4823

Assessment
Report No.

GEOCHEMICAL & GEOPHYSICAL REPORT

92K/3W on the

FS MINERAL CLAIM GROUP

4823

92K/3W

Nanaimo Mining Division
Brown Bay Area
British Columbia

50°09.8' North Latitude
125°23.6' West Longitude

92 K 3 W (M)

for

FOUR SEASONS MANUFACTURING LIMITED
1102-1177 West Hastings Street
Vancouver 1, B. C.

by

C. M. Armstrong, P.Eng.
Consulting Engineer
4085 West 29th Avenue
Vancouver, B.C. V6S 1V4

between
February 18 and December 27, 1973

December 27, 1973

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4823 MAP

CONTENTS

INTRODUCTION

In the writer's "Report on the FS Mineral Claim Group" dated February 17, 1971, an expenditure of $20,000 was recommended for exploration in a 4-month Phase I program involving prospecting, mapping, trenching, and trial geophysical surveying. An expenditure of $40,000 also was estimated for exploration in a follow-up 2-month Phase II program involving trenching, geophysical surveying, and diamond drilling.

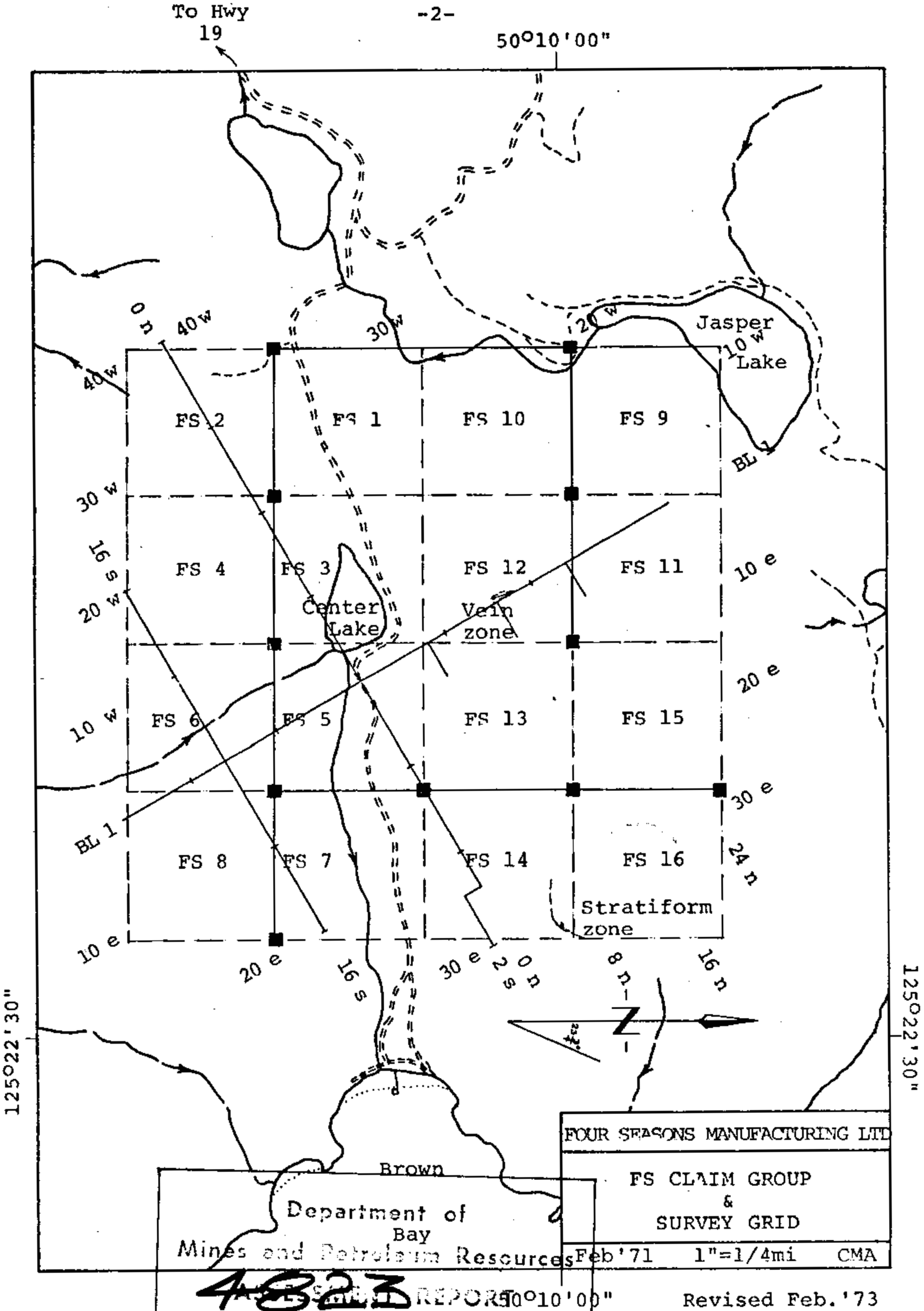
Owing to extensive committments of both finances and time in various industrial projects, the above exploration programs were not carried out. At the request of B. G. Murdoch, Treasurer, on November 27/73, the writer carried out the required additional exploratory work necessary to maintain the claims in good standing for one additional assessment year.

This report describes the work completed by the writer during the periods February 18 to March 12, and November 27 to December 27, 1973, for which assessment credit is applicable. Geochemical work consisted of analysis of existing samples for four additional metallic elements, silver, lead, zinc, and nickel, data processing by statistical techniques, and plotting of all geochemical data on new base plans. Geophysical work consisted of 2.6 miles of VLF-EM surveying, and related data processing, filtering, plotting, and interpretation. Field work during the period December 3 to 6 was conducted under extremely difficult conditions, 2 feet of snow on the ground, and continuous heavy rain. Accordingly, it was not possible to carry out the program of fill-in soil sampling and line cutting which was planned, and the limited budget did not permit additional trips to the property.

Much of the background data in this report has been obtained from earlier reports by the writer concerned with exploration both in the general area and in the immediate area.

PROPERTY

The FS group, outlined in Figure 1, is comprised of 16 located mineral claims, FS 1-16, in the Nanaimo Mining Division, record numbers 33485 to 33500, respectively. Date of record was February 10, 1971. Four Seasons Manufacturing Limited is the owner of the claims



FOUR SEASONS MANUFACTURING LTD

FS CLAIM GROUP
&
SURVEY GRID

Feb'71 1"=1/4mi CMA

Revised Feb.'73
Dec.'73

Fig. 1

LOCATION, ACCESS, DECLINATION, TOPOGRAPHY, ROCK EXPOSURE, TIMBER, WATER, POWER, CLIMATE

As shown on the Location Map, Figure 2, the FS claims are centered 15½ road-miles or 11 line-miles north-northwest of the town of Campbell River on the east coast of Vancouver Island, immediately west of Brown Bay on Discovery Passage.

Geographic location is 50°09.8' north latitude and 125°23.6' west longitude.

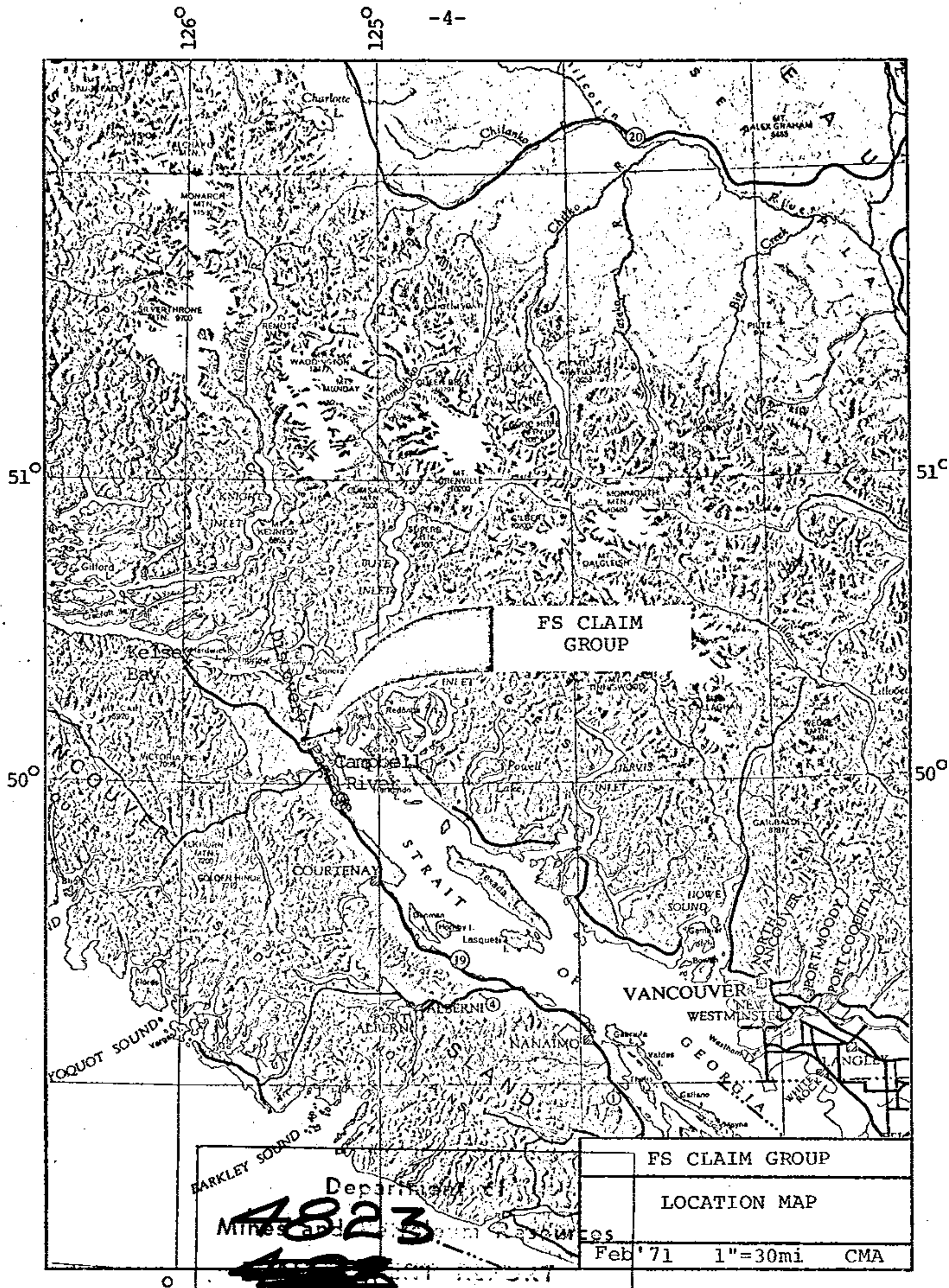
Ready access to the claims is provided by a MacMillan Bloedel logging road which branches to the north from paved Highway 19 some 13 road-miles from Campbell River or 2.6 road-miles from the Menzies Bay Division of MacMillan Bloedel Limited. Several old, partially overgrown logging roads traverse various areas of the claim group, and a recent road has been extended northerly from "Adam's Resort" at Brown Bay.

Magnetic declination in 1973 is approximately 23°40' east, decreasing at the rate of 2.5' annually.

Maximum relief on the property is approximately 1200 feet, from 200 to 1400 feet ASL, and is characterized by a succession of east-west trending benches varying from a few feet to over one hundred feet in height, some of which are quite precipitous. Numerous narrow, but generally shallow and fairly readily traverseable ravines disect the slopes both north and south of a prominent east-west valley which terminates at Brown Bay. Physiographically the area is in the Nanaimo Lowlands on the westernside of the Georgia Depression, part of the major northwest trending Coastal Trough.

Outcrops vary in aerial extent from an estimated 2% on the valley floor, to 10% on the north-facing slope and summits, to 70% on the south-facing slope. Over the entire claim group probable rock exposure is in the order of 20%.

Timber in the east-west Brown Bay valley, on most of the claims to the south on the north facing slope, and on the lower portions of the claims to the north on the south facing slope were logged extensively in the early nineteen hundreds. Secondary growth is predominantly hemlock and alder to 16 inches in diameter. Primary stands of Douglas fir on the northern slopes currently are being logged on a small scale.



FS CLAIM GROUP

LOCATION MAP

Feb '71 1"=30mi CMA

Fig. 2

Department of
Mines and Petroleum Resources
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~~4824~~
NO. ~~4830~~ MAP #2

There are four small, shallow lakes in the vicinity of the claims varying from about 5 to 25 acres in aerial extent, and fed by intermittent run-off streams. Depending on the location and weather, some difficulty could be experienced in finding sufficient water in small creeks for diamond drilling. Mohun Lake, 4 miles southwest of the claims, could provide an adequate supply of process water, being over 5 miles in length in a north-south direction and ¼ to ½ mile in average width.

A power transmission line extends to Menzies Bay, 1½ miles south of the claims, but power characteristics are unknown to the writer.

Climate is mild, typifying coastal areas in southern B.C., with annual precipitation in the order of 60 inches, of which approximately 15% or 9 inches occurs as snow, mainly between the months of November and January. Winters generally are not severe, and exploration can be conducted throughout the year with little difficulty if topography permits.

HISTORY

The initial, and by far the most significant work on the property, was that carried out in the period 1899 to 1902 when 456 feet of development work was carried out on the 6-claim Sunset Group. A strong NW-striking, vertically-dipping quartz vein in amygdaloidal "diabase" was explored by 3 adits, plus winzes, subdrifts, crosscuts, and raises, reportedly yielding an average of 6% copper.

No other public record of work on the property was found by the writer, but it is highly probable that some additional work has been done, and that the property has been re-staked on other occasions. For example, the 6-claim Snow group, indicated by posts in the adit area dated February 7, 1963, was found to have been forfeited sometime prior to 1967 (Vancouver records before that date have been destroyed).

REGIONAL GEOLOGY

The entire Campbell River/Kelsey Bay area is underlain by a very thick, gently dipping, eugeosynclinal sequence of Permian (?) to Upper Triassic submarine basic volcanic flows of the Karmutsen Formation. Limestone of the Upper Triassic Quatsino Formation overlies the volcanics on Quadra Island 5 miles to the northeast, and 14 miles to the southwest also. Upper Triassic to Lower Jurassic clastic sediments and volcanics of the Bonanza Formation in turn overlie the Quatsino Formation in the Paterson Lake/ Salmon River belt, and also appear to occur in the upper portions of the undifferentiated, so-called "lime belt" on Quadra Island. Collectively, these three formations, Karmutsen, Quatsino, and Bonanza, make up the Vancouver Group.

Middle Jurassic granitic rocks of the Island Intrusions or Coast Intrusions cut all formations of the Vancouver Group.

A wedge of clastic sediments of the Upper Cretaceous Nanaimo Group unconformably overlies Bonanza sediments at Campbell Lake 12 miles to the southwest.

LOCAL GEOLOGY AND MINERALIZATION

Only basic volcanic rocks of the Karmutsen Formation, with local minor interflow limey sediments occur on the FS claim group. While local undulations along flow contacts give rise to "pseudo-dips" of 10° or more, grossly the flows are flat lying in this area.

A 90-foot thick bed of pillow lava and pillow breccia occurs above approximate elevation 900 feet on the slope north of the Brown Bay valley. A small, 20-foot wide, northerly trending, limestone-filled channel occurs near the east boundary of claim FS 14 at the base of the pillowed flow - maximum exposed thickness is only about 1 foot. The fine grained, fossiliferous and limey sedimentary rock contains inconspicuous, very lightly disseminated bornite mineralization, probably essentially syngenetic in origin. Alteration to malachite and azurite occurs along exposed surfaces, and sometimes coats late fracture surfaces in the massive, amygdaloidal volcanic flow below the basal member. Bornite/malachite mineralization also occurs elsewhere along the thin (less than 1 foot), fractured and brecciated base of the pillowed flow where sedimentary material is absent. Copper mineralization probably was derived from the volcanic rocks by dissolution in connate "water", and redeposited in a reducing environment along the permeable basal member. While visual grade/width combinations of exposed mineralization appear to be much below economic requirements, it is essential to prospect this favourable contact thoroughly throughout its extent.

The succession of fairly massive flows, variable mainly in size, proportion, and composition of amygdules, and in grain size of the groundmass, which occur between the approximate elevations 500 feet and 900 feet, appear to be essentially barren of copper mineralization.

Numerous crosscutting fault, shear, and fracture systems, however, some of which are prominently demarcated by narrow, overburden-filled ravines and depressions, are potentially favourable environments for localization of metallic mineralization, and, until such time as the structural history of the area is established and related to economic mineralization, all such linears should be prospected thoroughly. The majority of these steep dipping zones, including azimuths of 15°, 45°, 80°, and 160°, in all probability will be unrelated to copper mineralization.

One such 100-foot wide, epidotized and silicified, east-west trending, vertical or steep south dipping fracture zone which occurs between elevations 800 feet and 900 feet, approximately 1500 feet northeast of the small lake closest to Brown Bay, contains at least traces of chalcopyrite, visually anomalous in comparison to the background copper content of the volcanics, and is worthy of careful prospecting throughout its strike extent. The bornite-bearing quartz veins at elevation 900 feet, approximately 1500 feet due north of the previously mentioned lake, and close to the mutual boundary of claims FS 12 and 13, in which 456 feet of underground exploration work was conducted at the turn of the century, may be particularly useful, not only in deciphering the geologic history as it pertains to copper mineralization, but also as a direct or indirect guide to ore. Over a width of 50 to 75 feet there actually occur several parallel bornite-mineralized veins, varying in width from 1 inch to 3 feet, with the development work naturally carried out on the strongest vein. Azimuths vary from 330° to 345°, with occasional branch veins at 5°, and dips are either vertical or very steep to the southwest. A 5-pound composite grab sample of mineralized vein quartz taken by the writer assayed 2.69% copper, 0.42 oz/T silver, and Trace oz/T gold. The copper value is much below the 6% claimed by the original owners, and visual appearances suggest that the overall grade of the vein material will be considerably lower still. Furthermore, when dilution by 1 or 2 feet, or more, of essentially barren wall rock is considered, mineable grade would be sub-economic for this type of deposit, irrespective of tonnage considerations. Thus, while it appears that the veins are too low in grade, individually or collectively, to be economic at this location, it is not unreasonable to suggest that somewhere on the strike or dip extensions of the zone, the density of veining and/or the proportion of copper mineralization might reach economic proportions. Also possible is the mergence of the structurally controlled vein deposits with a related structure, such as a fault breccia zone, giving rise to economic mineralization. With these possibilities in mind, it is essential to map and prospect thoroughly the area in proximity to the veins and their projections. A number of other weak linears having the same strike as the quartz veins are discernable on air photographs of the area, and examination of such features on the ground likewise is very important.

It is perhaps not merely fortuitous that the strike of the mineralized veining on the FS claims is the same as that of a mineralized fault structure on Quadra Island 6 miles to the southeast, with which a number of small stratiform, fissure, and stockwork chalcocite deposits are spatially and probably genetically related.

AIR PHOTO LINEARS AND SURVEY GRID

To assist in establishing the best orientation of a grid for subsequent geological, geochemical, and geophysical surveys, all air photo linears were plotted on a base map, Figure 3, at a scale of 1"=¼mi.

All things considered, the inconspicuous linear extending from the east end of "Center Lake" to the east end of Jasper Lake, along which the significant bornite-bearing quartz veins are localized, appeared to be the most important economically; and, accordingly, a base line was laid out close to and parallel to this structure on an azimuth of 330°/150°. Two cross lines were extended to the claim boundaries at 1600-foot intervals on azimuths of 60° and 240°, and three lines at 800-foot intervals were extended across the known quartz vein zone and strike extensions. The grid is shown on Figure 1.

All lines were laid out on compass bearings, and stations were flagged and picketed at 100-foot intervals employing a one-man "Topofil" chain. Altimeter readingsto the closest 5 feet were taken on all 100-foot stations, as well as points of topographic interest, using a Thommen Pocket Altimeter, and corrected to a base station on a time basis. Duplicate, similarly corrected readings were taken at each soil sample station to provide a check on the former and to improve the precision of the survey. A total of 3.44 miles of line were laid out and surveyed topographically, providing a sound basis for future exploration.

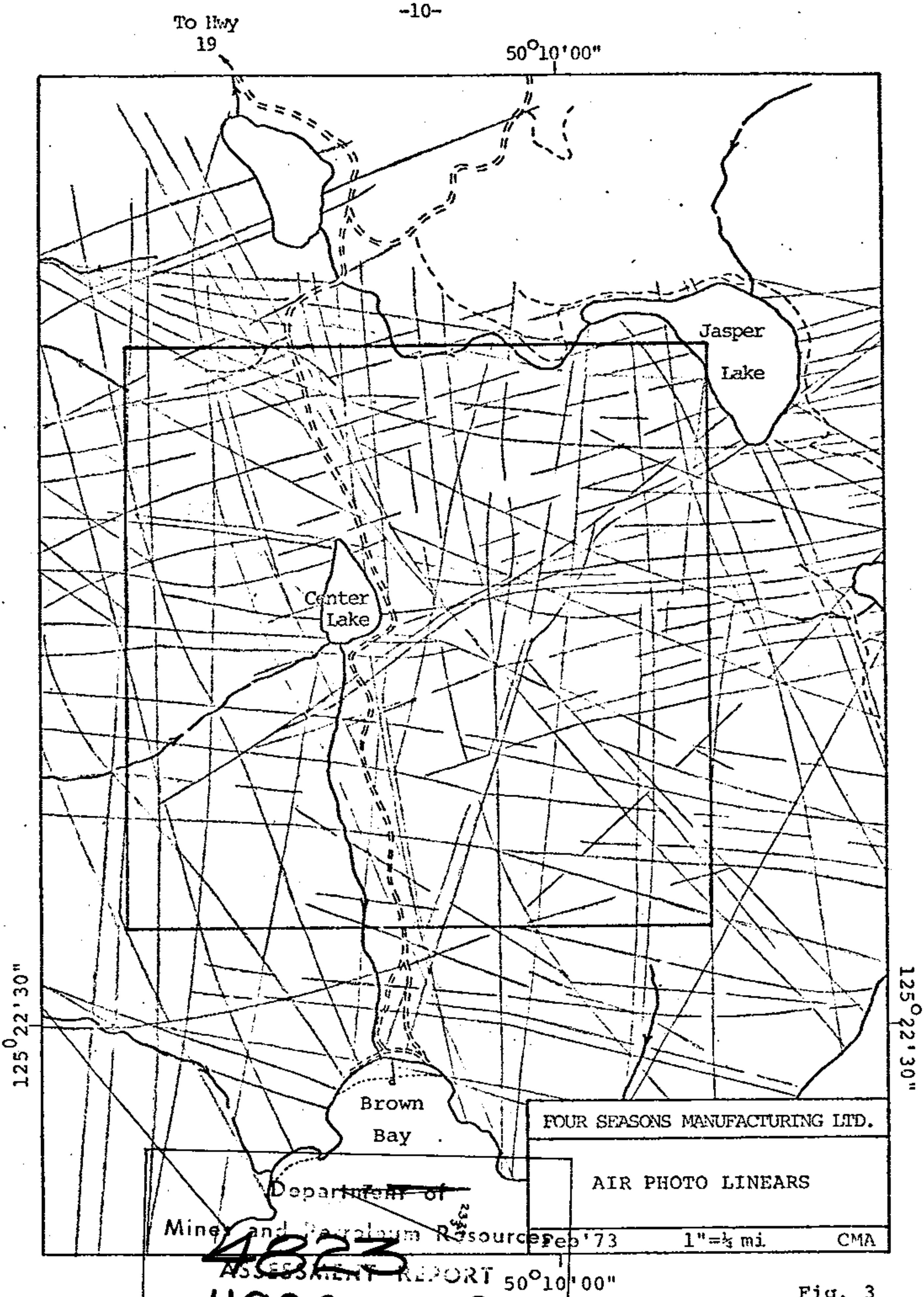
To Hwy 19
50°10'00"
Jasper Lake
Center Lake
Brown Bay
125°22'30"
125°22'30"
50°10'00"
FOUR SEASONS MANUFACTURING LTD.
AIR PHOTO LINEARS
Feb'73
1"=¼ mi
CMA

Fig. 3

GEOCHEMICAL SURVEY

Description

Podzolic soil is well developed over most of the claim area, favouring the application of relatively low cost soil sampling as a viable exploration technique.

On a reconnaissance basis, sampling at 200-foot intervals was selected as the best method for defining areas for follow-up detailing. In the area of known lode-type, quartz vein mineralization, however, sampling at 100-foot intervals was selected for trial testing, although 50-foot samples could be justified. A total of 98 soil samples was taken.

Sampling was restricted wholly to the upper portion of the well developed orange, orange-brown, or red-brown "B" horizon, which varied in depth from a minimum of 2" to a maximum of 24", and averaged about 10". Both a 2" post-hole auger and a grub hoe were employed for sampling purposes, depending on overburden characteristics. Because of the rocky nature of much of the northern area, in particular, the grub hoe proved to be the more versatile sampling tool on this claim group.

Soil samples, in the amount of a small handful, were placed in high wet strength, 3½ x 6 1/8, open-end Kraft soil sample envelopes, on which the sample location coordinates were recorded with waterproof felt-tip marker. Rock fragments and organic material were excluded from the samples. For each sample site, notes on location, depth, horizon, colour, slope, and remarks were recorded on "Soil Sampling Data" sheets.

Rock chip samples of bedrock were taken at 800-foot intervals on the grid to determine: the correlation, if any, between soil and rock geochemical samples; if any broad trends in copper values were discernable; and the applicability of rock chip sampling in defining anomalous areas for follow-up detailing. A total of 18 samples were taken, indicated on plan by the prefix "R".

Initial analyses for copper were augmented by analyses for silver, lead, zinc, and nickel to establish the relative utility of these elements as pathfinders to copper mineralization. Analyses were carried out in the geochemical laboratory of Fraser Laboratories Limited employing standard procedures for drying (120^{O}F), seiving (minus 80-mesh), weighing (½ gram), dissolution (2 hours in 6 ml hot perchloric/nitric acids at 2/1 volume ratio, bulked to 25 ml with demineralized water, shaken, and settled), and analyzing (Techtron AA 5 Atomic Absorption Spectrophotometer, against matrix standards). "Geochemical Analysis" sheets are contained in Appendix I. Soil pH also was determined for 8 samples on the base line.

Sample sites and metal values in ppm are plotted on plan at a scale of 1"=400'. Copper, silver, lead, and zinc are found on Figures 4, 5, 6, and 7, respectively, in the pocket of the report.

Slopes in degrees and soil pH values are plotted on the copper soil plan only. A separate plan was not prepared for the nickel values, since no significant contribution was made to the geochemical picture.

Interpretation

Although the relatively small number of soil samples, 98, limits the effectiveness of a statistical analysis, nevertheless, a valuable indication of background, and weakly, moderately, and strongly anomalous soil values may be obtained.

Statistical analyses for copper, silver, lead, zinc, and nickel by graphical techniques are included in Appendix II and summarized below:

Element	Cu	Ag	Pb	Zn	Ni	Statistical Parameter
Background	40	1.0	25	50	25	Mean
Weakly anomalous	75	1.25	30	75	35	Mean + 1 std dev
Moderately anomalous/threshold	150	1.5	40	100	45	Mean + 2 std dev
Strongly anomalous	300	2.0	55	150	65	Mean + 3 std dev

Tests for soil pH demonstrate a significantly more acid soil on the relatively lush, north-facing slope (average 4.4) than on the exposed, south-facing slope (average 5.4), with the east-west Brown Bay valley being a distinct dividing line. When additional samples are taken in future exploration work, it might be warranted to calculate separate statistical parameters for the two areas. Lithologically, the entire claim area is homogeneous, for all practical purposes.

The most significant copper soil anomaly is that defined by 5 samples ranging from 80 ppm to 680 ppm on the base line and line 24 n, representing the overburden-covered, unexplored strike extension of known bornite-bearing quartz veins. In the writer's opinion it is significant that soil values in the known area explored by underground development are only about 65 ppm Cu, even though dump material containing easily visible copper extends down the moderately steep slope. While this mineralization is not of ore grade, nevertheless it is significant, and suggests both that the level for weakly anomalous copper might be lowered justifiably to 60 ppm Cu, and that the up-slope soil anomaly has very good potential for reflecting significantly higher bedrock values. The anomaly is open in a northerly direction. Fairly good correlation with weakly anomalous lead values is evident, 4 out of the 5 samples, but no significant silver, zinc, or nickel values occur.

It is essential to extend the base line the remaining several hundred feet to the north claim boundary, and to delineate the anomalous soil area with samples at 100-foot intervals on lines at 200-foot spacings.

A number of isolated anomalous soil values with various degrees of multi-element correlation occur on the widely spaced (1600-foot) grid lines sampled at 200-foot intervals. In all instances these areas of uncertain significance should be "boxed in" with 4 to 8 additional samples on a 100-foot grid to establish continuity of the soil values and to indicate where further detailing may be warranted. Maximum recommended line spacing for reconnaissance sampling is 800 feet, with 200-foot sample intervals being adequate.

Weak to strong soil anomalies with 5-element correlation (Cu, Ag, Pb, Zn, Ni) occur at: BL 1 - 16s, on - 12w and 30w, and 16s - 6e.

Weak to strong soil anomalies with 4-element correlation occur at: 0n - 24w (Cu, Ag, Pb, Zn) and 0n - 22e (Ag, Pb, Zn, Ni).

Weak to strong soil anomalies with 3-element correlation occur at: BL 1 - 24s, 0n - 20w, and 0n - 12e (Cu, Ag, Pb); BL 1 - 18n, 16n - 4e, 2s - 30e, and 16s - 16w (Ag, Pb plus Zn or Ni); 16n - le, and 0n - 20e (Pb, Zn, Ni).

Weak to moderate soil anomalies with 2-element correlation occur at: BL 1 - 10n (Cu, Pb); BL 1 - 28s, and 0n - 18w (Ag, Pb); BL 1 - 14n, 0n - 16w, and 0n - 26w (Pb plus Zn or Ni).

GEOPHYSICAL SURVEY

VLF-EM Method

Theoretical considerations on which this electrical surveying system is founded, and etailed operating procedures are documented fully in the general geophysical literature as well as in the publications supplied by the instrument manufacturers, and only a brief resumé will be presented.

To permit effective communication with operating submarines, a network of very low frequency (VLF) radio transmitting stations with vertical antennae were established around the world by the U.S. Navy, from which radiate concentrically outward horizontally polarized magnetic fields.

When these primary magnetic fields intersect shallow conductive deposits in the earth's crust, secondary fields are set up which distort the primary field. It is the function of the VLF-EM receiving unit to measure the in-phase and out-of-phase vertical components of the resultant field.

The EM-16 unit is simply a sensitive radio receiver tuned to the pertinent transmitting frequency of the VLF communication band by means of plug-in selector modules.

Two orthogonally mounted receiver coils, a vertical signal coil and a horizontal reference coil are oriented in the vertical plane of the magnetic field, and when the instrument is rotated about a horizontal axis parallel to the direction to the transmitting station to yield a minimal signal from the vertical coil, further nulled or balanced out by a measured percentage of signal from the reference coil, a measure is obtained both of the vertical real component of the resultant field, the tilt angle in percent slope from the horizontal, and of the quadrature vertical signal or out-of-phase vertical component of the resultant field, also in percent.

Description

Direction to station NLK/NPG, 18.6 KHz, near Seattle, Washington averaged 130°, providing good coupling with the known quartz veins and associated strong northwest trending linears. For the most part audible responses and nulls were clear and sharp. In the brief time period alloted, and with the difficult conditions of snow under foot and continuous heavy rain, only 2.6 miles were completed with readings at 50-foot intervals. Transmission ceased, as scheduled, at 9:00 am on December 6, precluding completion of the northern portion of the grid.

Direction to station NAA, 17.8 KHz, at Cutler, Maine averaged 80°, providing poor coupling with the known northwest trending vein zones and linears, but good coupling with the numerous east-west trending linears of unknown geologic significance. A portion of the base line from 16s to 28s, 1200 feet, was duplicated with 50-foot readings employing the Cutler transmitter. Audible responses were fairly weak and nulls rather broad and poorly defined. However, correlation of results with those from the Seattle transmitter was very good, with regards both to conductor magnitude (very weak) and to conductor extent.

To minimize the adverse effects both of geologic noise, resulting from the relatively high transmitted frequency, and of topography, due principally to the secondary fields developed parallel to the topographic slope by variably conductive overburden, and also to aid in interpretation, use was made of the excellent filtering procedure developed by Fraser ("Geophysics", Vol. 34, No. 6, Dec. 1969, pp. 958-967) which yields readily contourable data. By means of simple addition and subtraction of tilt angle data, a difference operator is applied to transform zero-crossings into peaks, and a low-pass smoothing operator is applied to minimize noise.

"VLF-EM Data" sheets are included in Appendix III, and filtered data employing the Seattle transmitter is plotted on plan at a scale of 1"=400', Figure 8 in the pocket of the report. The VLF-EM unit employed was a Geonics (Ronka) EM-16, serial number 3327, property of the writer.

Interpretation

With the exception of that area near 0n - 0e, in proximity to a buried B.C. Telephone cable, no characteristic "crossovers" were obtained, and only very weak to weak conductor zones were defined.

Positive correlation with anomalous soil values is evident in the following instances, representing more than 60% of the soil anomalies in the area completed: BL 1 - 16s, 24s and 28s; 0n - 16w, 18w, 20w, 22w, 24w, 26w, 30w, 32w, and 36w. Underlined locations indicate areas of coincident VLF-EM conductors and multi-element soil anomalies (Cu, Ag, Pb, and Zn). Because of the wide line spacing, it is premature to speculate on the significance of the correlation.

Further VLF-EM detailing should be carried out in conjunction with the fill-in soil sampling, and the remainder of the existing grid should be completed, with particular emphasis on the known copper-bearing quartz vein zone.

CONCLUSIONS

A 200-foot wide by 1000-foot long area of distinctly anomalous copper and lead soil values has been defined, incompletely, on the unexplored, overburden-covered strike extension of known, significant copper mineralization in quartz veins. The anomaly is open in a northerly direction, and represents a good target for follow-up detailed exploration. The base line should be extended to the north claim boundary, and the strike extension of the vein zone should be soil sampled on cross lines at 200-foot spacings with samples at maximum 100-foot intervals.

A number of isolated anomalous soil values with various degrees of multi-element correlation have been defined on the widely spaced grid lines sampled at 200-foot intervals, and in all instances further detailing is required with soil samples at 100-foot intervals.

VLF-EM surveying on the southern portion of the claim group disclosed a number of very weak to weak conductor zones which correlate well with over 60% of the anomalous soil areas, indicating that further detailing is required in conjunction with the above soil sampling. The northern portion of the existing grid and its future extension and expansion in the area of known copper mineralization also should be surveyed at 50-foot intervals.

Continuation of the $20,000 Phase I exploration program detailed in the writer's "Report on the FS Mineral Claim Group" dated February 17, 1971, is fully justified, and the probability that the $40,000 Phase II program will be warranted has been enhanced.

ASSESSMENT DATA

Expenditure Details

Item		Expenditure
Soil sample analyses (464)		$ 116.00
Ronka EM-16 rental		50.00
Fee 15 days @ $100=		1500.00
Transportation		
Vehicle rental	$54.58	
Personal vehicle	20.40	
Ferries	13.00	
Fuel	5.50	
Parking	1.75	
		95.23
Accomodation		24.05
Meals		25.15
Supplies		55.67
Copying		101.31
Typing		23.00
Maps, air photographs, postage, covers, telephone		17.09
	Total	$2007.50

Of the above total expenditure, $2007.50, it is requested to apply only $1600.00, or approximately 80%, for one year's assessment work credit to each of grouped claims FS 1 to 16.

Time Allotment

All work was conducted solely by the writer during the periods February 18 to March 12 (6 days) when data from the previous assessment year's field work was processed, plotted, and reported; and November 27 to December 27 (9 days, 4 days in the field and 5 days in the office) when data pertinent to this report was gathered, processed, plotted, and reported.

(over)

Declared before me at the City /
of Vancouver, in the
Province of British Columbia, this 28
day of December, 1973, A.D.

L. Jeannotte
A Commissioner for taking Affidavits within British Columbia ~~or~~
~~A Notary Public in and for the Province of British Columbia.~~

SUB-MINING RECORDER

CERTIFICATION

I, CHRISTOPHER MACKENDRICK ARMSTRONG of the City of Vancouver, Province of British Columbia, do hereby certify:

THAT I am a practicing Geological Engineer residing at 4085 West 29th Avenue, Vancouver 8, British Columbia.

THAT I am a registered Professional Engineer in good standing in the Provinces of British Columbia and Ontario.

THAT I received the degree of B.Sc. in Geological Engineering from Queen's University, Kingston, Ontario in 1960, and practiced my profession continuously in the period between leaving university in 1959 and returning to university in 1966.

THAT I enrolled in the Department of Mineral Engineering at the University of British Columbia in 1966, and in the period to 1969 completed course work and research work requirements in an M.A.Sc. program, specializing in bacterial/acid leaching systems; thesis writing was not completed; post graduate courses in economic geology and North American geology also were taken and completed.

THAT since leaving university in 1969, I have practiced my profession both as a Geological Engineer and as a Specialist/Advisor in ambient temperature/pressure leaching systems.

THAT the following is a true record of my employment and experience:

1957	4 mos. Junior Geologist. Noranda Mines Ltd. Noranda, Quebec.
1958	4 mos. Party Chief. Hollinger North Shore Exploration Co. Ltd. New Quebec and Labrador.
1959-1961	27 mos. Assistant Geologist. Pickle Crow Gold Mines Ltd. Pickle Crow, Ontario. Teck Corporation Ltd.
1961-1962	9 mos. Assistant Geologist. Willroy Mines Ltd. Manitouwadge, Ont.
1962-1964	28 mos. Chief Geologist. Metal Mines Ltd. Werner Lake, Ontario. Consolidated Canadian Faraday.
1964-1966	24 mos. Chief Geologist. Tegren Goldfields Ltd. Kirkland Lake, Ontario. Teck Corporation Ltd.
1967	6 mos. Project Geologist. McLeese Lake property, B. C. Geophysical Engineering & Surveys Ltd. Teck Corporation Ltd.
1969-1970	13 mos. Laboratory Manager, Chief Geologist, and Consulting Engineer. S. M. Industries Ltd. Vancouver, B. C.
1970-1973	3½ yrs. Independent Consulting Engineer.

THAT I do not have any interest, direct, indirect, or contingent, in the securities or properties of FOUR SEASONS MANUFACTURING LIMITED.

THAT All work described in this report was conducted solely by the writer during the periods February 18 to March 12, and November 27 to December 27, 1973.

C. M. Armstrong, P. Eng.

Dated at Vancouver this
28th Day of December, 1973

APPENDIX

I

Geochemical Analysis
Fraser Laboratories Ltd.

TELEPHONE: 980-1115

FRASER LABORATORIES LIMITED

1175 W 15th STREET • NORTH VANCOUVER, B.C.

C.M. Armstrong,
4085 West 29th Avenue,
Vancouver 8. B.C.

Page 1 of 4

GEOCHEMICAL ANALYSIS

REPORT No: 73 - 109

DATE February 9 1973

SAMPLES FROM

SAMPLE	ppm Cu	ppm Ag	ppm Pb	ppm Zn	ppm Ni
BL 1 - 28s	72	1.4	32	60	23
26s	26	0.8	29	62	16
24s	81	1.3	29	66	24
22s	42	0.9	26	55	17
20s	26	0.7	19	40	15
18s	22	0.8	18	37	13
16s	97	1.8	42	128	50
14s	41	1.0	20	42	17
12s	20	0.7	18	29	13
10s	14	0.8	26	61	15
8s	13	1.2	29	57	25
6s	29	1.0	20	43	20
4s	67	0.9	22	57	32
2s	59	0.8	19	37	23
0s	57	1.4	24	59	27
BL 1 - 2n	37	1.1	20	63	25
4n	21	0.7	16	38	14
6n	53	0.8	15	46	13
8n	74	1.0	19	47	29
10n	129	1.2	26	70	34
12n	60	1.0	21	45	30
13 + 80n	47	1.1	26	64	38
16n	63	1.2	20	36	32
18n	17	1.4	30	81	30
20n	33	0.9	21	35	18
22n	36	0.8	23	43	19
24n	119	0.7	20	38	21
26n	80	1.0	26	55	28
28n	126	1.2	28	140	40
16 s - 20e	50	1.0	19	37	24

ASSAYER R. M. Samuels

REGISTERED ASSAYER, PROVINCE OF BRITISH COLUMBIA

TELEPHONE: 980-1115

FRASER LABORATORIES LIMITED

1175 W 15th STREET · NORTH VANCOUVER, B.C.

C.M. Armstrong,
4085 West 29th Avenue,
Vancouver 8. B.C.

Page 2 of 4

GEOCHEMICAL ANALYSIS

REPORT No: 73 - 109

DATE February 9 1973

SAMPLES FROM

SAMPLE	ppm Cu	ppm Ag	ppm Pb	ppm Zn	ppm Ni
16 s - 18e	37	1.3	26	45	23
16e	59	0.8	20	41	17
14e	52	1.2	24	51	20
12e	63	1.2	26	46	22
10e	44	1.1	25	45	21
8e	58	1.0	19	31	26
6e	99	1.3	35	86	36
4e	29	0.8	20	46	20
2e	38	0.8	21	51	18
16 s - 2w	28	0.8	26	63	19
4w	13	0.7	20	44	11
6w	16	0.6	15	41	12
8w	25	1.4	22	49	19
10w	14	0.6	13	37	13
12w	27	0.9	24	30	14
14w	22	0.7	15	28	15
16w	71	1.5	34	200	34
18w	63	1.0	24	46	26
20w	53	1.0	25	47	18
2 s - 30e	21	1.3	40	188	31
28e	76	1.1	23	52	28
26e	27	0.9	31	59	22
1 + 75s - 24e	56	1.1	28	67	28
1 + 40s - 4w	37	0.8	18	24	15
1 + 05s - 6w	47	0.7	15	29	17
0 + 95s - 38w	69	1.1	26	27	19
0 n - 24e	20	1.1	28	64	26
22e	39	1.4	34	168	40
20e	18	1.2	31	136	54
18e	18	1.2	30	47	29

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Page 3 of 4

GEOCHEMICAL ANALYSIS

REPORT No: 73 - 109

DATE February 9 1973

SAMPLES FROM

SAMPLE	ppm Cu	ppm Ag	ppm Pb	ppm Zn	ppm Ni
0n - 16 + 25e	43	0.5	14	25	12
13 + 45e	60	1.2	25	57	31
12e	111	1.3	27	41	27
11e	30	0.7	26	44	17
10e	47	1.1	22	71	29
8e	20	1.0	24	55	19
6e	31	0.9	26	47	18
4e	24	0.7	22	48	16
2e	52	0.9	24	42	22
0n - 2w	58	1.0	23	33	25
6w	20	0.9	23	33	17
10w	16	0.8	25	47	20
12w	79	1.4	34	148	44
14w	49	1.1	31	61	30
16w	28	1.1	29	89	22
18w	72	1.3	30	43	34
20w	158	1.8	28	54	33
22w	27	1.0	32	60	20
24w	83	1.5	38	182	29
26w	20	1.1	34	70	35
28w	47	0.8	26	49	24
30w	102	1.5	53	174	36
32w	35	1.0	31	61	25
34w	14	0.7	28	38	14
36w	87	1.2	26	69	25
40w	19	0.7	20	27	15
8n - 1e	72	1.0	22	39	24
2e	32	1.0	21	38	41
3e	39	0.9	21	50	26
4e	37	0.8	23	47	29

ASSAYER R.M. Samuels

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Page 4 of 4

GEOCHEMICAL ANALYSIS

REPORT No: 73 - 109

DATE February 9 1973

SAMPLES FROM

SAMPLE	ppm Cu	ppm Ag	ppm Pb	ppm Zn	ppm Ni
16n - 1e	68	1.2	26	82	47
2e	60	1.1	22	39	28
3e	62	1.1	26	58	33
4e	50	1.6	30	58	48
24n - 1e	680	1.2	27	59	33
2e	91	1.1	27	42	25
3e	43	1.0	28	41	19
4e	61	1.1	26	47	19
Rock Geochem.					
BL 1 - 24 + 30n	795	2.7	42	54	70
BL 1 - 16n	63	2.2	41	45	59
BL 1 - 11 + 30n	98	1.9	35	66	59
BL 1 - 8s	17	1.7	31	54	58
BL 1 - 16s	210	1.5	25	41	35
BL 1 - 24s	81	1.1	20	67	43
0n - 24e	116	1.3	27	73	50
0n - 16e	36	1.0	23	68	57
0n - 8e	147	1.7	34	52	48
0n - 9 + 40w	22	1.9	37	50	62
0n - 16w	34	1.4	30	64	60
0n - 24w	22	1.4	31	78	57
0n - 32w	125	1.6	29	85	45
0n - 40w	18	2.0	37	76	55
16s - 16e	148	2.1	38	79	77
16s - 8e	128	2.1	38	92	67
16s - 6w	109	1.4	29	50	44
16s - 16w	133	1.2	24	34	36

ASSAYER R. M. Samuels

REGISTERED ASSAYER, PROVINCE OF BRITISH COLUMBIA

APPENDIX

II

Statistical Analysis
Graphical

C. M. ARMSTRONG, P.Eng.
Consulting Engineer

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GEOCHEMISTRY **Statistical Analysis Calculations**

Property FS

Company Four Seasons

Date Feb. 1973

Element Cu

Lognormal distribution

$n = \frac{\log R}{\log w} = ① \frac{1.716}{0.1} = 17$ ✓ ③ $\frac{1.021}{0.1} = 11$

R = ratio of highest to lowest value = ① $\frac{680}{13} = 52$ ✓ ② $\frac{158}{13} = 12$

w = width of classes & log w = 0.05, [✓ 0.1], or 0.2

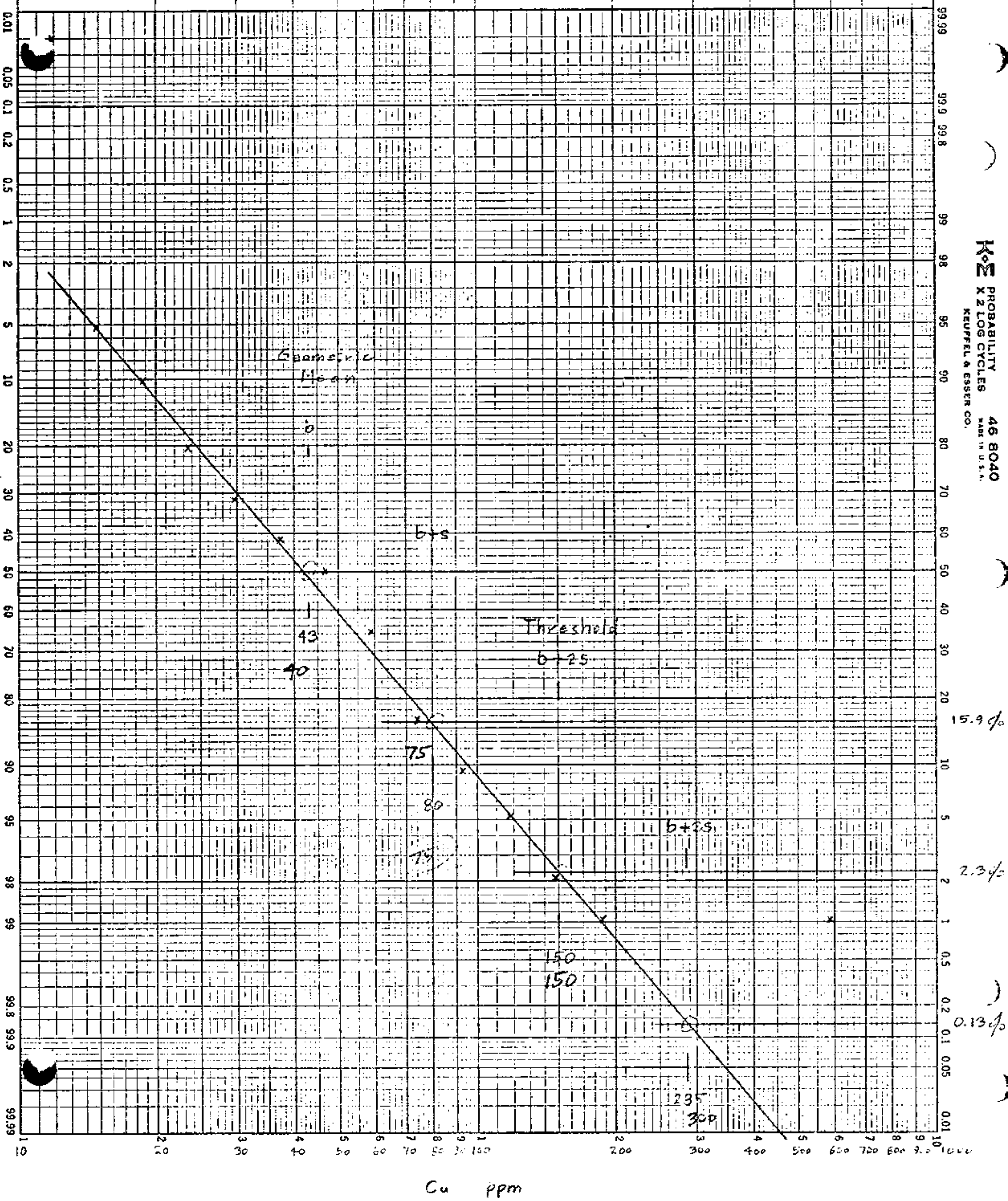
n = number of classes

	Class				Frequency				Calculation		
Limits ppm	Limits log	Mid-pt log x	Count	Total f	%	%	t*	ft	ft²	f(t+1)²
11.75	1.07	1.12	IIIII	5	5.10	99.98✓	−5	−25	125	80
14.79	1.17	1.22	IIIII	5	5.10	94.88	−4	−20	80	45
18.62	1.27	1.32	IIIIIIIIII	10	10.20	89.78	−3	−30	90	40
23.44	1.37	1.42	IIIIIIIIIII	11	11.22	79.58	−2	−22	44	11
29.51	1.47	1.52	IIIIIIIIII	10	10.20	68.36	−1	−10	10	0
x_0 37.15	1.57	1.62	IIIIIIII	8	8.16	58.16	0	0	0	8
46.77	1.67	1.72	IIIIIIIIIIIIIII	15	15.31	50.00	1	15	15	60
58.88	1.77	1.82	IIIIIIIIIIIIIIIIII✓	18	18.37	34.69	2	36	72	162
74.13	1.87	1.92	IIIIIII	7	7.14	16.32	3	21	63	112
93.33	1.97	2.02	IIII	4	4.09	9.18	4	16	64	100
117.5	2.07	2.12	III	3	3.06	5.10	5	15	75	105
147.9	2.17	2.22	I	1	1.02	2.04	6	6	36	49
186.2	2.27	2.32		0	0.00	1.02	7	0	0	0
234.4	2.37	2.42		0	0.00	1.02	8	0	0	0
295.1	2.47	2.52		0	0.00	1.02	9	0	0	0
371.5	2.57	2.62		0	0.00	1.02	10	0	0	0
467.7	2.67	2.72		0	0.00	1.02	11	0	0	0
588.8	2.77	2.82	I	1	1.02	1.02	12	12	144	169
741.3	2.87									
				98 ✓	99.93			14	818	944 ✓

Charlier's check: $818 + 2(\overset{28}{14}) + 98 = 944$ ✓

	Calculation	Graphical
$\bar{X} = 1.62 + 0.1\frac{14}{98} = 1.62 + 0.01 = \underline{1.63} \equiv 43$ ppm = b	40	40
$s = 0.1\sqrt{\frac{818}{98} - \left(\frac{14}{98}\right)^2} = 0.1\sqrt{8.35 - 0.02} = 0.1\sqrt{8.33} = 0.289$ or $0.29 \equiv 1.95$ ppm		
$t = b + 2s = 1.63 + 2(\overset{0.58}{0.29}) = 2.21 \equiv 162$ ppm	160	150
$b + s = 1.63 + 0.29 = 1.92 \equiv 83$ ppm	80	80
$b + 3s = 1.63 + 3(\overset{0.87}{0.29}) = 2.50 \equiv 316$ ppm	300	300

C. M. Armstrong, P.Eng. GEOCHEMISTRY Statistical Analysis Graph
Consulting Engineer Property FS Date Feb. 1973
Company Four Seasons Element Cu



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GEOCHEMISTRY

Statistical Analysis Calculations

Property FS

Company Four Seasons

Date Dec. 1973

Element Ag

Lognormal distribution

$n = \frac{\log R}{\log w} = \frac{0.556}{0.05} = 12$

R = ratio of highest to lowest value = $1.8/0.5 = 3.6$
w = width of classes & log w = [✓ 0.05], 0.1, or 0.2
n = number of classes

Class			Frequency				Calculation			
Limits		Mid-pt log		Total						
ppm	log	x	Count	f	%	%	t*	ft	ft^2	f(t+1)^2
			10 20 30 40							
0.47	$\bar{1}.67$									
0.53	$\bar{1}.72$			1	1.02	99.92				
0.59	$\bar{1}.77$									
0.66	$\bar{1}.82$		||	2	2.04	98.90				
0.74	$\bar{1}.87$		|||||||||||	11	11.22	96.86				
0.83	$\bar{1}.92$		||||||||||||||	14	14.29	85.14				
0.93	$\bar{1}.97$		|||||||||	9	9.10	71.35				
1.05	0.02		||||||||||||||||	16	16.33	62.25				
1.18	0.07		|||||||||||||||	15	15.31	45.92				
1.32	0.12		||||||||||||||||||	18	18.37	30.61				
1.48	0.17		||||||	6	6.12	12.24				
1.66	0.22		||||	4	4.08	6.12				
1.86	0.27		||	2	2.04	2.04				
				98	99.92					

x_o = assumed mean =

c = cell interval =

*t = $x - x_o$

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GEOCHEMISTRY

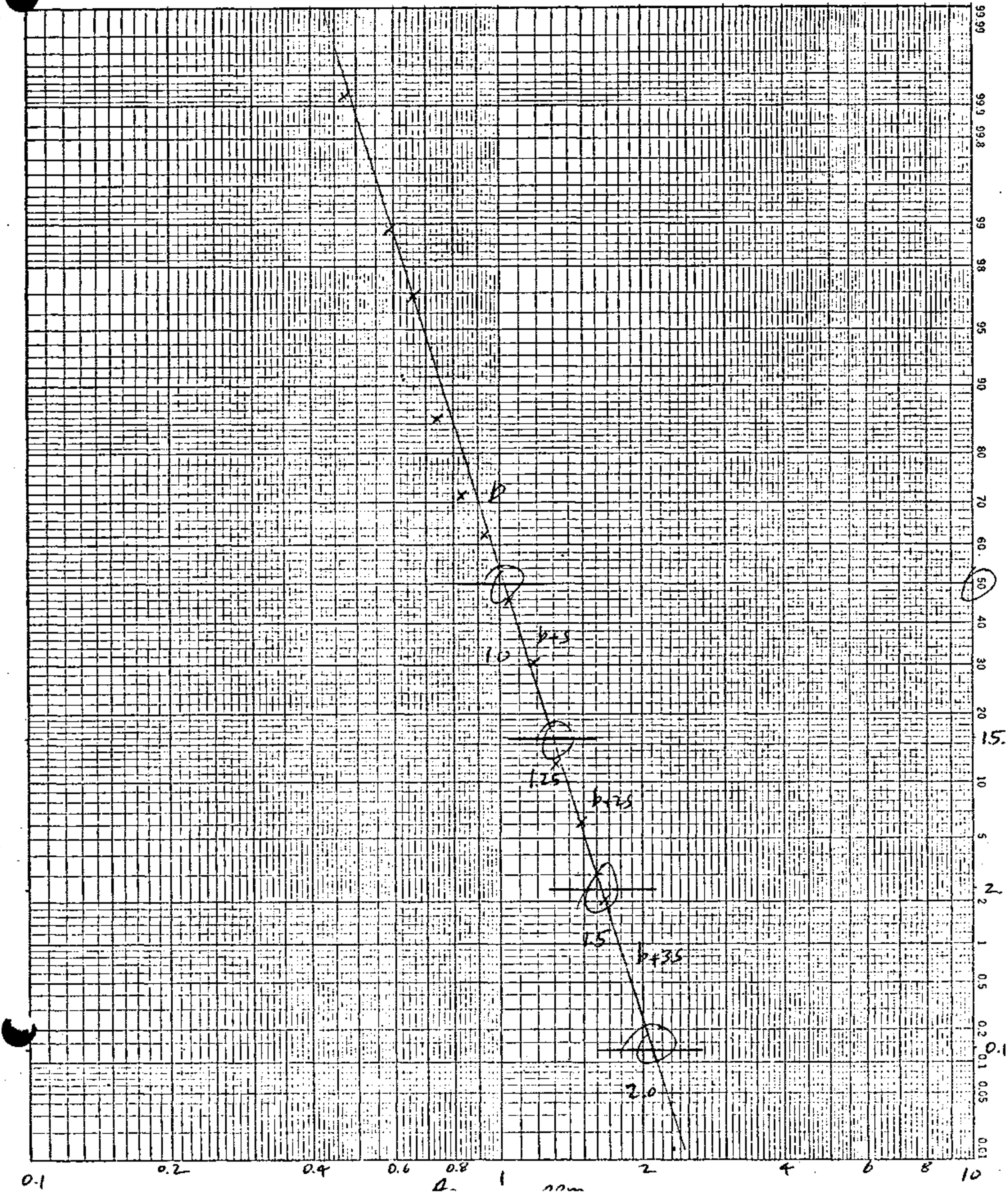
Statistical Analysis Graph

Property FS

Date Dec. 1973

Company Four Seasons

Element Ag



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GEOCHEMISTRY **Statistical Analysis Calculations**

Property FS
Date Dec. 1973
Company Four Seasons
Element Pb

Lognormal distribution

$n = \frac{\log R}{\log w} = \frac{0.611}{0.05} = 13$

R = ratio of highest to lowest value = $53/13 = 4.08$
w = width of classes & log w = [✓ 0.05], 0.1, or 0.2
n = number of classes

Class			Frequency							
Limits		Mid-pt log		Total						
ppm	log	x	Count (10 20 30 40)	f	%	%	t*	ft	ft^2	f(t+1)^2
-11.75	1.07		|	1	1.02	100.00				
-13.18	1.12		|	1	1.02	98.98				
-14.79	1.17		|||||	5	5.10	92.96				
-16.60	1.22		||||	4	4.08	92.86				
-18.62	1.27		|||||||||| |||	13	13.27	88.78				
-20.89	1.32		|||||||||| ||||||	16	16.33	75.51				
-23.44	1.37		|||||||||| |||||||||| ||||||	26	26.53	59.18				
-26.30	1.42		|||||||||| |||	13	13.27	32.65				
-29.51	1.47		||||||||||	10	10.20	19.38				
-33.11	1.52		|||||	5	5.10	9.18				
-37.15	1.57		||	2	2.04	4.08				
-41.69	1.62		|	1	1.02	2.04				
-46.77	1.67									
-52.88	1.72		|	1	1.02	1.02				
-58.88	1.77									
				98	100.00					

x₀ = assumed mean =

c = cell interval =

$^*t = \frac{x - x_0}{c}$

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GEOCHEMISTRY

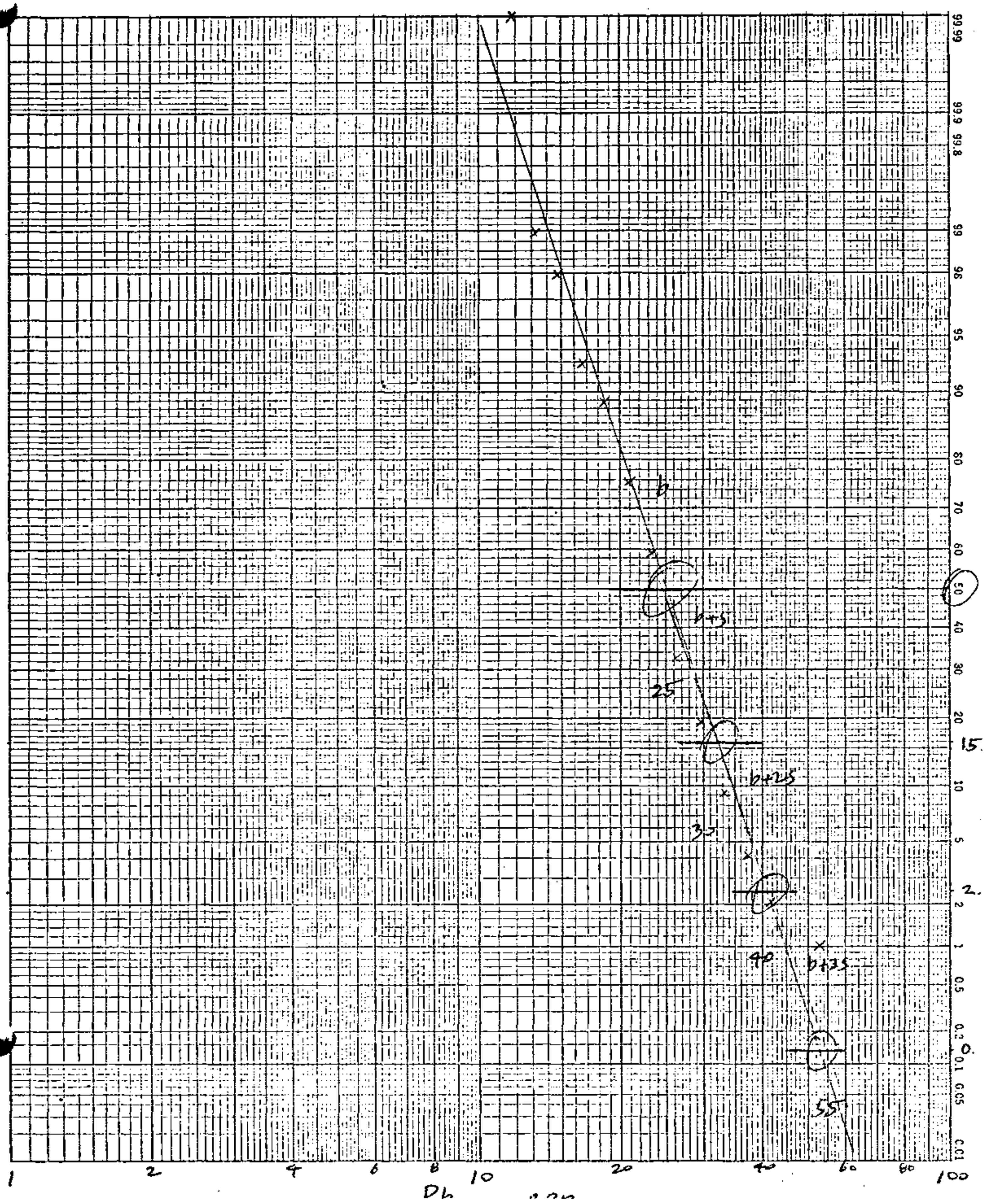
Statistical Analysis Graph

Property FS

Date Dec. 1973

Company Four Seasons

Element Pb



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GEOCHEMISTRY

Statistical Analysis Calculations

Property FS

Date Dec. 1973

Company Four Seasons

Element Zn

Lognormal distribution

$n = \frac{\log R}{\log w} = \frac{0.919}{0.1} = 10$

R = ratio of highest to lowest value = $\frac{200}{24}$ = $8.\dot{3}$
w = width of classes & log w = 0.05 [✓ 0.1] or 0.2
n = number of classes

Class			Frequency				Calculation			
Limits		Mid-pt log	Count	Total						
ppm	log	x		f	%	%	t*	ft	ft²	f(t+1)²
23.44	1.37									
				7	7.14	99.99				
29.51	1.47									
				10	10.20	92.85				
37.15	1.57									
				26	26.53	82.65				
46.77	1.67									
				23	23.47	56.12				
58.88	1.77									
				19	19.39	32.65				
74.13	1.87									
				4	4.08	13.26				
93.33	1.97									
						9.18				
117.5	2.07									
				3	3.06	9.18				
147.9	2.17									
				4	4.08	6.12				
186.2	2.27									
				2	2.04	2.04				
234.4	2.37									
				98	99.99					

x_o = assumed mean =

c = cell interval =

$*t = \frac{x - x_o}{c}$

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GEOCHEMISTRY

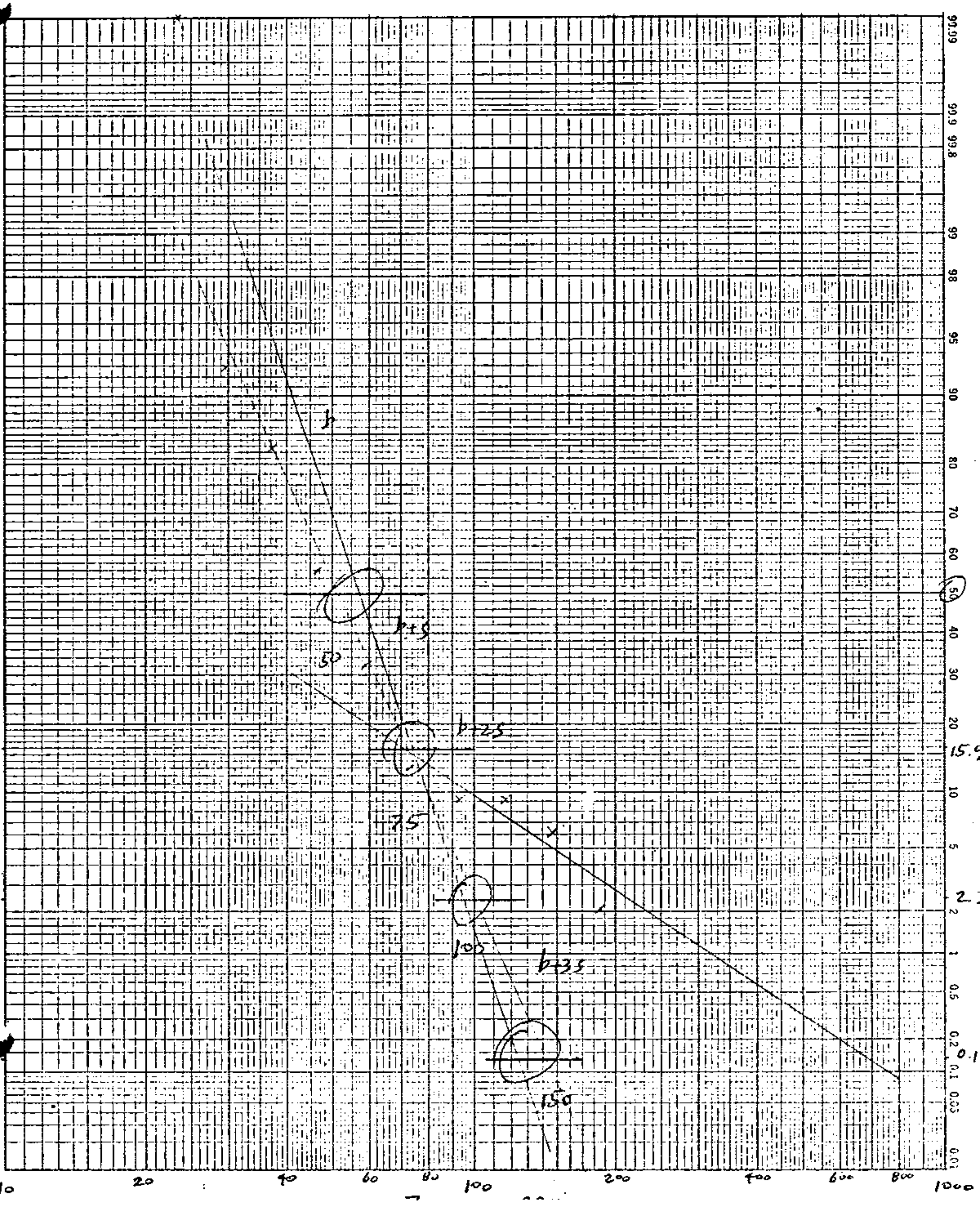
Statistical Analysis Graph

Property FS

Date Dec. 1973

Company Four Seasons

Element Zn



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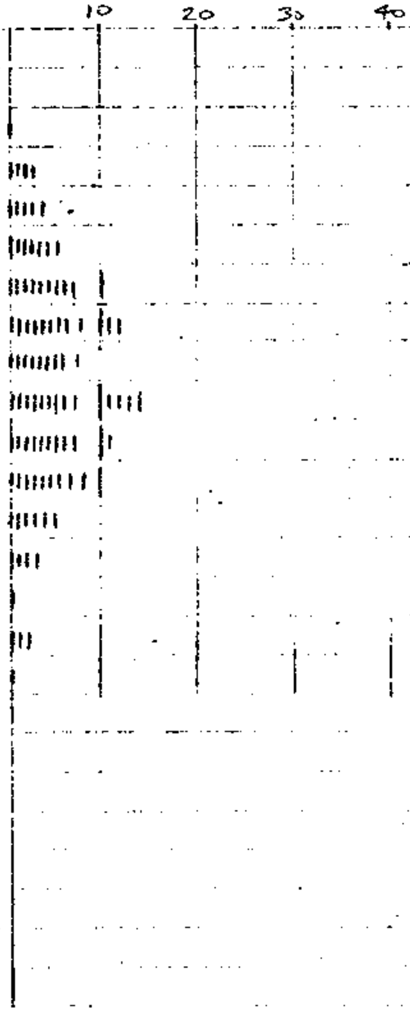
GEOCHEMISTRY **Statistical Analysis Calculations**

Property FS
Date Dec. 1973
Company Four Seasons
Element Ni

Lognormal distribution

$$n = \frac{\log R}{\log w} = \frac{0.691}{0.05} = 14$$

R = ratio of highest to lowest value = $\frac{54}{11} = 4.91$
w = width of classes & log w = [✓ 0.05], 0.1, or 0.2
n = number of classes



Class			Frequency				Calculation			
Limits		Mid-pt log		Total						
ppm	log	x	Count	f	%	%	t*	ft	ft^2	$f(t+1)^2$
-9.33	0.97									
-10.47	1.02									
-11.75	1.07			1	1.02	99.97				
13.18	1.12			4	4.08	98.95				
-14.79	1.17			5	5.10	94.87				
-16.60	1.22			7	7.14	89.77				
-18.62	1.27			10	10.20	82.63				
-20.89	1.32			12	12.24	72.43				
-23.44	1.37			9	9.18	60.19				
-26.30	1.42			14	14.29	51.01				
-29.51	1.47			11	11.22	36.72				
-33.11	1.52			10	10.20	25.50				
-37.15	1.57			6	6.12	15.30				
-41.69	1.62			4	4.08	9.18				
-46.77	1.67			1	1.02	5.10				
-52.58	1.72			3	3.06	4.08				
-58.88	1.77			1	1.02	1.02				
				98	99.97					

x_0 = assumed mean =

c = cell interval =

$*t = \frac{x - x_0}{c}$

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GEOCHEMISTRY

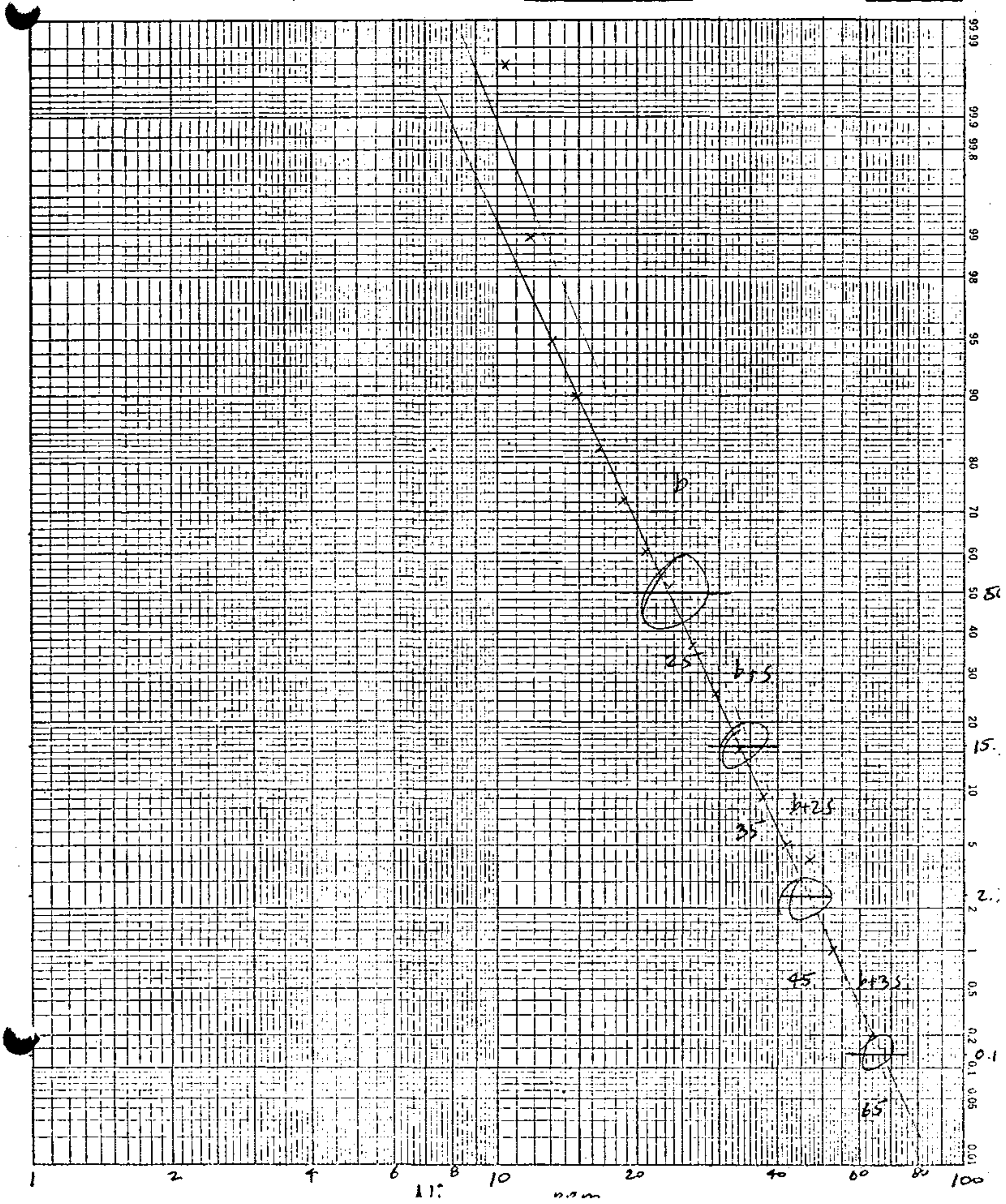
Statistical Analysis Graph

Property FS

Date Dec. 1973

Company Four Seasons

Element Ni



APPENDIX

III

VLF-EM Data

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VLF-EM DATA

Page 1

Property FS

Date Dec. 4/73

Company Four Seasons

Operator Armstrong

Instrument EM-16

Transmitter NTS 18.6 KHz Seattle

Cutler 75° 345° } Telephone cable interference
Seattle
(BL1-0n)
N→S
N+ S−

Location	Field Readings		Dip Angle X°	Sum of Pairs	Diff of Alt Rdgs	Remarks
	Quadrature %	In-Phase %				
BL1-0n						
15						
25						
35						
45						
55						
65						
75						
	-9	(W) -14 S	(S) (+)✓ W +			(165 – OK, [illegible]
85	-9	-15		-29		
	-8	-15		-30	-1	
95	-7	-15		-30	+1	
	-7	-16		-31	-2	
105	-6	-16		-32	-1	Top of hill
	-7	-16		-32	-2	[illegible]
115	-7	-18		-34	-5	
	-6	-19		-37	-4	
125	-6	-19		-38	-2	
	-6	-20		-39	-2	
135	-5	-20		-40	-1	
	-4	-20		-40	+1	
145	-3	-19		-39	+2	
	-3	-19		-38	+4	
155	-2	-16		-35	+6	
	-2	-16		-32	+4	

8:30 am
Lt rain
Seattle
145°– 55°
(E)

C. M. ARMSTRONG, P.Eng.
CONSULTING ENGINEER

VLF-EM DATA

Page 2

4085 West 29th Avenue
Vancouver 8, B. C.
(604) 224-7678

Property FS

Date Dec. 4/73

Company Four Seasons

Operator Armstrong

Instrument EM-16

Transmitter NPG 18.6 KHz Seattle
NAA 17.8 KHz Cutler

N → S
Nt S

Location	Field Readings Quadrature %		Field Readings In-Phase %		Dip Angle X°	Sum of Pairs		Diff of Alt Rdgs		Remarks
			Seattle	Cutler	C					
S ↓ BL1 — 165	-2	-3	-15	-15	S →	-31		+2		
	-2	-3	-15	-15		-32	-32	+2		
175	-1	-3	-14	-15		-29	-30	+2	0	Top of hill
	-1	-3	-14	-15		-28	-30	+1	2	T Flattish
185	-2	-3	-14	-15		-28	-30	-1	2	
	-3	-2	-15	-15		-29	-30	-2	0	
195	-3	-3	-15	-15		-30	-30	-1	0	
	-4	-3	-15	-15		-30	-28	+1	+2	
205	-3	-2	-14	-13		-29	-28	+2	+4	
	-2	-2	-14	-13		-28	-26	+2	+2	
215	-3	-1	-13	-13		-27	-26	+2	+3	
	-4	-2	-13	-10		-26	-23	0	+5	— 21+15S 61° S ←
[illegible]	-4	-2	-14	-11		-27	-21	-1	0	[illegible]
	-3	-2	-13	-12		-27	-23	+2	-3	
[illegible]	-2	-3	-12	-13		-25	-24	+5	-1	
	-1	-2	-12	-11		-22	-24	+6	+3	
[illegible]	-1	-2	-9	-10		-19	-21	+4	+4	
	0	-2	-9	-10		-18	-20	0	+1	T Flattish
[illegible]	0	-4	-10	-10		-19	-20	-2	-1	
	0	-4	-10	-11		-20	-21	-1	-3	
[illegible]	0	-5	-10	-12		-20	-23	0	-3	
	+1	-5	-10	-12		-20	-24	0	0	
275	+1	-4	-10	-11		-20	-23	0	+3	
	+1	-2	-10	-10		-20	-21	+2	+5	
C ↑ 285	0	-2	-9	-8		-19	-18			

All [illegible] Weak reception from Cutler

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VLF-EM DATA

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(604) 224-7678

Property FS

Date Dec. 4/73

Company Four Seasons

Operator Armstrong

Instrument EM-16

Transmitter NPG - 18.6 KHz Seattle

W → E
W+ E−

Location	Field Readings Quadrature %	Field Readings In-Phase %	Dip Angle X°	Sum of Pairs	Diff of Alt Rdgs	Remarks
16s- 4w	+6	W −1	W +	+1	+2	
	+5	−2		+4	+8	
3w	+3	−6		+9	+12	
	+1	−10		+16	+13	
2w	0	−12		+22	+9	
	[illegible]	−13		+25	+5	
1w	−1	−14		+27	+4	
	−2	−15		+29	+3	
0e	[illegible]	−15		+30	+2	
	−3	−15		+31	+2	
1e	−3	−16		+32	−1	
	−3	[illegible]		+30	−2	
2e	0	−11		+25	−7	
	−1	−12		+23	+3	
3e	−1	−16		+28	+9	
	−3	−16		+32	+3	
4e	−3	−15		+31	−2	
	−2	−15		+30	−1	
5e	−3	−15		+30	0	
	−3	−15		+30	0	
6e	−3	−15		+30	0	
	−5	−15		+30	0	
7e	−5	−15		+30	0	
	−5	−15		+30	0	
8e	−5	−15		+30	−1	
	−4	−14		+29	−1	
9e	−4	−15		+29	0	
	−3	−14		+29	−2	
10e	−2	−13		+27	−4	
	−2	−12		+25	−1	
11e	−3	−14		+26	+3	
	−2	−14				

Rain 12:30 pm

2:30 pm Rain

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Property FS

Date Dec. 4/73

Company Four Seasons

Operator Armstrong

Instrument EM-16

Transmitter NPG – 18.6 KHz Seattle

W→E
W+ E−

2:00 pm

Location	Field Readings Quadrature %	Field Readings In-Phase %	Dip Angle X°	Sum of Pairs	Diff of Alt Rdgs	Remarks
18S–20W	−2	(W) −8	W +			
	−4	−10		+18		
19W	−6	−13		+26	+13	
	−8	−15		+31	+10	Steep up
18W	−8	−18		+36	+3	
	−7	−16		+34	−6	
17W	−6	−14		+32	−8	
	−5	−12		+26	−8	
16W	−7	−10		+22	−8	
	−2	−8		+18	−5	
15W	−2	−9		+17	−1	
	−1	−8		+17	−2	
14W	0	−7		+15	−1	
	−1	−9		+16	+5	
13W	−1	−11		+20	+6	
	−1	−11		+22	+3	
12W	−1	−12		+23	+2	
	−1	−12		+24	0	
11W	−1	−11		+23	−5	
	0	−8		+19	−6	
10W	−1	−9		+17	0	
	0	−10		+19	+4	
9W	−2	−11		+21	+2	
	−3	−10		+21	−7	
8W	+1	−7		+17	−7	
	0	−7		+14	−4	
7W	0	−6		+13	−2	
	+1	−6		+12	−2	
6W	+2	−5		+11	−4	
	+2	−3		+3	−6	
5W	+4	−2		+5	−6	
	[illegible]	[illegible]		[illegible]	[illegible]	

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VLF-EM DATA

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Property FS

Date Dec. 4/[illegible]

Company Four Seasons

Operator Armstrong

Instrument EM-16

Transmitter NPG - 18.6 KHz Seattle

W→E
W+ E

	Field Readings					
Location	Quadrature %	In-Phase %	Dip Angle X°	Sum of Pairs	Diff of Alt Rdgs	Remarks
16s - 12e	-3	w -15	W + (tilt from W, E to W, or reverse signs?)	+29	+1	Flattish
	-2	-14		+29	-2	to sli up
13e	-1	-13		+27	-4	
	-1	-12		+25	-4	
14e	-1	-11		+23	-3	
	-2	-11		+22	-1	
15e	-2	-11		+22	+1	sli down
	-4	-12		+23	0	
16e	-3	-10		+22	-4	
	-3	-9	-15 /	+19	-4	
12e	-4	-9	✓ -17 -1	+18	-2	
	-4	-8	-17 +2	+17	-1	
18e	-5	-9	-19 +4	+17	+2	(whistle) 3:50 pm - signal chg
	-7	-10	-21 +4	+19	+4	
19e	-8	-11	-23 +7	+21	+4	Dwn
	-9	-12	-29	+23	+7	
4:00 pm 20e	-13	-16	Check (E to W)	+28		

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Property FS

Date Dec. 5/73

Company Four Seasons

Operator Armstrong

Instrument EM-16

Transmitter NPG – 18.6 KHz Seattle

E-SW
E+W-

Hvy Rain
9:30 am
55°

Repeat Dec. 5/2 ↑
[illegible]

Location	Field Readings Quadrature %	 In-Phase %	Dip Angle X°	Sum of Pairs	Diff of Alt Rdgs	Remarks
	+15	-57				
On — OE	40° +30 +20	-2 +10		-92	-36	Telephone cable
	+17 +44	-67 +32		-113	-36	interference
1w	+10 No [illegible]	-61 [illegible]		-123	+32	
	-11 -22	-3 -15 +59	+21 (+25)	-26	+64	
2w	-10 -9	+11 -4		-13 +35	+51	[illegible]
	-5 -6	+4 -4		-8 +15	-31	
3w	+5 -6	+1 -7	[illegible]	-11 +5	+6 -9	offset ~30's. Ck. Lk levels very high
	-3	+5		-2 +6	+24 +8	offset [illegible] lk.
4w	-4	+8		+13 +13	+23 +15	
	-3	+13		+21	+14 ✓	
5w	-2	+14		+27	+8	
	-3	+15		+29	+3	
6w	-3	+15		+30	+2	At [illegible]
	-3	+16		+31	+3	
7w	-3	+17		+33	-1	Water's edge [illegible]
	-4	+15		+32	-11	
8w	-6	+7		+22	-16	
	-2	+7		+14	-17	
9w	-9	0		+5	-15	
	-8	-1		-1	-9	
10w	-9	-3		-4	-2	
	-6	-5		-8	-7	
11w	-8	-6		-11	-7	
	-9	-9		-15	-10	
12w	-8	-12		-21	-10	
	-8	-13		-25	-7	
13w	-9	-15		-28	-7	
	-9	-17		-32	-6	
14w	-9	-17		-34	-1	
	-8	-16		-33	+2	
15w	-7	-16		-32	+1	
		17				

[illegible]

Main [illegible]

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VLF-EM DATA

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Property FS
Date Dec. 5/73
Company Four Seasons
Operator Armstrong
Instrument EM-16
Transmitter NPG – 18.6 KHz Seattle

E → W

Location	Field Readings Quadrature %	Field Readings In-Phase %	Dip Angle X°	Sum of Pairs	Diff of Alt Rdgs	Remarks
On – 16w	-6	-14		-30	+4	Top hill. [illegible]
	-6	-14	+28	-28	+2	
17w	-5	-14	+28 ✓ 0	-28	0	
	-5	-14	+29 +2	-28	0	
18w	-5	-14	+26 +3	-28	+2	
	-5	-12	+25 0	-26	+3	
19w	-5	-13	+26 0	-25	0	
	-5	-13	+25	-26	0	
20w	-5	-12	Check	-25	+2	
	-7	-12		-24	-1	
21w	-7	-14		-26	-4	
	-7	-14		-28	-2	
22w	-7 ✓	-15 -14 ✓		-23	0	
	-7	-14		-28	+2	
23w	-7	-12		-26	+5	Top hill
	-7	-11		-23	+4	
24w	-6	-1		-22	+2	
	-6	-10		-21	+4	
25w	-5	-8		-18	+5	
	-5	-9		-16	+2	
26w	-5	-8		-16	+1	
	-5	-7		-15	+2	
27w	-5	-7		-14	+1	
	-5	-7		-14	-1	
28w	-6	-8		-15	0	
	-5	-6		-14	+4	
29w	-4	-5		-11	+5	
	-4	-4		-9	+3	
30w	-4	-4		-8	+1	
	-4	-4		-8	0	
31w	-4	-4		-8	0	Top of hill

Seattle

Seattle

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Property FS

Date Dec. 5/73

Company Four Seasons

Operator Armstrong

Instrument EM-16

Transmitter NPG – 18.6 KHz Seattle

Location	Field Readings Quadrature %	Field Readings In-Phase %	Dip Angle X°	Sum of Pairs	Diff of Alt Rdgs	Remarks
On – 32w	-4	-4		-8	+2	
	-3	-2		-6	+5	
33w	-2	-1		-3	+6	
	-1	+1		0	+4	Bot of cliff
34w	-1	+2		+1	+3	
	-2	+1		+3	+2	
35w	~~+~~-1	+2		+3	+2	
	-1	+3		+5	+1	
36w	-2	+1		+4	-2	
	-2	+2		+3	0	
37w	-2	+2		+4	+1	
	-1	+2		+4	+2	Swamp
38w	-1	+4		+6	+2	
	-2	+2		+6	-2	
39w	-1	+2		+4	+1	
	+1	+5		+7	+7	
40w	+2	+6		+11		

1:30 pm
Seattle
130 – 65

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Company Four Seasons

Operator Armstrong

Instrument EM-16

Transmitter NPG - 18.6 KHz Seattle

E→W
E+ W-

Location	Field Readings Quadrature %	Field Readings In-Phase %	Dip Angle X°	Sum of Pairs	Diff of Alt Rdgs	Remarks
On – 16e	[illegible]	+15		+28	+1	
	+12	+12		+27	-4	Down [illegible]
15e	[illegible]	+12		+24	-4	
	+13	+11		+23	-4	
14e	+13	[illegible]		+20	-6	
	+12	+8		+17	-6	
13e	[illegible]	+6		+14	-3	
	+12	+8		+14	-1	
12e	+11	+5		+13	-4	Last line – picked up at 16e
	[illegible]	[illegible]		+10	-5	
11e	+9	+3		+3	-4	
	+9	+3		+6	-4	
10e	+9	+1		+4	-7	
	+7	-2		-1	-9	
9e	+7	-2		-4	-2	
	+9	-1		-3	+2	
8e	+10	-1		-2	0	
	+11	-2		-3	-2	Top of 15' cliff
7e	+12	-2		-4	-3	
	+12	-4		-6	-7	
6e	+11	-7		-11	-11	
	+11	-10		-17	-12	
5e	+12	-13		-23	-16	
	+10	-25		-33	-17	
4e	+12	[illegible]		-40	-8	
	+15	-21		-41	-4	
3e	+21	-23	[illegible]	-44	-11	
	+26	-29	+13 -27	-52	-17	Ht 40°
2e	(+26) +31	(-27) -30	+1? [illegible]	-61 -61	-12	
	([illegible]) +35	([illegible]) -3	[illegible]	-92 -62	-8 +2	
On – 1e	(+3[illegible]) [illegible]	([illegible]) [illegible]	[illegible]	-91 -59	+10 +6	
	([illegible]) +36	([illegible]) -27	[illegible]	-56	-3	Telephone cable

4:30 pm Tide [illegible]

Strong wind + H rain

Seattle 130° – 40°

on-0e +30 -2

Rain (55) ↑

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VLF-EM DATA

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Property FS

Date Dec. 5/73

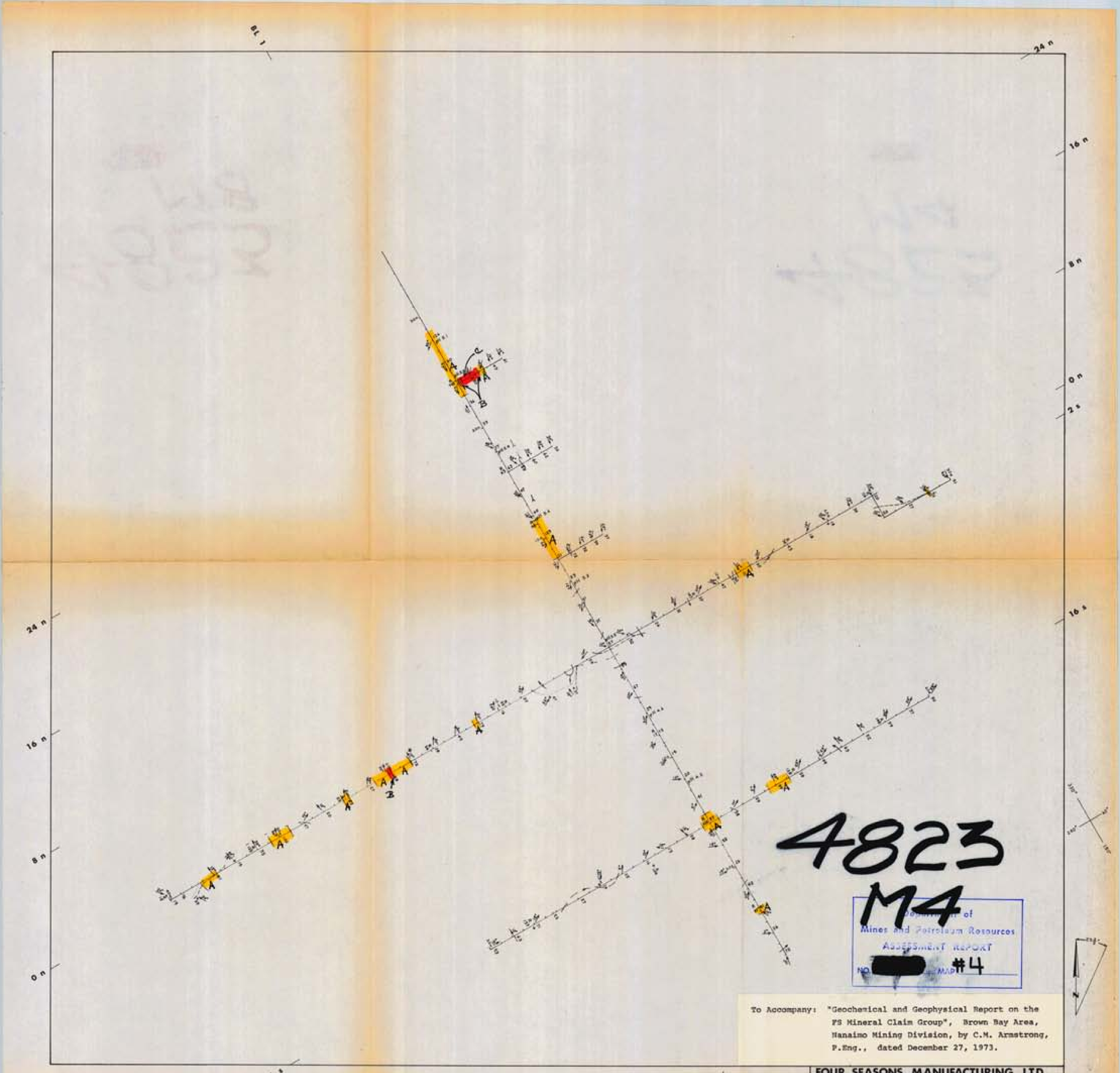
Company Four Seasons

Operator Armstrong

Instrument EM-16

Transmitter Seattle NPG - 18.6 KH

Location	Field Readings Quadrature %	Field Readings In-Phase %	Dip Angle X°	Sum of Pairs	Diff of Alt Rdgs	Remarks
26c						
25c						
24c						
23c						
22c						
21c						
20c						
19c						
↓ 18c	+7	+12				Signal strong - steady
	+9	+12		+24		
On - 17c	+10	+13		+25	+2	Signal OK - faded



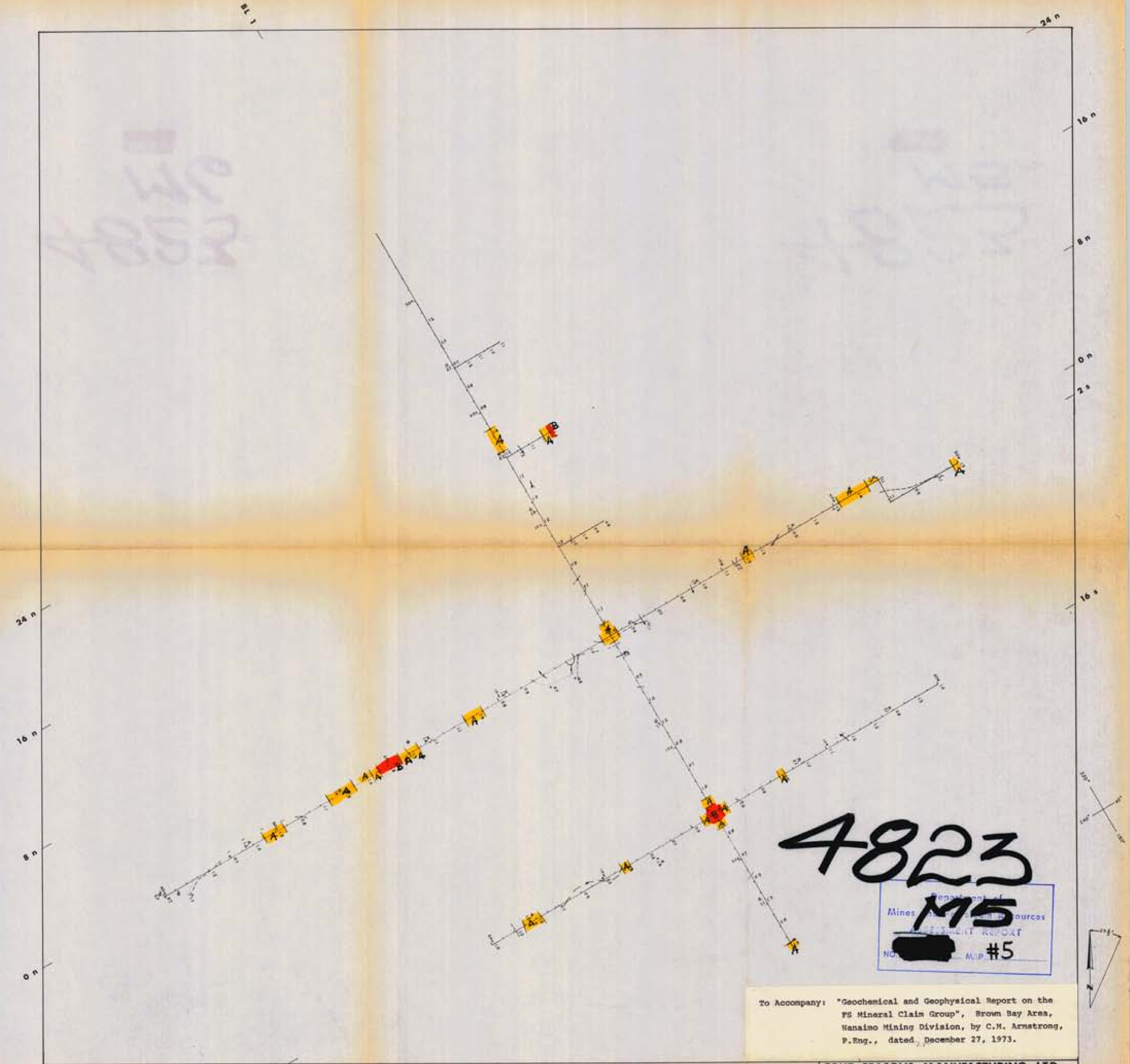
4823
M4

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. [redacted] MAP #4

To Accompany: "Geochemical and Geophysical Report on the FS Mineral Claim Group", Brown Bay Area, Nanaimo Mining Division, by C.M. Armstrong, P.Eng., dated December 27, 1973.

Background	40
Weakly anomalous	75
Moderately anomalous	150
Strongly anomalous	300

FOUR SEASONS MANUFACTURING LTD.
FS CLAIMS BROWN BAY B. C.
SOIL SAMPLING Copper
FEB. 1973 1" = 400' CMA



4823

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. [redacted] MAP #5

M5

To Accompany: "Geochemical and Geophysical Report on the FS Mineral Claim Group", Brown Bay Area, Nanaimo Mining Division, by C.M. Armstrong, P.Eng., dated December 27, 1973.

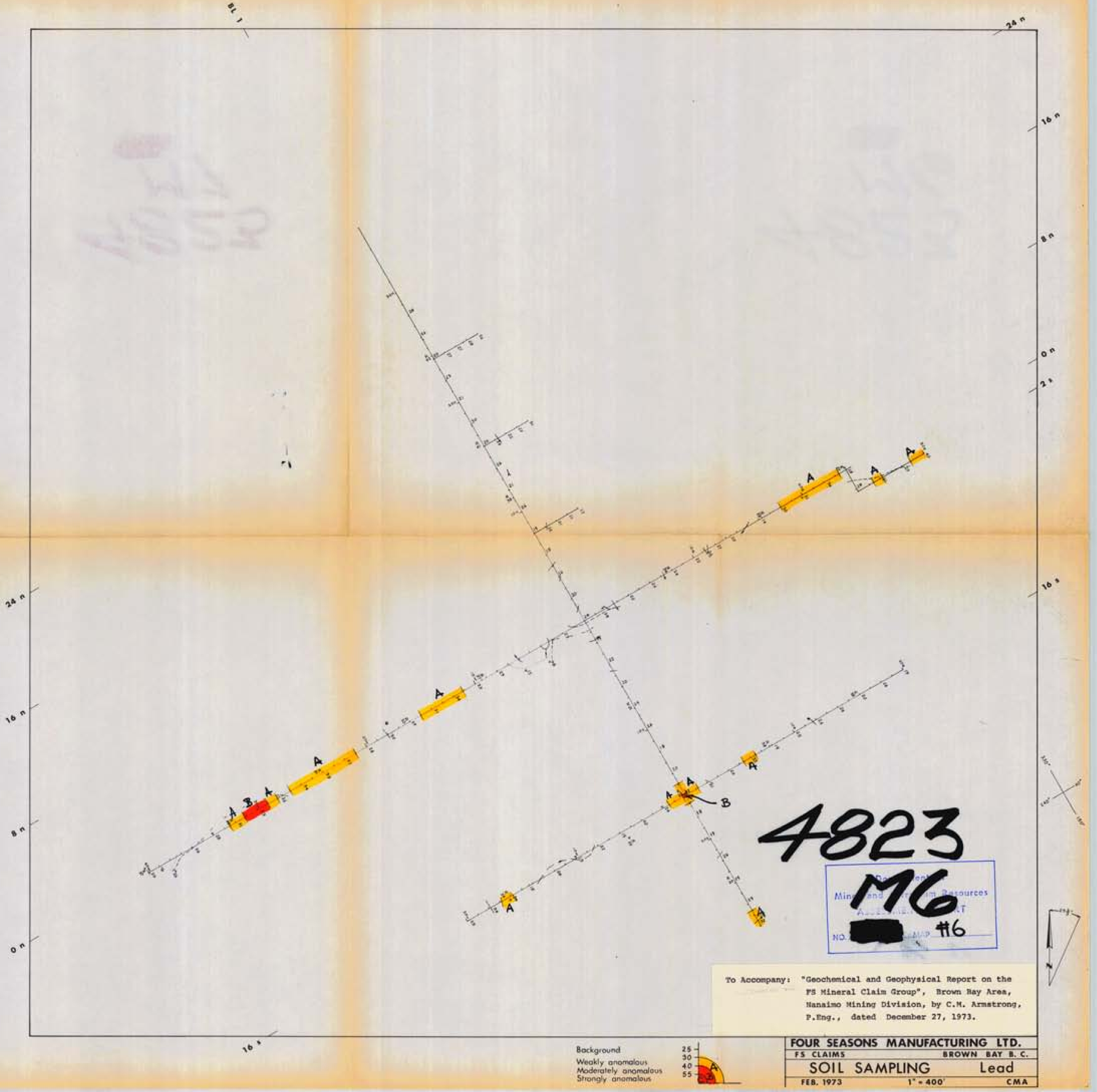
Background	1.0
Weakly anomalous	1.25
Moderately anomalous	1.50
Strongly anomalous	2.0

FOUR SEASONS MANUFACTURING LTD.

FS CLAIMS BROWN BAY B. C.

SOIL SAMPLING Silver

FEB. 1973 1" = 400' CMA

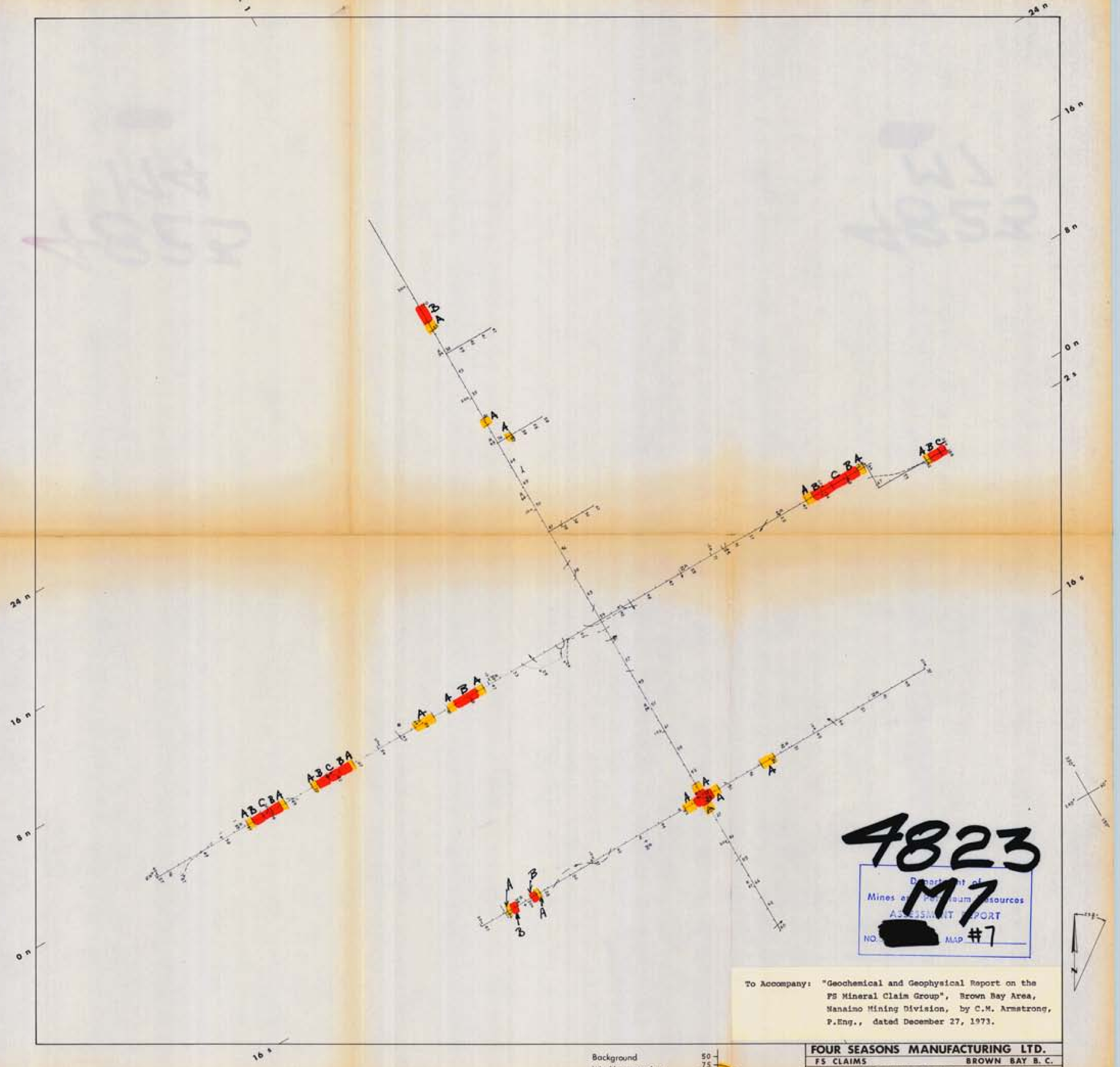


4823
M6

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. [redacted] MAP #6

To Accompany: "Geochemical and Geophysical Report on the FS Mineral Claim Group", Brown Bay Area, Nanaimo Mining Division, by C.M. Armstrong, P.Eng., dated December 27, 1973.

FOUR SEASONS MANUFACTURING LTD.
FS CLAIMS BROWN BAY B. C.
SOIL SAMPLING Lead
FEB. 1973 1" = 400' CMA



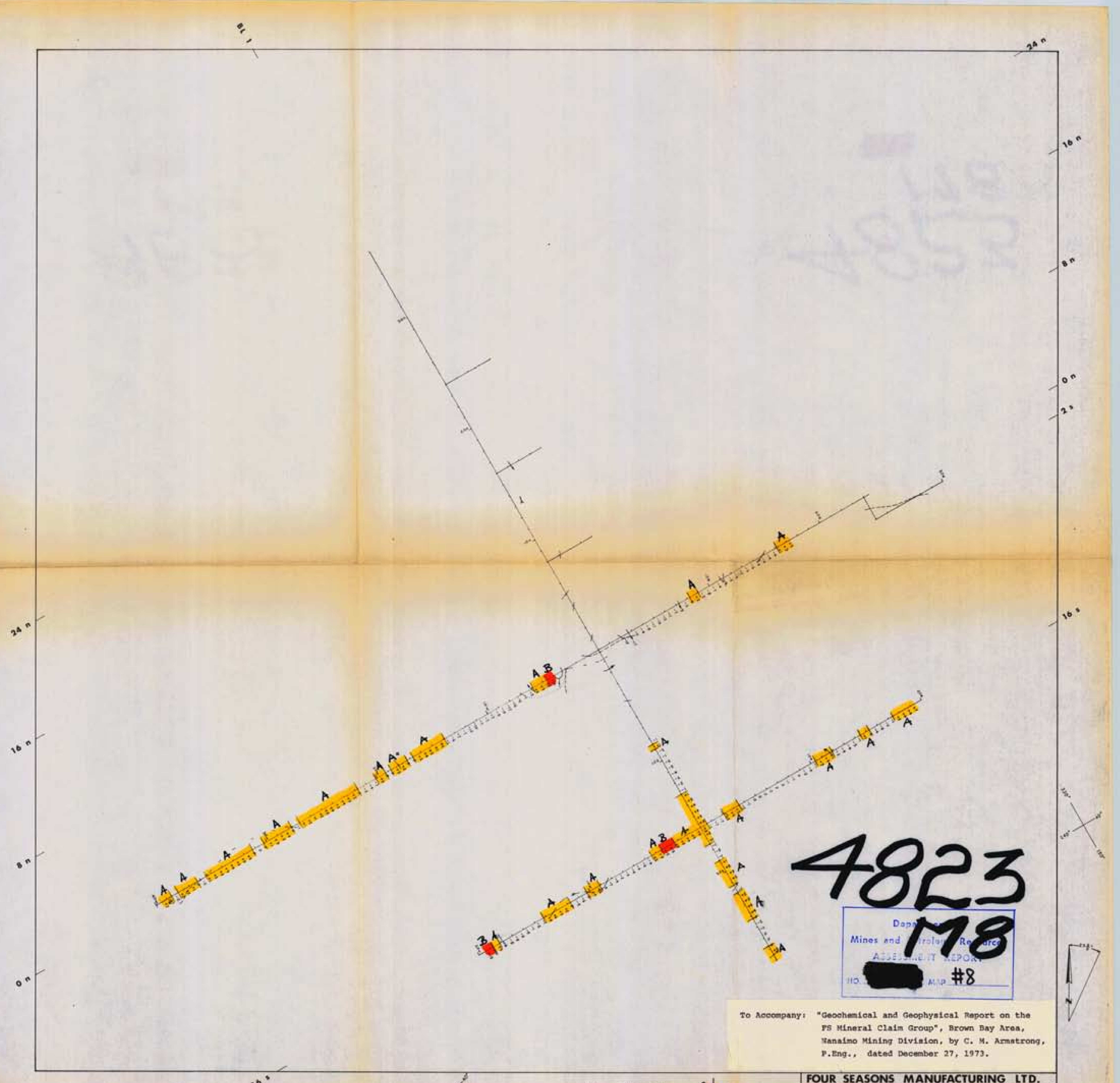
4823
M7

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. [redacted] MAP #7

To Accompany: "Geochemical and Geophysical Report on the FS Mineral Claim Group", Brown Bay Area, Nanaimo Mining Division, by C.M. Armstrong, P.Eng., dated December 27, 1973.

Background	50
Weakly anomalous	75
Moderately anomalous	100
Strongly anomalous	150

FOUR SEASONS MANUFACTURING LTD.
FS CLAIMS BROWN BAY B. C.
SOIL SAMPLING Zinc
FEB. 1973 1" = 400' CMA



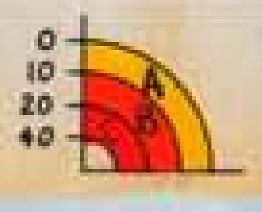
4823

M8

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. [redacted] MAP #8

To Accompany: "Geochemical and Geophysical Report on the
FS Mineral Claim Group", Brown Bay Area,
Nanaimo Mining Division, by C. M. Armstrong,
P.Eng., dated December 27, 1973.

Very weak conductor
Weak conductor
Moderate conductor
Strong conductor



FOUR SEASONS MANUFACTURING LTD.

FS CLAIMS	BROWN BAY B. C.
VLF-EM	Seattle

FEB. 1973	1" = 400'	CMA