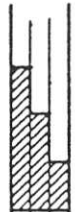
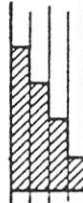


IMPERIAL OIL LIMITED
MINERALS SECTION
DRILL LOG

803937

PROJECT <i>Sulphurets 2153</i>	GROUND ELEV.																											
HOLE NO. <i>16</i>	BEARING <i>180°</i>																											
LOCATION <i>West of Iron Cap</i>	DIP <i>-60</i>																											
	TOTAL LENGTH <i>304.50m</i>																											
LOGGED BY <i>J. Ferguson, E.M.C.</i>	HORIZONTAL PROJECT																											
DATE <i>Sept. 6/80</i>	VERTICAL PROJECT																											
CONTRACTOR <i>Arctic</i>	ALTERATION SCALE  <ul style="list-style-type: none"> absent slight moderate intense 																											
CORE SIZE <i>BQ</i>																												
DATE STARTED <i>September 2 - Drill move September 4 - start drilling</i>	TOTAL SULPHIDE SCALE  <ul style="list-style-type: none"> traces only < 1% 1% - 3% 3% - 10% > 10% 																											
DATE COMPLETED <i>September 10 PM</i>																												
DIP TESTS																												
COMMENTS <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Depth</th> <th style="text-align: left;">Dip</th> <th style="text-align: left;">Azimuth</th> </tr> </thead> <tbody> <tr> <td><i>27.13m</i></td> <td><i>58°</i></td> <td><i>191°</i></td> </tr> <tr> <td><i>88.09m</i></td> <td><i>56°</i></td> <td><i>195°</i></td> </tr> <tr> <td><i>118.57m</i></td> <td><i>55.5</i></td> <td><i>197°</i></td> </tr> <tr> <td><i>149.05m</i></td> <td><i>56°</i></td> <td><i>193°</i></td> </tr> <tr> <td><i>194.77m</i></td> <td><i>55.5</i></td> <td><i>197°</i></td> </tr> <tr> <td><i>240.49m</i></td> <td><i>56°</i></td> <td><i>349° (invalid due to magnetite?)</i></td> </tr> <tr> <td><i>270.97m</i></td> <td><i>53.5°</i></td> <td><i>109° (invalid due to magnetite?)</i></td> </tr> <tr> <td><i>301.45m</i></td> <td><i>54°</i></td> <td><i>329° (invalid due to magnetite?)</i></td> </tr> </tbody> </table>	Depth	Dip	Azimuth	<i>27.13m</i>	<i>58°</i>	<i>191°</i>	<i>88.09m</i>	<i>56°</i>	<i>195°</i>	<i>118.57m</i>	<i>55.5</i>	<i>197°</i>	<i>149.05m</i>	<i>56°</i>	<i>193°</i>	<i>194.77m</i>	<i>55.5</i>	<i>197°</i>	<i>240.49m</i>	<i>56°</i>	<i>349° (invalid due to magnetite?)</i>	<i>270.97m</i>	<i>53.5°</i>	<i>109° (invalid due to magnetite?)</i>	<i>301.45m</i>	<i>54°</i>	<i>329° (invalid due to magnetite?)</i>	LEGEND
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PAGE 1 OF 21		PROJECT:			HOLE NO. 16	
DEPTH (METRES)	% Core Recy	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION	
				8.14m = 26.7' ~ 27 m = 88.6' ~ 58m = 190.3'		
				Overburden 0.0 - 8.14 : lower 1.3 m covered.		
5				8.14 - 22.7 : Altered feldspar amphibole porphyry intrusive? moderate to strong silicified and sericitized; light gray to light green, fine to medium grained, abundant small (< 3mm) sericitized/ chloritized? feldspar and amphiboles commonly preserved; locally white small feldspar also preserved; intensely fractured, microfractured - infilled by qtz, py, moly; opaque w/ other white weakly developed locally scattered veins thin vein of sulphides typically	moderate Sericite Silicified	
				8.14 - 15.24 : several zones of broken core; probably several fracture zones		
10				* These veins < 2cm wide, typically youngest veins, also carry qtz veins locally present up to 10cm wide - These typically older most date fine fracture filling but are usually older		
				Plan qtz-calcite veinlets, these do not typically contain sulphides although moly - is locally concentrated adjacent to them; flourite locally present in all three types of veins		
15						
		Calculation 306/A				
20				18.25 - 19 : brecciated zone; qtz with minor carbonate (calcite)		
				24.8 - 25.4 : strong grey qtz veining		
25				27.1 - 27.7 : broken, oxidized		
				27.8 - 27.9 : grey qtz vein		
				29.5 - 30.6 oxidized fracture filled abundant calc/A		
30				Altered Intrusive? 22.7 - 25.8 : intensely silicified intrusive	Intense Silicified	

	MINERALIZATION DESCRIPTION	TOTAL SULPHIDE	SAMPLE INTERVAL	SAMPLE WIDTH	ASSAY NUMBER	%			COMPOSITE ASSAYS	
						Cu	Mo	%	A ₁	A ₂
5										
10	3.14-84.35: matrix consists of py & Moly; py occurs disseminated throughout in structures; varies from cut 3 to 10% py; moly almost always in very fine fractures; both py & moly typically very fine grained; moly usually occurrences but locally py cut 2 in some fracture; Moly sometimes not visible but presence indicated by bluish tinge; cpy uncommon; locally py content up to 15-20%; relatively uniform py and moly distribution; rarely moly as clusters of fine grains; py is yellow & due to fineness of grain size difficult to detect all the cpy.		3.14 9.00 12.0 15.0	3.0	2345	.212	.029		.008	.33
				3.0	2346	.122	.046		.002	.14
				3.0	2347	.152	.018		.002	.16
15				3.0	2348	.100	.013		.002	.11
20	18.25-19: Higher py-moly content minor cpy; all larger py visible with cpy & moly.		18.0	3.0	2349	.179	.088		.004	.28
			21.0							
	21-24: 17.5% py, 100.5%			3.0	2350	.209	.030		.002	.48
			24.0							
25				3.0	2351	.182	.035		.002	.28
			27.0							
30				3.0	2352 (3.5m 2nd cut + red)	.141	.042		.002	.18
			36.0							

DEPTH (METRES)	% Core Recy	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION			
				31.45: trace pink Kspen? in gty veinlet.				
				36.0 - 42.3: numerous fractures not broken zone;				
35								
				40.0: 2cm mud seam				
		20% A mudstone fitz veinlets		42.34 - 42.42: gty vein with 270% py.				
				44.4 - 51.2: intense microfracturing, local brecciation.				
45				45.9: minor purple / white, in gty vein; also brown red Kspen? in the gty (Kspen or rose quartz)				
				46.7 - 48.0: broken & rubble, lost core, probably fracture fault zone				
				- calcite				
50				50.75 - 51.2: Qtz vein; pink calcite abundant Qtz sub-ordinate				
55				56.1: Kspen & minor - f. barite (purple)				
				57.6 - 57.9: Qtz vein with purple & white gty with possible white barite				
				58 - 70.9: brecciated zone; well preserved				
		Altered intr. zone		synthetic porphyry (Amphibole - feldspar) fragments locally; possible biotite locally; intrusive				
60								

70.9m = 232.6'

intense
Silicification

PAGE 4 OF 21		PROJECT:							HOLE NO. 16	
MINERALIZATION DESCRIPTION	TOTAL SULPHIDE	SAMPLE INTERVAL	SAMPLE WIDTH	ASSAY NUMBER	% Mo		% Au		COMPOSITE ASSAYS	
					Cu	Mo	Au	A _g		
				3.0	2353	.192	.029	.002	.24	
		33.0								
				3.0	2354	.132	.014	.002	.30	
		36.0								
37.9 - 42.0 : lower moly content, about 50% ? lower than overlying zone				3.0	2355	.196	.024	.002	.18	
		39.0								
				3.0	2356	.132	.025	.003	.24	
		42.0								
				3.0	2357	.150	.033	.002	.26	
				(3.5 = recovered)						
		45.0								
				3.0	2358	.162	.039	.002	.20	
		47								
		48.0								
				3.0	2359	.122	.025	.002	.18	
		51.0								
52.1 - 64 : moly content probably lower than overlying zone. however, host is dark grey and the fine grain moly is difficult to detect.				3.0	2360	.150	.027	.002	.19	
		54.0								
				3.0	2361	.218	.036	.002	.29	
		57.0								
58 + - 58.75 : 15% to 25% py in matrix.				3.0	2362	.191	.023	.007	.31	
		60.0								

DEPTH (METRES)	% Core Recy	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION			
				107.9m = 354'				
				material altering syenite rich in pyrite, qtz, m. calcite two intrusive shales - one py rich (25-30%) and one qtz-rich; complex breccia zone with magnetite and pyrite alteration; silicification post pyrite zone				
				58-70.9: Moderately to intensely silicified, locally 63.5-63.9: fluorite in veinlets.				silicified fluorite
65				thin siliceous shales				
70				Altered Intrusive?? 70.9-107.9: generally intensely silicified only local moderate silicification				intensely silicified
				71.3-71.8 - broken locally with sericite				Silicified
75								
				77.95-78.2: py-qtz-calcite vein				
80								
85				shown 45% / 1A 84.35-84.50: brecciated qtz vein with chlorite-py slips, possible shear zone				
				86.1: minor Kspars?? in groundmass. 86-90: local patchy poly/pink Kspars? as alt. feature.				
				87-87.2: qtz-calcite breccia vein				
				88.25-88.35: gray qtz-vein				
90				87: after 87 no intrusive textures preserved.				

MINERALIZATION DESCRIPTION	TOTAL SULPHIDE	SAMPLE INTERVAL	SAMPLE WIDTH	ASSAY NUMBER	% Cu		% Mo		% Au		COMPOSITE ASSAYS
60.95: cpy, on qtz-thurite veinlet											
61.3: minor cpy and qtz vein		62.0	3.6	2363	.149	.016	.006	.19			
58-66: locally 15 to 25% disseminated veinlet py.		63.0	3.0	2364	.221	.029	.007	.11			
		65.0									
		66.0									
66-69: MoS ₂ grains at 0.5%		69.0	3.0	2365	.143	.027	.008	.10			
		72.0									
72-75: moly qtz py associated with extensive wide veinlets up to 1cm. Mo content green (MoS ₂) is 2%		72.0	3.0	2366	.191	.013	.009	.62			
		75.0									
75.18: minor patch cpy.		75.0	3.0	2368	.182	.040	.011	.92			
		78.0									
78.05: minor cpy disseminated		78.0	3.0	2369	.229	.050	.011	.96			
		81.0									
83.1: minor cpy on fracture plane generally		84.0	3.0	2370	.149	.052	.008	.47			
84.35-156.5: mostly barren minor fracture veinlets moly locally. Similar py content as above zone. Equivalently locally moly is disseminated		87.0	3.0	2371	.158	.025	.007	.30			
85.3-85.5: minor to trace moly + possible cpy.		87.0									
85.9-86.5: minor moly.		90.0	3.0	2372	.123	.038	.009	.17			

DEPTH (METRES)	% Core Recy	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION			
				141m = 462.6' 161m = 528.2'				
125		py lamination 60°/A						
		veins 35°/A		125.5-125.6: calcite - qtz vein; 35° c/A				
130				128.3-129.7: semi-continuous subparallel grey qtz vein				
		Altered Sediment?		130.5-130.9: grey qtz vein with strong mod. siliceous and patches 128.3-130.9: brecciated zone				Intensely Silicified
135		lamina 50° 60°/A		130-141: py common as juxta lamina, locally disrupted siliceous layering & chloritic? layering; possibly altered disrupted silicates possibly chlorite; zones and patches with high py content often contain chlorite?				
				136.4 - 137.2: grey qtz vein cut by qtz-calcite stringers; some shear, present subparallel c/A.				
140		Altered unit		141-161: calcite; 111.4-130; uncertain primary nature				Intensely silicified
145				145.50-146.0: broken, sheared, sericitic slips				
				148.3-150.2: major cataclastic zone; broken c/wk; 24°; 10°; 10°; local m...				CATACLASTIC
				148.3-151.55: internal qtz-calcite stringers				
		qtz 60°/A		148.3-148.4: intense qtz veinlets all //				
150				148.7-149.7: grey qtz vein with 20% altered horn				

	MINERALIZATION DESCRIPTION	TOTAL SULPHIDE	SAMPLE INTERVAL	SAMPLE WIDTH	ASSAY NUMBER	%	%	%	COMPOSITE ASSAYS
						Cu	Mo	Au	
				3.0	2383	.119	.030	.007	.21
	122.7-123.1 = laminated py; discontinuous & probably secondary features; 20% py.		123.0						
125				3.0	2384	.157	.023	.006	.18
			126.0						
				3.0	2385	.178	.040	.008	.21
	128.3-130.9: strongly moly with local cpy.		129.0						
130	130.9-133: stronger moly with thin overlying material above 128.3			3.0	2386	.278	.059	.008	.51
	130-141: py both as disseminations and in laminae; py often concentrated in spots (sample 5m zone from base) (10-30% py)		132.0						
				3.0	2387	.251	.029	.009	.19
135			135.0						
				3.0	2388	.148	.013	.006	.14
			138.0						
140				3.0	2389	.262	.015	.010	.16
			141.0						
				3.0	2390	.102	.014	.002	.08
	143.5-145.5: better than average moly here for this zone		144.0						
145				3.0	2391	.214	.023	.003	.10
			147.0						
				3.0	2392	.309	.013	.007	.20
150			150.0						

PAGE 11 OF 21		PROJECT:							HOLE NO. 16	
MINERALIZATION DESCRIPTION	TOTAL SULPHIDE	SAMPLE INTERVAL	SAMPLE WIDTH	ASSAY NUMBER	%		%		COMPOSITE ASSAYS	
					Cu	Mo	Ag	A ₂		
151.6 - 156.5: locally strong moly and overall probably 1% cpy (disseminated)		153.0	3.0	2393	.232	.046	.008	.22		
			3.0	2394	.277	.042	.009	.31		
156.5 - 159.0: no significant moly noted; py more erratic, localized distribution; cpy noted locally but overall uncommon; py common in fractures & veinlets; py overall less than 3% 3%.		159.0	3.0	2395	.310	.021	.007	.47		
			3.0	2396	.317	.016	.008	.30		
163.48: small patch cpy with fibrite (pyrite) white silty in veinlet		165.0	3.0	2397	.320	.016	.010	.29		
			3.0	2398	.186	.009	.012	.29		
			3.0	2399	.166	.006	.004	.24		
			3.0	2400	.191	.004	.039	.31		
171.45 - 177.55: 2.5% py		177.0	3.0	1801	.412	.004	.005	.29		
177.45: minor patches cpy in veinlet		180.0	3.0	1802	.454	.005	.027	.31		

DEPTH (METRES)	% Core Recy	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION	
185				Altered moderately silicified, sericitized, chloritized feldspar-amphibole porphyry intrusive; upper contact broken, pale green consisting of chlorite-sericitized feldspar in a feldspathic groundmass; locally magnetic with visible magnetite; saw 5mm Kspars pl. relict; irregular flow orient. to the amphiboles locally; locally fine grained white feldspar	190.9m = 263	304.5m = 799
			45°/N	182.6-183.1: conglomeratic zone with upper contact at 45°/N. 3-5% diam. and patchy py; clasts of chert?, intrusive quartz? and sediment		
				186.1-186.8: broken, some sericitic-clay slips		
				187.8-188.4: broken		
				190-190.9: zone lith common		
190			45°/N	amphibole orientation		
			intrusive-sediment contact	196.9-194.8: contact zone between intrusive and probable sediments (chert? & chertitic sediments?); probable fault zone; well fr. veinlet; qtz-calcite veinlets common; combinations of intrusive and fault line chert; local clay mud		
			50°/N	lower fault contact		
195				195.7-196: calcite qtz veinlets breccia; minor sp. py patch in vein		
			chert sediments	194.8-304.5: grey, siliceous fine to medium grained cherts and chertitic sediments; locally conglomeratic chert clasts in ground; slight flowite bearing veinlets common; locally in zone of		
200			fault alteration 20°/30°/N	196.0-196.2: probable fault breccia associated with vein		
				199.5-200.25: fault zone; mud locally broken qtz-calcite veinlets; sulphide content low (leached).		
				202.7-203.4: broken 201.6-202.4: qtz veining with crosscutting fluorite-calcite veinlets 201.6-207.8: qtz veining common 194.8-213.5: predominantly chert.		
205						
210				209.95: qtz-calcite veinlet; fluorite quartz veins		

PAGE 14 OF 21		PROJECT:		HOLE NO. 16			
DEPTH (METRES)	% Core Recy	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION		ALTERATION	
				220.68			
				214.5m = 703.1 228m = 748			
215			bedding? 60% A	210.4-211.0	py-siliceous sedimentary bed;		
			bedding? 70% A		very fine lamination of arg. possible;		
			bedding? 55% A	211.0-211.5	conglomerate; chert + qtz clasts		
			35% A (212.8)		also one volcanic intrusion		
			CHLORITIC SEDIMENTS		porphyry (amphibole?) clast; size up to 2cm; some disrupted laminated siltstone; some bent clasts		
220					also pyritic in some cases; also chloritic clasts with py-cpy;		
					also one granitic clast; clasts are subangular to rounded; some contact		
				210.84	as for 209.95; veinlet		
				211.4	interbedded chert and siltstone and py, chloritic sediment;		
					thin bedding thicknesses		
225				212.5-212.9	inter-layered chert sediment and siltstone; also conglomerate		
					chertized clasts in siltstone; conglomerate brecciated by ST3.		
				220.0-220.8	predominantly grey qtz vein		
				214.5-214.9	predominantly grey quartz		
				213.5-216.2	tends to be chert-stippled with tabular chert - chloritic sediment zoning; predominantly chloritic sediment; some fault breccia common		
230				214.5	probable fault breccia		
				217.7-217.78	qtz vein with chloritic slips		
				220.68	thin granitic material with qtz vein		
				222.7-223.9	qtz vein subparallel c/A		
				224.4-225.3	granite veins with white and red feldspar phenocrysts; probable breccia zone		
235				225.1-226.5	medium grained feldspathic chloritic sediment with scattered isolated sedimentary clasts up to 4cm in size		
					Small clastic feldspar grains common		
				224.4-225.3	mainly coarse breccia		
				228.0	probable fault breccia		
				231.5-232.2	granite		
240				229.4-230	probable cataclastic zone - raised angular fragments of granite, chert, chloritic sediment in matrix		
				233.6-236	granite veins or brecciated fragments common; brecciation of matrix probably due to faulting + shearing.		
				233.2-233.8	matrix (c/A)		
					CHERT?		
				bedding? 35% A	236.2-252.7	predominantly grey chert locally with granitic veins and patches	

DEPTH (METRES)	% Core Recy	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION			
245				242.6-244.1 = qtz veins common trace cpy ; minor fluorite				
250				247.0-250 : zones full of tension gashes filled by qtz + calcite; very thin delicate gashes.				
255				252.15-253.0 : granite - white feldspar 1.2cm in size and pink feldspar 3-4mm in size all in an sp matrix py -rich host; only minor py locally crosscut by sulphide and qtz -calcite & fluorite inlets; contacts are brecciated.				
				254.6-254.7: well foliated sericitic zone with small at the amphibole? & feldspar intrusion granite contact about at 40° dip; sericitic layer could be at the porphyry intrusion				
260			Granite	257.7-266.5: granite predominant; isolated .5m zone of py -bearing chert; local py fractures in granite with sericite & for. inlets				
265				266.5-304.5 : clastic sediments typical mixture of chlorite and granitic feldspar includes chert and fine grained clastic sediments granite matrix as well as calcite, amphibole, feldspar (porphyry); brecciated zone with py (possibly, chert and breccia)				
			Sediments?	268.3-268.5: qtz -calcite vein with fluorite (purple-green)				
270				269.4-270: finely layered sediment; qtz -rich & chlorite-rich breccia				

foliation
40°/A

bedding
50°/A

DEPTH (METRES)	% Core Recy	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION			
275								
280		<u>45-53% / 11</u> <u>contact</u>		<u>276.14 - 279.92 = acid amphi. ls. with ^{with} fine ^{fine} grained ^{grained} foliated ^{foliated} material ^{material}</u>				
285								
290				<u>288.6 - 289.8 = calcite breccia with possible clean fluorite</u> <u>290.3 - 290.7 = actinolite 289.5 - 289.8</u>				
295		<u>100% / 11</u>		<u>291.75 = irregular Qtz + chlorite Qtz lamination</u>				
300		<u>foliated lamina</u> <u>50% / 11</u>		<u>298. - 298.4 = possible fine grained biotite? discontinuous foliated lamina</u>				

MINERALIZATION DESCRIPTION	TOTAL SULPHIDE	SAMPLE INTERVAL	SAMPLE WIDTH	ASSAY NUMBER	%			COMPOSITE ASSAYS	
					Cu	Mo		Av	Ag
		273.0	3.0	1833	.149	.006		.009	.49
		275.0	3.0	1834	.199	.005		.009	.20
		276.0							
			3.0	1835	.148	.004		.010	.28
		279.0							
			3.0	1836	.133	.005		.031	.18
		282.0							
			3.0	1837	.248	.007		.005	.20
		285.0							
			3.0	1838	.101	.004		.005	.11
		287.0							
			3.0	1839	.049	.008		.002	.09
		291.0							
			3.0	1840	.150	.009		.008	.10
		294.0							
			3.0	1841	.111	.009		.012	.10
		297.0							
297.14 - 297.50 = 40-50% py. with local irregular patches of cpy (2-3%) in a qtz-rich host.			3.0	1842	.430	.006		.039	.31
		300							

275

282

285

291

295

300

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MINERALIZATION DESCRIPTION	TOTAL SULPHIDE	SAMPLE INTERVAL	SAMPLE WIDTH	ASSAY NUMBER	%	%	%	A _v	A _g	COMPOSITE ASSAYS
					Cu	Mo				
			3.0	1843	.099	.006		.003	.27	
		303.0								
303.35 schist m. gray spy with quartz-chal. and trace brassy			1.5	1844	.201	.004		.002	.21	
more siliceous grey material (schist?)		304.50								
		ECH								

[Handwritten signature]