



APPENDIX D

Diamond Drill Logs and Geochemical Results

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**10,739**

**PART 3 of 3**

# TEXASGULF INC.

## DRILL HOLE LOG

**PROPERTY:**  
 LOCATION: JD 2+66E/0+315  
 Above Ag-Carbonate Zone  
 AZIM: 175° ELEV: .  
 DIP: -60° LENGTH: 397' (121m) Meterage Dip Azimuth TEST

	CORE SIZE:	FOOTAGE	READING	CORRECT	FOOTAGE	READING	CORRECT
STARTED: June 21, 1982	NQ	30.48	-62°	183°			
COMPLETED: June 23, 1982		121.00	-63°	176°			
PURPOSE: To test vertical, down-dip extension of vein							
CORE RECOVERY:							

CLAIM NO: JD  
 SECTION:  
 LOGGED BY: Ian Sutherland & Peter Leriche  
 DATE LOGGED: June 22, 24, 25, 26, 27, 28  
 DRILLING CO: Coates Enterprises  
 ASSAYED BY: Min-en Labs

TEXTURE, ALTER'N, MINERALIZATION, ETC.	GRAPH. GEOL.	DESCRIPTION	METERAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
	BOX 1	1.8-8.5												
Andesite Crystal tuff		Medium grey-green, fine-grained matrix; chloritized & saussuritized; weakly magnetic with 15-25% medium-coarse-grained feldspar grains; euhedral to broken &/or subhedral; saussuritized with common pink, hematitic coloration.	1.8	8.5	(18-40)		0001	15	142	267	1.0	5		
					60%		0002	22	16	230	1.8	5		
		3-5% chloritized biotite books, medium-coarse-grained; subhedral to anhedral; local hornblende abundant fracturing (lesser gouged zones), many with strong Mn oxide stain; dominant ones @ approx. 30° to core axis & approx 60° to core axis			(40-85)									
					97%									
		Moderate fracturing, in situ, with chlorite quartz-sericite ± epidote alteration along fractures. Minor jasper-like quartz-hematite stringers associated with carbonate stringers	(4.0	4.3)										
		(very irregular); subordinate dark brown oxide along fracture & in thin vugs approx parallel to core axis	(5.2	6.3)										
		trace specularite along carbonate fracture; very rare quartz stringers associated with carbonate with trace fine-grained disseminated pyrite.	(6.9	7.5)										
		alteration gives patchy green to pink bleached appearance.	4.5	5.2			003	26	18	152	1.2	10		
		Intense quartz-sericite-chlorite-epidote alteration with trace disseminated pyrite	(6.3	6.7)										
			5.2	6.2			004	68	18	123	1.5	5		

TEXTURE, ALTER 'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	METERAGE FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		-brecciated, quartz-chlorite-clay altered fault zone with minor to intense, dark brown oxide alteration material; sharp, brecciated contacts	6.7	6.9										
7			6.2	6.8			005	65	16	104	1.4	5		
			6.8	7.0			006	35	18	107	1.9	5		
		Similar to 6.3-6.7 but mainly quartz-chlorite + minor fine-grained, disseminated pyrite; strong propylitic alteration and saussuritization	7.85	8.5										
8			7.0	7.55			007	22	14	116	0.9	5		
			7.55	7.9			008	61	22	93	2.8	10		
		Very similar to 1.8 to 8.5m: Mn stain throughout	8.5	13.7										
9		Same as 7.85 - 8.5m with minor chloritic & quartz-hematite fracture fillings (stringer); also minor specularite BOX 2 8.5-13.7	7.9	8.9			009	24	15	94	0.8	5		
			8.5	9.5										
10		Similar to 1.8 to 8.5m.; chloritized & saussuritized volcanic; minor chlorite or carbonate stringers, rare quartz stringers - 0.1m phyllic alteration zone @ 11.5m.	8.9	10.0			010	30	12	137	1.4	5		
			9.5	12.0										
11		-localize unit of more feldspar fragment - rich volcanic equivalent; up to 50% medium to coarse grained feldspar crystal fragments in a similar matrix. Altered as in 9.5-12.0m.	10.0	11.0			011	24	82	246	1.9	5		
			12.0	12.4										
12		same as 9.5 to 12.0m. BOX 3 13.7-18.9	11.0	12.1			012	26	17	265	1.7	5		
			12.4	13.7										
13		As above with three main brecciated & phyllic altered zones - as in 9.5-12.0 and 12.4-13.7m. with very minor quartz stringers; trace pyrite along selvages	13.7	18.9										
			12.1	12.9			013	21	15	184	2.0	10		
			13.7	14.7										
14		- phyllic alteration zone; sharp upper fault contact @ 25° core axis has 1-2 cm., propylitic selvage which grades through varying widths of quartz-sericite	12.9	13.9			014	46	22	350	1.4	5		
			14.7	15.0										
15			13.9	14.9			015	94	873	1620	3.4	10		

TEXASGULF INC.

DRILL HOLE LOG

HOLE NO.  
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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	METERAGE FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		alteration with small patches of quartz- pyrite zones marked by sharp alteration fronts: - minor late veinlets of quartz+pyrite±hematite -sharp, irregular lower contact.	14.7	15.0	(Cont.,)								
16		same as 6.3-6.7m.	14.9	16.2			016	93	1050	2380	6.8	65	
			15.0	15.4									
			16.2	16.8			017	25	1680	1560	11.0	95	
17		Similar phyllic alteration to 14.7-15.0m - patchy quartz-pyrite within limonitic phyllic alteration @ 15.8m with associated 1/2-1cm. long vugs; up to 10% localized, fine- grained pyrite.	15.4	15.8									
			16.8	17.6			018	24	1000	790	11.8	170	
		same as 15.0 to 15.4m.	15.8	16.2									
			17.6	18.4			019	58	20	415	1.6	5	
		Strong propylitic alteration over 40 cm. (quartz-pyrite-chlorite) grades rapidly into intense phyllic alteration with predominant breccia texture & limonitic stain (appears to be strongly weathered)	16.2	17.3									
19			18.4	19.2			020	25	17	230	1.4	10	
20		phyllic grades into argillic from 16.75-17.0m. in localized patches -strong Fe/Mn stain along late fractures -lower contact marked by 0.5-1.0 cm. clay gouge	19.2	20.2			021	20	18	192	2.0	5	
			20.2	20.8			022	40	16	173	1.6	5	
21		same as 13.7-14.7	17.3	18.9									
		<u>BOX 4 18.90-24.35</u>											
22		as above (1.8-8.5) with one small phyllic alteration zone -irregular calcite veinlets (1.2mm. wide ) throughout	20.8	21.9			023	48	17	139	1.5	15	
23		20.5-21.5; phyllic alteration zone, minor Fe/Mn along surfaces	21.9	22.9			024	23	16	104	1.2	5	
		24.10-24.25 - rusty zone - upper & lower contact very sharp 45° to axis - one fracture 45° to core axis	22.9	23.9			025	13	16	106	1.1	5	

TEXTURE, ALTER 'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	METERAGE FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
			24	BOX 5 24.35-30.00 -medium gray-green andesite as in 1.8-8.5 -irregular calcite and chlorite veinlets throughout								
25	-fracturing @ 20-30° to axis -phyllitic alteration in several spots as well as probable fault zone consisting of brecciated quartz-chlorite clay pieces	23.9	24.9			026	18	16	113	1.2	5	
26	24.35-26.60; andesite volcanics as in 1.8-8.5 -matrix highly propylitized-intense calcite & chlorite veinlets creating pseudo brecciation	24.9	26.0			027	34	17	140	1.6	10	
27	-minor alteration of feldspars to epidote - minor sericitization	26.0	27.0			028	22	15	262	1.3	5	
28	26.60-28.70; less intense calcite and chlorite veining -quartz veinlets throughout and minor silicifi- cation -fracturing 20° to core axis with sericite along fracture planes	27.0	27.9			029	19	17	196	1.5	5	
29	-chlorite-epidote alteration of matrix -chlorite veinlets more intense near lower contact	27.9	28.7			030	5	19	199	1.2	5	
30	28.70-29.50: intense quartz-chlorite-sericite (clay?) altered fault zone - core broken into small fragments - Fe/Mn oxides throughout - apparent weathered out pyrite - core less altered from 29.10-29.40	28.7	29.5			031	16	17	320	1.1	5	
	29.50-30.00: strong alteration of feldspars to sericite, matrix to chlorite -brecciated feldspar fragments with propylitic filling between	29.5	30.6			032	28	17	152	1.3	20	
	-Fe/Mn oxides along fracture surfaces -probable weathered pyrite	30.6	31.6			033	23	20	152	1.6	10	

TEXTURE, ALTER 'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
31		BOX 6 30.0-35.7 -Medium green andesite lapilli tuff-feldspars up to 30%	31.6	32.6			034	25	19	110	1.6	5
		-calcite and chlorite as veinlets and as in fillings										
32		-several areas of intense propylitization										
		30.0-30.9; same as 29.5-30.0										
33		-intense propylitization nearing lower contact - limonitic staining - minor alteration to sericite.	32.6	33.6			035	87	19	154	1.4	5
		30.9-33.6; relatively unaltered andesite lapilli tuff										
34		-chlorite and calcite veinlets throughout -quartz grains and veinlets 5-10% - pyrite up to 1%	33.6	34.7			036	23	24	163	2.0	10
		-minor fractures 40° to axis with rusty stain on fracture surfaces										
35		33.6-35.7; upper contact sharp 35° to axis -matrix propylitized and locally siliceous	34.7	35.9			037	21	32	167	2.6	30
		-disseminated pyrite up to 3%	35.9	36.9			038	28	37	381	2.2	10
36		-fracturing subparallel to core axis -intense chlorite and minor calcite in filled veins pseudo brecciated core near lower contact	36.9	37.9			039	24	30	131	1.4	15
37		BOX 7 35.7-41.2 -light to medium brown, altered volcanics	37.9	38.7			040	129	920	1610	5.8	1600
		-phyllic alteration and zones of quartz- hematite alteration										
38		-Mn oxides along fracture planes	38.7	39.5			041	216	890	2420	4.6	1550
39		35.7-35.9 - same as 33.6-35.7	39.5	40.2			042	54	48	392	1.3	160
40		35.9-38.4 - upper contact 25° to axis intense phyllic propylitic alteration - minor argillic alteration										
		quartz veinlets 1-2mm. wide throughout	40.2	40.85			043					

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
41		-pyrite through 1-2% -highly weathered and pitted, especially near lower contact												
42		38.4-38.8 - Quartz(30%) alteration; chloritized lithic fragments, too; trace 38.4-39.6 - intensely altered phyllic & propylitic -fracture surface with slickensides sub-parallel to axis - Mn oxide on fractures	40.85	41.85			044	31	16	287	1.2	45		
43		-rusty weathered surface, slightly hematitic -chlorite veinlets throughout 39.6-40.2; chlorite-epidote - hematite altera- -minor quartz + pyrite	41.85	42.85			045	80	122	1520	1.1	225		
44		40.2-40.85; quartz-hematite-chlorite altera- -pyrite 2-3%	42.85	44.2			046	360	1290	1890	3.6	240		
		-brecciated angular hematitic fragments -gradational lower contact	44.2	44.9			047	655	2425	1940	7.3	1750		
45		40.85-41.2; propylitic alteration + minor hematite	44.9	45.6			048	365	1110	1840	4.4	190		
46		-quartz stringers throughout - pyrite < 1% BOX 8 41.2-46.8	45.6	46.15			049	515	955	2590	4.8	310		
		-high propylitic + minor phyllic alteration - limonite staining -fracturing approx 10° to core axis	46.15	46.55			050	680	1870	2780	19.0	1600		
47		41.2-42.7; similar to 40.85-41.2	46.55	47.4			051	123	26	2730	1.3	5		
48		42.7-44.0; intense chlorite-epidote-hematite alteration, limonite staining -core broken into small pieces - one irregular fracture approx. 25° to axis	47.4	48.3			052	87	38	2880	1.7	580		
49		44.0-45.5; similar to 42.7-44.0 -minor quartz veining and slightly siliceous -pyrite less than 1%	48.3	49.3			053	96	173	2560	8.0	775		







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DRILL HOLE LOG

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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		60.2-62.3; initially fairly fresh tuff with some hematitic alteration	6725	6830			073	9	197	456	2.2	115	
68		-carbonate veins 50° to axis. at 60.7, quartz-hematite-chlorite-limonite alteration	6830	6925			074	4	28	246	3.0	15	
69		-quartz-calcite veining -some brecciated hematitic fragments	6925	6975			075	9	67	169	7.5	55	
70		-probable fault zone; zone coming in at 35° to axis which cross-cuts other veins 60° to axis -possible potassic alteration?	6975	7070			076	32	238	446	57.5	350	
71		62.3-63.1; intense alteration by limonite and Mn oxide veins -irregular calcite-quartz veins -chlorite in veins and forming selvages of calcite-quartz veins	7070	7180			077	80	37	189	4.0	15	
72		63.1-63.58; quartz-hematite-chlorite altera- tion -quartz-calcite along fractures and in veins -two sets of fractures running 20° and 50° to axis	71.80	72.40			078	17	150	165	20.6	55	
73		-disseminated pyrite - approx. 1% -minor limonite and Mn oxide -chlorite selvage on calcite-quartz veins	7240	7335			079	13	99	68	6.8	20	
74		BOX 12 63.58-68.80 -maroon to light green crystal tuff -abundant irregular calcite fractures	7335	7440			080	24	21	89	2.4	5	
75		63.58-67.60; unaltered crystal tuff -moderate propylitization + minor hematite -calcite (pink) infilled fractures 60° to axis	7440	7540			081	4	18	66	1.4	5	
76		-one prominent fracture with chloride selvage 15° to axis -Fe/Mn oxides at 65.8, 66.9 -minor brecciation approaching lower contact	75.4	76.4			082	4	19	73	1.6	5	

TEXTURE, ALTER' <sup>N</sup> MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
77		67.60-68.80 brecciated core, with calcite infilling between fragments -fragment chloritic and slightly silicified -disseminated pyrite - 1%	76.4	77.4			083	4	17	70	1.4	5
78		BOX 13 68.80-74.40 -brecciated tuff, tuff breccia + andesite tuff -numerous irregular calcite veins	77.4	78.2			084	36	301	214	11.2	25
79		68.80-69.80; similar to 67.70-68.80 -from 69.0-69.25, silicified + hematitic -local argillic alteration -disseminated pyrite 1%	78.2	79.2			085	4	20	127	1.6	5
80		69.80-72.47; angular to sub-angular green crystal tuff, fragments in a maroon tuffaceous matrix	80.4	80.8			087	5	19	127	1.6	15
81		-breccia fragments up to 10 cm. wide -disseminated pyrite 1% throughout -fractures, some infilled with calcite 30° to axis	80.8	81.7			088	4	15	92	1.1	5
82		-lower contact marked by 3 cm. siliceous and pyritic zones	81.7	82.7			089	4	23	95	0.8	10
83		72.47-73.60; hematite-epidote-sericite alteration breccia -numerous irregular veining	82.7	83.7			090	4	21	214	0.9	5
84		73.60-74.40; propylitized andesite tuff irregular calcite + quartz stringers -grain size is tuffaceous grading locally to lapilli size	83.7	84.7			091	4	17	51	0.7	5
85			84.7	85.8			092	5	16	111	1.2	<5

TEXTURE, ALTER 'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		<u>BOX 14 74.4-80.1</u>												
86		-maroon andesite tuff grain size tuffaceous -slightly propylitic and locally hematitic -phyllitic alteration zone 3cm. wide at 77.95	85.8	86.8			093	5	19	83	1.7	5		
87		-numerous, irregular calcite veins + minor quartz veins -slightly brecciated near 80.0												
88		<u>BOX 15 80.1-85.8</u>	86.8	87.8			094	4	15	65	1.8	<5		
		-similar to above -breccia zone with phyllic alteration -some lapilli tuff	87.8	88.8			095	4	20	63	1.9	5		
89		80.1-80.4; same as 74.4-80.1												
			88.8	89.8			096	5	24	114	1.8	5		
90		80.4-80.8; breccia zone -angular tuffaceous fragments set in a clay- calcite matrix -minor limonite staining -contacts limonite 45° to axis	89.8	90.8			097	4	21	92	1.7	<5		
91		80.4-85.8; similar to 74.4-80.1 -lapilli tuffs -locally small zones of argillic alteration	90.8	91.9			098	6	19	58	1.8	5		
92		-calcite infilled fractures 45° to core axis												
		<u>BOX 16 85.8-91.5</u>	91.9	92.9			099	5	19	70	1.8	10		
93		-maroon - light green lapilli tuff and tuff -calcite veining throughout	92.9	93.8			100	7	23	69	1.9	<5		
94		85.8-90.2; maroon lapilli tuff (tuff breccia) -subangular-subrounded lapilli size fragments	93.8	94.8			101	3	20	53	0.9	10		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Au	Ag
95		in a tuffaceous matrix -calcite infilled fractures both irregular and 40° to core axis -minor pyrite less than 1%	94.8	95.8			102	3	13	84	5	.7
96		90.2-91.5; light green, tuff-lapilli tuff -hematitic veining + calcite veins -minor clay alteration	95.8	96.8			103	3	12	57	5	.8
97		<u>BOX 17 91.5-97.3</u>										
98		-similar to 90.2-91.5 -light green lapilli tuff, locally hematitic -fractures with limonite 50° to axis -irregular calcite infilled fractures throughout	96.8	97.8			104	3	17	61	5	.7
99		<u>BOX 18 97.3-103</u>										
100		-light green, possibly dacitic? -numerous calcite infilled fractures -one quartz-hematite alteration zone -turns into tuff breccia 102.5	98.8	99.8			106	3	20	74	5	0.8
101		97.3-102.5; as described above -quartz-hematite alteration zone from 98.3-98.4 -calcite infilled fractures 20° and 50° to axis	99.8	100.9			107	3	21	61	5	.9
102		102.5-103; subangular dark green fragments in a light green tuffaceous matrix -fragments are tuffaceous ave. 1.5cm. wide -two prominent fractures with limonitic stain 15° to axis	100.9	101.9			108	3	19	59	10	1.0
103		-minor hematite alteration	101.9	102.8			109	3	17	72	5	.9
			102.8	103.8			110	3	18	68	5	1.2

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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Au	Ag		
		BOX 19 103-104												
104		-light grey lapilli tuff - massive -lcm. quartz-hematite alteration zone @ 103.0 -locally hematitic	103.8	104.9			111	3	15	43	5	0.8		
105		-hematitic-chlorite vein cross-cut and faulted lcm. by calcite infilled fracture -calcite in irregular fractures and fractures running 50-60° to axis -faint bedding 55° to axis	104.9	105.9			112	3	18	42	10	0.8		
106		-prominent open fracture @ 105.8 running 10° to axis												
		BOX 20 109.0-114.7	105.9	106.9			113	3	16	46	5	0.8		
107		-similar to above -one hematite breccia zone -small tuff breccia zone	106.9	107.9			114	3	17	49	5	0.7		
108		109.0-110.4; light green-grey crystal tuff -intensive calcite and minor clay infilled fractures @ 109.5 trending 25° to axis	107.9	108.9			115	2	16	45	5	0.6		
109		-brecciated zone from 109.7-110; hematitic fragments, intensive calcite veining with rusty selvages -minor silicification	108.9	109.9			116	2	18	50	10	0.8		
110		110.4-111.2 tuff breccia -dark green tuffaceous fragments up to agglomerate size in a light grey hematitic matrix -chlorite alteration and minor silicification of the matrix	109.9	110.9			117	11	20	84	5	1.1		
111		-irregular calcite veins												
		111.2-114.3; similar to 103-109	110.9	111.9			118	4	21	80	5	1.0		
112		-abundant irregular calcite infilled fractures -minor limonite on fracture planes	111.9	112.9			119	2	19	74	5	0.9		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	METERAGE FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Au	Ag		
		114.3-114.7; weathered, crystal tuff -core crumbly and weathered												
113		-alteration to clays -one fracture 15° to axis	112.9	113.6			120	2	19	86	10	1.0		
114		BOX 21 114.7-120.6	113.6	114.3			121	2	17	54	5	0.8		
		-plain Jane light grey andesite crystal tuff -tuff breccia after 118.5	114.3	115.0			122	2	21	42	5	0.7		
115		-one quartz-hematite-alteration zone												
		114.7-115.0; same as 114.3-114.7	115.0	116.0			123	2	18	62	40	2.1		
116		115.0-118.1; light grey crystal tuff-massive -small quartz-hematite-chlorite altered fracture -fracture oriented 45° to axis @ 117	116.0	117.0			124	2	20	65	10	1.3		
117		118.1-119.2; tuff breccia -dark green tuffaceous fragments 3-4cm. wide in a grey matrix	117.0	118.0			125	2	21	56	5	1.1		
118		-Fe-oxide staining and in veins -more brecciated near lower contact	118.0	119.0			126	2	19	55	5	1.3		
119		119.2-119.5; quartz-hematite-chlorite altera- -fine-grained and siliceous -Fe/Mn oxide staining -contact approx. 90° to core axis	119.0	119.5			127	53	24	83	10	6.5		
120		119.5-120.6; dark green crystal tuff -irregular hematitic fractures 1mm. wide -calcite infilled fractures 50° to axis -rusty stained fractures at 120.5, 20° to axis	119.5	120.5			128	11	12	83	5	0.8		
121		BOX 22 120.6-121.2 Same as 119.5-120.6 - crystal tuff END OF HOLE DDH J82-1	120.5	121.2			129	2	15	52	5	0.6		











TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
33		30.5 - 31.8; andesite crystal tuff -locally propylitic -minor irregular calcite-quartz veining	32.2	32.9			161	34	73	231	2.8	25
34		31.8 - 32.5; intensive propylitic alteration -chlorite-epidote-minor sericite, abundant Mn oxide -initially is brecciated in a muddy matrix	32.9	33.9			162	18	25	144	0.6	5
35		32.5 - 34.15; crystal tuff; 50% feldspars crystals turning to sericite -veinlets of Mn oxides throughout -minor argillic and sericite alteration from	33.9	35.0			163	38	26	164	0.8	1970
36		32.7 - 33.2 -local saussuritization	35.0	35.5			164	31	50	222	1.3	100
37		34.15 - 35.1; quartz-hematite-chlorite- epidote altered -limonitic, argillic zone @ 34.65 -hematite and quartz stringers	35.5	36.5			165	29	28	159	1.0	280
38		35.1 - 35.6; quartz-hematite-pyrite zone -quartz stringers throughout -1-2% pyrite -possible potassic alteration	36.5	37.5			166	449	2400	2560	21.6	8800
39		-fracturing 35-40° to axis	37.5	38.5			167	55	44	1410	1.4	620
40		35.6 - 35.9; feldspars → sericite -Mn oxide veins throughout -probable potassic alteration	38.5	39.5			168	49	40	790	1.2	500
41		BOX 7 35.9 - 41.5 Andesite crystal tuff with silicified zone - quartz-hematite alteration	39.5	40.5			169	65	380	855	1.7	640

TEXTURE, ALTER 'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
42		35.9 - 37.5; quartz-hematite-pyrite alteration zone -1% pyrite												
		-quartz and hematite stringers	40.6	41.5			171	37	32	575	1.5	175		
43		-limonite and Mn oxide in veins and fractured surfaces												
		37.5 - 39.4; andesite crystal lapilli tuff	41.5	42.5			172	248	320	1200	2.1	900		
44		-feldspars turning to sericite -moderate propylitization -minor hematite												
		-irregular calcite veins	42.5	43.5			173	38	32	545	2.3	80		
45		-fractures 35-40° to axis												
		39.4 - 39.8; silicified andesite tuff												
		-thin limonite veinlets (less than 1mm. wide)	43.5	44.45			174	495	758	2360	4.0	670		
46		-pyrite less than 1% -minor hematite												
		39.8 - 41.5; andesite crystal tuff												
		-propylitic and locally limonitic	44.45	45.45			176	278	2350	2660	8.4	950		
		-carbonate-quartz vein 4mm. wide hosting rounded steel grey metallic mineral	45.45	45.8			177	451	2400	2810	37.5	900		
		-hardness approx. 5, black streak - probably tetrahedrite or possibly freidburgite - associated sphalerite-enargite? - pyrite and chalcopyrite	45.8	46.3			178	1250	6700	5680	148.0	4200		
47			46.3	46.8			179	1006	7200	2940	68.0	800		
		BOX 8 41.5 - 47.0												
			46.8	47.3			180	1610	10200	3140	180.0	1400		
		Siliceous-pyritic andesite crystal tuff + quartz fragment breccia with a hematite-limonite-siliceous matrix	47.3	47.8			181	1250	7350	2590	15.0	1400		
48			47.8	48.2			182	770	5250	1190	11.5	800		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
49		41.5 - 43.55; siliceous, pyritic andesite crystal tuff	48.2	48.8			183	680	4250	730	55.0	2200
		-pink carbonate, vein 3 mm. wide hosting pyrite, chalcopyrite, steel grey sphalerite as above (39.8 - 41.5)	48.8	49.4			184	940	5200	2580	68.0	1500
50		-30% sulphides in vein - 15% sphalerite, 13% pyrite, 2% chalcopyrite -1-2% disseminated pyrite in core	49.9	50.2			185	520	650	5540	20.0	160
51		43.55 - 44.55; border phase of andesite crystal tuff -core is very pitted, slightly brecciated -very siliceous	50.2	51.3			186	29	720	4150	11.4	2100
52		-invasion of Fe/Mn oxides -lower contact abrupt 60° to axis	51.3	52.1			187	45	1900	3350	22.0	4500
53		44.5 - 47.0; quartz breccia -angular - subangular quartz fragments ranging in size from 2 mm. to 4 cm. set in a hematite- limonite-chlorite-argillic matrix - matrix locally siliceous	52.1	53.1			188	20	190	3000	3.5	485
54		-60-70% quartz fragments, 30-40% matrix -pyrite usually within quartz fragments - especially concentrated in smokey quartz fragments	53.1	54.0			189	26	180	1230	2.4	245
55		-few fragments hematitic -thin quartz stringers 1 mm. throughout -from 44.75 - 45.15 is fine-grained, highly siliceous area.	54.0	55.0			190	25	160	391	2.4	105
56		BOX 9 47.0 - 52.5										
57		Quartz breccia as described in BOX 8 followed by an argillic alteration zone -silicified propylitized andesite tuff	55.0	56.0			191	10	57	820	2.2	10

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		47.0 - 48.85; same as described from 44.5-47.0	56.0	57.0			192	9	28	1740	1.4	5
		-more quartz in matrix at 47.3; minor drusy quartz in vugs	57.0	57.6			193	8	26	1060	1.3	<5
58		-matrix becoming more argillic near lower contact	57.6	58.5			194	7	27	455	1.4	5
59		48.85 - 49.40; argillic-limonite alteration -initially more limonitic with a few quartz breccia fragments becoming more argillic.										
60		49.40 - 52.5; propylitized, siliceous andesite tuff	58.5	59.55			195	6	22	222	1.4	5
		-minor pyrite less than 1%										
		-abundant Fe/Mn oxides on fractured surfaces and thin veinlets.	59.55	60.6			196	10	20	210	1.3	10
61		-brecciated tuff in a muddy propylitic matrix from 51.1 - 51.8 minor hematitic fragments										
		-calcite infilling along irregular fractures										
62		-few fractures 40° to core axis	60.6	61.6			197	12	22	235	1.3	5
		BOX 10 52.5 - 57.8										
63		Mainly propylitic crystal tuff	61.6	62.35			198	13	42	188	2.4	70
		-irregular patches of more intense propylitic alteration containing calcite fragments										
64		52.5 - 57.5; andesite crystal tuff containing feldspar and minor hornblende crystals	62.35	63.4			199	11	44	274	2.8	40
		-propylitic alteration, chlorite-epidote- hematite, throughout										
65		-moderate silicification, also										
		-very irregular distinct patches of intense chlorite with angular fragments of calcite	63.4	64.4			200	8	25	570	1.6	55
		contained within	64.4	65.0			225	10	24	455	1.4	20

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
66		-small brecciated zones with a clay-mud-limonite matrix @ 55.4 and 56.9 -lower contact sharp 50° to axis	65.0	65.8			226	11	37	184	1.7	10	
67		57.5 - 57.8; buff-coloured, manganese/iron oxide altered rock -Mn oxides in dendritic veinlets											
68		-calcite with minor quartz in a 1cm vein running parallel to core axis	65.8	66.8			227	12	26	310	1.4	10	
		BOX 11 57.8 - 63.4											
69		Andesite crystal tuff - local areas of dendritic Mn oxide and propylitic alteration	66.8	67.8			228	28	45	297	1.8	100	
			67.8	68.7			229	48	47	294	1.8	10	
70		57.8 - 58.5; same as 57.5 - 57.8 -grades into andesite crystal tuff											
		58.5 - 63.4 mostly medium-grained unaltered crystal tuff	68.7	69.7			230	25	46	490	1.8	15	
		-local zones of propylitic and dendritic Mn oxide alteration											
		-calcite veinlets (1-2 mm.) throughout - usually run at 45-60° to axis											
		-quartz stringers with associated hematite and minor sericite from 61.7 - 61.8	67.7	70.9			231	51	30	363	1.4	5	
71		-small brecciated quartz-calcite area 62.0 - 62.1 -intense propylitic alteration and Mn oxides from 62.6 - 63.0 - contact at 60° to axis	70.9	71.9			232	17	25	183	1.2	10	
72		BOX 12 63.4 - 69.0											
73		Mainly propylitic andesite tuff with several phyllic alteration zones	71.9	72.6			233	15	132	1540	1.9	15	





TEXTURE, ALTER 'N MINERALIZATION, ETC.	GRAPH. GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
82		-local brecciation												
		BOX 13 69.0 - 74.7	81.1	82.1			243	4	10	50	0.8	5		
83		Initially propylitic altered changing to phyllic alteration, followed by argillic alteration												
84		-near 74.7 core becoming siliceous, brecciated with a clay matrix	82.1	83.1			244	6	13	79	0.8	5		
		69.0 - 70.2; intense propylitic alteration with pockets of clay alteration - minor alteration of feldspars to clays												
85		-dendritic Mn oxides	83.1	84.0			245	4	14	69	0.7	5		
		70.2 - 72.6; phyllic alteration												
86		-altered to quartz-sericite-pyrite minor chlorite and clay	84.0	85.05			246	4	13	54	0.8	15		
		-pyrite concentrated along quartz veinlets -fractures coated with limonite range 56-70° to axis												
87			85.05	86.0			247	5	9	65.	0.5	5		
		72.6 - 74.7; primarily argillic alteration with some phyllic and silicification												
88		-brecciated siliceous fragments 3 cm. wide in a clay matrix from 73.4 - 73.6	86.0	87.2			248	6	9	85	0.8	10		
		-@ 73.6, hematite-epidote-chlorite alteration siliceous and pyritic - brecciated												
		-@ 74.2: silicified medium green fragments in a quartz matrix turning quickly back into argillic alteration.	87.2	88.3			249	5	11	57	0.9	5		
89														
			88.3	89.3			250	6	12	47	0.8	10		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		BOX 14 74.7 - 80.2												
90		Quartz-hematite-sericite breccia and slightly altered medium grey andesite crystal tuff	89.3	90.25			251	5	12	59	0.8	5		
91		74.7 - 76.35; quartz-hematite-sericite fragments (40%) in a maroon, tuffaceous, matrix (60%)	90.25	91.2			252	4	.2	52	1.0	15		
92		-fragments consist mainly of very irregular sericite patches and sub-angular jasperitic quartz (3 cm. wide)	91.2	92.05			253	4	14	55	0.8	5		
93		-quartz-carbonate veins 25-35% to axis -patchy argillic alteration throughout												
93		76.35 - 80.2; andesite crystal tuff with feldspars - sericite	92.05	93.05			254	4	13	52	0.4	5		
94		-minor hematite interspersed -argillic area @ 77.85 - 77.95												
		BOX 15 80.2 - 85.9	93.05	94.2			255	8	18	56	0.8	5		
95		Tuff breccia with one milky barite zone and andesite crystal tuff	94.2	95.2			256	7	8	56	0.7	<5		
96		80.2 - 80.5; same as 76.35 - 80.20												
96		80.5 - 81.4 tuff breccia (40%)	95.2	96.2			257	8	7	48	0.8	5		
97		-light green sub-angular fragments 3mm - 4cm. wide in a maroon, tuffaceous matrix (60%) barite zone from 79.9 - 80.0												
			96.2	97.2			258	8	7	54	0.7	5		
98		81.4 - 85.9 andesite crystal tuff with subhedral feldspar and lesser hornblende crystals												
		-minor calcite veining -linear fracturing 30° to core axis	97.2	98.2			259	6	13	44	0.9	5		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		-feldspars to sericite.												
			98.2	99.0			260	7	7	45	0.7	5		
99		<u>BOX 16</u> 85.9 - 91.6												
		Medium grey-green crystal tuff + tuff breccia	99.0	100.0			261	6	8	57	0.8	<5		
		-one area of fairly intense quartz-carbonate invasion												
100														
		85.9 - 87.3; same as 81.4 - 85.9	100.0	101.0			262	6	8	56	0.7	<5		
101		87.3 - 90.5; tuff breccia												
		-maroon fragments of various size in a medium green tuffaceous matrix	101.0	102.0			263	5	10	59	0.7	5		
		-fragment matrix ratio variable, but about 30% fragments, 70% matrix												
102		-quartz-carbonate veins and infilling around fragments, throughout												
		-local hematite alteration	102.0	103.1			264	10	10	55	1.0	<5		
103		-linear fractures 50° to axis												
		90.5 - 91.6; more intensive alteration												
		-hematite, locally siliceous and chloritic	103.1	104.1			265	7	5	39	0.8	5		
104		-abundant irregular quartz-carbonate veining												
		-abrupt contact 45° to axis												
		<u>BOX 17</u> 91.6 - 97.5	104.1	105.15			266	5	8	38	0.8	5		
105														
		Propylitic, hematitic, andesite crystal tuff												
		-abundant quartz-carbonate veining	105.15	106.15			267	6	8	41	0.7	<5		
106		91.6 - 92.05; same as 90.5 - 91.6												
		92.05 - 97.5; hematite-chlorite-sericite alteration												
107		-medium green crystal tuff turned maroon due to	106.15	107.15			268	5	9	44	0.9	5		







TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH. GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
17		BOX 4 18.8 - 24.1m			~100%									
		-same as above; feldspars often (?)hematized			↓									
18		-19.2 - 19.4m; intense chlorite-sericite alteration + minor shearing associated with fracture @ 30° to core axis												
		-adjacent rock strongly propylitized												
19		-20.0m; buff clay (?gouge) & rubble rock; possible margin of fault	18.8	20.1			0287	27	19	146	1.6	15		
		-20.1 - 21.0m; intense sericite-carbonate along sheared, brecciated fault zone	20.1	21.0			0288	35	36	79	1.2	5		
20		- becomes argillic in core of strongest alteration	21.0	22.0			0289	24	28	213	0.9	5		
		- abundant MnO dendrites; fracturing, shearing dominant @ 60° to core axis	22.0	22.9			0290	12	16	130	0.6	10		
21		- strong chloritization especially below zone	22.9	24.1			0291	14	15	157	0.7	5		
		-21.3 - 22.8m; carbonate + chlorite stringers cut slightly chloritized rock (relatively fresh)												
22		BOX 5 24.1 - 29.7m												
23		-same as above												
		-24.1 - 25.1m.; - minor carbonate stringers @25.3m - minor 'jasper' stringers												
24		@25.5m - complete feldspar argillization	24.1	25.1			0292	9	19	157	0.7	5		
		-25.6m.: - intense shearing + chlorite-sericite-Fe-Mn oxide alteration along fault zone	25.1	26.1			0293	31	30	195	1.7	300		
			26.1	27.0			0294	39	100	180	2.2	890		
25			27.0	28.0			0295	72	25	153	1.6	45		







TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
45		-45.7 - 46.4m: strong pink, phyllic ( $\pm$ argillic) alteration, minor chloritization along fractures												
46		- vuggy quartz stringers + minor carbonate throughout - irregular chlorite-quartz-pyrite veinlet @ 45.9m. - strong Fe oxides along fracture @ 20° to core axis @ 46.1 m.												
47		BOX 9 46.4 - 52.2m.												
48		-similar to above -46.4 - 46.6 m. - same as 45.7 - 46.4m.												
49		-46.6 - 50.2m; - pale green, sericitized feldspars; scattered carbonate and/or quartz veinlets and open space fillings (46.9, 47.5, 48.2 - 48.3, 48.9, 50.1, 50.5, 51.0m.) - trace pyrite with grey quartz stringers												
50		- 48.2 m. - trace galena												
51		-50.2 - 50.9m; - variable brecciation with approx. 20% quartz-carbonate, open-space filling, traces galena & chalcopyrite; 0.5 - 1.0% fine-grained pyrite along stringer margins; quartz is medium grey, carbonate is milky white; minor druse; wall rock weakly to strongly altered with quartz-sericite	46.6	47.6			0316	41	52	243	1.6	90		
			47.6	48.6			0317	137	600	282	3.5	1050		
			48.6	49.4			0318	31	32	152	1.9	875		
52		- minor red, hematitic quartz stringers.	49.4	50.2			0319	235	315	440	1.2	1000		
			50.2	50.9			0320	71	245	595	5.0	4800		
		-50.9 - 52.2m; - angular fragments of silicified and/or propylitized alteration material,	50.9	51.5			0321	337	3600	2760	20.0	2050		
		highly variable fragment size but generally	51.5	52.2			0322	508	4300	3010	19.0	1950		





TEXTURE, ALTER 'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		BOX 11 59.25 - 64.6m.												
60		Andesitic feldspar hornblende crystal tuff and tuff breccia characterized by pink subhedral plagioclasic crystals (20-30%) to 5mm. subhedral to anhedral hornblende crystals (5%) to 2mm. in a fine-grained weakly chloritized tuffaceous matrix	59.25	60.25			0330	3	80	300	1.8	540		
61														
62		59.25 - 62.2m.; - tuff breccia with $\leq$ 30% subrounded pinkish andesitic feldspar crystal lapilli tuff fragments to >5cm. in size	60.25	61.25			0331	2	120	228	2.0	25		
63		Local irregular shaped zones of silicified-carbonitized quartz breccia and patches and 'clots' of quartz-calcite alteration. The fragments include siliceous wall rock fragments of grey quartz to 2cm. in size. The silicate consists of a finely crystalline mixture of quartz-calcite, but may be locally grey and chalcedonic. Most prominent zones occur at approx. 61.9 - 62.1m. and 63.0-63.1m.	61.25	62.25			0332	2	50	246	1.4	180		
64														
		64.0 - 64.12m.; - 12cm. fault zone characterized by intense propylitic (chlorite) and sericitic alteration and by minor orange-ish clay along shear planes - 45° to core axis. Minor disseminated pyrite.	62.25	63.25			0333	1	68	251	1.3	95		
		scattered calcite stringers and gashes throughout	63.25	64.25			0334	1	66	206	2.0	30		
			64.25	65.25			0335	2	60	273	2.3	35		

TEXTURE, ALTER 'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		BOX 12 64.6 - 70.6m.											
65		Andesitic feldspar hornblende crystal tuff											
		- same as Box 11, but with variable silicified propylitized and hematite-clay? alteration zones	65.25	66.5			0336	1	54	289	2.1	25	
66													
		64.6-66.5; andesite crystal tuff with minor local patches and 'clots' of quartz-calcite alteration and siliceous breccia, as in Box 11; at approx. 66.5 m. silicification becomes more intense with no calcite present.	66.5	67.7			0337	24	125	1060	16.0	60	
67		Silicification is characterized by patches of finely crystalline grey quartz and becomes pervasive at 67.4m. where it occurs as massive grey to brown quartz.											
			67.7	69.2			0338	12	40	98	1.4	5	
68													
69		67.7-69.2m. fault zone (1.5m. wide) with a 10cm clay zone (67.7-67.8) characterized by white to greyish clays and then a 1.4m. interval of intensely fractured and hematized (purplish) tuff with 40% patches of intense light green chlorite-sericite alteration and abundant clay zones. The clay zones are irregular in orientation and distribution and often contain fragments of hematite-chlorite wall rock.	69.2	70.2			0339	3	35	72	1.2	5	
70													
		69.2-70.6m.; - intense maroon hematite-clay (sericite) alteration; plagioclase-clay matrix - hematite local bull white quartz veinlets to 1 cm. - microfaulted (1cm. displacement) chlorite-sericite alteration in fault zone overprints hematite.	70.2	70.6			0340	3	34	81	1.3	5	

TEXTURE, ALTER'N. MINERALIZATION, ETC.	GRAPH. GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
71		SPIILLED BOX												
72		Andesitic feldspar-hornblende crystal tuff 40% white subhedral to anhedral plagioclase crystals to 4mm. and 0-15% subhedral hornblende crystals to 3mm. within a grey tuffaceous groundmass												
73		Local, minor quartz and quartz-calcite stringers, veinlets and gashes; randomly oriented and often cross-cutting; minor fractures (50° -t 70° to core axis) with 5mm. grey sericite halos. Rare pinkish hematitic patches. 1cm. clay gouge (fault zone) - 45° to core axis.												
74														
75														
76														
		BOX 14 76.1 - 81.9m.												
77		Andesitic feldspar hornblende crystal tuff, crystal lapilli tuff and tuff breccia	76.1	77.1			0341	5	30	92	1.2	5		
78		Andesitic crystal tuff, same as Box 13. Crystal lapilli tuff is characterized by plagioclase crystals less than 3mm. in size and occurs from 76.9 to 78.5m. 78.5 - 79.5m.; - tuff breccia - subangular grey andesitic crystal tuff.	77.1	78.1			0342	4	35	62	1.2	10		











TEXTURE, ALTER'M MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
113		have associated maroon hematitic selvages. Maroon hematite alteration also occurs as distinct x lcm. halos around fractures and calcite stringers.	111.4	112.4			0371	6	18	50	1.6	5
114		minor calcite stringers and gashes throughout.	112.4	113.4			0372	7	16	52	1.2	5
115			113.4	114.4			0373	7	16	42	1.0	15
116			114.4	115.4			0374	8	15	53	1.0	5
117			115.4	116.4			0375	7	14	38	1.0	5
		BOX 21 116.0 - 121.8m.										
118		Andesitic feldspar hornblende crystal tuff -same description as previous	116.4	117.4			0376	8	23	57	1.4	<5
119		-local patchy and stringy deep maroon hematitic alteration and lesser (less than 1%) intense sericitic alteration patches										
		-local white calcite stringers and veinlets (40° to core axis)	117.4	118.4			0377	9	150	60	1.3	5
120		20.5m - fracture with 1.2mm. rusty orange phyllic alteration	118.4	119.4			0378	7	28	57	1.1	5
		20.9 - 3cm. grey sericitic patch.										
121			119.4	120.4			0379	8	24	67	1.0	5



TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		ok-grey sericite alteration. Patches of greyish -green sericite alteration are minor.	130.4	131.4			0390	7	21	34	1.1	45	
131		131.1 - 132.3m: - at 131.1m. fault (greyish clay) contact (25° to core axis) with intense chlorite-sericite-quartz + hematite alteration to 132.3m.	131.4	132.4			0391	36	24	93	8.5	5	
132		28.6m. - 5cm. calcite vein - 40° to core axis.											
133													
			132.4	133.4			0392	7	20	64	1.6	10	
		132.2m. END OF HOLE											
							0393	8	24	71	1.1	5	
							0394	9	22	85	0.9	10	
							0395	12	20	70	1.2	5	
							0396	10	19	57	1.0	5	
							0397	7	14	58	1.0	5	
							0398	6	18	66	1.2	5	

Boxes 13 & 15  
spilled core

PROPERTY: JD

# TEXASGULF INC.

## DRILL HOLE LOG

HOLE NO. J82-4	PAGE NO. 1
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LOCATION: JD 0+13E 0+77N

AZIM: 160° ELEV:

DIP: -60° LENGTH: 9.0m.

CORE SIZE: NQ

DEPTH			AZIM			DIP			TEST		
FOOTAGE	READING	CORRECT	FOOTAGE	READING	CORRECT	FOOTAGE	READING	CORRECT	FOOTAGE	READING	CORRECT

STARTED: June 27, 1982

COMPLETED: June 28, 1982

PURPOSE:

CORE RECOVERY:

CLAIM NO: JD  
 SECTION:  
 LOGGED BY: P. Leriche  
 DATE LOGGED: July 3, 1982  
 DRILLING CO: Coates Enterprises  
 ASSAYED BY: Min-En Labs

TEXTURE, ALTER'N, MINERALIZATION, ETC.	GRAPH. GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
4		BOX 1 4.7 - 9.0m.												
5		Propylitic andesite crystal tuff - 25-30% subhedral feldspar fragments in a propylitic tuffaceous groundmass (70-75%) - irregular quartz and calcite stringers - groundmass locally hematitic	4.7	5.7			399	13	16	111	3.0	10		
6		END OF HOLE DDH J82-4												
7		Hole aborted due to Drilling Complications	5.7	6.6			400	30	15	114	4.3	5		
8														
9			6.6	8.1			401	31	14	100	2.0	5		
			8.1	9.0			402	16	14	97	1.7	5		







TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
18		22.6-24.0m.; phyllic alteration as described from 21.7-22.6 - possible fault zone	16.95	18.1			413	33	470	1390	5.2	10
19		24.0-27.0m.; propylitic-siliceous alteration -quartz-chlorite-hematite; minor sericite, epidote -quartz also in stringers (1-2mm. wide) -limonite-Mn oxide staining - core broken.	18.1	19.1			414	24	380	1690	5.0	5
20		27.0-27.7m.; similar to 24.0-27.0 only high Mn oxides permeating throughout	19.1	19.9			415	30	134	1120	6.8	5
			19.9	20.5			416	34	160	1280	5.4	5
21		BOX 5 27.7 - 33.5m. Maroon-brown clay seam (fault gouge) + altered andesite tuff	20.5	21.4			417	46	190	1590	17.8	5
22		27.7-31.0m.; clay gouge, intense argillic alteration -andesite tuff breaking down to maroon coloured clay - limonitic	21.4	22.4			418	31	830	421	57.0	10
23		-minor sericite										
24		31.0-32.1m.; fault gouge -andesite gouge fragments in a clay matrix -20-30% fragments, 70-80% matrix -creamy-light brown clay seam from 31.7-31.9m.	22.4	23.6			419	46	700	446	56.0	5
			23.6	24.7			420	46	580	1060	45.0	5
25		32.1-33.5m.; altered andesite tuff -light grey moderate breakdown to clay gouge -siliceous from 32.2 - 32.4m., with dendritic Mn oxides -irregular, calcite veinlets 1mm. wide	24.7	25.4			421	35	530	1170	14.0	5
26		-minor limonite staining	25.4	26.5			422	37	270	680	9.0	<5



TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		40.9-41.1m.; argillic alteration, minor limonite and epidote - fault gouge? -lower contact sharp @ 40°.												
36		41.1-44.75m.; tuff breccia as 36.6-39.1m. -2cm. wide clay gouge @ 42.9 and 43.2m. -locally disseminated pyrite ≤ 1%	35.2	36.2			433	9	33	69	2.0	10		
37		BOX 8 44.75 - 50.5m.	36.2	37.1			434	10	12	69	3.4	15		
38		Medium green crystal tuff, consisting of 40% feldspar crystals in a tuffaceous (60%) matrix - feldspar crystals up to lapilli size -1-2cm. sericite bands @ 45.25, 46.6, 47.1, 48.8m -local tuff breccia - chemistry of fragments	37.1	38.1			435	10	25	42	3.6	15		
39		very close to matrix so is difficult to identify -minor irregular calcite veining	38.1	39.1			436	14	24	62	3.2	5		
40		-quartz-carbonate veined zone @ 48.8-49.0m. -upper & lower contacts sericite & sharp @ 45° -clay gouge @ 50.0-50.5m.	39.1	40.1			437	9	22	90	2.5	<5		
41		BOX 9 50.5 - 56.1 Crystal tuff as described above -initially hematitic and sericitic	40.1	41.2			438	8	16	54	1.8	5		
42		50.5-52.8m.; hematite alteration throughout -feldspars - sericite and thin sericitic seams -minor carbonate infilling -quartz-carbonate stringers @ 52.7-52.8m.	41.2	42.2			439	9	24	179	2.0	10		
43		52.8-56.1m.; andesite crystal tuff, very plain -minor propylitization	42.2	43.2			440	7	19	70	1.9	5		
			43.2	44.1			441	7	18	82	1.8	10		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH. GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
44		BOX 10 56.1 - 61.7m.	44.1	45.05			442	7	21	81	1.8	15
		Sub-angular, dark-green, tuffaceous fragments (40%) of various size in a green-brown tuffaceous groundmass (60%), sometimes difficult to distinguish fragments from groundmass due to similar chemistry										
45		-calcite infilled fractures 20-25° to axis	45.05	46.05			443	9	22	69	1.9	10
		-few sericite seams										
46		-locally pyritic up to 2%	46.05	47.0			444	9	24	76	2.0	10
		BOX 11 61.7 - 67.3m.										
47		Andesite crystal tuff - medium green, 40% feldspar crystals 60% slightly propylitic matrix	47.0	48.0			445	6	25	76	1.9	<5
		-feldspars - sericite locally more intense										
48		-occasional 1-2cm. wide breccia fragment										
		-quartz-carbonate infilling irregular fractures	48.0	49.1			446	8	23	77	2.0	10
		-few linear fractures @ 25° to axis										
49		-becoming more sericitic @ 67.0m.										
		-disseminated pyrite (euhedral) 1-2%	49.1	50.1			447	9	21	87	1.9	5
		BOX 12 67.3 - 73.2m.										
50		Similar to 61.7 - 67.3										
		-sericite up to 70.0 m.; then relatively unaltered crystal tuff	50.1	51.0			448	7	19	106	1.8	5
51		-minor hematization throughout										
		-pyrite 1-2%	51.0	52.0			449	8	22	80	1.8	10
		BOX 13 73.2 - 79.0m.										
52		Same as 61.7 - 67.3m.										
		-alteration from 77.6-78.0; intense quartz-	52.0	53.0			450	8	21	67	1.7	5

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
53		carbonate veining, propylitized and sericitic andesite -sericite seams 35° to axis												
		BOX 14 79.0 - 84.6m.	53.0	54.0			451	8	23	78	1.8	5		
54		Slightly hematitic crystal tuff and tuff breccia												
			54.0	55.0			452	12	28	72	1.6	5		
55		79.0-80.5m.; andesite crystal tuff as 61.7 - 67.3m. -slightly hematitic												
			55.0	56.1			453	10	18	64	1.2	10		
56		80.5-84.6; tuff breccia -30% light green-brown sub-angular fragments of various sizes in a dark green groundmass (70%)												
			56.1	57.1			454	9	19	70	1.4	5		
57		-quartz-carbonate in irregular fractures and linear fractures, 30° to axis -disseminated euhedral pyrite 1-2%												
			57.1	58.1			455	10	21	86	1.6	5		
58		BOX 15 84.6 - 90.4m.												
		Tuff breccia same as 80.5-84.6 -from 85.2-85.6, quartz-carbonate-graphite zone - contacts at 55° to axis												
			58.1	59.1			456	8	20	79	1.5	5		
59		-quartz-carbonate veining 30° -disseminated pyrite 1-2%												
			59.1	59.9			457	10	20	92	1.4	10		
60		BOX 16 90.4 - 95.8m.												
			59.9	60.9			458	9	22	80	1.7	5		
61		90.4-93.5; tuff breccia as described in 80.5 - 84.6 -lower contacts marked by siliceous-pyrite zone from 93.3-93.5m.												
			60.9	61.9			459	10	20	84	1.8	15		





TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		-@101.2-101.7m. core fractured sub-parallel to core axis - sericitic & carbonate infilling	69.9	70.9			468	10	19	93	1.3	5
		-123.25-123.40; brecciated, fragments lcm. wide, infilled with quartz-carbonate										
71		BOX 22 124.31 - 130.2m.	70.9	71.8			469	8	18	85	1.5	5
72		Same as 101.6 - 107.3m., except not pyritic	71.8	72.9			470	10	20	78	1.5	15
		-local quartz-carbonate hematitic veining causing minor brecciation.	72.9	73.9			471	11	21	79	1.4	10
			73.9	74.9			472	10	20	72	1.5	10
			74.9	76.0			473	11	23	125	1.6	5
73			76.0	77.0			474	12	24	86	1.7	5
			77.0	78.0			475	11	18	76	1.6	10
			78.0	79.0			476	10	19	81	1.5	15
			79.0	80.0			477	10	20	81	1.6	5
		END OF HOLE DDH J82-5	80.0	80.9			478	9	17	78	1.4	5
			80.9	81.9			479	11	16	78	1.6	10
			81.9	82.9			480	10	18	74	1.8	5
			82.9	83.8			481	10	19	76	1.6	5
			83.8	84.7			482	6	20	74	1.5	10
			84.7	85.7			483	5	1300	78	1.2	5
			85.7	86.7			484	5	32	80	1.1	5
			86.7	87.7			485	5	28	62	0.9	10
			87.7	88.7			486	6	21	67	1.2	5
			88.7	89.7			487	6	18	72	1.2	15
			89.7	90.7			488	6	20	58	0.9	5
			90.7	91.7			489	6	21	58	1.0	5
			91.7	92.7			490	7	20	70	0.9	5
			92.7	93.6			491	5	16	64	0.8	5
			93.6	94.6			492	6	19	92	1.3	10
			94.6	95.4			493	7	22	80	1.2	5
			95.4	96.4			494	5	24	76	1.0	15
			96.4	97.4			495	10	22	65	1.5	5
			97.4	98.4			496	7	40	57	1.0	10
			98.4	99.4			497	6	24	64	1.1	5



# TEXASGULF INC.

## DRILL HOLE LOG

PROPERTY: JD  
 LOCATION: JD 0+13E 0+77N

AZIM: 190° ELEV:  
 DIP: -60° LENGTH: 59.7m (196')  
 CORE SIZE: NQ

DEPTH			AZIM.			DIP			TEST		
FOOTAGE	READING	CORRECT	FOOTAGE	READING	CORRECT	FOOTAGE	READING	CORRECT	FOOTAGE	READING	CORRECT

STARTED: June 30, 1980  
 COMPLETED: July 2, 1982  
 PURPOSE:

CLAIM NO: JD  
 SECTION:  
 LOGGED BY: P. Leriche  
 DATE LOGGED: July 5, 6, 1982  
 DRILLING CO: Coates Enterprises  
 ASSAYED BY: Min-En Labs

CORE RECOVERY:

TEXTURE, ALTER'N, MINERALIZATION, ETC.	GRAPH. GEOLOG.	DESCRIPTION	METERAGE FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
0														
1		OVERBURDEN												
2														
3		BOX 1 3.2 - 9.3m.												
4		Andesite crystal tuff, 30% stained feldspar crystal tuff in a dark green propylitic groundmass	3.2	4.2			529	5	14	79	1.2	10		
5		-core broken -quartz stringers @ 4.9-5.0, 5.6-6.0m. -other minor quartz stringers												
6		-hematitic stringers throughout	4.2	5.4			530	7	18	92	1.3	10		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
7			5.4	6.8			531	17	16	102	3.0	5
8			6.8	7.7			532	17	15	88	1.0	15
9			7.7	8.7			533	49	76	158	1.6	5
10		BOX 2 9.3 - 18.3m.			66.6%							
10			8.7	9.7			534	20	16	131	2.2	10
11		Strongly propylitic andesite crystal tuff -few small quartz-hematite breccia zones -chlorite-epidote-hematite alteration - Mn oxides coating fractured surfaces										
12		Small breccia zones @ 11.0-11.15 (with small vugs and drusy quartz), 11.25-11.45, 11.80- 11.90, 15.0-15.24 m. - brecciated tuff with quartz-hematite infilling between angular fragments	9.7	11.2			535	18	34	194	5.0	5
13		-core blocky to broken up -from 15.0-15.24 is siliceous & pyritic 17.50-18.34; - phyllic alteration, only 50% recovery			50%							
14		-quartz-hematite-limonite - minor sericite, chlorite -limonite staining										
15			11.9	13.9			537	22	58	268	3.4	25



TEXTURE, ALTER'MN MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		-core broken into small pieces												
		-some pieces are siliceous	22.6	23.6			543	28	340	750	11.2	10		
25														
			23.6	24.6			544	27	530	720	31.0	15		
26														
			24.6	26.4			545	29	430	950	14.0	5		
		BOX 4 26.8 - 32.89m.												
27		Altered andesite crystal tuff												
		26.8-28.8; quartz-chlorite-epidote alteration				50%								
28		- minor hematite - probable fault zone	26.4	27.8			546	139	1300	1030	31.0	290		
		- limonite & Mn oxide in veins and coating surfaces												
		- locally brecciated with angular quartz fragments in a propylitic matrix - minor quartz stringers												
29		- clay gouge @ 26.9-27.0	27.8	29.0			547	309	18000	810	11.2	870		
		- galena mineralization in pieces of core from 28.0-28.5 - recovery very poor												
30														
		28.8-29.1; clay gouge	29.0	30.0			548	8	200	180	2.2	10		
		- light brown-maroon clay												
31		- broken down andesite												
		- propylitic fragments within												
			30.0	31.0			549	5	82	171	1.8	5		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
32		29.1-32.87; propylitic alteration											
		-clay gouge zone @ 31.1-31.3											
		-Mn oxide alteration @ 32.3-32.4	31.0	32.1			550	7	24	260	1.9	10	
33		32.87-32.89; tuff breccia											
		-angular dark green tuffaceous fragments in a light green tuffaceous matrix	32.1	32.89			551	17	102	180	2.0	235	
		BOX 5 32.89 - 38.6m.;											
34		-tuff breccia											
		-subangular dark green crystal tuff fragments (25-30%) in a light green to maroon groundmass (70-75%)	32.89	33.9			552	5	16	97	1.4	5	
35		-quartz-carbonate fractures 30° to axis and irregular fractures											
		-locally hematitic in groundmass & fragments	33.9	34.8			553	5	17	118	1.2	5	
36		-sericite seams from 36.5-37.0.											
			34.8	35.85			554	10	16	109	1.7	10	
			35.85	36.3			555	17	18	99	1.4	15	
37			36.3	36.85			556	11	19	115	1.6	10	
38			36.85	37.85			557	5	16	118	1.4	15	
39		BOX 6 38.6 - 44.38m.											
		Tuff Breccia 38.6-38.8; same as 32.89-38.6	37.85	38.8			558	5	15	101	1.5	10	





TEXTURE, ALTER 'N MINERALIZATION, ETC.	GRAPH. GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	AU	
		-sericite-clay gouge @ 46.50 - pyritic	46.4	47.0			566	7	28	101	4.4	10	
49		46.70-47.30; tuff breccia; 40% sericitic light green fragments in a dark green groundmass											
		-minor pyrite << 1%	47.0	47.9			567	7	26	32	2.5	5	
		47.3-49.43; andesite crystal tuff with feldspar crystals → sericite											
		-brecciated from 48.00-48.6, sericite and chlorite between fragments - pink quartz-carbonate veining @ 48.5 with few cubes of galena.	47.9	48.6			568	23	156	67	5.3	55	
		BOX 8 49.43 - 54.83m.											
50		Tuff breccia and clay gouge	48.6	49.6			569	9	64	63	4.4	15	
		49.43-50.80; tuff breccia as 46.7-47.3											
		-few small sericite-clay seams											
51		50.80- 53.9; brecciated andesitic tuff with quartz-carbonate & sericite heating	49.6	50.6			570	9	36	148	5.8	60	
		-80% angular fragments, 20% matrix											
52		--@52.0, quartz-carbonate veining hosting several cubes of galena - cubes 5mm. wide	50.6	51.6			571	7	64	79	3.6	65	
		-intense clay-sericite gouge zone from 53.1 - 53.6 - fault?											
53		-minor sphalerite in quartz-carbonate veins @ 51.1	51.6	52.5			572	8	22	235	2.2	10	
		53.9-54.83; andesite lapilli tuff											
54		-rounded dark green fragments (30%) in a light green sericitic groundmass - fragments up to 5cm. in diameter	52.5	53.6			573	7	56	27	3.2	5	

TEXTURE, ALTER'N. MINERALIZATION, ETC.	GRAPH. GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
55														
			53.6	54.6			574	4	21	95	1.6	5		
		BOX 9 54.83-59.74m.												
56		Andesite crystal lapilli tuff as 53.9-54.8 matrix less sericitic	54.6	55.65			575	8	20	104	1.1	5		
		-matrix and fragments are both crystal tuff in composition												
57		-fracturing 25-30° to axis												
		-pyrite approx. 1%	55.65	56.6			576	6	21	106	1.7	5		
58														
		END OF HOLE DDH J82-6 59.74m.	56.6	57.6			577	4	20	105	1.4	5		
59														
			57.6	58.6			578	7	26	129	1.9	5		
			58.6	59.74			579	5	24	132	1.6	5		

# TEXASGULF INC.

## DRILL HOLE LOG

PROPERTY: JD  
 LOCATION: 0+13E 0+77N  
 AZIM: 135° ELEV:  
 DIP: -60° LENGTH: 72.2m. (237')  
 CORE SIZE: NQ

DEPTH	AZIM.	DIP	TEST
72.2	160° ?	-60°	faulty test, no readings

STARTED: July 2, 1982  
 COMPLETED: July 3, 1982  
 PURPOSE: Test trench mineralization  
 Geochemical & Geophysical Anomalies  
 CORE RECOVERY:

CLAIM NO: JD  
 SECTION:  
 LOGGED BY: P. Leriche  
 DATE LOGGED: July 7, 8, 9, 1982  
 DRILLING CO: Coates Enterprises  
 ASSAYED BY: Min-En Labs

TEXTURE, ALTER'N, MINERALIZATION, ETC.	GRAPH. GEOL.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		BOX 1	4.70	11.28m.	91%	152ppb							
5		Andesite crystal tuff; 35% feldspar & hornblende crystals in a dark green propylitic groundmass - groundmass locally hematitic											
6		-core locally pitted and weathered -periodic quartz stringers 30° to axis -minor carbonate infilling irregular fractures	4.7	5.7		580	26	14	100	26	5		
7			5.7	6.7		581	6	13	106	21	5		
8													
9			6.7	8.3		582	8	16	90	16	5		
10													
			8.3	9.4		583	15	12	72	8	10		

TEXTURE, ALTER 'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
11													
		BOX 2 11.28 - 17.37m.	9.4	11.2			584	31	12	93	17	5	
			11.2	11.6			585	36	17	170	74	5	
12		Andesite crystal tuff with a quartz-hematite-limonite zone											
		11.28 - 13.50; same as 4.7-11.28	11.6	12.3			586	23	44	171	24	<5	
		-slightly siliceous & disseminated pyrite 1%											
13		13.5-15.25; silicification & quartz stringers zone - stringer systems locally brecciating	12.3	13.6			587	14	10	130	15	5	
		andesite											
14		-minor associated hematite - limonite staining											
		-intense quartz stringers & hematite @ 14.84-14.94											
		-disseminated pyrite 1-2%	13.6	14.45			588	28	24	248	58	10	
15		15.25-17.37; andesite crystal tuff as 4.7-11.28	14.45	15.35			589	39	250	560	60	5	
16													
17			15.35	16.85			590	18	16	164	09	5	
		BOX 3 17.37 - 26.42m.	16.85	17.80	66.3		591	7	12	142	08	5	
18		Andesite crystal tuff with quartz stringer & siliceous zones	17.80	18.3			592	49	36	284	69	10	

TEXASGULF INC.

DRILL HOLE LOG

HOLE NO.  
J82-7

PAGE NO.  
3

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		7.37-17.80; same as 4.7-11.28	18.3	19.2			593	24	16	329	20	5
19		17.80-20.5; silicified andesite crystal tuff -intense quartz stringers throughout, brecciating core										
20		-disseminated pyrite 2-3% - minor drusy quartz -Mn oxide and limonite coating surfaces -hematitic and propylitic	19.2	20.0			594	32	76	463	24	15
21		20.5-23.8; propylitic andesitic crystal tuff -less quartz stringers -"grotty" broken core -Mn oxides coating all surfaces	20.0	20.5	50%		595	17	34	1080	20	5
22		-pyrite 1-2%	20.5	21.95			596	23	104	1100	21	5
23		23.8-24.38; quartz stringers in siliceous andesite tuff -minor hematite and chlorite -drusy quartz veinlets - pyrite 1%	21.95	23.1			597	22	34	1130	34	5
24		24.38-26.42; propylitic-hematite alteration -slightly siliceous -minor pyrite -very poor recovery - core very broken			25%							
25			23.1	24.4			598	33	245	790	54	10
26		BOX 4 26.42 - 33.42 m.	24.4	26.4	85.7%		599	26	340	820	74	5
27		Quartz-hematite breccia, clay fault gouge, and altered andesite tuff	26.4	27.0			600	101	860	1120	465	75



TEXTURE, ALTER 'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		-quartz fractures 55° to axis												
		34.6-35.1; rusty coloured fault gouge	35.1	36.05			611	5	28	23	13	5		
36		-very ground up and altered to sericite-hematite; lesser chlorite, epidote												
		-small angular quartz fragments throughout												
37		35.1-37.8; fault gouge - light grey												
		-85% sericite fragments in a sericite groundmass	36.05	37.8			612	5	16	19	5	5		
		-lower contact marked by fracture 45° to axis												
38		37.8-38.4; tuff breccia; 30% sericite fragments in a dark green fine-grained groundmass	37.8	38.7			613	7	17	16	4	10		
		38.4-39.65; light grey andesite crystal tuff with feldspars → sericite; local brecciated zones as from 35.1-37.8												
		BOX 6 39.65 - 45.36m.	38.7	39.65			614	5	14	11	4	5		
40		Probable dyke and altered andesite crystal tuff												
		39.65-39.90; same as 38.4-39.65												
41		39.90-41.65; probable andesite dyke	39.65	41.45			615	5	16	106	08	5		
		-medium green, massive												
		-20% euhedral feldspar phenocrysts												
		-pyrite 1%												
42		41.65-43.0; sericitic gouge as 35.1-37.8 up to 10cm. propylitic tuff, slightly siliceous, broken	41.45	42.3			616	6	16	81	8	15		
		43.0-44.7; light grey crystal tuff as 38.4-39.65; minor calcite veining	42.3	43.3			617	5	12	10	6	10		







TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	FOOTAGE		REC'Y	EST. GRADE	SAM. NO.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
62		BOX 10 62.0-67.66m.	61.0	62.0			636	7	16	113	6	5
63		Tuff breccia 62.0-65.0; tuff breccia as 58.3-62.0 -occasional sericitic seams	62.0	63.0			637	8	19	65	7	5
64		65.0-65.9; tuff breccia, light green subangular fragments 50% in a dark green matrix -fragments slightly siliceous - fragments variable in size	63.0	64.0			638	7	21	62	6	5
65		-no pyrite	64.0	65.0			639	5	15	65	5	5
66		65.9-67.66; tuff breccia as 58.3-62.0, linear fracture 35° to axis -minor hematite -pyrite approx. 2%	65.0	66.0			640	5	12	113	4	5
67		BOX 11 67.66 - 72.2m.	66.0	67.0			641	7	18	134	6	5
68		Tuff breccia	67.0	68.0			642	7	17	75	10	5
69		67.66-69.0; 10% light green angular fragments in a dark green groundmass (90%) -minor calcite in fractures -pyrite 2%	68.0	69.0			643	9	14	53	10	<5
70		69.0-72.2; tuff breccia; 40% light green-grey fragments on dark green groundmass (60%)	69.0	70.0			644	6	12	15	9	10











KIDD CREEK MINES LTD

DRILL HOLE LOG

HOLE No.  
J82-8

PAGE No.  
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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		24.9m.; - 3cm. grey orange siliceous zone with a 1mm. light grey 'bleached' selvage and a 1mm. intense orangeish hematite alteration halo.	25.0	26.0			669	30	510	1440	42	5
		25.1m. - Hematite filling cavities in quartz stringers										
		25.4m. - Inclusions of hematite and crystal tuff in 2cm. grey cherty quartz vein. Generally - approx. 1% quartz stringers and patchy silicate throughout.	26.0	27.0			670	31	620	1480	50	10
		BOX 5 26.71 - 32.3m.										
27		Andesitic crystal Tuff, silicified quartz breccia and fault gouge Andesitic crystal tuff textures are rare due to alteration overprinting and faulting	27.0	28.0			671	21	440	1110	48	5
28		26.71 - 27.3m.; - intense orangeish-green chlorite hematite alteration overprints a vague fragmental texture which is evident by lighter & darker alteration patches	28.0	29.2			672	15	340	1710	46	5
29		27.3m. - quartz healed 'crackle' breccia with angular hematite crystal tuff fragments & local quartz druse. The quartz is cherty grey. The siliceous zone grades at 27.7m. to a highly broken interval with local grey quartz stringers and relic crystal tuff texture.	29.2	29.45			673	450	4800	6800	1160	1600
			29.45	30.5			674	75	680	1110	370	735
31		28.9m. - fault gouge - ground-up yellow rock floor 29.2m. - silica healed quartz breccia to 29.4 - fragments difficult to distinguish from matrix due to multiple siliceous events:	30.5	31.5			675	13	68	187	28	40



TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		1) Fine, light grey quartz, then											
		2) Breccia and healing by deep red quartz-hematite, then											
		3) Breccia and healing by fleshy pink quartz-hematite, then.											
		4) Cross-cutting white to grey quartz + galena stringers.											
		At 29.4m. - end of box; - there is a fault gouge zone characterized by brown to yellowish clay and fault breccia all with associated intense carbonitization	31.5	32.5			676	9	18	145	13	5	
		BOX 6 32.3 - 37.65m.	32.5	33.2			677	9	40	184	46	10	
33		Tuff Breccia and Fault Gouge Subhedral white plagioclase 40% are variable in size ranging from approx. 1mm. to 1cm. Plagioclase is completely replaced by calcite.	33.2	34.2			678	7	26	75	23	5	
34		Matrix/groundmass is a light greyish green, finely crystalline mixture of chlorite-sericite-calcite. Locally, chlorite replaces plagioclase Breccia zones consist of	34.2	35.2			679	7	28	47	18	5	
35		angular andesite 'crystal tuff'/'flow' fragments (40%) to 5cm. in size (1cm. average) in a fine-grained greyish red matrix.											
36		32.32 - 33.2m.; - Andesitic crystal tuff	35.2	36.2			680	11	18	7	12	5	
37		33.2 - 34.2m.; - fault gouge - orangeish rock flour and fragments - intense hematite and fracturing.											
		34.2 - 35.0m.; Andesitic crystal tuff/flow with 1-5cm. hematite halos (staining) around fractures which are locally infilled with	36.2	37.2			681	9	62	132	13	10	

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		calcite or clear gypsum (@34.3m.) - 70° to core axis												
		34.8 - 35.0m.; 35.4 - 35.6m.; 35.7 - 35.8m.;												
		36.2 - 37.0m.; - Tuff Breccia with sharp irregular contacts with the crystal tuff	37.2	38.45			682	8	13	5	16	5		
		37.0 - 37.65m.; - local gouge and shearing (45° to core axis)												
		BOX 7 37.65 - 42.93m.												
38		Andesitic Tuff Breccia Subangular breccia fragments (5-10%) range in size from less than 1cm. to more than 10cm.												
39		- (2cm. average). The fragments are often irregularly shaped and may be lensoidal. They are characteristically lighter grey than the matrix, due to weak-to-intense sericitization	38.45	39.8			683	9	16	7	11	5		
40		which has preferentially altered the fragments The matrix is fine-grained and darker grey.	39.8	40.8			684	8	16	13	9	5		
41		37.65 - 38.2m.; - intense greyish yellow sericitization												
42		38.2 - 38.4m.; - fault gouge - intense shearing and sericitization												
		38.45 - 39.8m.; - intense sericitization of breccia fragments with a 10cm. zone of light greyish yellow sericite @ 39.5m.	40.8	41.8			685	10	18	24	10	5		
		39.8 - 42.93m.; - Tuff breccia with weak sericitization of the fragments.												
			41.8	42.8			686	8	15	22	10	5		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
43		BOX 8 42.93 - 48.1m.	42.8	43.8			687	8	16	33	9	5
		Andesitic Crystal Tuff and Tuff Breccia										
44		Tuff breccia is same as previous box with breccia fragments altered by greyish to orange yellow sericite. The unit is typically unsorted and does not show evidence of layering	43.8	44.8			688	10	17	62	9	5
45		42.93 - 43.98m.; - tuff breccia										
46		43.93 - 44.1m.; - approx. 10cm. fault gouge characterized by grey-to-orangeish clay and fragmentation	44.8	45.6			689	8	22	50	10	5
47		44.1 - 45.2m.; - Tuff breccia										
		45.2 - 45.5m.; - Fault breccia - grey clays, fragmentation and carbonitization	45.6	46.6			690	7	16	72	11	5
48		45.6 - 48.1m.; - grey andesitic crystal tuff										
		46.75 - 47.0m.; - 1% pyrite dissemination and in blebs through a sheared interval with moderate chlorite alteration and local silica and quartz stringers.	46.6	47.6			691	6	16	59	10	5
		47.7m. - weak silica + 1% pyrite.										
		Local calcite stringers throughout										
		BOX 9 48.1 - 53.48m.	47.6	48.6			692	6	13	58	11	5
49		Andesitic Crystal Tuff and Tuff breccia	48.6	49.6			693	5	20	68	08	5

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		The andesite crystal tuff is moderately chloritized with fairly uniform textures and minor breccia fragments. Plagioclase - 20-50%												
50		occurs as white altered (sericite) subhedral crystals ranging in size from less than 1mm. - 5mm. The crystals are 'crowded' in a fine-grained, moderately chloritized matrix.	49.6	50.6			694	5	20	52	6	5		
51		Sub-angular crystal tuff breccia fragments are distinguished by their lighter, sericitic nature.	50.6	51.6			695	8	18	53	9	5		
52		Pyrite blebs and disseminations occur at 52.1m 49.8m., 50.0m. and 53.2m. and appear to be associated with chlorite shears (approx. at 50°).	51.6	52.6			696	5	22	54	9	10		
53		49.6m. - 1 cm. fault gouge with chlorite shears and grey clays												
		51.25m. - 2cm. pink calcite bleb	52.6	53.6			697	5	19	50	8	5		
		53.4m. - 5cm. subrounded fragment of chlorite-epidote altered feldspar hornblende crystal tuff.												
		BOX 10 53.48 - 58.53m.	53.6	54.6			698	3	15	47	04	5		
54		Andesitic Crystal Tuff Same as Box 9. Moderate chloritization with traces of disseminated pyrite and local pyrite blebs throughout. Quartz and calcite veining	54.6	55.6			699	6	24	45	6	5		
55		is absent. Vesiculation cavities? are present at 54.0m., 55.6m., and 58.4m.												
56		54.6m. - 5cm. chlorite shears @ 50° to core axis 55.15m. - pyrite stringers	55.6	56.6			700	4	15	43	5	45		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		Local, patchy, weak sericite alteration is characterized by a lighter greyish-green 'bleaching' of the core.	56.6	57.6			701	5	18	48	5	5	
57													
			57.6	58.6			702	5	20	54	6	5	
58													
		BOX 11 58.53 - 64.06m.	58.6	59.6			703	4	16	49	06	1320	
59		Andesitic Crystal Tuff and Tuff Breccia											
		Moderately chloritized andesite crystal tuff contains 30-50% subhedral plagioclase which											
60		are difficult to distinguish from the chloritic matrix because of plagioclase-sericite. The	59.6	60.6			704	6	19	41	6	740	
		last half of the box shows an increase in intensity of sericite alteration and in pyrite											
61		content ( $\leq 5\%$ ).											
		58.53 - 60.15m.; - Andesite crystal tuff with											
		minor disseminated pyrite and pyrite blebs	60.6	61.6			705	6	18	59	7	130	
62		60.15 - 60.55m.; - tuff breccia with minor											
		disseminated pyrite.											
		61.40m. - 5cm. interval of tuff breccia with											
63		lower (50° to core axis) marked by a lcm.	61.6	62.0			706	5	41	46	8	10	
		sericite margin	62.0	63.0			707	7	112	194	8	10	
		61.50m. - Andesite crystal tuff shows an											
64		increase in sericite alteration and pyrite.											
		By 62.0m., the sericite alteration is moderate											
		and continues to end of box.	63.0	64.0			708	8	88	154	10	5	

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		61.55m. - 61.75m.; - chlorite-sericite shear zone (45° to core axis)												
		62.5 - 62.8m.; - fault gouge + breccia with pink calcite vein												
		BOX 12 64.06 - 69.3m.	64.0	65.0			709	8	26	65	7	5		
65		Andesitic Crystal Tuff												
		Moderate sericite-pyrite alteration of previous box decreases in grade (approx. 64.5												
66		m.) to a weak, but pervasive, overprint, which is present to end of box. Both crystals and matrix have been altered. Fine disseminated pyrite is present on the average at 5%.	65.0	66.0			710	6	19	64	8	5		
67		Local calcite stringers throughout.	66.0	67.0			711	5	29	94	8	5		
68			67.0	68.0			712	7	24	63	7	5		
69			68.0	69.0			713	5	12	44	6	5		
			69.0	70.0			714	4	10	40	6	5		







PROPERTY: JD

# KIDD CREEK MINES LTD

HOLE No. J82-9 PAGE No. 1

HOLE LOCATION: 0+96E 0+21N

## DRILL HOLE LOG

AZIM: 135° ELEV:  
 DIP: -60° LENGTH: 277' (84.4m.)  
 CORE SIZE: NQ

### SURVEY

DEPTH	AZIM.	DIP	DEPTH	AZIM.	DIP
277'	130°	-60°			

STARTED: July 5, 1982  
 COMPLETED: July 6, 1982  
 PURPOSE: To test trench mineralization

CLAIM No: JD

SECTION:

LOGGED BY: P. Leriche

DATE LOGGED: July 10, 1982

DRILLING CO: Coates Enterprises

ASSAYED BY: Min-En Labs

CORE RECOVERY:

TEXTURE, ALTER'N, MINERALIZATION, ETC.	GRAPH. GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
3		Box 1 3.05 - 8.60m.												
		Altered Andesite Tuff												
4		-strong propylitic alteration + intense secondary alteration by Mn-oxides	3.05	4.0			727	32	360	730	44	10		
		-regular quartz veining throughout, linear fractures 80° to axis												
5		-core slightly siliceous throughout												
		6.2 - 7.0m.; - quartz-hematite-chlorite alteration with disseminated pyrite 3%	4.0	5.0			728	27	290	700	47	10		
6		-average pyrite 1-2% throughout												
			5.0	6.0			729	27	550	1880	102	30		
7														
			6.0	6.8			730	24	520	2060	98	20		
8			6.8	7.8			731	21	200	540	46	5		
		BOX 2 8.60 - 14.35m.												
9		Altered Andesite Tuff	7.8	8.8			732	21	110	525	3.2	10		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		8.60 - 10.70m.; - same as 3.05-8.60m. -fracturing 40-45° to axis											
10		10.70 - 11.55m.; - quartz-hematite-chlorite alteration	8.8	9.9			733	24	340	1000	3.2	5	
		-well weathered - leached out pyrite -limonite staining throughout and along fracture											
11			9.9	10.7			734	22	310	3100	2.8	15	
		11.55 - 13.7m.; - similar to 3.05 - 8.60m. -propylitic and minor silicification through- out											
12		-occasional quartz-hematite veining 50° to axis -pyrite approx 1%											
			10.7	11.8			735	24	1200	950	10.6	35	
13		13.7 - 14.35m.; - less altered & weathered andesite crystal tuff 35% subhedral feldspar crystals in a dark green groundmass	11.8	12.8			736	12	28	2200	2.8	5	
		-quartz veins up to 1cm. wide with hematitic margins 55° to axis -also irregular quartz stringers -disseminated pyrite 1-2%											
			12.8	13.7			737	21	68	540	1.8	5	
14		BOX 3 14.35 - 19.60m.											
			13.7	14.65			738	23	18	285	1.4	<5	
15		Andesite Crystal Tuff as 13.7 - 14.35m. -groundmass moderately propylitic -quartz infilled fractures 50° to axis -fracturing after 18.00m. sub-parallel to core axis and at 50°											
			14.65	15.7			739	15	20	280	1.2	10	
16			15.7	16.6			740	16	15	200	1.6	5	
17			16.6	17.4			741	53	120	450	1.1	15	

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
			17.4	18.3			742	21	17	171	1.0	10
18												
			18.3	19.3			743	25	50	430	1.3	5
19												
		BOX 4 1960 - 24.7m.										
			19.3	20.0			744	42	30	455	1.4	65
20		Andesite Crystal Tuff with numerous banded quartz-hematite veins										
		19.60 - 20.2m.; same as 14.35 - 19.60m.	20.0	20.9			745	17	105	670	1.5	5
21		20.2 - 24.7m.; similar to 19.6 - 20.2m. except contains banded quartz-hematite stringers and one small quartz breccia zone	20.9	21.65			746	17	120	1580	3.2	10
			21.65	21.8			747	180	3200	2400	240.0	70
22		-@21.0 - 21.3m.; grotty and fractured with quartz infilling and Mn oxide	21.8	22.5			748	27	1050	3500	3.8	15
		-@21.65 - 21.80m.; quartz breccia in a hematite-chlorite-limonite matrix - quartz stringers										
23		-@22.2m.; fracture at 70° to axis is faulted by quartz-hematite fracture at 45° to axis.	22.5	23.5			749	11	65	810	1.5	5
		-@22.50m. & 22.75m.; quartz-hematite banded, 3cm. wide approx., 90° to axis										
24		-fractures predominantly 70° to axis										
			23.5	24.4			750	36	40	213	2.6	55
25		BOX 5 24.7 - 30.15m.										
			24.4	24.9			751	77	860	2350	3.2	5
		Andesite Crystal Tuff with banded quartz- hematite stringers - two quartz breccia zones	24.9	25.1			752	630	10600	1100	560.0	200
			25.1	25.40			753	53	660	1130	5.3	25
26			25.40	25.6			754	54	960	930	84.0	145

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		24.7 - 24.9m.; andesite crystal tuff												
27		24.9 - 25.1m.; quartz breccia; quartz & andesite tuff fragments in a matrix of clay and hematite chalcedonic quartz and minor chlorite; pyrite & fine-grained silver mineral probably galena, disseminated 1%	25.5	26.4			755	52	330	1750	11.0	80		
28		25.1 - 25.4m.; propylitic andesite tuff with quartz stringers.	26.4	27.3			756	17	64	960	2.6	10		
29		25.4 - 25.6m.; quartz breccia as 24.9 - 25.1m. 25.6 - 30.5m.; andesite crystal tuff with abundant quartz-hematite banded stringers as 20.2 - 24.7m.	27.3	28.35			757	44	40	360	4.5	390		
30		-more linear fractures run 50-70° to axis -minor clay on fractured surface @ 30.0m. -small vugs common with drusy quartz infilling	28.35	29.5			758	49	32	425	3.0	135		
		BOX 6 30.15 - 35.5m.												
31		30.15 - 33.6m.; andesite crystal tuff with abundant banded quartz-hematite stringers as 25.6 - 30.5m.	29.5	30.45			759	40	98	445	6.0	110		
32		-stringers contain disseminated fine-grained pyrite -minor pyrite in crystal tuff	30.45	31.45			760	13	44	360	2.1	10		
33		33.6 - 33.9m.; argillic alteration and clay gouge -@33.6 - 33.75m.; core breaking down to clay turning into dark brown clay-mud gouge	31.45	32.2			761	24	180	780	2.6	50		
34		33.9 - 35.5m.; similar to 25.6 - 30.5m. -crystal tuff is propylitic and locally hematitic	32.2	33.1			762	18	14	362	1.7	5		
35		-hematite-quartz stringers - hematite halos (margins) with quartz followed by drusy	33.1	33.6			763	25	250	1140	2.8	10		
			33.6	33.9			764	240	5700	2800	28.0	65		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		quartz in the middle of the stringer -stringers 1cm. wide -disseminated pyrite 3% within stringers	33.9	34.8			765	23	1100	2800	4.8	10
		BOX 7 35.5 - 41.0m.										
36		Mainly quartz healed breccia and fault gouge 35.5 - 35.95m.; same as 33.9 - 35.5m.	34.8	35.95			766	23	190	670	5.6	5
37		35.95 - 38.2m.; intense quartz stringers in a brecciated quartz-hematite-chlorite altered crystal tuff -fragment size highly variable	35.95	36.7			767	26	160	2100	2.6	15
38		-fine-grained pyrite associated with quartz -late stage dendritic Mn-oxide and limonite 38.2 - 39.2m.; breccia subangular-subrounded fragments (40%) in a quartz-hematite ground- mass	36.7	37.5			768	21	110	860	2.5	5
39		-fragments green-brown, siliceous, variable in size -quartz-hematite stringers containing pyrite, galena & trace chalcopyrite - all fine-grained	37.5	38.2			769	32	600	970	3.8	25
40		39.2 - 40.4m.; similar to 35.95 - 38.2m. -propylitic-siliceous fragments (50%) healed with quartz-hematite -numerous quartz stringers	38.2	39.2			770	22	760	1260	2.9	5
41		40.4 - 40.6m.; fault gouge -small angular quartz fragments in a dark brown mud-clay groundmass	39.2	40.4			771	16	330	630	2.8	10
42		40.6 - 41.0m; quartz-hematite breccia "grotty" and broken	40.4	40.6			772	27	380	3500	3.1	20
		BOX 8 41.0 - 46.0m.										
43		Quartz breccia, fault gouge and tuff breccia	40.6	41.45			773	164	2200	3600	26.0	50



TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		-propylitic; limonite on broken surfaces												
			49.7	50.1			783	3	20	74	1.0	15		
51		51.1 - 51.35m.; tuff breccia as described @ 46.0 - 49.7m.												
		BOX 10 51.35 - 56.6m.	50.1	51.0			784	3	24	73	1.0	5		
52		Tuff breccia similar to 46.0 - 49.7m. -groundmass locally hematitic -few fractures 35° to axis	51.0	52.0			785	3	24	63	0.8	5		
53		-propylitic-quartz zone @ 53.4 - 53.5m. -quartz and calcite infilling along fractures especially after 55.0m. -minor limonite along fractures.	52.0	53.0			786	4	20	57	0.8	10		
54			53.0	54.0			787	5	18	65	0.8	5		
55			54.0	55.0			788	5	24	74	1.0	5		
56			55.0	56.0			789	4	26	67	1.1	15		
		BOX 11 56.6 - 62.25m.												
57		Andesite Crystal Tuff	56.0	57.0			790	4	20	63	1.0	10		
		56.6 - 57.2m.; tuff breccia, lower contact marked by hematitic zone with calcite and quartz stringers	57.0	58.0			791	4	20	67	0.8	5		
58		-quartz stringers contain minor pyrite												
59		57.2 - 62.25m.; andesite crystal tuff -35% subhedral feldspar and hornblende crystals in a medium green-grey groundmass	58.0	59.0			792	7	12	74	0.8	5		





# KIDD CREEK MINES LTD

# DRILL HOLE LOG

HOLE No  
J82-9

PAGE No.  
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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		BOX 13 68.1 - 73.0m.												
69		Andesite crystal tuff and small quartz-hematite zone	67.3	68.4			801	6	22	86	0.8	5		
		68.1 - 68.4m.; tuff breccia as 62.25 - 68.1m.	68.4	69.1			802	4	19	40	0.5	5		
70		68.4 - 71.7m.; andesite crystal tuff 30% subhedral feldspar crystals in a dark green groundmass 70% irregular calcite veining throughout	69.1	70.2			803	3	15	39	0.5	5		
71		-fracturing 30-40° to axis												
		71.7 - 72.0m.; area of more intensive quartz-calcite veining	70.2	71.1			804	3	12	44	0.5	10		
72		-initially hematitic -late stage limonite along fractures	71.1	71.7			805	10	16	40	0.6	5		
		72.0 - 73.0m.; andesite crystal tuff as 68.4 - 71.7 - 72.0 71.7m.	71.7	72.0			806	4	12	43	0.5	5		
73														
		BOX 14 73.0 - 78.95m.	72.0	73.0			807	3	16	61	0.7	5		
74		Andesite crystal tuff -as described from 68.4 - 71.7m.												
		from 74.0 - 75.0; contains quartz and minor hematite fragments.	73.0	74.0			808	5	14	54	0.5	<5		
75		-quartz is stained orange -minor drusy quartz veinlets -minor calcite infillings												
76		-linear fractures 55° to axis	74.0	75.5			809	6	16	54	0.6	5		
77			75.5	76.0			810	7	11	58	0.6	5		



PROPERTY:

JD

# KIDD CREEK MINES LTD

HOLE No.  
J82-10

PAGE No.  
1

HOLE LOCATION: 0+96E 0+21N

## DRILL HOLE LOG

AZIM: 135° ELEV:  
DIP: -80° LENGTH: 73.0m.  
CORE SIZE: NQ

### SURVEY

DEPTH	AZIM.	DIP	DEPTH	AZIM.	DIP
72.24	131°	-80°			

STARTED: July 6, 1982

COMPLETED: July 7, 1982

PURPOSE:

CORE RECOVERY:

CLAIM No:

SECTION:

LOGGED BY: D. Piroshco

DATE LOGGED: July 11 - 12, 1982

DRILLING CO: Coates Enterprises

ASSAYED BY: Min-En Labs

TEXTURE, ALTER'N, MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
0		0 - 3.05m. OVERBURDEN												
1														
2														
3		BOX 1 3.05 - 8.6m.	3.05	4.0			819	37	60	1090	2.6	10		
		Andesite Crystal Tuff												
4		Plagioclase - 40% - subhedral white to orange- ish stained, locally euhedral; partially altered to sericite. The Matrix is fine- grained and orangeish grey, due to pervasive hematite staining. Abundant 1-2mm. sized vugs (2-10%) could represent sites of horn- blende crystals. Fractures - 70° to core axis are partially-to-completely healed by 'grotty' grey quartz, general grotty appearance of core is due to weak propylitic alteration and local silicified and quartz stringered zones.	4.0	5.0			820	27	180	870	2.4	15		
5			5.0	6.0			821	14	37	243	2.0	15		
6			6.0	7.0			822	22	21	268	1.7	5		



TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		BOX 3 13.9 - 19.1m.											
		Andesitic Crystal Tuff											
14		-as previous with texture generally over- printed by weak to moderate chloritization and hematite staining. The box shows an increase in quartz veining. The veins are	14.9	15.6			832	17	20	238	1.8	5	
15		randomly oriented with widths ranging to 3cm. The veins show fine quartz-hematite banding and often contain drusy quartz vug infills to 2cm. Vein-wall-rock contacts are sharp	15.6	16.2			833	21	34	350	1.8	5	
16		with a $\pm$ 1mm. hematite selvage and 1-3cm. hematite halo, grading into moderately chloritized rock.	16.2	16.7			834	21	110	880	1.7	5	
			16.7	17.5			835	28	170	900	1.8	10	
17		13.9 - 14.9m.; moderate chlorite with hematite stains, 1% grey quartz stringers and abundant Mn stains.											
		14.9 - 15.6m.; same as above, but with drusy quartz vein at 15.0m.	17.5	18.5			836	80	155	1700	2.5	5	
18		15.6 - 16.2m.; drusy quartz veins 1% - Mn in quartz vugs.											
		16.2 - 16.7m.; moderate chloritized andesite crystal tuff with rare quartz veins											
19		16.7 - 17.5m.; drusy, banded quartz veins - 1-2%	18.5	19.5			837	27	75	515	1.6	10	
		17.5 - 18.5m.; fault gouge - broken & ground- up rock											
		18.5 - End of Box; minor banded drusy quartz veins											
		BOX 4 19.1 - 24.7m.											
20		Andesitic crystal tuff	19.5	20.5			838	25	15	237	1.4	5	
		Core is fresher in appearance than in previous boxes with rare hematite staining, plagioclase											
21		(30%) occur as greenish-orange (chloritized)	20.5	21.5			839	27	830	2300	2.8	5	

## KIDD CREEK MINES LTD

## DRILL HOLE LOG

HOLE No.  
J82-10PAGE No.  
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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		subhedral crystals to 5mm. in size (3mm. average). Hornblende (5%) occurs as scattered anhedral to subhedral crystals (< 1mm-2mm.)												
22		Matrix is brownish green and fine-grained 19.1 - 22.3m.; weakly chloritized andesitic crystal tuff with local quartz stringers - banding is absent.	21.5	22.3			840	20	320	4150	3.5	5		
		22.3 - 22.7m.; intensely silicified zone												
23		extensive network of quartz-hematite banded veinlets, quartz is typically dark grey and crystalline in a maroon siliceous andesite	22.3	22.7			841	360	16000	5300	32.0	190		
		crystal tuff with relic textures - 5%.	22.7	23.2			842	119	3800	3400	9.5	5		
24		Fragmentation - re-healing by quartz-hematite is evident (therefore two stages of silica) - 1% vugs.	23.2	24.0			843	8	108	442	2.3	5		
		22.7 - 23.2m.; 5% quartz-hematite banded stringer with minor silica and trace galena.	24.0	25.0			844	27	50	158	1.8	5		
		23.2 - 24.0m.; 1% banded quartz + hematite stringers												
		<u>BOX 5</u> 24.7 - 29.9m.												
		Andesite crystal tuff	25.0	26.0			845	27	64	227	2.2	5		
25		Salmon pink subhedral plagioclase (35%) - (3mm average) hornblende (5%) partially-to-completely altered to calcite. Matrix is fine												
		-grained and dark reddish brown (hematitic throughout). The rock appears relatively	26.0	27.0			846	31	65	525	3.7	10		
26		fresh, as in the previous box, with a strong porphyritic texture. Intensity of quartz												
		veining varies from approx. 1 vein to approx.												
27		10 veins per metre of core. The veins 2mm. - 2cm. in width (35-70° to core axis) and are characteristically quartz-hematite banded	27.0	28.0			847	16	20	210	3.7	10		
		with 1-2% vugs partially infilled by fine.												
28		clear drusy quartz.	28.0	29.0			848	27	40	304	4.2	90		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		Minor anhedral biotite												
		Trace disseminated pyrite												
29			29.0	30.0			849	18	28	225	2.6	5		
		BOX 6 29.9 - 35.75m.	30.0	30.4			850	19	40	174	3.2	5		
30		Andesite crystal tuff	30.4	31.4			851	20	48	374	3.1	5		
		Moderate chloritized feldspar hornblende ± biotite crystal tuff, is same as in previous boxes with weak to moderate quartz-hematite veining. Veins are same as in Box 5, but with traces of disseminated pyrite @ 33.2m., vein orientation is quite random, but 60° orienta-	31.4	32.4			852	29	230	950	5.2	5		
31														
32		tion to core axis may dominate. The veins often appear as irregular networks. Late stage calcite is locally present in vugs + drusy cavities												
		34.8 - 35.5m.; 5% grey quartz-hematite + calcite veins with associated intense bright orange hematite ± chlorite alteration with Mn coatings.	32.4	33.3			853	22	126	510	3.4	5		
33														
34			33.3	34.3			854	26	88	355	5.0	5		
35			34.3	34.8			855	10	142	3750	4.3	5		
			34.8	35.5			856	17	180	2000	6.0	5		
			35.5	36.2			857	65	2800	3700	14.0	10		





## KIDD CREEK MINES LTD

## DRILL HOLE LOG

HOLE No.  
J82-10PAGE No.  
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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		41.9 - 42.9m; fault zone with 20cm. of sheared and gouge core with associated chloritization and pervasive hematite stains + Mn coatings	43.9	44.4			867	6	20	197	1.6	5
45		42.9 - 43.9m; Intense chloritization and hematite staining. Local dark greenish-grey subangular breccia fragments to 5cm.	44.4	45.3			868	8	22	232	1.6	10
46		43.9 - End of Box; moderately chloritized andesite crystal tuff with pervasive hematite staining, local Mn coatings and zones of tuff breccia. Breccia is distinguished by darker grey-green fragments in a more intense altered orangeish matrix. General lack of banded quartz veins, local calcite stringers.	45.3	46.2			869	6	23	210	1.5	5
			46.2	47.2			870	6	21	131	1.3	5
47		BOX 9 4 66 - 52.2m.										
48		Andesite crystal tuff Subhedral pink to white plagioclase (30%) to 2mm. average size with 5% calcite replacing hornblende sites in a fine-grained, weakly chloritized, grey matrix.	47.2	48.2			871	7	20	104	1.2	10
49		46.6 - 47.2m.; moderate hematite stained and chlorite andesite crystal tuff which grades into fairly homogeneous grey unaltered crystal tuff, which continues to 51.8m. White quartz-calcite veinlets to 1cm. are rare (25-35° to core axis).	48.2	49.2			872	5	19	118	1.4	5
50		51.2m. - 10cm. of finely crystalline mixture of quartz and calcite.	49.2	50.2			873	6	17	83	1.8	10
51		51.8m - End of Box; weak grey quartz-sericite alteration.	50.2	51.2			874	5	21	82	1.4	20
52			51.2	52.2			875	9	28	34	3.6	590



## KIDD CREEK MINES LTD

## DRILL HOLE LOG

HOLE No.  
J82-10PAGE No.  
9

TEXTURE, ALTER' <sup>N</sup> MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		alteration overprints primary textures												
		59.4 - 60.1m; weak, light grey, quartz- sericite alteration	60.1	61.1			886	5	9	23	1.0	10		
61		60.1 - 61.1m.; weak chloritized and crystal tuff												
		61.1 - 61.4m.; intense dark greyish brown quartz-sericite alteration	61.1	62.4			887	8	10	16	1.3	5		
62		61.4 - 63.4m.; weakly chloritized and crystal tuff												
		63.5m. - 2cm. fault gouge												
63			62.4	63.4			888	6	8	61	1.0	5		
64		BOX 12 63.5 - 69.1m.	63.4	64.4			689	8	10	78	1.0	10		
		Andesite crystal tuff and tuff breccia Description is same as in previous boxes.												
65		Andesite crystal tuff is relatively 'fresh' in appearance. The breccia texture is high- lighted in zones of intense sericitic altera- tion where the matrix is preferentially	64.4	65.4			890	8	16	49	1.9	10		
66		altered.												
		64.4m. - 3cm. fault gouge - 70° to core axis	65.4	66.4			891	8	15	53	1.8	5		
67		66.4m. - 2cm. white quartz-calcite vein - 45° to core axis with shears (slickensides) parallel to vein												
		Moderate, brownish-grey, sericitic alteration (as above) occurs at 66.59 - 66.8m & 67.1 - 67.4m.	66.4	67.4			892	7	12	69	2.0	5		
			67.4	68.4			893	6	11	59	1.5	5		
69			68.4	69.4			894	6	14	93	1.8	<5		



PROPERTY:

JD

## KIDD CREEK MINES LTD

HOLE No.  
J82-11PAGE No.  
1

HOLE LOCATION:

0+96E 0+21N

## DRILL HOLE LOG

AZIM: 160°

ELEV:

DIP: -60°

LENGTH: 78.33m(257')

CORE SIZE: NQ

## SURVEY

DEPTH	AZIM.	DIP	DEPTH	AZIM.	DIP
78.33	148	-60°			

CLAIM No: JD

SECTION:

LOGGED BY: J.R. Clark

DATE LOGGED: July 11, 1982

DRILLING CO: Coates Enterprises

ASSAYED BY: Min-En Labs

STARTED: July 7, 1982

COMPLETED: July 7, 1982

PURPOSE: To--!!!

CORE RECOVERY:

TEXTURE, ALTER'N, MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		Overburden 0 - 3.2m. -includes 13cm. boulder of moderately heavy physically altered plagioclase-hornblende andesite												
		BOX 1 3.2 - 8.4m.												
		Andesite: greenish-grey; plagioclase: pinkish sub- to euhedral, 1-5mm., moderate to heavy sericitization + carbonate alteration; hornblende euhedral, 5%, 0.5-2mm. heavy chlorite-hematite alteration; groundmass variably lightly chloritic to heavily	3.2	4.2	90%		899	17	280	790	46	10		
		sericitic; minor blebs of specularite. Rare ( < 1%) quartz + carbonate veinlets, randomly oriented, up to 1cm. across, larger quartz- rich veinlets exhibit slight banding. Possible	4.2	4.8	90%		900	27	290	690	45	10		
		flow. Dominant alteration propylitic to moderately phyllic, with up to 5% and 20-25% pervasive quartz.	4.8	5.8	90%		901	21	270	900	44	45		
		Section 3.2 - 4.2m.: slight to moderate phyllic alteration, pyrite 3-4%, sericite +	5.8	6.8			902	24	62	260	28	5		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		chlorite 30%, quartz (silicification) 5-10%, quartz + carbonate veinlets 1%, patchy Mn weathering.											
8		Section 4.2 - 4.8m.; light grey-green to brownish, fairly heavily bleached, possibly up to 15-20% pervasive silicification.	6.8	7.8			903	19	28	204	24	10	
		Section 4.8 - 5.8m.; same as 3.2 - 4.2m.											
		Section 5.8 - 6.8m.; same as 3.2 - 4.2m.	7.8	8.8			904	24	106	359	40	5	
		Section 6.8 - 7.8m.; same as 3.2 - 4.2m.											
		Section 7.8 - 8.8m.; same as 3.2 - 4.2m.											
			8.8	10.2			905	17	57	1820	24	10	
		BOX 2 8.4 - 13.8m.											
9		Similar to Box 1, with increasing amounts of alteration, less weathered core. Includes minor moderately silicified sections with significant veining and minor alteration. Plagioclase phenos. in less altered rocks	10.2	10.7			906	45	3800	1580	283	30	
10		remain heavily sericitized. Section 8.8 - 10.2m.; same as 3.2 - 4.2m.	10.7	11.9			907	31	82	2160	43	5	
		Section 10.2 - 10.7m.; moderately silicified, mostly replacement of andesite, some quartz breccia and heavy veining (5-10% overall);											
11		1cm. fault at 10.2m.; good veining at 10.6m. clear to milky to light grey	11.9	12.5			908	19	23	1280	20	5	
		Section 10.7 - 11.9m.; slight to moderate silicification with minor sericitic patches,	12.5	13.5			909	24	15	485	16	5	
		white irregular quartz veining and local brecciation 3-5%, minor quartz druse in veinlet vugs.											
13		Section 11.9 - 12.5m.; slight silicification with minor sericitic patches, white to clear quartz veining 2-3%.	13.5	14.5			910	9	12	153	12	5	
		Section 12.5 - 13.5m.; minor alteration, plagioclase sericitized, trace groundmass	14.5	15.5			911	18	36	225	15	5	







TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		BOX 5	24.78	30.58m.									
25		Same as Box 4, with significant carbonate in mafic alteration crystals with chlorite and hematite, overall carbonate 5-7%.											
26		Section 25.3 - 26.3m.; includes 2-3% quartz-carbonate veinlets, carbonate usually later, although may be interlayered on fine scale, up to 2cm. across											
27		Section 26.3 - 27.3m.; similar to 25.3 - 26.3m includes 1.5cm. vein at 26.95m. with very finely interlayered quartz-carbonate (quartz chalcedonic grey-white-pinkish to drusy clear) asymmetrical layers with respect to downhole contact at 28° to core axis (thicker bands downhole indicating up direction), also											
28		interconnecting veins indicate terminal axis downhole (core of possible apparent axial direction).	25.3	26.3			923	12	46	260	22	5	
29		Section 27.3 - 28.3m.; similar to 25.3 - 26.3m includes 1cm. vein with drusy amethyst core at 27.5m., and 3 cm. vein at 27.75m.	26.3	27.3			924	33	130	180	24	5	
30		Section 28.3 - 29.3m.; same as 25.3 - 26.3m. Section 29.3 - 30.1m.; similar to 25.3 - 26.3m includes 2cm. of quartz breccia with angular finely banded white-pinkish-grey quartz fragments set in carbonate cement at 29.9m.	27.3	28.3			925	10	46	181	15	5	
		Section 30.1 - 31.1m.; bleached and heavily altered; andesite heavy propylitic alteration (chlorite + epidote + carbonate) to moderate sericite alteration; 20% quartz-carbonate veins and local stockwork, carbonate + quartz intermixed but last phase usually carbonate, quartz banded chalcedonic to later drusy amethystine, possible minor late adularia.	28.3	29.3			926	32	17	170	42	5	
			29.3	30.1			927	41	270	650	79	5	

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		BOX 6	30.58	36.33m.	30.1	31.1		928	32	840	3560	208	5
31		Generally similar to Box 4 etc.; locally intense veining and brecciation as in Box 5. Overall propylitic to slight phyllic alteration andesite flow.											
32		Section 31.1 - 32.1m.; similar to 30.1 - 31.1m. with 4cm. of quartz-hematite veining at 31.4m and other minor quartz-hematite veins through-out, local sections of quartz breccia, especially, 31.7 - 31.8m., siliceous veining and breccia comprise 20-25% of section.	31.1	32.1			929	51	1100	2320	82	10	
33		Section 32.1 - 33.1m.; slightly weathered core abundant Mn stains along fractures and veins quartz veining 5-10% with traces pyrite and hematite, veins up to 1cm. across, randomly oriented, possible fault at 35° to core axis at 32.4m.	32.1	33.1			930	19	86	1220	26	5	
34		Section 33.1 - 34.9m.; homogeneous greenish-grey, slightly sericitic andesite, with moderately to heavy sericitized plagioclase & groundmass, chloritized + carbonate + hornblende 3% disseminated pyrite with some concentration along fractures; cut by 5% finely banded chalcedonic quartz (white-pink) grading to amethystine druse and late carbonate infillings, veining up to 1cm. across.	33.1	34.1			931	16	16	178	18	5	
35		Section 34.9 - 37.0m.; slightly lighter greenish grey, more bleached than 33.1 - 34.9m., moderate sericitization, slight to moderate pervasive silicification, local brecciation; quartz (chalced to drusy amethystine) veining + late carbonate 5%, increasing to 10% downhole.	34.1	34.9			932	12	15	133	19	10	
36			34.9	35.9			933	13	62	440	52	5	
			35.9	37.0			934	19	175	755	94	5	
			37.0	38.0			935	16	24	157	45	5	









TEXTURE, ALTER' MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		of feldspar, mild pervasive silicification & rare clear quartz stringers, disseminated hematite blebs ( $\leq$ 1mm.) 2-3%.	59.9	60.9			960	7	18	130	18	5
62		Section 53.9 - 58.65m.; same as 48.4 - 53.3m. broken up zone of fault gouge and breccia between 54.4 - 54.7m.; loses fragmental character below 56.2m. and picks up again at approx. 57.9m. with gradational contacts.	60.9	61.9			961	7	14	108	16	20
63		crystal tuff section has crude layering due to long axis orientation of feldspar - approx 55° to core axis	61.9	62.9			962	6	16	110	11	5
64												
		BOX 11 58.65 - 64.37m.	62.9	63.9			963	6	15	101	12	15
65		Same as Box 9, Andesitic lapilli-crystal tuffs, angular to subangular plagioclase-hornblende phytic fragments, average 1-5cm., matrix of fine fragments & ash. & plagioclase & hornblende crystals; minor irregular carbonate stringers have basaltic fragments.	63.9	64.9			964	5	14	105	10	10
66			64.9	65.9			965	3	13	100	9	5
67		BOX 12 64.37 - 70.18m.										
68		Similar to Boxes 9-11, dominantly andesitic lapilli-crystal tuff, possibly slightly coarser & locally a tuff-breccia; underlain by massive basaltic-andesite, plagioclase & hornblende phytic, possibly some augite etc.	65.9	66.9			966	3	16	98	8	5
69		Section 68.8 - 70.9m.; basaltic andesite; plagioclase 25-30%, euhedral - subhedral, light sericite alteration; hornblende 20% euhedral, 0.5-2mm., slight chlorite alteration; groundmass dark greenish-grey, lightly chloritic & sericitic, plagioclasic & mafic	66.9	67.9			967	4	14	101	12	10
70			67.9	68.8			968	2	18	103	14	5















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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		BOX 6 29.33 - 34.49m.	29.6	30.6			1008	42	180	910	370	20	
		Andesite volcanic											
30		Moderately chloritized andesite is generally the same as in previous, except for an increase in number of banded, vuggy, quartz + hematite stringers and veinlets. Intensely	30.6	31.6			1009	58	470	960	280	70	
31		veined zones show pervasive silica of the andesite, which is characterized by its orangeish grey grotty appearance.											
32		29.6 - 30.6m.; intense veining with associated silicification (veins 10%). ????? intense veining	31.6	32.6			1010	45	96	490	560	75	
			32.6	33.6			1011	27	19	385	59	10	
33													
			33.6	34.0			1012	22	69	535	36	5	
34			34.0	35.0			1013	25	104	502	85	15	
35		BOX 7 34.49 - 40.09m.											
		Andesite volcanic											
36		General description is same as in previous box. Veining is weak throughout, but narrow intervals of <sup>more</sup> intense veining occur locally. The veins show distinct 'coliform' type quartz-hematite banding (mm. scale) with later	35.0	36.0			1014	58	1300	6500	195	5	
37		stage drusy quartz and drusy quartz vug infills and dark grey 'smokey' chalcedonic quartz. Pink calcite druse in the veins - probably even later stage.	36.0	37.0			1015	28	142	1345	260	25	
38			37.0	37.4			1016	28	160	860	36	20	

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		37.4 - 37.8m.; banded 'agate' type veining with drusy quartz vug infills (geode) and grey chalcedonic quartz.	37.4	37.8			1017	24	32	164	42	5
39			37.8	38.6			1018	30	210	572	86	10
			38.6	39.6			1019	21	16	153	23	5
			39.6	40.5			1020	22	14	88	19	15
40		BOX 8 40.09 - 45.43m.										
		Andesite volcanic and tuff breccia										
41		Andesite volcanic is same as in previous box to 41.2m. with quartz-hematite banded veinlets and a 5cm. zone of 'crackle breccia' type veining	40.5	41.2			1021	22	98	450	28	15
			41.2	41.8			1022	30	810	3660	205	110
42		40.5 - 41.2m.; silica healed quartz breccia - with approx. 40% grey, subangular, chalcedonic quartz fragments to 2cm. in size. Silicified wall rock fragments - 10% in a dark grey-green, finely crystalline matrix of quartz-chlorite and 5% fine disseminated pyrite.	41.8	42.3			1023	41	1280	4860	520	55
			42.3	42.85			1024	351	1640	4360	3000	5500
43		41.2 - 41.8m.; silica healed quartz breccia - quartz fragments are subangular, range in size from 1mm. - 5cm. and are 60-80% in abundance.	42.85	43.6			1025	8	34	2010	19	20
44		Fragments are grey and chalcedonic to locally quartz-hematite banded. Jasperoid stringer occurs in fractures and around fragment boundaries. The matrix ranges from grey	43.6	43.85			1026	5	14	402	9	10
45		chalcedonic quartz to reddish chalcedonic quartz to dark grey-green 'grotty' quartz with traces of pyrite. Matrix approx. 10% calcite quartz-hematite veinlets are offset (1-3mm.) by quartz gashes (5° to core axis).	43.85	44.85			1027	7	22	820	13	15

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		42.85 - 43.6m.; rusty, limonitic fault gouge with 10% volcanic fragments.	44.85	45.85			1028	6	14	328	6	5
		43.6 - End of Box; rusty orange ground-up, weak sericite, Mn stains.										
		BOX 9 45.43 - 50.9m.										
46		Andesite tuff breccia Heavily hematitically stained, local shearing and dendritic Mn coatings continue until 46.2m and passes into grey-green weakly chloritized	45.85	47.0			1029	9	17	184	9	5
47		tuff breccia. Plagioclase - 30-40% - pink to white subhedral crystals (1mm. average).	47.0	48.0			1030	9	13	125	10	15
48		Hornblende - 5% - subhedral prismatic crystals to 3mm. Matrix fine-grained, greyish-green, chloritic; fragments are scattered throughout and are subangular to subrounded - andesitic in composition. They are distinguished from the general rock type by their darker colour.	48.0	49.0			1031	9	17	143	11	10
49		Quartz veins and silica are absent. Minor calcite stringers and gashes (80-90° to core axis).	49.0	50.0			1032	10	14	112	9	15
50		Fractures (45° to core axis) have associated rusty hematite 'haloes' and show evidence of shearing.	50.0	51.0			1033	10	15	179	9	5
		BOX 10 50.9 - 56.73m.	51.0	52.0			1034	12	19	170	10	20
51		Andesite tuff breccia Same general description as Box 9. Breccia zones are most evident in areas of										
52		alteration where fragments show a preferential	52.0	53.0			1035	16	24	72	47	115





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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		BOX 12 62.09 - 67.86m.	62.0	62.6			1045	8	14	25	13	20	
		Andesite volcanics											
62		Plagioclase 40-50%. White to pink sub- to locally euhedral crystals (average 1mm.), locally altered to chlorite. Hornblende-subhedral crystals (less than 5%) to 2mm.	62.6	63.4			1046	7	15	82	15	10	
63		Matrix is dark grey and fine-grained. Generally the rock is relatively fresh looking and lacks veins. Breccia fragments are rare	63.4	64.0			1047	9	13	31	18	5	
		61.7 - 62.6m. and 63.6m. - 64.0m.; weak reddish brown quartz-sericite alteration	64.0	65.0			1048	33	47	156	8	5	
64		66.4m. - 10cm. zone of fracturing with chloritic shears - 60° to core axis.	65.0	66.0			1049	7	8	74	7	10	
65		61.25m. - contact? Between tuff breccia and plagioclase porphyritic and volcanic. Contact in previous box (Box 11) is marked by hematite fracture 90° to core axis.	66.0	67.0			1050	7	12	70	9	5	
66													
67		BOX 13 72.24m.	67.0	68.0			1051	8	15	74	8	10	
68		Andesite volcanic and tuff breccia											
69		Same as Box 12, except for local intense dull greenish-grey sericitic alteration along shear zones. Breccia texture is most evident in these zones, where fragments show partial alteration to sericite.	68.0	69.0			1052	11	12	48	9	20	
70		71.7m. - chlorite-sericite shears 60° to core axis	69.0	70.0			1053	7	10	84	8	5	
71		72.1m. - quartz-calcite veinlet along chloritic shear 45° to core axis											
		end of hole 72.24.	70.0	71.0			1054	8	16	45	10	5	
72			71.0	72.0			1055	5	11	42	6	10	



TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		-30% feldspar and hornblende crystal (locally weathered out) in a propylitic groundmass (70%)	8.42	9.45			1061	57	200	1125	28	5
		-late stage Mn oxides along fractures										
10		-minor, irregular calcite veinlets										
		-quartz veinlet @ 9.1m. containing pyrite & trace galena										
		-disseminated pyrite 2% throughout										
11			9.45	10.55			1062	34	305	2400	42	5
12			10.55	11.50			1063	31	152	1200	11	45
			11.50	12.40			1064	26	126	1235	16	5
13												
14		BOX 3 13.7 - 19.04m.	12.4	13.7	80.5%		1065	36	195	1970	44	30
		Altered andesite volcanics; one silicified zone grading into zone of phyllic alteration.										
15		13.7 - 15.65m.; andesite volcanics similar to 8.42 - 13.7m.										
		-moderately siliceous, throughout, becoming more siliceous near lower contact	13.7	15.0			1066	44	122	800	22	15
16		-late stage limonite & Mn oxides	15.0	15.65			1067	66	630	895	49	375
		-fracturing 50-60° to axis										
		-pyrite disseminated 2-3%										
17		15.65 - 16.25m.; quartz breccia; smokey quartz fragments of various sizes 40% in a siliceous light brown matrix	15.65	16.25			1068	500	1900	370	220	340
		-quartz stringers throughout (1mm.)										
18		-pyrite 3-4% fine-grained black-silvery mineral?	16.25	17.3			1069	125	2300	304	158	760

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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		16.25 - 17.70m.; phyllic alteration; quartz-sericite	17.3	17.7			1070	60	1350	131	290	165	
19		-abundant quartz stringers - weathering to clays -pyrite 2-3%											
		17.70 - 18.7m.; same as 13.7 - 15.65m.; quartz stringers and several small phyllic zones											
		18.7 - 19.04m.; phyllic alteration similar to 16.25 - 17.70m.	17.7	18.7			1071	78	765	580	190	25	
		-upper contact @ 50° - pyrite 2-3%											
20		BOX 4 19.04 - 24.14m.											
		Phyllic altered zone and andesite volcanics											
21		19.04 - 20.80m.; phyllic alteration; quartz-sericite-pyrite	18.7	19.7			1072	60	670	325	290	60	
		-weathering to clays and pyrite leaching out -minor brecciation - quartz fragments -locally hematitic, minor chlorite	19.7	20.4			1073	58	380	369	175	5	
22		-late stage limonite & Mn oxides along fractures											
		-less altered from 19.6 - 19.9m.	20.4	20.8			1074	57	490	870	170	65	
		-disseminated pyrite - 1-2%											
23		20.80 - 24.14m.; undifferentiated andesite volcanic											
		-30% feldspar & hornblende crystals in a propylitic-siliceous groundmass (70%)	20.8	21.8			1075	47	154	800	66	15	
24		-feldspars and hornblende being pitted out											
		-limonite, Mn oxides on broken surfaces	21.8	22.75			1076	33	23	740	17	5	
		-minor calcite infilling -fracturing @ 35°											
		-less altered @ 23.5m.											
		-pyrite 2-3% throughout	22.75	23.75			1077	43	70	1010	138	10	

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		BOX 5 24.14 - 29.57m.												
25		Undifferentiated andesite volcanics as described @ 20.84 - 24.14m. -small phyllic seam, 1cm. wide @ 28.5m.	23.75	24.70			1078	42	128	850	220	5		
26			24.70	25.70			1079	28	126	690	45	10		
27			25.70	26.6			1080	40	365	1790	180	5		
28			26.6	27.5			1081	25	215	910	51	5		
29			27.5	28.5			1082	39	146	805	69	10		
		BOX 6 29.57 - 34.57m.	28.5	29.57			1083	32	245	760	76	15		
30		Propylitic andesite volcanics + one phyllic alteration zone 29.57 - 30.9m.; propylitic-siliceous-pyritic andesite volcanics, similar to 20.8 - 24.14m	29.57	30.6			1084	28	550	1030	73	10		
		-quartz-sericite-pyrite-hematite alteration	30.6	30.9			1085	129	1420	2070	540	75		
31		near contact @ 30.6m.	30.9	31.4			1086	49	475	226	285	90		
		30.9 - 31.4m.; phyllic alteration -quartz-sericite; minor pyrite & hematite												
32		-weathering to clays	31.4	32.5			1087	58	69	1120	65	220		
		31.4 - 34.57m.; same as 29.57 - 30.9m. -pyrite 3%												
33		-small amount of white precipitate @ 34.44m.	32.5	33.30			1088	45	250	1060	103	15		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		possibly sulphate?												
34		BOX 7 34.57 - 39.88m.	34.3	34.15			1089	54	116	960	41	5		
35		Propylitic - slightly siliceous andesite volcanic -35% feldspar - hornblende crystals, 65% propylitic groundmass -pyrite 1%, locally up to 3%	34.15	35.0			1090	33	88	540	59	5		
36		-@37.3 - 37.4m.; siliceous-hematite pod - quartz stringers and drusy quartz - pyrite 4% -locally more weathered to clays	35.0	36.0			1091	32	370	1610	49	5		
37		-late stage Mn-oxides on fracture surfaces -fracturing 50-60° to axis	36.0	37.0			1092	31	23	510	17	5		
38			37.0	37.9			1093	49	48	930	32	15		
39			37.9	39.0			1094	45	169	750	49	25		
40		BOX 8 39.88 - 45.32m.	39.0	39.88			1095	44	118	1090	29	10		
		Altered andesite volcanics												
41		39.88 - 41.35m.; similar to 34.57 - 39.88 -@40.5m., 3cm. vein, mainly calcite with an inner core of pink sulphate or possible a zeolite-pyrite halo at margins of vein - Mn	39.88	40.9			1096	33	100	498	22	5		
42		oxides on broken surfaces	40.9	41.35			1097	56	50	446	100	20		





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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		quartz zones and quartz stringers												
		50.47 - 52.0m.; andesite volcanic; propylitic and moderately siliceous	50.47	51.4			1109	65	450	1100	185	65		
52		-small quartz-hematite alteration zone (3cm.) @ 50.6m.	51.4	52.0			1110	78	178	415	24	120		
		-irregular calcite infillings throughout												
53		-disseminated pyrite 2-3%	52.0	52.8			1111	22	340	1220	22	2000		
		52.0 - 54.8m.; similar to 50.47 - 52.0m. with patchy zones of quartz (5-10cm.) long and quartz stringers throughout.	52.8	53.5			1112	24	530	2550	24	145		
54		-patchy quartz zones @ 52.2, 53.0, 53.3-53.5, 54.4												
		-intense quartz stringers locally brecciating the andesite - also barite & calcite infilling												
55		-disseminated pyrite 2-3%	53.5	54.8			1113	33	1520	5700	40	210		
		54.8 - 55.81m.; altered andesite volcanics, propylitic & siliceous - few quartz-hematite stringers												
		-pyrite 2% - late stage limonite & Mn-oxides												
		BOX 11 55.81 - 60.70m.	54.8	55.81			1114	54	1780	3540	55	330		
56		Altered andesite volcanics												
		55.81 - 58.0m.; siliceous andesite volcanic												
		-local quartz-hematite stringers and breccia zones throughout - breccia zones @ 55.85 -	55.81	56.81			1115	296	3950	3580	340	250		
57		56.05m., 56.5, 57.5 - 57.7m.; quartz is smokey												
		-disseminated pyrite 2% throughout - possible trace galena												
58		-limonitic and Mn-oxide along fractures												
		58.0 - 58.6m.; quartz-sericite, hematite alteration												
59		-disseminated pyrite 2% - fine-grained galena specularite	56.81	58.0			1116	760	9000	7680	1320	225		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		58.6 - 60.70m.; siliceous, sulphide-rich interval												
		-quartz-hematite alteration	58.0	58.6			1117	225	2600	920	1280	490		
60		-fine-grained galena-sphalerite-chalcopyrite along quartz stringers and disseminated in siliceous areas; sulphides 2-3% throughout	58.6	59.0			1118	361	10000	2520	395	1700		
		-concentrated sulphides (5%) @ 58.8 - 59.0m.												
		-barite infilling @ 59.6m.	59.0	59.85			1119	165	3800	7560	245	150		
		-core generally broken												
		-disseminated pyrite 3%												
61		BOX 12 60.77 - 66.26m.	59.85	60.70			1120	119	4200	6690	165	300		
		Quartz-hematite altered rocks - sulphide-rich												
62		60.77 - 63.0m.; andesite volcanics, slightly siliceous; quartz stringers throughout	60.70	61.4		56.5%	1121	70	2500	6180	63	215		
		-local quartz hematite intervals												
		-galena-sphalerite 4% associated with quartz-hematite zones												
63		63.0 - 66.2m.; quartz breccia + silicified andesite locally hematitic throughout - intensely silicified												
		-sulphides; galena, sphalerite, chalcopyrite along quartz stringers - sulphides 1% throughout	61.4	63.0			1122	41	1450	4820	26	90		
		-disseminated pyrite 2% throughout												
		-linear quartz veins 80° to axis	63.0	63.3			1123	343	6250	7200	220	1450		
65			63.3	63.75			1124	660	8800	6490	260	960		
		66.2 - 66.26m.; light grey clay	63.75	64.05			1125	208	10200	7600	250	380		
			64.05	64.45			1126	403	6900	7030	105	4800		
66			64.45	64.90			1127	60	1560	4220	64	1500		
			64.90	65.40			1128	48	1080	2920	100	210		







TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
91			89.6	90.6			1157	3	19	74	11	5		
92			90.6	91.7			1158	3	18	57	10	10		
93			91.7	92.8			1159	2	19	58	9	15		
94			92.8	93.8			1160	2	14	88	10	<5		
95		BOX 18 94.55 - 100.05m.												
		Lapilli tuff -mainly medium green fragments (30% in a maroon groundmass (70%) - massive	93.8	94.85			1161	3	17	87	12	5		
96		-banded calcite stringers - one stringer faulted 1cm. parallel to core axis @ 97.6m.												
		-small quartz-calcite healed breccia zone @ 98.9 - 99.1m. - fragments are very hematitic	94.85	96.0			1162	2	17	66	11	5		
		-fractures 55-60° to axis												
97			96.0	96.9			1163	2	18	60	10	5		
98			96.9	97.9			1164	2	19	50	9	15		
99			97.9	99.0			1165	2	23	98	15	930		







TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		siliceous. Intensely siliceous zones are characteristically orange (hematitic) with $\leq 1\%$ disseminated pyrite	6.0	7.0			1175	42	350	740	147	5
7		6.1 - 6.2m.; heavy limonite-hematite weathering										
		7.0m. - earthy hematitic gouge (fault zone?)	7.0	8.0	40		1176	42	485	1240	185	5
		9.5m. - greyish, finely crystalline quartz vein? 5cm. wide, hematite stained with 1% disseminated pyrite (55° to core axis)										
8		10.0m. - moderately siliceous with vugs and 1% disseminated pyrite. Mn coatings on fractures (45° to core axis) occur throughout.	8.0	9.0			1177	21	52	990	27	5
9												
			9.0	10.0			1178	38	172	980	116	5
10												
			10.0	11.1			1179	34	235	1180	205	5
		<u>BOX 2 10.43 - 16.06m.</u>										
11		Andesite volcanic Generally the same as previous box; heavily broken with abundant hematite stains and Mn along fractures. Moderately chloritized & siliceous	11.1	12.1			1180	27	141	1260	44	5
12		10.0 - 11.1m.; silicified zone with patchy 'dirty' grey, finely crystalline quartz with 1-2% disseminated pyrite	12.1	13.1			1181	35	170	1460	35	10
13		14.5m. - 5cm. of shattered, ground up rock (fault zone) with brownish orange clays										
		10.1m. - End of Box - moderate greenish grey to orangeish (hematite) silicification.										
14		Where intense, quartz is finely crystalline	13.1	14.1			1182	40	300	1560	67	5

KIDD CREEK MINES LTD

DRILL HOLE LOG

HOLE No.  
J82-14

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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		with 1% disseminated pyrite. Dendritic Mn coatings are minor												
15			14.1	15.1			1183	35	139	1610	37	5		
16		BOX 3 16.06 - 21.55m.	15.1	16.2			1184	36	440	830	51	75		
17		Andesitic volcanic The box shows variable degrees dark quartz and quartz-sericite alteration which appears to be associated with a fault. Primary textures have been overprinted by the alteration.	16.2	16.5			1185	124	335	468	66	10		
18		16.2 - 16.5m.; moderate silicified, hematite stained with 1% disseminated pyrite	16.5	17.1			1186	142	6750	93	425	270		
19		16.5 - 16.7m.; intense grey silica with int- ense shattering as shown by orange hematite stringers.												
		16.7 - 17.1m.; fault gouge with heavily bleached light grey to orangeish clays and fragments (5%) of brittle grey quartz	17.1	18.0			1187	296	4300	386	280	320		
20		17.1 - 18.7m.; bleached, hematite stained with intense quartz-sericite+hematite alteration with ≤ 3% pyrite	18.0	18.7			1188	148	445	259	195	95		
		18.7 - End of Box; Dark green, moderate silica with patches of grey chalcedonic quartz, and disseminated pyrite ≤ 2%.	18.7	19.4			1189	243	460	830	280	5		
21		Local vugs & Mn coats	19.4	20.0			1190	109	900	515	140	170		
		General lack of quartz veining	20.0	21.3			1191	40	320	510	78	45		





KIDD CREEK MINES LTD

DRILL HOLE LOG

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J82-14

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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		35.3 - 36.4m.; Fault zone - 35.3 - 35.6m. is fault gouge with whitish yellow bleached clay and fragments of grey quartz, 35.6 - 36.4m.												
36		intense quartz+ hematite alteration with minor cross-cutting grey quartz veinlets (40° to core axis), the zone shows pervasive orange hematite staining due to moderate weathering. Zone is 40° to core axis.	35.3	36.4			1205	206	5200	750	95	8700		
37		Minor vugs and Mn stains occur throughout.	36.4	37.4			1206	62	620	2240	82	185		
		BOX 7 37.6 - 42.65m.	37.4	38.4			1206	62	620	2240	82	185		
38		Andesite volcanic Plagioclase - 25% sub-euhedral white to hematite stained crystals (3mm. average) to 5mm. Minor plagioclase - chlorite hornblende												
39		7% subhedral crystals to 3mm. Locally weathered out or replaced by calcite biotite less than 1% - anhedral chloritized flecks to 1mm.	38.4	39.4			1207	32	350	990	22	10		
40		Matrix - fine-grained, dark greyish brown and siliceous. The core has a relatively fresh appearance with only minor silicified zones and gashes and stringers of white to pink quartz-calcite-	39.4	40.4			1208	33	510	1320	26	5		
41		barite	40.4	41.4			1209	20	40	480	9	5		
		Minor fractures 40-50° to core axis												
42		42.2m. - 'patch' of intense grey quartz-pyrite alteration	41.4	42.4			1210	40	190	480	16	35		
		Minor dark grey sub-angular rock fragments to 2cm.	42.4	43.4			1211	28	240	690	40	10		





TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		BOX 11 58.97 - 64.9m.	59.0	60.0			1228	66	1950	4700	69	120
		Andesite volcanic										
60		Moderately propylitized (chlorite-calcite) volcanic is heavily broken and weathered.										
		Pervasive hematite staining throughout broken fractured intervals with Mn coats and	60.0	61.0			1229	82	2750	6100	66	750
61		dendritic growths. Narrow interval of quartz-hematite banded veins with associated silica; appears to be associated with fault gouge zones.	61.0	62.0			1230	124	2100	5300	420	5
62		60.5m. - broken core with evidence of vein which contains white sulphate (80%), grey, finely crystalline quartz (5%) and blebs of finely crystalline powdery sulfides, (galena,	62.0	62.5			1231	166	2800	4950	245	120
63		sphalerite), broken core 62.3m. 62.5m - 62.6m.; 10cm. fault gouge (45° to core axis) with associated shearing, orangeish yellow clays and hematite staining & general	62.5	62.9			1232	1750	6800	7500	3400	380
64		bleaching. 62.6 - 62.9m.; silicified and veined zone, with grey quartz, banded quartz-hematite, and blood red hematite veinlets (40%). Blood red jasperoid quartz also appears as a super-	62.9	64.0			1233	325	5400	6300	530	330
		imposed 'paint' over the grey silicification.	64.0	65.0			1234	260	6200	740	290	380
		63.5m. - 4cm. fault gouge with bleached clays and 20cm. of shearing and sericite bleaching of footwall (90° to core axis).										
		64.1 - 64.3m.; quartz-hematite banded veinlets & trace pyrite + galena.										
65		BOX 12 64.9 - 70.9m.	65.0	65.5			1235	112	3100	3850	150	1820
		Andesite volcanic										
66		Moderately chloritized andesite volcanic with pervasive hematite staining continues to 65.1m	65.5	66.5			1236	2030	730	890	410	840





TEXTURE, ALTER <sup>'N</sup> MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		clays (75° to core axis).	72.5	73.5			1244	8	29	78	09	5
75		72.1 - 72.6m.; aphanitic, dark grey interval with local subrounded 'inclusions' of andesite porphyry. The unit has a sharp irregular upper contact, but is gradational with the underlying andesite porphyry.	73.5	74.5			1245	6	18	73	09	5
76		72.6 - 74.5m.; volcanic breccia - subrounded plagioclase. Porphyritic fragments (30-40%) are coarser-grained and more chloritic than matrix.	74.5	75.5			1246	5	18	114	11	5
		74.5m. - 1cm. fault gouge (50° to core axis). -minor calcite stringers (60-80°) throughout.										
		74.5 - End of Box; crystal lapilli tuff (see next box) Fault contact at 74.5m. (50° to core axis)	75.5	76.5			1247	7	18	94	14	5
		BOX 14 76.12 - 81.63m.										
77		Polymictic crystal lapilli tuff and tuff breccia plagioclase - 30-40% - anhedral to subhedral white crystals less than 1mm. to 3mm. in size (2mm. average). Locally chloritized hornblende (1-5%) subhedral crystals (2mm average). Matrix is greenish-grey (chloritic)	76.5	77.5			1248	6	20	81	18	5
78		to orangeish brown with sharp contacts between the matrix colouration.	77.5	78.5			1249	5	16	57	13	5
79		Fragments (6mm. - 1.5cm.) are present in amounts up to 20%. They are dominantly grey, subangular andesitic porphyritic to hematitic andesitic porphyry with rare greenish, finely crystalline (sericitic) fragments.	78.5	79.5			1250	8	16	57	21	5
80		well defined layering occurs locally (45° to core axis).										
81		76.12 - 77.65m.; Andesitic crystal lapilli tuff, grey in colour, with local breccia size fragments ( $\leq$ 10cm.). Moderately	79.5	80.5			1251	7	17	78	30	5

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		carbonitized, minor grey quartz fragments locally well bedded.												
		77.65 - 78.7m.; reddish brown with plagioclase - lapilli fragments not visible. Fine-grained, hematitic.												
		78.7m - End of Box; grey to locally hematitic crystal lapilli tuff with local subangular breccia fragments. Gross fining (?) upward sequence 81.63 - 80.2m. Calcite gashes and stringers are minor.	80.5	81.5			1252	5	16	68	36	5		
		BOX 15 81.63 - 86.85m.	81.5	82.5			1253	8	28	172	48	10		
		Andesitic crystal lapilli tuff, tuff breccia and flow												
82		81.65 - 83.7m.; crystal lapilli tuff and tuff breccia; same as in previous box with local breccia fragments of dark grey, plagioclase porphyritic andesite to 3cm. in size. The breccia fragments decrease in abundance approx. 82.5m and lapilli-sized fragments are noted thereafter in a crystal tuff matrix	82.5	83.5			1254	9	98	192	29	30		
83		83.3 - 83.7m.; fault gouge with grey green chloritic clays, fragments (angular) of crystal tuff and fragments of finely crystalline grey-green quartz with intermixed chlorite & trace disseminated pyrite (fault 40° to core axis) minor calcite stringers.	83.5	84.5			1255	14	53	152	53	50		
84		83.7 - 84.0m.; grey plagioclase porphyritic andesite dyke with 40° subhedral pink plagioclase (2mm. average). Lower contact (55° to core axis) truncates white calcite veinlets which cut underlying lapilli tuff at 80° to core axis.	84.5	85.5			1256	8	19	78	12	5		
85		84.0m. - End of Box; crystal lapilli tuff with ≤ 30% dark grey plagioclase porphyry	85.5	86.5			1257	8	21	120	18	10		

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		fragments (average 8mm.) to 3cm. Texture is variable with respect to size of plagioclase crystals and abundance of fragments. Minor vague, irregular layering.	86.5	87.4			1258	7	20	122	15	130
		BOX 16 86.85 - 92.46m.										
87		Andesite ash and crystal tuff, minor tuff breccia. Plagioclase (20-40%) white to pink subhedral to anhedral crystals are locally altered to chlorite. The grain size is variable with plagioclase crystal size averaging from $\leq$ 1mm. to 2mm. The matrix is fine-grained, greyish green and weakly chloritized. Minor biotite ( $\leq$ 1mm.)	87.4	88.5			1259	6	13	68	07	5
88		87.2m. - 1cm. grey quartz-sericite band ( $45^\circ$ to core axis) bedding?	88.5	89.5			1260	5	14	77	09	5
89		87.6m. - 4cm. grey, fine-grained, subrounded siliceous fragments										
90		89.0m. - 1cm. grey quartz-calcite-hematite vein ( $70^\circ$ to core axis)										
		90.0m. - white, drusy calcite vug infill	89.5	90.5			1261	10	15	67	8	5
91		92.1m. - End of Box: 30% dark grey tuffaceous rock fragments ( $\leq$ 3cm.) in a finely crystalline greyish brown siliceous matrix with minor disseminated pyrite and chlorite-sericite shears ( $25^\circ$ to core axis).	90.5	91.5			1262	7	17	117	10	5
92		Minor calcite stringers and gashes throughout ( $70-80^\circ$ to core axis).										
			91.5	91.9			1263	6	20	132	13	5
			91.9	93.0			1264	28	24	176	12	5



PROPERTY:

JD

# KIDD CREEK MINES LTD

HOLE No.  
J82-15

PAGE No.  
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HOLE LOCATION: 4+68E/o+45S

## DRILL HOLE LOG

AZIM: 125° ELEV:  
DIP: -60° LENGTH: 108.8m. (357')  
CORE SIZE: NQ

### SURVEY

DEPTH	AZIM	DIP	DEPTH	AZIM	DIP
108.8	130°	-64°			

STARTED: July 11, 1982

COMPLETED: July 12, 1982

PURPOSE:

CORE RECOVERY:

CLAIM No: JD

SECTION:

LOGGED BY: P. Leriche

DATE LOGGED: July 16, 1982

DRILLING CO: Coates Enterprises

ASSAYED BY: Min-En Labs

TEXTURE, ALTER'N, MINERALIZATION, ETC. 3	GRAPH GEOL	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		BOX 1 3.05 - 9.65m.			68%								
		Andesite, possibly dacite, volcanics											
4		-25% feldspar and hornblende crystals in a medium green propylitic matrix											
		-feldspars largely weathered out - core very weathered											
5		-locally siliceous with silica infilling feldspar pseudomorphs											
		-late stage Mn oxide & limonite infilling along fracture surfaces											
6		-fracturing highly variable 40-60° to axis	3.05	5.50			1268	49	740	775	185	5	
7			5.50	6.40			1269	66	460	1610	106	5	
8			6.40	7.40			1270	78	430	1720	190	5	
9			7.40	8.65			1271	56	340	1240	260	5	

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		BOX 2 9.65 - 15.45m.	8.65	9.65	84%		1272	48	480	1090	370	10
10		Andesite volcanics similar to 3.05-9.65m -disseminated pyrite approx. 1% throughout -small brecciated fracture 35° to core axis @ 9.90m.										
		-narrow quartz stringers containing galena & pyrite @ 11.2 - 11.45m.	9.65	11.0			1273	82	610	640	360	5
12		-drusy quartz veins 5mm. wide containing 2% galena, minor chalcopyrite, and 3-4% pyrite @ 13.8 - 14.0m. -pyrite mainly on the margins of veins										
		-core generally broken and weathered with secondary Mn oxides & limonite along broken surfaces	11.0	12.0			1274	31	68	445	58	10
14			12.0	13.3			1275	31	190	980	125	5
15			13.3	14.15			1276	29	290	1590	72	5
		BOX 3 15.45 - 20.35m.	14.15	15.3			1277	34	550	2360	74	5
16		Andesite volcanics similar to 3.05-9.65m. with several zones of phyllic alteration 15.45 - 17.00m.; andesite volcanics; local pyritic quartz stringers	15.3	16.0			1278	42	470	2910	57	10
17		-small phyllic alteration zone, quartz-	16.0	17.0			1279	44	570	1840	73	10

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		sericitic-pyrite, @ 16.3-16.4m.											
			17.0	17.5			1280	23	840	1010	83	75	
18		17.00-17.50m.; phyllic alteration, siliceous and quartz stringers -feldspars breaking down to sericite											
		-slightly hematitic	17.5	18.55			1281	22	210	1310	70	40	
19		-pyrite less than 1% -limonite staining along irregular fractures											
			18.55	19.3			1282	26	95	1430	21	10	
		17.50-20.35m.; same as 3.05-9.65 -no quartz stringers - calcite pseudomorphing feldspar crystals locally - pyrite less than 1%; quartz fracture @ 17.9m, 35° to axis.											
		BOX 4 20.35 - 25.35m.	19.3	20.35			1283	22	210	1450	29	60	
21		Andesite volcanics, large phyllic alteration zone and a hematitic fault gouge											
		20.35-22.0m.; propylitic, siliceous andesite -feldspar crystals mostly weathered out - pyrite less than 1%	20.35	21.2			1284	31	490	1405	24	5	
22		-small phyllic zone (quartz-sericite) @ 21.7 - 21.8m.											
23		-fractures 45° to axis - lower contact sharp 45° to axis											
		22.0 -22.9m.; phyllic alteration - intense quartz-sericite - late stage hematite-pyrite probably leached out	22.0	22.3			1285	815	1360	1380	100	5	
24		22.3-22.6m.; bleached, leaving mainly sericite	22.3	22.65			1286	192	2650	203	250	510	
		22.9-23.4m.; fault gouge; 40% quartz fragments in a sericite groundmass stained red, due to invasion of hematite	22.65	22.9			1287	59	1800	43	275	430	
25		23.4-24.8m.; phyllic alteration; mainly quartz with less sericite - hematite throughout. -pyrite mainly leached out, but locally 1-2%	22.9	23.4			1288	320	3900	310	205	350	
			23.4	24.0			1289	200	2950	252	174	470	
							1290	300	2700	378	125	310	



# KIDD CREEK MINES LTD

## DRILL HOLE LOG

HOLE No.  
J82-15

PAGE No.  
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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		24.8-25.35m.; similar to 20.35-22.0m. -pyrite disseminated 1%; small phyllic alteration zone @ 25.3-25.35m.	24.0	24.8			1291	360	3900	513	430	160
		BOX 5 25.35-30.30m.										
26		Moderately siliceous andesite volcanics with several siliceous - quartz stringer zones.	24.8	25.55			1292	365	760	493	270	70
		25.35-26.30m.; moderately siliceous andesite volcanics - becoming more siliceous near gradational lower contact - pyrite 1%	25.55	26.3			1293	255	3160	980	300	5
27		26.30-26.65m.; silicified andesite? with narrow quartz stringers (1mm. wide) throughout - most pyrite leached out - secondary limon- ite throughout.	26.3	26.65			1294	167	1800	1440	170	280
28		26.65-30.30m.; andesite volcanic; weathered with feldspar crystals pitted out -intense semi-pervasive Mn-oxides throughout -slightly siliceous; pyrite approx. 1% -linear fractures are 35° to axis -small siliceous zone same as 26.30-26.65m. @ 29.3-29.35m.	26.65	27.6			1295	88	640	1990	34	5
29		26.65-30.30m.; andesite volcanic; weathered with feldspar crystals pitted out -intense semi-pervasive Mn-oxides throughout -slightly siliceous; pyrite approx. 1% -linear fractures are 35° to axis -small siliceous zone same as 26.30-26.65m. @ 29.3-29.35m.	27.6	28.5			1296	50	500	2350	48	5
30		26.65-30.30m.; andesite volcanic; weathered with feldspar crystals pitted out -intense semi-pervasive Mn-oxides throughout -slightly siliceous; pyrite approx. 1% -linear fractures are 35° to axis -small siliceous zone same as 26.30-26.65m. @ 29.3-29.35m.	28.5	29.5			1297	41	420	1880	126	40
		BOX 6 30.30 - 35.20m.										
31		Phyllic alteration and andesite volcanics	29.5	30.3			1298	50	420	1590	59	5
		30.30-33.0m.; phyllic alteration; alteration varies from mild to intense -quartz-sericite-pyrite with lesser hematite -very siliceous and quartz stringers through- out	30.3	31.4			1299	87	1180	940	175	5
32		30.30-33.0m.; phyllic alteration; alteration varies from mild to intense -quartz-sericite-pyrite with lesser hematite -very siliceous and quartz stringers through- out										
33		-small brecciated fracture @ 32.6, 35° to axis	31.4	32.4			1300	56	290	552	230	20



TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		44.5-44.6 - consists of quartz-sericite-minor hematite, possible potassic alteration.	40.3	41.6			1310	56	360	1970	112	5
43		-after 43.5, core becomes more propylitic, broken and grotty in appearance - abundant Mn-oxide coatings										
		-few linear fractures 40-45° to axis	41.6	42.7			1311	31	180	1510	116	5
44												
			42.7	43.8			1312	30	340	1890	60	50
45												
		BOX 9 45.16 - 49.85m.	43.8	44.8			1313	83	880	2080	158	25
46		weathered andesite volcanics - 25% feldspar & hornblende crystals in a medium green groundmass (75%)	44.8	45.7			1314	37	186	1340	360	5
47		-minor quartz veins										
		-limonite & Mn-oxides throughout	45.7	46.5			1315	36	180	1700	80	5
		-linear fractures 40° to core axis										
48		-pyrite less than 1%										
			46.5	47.5			1316	32	82	2040	60	5
49												
			47.4	48.2			1317	23	40	630	59	5
			48.2	49.25			1318	24	38	564	32	5



# KIDD CREEK MINES LTD

# DRILL HOLE LOG

HOLE No.  
J82-15

PAGE No.  
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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		BOX 11 55.27 - 60.65m.											
56		Mainly andesite volcanics with one zone of phyllic alteration. 55.27-56.9m.; andesite volcanics similar to 45.16-49.85m.	54.5	55.6			1324	60	240	1720	57	150	
		-more quartz stringers & pyrite dissemination 1-2%	55.6	56.5			1325	58	200	3480	32	20	
57		-quartz vein @ 56.2, 90° to core axis is faulted 8cm. by a quartz vein running parallel to axis - possible fine-grained galena	56.5	56.9			1326	26	220	2160	38	240	
58		56.9-57.4m.; phyllic alteration; quartz- sericite-hematite, lesser pyrite, most of which is leached out	56.9	57.4			1327	57	460	1970	25	60	
59		-limonite coating on all surfaces -pyrite locally 2%											
		57.4-60.65m.; very 'grotty' weathered andesite volcanic	57.4	58.8			1328	37	52	1960	25	60	
60		-Mn-oxide and limonite very intense @59.0-59.44m.; phyllic alteration, mainly sericite with quartz and pyrite (2%)	58.8	59.4			1329	50	300	1710	280	140	
		BOX 12 60.65 - 66.14m.	59.4	60.65	78.2%		1330	50	240	2390	90	15	
61		Andesite volcanics, as 45.16-49.85m. -core broken, weathered and grotty -intense Mn-oxides and limonite -locally siliceous and pyritic (2%)											
62		-minor sulphate precipitate on fracture @61.65 -fracturing 40-45° to axis	60.65	61.85			1331	40	260	2120	132	30	
63			61.85	62.9			1332	61	660	2830	280	120	





TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		-after 82.3m., quartz-carbonate in stringers and large clots -minor galena in smokey quartz clots	80.0	81.15			1351	26	198	1090	27	5	
82													
			81.15	82.3			1352	32	520	2860	48	5	
		<u>BOX 16</u> 82.63 - 87.59m.											
83		Very similar to 77.15-82.63m. numerous quartz-carbonate stringers and clots containing pyrite (3%) and probable fine- grained galena and sphalerite at the margins of stringers (1%)	82.3	83.3			1353	23	160	1350	23	10	
84		-chlorite associated with clots and stringers after 86.0m.	83.3	84.3			1354	31	280	2160	22	15	
85		-local hematite with siliceous zones -minor late stage Mn-oxides on broken surfaces											
			84.3	85.3			1355	32	32	393	14	10	
86													
			85.3	86.3			1356	29	240	468	13	5	
87													
			86.3	87.1			1357	32	320	1260	32	10	



## KIDD CREEK MINES LTD

## DRILL HOLE LOG

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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS						
			FROM	TO				Cu	Pb	Zn	Ag	Au		
		BOX 17 87.59 - 93.15m.												
88		Andesite volcanics, andesite breccia, + quartz breccia - all sulphide rich 87.57-89.2m.; andesite volcanics similar to 82.63 - 87.59m.; becoming very siliceous near lower contact - hematitic throughout	87.1	88.1			1358	38	340	1360	21	5		
89		-sulphides with quartz-carbonate stringers - 1-2% pyrite, 5% galena -lower contact 40° to axis	88.1	89.2			1359	15	22	455	12	5		
90		89.2-90.1m.; tuff breccia; dark green crystal tuff fragments in a fine-grained hematitic groundmass	89.2	90.1			1360	39	72	730	14	115		
91		-less quartz-carbonate stringers with <1% pyrite + galena. -barite clots - lower contact 90° to axis	90.0	90.50			1361	27	460	2020	17	25		
92		90.1-92.9m.; breccia; 25-30% andesite fragments in a quartz hematite groundmass (70-75%) -fragments 1cm.-10cm. - altering to chlorite-epidote-siliceous -groundmass almost completely shattered quartz with minor hematite - quartz is smokey- local banded "agate" type quartz between fragments	90.5	91.0			1362	24	480	1120	14	75		
93		-barite clots occasional -sulphides mainly in stringers - 5% pyrite, 1% galena, chalcopyrite	91.0	91.5			1363	26	148	750	12	150		
		92.9-93.15m.; lower breccia zone - quartz and andesite fragments - minor gouge at 92.9m.	91.5	92.0			1364	28	400	1950	17	140		
			92.0	92.5			1365	26	240	910	18	365		
			92.5	92.9			1366	51	360	1020	14	340		
		BOX 18 93.15 - 98.62m.												
94		fault gouge and andesite lapilli tuff -tuffs are pyritic	92.9	93.35			1367	140	500	1120	42	160		
95		93.15 - 93.35m.; similar to 92.9 - 93.15m.; ground up andesite into a sericitic gouge.	93.35	94.5			1368	112	420	560	23	95		





PROPERTY:

JD

## KIDD CREEK MINES LTD

HOLE No.  
J82-16PAGE No.  
1

HOLE LOCATION:

4+68E 0+45S

## DRILL HOLE LOG

AZIM:

ELEV:

1

DIP: -90°

LENGTH:

108.81

CORE SIZE:

NQ

## SURVEY

DEPTH	AZIM.	DIP	DEPTH	AZIM.	DIP
108.81		-88°			

CLAIM No:

SECTION:

LOGGED BY: D. Piroshco

DATE LOGGED: July 16, 1982 - July 19, 1982

DRILLING CO: Coates Enterprises

ASSAYED BY: Min-En Labs

CORE RECOVERY:

Good

TEXTURE, ALTER'N,  
MINERALIZATION,  
ETC. 0GRAPH  
GEOL.

DESCRIPTION

INTERVAL

FROM TO

REC'Y

EST.  
GRADESAM.  
No.

ASSAYS

Cu Pb Zn Ag Au

0 - 3.05m. OVERBURDEN

1

2

3

BOX 1 3.05 - 8.10m.

3.05 4.0

1382

72 1560 520 385 5

Andesite volcanic

Core is heavily broken and weathered with  
local intense propylitic (chlorite) alteration  
and zones of bleached hematite-clay alteration  
with associated weak silicification

4.0 5.0

1383

51 420 2130 78 5

3.05-4.0m.: rusty & bleached, hematite-clay  
altered

5

4.0 -5.0m.: greenish grey, local chloritized  
and weathered out hornblende crystals. Other  
primary textures overprinted by the propyl-  
itic alteration.

5.0 6.0

1384

64 375 1240 515 30

6

5.0 - End of Box: heavily fractured and

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		weathered with pervasive hematite stains and minor white 'bleached' clay zones. The interval relatively siliceous, probably due to weak silicification	6.0	7.0			1385	65	132	462	420	5
7			7.0	8.0			1386	77	145	333	465	5
8			8.0	9.0			1387	68	118	850	430	5
		BOX 2 8.10 - 13.50m.										
9		Andesite volcanic										
		As in box 1, the core is heavily weathered and fractured with crystals and matrix altered to a fine-grained mixture of sericite and minor quartz; 'pervasive' hematite staining and general bleaching is present throughout. Local Mn coatings occur along fracture surfaces.	9.0	10.0			1388	65	590	488	635	5
10			10.0	11.0			1389	57	530	550	705	5
11			11.0	12.0			1390	52	280	1070	580	5
12			12.0	13.0			1391	32	80	1050	102	5
13			13.0	14.0			1392	36	230	860	515	5

TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
		BOX 3 13.5 - 18.6m.											
		Andesite volcanic											
14		Generally the same as above with a weak silicification, plagioclase-sericite, and hematite staining, local Mn coatings on fracture surfaces. Trace disseminated pyrite associated with the silicification.	14.0	15.0			1393	27	270	670	166	5	
15		17.4m. - 5cm. patch of finely crystalline, grey quartz with 1% disseminated pyrite.	15.0	16.0			1394	26	490	960	125	5	
16		17.0m. - 5cm. of ground up weathered, hematized core.	16.0	17.0			1395	35	470	1075	61	5	
17			17.0	18.0			1396	25	170	780	144	5	
18			18.0	19.0			1397	49	490	1080	405	5	
19		BOX 4 18.6 - 24.0m.											
		Andesite porphyry											
20		Box shows decrease in fracturing and weathering, primary volcanic textures become evident - plagioclase - 20-30% - subhedral pink crystals (2mm. average) are locally partially to completely pseudomorphed by chlorite.	19.0	20.0			1398	29	45	1280	42	5	
21		Hornblende - 5% - subhedral crystals (1-3mm.) are locally replaced by calcite. Matrix-fine-grained, dark reddish brown. Minor disseminations and blebs of specular hematite. Minor subangular fragments of darker grey, finer-	20.0	21.0			1399	17	16	189	21	5	
22			21.0	22.0			1400	22	36	475	42	5	



# KIDD CREEK MINES LTD

## DRILL HOLE LOG

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TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
31		Plagioclase-chlorite, hornblende locally to calcite. Local, weathered, hematitic zones are associated with fractured core. Minor zones are associated with fractured core. Minor white calcite stringers and veinlets and local quartz veinlets occur throughout.	30.0	31.0			1409	27	72	950	71	5
32		33.4m. - broken core, hematite stained, 1% white to grey quartz veinlets with traces of disseminated pyrite and local (1mm.) pyritic selvages - 45° to core axis.	31.0	32.0			1410	26	70	860	50	5
33			32.0	33.4			1411	32	65	970	24	5
34			33.4	34.0			1412	28	200	2320	101	5
		<u>BOX 7</u> 34.0 - 39.0m.	34.0	35.0			1413	31	250	4590	195	20
35		Andesite porphyry volcanic Same description as above. Minor quartz stringers are locally banded with light and darker quartz.										
36		34.0 - 35.5m.; broken, weathered, hematite stained core with trace of grey quartz veins. 36.0m. - irregular banded grey quartz stringers (≤ 3mm. wide)	35.0	36.0			1414	26	290	3670	102	25
37		37.3m. - 3cm. irregular shaped pink fragment with 20% intensely chloritized plagioclase crystals; fractures (50-60° to core axis) are association with hematite staining (1-5cm.) of the wall rock	36.0	37.0			1415	18	58	1030	49	5
38		38.7m.; - vugs (1-5mm.) Local late stage Mn coatings on fractures @ 37.7m.	37.0	38.0			1416	22	46	435	16	5









TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS					
			FROM	TO				Cu	Pb	Zn	Ag	Au	
			61.0	62.0			1439	22	21	377	10	5	
			62.0	63.0			1440	7	16	520	9	5	
		BOX 12 62.4 - 67.15m.											
63		Andesite porphyry volcanic Same general description as Box 11. Relatively	63.0	64.0			1441	8	18	830	10	5	
64		unaltered. Rare subrounded fine-grained, grey fragments to 2cm. Minor calcite stringers. 64.9m. - End of Box; - broken 'grotty'											
65		andesite with local Mn and hematite coatings on fractures. Hornblende and plagioclase often is weathered, leaving voids.	64.0	65.0			1442	11	19	680	7	5	
66			65.0	66.0			1443	23	28	2230	11	20	
67			66.0	67.0			1444	22	37	2380	14	30	



TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOL.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		75.0 - 76.6m.; increase in disseminated pyrite and dark pyritic stringers	75.0	76.0			1453	64	690	2730	128	15
76		76.6 - End of Box: - fault gouge with bleached greyish white clays and 20% grey silicified rock fragments ( $\leq 1$ cm.) - minor hematite staining and fault breccia (@77.6m.)	76.0	76.6			1454	86	810	2060	56	25
77		BOX 15 77.0 - 81.3m.	76.6	77.0			1455	22	640	112	350	230
			77.0	78.0			1456	54	630	440	210	400
78		Andesite porphyry Box is largely composed of fault gouge with variable silicified intervals										
79		77.1 - 78.0m.; intense sericite-chlorite + quartz alteration; light greyish green, weak hematite staining. Minor grey, massive quartz + pink K-spar veinlets = al to core axis with trace disseminated pyrite + galena. Local maroon jasperitic 'gashes'.	78.0	78.9			1457	300	2150	2560	148	250
80		78.0 - 78.9m.; dark greenish grey weak chlorite-quartz alteration with 1% disseminated pyrite	78.9	80.0			1458	118	1550	860	1400	100
81		78.9 - 79.9m.; 1m. fault gouge with 80% bleached white clay and 20% fragments of dominantly grey, massive quartz with lesser jasperitic fragments and fragments of chloritized andesite. Rare oxidized cubes of pyrite (@ 79.1m.) 79.9 - 80.2m. fault breccia with fragments of grey quartz + chlorite-andesite in a rusty hematite, siliceous matrix.	80.0	81.0			1459	67	360	1460	136	290
		80.2 - 81.0m.; shattered, grey to faintly jasperitic quartz with clay within fractures. Local cross-cutting quartz veinlets with trace galena.	81.0	82.0			1460	89	2800	5800	145	90









TEXTURE, ALTER'N MINERALIZATION, ETC.	GRAPH GEOLOG.	DESCRIPTION	INTERVAL		REC'Y	EST. GRADE	SAM. No.	ASSAYS				
			FROM	TO				Cu	Pb	Zn	Ag	Au
		grained thin interbeds (1cm.) of maroon to greyish ash tuff (97.2 - 97.3m.) at 70° to core axis.	97.0	98.0			1477	22	47	170	14	5
		BOX 19 97.5 - 103.25m.										
		Andesitic ash and crystal tuff										
98		97.5 - 98.3m.: Fine-grained, chloritic, reddish to greenish grey with 1% angular dark grey lapilli and breccia fragments and rare grey quartz lapilli fragments. Minor chloritic shears, quartz-hematite gashes and cross-cutting calcite stringers. 1% disseminated pyrite	98.0	99.0			1478	8	190	147	12	390
99		98.3m.-End of Box: Weakly silicified and chloritized andesitic crystal tuff; generally fine-grained to weakly porphyritic with 1-5% disseminated pyrite throughout.										
		99.4m. - 1cm. grey quartz vein with pink hematitic selvages.	99.0	100.0			1479	6	200	149	13	145
100		99.7m. - wavy greyish green quartz-chlorite vein (45° to core axis) with blebs of pyrite and trace chalcopryrite.										
101		Minor calcite and chlorite gashes (99.7m.)	100.0	101.0			1480	52	76	156	12	100
		102.0 - 102.2m. - chloritic shear 80° to core axis.										
102		102.9 - 103.0m.; fault gouge with fracture andesite and grey clays										
103		103.1m.; irregular quartz-pyrite-stringer.	101.0	102.0			1481	10	25	116	8	5
			102.0	103.0			1482	17	26	125	8	5

