

ASSESSMENT REPORT ON

ALSEK COPPER PROPERTY - WINDY 1-8, CRAGGY 1-6 M.C.'s.

ATLIN M.D.

LAT. $59^{\circ} 44' 00''$ N., LONG. $137^{\circ} 43' 00''$ W.

GEOPHYSICAL SURVEYS - E.M. & MAGNETOMETER

PERIOD SEPTEMBER 16, 1974 - AUGUST 29, 1975

FALCONBRIDGE NICKEL MINES LTD., - OWNER AND OPERATOR

N.T.S. 114-P-12

Vancouver, B.C.

S. Presunka

September 15, 1975

D.H. Brown

Department of	
Mines and Petroleum Resources	
ASSESSMENT REPORT	
NO. 5608	MAP

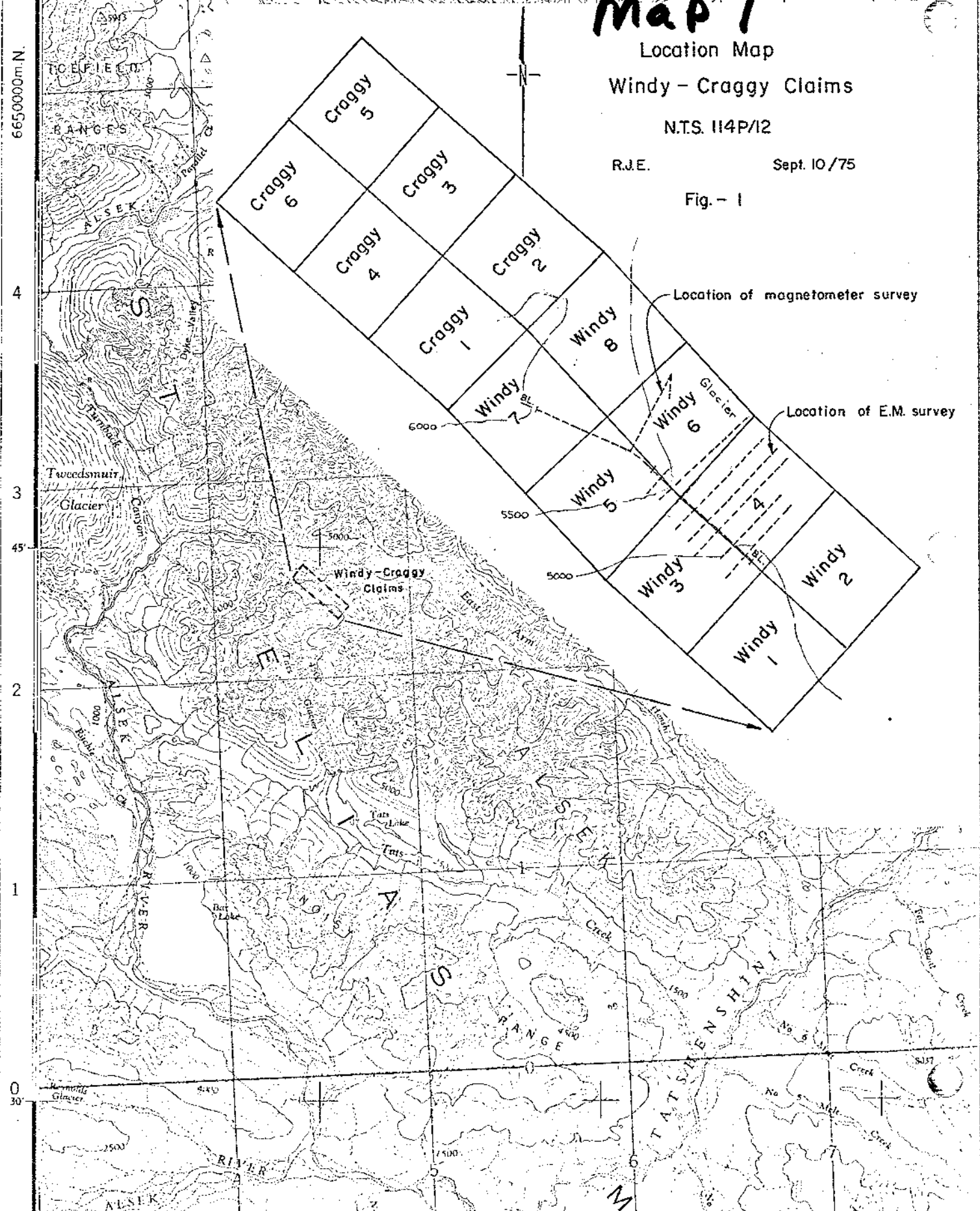
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138°00' 340000m E. 45° 5 630' 7 15'



map 1

Location Map
Windy - Craggy Claims

N.T.S. 114P/12

R.J.E. Sept. 10/75

Fig. - 1

Location of magnetometer survey

Location of E.M. survey

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PERIOD SEPTEMBER 16, 1974 - AUGUST 29, 1975

Introduction

The Windy-Craggy property includes 14 located claims - Windy 1-8 and Craggy 1-6 which are recorded as the Windy Group. The present assessment report covers geophysical work carried out during the anniversary year September 9, 1974 to September 8, 1975 on Falconbridge M.C.'s Windy 3-7, and includes an E.M. Survey conducted in the latter half of September 1974, and a magnetometer survey conducted in August 1975. A magnetometer survey attempted in conjunction with the E.M. Survey in 1974 was unsuccessful due to equipment failure. The work was done for Falconbridge Nickel Mines Limited, owner and operator of the property.

Property Location and Access (Lat. $59^{\circ}44'00''N.$, Long. $137^{\circ}43'00''W$)

The property is located in the St. Elias Mountains, 45 miles west of the Haines cut-off Highway and 20 miles north of the junction of the Alsek and Tathenshini Rivers. The property is located above the 5000 ft. elevation and is ice-cap covered in part. Access to the property is by helicopter.

Geological Setting

The 14 claims staked in 1958 are underlain by Tats greenstones (largely altered pillow lavas), and shaly to argillaceous sediments. The deposit is a near massive sulphide replacement of the volcanics along a somewhat folded and brecciated or sheared contact with the sediments. Minerals present include chalcopyrite, pyrrhotite, and pyrite. Minor cobalt is also present.

Scope of Survey

In preparation for the geophysical E.M. survey seven stations at approximately 200 ft. intervals were set along 1500 feet of an existing transit-controlled baseline trending $N47^{\circ}30'W$, approximately along the boundaries between Windy 3 and 4 and Windy 5 and 6. From the 200 ft. stations, where it was physically possible, six picket lines averaging 1600 feet in length were run by chain and compass $N42^{\circ}30'E$ and $S42^{\circ}30'W$ for a total of 10,800 ft. of crossline. Readings were taken across both bedrock and ice cap at 50 ft. intervals along the crossline.

In preparation for the test magnetometer survey a 1400 ft. section of survey line located on claims Windy 5, 6 and 7 and trending $N60^{\circ}W$ was used as a base and from its south end a 1300 ft. crossline at $N30^{\circ}E$ was established. A 500 ft. jog to the south was made from this crossline. Stations were located at 25 foot intervals along the base and crosslines. A magnetometer base station was established west of the main baseline away from known mineralization.

Methods of Survey

a) Ronka E.M. 16 - Principle of Operation

The VLF-radio stations designed for communications with submarines have vertical antennae which create a concentric horizontal magnetic field around them when energized. When these magnetic fields encounter conductive bodies in the ground (through which they readily penetrate), a secondary field radiates from the latter. The Ronka E.M. 16 equipment which is simply a sensitive Very Low Frequency receiver measures the vertical components of these secondary fields.

The receiver has two receiving coils, one horizontal, and one vertical. The signal picked up by one of the coils (vertical axis) is first minimized by tilting the coil through a measured angle which is calibrated in percentages. The remaining signal in this coil is then balanced out by a measured percentage of a signal from the other coil, which is oriented at right angles to the first coil. This coil is normally kept parallel to the primary field.

Thus, if the secondary signals are small compared to the primary horizontal field, the mechanical tilt-angle is an accurate measure of the vertical real component, and the compensation $\Pi/2$ signal from the horizontal coil is a measure of the quadrature vertical signal.

The selection of the proper transmitter station is accomplished by use of a plug-in unit in the receiver. The magnetic field lines from the station are always at right angles to the direction to the station. Therefore, a station should be selected which gives the field approximately at right angles to the main strike of the conductor or geological structure of the area presently being worked on. After the proper station has been selected the survey lines are selected at right angles to the direction of the station and hence, parallel to the magnetic field from the station.

<u>Transmitting Station</u>	<u>Location</u>	<u>Frequency</u>	<u>Bearing to Property</u>
VLF Station N.A.A.	Cutler, Maine	17.8 k.c.	N70°W appr.
VLF Station N.P.G.	Seattle, Wash.	18.6 k.c.	N20°W appr.
	Baseline, Windy-Craggy		N45°W appr.

From the above data it can be seen that the bearings from the two VLF stations selected are equiangular (25°) on either side of the bearing of the baseline used. The right angled crosslines, then, are equiangular from being parallel to the magnetic fields excited by transmission from each station and hence, the vector strengths from each transmission should be relatively similar.

b) Scintrex MF₂ Magnetometer

This is a fluxgate magnetometer with I.C. circuitry and temperature compensation of less than one gamma/°C. over the range -40°C to +40C. It has a full terrestrial range of 0-100,000 gammas and an orientation

independent internal sensor and an accuracy of $\pm 0.5\%$. Instrument check readings were taken periodically at the base station northwest of the baseline, and corrections were made in the field for the diurnal changes recorded. As only relative readings are of interest in this type of survey, for simplicity, the instrument was adjusted to zero background at the base station which was well removed from extraneous magnetite influence.

Geophysical Interpretation (E.M. 16 Survey Figs. 2 & 4)

The profiles constructed from the E.M. readings between stations 17 to 26 on the main baseline using VLF Station 17.8 show a nearly continuous series of cross-overs (i.e. the point at which profile values change sign) indicating a good conductive zone on the north-east side of the baseline. The profiles constructed from a similar set of readings using VLF Station 18.6 show good correlation with the plot of the conductive zone obtained from readings using Station 17.8. The contour maps representing lines of equal intensity illustrate the direction of the zone of good conductivity, and a concentration of steep gradients in the Station 20 to 22 area of the baseline indicates a near surface anomaly which should be investigated further.

Magnetometer Survey

The magnetometer survey shows a relatively small "high" on the crossline running from Station 13.5 on the baseline. This anomaly with a high of 1305 gammas outlines the zone of known mineralization in this area.

The values obtained between Stations 5 and 13.5 on the baseline, on the other hand, show anomalous values ranging from 1305 to 2290 gammas (Sta. 7.8) which is possibly indicative of mineralization.

Conclusions

The E.M. survey has defined the locus of a good conductive zone continuous over at least 1000 ft. with an anomalous concentration requiring further investigation between Stations 20 and 22 on the baseline.

The magnetometer survey showed the ground covered by the baseline between Stations 5 and 13.5 to be consistently more strongly magnetic than the ground over known mineralization on the crossline from Station 13.5, although this may be partly due to topographic effect.

Vancouver, B.C.
September 15, 1975


D.H. Brown, P. Eng.

BRITISH COLUMBIA MINING RECEIPT

Mining Division ATHLON

Issued at Vancouver No 101083 E

Date September 8 19 75

RECEIVED from Westrob Mines Limited

the sum of Three hundred & sixty ⁰⁰/₁₀₀ Dollars.

in payment of recording 3 yrs work & rental

on WINDY 1-8, CRAGGY 1, 2, 4,

2 yrs work & rental on CRAGGY 3, 5, 6

Signature Jean Paul

Office Sub-mining Recorder

\$ 390.⁰⁰



DEPARTMENT OF MINES AND PETROLEUM RESOURCES

FORM B (Section 51) MINERAL ACT

SUB-MINING RECORDER RECEIVED SEP 8 - 1975 M.R. # \$ VANCOUVER, B. C.

N73-1112 PN-134

Affidavit on Application to Record Work

1. I, D.H. BROWN Agent for FALCONBRIDGE NICKEL MINES LIMITED, 504 - 1112 WEST PENDER STREET, VANCOUVER, B.C. V6E 2S3. Free Miner's Certificate No. 136737 Date issued December 30, 1974

MAKE OATH AND SAY:

2. I have done, or caused to be done, work on the WINDY GROUP. (Sept. 8/75) WINDY 3, 4, 5 and 6 and 7. Record No.(s) 3726, 3727, 3728, 3729, 3730. Situate at TATS GLACIER in the ATLIN Mining Division, to the value of at least 7800 dollars. Work was done from the 16th day of SEPTEMBER 19 74, to the 29th day of AUGUST, 1975

3. The following is a detailed statement of such work done in the 12 months in which such work is required to be done.

(COMPLETE APPROPRIATE SECTION(S) A, B, C, D, BELOW)

A. PHYSICAL (Trenches, open cuts, adits, pits, shafts, reclamation, and construction of roads and trails)

(Give details as required by regulations)

Table with columns for details and COST. Includes a TOTAL row at the bottom.

I wish to apply \$ of this work to the claims listed below. (State number of years to be applied to each claim and its month of record)

DOMINION OF CANADA:
 PROVINCE OF BRITISH COLUMBIA.

To Wit:

In the Matter of GEOPHYSICAL E.M. AND MAGNETOMETER SURVEY
 OVER WINDY 1 - 8 AND CRAGGY 1 - 6 MINERAL CLAIMS
 LAT. 59° 44' 0". LONG. 137° 43' 00"

I. D.H. Brown

of 504 - 1112 WEST PENDER STREET, VANCOUVER, B.C. V6E 2S3

in the Province of British Columbia, do solemnly declare that the following expenses were incurred in connection with a geophysical survey (E.M. and Magnetometer) covering the WINDY 3, 4, 5, 6 mineral claims, as detailed below

*8th
and 7*

WINDY-CRAGGY GEOPHYSICAL (E.M. AND MAG.) SURVEY

<u>Period</u>	<u>E.M. SURVEY</u>			
<u>1974</u>				
Sept. 16-22	Helicopter VF-CFL 12 hrs. @ \$280.00		3,360.00	
	Fuel Ferrying 200 mls. @ 1.00		200.00	
	<u>Geophysical Crew Wages</u>			
	✓ S. Presunka 7 x \$100.00		700.00	
	✓ K. Christensen geophy. helper 7x 50.00		350.00	
	Geophy. equipment rental 7 x 50.00		350.00	
	<u>Falconbridge Staff</u>			
	✓ J.J. McDougall, P.Eng. Supervision 3 x 100.00		300.00	
Sept. 16-22	Catering - Board and room 17x 10.00		170.00	5,430.00
<u>1975</u>				
Aug. 23	Helicopter VF-CFL 6 hrs. @ \$280.00		1,680.00	
	Fuel Ferrying 200 mls. @ 1.00		200.00	
	<u>Geophysical Crew Wages</u>			
	S. Presunka 1 x 100.00		100.00	
	K. Christensen geophysical helper 1 x 50.00		50.00	
	Geophy. equipment rental 1 x 50.00		50.00	
	<u>Falconbridge Staff</u>			
	✓ J.J. McDougall, P.Eng. Supervision 1 x 100.00		100.00	2,180.00
Aug. 27-29	<u>Drafting</u>			
	✓ R. Esson 3 x \$41.60		124.80	160.40
	<u>Report Writing</u>			
	✓ D.H. Brown, P.Eng. 1 x \$100.00		100.00	64.40

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of
 \$7,834.80 \$7,834.80

the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the *City*
 of *Vancouver*, in the
 Province of British Columbia, this *8th*
 day of *September, 1975*, A.D.

D.H. Brown

John Paul Sub-mining Recorder

A Commissioner for taking Affidavits within British Columbia or
 A Notary Public in and for the Province of British Columbia.



FALCONBRIDGE NICKEL MINES LIMITED
1112 West Pender Street, Vancouver 1, B.C., Canada
Telex 04-53245
Telephone (604) 682-6242

September 15, 1975

The Mining Recorder,
Atlin, B.C.

Dear Sir,

Statement of Qualifications of Participants

This is to certify that the geophysical work done on the Windy Group claims in the Atlin, M.D. was done under my direction.

Mr. S. Presunka is a fully qualified geophysical operator with over 18 years experience in this capacity.

Mr. K. Christensen, a company prospector, has been trained over the past 10 years as a competent geophysical assistant.

Mr. J.J. McDougall, P.Eng. (B.C.) with knowledge of the geological setting planned the surveys and supervised the operations.

I, D.H. Brown, P.Eng. (B.C.), in conjunction with S. Presunka carried out the interpretation and the writing of the report.

Yours truly,
FALCONBRIDGE NICKEL MINES LIMITED,


D.H. Brown, P.Eng. (B.C.)

Encl.
DHB:pb

Department of
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ASSESSMENT REPORT
NO. 5608 MAP 6



○ Survey Station

Magnetic Profiles — 1" = 2000 gammas

Instrument adjusted to read 0 for background at base station.

All readings are positive unless otherwise noted.

FALCONBRIDGE NICKEL MINES LTD.

PROPERTY: Windy - Craggy Claims

LOCATION: Alsek R. Area - St. Elias Mountains

TYPE OF MAP: Magnetometer Survey
(MF2 Fluxgate, Ser. no. 905454)

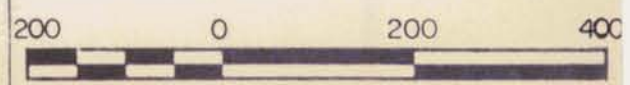
BASED ON: Survey by S. Presunka

DATE OF WORK: Aug. / 75

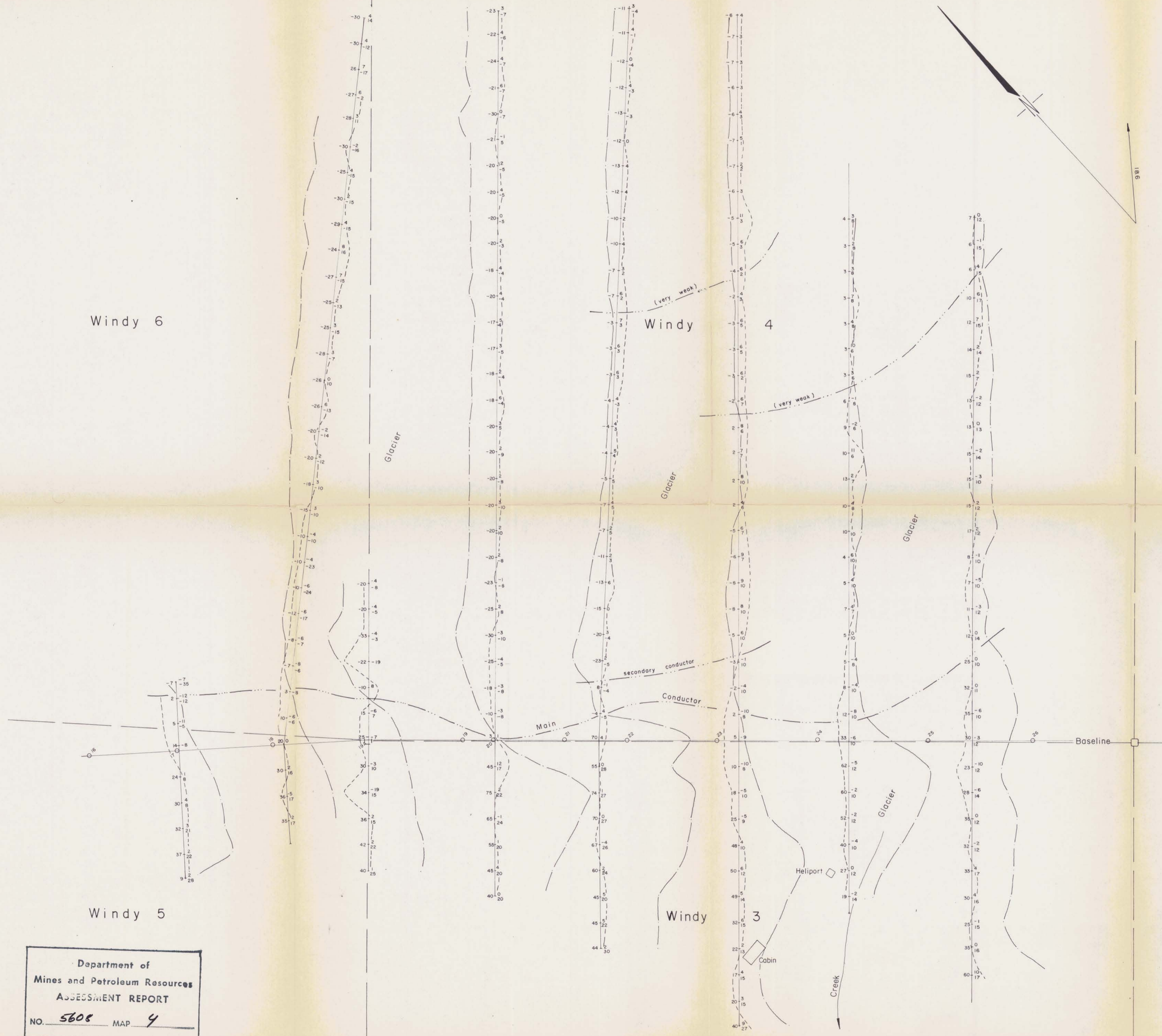
DATE: Sept. 10 / 75

DRAWN BY: R.J.E.

S. Brown



SCALE: 1 INCH TO 200' (1cm = 24meter)



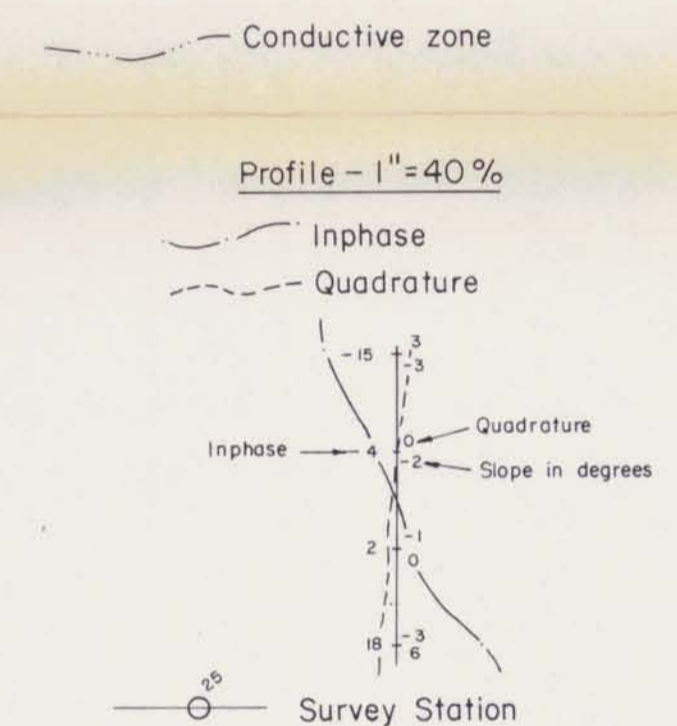
Windy 6

Windy 5

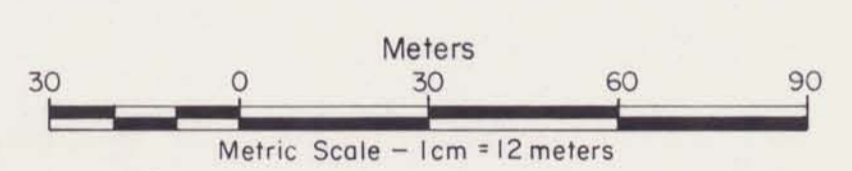
Windy 4

Windy 3

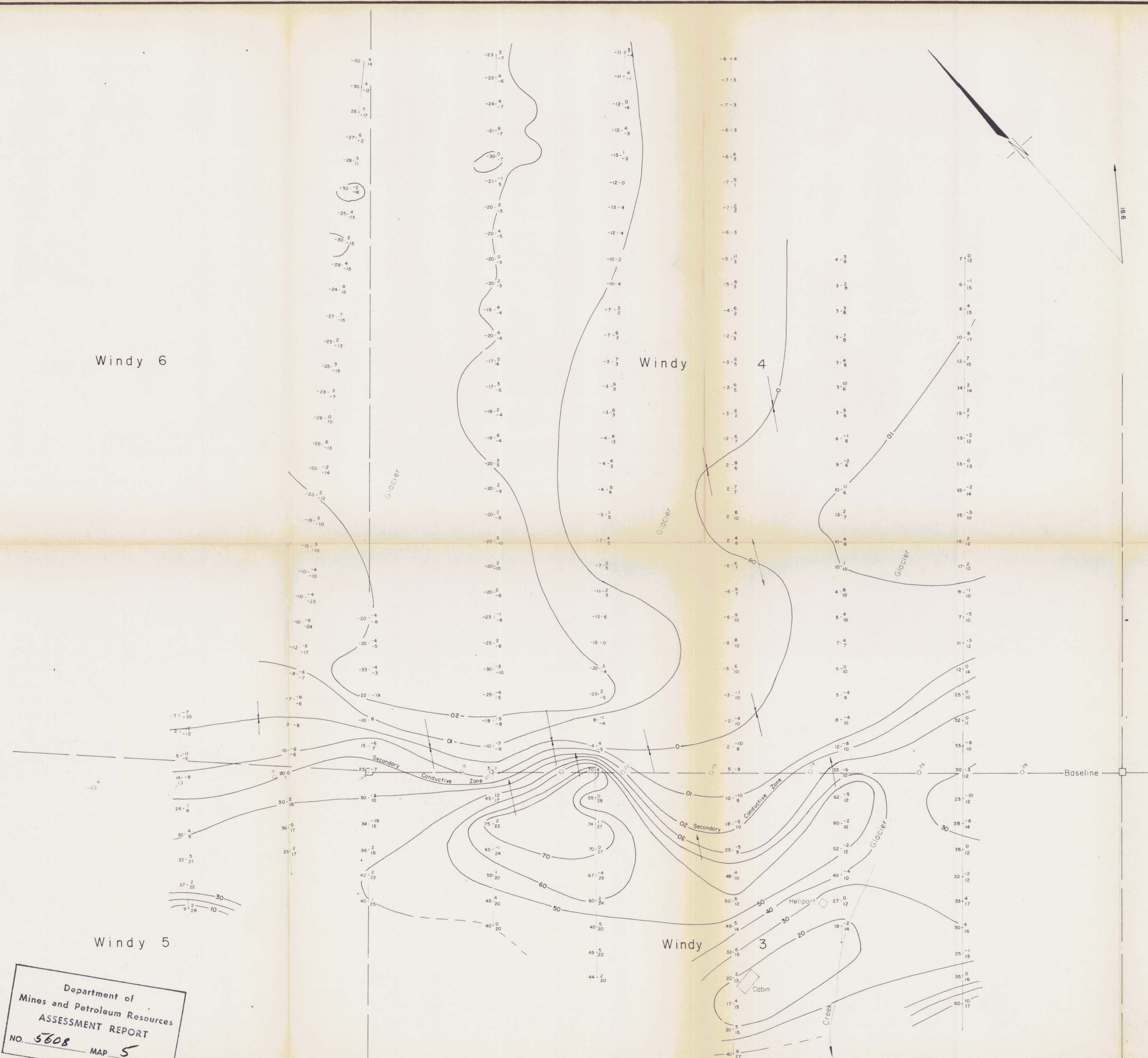
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5608 MAP 4



VLF Station Location - Seattle, U.S.A.



FALCONBRIDGE NICKEL MINES LIMITED		
PROPERTY:	Windy - Craggy Claims	5608
LOCATION:	Alsek R. Area - St. Elias Mountains	Map 4
TYPE OF MAP:	Electro Magnetic Survey - Instrument EM-16 VLF St. 18.6 (Tilt Direction 038°)	
WORKING PLACE:	Windy Claims 3,4,5,6	
BASED ON:	EM16 Survey by S. Presunka	
DATE OF WORK:	Sept. 16-22/74	MAP REF. NO.:
DRAWN BY:	R.J.E. after S.P.	FIG. NO.:
DATE:	Sept. 8/75	N.T.S. NO.:
		1:4 P/12
		4



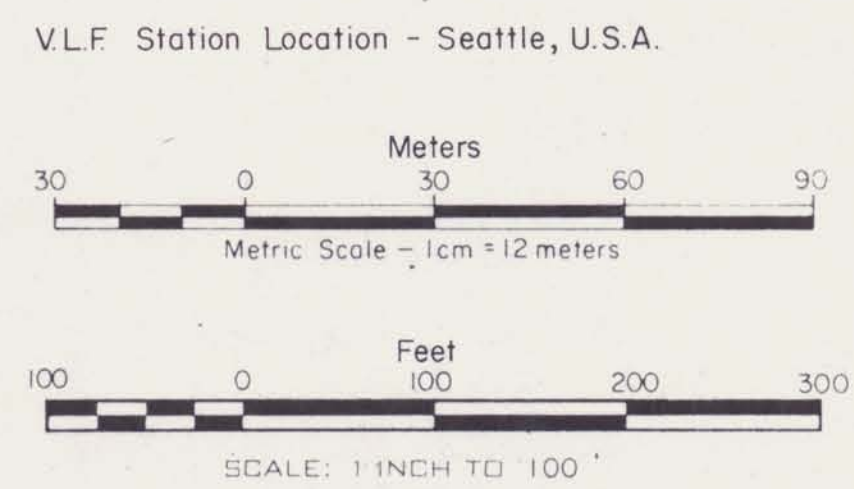
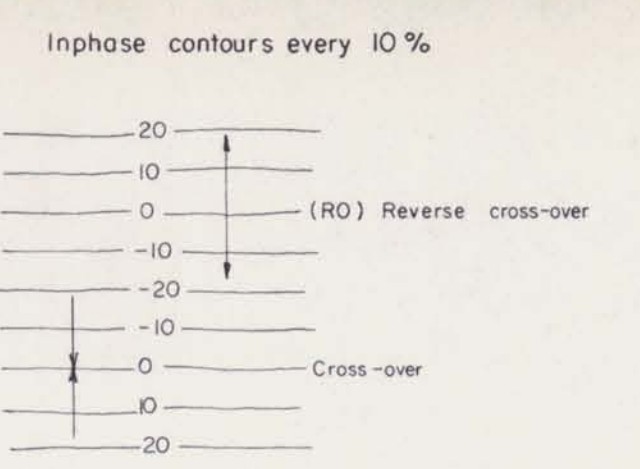
Windy 6

Windy 4

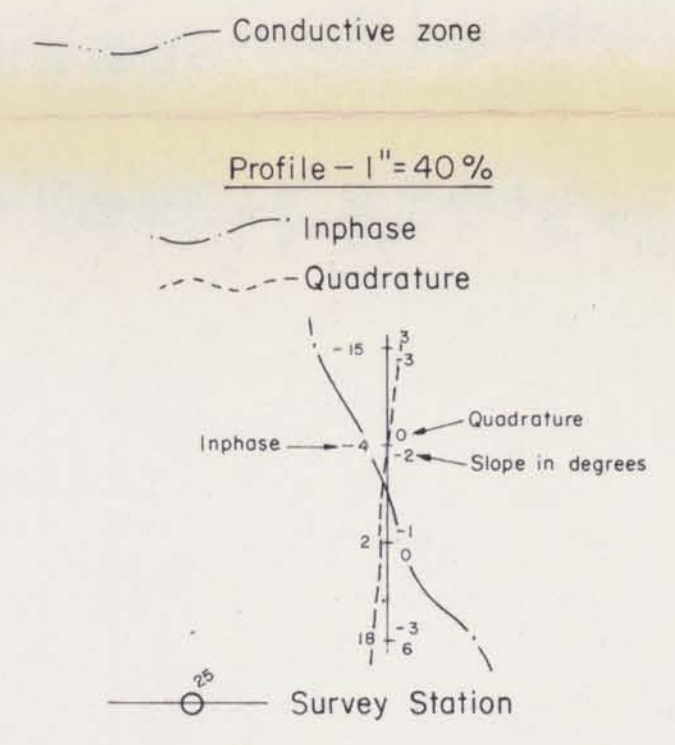
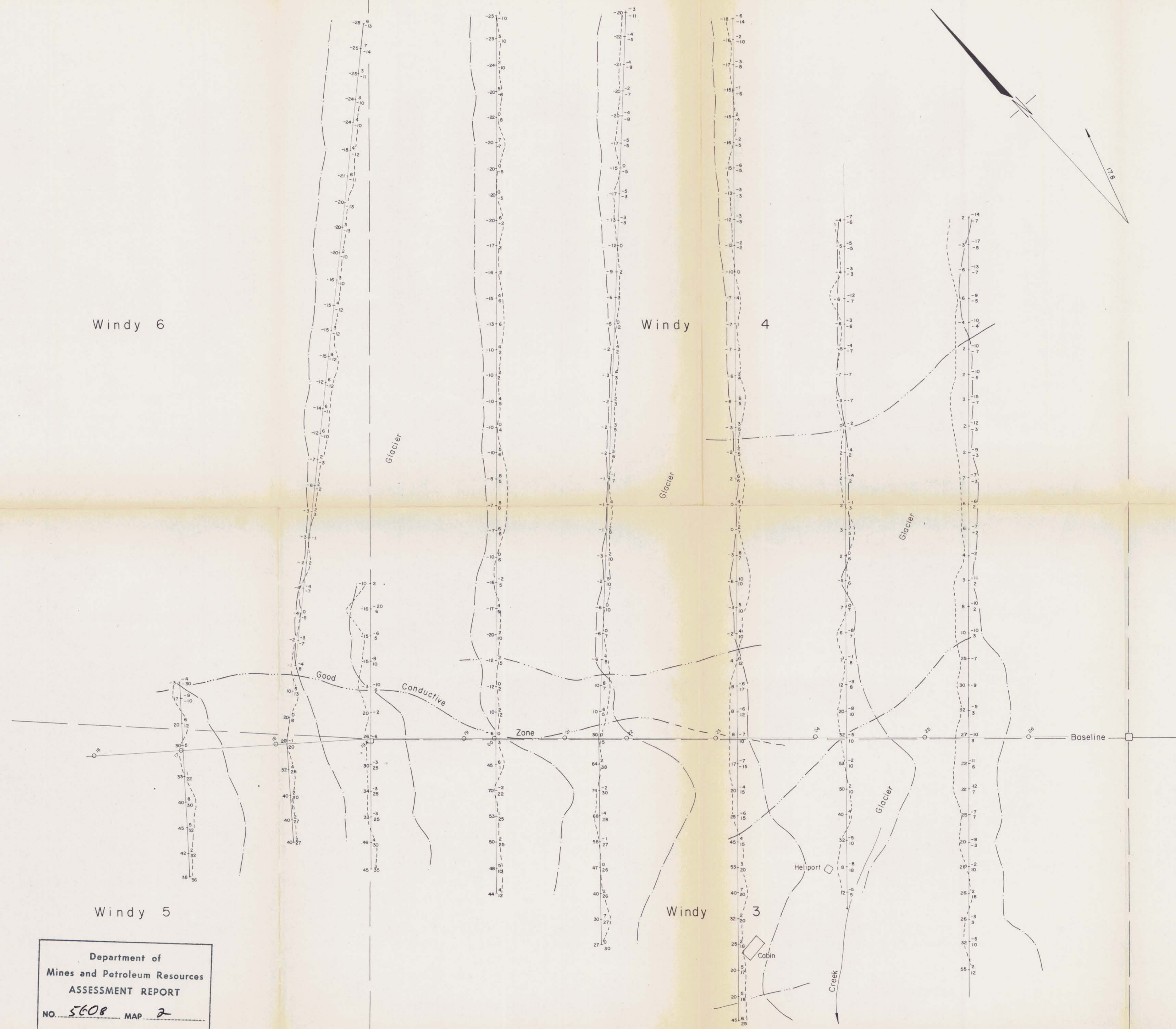
Windy 5

Windy 3

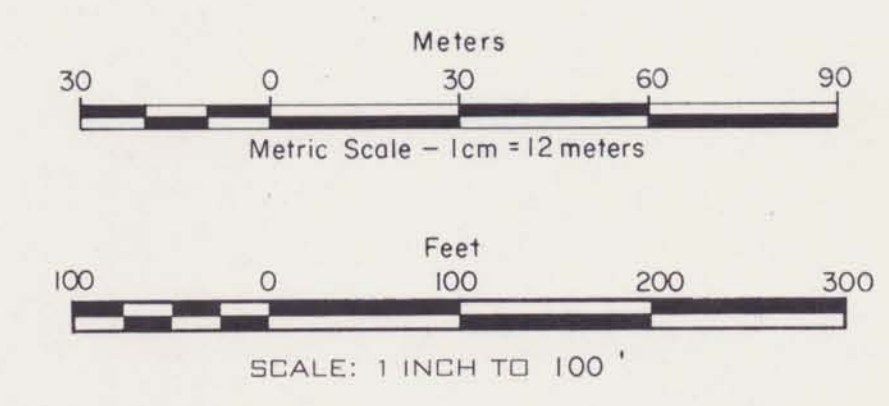
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5608 MAP 5



FALCONBRIDGE NICKEL MINES LIMITED		
PROPERTY:	Windy - Craggy Claims	5608
LOCATION:	Alsek R. Area - St. Elias Mountains	Map 5
TYPE OF MAP:	Electro Magnetic Survey - Instrument EM-16 VLF St. 18.6 (Tilt Direction 038°) Inphase Contours	
WORKING PLACE:	Windy Claims 3,4,5,6	
BASED ON:	EM16 Survey by S. Presunka	
DATE OF WORK:	Sept 16-22/74	MAP REF. NO.:
DRAWN BY:	RJE after S.P.	FIG. NO.
DATE:	Sept 8/75	N.T.S. NO.: 114P/12
		5



V.L.F. Station Location - Maine, U.S.A.



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ASSESSMENT REPORT
NO. 5608 MAP 2

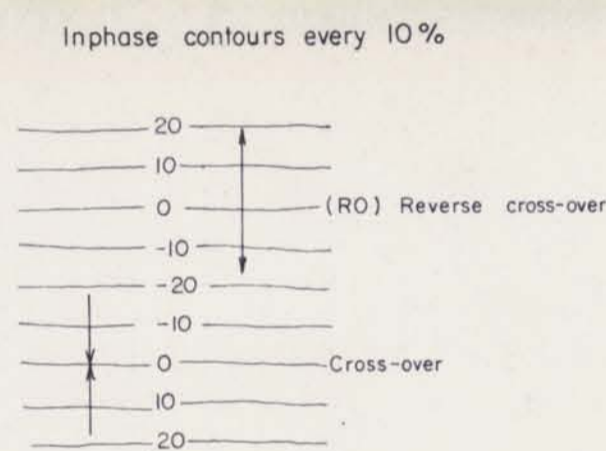
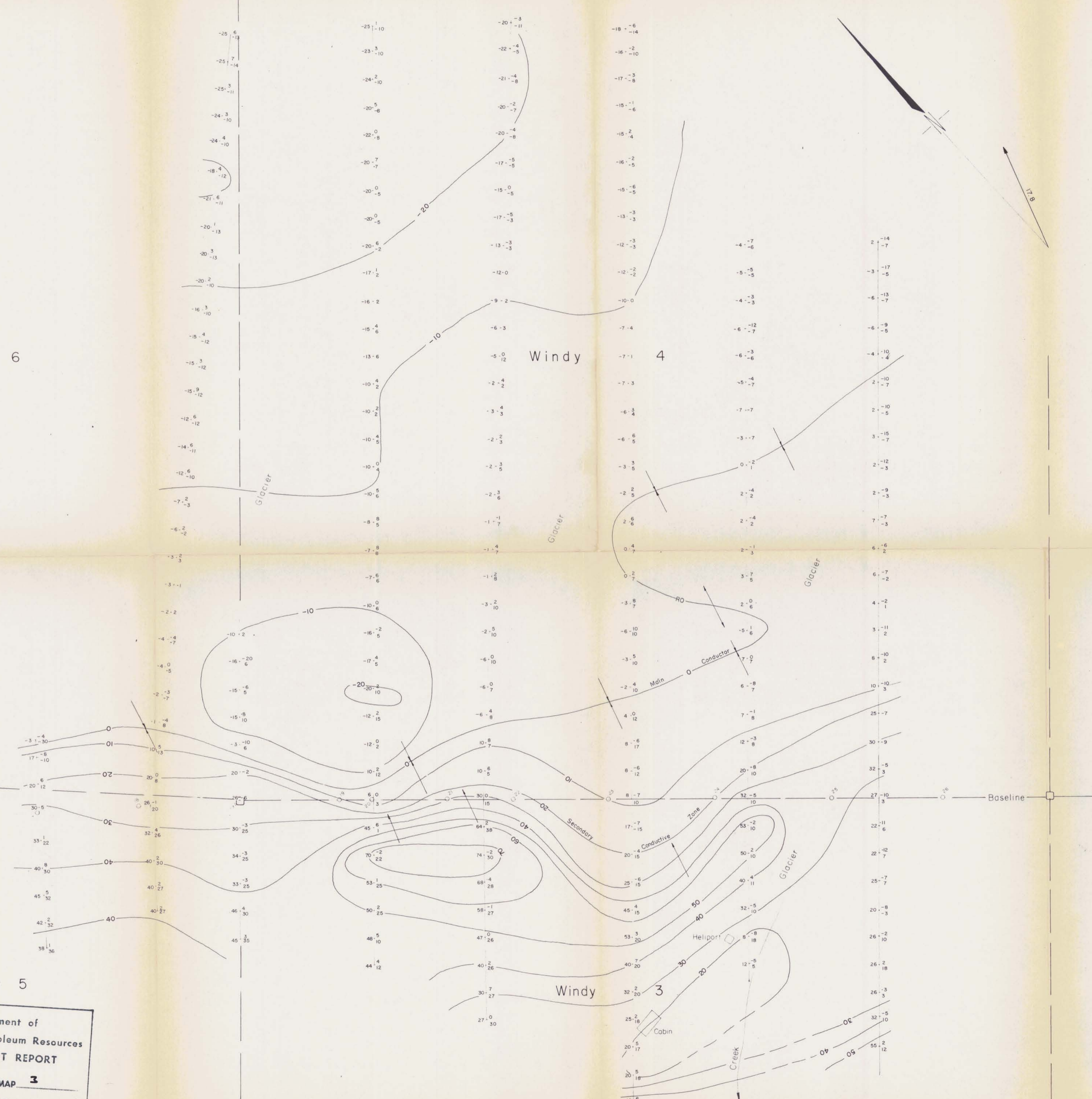
FALCONBRIDGE NICKEL MINES LIMITED		
PROPERTY:	Windy - Craggy Claims	5608
LOCATION:	Alsek R. Area - St. Elias Mountains	Map 2
TYPE OF MAP:	Electro Magnetic Survey - Instrument EM-16 V.L.F. St. 17.8 (Tilt Direction 017°)	
WORKING PLACE:	Windy Claims 3,4,5,6	
BASED ON:	EM16 Survey by S. Presunka	
DATE OF WORK:	Sept. 16-22/74	MAP REF. NO.:
DRAWN BY:	R.J.E. after S.P.	FIG. NO.:
DATE:	Sept. 8/75	N.T.S. NO.:
		1:4 P/12
		2

Windy 6

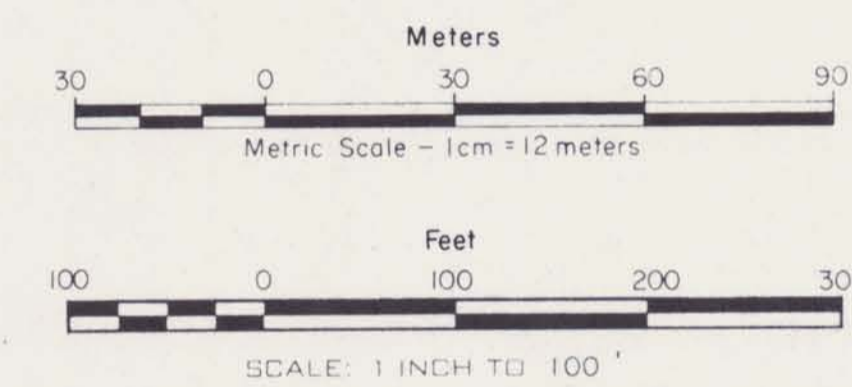
Windy 4

Windy 5

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5608 MAP 3



VLF Station Location - Maine, USA.



FALCONBRIDGE NICKEL MINES LIMITED	
PROPERTY:	Windy - Craggy Claims 5608
LOCATION:	Aisek R. Area - St. Elias Mountains Map 3
TYPE OF MAP:	Electro Magnetic Survey - Instrument EM-16 VLF St. 17.8 (Tilt Direction 017°) Inphase Contours
WORKING PLACE:	Windy Claims 3,4,5,6
BASED ON:	EM16 Survey by S Presunka
DATE OF WORK:	Sept 16-22/74
DRAWN BY:	RJE after SP
DATE:	Sept 8/75

[Signature]