# GEOLOGICAL AND GEOPHYSICAL REPORT

# ON THE

# WEST 1 CLAIM

Frog River Area
Liard Mining Division, British Columbia
94L / 3E

(58°12'30" N. Lat., 127°10' W. Long.)

FOR

**Skylark Resources Ltd.**
#902 - 837 West Hastings Street,
Vancouver, B.C.

BY

P.J. Burns, B.Sc.

AND

C. McAtee, B.Sc., M.Sc.

November, 1987

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## ILLUSTRATIONS

## INTRODUCTION

### General

Field work was carried out on the property by Chris McAtee, Patrick J. Burns, geologists, as well as Doug Hopper, prospector, and John Sveen, prospector, on September 20th, 1987.

Geology, sampling, prospecting and VLF-EM survey work was conducted on the claim. Previous to this, a prospecting-geology-sampling examination was conducted on September 3, 1987 by H.H. Shear, geologist, P.J. Burns, and J.M. Mirko, prospector.

### Location and Access

The West 1 Claim is located at 58°12'30" N. Latitude and 127°10' W. Longitude in the Frog River area, Ketchika Map Sheet, 94L/3E, Liard Mining Division (Figures 1 and 2).

Access to the property is by airplane from Smithers to the Sturdee Airstrip in the Toodoggone area, a distance of 280 kilometres, and from Sturdee north to the property by helicopter, a distance of approximately 110 km.

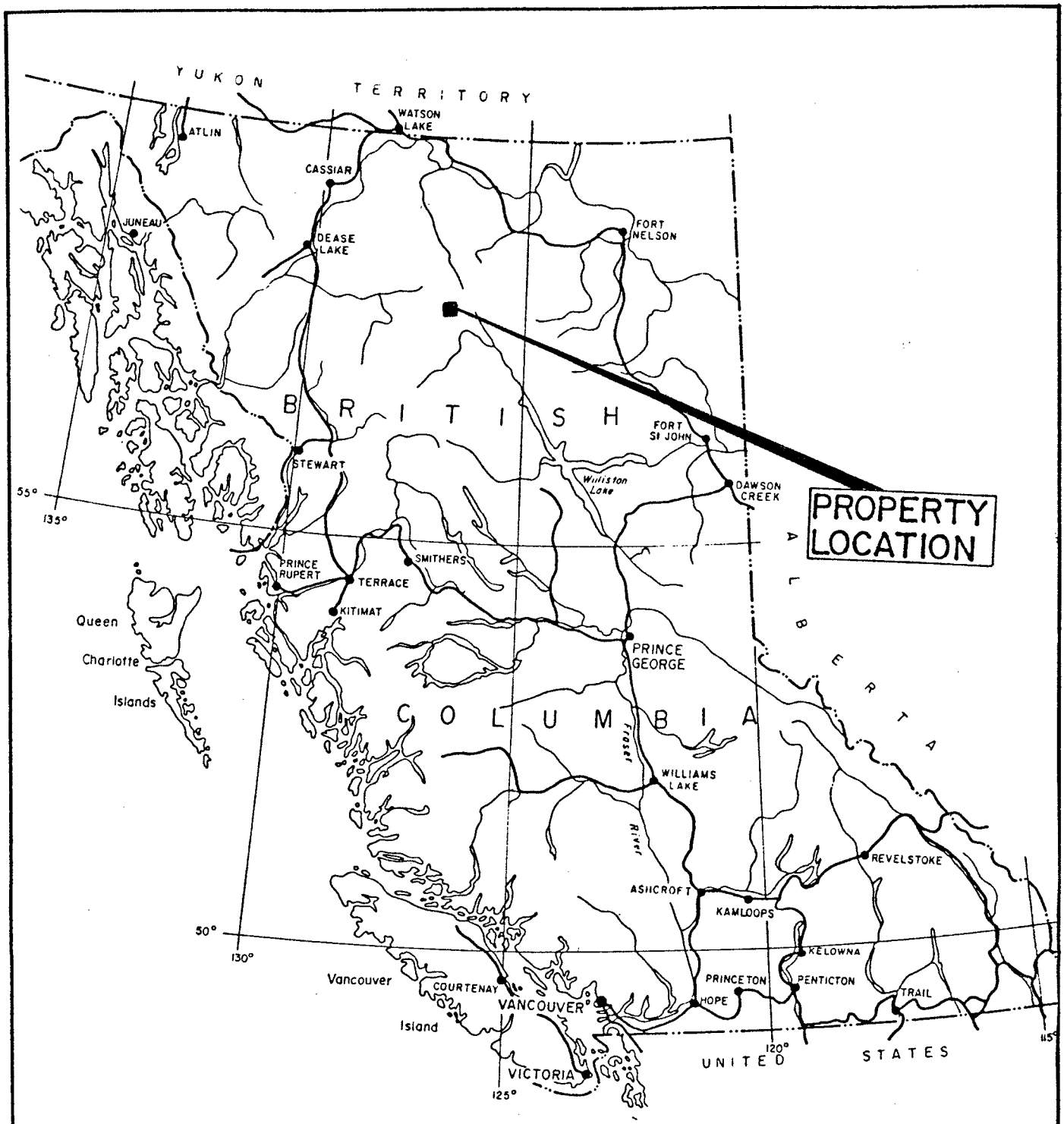
### Physiography

Topography is moderate to steep with the main showings on the property located in a broad, flat cirque at an elevation of 1750 m to 1800 m above sea level and above tree line.

Rock exposure is poor to moderate over the grid area.

### Property and Claim Status

The West 1 Claim, originally part of a larger claim group of which all but the West 1 have been allowed to expire, is owned by Cominco Ltd., 200 Granville Street, Vancouver, B.C. and




SKYLARK RESOURCES LTD.

WEST 1 CLAIM

# LOCATION MAP

FROG RIVER AREA

N.T.S. 94L-3E LIARD M.D., B.C.

0 100 200 500KM

| | |
|---|---|
| SCALE : AS SHOWN | DATE : NOV. 1987 |
| DRAWN BY: P.J.B., C.M. | FIGURE Nº. 1 |

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la

is currently under option to Skylark Resources Ltd.

Upon acceptance of this report, the West 1 Claim will be in good standing until 1988.

The claim consists of the following:

| Claim | Units | Record No. | Anniversary Date |
|---|---|---|---|
| West 1 | 20 | 232 | October 7, 1988 |

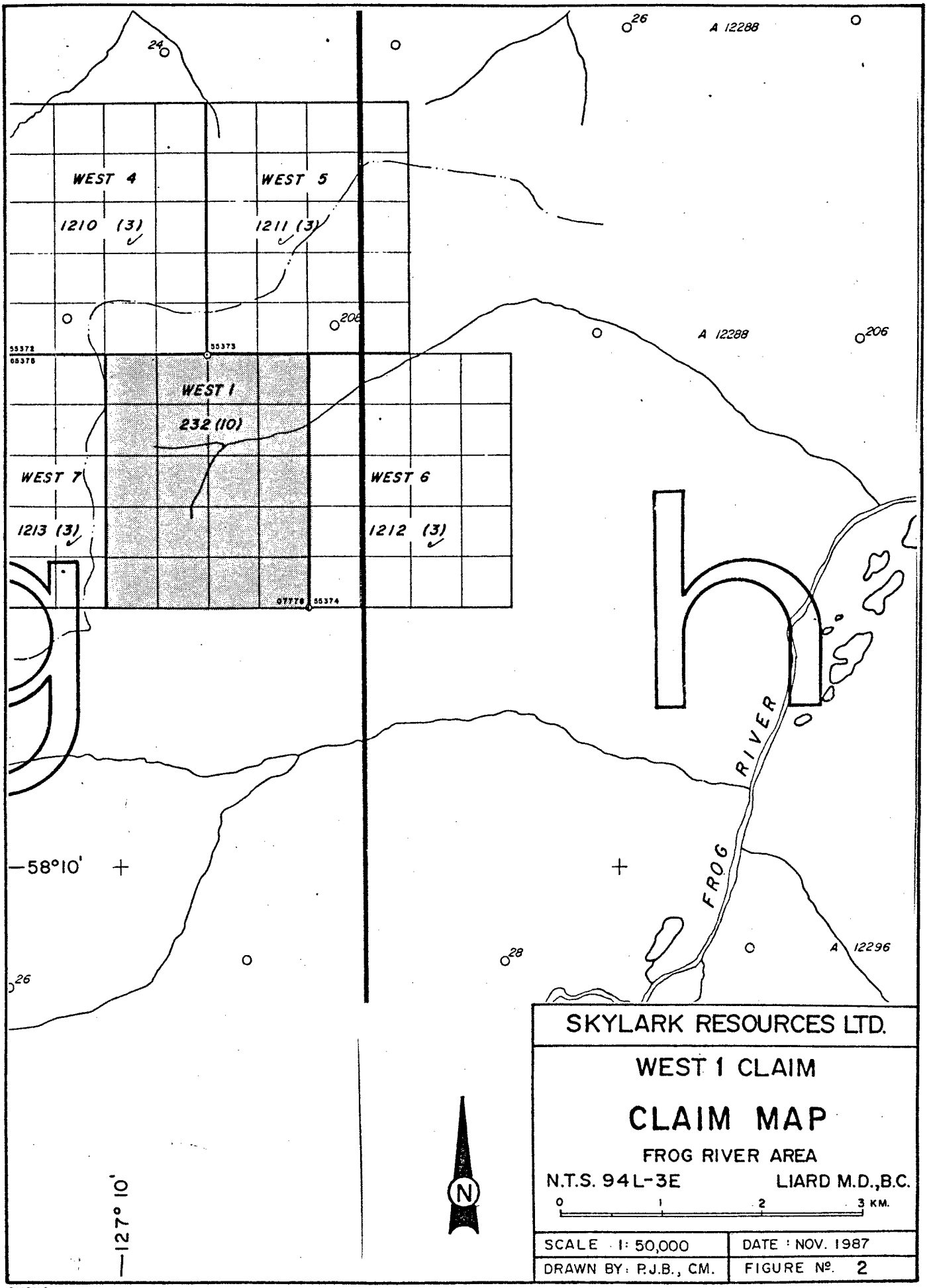
## Property History

Lake Expanse sampled the creek bed exposures on the property in 1952-1953 and obtained 8.2 m of 0.6 oz/ton Ag, 2.1% Pb and 1.3% Zn, as well as 87 m of 0.3 oz/ton Ag, 1.2% Pb, and 0.7% Zn.

Conwest drilled 8 holes totalling 929 m in 1971 on the property to test several IP anomalies outlined by previous geophysical surveys.

Results of the drilling program returned only traces of gold, with silver values ranging from trace to 0.38 oz/ton and combined lead-zinc to 2.43% over narrow widths.

Additional minor geological and interpretation work was conducted by Cominco before deciding to option out the property in 1987.


WEST 4
1210 (3)
WEST 5
1211 (3)
WEST 1
232 (10)
WEST 7
1213 (3)
WEST 6
1212 (3)
55372
55373
55375
55374
A 12288
A 12288
A 12296
206
206
24
26
26
28
FROG RIVER
58°10'
127° 10'
N
SKYLARK RESOURCES LTD.
WEST 1 CLAIM
CLAIM MAP
FROG RIVER AREA
N.T.S. 94L-3E
LIARD M.D., B.C.
0 1 2 3 KM.
SCALE 1: 50,000
DATE : NOV. 1987
DRAWN BY: P.J.B., CM.
FIGURE Nº. 2

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## EXPLORATION PROCEDURE

Work in 1987 by Skylark Resources Ltd. consisted of sampling, prospecting, and a VLF-EM survey. The purpose of the geophysical survey was to attempt to trace the zones of high grade Ag/Pb/Zn float boulders situated along Halls Creek.

Old survey stations and the LCP for West 1 were located and a new grid was established over the area of the main showings (Figure 3).

The baseline was run east-west for 300 m and perpendicular crosslines were made at 50 m intervals, with stations every 25 m. A total of 1975 m of crosslines were established, and 1775 m of VLF-EM surveying was carried out with readings taken every 25 m along the lines.

A VLF-EM 2 receiver manufactured by Phoenix Geophysics Ltd., was used for the electromagnetic survey. This instrument is designed to measure the current induced in a vertical coil by the primary and secondary fields of a transmitted signal from fixed U.S. Navy transmitter stations. Due to the unknown strike of favourable conductors, both Seattle and Hawaii stations were used in the survey.

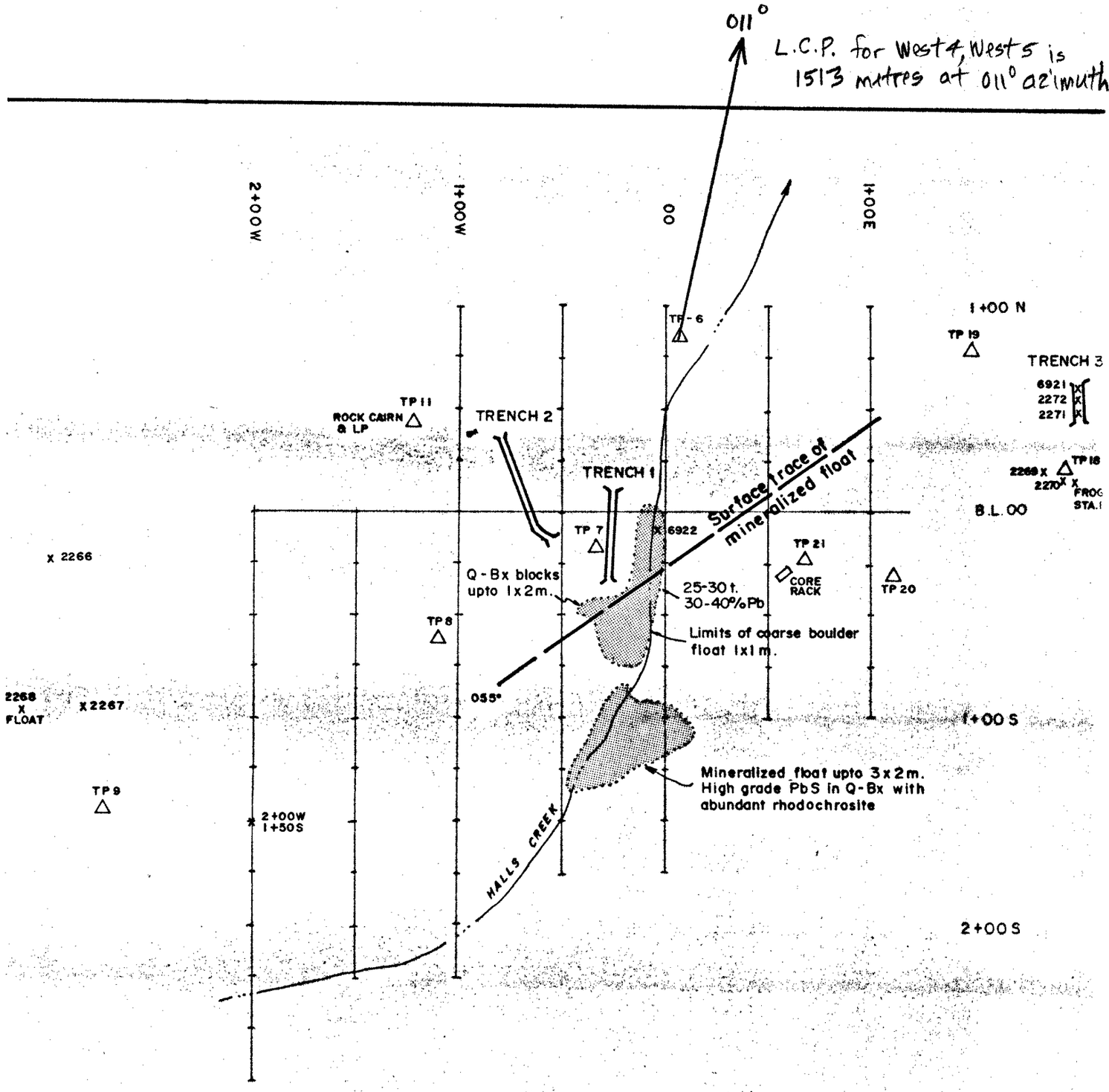
Figure 4 shows a plot of the survey lines and dip angles. The survey lines, which were run at 180° azimuth using a silva compass and standard hip chain, were tied into pre-existing survey stations.

The standard Fraser filtering technique, which enables the results to be contoured, was used. All geophysical maps were produced on a scale of 1:2500.

32

011°

L.C.P. for West 4, West 5 is 1513 metres at 011° azimuth




## LEGEND

- TP 8 — Old survey station
- x 2267 — Rock sample location & Nº.
- Trench
- VLF-EM grid

N

# SKYLARK RESOURCES LTD.

## WEST 1 CLAIM
## TRENCHES & ROCK SAMPLES MAP

FROG RIVER AREA

N.T.S. 94L-3E — LIARD M.D., B.C.

0 — 50 — 100 — 150 metres

| | |
|---|---|
| SCALE 1:2500 | DATE : NOV. 1987 |
| DRAWN BY: P.J.B. | FIGURE Nº. 3 |

NG

Prospecting delineated the apparent trace of one of the main mineralized zones on the claim.

In addition, 11 rock samples of mineralized material were taken and geochemically assayed by the ICP technique and for ppb gold.

Two samples were assayed for Au/Pb/Zn in percent, and silver in ounces per ton.

Results are shown in the appendices and sample numbers are indicated on Figure 3.

## GEOLOGY

The Frog River area occurs within the 1:250,000 scale Kechika geological map sheet (No. 42-1962).

Regionally in the Frog River area, Ingenika Group broadly folded and faulted clastic and carbonate rocks of upper Proterozoic age have been intruded to the west by the Cretaceous age Cassiar batholith.

The Ingenika clastic rocks comprise a succession of medium to thick bedded grey-white quartzites with intercalated andesitic composition grey-green chloritic phyllites of the Swannell Formation. These rocks are in turn overlain by Tsaydiz Formation phyllites, thin-bedded limestones, and phyllitic carbonates.

Major structural breaks strike north-west in general.

## PROPERTY GEOLOGY

Previous work on the West 1 claim has shown it to be underlain by Swannell Formation grey-white quartzite and interbedded phyllites. These units strike westerly and dip northerly.

Tsaydiz Formation phyllitic grey limestone with minor interbedded grey limestone and arenaceous to gritty carbonates overlie Swannell Formation rocks.

The southern boundary of the claim is intruded by a quartz monzonite, dipping 85° N. at the contact.

Numerous quartz-eye porphyry dykes and a basic to intermediate sill have also been previously mapped.

Two major fault systems cut the claim, one striking northwest and dipping vertically, the other striking northeast and also steeply dipping. The 1987 work indicates the surface projection of these two systems would intersect in the area of the high grade mineralized float in Halls Creek.

It is considered probable that numerous parallel to subparallel mineralized stringers and shears are related to the two main structural features on the claim.

MINERALIZATION

The following is a direct quote, by permission, from a Cominco report written by Bruce Mawer and contained in a letter dated October 22, 1987 to John Mirko, Operations Manager for Skylark Resources Ltd., from Mr. John M. Hamilton, Manager, Exploration-Western Canada for Cominco:

"In the lower basin in a few exposed areas, creek banks etc. there is considerable (up to 2 m) of pyrolusite cemented capping on the quartzite and grit bedrock. The quartzite, grit and phyllite is fractured and cut by a strong fault in the creek bed. The fractures are hairline to 1-2 mm thick and are mineralized with galena, sphalerite, pyrite, rhodochrosite and rhodonite and minor chalcopyrite. Where fractures intersect and within the fault zones local small pods of high grade sulphide occur. The sulphides within the fault zone are mylonitized and have striated fault surfaces and local rolls or lenses in the zone. The channel sampling done by Lake Expanse appears in part parallel to the fault zone and not normal to it."

"The high grade float area at an elevation of 1,800 is located in Halls Creek and immediately to the west. The area is roughly 120m x 180m and contains numerous blocks of high grade galena, pyrite, sphalerite, rhodonite, rhodochrosite and minor chalcopyrite. The blocks contain solid sulphide to mixtures of sulphide and quartzite breccia to quartzite blocks up to 2m x 2m with numerous 10-20 cm fractures filled with sulphides and rhodochrosite. There is very little to no hydrothermal or secondary quartz as a gangue mineral. Conwest's sampling of a

number of blocks of float and check samples by Cominco averaged 0.01 oz Au/t, 16.6 oz Ag/ton, 29.7% Pb, 6.8% Zn, 0.6% Cu. One sample by Conwest was reported to contain 0.4 oz Au/t, no sampling to date has confirmed this gold content. Conwest dug two trenches within the float area and ground sluiced the creek bed, the trenches are now caved and contain only minor exposed pyritic quartzite with a few small fractures of mineralization in Trench 1. Approximately 25-30 tons of high grade were thrown up out of the creek bed on to the east side of the creek bank. The trend of the float patterns of sulphide blocks within the area appear to be influenced by soil solufluction and polygonal frost heaves. In the upper part of the ground sluiced creek trench the mineralized blocks contain abundant rhodochrosite in a higher proportion to the sulphides than at Trench 1 and 2."

"Approximately 200 m east of Trench 1 and 2 a short hand trench 1 m wide x 4 m long x 1 m deep was made to expose bedrock consisting of pyrolusite covered basic sill or dyke material. This dark green rock contains disseminated and banded sphalerite and galena. Contiguous chip sampling assayed as follows: 2 m @ 0.002 oz/t Au, 1.48 oz/t Ag, 1.85% Pb, 8.85% Zn, 2.0 m @ 0.002 oz/t Au, 0.38 oz/t Ag, 0.41% Pb, 0.75% Zn, 2.0 m @ 0.002 oz/t Au, 0.26 oz/t Ag, 0.22% Pb, 1.20% Zn."

"The mineralization of interest, Ag Pb Zn, is scattered over a very large area (1 km x 1 km) occurring as fine fracture fillings and local small pods in fracture intersections and in fault zones. This would represent a large low grade potential. The

high grade float area is 120 m x 180 meters in dimension and could represent a local area of limited but high grade potential. Diamond drilling by Conwest in these areas intersected only minor fracture mineralization similar as seen in outcrop but did not intersect any thick zones of high grade."

A possible reason for the discouraging drill results is that most of the holes were drilled parallel to the structures that are inferred as mineralizing controls.

Diligent prospecting on the claim revealed that the surface trace of the main zone of well-mineralized float has a 054° to 058° strike (See Figure 3), which can be followed for some 250 m.

Southwest of the estimated 25 to 30 tons of high grade massive sulphides, float mineralization becomes very sporadic, with narrow breccia zones and galena stringers to 1 cm wide. Local, rare quartz stringers were also noted, varying in width from a few millimetres to 2 cm wide.

Galena, where present is often massive and well-cleaved but locally banded and fine grained crushed or "steel" galena zones exist, indicative of post-mineral faulting or shearing.

Northwest of the creek and along the inferred strike of the zone, mineralization is confined predominantly to fracture coatings and veinlets with pyrite-galena intergrowths, the former rimming the latter.

It appears probably that the main mineralized zones are located at the juncture of the two main structural zones previously mentioned, and that numerous parallel to subparallel

mineralized veins and fractures also occur in the area.

The northeast structural trend appears to have been the dominant mineralizing control based upon a field examination of the property. If this assumption is correct, their previous drilling was parallel to the strike of the mineralization.

An interesting observation here is that the mineralization has the same approximate strike as the bedding, although previous drilling would have somewhat constrained the tonnage potential of the property.

Results of the 11 rock samples analyzed are shown in Table 1, with sample locations indicated in Figure 3.

The ICP and ppb Au values tend to confirm previous sampling done on the property as well as indicating that anomalous gold values are associated with the highest Cu/Ag/Pb/Zn mineralization.

## GEOPHYSICS

### VLF-EM Survey

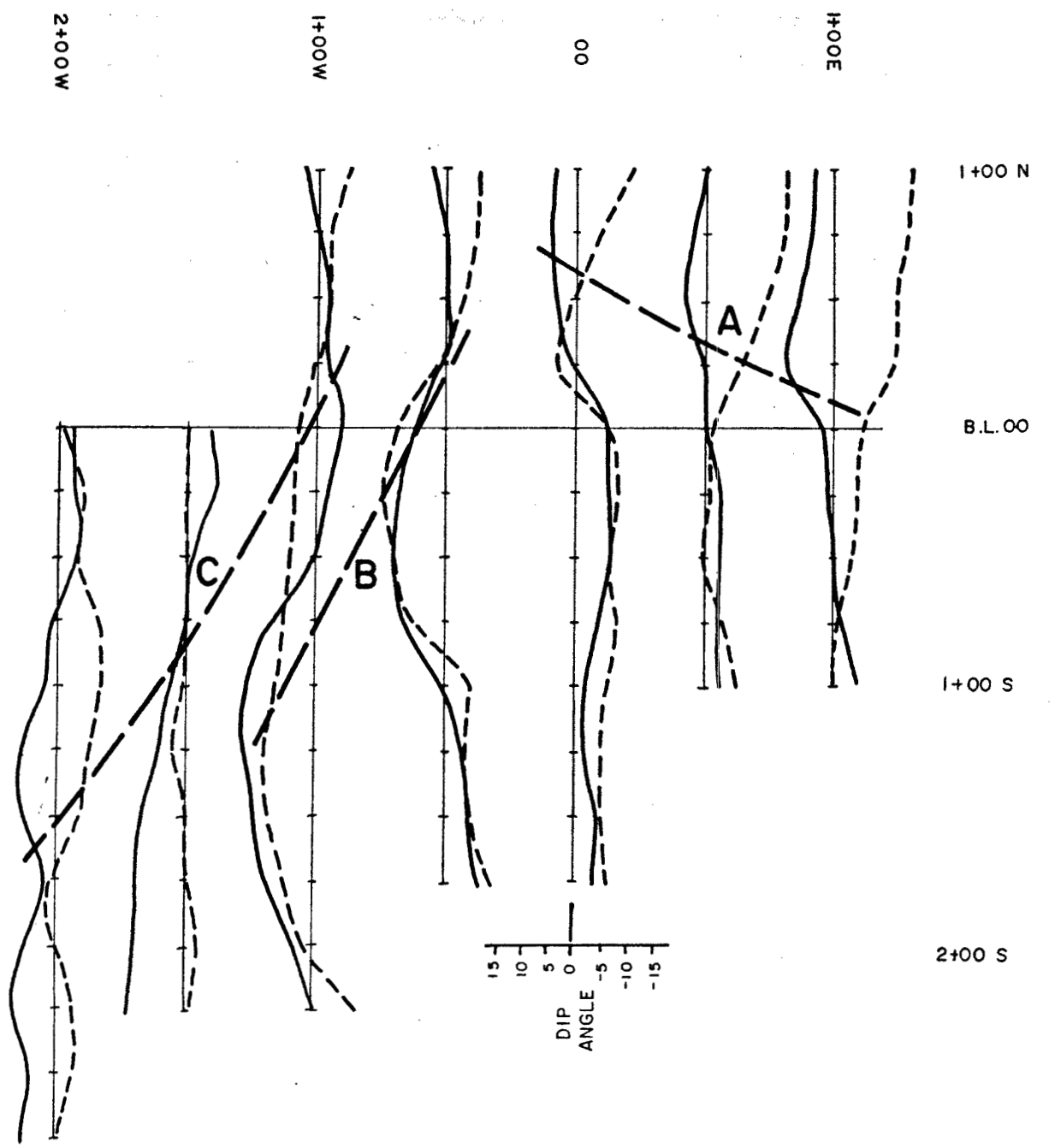
Results of the VLF-EM survey suggest the existence of 3 weak apparent EM conductors, none of which have been previously tested, although a portion of conductor "C" was intersected by DDH-7.

Detailed drill logs are unavailable to the author at the time of writing this report and it is therefore unknown whether the sulphide content in the core was in sufficient quantities to explain the "C" anomaly.

Figure 4 depicts an interpretation of the 3 VLF-EM conductors.

Conductor "A" is in the area of high geochemical lead anomalies and an IP anomaly. It also parallels a known fault located to the southeast.

Conductors "B" and "C" parallel one another and trend normal to Conductor "A". They also parallel the previously mapped major structural trend located to the southwest.




HAWAII STATION
SEATTLE "
VLF-EM CONDUCTOR

N

SKYLARK RESOURCES LTD.

WEST 1 CLAIM

# VLF - EM PROFILES

FROG RIVER AREA

N.T.S. 94L-3E LIARD M.D.,B.C.

0 50 100 150metres

| | |
|---|---|
| SCALE 1:2500 | DATE : NOV. 1987 |
| DRAWN BY: C.M. | FIGURE Nº. 4 |

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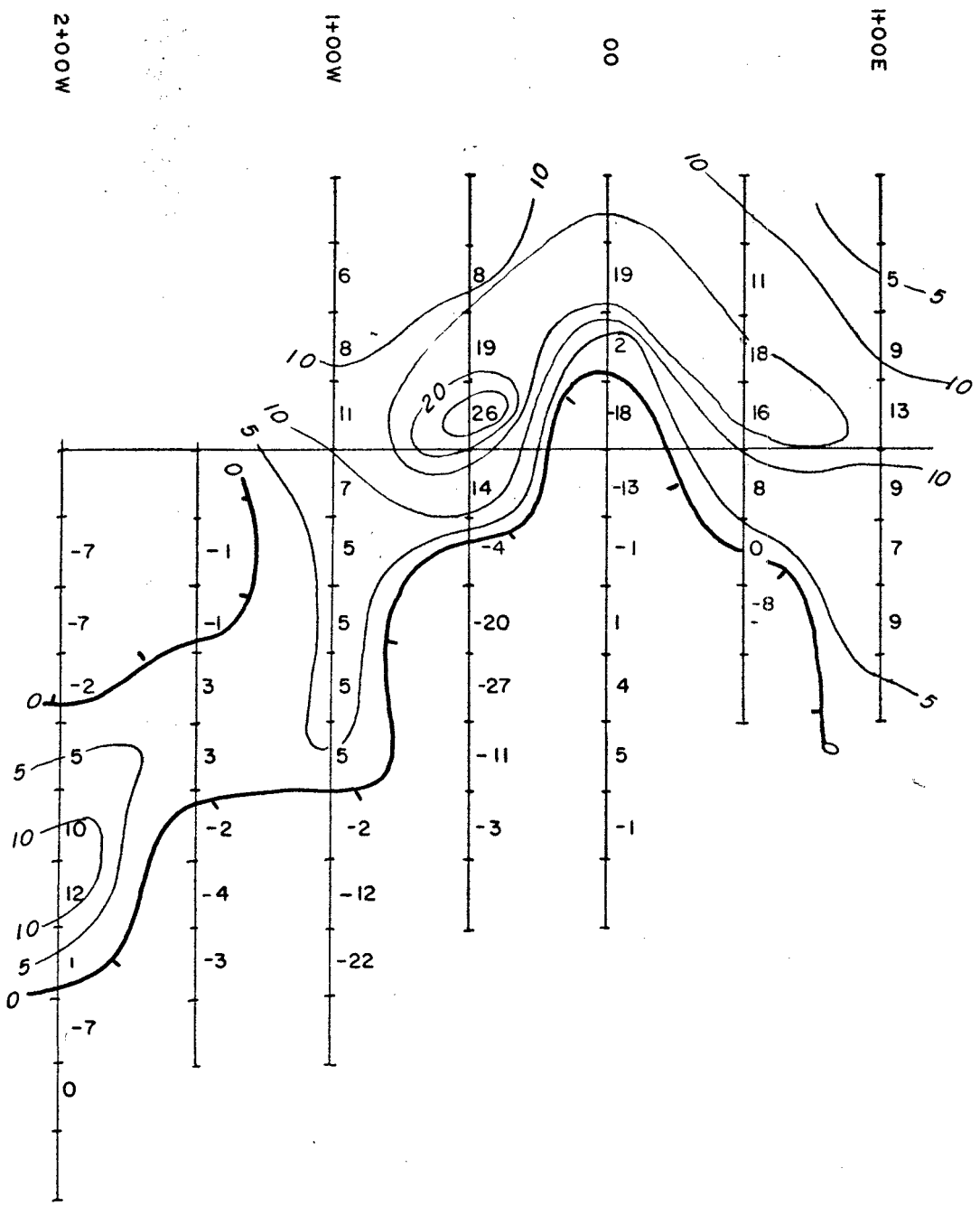
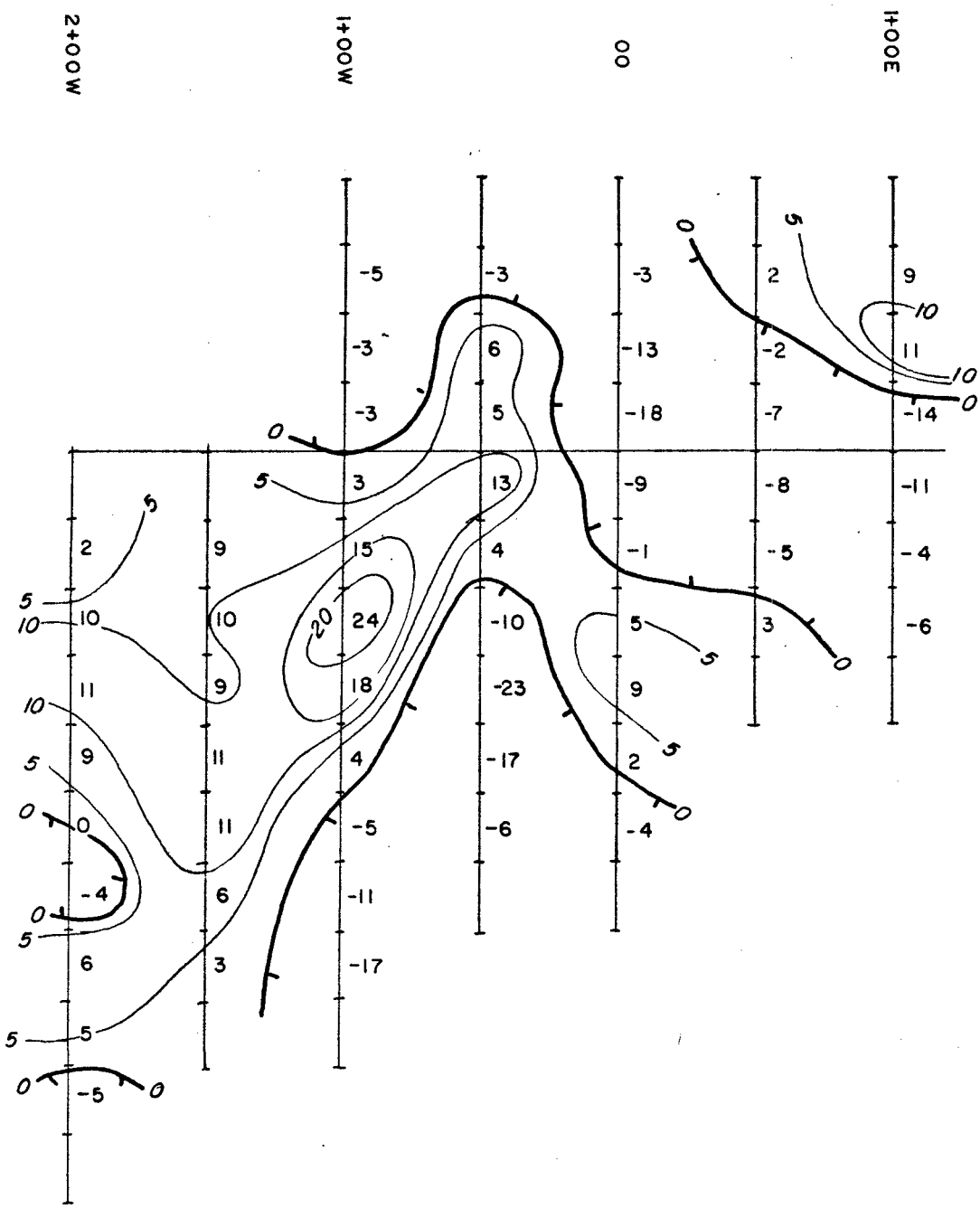



| SKYLARK RESOURCES LTD. | |
|---|---|
| WEST 1 CLAIM<br>**VLF-EM-FRASER FILTER**<br>**SEATTLE**<br>FROG RIVER AREA<br>N.T.S. 94L-3E LIARD M.D.,B.C.<br>0 50 100 150metres | |
| SCALE 1:2500 | DATE : NOV. 1987 |
| DRAWN BY: C.M. | FIGURE Nº. 5 |

CHONG




SKYLARK RESOURCES LTD.

# WEST 1 CLAIM
# VLF-EM-FRASER FILTER
# HAWAII

FROG RIVER AREA

N.T.S. 94L-3E LIARD M.D., B.C.

0 50 100 150 metres

| | |
|---|---|
| SCALE 1:2500 | DATE : NOV. 1987 |
| DRAWN BY: C.M. | FIGURE Nº. 6 |

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## CONCLUSIONS & RECOMMENDATIONS

Prospecting on the West 1 claim suggests that the main trend of mineralization strikes northeast, paralleling a major fault system cutting through the property.

The 2 main mineralized zones are likely to be controlled by the intersection of this northeast fault zone with a northwest structural system.

The VLF-EM survey indicated the presence of 3 weak conductors.

Further testing could include diamond drilling of these conductors and the apparent high grade structures.

## ITEMIZED COST STATEMENT

| | |
|---|---|
| Helicopter - 4.5 hours @ $600.00/hour | $ 2,700.00 |
| Field Wages - 3 geologists @ $200.00/day<br>1 geologist @ $150.00/day<br>1 geologist, 2 assistants<br>@ $130.00/day | $ 1,140.00 |
| Office Wages - 2 days @ $200.00/day | 400.00 |
| Assays | 120.00 |
| Equipment, Food & Camp | 90.00 |
| Airfare | 240.00 |
| Camp - 4 days @ $55.00/day | 220.00 |
| **TOTAL** | **$ 4,910.00** |

# QUALIFICATIONS

**CHRISTOPHER L. McATEE**
Box 5625
Whitehorse, Yukon
Y1A 5H4

Profession: Exploration Geologist

Education: M.Sc. Geology - Brock University, St. Catharines, Ontario, 1977.

Experience: 8 years exploration geologist with various companies in Newfoundland, British Columbia, Yukon, and Alaska.

| | |
|---|---|
| Skylark Resources Ltd. | 1987 - present |
| United Keno Hill Mines Ltd. | 1986 |
| Hudson Bay Exploration and Development Ltd. | 1984 |
| Scope Exploration Ltd. | 1982 |
| Orell Resources Ltd. | 1981 - 1982 |
| Agilis Exploration Ltd. | 1980 |
| Territorial Gold Placer Ltd. | 1979 |
| Dept. Indian Affairs & No. Devpt. | 1978 |
| Teck Corp. Ltd. | 1973 |

Christopher L. McAtee

Nov. 13, 1987

Christopher L McAtee

# QUALIFICATIONS

I, **Patrick J. Burns**, certify that:

1. I am a consulting geologist.

2. I have an honours Bachelor of Science degree in Geology from the University of British Columbia in Vancouver, British Columbia.

3. I have spent the past 14 years in mineral exploration and development throughout Canada, the United States and both Central and South America.

4. I personally examined the property and directed the exploration program conducted by Skylark Resources Ltd. in 1987.

5. I have no financial interest, direct or indirect in the property.

Vancouver, B.C.
November, 1987

Patrick J. Burns
Consulting Geologist

**TABLE 1**

**PROG ASSAYS**

| SAMPLE # | MO PPM | CU PPM | PB PPM | ZN PPM | AG PPM | NI PPM | CO PPM | MN PPM | FE % | AS PPM | U PPM | AU PPM | TH PPM | SR PPM | CD PPM | SB PPM | BI PPM | V PPM | CA % | P % | LA PPM | CR PPM | MG % | BA PPM | TI % | B PPM | AL % | NA % | K % | W PPM | AU PPB | CU % | PB % | ZN % | AG OZ/T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROG RG 2+00w 1+50S | 12 | 149 | 32 | 596 | 1.6 | 124 | 9 | 37037 | 1.60 | 48 | 17 | ND | 7 | 23 | 6 | 2 | 2 | 4 | .18 | .054 | 31 | 4 | .09 | 41 | .01 | 2 | .89 | .01 | .17 | 5 | 12 | | | | |
| PROG STA 18 RG | 18 | 253 | 3426 | 3368 | 2.1 | 47 | 13 | 99999 | 3.74 | 19 | 5 | ND | 9 | 9 | 65 | 2 | 2 | 17 | .04 | .024 | 38 | 16 | .15 | 58 | .01 | 2 | .99 | .01 | .17 | 1 | 10 | | | | |
| 2266 | 1 | 309 | 1993 | 2036 | 1.8 | 5 | 5 | 380 | 20.18 | 16 | 5 | ND | 7 | 2 | 17 | 2 | 22 | 13 | .05 | .019 | 6 | 1 | .06 | 18 | .02 | 10 | .40 | .01 | .11 | 1 | 6 | | | | |
| 2267 | 2 | 75 | 4160 | 245 | 4.4 | 2 | 1 | 795 | 2.80 | 90 | 5 | ND | 4 | 5 | 1 | 4 | 2 | 2 | .02 | .017 | 6 | 5 | .02 | 13 | .01 | 11 | .19 | .01 | .13 | 1 | 7 | | | | |
| 2268 | 2 | 13 | 125 | 60 | .7 | 2 | 1 | 220 | 1.50 | 156 | 5 | ND | 4 | 4 | 1 | 8 | 2 | 2 | .02 | .019 | 8 | 1 | .01 | 18 | .01 | 2 | .21 | .01 | .16 | 231 | 23 | | | | |
| 2269 | 2 | 96 | 5626 | 738 | 7.4 | 5 | 2 | 2755 | 5.71 | 32 | 5 | ND | 5 | 2 | 1 | 2 | 6 | 13 | .02 | .019 | 6 | 16 | .13 | 5 | .01 | 3 | .55 | .01 | .05 | 3 | 1 | | | | |
| 2270 | 31 | 28 | 1366 | 236 | 1.9 | 16 | 4 | 138 | 2.51 | 22 | 5 | ND | 7 | 2 | 1 | 6 | 2 | 3 | .01 | .005 | 7 | 7 | .02 | 19 | .01 | 5 | .22 | .01 | .18 | 2 | 7 | | | | |
| 2271 | 5 | 144 | 3979 | 9395 | 7.7 | 31 | 13 | 25020 | 10.36 | 43 | 5 | ND | 7 | 10 | 36 | 8 | 18 | 45 | .19 | .082 | 7 | 31 | 1.06 | 14 | .01 | 5 | 3.20 | .01 | .12 | 1 | 4 | | | | |
| 2272 | 2 | 141 | 1102 | 9054 | 3.4 | 28 | 7 | 10483 | 6.96 | 12 | 5 | ND | 9 | 5 | 38 | 5 | 5 | 24 | .05 | .026 | 16 | 28 | .67 | 16 | .01 | 6 | 2.39 | .01 | .11 | 8 | 2 | | | | |
| R 6921 | 21 | 5520 | 18910 | 99999 | 132.0 | 53 | 76 | 9371 | 20.55 | 139 | 5 | ND | 3 | 6 | 601 | 2 | 187 | 25 | .01 | .003 | 2 | 11 | .69 | 5 | .01 | 2 | 2.00 | .02 | .01 | 1 | 4700 | .95 | 2.63 | 19.80 | 4.36 |
| R 6922 | 16 | 3909 | 18474 | 75849 | 338.8 | 6 | 4 | 6013 | 3.58 | 54 | 5 | ND | 1 | 1 | 272 | 581 | 57 | 1 | .03 | .002 | 2 | 1 | .03 | 2 | .01 | 2 | .03 | .01 | .01 | 1 | 160 | .57 | 52.60 | 7.64 | 20.09 |

# APPENDIX 2

The EM-16 measures In-phase and Quadrature components of vertical magnetic field as a percentage of horizontal primary field. (That is tangent of the tiltangle and ellipticity). Both values are given in percentages. Field procedure requires to always face the same direction when taking readings. When approaching a conductor the readings will be positive, and when leaving a conductor the readings will be negative. The EM-16 is rotated in the vertical plane until a minimum signal is obtained. This reading is the "In-phase" and gives the tiltangle in degrees and the tangent of the tiltangle expressed as percent. Once this minimum signal is obtained, the "Quadrature" knob is rotated until the signal minimum is obtained. This reading is approximately the ratio of the quadrature component of the vertical secondary field to the horizontal primary field.

The VLF-EM can pick up conductors caused by electrolyte-filled fault or shear zones and porus horizons, graphite, carbonaceous sediments, lithological boundaries as well as sulphide bodies.