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16331 BELL ROAD
SURREY, B. C.,
CANADA
V3S 1J9

5142 II

PETROGRAPHIC REPORT
ON FIFTEEN THIN SECTION
SNIPPAKER CREEK AREA, B.C.

104B/10W

for

GREAT PLAINS DEVELOPMENT CO. OF CANADA LTD.

736 EIGHTH AVENUE S.W.

CALGARY, ALBERTA

by

D. L. COOKE, PH.D., P.ENG.

CONSULTING GEOLOGIST

March 14, 1974

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 5142 MAP

D. L. Cooke

#9 Geology - Kim E. G. P.
#10 Geology - Tom G. G. P.

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INTRODUCTION

The specimens from the Snippaker Creek property were examined in thin sections for Great Plains Development Co. of Canada Ltd. on the instructions of Mr. V. K. Read. This petrographic study was done to determine the nature, origin, and alteration of the host rocks.

The textures, primary minerals, and alteration products were identified optically. The volume percents of the minerals were visually estimated. Petrographic report sheets, with mineralogical descriptions and rock classifications, are presented for individual sections. These sheets form a part of this report.

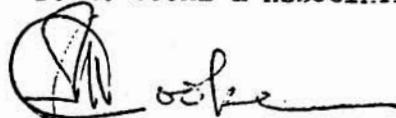
SUMMARY AND CONCLUSIONS

1. The sections represent a series of granitic intrusive rocks, which were emplaced at shallow depths. Also represented are dike, fragmental, and extrusive units. These rocks range from acid to intermediate in composition. The intrusive rocks include granite, quartz monzonite and granodiorite. The lava flows and tuffs are andesites and more siliceous varieties. The intrusive and volcanic suites are believed to be derived from separate magmas. However, the feldspar and diorite porphyries, #MA-5 and #E-15, are probably dike equivalents of the volcanic suite.

2. In the intrusives the porphyritic textures and medium to fine grained equigranular groundmasses are interpreted as the result of shallow plutonic and hypabyssal intrusion. Alteration has partially destroyed the original textures within the flows and pyroclastics. Slight foliation, due to shearing, is developed in some of the volcanic rocks.
3. Alteration in the samples is either propylitic (chlorite, carbonate, epidote) or phyllic (sericite and quartz). The overall intensity of alteration is not particularly distinct in either of the two suite of rocks. Neither is there any pronounced intensity of fracturing.
4. Sulphide mineralization occurs mainly in the form of pyrite disseminations, and minor pyrite filling fractures. The correlation between rock type, alteration and pyrite mineralization is obscure. However, two broad observations are warranted. Within the intrusive rocks, pyrite seems to be more closely associated with the granitic than the other types. Pyrite is also abundant within the volcanic tuffs. It cannot be positively stated that either of these two rock types is the source of the sulphide mineralization.

Respectfully submitted,

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PETROGRAPHIC REPORT

NUMBER: #B - 26

LOCALITY: Snippaker Creek

DATE: March 8, 1974

NAME AND CLASSIFICATION: ALTERED FINE GRAINED TUFF

MEGASCOPIIC DESCRIPTION: This sphanitic green specimen is characterized by irregular "bleached" patches.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Plagioclase	25	An ₂₄₋₂₈ . Plagioclase occurs as irregular, close-packed grains, which are cemented by chlorite and minor carbonate.
2. Chlorite	20	Chlorite forms an interconnected matrix between feldspar grains.
3. Epidote	15	Bleached areas contain abundant epidote, carbonate and quartz.
4. Carbonate	15	This secondary mineral is associated with epidote and quartz in the alteration of plagioclase.
5. Quartz	13	Irregular quartz grains are more abundant in the bleached portions of the section.
6. Sericite	7	There is a uniform scattering of sericite throughout.
7. Leucoxene	3	Granular leucoxene is secondary after plagioclase.
8. Apatite	2	Apatite occurs as an accessory mineral.

TEXTURE: The green portions of the rock consist of abundant anhedral fragments of plagioclase, cemented by chlorite and lesser carbonate and epidote. The light-coloured, bleached areas, contain epidote, carbonate, quartz and leucoxene - derived from the alteration of plagioclase

CONCLUSION:

The rock is believed to be a fine grained andesitic crystal tuff which has been subsequently altered to a light coloured mass by hydrothermal solutions. Alteration type is propylitic.

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PETROGRAPHIC REPORT

NUMBER: #C - 8

LOCALITY: Snippeker Creek - 4 km

DATE: March 8, 1974

NAME AND CLASSIFICATION: GRANITE PORPHYRY

MEGASCOPIC DESCRIPTION: The specimen is medium to coarse grained, and grey in colour.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Plagioclase	35	Ang ₁₂ . Plagioclase is subhedral and coarse grained. It is affected by minor sericite alteration.
2. Quartz	20	Small equant quartz grains are scattered between larger feldspar grains.
3. Carbonate	13	Veinlets are filled mainly by secondary carbonate.
4. Chlorite	12	Chlorite occurs both with epidote alteration and with sericite of the matrix.
5. Epidote	10	Patches of epidote appear to be alteration products of other ferromagnesian minerals.
6. Sericite	6	Fine sericite is mixed with chlorite as matrix material. It is also moderately abundant within plagioclase grains.
7. Sphene & Leucoxene	2	Subhedral crystals of sphene, and cloudy leucoxene grains, are scattered throughout.
8. Apatite	1	Accessory apatite is moderately common.
9. Pyrite	1	Pyrite crystals occur as disseminations.

TEXTURE: Plagioclase tablets, 2-5 mm., give the section a weak porphyritic texture. The groundmass consists of a medium grained equigranular mixture of quartz and alkali plagioclase, with patches of chlorite and epidote.

CONCLUSION:

The specimen represents a shallow intrusion of soda granite composition. Alteration is weak propylitic.

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PETROGRAPHIC REPORT

NUMBER: #D- 13

LOCALITY: Snippaker Creek - Km

DATE: March 11, 1974

NAME AND CLASSIFICATION: GRANITE PORPHYRY

MEGASCOPIIC DESCRIPTION: The rock is grey and siliceous. It contains scattered phenocrysts of green mineral and abundant sulphide disseminations.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Plagioclase	25	Ang ₁₂ . Plagioclase phenocrysts, 1-4 mm. in length, are uniformly distributed.
2. Alkali Feldspar	20	An extremely fine groundmass consists of a "Salt and pepper" mixture of alkali feldspar and quartz.
3. Quartz	20	Quartz occurs with alkali feldspar to form the matrix.
4. Epidote	10	Large euhedral pseudomorphs, 1-4 cm. in length, now consist mainly of coarse epidote, with minor chlorite and leucoxene.
5. Chlorite	10	Chlorite occurs with epidote in the large pseudomorphs, and alone in other smaller ones.
6. Sericite	8	The plagioclase contains scattered sericite flakes.
7. Pyrite	4	Euhedral pyrite crystals are disseminated throughout.
8. Apatite	2	Large apatite crystals are most frequent within the mafic pseudomorphs.
9. Sphene	1	Sphene is also common within these pseudomorphs.

TEXTURE: The texture is porphyritic, consisting of 1-4 cm. pseudomorphs and 1-4 mm. plagioclase phenocrysts in a very fine grained groundmass of equigranular alkali feldspar and quartz.

CONCLUSION:

This rock is from a small (dike?) hypabyssal intrusion of soda granite composition. It has been modified to the stage of weak propylitic alteration.

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PETROGRAPHIC REPORT

NUMBER: #D - 19

LOCALITY: Snippaker Creek - 4 mi

DATE: March 11, 1974

NAME AND CLASSIFICATION: ALTERED ANDESITE

MEGASCOPIC DESCRIPTION: This is a dark green specimen which contains grey feldspar as well as dark mafic phenocrysts.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Chlorite	30	Secondary green chlorite permeates the section. It occurs in feldspar and ferromagnesian pseudomorphs, and as interstitial material in the matrix.
2. Plagioclase	25	2-6 mm. feldspar phenocrysts are completely replaced by a mixture of alkali plagioclase, epidote, chlorite and sericite. plagioclase laths in the groundmass are less altered.
3. Epidote	20	Epidote is a major secondary mineral derived from plagioclase and pyroxene (?) alteration.
4. Hornblende	10	Stubby crystals of green hornblende appear to be secondary after pyroxene, as well as primary.
5. Sericite	7	Some sericite is derived from the alteration of plagioclase.
6. Leucoxene	3	Granular leucoxene occurs after an unidentified mafic (?) mineral.
7. Biotite	3	Minute crystals of green-brown pleochroic biotite have recrystallized from the chloritic alteration products.
8. Magnetite	2	Granular magnetite is scattered within ferromagnesian pseudomorphs and later veinlets.
9. Pyrite	Tr.	Anhedral grains are found mainly in late veinlets which transect the alteration products.

TEXTURE: Hornblende, pyroxene, and plagioclase pseudomorphs, 1-5 mm. in length, are aligned in a sub-parallel "flow" structure. These crystals are set in a matted matrix of alkali plagioclase and interstitial chlorite.

CONCLUSION:

The section was taken from a volcanic flow of andesitic composition. Extensive propylitic alteration is evident throughout. Sericite and biotite may be classed as superimposed weak phyllic alteration.

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PETROGRAPHIC REPORT

NUMBER: #E - 15

LOCALITY: Snippaker Creek - *Kim*

DATE: March 12, 1974

NAME AND CLASSIFICATION: ALTERED ANDESITE PORPHYRY

MEGASCOPIIC DESCRIPTION: Stubby feldspar crystals are visible in ^edark green aphanitic groundmass.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Plagioclase	30	An ₆₋₁₀ Plagioclase phenocrysts, 1-3 mm. long are altered to epidote, albite, and minor sericite.
2. Chlorite	30	Chlorite occurs throughout the groundmass and as an alteration mineral associated with epidote and leucoxene.
3. Epidote	20	Epidote permeates the plagioclase and ferromagnesian phenocrysts from which it is derived.
4. Quartz	10	Interstitial areas within the groundmass contain quartz and chlorite.
5. Leucoxene	5	This is one of the common alteration minerals of the ferromagnesiens.
6. Apatite	3	Coarse, anhedral apatite crystals occur with the altered mafic phenocrysts.
7. Sericite	2	Minor sericite is associated with the alteration of plagioclase.

TEXTURE: The plagioclase and mafic phenocrysts, 1-3 mm. in size, account for the porphyritic texture. The groundmass consists of a medium grained matte of alkali plagioclase, quartz and chlorite.

CONCLUSION:

Alteration is strongly propylitic. The medium grained texture of the matrix is interpreted as the result of andesite dike intrusion rather than extrusive flow.

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PETROGRAPHIC REPORT

NUMBER: #G - 9

LOCALITY: Snippaker Creek - *Kim*

DATE: March 12, 1974

NAME AND CLASSIFICATION: GRANODIORITE

MEGASCOPIIC DESCRIPTION: The specimen has the texture of a grey intrusive rock.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Plagioclase	20	An ₂₀₋₃₀ . Stubby plagioclase crystals are subhedral in outline, and these are partially altered to sericite, alkali feldspar, epidote, carbonate and chlorite.
2. Quartz	20	Quartz occurs as strained and fractured grains, which have ragged irregular outlines.
3. Chlorite	20	Chlorite is secondary after both plagioclase and mafic minerals. It is associated with epidote, etc.
4. Epidote	15	Epidote is most abundant in altered mafics, and less abundant in partially altered plagioclase.
5. Sericite	13	Moderate sericite alteration of the plagioclase is evident.
6. Carbonate	7	Carbonate is secondary mainly after plagioclase.
7. Sphene	4	Wedges of sphene occur in association with altered mafics.
8. Apatite	1	Abundant accessory apatite was noted.

TEXTURE: A medium grained equigranular texture is suggested by the random orientation of plagioclase, quartz, and mafic pseudomorphs. The quartz exhibits moderate undulatory extinction and fracturing.

CONCLUSION:

The sample is distinctly intrusive in origin. Depth of intrusion is moderately shallow. It has been modified by moderate propylitic alteration and affected by dynamic stresses.

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PETROGRAPHIC REPORT

NUMBER: #G - 23

LOCALITY: Snippaker Creek - Kim

DATE: March 12, 1974

NAME AND CLASSIFICATION:

GRANODIORITE

MEGASCOPIIC DESCRIPTION:

The specimen is greenish, medium grained and intrusive in appearance.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Plagioclase	28	An _{30±5} . Stubby, subhedral andesine crystals are close-packed and partially altered to sericite, epidote and carbonate.
2. Quartz	20	Equigranular quartz is jammed in between plagioclase crystals.
3. Sericite	15	This is secondary after plagioclase.
4. Chlorite	10	Interstitial mafic minerals are completely replaced by chlorite, carbonate and leucoxene.
5. Alkali Feldspar	7	Less than a third of the feldspar consists of interstitial grains and rims of alkali plagioclase, which exhibit poor chess-board to perthite structure.
6. Carbonate	7	Carbonate is distributed as small irregular grains.
7. Epidote	5	Minor quantities of epidote are confined to the plagioclases.
8. Magnetite	3	Accessory grains occur throughout.
9. Sphene	2	Accessory crystals are common.
10. Leucoxene	2	The mafics are altered to leucoxene, carbonate and chlorite.
11. Apatite	1	This is a minor accessory.

TEXTURE: A medium grained texture is exhibited. Subhedral plagioclase crystals appear closely packed. Equigranular quartz, mafic pseudomorphs, and alkali feldspars occur in the interstices between plagioclase crystals.

CONCLUSION:

A shallow intrusive source is suspected. Although non-porphyrific, the feldspar tablets crystallized slightly earlier than the remainder of the rock. Alteration lies between propylitic and phyllic types.

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PETROGRAPHIC REPORT

NUMBER: #K - 6

LOCALITY: Snippaker Creek - Tadi DATE: March 13, 1974

NAME AND CLASSIFICATION: ALTERED TUFF

MEGASCOPIC DESCRIPTION: This is a fine textured rock which has a green and grey mottled colour.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Plagioclase	35	Ill-defined alkali feldspar crystals and fragments (?) are strongly sericitized and chloritized. Some potash feldspar replacement may also have occurred.
2. Sericite	25	Abundant sericite is scattered throughout, but mainly within plagioclase grains.
3. Chlorite	20	Secondary chlorite permeates all constituents. Mafic minerals are altered to chlorite and leucoxene.
4. Quartz	10	Fine equigranular quartz, and lesser alkali feldspar, are developed in the alteration of the matrix.
5. Epidote	5	Granular epidote occurs as scattered grains.
6. Magnetite	4	The matrix is crowded with patches of fine magnetite grains.
7. Leucoxene	1	This mineral is secondary after ferromagnesian.
8. Apatite	Tr.	Minor amounts of apatite are present.

TEXTURE: Only shadowy remnants of rock and crystal fragments are evident within the matrix of sericite, chlorite, and quartz. These alteration products are fine grained, and they have obscured the texture and nature of the original minerals.

CONCLUSION:

The specimen is tuffaceous - possibly a coarse tuff or lapilli tuff of intermediate composition. Strong quartz-sericite (phyllitic) alteration has occurred.

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PETROGRAPHIC REPORT

NUMBER: #MA - 5

LOCALITY: Snippaker Creek - TAD

DATE: March 13, 1974

NAME AND CLASSIFICATION: ALTERED FELDSPAR PORPHYRY

MEGASCOPIC DESCRIPTION: This appears as a grey feldspar porphyry.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Plagioclase	25	An ₅₋₁₂ . Euhedral albite phenocrysts, 2-5 mm., exhibit twinning and moderate alteration to sericite, epidote, and minor chlorite and alkali feldspar.
2. Sericite	25	Sericite pervades the entire groundmass, leaving few remnants of the original texture and mineralogy.
3. Chlorite	18	Fine grained chlorite is closely associated with sericite, as well as with epidote.
4. Epidote	12	Coarse epidote occurs in patches as a secondary mineral derived from the alteration of mafic phenocrysts.
5. Potash Feldspar	10	A few phenocrysts and irregular secondary patches within plagioclase consist of potash feldspar.
6. Quartz	7	Quartz occurs as a secondary mineral in the groundmass and in pseudomorphs after mafic phenocrysts.
7. Sphene & Leucoxene	3	Crystalline sphene and granular leucoxene are common accessory minerals.
8. Pyrite	Tr.	A few grains are partially weathered to hematite.
9. Apatite	Tr.	Large apatite crystals, up to 1 mm., are accessory.

TEXTURE: The feldspar phenocrysts give the section its porphyritic texture. These phenocrysts are stubby and randomly oriented. Patches of epidote, quartz and chlorite probably represent mafic phenocrysts. The groundmass consists of fine sericite, alkali plagioclase, chlorite and minor quartz.

CONCLUSION: The rock is a feldspar porphyry that intruded at shallow depth. It may be sill-like in form, and syenitic in composition. Strong phyllic alteration is indicated by the development of abundant sericite.

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PETROGRAPHIC REPORT

NUMBER: #MA - 13

LOCALITY: Snippaker Creek - 7 km. DATE: March 13, 1974

NAME AND CLASSIFICATION: SERICITIZED GRANITE (?)

MEGASCOPIIC DESCRIPTION: This is a fine grained, mottled grey and green specimen containing abundant pyrite disseminations.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Sericite	40	All feldspars are completely altered to sericite, carbonate and minor amounts of chlorite.
2. Carbonate	25	This mineral is secondary after plagioclase.
3. Quartz	18	Fractured, coarse anhedral quartz grains are dispersed within the fine grained secondary minerals.
4. Chlorite	10	Chlorite is mixed with secondary sericite. It is more abundant in areas which have been derived from the alteration of mafic minerals.
5. Pyrite	4	Irregular grains occur as disseminations and fillings of narrow fractures.
6. Leucoxene	2	Some appears to be derived from magnetite, and some from the mafics.
7. Apatite	1	Apatite grains are accessory.

TEXTURE: Equigranular, coarse to medium grained quartz occurs in a fine grained secondary matrix of sericite, carbonate and chlorite. These secondary minerals are derived from plagioclase, and chlorite with leucoxene is derived from ferromagnesian.

CONCLUSION:

The section may be representative of either a medium grained granite or granodiorite. It is strongly sericitized (phyllic alteration). The abundance of carbonate is probably the result of alteration of intermediate plagioclase.

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PETROGRAPHIC REPORT

NUMBER: #MA - 15

LOCALITY: Snippeker Creek - *Tami* DATE: March 13, 1974

NAME AND CLASSIFICATION: QUARTZ MONZONITE

MEGASCOPIIC DESCRIPTION: Grey feldspar phenocrysts are crowded into a mafic-rich matrix.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Plagioclase	35	An ₂₀₋₃₀ (?). The partial alteration of euhedral plagioclase to sericite, epidote and chlorite prevents accurate determination of its composition.
2. Quartz	20	Quartz is equigranular and interlocked with plagioclase and orthoclase.
3. Perthite	15	Large orthoclase perthite plates enclose smaller plagioclase crystals. Orthoclase also occurs in the matrix as small equigranular grains.
4. Sericite	10	Fine sericite permeates plagioclase crystals.
5. Chlorite	10	Chlorite is abundant in interstitial patches derived from the alteration of hornblende or biotite.
6. Epidote	5	Epidote occurs together with both chlorite and sericite.
7. Accessories	5	Magnetite, sphene and apatite are the common accessory minerals.

TEXTURE: A sub-porphyrific to equigranular texture is preserved. Large orthoclase crystals, and 1-4 mm. plagioclase tablets are set in a coarse equigranular matrix of plagioclase, orthoclase and quartz. Interstitial ferromagnesian are altered to chlorite and epidote.

CONCLUSION:

The intrusion is hypabyssal to plutonic in nature. Weak propylitic alteration is evident.

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PETROGRAPHIC REPORT

NUMBER: #R - 6

LOCALITY: Snippeker Creek - 7200

DATE: March 13, 1974

NAME AND CLASSIFICATION: SERICITIZED INTRUSIVE (?)

MEGASCOPIIC DESCRIPTION: The specimen is grey, siliceous and relatively fine grained.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Alkali Feldspar	30	Poorly defined alkali feldspar grains are strongly sericitized. Remnant twins are barely visible.
2. Sericite	30	Sericite is secondary and fine grained.
3. Quartz	30	Irregular grains and patches of quartz are scattered among the sericite and remnant feldspar.
4. Chlorite	8	The occasional patch of chlorite occurs with sericite.
5. Leucoxene	2½	Grains of leucoxene are secondary.
6. Hematite/Pyrite	½	Pyrite and associated hematite occur in small amounts.

TEXTURE: Shadowy tabular feldspar remnants (with scattered sericite) are suggestive of 2-4 mm. crystals. The section is now a fine grained quartz-sericite-feldspar rock, without much primary texture. Irregular grains of quartz and feldspar occur in a sericitic matrix.

CONCLUSION:

The original texture and mineralogy have been drastically modified. The sample is essentially a feldspar-quartz-sericite rock. It may have been derived from any of the intrusive types previously described. Alteration is a strong silica and sericite replacement.

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PETROGRAPHIC REPORT

NUMBER: #S - 6

LOCALITY: Snippaker Creek - 7200

DATE: March 13, 1974

NAME AND CLASSIFICATION: SERICITIZED TUFF

MEGASCOPIIC DESCRIPTION: Numerous pyritic fractures cut across this grey-green aphanitic rock.

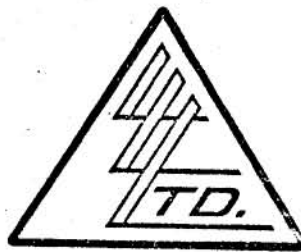
MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Sericite	45	Anhedral elongate areas (1-3 mm.) consist essentially of fine grained sericite. These may be altered feldspar phenocrysts and/or rock fragments.
2. Chlorite	25	Abundant chlorite is associated with sericite alteration.
3. Quartz	25	Fine grained equigranular quartz, together with sericite and chlorite, makes up the groundmass.
4. Pyrite/Hematite	3	Pyrite occurs as disseminations and in fractures. Weathering to hematite is incipient.
5. Leucoxene	2	Granular streaks of leucoxene follow the direction of lineation.

TEXTURE: A pseudo "flow texture" is indicated by the parallel alignment of sericite pseudomorphs, which are "angular" to "euhedral" in appearance. The intervening matrix consists of a very fine mixture of sericite, chlorite and equigranular quartz.

CONCLUSION:
The primary "tuffaceous" appearance is preserved by the secondary alteration minerals sericite, chlorite and quartz. This is strong phyllic alteration. Development of weak lineation is the result of shearing stresses.

To: GREAT PLAINS DEVELOPMENT
 COMPANY OF CANADA,
 6th Floor, 736-8th Ave. S.W.,
 Calgary, Alta.
 ATTN: V.K. Read



File No. 7761
 Date February 27, 1974
 Samples Chip

Certificate of
 ASSAY OF
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-1-

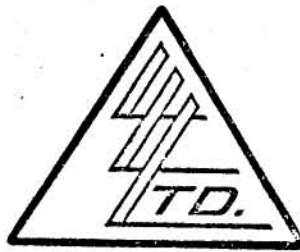
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R- 4	Trace	.62	.005	.01	.003
S- 1	Trace	.26	.005	Trace	.002
S-15	Trace	Trace	.005	.01	.004
MA- 7	Trace	.06	.01	.01	.004
K- 2	Trace	.04	.01	Trace	.002
BX	Trace	.84	.12	1.61	.003
C- 4	Trace	.08	.10	.03	.003
A-17	Trace	.06	.01	.02	.002
C-30	.010	.20	.02	.03	.003
BY	.010	.44	.13	.01	.002
B- 5	Trace	.22	.01	Trace	.001
24N-4W	Trace	.06	.01	Trace	.002
G-19-A	Trace	.04	.01	.01	.003
H- 4	Trace	.40	.005	Trace	.002

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Rejects Retained one month.
 Pulps Retained one month
 unless specific arrangements
 made in advance.

E. L. McFarlane
 Licensed Assayer of British Columbia

To: GREAT PLAINS DEVELOPMENT
 COMPANY OF CANADA LTD.,
 6th Floor, 736-8th Ave. S.W.,
 Calgary, Alta.
 ATTN: V.K. Read



File No. 7761
 Date February 27, 1974
 Samples Chip

Certificate of
 ASSAY OF
 LORING LABORATORIES LTD.

-2-

SAMPLE No.	OZ./TON GOLD	OZ./TON SILVER	% Cu	% Pb	TOTAL % MoS2
B-16	.010	Trace	.005	.01	.001
E- 3	Trace	.16	.005	.01	.001
M- C	Trace	2.42	7.07	.01	.003
H- 6	Trace	.20	.17	.01	.003
F- 1	Trace	.16	.02	.02	.004
B-30	Trace	.28	.22	.02	.003
E-14	Trace	.18	.54	.02	.003
B-23	Trace	.48	.26	.02	.002
D- 5	Trace	.08	.02	.02	.001
D-11	Trace	.12	.01	.01	.001
B-19	Trace	.20	.01	.01	.001
A-20	Trace	.32	.01	.03	.002
C-34	Trace	.74	.01	.02	Trace

Total Mo Reported as % MoS2

I **Hereby Certify** THAT THE ABOVE RESULTS ARE THOSE
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES

Rejects Retained one month.
 Pulps Retained one month
 unless specific arrangements
 made in advance.

[Signature]
 Licensed Assayer of British Columbia