

84-#70 - 11997
3/85

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

11,997

SOVEREIGN METALS CORPORATION (n.p.l.)

CUB PROPERTY

Liard M.D., B. C., NTS 104 0/16 W & 104 0/15 E
Latitude $59^{\circ} 56' N$, Longitude $130^{\circ} 31' W$

ASSESSMENT REPORT
ELECTROMAGNETIC and
MAGNETIC SURVEYS

V. Cukor, P. Eng.
NVC ENGINEERING LTD.

February, 1984

Vancouver, B. C.

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APPENDIX

SOVEREIGN METALS CORPORATION (n.p.l.)

CUB PROPERTY

Tootsee Lake Area

1. INTRODUCTION

This Report on the assessment work performance in the summer of 1983 is prepared at the request of the principals of Sovereign Metals Corporation (n.p.l.), a Vancouver based public company. The work consisted of VLF electromagnetic and ground magnetic surveys, executed by Presunka Geophysical Exploration Ltd. In preparation for the survey the old grid lines were cleared of brush and stations were re-chained and reflagged, and about 2.5 kilometers of new grid were cut. Prior to the field work, a topographic base map, scale 1:5,000, was compiled from airphotographs by McElhanney Surveying and Engineering Ltd. (see Figure 4).

The author of this Report was not present in the field and the Report is based on a study of the data presented by S. Presunka, field operator. The author knows Mr. Presunka as a reliable and experienced field operator, having employed his services intermittently in various exploration programs over the last ten years.

Although the author has not previously worked on the Cub property, he has a good general knowledge of the area, having been involved there in exploration programs and property examinations for a lengthy period of time.

1. INTRODUCTION (CONT'D)

Claim standing was researched in the Mining Recording office records in Vancouver and the Statement of Costs was prepared on the basis of information supplied to the author by the Company accountant.

Recommendations for future programs and cost estimates are in line with ones described in the Engineering Report prepared for the Company by H. Veerman, P. Eng.

2. REVIEW

2.1 SUMMARY and CONCLUSIONS

The Cub property is located in northern British Columbia in the near proximity of Marbaco and Regional Resources-Midway mineral deposits. Carbonate units, found connected with sulfide mineralization on both of these properties, are most likely also present on the Cub claims. Geochemical anomalies as well as high grade float were already located within the property. A \$50,000 program was recommended by H. Veerman, P. Eng., which calls for geological mapping, geochemical and geophysical surveys and limited trenching in the first phase. The second phase of 8 one hundred meter drill holes with a total budget of \$76,000 is planned to follow, if results are encouraging.

During the 1983 field program part of this recommended work was carried out; the geological and geochemical studies as well as trenching and digging the test pits are as yet to follow.

The magnetic and electromagnetic surveys produced results which should be considered encouraging. In the areas where these surveys overlap with the geochemical surveys completed in the past, some of the geophysical anomalies and geophysical structural trends coincide with geochemical anomalies and some do not. These trends

2. REVIEW (CONT'D)

2.1 SUMMARY and CONCLUSIONS (Cont'd)

and locations are possibly also coincidental with a favourable geological structure.

Further detailed geochemical and geological study is essential to outline the targets for the second stage.

2.2 RECOMMENDATIONS

It is recommended to continue with the first stage of the program as outlined in the Report of H. Veerman, P. Eng. The geochemical soil survey should be extended at least over the portion of the grid cut in 1983. Detailed geological mapping of all outcrops found as well as boulder prospecting should be completed over the entire grid. Special attention, however, should be given to the areas where anomalous geochemical and/or geophysical readings were encountered. This work should also outline new areas, where overburden conditions would be favourable for hand trenching.

The remainder of the work outlined in the first stage of the exploration program should be easily completed within the budget estimate as presented in Veerman's Report.

3. PROPERTY

3.1 LOCATION

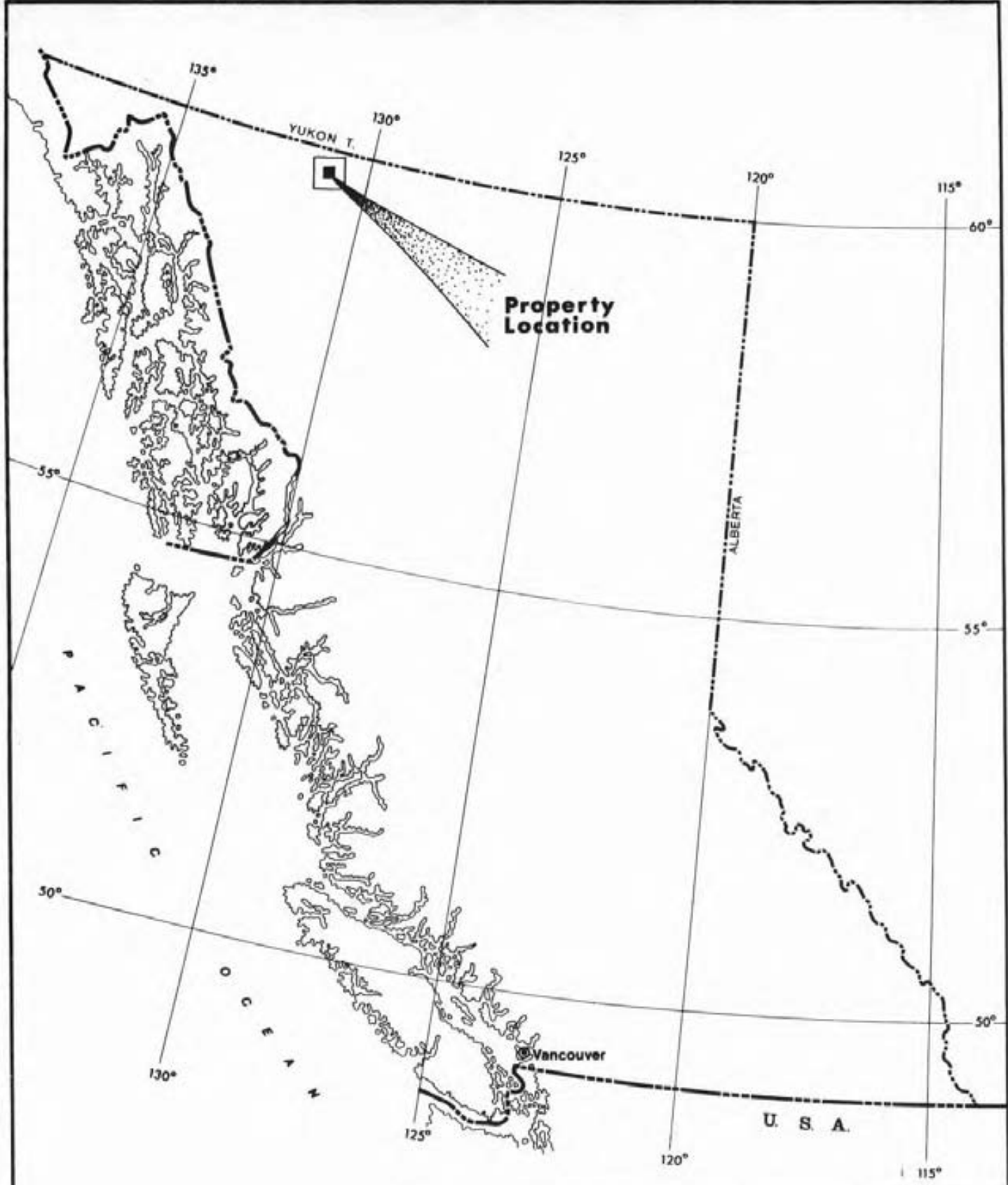
The general location of the property is shown on Figure 1 and claim location on Figure 2.


The property is in northern British Columbia, only about 6 kilometers south of the Yukon border and 3 kilometers north of the eastern tip of Tootsee Lake. The closest settlement is Rancheria, Yukon, about 18 kilometers due north and the closest supply centre is Watson Lake, Yukon, about 130 kilometers east of the property. Most of the services are available there and that settlement is connected to Whitehorse, Edmonton and Vancouver by daily air service.

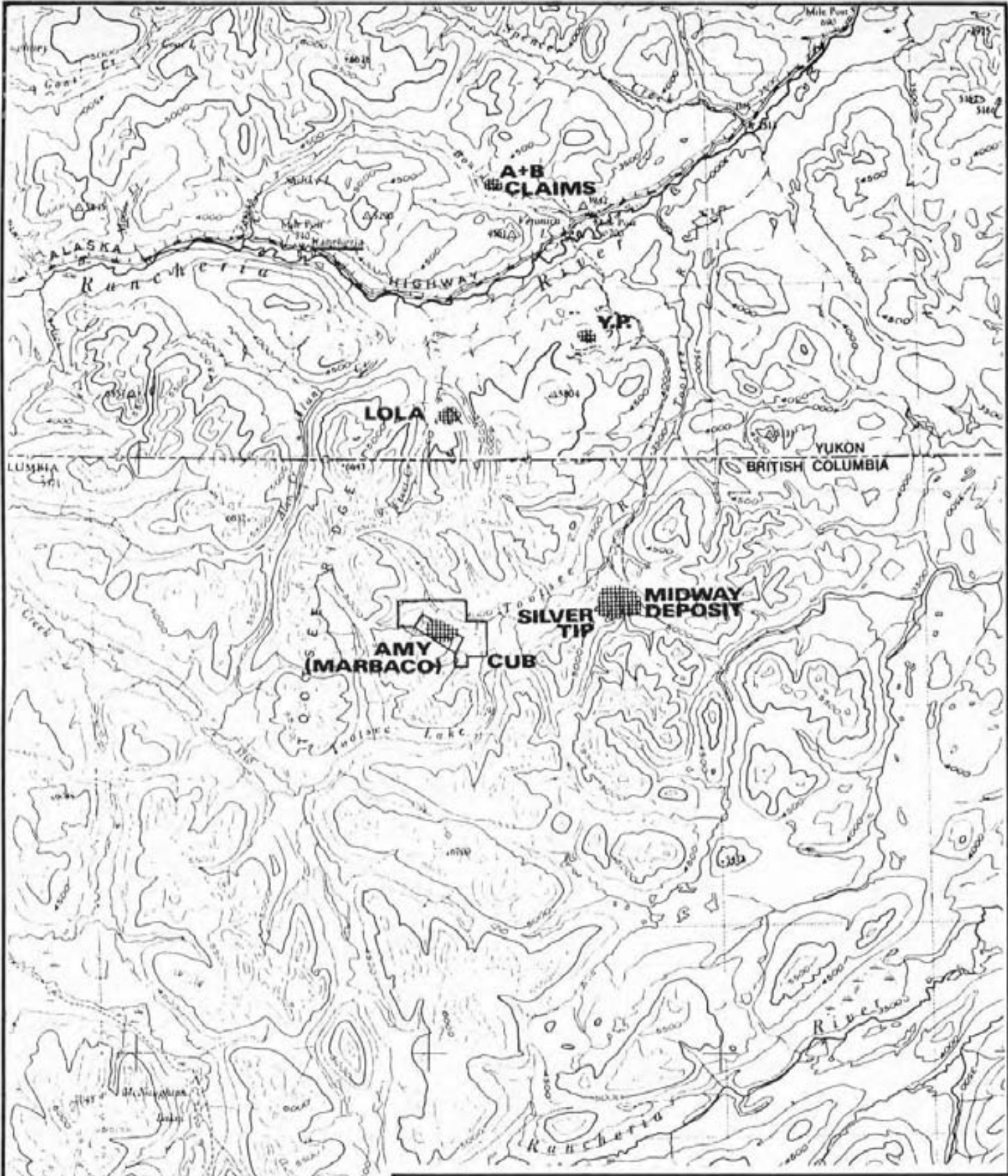
The property is in the Liard Mining Division, at the N.T.S. 104-0/16 W and 104-0/15 E. The centre of the property is at approximate latitude $59^{\circ} 56'$ north and longitude $130^{\circ} 30'$ west.

3.2 ACCESS


The property is accessible by 4 x 4 vehicle. The all-weather bushroad (about 30 kilometers long), partly following the Tootsee River, turns off the Alaska Highway at Mile 701. From the Regional Resources - Midway Prospect camp, the property is accessibly by about an 8 kilometer long, 4 x 4 road, passable only during the dry season.



SOVEREIGN METALS CORPORATION (NPL)		
CUB CLAIMS LOCATION MAP		
LIARD M.D., B.C.		NTS 104 O-16 W & 104 O-15 E
V.CUKOR, P.Eng. - NVC ENGINEERING Ltd. - VANCOUVER, B.C.		
DATE: Feb, 1984	SCALE: 0  100 miles	FIG. 1



LEGEND

 Mineral showings area

SOVEREIGN METALS CORPORATION (NPL)

CUB CLAIMS

CLAIM LOCATION

LIARD M.D., B.C.

NTS 104 O-16W & 104 O-15 E

V.CUKOR, P.Eng. - NVC ENGINEERING Ltd. - VANCOUVER, B.C.

DATE: FEB. 1984

SCALE:  5 km

FIG. **2**

3. PROPERTY (CONT'D)

3.2 ACCESS (Cont'd)

Alternative access is by helicopter from Watson Lake and during the field season is usually also available at Rancheria.

3.3 CLAIMS

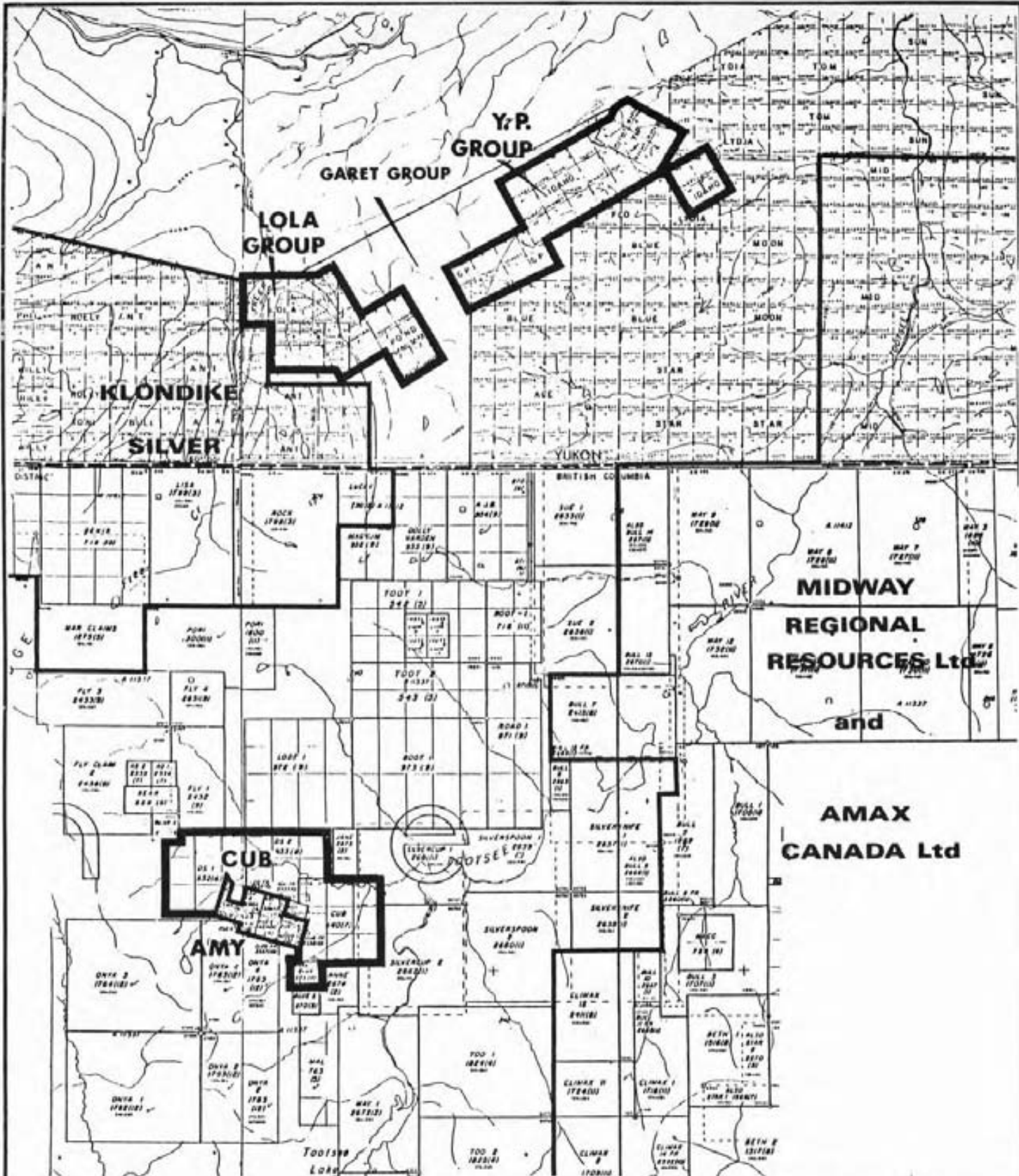
All claims comprising the Cub group are staked on the modified grid system. The claims, record numbers and anniversary dates are as follows:

<u>Claim</u>	<u>No. Units</u>	<u>Record Number</u>	<u>Anniversary Date</u>
D.S. #1	9	932	August 21, 1985
D.S. #2	9	933	August 21, 1985
Blue	1	573	July 6, 1985
Rox	1	572	July 6, 1987
Cub	9	440	July 27, 1985

Figure 3 shows the approximate position of the claims. There is some apparent overlap at several points, but the survey of legal corner posts will show the real claim area.

3.4 TOPOGRAPHY and CLIMATE

The property is located between elevations of 1,200 to 1,600 meters, covering the northern and eastern slopes of the over 2,000 meter high mountain. The slopes are moderately steep, although some deep creek valleys are carved, making the terrain locally rough.



SOVEREIGN METALS CORPORATION (NPL)

**CUB CLAIMS
CLAIM MAP**

LIARD M.D. .B.C.

NTS 104 O-16 W & 104 O-15 E

V.CUKOR, P.Eng. - NVC ENGINEERING Ltd. - VANCOUVER, B.C.

DATE: Feb. 1984

SCALE: 0 1 2 km

FIG. 3

3. PROPERTY (CONT'D)

3.4 TOPOGRAPHY and CLIMATE (Cont'd)

Higher elevations are open grasslands, while in the lower area small timber and much underbrush make travel difficult. Swampy areas are thickly overgrown with scrub willows.

The climate of the area is Northern Continental. It is characterized by long, cold winters and short, warm summers. Atmospheric precipitation is moderately high, of which a considerable amount falls as snow. The property is snowbound generally from the end of October to the end of May.

Timber and water necessary for exploration purposes is available within the property area.

4. GEOLOGY

The general geology of the Tootsee Lake area is shown on the G.S.C. 1" = 4 miles map by H. Gabrielse, which is appended to the Paper 68-55. It shows the area to be underlain by Mesozoic clastic and carbonate sediments, metasediments and volcanics, which are intruded by granodiorites of the Cassiar Batholith.

The local geology of the Cub property is mostly unknown due to the extensive cover of glacial till, which obscures geological and structural elements. The rock types underlying the neighbouring Marbaco property included argillites, quartzites and limestones. On both the Marbaco and Regional Resources - Midway properties, limestones host silver-lead-zinc deposits. From geological mapping of the surrounding Marbaco and Packard properties, it appears that the east-west striking limestone structure cuts through the Cub claims and very likely is associated with the mineralized float found on the Rox claim.

Two types of mineralization were found on the property. The more common of the two seems to be the occurrence of argentiferous galena - sphalerite found as angular float in exploration pits on the Rox claim and elsewhere on the property. The other type is scheelite - molybdenite with an unclear relationship to the first type

4. GEOLOGY (CONT'D)

of mineralization. Although the float found so far was abundant, no mineralization in place has been found.

5. MAGNETIC SURVEY

A total of 4.4 kilometers of magnetic survey was carried out on the precut grid. Readings were taken along 30 meter spaced grid lines at 10 meter stations.

The instrument used was a Barringer Proton Magnetometer, Serial No. 6282, sensitive to one gamma and measuring the Total Magnetic Field. In order to eliminate diurnal variations, the grid was surveyed in the following manner:

1. The baseline was surveyed first with a checkpoint selected at the end of the baseline, and a reading taken there. A reading was taken at the following station and another one at the checkpoint. The readings were taken in a rapid succession with a very short time lapse. Half of the difference between the two checkpoint readings was then added or subtracted to the following station reading, whereupon this station is considered a checkpoint too. In similar fashion, readings were taken down the baseline with each station becoming a checkpoint for the following station.
2. The crosslines were then surveyed in pairs, forming loops. Each loop was tied to the baseline at its start and completion, with a reading taken on one of the checkpoints on the baseline. Differences between the established values at the checkpoints and values received during the loop survey were distributed over the loop.

5. MAGNETIC SURVEY (CONT'D)

3. From such corrected value, 58,000 gammas were deducted and such relative values plotted on the 1:1,000 grid plan and contoured at 50 gamma intervals. This plan is appended to the Report as Figure 5.

Moderately low magnetic relief is encountered over the grid, with readings ranging from 388 to 759 gammas for a total relief of 371 gammas. Magnetic contours show a definite elongated magnetic structure. The most interesting feature, however, is the change in the trend of this structure, which occurs roughly in the baseline area. An almost coincidental trend change was also encountered by the electromagnetic survey. This feature could be caused by a plunging fold, but too little is known about the geological structure in that particular area to draw any definite conclusions yet.

6. ELECTROMAGNETIC SURVEY

The electromagnetic survey was carried out over the same grid, which was described under "Magnetic Survey". It was performed by S. Presunka, employing the instrument, Ronka EM-16, Serial No. 2. Two VLF Station signals were used: signals from VLF Station 24.8 Seattle, tilt direction 040° , and signals from VLF Station 23.4 Hawaii, tilt direction 120° . Along the baseline, readings were taken at 10 meter spacing, while crosslines were surveyed at 20 meter centers with additional 10 meter readings taken occasionally within the conductive zones.

Two grid plans in scale 1:1,000 were prepared and appended to the Report as Figures 6 and 7. Of these, Figure 6 represents the Inphase and Quadrature Profiles for VLF Station Seattle, and Figure 7 is Inphase Contour Plan for VLF Station Hawaii.


A strong conductive zone was encountered around the baseline and in the southern half of the grid, while in the northern part of the grid readings remained flat. The conductive zone, which could represent the zone of intensive fracturing and/or structure with a concentration of sulfide minerals (in the case of the Cub property, possibly galena), shows distinct east-west strike. At about line 5+70 E and baseline, the conductor splits, with one part extending further east and the other running northwest, almost paralleling the baseline. This east-west strike seems to be most significant since it also appears on both

6. ELECTROMAGNETIC SURVEY (CONT'D)

the magnetic and geochemical survey plans (performed prior to 1983) and interpretation of geological structure suggests that this might also be the strike of geological units.

On the basis of these coincidences, as well as on the basis of the strength and strike length of the conductive zone, the author feels that further follow-up work is warranted. The area should be examined in detail for any outcrops, as well as any sulfide float in the vicinity of conductive zones. As outcrop is sparse or absent within the area of principal interest and the nature of the overburden is obscured by vegetation, hand trenching and/or mechanical stripping may be employed to advantage to trace known sulfide float occurrences. The strong conductive zones appear to warrant testing by diamond drilling at least four holes when previously recommended preparatory work has been completed.

Respectfully submitted,



V. Cukor, P. Eng.
NVC ENGINEERING LTD.

February, 1984

A P P E N D I X

Statement of Costs and Personnel
Employed on the Cub Project

Field Work

Linecutting: August 7 - 15, 1983 -

D. Schellenberg, 9 days @ \$125/day	\$ 1,125.00
J. Robinson 9 days @ \$100/day	900.00
Field Expenses	485.38
Field Supplies	270.32
Travel	451.00

Geophysical Surveys: August 27 - September
10, 1983 -

Presunka Geophysical Exploration Ltd.	1,620.00
D. Schellenberg, Truck Rental and Labour	1,225.00

Office

Topo map preparation:

McElhanney Survey & Engineering	1,350.00
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Report:

NVC Engineering Ltd.	<u>1,225.00</u>
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\$ 8,651.70

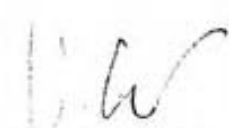


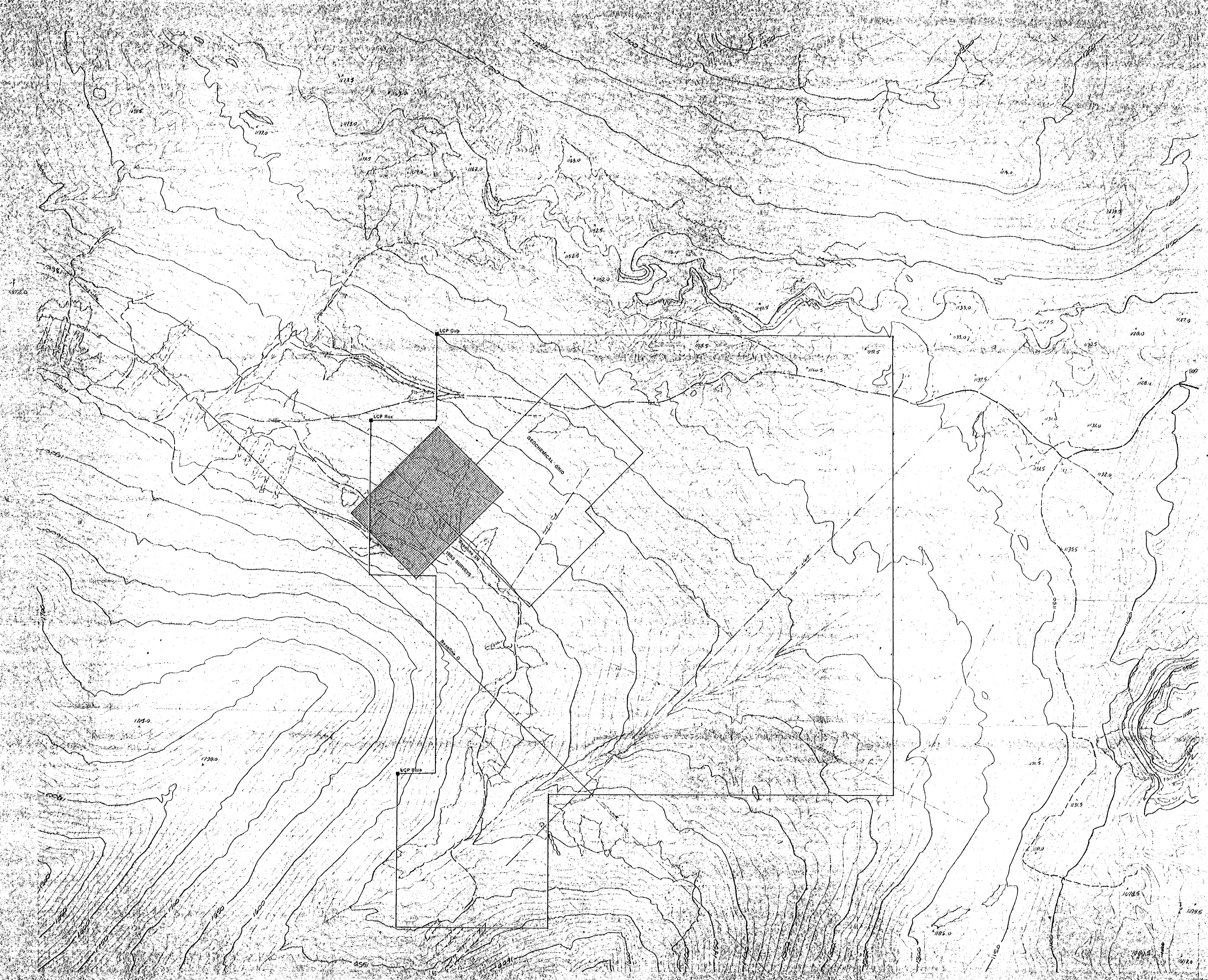
CERTIFICATE

I, VLADIMIR CUKOR, of 2830 West 37th Avenue,
Vancouver, British Columbia, DO HEREBY CERTIFY that:

1. I am a Consulting Geological Engineer with NVC ENGINEERING LTD. and with business address as above;
2. I graduated from the University of Zagreb, Yugoslavia in 1963 as a Graduated Geological Engineer;
3. I am a Registered Professional Engineer in the Geological Section of the Association of Professional Engineers in the Province of British Columbia;
4. I have practiced my profession as a Geological Engineer for the past twenty-one years, in Europe and North America in engineering geology, hydro-geology and exploration for base metals and precious metals;
5. I have reviewed information on the Cub property and the general area available to me;
6. I have no interest, direct or indirect, in the properties of Sovereign Metals Corporation, nor do I expect to receive or acquire any.

February, 1984


V. Cukor, P. Eng.
NVC ENGINEERING LTD.




GEOLOGICAL BRANCH
ASSESSMENT REPORT

11,997

UW

PRELIMINARY RECONNAISSANCE TYPE REPORT

SOVEREIGN METALS CORPORATION	
CUB CLAIMS	
	Medinney Survey & Engineering Ltd. 11890 Highway 104, Edmonton, Alberta, Canada T5A 1P8 Telephone: (780) 463-1111 Fax: (780) 463-1112
FIGURE 4	Scale: 1:50,000 Date: 10/10/98 Sheet 1 of 1

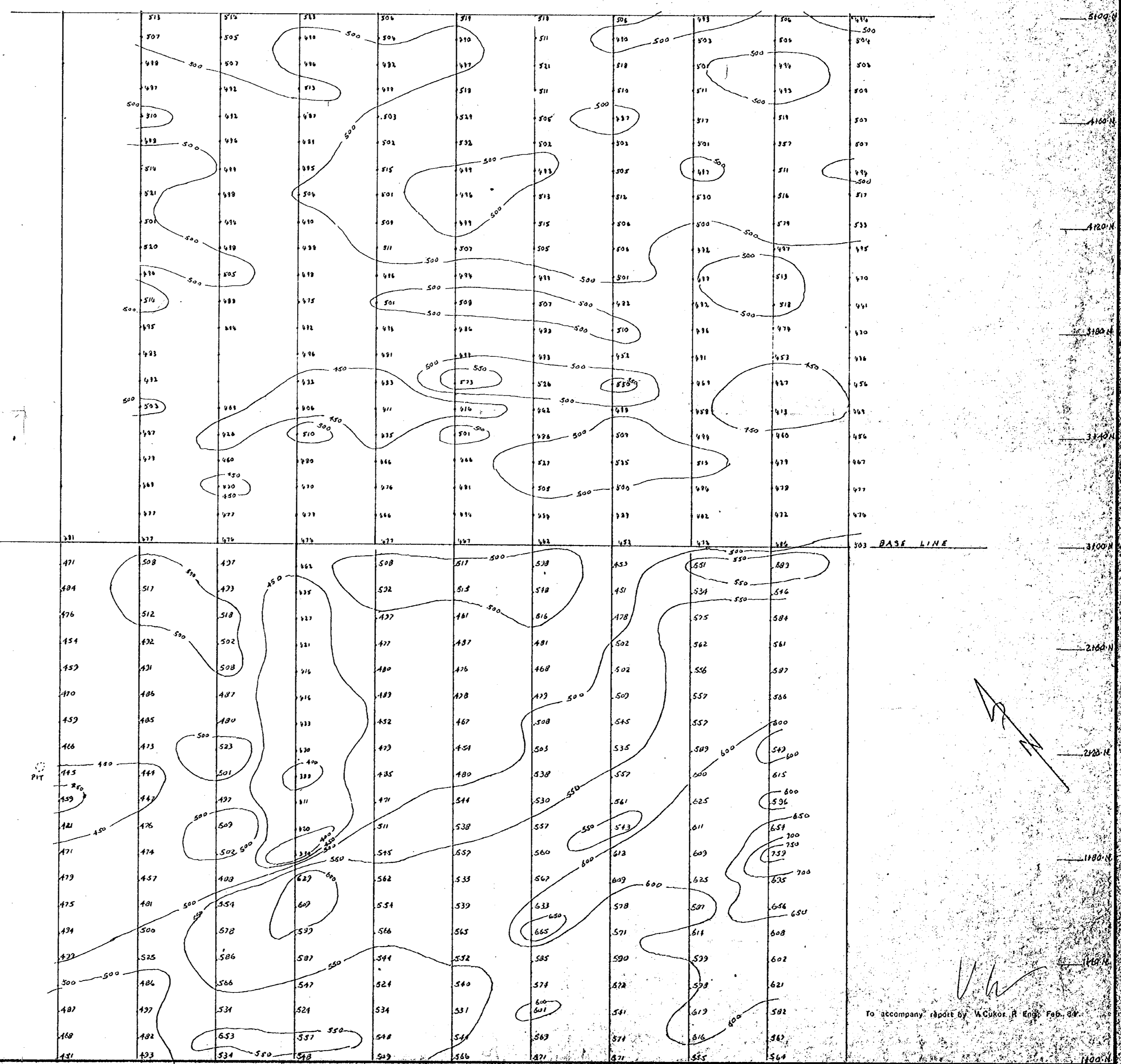
GEOLOGICAL BRANCH
ASSESSMENT REPORT

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CUB PROJECT
MAGNETOMETER SURVEY
INST. BARRINGER PROTON MAGNETOMETER SERIAL 6282
ALL READINGS ABOVE 58000 GAMMAS
SCALE: 0 20 40 60 METERS
DATE: SEPTEMBER 1983

S. PRESUNKA

FIGURE 5



To accompany report by W. C. Cook, R. Eng., Feb. 84.

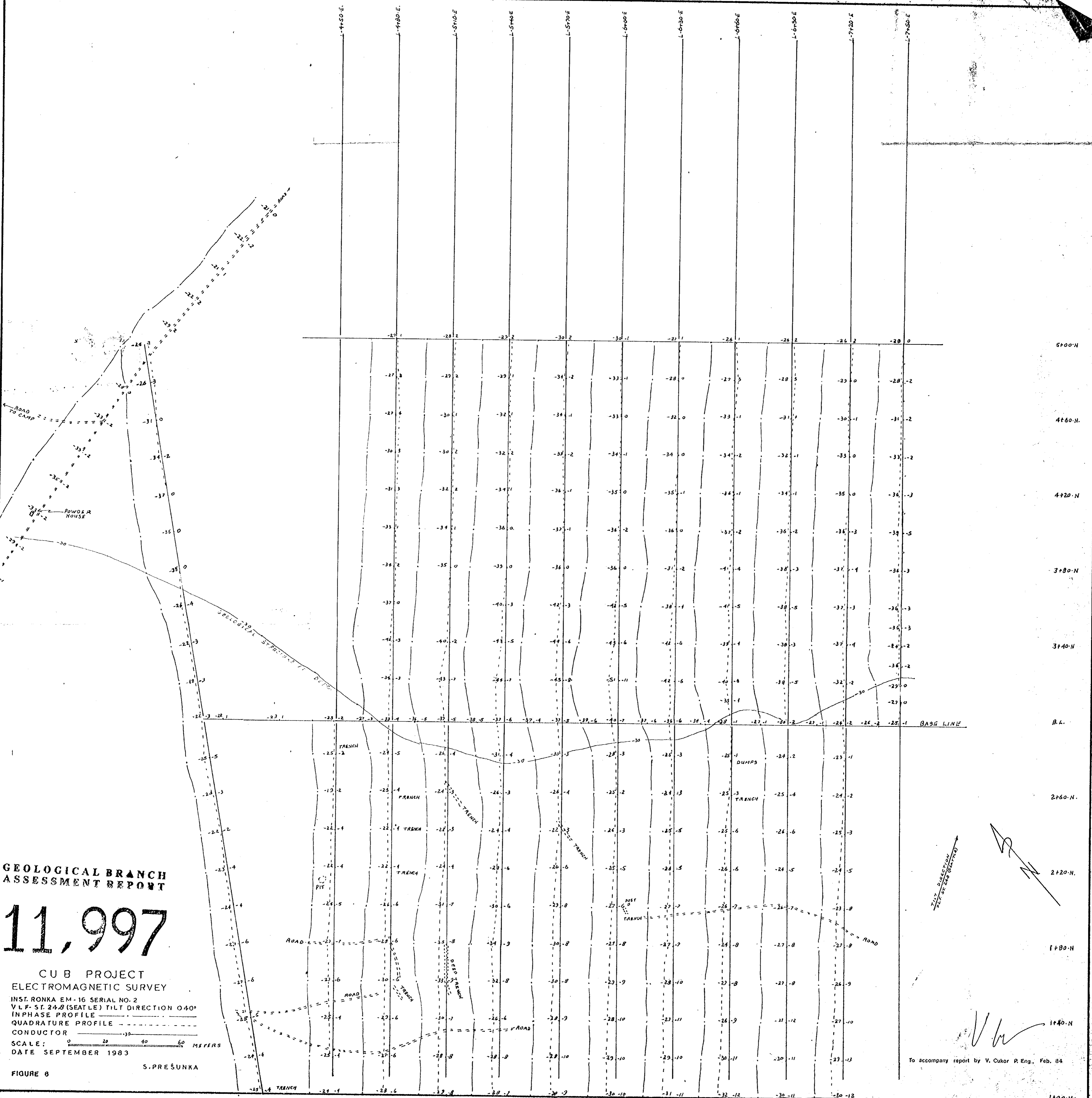
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ASSESSMENT REPORT

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CUB PROJECT
ELECTROMAGNETIC SURVEY
INST. RONKA EM-16 SERIAL NO. 2
VLF - ST. 24.0 (SEATTLE) TILT DIRECTION 040°
INPHASE PROFILE
QUADRATURE PROFILE
CONDUCTOR
SCALE: 0 20 40 60 METERS
DATE SEPTEMBER 1983

S. PREŠUNKA

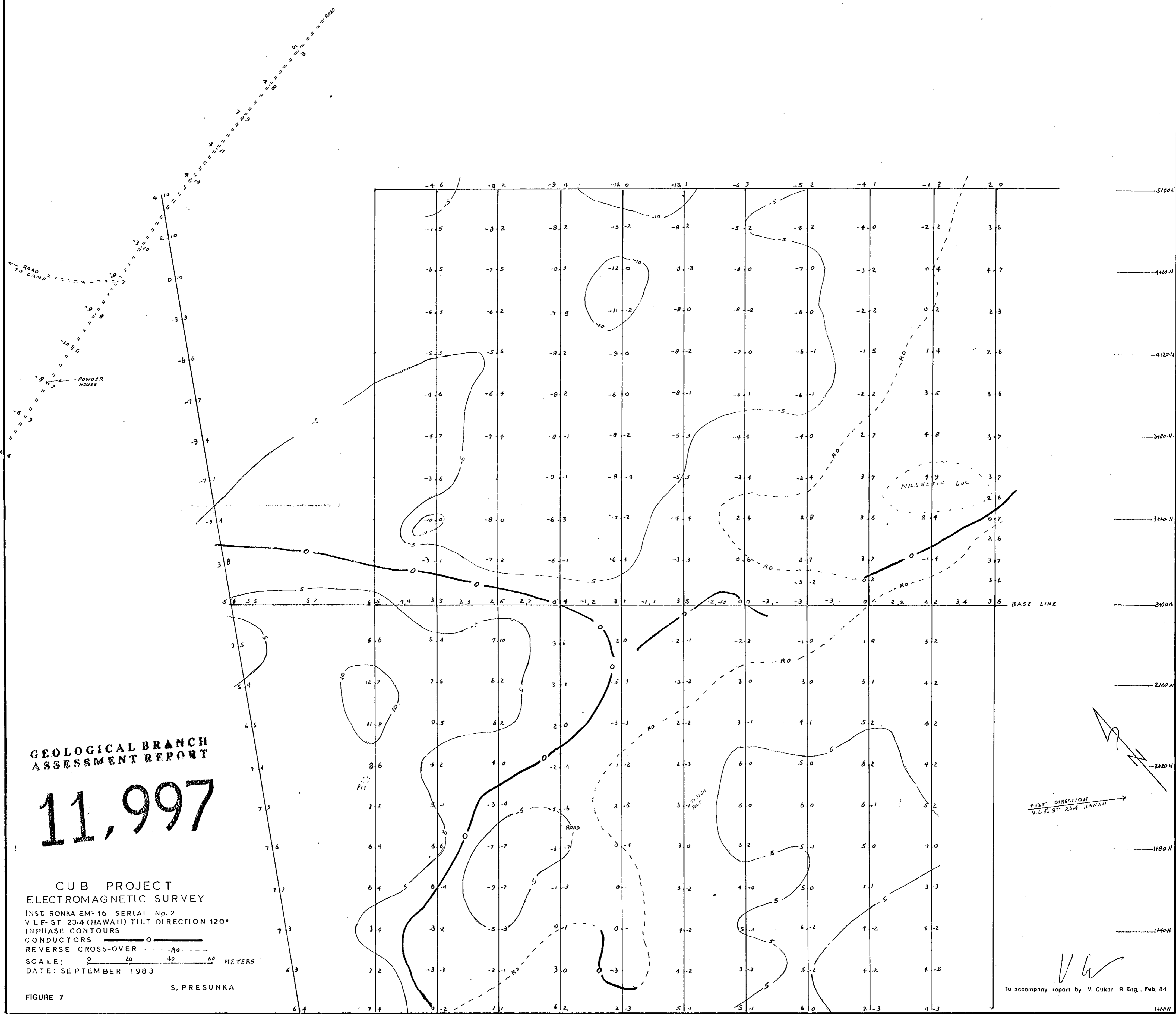
FIGURE 6



To accompany report by V. Cukor P. Eng., Feb. 84

[Handwritten signature]

L-4450-E
L-4480-E
L-5410-E
L-5440-E
L-5470-E
L-6400-E
L-6430-E
L-6460-E
L-6490-E
L-7420-E
L-7450-E



GEOLOGICAL BRANCH
ASSESSMENT REPORT

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CUB PROJECT
ELECTROMAGNETIC SURVEY

INST. RONKA EM-16 SERIAL No. 2
V.L.F. ST. 23.4 (HAWAII) TILT DIRECTION 120°
INPHASE CONTOURS
CONDUCTORS
REVERSE CROSS-OVER
SCALE: 0 20 40 60 METERS
DATE: SEPTEMBER 1983

FIGURE 7

S. PRESUNKA

TILT DIRECTION
V.L.F. ST. 23.4 HAWAII

To accompany report by V. Cukor P. Eng., Feb. 84