

VLF-EM 16 GROUND SURVEY
ASSESSMENT REPORT

on

GOLDIE 1 + 2 MINERAL CLAIMS
BEAVERDELL AREA
GREENWOOD MINING DIVISION

by

MURRAY MORRISON, B.Sc.

Claims: Goldie 1 + 2 (22 units)

Location: The Goldie property lies 12km northeast
of Beaverdell, B.C.
Lat. 49°32'; Long. 119°00'; N.T.S. 82-E-10+11

Owner: Murray Morrison

Operator: Murray Morrison

Date Started: October 3, 1983

Date Completed: October 12, 1983

Kelowna, B.C.

October 15, 1983

GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,599

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VLF-EM SURVEY		
GOLDIE 1 and 2 MINERAL CLAIMS	Figure G-83-3.....in pocket	

SUMMARY

The Goldie property, located 12km northeast of Teck Corporation's Highland Bell Silver Mine at Beaverdell, is comprised of two mineral claims, totalling 22 units, owned by the writer. The property surrounds the old Rosemont Mine from which limited shipments of gold averaging 16 grams per tonne were made in the late thirties. The ore at the Rosemont Mine occurs in a roof pendant of Anarchist Group rocks that has been intruded by Nelson diorite. The Goldie property covers the extension of the roof pendant to the northwest of the old Rosemont workings.

A soil geochem programme carried out over the central portion of the Goldie property by Cominco Ltd. in 1981 failed to show up any anomalies in spite of the nearby gold mineralization at the Rosemont workings. A clayey till may have hampered the effectiveness of the geochem survey.

During October, 1983 a VLF-EM 16 survey was conducted over the central portion of the Goldie property by the writer. Three strong northwesterly-trending anomalies were discovered, and two of these anomalies are considered to show promise for further exploration. One anomaly extends northwesterly from the Rosemont workings into an area of untested geology along the strike of the Rosemont workings. A second strong anomaly coincides with a wide bed of limestone contained within the Anarchist roof pendant, and it is thought that it might represent a contact metasomatic type of ore disposition.

Further VLF-EM fill-in work is recommended over the central portion of the Goldie property, along with a ground magnetometer survey. It is felt that the magnetic survey might outline pyrrhotite bodies near the limestone contacts (the gold at the Rosemont Mine is associated with pyrrhotite).

Diamond drilling is recommended for any coincident VLF-EM and magnetic anomalies that might be outlined near the limestone contact.

INTRODUCTION

The Goldie 1 and 2 mineral claims, comprised of 22 units, are situated 2km southwest of Buck Lake, or 12km northeast of Beaverdell, B.C. (Lat. 49°32'; Long. 119°00'; N.T.S. 82-E-10 + 11). The claims were staked for Cominco Ltd. by the writer in 1980 to cover an area of promising geology surrounding the old Rosemont gold prospect.

During 1981 Cominco crews carried out a limited soil geochem survey over the central portion of the Goldie property. Elements analyzed included gold, silver, copper, lead and zinc. The results of the geochem survey were discouraging and title to the property was signed over to the writer this year (1983).

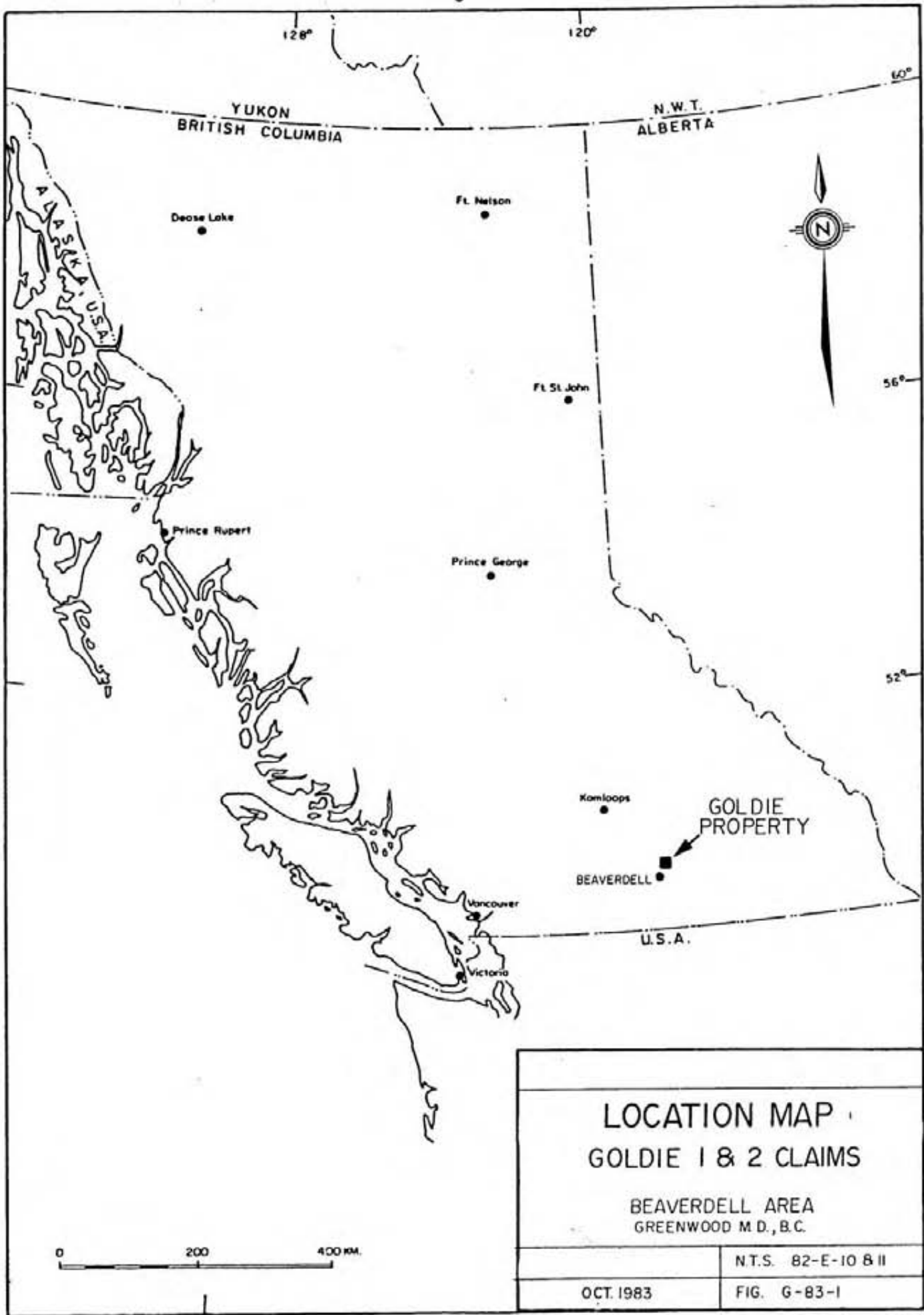
In October, 1983, the writer, with the aid of an assistant conducted a VLF-EM 16 survey along 14.75km of grid line over the central portion of the Goldie property. A discussion of the results of the survey makes up the text of this report. The VLF-EM 16 data has been plotted as line profiles which have been attached to this report, while the collective results of the survey are shown in plan view on figure G-83-3 accompanying this report.

LOCATION, TOPOGRAPHY, VEGETATION & ACCESS

The Goldie 1 and 2 mineral claims straddle a flat-topped ridge 2km southwest of Buck Lake, or 12km northeast of Beaverdell, B.C. The northwest side of the ridge slopes gently into the watershed of China Creek, while the southeast side of the ridge drops much more abruptly into St. John Creek. Elevations on the property range from 1200 to 1400 metres, and winter snows, averaging one metre in depth, can be expected to cover the property until mid-May.

Forest cover on the property varies from an open park-like stand of mature Douglas fir to a tangle of young pine and larch trees in old forest fire scars, and on northeast slopes.

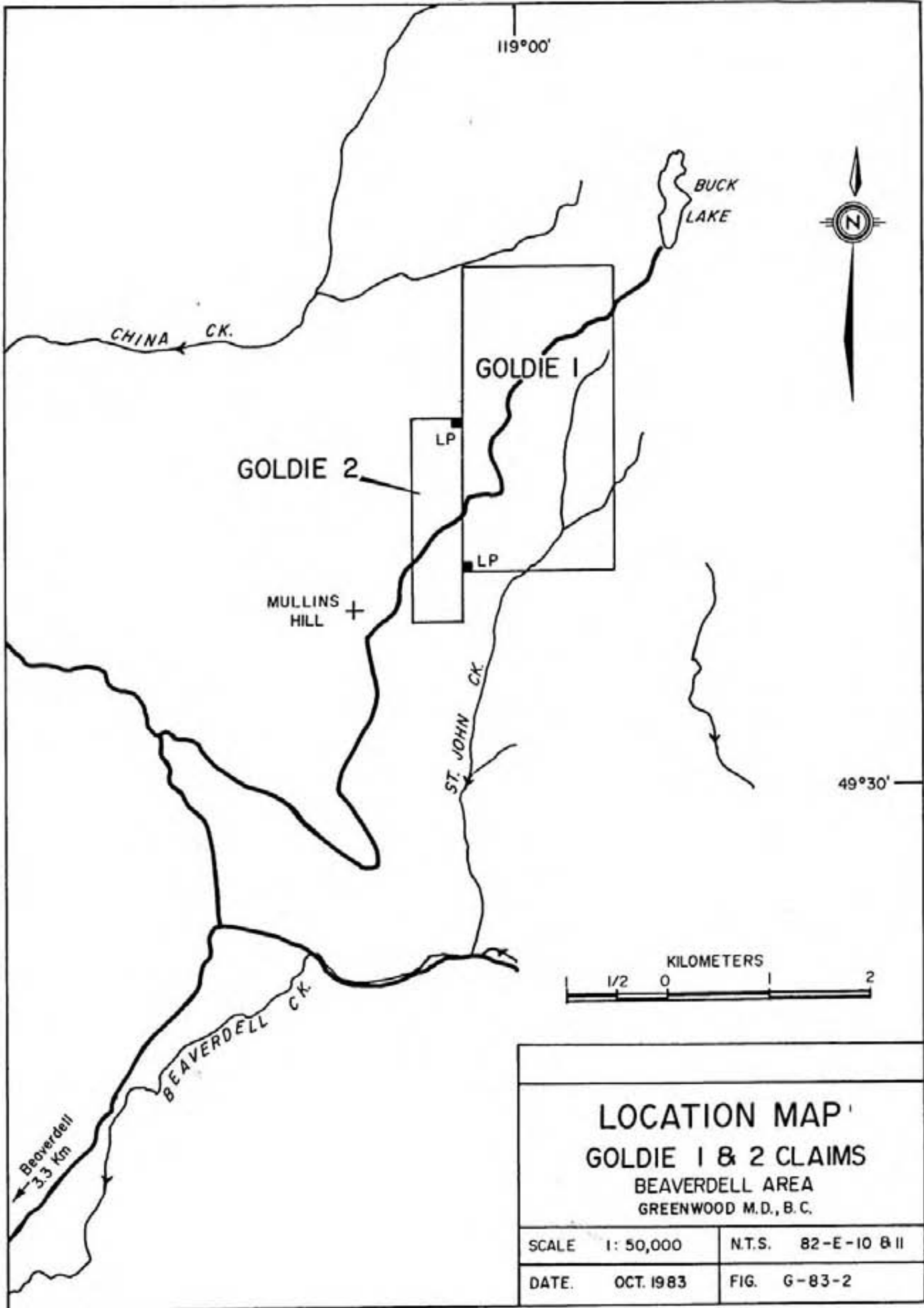
Access to the property from Beaverdell is via the Beaver Creek,



LOCATION MAP
GOLDIE 1 & 2 CLAIMS

BEAVERDELL AREA
GREENWOOD M.D., B.C.

	N.T.S. 82-E-10 & 11
OCT. 1983	FIG. G-83-1



LOCATION MAP GOLDIE 1 & 2 CLAIMS BEAVERDELL AREA GREENWOOD M.D., B.C.			
SCALE	1: 50,000	N.T.S.	82-E-10 B II
DATE.	OCT. 1983	FIG.	G-83-2

and Buck Lake roads, a distance of 17km, as shown on figure G-83-2. The Buck Lake road has been upgraded for logging trucks as far as Mullins Hill. Beyond Mullins Hill, and through the Goldie property, the dirt road is suitable for light trucks during summer months. It requires 45 minutes to reach the Goldie property from Beaverdell.

CLAIM STATUS

The Goldie 1 and 2 mineral claims located in the Greenwood Mining Division are 100% owned by the writer, M. Morrison, of Kelowna, B.C. Particulars on the two Goldie claims are given below:

<u>CLAIM NAME</u>	<u>UNITS</u>	<u>DATE OF RECORDING</u>	<u>RECORD NUMBER</u>	<u>EXPIRY DATE</u>
Goldie 1	18	October 16/80	2430	October 16/84
Goldie 2	4	October 16/80	2431	October 16/84

The Rosemont Crown Grant (Lot 3291s) falls within the boundaries of the Goldie 1 mineral claim, but its exact position is unknown. Government topographic and mineral claim reference maps show the Lot to be positioned as it is plotted on figure G-83-3. However, the Crown Grant is in fact believed to cover the area of adits and workings located near the southern boundary of the Goldie 1 mineral claim, a full kilometre south of where it is positioned on government maps. The workings on the Goldie #1 mineral claim match with those described in the literature under the title of the Rosemont Mine. There is also a question as to what degree the Rosemont Crown Grant (Lot 3291s) covers the old workings, because the original Rosemont property was made up of 4 mineral claims.

Lot 3291s is currently held by Mrs. Rosaline J. Marson, of R.R.#3, North Lakeside, Williams Lake, B.C.

HISTORY

The Goldie property is located 12km northeast of Teck Corporation's Highland Bell Mine, which has been producing silver ore since 1900 on a continuous basis. The Rosemont Mine, which lies within the boundaries of the Goldie 1 mineral claim (see Claim Status section), appears to have been discovered and staked in 1937.

Prior to 1939, 41 tons of ore were shipped from the Rosemont Mine, yielding 26 oz of gold and 28 oz of silver. In 1939 the property was optioned to Highland Bell Ltd., which shipped 22 tons of ore that yielded 10 oz of gold and 4 oz of silver.

The following year (1940) Highland Bell Ltd. did 30 feet of drifting and 100 feet of cross-cutting, and in 1941 they did another 50 feet of drifting before dropping their option on the property.

Minor cat trenching was carried out in the vicinity of the old pits on top of the ridge, well above the adits, by persons unknown in the 1960's (?). However, very old, shallow, hand-dug trenches in thick underbrush on the south half of the Goldie 2 mineral claim appear to have been ignored for decades.

During 1981 crews of Cominco Ltd. carried out a soil geochem programme over the central portion of the Goldie property. Samples were analyzed for gold, silver, copper, lead and zinc. The results of the survey were discouraging and the property was transferred to the writer in September, 1983.

REGIONAL GEOLOGY

The Geological Survey of Canada maps for Kettle River, East Half (Map 6-1957), and West Half (Map 15-1961), both by H.W. Little, show that the Goldie property covers a roof pendant of Anarchist rock (Permian and/or Triassic) that has been intruded by a portion of the Beaverdell Nelson Batholith (Cretaceous?). The maps show that the Nelson rocks have, in turn, been intruded by a body of

Valhalla intrusive rock (Cretaceous?) immediately north of the Goldie property.

At the Beaverdell Mining Camp, 12km to the southwest, ore occurs in shear zones cutting Nelson granitic rocks predominantly, and to a lesser extent, Anarchist rocks. The ore solutions are believed to have originated from a local stock of Valhalla quartz monzonite. Very similar conditions prevail at the Goldie property.

LOCAL GEOLOGY

The general geology of the Goldie property is outlined on figure G-83-3 accompanying this report. A 500 to 1000 metre wide roof pendant of Anarchist rock strikes northwesterly across the southern portion of the Goldie 1 mineral claim, while a second body of Anarchist rock underlies the southern half of the Goldie 2 mineral claim. In each case the Anarchist rock is hornfelsic and rests upon Nelson diorite. The Nelson diorite, which is generally medium grained, becomes fine grained towards the Anarchist contacts.

The original Anarchist rocks are believed to have been fine to medium grained, thinly bedded, tuffs. The roof pendant also includes a 30 metre wide limestone bed that has been mapped for 1km across the grid area on the Goldie property.

The mineralized rocks at the old Rosemont workings are composed of highly fractured, fine to medium grained, bedded, hornfelsed, tuffs of the Anarchist Group that lie in close proximity to the Nelson intrusive contact. The rocks contain 0.2 to 1% disseminated pyrite, and they are locally cut by shear zones containing up to 15cm of massive pyrite. The best ore on the property comes from the adits shown on figure G-83-3, where quartz vein material fills fractures in Anarchist rocks. A sample of quartz vein material collected by the writer in 1980 contained 40% pyrrhotite, 10% pyrite, 0.5% chalcopyrite, 16,000 ppb gold, 1.1 ppm silver and 4 ppm arsenic. The gold content of the sample compares well with the ore shipped from the property in the late thirties.

1983 VLF-EM 16 SURVEY

The grid lines laid out by Cominco Ltd. in 1981 for their soil geochem survey are largely obliterated, so a new flagged grid totalling 14.75km was established this year using a Silva Ranger compass, and a Topolite belt chain. The grid shown on figure G-83-3, covering the central portion of the Goldie property, required 6 man days to establish.

A VLF-EM 16 Ronka instrument produced by Geonics Limited was used in conducting the survey over the new grid area. Annapolis, Maryland was selected for a signal station after testing several other stations in the area of the old Rosemont workings. The signal station was in a direction of 110° azimuth, and all readings were, therefore, taken at right angles, facing 20° azimuth, at 25 metre intervals along all grid lines. The angle of tilt and the quadrature were recorded at each survey station. The data is given in profile form for each line, and these profiles have been appended to this report. The results have also been Fraser filtered, and the filtered data is summarized on figure G-83-3.

The Fraser filtering technique has had widespread use in the handling of VLF-EM 16 data for over ten years. By means of simple mathematical operations the tilt data can be transformed into contourable form, and the effects of noise and topography can be filtered from data. By averaging pairs of stations and taking differences between pairs separated by the appropriate distance, values may be plotted and contoured in plan that transform cross-overs into peaks, and a low-pass smoothing operator reduces noise.

A full explanation of the Fraser filtering technique is given in geophysical papers by Fraser, Peterson and Ronka that are listed under references at the end of this report.

DISCUSSION OF THE RESULTS OF THE VLF-EM 16 SURVEY

There was some indecision in the selecting of the proper signal station for the VLF-EM survey on the Goldie property. The exposed mineralized showings were known to strike in a northwest direction near an Anarchist - Nelson contact. It was suspected that further mineralization might be found near other Anarchist - Nelson contacts on the property. The problem was that the geology as mapped showed other Anarchist - Nelson contacts to strike predominantly either north-south or east-west. It was, therefore, difficult to select a survey direction to fit all mineral possibilities. To resolve the problem it was decided to experiment over the mineralized showings at the old Rosemont workings using several different signal stations. In doing so, it was discovered that the Annapolis, Maryland gave the clearest indication of an anomaly over the mineralized area. The Maryland signal station was chosen for the entire survey. In addition to the east-west survey lines three experimental lines were run north-south to cover all possible geological trends on the property.

All of the VLF-EM anomalies with Fraser filtered values of greater than 5 per cent have been plotted on figure G-83-3 accompanying this report. Three northwesterly trending anomalous areas, A, B, and C, can be readily identified. Most of the remaining small to medium magnitude anomalies are restricted in area and lie near the main Anarchist - Nelson contacts.

ANOMALY A

Anomaly A extends from line 4S to 4N and reaches a peak of 35 per cent on line 15+50E. The southern half of the anomaly is believed to be underlain by Nelson diorite. The area is one of glacial gravels that have been cut deeply by creeks and ravines. Therefore, this portion of the anomaly should be considered low in priority for any follow-up work. On the other hand, the northern half of the anomaly is believed to be underlain by Anarchist rocks

in an area where overburden is thought to be shallow. This portion of the anomaly does warrant further investigation.

ANOMALY B

Anomaly B is moderately strong with Fraser filtered values of up to 25 per cent. The anomaly originates just north of the Rosemont adits, and continues along the trend of old workings to the road, and then beyond for another 250 metres northwest. The anomaly shows weakly for the next 500 metres before showing strongly again on line 6N. This anomaly is of great interest, because it does pass through all of the known mineralized zones of the Rosemont prospect, and then continues northwest into territory that has not yet been explored.

ANOMALY C

Anomaly C is the strongest and most interesting of the three main anomalies. It coincides with a limestone bed crossing the property from line 2N to line 8N and it reaches a Fraser filtered value of 73 per cent on line 8N. It is suggested that the peaks of the anomaly may indicate bodies of sulphide mineralization that have chemically precipitated against the limestone. If this is true, it is quite possible that the sulphide mineralization may be composed of pyrrhotite, pyrite, and chalcopyrite with associated gold as is the case at the Rosemont Mine just 400 to 600 metres to the southwest.

CONCLUSIONS AND RECOMMENDATIONS

The 1983 VLF-EM 16 survey has shown that three major anomalies cross the Goldie property in a northwesterly direction. At least two of these anomalies appear to have economic significance. One of these anomalies indicates that sulphide mineralization may extend a considerable distance northwest of the workings at the Rosemont Mine into an area that has not been explored. The second strong anomaly is coincident with a limestone bed crossing the property,

and there is now believed to be the possibility of finding contact metasomatic sulphide deposits on the property.

Because pyrrhotite is one of the major sulphides at the Rosemont Mine it is suggested that pyrrhotite might be associated with the limestone contact VLF-EM anomalies. If this is the case, then a ground magnetometer survey would be useful in defining the outlines of pyrrhotite bodies. Such a survey is, therefore, recommended for the grid area on the Goldie property. It is also recommended that fill-in VLF-EM lines be established to better define the present VLF-EM anomalies.

Coincident VLF-EM and magnetic anomalies near the limestone bed should be considered as high priority drill targets. Much of the country underlain by the limestone bed is flat and readily accessible.

SUMMARY OF RECOMMENDATIONS

Phase I

1. VLF-EM fill-in lines, and extensions:

L 1N	11E to 25E	1400m
L 3N	"	"
L 5N	"	"
L 7N	"	"
L 9N	"	"
	Total	<u>7000m</u>

2. Ground magnetic survey

- on all established east-west grid lines,
19km in all.

Phase II

1. Diamond drill coincident VLF-EM - magnetic anomalies near the limestone contact.

Footnote on Cominco Ltd.'s 1981 Soil Survey

A mantle of white to grey clayey glacial till covers much of the Goldie property, and it has been the writer's experience in the Beaverdell area, that this till can greatly hamper the distribution of metallic elements into the upper soil horizons. Several rock samples from the Rosemont workings assay for gold (up to 25,000 ppb in Cominco Ltd.'s sample), yet there is no expression of gold in soil nearby. I, therefore, feel that the negative results of Cominco Ltd.'s 1981 soil survey should not discourage further work on the Goldie property. The VLF-EM anomalies outlined in this report do warrant further investigation.

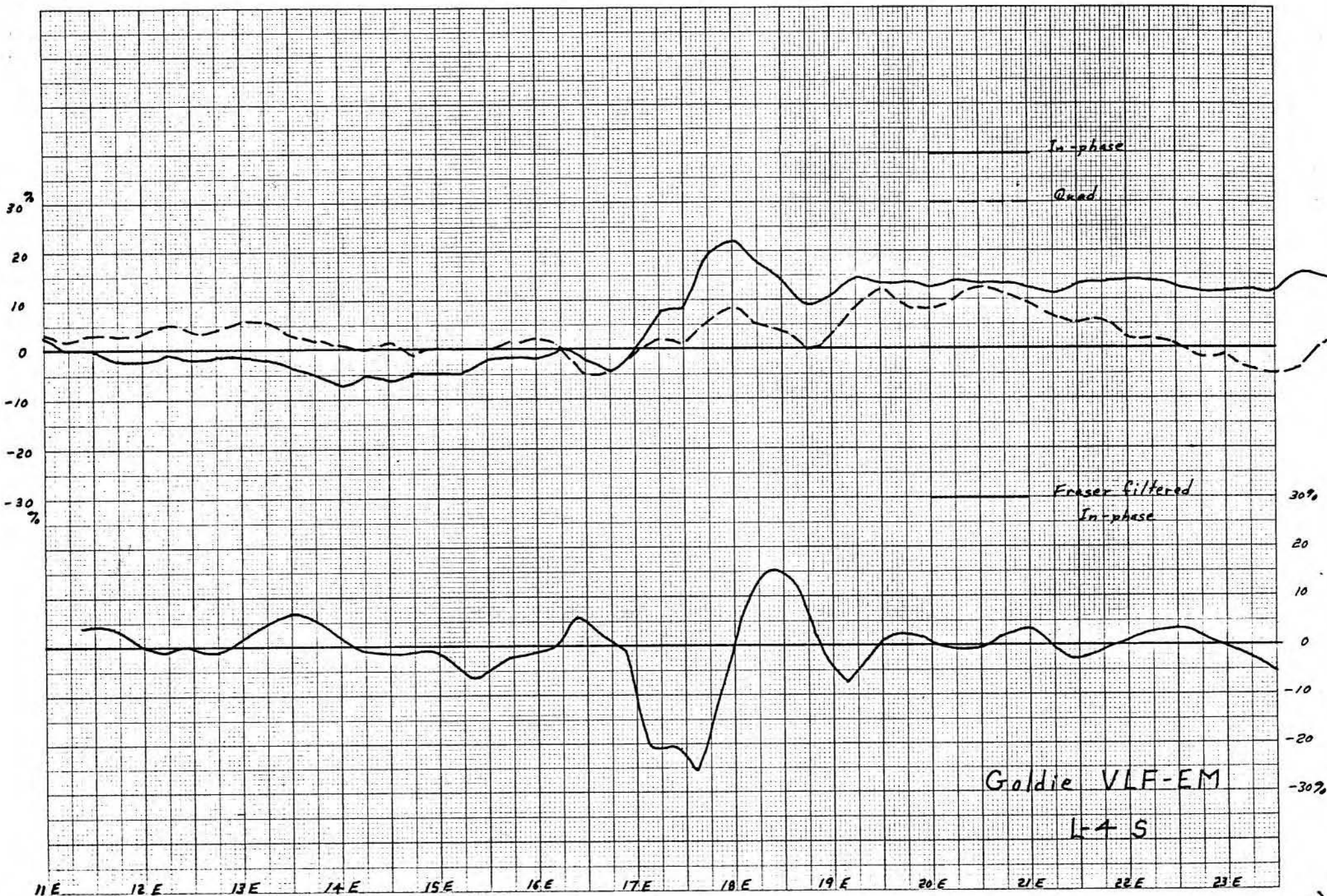
October 15, 1983

Kelowna, B.C.

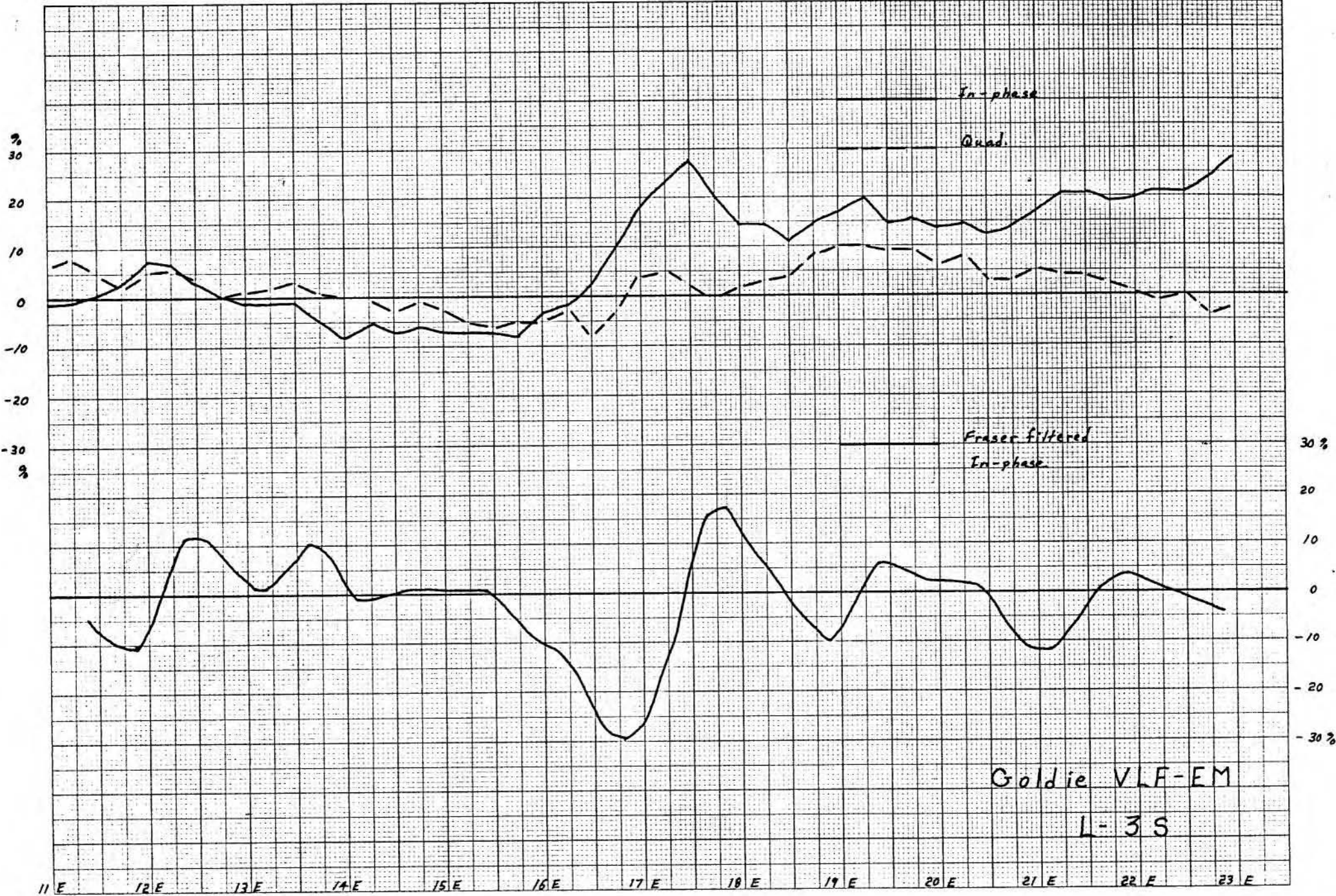

MURRAY MORRISON, B.Sc.

REFERENCES

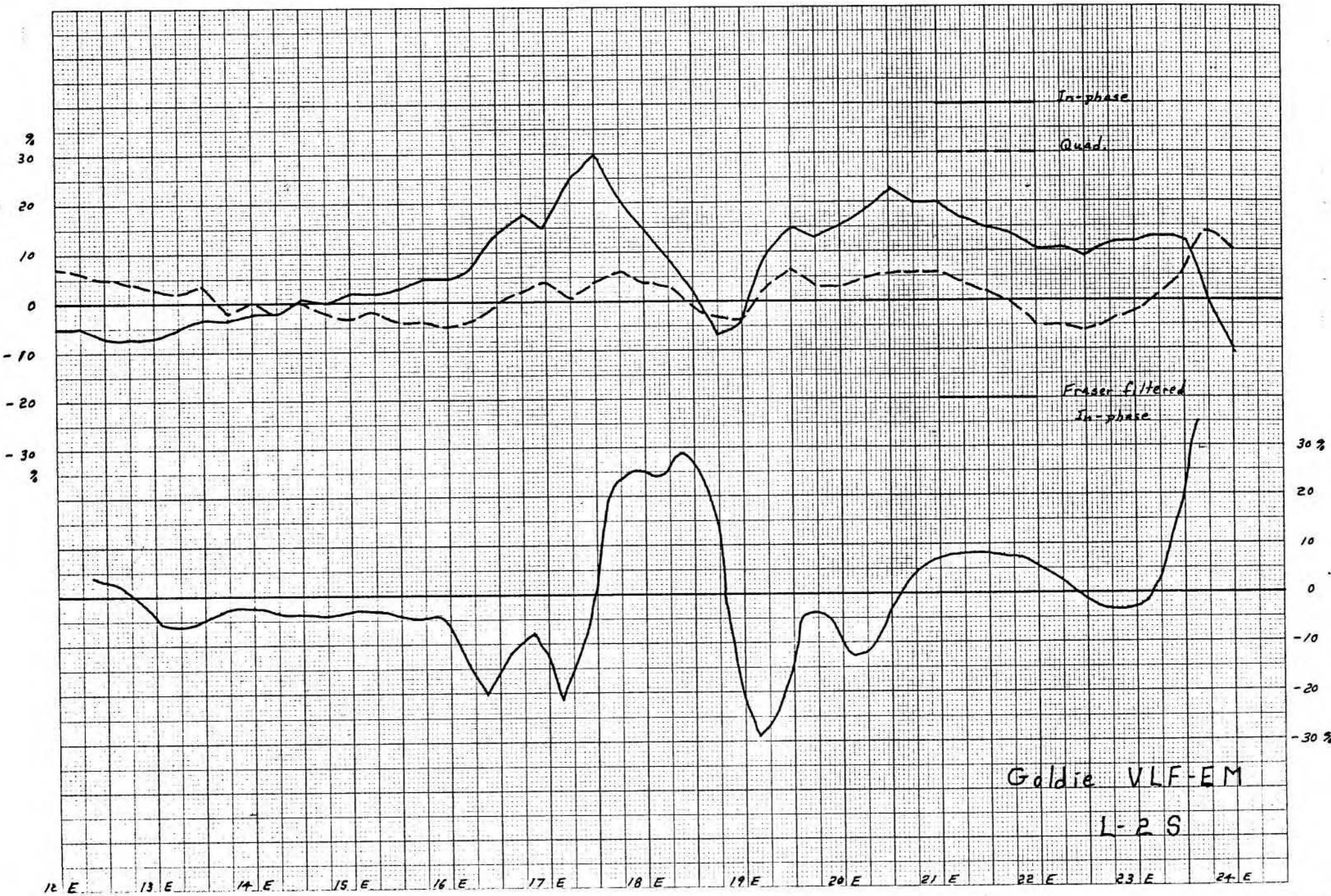
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1957: Geology, Kettle River (East Half) British Columbia, G.S.C., Map 6-1957.
1961: Geology, Kettle River (West Half) British Columbia, G.S.C., Map 15-1961.
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- Peterson, N.R. and Ronka, V.
1969: Five Years of Surveying with the VLF-EM Method, a paper presented at the 1969 Annual International Meeting, Society of Exploration Geophysicists.



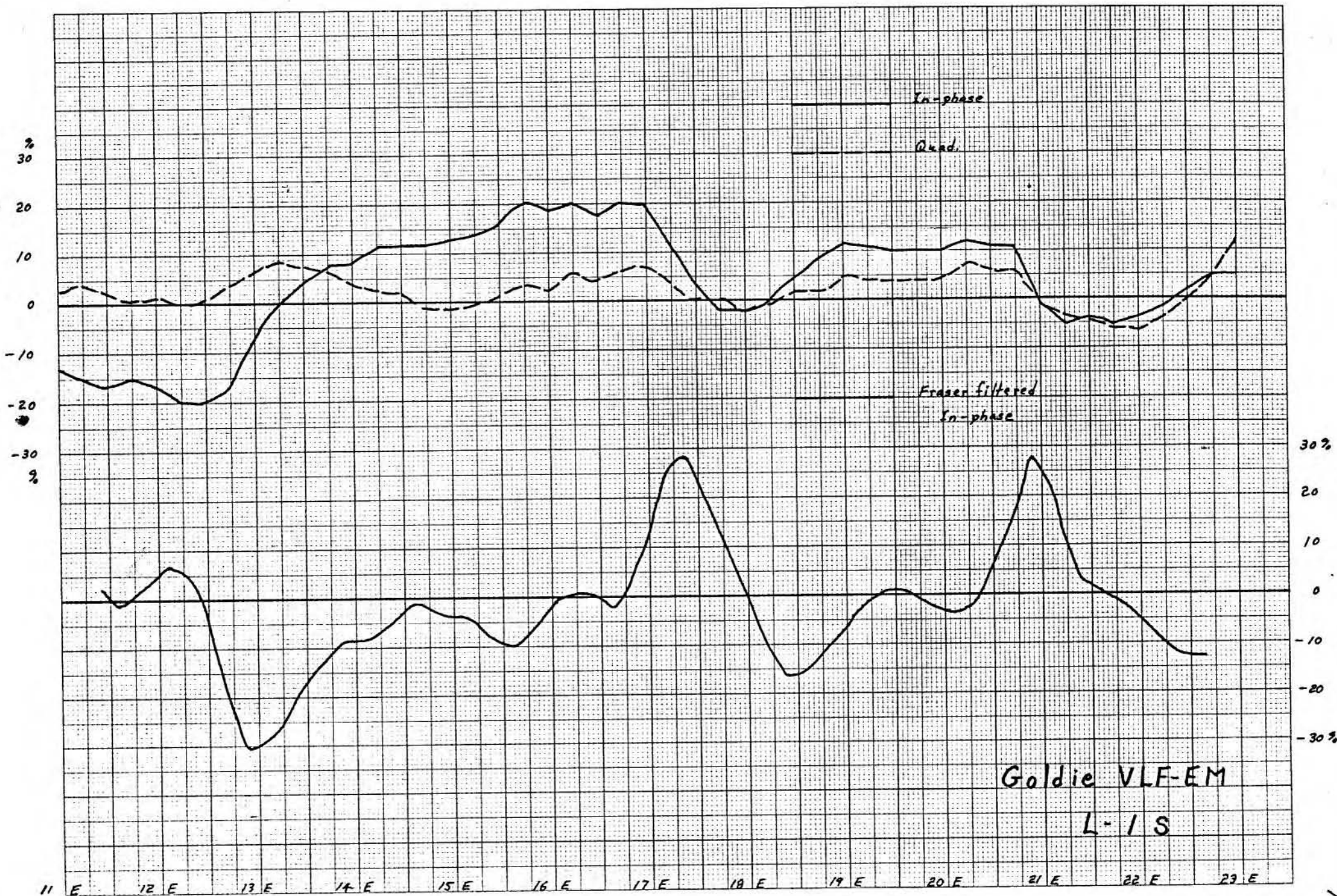
Appendix "A"

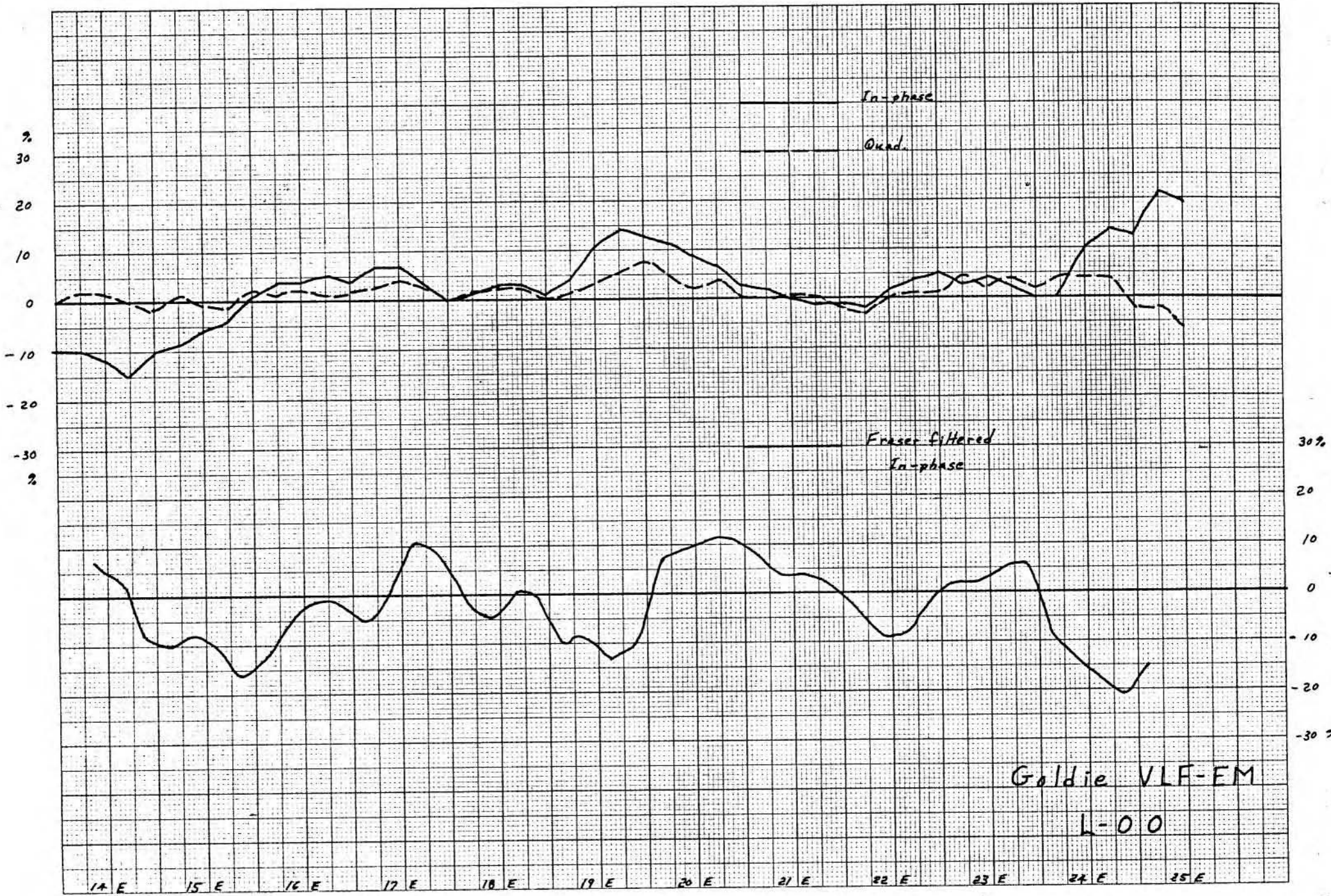


Goldie VLF-EM
L-3S



Goldie VLF-EM
L-2 S

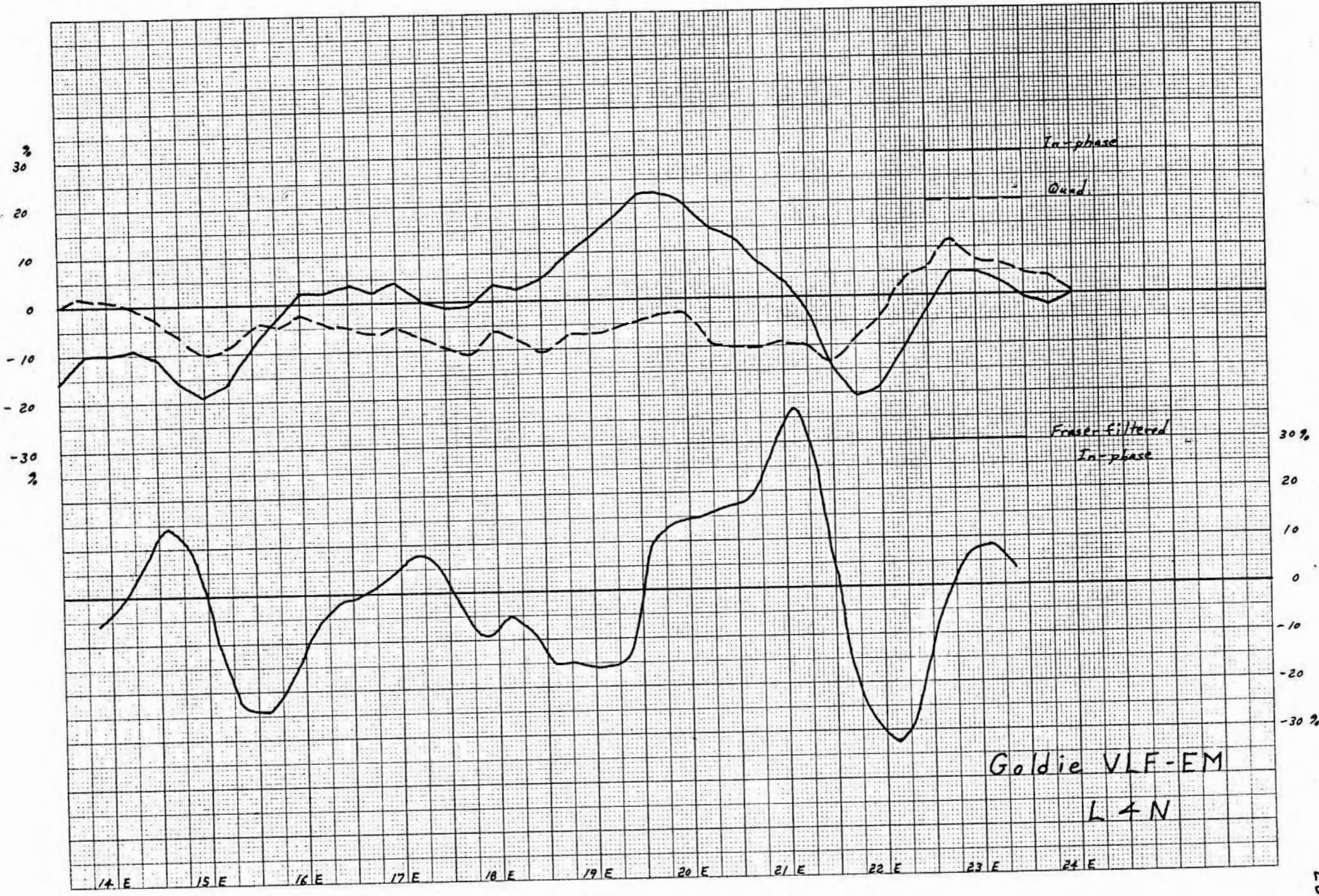




Goldie VLF-EM
L-00

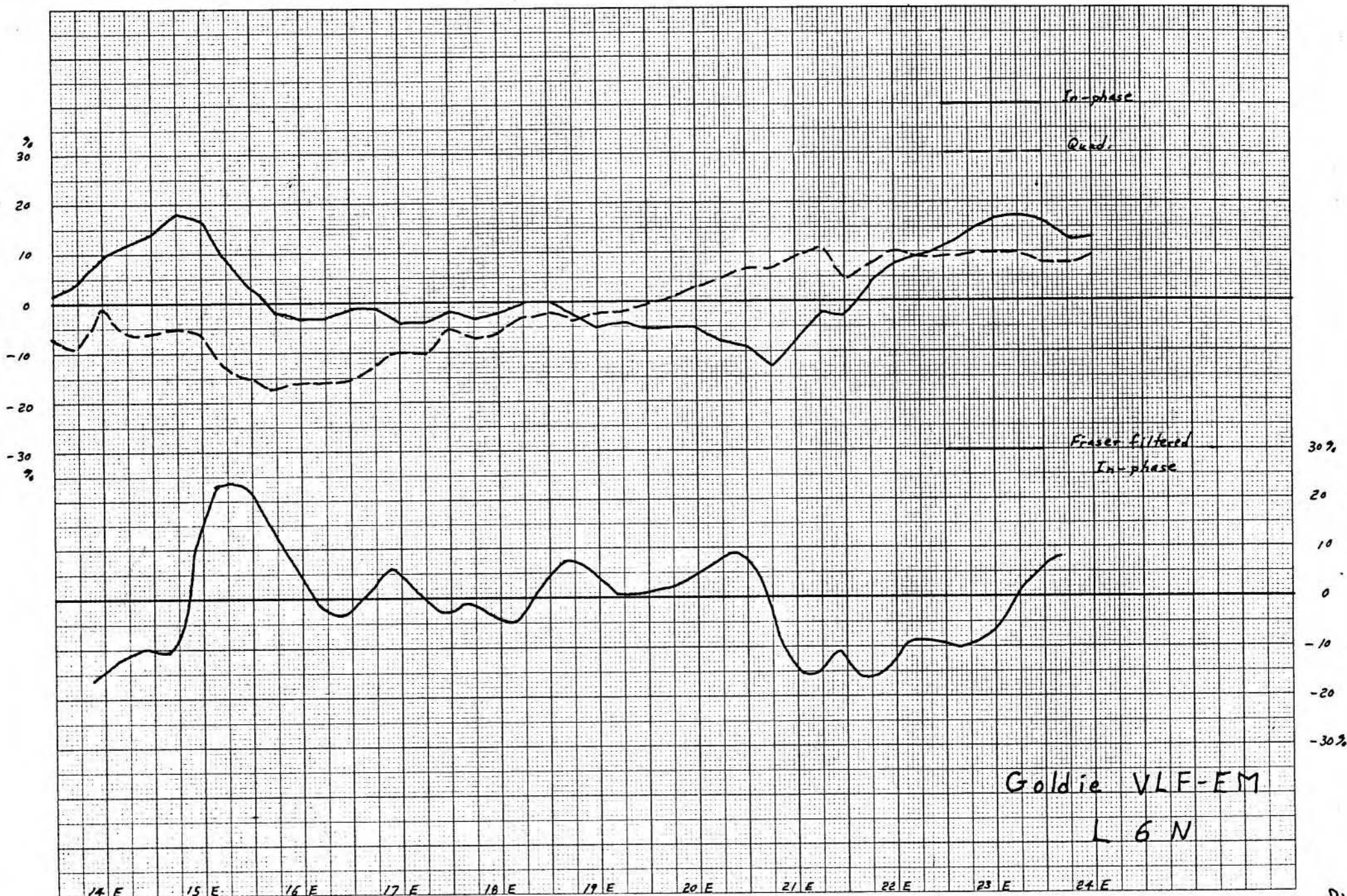


LAN



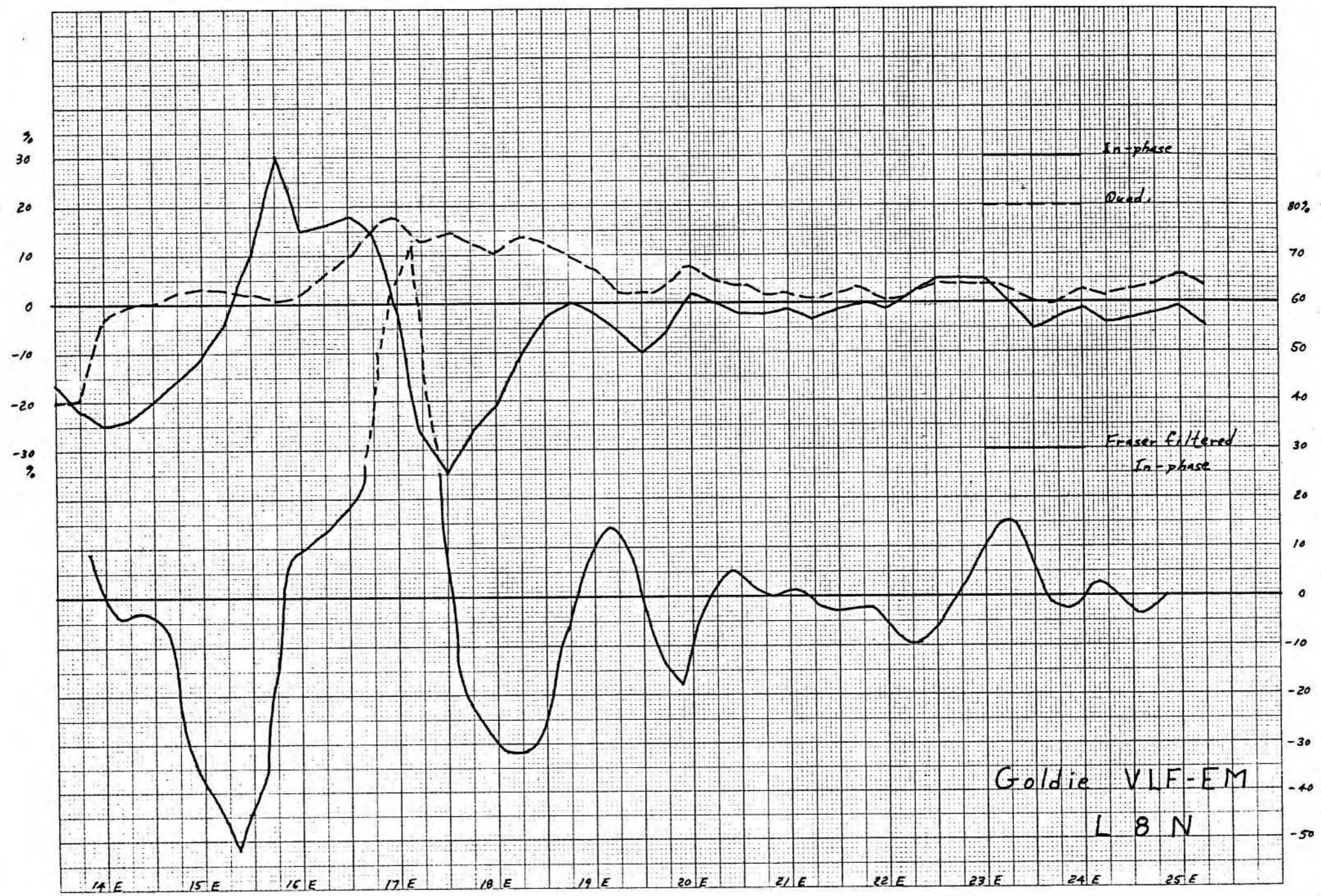
Goldie VLF-EM
LAN

L6N



30%
20
10
0
-10
-20
-30%

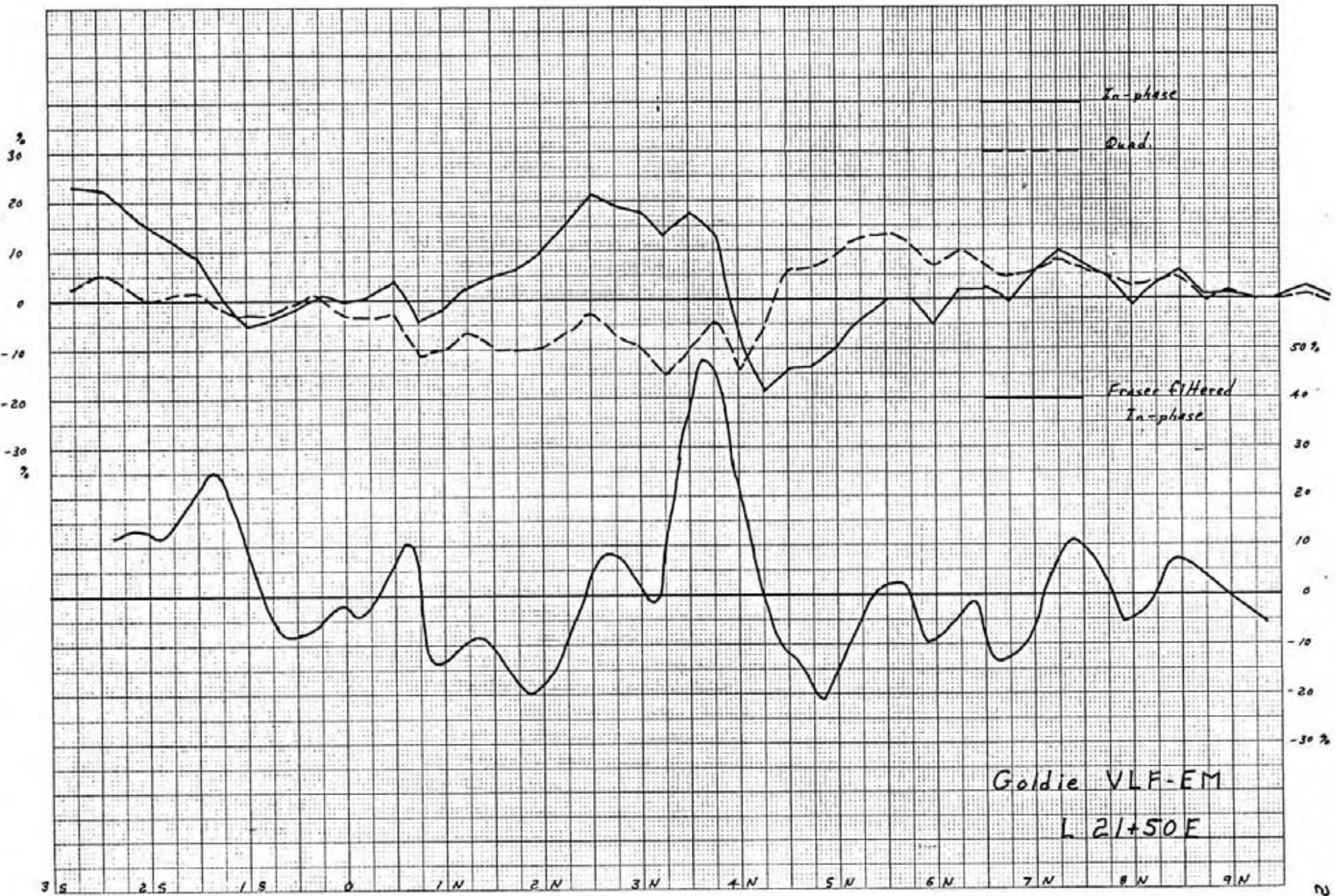
LBN



L10N



Goldie VLF-EM
L10N

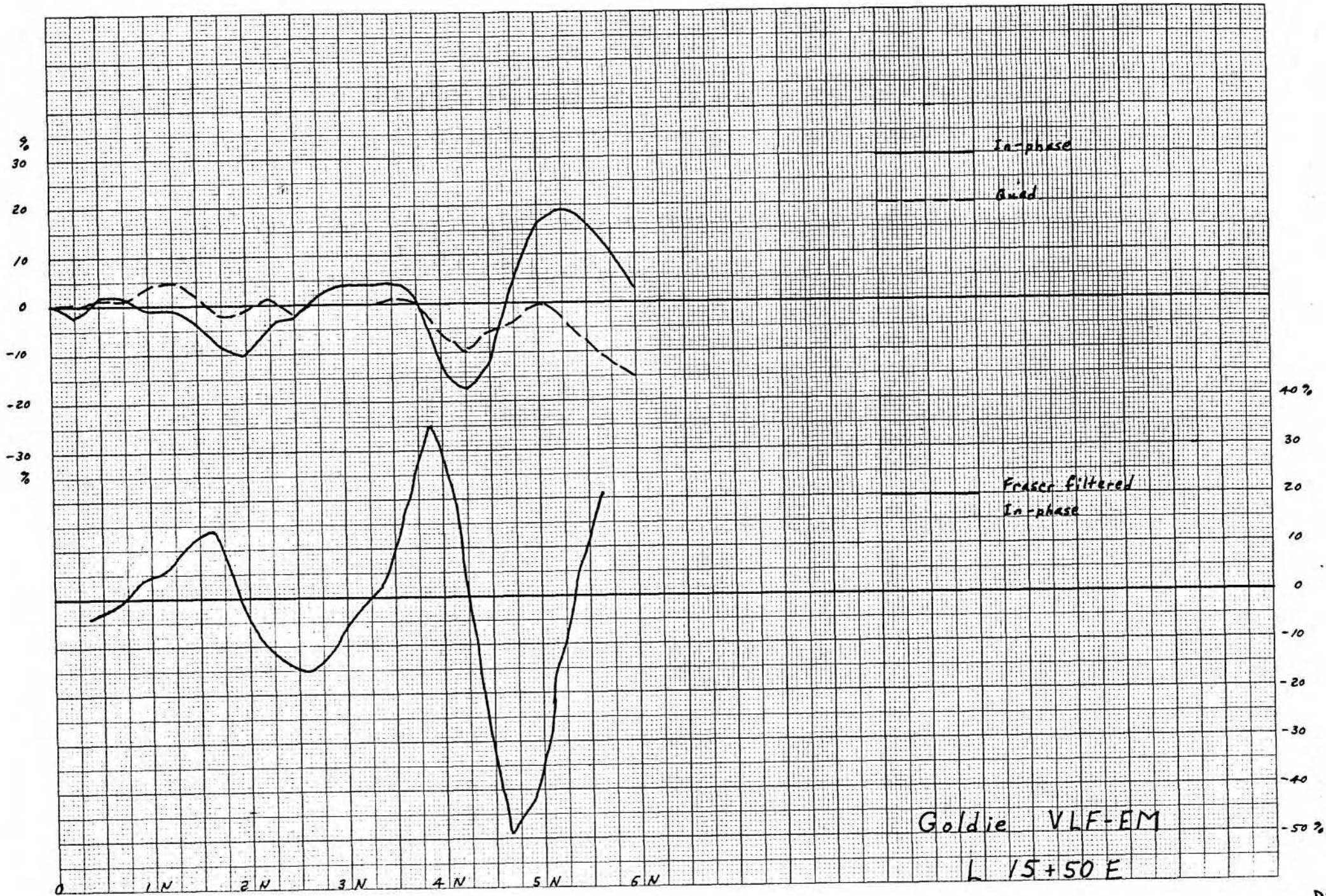


Goldie VLF-EM
L 21+50E

L 19+25N



L 15+50E



40%
30
20
10
0
-10
-20
-30
-40
-50%

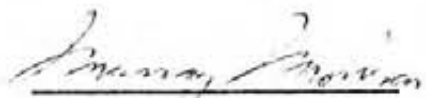
APPENDIX B

STATEMENT OF QUALIFICATIONS

I, Murray Morrison, of the City of Kelowna, in the Province of British Columbia, do hereby state that:

1. I graduated from the University of British Columbia in 1969 with a B.Sc. Degree in Geology.
2. I have been working in all phases of mining exploration in Canada for the past fourteen years.
3. During the past fourteen years, I have intermittently held responsible positions as a geologist with various mineral exploration companies in Canada.
4. Over the past nine years I have examined many mineral properties in the Beaverdell area of British Columbia.
5. I personally carried out and/or supervised the VLF-EM 16 survey outlined in this report.
6. I own full title to the Goldie 1+2 mineral claims described in this report.

October 15, 1983
Kelowna, B.C.


MURRAY/MORRISON, B.Sc.

APPENDIX C

STATEMENT OF EXPENDITURES - ON THE GOLDIE 1+2 MINERAL CLAIMS

Statement of Expenditures in connection with the VLF-EM 16 Survey carried out on the Goldie 1+2 mineral claims, N.T.S. 82-E-10+11, Beaverdell, B.C. for the year 1983.

FIELDWORK - ESTABLISHING FLAGGED GRID LINES (14.75 KM).

A. Hunt, Assistant	6 days @ \$75/day	\$ 450.00
Lodging	6 days @ \$16.50/day	99.00
Meals	6 days @ \$20/day	120.00
Flagging, Belt chain thread	6 days @ \$15/day	<u>90.00</u>
	sub-total	759.00

FIELDWORK - VLF-EM 16 SURVEY

M. Morrison, Geologist	6 days @ \$150/day	900.00
Lodging	6 days @ \$16.50/day	99.00
Meals	6 days @ \$20/day	120.00
Truck (4x4, incl. gas)	6 days @ \$55/day	330.00
VLF-EM 16 instrument rental	1 week	<u>100.00</u>
	sub-total	1,549.00

REPORT PREPARATION COSTS

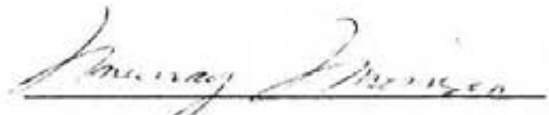
Geologist (calculations, profiles, maps, report)	2 days @ \$150/day	300.00
Drafting	1 day @ \$75/day	75.00
Typing		85.00
Copying maps & reports - two copies		<u>12.50</u>
	sub-total	472.50
	<u>GRAND TOTAL</u>	<u><u>\$2,780.50</u></u>

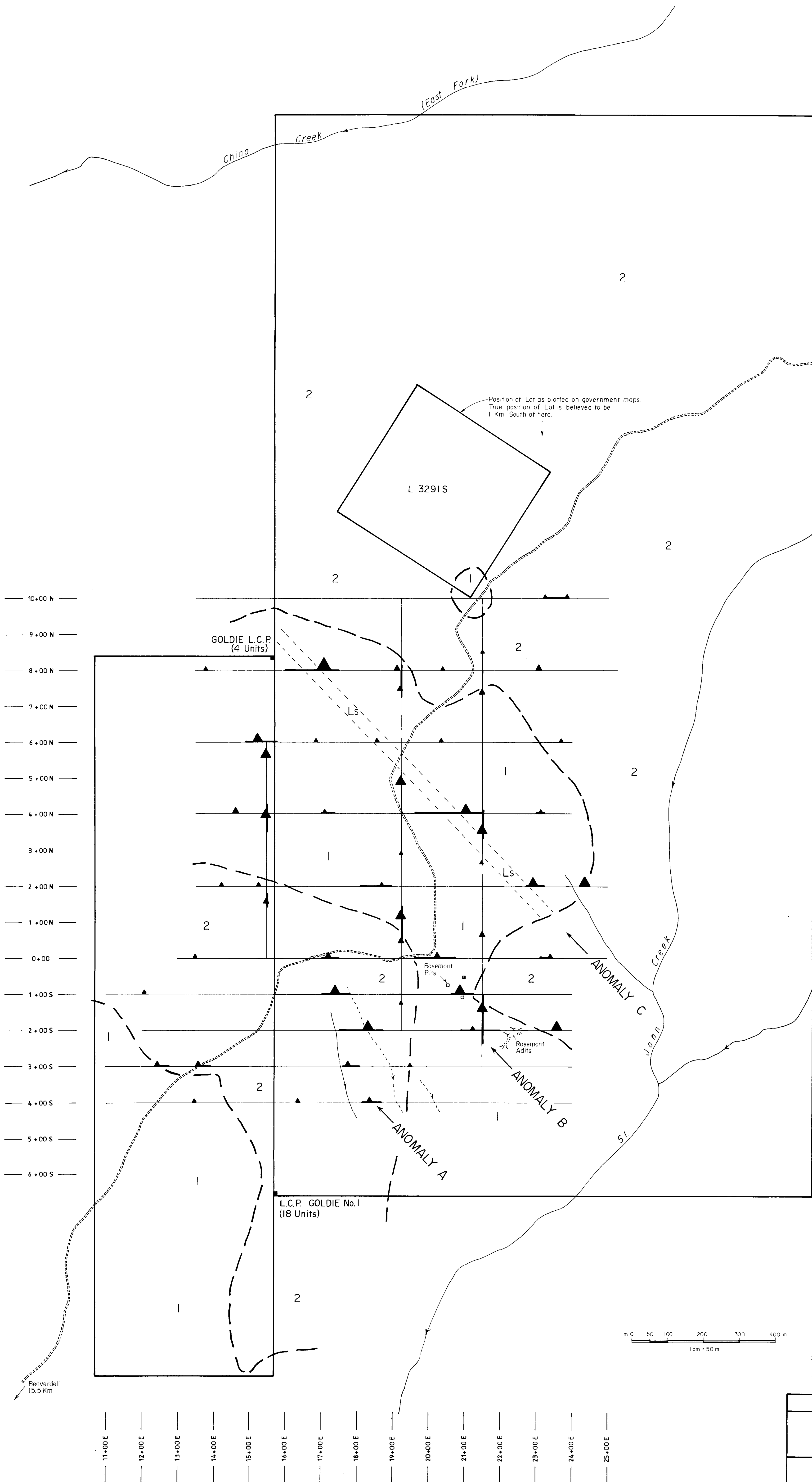
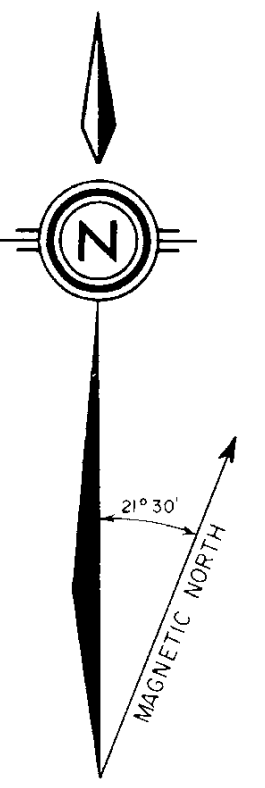
...CONTINUED

APPENDIX C - Continued

I hereby certify that the preceding statement is a true statement of monies expended in connection with the VLF-EM 16 survey carried out October 3-12, 1983.

October 15, 1983


MURRAY MORRISON - Geologist



GEOLOGY

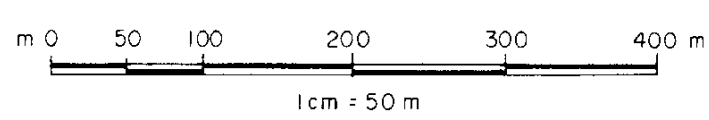
- Cretaceous (?)
- 2 Nelson Diorite
- Permian and/or Triassic
- 1 Anarchist bedded tuff and limestone (Ls)

LEGEND

- Old Pits
 - Old Shaft
 - ⊕ Adits and Dumps
 - Geological contacts (assumed)
 - Creek, ravines
 - Road
 - Grid lines
 - ▲ or --- VLF-EM Conductors (Fraser filtered dip angle > 5%)
- FRASER FILTERED POSITIVE PEAKS (%)
- ▲ 5 to 9
 - ▲ 10 to 19
 - ▲ 20 to 39
 - ▲ 40 to 70
- (Please see detailed line profiles with report.)
- Instrument: Ronka EM-16

GEOLOGICAL BRANCH ASSESSMENT REPORT

11,599



Legal Corner Posts tied-in by compass and belt chain traverses.

To Accompany a Geophysical Report by M. Morrison.

GOLDIE PROPERTY		
BEAVERDELL AREA, GREENWOOD M.D., B.C.		
VLF-EM SURVEY		
GOLDIE 1+2 MINERAL CLAIMS		
Drawn by M. M.	October 1983	N.T.S. 82-E-10+11
Drafted by A. H.	Scale 1:5000	Fig. G-83-3

