

NIAGARA MINING & DEVELOPMENT CORP.
LTD. (NPL)
AFMAG and DIP NEEDLE SURVEYS
CROW AND RAVEN GROUPS OF MINERAL C
DEADWOOD 5 MILES NORTHEAST
82E/2E+2W GREENWOOD B.C.
49°, 118° SOUTHEAST
Aug-Sept. 1960 V.B. Bjorkman P.Eng.

00363

V. B. BJORKMAN, B.A.S.C., P.ENG., M.C.I.M.M.
CONSULTING MINING ENGINEER

PHONE WALNUT 2-7352

1795 ROSEBERY AVENUE
WEST VANCOUVER, B.C.

363

Certificate of Operator of Geophysical
Instrument

I, VICTOR B. BJORKMAN, CERTIFY that:

- (1) I am a graduate of the University of British Columbia, with the degree of Bachelor of Applied Science in Mining Engineering and Geophysics was a subject in the course of study.


V. B. BJORKMAN

RAVEN GROUP
COST STATEMENT

The following statements show costs of magnetometer and electromagnetic survey (AFMAG) carried out on the RAVEN GROUP of 6 Claims, by a crew of men employed by NIAGARA MINING & DEVELOPMENT CORPORATION LTD. (NPL).

Supervision was provided by Niagara Mining & Development Corporation Ltd. (NPL) under Mr. Ralph Sostad and Mr. V. B. Bjorkman, M.E. Surveys were carried out and the work performed during the months of July, August and September of 1960. Calculations are based on figures from the records of Niagara Mining & Development Corporation Ltd. (NPL) which are available at 510 - 535 West Georgia Street, Vancouver 2, B.C.

Costs, as calculated, are based on the delivery pay rate plus expenses for the crew of men who worked on the job, and include the professional fee of the consulting engineer, Mr. V.B.Bjorkman.

Only those operating costs directly chargeable to the job are included.

SUMMARY OF TOTAL COSTS FOR
THE RAVEN GROUP - 6 CLAIMS

Wages and Salaries	\$506.60
Living Expenses for Crew	82.50
Gas, Oil and Truck Rental	\$ 37.26
AFMAG Machine Rental, with Insurance	\$ 49.92
	\$676.28

SCHEDULE OF LABOUR

THE RAVEN GROUP

<u>NAME</u>	<u>JOB</u>	<u>DAYS</u>	<u>RATE</u>	<u>TOTAL</u>
R. SOSTAD	Supervision	6	\$25.00	\$150.00
C. LANGLOIS	Head Man	5	\$15.00	\$ 75.00
L. SOSTAD	Helper	2	\$15.00	\$ 30.00
O. FREEMAN	Helper	2	\$15.00	\$ 30.00
V. B. BJORKMAN	Engineer			\$221.60
				\$506.60

CROW NO. 1 GROUP

COST STATEMENT.

The following statements show costs of magnetometer and electromagnetic survey (AFMAG) carried out on the CROW No. 1 GROUP of 20 Claims by a crew of men employed by NIAGARA MINING & DEVELOPMENT CORPORATION LTD. (NPL).

Supervision was provided by Niagara Mining & Development Corporation Ltd. (NPL) under Mr. Ralph Sostad, and Mr. V.B. Bjorkman, M.E. Surveys were carried out and the work performed during the months of July, August, and September of 1960.

Calculations are based on figures from the records of Niagara Mining & Development Corporation Ltd. (NPL) which are available at 510 - 535 West Georgia Street, Vancouver 2, B.C.

Costs, as calculated, are based on the delivery pay rate plus expenses for the crew of men who worked on the job, and include the professional fee of the consulting engineer, Mr. V. B. Bjorkman.

Only those operating costs directly chargeable to the job are included:

SUMMARY OF TOTAL COSTS
FOR CROW NO. 1 GROUP -
20 CLAIMS

Wages and Salaries	\$1,441.70
Living Expenses for Crew	275.00
Gas and Oil, and Truck Rental	124.20
AFMAG Machine Rental, with Insurance	<u>166.40</u>
	<u>\$2,007.30</u>

CROWD NO. 2 GROUP

COST STATEMENT

The following statements show costs of magnetometer and electromagnetic survey (AFMAG) carried out on the CROWD NO. 2 GROUP OF 20 Claims by a crew of men employed by NIAGARA MINING & DEVELOPMENT CORPORATION LTD. (NPL).

Supervision was provided by NIAGARA MINING & DEVELOPMENT CORPORATION LTD. (NPL) under Mr. Ralph Sostad and Mr. V. B. Bjorkman, M.E. Surveys were carried out and the work performed during the months of July, August and September of 1960. Calculations are based on figures from the records of Niagara Mining & Development Corporation Ltd. (NPL) which are available at 510 - 535 West Georgia Street, Vancouver 2, B.C.

Costs, as calculated, are based on the delivery pay rate plus expenses for the crew of men who worked on the job, and include the professional fee of the Consulting Engineer, Mr. V. B. Bjorkman.

Only those operating costs directly chargeable to the job are included.

SUMMARY OF TOTAL COSTS FOR THE
CROW NO. 2 GROUP - 20
CLAIMS

Wages and Salaries	\$1,441.70
Living Expenses for Crew	275.00
Gas, Oil and Truck Rental	124.20
AFMAG Machine rental, with Insurance	166.40
<div style="text-align: right; margin-right: 50px;">TOTAL</div> <div style="text-align: right;">\$2,007.30</div>	

SCHEDULE OF LABOUR
ON CROW NO. 2 GROUP

<u>NAME</u>	<u>JOB</u>	<u>DAYS</u>	<u>RATE</u>	<u>TOTAL</u>
R. SOSTAD	Supervision	18½	\$25.00	\$462.50
C. LANGLOIS	Head man	11	\$15.00	\$165.00
L. SOSTAD	Helper	2	\$15.00	\$ 30.00
O. FREEMAN	Helper	3	\$15.00	\$ 45.00
V. B. BJORKMAN	Engineer			\$739.20
				\$1,441. 70

NIAGARA MINING AND DEVELOPMENT CORPORATION
LIMITED (NPL)

AEMAG and DIP NEEDLE SURVEY

ON THE

CROW AND RAVEN GROUPS OF MINERAL CLAIMS

DEADWOOD 5 MILES NORTHWEST

OF

GREENWOOD, B.C.

49°, 118° Southeast

V. B. BJORKMAN, P. Eng.

August - September, 1960.

S U M M A R Y

An electromagnetic survey by the AFMAG method accompanied by a dip needle survey has been made over two areas on the Crow and Raven Groups of Niagara Mining and Development Corporation Ltd. (NPL) near Greenwood, B.C. Three anomalous areas were found and diamond drilling is recommended for two of these anomalies.

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Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 363 MAP

Afmag. and dip needle survey 363-1 *In pocket* **A**
" " 363-2 " **B**

INTRODUCTION AND PURPOSE OF REPORT

In a preliminary report dated June 21, 1960, the writer recommended an AFMAG survey on the Crow and Raven Groups of mineral claims covering areas showing magnetic anomalies from an earlier airborne magnetic survey.

Two areas were indicated and an AFMAG and Dip Needle Survey have been made on these two areas by the writer.

This report deals with the results of these surveys and readings and data are recorded and plotted on two maps which accompany this report.

All measurements were made by the writer or in the writer's presence.

The maps are more specifically described as:

- (1) AFMAG and Dip Needle Survey, Crow and Raven Groups "A".
- (2) AFMAG and Dip Needle Survey, Crow and Raven Groups "B".

OUTLINE OF AFMAG METHOD

The AFMAG geophysical exploration method used in this survey measures the distortion of natural alternating magnetic fields of the earth's crust caused by geologic features. These natural fields are primarily caused by world wide thunder storm activity, and are in the absence of a conductive geologic feature horizontal with little, if any, vertical component. Where these fields are close to a conductive body the plane of polarization is tilted out of the horizontal.

If the tilt of these planes of non-horizontal polarization is measured at successive stations in a survey then the location of the conductor can be determined.

In this survey a Sharpes AFMAG serial No. 2001 was used. A Sharpes, D-2, Great Lakes Model, Dip Needle, was used for the dip needle measurements.

PROCEDURE

On each area a base line was laid out by compass and tape measurement. From these base lines perpendicular offset lines were run at 200 foot intervals and a grid formed by marking stations at 200 foot intervals on these offsets.

At each 200 ft. station the horizontal azimuth of polarization was first determined and then the vertical component of this polarization was measured at two frequencies, 150 c.p.s. and 510 c.p.s.

These are read as dip angles directly from the detecting coil and are plotted on the maps as dip angle profiles.

Where more detail was required stations were read at 100' intervals.

At each 200' main station readings were also taken with the dip needle. The method of reading maximum swing on the dip needle was used and the average of three readings were recorded.

Recorded figures under each station on the map are in order from top to bottom 150 c.p.s. AFMAG, 510 c.p.s. AFMAG, A ND Dip Needle readings.

RESULTS

Recorded data and the resulting AFMAG profiles and the resulting magnetic contours are plotted on the accompanying maps. The following interpretations are made from these results.

A BASE LINE AREA

1. Anomaly Location

An anomalous area extends from Line A8 to Line A16 with a width of approximately 500ft. This anomalous area closely follows the course of Deadwood Creek.

2. Conductivity

Conductivity is generally low as evidenced by the number of single low frequency crossovers of the tilt angles, and the ratio of the peak to peak amplitudes of the low and high frequency profiles near the crossovers. The fact that the axis of the conductor falls generally in an area of high magnetic contours indicates that the conductor is magnetic and not caused by graphites or clay beds.

3. Dip of Conductor

The profiles of the dip angles are nearly asymmetrical near the crossovers indicating a steeply dipping conductor.

Depth of Conductor

The flat crossover of the dip angle profiles indicate that the conductor is deep and is probably at the maximum working depth of this method. This would be in the

order of 500 to 700 ft.

4. Depth Extent of Conductor

The value of the angles well back from the crossovers remain constant or are increasing indicating good depth extent.

5. Strike Length

The indicated strike length is from lines A8 to A15 or better than 1400 ft.

6. Width of Conductor

The number of crossovers and the spread of the high and low frequency crossovers on any one line would indicate a wide conductor with variable conductivity across the strike. A minimum of 500' is suggested.

B BASE LINE AREA

1. Anomaly Locations

Two anomalous areas are indicated by the plotted results. B No. 1 anomaly extends from a point 900 ft. from the base line on Line B 1 to a point near the base line on Line B 5. B No. 2 anomaly extends from a point 300 ft. from the base line on Line B 10 to a point 200 ft. from the base line on Line B 12.

2. Conductivities

Where a value for conductivity can be obtained B No. 1 anomaly gives a medium to good conductivity. B No. 2 conductivity is poor.

3. Dip of Conductors

On the line B 2 on B. No. 1 conductor the asymmetry of the lines near the crossover would indicate a flat, westerly dipping conductor. This is also indicated by the spread of the low and high frequency crossovers. This displacement is reversed on Line B5. There is no indicated explanation that can be arrived at for this. B No. 2 conductor is indicated to be near vertical.

4. Depth of Conductor

The depth of B No. 1 conductor as indicated by the slope of the crossovers is taken to be in the medium range.

B No. 2 is deep.

Medium is taken to be 300 to 500 ft., Deep 500 to 1000 ft.

5. Depth Extent of Conductors

Only a shallow depth extent is arrived at for B No. 1 conductor from the values retained by the profiles back from the crossovers. This is to be expected from a flat lying body.

B No. 2 conductor shows good depth extent.

6. Width of Conductor

No estimate can be made for the width of B No. 1 or B No. 2 conductors.

7. Dip Needle Contours

Both anomalies are in relatively high magnetic areas and are not believed to be caused by graphite or clay beds.

CONCLUSIONS

From the above interpretations the writer submits the following conclusions:

1. That on A. Base Line Area a wide conductor with varying degrees of conductivity across the strike exists.
2. That this conductor is probably a wide fault and/or shear zone. The conductivity caused by mineralization in the shear.
3. That the valley of Deadwood Creek may be following the course of this shear.
4. That B No. 1 Anomaly is caused by a flat lying conductor and is at least 1200' long.
5. That B No. 1 anomaly is caused by a mineralized zone and not graphite or clay beds.
6. That B No. 2 conductor is steep, a poor conductor and only has 400' of strike length.

RECOMMENDATIONS

The writer submits the following recommendations:

1. That a diamond drill hole be drilled at a point on B No. 2 anomaly at a point 600 ft. West of the base line on Line B 2. This hole to be drilled vertical and to go to

a depth of 500 ft. unless mineralization is intersected sooner. Results of this drilling would indicate further work necessary.

2. That Two diamond drill holes be drilled on A Base Line Area anomaly. The first hole at 800 ft. from the base line on Line A 14 on the NE side of Deadwood Creek. This hole to be drilled SE at 50° . 700 ft. deep. The Second hole to be drilled at a point 900 ft. from the Base line on Line B 8 to be drilled SE at -50° 700 ft. deep.
3. That no further work be done on Anomaly B. No. 2.
4. That recommendations be carried on in the order written here.

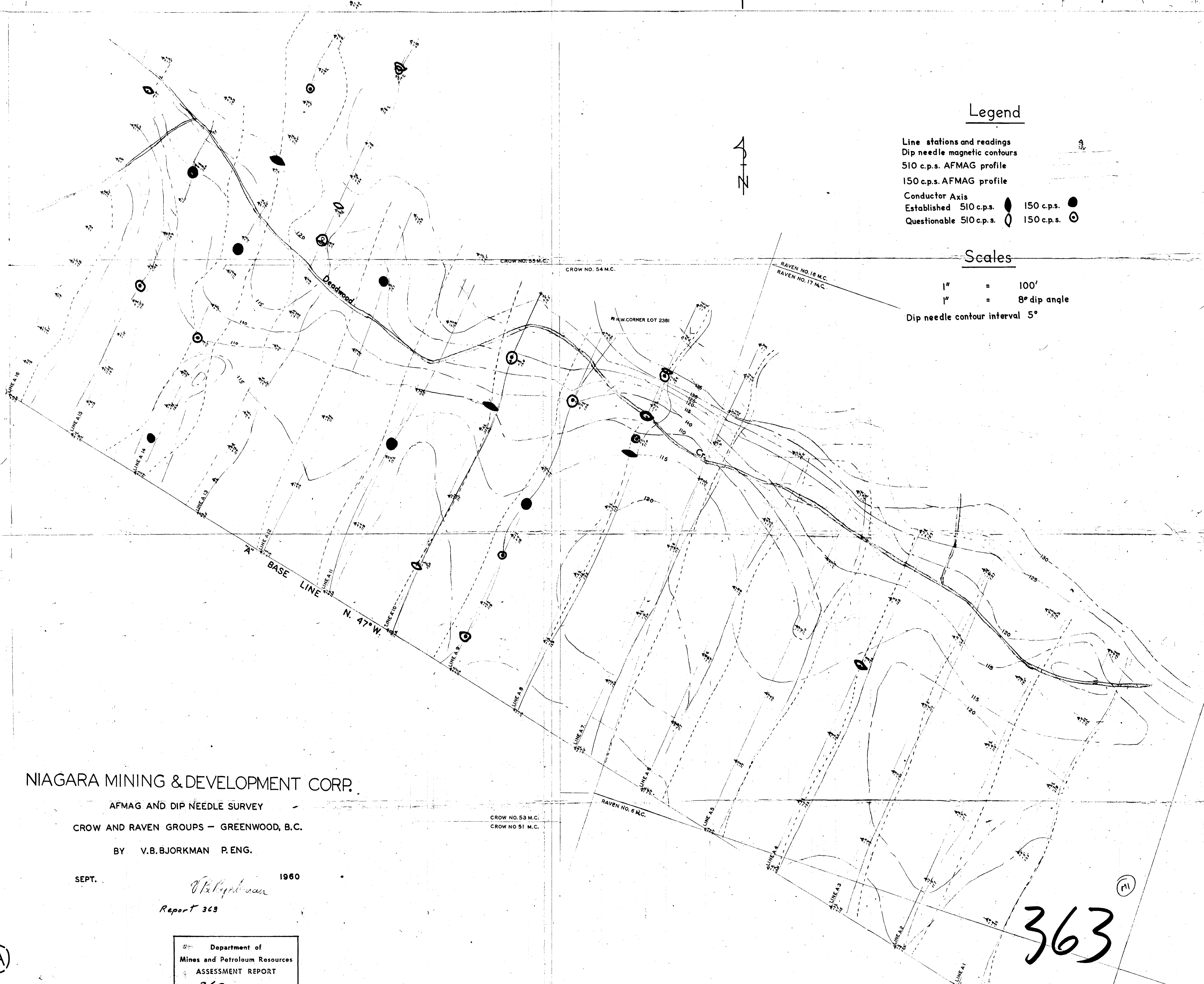
Respectfully submitted


V.B. BJORKMAN, P. Eng.

Consulting Mining Engineer,

VANCOUVER, B.C.

Sept. 19, 1960.



Legend

- Line stations and readings
- Dip needle magnetic contours
- 510 c.p.s. AFMAG profile
- 150 c.p.s. AFMAG profile
- Conductor Axis
- Established 510 c.p.s. ● 150 c.p.s. ○
- Questionable 510 c.p.s. ◐ 150 c.p.s. ◑

Scales

- 1" = 100'
- 1" = 8° dip angle
- Dip needle contour interval 5°

NIAGARA MINING & DEVELOPMENT CORP.

AFMAG AND DIP NEEDLE SURVEY

CROW AND RAVEN GROUPS - GREENWOOD, B.C.

BY V.B. BJORKMAN P. ENG.

SEPT. 1960

V.B. Bjorkman
Report 363

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 363 M.C.P. 1

363

(A)



Legend

- Line stations and readings
- 510 c.p.s. AFMAG profile
- 120 c.p.s. AFMAG profile
- Conductor Axis
- Established 510 c.p.s.
- Questionable 510 c.p.s.
- Dip Needle magnetic contours

Scales

1" = 100'
 1" = 8° dip angle
 Dip Needle contour interval 5°

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 363 MAP 2

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NIAGARA MINING & DEVELOPMENT CORP.

AFMAG AND DIP NEEDLE SURVEY

CROW AND RAVEN GROUPS — GREENWOOD, B.C.

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V.B. Bjorkman

