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REPORT ON  
THE PROPERTIES OF  
DELKIRK MINING CO. LTD.

by  
Hill, Manning & Associates Ltd.

18 January, 1967 *92-C-13*

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The President and Directors,  
Delkirk Mining Co. Ltd.,  
New Westminster, B. C.

Dear Sirs:

The following reports are based on visits and examination of three of your properties by the firm's representatives, and on knowledge and reports obtained from reliable authorities.

Recommendations for expenditures totaling a maximum of \$90,000 to be spent as indicated in the following table are detailed in the body of the report.

<u>Location</u>	<u>Recommended Expenditure</u>
1. Wreck Bay	\$ 50,000
2. Red Hill	12,000
3. Botanic Mountain	4,000
4. General Prospecting	4,000
5. Airborne Survey	<u>20,000</u>
	\$ 90,000

*R. J. Cunningham*

WRECK BAY

The following report is based on the results of several visits to the beach by our firm representative, G. E. A. von Rosen, and one visit by the writer. In addition, various published reports on the beach and reports of Delkirk Mining on their last seasons work have been studied.

SUMMARY:

The company reportedly has the rights to work a group of leases on a beach placer deposit at Wreck Bay about 4 miles north of Ucluelet, B. C. The beach has a history of several attempts to mine it being thwarted due to inadequate sampling before commencement, and due to permanent equipment located on the beach being destroyed by storms. It is recommended that up to \$20,000 be spent in preliminary examinations and, depending on results of this examination, up to an additional \$40,000 be made available to prove reserves before any consideration be given to investing in high capacity mining equipment.

LOCATION:

The beach occurs on the west coast of Vancouver Island immediately south of Long Beach, Tofino, B. C., in the Dominion Topographic Area 92 C 13 at approximately Latitude 49°00', Longitude 125°40'.

17 leases cover the most important parts of the prospect.

LIST OF LEASES

<u>Lease</u>	<u>Location Date</u>	<u>Application Submitted</u>	<u>Owner or Applier</u>
P.M.L.73-P.M.L.77			H. W. Gardner
Able Betta	15th Sept./66	4 Nov./66	
Epsilon	29th Sept./66	4 Nov./66	
D.M.L. 1-D.M.L.9	17th Oct./66	9 Nov./66	(Notice of intent only)

Rights are maintained on these by location as indicated, or by arrangements with Mr. H. W. Gardner and Associates.

HISTORY:

Several published reports of the B. C. Department of Mines attest to the history of attempts at gold production on this beach. The earliest serious attempt was from 1899 to 1903 when a company produced \$9,400 from 600 yards in 1900 and \$9,950 in the 1901 season from April 1st to September 30th. No yardage production was available for second season. Gold was reported as being "fine but not rusty". This characteristic is confirmed by recent sampling. Various reports of latter attempts to work the beach on a large scale have similar patterns in that heavy storms wrecked their equipment or that pay streaks were too erratic for economic operation. According to Bulletin No. 21 of the B. C. Department of Mines 1959 beach placers are generally difficult to work because "Concentrations rich enough to be worked are usually small, and considerable difficulty is often experienced in separating the exceedingly small, rusty flake gold from the magnetite sand. There are beach placers at Wreck Bay, Vancouver Island, and on the east coast of Graham Island."

Production records compiled by Stuart S. Holland of the B. C. Department of Mines show the following recorded production from Wreck Bay:

<u>Year</u>	<u>Ounces</u>	<u>\$</u>	<u>\$/oz.</u>	<u>Fineness</u>
1896 - 1900	700	10,639	\$15.20	768
1901 - 05	628	9,950	15.80	768
1905 - 10	--	--		
1911 - 15	--	--		
1916 - 20	--	--		
1921 - 25	--	--		
1926 - 30	--	--		
1931 - 35	92	1,997	21.60	768
1936 - 40	--	--		
1941 - 45	--	--		
<hr/>				
Total - 1945	1,420	22,585		768
Present Est. Value	1,420	\$41,400	29.10	

More gold has undoubtedly been taken from the beach than has been recorded as some people still pan the black sands which are concentrated after every storm, and extract some gold.

The gold extracted in the period 1931 - 1935 was undoubtedly recovered by A. Williams and Associates of the Wreck Bay Placer Mining Company who made an attempt to recover the gold in the unconcentrated Wreck Bay Formation starting at the mouth of Lost Shoe Creek. At this time, (1936) a report was prepared by

HISTORY: (Continued)

J. S. Stevens of the B. C. Department of Mines on Wreck Bay in which he reports that attention at that time was directed to mining of the sea cliff. Samples taken of the Formation by Stevens at that time in the vicinity of the Lost Shoe Creek and at the present highway to the east, gave gold values ranging from trace through 0.8¢ to 3¢ per yard. Colors can be obtained almost anywhere in the gravels. Beach samples taken at the same time gave gold values ranging from 1.7¢ to \$1.22 per yard for an arithmetic average of 38¢. All samples were taken near the mouth of Lost Shoe Creek.

In 1958, work by Stuart S. Holland and H. W. Nasmith demonstrated that by taking samples up to 18 inches deep, the magnetite values were concentrated in a zone 40 to 100 feet from the sea cliff. Samples could be taken no closer than 40 feet because of the tangled masses of driftwood and the higher values are closest to this driftwood. They also report the beach has progressively more gravel and cobbles toward the south east end.

RECENT WORK:

Recently in the summer of 1965, Delkirk Mining Ltd. took 25 samples from the beach, four of them under the supervision of G. E. A. von Rosen of the writers firm.

Samples taken by back hoe along the beach from fourteen different localities spaced approximately over 5,000 feet of beach resulted in four of the localities carrying values which averaged 29¢ per yard including the ten localities which assayed trace.

Values ranged from trace to \$3.57. Samples from 3 more locations within the 5,000 feet averaged 5.8¢ bringing the total arithmetic average to 25¢ per yard.

All these samples were simply cut from a pile dug by a back hoe, and fire assayed. A small shaking riffle was later developed and four samples were concentrated from 3 cubic foot cuts taken from four samples over a one mile stretch of beach. Each sample was taken from a pile made by digging six feet down. All four samples carried values ranging from 7.14¢ to 79.47¢ and averaged 30.06¢ per yard in gold.

The presence of unknown quantities of platinum have been established by spectro analysis and by returns on some concentrate from a large reputable American mining and smelting firm operating in Canada. The presence of the usual minerals associated with black sands has been noted including magnetite, zircon, monozite, ilmenite, rutile, etc. Inquiries made by Delkirk have indicated that markets for these products are good now.

GEOLOGY:

The country in the vicinity of Wreck Bay is covered with Pleistocene till. The sea has eroded the contacts of this till and concentrated the low gold values contained almost anywhere in it. The till is mapped as being underlain by Jurassic sedimentary and volcanic rocks.

The shore area can be divided into four zones (i) Cliff, (ii) the sloughed cliff and back shore, (iii) the Intertidal zone, (iv) the submarine zone.

i. Cliff: The cliff is anywhere from 50 to 100 feet high. It consists of fluvial gravels, in some places crossbedded, interlayered with silty and clay rich bands. Blue clay has been found within 5 feet of the surface of the beach.

ii. Sloughed Cliff and backshore: Material eroded from the cliff collects below it as a discontinuous 'Talus slope'. This rather steep sided pile gets washed by high tides and a steep coarse beach is left behind with most of the heavy sands. Most of the finer material is washed seaward.

iii. Intertidal Zone: Here the sand and silt washed out of the gravel comes to rest on a shelf-like sand bar.

iv. Submarine Zone: Some question exists regarding the make up of this part of the bay. It is probable that silt sized particles would predominate over sand or gravel. Sand and silt washed into the sea by Lost Shoe Creek are filling the north arc of Wreck Bay thus causing the Intertidal zone to extend farther out.

OBSERVATIONS:

A beach well known for its superficial concentration of gold has an erratic history of production attempts. Previous attempts to work the beach have failed for two main reasons.

1. In common with most placer deposits which have proved unsuccessful, inadequate sampling in quality and quantity preceded the start up of actual operations. The reason placers are so often not sampled adequately is because exploration by drilling often seems slower and more expensive than simply running the gravel through a plant and paying as you go.
2. Equipment designed to handle low value material at a profit has been damaged by violent storms on the beach, and was probably not capable of handling 20¢ - 30¢ material in any case.

CONCLUSIONS AND RECOMMENDATIONS:

1. The beach deposit should be tested by geophysical means for determining heavy, magnetic, or chargeable concentration of minerals.
2. The favourable areas should be test drilled to determine the validity and effectiveness of the geophysical methods. If a geophysical method is confirmed, it should then be used to explore the back country for economic concentrations.
3. Anomalous areas on the beach should be drilled for evaluation.
4. Concurrently with above program bulk samples should be sent to commercial processing firms for quantitative evaluations of all possible products.
5. Any permanent equipment should be installed above the cliffs.

Estimated Costs of the Above program:

1.	Geophysical testing and surveying of beach	\$ 3,000	
2.	Test drilling by Becker drill to confirm methods	4,000	
3.	Sampling and testing beach samples for by-product evaluation	4,000	
	Travel, supervision, reports, etc.	<u>1,000</u>	
A.	Total preliminary beach examination Depending on results of (A).	\$12,000	
4.	Reconnaisance geophysical survey of till area under lease	3,000	
5.	Test drilling by Becker drill to confirm anomalies	4,000	
	Travel, supervision, reports etc.	<u>1,000</u>	
B.	Total preliminary till examination	\$ 8,000	
	Total Phase I preliminary examination Depending on results of (A) and (B).		\$20,000
6.	Allowance for Becker Drilling of beach reserves	10,000	
7.	Allowance for Becker drilling of till reserves	<u>20,000</u>	
C.	Total Phase II		<u>\$30,000</u>
	Total Estimate Phase I and II		<u>\$50,000</u>

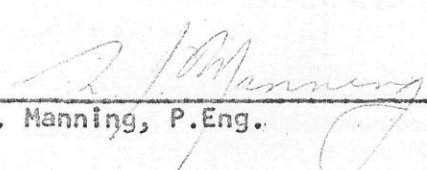


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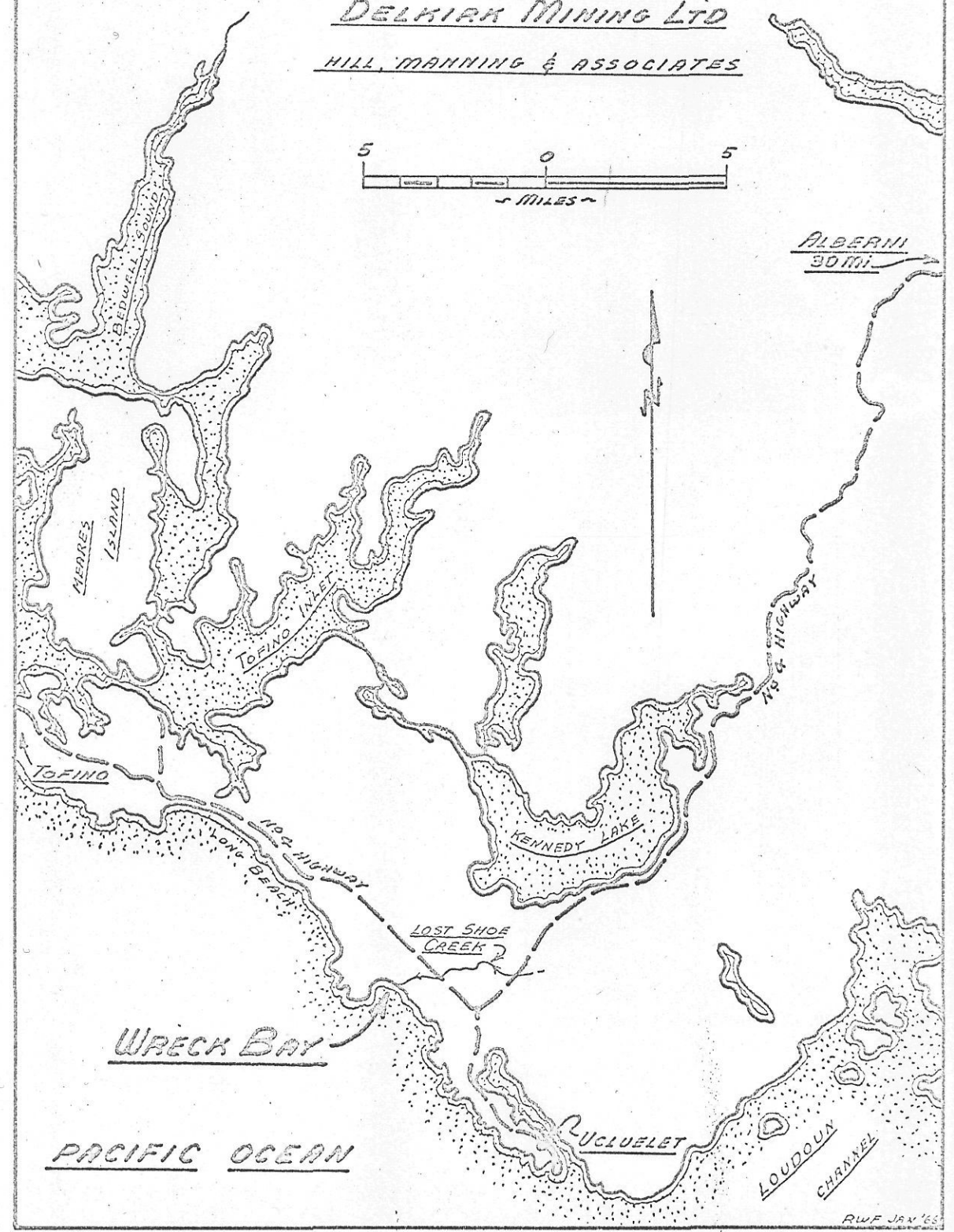
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L. J. Manning, P.Eng.

LOCATION MAP  
WRECK BAY AREA  
DELKIRK MINING LTD  
HILL, MANNING & ASSOCIATES



RWF JAN '66

RED HILL

The following report is based on one visit by the writer to the group on 29th April, 1967. Reports of subsequent visits by G. E. A. von Rosen, geologist on our staff plus the report of a major mining company on the property augmented discussions with the directorship of Delkirk to contribute to the following opinions.

SUMMARY:

Delkirk Mining Limited (N.P.L.) have 107 claims and 16 fractions near the Red Hill property nine miles south of Ashcroft, B. C. This contiguous group overlies Cache Creek volcanics intruded by diorite stock, said to be of the Guichon Batholith.

Extensive work by one large firm in an area of the claims, conspicuous by its weathered outcrops of iron and copperstain, revealed an area unlikely for large scale copper mineralization. Subsequent work by your company confirmed these findings and led to the appreciation of the gold copper ratios in one of the zones near an intrusive.

It is recommended that the reconnaissance work completed over the conspicuous hill be extended into the adjacent flat to complete the outline of the intrusive near the best mineralization and that the most favourable zones be tested by drilling. An estimated expenditure of \$12,000 would be required to complete this program.

LOCATION AND CLAIMS:

The property is in the Kamloops Mining Division in the Dominion Topographic area 92 1 11 at approximately Latitude 50°39' and Longitude 121°20'. It lies on both sides of highway 1 about 9 miles south of Ashcroft, B. C.

LOCATION AND CLAIMS: (Continued)

<u>Claims</u>	<u>Owner</u>	<u>No. of Claims</u>	<u>Record No.</u>	<u>Recording Date</u>
Babkirk 2G-4G	Babkirk	3	54366 - 54368	21 March/67
Babkirk 10G-15G	Babkirk	6	54374 - 54379	21 March/67
Loring 3F-5F	Loring	3	54381 - 54383	21 March/67
Loring 8F	Loring	1	54386	21 March/67
Loring 10F-15F	Loring	6	54388 - 54393	21 March/67
Loring 16F-19F	Loring	4	54516 - 54519	5 April/67
Loring 26F-43F	Loring	18	54520 - 54537	5 April/67
Babkirk 16G-19G	Babkirk	4	54538 - 54541	5 April/67
Babkirk 26G-44G	Babkirk	19	54542 - 54560	5 April/67
Babkirk 21G-24G	Babkirk	4	55450 - 55453	26 April/67
Loring 20F-25F	Loring	6	55454 - 55459	26 April/67
Phillips 1D-6D	Phillips	6	55460 - 55465	26 April/67
Gordon 1E-6E	Gordon	6	55466 - 55471	26 April/67
DK 13	Delkirk	1	57335	24 June/67
DK 15	Delkirk	1	57337	24 June/67
DK 17	Delkirk	1	57339	24 June/67
DK 19	Delkirk	1	57341	24 June/67

Total 70

Fractional Claims

Dunbar 1A-8A	Dunbar	8	54121 - 54128	7 March/67
Loring 1F	Loring	1	54253	14 March/67
Babkirk 1G	Babkirk	2	54254	21 March/67
Babkirk 5G, 6G	Babkirk	1	54369, 54370	14 March/67
Loring 2F	Loring	1	54380	21 March/67
Loring 6F, 7F	Loring	2	54384, 54385	21 March/67
Loring 9F	Loring	1	54387	21 March/67
DK 10	Delkirk	1	57332	24 June/67

Total 17

The claims are registered as shown and Bills of Sale and transfers are reportedly being processed to place ownership in favor of Delkirk Mining Ltd. (N.P.L.). 8 adverse claims are located in the center.

TOPOGRAPHY AND ACCESS:

Access is by good paved highway Number 97. Both C.N.R. and C.P.R. railways are readily accessible.

Generally the area is in the drybelt with rainfall reported at 8 inches in Ashcroft. Relief is generally slight with occasional deep gorges from major rivers. Gradients are often steep on the faces of outcrops.

HISTORY:

Previous to the last few years no record of previous work could be found. Undoubtedly the hill was prospected because of it's obvious red and brown outcroppings containing copper oxides, specimens of which will return high assays. The hill itself was explored by a major mining company in 1962. The major part of the hill was prospected and surveyed by geochemistry and magnetometer. A Junior Electromagnetic survey and a Self Potential survey were also run over the same area. Seven small core holes were drilled for a total of 587 feet and one A.X. hole was drilled to 303 feet. Trenching and open cutting were conducted simultaneously.

In 1966 some additional trenching and prospecting was completed by Delkirk Mining Ltd. (N.P.L.) followed by three additional small holes for a total of 312 1/2 feet. These holes confirmed reports of previous drilling as to grade and difficulty of core recovery in the more pyritic zones.

In general the area is mapped by the G.S.C. as being comprised of the Cache Creek series intruded by stocks of the Guichon Batholith. Locally the Cache Creek series consists of green and brown igneous porphyritic flows regionally sheared at about N50W with shear dips nearly vertical. Two stocks of granodiorite have been noted in the area, one in the northwest and one in the southeast; others may be inferred from the magnetometer survey. Alterations of the flow to chlorite and sericite silicified schists is directly related to the amount of shearing. The granodiorite stock is green colored due to epidote.

Mineralization occurs in the shears and generally consists of pyrite carrying some gold and silver values. Chalcopyrite is scarce. Values of copper as high as 3.0% have been obtained from the plentiful red and rusty gossans. A variety of secondary copper minerals have been reported from the area.

The most significant sulphide occurrences are in D.D.H. #4 and D.D.H. #8 where No. 4 returned a value of \$17.80 per ton over 3 feet with one half of this length returning only 60% core recovery \$6.60 of this in Au and Ag, and \$11.20 in Cu. No. 8 hole returned 3 1/2 feet of heavy pyrite which apparently was never assayed. Both these holes were drilled by the major company in 1962 and both were in the proximity of the northwestern intrusive. Most of the obvious mineralization appears around the northwestern intrusive, little or none has been reported near the southeastern stock.

GEOLOGY: (Continued)

Soil sampling in the area confirmed the visual observations, and the magnetometer survey outlined one edge of each of the two observed plugs and indicated the probable location of other small ones. The self potential method was not successful due to instrument breakdowns. The junior E. M. Survey indicated that the pyrite zones were not responsive to Junior E. M. methods.

OBSERVATIONS:

An historically favourable geological environment exists in the area in that the Gulchon Batholith is associated with auriferous pyrite zones presumably similar to those in the old Grange Mines and the old Maggie Mine, both small producers. The best zones appear close to the northwestern intrusive.

The sulphide zones do not appear to respond to E.M. methods, however, if the sulphide zones were more massive they would certainly respond. All zones would appear to be responsive to Induced Polarization methods. Soil sampling methods have proven highly successful in the area.

CONCLUSIONS:

The large area controlled by Delkirk surrounding the area previously worked should be surveyed for further and better sulphide occurrences.

1. A combined soil sampling and magnetometer survey should be extended over the remaining area.
2. A ground electromagnetic survey should be conducted to check for any heavy sulphide zones.
3. Favourable areas should be tested with large diameter drills.

RECOMMENDATIONS:

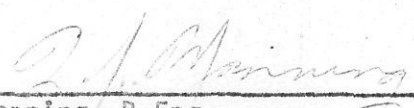
Moneys be allocated according to the following estimate:

1. Soil Sampling and magnetometer work	\$ 4,000
2. Assay Anomalous Areas	600
3. E. M. Survey near contacts & Anomalies	2,000
4. Test Drilling	3,000
5. Engineering, Supervision, Travel & Reports	1,500
Contingencies	<u>900</u>
	\$12,000

BIBLIOGRAPHY:

Geological Survey of Canada Memoir 262  
by Duffell & McTaggart

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1934 - 1939

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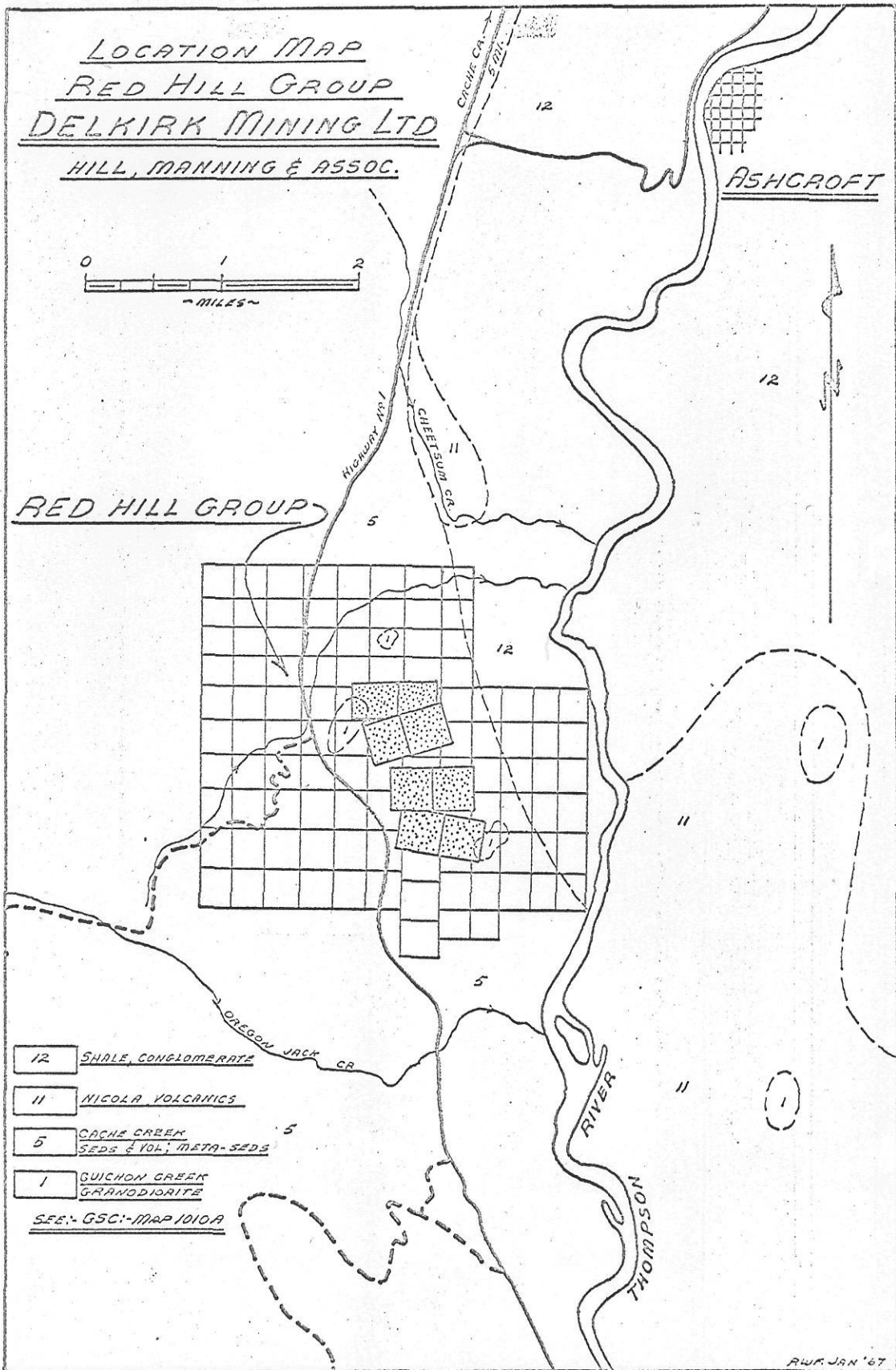
L. J. Manning, P.Eng.

LOCATION MAP  
RED HILL GROUP  
DELKIRK MINING LTD  
HILL, MANNING & ASSOC.



RED HILL GROUP

ASHCROFT



- 12 SHALE, CONGLOMERATE
  - 11 NICOLA VOLCANICS
  - 5 CACHE CREEK SEDS & VOL; META-SEDS
  - 1 QUICHON CREEK GRANODIORITE
- SEE: GSC: MAP 1010A



BOTANIE MOUNTAIN

The following report is based on a visit on August 10th, 1966 to one showing on the Loring A group by Gerhardt von Rosen, Geologist with our firm, and a study of published reports on the area.

SUMMARY AND CONCLUSIONS:

The claims are located on Botanie Mountain 10 miles north of Lytton, B. C. The area appears geologically favourable for mineralization, and showings have been prospected by conventional means for years.

A reconnaissance program of soil sampling and magnetometer surveys is recommended for the groups to cost an estimated \$4,000.

LOCATION AND CLAIMS:

The claims are located in the Kamloops Mining Division on Botanie Mountain some 10 miles north of Lytton, B. C. in Map area 92 I 5 at approximately 50°21' Latitude and 121°33' Longitude.

Access is available to groups on both sides of the hill from a gravel road on Botanie Creek, thence by trails to the various groups. Relief is high, about 3,000 feet on Botanie Creek up to 5,500 feet in the pass and from 500 feet at the Fraser to 5,000 feet to the location line of the groups on the west side of Botanie Mountain. Our geologist visited only one show on the east side of Botanie Mountain, in the Loring A group of claims.

<u>Name</u>	<u>Owner</u>	<u>No. of Claims</u>	<u>Record Number</u>	<u>Recording Date</u>
Loring 1A-6A	Loring	6	50059E-50064E	May 14/67
Loring 12A-14A	Delkirk	3	58966H-58968H	July 28/67
Alpha 1-6	Delkirk	6	58969H-58974H	July 28/67
Babkirk 1A-3A	Delkirk	3	58975H-58977H	July 28/67
Loring 7A	Loring	1	51314K	Aug. 20/67
Loring 8A-11A	Loring	4	51732M-51735M	Sept. 14/67
Loring 1B-4B	Loring	4	51736M-51739M	Sept. 14/67
		<u>27</u>		

The claims are registered in the name of the owners as shown, and Bills of Sale and transfers are reportedly being processed to transfer all ownership to Delkirk Mining Co. Ltd.

HISTORY:

No records of work on the property could be found, but references to the Victory Claim were noted. It is on the same regional fault that forms the east side of the mountain on which the showings were observed, and is underlain by the same Lytton Batholith, but is well to the north between Lalowissin and McGillivray Creeks. Surface showings on the Victory Claim reportedly carried interesting amounts of pyrite, and some copper stain was noticed. Old workings in the Loring A group showing attest to earlier work, so undoubtedly the area has been well prospected by conventional means.

GEOLOGY:

All four groups are generally underlain by intrusive rocks of the Mount Lytton Batholith. Small remnants of older Cache Creek series appear as inclusions and the contacts of these may be favourable for mineral concentrations. These are distinct from some of the Spences Bridge flows and sediments of which a few remnants overlie the older Mount Lytton Batholith.

The Loring A group show is specifically underlain by medium to coarse grained amphibole rich diorite of the Mount Lytton Batholith. The showing consists of horizontal veins and dykes of pegmatite 4 inches to 5 feet in width which carry some chalcopryite especially along small shears near the edge of the structures. Few zones appear mineralized, and these are separated by a large quantity of waste rock in the form of barren host rock and Pegmatite. Some mineralized veinlets can be traced for 20 or 30 feet, but they remain small in width.

OBSERVATIONS:

1. Several groups of claims have been staked on the Botanie Mountain, one of which exhibits minor chalcopryite. G. S. C. reports reveal a major fault running near this group and mention inclusions of Cache Creek rocks in the batholiths, some of which exhibit some mineralization where cut by this same major fault.
2. Old adits in the group would indicate that the area has been prospected by conventional methods.

CONCLUSIONS AND RECOMMENDATIONS:

The area has some favourable characteristics and is worth a reconnaissance prospecting program guided by soil sampling and possibly a magnetometer survey to allow mapping of the local rock types under the overburden.

CONCLUSIONS AND RECOMMENDATIONS: (Continued)

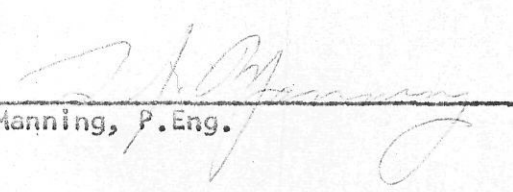
Estimated Costs:

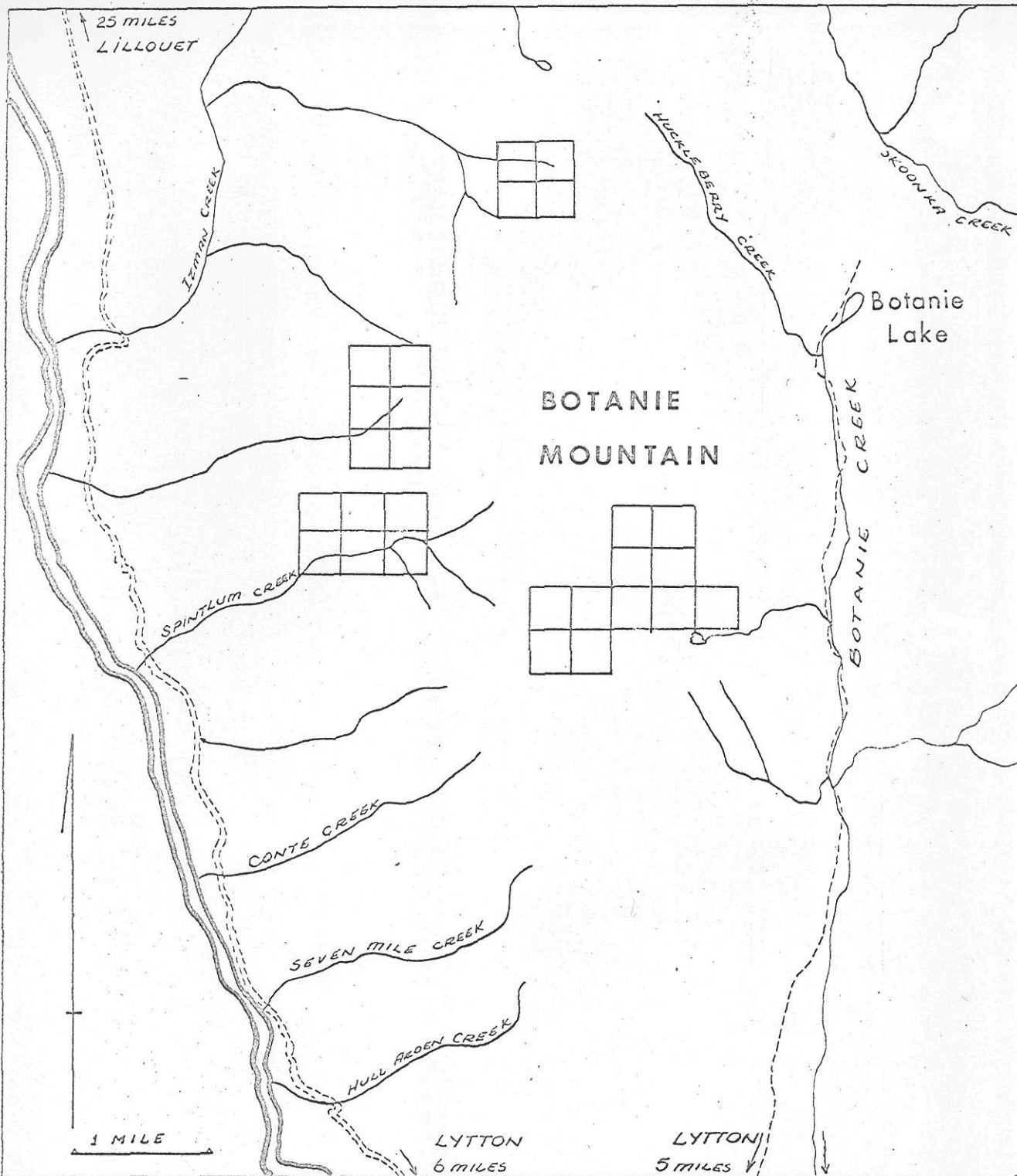
2 men - 1 month wages	\$1,500
2 men - months subsistence	600
Transportation	100
Assays	600
Supervision, report, interpretation	1,000
Contingencies	<u>200</u>
	\$4,000

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Geological Survey of Canada Memoir 262

Minister of Mines Reports of B. C.

  
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L. J. Manning, P.Eng.



LOCATION MAP

DELKIRK MINING LIMITED

Botanie Group

(locations approx)

Hill Manning & Assoc

### AIRBORNE SURVEY

The following is a recommendation and cost estimate for conducting an airborne electromagnetic (E.M.) and Magnetometer (Mag.) survey over a suitable area using a helicopter towed transmitter-receiver system.

#### SUMMARY:

A method of geologically mapping an area while simultaneously prospecting for deposits of massive sulphides and magnetite is available in a helicopter flown electromagnetic and magnetometer system. Because of the low cost and high speed coverage obtainable with this method it is recommended that \$20,000 be spent on a survey of 600 line miles.

#### GENERAL PRINCIPLES:

1. An airborne E.M. Survey is based on the ability of a highly electrically conductive deposit to distort to a measurable significant degree, an electrical field induced into the ground. These deposits may be composed of graphite, water filled fractures, buried steel, etc., or massive sulphides.
2. A magnetometer survey measures the variations from the normal earth's magnetic field caused by changes of the magnetic properties of the main rock masses passed over by the survey. Generally, the most useful purpose of this survey is to enable extending geological mapping of outcrops into overburden covered areas. Mag. surveys, of course, specifically locate bodies having high natural magnetism such as magnetite and pyrrhotite.

#### AIRBORNE CRITERIA:

That both of these surveys require no direct contact with the ground enables them to be conducted from an airborne platform. A helicopter is a suitable slow flying, low flying controllable device enabling sufficient constant ground clearance to be maintained by the instruments. The E. M. Transceiver is suspended beneath the helicopter enabling the pilot to have safe ground clearance while keeping the instruments as close to the ground as trees and other obstructions permit.

#### COST AND PERFORMANCE:

It is estimated that such a survey should cost about \$22.00 per line mile all out including normal mobilization costs for a three week program, helicopter and instrument rent and operation plus interpretation compilation and reports but not including a ground follow-up program of any sort. (See appendix.)

COST AND PERFORMANCE: (Continued)

Normal minimum performance should permit 60 hours per month, and at 45 miles per hour of useful survey should enable the production of 2,700 line miles per month per unit. For most areas a 1/8 mile spacing would provide suitable detail for reconnaissance thus enabling the covering of 340 square miles per month of reconnaissance survey.

Crew would consist of pilot, mechanic, cook, airborne geophysical operator, ground data compiler and interpreter. Equipment would consist of one SL4 size helicopter, service truck and suitable camping equipment depending on the area flown.

AREA RESEARCH:

Areas physically suitable for such a survey, and favourable from a geological and historical standpoint have been researched and selected for your firm.

CONCLUSIONS:


An area can be surveyed by these methods in considerable detail and at much less cost than with equivalent ground methods.

RECOMMENDATIONS:

It is recommended that 600 line miles be flown at 1/8 mile spacing.

ESTIMATED COSTS:

Normal costs 600 miles @ \$22.00/line mile	\$13,000
Mobilization and demobilization	2,000
Ground follow-up - 15 line miles at \$200/mile	3,000
Test holing anomalies 200 feet @ \$10.00/foot	<u>2,000</u>
Total	\$20,000

  
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L. J. Manning, P.Eng.

ESTIMATED COST FOR AIRBORNE E.M. & MAG.

1. Operator & E. M. Unit & Mag	\$13,000
2. Administration, reports, etc.	1,000
3. Cook	960
4. Helper	600
5. Interpreter & Compiler	2,000
6. Board and room for 7 men @ \$7/man day	<u>1,450</u>
Total fixed monthly	\$19,010

Helicopter @ \$145/hr. @ 45 miles of Survey per hour 3.22/mile

Interpretation & Compilation Mag & E.M. 10.00/mile

Total fixed per mile \$13.22

Hours/Mo.	60	80	100	200
Miles of Survey/Mo.	2,700	3,600	4,500	9,000
Fixed/Mo.	19,010	19,010	19,010	19,010
Fixed/Mile	7.05	5.30	4.23	2.12
	<u>13.22</u>	<u>13.22</u>	<u>13.22</u>	<u>13.22</u>
Total cost/mile	<u>\$20.27</u>	<u>\$18.52</u>	<u>\$17.45</u>	<u>\$15.34</u>


To this add costs of mobilization and photography figure on \$22.00 per line mile all out for small three week program.

CERTIFICATE OF QUALIFICATIONS

I, Luard J. Manning of 945 Belvedere Drive, North Vancouver, B. C. certify as follows:

1. That I am a graduate of the University of British Columbia and hold a Bachelor of Applied Science degree in Mining Engineering
2. That I have been a member of the Association of Professional Engineers of Ontario since 1959 and a member of the Association of Professional Engineers of British Columbia since April, 1966.
3. That I have been engaged in the profession of mining engineering for over 15 years.
4. That I was a member of the engineering and supervisory staff of the Taxco Unit of the American Smelting and Refining Co. Ltd. from 1951 to 1953.
5. That in 1953 I joined the staff as chief engineer of Giant Mascot Mines Ltd., Spillimacheen, B. C. and remained there until 1955.
6. That from 1955 to 1957 I was employed by Rix Athabasca Uranium Mines Ltd. as chief engineer and assistant manager.
7. That from 1957 to 1959 I was a mine captain at Pronto Uranium Mines Ltd.
8. That from 1959 to 1960 I was in charge of research and auxilliary mine services at Pronto.
9. That from 1960 to 1963 I was mine superintendent of the Pronto Division of Rio Algom Mines Ltd.
10. That from 1964 to 1965 I was General Mine Superintendent of the Pronto Division of Rio Algom Mines Ltd.
11. That from August to December 1965 I was resident manager at Orecan Mines Limited.
12. That from January 1966 I have been involved in general exploration and consulting work.
13. That I am at present a partner in the firm of Hill, Manning & Associates Limited of Vancouver, a firm of consulting mining engineers.
14. That I do not hold any financial or other interests in the properties or stock of Delkirk Mining Co. Ltd. nor do I expect to do so in the future.

Dated at Vancouver, B. C. this 18th day of January , 1967.

  
\_\_\_\_\_  
L. J. Manning, P.Eng.



Flourish Bay - Wheel Bay  
~~at~~ mountain of Uchit suburbs.  
700 + 1000 earths.

Pt - Au placer w Coast  
of Van. Island

Mr. Cona Jordan - heads small  
company,

~~XXXXXXXXXX~~ \$21-2651

#206 - 713 Columbia; N. West  
Shepherd + Mc Intosh minerals

Cont. - Aldridge, Bk, Inco - Pt. Au, Zr, <sup>monazite</sup>

Lunch w/ Fred Chaw

soon

~~(58) 1 mi~~

~~(138 miles)~~

Large area of Pt. Au, Zr - no grade,  
possible extensions under ocean.

INTER-OFFICE MEMO

TO CLYDE SMITH		OFFICE VANC
FROM E.O. CUSHORH		OFFICE VANC
SUBJECT DELKIRK MINING CO		DATE FEB 20/67
<p>MESSAGE THE PLACER PROPOSITION APPEARS TO ERRATIC. THESE BEAN PLACERS ARE BEANLY TOUGH TO EVALUATE. THE OTHER PROPOSIES ARE PROSPECS BEQUIRING CONSIDERABLE EXPENDITURES TO EVALUATE. PLEASE ADVISE WE ARE NOT FURTHER INTERESTED. THERE IS ONE AFTERTHOUGHT I HAVE AND THAT IS THE POSSIBILITY OF A LARGE ILMENITE, RUTILE OR TITANAZITE DEPOSIT (SEE QUEENSLAND MINING JOURNAL PAGE 622) COULD THEY GIVE YOU ANY ANALYSIS OF THIS CONTENT?</p>		
		SIGNED E.O.C.
REPLY		
DATE	OFFICE	SIGNED