

COMINCO LTD.

EXPLORATION
NTS:92H/10

WESTERN DISTRICT
June 21, 1982

ASSESSMENT REPORT ON

A GROUND MAGNETOMETER AND

V.L.F. SURVEY OF THE PIP 2,4,6,8

AND 10 MINERAL CLAIMS (5 UNITS)

SUMMERS CREEK AREA, SIMILKAMEEN M.D., B.C.

(Work performed June 11 to June 16, 1982)

LATITUDE: $49^{\circ}38'28''$

LONGITUDE: $120^{\circ}30'38''$

REPORT BY:

D.T. MEHNER

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

10,593

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SUMMARY

The Pip claims cover part of the Axe porphyry Cu prospect located about 20 km north of Princeton B.C. Ground magnetometer and VLF surveys were conducted over 3.7 km of grid lines to help determine rock unit boundaries and the position of the Summers Creek fault in an area containing very little rock outcrop.

Ground magnetic values predominantly less than 57,000 gammas in the area of lines 8N to 20N occur over mineralized Nicola Group volcanics. Values over 57,000 gammas occur over lines 00 to 6N and are believed to reflect underlying Triassic diorite and Cretaceous granitic rocks.

VLF conductors defined by stations N.L.K.(Seattle, Washington) and N.A.A.(Cutler, Maine) may represent contacts between Nicola Group volcanics and the Summers Creek stock or the Summers Creek fault.

Further ground magnetometer and VLF surveys to the north, east and west should be conducted to more fully interpret the present surveys.

INTRODUCTION

The Pip 2,4,6,8 and 10 mineral claims make up part of the Axe alkaline porphyry Cu-Au prospect occurring in Nicola volcanics about 20 km north of Princeton B.C.

As part of the ongoing evaluation of the Axe property and as aid in locating rock unit boundaries and faults in an area of little outcrop, 3.7 km of ground magnetometer and VLF surveys were carried out. The work was conducted by John Donahue between June 11 and June 16, 1982.

LOCATION AND ACCESS

The Pip mineral claims are located about 20 km north of Princeton B.C. and 5.5 km east of Laird Lake in south-central B.C.(Plate 1). The centre of Pip 6 is located at about $120^{\circ}30'38''$ west longitude and $49^{\circ}38'28''$ north latitude.

Access to the property is available to all vehicles by turning east off Highway 5, 9.5 km north of Princeton on to the Missezula Lake Road and then following the road north for about 10 km.

TOPOGRAPHY AND VEGETATION

The Pip claims are situated along the bottom and steep, west slopes of the Summers Creek valley. Slopes in the steepest portions range up to 40 degrees. Elevations vary from 1100 meters along the western edge of Pip 4 to less than 900 meters along Summers Creek in Pip 10.

Vegetation covering the claims includes large fir, pine, spruce and poplar with willow being very common along Summers Creek. Two fields used for grazing cattle also are found on the claims.

PROPERTY AND OWNERSHIP

The Pip claims are located in the Similkameen Mining Division. They are:

<u>CLAIM NAME</u>	<u>RECORD NO.</u>	<u>UNITS</u>	<u>DATE RECORDED</u>	<u>DUE DATE</u>
Pip 2	20782	1	July 31/67	July 31/82
Pip 4	20784	1	July 31/67	July 31/82
Pip 6	20786	1	July 31/67	July 31/82
Pip 8	20788	1	July 31/67	July 31/82
Pip 10	20790	1	July 31/67	July 31/82

Registered owners of the Pip claims are G.I. Burr and E. Mullin of Princeton B.C. The claims were optioned by Cominco Ltd. in the fall of 1980.

PREVIOUS WORK

The Pip claims were staked in 1967 by E. Mullin of Princeton, B.C. They were optioned by Quintana Minerals Ltd. in 1968 and subsequently returned to the owners later that year. In May, 1970, Kalco Valley Mines Ltd. optioned the ground and drilled five percussion holes for 110 meters along the eastern edge of the Pip 4 mineral claim (Hicks, 1970). In November, 1970 Kalco Valley Mines Ltd. optioned the property to Amax Exploration Inc.(Christoffersen, 1971) who before year end completed soil geochemical and ground magnetometer surveys, geological mapping and percussion drilling primarily east of the Pip claims. The option was dropped by Amax in 1971 and picked up by Iso Exploration Ltd.(now part of Teck Corp.) in 1972. They carried out an I.P. survey over the claims before dropping the option (Mullan,1972). The claims remained inactive until optioned by Cominco Ltd. in 1980.

GEOLOGY

The Axe property occurs in the Intermontane Tectonic Belt of south-central B.C. (Preto, 1979). Underlain by Upper Triassic Nicola volcanics and coeval intrusives, the area is noted for its abundance of copper showings that occur between the Copper Mountain camp to the south and the Afton Mine to the north. Numerous north trending, high angle faults occur throughout the Nicola belt of rocks. These are not only the dominant structural element but are also important in localizing small alkalic plugs and copper mineralization which is often associated with these quartz poor intrusives.

The geology underlying the Pip claims consists of well bedded and mineralized andesitic and minor dacitic tuffs (Pip 4,6,8,10), bedded siltstones, greywackes and minor pebble conglomerates (Pip 2,4) intruded by coeval diorite and monzonite porphyry stocks (Pip 2,4,6,8) and porphyritic quartz monzonite (Pip 8,10) (Mehner, 1981).

The volcanic and sedimentary rocks are part of the Upper Triassic, Nicola Group. The diorite and monzonite porphyry are believed to be of the same age and are thought to be the sources of sulphide mineralization on the property.

The porphyritic quartz monzonite is part of the 100 M.Y. old Summers Creek stock (Preto, 1979).

GEOPHYSICS

Ground Magnetic Survey

A ground magnetometer survey was conducted over 3.7 km of grid line with readings taken every 25 meters. The values are listed in Appendix "B" and station locations with contours of the results are shown on Plate 2.

The survey was conducted with a Scintrex MP-2 proton precession magnetometer that measures the earth's total magnetic field to the nearest gamma. Diurnal variation was checked for by establishing base stations where picket lines crossed the roads. Readings were taken at the base stations about every 2 hours with only minimal changes in values observed. Minor corrections were made for lines 6N and 8N by using a graph of time vs the ground magnetic values obtained at the same base station over a period of time.

Background for the survey was taken to be 57000 gammas. Values relative to this were plotted on Plate 2 and contoured. The survey shows the area from line 00 to 10N (Pip 6,8,10) contains a number of poorly defined, weak to moderate magnetic anomalies. This area is thought to be largely underlain by granodiorite to porphyritic quartz monzonite of the Summers Creek stock and possibly mineralized diorite of Triassic age (Mehner, 1981).

The area covered by lines 10N to 20N has considerably lower magnetic values, with most of the area being greater than 200 gammas below background. In contrast to the area to the south, this portion of the Pip claims is underlain predominantly by well bedded, altered and mineralized pyroclastic (Pip 2,4,6) and monzonite porphyry (Pip 2) rocks.

In order to use the ground magnetometer survey results for a more definitive interpretation of rock unit boundaries, and alteration, the survey should be extended to areas of outcrop with better geological control.

V.L.F.

A VLF survey was conducted over the Pip grid lines using a Geonics EM 16 instrument. Readings were taken on all lines at 25 meter intervals using the Seattle Washington transmitting station N.L.K. and the Cutler Maine transmitter, N.A.A. Data is plotted in standard profile form on Plate 3(station N.L.K.) and Plate 4(station N.A.A.).

The profiles are plotted so as to give right wave crossovers over VLF conductive features. Such features are noted on Plates 3 and 4 by heavy line.

The line to line correlation of VLF features for station N.L.K.(Plate 3) suggests the occurrence of a conductor from line 00 to at least 8N. This feature may define part of the Summers Creek fault or may represent the contact between the Summers Creek stock to the west and Nicola Group pyroclastics to the east.

The line to line correlation of VLF features for station N.A.A.(Plate 4) is not very well defined, however a conductive feature similar to that shown by station N.L.K. appears to occur.

In order to better define the VLF conductive features, grid line separation should be reduced to 100 meters from the present 200 meters.

CONCLUSIONS

The area covered by lines 10N to 20N on the Pip claims has considerably lower ground magnetic values than the area from lines 00 to 10N. Geological mapping in 1981 suggests the area underlain by lines 10N to 20N is underlain by mineralized(pyrite + chalcopyrite), well bedded andesite tuffs, interbedded siltstones and minor dacite tuffs. From line 00 to 10N the area is believed to be underlain by minor mineralized diorite(Triassic) some mineralized tuffs and relatively fresh, porphyritic granodiorite to quartz monzonite of the Cretaceous, Summers Creek stock.

The VLF survey has outlined a conductor that extends from line 00 to 8N. This may define part of the Summers Creek fault or represent the contact between the Summers Creek stock and older, Nicola Group volcanics.

RECOMMENDATIONS

1. Extend the ground magnetometer survey to areas of good rock outcrop that have been geologically mapped in order to help determine the significance of the low magnetic values on the northern portion of the Pip claims.
2. Do a ground magnetometer survey on lines 14N and 16N.
3. Continue the VLF survey using station N.L.K. to the east, west and north in hopes of establishing the position of the Summers Creek fault and areas of strong rock fracturing that may be associated with copper mineralization.

REFERENCES

- Christoffersen, J.E. 1971. Kalco Valley Cu-Mo Property, Similkameen Mining Division, 92H/9 and 10. Amax Exploration Inc., private report.
- Hicks, H.B. 1970 Summary of work on the Pip-Cop Group, Princeton Area. Cannon-Hicks Associates Ltd., private report.
- Mehner, D.T. 1981 Assessment Report on a Soil and Rock Geochemical, VLF and Geological Mapping Survey of the Axe Property (Axe, Snow, Star, and B.S.M. Mineral Claims, 161 Units), Summers Creek Area, Similkameen M.D., B.C.
- Mullan, A.W. 1972 Report on the Induced Polarization and Resistivity Survey On The Kalco Valley Mines Ltd. (N.P.L.) Option, Summers Creek Valley, Tulameen Area, Similkameen M.D., B.C. for Iso Exploration Ltd. Assessment report 4166.
- Preto, V.A. 1979 Geology of the Nicola Group between Merritt and Princeton B.C., Ministry of Energy, Mines and Petroleum Resources Bulletin 69.

Report by: DTM per Trent Lubyng
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Geologist I

Endorsed by: Trent Lubyng
F.L. Wynne
Senior Geologist

Approved for
Release by: W. J. Macfee for
G. Harden, Manager
Western District
Exploration

Distribution:
Minister of Mines(2)
West. Dist. Files(1)
Vernon Files(1)

APPENDIX "A"

STATEMENT OF EXPENDITURE

FOR WORK ON THE PIP MINERAL CLAIMS

SALARIES

John Donahue - 6 days @ \$88/day June 11,12,14,15,16,20	\$ 528.00
David Mehner - ½ day field and 1½ days office @ \$135/day June 11, June 21,22	270.00

GEOPHYSICS

Magnetometer rental for 5 days @ \$15/day	75.00
E.M. 16 rental for 5 days @ \$15/day	75.00

TRANSPORTATION

1 Truck plus gas @ \$30/day for 5 days	150.00
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DOMICILE

7 man days @ \$25/man day	<u>175.00</u>
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TOTAL	\$ 1273.00
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APPENDIX "B"

GROUND MAGNETOMETER SURVEY RESULTS(IN GAMMAS)

Values plotted on Plate 2 were obtained by subtracting background(57,000 Gammas) from these results.

<u>LINE</u>	<u>STATION</u>	<u>READING</u>	<u>LINE</u>	<u>STATION</u>	<u>READING</u>
0N	900W	56998	4N	850W	57023
	925W	57097		875W	57111
	950W	57043		900W	57166
	975W	57126		925W	57227
	1000W	57233		950W	56848
	1025W	57326		975W	57073
	1050W	57380		1000W	57059
	1075W	57513		1025W	57016
	1100W	57550		1050W	57216
	1125W	57564		1075W	57070
	1150W	57581		1100W	57053
	1175W	57561		1125W	57065
	1200W	57564		1150W	57017
	1225W	57633		1175W	56966
	1250W	57606		1200W	57040
	1275W	57627		1225W	57121
	1300W	57975		1250W	57103
00 Base1st	890W	57100	1stBase	830W	56881
00 Base2nd	890	57083	2ndBase	830W	56870
2N	850W	56861	6N	825W	57255
	875W	57250		850W	57219
	900W	57250		875W	57021
	925W	57267		900W	56985
	950W	57220		925W	57068
	975W	57116		950W	57071
	1000W	57040		975W	56975
	1025W	57110		1000W	56912
	1050W	57069		1025W	57126
	1075W	57084		1050W	57309
	1100W	57098		1075W	57650
	1125W	57096		1100W	57780
	1150W	56974		1125W	57629
	1175W	56958		1150W	57541
	1200W	57222		1175W	57269
	1225W	57125		1200W	57260
	1250W	57091		1225W	57254
2 Base1st		56915	1stBase	820W	57130
2 base2nd		56903	2ndBase	820	57133

<u>LINE</u>	<u>STATION</u>	<u>READING</u>	<u>LINE</u>	<u>STATION</u>	<u>READING</u>
8N	800W	56625	12N	1275W	56854
	825W	56798		1300W	56830
	850W	56785	1st Base	910W	56488
	875W	57005		2nd Base	910W
	900W	56927	18N	1450W	56929
	925W	56962		1475W	56993
	950W	56694		1500W	56973
	975W	56656		1525W	56870
	1000W	56666		1550W	56753
	1025W	57003		1575W	56721
	1050W	57230		1600W	56709
	1075W	57215		1625W	56706
	1100W	57101		1650W	56705
	1125W	56907		1675W	56743
	1150W	56912		1700W	56763
	1175W	57044		1725W	56956
	1200W	57347		1750W	56761
1st Base	810	56694		1775W	56741
2nd Base	810	56699		1800W	56765
10N	825W	56597		1825W	56754
	850W	56677		1850W	56761
	875W	56692	1st Base	1435	56832
	900W	56699		2nd Base	1435
	925W	56714	20N	1500W	56599
	950W	56710		1525W	56693
	975W	56360		1550W	56726
	1000W	57367		1575W	56780
	1025W	57901		1600W	56751
	1050W	57282		1625W	56780
	1075W	57221		1650W	56762
	1100W	57079		1675W	56774
	1125W	56991		1700W	56786
	1150W	56841		1725W	56813
	1175W	56758		1750W	56855
	1200W	56766		1775W	56888
	1225W	56774		1800W	56851
1st Base	810W	56569		1825W	56892
2nd Base	810W	56574		1850W	57144
12N	900E	56431		1875W	56964
	925W	56488		1900W	56972
	950W	56511	1st Base	1500W	56599
	975W	56483		2nd Base	1500W
	1000W	56455			
	1025W	56413			
	1050W	56395			
	1075W	56443			
	1100W	56400			
	1125W	56520			
	1150W	56710			
	1175W	56710			
	1200W	56903			
	1225W	56795			
	1250W	56891			

APPENDIX "C"

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

STATEMENT OF QUALIFICATIONS

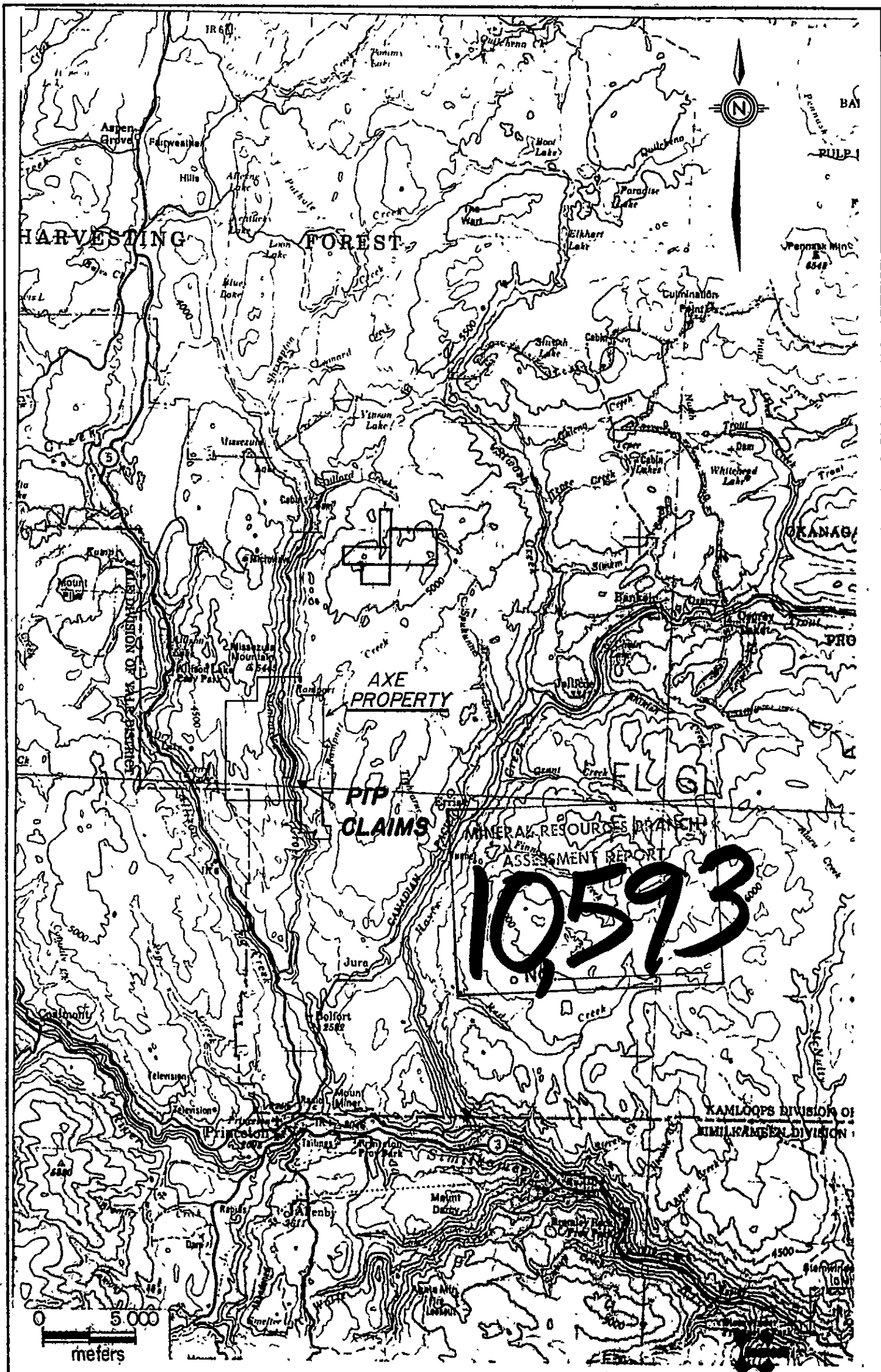
I, DAVID T. MEHNER, OF THE CITY OF VERNON BRITISH COLUMBIA, HEREBY CERTIFY:

1. THAT I AM a Geologist residing at 1715-41st Avenue, Vernon, British Columbia, with a business address at 4405 - 28th Street, Vernon, British Columbia.
2. THAT I GRADUATED with a B.Sc. Hon. Degree in Geology in 1976 and an M.Sc. Degree in 1982 from the University of Manitoba.
3. THAT I HAVE practised geology with Cominco Ltd. from October 1979 to present and as such have a personal knowledge of the facts which I hereinafter depose.

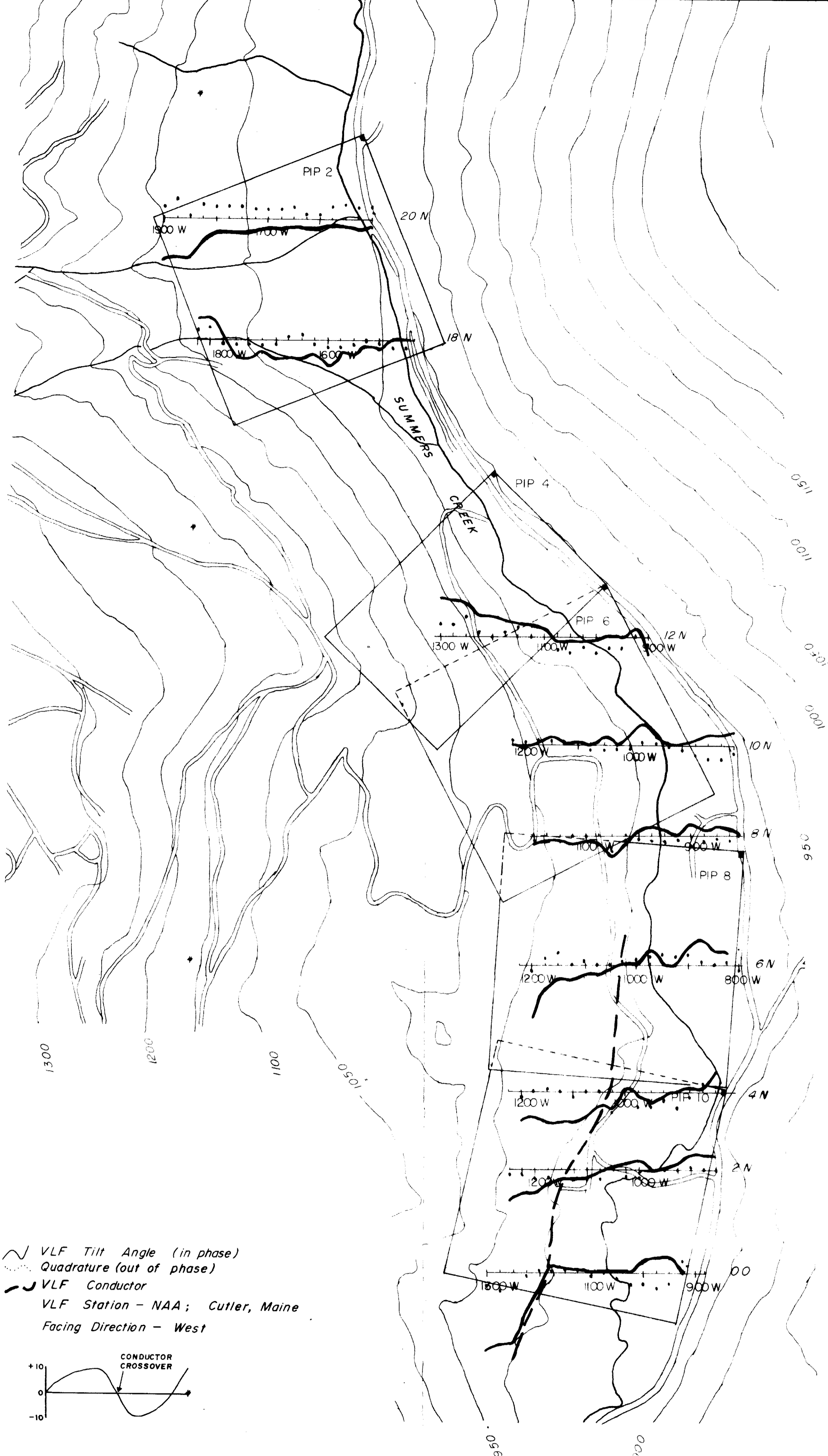
DATED THIS 21 DAY OF JULY, 1982 AT VERNON, BRITISH COLUMBIA.




SIGNED

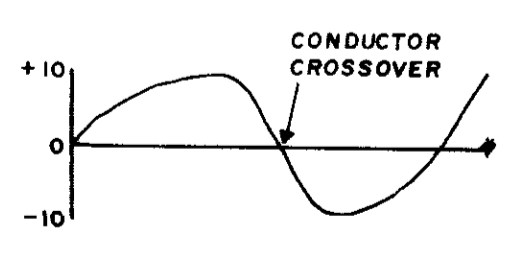
David T. Mehner, Geologist I



Drawn by:		Traced by: DTM		AXE PROPERTY LOCATION MAP PIP CLAIMS			
Revised by	Date	Revised by	Date				
DTM	DEC 16 / 81						
DTM	JUNE 24 / 83						



 VLF Tilt Angle (in phase)
 Quadrature (out of phase)
 VLF Conductor
 VLF Station - NAA; Cutler, Maine
 Facing Direction - West



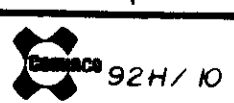
650 Elevation Contours of Meters Above Sealevel

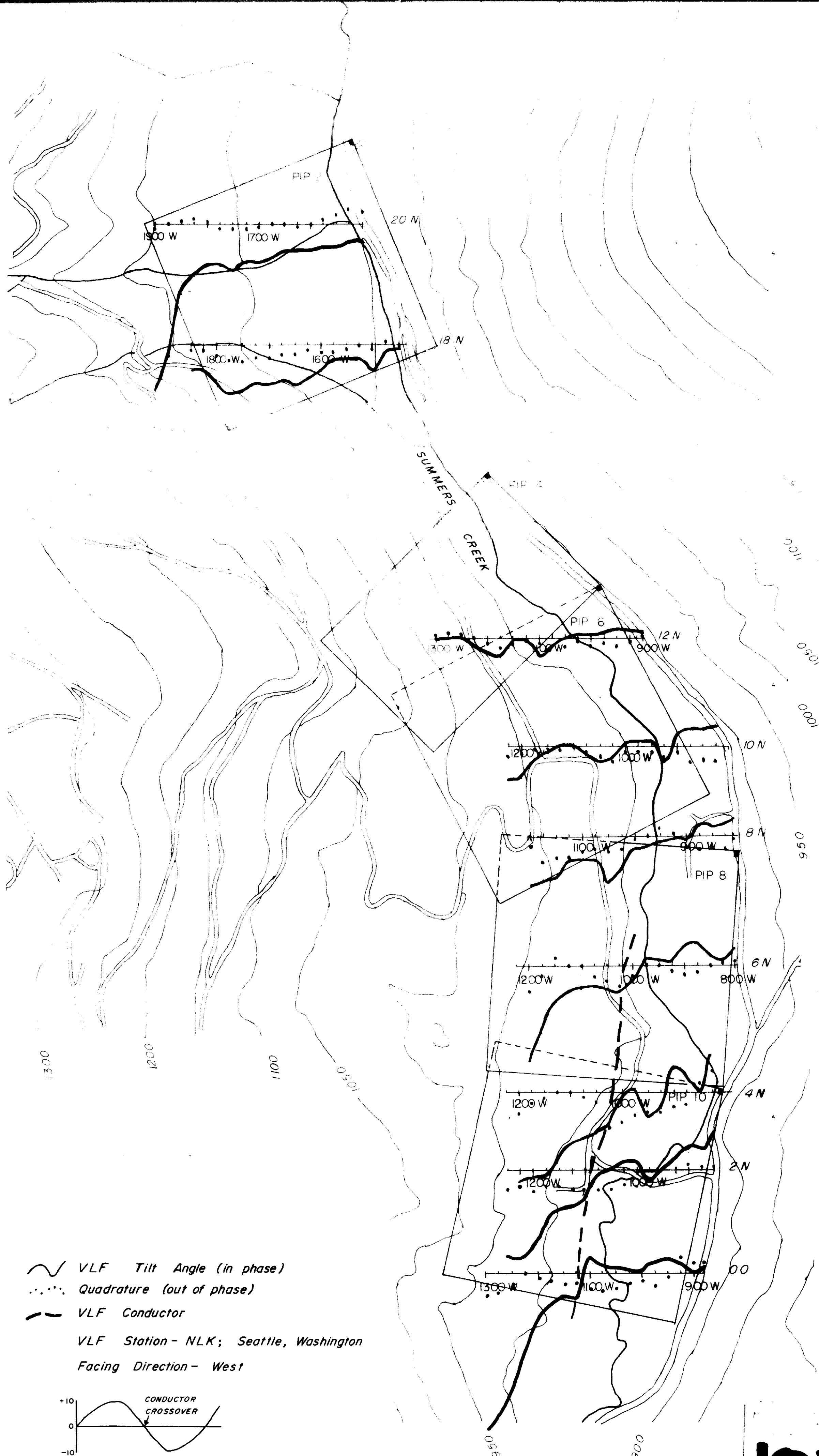



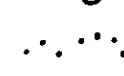

10,593

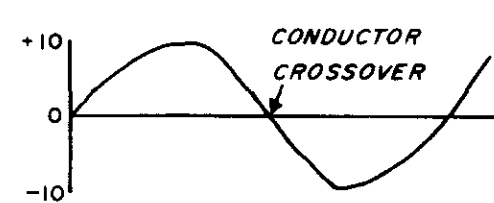
D. O. Melner

MAP Control
1:5000 orthophoto
chain + compass

PIP CLAIMS		AXE PROPERTY	
Drawn by: DJS	Traced by:		
Revised by:	Date:	Revised by:	Date:
GROUND VLF SURVEY (NAA)			
Scale: 1:5000	Date: JUNE 20, 1982	Plate: 4	

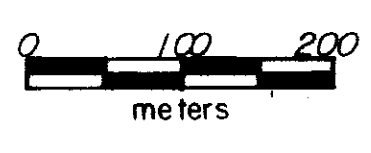


 VLF Tilt Angle (in phase)
 Quadrature (out of phase)
 VLF Conductor
 VLF Station - NLK; Seattle, Washington
 Facing Direction - West




850 Elevation Contours of Meters Above Sealevel

10593



D. Melner

MAP Control
1:5000 orthophoto
chain + compass

PIP CLAIMS				AXE PROPERTY	 92H/10
Drawn by: DJS		Traced by:		GROUND VLF SURVEY (NLK)	
Revised by:	Date:	Revised by:	Date:		
Scale: 1:5000		Date: JUNE 21, 1982		Plate: 3	