

# GM 18801

DIAMOND DRILL PROGRAMME

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KUSTEN MINES LIMITED

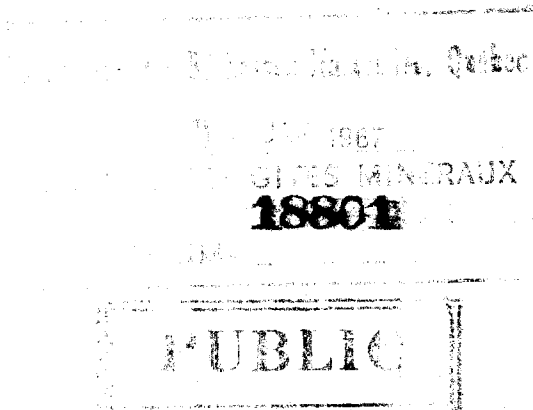
DIAMOND DRILL PROGRAMME 1966

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Toronto, Ontario

November 25, 1966.

C. H. Smallwood.



KUSTEN MINES LIMITED

DIAMOND DRILL PROGRAMME 1966

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## INTRODUCTION

An electromagnetic survey was conducted on a portion of the ground held by KUSTEN MINES LIMITED, which consists of 54 claims in south-central Galinee Township, Mattagami District, Quebec.

As a result of this survey, five diamond drill holes were drilled to check four anomalies. This diamond drill programme commenced on July 28, 1966 and was concluded on October 7, 1966.

## ELECTROMAGNETIC SURVEY

This survey, involving thirty-one line miles, was conducted by Barringer Research Limited from May 23 to July 2, 1966. The description and results of this work are adequately covered in the report "Electromagnetic Survey Claims Group, Galinee Township, P. Q. For Kusten Mines Limited" by J. B. Boniwell, dated July 1966.

## DIAMOND DRILLING

Five holes were drilled for a total of 3085 feet of which 531 feet were in overburden and 2554 feet were in bedrock.

The drilling was done under contract by N. Morissette Diamond Drilling Limited.

HOLE LOCATIONS

K-1	Station 20 + 00 N	Line 28 E
K-2A	Station 11 + 50 N	Line 28 E
K-2B	Station 11 + 50 N	27 + 99 E
K-3	Station 14 + 50 N	Line 76 E
K-4	Station 11 + 00 S	Line 112 E
K-5	Station 18 + 75 N	Line 76 E

SEE PLAN 1 and APPENDIX B

GEOLOGY

K-1	0.0 - 132.0 CASING
	132.0 - 256.2 GABBRO and Acid Dykes
	256.2 - 486.0 GABBRO; minor Andesite
K-2A	0.0 - 108.0 CASING
	108.0 - 177.0 GABBRO
	HOLE ABANDONED
K-2B	0.0 - 103.0 CASING
	103.0 - 331.0 GABBRO
	331.0 - 338.0 ANDESITE
	338.0 - 567.6 GABBRO; Lamp Dykes, Andesite
	567.6 - 575.9 ANDESITE
	575.9 - 751.0 GABBRO minor Andesite
K-3	0.0 - 56.0 CASING
	56.0 - 264.4 GABBRO
	264.4 - 273.4 ANDESITE
	273.4 - 349.0 GABBRO
	349.0 - 400.0 ANDESITE
	400.0 - 538.0 GABBRO

GEOLOGY

K-4      0.0 - 70.0 CASING  
           70.0 - 207.9 GABBRO  
           207.9 - 257.0 ANDESITE  
           257.0 - 450.0 GRANITE and GABBRO  
           450.0 - 468.0 ANDESITE  
           468.0 - 501.0 GABBRO

K-5      0.0 - 62.0 CASING  
           62.0 - 347.0 GABBRO  
           347.0 - 354.2 ANDESITE  
           354.2 - 355.2 GABBRO

REFER TO LOGS AND SECTIONS IN APPENDIX A

ASSAYS

	<u>Footage</u>	<u>Ag.</u>	<u>Cu.</u>	<u>Zn.</u>	<u>Ni.</u>
K-1	145.0 - 146.5	.12	.05	Nil	Nil
	312.5 - 314.5	.13	.13	"	"
	316.5 - 318.2	.14	.13	"	"
	470.2 - 470.7	.02	.13	"	"
	470.7 - 472.7	.04	.42	"	"
	482.8 - 484.2	Nil	.18	"	"
	502.7 - 505.0	"	.31	"	"
K-2A	NO SAMPLES				
K-2B	549.5 - 551.5	Nil	.03	TR	Nil
K-3	166.0 - 168.6	.32	.04	Nil	"
K-4	NO SAMPLES				
K-5	105.0 - 107.5	.15	.015	.01	Nil
	120.0 - 122.5	.66	TR	.02	"
	140.7 - 142.0	Nil	TR	1.25	"
	315.0 - 317.5	Nil	TR	.55	Nil

REFER TO LOGS APPENDIX A

COSTS

The contract price was \$5.55 per foot of rock drilling plus costs due to overburden, moving and delays. At the conclusion of the drilling the actual total cost was \$24,429.00 or \$7.92 per foot, exclusive of supervisory costs.

GENERAL

In all holes the Ax casing was left in, and the hole collars numbered with metal tags on the casing. All holes were left in such condition that they can be deepened if necessary.

The core was stored at each drill site.

Details are contained on the attached logs and sections (Appendix A).



C. H. Smallwood

Toronto, Ontario

November 25, 1966

K-1 ASSAYS

<u>Sample</u>	<u>Footage</u>	<u>Length</u>	<u>Au.</u>	<u>Ag.</u>	<u>Cu.</u>	<u>Zn.</u>	<u>Ni.</u>
11	145.0-146.5	1.5	Nil	.12	.05	Nil	Nil
12	312.5-314.5	2.0	"	.13	.13	"	"
13	316.5-318.2	1.7	"	.14	.13	"	"
14	470.2-470.7	0.5	"	.02	.13	"	"
15	470.7-472.7	2.0	"	.04	.42	"	"
16	482.8-484.2	1.4	"	Nil	.18	"	"
17	484.2-486.0	1.8	"	"	.08	"	"
18	502.7-505.0	1.3	"	"	.31	"	"
19	552.7-555.1	2.4	"	"	.16	"	"
20	606.1-607.5	1.4	"	"	.13	"	"
21	738.2-739.1	0.9	"	"	.16	"	"
22	750.7-752.0	1.3	"	"	.08	"	"



KUSTEN MINES LIMITED

Hole Number: K-1

Claim 143807-2, Location: Line 28E; 20 + 00 N, Azimuth: 197°(T)  
Dip: at collar 55°, at ledge 52° (corrected) (150 ft.) at 500 52°  
(corrected) at 700 51° (corrected)

Core Size: AXT  
Depth: 763 feet  
Started: August 11, 1966  
Finished: August 28, 1966  
Logged by: Charles H. Smallwood  
Purpose: To test an E.M. Conductor at 17 + 00 N on line 28E

**PUBLIC**

Sample #

0.0 - 132.0	CASING	0.0 - 75.0 Mostly Clay 75.0 -100.0 Quick Sand Lost Water 100.0 - 126.0 White Sand 126.0 Ledge
132.0 - 168.5	GABBRO	Medium to coarse-grained, dark green Matrix with 55% to 80% feldspar (fresh) numerous Quartz and carbonate fractures and stringers, minor globular pyrite traces ilmenite  145.4 - 146.0 10% feldspar 147.0 - 147.2 10% feldspar 145.0 - 146.5 10% quartz 11 (2107) stringer 1% Pyrite, minor tourmaline Trace Sphalerite?
168.5 - 191.6	GABBRO	Fine-grained; uniform; dark green colour; 10% to 20% feldspar some altered to epidote, some altered to pinkish buff mineral; odd section slightly sheared at 30° to core axis; odd quartz, carbonate (cream colour) fractures and stringers; minor disseminated globular pyrite, Trace ilmenite chloritized GABBRO
191.6 - 197.0	GABBRO	As from 132.0 - 168.5 some feldspar altered to reddish buff mineral

Ministère des Richesses Naturelles, Québec

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No GM- 18801

Sample #

197.0 - 212.3	RHYOLITE DYKE	Aphanitic; Pale greenish-yellow colour; Traces pyrite cubes white quartz fracture along core at 204.5
212.3 - 219.0	QUARTZ FELDSPAR PORPHYRY DYKE	Fine-grained; uniform; Buff grey colour; most of feldspar altered to epidote; Quartz phenocrysts Quartz fracture at 214.0; unaltered feldspar as white flecks; minor disseminated Pyrite cubes
219.0 - 230.1	QUARTZ FELDSPAR PORPHYRY DYKE	Medium-grained; Uniform; Pale greenish-grey colour; feldspar altered to epidote; minor quartz fractures; minor disseminated Pyrite cubes; Lower contact at 70°
230.1 - 231.6	RHYOLITE DYKE	As from 197.0 - 212.3 Last 2" brecciated and quartz replaced; Vuggy; FAULT
231.6 - 236.0	GABBRO	As from 168.5 - 191.6 grades into
236.0 - 243.7	GABBRO	As from 132.0 - 168.5
243.7 - 244.5	GABBRO	Fine-grained; green colour; very minor feldspar; 30% quartz carbonate stringers
244.5 - 256.2	GABBRO	As from 132.0 - 168.5
256.2 - 257.9	ANDESITE	Fine-grained; dark green colour; inclusions of gabbro; 25% quartz fractures minor Pyrite; upper contact at 45° to core; lower contact at 80° to core axis
257.9 - 281.3	GABBRO	As from 132.0 - 168.5 A northositic from 261.4 - 262.0 and from 274.5 - 275.0; 1/8" yellowish material at 271.0 similar to Rhyolite Dyke
281.3 - 287.0	ANDESITE	Fine-grained; green colour; uniform; massive; odd quartz fracture; minor Pyrite
287.0 - 318.0	GABBRO	As from 132.0 - 168.5; several quartz stringers at 292.0 312.5 - 314.5 60% quartz, 12 (2108) Trace Pyrite 316.5 - 318.2 30% silicified, 13 (2109) altered 3% fine Pyrite

Sample #

318.0 - 336.4	ANDESITE	Fine-grained; Bluish-grey colour; uniform slightly sheared at 30°; minor disseminated Pyrite	
336.4 - 352.0	GABBRO	As from 132.0 - 168.5; 60% barren smoky Quartz in first feet	
352.0 - 353.2	ANDESITE	Fine-grained; massive; dark green colour; amygdaloidal	
353.2 - 368.0	GABBRO	As from 132.0 - 168.5	
368.0 - 375.0	GABBRO	Chloritized as from 168.5 - 191.6	
375.0 - 381.5	GABBRO	As from 132.0 - 168.5	
381.5 - 385.4	GABBRO	Chloritized as from 168.5 - 191.6	
385.4 - 408.5	GABBRO	As from 132.0 - 168.5	
408.5 - 410.5	GABBRO	Chloritized as from 168.5 - 191.6	
410.5 - 412.0	ANDESITE	As from 352.0 - 353.2	
412.0 - 449.5	GABBRO	As from 132.0 - 168.5; first 1.5 feet chloritized with 1% Pyrrhotite minor Pyrite numerous quartz fractures	
449.5 - 451.5	LAMPROPHYRE DYKE	Fine-grained; grey colour; black flecked; grey white Quartz, feldspar, contacts at 80° to core axis	
451.5 - 466.2	GABBRO	As from 132.0 - 168.5	
466.2 - 468.2	GABBRO	As from 168.5 - 191.6 chloritized	
468.2 - 470.4	GABBRO	As from 132.0 - 168.5	
470.4 - 472.6	ANDESITE	Fine-grained; massive; green colour; quartz fracture at upper contact (80°) lower contact at 80°	
		470.2-470.7 ½" Quartz fracture 1% chalcopyrite 1% Pyrite, Pyrrhotite	14 (2110)
		470.7-472.7 1% sulphides	15 (2111)
472.6 - 473.2	GABBRO	As from 132.0 - 168.5	

Sample #

473.2 - 475.5	ANDESITE	As from 470.4 - 472.6 except little mineralization; upper contact at 30°; Lower contact at 10° (along core)	
475.5 - 479.1	GABBRO	As from 132.0 - 168.5	
479.1 - 480.0	ANDESITE?	Fine-grained; green colour slightly sheared at 40° to core axis	
480.0 - 486.0	GABBRO	Altered and silicified, chloritized; light green colour; sections highly chloritized	
		482.8-484.2 Quartz vein	16 (2112)
		484.2-486.0 minor sulphides	17 (2113)
486.0 - 502.7	GABBRO	As from 132.0 - 168.5	
502.7 - 505.0	GABBRO	Altered Brecciated; 70% Quartz last 1/2 foot highly chloritized	
		502.7-505.0 minor sulphides	18 (2114)
505.0 - 521.2	GABBRO	As from 132.0-168.5	
521.2 - 531.0	GABBRO	Chloritized as from 168.5 - 191.6	
531.0 - 545.5	GABBRO	As from 132.0 - 168.5	
545.5 - 555.1	GABBRO	Mixed chloritized bands with high Feldspar bands; minor silicifications and quartz stringers	
		552.7-555.1 chloritized 3% Pyrrhotite 1% Pyrite Trace chalcopyrite (very weak Ohm meter response)	19 (2115)
555.1 - 719.5	GABBRO	As from 132.0 - 168.5; Traces Magnetite odd narrow section chloritized	
		606.1 - 607.5 4" massive Magnetite with minor Pyrrhotite and Pyrite; minor chalcopyrite in chloritized gabbro (fair Ohm meter response)	20 (2116)
		1/2" massive magnetite blob at 618.3	
		Grades into:	
719.5 - 724.0	GABBRO	Green colour; altered, silicified; feldspar altered to Buff grey material or epidote minor quartz-carbonate stringers	

Sample #

724.0 - 725.0	GABBRO	Fine-grained; light green to Buff green; Black flecked (soft mineral) at contacts Black flecks elongated sharp contacts at 45° to core DYKE?	
725.0 - 726.7	GABBRO	As from 719.5 - 724.0	
726.7 - 732.6	GABBRO	As from 724.0 - 725.0; Specimen #1 fault at 732.6	
732.6 - 734.3	GABBRO	As from 719.5 - 724.0	
734.3 - 737.8	GABBRO	As from 724.0 - 725.0	
737.8 - 740.6	GABBRO	As from 719.5 - 724.0 738.2-739.1 40% Carbonatized and silicified; 3% Pyrrhotite, 1% Pyrite minor chalcopyrite	21 (2117)
740.6 - 744.0	GABBRO	Fine-grained; chloritized, shearing at 35° to core; minor Quartz stringers	
744.0 - 745.0	GABBRO	As from 719.5 - 724.0	
745.0 - 745.7	GABBRO	As from 724.0 - 725.0	
745.7 - 746.2	GABBRO	As from 719.5 - 724.0	
746.2 - 750.0	GABBRO	As from 724.0 - 725.0	
750.0 - 759.3	GABBRO	Chloritized; Amphibolite; fine-grained green colour; odd Quartz fractures 750.7-752.0 2% Pyrrhotite, 1/2% Pyrite Trace chalcopyrite	22 (2118)
759.3 - 763.0	GABBRO	As from 132.0 - 168.5	

## END OF HOLE

Comments: Hole open with AXT casing left in as follows:

8-10 ft. lengths and 26-2 ft lengths (no casing shoe was used)

CORE RECOVERY 100%

No conclusive explanation of the E.M. conductor was observed in the core; possible explanation could be 4" of Magnetite at 606.5 or the vuggy fault at 231.6

Charles H. Smallwood

KUSTEN MINES LIMITED

Hole Number: K-2A

Claim 143807-1, Location: Line 28E; 11 + 50 N, Azimuth: 17° (T)  
Dip: at collar 55°

Core Size: AXT  
Depth: 177 feet  
Started: August 31, 1966  
Finished: September 8, 1966  
Logged by: Charles H. Smallwood  
Purpose: To test an E.M. conductor at 13 + 60 N on Line 28E

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0.0 - 108.0	CASING	Mostly sand with narrow sections of CLAY LEDGE at 108.0
108.0 - 177.0	GABBRO	Medium-grained; 60%-75% feldspar matrix green colour; some feldspar altered to buff pink colour; minor Quartz, calcite fractures and stringers; Minor Pyrite chloritized dark green colour fine-grained from 111.5 - 113.0 122.5 - 123.0 131.4 - 132.5 157.0 - 160.0 silicified and epidotized light green colour; fine-grained; minor Pyrite odd spec chalcopyrite; from 133.0 - 138.0 144.0 - 145.6 147.8 - 149.0 153.0 - 157.0 160.0 - 170.0

END OF HOLE

HOLE ABANDONED due to broken casing and much sand in hole. A 10 ft. length of Bx casing lost in hole. Rest of casing recovered.

Charles H. Smallwood,  
September 13, 1966.

## KUSTEN MINES LIMITED

Hole Number: K-2B

Claim 143807-1, Location: 1 foot West of Line 28E at 11 + 50 N,  
 Azimuth: 17° (T), Dip: at collar 60°, at 125 59° (corrected)  
 at 450 58° (corrected) at 740 58° (corrected)

Core Size: AXT  
 Depth: 751 feet  
 Started: September 8, 1966  
 Finished: September 17, 1966  
 Logged by: Charles H. Smallwood  
 Purpose: To test an E.M. conductor at 13 + 60 N on Line 28E

0.0 - 103.0	CASING	Mostly sand with some clay from 0.0 - 94.0 Ledge at 94.0 with casing down to 103.0
103.0 - 132.0	GABBRO (A)	Medium-grained; 50%-70% feldspar; dark green-coloured matrix; fractures at 20° to core; narrow sections chloritized or anorthositic; minor globular Pyrite, ilmenite. Hit sand and water seam somewhere between 103.0 and 120.0
132.0 - 172.0	GABBRO (B)	Fine-grained; 20%-40% feldspar some altered to buff colour; chloritized minor Pyrite Lost core 152.0 - 153.0
172.0 - 179.0	GABBRO (C)	Fine-grained; highly chloritized; dark green colour; 20%-30% feldspar some altered to grey or buff colour; minor Pyrite
179.0 - 192.0	GABBRO (A)	As from 103.0 - 132.0
192.0 - 193.7	GABBRO (C)	As from 172.0 - 179.0
193.7 - 220.6	GABBRO (A)	As from 103.0 - 132.0; 1" Quartz tourmaline fracture at 203.0
220.6 - 222.0	GABBRO (C)	
222.0 - 226.0	GABBRO (A)	
226.0 - 228.0	GABBRO (B)	
228.0 - 232.0	GABBRO (C)	
232.0 - 238.9	GABBRO (A)	

Sample #

238.9 - 240.2	ANDESITE	Fine-grained; massive uniform; pillow feature? at 240.0; contacts at 70° to core
240.2 - 255.0	GABBRO (A)	
255.0 - 263.3	LAMPROPHYRE DYKE	Fine-grained; massive; uniform; light greenish-grey colour; Black flecked; odd calcite stringer; Trace globular Pyrite; contacts at 60° to core
263.3 - 268.0	GABBRO (A)	3" Quartz calcite at contact with dyke; one speck chalcopyrite
268.0 - 279.0	GABBRO (C)	½" Quartz, calcite, tourmaline fracture along core from 269.0 - 272.5; in places vuggy; minor Pyrite FAULT?
279.0 - 281.5	GABBRO (A)	
281.5 - 306.5	GABBRO (C)	
306.5 - 313.0	GABBRO (B)	
313.0 - 331.0	GABBRO (A)	
331.0 - 338.0	ANDESITE	As above; no pillows; odd Quartz, calcite stringer with iron oxide staining
338.0 - 343.0	GABBRO (A)	
343.0 - 348.0	GABBRO (C)	
348.0 - 350.2	GABBRO (A)	
350.2 - 366.7	GABBRO (C)	
366.7 - 369.6	ANDESITE	As above; upper contact at 30° Lower contact at 60° to core
369.6 - 374.5	GABBRO (A)	
374.5 - 386.3	GABBRO (C)	
386.3 - 388.5	GABBRO (A)	
388.5 - 390.0	GABBRO (C)	



Sample #

390.0 - 395.0	GABBRO (A)	Pink feldspar? Quartz? at 392.6 - 395.0	
395.0 - 397.5	GABBRO (C)		
397.5 - 413.0	GABBRO (A)		
413.0 - 414.7	GABBRO (C)		
414.7 - 421.5	GABBRO (A)		
421.5 - 431.2	GABBRO (C)	Possible ANDESITE?	
431.2 - 469.2	GABBRO (A)		
469.2 - 472.0	LAMPROPHYRE DYKE	As above; slightly sheared at 30° to core contacts irregular	
472.0 - 473.0	GABBRO (A)		
473.0 - 474.3	LAMPROPHYRE DYKE	As above; contacts at 30° to core	
474.3 - 482.0	GABBRO (A)		
482.0 - 493.5	GABBRO (C)	Barren Quartz-calcite stringer at 487.0	
493.5 - 502.0	GABBRO (A)		
502.0 - 504.0	GABBRO (C)		
504.0 - 518.2	GABBRO (A)		
518.2 - 521.6	ANESITE	With discontinuous quartz, calcite blebs lined by dark grey material Pillows? Last 6" aphanitic	
521.6 - 525.5	GABBRO (B)		
525.5 - 526.6	GABBRO (C)		
526.6 - 534.2	GABBRO (A)		
534.2 - 538.5	GABBRO (C)		
538.5 - 549.4	GABBRO (A)		
549.4 - 553.0	GABBRO (C)	From 549.5 - 551.5 2% Pyrite Pyrrhotite; Trace chalcopyrite	23 (2119)

Sample #

553.0 - 567.6	GABBRO (A)	Highly altered, Basaltic
567.6 - 575.9	ANDESITE?	Fine-grained; Blue-grey colour massive uniform; $\frac{1}{2}$ " calcite stringer at 572.5; irregular contacts
575.9 - 578.3	GABBRO (B)	
578.3 - 588.8	GABBRO (A)	
588.8 - 590.6	ANDESITE	
590.6 - 627.0	GABBRO (D)	Coarse-grained; lighter colour than gabbro (A); 70% to 95% feldspar variable alteration of feldspar; 3" barren Quartz veinlet with ankerite at 619.6 and 621.3 sections ANORTHOSITE odd section chloritized
627.0 - 627.5	ANDESITE	As above upper contact at 80° lower contact at 30° to core
627.5 - 727.5	GABBRO (D)	Minor ANKERITE blebs and stringers some suggestion of Banding parallel to core; odd small bleb of Pyrite or Pyrrhotite Barren Quartz calcite veinlet at 659.0, 661.0, 683.8 Sections more alteration of feldspar Sections ANORTHOSITE
727.5 - 730.5	GABBRO (C)	
730.5 - 732.0	QUARTZ VEIN	Barren minor ankerite
732.0 - 735.0	GABBRO (B)	
735.0 - 742.7	GABBRO (C)	
742.7 - 748.0	GABBRO (A)	Feldspar altered to epidote
748.0 - 748.8	ANDESITE	As above
748.8 - 751.0	GABBRO (A)	Epidotized

END OF HOLE

Comments: Hole left open with AX casing in 9-10 foot lengths and 6-2 foot lengths. No casing bit used.

Core recovery 99%

No conclusive explanation of the E.M. conductor was observed in the core.

Charles H. Smallwood,  
September 19, 1966

K - 2B ASSAYS

<u>Sample</u>	<u>Footage</u>	<u>Length</u>	<u>Au</u>	<u>Ag</u>	<u>Cu</u>	<u>Zn</u>	<u>Ni</u>
23 (2119)	549.5-551.5	2.0	Nil	Nil	.03	TR.	Nil

KUSTEN MINES LIMITED

Hole Number: K-3

Claim 143734-1, Location: Line 76 E, 14 + 50 N, Azimuth: 12°(T)  
 Dip: at collar 52°, at Ledge 46° (corrected) at 300 47° (corrected)  
 at 500 44½° (corrected)

Core Size: AXT  
 Depth: 538 feet  
 Started: July 28, 1966  
 Finished: August 2, 1966  
 Logged by: Charles H. Smallwood  
 Purpose: To test an E. M. Conductor at 16+50 N on Line 76E

		<u>Sample #</u>
0.0 - 56.0	OVERBURDEN:	Mostly Clay 50.0 - 52.0 Sand and Boulders 52.0 Ledge 52.0 - 56.0 Casing
56.0 - 70.0	GABBRO	Coarse-grained, dark green matrix with 70% to 85% Feldspar Buff color; numerous narrow calcite stringers; scattered pyrite cubes and ilmenite, odd tiny specks of chalcopyrite, Trace Pyrrhotite  64.0-65.0 ) 65.0-67.0 ) medium-grained 68.0-70.0 ) 40% Feldspar  Thus giving a banded appearance ANORTHOSITIC GABBRO
70.0 - 70.6	RHYOLITE	Very fine-grained, cherty, Buff pinkish grey color; traces pyrite INTRUSIVE
70.6 - 122.8	GABBRO	As from 56.0 to 70.0 with the following Feldspar lean bands  84.2 - 93.6 94.5 - 95.5 104.5 - 105.2 113.1 - 122.8 119.9 Small fault 105.0 - 106.2 Lost core 119.3 - 120.8 ) 20% silicified with 1 (2413) 120.8 - 122.8 ) Feldspar altered to 2 (2411) epidote, yellowish green color, minor disseminated sulphides

			<u>Sample #</u>
122.8-123.5	QUARTZ	Series of tight quartz stringers giving apparent banding of 30° to core axis; 1% sulphides mostly Pyrite, Pyrrhotite with minor chalcopyrite and trace sphalerite	3 (2410)
123.5-168.6	GABBRO	As from 56.0 to 70.0 with Feldspar poor bands from 123.5 - 130.2 161.9 - 168.6	
		130.2-131.0 ) Pegmatite Dyke 143.0-143.2 ) coarse grained 149.5-153.0 )	
		135.0-137.0 Lost core	
		123.5-125.8 slightly silicified, minor Pyrite, Sphalerite	4 (2409)
		166.0-168.6 minor Sulphides	5 (2408)
168.6-172.2	QUARTZ	Mostly Quartz with minor calcite and gabbro; 1% Pyrrhotite, 1/2% Pyrite, minor Sphalerite, Trace Chalcopyrite	
		168.6-170.0 170.0-172.2	6 (2407) 7 (2405)
172.2-264.4	GABBRO	As from 56.0-70.0 with some quartz stringers; scattered traces of Pyrite, Pyrrhotite, Chalcopyrite	
		194.3-196.5 ) 203.2-205.5 ) 30% Feldspar 230.0-231.8 )	
		200.5-202.4 ) 95% Feldspar 231.8-238.0 ) Anorthosite	
		241.0-244.5 ) Feldspar altered to 255.0-264.4 ) epidote	
		175.5-176.5 ) Lost core 260.0-260.3 )	
		172.2-174.0 Trace Sulphides	8 (2404)

Sample #

264.4-273.4	ANDESITE	Fine-grained equigranular, light green grey colour, several quartz-calcite stringers; upper contact at 70° to core axis, lower contact is gradational, traces Pyrite, Pyrrhotite, ilmenite and chalcopyrite	
		272.0-273.4 40% quartz stringers minor sulphides	9 (2403)
273.4-338.4	GABBRO	As from 56.0-70.0 some alteration of feldspar to epidote	
		320.5-322.7 ) coarse-grained 45% 326.0-328.0 ) feldspar	
338.4-349.0	GABBRO	Fine-grained to medium-grained slightly bluish-green, 30% to 70% altered feldspar to epidote, odd section silicified with traces of scattered sulphides	
349.0-389.0	ANDESITE	Fine-grained light green colour amygdaloidal, upper contact at 30° to core axis, slightly sheared at 30° Lower contact is tight quartz-filled shear zone (Fault) at 20° to core axis	
		388.2-390.5 Quartz zone 1% sulphides	10 (2401)
389.0-400.0	ANDESITE	Aphanitic, yellowish-green colour feldspar altered to epidote, odd narrow quartz stringer, traces Pyrite, Pyrrhotite	
400.0-414.0	GABBRO	Fine-grained yellowish-green highly altered with feldspar now epidote	
		401.0-402.0 Lost core	
414.0-512.0	GABBRO	Mixed feldspar rich and poor bands: the bands of low feldspar content are fine-grained, green colour, minor narrow bands are Anorthositic, very little sulphide mineralization.	
		495.5-496.0 Quartz stringer 1% Pyrrhotite	
		430.0-431.0 Lost core	
		505.0-506.0 Lost core	

Sample #

512.0-531.0	GABBRO	Medium-grained, green, 40% Feldspar, sections 20%, silicified with traces Pyrite, Pyrrhotite. Some Quartz, calcite stringers
531.0-538.0	GABBRO	Medium to coarse-grained 85% Feldspar Anorthositic Gabbro

End of Hole.

Comments: Hole open with AXT casing left in as follows:  
4 lengths @ 10 feet; 8 lengths @ 2 feet (casing  
shoe was not used).  
No apparrent explanation of the E. M. conductor  
was observed in the core.  
Core Recovery = 98.6%

Charles H. Smallwood

KUSTEN MINES LIMITED

Hole Number K-3

<u>Sample #</u>	<u>From</u>	<u>To</u>	<u>Length (ft.)</u>	<u>Au Dwt/ton</u>	<u>Ag Oz/ton</u>	<u>% Cu</u>	<u>% Zn</u>	<u>% Ni</u>
2401	388.2	- 390.5	2.3	Nil	Nil	.03	Nil	Nil
2403	272.0	- 273.4	1.4	Nil	Nil	.03	Nil	Nil
2404	172.2	- 174.0	1.8	Nil	Nil	.04	Nil	Nil
2405	170.0	- 172.2	2.2	Nil	Nil	.07	Nil	Nil
2407	168.6	- 170.0	1.4	Nil	Nil	.05	Nil	Nil
2408	166.0	- 168.6	2.6	Nil	0.32	.04	Nil	Nil
2409	123.5	- 125.8	2.3	Nil	Nil	.09	Nil	Nil
2410	122.8	- 123.5	0.7	Nil	Nil	.05	Nil	Nil
2411	120.8	- 122.8	2.0	Nil	Nil	.07	Nil	Nil
2413	119.3	- 120.8	1.5	Nil	Nil	.07	Nil	Nil

Assays by Sigma Mines (Quebec) Limited.

2102	250.0	- 260.0	10.0	Nil	Nil	.04	Nil	Nil
2103	260.0	- 270.0	10.0	Nil	Nil	.05	Nil	Nil
2104	270.0	- 280.0	10.0	Nil	Nil	.04	Nil	Nil
2105	280.0	- 290.0	10.0	Nil	Nil	.05	Nil	Nil



KUSTEN MINES LIMITED

Hole Number K-4

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Claim 143809 - 3  
Location: Line 112 E; 11+00 S  
Azimuth: 17° (T)  
Dip At collar 51°  
100 ft. 51½° (corrected)  
300 ft. 52° (corrected)  
500 ft. 48½° (corrected)  
Core Size: AXT  
Depth: 501 ft.  
Started: October 3, 1966  
Finished: October 7, 1966  
Logged by: Charles H. Smallwood  
Purpose: To test an E. M. conductor on  
Line 112 E at 8 + 70 S.

## Sample

0.0-70.0	Casing	0.0-65.0 Mostly sand Ledge at 65.0
70.0-82.4	Gabbro	Medium-grained, green colour; altered with lemon yellow alteration of feldspar; 70% feldspar traces pyrite, pyrrhotite. Specimen #2 from 72.0. Narrow sections of Granite? at 73.4, 75.0 and 78.0 Silicified with blue opalence quartz
82.4-105.0	Gabbro	Medium-grained, quartz-mica; pinkish colour, minor quartz, calcite fractures; traces pyrite, pyrrhotite; rusty fractures at 100.0 chloritized from 90.0 to 91.0 Altered anorthositic gabbro? Specimen 3 from 84.4 Specimen 5 from 97.8 Granitized gabbro.
105.0-180.0	Gabbro	Medium-grained; blue green colour; 60%-80% feldspar; alteration of feldspar to lemon yellow colour; sections granitic and anorthositic Quartz tourmaline Fault at 140.0. Minor pyrite at 162.5 and 165.0 Coarse grained 167.0-169.5
180.0-207.9	Gabbro	Fine to medium-grained, moderately to highly chloritized; green to dark green colour; 40%-60% feldspar; minor pyrite, pyrrhotite
207.9-238.0	Andesite	Fine-grained; massive, uniform; green colour; white flecked; trace pyrite; slightly altered in first two feet. Lost core 222.0-223.0

## Sample

238.0-257.0	Andesite	Altered and shreds of apple green serpentine?
257.0-269.0	Gabbro	Medium-grained; 60% feldspar minor epidote; altered; matrix chloritic; minor quartz, calcite fractures; minor pyrite, pyrrhotite chloritized 267.0-269.0 Small fault at 268.5 Specimen #6 from 263.5
269.0-280.0	Granite	Medium to coarse-grained; pink colour; 50% feldspar; 30% quartz 20% mafics
280.0-282.0	Gabbro	Highly chloritized, dark green colour; fine-grained; blue-grey quartz; gradational contacts
282.0-284.0	Granite	
284.0-293.0	Gabbro	Fine to medium-grained; Highly chloritized and granitized dark green colour with blue-grey quartz 289.0-293.0 core broken and sheared at 20° to core
293.0-298.8	Granite	Medium-grained greenish yellow colour
298.8-299.6	Acid Dyke	Medium-grained, lemon yellow colour; contacts at 60° to core. Specimen 7 from 299.2 Feldspar altered to epidote 30% quartz
299.6-301.4	Granite	
301.4-302.0	Acid Dyke	
302.0-311.0	Granite	Medium to coarse-grained; with blebs of dyke material; Sections chloritized
311.0-312.2	Gabbro	Fine-grained; dark green colour; chloritized; blue-grey quartz; flecks of lemon yellow alteration; lower contact at 75°

## Sample

312.2-318.0	Granite	Gradational lower contact Specimen # 8 from 317.6
318.0-323.0	Granite	As above; altered at upper contact Specimen # 9 from 319.7 Lava?
323.0-360.0	Gabbro	Fine to medium-grained; blue grey colour; sections chloritic green colour; traces pyrite pyrrhotite
360.0-393.0	Gabbro	Medium-grained; green to blue green colour; siliceous; sections chloritic with minor pyrite, pyrrhotite; some altered feldspar; blue grey quartz phenocrysts? (not quartz-eyes) Quart, chlorite, tourmaline at 375.0 FAULT Specimen #10 from 361.6 Altered phase of gabbro
393.0-447.0	Gabbro	Fine-grained; uniform, blue green colour; siliceous; flecks lemon yellow alteration; mottled appearance; sections dark green chloritic; silicified with opalence quartz; Specimen # 11 from 393.5 ALTERED CABBRO
447.0-450.0	Granite	As above gradational contacts
450.0-468.0	Andesite	Fine-grained; chloritic; dark green colour; massive; calcite stringers; altered last three feet with blue grey quartz Flecked
468.0-501.0	Gabbro	Medium-grained; blue grey colour sericite alteration and lemon yellow alteration flecks; calcite stringers and fractures; odd section chloritic Specimen # 12 from 492.5

END OF HOLE

Comments:           Hole open with 3 - 10 ft. and 20 - 2 ft.  
lengths of AXT casing left in hole (no casing  
bit used)

Core Recovery       99%

No conclusive explanation of the E. M.  
conductor was observed in the core.

Charles H. Smallwood.

October 7, 1966.

KUSTEN MINES LIMITED

HOLE NUMBER: K-5

Claim: 143734 - 1

Location: Line 76 E at 18+75 N

Azimuth: 192° (T)

Dip: at collar 65°

at 100 64° (corrected)

at 300 61° (corrected)

Core size: AXT

Depth: 355

Started: September 23, 1966

Finished: September 28, 1966

Logged by: Charles H. Smallwood

Purpose: To test an E. M. conductor  
at 16+ 50 N on Line 76 E.

## Sample

0.0-62.0	Casing	0.0-30.0 Mostly sand 30.0-62.0 Sand and boulders	
62.0-89.5	Gabbro Float	Medium-grained; matrix dark green; 75% feldspar with some altered to epidote; Traces of pyrite and pyrrhotite. Weathered, surface pitted; fractures at 25° to core iron staining, sections bleached, sections core badly broken. Button of granite at 73.0 coarse calcite and quartz crystals at 78.5 and 89.0 vuggy.	
89.5-97.5	Gabbro (A)	Medium-grained; dark green matrix; 70% feldspar; fresh unaltered. Trace pyrite, pyrrhotite minor ilmenite.	
97.5-105.0	Gabbro	Fine to medium-grained; light green colour; 40% feldspar; odd quartz, calcite fractures; trace pyrite, pyrrhotite	
105.0-113.2	Gabbro (B)	Medium-grained; green colour; 30% feldspar slightly altered to epidote; 30% silicified.	
		105.0-107.5 ) 1% pyrrhotite ½%	24 (2120)
		107.5-110.0 ) Pyrite trace	25 (2121)
		110.0-111.5 ) Chalcopyrite	26 (2122)
		111.5-113.2 3% Pyrrhotite and Pyrite Minor Chalcopyrite	27 (2123)
113.2-115.5	Silica	50% white quartz and 40% grey silica 5% pyrrhotite 1% pyrite Minor chalcopyrite Minor chloritic material	28 (2124)
115.5-117.5	Gabbro (B)	1% Pyrrhotite ¼% Pyrite Trace chalcopyrite	29 (2125)

## Sample

117.5-126.2 Silica	White to grey white quartz and greenish grey silica; minor altered gabbro; no shearing 1% pyrrhotite $\frac{1}{2}$ % pyrite minor chalcopyrite	
	117.5 - 120.0	30 (2126)
	120.0 - 122.5	31 (2127)
	122.5 - 125.0	32 (2128)
	125.0 - 126.2	33 (2129)
126.2-128.6 Gabbro (B)	1 $\frac{1}{2}$ % Pyrrhotite $\frac{1}{2}$ " Pyrite trace chalcopyrite	34 (2130)
128.6-136.0 Gabbro (A)		
136.0-137.5 Gabbro (B)	Slightly sheared $\frac{1}{2}$ % Sulphides	35 (2131)
137.5-140.7 Gabbro (A)		
140.7-142.0 Gabbro (B)	Slightly sheared 3% Pyrrhotite $\frac{1}{2}$ % pyrite trace chalcopyrite	36 (2132)
142.0-157.0 Gabbro (A)	Calcite stringer at 156.8	
157.0-157.8 Gabbro (B)	Minor sulphides	
157.8-161.3 Gabbro (A)		
161.3-162.1 Gabbro (B)	Minor sulphides	
162.1-171.0 Gabbro (A)	Anorthositic	
171.0-171.6 Gabbro (B)	3% Pyrrhotite 1% pyrite trace chalcopyrite	37 (2133)
171.6-178.7 Gabbro (A)	Coarse-grained Anorthositic	
178.7-184.6 Diorite Dyke	Fine-grained; blue grey colour; trace pyrite pyrrhotite, white flecked; massive, uniform, contacts at 30° to core	
184.6-202.8 Gabbro (A)	Coarse-grained Anorthositic	
202.8-214.0 Gabbro (c)	Fine-grained; dark green colour; chloritized, 30% feldspar; odd calcite fractures; odd section silicified; traces pyrite and pyrrhotite.	



## Sample

214.0-241.3	Gabbro (A)	Medium to coarse-grained; Sections anorthositic Anorthosite 232.8-234.3 Barren quartz 240.8-241.3	
241.3-243.5	Gabbro (c)		
243.5-315.0	Gabbro (A)	Odd narrow calcite fractures and barren quartz; narrow sections gabbro (B), (C), anorthositic 253.2-255.0 1% Pyrrhotite $\frac{1}{2}$ % Pyrite Trace Chalcopyrite	38 (2134)
		261.5-263.2 3% Pyrrhotite 1% Pyrite, minor chalcopyrite	39 (2135)
		278.6-281.2 3% Pyrrhotite, 1% Pyrite, minor chalcopyrite chloritic	40 (2136)
		310.0-312.8 anorthosite	
315.0-332.3	Gabbro (C)	Coarse-grained, altered, chloritized, 40%-50% feldspar; 2" tight quartz calcite fracture at 321.0	
		315.0-317.5 ) 2% Pyrrhotite $\frac{1}{2}$ %	41 (2137)
		317.5-320.0 ) Pyrite trace chal-	42 (2138)
		320.0-322.5) copyrite minor magnetite	43 (2139)
		322.5-325.0 5% Pyrrhotite 2% Pyrite, minor chalcopyrite $\frac{1}{2}$ % magnetite	44 (2140)
332.3-347.0	Gabbro	Highly altered to epidote; pale yellowish green colour, mottled; minor calcite fractures; tight fault at 347.0 with some rhyolitic material	
347.0-354.2	Andesite	Fine grained, light greenish grey colour, massive, uniform; flecked very slightly sheared at contact.	
354.2-355.2	Gabbro	As from 332.3-347.0	

End of Hole

## Comments:

Hole open with 3 - 10 ft. and 16-2 ft. lengths  
of Ax casing left in (no casing bit used)

Core recovery - 100%

No conclusive explanation of the E. M. Conductor  
was observed in core.

Charles H. Smallwood.

September 29, 1966.

K-5 ASSAYS

<u>Sample</u>	<u>Footage</u>	<u>Length</u>	<u>Au.</u>	<u>Ag.</u>	<u>Cu.</u>	<u>Zn.</u>	<u>Ni.</u>
24	105 -107.5	2.5	TR	.15	.015	.01	Nil
25	107.5-110.0	2.5	TR	Nil	.012	.02	"
26	110.0-111.5	1.5	TR	"	.015	.02	"
27	111.5-113.2	1.7	TR	"	TR	.02	"
28	113.2-115.5	2.3	Nil	"	"	.01	"
29	115.5-117.5	2.0	Nil	"	"	TR	"
30	117.5-120.0	2.5	Nil	Nil	"	.02	"
31	120.0-122.5	2.5	Nil	.66	"	.02	"
32	122.5-125.0	2.5	TR	Nil	"	.01	"
33	125.0-126.2	1.2	TR	"	TR	TR	"
34	126.2-128.6	2.4	TR	"	.01	.01	"
35	136.0-137.5	1.5	Nil	"	TR	.01	"
36	140.7-142.0	1.3	Nil	"	TR	1.25	"
37	171.0-171.6	0.6	Nil	"	TR	TR	"
38	253.2-255.0	1.8	Nil	"	.015	.01	"
39	261.5-263.2	1.7	Nil	"	TR	.03	"
40	278.6-281.2	2.6	Nil	"	"	.01	"
41	315.0-317.5	2.5	Nil	"	"	.55	"
42	317.5-320.0	2.5	Nil	"	"	.01	"
43	320.0-322.5	2.5	Nil	"	"	.02	"
44	322.5-325.0	2.5	Nil	Nil	TR	.02	Nil