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AFTON MINES PROPERTY  
KAMLOOPS, BRITISH COLUMBIA.

M. R. Wolfhard  
July 28, 1971.

AFTON MINES PROPERTY  
KAMLOOPS, BRITISH COLUMBIA

SUMMARY:

During the period April 12 through May 13, 1971 a program of mapping, rock geochemistry and percussion drilling was carried out on the Afton Mines Ltd. property, southwest of Kamloops, B.C. The program indicated the presence of a strong sericite pyrite (phyllitic) alteration zone about 2000 feet in diameter, enclosing a potassium feldspar zone about 1000 feet in diameter. The best grade obtained within this porphyry alteration zone was 0.04% Cu over 300 feet and 0.14% Cu over 20 feet in Hole A-7, within the potassium feldspar zone.

Hole spacing was such that there is no chance of a significant porphyry deposit existing on Afton Mines ground in areas underlain by pre Kamloops rocks. It is possible that the post mineral Kamloop group may cover interesting ground, but this rock unit has proven to be greater than 300 feet thick in all holes, which penetrated to date.

It is recommended that no further work be performed on the Afton option and that the option be allowed to lapse on July 31, 1971.

MAPPING:

During April and May the Afton property and much of the surrounding area, including about 8 square miles was mapped at 1000 feet to the inch.

Outcrops were examined for:

- Rock type,
- Hydrothermal and/or contact metamorphism,
- Presence of sulphides,
- Pyrite/chalcopyrite ratio,
- Mode of occurrence of sulphides.

This mapping suggests that the only large hydrothermally altered zone within the map area lies in the west central portion of Afton Mines ground.

### ROCK GEOCHEMISTRY:

Rock geochemical sample program was conducted on the Afton ground over an area of about 2 square miles. Samples were analysed for Cu and Mo. The rock geochemistry indicates areas of higher than normal Cu content, both by Cu values and by a small but significant increase in Mo values. However, the same areas can be identified through inspection of the hand specimens for chalcopyrite and by examining trends in hydrothermal alteration. In this environment the results of the rock geochemical sampling tell us nothing we could not discover from a geological mapping program.

### DRILLING:

Drilling commenced April 28 and by the end of night shift May 14, 5100 feet of percussion drilling has been completed in 21 holes. Five of these holes were abandoned in overburden at depths ranging from 100 - 140 feet. Of the remaining 16 holes, 15 were completed to 300 feet in bedrock and one was completed to 260 feet in bedrock.

We originally became interested in this property because of the presence of widespread copper mineralization in an intrusive complex in an area with about 5% outcrop and containing relatively large completely covered areas. It was believed that there was a potential for a porphyry type copper/molybdenum deposit.

Holes A-3, A-5, A-7, and A-12a penetrated phyllic and potassic altered hornblende and hornblende feldspar porphyry. The best grade obtained within this zone was 300 feet of 0.04% Cu containing a 20 foot section of 0.14% Cu. in Hole A-7.

Holes A-3 and A-5 both contained considerable pyrite and occasional grains of chalcopyrite but they assayed only slightly higher than background at approximately 0.01% Cu. Hole A-2 cut about 150 feet of garnet skarn altered Nicola volcanic rock containing native copper, magnetite and hematite. This hole which averaged 0.06% Cu with a maximum of 0.10% Cu over 15 feet may have penetrated a western extension of mineralization cut by Afton Mines Hole 70-4. Interpretation of available geology suggests that this zone is no more than 300 feet wide and is too small to consider as an open pit target.

Of the other 12 holes which penetrated bedrock, 5 were drilled in post mineral Kamloops group clastics and pyroclastics. Considerably more of the southern portion of the Afton ground was underlain by these post mineral rocks than had been anticipated. One of the large covered areas was thus eliminated as an exploration target.

The remaining 7 holes returned chips of relatively unaltered and unmineralized Iron Mask batholith rocks.

Given the combination of outcrop and drill hole information available, it is clear that there is no room on Afton Mines Ltd. property for a significant porphyry deposit accessible to surface mining methods.

  
M. R. Wolfhard.

MRW/vmck  
July 28, 1971

PROPERTY: AFTON

HOLE # A-1 (Q75) LOCATION See Map DIP -90°

From	To	Description	Cu (ppm)	Cu (%)	Mo (ppm)
0	22	overburden.			
22	30	Afton microdiorite, chlorite, minor fresh biotite, epidote, weak sericite. Some specularite Magnetite in heavy fines.	190		9
30	40	same.			
40	50	same, with potassium feldspar veinlets.	174		5
50	60	same, no potassium feldspar.			
60	70	same.	154		5
70	80	same, with potassium feldspar.			
80	90	same, 10% potassium feldspar, only minor epidote.			
90	100	Afton microdiorite with blue-green chlorite, no fresh biotite, only minor potassium feldspar, 5% epidote, contact is gradational over 50'. Magnetite in fine heavys.	158		5
100	110	same as 90-100'.	158		6
110	120	same, 10% potassium feldspar.			
120	130	same as 110-120', minor potassium feldspar.	166		5
130	140	same, very minor potassium feldspar.			
140	150	same.	112		5
150	160	same.			
160	170	same, minor fresh biotite.	69		6
170	180	same, with 50% of fragments white.			
180	190	60% blue-green, 20% potassium feldspar.	87		4
190	200	30% blue-green, 40% potassium feldspar.			
200	210	10% blue-green, 60% potassium feldspar.	104		4
210	220	80% blue-green, 5% potassium feldspar.			
220	230	40% blue-green, 5% potassium feldspar.	81		3
230	240	60% blue-green, 5% potassium feldspar.			
240	250	50% blue-green, 5% potassium feldspar.	104		5
250	260	about the same throughout.			
260	270		170		5
270	280				
280	290		142		4
290	300				
Average			133		5

PROPERTY: AFTON

HOLE # A-2

(976)

LOCATION See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	135	overburden.			
135	150	80% fragments, reddish brown garnet, 20% white feldspar, minor chlorite and orange feldspar, minor epidote. Native copper in less than 1mm grains throughout. The copper appears mainly in the fine fraction. Very minor chalcopyrite, pyrite.	1045		4
150	160	same, 10% orange feldspar, no epidote, minor quartz.	665		4
160	170	same as 150-160'.			
170	180	60% garnet, 30% quartz, white feldspar, epidote, fluorite? Very minor sulphides, some native.	320		5
180	190	same as 170-180'.			
190	200	80% garnet.	600		4
200	210	same.			
210	220	50% garnet, 30% quartz, orange feldspar. No sulphide.	890.		5
220	230	40% garnet, 20% quartz, 40% feldspar and blue-green rock fragments. Native but no sulphide.	770		6
230	240	same.			
240	250	20% garnet, rest mainly blue-green rock chips.. 240-260	810		4
250	280	40% garnet, 30% quartz, 30% blue-green, minor sulphide. 260-280	293		5
280	290	20% garnet, 20% syenite fragments, rest is feldspar, quartz, minor pyrite, no copper, no epidote.	277		5
290	300	10% garnet, 70% syenite, 20% blue-green. No copper.			
135	290	all red brown colored return.  There is a minor unknown, soft, bluish white, silky lustre mineral throughout.			
Average			630		4

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HOLE # A-3 (977) LOCATION See Map DIP -90°

From	To	Description	Cu (ppm)	Cu (%)	Mo (ppm)
0	66	overburden.			
66	70	sericite (minor quartz) rock with abundant disseminated subhedral pyrite, average grain size about 1/2 mm.			
70	80	sericite 70%, quartz 10%, sericitized potassium feldspar 20%, abundant disseminated pyrite. Pyrite/chalcopyrite much greater than 10/1.	51		5
80	90	as 70-80', sericite 50%, quartz 10% sericitized potassium feldspar 40%.	25		4
90	100	same.			
100	110	same, red unknown on fractures and fine grain unknown sulphide. Running spectroscopic analysis on gold, silver and mercury.	58		4
110	120	same, no red unknown.			
120	130	see 130-140'.			
130	140	15% quartz, 85% sericitized potassium feldspar, abundant pyrite, minor chalcopyrite, ratio approximately 10/1.	25		3
140	150	sericite 60%, quartz 10%, sericitized potassium feldspar (some fresh) 30%. Pyrite, very minor chalcopyrite, minor magnetite with chlorite.	49		3
150	160	sericite 40%, quartz 10%, sericitized potassium feldspar 10%, chlorite-sericite magnetite rock 40%. Pyrite.			
160	170	same. Note that "unknown fine grain sulphide" is probably gray sericite.	154		4
170	180	same.			
180	190	same.			
190	200	same, sericite 70%, quartz 10%, chlorite-sericite magnetite rock 20%.	97		5
200	210	10% very fine grain garnet. 30% sericite, 10% quartz, 50% chlorite-magnetite. Pyrite.	117		4
210	220	same, no garnet.			
220	230	60% sericite, 20% potassium feldspar, 20% chlorite-magnetite-hematite. Pyrite.			

Cont'd..

PROPERTY: AFTON

HOLE # A-3 (page 2)

LOCATION See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
230	240	60% sericite, 20% potassium feldspar, 20% chlorite-magnetite-hematite. Pyrite. Minor red unknown.	166		5
240	250	same, 5% very fine grain red garnet.	126		3
250	260	same, no garnet.			
260	270	same.	195		4
270	280	same, minor garnet.			
280	290	70% monzonite or granite cuttings. Fresh orange feldspar with "graphic" quartz or albite, 30% chlorite-magnetite and sericite rock. Much less pyrite.	200		3
290	300	60% monzonite, 20% sericite, 20% chlorite-magnetite.			
		Average	105		3



PROPERTY: AFTON

HOLE # A-4 (978) LOCATION See Map DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	95	overburden.			
95	260	Kamloops group. Red and black fine crystalline rock, feldspar porphyritic andesite and latite, chert, and clastic rocks. No sulphides.			
95	110		285		4
110	130		53		4
130	150		47		4
150	170		32		3
170	190		35		3
190	210		43		4
210	230		43		4
230	250		29		2
250	260		31		4
		Average	66		3

PROPERTY: AFTON

HOLE # A-5 (Q79)

LOCATION See Map

DIP -90°

From	To	Description	Cu (ppm)	Cu (%)	Mo (ppm)
0	30	overburden.	131		5
30	40	mixed, still much overburden.			
40	50	10% syenite, 10% chlorite-sericite rock, 10% quartz, 70% white, weakly sericitized albite? rich rock with abundant pyrite, some chalcopyrite. Estimate pyrite/chalcopyrite 10/1.	81		2
50	60	50% fine grain orange-pink weakly sericitized feldspar. 30% fine grain white weakly sericitized feldspar. 10% syenite, 10% quartz. pyrite, minor chalcopyrite.			
60	70	30% fine grain orange-pink weakly sericitized feldspar. 60% chlorite-sericite rock. 5% syenite, contaminated with basic rock. 5% quartz. some pyrite.	75		3
70	80	90% chlorite-sericite rock. 10% potassium feldspar. pyrite.			
NOTE:		chlorite-sericite rock is probably meta-Nicola.			
80	110	80% chlorite-sericite rock. 20% syenite and potassium feldspar. pyrite, minor chalcopyrite. 80-100 minor epidote.	117		3
110	120	40% chlorite-sericite rock. 100-120 60% potassium feldspar and syenite. epidote, red garnet, pyrite.	124		4
120	140	70% strong disseminated epidote + sericite + potassium feldspar altered, micro porphyritic, micro-granitic. May be altered Sugarloaf phase or syenite. Sulphide poor. 30% potassium feldspar. Pyrite.	81		3
140	160	60%-80% potassium feldspar, weakly sericitized. 20%-40% epidote altered Sugarloaf? or syenite. Pyrite, minor chalcopyrite?	146		4
160	200	65%-85% potassium feldspar. 160-180 10% quartz. 5%-25% chlorite sericite rock and	128		4
		continued..			

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HOLE # A-5 continued LOCATION See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu(ppm)</u>	<u>Cu(%)</u>	<u>Mo(ppm)</u>
		180-200 altered microgranitic.	114		4
200	230	Pyrite, very minor chalcopyrite. 30% potassium feldspar. 60% epidote altered microgranitic and minor chlorite sericite rock. 10% quartz. 200-220 pyrite, very minor chalcopyrite.	61		4
230	240	Microgranitic is definitely Sugarloaf. 20% chlorite-sericite. 20% potassium feldspar. 5% quartz. 10% syenite 220-240 45% microgranitic, potassium feldspar altered. pyrite, chalcopyrite.	104		5
240	250	10% chlorite sericite. 15% quartz. 10% potassium feldspar. 240-260 65% microgranitic, potassium feldspar altered. pyrite/chalcopyrite 3/1.	117		5
250	280	same, but pyrite/chalcopyrite 10/1. low total sulphide. 260-280	281		5
280	300	80% fresh to very weakly altered potassium feldspar. 20% potassium feldspar altered. microgranitic. more sulphides. pyrite/chalcopyrite 5/1.	200		5
NOTE:		sulphides essentially all disseminated.			
		Average	125		4

PROPERTY: AFTON

HOLE # A-6 (970) LOCATION See Map

DIP-45° to 180°

From	To	Description	Cu (ppm)	Cu (%)	Mo (ppm)
22	40	strong sericite-quartz-pyrite alteration.			
		pyrite/chalcopyrite approx. 10/1.			
40	50	potassium feldspar alteration.			
		pyrite/chalcopyrite approx. 10/1.			
50	70	strong sericite-quartz-pyrite alteration.			
		pyrite/chalcopyrite 10/1.			
70	110	60% potassium feldspar.) @ 70 in- 40% chlorite-sericite.) creasing to 90% potassium feldspar. 10% chlorite-sericite			
		pyrite/chalcopyrite 10/1.			
110	130	90% potassium feldspar. 10% sericite.			
		pyrite/chalcopyrite 5-10/1.			
130	150	10%-30% quartz. 70%-90% potassium feldspar.			
		pyrite/chalcopyrite 5-10/1.			
150	170	see 110-130.			
170	210	65% potassium feldspar. 30% sericite. 5% quartz.			
		pyrite/chalcopyrite 10/1.			
210	300	see 110-130. pyrite/chalcopyrite 5-10/1.			
0	40		76		11
40	60		104		4
60	80		244		4
80	100		178		5
100	120		269		5
120	140		135		8
140	160		51		11
160	180		79		7
180	200		102		5
200	220		110		4
220	240		69		4
240	260		135		4
260	280		110		5
280	300		128		8
Average			127		6

PROPERTY: AFTON

HOLE # A-7 (991) LOCATION See Map DIP -90°

From	To	Description	Cu (ppm)	Cu (%)	Mo (ppm)
0	13	overburden.			
13	300	70% sericite rock ) @ 13' 30% potassium feldspar) all pyritic, minor chalcopyrite changing. 40% sericite rock ) @ 70' 60% potassium feldspar) sericite rock may be altered Sugarloaf phase. abundant sulphides. pyrite/chalcopyrite 10/1. minor bornite at 80'-90' minor bornite at 100'-110' 50% sericite rock ) @ 100'-110' 50% potassium feldspar) this ratio is relatively constant to 240'-250'. 20% sericite rock ) @ 240'-250' 80% potassium feldspar) 50% sericite rock ) @ 250'-260' 50% potassium feldspar) 50/50 to end of hole @ 300'.  minor quartz throughout, minor chlorite, no epidote.			
0	20		238		6
20	40		850		9
40	60		700		9
60	80		304		10
80	100		830		11
100	120		1405		10
120	140		281		8
140	160		310		6
160	180		238		7
180	200		287		5
200	220		178		6
220	240		251		5
240	260		275		9
260	280		222		7
280	300		217		7
		Average	439		7

PROPERTY: AFTON

HOLE # A-8

LOCATION See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	120	overburden. Abandoned.			

PROPERTY: AFTON

HOLE # A-8a (082) LOCATION See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	58	overburden.			
58	300	Kamloops sediments. a very few grains of chalcopyrite, pyrite in the last 20'.			
58	80		61		4
80	100		43		4
100	120		40		3
120	140		39		3
140	160		43		4
160	180		42		3
180	200		36		3
200	220		43		3
220	240		40		3
240	260		43		2
260	280		43		2
280	300		40		4
		Average	42		3

PROPERTY: AFTON

HOLE # A-9 (Q33) LOCATION See Map DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	40	overburden.			
40	100	Kamloops sediments.			



PROPERTY: AFTON

HOLE # A-10 (Q84) LOCATION See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	45	overburden.			
45	300	hematite cemented Kamloops Group sediments.			

PROPERTY: AFTON

HOLE # A-11 (QTS) LOCATION See Map DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
		abandoned at 140' in overburden.			

PROPERTY: AFTON

HOLE # A-12

LOCATION See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
		abandoned at 90' in overburden.			

PROPERTY: AFTON

HOLE # A-12a (Q86) LOCATION See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	50	overburden.			
50	300	strong epidote, minor potassium feldspar alteration of Sugarloaf phase diorite. Epidote disseminated and replacing the hornblende phenocrysts. no sulphides. (only some of chips examined.)			
50	60		69		7
60	80		94		7
80	100		67		6
100	120		65		6
120	140		61		6
140	160		61		5
160	180		64		5
180	200		69		5
200	220		61		6
220	240		70		5
240	260		73		7
260	280		69		6
280	300		70		5
		Average	68		5

PROPERTY: AFTON

HOLE # A-13 (Q87) LOCATION See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	40	overburden.			
40	300	hematite cemented Kamloops Group sediments.			

PROPERTY: AFTON

HOLE # A-14 (Q88)

LOCATION

See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	17	overburden.			
17	300	epidote-amphibolite facies meta-Nicola. No to very sparse sulphides. Pervasive chlorite. epidote-amphibolite grades to chlorite-epidote by 150'. There are a few narrow (approx.10') dikes of Sugarloaf phase.			
20	40		87		9
40	60		112		7
60	80		124		9
80	100		150		7
100	120		64		8
120	140		52		7
140	160		100		5
160	180		69		9
180	200		89		7
200	220		97		7
220	240		146.		6
240	260		124		9
260	280		97		7
280	300		65		7
		Average	98		7

PROPERTY: AFTON

HOLE # A-15

LOCATION

See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	120	abandoned in overburden.			

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HOLE # A-15a (Q89)

LOCATION See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	64	overburden.			
64	300	Sugarloaf hornblende porphyry. Feldspar weakly clay altered, mafics chloritized, calcite (from veinlets?) makes up 0-10% of rock. Fractures oxidized to 100'. Below 100', sparse fracture and controlled disseminated pyrite. No to minor chalcopyrite. Sulphides abundant 220-230'. Pyrite/chalcopyrite approx. 10/1. Sulphides very sparse 240-300'.			
64	80		87		8
80	100		125		9
100	120		158		10
120	140		138		8
140	160		212		9
160	180		275		9
180	200		101		8
200	220		72		7
220	240		95		7
240	260		76		8
260	280		117		6
280	300		77		5
		Average	127		7



PROPERTY: AFTON

HOLE # A-16 (Q90) LOCATION See Map

DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	95	overburden.			
95	120	?Lone Tree phase?, feldspar fresh to weakly softened.			
120	130	Afton phase, medium epidote fractures, weak pervasive sericite. Very sparse sulphides.			
130	150	See 95'-120'.			
150	300	See 120'-130'. 190'-200' orange feldspar rich. 230'-260' orange feldspar rich. 280'-290' 20% syenite.			
120	130		38		7

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HOLE # A-17

LOCATION See Map

DIP -90°

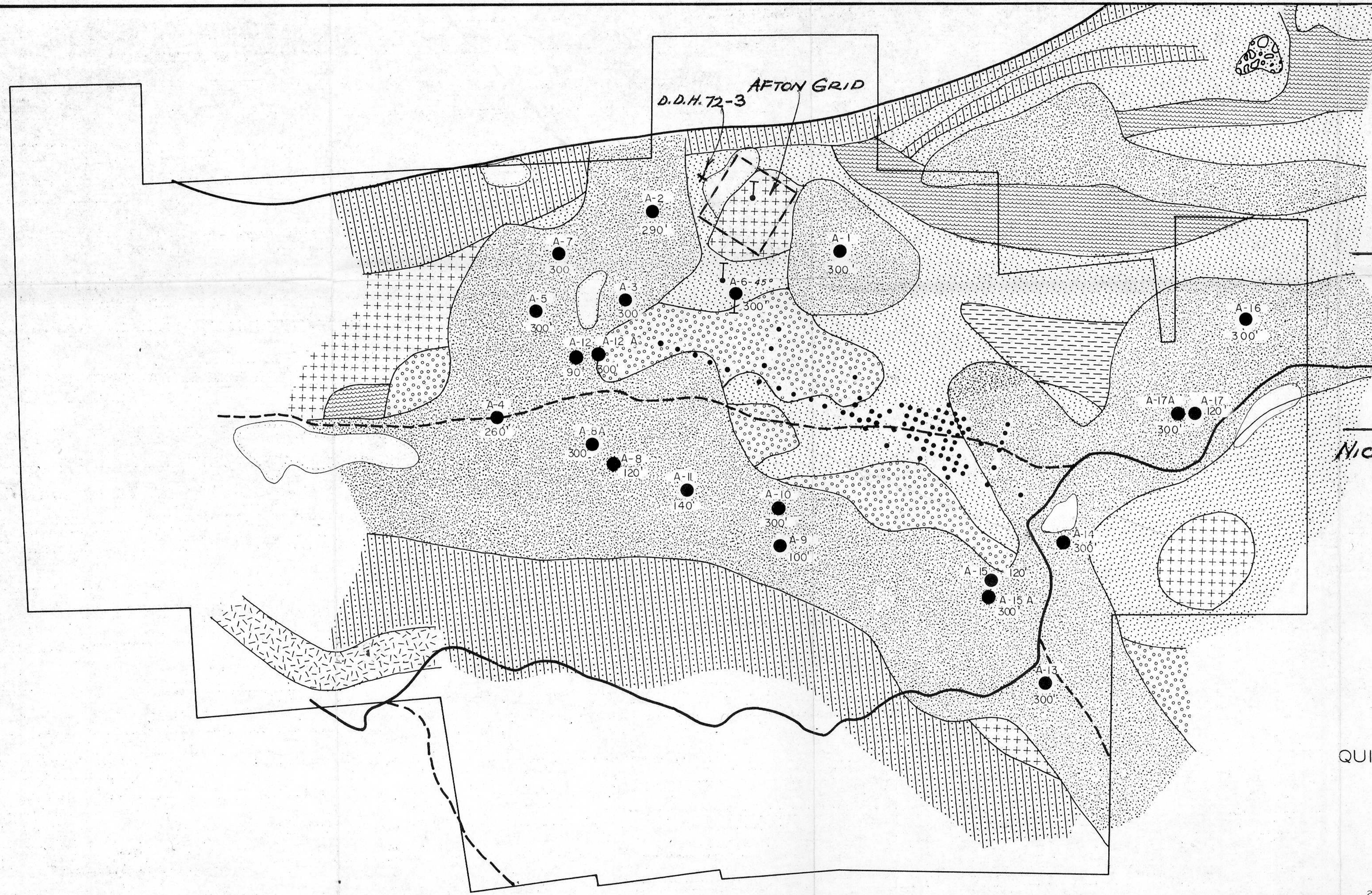
<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	120	overburden. Abandoned.			

PROPERTY: AFTON

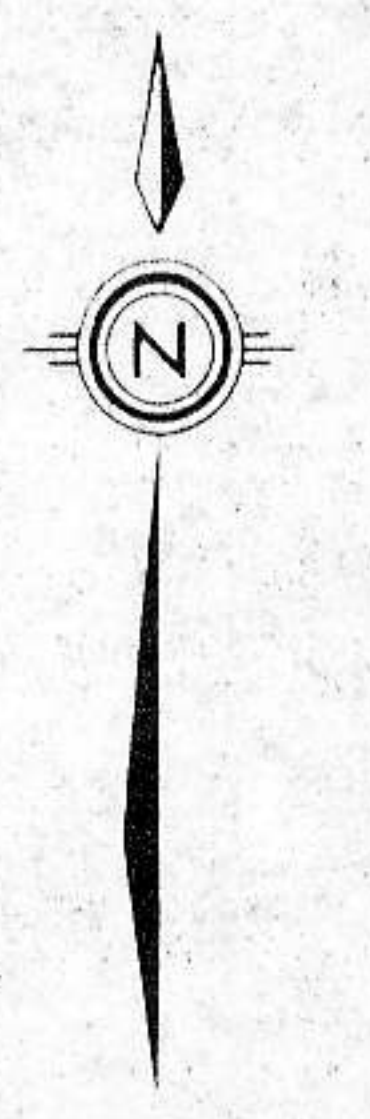
HOLE # A-17a (Q91) LOCATION See Map DIP -90°

<u>From</u>	<u>To</u>	<u>Description</u>	<u>Cu (ppm)</u>	<u>Cu (%)</u>	<u>Mo (ppm)</u>
0	42	overburden.			
42	300	not logged in detail - samples still wet. no sulphides. rock type-mixed Lone Tree and Afton phases.	38		10





- LEGEND**
- POST MINERAL**
- Quaternary Alluvium
  - Miocene or later, Kamloops Group, andesite, fragmentals, sediments
  - Miocene or later, Kamloops Group, rhyolite, clay altered, silicified, pyritic
- IRON MASK BATHOLITH**
- Sugarloaf phase, hornblende ± feldspar porphyritic diorite
  - Lone Tree phase, hornblende-biotite diorite
  - Breccia, pipe type ?
  - Red feldspar syenite
  - Afton phase, hornblende, biotite, diorite
- NICOLA**
- Granitized to green schist facies meta-Triassic volcanic rock
- Pre 1971 drill hole
  - **QUINTANA** proposed drill hole (percussion)
  - Road
  - Lake



QUINTANA MINERALS CORPORATION  
 AFTON MINES PROJECT  
 (KAMLOOPS AREA, B.C.)  
**GEOLOGY & DRILL HOLE  
 LOCATION MAP**

