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ASSESSMENT REPORT

on

VLF-EM GEOPHYSICS

ZINGER CLAIMS

Upper Perry Creek Area

FORT STEELE MINING DIVISION

NTS 82 F/9 E

TRIM 82F.050

Latitude 49° 26' N

Longitude 116° 11' W

UTM 5475000N 560000E

By

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September, 1999

GEOLOGICAL SURVEY BRANCH  
ASSESSMENT REPORT

26,010

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## 1.00 INTRODUCTION

This report describes a VLF-EM survey completed on the Zinger property in the upper Perry Creek drainage during 1998.

### 1.10 Location and Access

The Zinger claims are located approximately 30 kilometers west-southwest of Cranbrook, B.C., in the Fort Steele Mining Division (Fig. 1). The claim block straddles a ridge between Perry Creek and Hellroaring Creek, near the headwaters of both drainages. The claims are centered near 49° 26' N Latitude and 116° 11' W Longitude / UTM 5475000N, 560000E.

Access to the property is via logging roads up either Perry Creek or Hellroaring Creek.

### 1.20 Property

The Zinger claims are a contiguous group of 20 two-post claims owned by the author (Fig. 2).

### 1.30 Physiography

The Zinger claim group occurs within the Moyie Range of the Purcell Mountains, in moderately rugged terrain near the headwaters of Perry and Hellroaring Creeks. Elevation on the claim block ranges from 1520m to 2220m. Forest cover consists of a mixture of Pine, Fir and Larch. Lower elevation portions of the claim block in the Perry Creek drainage have been recently clear-cut logged.

### 1.40 History of Previous Exploration

The Zinger claims are situated near the headwaters of Perry Creek which was the site of a placer gold rush near the turn of the century. Intermittent placer gold production has occurred since that time. Numerous old workings on and in the vicinity of the Zinger claims date back to the early part of this century. Several adits and shafts on the old 'Yellow Metal' property, which is now the northern part of the Zinger claims, are described in B.C Ministry of Mines Annual Report for 1916.

More recent lode gold exploration activity started in the early 1980's following a dramatic increase in the price of gold. Numerous claims were staked to cover prospective lode gold sources of known placer streams near Cranbrook, including this part of Perry Creek.

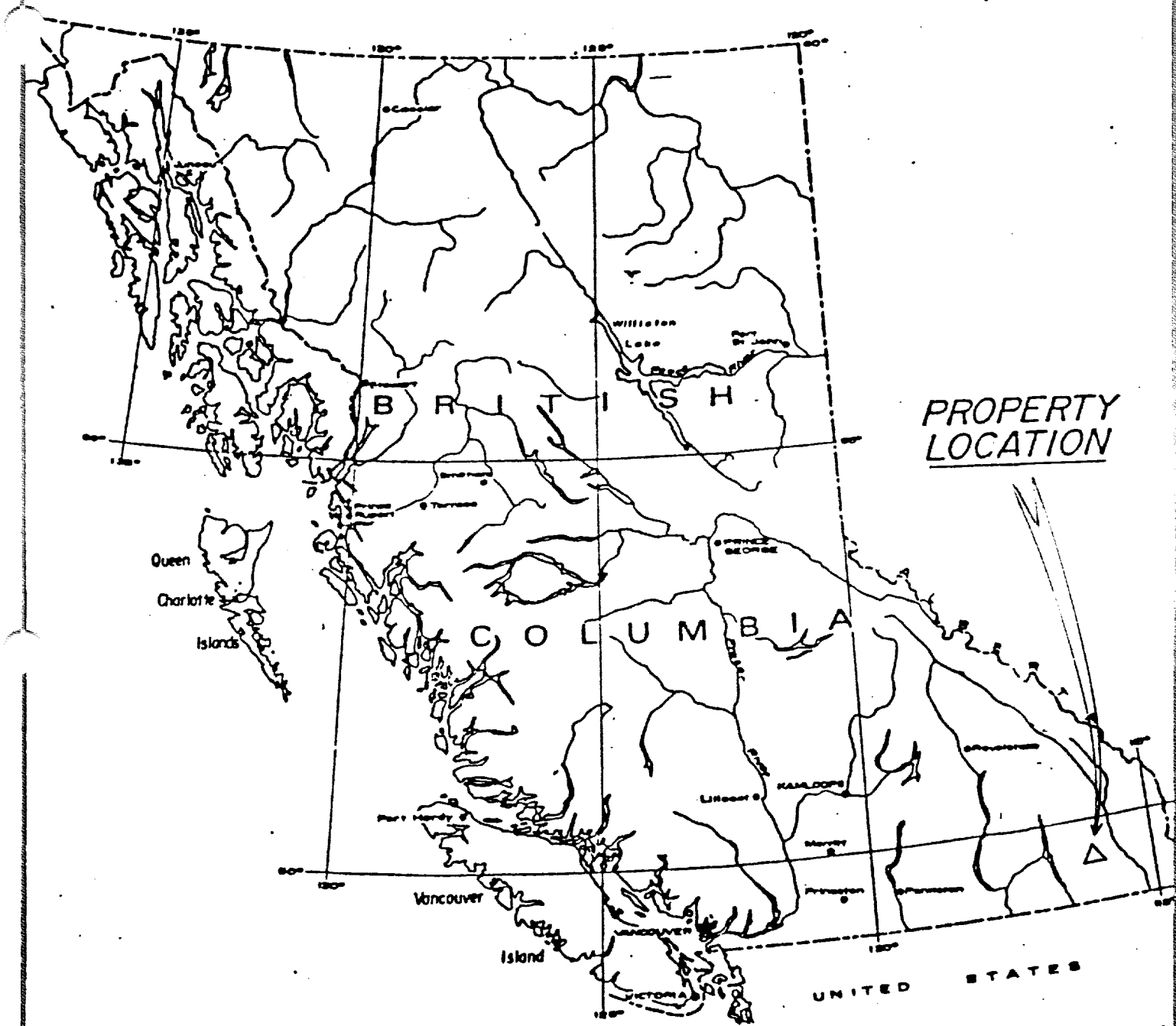
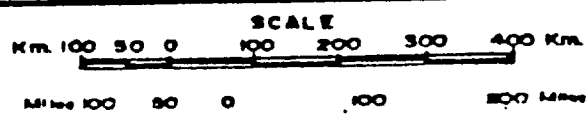


Figure 1  
ZINGER CLAIMS  
PROPERTY LOCATION MAP



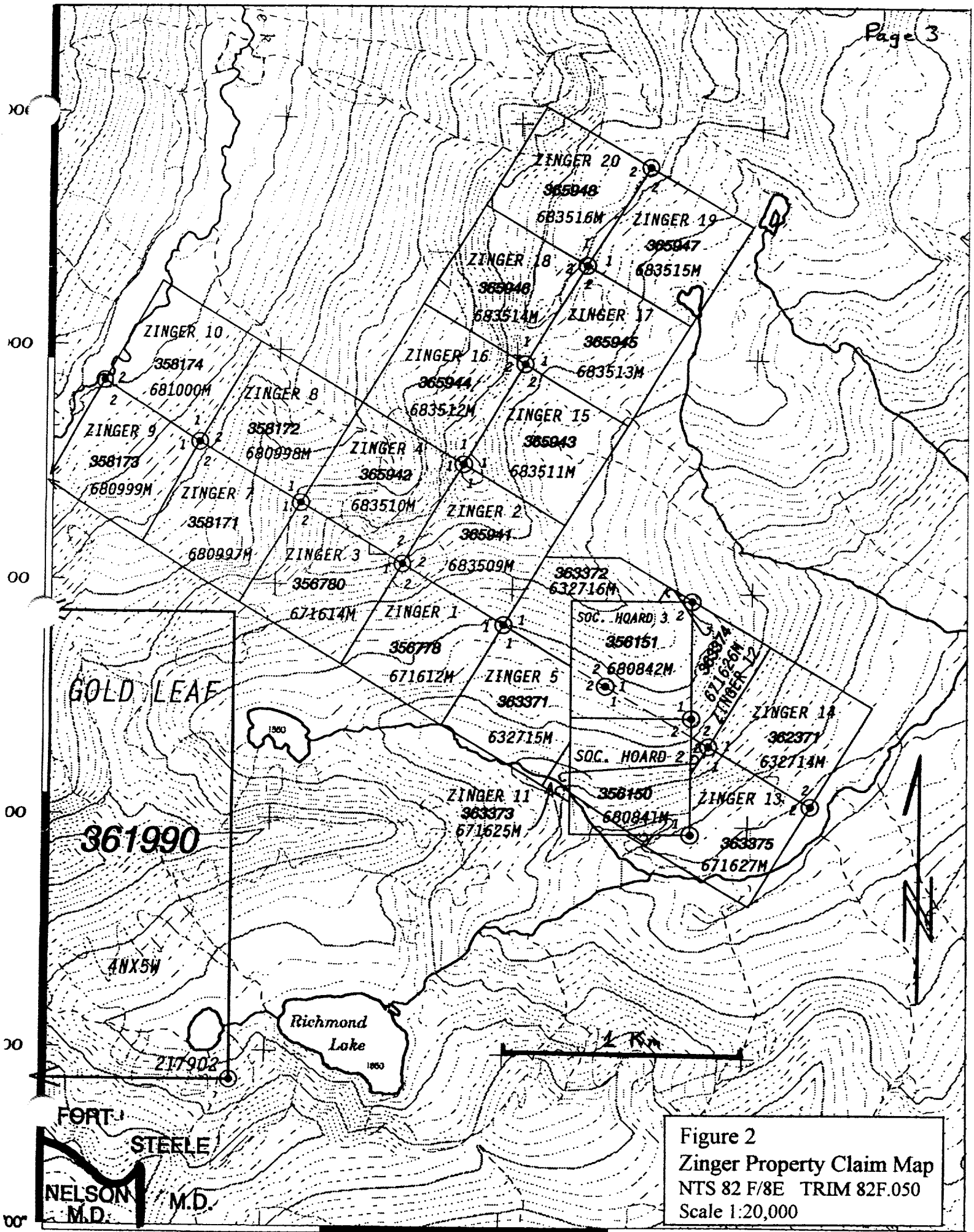


Figure 2  
 Zinger Property Claim Map  
 NTS 82 F/8E TRIM 82F.050  
 Scale 1:20,000

In 1985 Partners Oil and Minerals Ltd. took reconnaissance soil samples along the trail above Gold Run Lake and detected significant gold anomalies. In 1987 they conducted grid soil sampling and established the presence of a large and rather strong gold anomaly (Bishop, 1987, A.R. 16,656).

In 1993 Consolidated Ramrod Gold Corporation staked a large claim block in the area. Their work included soil geochemistry, road building, trenching and diamond drilling in the area of the present Zinger claims.

In 1997 and early 1998 a VLF-EM survey was conducted over part of one of Ramrod's gold-in-soil anomalies. A northwest trending anomaly was identified, crossing regional stratigraphy a short distance west of a strong gold-in-soil anomaly (Klewchuk, 1998, AR 25,634).

#### 1.50 Purpose of Survey

In the autumn of 1998 a program of VLF-EM geophysical surveying was started on the claim block using the Zinger claim lines as control. Only a few lines were surveyed in 1998; a heavy snowfall during the 1998-1999 winter prevented accessing the claims to expand the survey in the spring of 1999 prior to assessment due dates.

### 2.00 GEOLOGY

#### 2.10 Regional Geology

The area of the Zinger claims is underlain by the Mesoproterozoic Purcell Supergroup, a thick succession of fine grained clastic and carbonate sedimentary rocks exposed in the core of the Purcell Anticlinorium in southeast British Columbia. These rocks are believed by most workers (eg. Harrison, 1972) to have been deposited in an epicratonic re-entrant of a sea that extended along the western margin of the Precambrian North American Craton.

The oldest known member of the Purcell Supergroup is the Aldridge Formation, a thick sequence of fine-grained siliciclastic rocks deposited largely by turbidity currents. The Aldridge Formation is gradationally overlain by shallower-water deltaic clastics of the Creston Formation. The Creston Formation is in turn overlain by predominantly dolomitic siltstones of the Kitchener Formation.

The Purcell Anticlinorium is transected by a number of steep transverse and longitudinal faults. The transverse faults appear to have been syndepositional (Lis and Price, 1976) and Hoy (1982) suggests a possible genetic link between mineralization and syndepositional faulting. Longitudinal faults which more closely parallel the direction of basin growth faults may have

played a similar role. Gold mineralization, most of which is believed Cretaceous in age, appears to be related to felsic intrusive activity and controlled by fault or shear structures.

## 2.20 Property Geology

The Zinger property is underlain by rocks of the Creston Formation, consisting mainly of shallow water thin bedded argillites, medium thick bedded siltstones and medium and thicker bedded quartzites. For the most part, beds strike northeasterly and dip moderately to steeply westerly. Near the Zinger claim block, gabbroic intrusions are known and some may exist on the claim block. The Grassy Mountain Intrusive, a Cretaceous granitic plug, outcrops east of Hellroaring Creek about 5 kilometers north of the Zinger claims.

## 3.00 GEOPHYSICS

### 3.10 Introduction

A total of 4.35 kilometers of line was surveyed; Figure 3 shows the survey line locations relative to the claim block and shows VLF-EM survey data consisting of Dip angle readings and calculated Fraser Filter values.

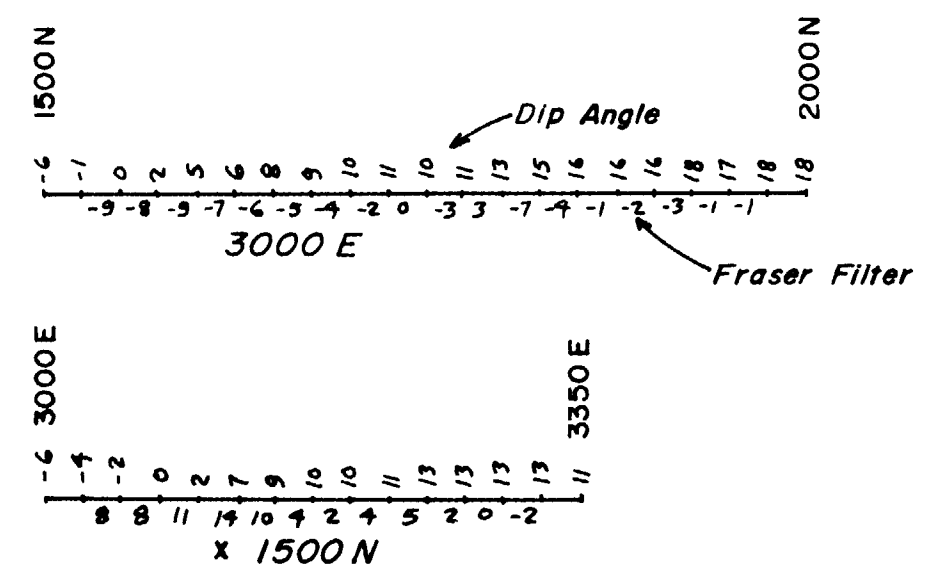
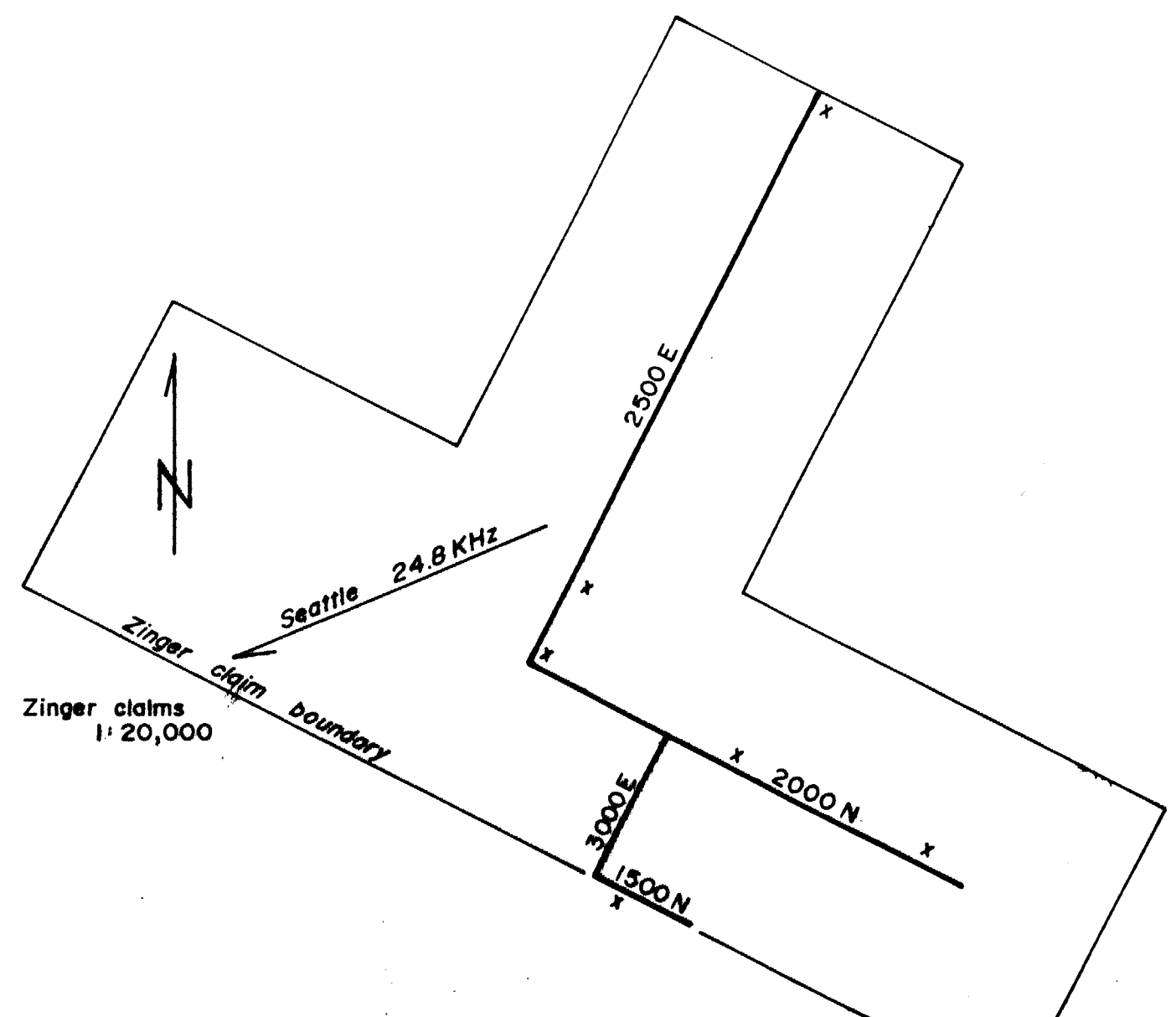
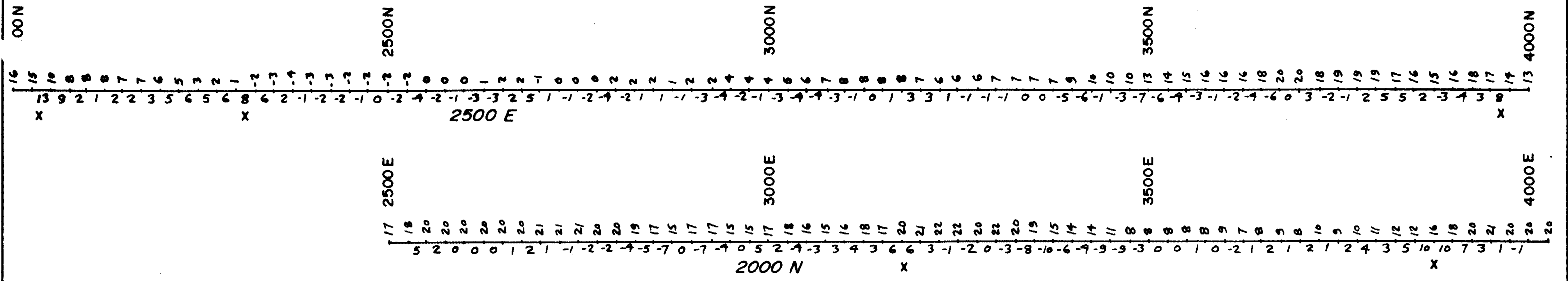
### 3.20 VLF-EM Survey

#### 3.21 Instrumentation and Survey Procedure

A Crone Radem VLF-EM receiver, manufactured by Crone Geophysics Ltd. of Mississauga, Ontario was used for the VLF-EM survey. Seattle, Washington, transmitting at 24.8 Khz and at an approximate azimuth of 247° from the survey area, was used as the transmitting station.

In all electromagnetic prospecting, a transmitter produces an alternating magnetic (primary) field by a strong alternating current usually through a coil of wire. If a conductive mass such as a sulfide body is within this magnetic field, a secondary alternating current is induced within it, which in turn induces a secondary magnetic field that distorts the primary magnetic field. The VLF-EM receiver measures the resultant field of the primary and secondary fields, and measures this as the tilt or 'dip angle'. The Crone Radem VLF-EM receiver measures both the total field strength and the dip angle.

The VLF-EM uses a frequency range from about 15 to 28 Khz, whereas most EM instruments use frequencies ranging from a few hundred to a few thousand Hz. Because of its relatively high



x Anomaly

**ZINGER CLAIMS**  
**VLF-EM SURVEY**  
 Dip Angle and Fraser Filter Values  
 Claim outline shows location of lines  
 Scale 1: 5,000  
**FIGURE 3**



frequency, the VLF-EM can detect zones of relatively lower conductivity. This results in it being a useful tool for geologic mapping in areas of overburden but it also often results in detection of weak anomalies that are difficult to explain. However the VLF-EM can also detect sulfide bodies that have too low a conductivity for other EM methods to pick up.

For the survey on the Zinger claims, readings were taken every 25 meters along survey lines as shown on Figure 3. Bedrock geology observed during the survey suggests that favorable anomalies would be oriented either northeast or northwest, parallel to and crossing the regional structural pattern.

Results were reduced by applying the Fraser Filter; dip angle readings and the Fraser Filter values are shown in Figure 3. Fraser Filter values are plotted between the dip angle readings which are at survey points. The higher Fraser Filter values (5+) are also identified with an 'x'.

The Fraser Filter is essentially a 4-point difference operator which transforms zero crossings into peaks, and a low pass operator which induces the inherent high frequency noise in the data. Thus the noisy, often non-contourable data are transformed into less noisy, contourable data. Another advantage of this filter is that a conductor which does not show up as a zero crossover on the unfiltered data quite often shows up on the filtered data.

### 3.22 Discussion of Results

A number of isolated moderate to weak anomalous responses were detected by the VLF-EM survey. The widespread positioning of the individual lines hinders interpretation of the anomalies and further surveying is required to define the orientation and extent of the anomalies.

## 4.00 CONCLUSIONS

A 4.35 kilometer VLF-EM survey on the Zinger claims in the upper Perry Creek drainage west southwest of Cranbrook, B.C. has identified a number of moderate to weak anomalous responses which may be reflecting bedrock structures. As these anomalies occur in the vicinity of anomalous gold-in-soil geochemical anomalies, they may be related to the gold mineralizing process. Further work should be conducted, with additional VLF-EM surveying, to determine the orientation and extent of the anomalies. Subsequent work should include geologic mapping to identify a geologic cause for the anomalies.

## 5.00 REFERENCES

- Bishop, Stephen, 1987 Geological/Geochemical/Geophysical report on the CND mineral claims, Fort Steele Mining Division, B.C., B.C. Ministry of Mines Assessment Report 16,656.
- Harrison, J.E., 1972 Precambrian Belt Basin of northwestern United States: Its geometry, sedimentation and copper occurrences: Geol. Soc. of America Bull., V.83, p.1215-1240.
- Hoy, T., 1982 The Purcell Supergroup in southeastern British Columbia: sedimentation, tectonics and stratiform lead-zinc deposits. in : Precambrian sulphide deposits; H.S. Robinson Memorial Volume (R.W Hutchison, C.D. Spence, and J.M. Franklin, Eds.) Geol. Assoc. Can. Special Paper 25.
- Klewchuk, P., 1998 Assessment Report on VLF-EM Geophysics, Zinger claims, upper Perry Creek area, Fort Steele Mining Division, B.C. Ministry of Mines Assessment Report 25,634.
- Lis, M.G. and Price, R.A., 1976 Large scale block faulting during deposition of the Windermere Supergroup (Hadrynian) in southeastern British Columbia: Geol. Surv. Can. Paper 76-1A, p135-136.

## 6.00 STATEMENT OF EXPENDITURES

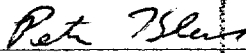
3.75 man-days, field work, drafting and report @ \$300/day	\$1125.00
4X4 truck 2 days @ \$75/day	150.00
VLF-EM rental 2 days @ \$30/day	160.00
Field, drafting and report supplies	32.00
<b>TOTAL EXPENDITURE</b>	<b><u>\$1367.00</u></b>

7.00 AUTHOR'S QUALIFICATIONS

As author of this report I, Peter Klewchuk, certify that:

1. I am an independent consulting geologist with offices at 246 Moyie Street, Kimberley, B.C.
2. I am a graduate geologist with a B.Sc. degree (1969) from the University of British Columbia and an M.Sc. degree (1972) from the University of Calgary.
3. I am a Fellow of the Geological Association of Canada and a member of the Association of Professional Engineers and Geoscientists of British Columbia.
4. I have been actively involved in mining and exploration geology, primarily in the province of British Columbia, for the past 25 years.
5. I have been employed by major mining companies and provincial government geological departments.

Dated at Kimberley, British Columbia, this 7<sup>th</sup> day of September, 1999.

  
Peter Klewchuk  
P. Geo.

