-	-	-	374.95	375.05	COAL	coal	0.10		Seam 1	CANISTER 2	376.27	376.37	same as above
					0.10		-	-	-	-	-	-	-	375.05	375.15	SHALY COAL	Shaly Coal	0.10		Seam 1	NOT SAMPLED			mdst, partly cbr
					0.24		-	-	-	-	-	-	-	375.15	375.39	COAL	coal	0.24		Seam 1	CANISTER 2	376.47	376.71	same as above
														375.39	375.49	SHALY COAL	Shaly Coal	0.10		Seam 1	28211	376.71	376.81	mdst some cbr w/ coal stringers floor
														375.49	375.59	SHALY COAL	Shaly Coal	0.10		Seam 1	NOT SAMPLED			mdst some cbr w/ coal stringers floor
					1.07		-	-	-	-	-	-	-	375.59	376.46	MUDSTONE	mdst,coal	0.87			ns			mdst some cbr w/ coal stringers floor
16	11	377.78	380.52	2.74	2.70	98.54%	>25	2.10	25	13	W6	R5	4	376.46	379.16	SANDSTONE	sst	2.70						med grey, mg-cg, sst w/ interbeds of mdst and coal stringers, mainly massive, some w/ ~80-85TCA bedding,
17	12	380.52	382.35	1.83	1.98	108.20%										#N/A								
					0.30		-	-	-	-	-	-	-	379.16	379.46	SANDSTONE	sst	0.30						med-grey, fg-mg, massive
					0.53		-	-	-	-	-	-	-	379.46	379.99	SILTSTONE	sltst	0.53						med grey to brown, some coal stringers
					0.18		-	-	-	-	-	-	-	379.99	380.17	SHALY COAL	Shaly coal	0.18			CANISTER 3	381.35	381.53	bright ~30-40%TCA w/ some py and shaly text
					0.20		-	-	-	-	-	-	-	380.17	380.37	SILTSTONE	sltst	0.20			ns			med grey to brown, calc infractures, coal stringers
					0.15		-	-	-	-	-	-	-	380.37	380.52	COALY MUDSTONE	coaly Shale	0.15			CANISTER 3	381.73	381.88	dull sugary/shaly texture
					0.62		-	-	-	-	-	-	-	380.52	381.14	SILTSTONE	sltst	0.62						grey/brown calc in frac, coal stringers
18	12,13	382.35	385.09	2.74	2.74	100.00%	6	2.63	25	15	W6	R6	4	381.14	383.88	SANDSTONE	sst, sltst	2.74						sst and sltst interbeds, some portions cbr, fg-mg sst, rip-up clasts, part of the sst shows ~60TCA bedding angle
19	13	385.09	387.22	2.13	2.46	115.49%	5	1.79	25	14	W6	R5	4	383.88	386.34	SILTSTONE	sltst	2.46						grey, fg-v.fg, sandy sltst, has minor coal lenses and plant materials, trace carbonate, overall joints 70-80TCA, some carbonate filling, more slt rich in center of section w/ some irregular shaped contacts (30cm) (slu
20	14.00	387.22	387.83	0.61	0.51	83.61%	4	0.46	25	9	W6	R6	4	386.34	386.85	SANDSTONE	sst	0.51						grey, fg-mg, silty sst, massive w/ coarse lenses, trace plant material and coal frags
21	14	387.83	389.20	1.57	1.24	78.98%	>25	1.04	20	8	W6	R6	3	386.85	388.09	SILTSTONE	sltst	1.24						fg-v.fg, grey, massive, broken w/ 6cm crushed clay rich zone (micro fault?), mid interval frac @90TCA and 70TCA, sandy siltstone
22	15	389.20	390.57	1.37	1.47	107.30%	17	1.30	25	10	W6	R6	3	388.09	389.56	SILTSTONE	sltst	1.47						med brown to grey, sltst, w/ some thin interbeds of coarse grain sst, sst shows a bedding angle at about 60TCA (~5cm at the bottom of the run), most of fractures are at the depth of ~389.80m, in a 10cm interval c
23	15,16	390.57	393.00	2.43	2.42	99.59%	10	2.42	25	15	W6	R6	4	389.56	391.98	SHALY SILTSTONE	sltst, sst	2.42						med to coarse grin, sst, and sltst, dark grey to brown, calc filled fracs, organic frags in the sst, some parts show sharp contact ~60TCA, between sst and sltst
24	15,16	393.00	395.13	2.13	1.76	82.63%	>25	1.58	25	10	W6	R6	3	391.98	393.74	SHALY SILTSTONE	sltst, sst	1.76						fractured zone, 20cm thick at 393.10m, fault 55TCA at 394.34m. Some coal stringers, calc filled fractures, massive sst and sltst, organic matterials also are present, fractures mainly at frac zone
25	16	395.13	397.26	2.13	1.78	83.57%	>25	0.60	25	9	W6	R3	2	393.74	395.52	SANDY SHALE	shale	1.78						dark grey/blk, fg-v.fg, massive, broken up, massive, 15.5@45TCA, fr@90, calcite infill on fr
																								EOH 397.26m

Geological Borehole Log: RAV-09-030

Client: CJV
Project: Raven
Logged By: AJ, Henry

Hole Number: RAV-09-030
Date Hole Started: July 21 2009
Date Hole Finished: July 23 2009
Hole Orientation:

Total Hole Depth: 77.40m
Depth of Casing: 9.10m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Intervals Logged Lithology	Intervals Logged Interval Length	Intervals Logged Core Loss	Intervals Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	9.10	OVERBURDEN	OVBDN							Overburden:
1	1	9.10	11.90	2.80	2.42	86.43%	0	2.42	-	-	W6	R5	3, 4	9.10	11.52	SANDSTONE	SST	2.42						SST - med grey, mg-cg, massive. Solid core, had to break to get into box. Some drilling-wear on core quality at very top.
														11.52	11.58	LOST CORE	LOST CORE	0.06						SST - med grey, mg-cg, massive. Solid core, had to break to get into box. Some drilling-wear on core quality at very top.
2	1 & 2	11.90	14.90	3.05	3.12	102.30%	2	3.05	25	15	W6	R5	4	11.58	14.70	SANDSTONE	SST	3.12						SST - AS ABOVE. Again, solid core & had to break to get into box. Two apparent natural joints, @ 85° & 90°. One has a SLT stringer.
3	2 & 3	14.90	18.00	3.05	3.07	100.66%	10	2.77	25	14	W6	R5	4	14.70	17.77	SANDSTONE	SST	3.07						SST - as above. Solid core. Joints range from 70-90°. A few (~3) dk stringers at bottom of run.
4	3 & 4	18.00	21.00	3.05	3.01	98.69%	7	2.90	25	15	W6	R6	4	17.77	20.78	SANDSTONE	SST	3.01						SST - as above. At 19.72m depth, a 50° joint w/ soft grey clay (gouge -> fault?). ~19.50m another ~50° joint. All other joints ~85-90°.
5	4	21.00	24.10	3.05	3.01	98.69%	7	2.96	25	15	W6	R6	4	20.78	23.79	SANDSTONE	SST	3.01						Light grey, mg-cg massive SST. One 55° jouint at 22.80m. An other joints ~90°. Med-dk brown platy mineral visible along joints (Bi?)
6	4 & 5	24.10	27.10	3.05	2.95	96.72%	1	2.90	25	14	W6	R6	4	23.79	26.74	SANDSTONE	SST	2.95						Light grey mg-cg SST, most joints ~85-90° some w/SLT-plant materials. 50-65° betwen 24.65-25.15m, possible fault gouge at 25.20m, thin SLT lenses ~85-90° visible.
7	5 & 6	27.10	30.20	3.05	3.02	99.02%	4	2.94	25	15	W6	R6	4	26.74	29.76	SANDSTONE	SST	3.02						Light grey mg-cg massive SST. Solid core. All joints ~90°. Near bottom joints w/ plant material (or SLT). Thin dk band visible (SLT/coal?). ~85°.
8	6	30.20	33.20	3.05	3.08	100.98%	6	3.08	25	15	W6	R6	4	29.76	32.84	SANDSTONE	SST	3.08						Massive SST, as above. All joints ~75°, some w/ plant materials. Thin coal/slt (i) stringers ~75. more stringers near bottom.
9	6 & 7	33.20	36.30	3.05	3.08	100.98%	6	3.08	25	15	W6	R6	4	32.84	35.92	SANDSTONE	SST	3.08						Mass SST as above, joints 75-80° w/ plant materials. Thin coal/slt (i) stringers ~75-80°.
10	7 & 8	36.30	39.30	3.05	2.30	75.41%																		
					0.23		-	0.23	-	-	W6	R6	4	35.92	36.05	SANDSTONE	SST	0.13						Light-med grey, mg-cg, massive SST.
														36.05	36.15	SANDSTONE	SST	0.10			28251	36.43	36.53	Light-med grey, mg-cg, massive SST.
					0.54		>25	-	20	15	W6	R1	4	36.15	36.69	COAL	COAL	0.54		Seam 3	28252	36.53	37.07	Black 90-95% bright, little gassy, trace py, calc, light.
					0.05		-	0.00	-	-	W6	R4	4	36.69	36.74	SILTSTONE	SLT	0.05		Seam 3	28253	37.07	37.12	Dark grey, fg SLT. One 45° fracture. 90° contact w/ upper-lower coal.
					0.07		-	-	-	-	W6	R1	4	36.74	36.81	COAL	COAL	0.07		Seam 3	28254	37.12	37.19	Black, 50-60% bright, light, no gas. Trace py, calc.
					0.16		1	0.16	25	6	W6	R4	4	36.81	36.97	SILTSTONE	SLT	0.16		Seam 3	28255	37.19	37.35	SLT as above, one ~65° joint, one calc veins just below the joints.
					0.24		10	-	20	4	W6	R4	4	36.97	37.21	COAL	COAL	0.24		Seam 3	28256	37.35	32.59	Black, light, ~90% bright. Little gas. Trace py, calc. Top 10cm highly broken into ~3-5cm pieces.
														37.21	37.35	LOST CORE	LOST CORE	0.14		Seam 3	ns			Lost Core: Coal as interpreted from geophysical log
														37.35	37.45	SILTSTONE	SLT	0.10			28257	37.59	37.69	SLT as above. Thin coal bands (1-2cm) ~40° w/ trace py (near top). Below is massive.
														37.45	37.65	SILTSTONE	SLT	0.20						SLT as above. Thin coal bands (1-2cm) ~40° w/ trace py (near top). Below is massive.
														37.65	37.90	COAL	COAL	0.25						Coal: Interpreted from geophysical log
					1.01		5	1.01	25	10	W6	R4	4	37.90	38.36	SILTSTONE	SLT	0.46						SLT as above. Thin coal bands (1-2cm) ~40° w/ trace py (near top). Below is massive.
11	8	39.30	42.40	3.05	2.96	97.05%																		
					0.41		4	0.25	25	6	W6	R4	4	38.36	38.77	SILTSTONE	SLT	0.41						Med grey, fg IB w/ SST (~90°). Possible bedding ~90°, joints 85-90°.
					1.98		6	1.90	25	13	W6	R6	4	38.77	40.75	SANDSTONE	SST	1.98						Light grey, mg-cg SST IB w/ SLT (75-90°). Joints 75090° w/ SLT-plant material. Possible coal stringers.
					0.57		5	0.25	25	7	W6	R4	4	40.75	41.32	SILTSTONE	SLT	0.57						SLT as above. Bedding ~90°. 90° joints, near bottom is ~60° w/ calc. Fault gouge ~42.23m (w/ mud layer).
														41.32	41.88	LOST CORE	LOST CORE	0.56						Lost Core: prbly sltst
12	8 & 9	42.40	45.40	3.05	3.12	102.30%																		
					0.77		20	-	10	6	W6	R4	4	41.88	42.65	SILTSTONE	SLT	0.77						Dark grey fg SLT. Top is highly fractured w/ low-vertical fractures, SS, calc/clay within joints. 42.4-42.78m. Rest ~85-90° joint w/ SS, calc film along joint.
					2.35		>25	1.60	25	14	W6	R6	4	42.65	45.00	SANDSTONE	SST	2.35						Light grey mg-cg massive SST. ~90° SLT stringers, joints ~90° w/ SLT, 0.75m from bottom, clay layer, ~90° joints light grey to white, v.fg soft (35cm thick). Bottom 40cm is sks
13	9 & 10	45.40	48.50	3.05	2.94	96.39%																		
					2.25		4	1.40	25	14	W6	R6	4	45.00	47.17	SANDSTONE	SST	2.17						SST as above. Few SLT stringers ~90°. 45.4-46.25m one vertical fracture w/ 2 90° frac between them w/ coal-SLT along joint. Rest solid one peice core.
														47.17	47.25	SANDSTONE	SST	0.08			28258	47.57	47.65	SST as above. Few SLT stringers ~90°. 45.4-46.25m one vertical fracture w/ 2 90° frac between them w/ coal-SLT along joint. Rest solid one peice core.
					0.26		4	-	20	5	W6	R1	4	47.25	47.51	COAL	COAL	0.26		Seam 2	28259	47.65	47.91	Black, light little gas, ~90% bright. Trace py, calc.
														47.51	47.65	LOST CORE	LOST CORE	0.14		Seam 2	ns			Lost Core: prbly coal
														47.65	47.75	SILTSTONE	SLT	0.10			28260	47.91	48.01	Dk grey, fg IB w/ coal (~90°) vertical fracture (w/ ~90° joint). Top 30cm. 48.44m ~50° joint.
					0.43		3	-	10	6	W6	R4	4	47.75	48.18	SILTSTONE	SLT	0.43						Dk grey, fg IB w/ coal (~90°) vertical fracture (w/ ~90° joint). Top 30cm. 48.44m ~50° joint.
14	10 & 11	48.50	51.50	3.05	3.00	98.36%																		
					0.60		10	0.37	25	8	W6	R4	4	48.18	48.78	SILTSTONE	SLT	0.60						Dk grey-brown fg SLT. Small coal lenses visible. Most joints ~90°. Highly fractured bottom w. ~55-60° joints and 3-5cm rubble.
					2.40		10	1.87	25	13	W6	R6	4	48.78	51.18	SANDSTONE	SST	2.40						Med-light grey, mg-cg SST IB w/ thin SLT (~90°). Most joints ~90°, one 40° joint at 50.87m. 57.02-51.5m vertical fracture w/ 90° joints.
15	11	51.50	54.60	3.05	3.04	99.67%	17	2.32	25	15	W6	R6	4	51.18	54.22	LAMINITE	IB SST	3.04						Top 50cm - cg-v.cg SST w/ SLT clastas and lenses. Rest silty SST, med grey ~85° beddings. Mg-cg SST. w/ SLT layers. Most joints ~85-90°, some ~50°.
16	11 & 12	54.60	57.60	3.05	3.04	99.67%	9	2.82	25	15	W6	R6	4	54.22	57.26	SANDSTONE	SST	3.04						Med-light grey mg-cg SST. Top 50cm SLT layers (~75-85°) joints same angle. 55.14-55.54m vertical calc vein ~57.2m two 15-25 joints w/ calc vein.
17	12 & 13	57.60	60.70	3.05	3.03	99.34%	8	3.03	25	15	W6	R6	4	57.26	60.29	SANDSTONE	SST	3.03						SST light grey mg-cg, massive. SLT/coal stringers ~75°, two low angle joints (10-15°) at 59.51m w/ calc, other joints ~75-85°.
18	13	60.70	63.70	3.05	3.04	99.67%	10	2.72	25	15	W6	R6	4	60.29	63.33	SANDSTONE	SST	3.04						Light grey mg-cg IB w/ SLT (~75°). Most joints ~75-85°, one ~30° joint ~63.15m. SLT layers from few mm to 15cm thick.
19	14	63.70	66.75	3.05	3.04	99.67%																		
					1.74		4	1.01	25	10	W6	R4	4	63.33	64.98	SILTSTONE	SLT	1.65						Med grey mg-fg SLT w/ SST layers, joints 65-90°, some w/ sks and calc. Minor coal lenses. Bottom 0.74m is highly broken, w/ SS, into 1-5cm sizes.
														64.98	65.08	SILTSTONE	SLT	0.10			28261	65.40	65.50	Med grey mg-fg SLT w/ SST layers, joints 65-90°, some w/ sks and calc. Minor coal lenses. Bottom 0.74m is highly broken, w/ SS, into 1-5cm sizes.
					1.30		>25	0.47	25	6	W6	R1	4	65.08	65.68	COAL	COAL	0.60		Seam 1	28262	65.50	66.10	Black light ~95° bright coal w/ trace py & calc. Little gas, joints ~65°, some sks joints.
														65.68	66.38	COAL	COAL	0.70		Seam 1	28263	66.10	66.80	Black light ~95° bright coal w/ trace py & calc. Little gas, joints ~65°, some sks joints.
20	14 & 15	66.75	69.80	3.05	2.90	95.08%																		
					0.40		12	-	20	5	W6	R1	4	66.38	66.78	COAL	COAL	0.40		Seam 1	28264	66.80	67.20	Coal as above, mod-high fractured, near bottom mixed w/ SLT.
														66.78	66.88	SILTSTONE	SLT	0.10			28265	67.20	67.30	Light brown, fg altered (?) slt, thick calc vein near bottom.
					0.37		2	0.21	25	6	W6	R6	4	66.88	67.15	SILTSTONE	SLT	0.27						Light brown, fg altered (?) slt, thick calc vein near bottom.
					2.13		>25	1.40	25	13	W6	R6	4	67.15	69.28	CONGLOMERATE	VOLC	2.13						Green volc w/ heavy calc vein.
21	15 & 16	69.80	72.80	3.05	3.07	100.66%	>25	1.78	20	10	W6	R6	4	69.28	72.35	CONGLOMERATE	VOLC	3.07						Green volc w/ heavy calc, highly fractured near top ~71.0m.
22	16 & 17	72.80	75.90	3.05	3.04	99.67%	16	1.83	20	9	W6	R6	4	72.35	75.39	CONGLOMERATE	VOLC	3.04						Green volc as above, mod-high frac near top.
23	17	75.90	77.40	1.50	1.70	113.33%	>25	0.32	20	6	W6	R6	4	75.39	77.09	CONGLOMERATE	VOLC	1.70						As above, volc, highly fractured.
																								EOH 77.40m

Geological Borehole Log: RAV-09-031

Client: CJV
Project: Raven
Logged By: AJ, Henry

Hole Number: RAV-09-031
Date Hole Started: July 23 2009
Date Hole Finished: July 24 2009
Hole Orientation:

Total Hole Depth: 85.00m
Depth of Casing: 3.0m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Recovery			RQD		Fractures			Alt'n & Weath.	Hardness		G.P.L. Corrected			Intervals Logged				Samples (Driller's Depths)			Description
		Depth From (m)	Depth to (m)	Length of Run (m)	Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage		Prefix	Core Quailty	From (m)	To (m)		Lithology	Interval Length	Core Loss	Strat	Number	From (m)	To (m)	
														0.00	3.00	OVERBURDEN	Ovbdn	3.00						Overburden
1	1 & 2	3.00	5.80	2.80	2.33	83.21%	6	2.15	25	14	W6	R5	4	3.00	5.33	SANDSTONE	SST	2.33						SST - light grey, v.cg massive. 6 joints ~85-90°. At depth 3.69m is an 18cm broken zone. Pieces broken (joints?) at low (~10°) angles.
2	2	5.80	8.80	3.05	3.05	100.00%	2	3.06	25	15	W6	R5	4	5.33	8.38	SANDSTONE	SST	3.05						SST - as above Becomes finer at bottom 10cm. Solid core, had to break to get into box. Two natural-looking joints (~90°) have SLT/plant material lining them.
3	2 & 3	8.80	11.90	3.05	2.99	98.03%	8	2.99	25	14	W6	R5	4	8.38	11.37	SANDSTONE	SST	2.99						SST - light grey. Cg at top 30cm then back to v.cg, massive. Joints 75-90° w/ SLT stringers and plant materials.
4	3 & 4	11.90	14.90	3.05	3.06	100.33%	1	3.06	25	15	W6	R5	4	11.37	14.43	SANDSTONE	SST	3.06						SST - light grey, v.cg massive. One natural joint ~85°. One ~90° coal stringer.
5	4	14.90	18.00	3.05	1.84	60.33%																		
														14.43	14.71	LOST CORE	LOST CORE	0.28						
														14.71	15.02	SANDSTONE	SST	0.31						SST - as above. Joints ~85°. SLT/coal stringers.
					0.41		2	0.41	25	10	W6	R5	4	15.02	15.12	SANDSTONE	SST	0.10			28266	15.21	15.31	SST - as above. Joints ~85°. SLT/coal stringers.
														15.12	15.22	LOST CORE	LOST CORE	0.10			ns			Lost Core: Coal interpreted from geophysical log
					0.24		-	0.00	-	-	-	-	-	15.22	15.46	COAL	COAL	0.24			28268	15.31	15.55	Black coal; ~70° bright. Mostly friable/clayey-fell. Trace py (<0.5%)
					1.19		5							15.46	15.56	SANDSTONE	SST	0.10			28267	15.55	15.65	SST - mg-cg w/ coal stringers at top ~60cm. Joints at ~90° but one 25° one at bottom.
														15.56	16.65	SANDSTONE	SST	1.09						SST - cg-v.cg, massive, light grey. Joints ~85° but one ~45°.
6	4 & 5	18.00	21.00	3.05	3.16	103.61%	9	3.11	25	14	W6	R5	4	16.65	19.81	SANDSTONE	SST	3.16						SST - cg-v.cg, massive, light grey. Joints ~85° but one ~45°.
7	5 & 6	21.00	24.10	3.05	2.93	96.07%	5	2.84	25	15	W6	R5	4	19.81	22.74	SANDSTONE	SST	2.93						SST - as above. 4 joints 30°, one 45°.
8	6	24.10	27.10	3.05	2.87	94.10%																		
					0.55		1	0.55	25	15	W6	R4	4	22.74	23.29	SANDSTONE	SST	0.55						SST - as above. Darkening slightly downward. Joint at 90°.
					2.32		12	2.17	25	15	W6	R4	4	23.29	24.32	SILTSTONE	SLT	1.03						Grey SLT w/ ~90° wisps of SST. Joints at ~90° but one at 40°, two at 30°.
														24.32	24.76	LOST CORE	LOST CORE	0.44		Seam 3	ns			Lost
														24.76	26.05	SILTSTONE	SLT	1.29						Dark grey fg IB w/ thin beds of mg SST. Bedding ~85-90° near top. Gradually changes to 70-75°. Joints follow bedding angles from 70-85°. Occasional calc veins following bedding angles.
9	7	27.10	30.20	3.05	2.90	95.08%	9	2.67	25	15	W6	R6	4	26.05	28.95	SILTSTONE	SLT	2.90						Dark grey fg IB w/ thin beds of mg SST. Bedding ~85-90° near top. Gradually changes to 70-75°. Joints follow bedding angles from 70-85°. Occasional calc veins following bedding angles.
10	7 & 8	30.20	33.20	3.05	3.03	99.34%																		
					2.41		9	2.33	25	15	W6	R4	4	28.95	31.36	SILTSTONE	SLT	2.41						SLT IB w/ SST as above. Bedding ~85-90° and change to ~75° from 31.50m. Contact angle w/ lower SST ~75°.
					0.62		1	0.62	25	15	W6	R6	4	31.36	31.98	SANDSTONE	SST	0.62						Light grey cg-v.cg, massive SST. Joint ~85°.
11	8 & 9	33.20	36.30	3.05	3.05	100.00%	1	3.05	25	15	W6	R6	4	31.98	35.03	SANDSTONE	SST	3.05						Light grey, cg-v.cg, massive SST, one joint w/ plant material, ~85° at 34.95m.
12	9	36.30	39.30	3.05	3.03	99.34%	4	2.99	25	15	W6	R6	4	35.03	38.06	SANDSTONE	SST	3.03						Light grey massive SST, mg-v.cg. V.cg at top; gradually finer grain and back to v.cg near bottom. Joints ~75-90° w/ plant material or coal.
13	9 & 10	39.30	42.40	3.05	3.10	101.64%	4	3.00	25	15	W6	R6	4	38.06	41.16	SANDSTONE	SST	3.10						Light grey, cg-v.cg massive SST. Joints ~70°, one at the bottom w/ coal. ~30° joint @ 41.80m; ~70° coal stringers at 40.85m and near bottom.
14	10 & 11	42.40	45.40	3.05	3.02	99.02%	5	3.02	25	15	W6	R6	4	41.16	44.18	SANDSTONE	SST	3.02						Light grey, cg-v.cg massive SST w/ coal (or SH?) stringers (~85-90°). Joints also 85-90°, some w/ coal plant materials. Heavy coal (SLT?) band @ 44.88m (~9cm thick).
15	11	45.40	48.50	3.05	2.98	97.70%	6	2.90	25	15	W6	R6	4	44.18	47.16	SANDSTONE	SST	2.98						Light grey - partly light brown, mg-v.cg SST. Grain size changes from v.cg to mg @ 46.50m. Coal stringers from 70-90°.
16	11 & 12	48.50	51.50	3.05	3.09	101.31%	6	3.07	25	15	W5	R5	4	47.16	50.25	SANDSTONE	SST	3.09						SST as above. Coal/SLT stringers 70-90°. Some joints w/ coal, joints 85-90°.
17	12 & 13	51.50	54.60	3.05	3.05	100.00%	7	3.00	25	15	W6	R6	4	50.25	53.30	SANDSTONE	SST	3.05						Light grey cg-v.cg massive SST. Coal stringers 75-90°, joints mostly ~85° w/ coal.
18	13 & 14	54.60	57.60	3.05	3.12	102.30%																		
					2.37		5	2.37	25	15	W6	R6	4	53.30	55.62	SANDSTONE	SST	2.32						Light grey cg-v.cg massive coal stringers ~80°. Joints w/ coal.
					0.03		-	0.03	-	-	W6	R1	4	55.62	55.65	SHALY COAL	Shaly COAL	0.03						Black ~90% bright coal. Mixed w/ SST. Light. No Gas.
														55.65	55.75	LOST CORE	LOST CORE	0.10						Lost Core: interpreted as coaly although badly caved
					0.72		>25	0.21	20	6	W6	R4	4	55.75	56.47	SILTSTONE	SLT	0.72						Dark grey to brown, fg, highly fracured top 30cm (small pieces). Possibly fault gouge at 57.40-57.50 (all fg, mud layer, very soft).
19	14	57.60	60.70	3.05	2.94	96.39%																		
					2.10		>25	1.37	10	7	W6	R4	4	56.47	57.94	SILTSTONE	SLT	1.47						SLT as above. Overall mod-high fractured. Broken bits w/ thick mud. Near top ~80-90° fractures, near bottom. 10-65° fracture w/ SS and trace py.
														57.94	58.19	CARBONACEOUS MUDSTONE	CARB MDSTN	0.25						Interpreted as Carb mdstn although badly caved. possibly fault gouge 58.05-58.50m.
														58.19	59.27	SILTSTONE	SLT	1.08						SLT as above. Overall mod-high fractured. Broken bits w/ thick mud. Near top ~80-90° fractures, near bottom. 10-65° fracture w/ SS and trace py.
														59.27	59.37	SILTSTONE	SLT	0.10			28269	59.60	59.70	SLT as above. Overall mod-high fractured. Broken bits w/ thick mud. Near top ~80-90° fractures, near bottom. 10-65° fracture w/ SS and trace py.
					0.53		>25	-	10	4	W6	R1	4	59.37	59.90	COAL	COAL	0.53		Seam 1	28270	59.70	60.23	Black, ~90% bright coal. Top 8cm is soft bitumen like. Light. No gas. Trace py/calc.
														59.90	59.95	LOST CORE	LOST CORE	0.05		Seam 1	ns			Coal: interpreted from geophysical Log
														59.95	60.05	SILTSTONE	SLT	0.10			28271	60.23	60.33	SLT as above w/ coal stringers and trace py.
					0.18		3	-	25	6	W6	R1	4	60.05	60.13	SILTSTONE	SLT	0.08						SLT as above w/ coal stringers and trace py.
					0.13		0	0.13	-	-	W6	R6	4	60.13	60.26	SANDSTONE	SST	0.13						Light grey cg SST w/ coal stringers.
														60.26	60.39	LOST CORE	LOST CORE	0.13						Lost Core - prbly coaly sltst
20	14 & 15	60.70	63.70	3.05	2.97	97.38%																		
					0.85		0	0.85	-	-	W6	R6	4	60.39	61.24	SANDSTONE	SST	0.85						Light-med grey, massive SST. At top are coal stringers. At top green volc zenolith (3-5cm), angular.
					0.67		4	0.54	25	7	W6	R4	4	61.24	61.91	SILTSTONE	SLT	0.67						Dark grey fg SLT w/ coal stringers ~90°. Trace py at top joint ~90°. Near bottom joints ~30-40°.
					0.08		-	0.08	-	-	W6	R1	4	61.91	61.99	COAL	COAL	0.08						Black, 80-90° bright coal, med weight, trace py, along bedding ~90°, no gas.
														61.99	62.08	LOST CORE	LOST CORE	0.09						Lost Core interpreted as coal from geophysical log
					1.37		6	0.93	25	8	W6	R4	4	62.08	63.45	SILTSTONE	SLT	1.37						Med-dark grey to brown, fg near top is dark grey from 0.20m top is light grey to brown colour. Altered SLT (?) by fluid (?). Green zenolith (volc?). Near bottom calc veins. Breccia/pseudo breccia?
21	15 & 16	63.70	66.80	3.05	3.17	103.93%	>25	1.46	25	7	W6	R5	4	63.45	66.62	CONGLOMERATE	VOLC	3.17						Grey volc turns to red volc and back to grey/green volc.
22	16 & 17	66.80	69.80	3.05	3.37	110.49%	>25	2.31	25	10	W6	R5	4	66.62	69.99	CONGLOMERATE	VOLC	3.37						Red volc grading coarsely into green volc. Most joints ~85°. Some shallow joints in a broken area near bottom.
23	17	69.80	72.80	3.05	3.38	110.82%	>25	1.44	25	8	W6	R4	4	69.99	73.37	CONGLOMERATE	VOLC	3.38						Green volv. Calc strings. Red volc splotches. Joints ~90°. 0.50m is total crushed zones.
24	17 & 18	72.80	75.90	3.05	3.33	109.18%	>25	2.20	25	9	W6	R4	4	73.37	76.70	CONGLOMERATE	VOLC	3.33						Green volv, red volc splotches. Calc veins. Joints 80-90°. Broken zones total ~0.35m.
25	18 & 19	75.90	78.90	3.05	2.89	94.75%	1	2.71	25	14	W6	R5	4	76.70	79.59	CONGLOMERATE	VOLC	2.89						Brown-green volc extremely fractured (angular) and healed w/ calc deposits. Joints 75-90°.
26	19 & 20	78.90	82.00	3.05	3.18	104.26%	14	2.99	25	14	W6	R5	4	79.59	82.77	CONGLOMERATE	VOLC	3.18						As above, w/ less brown.
27	20	82.00	85.00	3.05	3.12	102.30%	9	3.12	25	15	W6	R5	4	82.77	85.89	CONGLOMERATE	VOLC	3.12						Green volc. Calc stringers. Joints 70-90°.
																								EOH at 85.0m.

Client: CJV
Project: Raven
Logged By: Henry Kim, Ernest Popyk

Hole Number: RAV-09-032
Date Hole Started: July 25 2009
Date Hole Finished: July 27 2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 106.45 m
Depth of Casing: 19.70 m
Core Size: HQ

Geological Borehole Log: RAV-09-032

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Interval Logged Lith	Interval Logged Length	Interval Logged Lost Core	Interval Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description	
														0.00	10.27	OVERBURDEN	OVBDN							OVBDN - Casing set to 19.7m	
1	1	10.70	11.90	1.20	0.80	66.67%																			1
							>25	0.00	25	6	W6	R5	4	10.27	11.07	LAMINITE	IB SST &	0.80						About 50-50 grey Sltst and light grey fg Sst interbedding (~85˚). Core broken and crushed. Fine calcite stringers.	
														11.07	11.47	LOST CORE	Lost Core	0.40	0.40					*Rock Loss*	
2	1, 2	11.90	14.95	3.05	2.81	92.13%																			2
														11.47	11.71	LOST CORE	Lost Core	0.24	0.24					*Rock Loss*	
							>25	55.52%	20	8	W6	R4	4	11.71	14.52	SILTSTONE	Sltst	2.81						Dark grey, fg Sltst, moderate to hightly fractured. Some parts with thin Sst layers ~ 80˚ TCA. All joints and calcite veins ~ 80˚ TCA. ~0.20m thick mud layer at top.	
3	2, 3	14.95	18.00	3.05	2.85	93.44%																			3
							5	83.33%	20	7	W6	R4	4	14.52	14.94	SILTSTONE	Sltst	0.42						Dark grey, Slt, as above, thick mud layer at top. Joints ~80-90˚ TCA. Possible bedding ~80˚ TCA.	
														14.94	15.14	LOST CORE	Lost Core	0.20	0.20					*Rock Loss*	
							>25	17.28%	20	6	W6	R5	4	15.14	17.57	SANDSTONE	Sst	2.43						Light grey, mg-cg Sst, IB w/ thin Mdst layers ~70-80˚ TCA. Highly fracuted top & bottom, vertical fr at ~16.5m depth.	
4	3	18.00	21.05	3.05	2.01	65.90%																			4
							5	40.63%	20	6	W6	R5	4	17.57	17.89	SANDSTONE	Sst	0.32						Sst as above, joints ~60-90˚ TCA, some w/ coal, near bottom 80-90˚ TCA. Coal/Sltst stringers visible.	
							>25				W6	R1	4	17.89	18.23	COAL	Coal	0.34		Seam 4	28157	18.32	18.66	Black, small fragments of coal mixed with mud, heavy, 30-50 % bright coal, no gas, near bottom ~90% mud.	
														18.23	19.27	LOST CORE	Lost Core	1.04	1.04					*Rock Loss*	
							>25	31.85%	20	5	W6	R6	4	19.27	20.62	SANDSTONE	Sst	1.35						Light grey, m-cg Sst. Heavily broken. Dominant joint ~60˚ TCA. Many w/ Sltst. High % of Sltst stringers.	
5	3, 4	21.05	24.10	3.05	3.00	98.36%																			5
														20.62	20.67	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*	
							>25	36.67%	10	9	W6	R6	4	20.67	23.67	SANDSTONE	Sst	3.00						Sst, as above. Highly fractured w/ Sh & Sltst stringers, dominant joint angle ~60˚ TCA, vertical fractures near bottom.	
6	4, 5	24.10	27.15	3.05	2.95	96.72%																			6
														23.67	23.70	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*	
							>25	41.02%	10	10	W6	R6	4	23.70	26.65	SANDSTONE	Sst	2.95						Sst, as above, highly fractured, dominant joint angle ~60-90˚ TCA w/Sh, some vertical and ~80-90˚ joints (minor),many Coal/Sltst stringers near bottom w/ micro faults.	
7	5, 6	27.15	30.20	3.05	2.87	94.10%																			7
							1	71.43%	25	10	W6	R6	4	26.65	26.83	SANDSTONE	Sst	0.18						Sst, as above with many Sltst stringers, 30-90˚ TCA, ~30˚ TCA joints at top, ~90˚ contact w/ bottom coal.	
														26.83	26.93	SANDSTONE	Sst	0.10			28164	27.28	27.38	Sst, as above with many Sltst stringers, 30-90˚ TCA, ~30˚ TCA joints at top, ~90˚ contact w/ bottom coal.	
														26.93	27.06	LOST CORE	Lost Core	0.13	0.13	Seam 3	ns			*Coal loss.*	
														27.06	27.09	COAL	Coal	0.03		Seam 3	28163	27.38	27.41	*Part of below coal interval, please see next interval for comments*	
														27.09	27.23	CLAYSTONE	Clyst	0.14		Seam 3	28163	27.41	27.55	*Originally this parting was logged as COAL (Taken from below unit). But after examining the geophysical density & gamma,*	
							>25	31.94%	25	6	W6	R1	4	27.23	27.78	COAL	Coal	0.55		Seam 3	28163	27.55	28.10	Black, 90-95% bright coal, with dull bands between. No gas, trace plant & calc, top 20cm is highly fractured and held together with mud (fault?)	
														27.78	27.88	SANDSTONE	Sst	0.10			28165	28.10	28.20	Sst, as above. Top 0.80m mixed with Sltst or coal, joints 30-85˚ TCA, ~20 percent calc vein at 29.80m depth.	
							8	80.21%	25	13	W6	R6	4	27.88	29.65	SANDSTONE	Sst	1.77						Sst, as above. Top 0.80m mixed with Sltst or coal, joints 30-85˚ TCA, ~20 percent calc vein at 29.80m depth.	
8	6	30.20	33.25	3.05	3.02	99.02%																			8
							6	100.00%	25	15	W6	R6	4	29.65	32.67	SANDSTONE	Sst	3.02						Light grey, mg-cg, massive Sst. Joints 35 and 90˚ TCA, 32.85-33.10m is Sst mixed with Sltst stringers.	
9	6, 7	33.25	36.30	3.05	3.04	99.67%																			9
							13	93.42%	20	15	W6	R6	4	32.67	35.71	SANDSTONE	Sst	3.04						Sst as above, massive, joints 70-90˚ TCA. Highly fractured zone at 35.80m depth w/ gouge material, (fine grained Sst fragments) , lost returns at this depth.	
10	7, 8	36.30	39.35	3.05	3.05	100.00%																			10
							7	92.46%	25	15	W6	R6	4	35.71	38.76	SANDSTONE	Sst	3.05						Sst, as above, massive, joints 70-90˚ TCA.	
11	8, 9	39.35	42.40	3.05	3.03	99.34%																			11
							5	93.40%	25	15	W6	R6	4	38.76	41.79	SANDSTONE	Sst	3.03						Light grey, mg-cg, massive Sst. Joints ~90˚ TCA, 20˚ TCA joint at 42.00m depth.	
12	8. 9	42.40	45.45	3.05	2.91	95.41%																			12
							5	50.59%	25	15	W6	R7	3	41.79	43.49	SANDSTONE	Sst	1.70						3 fr at 90˚, large sks at 6˚ (filled with rock flour) Light grey, v.c.g - c.g., massive Sst.	
							>25	0.00%	10	0	W6	R0	0	43.49	43.53	COAL	Coal	0.04						Black, powdery, dull coal, contacts at 55˚ TCA.	
							4	88.03%	20	13	W6	R7	3	43.53	44.70	SANDSTONE	Sst	1.17						As above Sst, except for 1 large sks at 10˚, 3 @ 90˚	
														44.70	44.75	LOST CORE	Lost Core	0.05	0.05					*Rock loss.*	
13		45.45	48.50	3.05	3.05	100.00%																			13
	9						5	71.74%	20	13	W6	R7	3	44.75	45.67	SANDSTONE	Sst	0.92						As above Sst, except for 3 sks at 45˚, 1 fr at 10˚, 1 fr at 0˚.	
	10						7	88.73%	20	13	W6	R7	3	45.67	47.80	SANDSTONE	Sst	2.13						As above Sst, except for Sh beds at 80˚, 5 fr at 80˚, 2 fr at 90˚.	
14		48.50	51.55	3.05	3.03	99.34%																			14
	10						17	77.78%	25	12	W6	R7	3	47.80	49.87	SANDSTONE	Sst	2.07						As above Sst, except for it is fining towards the bottom of the run 8 fr@ 70˚ 1 fr @ 10˚ rest of fr @ 90˚	
	11						14	69.79%	20	10	W6	R7	3	49.87	50.83	SANDSTONE	Sst	0.96						As above Sst, all fr at 90˚.	
15	11	51.55	54.60	3.05	2.98	97.70%																			15
							>25	61.41%	20	8	W6	R7	3	50.83	53.81	SANDSTONE	Sst	2.98						As above Sst, except for numberous sks at 45˚, 1 fr at 15˚.	
16	12	54.60	57.65	3.05	3.05	100.00%																			16
							19	74.75%	25	9	W6	R7	2	53.81	56.86	SANDSTONE	Sst	3.05						As above Sst, except for 4 calcite veins at 45˚ TCA, 1 fr at 10˚, 1 sks at 45˚, rest at 90˚.	
17		57.65	60.70	3.05	3.34	109.51																			17
	12						4	92.04%	20	10	W6	R7		56.86	57.99	SANDSTONE	Sst	1.13						As above Sst, except for 5 sks at 45˚ TCA.	
	13						>25	21.72%	20	9	W6	R7		57.99	60.20	SANDSTONE	Sst	2.21						As above Sst, except 1 fr at 0˚ (0.40m long). 2 sks at 45˚, numberous fr at 90˚.	
18		60.70	63.75	3.05	2.94	96.39%																			18
	13						7	55.96%	25	9	W6	R7	2	60.20	62.13	SANDSTONE	Sst	1.93						As above Sst, except for 1 fr at 0˚ (0.30m), 1 fr at 15˚, rest at 90˚. Rock flower in all fractures. 2 or 3 SH beds at 75˚.	
	14						4	80.20%	25	10	W6	R7	2	62.13	63.14	SANDSTONE	Sst	1.01						As above Sst, except for 2 fr at 90˚, 1 fr at 15˚, 1 fr at 60˚.	
														63.14	63.18	LOST CORE	Lost Core	0.04	0.04					*Rock Loss*	
19		63.75	66.80	3.05	3.03	99.34%																			19
	14						3	100.00%	25	11	W6	R7	3	63.18	65.02	SANDSTONE	SST	1.84						As above Sst, except 2 sks at 38˚ TCA, 1 fr at 90˚, coal spars and plant material.	
	14						>25	0.00%	0	3	W6	R0	0	65.02	65.09	COAL	Coal	0.07						Bright (60%) dull (40%) coal broken, crushed.	
	14						>25	15.94%	10	7	W6	R1	1	65.09	65.73	CARBONACEOUS MUDSTONE	Carb Sh	0.64						80% Sh, 20% coal, Sh black/brown, massive, v. fg, sheared/broken/crushed disks of dull coal.	
	14						1	73.33%	25	10	W6	R0	1	65.73	65.93	COAL	Coal	0.20			28158	65.62	65.82	As above coal, 1 fr at 90˚ TCA.	
	14						3	78.57%	25	10	W6	R3	2	65.93	66.21	SHALE	Sh	0.28						Black, v. fg, massive Sh.	
20	15	66.80	69.85	3.05	3.05	100.00																			20
								100.00%			W6	R3	3	66.21	66.31	SHALE	Sh	0.10						As above Sh.	
							17	83.73%	25	11	W6	R3	3	66.31	69.26	LAMINITE	IB SH & SLTST	2.95						75% Sh, 25% Sltst. Sh as above, except for thinly to medium laminated beds at 70-90˚. Sltst, dark brown, mg beds at 70-90˚, 8 sks at 45˚, 1 FR at 20 ˚ rest at 90 ˚.	
21		69.85	72.90	3.05	3.04	99.67%																			21

	15						11	56.78%	20	10	W6	R3	3	69.26	70.44	LAMINITE	IB SH & SLTST	1.18						Fr at 15˚ is a stepped fr. As above IB Sh/Sltst, except for 4 sks at 45 ˚, 1 fr at 15 ˚, all bedding between 70 and 90 ˚. All other fr at 90˚.	
	16						2		25	7	W6	R3	3	70.44	70.51	SILTSTONE	Sltst	0.07						As above IB Sh/Sltst.	
	16						12	47.30%	25	8	W6	R6	3	70.51	71.25	LAMINITE	IB SH & SLTST	0.74						50% grey, cg, Sst ant 50% dark grey mg Sltst. Beds and contacts at 45 ˚ TCA, 2 fr at 45 ˚ TCA, rest of the fr at 90 ˚ TCA	
	16						10	78.10%	20	10	W6	R4	2	71.25	72.30	SILTSTONE	Sltst	1.05						Dark grey to black, f-mg Sltst with plant marterial and coal spars, 4 fr at 45 ˚, 2 at 90˚, rest irregular.	
22		72.90	75.95	3.05	3.06	100.33%																			22
	16										W6	R4	2	72.30	72.34	SILTSTONE	Sltst	0.04						As above Sltst.	
	16						14	82.84%	25	11	W6	R6	2	72.34	74.38	SANDSTONE	Sst	2.04						Light grey, cg, massive Sst w/ several Sltst beds at 15 ˚, 10 fr at 45 ˚.	
	17						8	81.63%	25	12	W6	R6	3	74.38	75.36	SANDSTONE	Sst	0.98						As above Sst, except for all fr in between 70-90 ˚ TCA.	
23	17	75.95	79.00	3.05	3.02	99.02%																			23
							>25	70.86%	25	12	W6	R6	3	75.36	78.38	SANDSTONE	Sst	3.02						As above Sst. 7 sks at 45˚, 1 fr at 0˚. Rest of the fr are at 90 ˚.	
24		79.00	82.05	3.05	2.91	95.41%																			24
	17										W6	R6	3	78.38	78.44	SANDSTONE	Sst	0.06						As above Sst.	
	18						16	61.54%	20	12	W6	R6	2	78.44	80.26	SANDSTONE	Sst	1.82						As above Sst, 5 sks at 45 ˚, 2 thick (4mm) calcite veins at 50 ˚, 1 fr at 10˚, 5 fr at 45˚.	
														80.26	80.45	LOST CORE	Lost Core	0.19	0.19					*Rock loss.*	
	18						>25	0.00%	20	6	W6	R3	0	80.45	81.38	CARBONACEOUS MUDSTONE	Carb Sh	0.93						Interfingered bands of Sh and crushed coal, 75% Sh, 25% crushed black coal.	
	18										W6	R6	1	81.38	81.48	SANDSTONE	Sst	0.10						A chunk of the above Sst.	
25	18,	82.05	85.10	3.05	2.44	80.00%																			25
							9	40.74%	25	11	W6	R6	2	81.48	82.29	SANDSTONE	Sst	0.81						As above Sst, 1 irregular fracture, 1 fr at 70˚, 3 at approximately 90 ˚.	
							4	94.34%	20	10	W6	R6	4	82.29	82.82	SANDSTONE	Sst	0.53						As above Sst, fractures ~ 50 ˚ TCA.	
							>25	41.67%	20	6	W6	R4	4	82.82	83.32	SILTSTONE	Sltst	0.50						Dark grey- dark brown, fg Sltst, highly fractured ~50-90 ˚ TCA.	
							>25	41.67%	20	6	W6	R4	4	83.32	83.42	SILTSTONE	Sltst	0.10			28161	84.40	84.50	Dark grey- dark brown, fg Sltst, highly fractured ~50-90 ˚ TCA.	
											W6	R1	0	83.42	83.92	COAL	Coal	0.50		Seam 1	28159	84.50	85.00	Black coal, highly fractured into small pieces, appears to be mostly dull, (80-90% ?) light, no gass, trace py.	
														83.92	84.19	LOST CORE	Lost Core	0.27	0.27	Seam 1	ns			*Lost Core: Probably Shaly Coal*	
							>25							84.19	84.57	LOST CORE	Lost Core	0.38	0.38	Seam 1	ns			*Lost Coal*	
26	19,	85.10	88.15	3.05	2.90	95.08%																			26
														84.57	84.72	LOST CORE	Lost Core	0.15	0.15	Seam 1	ns			*Coal loss.*	
														84.72	85.22	COAL	Coal	0.50		Seam 1	28159	85.00	85.50		
							>25				W6	R1	0	85.22	85.62	COAL	Coal	0.40		Seam 1	28160	85.50	85.90	Black coal as above, highly fractured into small pieces, 40-50% bright coak. Light, no gass, trace py.	
														85.62	85.72	SILTSTONE	Sltst	0.10			28162	85.90	86.00	Light brown to grey, fine grained Sltst, 87.0-87.50m, highly fractured joints ~70-90 ˚ TCA, near bottom volc green sheen.	
							>25	43.50%	20	7	W6	R4	4	85.72	87.62	SILTSTONE	Sltst	1.90						Light brown to grey, fine grained Sltst, 87.0-87.50m, highly fractured joints ~70-90 ˚ TCA, near bottom volc green sheen.	
27	20,	88.15	91.20	3.05	3.00	98.36%			20	10	W6	R4	4												27
														87.62	87.67	LOST CORE	Lost Core	0.05	0.05					*Rock Loss*	
							17	87.67%	20	10	W6	R4	4	87.67	90.67	SILTSTONE	Sltst	3.00						Light grey-green, fg, altered Sltst, fractures ~70-90 ˚ TCA, calc veins.	
28	21	91.20	94.25	3.05	3.02	99.02%			20	12	W6	R3	4												28
														90.67	90.70	LOST CORE	Lost Core	0.03	0.03					*Rock Loss*	
							>25	93.71%	20	12	W6	R3	4	90.70	93.72	SILTSTONE	Sltst	3.02						Light-dk green fg hi-altered Sltst; hi-fractured & massive calcite veins, fractures ~ 70-90 ˚ TCA. Some altered red-brown colour.	
29	21,	94.25	97.30	3.05	2.90	95.08%			20	7	W6	R3	4												29
							>25	25.17%	20	7	W6	R3	4	93.72	96.62	SILTSTONE	Sltst	2.90						Altered Sltst as above, highly fractured w/ calcitic quartz veins, fractures/ veins vary in angle.	
														96.62	96.77	LOST CORE	Lost Core	0.15	0.15					*Rock Loss*	
30	22,	97.30	100.35	3.05	3.14	102.95%			20	13	W6	R5	4												30
							>25	59.24%	20	13	W6	R5	4	96.77	99.91	SANDY SILTSTONE	Sltst-Vol	3.14						Dark green, volc, basalt/altered Sltst. Rock harder than above Sltst, highly fractured with calcitic quartz veins.	
31	23,	100.35	103.40	3.05	2.90	95.08%			20	7	W6	R5	4												31
														99.91	100.02	LOST CORE	Lost Core	0.11	0.11					*Rock Loss*	
							>25	33.45%	20	7	W6	R5	4	100.02	102.92	CONGLOMERATE	Volc	2.90						Volcanic as above, highly fractured zone from 101.0m-102.0m depth.	
32	24	103.40	106.45	3.05	3.10	101.64%			20	8	W6	R5	4												32
							>25	43.23%	20	8	W6	R5	4	102.92	106.02	CONGLOMERATE	Volc	3.10						Dark green volcanics. Highly fractured with calcitic quartz veins, fractures/joints are 10-90˚ TCA, some areas show red-brown color alteration. Dominant vein/joint angle ~65-75 ˚ TCA.	

Geological Borehole Log: RAV-09-033

Client: CJV
Project: Raven
Logged By: Henry, Parviz

Hole Number: RAV-09-033
Date Hole Started: 30-Jul-09
Date Hole Finished: 23-Aug-09
Hole Orientation: -90 degrees

Total Hole Depth: 445.50m
Depth of Casing: 25.90m
Core Size: HQ

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Recovery			RQD		Fractures			Hardness		G.P.L. Corrected		Intervals Logged				Samples (Driller's Depths)			Description
		Depth From (m)	Depth to (m)	Length of Run (m)	Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage	Alt'n & Weath.	Prefix	Core Quality	From (m)	To (m)	Lithology	Interval Length	Core Loss	Strat	Number	From (m)	To (m)	
														0.00	25.90	OVERBURDEN	OVBDN	25.90		OVBDN				0-25.9m OB
														25.90	26.30	LOST CORE	LOST CORE	0.40						
1	1	25.90	27.10	1.20	1.00	83.33%	4	81.00%	20	10	W6	R5	3	26.30	27.30	SILTSTONE	sltst	1.00						Dark grey, fg, sltst, massive, top 10cm vertical fracture, joint ~80TCA, bottom ~30TCA joint w/ trace calc and mud
2	1,2	27.10	30.15	3.05	3.10	101.64%	>25	0.48%	20	10	W6	R5	3	27.30	30.40	LAMINITE	IB sltst	3.10						Dark grey, fg, sltst, IB w/ light grey mg sst, bedding ~90TCA, fractures ~90TCA, also ~vertical fractures, overall mod-high fractured
3	2,3	30.15	33.20	3.05	3.00	98.36%	14	0.86%	20	13	W6	R5	3	30.40	33.40	LAMINITE	IB sltst	3.00						IB sltst w/ sst, as above, some areas w/mud, bedding ~90TA, joints/fractures from 40-90TCA, dominant fractures ~90TCA overall, sst increases towards bottom
4	3,4	33.20	36.25	3.05	3.01	98.69%	12	0.99%	25	14	W6	R5	4	33.40	36.41	LAMINITE	IB sst	3.01						Light frey, mg sst, IB w/slt, bedding ~85-90TCA, some depositional structures visible within sltst, joints/fractures ~85-90TCA
5	4	36.25	39.30	3.05	3.05	100.00%	>25	64.92%	20	6	W6	R5	2	36.41	39.46	LAMINITE	IB sltst	3.05						Dark grey, fg, sltst, IB w/ sst, ~90TCA bedding, highly fractured, mixed w/ mud, irregular joints/fractures, smooth surfaces
6	4,5	39.30	42.35	3.05	2.97	97.38%	>25	37.04%	10	8	W6	R5	2	39.46	42.43	SILTSTONE	sltst	2.97						dark grey, fg, sltst, highly fractured w/thick calc/quz vein from 39.80-41.40m, slicken sided surfaces, disc py associated w/ vein system, possible fault plain(?), 41.40m to bottom is solid massive sltst, two joints ~35TCA, one 90TCA at bottom
7	5,6	42.35	45.40	3.05	2.90	95.08%	>25	59.31%	0	8	W6	R5	2	42.43	45.33	SILTSTONE	sltst	2.90						dark grey, fg, sltst, as above, top 1.3m is solid core (~90TCA fractures), massive sltst, 43.7-44.7m is highly fractured in small pieces, irregular fractures, 44.7-bottom is solid core w/ ~90TCA fractures, massive sltst
8	6,7	45.40	48.45	3.05	3.42	112.13%		92.11%	25	14	W4	R3	-	45.33	48.75	SILTSTONE	sltst	3.42						fg-mg, massive sltst, core is almost intact
9	6,7	48.45	51.50	3.05	2.90	95.08%	>25	20.00%	25	7	W4	R3	-	48.75	51.65	SILTSTONE	sltst	2.90						med grey, fg, massive sltst
10	7,8	51.50	54.55	3.05	3.05	100.00%	>25	59.02%	25	13	W4	R3	-	51.65	54.70	SILTSTONE	sltst	3.05						sltst as above, gauge at 2.00 from the top and run around 0.15m
11	8,9	54.55	57.60	3.05	3.05	100.00%	-	-	-	-	-	-	-											
					2.51		5	100.00%	25	14	W4	R3	-	54.70	57.21	SILTSTONE	sltst	2.51						sltst, med grey, fg, massive, core intact
					0.54		-	-	-	-	-	-	-	57.21	57.75	SANDSTONE	sst,sltst	0.54						sltst IB w/ fg, light grey sst bands upto 10cm, 0.2m at the bottom sltst
12	9,10	57.60	60.65	3.05	3.05	100.00%	2	98.36%	25	15	W4	R3	-	57.75	60.80	SANDSTONE	sst, sltst	3.05						IB of sltst and sst with domination of sltst, sst bands are from 2-3cm upto 0.15m, solid core
13	10	60.65	63.70	3.05	2.97	97.38%	14	77.10%	25	15	W4	R3	-	60.80	63.77	SILTSTONE	sltst	2.97						sltst, med grey, fg, massive, 0.3m at the top of run w/ sst, fg bands, 1.60m from top, 0.26m sst, 0.8m from top, 0.50m of core broken w/ joint at 30TCA and 0.10m gauge
14	10,11	63.70	66.75	3.05	3.02	99.02%	-	-	-	-	-	-	-											
					0.37		-	10.00%	-	-	-	R4	-	63.77	64.14	SILTSTONE	sltst	0.37						slt, med grey, fg, solid
					1.11		-	100.00%	-	-	-	R5	-	64.14	65.25	SANDSTONE	sst	1.11						sst, lifhg grey, fg, w/ few bands of sltst upto 5cm
					1.53		-	100.00%	-	-	-	-	-	65.25	66.78	SILTSTONE	sltst	1.53						sst, light grey, fg, solid w/ some stringers of sst at 90TCA
15	11,12	66.75	69.80	3.05	3.23	105.90%																		
					1.00		2	100.00%	-	-	-	-	-	66.78	67.78	SILTSTONE	sltst	1.00						sltst as above
					1.00		-	100.00%	-	-	-	-	-	67.78	68.78	SANDSTONE	sst	1.00						sst, light grey, fine grained, solid
					1.23		-	83.74%	-	-	-	-	-	68.78	70.01	SANDSTONE	sst	1.23						silty sst, med grey, fg, massive and solid
16	12	69.80	72.85	3.05	2.98	97.70%	-	100.00%	-	-	W4	R4	4	70.01	72.99	SILTSTONE	sltst	2.98						sltst, med to light grey, massive
17	13	72.85	75.90	3.05	3.05	100.00%	4	98.36%	25	15	W6	R4	4	72.99	76.04	SILTSTONE	sltst	3.05						sltst, med to dark grey, fg, massive, 10.22m from top 0.04m gauge
18	13,14	75.90	78.95	3.05	3.05	100.00%	8	84.92%	25	15	W6	R4	4	76.04	79.09	SILTSTONE	sltst	3.05						sltst, med grey, fg, massive, 0.88m to bottom joints at 50TCA
19	14,15	78.95	82.00	3.05	2.98	97.70%	3	81.54%	25	12	W6	R4	4	79.09	82.07	SILTSTONE	sltst	2.98						sltst, med grey, fg, massive, 0.50m at the bottom joints along the core axis
20	15	82.00	85.05	3.05	3.06	100.33%	1	100.00%	25	15	W6	R4	4	82.07	85.13	SILTSTONE	sltst	3.06						sltst as above
21	15,16	85.05	88.10	3.05	3.06	100.33%	3	91.83%	26	12	W6	R4	4	85.13	88.19	SILTSTONE	sltst	3.06						sltst as above, 10.75m at the bottom joints along the core axis, 0.10m broken core at the top
22	16,17	88.10	91.15	3.05	3.14	102.95%	3	91.72%	25	9	W6	R4	4	88.19	91.33	SILTSTONE	sltst	3.14						sltst, as above, joints zone, 0.80m above the bottom, joints ~50TCA
23	17,18	91.15	94.20	3.05	2.98	97.70%	-	100.00%					4	91.33	94.31	SILTSTONE	sltst	2.98						sltst, fg, med to dark grey, massive, solid
24	18	94.20	97.25	3.05	3.03	99.34%	5	100.00%	25	15	W6	R4	4	94.31	97.34	SILTSTONE	sltst	3.03						sltst, med to dark grey, fg, massive, core somewhat broken by joints @45TCA
25	18,19	97.25	100.30	3.05	3.01	98.69%	-	102.99%	-					97.34	100.35	SILTSTONE	sltst	3.01						sltst as above, solid
26	19,20	100.30	103.35	3.05	2.95	96.72%	2	100.00%	25	15	W6	R4	4	100.35	103.30	SILTSTONE	sltst	2.95						sltst as above, solid
27	20,21	103.35	106.40	3.05	3.00	98.36%	>25	35.67%	10	6	W6	R5	0	103.30	106.30	SILTSTONE	sltst	3.00						dark grey, fg, sltst, 103.30-103.95m is solid core, massive sltst, 103.95m to bottom is highly fractured into small pieces, dominant joints/fractures angle 30-50TCA, some w. ss and calc, some ares joints filled w/ mud (fault gauge?)
28	21	106.40	109.45	3.05	3.00	98.36%	>25	41.00%	10	6	W6	R5	4	106.30	109.30	SILTSTONE	sltst	3.00						dark grey, fg, sltst, 106.4-108.0m is mod-highly fractured w/ss and calc vein dominant fracture angle ~40-60TCA, 108.0-109.4m is more solid core w/ planar fractures ~90TCA
29	21,22	109.45	112.50	3.05	3.05	100.00%	>25	41.64%	10	7	W6	R5	2	109.30	112.35	SILTSTONE	sltst	3.05						dark grey, fg, sltst 109.4-110.58m solid core, massive sltst, ~90TCA fractures w/ calc, 110.58-111.80m highly fractured w/ ss, some w/ calc on fracture surfaces, 111.80-bottom is more solid w/ 90TCA fractures, some w/ calc and calc veins
30	22,23	112.50	115.55	3.05	3.02	99.02%	12	92.05%	25	14	W6	R5	4	112.35	115.37	SILTSTONE	sltst	3.02						dark grey, fg, sltst, massive joints ~90TCA, ~35TCA, light brown, fg, soft vein (1-3mm), through out the run, ~30TCA joint w/ ss @ 115.40m
31	23,24	115.55	118.60	3.05	3.00	98.36%	20	80.67%	20	13	W6	R5	4	115.37	118.37	SILTSTONE	sltst	3.00						dark grey, fg, sltst, top 0.6m is highly fractured w/ ss, irregular fractures ~30-50TCA, rest is solid core w/ ~90TCA planar fractures, one ~50TCA fracture @117.10m
32	24	118.60	121.65	3.05	3.38	110.82%	8	96.75%	25	15	W6	R5	4	118.37	121.75	SILTSTONE	sltst	3.38						dark frey, fg, sltst, massive, joints ~90TCA, two ~40TCA joints near bottom
33	24,25	121.65	124.70	3.05	2.85	93.44%	8	74.74%	20	13	W6	R5	4	121.75	124.60	SILTSTONE	sltst	2.85						dark grey, fg, sltst, lb w/ sst, light grey, mg, bedding ~90TCA, massive ~90TCA planar joints from the top to bottom except 123.70m, 124.80m highly fractured w/ 10-50TCA w/ ss and calc veins
34	25,26	124.70	127.75	3.05	2.93	96.07%	10	81.91%	25	13	W6	R5	3	124.60	127.53	SILTSTONE	sltst	2.93						dark grey fg, sltst, joints mostly ~85-90TCA, ~125.0m and 127.50m mod-fractured zone w/ vertical to low angle planar fractures, rest is massive sltst w/ solid core
35	26	127.75	130.80	3.05	3.03	99.34%	5	100.00%	25	15	W6	R5	4	127.53	130.56	SILTSTONE	sltst	3.03						dark grey, fg, massive sltst w/ solid core, joints ~80-90TCA, some filled w/ calc, ~10cm sst layer @ 128.65m, mixed w/ sltst ~90TCA bedding
36	26,27	130.80	133.85	3.05	3.10	101.64%	10	96.77%	25	15	W6	R5	4	130.56	133.66	SILTSTONE	sltst	3.10						dark grey, fg, sltst, massive solid core, all joints ~85-90TCA, except ~133.0m ~25TCA joints w/ ss, highly fractured ~10cm and @ 132.30m ~65TCA joints filled w/ calc vein and trace py, from 132.30m to bottom occational ~90TCA sst bedding layers ~cm
37	27,28	133.85	136.90	3.05	3.00	98.36%	7	100.00%	25	15	W6	R5	4	133.66	136.66	SILTSTONE	sltst	3.00						dark grey, fg, sltst, massive and solid core, joints ~90TCA, near bottom two ~40TCA joints ~136.65-136.80m
38	28,29	136.90	139.95	3.05	3.05	100.00%	13	88.52%	25	15	W6	R5	4	136.66	139.71	SILTSTONE	sltst	3.05						dark grey, fg, sltst, top 30cm is highly broken w/ thick calc. vein w/ trace py, dominant joint angle 40-50TCA, rest of the core is solid, massive sltst, two joints ~45TCA
39	29	139.95	143.00	3.05	3.05	100.00%	>25	48.52%	10	9	W6	R5	2	139.71	142.76	SILTSTONE	sltst	3.05						dark grey, fg, sltst, 139.90-142.40m is solid core, massive slt, joints 60-90TCA, one ~20TCA calc vein near top, 142.20-bottom is highly fractured w/ ss, calc vein, fractures from vertical to~80TCA, possible fault zone(?)
40	29,30	143.00	146.05	3.05	3.15	103.28%	>25	68.57%	20	10	W6	R5	3	142.76	145.91	SILTSTONE	sltst	3.15						dark grey, fg, sltst, massive, two calc vein near top, joints 35-85TCA, some w/ ss and calc.
41	30,31	146.05	149.10	3.05	2.90	95.08%	19	90.69%	20	13	W6	R5	4	145.91	148.81	SILTSTONE	sltst	2.90						dark grey, fg, sltst, massive, joints ~70-90TCA, 147.80-148,10m has 9 fractures w/ fresh mud layer (both ~90TCA), possible fault gauge (?), bottom ~10cm is mod-fractured
42	31,32	149.10	152.15	3.05	3.02	99.02%	5	86.75%	25	9	W6	R4	4	148.81	151.83	SILTSTONE	sltst	3.02						sltst, med to dark grey, massive, joints start from 0.60m from the top at 25TCA, the rest of the core is intact, 0.20m at the bottom is broken
43	32	152.15	155.20	3.05	3.05	100.00%	4	84.59%	25	7	W6	R4	4	151.83	154.88	SILTSTONE	sltst	3.05						sltst as above, 0.50m from top, 0.37m of core joints top and bottom at 50TCA, 0.10m at the bottom part at 152.97m very broken
44	32,33	155.20	158.25	3.05	3.05	100.00%	2	100.00%	25	15	W6	R4	4	154.88	157.93	SILTSTONE	sltst	3.05						sltst as above, massive , med-dark grey, joints at 45TCA
45	33,34	158.25	161.25	3.00	2.90	96.67%	3	88.28%	25	14	W6	R4	4	157.93	160.83	SILTSTONE	sltst	2.90						sltst as above, 10.25m at the top joints at 15TCA
46	34,35	161.25	164.30	3.05	3.10	101.64%	-	-	-	-	-	-	-	160.83	163.93	SILTSTONE	sltst	3.10						sltst as above, dark grey, massive solid
47	35	164.30	167.35	3.05	3.05	100.00%	-	-	-	-	-	-	-	163.93	166.98	SILTSTONE	sltst	3.05						sltst, massive, med0dark grey, solid
48	35,36	167.35	170.40	3.05	3.05	100.00%	1	-	25	15	W6	R4	4	166.98	170.03	SILTSTONE	sltst	3.05						sltst as above
49	36,37	170.40	173.45	3.05	2.98	97.70%	2	100.00%	25	15	W6	R4	4	170.03	173.01	SILTSTONE	sltst	2.98						med to dark grey, sltst, massive, solid core
50	37	173.45	176.50	3.05	3.05	100.00%	-	101.64%	-	-	-	-	-	173.01	176.06	SILTSTONE	sltst	3.05						slt as above solid
51	37,38	176.50	179.55	3.05	3.05	100.00%	-	100.00%	-	-	-	-	-	176.06	179.11	SILTSTONE	sltst	3.05						slt, med to dark grey, fg, massive, solid
52	38,39	179.55	182.60	3.05	3.02	99.02%	-	98.34%	-	-	-	-	-	179.11	182.13	SILTSTONE	sltst	3.02						slt as above, 0.05m end of run is broken
53	39,40	182.60	185.65	3.05	3.07	100.66%	6	92.83%	25	7	W6	R4	4	182.13	185.20	SILTSTONE	sltst	3.07						slt as above, at 184.60m 20cm of core jointed at 30TCA
54	40	185.65	188.70	3.05	3.05	100.00%	2	101.64%	25	33	W6	R4	4	185.20	188.25	SHALY SILTSTONE	sltst, sst	3.05						slt, med to dark grey, fg, massive, 0.20m at the bottom is sst
55	40,41	188.70	191.75	3.05	3.00	98.36%	-	100.00%					-	188.25	191.25	SANDSTONE	sst	3.00						sst, light grey, med grey, massive
56	41,42	191.75	194.80	3.05	3.05	100.00%	-	100.00%	-	-	-	-	-	191.25	194.30	SANDSTONE	sst	3.05						sst, light grey, mg-cg, solid
57	42	194.80	197.85	3.05	2.95	96.72%	3	96.61%	25	15	W6	R6	4	194.30	197.25	SANDSTONE	sst	2.95						light to med grey, mg-cg, massive sst, ~10TCA calc vein at 195.05m, 196.55-196.80m, silty sst, dark gery, joints ~70-80TCA, rest is solid core, one slt clast at 195.34
58	42,43	197.85	200.90	3.05	3.03	99.34%	4	95.71%	25	15	W6	R6	4	197.25	200.28	SANDSTONE	sst	3.03						light to med grey, mg-cg, massive sst, joints filled w/ calc and shows ss @ 197.80m and 197.80m, slt clasts ~3cm along ~80TCA fracture@ 198.30m, ~45TCA joints @199.40m
59	43,44	200.90	203.95	3.05	3.03	99.34%	6	92.41%	25	15	W6	R6	4	200.28	203.31	SANDSTONE	sst	3.03						light to med grey, mg-cg, massive sst, thin dark stringer layers (sltst?) ~25TCA @ 201.55m, and ~65TCA @ 202.0m, silty sst layer from 202.63-202.88m, mod fractured (50-80TCA), joints 70-85TCA some w/ slt(mud)
60	44,45	203.95	207.00	3.05	3.00	98.36%	-	-	-	-	-	-	-											
					0.55		8	69.09%	25	9	W6	R6	4	203.31	203.86	SANDSTONE	sst	0.55						light-med grey, mg-cg, massive sst, joints/fractures near bottom ~70-90TCA, bottom 20cm is mixed with slt
					2.45		18	55.10%	20	11	W6	R5	4	203.86	206.31	SILTSTONE	sltst	2.45						dark grey, fg, massive slt, top 10cm highly fractured w/ ss, and mud (fault gauge?), vertical fracture near bottom, other joints 80-90TCA
61	45	207.00	210.05	3.05	3.05	100.00%	7	99.02%	25	15	W6	R5	4	206.31	209.36	SILTSTONE	sltst	3.05						dark grey, fg, massive slt joints mostly 85-90TCA, except ~30TCA @208.30m, fossil @207.44m some joints w/ plant material/coal lenses and thin (1-3mm) coal lenses visible near bottom
62	45,6	210.05	213.10	3.05	3.08	100.98%	20	79.87%	20	12	W6	R5	4	209.36	212.44	SILTSTONE	sltst	3.08						dark grey, fg, massive sltst, near top small coal lenses visible, joints ~70-85TCA upto 210.70m, 210.70-213.10m, joints ~35-50TCA, some w/ calc, bottom 10cm is highly broken into small pieces
63	46,47	213.10	216.15	3.05	2.92	95.74%	7	100.00%	25	15	W6	R5	4	212.44	215.36	SILTSTONE	sltst	2.92						dark grey, fg, massive sltst, at top, ~35TCA joints w/ mud, calc stringers visible through out, other joints ~80-85TCA, 214.8-215.23m, sandy slt 2/ ripup clasts(?), v.thin coal lenses visible
64	47	216.15	219.20	3.05	3.03	99.34%	7	93.07%	25	15	W6	R5	4	215.36	218.39	SILTSTONE	sltst	3.03						dark grey, fg, massive sltst, most joints ~90TCA, ~70-90TCA, joints w/ ss @ 217.0m, w/ calc film and veinlets (possible clasts?), ~50TCA joint w/ calc @219.80m, calc stringers, veinlets and possible bivalve fossils(?)
65	47,48	219.20	222.25	3.05	3.09	101.31%	18	74.11%	20	10	W6	R5	4	218.39	221.48	SILTSTONE	sltst	3.09						dark grey, fg, massive sltst, ~10TCA, 40cm long joints w/ calc ss @ 220.0m, appears to be missing large clasts (~3-4cm)@220.60m, (same as one @ 217.0m), highly fractured from 214.20-214.20m w/ ss, 214.20m-
66	48,49	222.25	225.30	3.05	2.97	97.38%	8	86.53%	25	15	W6	R5	4	221.48	224.45	SILTSTONE	sltst	2.97						dark grey, fg, massive sltst, ~30TCA joint w/ thick calc vein @222.35m, and 223.20m, both w/ ss, all other joints ~85-90TCA, massive sltst
67	49,50	225.30	228.35	3.05	3.05	100.00%	7	100.00%	25	15	W6	R5	4	224.45	227.50	SILTSTONE	sltst	3.05						dark grey, fg, massive sltst, all joints ~85-90TCA, ~226.40m sandy sltst ~90TCA beddings
68	50	228.35	231.40	3.05	3.00	98.36%																		
					2.83		>25	84.10%	10	12	W6	R5	4	227.50	230.33	SILTSTONE	sltst	2.83						dark grey, fg, sltst, ~90TCA thick calc vein, below is highly broken w/ ss and mud (~40cm), ~20TCA joint @289.0m, and 229.40m, ~230.70m, highly fractured (~20cm), rest mostly ~70-90TCA joints ~90TCA calc vein
					0.17		1	70.59%	20	18	W6	R6	4	230.33	230.50	SANDSTONE	sst	0.17						light grey, mg0cg sst, slt stringers ~80TCA, visible along joint surfaces
69	50,51	231.40	234.45	3.05	2.99	98.03%																		
					2.29		11	84.28%	20	12	W6	R6	4	230.50	232.79	SANDSTONE	sst	2.29						light-med grey, mg-cg, massive sst, ~45TCA joints w/ ~1cm thick calc vein @231.90m, ~60-90TCA thin calc veinlets 232.70-234.0m, at bottom ~30TCA joint w/ ss and ~4cm thick calc vein contact w/ lower sltst other
					0.70		7	42.86%	10	8	W6	R5	4	232.79	233.49	SILTSTONE	sltst	0.70						dark grey, fg, massive sltst calc, veinlets going various directions near top, ss joints ~40-60TCA near top other joints ~70-90TCA
70	51,52	234.45	237.50	3.05	3.00	98.36%	1	100.00%	25	15	W6	R4	4	233.49	236.49	SILTSTONE	sltst	3.00						sltst med to dark grey fg massive, solid
71	52	237.50	240.55	3.05	3.11	101.97%																		
					0.65		-	-	-	-	-	-	-	236.49	237.14	SILTSTONE	sltst	0.65						sltst as above, 10-20cm at the bottom more sandy

					2.46		2	96.34%	25	15	W6	R5	4	237.14	239.60	SANDSTONE	sst	2.46						sst, mg-cg, light grey, massive sst, 0.10m at the top more silty with coal stringers at 90TCA
72	53	240.55	243.60	3.05	3.07	100.66%	4	77.20%	25	15	W6	R6	4	239.60	242.67	SANDSTONE	sst	3.07						sst as above, 1m at the top with remains of plant
73	53,54	243.60	246.65	3.05	3.00	98.36%	3	100.00%	25	14	W6	R6	4	242.67	245.67	SANDSTONE	sst	3.00						sst, mg, light grey, massive, 1.20m at the top with trace of plant fossils
74	54,55	246.65	249.70	3.05	3.10	101.64%	6	100.00%	25	14	W6	R6	4	245.67	248.77	SANDSTONE	sst	3.10						light grey, mg, massive sst, 2.36 from top with cst stringsers at 90TCA
75	55	249.70	252.75	3.05	3.00	98.36%	8	91.67%	25	9	W6	R6	4	248.77	251.77	SANDSTONE	sst	3.00						light grey, mg, massive sst, most of joints at 90TCA, few at 45-65TCA, some joints filled with calc
76	55,56	252.75	255.80	3.05	3.05	100.00%	9	91.80%	25	15	W6	R6	4	251.77	254.82	SANDSTONE	sst	3.05						med grey, light grey, sst, joints 0-45TCA, 0.70m at the bottom some healed joints with calc
77	56,57	255.80	258.85	3.05	3.13	102.62%	11	100.00%	25	10	W6	R6	4	254.82	257.95	SANDSTONE	sst	3.13						mg, sst as above, irregular cross cut joints all over the core, some filled with calc
78	57,58	258.85	261.90	3.05	3.06	100.33%	17	90.85%	25	14	W5	R6	4	257.95	261.01	SANDSTONE	sst	3.06						sst, mg, light grey, 0.05m from top joint filled with 3cm calc, fractures filled with calc all over core, joints from 45-70TCA
79	58	261.90	264.95	3.05	3.10	101.64%	15	88.71%	25	10	W5	R6	4	261.01	264.11	SANDSTONE	sst	3.10						sst, mg, light grey, fractures filled with calc vein all over the core, upto 0.05m, core almost broken
80	58,59	264.95	268.00	3.05	3.05	100.00%	14	95.08%	25	9	W6	R6	4	264.11	267.16	SANDSTONE	sst	3.05						sst, mg, light grey. Massive, 0.3m at the bottom of the run broken and filled with calc
81	59,50	268.00	271.05	3.05	3.02	99.02%	14	93.38%	25	15	W6	R6	4	267.16	270.18	SANDSTONE	sst	3.02						sst, mg-fg, light grey, fracture filled joints thickness upto 2cm, most st 45TCA, 0.17m from top, 0.05m gauge
82	60	271.05	274.10	3.05	3.10	101.64%	11	84.52%	25	10	W6	R6	4	270.18	273.28	SANDSTONE	sst	3.10						mg-fg, sst, fracture filled calcite vein, 2-3mm crosscut each other, 0.24m from top, 0.20m of core gauge and brecciated
83	61	274.10	277.15	3.05	2.93	96.07%	16	87.03%	25	7	W6	R6	4	273.28	276.21	SANDSTONE	sst	2.93						sst, mg-fg, light grey, 1.30m from top 0.70m jointed and broken
														276.21	276.64	LOST CORE	LOST CORE	0.43						
84	61,62	277.15	280.20	3.05	3.04	99.67%	7	100.00%	20	15	W6	R6	4	276.64	279.68	SANDSTONE	sst	3.04						light-med grey, mg-cg, sst, 277.1-278.35m is ib w/ thinly bedded slt (~75TCA), joints in same orientation, some w/ calc veins, 278.35m - bottom is massive sst, joints ~70-80TCA, some w/ coal or plant material
85	62,63	280.20	283.25	3.05	3.21	105.25%																		
					0.19		0	100.00%	-	-	W6	R6	4	279.68	279.87	SANDSTONE	sst	0.19						light-med grey, mg, sst, massive, ~80TCA contact angle w/ lower slt IB unit
					1.42		7	91.55%	20	9	W6	R5	4	279.87	281.19	LAMINITE	ib sltst	1.32						med-dark grey-brown, fg ib w/ mg-cg sst, some area mixed w/ coal, bedding ~70TCA, joints ~70TCA, some w/ calc vein
														281.19	281.29	LAMINITE	ib sltst	0.10			28272	281.50	281.60	med-dark grey-brown, fg ib w/ mg-cg sst, some area mixed w/ coal, bedding ~70TCA, joints ~70TCA, some w/ calc vein
					0.50		>25	-	-	-	W6	R1	0	281.29	281.69	COAL	coal	0.40		Seam 5	28273	281.60	282.10	blk, ~90% bright, light, little gas, thin beds of sltst visible, trace py calc; coal is broken and core spread out; reduced lngth to 40cm from 50cm. ORC
					0.70		>25	-	-	-	W6	R5	0	281.69	282.24	CARBONACEOUS CLAYSTONE	Carb. clytst	0.55			28274	282.10	282.80	dark grey-brown, fg, highly fractured w/ ss; changed intvl to .55m after looking at pictures; core ground and broken and spread out.ORC
					0.40		>25	-	-	-	W6	R1	0	282.24	282.56	COAL	coal	0.32		Seam 5	28275	282.80	283.20	blk, ~90% bright, light, little gas, thin beds of sltst visible, trace py calc; core spread out in box. No more than 32cm
86	63	283.25	286.30	3.05	3.11	101.97%																		
					0.35		>25	-	-	-	W6	R1	1	282.56	282.91	COAL	coal	0.35		Seam 5	28276	283.20	283.55	blk, ~90% bright, light, little gas, trace py, calc, mixed w/ sltst
					0.44		>25	-	10	-	W6	R4	1	282.91	283.01	SILTSTONE	sltst	0.10			28277	283.55	283.65	dark grey-brown, fg, w/ coal lenses, bedding ~70TCA, some w/ ss
														283.01	283.35	SILTSTONE	sltst	0.34						dark grey-brown, fg, w/ coal lenses, bedding ~70TCA, some w/ ss
					2.32		>25	84.05%	10	13	W6	R5	4	283.35	283.50	CLAY	clay	0.15						clay gash, possibly fault?
														283.50	285.67	SANDSTONE	sst	2.17						med-dark grey, mg-cg, sst, top 20cm highly fractured into small pieces w/ ss, rest is solid core joints ~65-90TCA, ib/mixed w/ sltst, more % sltst near top and less % sltst as go deep), ~85TCA sltst stringers near bottom
87	64	286.30	289.35	3.05	2.97	97.38%	9	98.32%	25	15	W6	R6	4	285.67	288.64	SANDSTONE	sst	2.97						light-med grey, mg-cg sst, slt/coal stringers, 75-85TCA, joints in same orientations, all joitns w/ sltst or coal on joint surfaces
88	64,65	289.35	292.40	3.05	2.08	68.20%	6	100.98%	25	15	W6	R6	4	288.64	290.72	SANDSTONE	sst	2.08						light grey mg-cg, massive sst solid core, joints ~65-85TCA, same w/ sltst or coal near top sltst/coal strings visible
														290.72	292.08	LOST CORE	LOST CORE	1.36						
89	65,66	292.40	295.45	3.05	2.94	96.39%	6	100.00%	25	15	W6	R6	4	292.08	295.02	SANDSTONE	sst	2.94						light grey, mg-cg, massive sst, joints ~75-85TCA, some w/ coal, ~90TCA coal stringers visible, possible sltst stringers ~40TCA
90	66	295.45	298.50	3.05	3.07	100.66%	6	100.00%	25	12	W4	R6	4	295.02	298.09	SANDSTONE	sst	3.07						sst, mg-cg, light grey, massive with some coal lens
91	66,67	298.50	301.55	3.05	3.12	102.30%	9	99.36%	25	12	W4	R6	4	298.09	301.21	SANDSTONE	sst	3.12						sst as above w/ some coal stringers
92	67,68	301.55	304.60	3.05	3.00	98.36%																		
					0.05		-	-	-	-	-	-	-	301.21	301.26	SANDSTONE	sst	0.05						sst as above
					1.43		>25	74.83%	25	9	W6	R5	4	301.26	302.69	SILTSTONE	sltst	1.43						sltst, dark grey, 0.25m at the top lyccst, very broken, rest joints with frequency of 30cm @30TCA
					1.52		7	100.00%	25	9	W6	R6	4	302.69	304.21	SANDSTONE	sst	1.52						sst, fg, light grey, with clyst stringers at 60TCA, 0.27m from the bottom 10cm calc banc
93	68,69	304.60	307.65	3.05	3.04	99.67%	>25	41.12%	25	7	W6	R6	4	304.21	307.25	SANDSTONE	sst	3.04						sst, mg-fg, light grey, 1.08m at the bottom with coal band 1cm, from that to bottom coarse grain very broken
94	64	307.65	310.70	3.05	2.95	96.72%																		
					1.26		>25	18.25%	25	7	W6	R6	4	307.25	308.51	SANDSTONE	sst	1.26						cg, light grey sst, broken
					0.05		-	-	-	-	-	-	-	308.51	308.56	COAL	coal	0.05						coal, crushed, dull
					1.64		>25	47.56%	25	7	W6	R3	2	308.56	310.20	CLAYSTONE	clyst	1.64						carb clyst, dark grey, broken, 0.50m at the bottom 10.26m very broken
95	69,70	310.70	313.75	3.05	2.40	78.69%																		
					1.40		>25	30.00%	25	7	W6	R3	4	310.20	311.60	CLAYSTONE	clyst	1.40			ns			med-dark grey, clyst, broken
					0.20		-	-	-	-	-	-	-	311.60	311.80	COAL	coal	0.20		Seam 4	28278	315.00	315.20	coal dull broken
					0.19		-	-	-	-	-	-	-	311.80	311.99	CLAYSTONE	clyst	0.19		Seam 4	28279	315.20	315.39	clyst dark grey broken
					0.37		-	-	-	-	-	-	-	311.99	312.36	COAL	coal	0.37		Seam 4	28280	315.39	315.76	coal, dull, 0.17m at the bottom very broken
														312.36	312.76	LOST CORE	LOST CORE	0.40		Seam 4	ns			Lost Core: Prbly Coal as interpreted from geophysical log
					0.24		>25	-	20	7	W6	R3	4	312.76	313.00	CLAYSTONE	clyst	0.24			ns			med grey, clyst, broken
														313.00	313.75	LOST CORE	LOST CORE	0.75						Lost Core: Prbly Claystone as interpreted from geophysical log
96	70,71	313.75	316.80	3.05	3.04	99.67%																		
					0.30		3	40.00%	25	7	W6	R3	4	313.75	314.05	CLAYSTONE	clyst	0.30						med grey, clyst
					1.78		10	88.20%	10	10	W6	R6	4	314.05	315.83	SANDSTONE	sst	1.78						med grey, light grey sst, somewhat broken, 0.30m at the bottom with calc veins at 50TCA
					0.52		25	0.00%	>25	10	W6	R4	4	315.83	316.35	CLAYSTONE	clyst	0.52						med grey, clyst, 0.10m from top 0.18m very broken
					0.44		3	-	25	9	W6	R4	4	316.35	316.79	SANDSTONE	sst	0.44						sst, cg, light grey
97	71	316.80	319.85	3.05	2.99	98.03%																		
					0.07		-	-	-	-	-	-	-	316.79	316.86	SANDSTONE	sst	0.07						sst same as above
					0.23		-	-	-	-	-	-	-	316.86	317.09	CLAYSTONE	clyst	0.23						clyst, very broken
					0.75		-	-	-	-	-	-	-	317.09	317.84	SANDSTONE	sst	0.75						cg, light grey, sst
					1.18		>25	53.39%	25	7	W6	R3	4	317.84	319.02	CLAYSTONE	clyst	1.18						med grey, massive clyst
					0.76		1	100.00%	25	15	W6	R6	4	319.02	319.78	SANDSTONE	sst	0.76						cg, light grey, sst
98	72	319.85	322.90	3.05	2.97	97.38%	7	96.63%	25	15	W6	R6	4	319.78	322.75	SANDSTONE	sst	2.97						cg, light grey, massive sst
99	72,73	322.90	325.95	3.05	2.96	97.05%	8	95.27%	25	15	W6	R6	4	322.75	325.71	SANDSTONE	sst	2.96						light grey, mg-cg, massive sst, joints/fractures ~75-90TCA, some w/ plant materials, occational slt/coal stringers 70-90TCA
100	73,74	325.95	329.00	3.05	2.96	97.05%	11	91.22%	25	15	W6	R6	4	325.71	328.67	SANDSTONE	sst	2.96						light grey, mg-cg, massive sst, joints ~45-85TCA, some w/ plant material, bottom 45cm is mod-fractured w/ ss, coal/sltst stringers ~70-90TCA, some possible sltst layer ~40TCA
101	74	329.00	332.05	3.05	3.05	100.00%	9	95.08%	25	15	W6	R6	4	328.67	331.72	SANDSTONE	sst	3.05						light grey, mg-cg, massive sst, joints ~65-90TCA, some w/ sltst or plant material, sltst/coal stringers ~60-90TCA ~10TCA calc vein ~@353.45m
102	74,75	332.05	335.10	3.05	3.04	99.67%	7	97.37%	25	15	W6	R6	4	331.72	334.76	SANDSTONE	sst	3.04						light grey, mg-cg, massive sst, coal/sltst stringers 75-90TCA, joints in some orientation two fault gauge(?), joints filled w/ soft sand @337.50m (~5cm thick) w/ coal/sltst stringers, solid core
103	75,76	335.10	338.15	3.05	3.03	99.34%	3	99.01%	25	15	W6	R6	4	334.76	337.79	SANDSTONE	sst	3.03						light grey, mg-cg, massive sst ~40TCA, joints 2/ soft sand @339.0m, (fault gauge?), two ~90TCA joints at bottom, coal stringers ~80TCA, one calc vein (~1cm) @339.30m, ~40TCA, solid core
104	76	338.15	341.20	3.05	3.02	99.02%	5	97.02%	25	15	W6	R6	4	337.79	340.81	SANDSTONE	sst	3.02						light grey, mg-cg, massive sst, solid core, joint ~75TCA, some w/ coal (plant material), coal stringers/lenses ~80-90TCA
105	76,77	341.20	344.25	3.05	3.05	100.00%	4	98.36%	25	15	W6	R6	4	340.81	343.86	SANDSTONE	sst	3.05						light grey, mg-cg, massive sst, solid core, all 4 joints within 80cm from bottom, all joints ~85-90TCA, bottom 3 have coal/plant material on joint surface w/ possible ss, minor coal/sltst stringers visible throughout the run ~60-90TCA
106	77,78	344.25	347.30	3.05	3.03	99.34%	12	86.14%	25	15	W6	R6	4	343.86	346.89	SANDSTONE	sst	3.03						light grey mg-cg, massive sst, solid core, most joints ~85-90TCA, some w/ coal, at top 3cm fault gauge(?), w/ soft sand ~40TCA joint @347.40m, 35TCA and 50TCA joint @347.90m, coal stringers 75-90TCA
107	78,79	347.30	350.35	3.05	2.98	97.70%	5	90.94%	25	15	W6	R6	4	346.89	349.87	SANDSTONE	sst	2.98						light-med grey, mg-cg, massive sst, solid core, joints ~90TCA, except two ~25TCA joint w/ fault gauge (?) at bottom, coal stringers ~90TCA
108	79	350.35	353.40	3.05	2.91	95.41%	7	94.85%	25	15	W6	R6	4	349.87	352.78	SANDSTONE	sst	2.91						light-med grey, mg-cg, massive sst, coarser and darket than above sst so far joints ~90TCA, most w/ coal lenses, coal stringers/lenses ~90TCA, at bottom ~90TCA contact w/ sltst and shows ss w/ trace py
109	79,80	353.40	356.45	3.05	2.50	81.97%	>25	42.40%	25	6	W6	R3	3	352.78	355.28	CLAYSTONE	clyst	2.50						high gas within coal lenses, carb clyst, dark grey, very broken, ss at joints ~70TCA
														355.28	356.45	LOST CORE	LOST CORE	1.17						Lost Core: prbly clyst
110	80,81	356.45	359.50	3.05	2.20	72.13%																		
					1.90		>25	23.68%	25	6	W6	R3	3	356.45	356.65	CLAYSTONE	clyst	0.20			ns			dark grey, carb clyst, with coal stringers at 1.04m, some parts very broken; 1.90 m of carbonaceous Claystone intermixed with coal. Core is broken , crushed and mixed up.
														356.65	357.20	LOST CORE	LOST CORE; Coal	0.55		Seam 3	ns			Coal as interpreted from geophysical log
														357.20	357.96	CLAYSTONE	clyst	0.76			ns			Carbonaceous Claystone as interpreted from geophysical log
														357.96	358.36	LOST CORE	LOST CORE; Coal	0.40		Seam 3	ns			Coal as interpreted from geophysical log
														358.36	358.83	CLAYSTONE	clyst	0.47			ns			Carbonaceous Claystone as interpreted from geophysical log
														358.83	359.27	LOST CORE	LOST CORE; Coal	0.44		Seam 3	ns			Coal as interpreted from geophysical log
					0.12		-	-	-	-	-	-	-	359.27	359.39	COAL	coal	0.12		Seam 3	ns			coal, dull, 0.05m at the bottom broken
					0.18		-	-	-	-	-	-	-	359.39	359.57	CLAYSTONE	clyst	0.18			ns			med grey, clyst
111	81	359.50	362.55	3.05	2.70	88.52%																		
					1.30		>25	47.69%	25	6	W6	R4	3	359.57	360.87	CLAYSTONE	clyst	1.30						med grey, clyst, 0.20m at the top with coal stringers, 0.50m at the top more broken
					1.40		4	100.00%	25	15	W6	R6	4	360.87	362.27	SANDSTONE	sst	1.40						sst, med grey light grey, with clyst stringers ~50TCA
112	81,82	362.55	365.60	3.05	2.90	95.08%	-	67.24%	25	9	W6	R6	4	362.27	365.17	SANDSTONE	sst	2.90						sst, mg, light grey, with sltst stringers @50TCA
113	82,83	365.60	368.65	3.05	3.04	99.67%	12	39.47%	25	9	W6	R6	4	365.17	368.21	SANDSTONE	sst	3.04						sst, mg-cg, light grey w/ sltst bands upto 1cm at 60TCA, to the depth of 370.20m the rest cg, massive sst
114	83,84	368.65	371.70	3.05	3.05	100.00%	-	-	-	-	-	-	-	368.21	371.26	SANDSTONE	sst	3.05						cg, light grey, sst, solid, massive
115	84	371.70	374.75	3.05	2.97	97.38%	>25	58.59%	25	7	W6	R6	4	371.26	374.23	SANDSTONE	sst	2.97						sst mg-fg, with dark grey slt srtingers @70TCA, 0.40m at the top cg sst, broken from 375.90m
116	84,85	374.75	377.80	3.05	3.00	98.36%	>25	36.67%	25	7	W6	R6	4	374.23	377.23	SANDSTONE	sst	3.00						sst, cg, light grey, very broken, especially at 377.6m, 0.40m at 278.20m 0.45m partly altered and saf clyst
117	85,86	377.80	380.85	3.05	3.00	98.36%	>25	20.00%	10	6	W5	R6	4	377.23	380.23	SANDSTONE	sst	3.00						med grey to light brown, mg-cg, sst, highly fractured some area w/ sks, dominant joint ~60-90TCA, vertical fracture @381.3m, bottom 40cm is all crushed rock pieces on fractured surfaces coal. Plant fragments/calc visible, thick calc vein @383.0m
118	8687	380.85	383.90	3.05	3.00	98.36%	>25	53.33%	10	7	W5	R6	4	380.23	383.23	SANDSTONE	sst	3.00						med grey, mg-cg, highly fractured top 10cm is crushed rock, dominant joint ~75-90TCA, some w/ coal, bottom ~30cm is highly fractured w/ vertical joint, coal stringers ~90TCA, ~385.20m-386.20m joint w/ ss @385.30m
119	87	383.90	386.95	3.05	3.05	100.00%	>25	7.54%	10	4	W6	R5	0	383.23	383.50	SILTSTONE	sltst	0.27						dark grey to black, fg, coaly sltst med0high in gas, highly fractured w/ sks all through out the run, thin coal lenses ~90TCA joints from 10-90TCA w/ ss
														383.50	385.13	CARBONACEOUS MUDSTONE	Carb to coaly mdstn	1.63						Re-interpreted from geophysical log and crushed and broken core; possibly fault zone;

															385.13	386.28	SILTSTONE	sltst	1.15						dark grey, highly broken sltst w/ sks, at 392.90m highly broken (sandy) w/ returen, drill bit and rod getting stuck
120	87,88	386.95	390.00	3.05	2.70	88.52%	>25	-	10	0	W6	R5	0	386.28	388.12	SILTSTONE	sltst	1.84			ns			dark grey, highly broken sltst w/ sks, at 392.90m highly broken (sandy) w/ returen, drill bit and rod getting stuck
														388.12	388.77	CARBONACEOUS MUDSTONE	Carb to coaly mdstn	0.65		Seam 1R	ns			sheared carb mdstn, sltst - interpreted from geophysical log - hole badly caved
														388.77	389.02	SILTSTONE	sltst	0.25			ns			dark grey, highly broken sltst w/ sks, at 392.90m highly broken (sandy) w/ returen, drill bit and rod getting stuck
														389.02	390.00	LOST CORE	LOST CORE: Carb to coaly mdstn	0.98		Seam 1	ns			Lost Core: prbly carb/coaly mdstn - interpreted from geophysical log - hole badly caved - fault zone??
121	88,89	390.00	393.05	3.05	1.02	33.44%																		
					0.50		>25	-	10	-	W6	R5	0	390.00	390.50	CARBONACEOUS MUDSTONE	Carb to coaly mdstn	0.50		Seam 1	ns			dark grey, fg, highly broken into small pieces w/sks
					0.32		4	-	-	-	W6	R1	1	390.50	390.82	SHALY COAL	shaly coal	0.32		Seam 1	28281	393.40	393.72	blk, ~90% bright, light little gas, thin slt layers
					0.20		25	-	-	-	W6			390.82	391.02	CLAYSTONE	clyst	0.20		Seam 1	ns			carb clyst, very broken w/sks
														391.02	392.08	LOST CORE	Lost Core: Coal to Coaly Shale	1.06		Seam 1	ns			Lost Core: prbly highle broken, sheared, carb to coaly mdstn with coal lenses and strgs. - interpreted fromgeophysical log - highly caved
														392.08	393.10	LOST CORE	Lost Core: Sltst to claystn	1.02			ns			Lost Core: prbly clystn and sltst from geophysical log.
122	89	393.05	393.65	0.60	0.55	91.67%	>25	0.00%	0	1	W5	C2	0	393.10	393.65	SILTSTONE	sltst	0.55						dark grey to black coaly shale and siltstone
123	89	393.65	396.70	3.05	3.00	98.36%																		
					2.13		>25	23.47%	10	5	W5	R3	1	393.65	395.78	SILTSTONE	slt	2.13						dark grey to black, fg, slt, top 0.2m highly broken, joints ~60-90TCA w/ ss, bottom ~5cm black fg sandy layers
					0.77		0	100.00%	-	-	W5	R6	4	395.78	396.55	SANDSTONE	sst	0.77						med-light grey, cg-v.cg sst solid core, ~20TCA calc vein near bottom
					0.10		1	0.00%	10	6	W5	R3	3	396.55	396.65	SILTSTONE	sltst	0.10						dark grey, fg, slts as above, joint ~90TCA w/ ss
124	90	396.70	399.75	3.05	2.93	96.07%	>25	44.37%	10	6	W5	R4	1	396.65	399.58	SILTSTONE	sltst	2.93						dark grey to black, fg, slt, joints ~65-90TCA w/ ss, 401.20m-401.50m highly broken zone w/ ss
125	90,91	399.75	402.80	3.05	3.00	98.36%	>25	26.67%	10	6	W5	R4	1	399.58	402.58	SILTSTONE	sltst	3.00						dark grey to black, fg, sltst as above, joints 50-85TCA, w/ ss, ~404.80m calc, veins 10-20TCA, ~20cm soft gauge? Layer w/ small 1-3cm broken slt ~405.20m
126	91,92	402.80	405.85	3.05	2.90	95.08%	>25	36.21%	10	7	W5	R4	1	402.58	405.48	SILTSTONE	sltst	2.90						sltst as above, joints 60-90TCA, w/ ss, ~60cm highly broken/fractured zone @407.45m, muddy w/ small crushed rock w/ ss (gauge?)
127	92,93	405.85	408.90	3.05	2.87	94.10%	11	95.12%	25	15	W6	R6	4	405.48	408.35	SILTSTONE	sltst	2.87						dark grey, sltst, mainly massive w/ fractures ~60-70TCA, plant fossil presents
128	93	408.90	411.95	3.05	2.80	91.80%																		
					1.08		15	123.15%	25	13	W6	R5	4	408.35	409.43	SILTSTONE	sltst	1.08						sltst as above, a gauge at 418.2m some cbr portions present
					1.12		7	77.68%	25	14	W6	R6	4	409.43	410.55	SANDSTONE	sst	1.12						light grey, sst, fg-mg, some sltst ib, some bioturbation at ~414.3m, low angle ~25TCA fracture
129	93,94	411.95	415.00	3.05	3.10	101.64%																		
					2.56		>25	82.03%	10	9	W4	R4	1	410.55	413.11	LAMINITE	ib sltst	2.56						dark grey, fg, sltst, ib w/ cg, sst (altered?), 90% sltst, sst layer upto 20cm, most joints ~70-90TCA w/ ss, 415.55m highly broken zoen w/ ss
					0.54		0	100.00%	-	-	W3	R6	4	413.11	413.65	SANDSTONE	sst	0.54						light grey cg-v.cg, sst, possible altered(?) qtz visible (1-2mm)
130	94,95	415.00	418.05	3.05	3.07	100.66%	10	91.21%	10	14	W4	R4	3	413.65	416.72	LAMINITE	ib sltst	3.07						dark grey, fg, sltst, ib w/ altered(?) sst as above, joints ~75-90TCA, w/ ss, calc visible along joints, thin coal lens (~65TCA), near bottom
131	95,96	418.05	421.10	3.05	2.95	96.72%	20	69.49%	10	12	W5	R4	3	416.72	419.67	SILTSTONE	sltst	2.95						dark grey, fg, sltst joints ~75-90TCA, w/ ss, plant material along joints, possible gauge ~10cm @ 422.30m
132	96	421.10	424.15	3.05	3.04	99.67%	17	64.80%	25	10	W5	R4	3	419.67	422.71	SILTSTONE	sltst	3.04						ark grey, fg, sltst, as above, joints 75-90TCA, plant material along joints, ~10TCA joint @425.50m, thin coal lenses ~60TCA
133	96,97	424.15	427.20	3.05	2.99	98.03%																		
					1.83		20	49.18%	25	6	W4	R5	3	422.71	424.54	SILTSTONE	sltst	1.83						dark grey, fg, sltst, joints 70-90TCA, possible gauge @428.0m (~20cm) plant material along joints
					1.16		5	87.93%	10	14	W4	R6	4	424.54	425.70	SANDSTONE	sst	1.16						light grey, v.cg, altered sst, small frags at zenoliths visible (green possible volc?), ang quz, joints 30-70TCA, w/ plant material/ coal lens w/ ss, coal stringers and lenses 30-70TCA
134	97,98	427.20	430.25	3.05	3.00	98.36%																		
					1.50		14	80.00%	20	11	W4	R5	2	425.70	427.20	SILTSTONE	sltst	1.50						dark grey, fg, sltst, top ~20cm highly fractured, joints ~70-90TCA w/ plant material, bottom ~40cm is light grey to light brown altered sltst
					0.75		2	93.33%	25	14	W4	R6	4	427.20	427.95	SANDSTONE	sst	0.75						light grey, v.cg, w/ zenoliths, altered sst massive joints ~75-85TCA, w/ coal (~85TCA)
					0.75		4	77.33%	25	10	W4	R5	3	427.95	428.70	SILTSTONE	sltst	0.75						dark grey, fg, sltst as above, ~70TCA joints w/ plant material
135	98,99	430.25	433.30	3.05	3.16	103.61%																		
					2.07		10	80.68%	10	5	W3	R4	2	428.70	430.77	SILTSTONE	sltst	2.07						dark grey to light brown, fg, sltst, top ~0.8m is dark grey sltst, rest is altered light brown sltst joints ~70-90TCA, within top slt some w/ calc veins
					1.09		4	82.57%	25	12	W3	R4	2	430.77	431.86	CONGLOMERATE	volc	1.09		Volc				green, massive volc
136	99	433.30	436.35	3.05	2.90	95.08%	13	84.48%	25	10	W3	R5	1	431.86	434.76	CONGLOMERATE	volc	2.90						green massive, vold w/ calc vein, joints mostly ~90TCA, three ~60TCA low angle ~30TCA near bottom
137	99,100	436.35	439.40	3.05	3.12	102.30%	>25	56.41%	25	12	W3	R5	1	434.76	437.88	CONGLOMERATE	volc	3.12						grenn volc, calc veins ~15 joints ~90TCA, rest just fracture variety of orientations
138	100,101	439.40	442.45	3.05	3.17	103.93%	24	65.30%	25	12	W3	R5	1	437.88	441.05	CONGLOMERATE	volc	3.17						green volc, calc vein, most joints ~60TCA
139	101,102	442.45	445.50	3.05	3.00	98.36%	21	73.67%	25	13	W3	R5	3	441.05	444.05	CONGLOMERATE	volc	3.00						green volc, fewer calc veins, ~9 joints ~60TCA, rest ~90TCA

Geological Borehole Log: RAV-09-034

Client: CJV
Project: Raven
Logged By: Sarah Newman, Parviz Rajaei

Hole Number: RAV-09-034
Date Hole Started: 12-Aug-09
Date Hole Finished: 19-Aug-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 187.29m
Depth of Casing: 13.0m
Core Size: Modified PQ (3")

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Intervals Logged Lithology	Interval Length	Core Loss	Strat	Samples (Driller's Depths) Number	From (m)	To (m)	Description
														0.00	12.93	OVERBURDEN	OVBDN	12.93				0.00	12.93	Overburden no sample
														12.93	15.24	SANDSTONE	SST	2.31				12.93	15.24	Sst, light grey, medium grained
														15.24	16.76	SANDSTONE	SST	1.52				15.24	16.76	Sst, light grey, medium grained
														16.76	18.29	SANDSTONE	SST	1.52				16.76	18.29	Sst, light to medium grey, mixed 50/50
														18.29	19.81	SANDSTONE	SST	1.52				18.29	19.81	As above
														19.81	21.34	SANDSTONE	SST	1.52				19.81	21.34	Sst, light to medium grey, mixed 60/40
														21.34	22.86	SANDSTONE	SST	1.52				21.34	22.86	Sst, darker than above with a higher silt content
														22.86	24.38	SANDSTONE	SST	1.52				22.86	24.38	Sst, medium grey, fine grained, silty
														24.38	25.91	SANDSTONE	SST	1.52				24.38	25.91	Sst mixed with Sltst, 60/40, both fine grained
														25.91	27.43	SANDSTONE	SST	1.52				25.91	27.43	Sst, light grey, coarser than above, fg-mg
														27.43	28.96	SANDSTONE	SST	1.52				27.43	28.96	As above, slight brown color to about 10% of the Sst
														28.96	30.48	SANDSTONE	SST	1.52				28.96	30.48	Sst, light grey, fine to medium grained, trace plant material
														30.48	32.00	SILTSTONE	SLTST	1.52				30.48	32.00	Sltst 90% medium grey, fine grained. Sst 10%, light grey, fine grained.
														32.00	33.53	SANDSTONE	SST	1.52				32.00	33.53	Sst, brown-grey, medium grained, high silt content
														33.53	35.05	SANDSTONE	SST	1.52				33.53	35.05	As above with 2% Sltst
														35.05	36.58	SANDSTONE	SST	1.52				35.05	36.58	As above, tight layering and trace plant material in the Sst
														36.58	38.10	SANDSTONE	SST	1.52				36.58	38.10	Sst, light grey, fine grained with 5% Sltst, 1% quartz fragments
														38.10	39.62	SANDSTONE	SST	1.52				38.10	39.62	Sst, light grey, medium to coarse grained, with 1% Sltst, trace plant material
														39.62	41.15	SANDSTONE	SST	1.52				39.62	41.15	As above Sst
														41.15	42.67	SANDSTONE	SST	1.52				41.15	42.67	Sst, light grey, medium to coarse grained, with 1% Sltst, trace brown clasts
														42.67	44.20	SANDSTONE	SST	1.52				42.67	44.20	As above with trace calcite and Sltst fragments, about 2%
														44.20	45.72	SANDSTONE	SST	1.52				44.20	45.72	As above, light grey, medium to coarse grained with less than 1% Sltst
														45.72	47.24	SANDSTONE	SST	1.52				45.72	47.24	As above
														47.24	48.77	SANDSTONE	SST	1.52				47.24	48.77	Sst, brown-grey, fine to medium grained with 5% Sltst
														48.77	50.29	SANDSTONE	SST	1.52				48.77	50.29	Sst, light grey, medium grained, 1% Sltst
														50.29	51.82	SANDSTONE	SST	1.52				50.29	51.82	Sst,light grey, medium grained, trace Sltst
														51.82	53.34	SANDSTONE	SST	1.52				51.82	53.34	As above
														53.34	55.08	SANDSTONE	SST	1.74				53.34	54.86	Sst,light to medium grey, fine to medium grained
														55.08	55.77	CARBONACEOUS SILTSTONE	CARB SLTST	0.69		Seam 5	ns	54.86	56.39	*Sltst with 5% coal, 1% pyite. Note: carb zone on geophysical log from 55.08-55.33 and 55.49-55.77*
														55.77	57.90	SILTSTONE	SLTST	2.13				56.39	57.91	Silty Sst with 1% carbonate, no coal
														57.90	59.42	SANDSTONE	SST	1.52				57.91	59.44	Sst (80%) very finely laminated, Sltst (20%)
														59.42	60.95	SANDSTONE	SST	1.52				59.44	60.96	Sst, light grey, medium grained, with trace iron staining and Sltst
														60.95	62.47	SANDSTONE	SST	1.52				60.96	62.48	Sst, medium grey, fine to medium grained, with trace light grey Sst
														62.47	64.00	SANDSTONE	SST	1.52				62.48	64.01	Sst, light grey, fine to medium grey
														64.00	65.52	SANDSTONE	SST	1.52				64.01	65.53	As above with trace graphite on chip sample surfaces (SS?)
														65.52	67.04	SANDSTONE	SST	1.52				65.53	67.06	As above Sst but with brown-grey color
														67.04	68.57	SANDSTONE	SST	1.52				67.06	68.58	Sst, light grey, fine to medium grained
														68.57	70.09	SANDSTONE	SST	1.52				68.58	70.10	Sst (60%), brown-grey, fine grained. Sltst (40%) fine grained, dark grey
														70.09	71.62	SANDSTONE	SST	1.52				70.10	71.63	Sst, brown grey, fine to medium grained with 1% calcite, 2% Sltst
														71.62	73.14	SANDSTONE	SST	1.52				71.63	73.15	Sst, light grey, fine to medium grained with 1% Sltst
														73.14	73.82	SILTY SANDSTONE	SNDY SLTST	0.68				73.15	74.68	*Mixed Sltst (80%) , Sst (10%) Coal (5%), Py (2%) and calcite (2%)*
														73.82	74.86	COAL	Coal	1.04		Seam 4	ns			
														74.86	76.16	SANDY SILTSTONE	SLTY SST	1.30				74.68	76.20	*Sst 70% with Sltst (29%) and 1% Coal. Note: coal on gephysical log from 73.82 to 74.86*
														76.16	77.68	SANDSTONE	SST	1.52				76.20	77.72	Sst, light grey, fine grained with 2% Sltst
														77.68	79.21	SANDSTONE	SST	1.52				77.72	79.25	Sst, light grey, fine grained with 10% dark grey Sltst
														79.21	80.73	SANDSTONE	SST	1.52				79.25	80.77	As above
														80.73	82.26	SANDSTONE	SST	1.52				80.77	82.30	Sst, light grey, medium grained
														82.26	83.78	SANDSTONE	SST	1.52				82.30	83.82	As above
														83.78	85.30	SANDSTONE	SST	1.52				83.82	85.34	As above with 2% calcite, 1% Sltst
														85.30	86.83	SANDSTONE	SST	1.52				85.34	86.87	As above Sst, light grey, fine-medium grained
														86.83	88.35	SANDSTONE	SST	1.52				86.87	88.39	As above Sst, light grey, fine-medium grained
														88.35	89.88	SANDSTONE	SST	1.52				88.39	89.92	As above
														89.88	91.40	SANDSTONE	SST	1.52				89.92	91.44	As above
														91.40	92.92	SANDSTONE	SST	1.52				91.44	92.97	As above with 1% Sltst
														92.92	94.45	SANDSTONE	SST	1.52				92.97	94.49	As above
														94.45	95.97	SANDSTONE	SST	1.52				94.49	96.02	Sst, light grey, medium to coarse grained
														95.97	97.50	SANDSTONE	SST	1.52				96.02	97.54	As above with 2% Sltst
														97.50	98.27	SANDSTONE	SST	0.77				97.54	99.06	As above At 99.06m, switched to coring.
1	1	99.06	100.74	1.68	1.55	92%										#N/A								
							8	92%	25	13	W6	R5	3	98.27	99.82	SANDSTONE	Sst	1.55						Sst, light to medium grey, mg, with thin silty beds. Fractures approximately 90 degrees TCA, silty layers around 80-90 degrees TCA, 1 fracture at 10 degrees TCA.
2	1,2	100.74	102.72	1.98	1.75	88%										#N/A								
							15	63%	25	12	W6	R3	3	99.82	101.57	SANDSTONE	Sst	1.75						Sst, as above, light grey, mg-cg, 1 FR at 45, 1 at 20 degrees the rest are 80-85 degrees TCA. Trace carbonate veining, broken core at the bottom of the interval about 75 cm.
														101.57	101.93	LOST CORE	Lost Core	0.36	0.36					*Lost rock.*
3	2	102.72	105.31	2.59	1.58	61%										#N/A								
							4	100%	25	14	W6	R5	4	101.93	103.51	SANDSTONE	Sst	1.58						Sst as above, light grey, mg-cg, with thin silt laminations >1mm oriented 80-90 degrees TCA. Sst looks very 'clean', unaltered, very little matirx. Dark staining on fracture surfaces
4	2,3	105.31	107.14	1.83	2.00	109%										#N/A								
							5	84%	25	14	W6	R5	4	103.51	105.51	SANDSTONE	Sst	2.00						As above but slightly darker grey, 3 low angle FR at 40,50 and 60 degrees TCA, the rest are at 85 degrees. Trace carbonate stringers at 70 degrees TCA.
														105.51	106.35	LOST CORE	Lost Core	0.84	0.84					*Lost rock.*
5	3	107.14	107.44	0.30	0.19	63%										#N/A								
								0%		6	W6	R5	2	106.35	106.54	SANDSTONE	Sst	0.19						As above Sst, badly broken due to drilling (?) had artesian flow at the rate of 0.5L/min
														106.54	106.65	LOST CORE	Lost Core	0.11	0.11					*Lost rock.*
6	3	107.44	108.20	0.76	0.42	55%										#N/A								
							2	0%	25	6	W6	R5	2	106.65	107.07	SANDSTONE	Sst	0.42						As above Sst, broken due to drilling, low angle jointing at 20 degrees TCA, core tube is jamming badly, 1 cm silty layer and fine silt laminations 85 degrees TCA.
														107.07	107.41	LOST CORE	Lost Core	0.34	0.34					*Lost rock.*
7	3	108.20	110.21	2.01	1.74	87%										#N/A								
							5	87%	25	12	W6	R5	3.00	107.41	108.71	SANDSTONE	Sst	1.30						Sst, light grey, fg-mg with minor Sltst laminations about 80-90 degrees TCA. Trace plant material and minor bioturbation. Lower contact sharp (90 degrees) with possible faulting
							>25	0%	10	2	W5	S2	2	108.71	108.83	COAL	Coal	0.12			28212	109.5	109.62	Dull black coal, gougy with minor bubbling. *Not found on geophysical log.*
														108.83	109.10	LOST CORE	Lost Core	0.27	0.27					*Lost Rock*
							>25	34%	10	7	W6	R4	3	109.10	109.42	SHALE	Sh	0.32						Sh, dark brown, fine grained, FR at 90 and 70 degrees TCA, gouge zone is highly carbonaceous, possibly a high ash coal.
8	4	110.21	111.28	1.07	1.07	100%										#N/A								

							>25	32%	25	9	W6	R4	3	109.42	110.19	MUDSTONE	Mdst	0.77						Mdst, brown, weakly carbonaceous, bottom of the interval very boroken and weak, small crushed zone at the top of the interval. FR @ 70 and 90 degrees TCA.
							>25	0%	0	2	W5	S2	2	110.19	110.31	COAL	Coal	0.12			28213	110.98	111.1	Black, crushed, dull-bright coal. *Not found on geophysical log.*
							>25	0%	10	3	W6	S2	2	110.31	110.49	MUDSTONE	Mdst	0.18						As above Mdst, but broken.
9	4,5	111.28	113.87	2.59	2.38	92%										#N/A								
							>25	34%	2o	9	W6	R4	3	110.49	111.03	MUDSTONE	Mdst	0.54						Mdst, brown, broken, average 80 degrees TCA. Trace carbonate and sulphides. LC 90 TCA, broken, highly carbonaceous, mutliple low angle joints at 20-30 degrees TCA.
														111.03	111.13	MUDSTONE	Mdst	0.10			28214	111.82	111.92	*Roof*
							>25	0%	10	5	W6	R2	3	111.13	111.82	COAL	Coal	0.69		Seam 3	28215	111.92	112.61	Black, bright-dull coal, mostly solid, sulphide rich about 1%, bubbled for more than 10 min, crushed 12 cm zone near the top.
														111.82	111.92	SILTSTONE	Sltst	0.10			28216	112.61	112.71	*Floor Sample, part of below Sltst.*
							2	85%	25	10	W6	R5	4	111.92	112.75	SILTSTONE	Sltst	0.83						Sltst, brown-grey, fg, very finely laminated 85 degress TCA. Trace plant material and coal lenses, coarsens downwards becoming increasingly sandy.
														112.75	112.96	LOST CORE	Lost Core	0.21	0.21					*Lost rock.*
							0	100%			W6	R5	4	112.96	113.08	SANDSTONE	Sst	0.12						Sst, light grey, with thin Sltst laminations and trace plant material.
10	5,6	113.87	116.46	2.59	2.63	102%										#N/A								
							7	100%	25	13	W6	R5	4	113.08	115.71	SANDSTONE	Sst	2.63						Sst, light grey, fg-mg, moderately bioturbadted (burrows), massive, trace plant material.
11	6,7	116.46	118.29	1.83	1.54	84%										#N/A								
							5	85%	25	13	W6	R5	4	115.71	117.25	SANDSTONE	Sst	1.54						Sst as above, light grey, mg-cg, massive, wealky bioturbated, abundant plant material in upper 15 cm, wispy laminations.
12	7	118.29	121.03	2.74	2.60	95%										#N/A								
							11	70%	25	12	W6	R5	4	117.25	119.85	SANDSTONE	Sst	2.60						Sst as above, light to medium grey, mg-cg, massive, weakly bioturbated, calcite filled FR @ 45 degrees TCA. Lost circulation midway through the run, most breaks 90 degrees TCA
13	8	121.03	123.62	2.59	1.84	71%										#N/A								
							1	100%	25	14	W6	R6	4	119.85	121.27	SANDSTONE	Sst	1.42						Sst, light grey, fg-mg, massive, 1 FR @ 45 degrees TCA with SS.
							6	69%	20	9	W6	R5	4	121.27	121.69	SILTSTONE	Sltst	0.42						Sltst, sandy, with abundant FR averaging 30-50 degrees TCA with graphite on fracture surfaces. Abundant plant material, weakly laminated.
14	8,9	123.62	125.45	1.83	3.01	164%										#N/A								
							9	99%	25	14	W6	R5	3	121.69	124.70	SANDSTONE	Sst	3.01						Sst, light grey, mg-cg, massive, moderatly bioturbaded, minor silty layers 3-5mm thick, 85 degrees TCA. Trace plant material, jointing at 90 degrees TCA. Carbonate veining at the
15	9	125.45	127.58	2.13	2.11	99%										#N/A								
							1	2%	25	14	W6	R6	4	124.70	126.81	SANDSTONE	Sst	2.11						Sst, light grey, mg-fg, massive, with trace plant material. Carbonate vein 49cm long oriented 30 degrees TCA.
16	9,10	127.58	130.48	2.90	2.70	93%										#N/A								
														126.81	126.86	LOST CORE	Lost Core	0.05	0.05					*Lost rock.*
							25	72%	25	11	W6	R5	4	126.86	129.41	SANDSTONE	Sst	2.55						Started wrapping core here. Sst, massive, light grey, fg-mg with joints at 70 degrees TCA. Trace plant material and silty laminations at 90 degrees TCA. Sharp contact with Sltst
							3	0%	20	7	W6	R5	4	129.41	129.56	SILTSTONE	Sltst	0.15						Sltst, medium grey, fine grained, massive, jointing approximatly 90 degrees TCA, FR possibly due to drilling.
17	11,12	130.48	133.38	2.90	2.70	93%										#N/A								
							8	94%	25	10	W6	R6	4	129.56	132.26	SILTSTONE	Sltst	2.70						ibSltst with minor (5%) Sst laminations oriented 80 degrees TCA decreasing in abundance down section, dark grey, massive to very weakly laminated. One break by me at 1.45m to
18	12,13	133.38	135.82	2.44	2.55	105%										#N/A								
							13	87%	25	12	W6	R5	4	132.26	134.81	SILTSTONE	Sltst	2.55						Sltst, dark grey, fg-mg, scattered sandy zones but not laminated, massive to weakly bedded 85 degrees TCA, trace carbonate, joints are all at 85 degrees TCA.
19	13	135.82	135.82	0.00	0.12											#N/A								
							0	0%					2	134.81	134.93	SILTSTONE	Sltst	0.12						Core tube jammed up right away, as above Sltst.
20	13,14	135.82	138.41	2.59	1.66	64%										#N/A								
							8	27%	25	10	W6	R5	4	134.93	135.85	SILTSTONE	Sltst	0.92						As above Sltst, sandy dark grey, massive with trace carbonate. Most breaks 80-90 degrees TCA, healed (w. calcite). 3 Fractures at 60, 70 and 90 degrees TCA. Note: 3 ft missing
														135.85	135.95	SILTSTONE	Sltst	0.10			03248	136.81	136.91	
														135.95	136.87	LOST CORE	Lost Core	0.92	0.92	Seam 1	ns			*Lost Core: Prbly Coal - from geophysical log appears good quality coal*
														136.87	136.95	COAL	Coal	0.08		Seam 1	03249	136.91	136.99	Coal, black, dull-bright, crushed and gougy, bubbling vigourusly, trace pyrite.
								0%		1	W5	S2	0	136.95	137.00	CLAYSTONE	CLST	0.05		Seam 1	03249	136.99	137.04	Clay parting, grey-brown, highly fractured. Contact with coal 70 deg TCA.
								0%		2	W5	C4	3	137.00	137.41	COAL	Coal	0.41		Seam 1	03249	137.04	137.45	Black coal, dull-bright, mostly crushed with some solid sections, ended run in crushed coal, likely strong coal loss.
								0%		2	W5	S2	1	137.41	137.61	COAL	Coal	0.20		Seam 1	03250	137.45	137.65	Black coal, dull-bright, mostly crushed with some solid sections, ended run in crushed coal, likely strong coal loss.
21	14	138.41	140.24	1.83	1.38	75%										#N/A								
							3	0%	20	6	W5	R4	3	137.61	137.74	COAL	Coal	0.13		Seam 1	03250	137.65	137.78	Coal, black, dull, solid, bubbles moderatly, red staining on fracture surfaces (FeO?).
							1	100%	25	11	W6	R5	4	137.74	138.04	MUDSTONE	Mdst	0.30		Seam 1	03351	137.78	138.08	Mdst, dark grey, fine grained, massive, trace carbonate, strongly carbonaceous.
							2	100%	25	12	W6	R4	4	138.04	138.52	COAL	Coal	0.48		Seam 1	03352	138.08	138.56	Coal, dull bright with microcleats, a bit heavy for its size, rich in pyrite and calcite, solid.
														138.52	138.62	MUDSTONE	Mdst	0.10			03353	138.56	138.66	Mdst, brown-grey, massive, lacks plant material and coal lenses found above. Slight sandy appearance.
							0	100%			W6	R4	4	138.62	138.99	MUDSTONE	Mdst	0.37						Mdst, brown-grey, massive, lacks plant material and coal lenses found above. Slight sandy appearance.
														138.99	139.43	LOST CORE	Lost Core	0.44	0.44					*Lost Rock*
22	14	140.24	140.39	0.15	0.21	140%										#N/A								
							2	100%	25	13	W6	R5	4.00	139.43	139.64	MUDSTONE	Mdst	0.21						Mdst, grey-brown, fine grained, massive, weakly gassy (bubbling) trace plant material.
23	14	140.39	140.69	0.30	0.17	57%										#N/A								
							0	100%			W6	R5	3	139.64	139.81	SILTSTONE	Sltst	0.17						Sltst, grey brown, fine-medium grained, massive with abundant plant material.
24	15	140.69	142.52	1.83	2.08	114%										#N/A								
							9	100%	25	13	W6	R5	4	139.81	141.89	SILTSTONE	Sltst	2.08						Sltst, medium grey, fine grained, massive.
25	15,16	142.52	145.41	2.89	2.93	102%										#N/A								
											W6	R5	4	141.89	143.74	SILTSTONE	Sltst	1.85						The Geotechnical Information for Run 25 was collected for the whole run (not by lith). RQD is 98%, # of Joints is 11, Joint Condition is 25 and Degree of Breakage is 14 for the entire
											W6	R5	4	143.74	143.97	SANDSTONE	Sst	0.23						Sst, medium to coarse grained.
											W6	R5	4	143.97	144.33	SILTSTONE	Sltst	0.36						Sltst, medium grey, massive.
											W6	R5	4	144.33	144.46	SANDSTONE	Sst	0.13						Sst, light grey, medium to coarse grained.
											W6	R5	4	144.46	144.81	CLAYSTONE	Clyst	0.36						Clyst, medium grey with some coal lenses up to 3mm thick.
26	16,17	145.41	147.62	2.21	2.14	97%										#N/A								
							11	91%	25	13	W6	R6	4	144.81	146.95	SANDSTONE	Sst	2.14						Sst,light grey, coarse grained, massive. 0.80m at the top with coal stringers at 90 degrees TCA.
27	17,18	147.62	150.44	2.82	2.83	100%										#N/A								
							4	83%	25	4	W6	R4	4	146.95	147.95	SILTSTONE	Sltst	1.00						Sltst, medium grey, massive, 0.10m at the top is very broken.
												R6	4	147.95	148.73	SANDSTONE	Sst	0.78						Sst, light grey, coarse grained, massive.
							3	95%	25	15		R4	4	148.73	149.78	SILTSTONE	Sltst	1.05						Sltst, medium grey, fine grained, massive.
28	18,19	150.44	153.34	2.90	2.97	102%										#N/A								
							0	0%	20		W5	R5	4	149.78	150.00	SILTSTONE	Sltst	0.22						Sltst as above but more sandy.
							4	100%	25	11	W6	R6	4	150.00	151.40	SANDSTONE	Sst	1.40						Sst, light grey, coarse grained, massive.
							3	100%	25	14	W6	R4	4	151.40	152.75	SILTSTONE	Sltst	1.35						Sltst, medium grey, fine grained with small root traces.
29	20,21	153.34	156.24	2.90	2.83	98%										#N/A								
							1	100%	25	15	W6	R5	4	152.75	155.58	SILTSTONE	Sltst	2.83						Sltst-sandy,medium grey fine grained with root traces.
30	21,22	156.24	158.98	2.74	2.56	92%										#N/A								
							0					R6	4	155.58	155.78	SANDSTONE	Sst	0.20						Sst, medium grey, medium grained.
							1	98%	25	15	W6	R5	4	155.78	156.86	SILTSTONE	Sltst	1.08						Sltst, medium grey, fine grained, massive with root traces.
							1	100%	25	15	W6	R6	4	156.86	157.25	SANDSTONE	Sst	0.39						Sst, medium to fine grained with coal stringers at 90 degrees TCA.
							5	70%	25	9	W6	R6	4	157.25	158.14	SANDSTONE	Sst	0.89						Sst, light grey, coarse graiend, massive, 0.05m at the bottom is very broken.
														158.14	158.21	LOST CORE	Lost Core	0.07	0.07					*Rock loss.*
31	22	158.98	160.04	1.06	1.20	113%										#N/A								
							2	100%	25	15	W6	R5	4	158.21	159.41	SILTSTONE	Sltst	1.20						Sst, medium grey, fine grained, with some plant fragments.
32	23	160.04	162.94	2.90	2.90	100%										#N/A								
							2	100%	25	15	W6	R5	4.00	159.41	161.08	SILTSTONE	Sltst	1.67						Sltst, medium grey, fine grained, minor plant fragments. Grades into sandstone in last 50cm becoming increasingly sandy with depth. Massive-weakly bedded 85 degrees TCA.
							5	97%	25	12	W6	R5	4.00	161.08	162.31	SANDSTONE	Sst	1.23						Sst, light grey, coarse grained, massive-weakly bedded 85 degrees TCA, trace planet material.
33	23,24	162.94	164.46	1.52	1.31	86%										#N/A								
							3	100%	25	13	W6	R6	4	162.31	163.62	SANDSTONE	Sst	1.31						Sst, light grey, coarse to very coarse grained in upper 1.04m. 2cm py seem separates rock from a lower zone of muddy brown Sst that is finer grained, massive and has trace plant
34	24	164.46	167.20	2.74	0.08	3%										#N/A								
							1	100%	25	4	W6	R5	4	163.62	163.70	SANDSTONE	Sst	0.08						As above Sst.

														163.70	164.89	LOST CORE	Lost Core	1.19	1.19					*Rock loss.*
35	24	167.20	167.50	0.30	1.31	437%										#N/A								
							1	100%	25	12	W6	R5	4	164.89	165.42	SILTSTONE	Sltst	0.53						Sltst, brown grey, fine grained with thin Sst interbedding and trace plant material. Weak bedding 90 degrees TCA.
							2	100%	25	14	W6	R5	4	165.42	166.20	SANDSTONE	Sst	0.78						Sst, light grey, fine to medium grained, massive with minor Sltst laminations and trace plant material. One low angle fault at the bottom of the run, zero degrees TCA.
36	24	167.50	167.96	0.46	0.97	211%										#N/A								
							>25	45%	25	7	W6	R6	2	166.20	167.17	SANDSTONE	Sst	0.97						Sst, light grey, coarse to very coarse grained, massive with trace plant material. Coarsening downwards almost to a conglomerate. Badly over drilled.
37	25	167.96	169.94	1.98	2.09	106%										#N/A								
							5	94%	25	12	W6	R6	4	167.17	168.45	CONGLOMERATE	Congl	1.28						Congl, light grey, size of pebbles 2.3mm, matrix supported.
							2	78%	25	10	W6	R6	4	168.45	168.81	SANDSTONE	Sst	0.36						Sst, light grey, medium grained with coal stringers at 90 degrees TCA.
							0	100%				R4	4	168.81	169.26	SILTSTONE	Sltst	0.45						Sltst, light grey, fine grained, massive.
38	26,27	169.94	172.83	2.89	2.81	97%										#N/A								
							4	94%	25	12	W6	R6		169.26	170.22	SANDSTONE	Sst	0.96						Sst, light grey, coarse grained, with few volcanic pebbles up to 2cm. 0.10m at the top jointed and interbedded. with Clyst
							3	100%	25	13	W6	R6		170.22	171.45	SANDSTONE	Sst	1.23						Sst possibly Congl, coarse grained with clasts up to 1mm in diameter.
							0	100%						171.45	171.55	SILTSTONE	Sltst	0.10						Sltst interbedded with dark grey Clyst stringers.
							-	-						171.55	172.07	CONGLOMERATE	Congl	0.52						Congl, light grey, matrix supported with volcanic pepples 1mm in diameter.
39	27,28	172.83	175.72	2.89	2.86	99%										#N/A								
							3	77%	25	9	W6	R6	4	172.07	172.60	CONGLOMERATE	Congl	0.53						Congl, light grey, with few volcanic pebbles up to 2mm.
							0	100%						172.60	172.79	SILTSTONE	Sltst	0.19						Sltst, light grey, fine grained in sharp contacts with the conglomerate at 35 degrees TCA.
							8	89%	25	13	W6	R6	4	172.79	174.62	CONGLOMERATE	Congl	1.83						Congl, light grey, grain size 2-3mm, coal stringers in the 0.40cm at the bottom of the unit.
							0							174.62	174.93	SANDSTONE	Sst	0.31						Sst, light grey, fine grained, massive.
40	28,29	175.72	178.61	2.89	2.85	99%										#N/A								
							5	94%	25	13	W6	R6	4	174.93	175.82	SANDSTONE	Sst	0.89						Sst, medium grey, medium grained, with volcanic pebbles up to 5cm in diameter.
							8	69%	25	13	W6	R6	4.00	175.82	177.78	CONGLOMERATE	Congl	1.96						Congl, light, 0.5m from the top. The grain size increases up to 3mm. Coal stringers begin 0.38m from the bottom of the interval.
41	29,30	178.61	181.50	2.89	2.96	102%										#N/A								
							11	73%	25	10	W6	R6	4.00	177.78	179.44	CONGLOMERATE	Congl	1.66						Congl, light grey, massive, pebble size up to 4mm.
							3	100%	25	10	W6	R6	4	179.44	180.49	SANDSTONE	Sst	1.05						Sst, medium grey, mg, interbedded with dark grey Sltst 0.35m from the top, 0.05m at the bottom Congl.
							>25	0%				R3	1	180.49	180.74	SILTSTONE	Sltst	0.25						Medium grey Sltst, fine grained, 0.15m at the bottom is very broken.
42	30,31	181.50	184.39	2.89	2.82	97%										#N/A								
							0	100%				R3	2	180.74	181.34	CLAYSTONE	Cst	0.60						Cst, dark grey at the top with calcite veins, 0.20m at the bottom is very soft.
							0	100%				R6	4	181.34	182.95	CONGLOMERATE	Congl	1.61						Congl, medium grey, matrix supported, pebbles are rounded and up to 2-3cm. At the middle of the interval, there is about 50cm of fine grained material. 0.35 cm at the bottom
							-	70%			R3	W4		182.95	183.56	CLAYSTONE	Cst	0.61						Cst, dark grey, massive, 0.1m at the top is very broken.
														183.56	183.74	LOST CORE	Lost Core	0.17	0.17					*Rock loss.*
43	31	184.39	187.29	2.90	2.76	95%										#N/A								
				0	0		2.00	100%	25.00	15	W4	R5	4	183.74	186.50	UNDIFFERENTIATED VOLCANICS	Volc	2.76						Volc. Upper 45cm is black basalt with quartz filling the voids in the rock. Grades into green altered volcanics, becoming increasingly altered with depth. Non-conglomeratic.

Client: CJV
Project: Raven
Logged By: Parviz Rajaei, Sarah Newman

Hole Number: RAV-09-035
Date Hole Started: August 21, 2009
Date Hole Finished: September 12, 2009
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 40067
Depth of Casing:
Core Size: Modified PQ (3")

Geological Borehole Log: RAV-09-035

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Fractures Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Intervals Logged Lithology	Intervals Logged Interval Length	Intervals Logged Core Loss	Intervals Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
														0.00	15.24	OVERBURDEN	OVBDN	15.24				0.00	15.24	OVB
														15.24	16.15	SILTSTONE	SLTST	0.91			1	15.24	16.15	Sltst, Medium Grey, Chip Sampling starts here(Sample 1) and ends with Sample 136.
														16.15	16.76	SILTSTONE	SLTST	0.61			2	16.15	16.76	Sltst, Medium Grey
														16.76	18.29	SILTSTONE	SLTST	1.52			3	16.76	18.29	Sltst, Medium Grey
														18.29	19.81	SILTSTONE	SLTST	1.52			4	18.29	19.81	Sltst, Medium Grey
														19.81	21.34	SILTSTONE	SLTST	1.52			5	19.81	21.34	As above Sltst with 1% Calcite
														21.34	22.86	SILTSTONE	SLTST	1.52			6	21.34	22.86	As above Sltst
														22.86	24.38	SILTSTONE	SLTST	1.52			7	22.86	24.38	As above Sltst
														24.38	25.91	SILTSTONE	SLTST	1.52			8	24.38	25.91	As above Sltst
														25.91	27.43	SILTSTONE	SLTST	1.52			9	25.91	27.43	As above Sltst
														27.43	28.96	SILTSTONE	SLTST	1.52			10	27.43	28.96	As above Sltst
														28.96	30.48	SILTSTONE	SLTST	1.52			11	28.96	30.48	As above Sltst
														30.48	32.00	SILTSTONE	SLTST	1.52			12	30.48	32.00	As above Sltst
														32.00	33.53	SILTSTONE	SLTST	1.52			13	32.00	33.53	As above Sltst
														33.53	35.05	SILTSTONE	SLTST	1.52			14	33.53	35.05	As above Sltst
														35.05	36.58	SILTSTONE	SLTST	1.52			15	35.05	36.58	As above Sltst
														36.58	38.10	SILTSTONE	SLTST	1.52			16	36.58	38.10	As above Sltst
														38.10	39.62	SILTSTONE	SLTST	1.52			17	38.10	39.62	As above Sltst
														39.62	41.15	SILTSTONE	SLTST	1.52			18	39.62	41.15	As above Sltst
														41.15	42.67	SILTSTONE	SLTST	1.52			19	41.15	42.67	As above Sltst
														42.67	44.20	SILTSTONE	SLTST	1.52			20	42.67	44.20	As above Sltst
														44.20	45.72	SILTSTONE	SLTST	1.52			21	44.20	45.72	Sltst as above Medium Grey
														45.72	47.24	SILTSTONE	SLTST	1.52			22	45.72	47.24	As above Sltst
														47.24	48.77	SILTSTONE	SLTST	1.52			23	47.24	48.77	As above Sltst
														48.77	50.29	SILTSTONE	SLTST	1.52			24	48.77	50.29	As above Sltst
														50.29	51.82	SILTSTONE	SLTST	1.52			25	50.29	51.82	Sltst, Medium Grey
														51.82	53.34	SILTSTONE	SLTST	1.52			26	51.82	53.34	As above
														53.34	54.86	SILTSTONE	SLTST	1.52			27	53.34	54.86	As above
														54.86	56.39	SILTSTONE	SLTST	1.52			28	54.86	56.39	As above
														56.39	57.91	SILTSTONE	SLTST	1.52			29	56.39	57.91	As above
														57.91	59.44	SILTSTONE	SLTST	1.52			30	57.91	59.44	As above
														59.44	60.96	SILTSTONE	SLTST	1.52			31	59.44	60.96	As above Sltst Medium Grey
														60.96	62.48	SILTSTONE	SLTST	1.52			32	60.96	62.48	As above
														62.48	64.01	SILTSTONE	SLTST	1.52			33	62.48	64.01	Sltst
														64.01	65.53	SILTSTONE	SLTST	1.52			34	64.01	65.53	Sltst
														65.53	67.06	SILTSTONE	SLTST	1.52			35	65.53	67.06	Sltst
														67.06	68.58	SILTSTONE	SLTST	1.52			36	67.06	68.58	Sltst
														68.58	70.10	SILTSTONE	SLTST	1.52			37	68.58	70.10	Sltst
														70.10	71.63	SILTSTONE	SLTST	1.52			38	70.10	71.63	Sltst
														71.63	73.15	SILTSTONE	SLTST	1.52			39	71.63	73.15	Sltst
														73.15	74.68	SILTSTONE	SLTST	1.52			40	73.15	74.68	Sltst
														74.68	76.20	SILTSTONE	SLTST	1.52			41	74.68	76.20	Sltst
														76.20	77.72	SILTSTONE	SLTST	1.52			42	76.20	77.72	Sltst
														77.72	79.25	SILTSTONE	SLTST	1.52			43	77.72	79.25	Sltst
														79.25	80.77	SILTSTONE	SLTST	1.52			44	79.25	80.77	Sltst
														80.77	82.30	SILTSTONE	SLTST	1.52			45	80.77	82.30	Sltst
														82.30	83.82	SILTSTONE	SLTST	1.52			46	82.30	83.82	Sltst
														83.82	85.34	SILTSTONE	SLTST	1.52			47	83.82	85.34	Sltst
														85.34	86.87	SILTSTONE	SLTST	1.52			48	85.34	86.87	Sltst
														86.87	88.39	SILTSTONE	SLTST	1.52			49	86.87	88.39	Sltst
														88.39	89.92	SILTSTONE	SLTST	1.52			50	88.39	89.92	Sltst
														89.92	91.44	SILTSTONE	SLTST	1.52			51	89.92	91.44	Sltst
														91.44	92.96	SILTSTONE	SLTST	1.52			52	91.44	92.96	Sltst
														92.96	94.49	SILTSTONE	SLTST	1.52			53	92.96	94.49	Sltst
														94.49	96.01	SILTSTONE	SLTST	1.52			54	94.49	96.01	Sltst
														96.01	97.54	SILTSTONE	SLTST	1.52			55	96.01	97.54	Sltst
														97.54	99.06	SILTSTONE	SLTST	1.52			56	97.54	99.06	Sltst
														99.06	100.58	SILTSTONE	SLTST	1.52			57	99.06	100.58	Sltst
														100.58	102.11	SILTSTONE	SLTST	1.52			58	100.58	102.11	Sltst
														102.11	103.63	SILTSTONE	SLTST	1.52			59	102.11	103.63	Sltst
														103.63	105.16	SILTSTONE	SLTST	1.52			60	103.63	105.16	Sltst
														105.16	106.68	SILTSTONE	SLTST	1.52			61	105.16	106.68	Sltst
														106.68	108.20	SILTSTONE	SLTST	1.52			62	106.68	108.20	Sltst
														108.20	109.73	SILTSTONE	SLTST	1.52			63	108.20	109.73	Sltst
														109.73	111.25	SILTSTONE	SLTST	1.52			64	109.73	111.25	Sltst
														111.25	112.78	SILTSTONE	SLTST	1.52			65	111.25	112.78	Sltst
														112.78	114.30	SILTSTONE	SLTST	1.52			66	112.78	114.30	Sltst
														114.30	115.82	SILTSTONE	SLTST	1.52			67	114.30	115.82	Sltst
														115.82	117.35	SILTSTONE	SLTST	1.52			68	115.82	117.35	Sltst
														117.35	118.87	SILTSTONE	SLTST	1.52			69	117.35	118.87	Sltst
														118.87	120.40	SILTSTONE	SLTST	1.52			70	118.87	120.40	Sltst
														120.40	121.92	SILTSTONE	SLTST	1.52			71	120.40	121.92	Sltst
														121.92	123.44	SILTSTONE	SLTST	1.52			72	121.92	123.44	Sltst
														123.44	124.97	SILTSTONE	SLTST	1.52			73	123.44	124.97	Sltst
														124.97	126.49	SILTSTONE	SLTST	1.52			74	124.97	126.49	Sltst
														126.49	128.02	SILTSTONE	SLTST	1.52			75	126.49	128.02	Sltst
														128.02	129.54	SILTSTONE	SLTST	1.52			76	128.02	129.54	Sltst
														129.54	131.06	SILTSTONE	SLTST	1.52			77	129.54	131.06	Sltst
														131.06	132.59	SILTSTONE	SLTST	1.52			78	131.06	132.59	Sltst
														132.59	134.11	SILTSTONE	SLTST	1.52			79	132.59	134.11	Sltst
														134.11	135.64	SILTSTONE	SLTST	1.52			80	134.11	135.64	Sltst
														135.64	137.16	SILTSTONE	SLTST	1.52			81	135.64	137.16	Sltst
														137.16	138.68	SILTSTONE	SLTST	1.52			82	137.16	138.68	Sltst
														138.68	140.21	SILTSTONE	SLTST	1.52			83	138.68	140.21	Sltst
														140.21	141.73	SILTSTONE	SLTST	1.52			84	140.21	141.73	Sltst
														141.73	143.26	SILTSTONE	SLTST	1.52			85	141.73	143.26	Sltst
														143.26	144.78	SILTSTONE	SLTST	1.52			86	143.26	144.78	Sltst

														144.78	146.30	SILTSTONE	SLTST	1.52			87	144.78	146.30	Sltst
														146.30	147.83	SILTSTONE	SLTST	1.52			88	146.30	147.83	Sltst
														147.83	149.35	SILTSTONE	SLTST	1.52			89	147.83	149.35	Sltst
														149.35	150.88	SILTSTONE	SLTST	1.52			90	149.35	150.88	Sltst
														150.88	152.40	SILTSTONE	SLTST	1.52			91	150.88	152.40	Sltst
														152.40	153.92	SILTSTONE	SLTST	1.52			92	152.40	153.92	Sltst & Sst
														153.92	155.45	SILTSTONE	SLTST	1.52			93	153.92	155.45	Sltst
														155.45	156.97	SILTSTONE	SLTST	1.52			94	155.45	156.97	Sltst
														156.97	158.50	SILTSTONE	SLTST	1.52			95	156.97	158.50	Sltst
														158.50	160.02	SILTSTONE	SLTST	1.52			96	158.50	160.02	Sltst
														160.02	161.54	SILTSTONE	SLTST	1.52			97	160.02	161.54	Sltst
														161.54	163.07	SILTSTONE	SLTST	1.52			98	161.54	163.07	Sltst
														163.07	164.59	SILTSTONE	SLTST	1.52			99	163.07	164.59	Sltst
														164.59	166.12	SILTSTONE	SLTST	1.52			100	164.59	166.12	Sltst
														166.12	167.64	SILTSTONE	SLTST	1.52			101	166.12	167.64	Sltst
														167.64	169.16	SILTSTONE	SLTST	1.52			102	167.64	169.16	Sltst
														169.16	170.69	SILTSTONE	SLTST	1.52			103	169.16	170.69	Sltst
														170.69	172.21	SILTSTONE	SLTST	1.52			104	170.69	172.21	Sltst
														172.21	173.74	SILTSTONE	SLTST	1.52			105	172.21	173.74	Sltst
														173.74	175.26	SILTSTONE	SLTST	1.52			106	173.74	175.26	Sltst
														175.26	176.78	SANDY MUDSTONE	SDY SLTST	1.52			107	175.26	176.78	sltst:sst 70:30
														176.78	178.31	SANDY MUDSTONE	SDY SLTST	1.52			108	176.78	178.31	sltst:sst 80:20
														178.31	179.83	SANDY MUDSTONE	SDY SLTST	1.52			109	178.31	179.83	sltst, dk gy ; sst, lt gy, f.gr., 70:30
														179.83	181.36	SANDSTONE	SST	1.52			110	179.83	181.36	sst,lt gy., f.gr., sltst, dk gy, 80:20
														181.36	182.88	SILTSTONE	SLTST	1.52			111	181.36	182.88	As above with 1% qtz & calcite
														182.88	184.40	SILTSTONE	SLTST	1.52			112	182.88	184.40	sltst, sandy, dk gy
														184.40	185.93	SILTSTONE	SLTST	1.52			113	184.40	185.93	As Above
														185.93	187.45	SANDSTONE	SST	1.52			114	185.93	187.45	sst: m.gy., f-m gr.,
														187.45	188.98	SANDSTONE	SST	1.52			115	187.45	188.98	sst: lt -m.gy., f-m gr.,
														188.98	190.50	SANDSTONE	SST	1.52			116	188.98	190.50	sst: m-dk gy., f-m gr.
														190.50	192.02	SANDSTONE	SST	1.52			117	190.50	192.02	sst: lt gy, f-m gr., sltst: dk gy., 80:20
														192.02	193.55	SANDSTONE	SST	1.52			118	192.02	193.55	As above, 90:10
														193.55	195.07	SANDSTONE	SST	1.52			119	193.55	195.07	As above, 90:10
														195.07	196.60	SANDSTONE	SST	1.52			120	195.07	196.60	As above, 90:10
														196.60	198.12	SILTSTONE	SLTST	1.52			121	196.60	198.12	sltst; dk gy., sst lt gy., f.gr., 60:40
														198.12	199.64	SILTSTONE	SLTST	1.52			122	198.12	199.64	sltst; dk gy., sst lt gy., f.gr., 60:40
														199.64	201.17	SILTSTONE	SLTST	1.52			123	199.64	201.17	sltst; dk gy., sst lt gy., f.gr., 80:20
														201.17	202.69	SILTSTONE	SLTST	1.52			124	201.17	202.69	sltst; dk gy., sst lt gy., f.gr., 80:20
														202.69	204.22	SANDSTONE	SST	1.52			125	202.69	204.22	sst; lt gy., c.gr., sltst: dk gy., ; 70:30
														204.22	205.74	SANDSTONE	SST	1.52			126	204.22	205.74	sst; lt gy., c.gr., sltst: dk gy., ; 70:30
														205.74	207.26	SANDSTONE	SST	1.52			127	205.74	207.26	sst; lt gy., c.gr., sltst: dk gy., ; 80:20
														207.26	208.79	SANDSTONE	SST	1.52			128	207.26	208.79	sst; lt gy., c.gr., sltst: dk gy., ; 80:20; 1% qtz/calcite
														208.79	210.31	SANDSTONE	SST	1.52			129	208.79	210.31	sst; lt gy., c.gr., sltst: dk gy., ; 50:50
														210.31	211.84	SANDSTONE	SST	1.52			130	210.31	211.84	sst; pinky brn., k-spar rich., c.gr., sltst: dk gy., ; 50:50
														211.84	213.36	SANDSTONE	SST	1.52			131	211.84	213.36	sst: lt gy., sltst: dk gy., 90:10
														213.36	214.88	SANDSTONE	SST	1.52			132	213.36	214.88	sst: lt gy., sltst: dk gy., 80:20
														214.88	216.41	SANDSTONE	SST	1.52			133	214.88	216.41	sst: lt gy., sltst: dk gy., 80:20
														216.41	217.93	SANDSTONE	SST	1.52			134	216.41	217.93	sst: m.gy., f.gr., sltst; 90:10
														217.93	219.46	SANDSTONE	SST	1.52			135	217.93	219.46	sst: lt gy., m-c gr., sltst; 95:5
														219.46	220.98	SANDSTONE	SST	1.52			136	219.46	220.98	As Above
														220.98	221.49	SANDSTONE	SST	0.51						
														221.49	221.81	COAL	COAL	0.32		SEAM 5	ns	220.98	222.81	siltstone: dk.gy.; black water, likely coal but no coal chips visible in sample; called core point. Geophysical log shows coaly zone 221.49 to 221.81 (0.32)
														221.81	222.81	SILTSTONE	SLTST	1.00						
1	1	222.81	225.70	2.89	2.72	94.12%										#N/A								
							2	100	25	15	W6	R6	4	222.81	223.73	SILTSTONE	SLTST	0.92						lt gy., massive
							3	100	25	15	W6	R4	4	223.73	225.53	CLAYSTONE	CLYST	1.80						dk gy., massive
2	2	225.70	228.59	2.89	2.65	91.70%										#N/A								
							1	100	25	15	W6	R4	4	225.53	225.97	CLAYSTONE	CLYST	0.44						carb., massive
							0	100		6	W6	R6	4	225.97	226.29	SANDSTONE	SST	0.32						lt.gy., f.gr.
							3	0	25	15	W6	R4	4	226.29	226.43	CLAYSTONE	CLYST	0.14						carb., massive
							1	100	25	15	W6	R6	4	226.43	228.18	SANDSTONE	SST	1.75						m.gy., m.gr., massive, carb at top
3	3	228.59	230.42	1.83	1.73	94.54%										#N/A								
							1	100	25	15	W6	R6	3	228.18	229.91	SANDSTONE	SST	1.73						m.gy., m.gr., massive, trace plant material
4	3 & 4	230.42	233.01	2.59	2.98	115.06%										#N/A								
							2	100	25	15	W6	R6	3	229.91	232.89	SANDSTONE	SST	2.98						as above, plant material along bdg plane fractures, minor graphite and py along bdg plane, bdg at 80 deg tca
5	4	233.01	235.91	2.90	2.55	87.93%										#N/A								
							3	100	25	15	W6	R6	3	232.89	235.44	SANDSTONE	SST	2.55						as above, with weak bioturbation towards base and more abundant plant material; coarsens downwards
6	5 & 6	235.91	238.65	2.74	3.05	111.31%										#N/A								
							3	100	25	15	W6	R6	3	235.44	238.49	SANDSTONE	SST	3.05						m.gy., m-c.gr., massive., tr plant material., weak pinkcolour towards base (k-spar or weak Fe stn),
7	5 & 6	238.65	241.55	2.90	2.88	99.31%										#N/A								
							0	10			W6	R6	4	238.49	239.93	SANDSTONE	SST	1.44			ns			m.gy., m-c.gr., massive.,
							1	100	20	10	W6	R4	4	239.93	240.18	COAL	COAL	0.25		SEAM 4	28217	240.09	240.34	black, dull to bright, bubbling vigorously, trc pyand carbonate
							>25	68	10	7	W6	R3	4	240.18	240.40	MUDSTONE	MDSTN	0.22		SEAM 4	ns			brn gy., massive., crushed at lower contact with coal
							0	100			W6	R3	4	240.40	240.59	SHALY COAL	Shaly COAL	0.19		SEAM 4	28218	240.56	240.75	black, dull to bright, bubbling vigorously, more py than above
							0	100			W6	R4	3	240.59	241.12	MUDSTONE	MDSTN	0.53			ns			as above
							>25	60	10	6	W6	R2	4	241.12	241.37	COALY MUDSTONE	COALY MDSTN	0.25		SEAM 4	28219	241.30	241.55	interbedded mdstn with coal 1-5cm, coal increases downward, coal:mdstn 70:30., coal more fragile than above,
8	6 & 7	241.55	244.45	2.90	2.90	100.00%										#N/A								
							>25	0	20	4	W6	R2	1	241.37	241.75	SHALY COAL	Shaly COAL	0.38		SEAM 4	28220	241.55	241.93	dull to bright, blocky, thin mdstn bands 1- 2mm, trace py and carb., weak bubbling
														241.75	241.87	COALY MUDSTONE	Coaly Shale	0.12			ns			
							2	100	25	15	W6	R6	4	241.87	244.27	SANDSTONE	SST	2.40						lt m gy., m.gr., massive, lacks bioturbation, silty zone in middle.
9	7 & 8	244.45	247.35	2.90	2.42	83.45%										#N/A								
							1	100	25	15	W6	R6	4	244.27	245.17	SANDSTONE	SST	0.90						m.gy., f.gr., massive, sharp irregular contact with coal below., 45 deg c/a
							>25	0	10	7	W6	R2	1	245.17	245.28	COAL	COAL	0.11			28221	245.35	245.46	black, dull to bright, mostly crushed
							1	100	25	15	W6	R6	4	245.28	246.69	SANDSTONE	SST	1.41						m.gy., f.gr., massive
10	8	247.35	248.88	1.53	2.02	132.03%										#N/A								
							1	100	25	15	W6	R6	4	246.69	248.71	SANDSTONE	SST	2.02						m.gy., f-m.gr., massive
11	9/10	248.88	251.77	2.89	2.90	100.35%										#N/A								
							3	100	25	14	W6	R6	4	248.71	251.61	SANDSTONE	SST	2.90						lt gy., m.gr., massive; 40cm from top with coal strgs at 90 deg c/a., difficult to core
12	10	251.77	254.66	2.89	2.01	69.55%										#N/A								
							0	100			W6	R6	4	251.61	253.62	SANDSTONE	SST	2.01						as above., m-c.gr.
13	10 /11	254.66	256.49	1.83	2.19	119.67%										#N/A								
							2	100	25	15	W6	R6	4	253.62	255.81	SANDSTONE	SST	2.19						as above but with coal strgs and root structures
14	11/12	256.49	258.93	2.44	2.78	113.93%										#N/A								

							2	100	25	15	W6	R6	4	255.81	258.59	SANDSTONE	SST	2.78							as above, lt.gy., m-c.gr., massive
15	12/13	258.93	261.06	2.13	2.32	108.92%										#N/A									
							1	100	25	15	W6	R6	4	258.59	260.91	SANDSTONE	SST	2.32							as above with few coal strgs at 85 deg c/a
16	13/14	261.06	263.95	2.89	2.83	97.92%										#N/A									
							7	100	25	14	W6	R6	4	260.91	263.74	SANDSTONE	SST	2.83							as above with few coal strgs at 85- 90 deg c/a
17	14/15	263.95	266.84	2.89	2.97	102.77%										#N/A									
							7	100	25	14	W6	R6	4	263.74	266.71	SANDSTONE	SST	2.97							as above., massive., hd., hard to drill
18	15/16	266.84	269.73	2.89	2.60	89.97%										#N/A									
							1	100	25	15	W6	R6	4	266.71	269.31	SANDSTONE	SST	2.60							lt.gy., m-c.gr., massive
19	16/17	269.73	272.47	2.74	2.93	106.93%										#N/A									
							1	100	25	15	W6	R6	4	269.31	271.99	SANDSTONE	SST	2.68							as above, contact at 45 deg c/a
							1	80	25	12	W6	R6	4	271.99	272.24	SANDSTONE	SST	0.25							m.gy., f-c.gr., massive
20	18	272.47	275.21	2.74	2.93	106.93%										#N/A									
							3	100	25	15	W6	R6	4	272.24	275.17	SANDSTONE	SST	2.93							sst - lt.gy., f-m.gr., massive., joints at top of interval, hard., difficult to break to fit into box.
21	19/20	275.21	278.11	2.90	2.81	96.90%										#N/A									
							1	100	25	15	W6	R6	4	275.17	277.98	SANDSTONE	SST	2.81							lt.gy., f.gr., massive., one natural break near base of interval at a 2cm coal seam at 85 deg c/a., hard to break to fit into box.
22	20/21	278.11	281.01	2.90	3.02	104.14%										#N/A									
							3	100	25	15	W6	R6	4	277.98	279.78	SANDSTONE	SST	1.80							lt.gy., f-m.gr., massive., with fine wispy coal lams (<3%)
							3	0	20	6	W6	R4	3	279.78	279.92	MUDSTONE	MDSTN	0.14				03354	279.78	279.92	massive, broken, trace py.
							>25	0	0	6	W6	S2	1	279.92	280.26	COAL	COAL	0.34			SEAM 3U	03355	279.92	280.26	dull to bright., black, gassy., thin >1cm mdstn ptgs., trace py
							5	70	20	12	W6	R2	4	280.26	281.00	COAL	COAL	0.74			SEAM 3U	03356	280.26	281.00	dull to bright., black, solid., thin >2cm mdstn ptgs., trace py
23	21/22	281.01	283.91	2.90	1.61	55.52%										#N/A									
							>25	0	10	7	W6	R3	3	281.00	281.14	COALY MUDSTONE	COALY SHALE	0.14				03357	281.00	281.14	intbd coal and mdstn: coal crushed and mdstn is solid in beds of 2-5cm.,
							0	100			W6	R4	2	281.14	281.27	MUDSTONE	MDSTN	0.13				03358	281.14	281.27	brn., massive., trace py.
														281.27	281.46	LOST CORE	LOST CORE	0.19	0.19			ns			Lost Core is likely parting (carb mdstn)
							0				W6	R2	4	281.46	281.54	COAL	COAL	0.08			SEAM 3L	03359	281.46	281.54	dull to bright, tr py
							0	100			W6	R4	4	281.54	281.64	MUDSTONE	MDSTN	0.10			SEAM 3L	03360	281.54	281.64	brown, massive
														281.64	282.10	LOST CORE	LOST CORE	0.46	0.46		SEAM 3L	ns			Lost core is likely Coal
							>25	0	10	6	W6	R2	3	282.10	282.30	COAL	COAL	0.20			SEAM 3L	03361	282.10	282.30	dull to bright, tr py., in part crushed.,
							0	100			W6	R4	4	282.30	282.54	MUDSTONE	MDSTN	0.24			SEAM 3L	03362	282.30	282.54	brown, massive,solid
														282.54	282.80	COAL	COAL	0.26			SEAM 3L	03363	282.54	282.80	
														282.80	282.85	COAL	COAL	0.05			SEAM 3L	03364	282.80	282.85	
							>25	40	10	6	W6	R2	4	282.85	283.04	COAL	COAL	0.19			SEAM 3L	03365	282.85	283.04	dull to bright, tr py., crushed at base of intvl.
														283.04	283.54	LOST CORE	LOST CORE	0.50	0.50		SEAM 3L	ns			Lost Core is likely coal
							>25	0	10	6	W6	R4	4	283.54	283.68	CARBONACEOUS CLAYSTONE	CARB CLYST	0.14			SEAM 3L	03366	283.54	283.68	Carb.Clayst., brn-gy., broken to crushed in sharp jagged chunks.
														283.68	283.91	LOST CORE	LOST CORE	0.23	0.23		SEAM 3L	ns			Lost Core is likely coal
							>25	0	10	5	W6	R2	2	283.91	283.99	COAL	COAL	0.08			SEAM 3L	03367	283.91	284.76	dull to bright, tr py., broken due to drilling.
24	22	283.91	285.14	1.23	1.12	91.06%										#N/A									
							>25	52	10	3	W6	R2	2	283.99	284.76	COAL	COAL	0.77			SEAM 3L	03367	283.91	284.76	dull to bright, weak bubbling, tr.py., crushed zone at end of run.
														284.76	284.87	LOST CORE	LOST CORE	0.11	0.11		SEAM 3L	ns			Lost Core is likely coal
														284.87	284.97	MUDSTONE	MDSTN	0.10				03368	284.76	284.86	
							5	0	20	6	W6	R4	3	284.97	285.22	MUDSTONE	MDSTN	0.25							brn., massive, breaks are irregular shaped and overlapping.
25	22	285.14	285.29	0.15	0.13	86.67%										#N/A									
														285.22	285.34	LOST CORE	LOST CORE	0.12	0.12						Lost core is likely mdstn
							1	0	25	6	W6	R5	4	285.34	285.47	MUDSTONE	MDSTN	0.13							brn., massive, one fracture at 60 deg c/a., tr calcite
26	22, 23	285.29	287.88	2.59	2.52	97.30%										#N/A									
					1.24		2	8	25	7	W6	R5	4	285.47	286.71	SILTSTONE	Slst	1.24							slst, medium grey, massive
					1.28		3	100	25	15	W6	R6	4	286.71	287.99	SANDSTONE	Sst	1.28							Sst,fine grain interbrded with dark grey Slstat the top and bottom,it was very hard to drill
27	24,25	287.88	290.77	2.89	3.01	104.15%										#N/A									
					3.01		3	93	25	15	W6	R6	4	287.99	291.00	SILTY SANDSTONE	Sst/Slt	3.01							Sst, light greyintereded withdark grey Slst,0.40m from top, with bivalves fossiles
28	25,26	290.77	293.66	2.89	2.67	92.39%										#N/A									
					1.43		4	100	25	14	W6	R6	4	291.00	292.43	SANDSTONE	Sst	1.43							Sst, Coarse grain with occasional dark grey Slst
					0.25			100						292.43	292.57	CLAYSTONE	Clyst	0.14							Clyst, dark grey , solid piece
														292.57	292.67	CLAYSTONE	Clyst	0.10				03369	292.57	292.67	
					0.21			100	25	>25				292.67	292.88	COAL	Coal	0.21			SEAM 2	03370	292.67	292.88	Coal, dull very broken with bubbling gas
														292.88	292.98	CLAYSTONE	Clyst	0.10				03371	292.88	292.98	
					0.78			100	25	9	W6	R6	4	292.98	293.66	CLAYSTONE	Clyst	0.68							Clyst, carbonaceous ,0.10m at the top with coal stringers
29	26,27	293.66	296.55	2.89	2.70	93.43%										#N/A									
							12	98	25	11	W6	R6	4	293.66	296.36	CLAYSTONE	Clyst	2.70							Clyst, Carbonaceous dark grey interbeded with medium grey Clyst,at 85 TCA, 010m at the top broken
30	27	296.55	298.38	1.83	1.38	75.41%										#N/A									
							0	100			W6	R5	4	296.36	297.74	SILTSTONE	Slst	1.38							Slst, dark grey partly carbonaceous. 0.65m from bottom, Silty Sst to fine grain Sst
31	28	298.38	298.99	0.61	0.79	129.51%										#N/A									
							0	100			W6	R5	4	297.74	298.53	SILTSTONE	Slst	0.79							Slst, dark grey, fine grain, solid piece
32	28,29	298.99	301.63	2.64	3.13	118.56%										#N/A									
							1	100	25	15	W6	R5	4	298.53	299.33	SILTSTONE	Slst	0.80							Slst, dark grey, fine grain, solid piece
							1	100	25	15	W6	R6	4	299.33	300.03	SANDSTONE	Sst	0.70							Sst, light grey, coarse grain, massive
							6	100	25	14	W6	R6	4	300.03	301.66	SHALY SANDSTONE	Sst/Slst	1.63							Sst interbeded with Slst, Slst are stringingers to 0.07m bands at 85 TCA, the broken lower part is
33	29,30	301.63	303.56	1.93	2.00	103.63%			25	15	W6	R6	4			#N/A									
							5	100	25	15	W6	R6	4	301.66	303.66	SANDSTONE	Sst	2.00							Sst,light grey, Coarse grain, with some Clyst Laminations
34	30,31	303.56	306.45	2.89	2.60	89.97%										#N/A									
							4	100	25	14	W6	R6	4	303.66	305.70	SANDSTONE	Sst	2.04							Sst,light grey, Coarse grain, with some Clyst Laminations at 85 TCA
							5	55	25	7	W6	R4	4	305.70	306.26	CLAYSTONE	Clyst	0.56							Clyst, carbonaceous, dark grey with small band of Sst
35	31,32	306.45	309.19	2.74	2.82	102.92%			25	15	W6	R6	4			#N/A									
							6	100	25	14	W6	R4	4	306.26	308.01	CLAYSTONE	Clyst	1.75							Clyst, carbonaceous.dark grey, at the bottom with coal stringers
														308.01	308.12	CLAYSTONE	Clyst	0.11				03372	308.01	308.12	
									25	15	W6	R6	4	308.12	309.08	COAL	Coal	0.96			SEAM 1	03373	308.12	309.08	Coal, dull, 0.28m at the top broken, the rest is solid with 1% Pyrite
36	32,33	309.19	312.08	2.89	2.55	88.24%										#N/A									
														309.08	309.38	COAL	Coal	0.30			SEAM 1	03374	309.08	309.38	Coal, dull, solid, 1-2 % pyrite, 0.13m from bottom 0.08m High carbonaceous Clyst
														309.38	309.66	COAL	Coal	0.28			SEAM 1	03375	309.38	309.66	
														309.66	309.93	COAL	Coal	0.27			SEAM 1	03376	309.66	309.93	
														309.93	310.33	COAL	Coal	0.40			SEAM 1	03377	309.93	310.33	
														310.33	310.71	COAL	Coal	0.38			SEAM 1	03378	310.33	310.71	
														310.71	311.47	COAL	Coal	0.76			SEAM 1	03379	310.71	311.47	
														311.47	311.55	CARBONACEOUS CLAYSTONE	CARB CLYST	0.08			SEAM 1	03379	311.47	311.55	Carb.Clyst
														311.55	311.68	LOST CORE	LOST CORE	0.13			SEAM 1	ns			Lost Core likely coal.
														311.68	311.73	COAL	COAL	0.05			SEAM 1	03379	311.55	311.60	Coal as above
37	33,34	312.08	314.82	2.74	2.73	99.64%										#N/A									
							0	0						311.73	311.78	COALY MUDSTONE	Coaly Mdstn	0.05			SEAM 1	03379	311.60	311.65	Coal, dull, solid
														311.78	311.91	COALY MUDSTONE	Coaly Mdstn	0.13			SEAM 1	03379	311.65	311.78	
														311.91	312.01	CLAYSTONE	Clyst	0.10			SEAM 1	03380	311.78	311.88	
							0	100						312.01	312.11	CLAYSTONE	Clyst	0.10			SEAM 1	03381	312.01	312.11	Clyst, carbonaceous, dark grey
							5	77	25	15	W6	R3	4	312.11	312.68	COAL	Coal	0.57			SEAM 1	03382	312.11	312.68	coal, dull, broken
														312.68	312.75	CLAYSTONE	Clyst	0.07				03383	312.68	312.75	

							6	93	25	15	W6	R4	4	312.75	314.46	CLAYSTONE	Clyst	1.71						Clyst, dark grey wirh coal stringers at the top
38	34,35	314.82	317.56	2.74	3.10	113.14%										#N/A								
							9	97	25	14	W6	R4	4	314.46	316.61	CLAYSTONE	Clyst	2.15						Clyst, dark grey wirh coalified roots traces
							0	100				R6	4	316.61	316.87	SANDSTONE	Sst	0.26						Sst, light grey, coarse grain with irregular contacts
							5	85	25	7	W6	R4	4	316.87	317.56	CLAYSTONE	Clyst	0.69						Clyst, dark grey
39	35,36	317.56	320.45	2.89	2.92	101.04%										#N/A								
							7	100	25	15	W6	R5	4	317.56	319.64	SILTSTONE	Slst	2.08						Slst, medium grey, fine grain, massive at the top wit5h coal stringers and roots of plants
							2	100	25	15	W6	R6	4	319.64	320.11	SANDSTONE	Sst	0.47						Sst, light grey, Coarse grain with more than 30% feldspara and broken pieces of plants and coal stringers
							1	100	25	15	W6	R5	4	320.11	320.48	SILTSTONE	Slst	0.37						Slst, medium grey, massive
40	36,37	320.45	323.34	2.89	2.82	97.58%			25	15	W6	R6	4			#N/A								
							1	100	25	15	W6	R%	4	320.48	321.60	SILTSTONE	Slst	1.12						Slst, medium grey, massive
							10	87	25	15	W6	R6	4	321.60	323.30	COALY MUDSTONE	Cong	1.70						Conglomerate, light grey, size of pebbels about o.5mm with some volcanic clasts
41	37,38	323.34	326.23	2.89	3.03	104.84%										#N/A								
							3	100	25	9	W6	R6	4	323.30	323.86	COALY MUDSTONE	Cong	0.56						Conglomerate, light grey, lower contact sharp, irregullar, pebble size lessthan 0.5mm. 0.20m at the bottom
							2	92	25	15	W6	R5	4	323.86	324.34	SILTSTONE	Slst	0.48						Slst. Fine grain, sandy, massive
							2	67	25	13	W6	R6	4	324.34	324.80	SANDSTONE	Sst	0.46						Sst,light grey, coarse grain, upper contact graditional with Slst
							4	93	25	12	W6	R4	4	324.80	326.10	SILTSTONE	Slst	1.30						Slst, medium grey, fine grain, massive upper contact faulted at 35 TCA, at the bottom with feldspar clasts
							1	100	25	15	W6	R6	4	326.10	326.33	SANDSTONE	Sst	0.23						Sst, light gray, coarse grain, massive
42	38,39	326.23	329.12	2.89	2.88	99.65%										#N/A								
							4	100	25	15	W6	R4	4	326.33	329.21	SILTSTONE	Slst	2.88						Slst, medium grey, massive, 0.24m at the bottom more sandy
43	39,40	329.12	332.01	2.89	2.61	90.31%			25	15	W6	R6	4			#N/A								
							1	100	25	15	W6	R6	4	329.21	329.77	SANDSTONE	Sst	0.56						Sst, medium grey, medium to fine grain with coal stringers
							3	100	25	15	W6	R5	4	329.77	331.82	SILTSTONE	Slst	2.05						Slst, medium grey, fine grain, massive, 0.34m from top,0.10m more sandy
44		332.01	333.84	1.83	2.02	110.38%			25	15	W6	R6	4			#N/A								
							3	100	25	15	W6	R5	4	331.82	333.84	SILTSTONE	Slst	2.02						Slst, medium grey, fine grain, massive, with coal stringers and plants pieces
											EOH at 333.84m													

Geological Borehole Log: RAV-09-036

Client: CJV
Project: Raven
Logged By: Ernest Popyk

Hole Number: RAV-09-036
Date Hole Started: 20-Sep-09
Date Hole Finished: 22-Sep-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 68.87m
Depth of Casing: 9.91m
Core Size: 6 Inch

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Length of Run (m)	Recovery		RQD		Fractures		Alt'n & Weath.	Hardness		G.P.L. Corrected			Interval Logged				Samples (Driller's Depths)			Description
					Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage		Prefix	Core Quailty	From (m)	To (m)		Lith	Length	Lost Core	Strat	Number	From (m)	To (m)	
														0.00	9.72	OVERBURDEN	OVB	9.72				0.00	9.72	OVB
														9.72	9.88	LOST CORE	Lost Core	0.16	0.16			9.72	9.88	*Lost Rock, lost due to casing set up*
														9.88	18.16	SANDSTONE	Sst	8.28				9.88	18.16	Chip Sample down to core point. Light gey coarse to very coarse grained, 98% Sst, 2% Coal
														18.16	18.26	SANDSTONE	Sst	0.10				18.16	18.26	98% Sst, 2% Coal, Core Point Reached
1		18.26	19.78	1.52	1.44	94.74%																		
							16	34.03%	20	10	W5	R6	3	18.26	19.70	SANDSTONE	Sst	1.44				18.26	19.70	Light grey, massive, cg to vcg, iron staining along fr. Fractures filled with rock flour, uneven rough surface, 2 fr @ 80°(35cm in length), 1 fr @ 70°, 1 fr @ 90° 2 fr @ 45°° irregular calcite
2		19.78	21.30	1.52	1.60	105.26%																		
							2	100.00%	20	15	W6	R6	3	19.70	21.30	SANDSTONE	Sst	1.60				19.70	21.30	Sst as above, except for numerous healed fractures, irregular calcite veining, irregular shale beds, 1 fr @ 90°, 1 SS @ 45°
3		21.30	22.82	1.52	1.50	98.68%																		
							3	100.00%	20	15	W6	R6	4	21.30	22.80	SANDSTONE	Sst	1.50				21.30	22.80	As above Sst, 2 SS @ 45°, 1 irregular-planar fr @ 60°
														22.80	22.82	LOST CORE	Lost Core	0.02	0.02			22.80	22.82	*Lost Rock*
4		22.82	23.73	0.91	0.81	89.01%																		
							0	100.00%			W6	R6	3	22.82	23.63	SANDSTONE	Sst	0.81				22.82	23.63	As above Sst "Stick-up Core" Wispy Shale beds @ 80°
5		23.73	25.25	1.52	1.62	106.58%																		
							>25	83.95%	20	15	W6	R6	3	23.63	25.25	SANDSTONE	Sst	1.62				23.63	25.25	As aboveSst, 3 fr @ 90°, 2 SS @ 45°, Rock Flower in joints, odd coal spar
6		25.25	26.77	1.52	1.52	100.00%																		
							1	0.00%	20	5	W6	R6	3	25.25	26.77	SANDSTONE	Sst	1.52				25.25	26.77	As above Sst, Shale beds @ 80°, 1 fr @ 0 for the lenght of the run 1 SS at end of run @ 45°
7		26.77	28.29	1.52	1.51	99.34%																		
							4	99.00%	20	15	W6	R4	3	26.77	28.28	SANDSTONE	Sst	1.51				26.77	28.28	As above Sst, 1 fr @ 80°, 1 fr @ 50°, 2 fr @ 90°
														28.28	28.29	LOST CORE	Lost Core	0.01	0.01			28.28	28.29	*Lost Rock*
8		28.29	29.81	1.52	1.18	77.63%																		
							4	107.27%	20	15	W6	R4	3	28.29	28.84	SANDSTONE	Sst	0.55				28.29	57.13	As Above Sst, 2 fr @ 75°, 2 fr @ 90°
														28.84	29.04	SANDSTONE	Sst	0.20			028112	28.87	29.07	*Roof Sample, part of above Sst*
														29.04	29.24	SANDSTONE	Sst	0.20			028113	29.07	29.27	*Roof Sample, part of above Sst*
														29.24	29.34	SANDSTONE	Sst	0.10			028103	29.27	29.37	*Roof Sample, part of above Sst*
							>25	34.38%	20	10	W6	R0	2	29.34	29.47	COAL	Coal	0.13		Seam 3	028101	29.37	29.50	Blk, 40% Shiny, 60% dull, no bubbling, pyrite along fracture faces (0.05% py) hard, light, broken into chunks
														29.47	29.66	COAL	Coal	0.19		Seam 3	028102	29.50	29.69	*Part of above Coal Interval*
														29.66	29.76	LOST CORE	Lost Core	0.10	0.10	Seam 3	ns	29.69	29.69	*Lost Coal*
														29.76	29.81	LOST CORE	Lost Core	0.05	0.05	Seam 3	ns	29.50	29.55	*Lost Rock*
9		29.81	31.33	1.52	1.35	88.82%																		
							>25	0.00%	20	5	W6	R4	2	29.81	29.99	CARBONACEOUS	Carb Sh	0.18		Seam 3	028104	29.55	29.73	Crushed/broken chunks of Carb. Shale, some pyrite blebs, massive, very fined grained, 30% coal
							0	100.00%			W6	R0	4	29.99	30.22	COAL	Coal	0.23		Seam 3	028105	29.73	29.96	Solid black coal, pyrite blebs (0.05% py) no bubbling or cleating
							0	100.00%			W6	R0	4	30.22	30.48	COAL	Coal	0.26		Seam 3	028106	29.96	30.22	As above coal
							>25	50.00%	20	6	W6	R4	2	30.48	30.68	CARBONACEOUS	Carb Sh	0.20		Seam 3	028107	30.22	30.42	As above Carb Shale
														30.68	30.77	LOST CORE	Lost Core	0.09	0.09	Seam 3	ns			*Lost Rock*
							>25	0.00%	10	6	W6	R0	1	30.77	31.01	COAL	Coal	0.24		Seam 3	028108	30.42	30.66	Broken chunks & disks of blk coal, 60% dull & 40% bright, shiny, 1% pyrite blebs, no bubbling or cleating
							>25	0.00%	10	6	W6	R0	1	31.01	31.25	COAL	Coal	0.24		Seam 3	028109	30.66	30.9	As above coal
														31.25	31.28	LOST CORE	Lost Core	0.03	0.03	Seam 3	ns	30.9	30.93	*Lost Coal*
10		31.33	32.85	1.52	1.52	100.00%																		
							6	100.00%	20	10	W6	R4	3	31.28	31.38	SHALE	Sh	0.10			028110	30.93	31.03	*Floor Sample, part of below Shale*
														31.38	31.88	SHALE	Sh	0.50			028111	31.03	31.53	*Floor Sample, part of below Shale*
														31.88	32.80	SHALE	Sh	0.92				31.53	32.45	Light black shale, vfg, massive, 5 fr @ 90°
														32.80	46.37	SANDSTONE	Sst	13.57				32.45	46.02	Hammer drilling to next core point, Sst, changing to Sltst/Sh for the last 6 feet
														46.37	46.68	COAL	Coal	0.31		Seam 2	ns	46.02	46.33	Coal 2 seam
														46.68	54.27	LAMINITE	IB Sst & SLtst	7.59				46.33	54.25	IB Sst & SLtst
														54.27	54.52	COAL	Coal	0.25		Seam 2	ns	54.25	54.50	Coal 2 seam
														54.52	56.71	SANDSTONE	Sst	2.19				54.50	56.69	Core Point, (Sst, last 1 foot were Shale)
11		56.69	58.21	1.52	1.52	100.00%																		
							11	92.76%	20	15	W6	R3	3	56.71	58.23	LAMINITE	IB Sh & SLtst	1.52				56.69	58.21	60% Sh & 40% Sltst, Sltst: light to dark grey mg to fg, thin to medium laminations, Sh: blk, massive, vfg to fg 1 SS @ 45°, The rest of Fr @ ≈90° Bedding @ 75° to 80°
12		58.21	59.73	1.52	1.52	100.00%																		
							6	68.85%	20	10	W6	R4	2	58.23	58.82	LAMINITE	IB Sh & SLtst	0.59				58.21	58.80	As above , except for all fr and bedding @ ≈90° (3% pyrite)
							>25	0.00	20	5	W6	R3	2	58.82	58.99	CARBONACEOUS	Carb Sh	0.17				58.80	58.97	90% Sh, 10% Coal, Coal: broken & crushed, Sh; blk, massive, blebs of pyrite alonf fr
							6	75.95%	20	11	W6	R4	2	58.99	59.75	LAMINITE	IB Sh & SLtst	0.76				58.97	59.73	As above , except for Calcite veining @ 90°
13		59.73	61.25	1.52	1.52	100.00%																		
							6	93.59%	20	10	W6	R3	3	59.75	61.27	LAMINITE	IB Sh & SLtst	1.52				59.73	61.25	As above IB sltst & Sh, except for 2 SS @ 45°, 4 Fr @ 90, Calcite veining @ 90°, pyrite blebs on fractures
14		61.25	62.77	1.52	1.43	94.08%																		
							3	100.00%	20	10	W6	R4	2	61.27	61.52	CARBONACEOUS	Carb Sh	0.25			028114	61.25	61.50	Blk, massive, fg to vfg, 10% coal spars & coal beds
														61.52	61.77	CARBONACEOUS	Carb Sh	0.25			028115	61.50	61.75	*Roof Sample, part of above Carb Sh*
														61.77	61.89	CARBONACEOUS	Carb Sh	0.12			028116	61.75	61.87	*Roof Sample, part of above Carb Sh*
							>50	0.00%	10	6	W6	R0	0	61.89	62.29	COAL	Coal	0.40		Seam 1	028117	61.87	62.27	Blk, crushed & broken, sheared coal, 60% dull & 40% dull, no bubbling, powdery
							3	71.43%	25	9	W6	R4	2	62.29	62.50	SHALE	Sh	0.21		Seam 1	028118	62.27	62.48	Blk, massive vfg, numerous coal spars
														62.50	62.70	SHALE	Sh	0.20		Seam 1	028119	62.48	62.68	*Parting Sample, part of above Sh*
														62.70	62.79	LOST CORE	Lost Core	0.09	0.09	Seam 1	ns	62.68	62.77	*Rock Loss*
15		62.77	64.29	1.52	1.42	93.42%																		
							1	66.67%	20	10	W6	R0	3	62.79	62.97	COAL	Coal	0.18		Seam 1	028120	62.77	62.95	As above Coal
														62.97	63.01	LOST CORE	Lost Core	0.04	0.04	Seam 1	ns			*Lost Coal*
							>25	0.00%	20	6	W6	R4	0	63.01	63.17	SHALE	Sh	0.16		Seam 1	028121	62.95	63.11	Crushed/Blk/massive/Coaly/fg
							3	44.44%	20	9	W6	R0	3	63.17	63.53	COAL	Coal	0.36		Seam 1	028122	63.11	63.47	As above Coal
							>25	0.00%	20	6	W6	R4	0	63.53	63.69	SHALE	Sh	0.16		Seam 1	028123	63.47	63.63	As above shale
							4	58.00%	20	10	W6	R0	3	63.69	64.19	COAL	Coal	0.50		Seam 1	028124	63.63	64.13	As above coal, several 2cm thick sltst partings
							0				W6	R4	0	64.19	64.25	SHALE	Sh	0.06			028125	64.13	64.19	As above shale
														64.25	64.31	LOST CORE	Lost Core	0.06	0.06		ns	64.19	64.25	*Coal Loss*
16		64.29	65.81	1.52	1.52	100.00%																		
							>25	56.29%	20	10	W6	R4	2	64.31	64.56	SHALE	Sh	0.25			028126	64.25	64.50	*Floor Sample, part of below Shale*
														64.56	64.81	SHALE	Sh	0.25			028127	64.50	64.75	*Floor Sample, part of below Shale*
														64.81	65.83	SHALE	Sh	1.02				64.75	65.77	First 0.50m broken crushed, pyrite blebs on pieces. Most of the crushed chunks covered with SS, greyish black, vfg
17		65.81	67.33	1.52	1.63	107.24%																		
							5	75.46%	20	11	W6	R4	2	65.83	67.46	SILTSTONE	Sltst	1.63				65.77	67.40	Greyish black, fg to mg, massive, 5 Fr @ 90°, pyrite blebs on Fr faces. Calcite veins @ 45°, odd Sst bed @ 85°
18		67.33	68.85	1.52	1.41	92.76%																		
							7	79.43%	20	10	W6	R4	2	67.46	68.87	SILTSTONE	Sltst	1.41				67.40	68.81	As above Sltst

Geological Borehole Log: RAV-09-037

Client: CJV
Project: Raven
Logged By: Ernest Popyk

Hole Number: RAV-09-037
Date Hole Started: 24-Sep-09
Date Hole Finished: 24-Sep-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 32.90m
Depth of Casing: 8.84m
Core Size: 6 INCH

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Length of Run (m)	Recovery		RQD		Fractures		Alt'n & Weath.	Hardness		G.P.L. Corrected			Interval Logged				Samples (Driller's Depths)			Description
					Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage		Prefix	Core Quailty	From (m)	To (m)		Lith	Length	Lost Core	Strat	Number	From (m)	To (m)	
																OVERBURDEN	OVB	8.23				0.00	8.23	OVB
																LOST CORE	Lost Core	0.61	0.61			8.23	8.84	Rock Loss due to Casing Set up
																SANDSTONE	Sst	16.61				8.84	25.45	Hammer to core point, light grey Sst vcg
1		25.45	26.82	1.37	1.28	93.43%										#N/A								
							0	100.00%			W6	R6	4			SANDSTONE	Sst	1.28				25.45	26.73	Light grey, cg to vcg, massive, stick up core, broken while coring, some shale beds @ 70°, plant material, coal spars.
																LOST CORE	Lost Core	0.03	0.03			26.73	26.76	*Rock Loss*
2		26.82	28.34	1.52	0.00	0.00%										#N/A								
							3	84.81%	20	10	W4	R6	3			SANDSTONE	Sst	1.58				26.76	28.34	As above Sst, 2 Fr @ 90° 1 SS @ 15° , SS is filled with rock flower, SS altered black, wispy shale beds @ 90°
3		28.34	29.86	1.52	1.46	96.05%										#N/A								
							5	92.86%	25	11	W6	R6	3			SANDSTONE	Sst	0.90				28.34	29.24	As above Sst
																SANDSTONE	Sst	0.25			028128	29.24	29.49	*Roof Sample, part of above Sst*
																SANDSTONE	Sst	0.25			028129	29.49	29.74	*Roof Sample, part of above Sst*
							>25		20	6	W6	R0	0			COAL	Coal	0.06		Seam 3	028130	29.74	29.80	Blk crushed/broken, no gas 55% dull 45% bright
																LOST CORE	Lost Core	0.06	0.06	Seam 3	ns	29.80	29.86	*Coal loss*
4		29.86	31.38	1.52	1.52	100.00%										#N/A								
							>25	42.86%	20	6	W6	R0	0			COAL	Coal	0.28		Seam 3	028131	29.86	30.14	Broken/crushed coal, pyrite on fracture, hard rocky
																COAL	Coal	0.15		Seam 3	028132	30.14	30.29	*Part of above Coal*
							0	100.00%			W6	R4	0			SILTSTONE	Sltst	0.16		Seam 3	028133	30.29	30.45	Light grey, mg, lots of coal stringers
							3	96.30%	25	15	W6	R0	0			COAL	Coal	0.23		Seam 3	028134	30.45	30.68	Solid black coal, 1% pyrite
																COAL	Coal	0.31		Seam 3	028135	30.68	30.99	As above coal
							0	100.00%			W6	R6	0			CARBONACEOUS	Carb Sltst	0.11		Seam 3	028136	30.99	31.10	Very carb,mg, blackish, 30% coal
							>25	0.00%	20	10	W6	R6	0			COAL	Coal	0.28		Seam 3	028137	31.10	31.38	As above coal
5		31.38	32.90	1.52	1.52	100.00%										#N/A								
							>25	69.77%	25	11	W6	R0	3			COAL	Coal	0.25		Seam 3	028138	31.38	31.63	Coal Solid, blk, dull, pyrite on fractures, no cleats
																COAL	Coal	0.18		Seam 3	028139	31.63	31.81	*Part of above Coal*
																CARBONACEOUS	Carb Sltst	0.20			028140	31.81	32.01	*Floor Sample, part of below Carb Sltst*
																CARBONACEOUS	Carb Sltst	0.24			028141	32.01	32.25	*Floor Sample, part of below Carb Sltst*
																CARBONACEOUS	Carb Sltst	0.10			028142	32.25	32.35	*Floor Sample, part of below Carb Sltst*
							6	77.98%	25	12	W6	R4	3			CARBONACEOUS	Carb Sltst	0.55				32.35	32.90	Mg to fg, numerous coal spars, plant material EOH

Geological Borehole Log: RAV-09-038

Client: CJV
Project: Raven
Logged By: Ernest Popyk

Hole Number: RAV-09-038
Date Hole Started: 25-Sep-09
Date Hole Finished: 25-Sep-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 36.85m
Depth of Casing: 2.13m
Core Size: 6 Inch

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Length of Run (m)	Recovery		RQD		Fractures		Alt'n & Weath.	Hardness		G.P.L. Corrected		Interval Logged					Samples (Driller's Depths)			Description
					Length (m)	(%)	Joints	% by Lith	Joint Condition	Degree of Breakage		Prefix	Core Quailty	From (m)	To (m)		Lith	Length	Lost Core	Strat	Number	From (m)	To (m)	
																OVERBURDEN	OVB	1.52				0.00	1.52	OVB
																LOST CORE	Lost Core	0.61				1.52	2.13	Lost Rock due to Casing Set up, light grey Sst
																SANDSTONE	Sst	17.83				2.13	19.96	Hammer drilling down to Core Point. Light grey, vcg tp cg
																COAL	Coal	0.14		Seam 2	ns	19.96	20.10	Coal
																SILTSTONE	Sltst	4.89				20.10	24.99	Dark grey fg to mg
1		24.99	26.21	1.22	1.14	93.44%										#N/A								
							2	100.00%	25	15	W6	R5	4			LAMINITE	IB Sh & Sltst	1.14				24.99	26.13	50% Sh & 50% Sltst. Sh: vfg, massive, but thinly to thin laminations of Sltst through out. Bedding @ 90, Sltst: light grey, mg to fg, massive. 2 fr @ 90° calcite along fractures
																LOST CORE	Lost Core	0.07	0.07			26.13	26.20	Core Loss
2		26.21	27.73	1.52	1.53	100.66%										#N/A								
							2	100.00%	25	15	W6	R5	4			LAMINITE	IB Sh & Sltst	1.53				26.20	27.73	As above IB Sh & Sltst, 1 fr & bedding @ 90°
3		27.73	29.25	1.52	1.52	100.00%										#N/A								
							1	100.00%	25	15	W6	R5	4			LAMINITE	IB Sh & Sltst	0.73				27.73	28.46	As above, 1 fr @ 90° & bedding @ 70° to 90°
							0	100.00%			W6	R6	4			SANDSTONE	Sst	0.27				28.46	28.73	Light Grey, vcg to cg, massive, & bedding @ 70° to 90°
							1	100.00%	25	15	W6	R5	4			LAMINITE	IB Sh & Sltst	0.52				28.73	29.25	As above
4		29.25	30.77	1.52	1.52	100.00%										#N/A								
							1	95.77%	25	15	W6	R5	4			CARBONACEOUS MUDSTONE	Carb Sh	0.21				29.25	29.46	Blk Sh, fg to vfg, fr @ 90°
																CARBONACEOUS MUDSTONE	Carb Sh	0.25			028143	29.46	29.71	*Roof Sample, part of above Carb Sh*
																CARBONACEOUS MUDSTONE	Carb Sh	0.25			028144	29.71	29.96	*Roof Sample, part of above Carb Sh*
							<25	78.95%	20	10	W6	R0	3			COAL	Coal	0.35		Seam 1	028145	29.96	30.31	Blk, blocky, pyrite on fractures, no gas, odd <1cm thick rock band
																COAL	Coal	0.46		Seam 1	028146	30.31	30.77	*Part of above Coal*
5		30.77	32.29	1.52	1.52	100.00%										#N/A								
							7	81.82%	25	9	W6	R5	3			CARBONACEOUS SILTSTONE	Carb Sltst	0.33		Seam 1	028147	30.77	31.10	As above Carb Sltst Roof Interval
							16	75.63%	25	10	W6	R0	3			COAL	Coal	0.31		Seam 1	028148	31.10	31.41	As above Coal
																COAL	Coal	0.32		Seam 1	028149	31.41	31.73	As above Coal
																COAL	Coal	0.25		Seam 1	028150	31.73	31.98	As above Coal
																COAL	Coal	0.16		Seam 1	028236	31.98	32.14	As above Coal
																COAL	Coal	0.15		Seam 1	028237	32.14	32.29	As above Coal
6		32.29	33.81	1.52	1.25	82.24%										#N/A								
							<25	8.80%	20	6	W6	R0	0			COAL	Coal	0.25		Seam 1	028238	32.29	32.54	As above Coal but broken & crushed
																COAL	Coal	0.25		Seam 1	028239	32.54	32.79	Part of above Coal
																COAL	Coal	0.25		Seam 1	028240	32.79	33.04	Moderate amount of Sltst chips, part of above coal
																COAL	Coal	0.25		Seam 1	028241	33.04	33.29	Numerous Sltst chips, part of above coal
																COAL	Coal	0.25		Seam 1	028242	33.29	33.54	Numerous Sltst chips, part of above coal
																LOST CORE	Lost Core	0.27	0.27	Seam 1	ns	33.54	33.81	*Core Loss*
7		33.81	35.33	1.52	0.51	33.55%										#N/A								
							<100	0.00%	20	6	W6	R0	1			COAL	Coal	0.25		Seam 1	028243	33.81	34.06	Blk, broken& crushed, pieces polished faces, 1% pyrite
																COAL	Coal	0.27		Seam 1	028244	34.06	34.33	*Part of above Coal*
																SILTSTONE	Sltst	0.26			028245	34.33	34.59	*Floor Sample. Part of below Sltst*
																SILTSTONE	Sltst	0.25			028246	34.59	34.84	*Floor Sample. Part of below Sltst*
							6	80.58%	25	15	W6	R4	2			SILTSTONE	Sltst	0.52				34.84	35.36	Light brown, mg to fg, massive and carbonaceous
8		35.33	36.85	1.52	1.30	85.53%										#N/A								
							3	93.85%	25	15	W6	R4	2			SILTSTONE	Sltst	1.30				35.36	35.36	Light grey, massive, fg to mg, numerous coal spars, plant material, 3% coal
																LOST CORE	Lost Core	0.19	0.19			35.36	35.55	*Core Loss*

Geological Borehole Log: RAV-09-039

Client: CJV
Project: Raven
Logged By: Ernest Popyk

Hole Number: RAV-09-039
Date Hole Started: 26-Sep-09
Date Hole Finished: 26-Sep-09
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 35.72m
Depth of Casing: 1.21m
Core Size: 6 Inch

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
SS= Slickenslides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth To	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Interval Logged Lith	Interval Logged Length	Interval Logged Lost Core	Interval Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
																OVERBURDEN	OVB	1.00				0.00	1.00	OVB
																LOST CORE	Lost Core	0.21	0.21			1.00	1.21	Lost due to casing set up
																SANDSTONE	Sst & Sltst	26.83				1.21	28.04	Chip Sampling, Sst & Sltst
1		28.04	29.56	1.52	1.37	90.13%																		
							2	100.00%	25	15	W6	R4	4			LAMINITE	IB Sh & Sltst	0.87				28.04	28.91	75% Sh & 25% Sltst, Sh: blk, vfg thin to thinly laminations, Sltst: light grey, mg to fg, thinly laminated, all beds @ 90°, 1 calcite vein @ 90°, More Shale towards the bottom, oddly at bottom
																LOST CORE	Lost Core	0.15	0.15			28.91	29.06	*Lost Rock*
																LAMINITE	IB Sh & Sltst	0.25			028074	29.06	29.31	Part of above IB Sh & Sltst
																LAMINITE	IB Sh & Sltst	0.25			028075	29.31	29.56	Part of above IB Sh & Sltst
2		29.56	31.08	1.52	1.36	89.47%																		
							<25	80.88%	25	9	W6	R0	4			COAL	Coal	0.26		Seam 1	028076	29.56	29.82	Blk, blocky, 1% pyrite, one 7cm zone that is broken & crushed
																COAL	Coal	0.25		Seam 1	028077	29.82	30.07	Part of above coal
																COAL	Coal	0.17		Seam 1	028078	30.07	30.24	Part of above coal
							<25	0.00%	20	6	W6	R0	0			COAL	Coal	0.11		Seam 1	028079	30.24	30.35	Broken crushed coal
							0	100.00%			W6	R4	2			SILTSTONE	Sltst	0.20		Seam 1	028080	30.35	30.55	Light brown fg to mg massive
							<25	54.05%	25	7	W6	R4	2			COAL	Coal	0.21		Seam 1	028081	30.55	30.76	As above Coal, but last 17cm broken & crushed
																COAL	Coal	0.16		Seam 1	028082	30.76	30.92	*Part of above coal*
																LOST CORE	Lost Core	0.09	0.09	Seam 1	ns	30.92	31.01	*Coal Loss*
3		31.08	32.60	1.52	1.66	109.21%																		
				0.14			<25	76.51%	25	6	W6	R0	0			COAL	Coal	0.25		Seam 1	028083	31.01	31.26	First 0.5, is broken & crushed, broken crushed zones through out. Otherwise as above Coal
																COAL	Coal	0.25		Seam 1	028084	31.26	31.51	*Part of above coal*
																COAL	Coal	0.25		Seam 1	028085	31.51	31.76	*Part of above coal*
																COAL	Coal	0.25		Seam 1	028086	31.76	32.01	*Part of above coal*
																COAL	Coal	0.25		Seam 1	028087	32.01	32.26	*Part of above coal*
																COAL	Coal	0.25		Seam 1	028088	32.26	32.51	*Part of above coal*
																COAL	Coal	0.16		Seam 1	028089	32.51	32.67	*Part of above coal*
4		32.60	34.12	1.52	1.45	95.39%																		
							<25	23.01%	25	6	W6	R0	2			COAL	Coal	0.25		Seam 1	028090	32.67	32.92	Broken & crushed, 60% dull & 40% bright. In the first 60cm broken chunks of sh mixed in.
																COAL	Coal	0.25		Seam 1	028091	32.92	33.17	*Part of above coal*
																COAL	Coal	0.25		Seam 1	028092	33.17	33.42	*Part of above coal*
																COAL	Coal	0.25		Seam 1	028093	33.42	33.67	*Part of above coal*
																COAL	Coal	0.13		Seam 1	028094	33.67	33.80	*Part of above coal*
							0	100.00%			W6	R4	3			CARBONACEOUS	Carb Sltst	0.15			028095	33.80	33.95	Floor Sample, Massive, mg,light grey Sltst
																CARBONACEOUS	Carb Sltst	0.17			028096	33.95	34.12	Floor Sample, part of above Carb Sltst
5		34.12	35.72	1.60	0.25	15.63%																		
																CARBONACEOUS	Carb Sltst	0.25			028097	34.12	34.37	Floor Sample, part of below Carb Sltst
							3	93.75%	25	11	W6	R4	3			CARBONACEOUS	Carb Sltst	1.35				34.37	35.72	As above Sltst, EOH

Geological Borehole Log: RAV-09-042

Client: CJV
Project: Raven
Logged By: Rob McLean, Owen Cullingham

Hole Number: RAV-09-042
Date Hole Started: February 23, 2010
Date Hole Finished: March 4, 2010
Hole Orientation: Azimuth: 0° Dip -90°

Total Hole Depth: 339.5 m
Depth of Casing: 4.5 m
Core Size: Modified PQ (3")

Rock Codes: Sandstone=Sst, Siltstone=Sltst, Mudstone=Mdst, Claystone= Clyst
fg=fine grained, mg= medium grained, cg= coarse grained, v= very, fr=fracture
sks= Slickensides, ~= approximately, SHC= Shalely Coal, Sh=Shale, IB= Interbedded

Run #	Box #	Depth From (m)	Depth to (m)	Length of Run (m)	Recovery Length (m)	Recovery (%)	RQD Joints	RQD % by Lith	Fractures Joint Condition	Fractures Degree of Breakage	Alt'n & Weath.	Hardness Prefix	Hardness Core Quailty	G.P.L. Corrected From (m)	G.P.L. Corrected To (m)		Intervals Logged Lithology	Intervals Logged Interval Length	Intervals Logged Core Loss	Intervals Logged Strat	Samples (Driller's Depths) Number	Samples (Driller's Depths) From (m)	Samples (Driller's Depths) To (m)	Description
																								Note: Triconed chip sampled to top of Seam 1. Seam 1 to bottom cored.
														0.00	4.50	OVERBURDEN	OVBDN	4.50				0.00	4.50	OVB
														4.50	222.13	UNDIFFERENTIATED BEDROCK	UNDIFFERENTIATED							
														222.13	223.03	COAL	Coal	0.90		Seam 5				
														223.03	240.00	UNDIFFERENTIATED BEDROCK	UNDIFFERENTIATED							
														240.00	240.40	COAL	Coal	0.40						
														240.40	257.60	UNDIFFERENTIATED BEDROCK	UNDIFFERENTIATED							
														257.60	258.03	COAL	Coal	0.43						
														258.03	260.59	UNDIFFERENTIATED BEDROCK	UNDIFFERENTIATED							
														260.59	261.31	COAL	Coal	0.72		Seam 4				
														261.31	263.22	UNDIFFERENTIATED BEDROCK	UNDIFFERENTIATED							
														263.22	263.50	COAL	Coal	0.28						
														263.50	295.67	UNDIFFERENTIATED BEDROCK	UNDIFFERENTIATED							
														295.67	296.21	COAL	Coal	0.54		Seam 3				
														296.21	296.50	MUDSTONE	Mdstn	0.29		Seam 3				
														296.50	297.76	COAL	Coal	1.26		Seam 3				
														297.76	324.71	UNDIFFERENTIATED BEDROCK	UNDIFFERENTIATED BEDROCK							
1	1	324.00	326.90	2.90	2.01	69.30%																		
														324.71	325.60	LOST CORE	LOST CORE	0.89						Note: Drillers recorded stopped rotary drilling at 1066' (324.92m) but reported stsrted coring at 1063' (324m) which could account for the reported lost core.
								0						325.60	326.17	MUDSTONE	MDSTN	0.57						rubble, m.-m.dk.gy.
								36						326.17	327.61	MUDSTONE	MDSTN	1.44						m.-m.dk.gy., carb., minor coal splints. Core is intactto broken, RQD 36%; rare calcite veinlets; bdg at 80 - 85 deg c/a; fracturing along bdg and sub-parallel to bdg.
2	1 & 2	326.90	329.03	2.13	2.13	100%																		
								52						327.61	328.32	MUDSTONE	MDSTN	0.71						m.dk.gy.brn., fract @ 75 to 80 deg c/a; RQD 52%;
								0						328.32	328.55	CARBONACEOUS MUDSTONE	CARB MDSTN	0.23		ROOF	10001	327.64	327.84	dk.gy.brn., brn streak; coal splints; sks in contact region; contact at 85 deg c/a
								0						328.55	329.74	COAL	COAL	1.19		SEAM 1	10002	327.84	329.03	Banded to Banded Dull; platy to blocky; soft crushed over top 5cm. 5cm Carb mdstn ptg at 0.96m from top.
3	2 & 3	329.03	331.93	2.90	2.68	92.54%		56																
														329.74	329.77	LOST CORE	LOST CORE	0.03		SEAM 1				LOST COAL
														329.77	330.10	COAL	COAL	0.33		SEAM 1	10002	329.03	329.36	Banded to Banded Dull
														330.10	330.20	CARBONACEOUS MUDSTONE	CARB MDSTN	0.10		FLOOR	10003	329.36	329.46	m.dk.gy.brn.
														330.20	330.33	CARBONACEOUS MUDSTONE	CARB MDSTN	0.13						As Above
														330.33	330.38	COAL	COAL	0.05						Banded Dull, Blocky
														330.38	330.69	CARBONACEOUS MUDSTONE	CARB MDSTN	0.30						m.dk.gy.brn.
														330.69	331.15	MUDSTONE	MDSTN	0.46						m.-m.dk.gy., carb.
														331.15	331.20	COAL	COAL	0.05						Banded Dull, Blocky
														331.20	331.38	MUDSTONE	MDSTN	0.18						m.-m.dk.gy., carb.
														331.38	331.48	MUDSTONE	MDSTN	0.10		ROOF	10004	330.63	330.73	m.-m.dk.gy., carb.
														331.48	331.63	COAL	COAL	0.15			10005	330.73	330.88	Banded Dull, Blocky
														331.63	331.76	CARBONACEOUS MUDSTONE	CARB MDSTN	0.13			10006	330.88	331.01	m.dk.gy.brn.
														331.76	332.00	COAL	COAL	0.24			10007	331.01	331.25	Banded Dull, Platy to Blocky
														332.00	332.35	COALY MUDSTONE	COALY MDSTN	0.36			10008	331.25	331.61	dk.gy.-blk., brn streak, coal splints and chards and thn bands; les coaly downwards
														332.35	332.45	CARBONACEOUS MUDSTONE	CARB MDSTN	0.10		FLOOR	10009	331.61	331.71	m.dk.gy.brn.
														332.45	332.64	LOST CORE	LOST CORE	0.19						
4	3 & 4	331.93	334.82	2.90	2.90	100.00%		95																
														332.64	332.80	SANDY SILTSTONE	SLTY MDSTN	0.15						rubbly, bit warn, in place or slough??
														332.80	332.97	SANDY SILTSTONE	SLTY MDSTN	0.18						m.- m.dk.,gy., fracture at 70 deg c/a
														332.97	333.18	COALY MUDSTONE	COALY MDSTN	0.20						m.dk.gy.brn., 4 cm coal bnd at base.
														333.18	333.91	MUDSTONE	MDSTN	0.74						m.gy.brn., silty
														333.91	333.98	CARBONACEOUS MUDSTONE	CARB MDSTN	0.06						m.dk.gy.brn.; coal splints and thn ptgs
														333.98	334.38	MUDSTONE	MDSTN	0.41						m.gy.brn.;
														334.38	334.57	CARBONACEOUS MUDSTONE	CARB MDSTN	0.19						m.dk.gy.brn.; coal splints and thn ptgs
														334.57	335.11	MUDSTONE	MDSTN	0.53						m.gy.brn.;
														335.11	335.17	DULL COAL	DULL COAL	0.06						strg, calcite veinlets, bdg @ 75 deg c/a
														335.17	335.54	MUDSTONE	MDSTN	0.37						m.dk.gy.brn., intact core; RQD 95%; bdg @ 80 deg c/a; fracturing along bdg plane or sub-parallel to bdg; occasional fracture at 55 deg c/a;one fract at base of run at 40 deg c/a.
5	4 & 5	334.82	336.65	1.83	1.63	88.89%		61																
														335.54	335.82	CARBONACEOUS MUDSTONE	CARB MDSTN	0.28						m.dk.gy.brn., coal splints & chards
														335.82	336.06	CARBONACEOUS MUDSTONE	CARB MDSTN	0.24						m.dk.gy.brn.
														336.06	336.11	COALY MUDSTONE	COALY MDSTN	0.05						m.dk.gy.brn.; coal splints and thn ptgs
														336.11	336.22	CARBONACEOUS MUDSTONE	CARB MDSTN	0.11						m.dk.gy.brn.
														336.22	336.38	SHALY COAL	SHY COAL	0.15						fragmental to blocky
														336.38	336.48	CARBONACEOUS MUDSTONE	CARB MDSTN	0.10						m.dk.gy.brn.
														336.48	336.53	SHALY COAL	SHY COAL	0.05						striger
														336.53	336.66	CARBONACEOUS MUDSTONE	CARB MDSTN	0.13						m.dk.gy.brn.
														336.66	337.16	MUDSTONE	MDSTN	0.51						m.gy., slty, fract @ 45deg c/a; sks, highly polished; parallel fract., RQD 61%
														337.16	337.36	LOST CORE	LOST CORE	0.20						
6	5 & 6	336.65	339.55	2.90	2.84	98.25%		37																
														337.36	338.69	SHALY COAL	SILTY MDSTN	1.32						m.gy.brn., silty, fract @ 60 deg c/a., calc lined; RQD 37%; fault at base of unit @ 30 deg c/a
														338.69	339.47	SILTY SANDSTONE	SS	0.79						m.gy., m-c.gr., fract @ 70 deg c/a; calc lined.
														339.47	339.60	MUDSTONE	MDSTN	0.13						m.gy., broken, crushed, fragmental, (possibly mechanical)
														339.60	340.16	SILTY SANDSTONE	SS	0.56						SS as above, x-bdd., calc.
														340.16	340.21	CLAYSTONE	CLYST	0.05						m.gy., soft, clay seam
														340.21	340.27	LOST CORE	LOST CORE	0.06						

														359.34	359.39	SANDY SHALE	Shale	0.05		Seam 3	ns			Soft shale. Some carb.
														359.39	359.64	COAL	Coal	0.25	.	Seam 3	ns			This coal seam was interpreted from the geophysical density detail log, and from the orginial core log. The original log had this interval logged as crushed carb shale. Most likely this coal sample was destroyed during the coring process (interval had greater than 25 fractures & a RQD of 0%).
							>25	0.00%	15	6	W6	C2	4	359.64	360.11	SANDY SHALE	Shale	0.47			ns			Soft shale. Some carb. Two 4-cm coal spacings at 359.4 and 359.84. Black shiny & bubbly.
							3	100.00%	25	14	W6	R5	4	360.11	360.76	SANDY SHALE	Shale	0.65						Hard shale. Joints at 90, 60 + 30 TCA.
113	81	364.17	365.67	1.50	1.44	96.00%										#N/A								
							4	78.46%	20	14	W6	R5		360.76	361.41	SHALE	Sh	0.65						As above hard shale. Joints at 90 TCA, one at 60.
							2	70.89%	25	14	W6	R6	4	361.41	362.20	SANDSTONE	Sst	0.79						Med grey mg Sst. IB w/dk stringers.
114	81 & 82	365.67	368.72	3.05	3.01	98.69%										#N/A								
							6	100.00%	25	15	W6	R6	4	362.20	365.21	SANDSTONE	Sst	3.01						Light grey mg-cg Sst. Sltst stringers near top. Up to 363.40m. Below is massive Sst. All joints ~ 85-90 TCA. Some w/ coal near top.
115	82 & 83	368.72	371.77	3.05	3.16	103.61%										#N/A								
							10	96.77%	25	15	W6	R6	4	365.21	368.37	SANDSTONE	Sst	3.16						Sst. Same as above. Massive. Highly fractured zone near bottom EOH

APPENDIX B

GEOPHYSICAL LOGS OF DRILLHOLES

(geophysical logs contained on separate DVD)

APPENDIX C

COAL QUALITY KEYED TO DRILLHOLES

Pages 27- 31 and Appendix C of this report remain confidential under the terms of the Coal Act Regulation, Section 2(1), and have been removed from the public version.

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