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NEWMONT EXPLORATION

September 27, 1982

Van Schuotto
Aug 23/06

Mr. T.N. MacAuley
Newmont Exploration Ltd.
1400 750 West Pender St.
Vancouver, B.C.
V6C 1K3

Dear Terry

This letter concerns the field work which I completed at Trout Lake during August and September of 1982. The field area, of which Newmont has already received a geological map, extends from the west side of Wilke Creek, east to the upper part of Pump Creek.

The lithology is divided into nine units which roughly correlate to those established by Dr. Read. The first unit is phyllite and quartz biotite schist. These two rock types are grouped together because it is likely that the quartz biotite schist is a higher grade metamorphic equivalent of the phyllite. Both rock types are finely laminated quartz and mica/clay layers, and generally contain very little sulphides.

Carbonate rocks comprise the second unit which includes marble, dolomite, and black banded limestone. Dolomite is the least common carbonate, occurring west of Wilke Creek, east of the baseline on line 80N, and in the southeast corner of the map sheet. The rest of the carbonate is black laminated limestone and buff marble. Outcrop textures show that the marble is derived from the limestone. Blocks of remnant limestone can be seen in the marble, and zones of coarse grained marble crosscut the medium grained limestone.

The third unit is calcareous phyllite and calc silicate schist, where the schist is a higher grade metamorphic equivalent of the phyllite. The calcareous phyllite unit is grey/brown, well laminated, and differs from the phyllite unit only in the carbonate content. The calc silicate schist is also well laminated, and is comprised of quartz, biotite, actinolite, K-feldspar, and clinozoisite.

Quartzite, the fourth unit, is gradational from calcsilicate schist. It is either medium grey, massive, comprised largely of quartz, or dark brown, massive,comprised of biotite and quartz. The presence of 2-5% pyrrhotite is characteristic, which along with the massive texture enables the unit to be distinguished from the quartz biotite schist.

The fifth unit, actinolite schist, is dark green, massive,with radiating clusters of actinolite crystals, and is volcanic in origin. The majority of the metavolcanic crops out on the west side of Wilke Creek, with two smaller horizons east of the Z-fault. Grid lines 84N and 88N cross an intermediate volcanic on the east side of the Z-fault, but the rest of the unit has a more basic composition.

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Skarn is the sixth unit and generally replaces carbonate, but also rarely replaces calc silicate schist. Skarn development is related to quartz veins. Zones of massive or irregular patches of diopside, garnet, or pyrrhotite are spacially related to quartz veins, with calc silicates also common within the veins.

The last three units are of igneous origin: granodiorite, quartz diorite, and quartz stockwork. Most of the granodiorite and quartz stockwork are within the zone of surface mineralization, and have been previously mapped. One new granodiorite outcrop was discovered along the southern margin of the map area, but no quartz veins or mineralization was observed. Quartz diorite was observed at three locations: at the discovery outcrop, southeast of the Copper Chief Mine, and along the Copper Chief trail. At the latter two locations no mineralization, alteration, or quartz veins were observed. Alteration and mineralization is present in the quartz diorite at the discovery outcrop however these rocks are still relatively fresh when compared to the surrounding granodiorite and silisified schist.

Preliminary field observations indicate that a contact metamorphic aureole may exist on the east slope of Wilke Creek.Bydistinguishing calcareous phyllite from calc silicate schist,and phyllite from quartz biotite schist, tremolite and biotite isograds can be speculated. These preliminary isograds virtually surround the deposit and are elongated parallel to regional structure. Petrographi work will comprise part of this year's research, and should confirm or refute the field interpretation. If these isograds are confirmed it would be of importance to future exploration. They would indicate a sizable pluton at depth beneath the east slope of Wilke Creek. The intersection of this pluton with the quartz diorite which crop out at surface would be a prime exploration target. Granodiorite intersected by Amax diamond drilling beneath the west slope of Wilke Creek supports the premise of a pluton plunging from the Trout Lake deposit to the northwest beneath Wilke Creek.

The major dificulty on establishing a contact aureole is overprinting by hydrothermal alteration. In some fault zones, hydrothermal solutions have passed,and altered the surrounding country rock. A good example of this is sta. 82-50 where phyllic alteration is present in a fault zone. In general however the alteration is in the form of quartz biotite, and is probably not metasomatic. These rocks are difficult to distinguish from contact metamorphic rocks due to identical mineralogy and texture. The hydrothermal zones can only be identified by the sharp mineralogical contrast with the metamorphic rocks over a narrow width. The metamorphic rocks have consistant mineralogy over sizable distances.

The structural interpretation was based in part on models developed by Dr. Read . There are problems with the interpretation shown on the map sheet, particularly on the west side of Wilke Creek. The various units particularly

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the metavolcanics, do not form continuous horizons around folds. This may be due to original lateral facies changes, or pinching out during deformation. An additional fault along Lost Trail Creek was interpreted by Dr. Read. There is little field evidence to support or contradict the placing of this fault.

The Copper Chief (Ethel) fault was placed by indirect evidence. Along the southern contact of the quartz biotite schist are three different rock types which the schist seems to abut against. A narrow skarn zone is also developed along part of this zone. It is likely that hydrothermal solutions passed along this fault and calc silicate minerals replaced marble where intersected. The rest of the marble was impermiable thus no skarn was developed. Grades and widths of tungsten mineralization along this fault are present in an old Newmont report (see attatched sheet).

As a result of mapping around the deposit a new model was developed for the genesis of the deposit. I feel it is more likely that the major movement along the Z-fault was post contact metamorphic, but pre-mineralization. The possibility that the main movement along the Z-fault was after ore deposition cannot be ruled out. Sericitic alteration and molybenum mineralization is developed in phyllite east of the Z-fault. However in the adit the phyllite unit is several hundred meters outside alteration and mineralization. If the phyllite was dropped down to abut against the schist prior to mineralization the inability to fracture due to ductility contrasts, would result in poorly developed mineralization and alteration, which is what is observed. Even if the fault movement is post mineralization only a small amount of ore material would have been downdropped since the deposit is centered around the quartz diorite and the fault is on the periphery. Any mineralization east of the Z-fault would likely be associated with a different quartz diorite intrusion.

Approximately 150 samples were cut and stained for K-feldspar. All rock types were stained from various parts of the map area. A possible isograd involving K-feldspar can be drawn arround the deposit but furthur petrographic work is needed. The results of staining the quartz biotite schist close to the mineralization was unclear, however zones with good mineralization did contain abundant K-feldspar.

A total of 18 rock samples were collected from various parts of the map area, particularly in areas not previously mapped. Although no new mineralization was observed, these samples will provide background data for molybdenum content in contact metamorphic and hydrothermally altered rocks.

→ 12 element ICP analyses of 18 samples are attached. Where are descriptions and locations? TNM Aug/86

Best Regards,

Robert Linnen

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ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

TO : NEWMONT EXPLORATION OF CANADA LTD.,

STE. 1400 - 750 W. PENDER STREET
VANCOUVER, B.C.
V6C 1K3

ATTN: H.C. BOYLE

CERT. # : A8214420-001-A
INVOICE # : I8214420
DATE : 22-NOV-82
P.O. # : NONE
321

Parameter Description			Sample # 1 (9)	Sample # 2 (176)	Sample # 3 (16)	Sample # 4 (28)	Sample # 5 (38)
Sample preparation code			205	205	205	205	205
Arsenic	ppm	(ICP)	<10	10	15	10	15
Molybdenum	ppm	(ICP)	<1	5	23 ●	1	4
Tungsten	ppm	(ICP)	<10	<10	<10	<10	<10
Zinc	ppm	(ICP)	75	150 ←	33	29	61
Lead	ppm	(ICP)	64	16	62	61	53
Bismuth	ppm	(ICP)	<2	<2	<2	<2	<2
Cadmium	ppm	(ICP)	0.5	4.0 ←	0.5	1.0 ←	<0.5
Cobalt	ppm	(ICP)	13	4	<1	6	24 ←
Nickel	ppm	(ICP)	34	14	2	24	40
Manganese	ppm	(ICP)	410	825 ←	480	230	255
Copper	ppm	(ICP)	101 ←	77	5	62	86 ←
Silver	ppm	(ICP)	<1.0	<1.0	<1.0	<1.0	<1.0

Sample description information
Sample # 1 18229
Sample # 2 18230
Sample # 3 18231
Sample # 4 18232
Sample # 5 18233

Preparation code description
205 Rock geochem - RING

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CERT. # : A8214420-001-B
INVOICE # : I8214420
DATE : 22-NOV-82
P.O. # : NONE
321

Parameter Description			43 Sample # 6	44 Sample # 7	50 Sample # 8	67 Sample # 9	70 Sample # 10
Sample preparation code			205	205	205	205	205
Arsenic	ppm	(ICP)	10	<10	15	25 ←	<10
Molybdenum	ppm	(ICP)	<1	1	4	1	2
Tungsten	ppm	(ICP)	<10	<10	<10	<10	<10
Zinc	ppm	(ICP)	170 ←	66	21	29	66
Lead	ppm	(ICP)	441 ←	28	53	50	68
Bismuth	ppm	(ICP)	<2	<2	<2	<2	<2
Cadmium	ppm	(ICP)	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	ppm	(ICP)	34 ←	27 ←	2	<1	15
Nickel	ppm	(ICP)	70 ←	105 ←	9	2	62
Manganese	ppm	(ICP)	915 ←	805 ←	390	220	620
Copper	ppm	(ICP)	138 ←	82 ←	10	5	17
Silver	ppm	(ICP)	1.0	<1.0	<1.0	<1.0	<1.0

Sample description information
Sample # 6 18234
Sample # 7 18235
Sample # 8 18236
Sample # 9 18237
Sample # 10 18238

Preparation code description
205 Rock geochem - RING

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ATTN: H.C. BOYLE

CERT. # : A8214420-002-
INVOICE # : I8214420
DATE : 22-NOV-82
P.O. # : NONE
321

Parameter Description			76 Sample # 11	78 Sample # 12	88 Sample # 13	89 Sample # 14	108 Sample # 15
Sample preparation code			205	205	205	205	205
Arsenic	ppm	(ICP)	<10	<10	20	10	10
Molybdenum	ppm	(ICP)	<1	<1	5	<1	<1
Tungsten	ppm	(ICP)	<10	<10	<10	<10	<10
Zinc	ppm	(ICP)	67	125	16	94	140
Lead	ppm	(ICP)	32	57	47	78	24
Bismuth	ppm	(ICP)	<2	<2	<2	<2	<2
Cadmium	ppm	(ICP)	<0.5	<0.5	<0.5	1.0 ←	<0.5
Cobalt	ppm	(ICP)	9	8	3	9	18
Nickel	ppm	(ICP)	22	52	9	34	54
Manganese	ppm	(ICP)	110	920 ←	410	470	715 ←
Copper	ppm	(ICP)	62	9	24	<1	52
Silver	ppm	(ICP)	<1.0	<1.0	<1.0	<1.0	<1.0

Sample description information
Sample # 11 18239
Sample # 12 18240
Sample # 13 18241
Sample # 14 18242
Sample # 15 18243

Preparation code description
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ATTN: H.C. BOYLE

CERT. # : A8214420-002-B
INVOICE # : I8214420
DATE : 22-NOV-82
P.O. # : NONE
321

Parameter Description			111 Sample # 16	112 Sample # 17	153 Sample # 18
Sample preparation code			205	205	205
Arsenic	ppm	(ICP)	10	<10	15
Molybdenum	ppm	(ICP)	<1	<1	8 ←
Tungsten	ppm	(ICP)	<10	<10	<10
Zinc	ppm	(ICP)	50	84	53
Lead	ppm	(ICP)	43	24	18
Bismuth	ppm	(ICP)	<2	<2	<2
Cadmium	ppm	(ICP)	<0.5	0.5	<0.5
Cobalt	ppm	(ICP)	3	27 ←	3
Nickel	ppm	(ICP)	17	23	11
Manganese	ppm	(ICP)	300	610	275
Copper	ppm	(ICP)	30	22	6
Silver	ppm	(ICP)	<1.0	<1.0	<1.0

Sample description information
Sample # 16 18244
Sample # 17 18245
Sample # 18 18246

Preparation code description
205 Rock geochem - RING

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