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#### REPORT ON

COMBINED MAGNETIC AND ELECTROMAGNETIC SURVEYS

IN THE DAYOHESSARAH LAKE AREA

HAMBLETON TOWNSHIP

SAULT STE. MARIE MINING DIVISION

CANEX AERIAL EXPLORATION LIMITED TORONTO, ONTARIO

BY

MAY 5, 1969

NOT TO BE REMOVED FROM
THE OFFICE OF THE RESIDENT
GEOLOGIST, ONT. DEPT. OF MINES
SAULT STE. MARIE, ONT.

ASSESSMENT WORK

SSM-1492

W. E. NYMAN



RESIDENT GEULOGIST

ODM 63.2533

#### INTRODUCTION

During the period from February 9, 1969 to March 19, 1969 three separate grophysical surveys were done on a group of 66 claims in the White River area by Canex Aerial Exploration Limited of 2600-401 Bay Street, Toronto. These surveys were 1.) Sharpe Fluxgate Magnetic 2.) Crone Dual Frequency Electromagnetic and 3.) Crone Radem Electromagnetic.

#### LOCATION AND ACCESS

The claims are located in Hambleton Township,
Sault Ste. Marie Mining Division and lie approximately
twenty air miles northeast of White River, Ontario.
Access to the property is by way of either ski or float
equipped aircraft which can land on either Hambleton or
Dayohessarah Lakes both of which are partially covered
by and form part of the claim group.

Forty claims recorded in the name of Canex Aerial Exploration Limited, 2600-401 Bay Street are numbered. SSM 101000 - SSM 101011 incl. SSM 102511 - SSM 102522 incl. SSM 104366 - SSM 104376 incl. SSM 104378 - SSM 104382 incl.

Twenty six claims recorded in the name of Floyd Faulkner of the same address are numbered.

SSM 107437 - SSM 107461 incl. and SSM 107659

This makes a group total of sixty six claims.

#### PREVIOUS WORK

The area was mapped by K. G. Fenwick in 1963-64 for the Ontario Department of Mines.

In 1957 it was mapped by T. Page and M. Bartley for the Department of Industrial Development, Canadian Pacific Railway Company. Page noted in his report that a positive test for nickel (using dimethylglyoxime as reagent) was obtained from the metagabbro on the north end of Dayohessarah Lake, however he attached no significance to this.

Kasper Sperle of Manitouwadge while prospecting the area in 1968 discovered two large pieces of copper bearing float and a showing of nickel copper in peridotite. The property was optioned by Canex in September 1968 and work was began in the winter of 1969.

#### GEOLOGY

The most recent geology of the area is shown on the Ontario Department of Mines map Geology of the Dayohessarah Lake area by K. G. Fenwick. The area of the claim group is shown to be underlain by meta volcanics

(amphibolite both massive and schistose) in the north and by both meta volcanics and metasediments in the south. The southern portion is also shown to contain dikes and small plutons of metagabbro.

#### TYPES AND METHODS OF SURVEY

The complete group was covered with a grid cut on 400' centres off of two baselines running N-S in the northern part of the group and N 45 w in the southern part. Nine lines with 200' centres were cut to detail an area on the south end of the north-south baseline e.g. Lines 26S to 40S inclusive. A total of 58.8 miles of line were cut.

For the magnetic survey a Sharpe MF-1 Fluxgate magnetometer was used with a sensitivity of 20 gammas per scale division on the most sensitive scale.

Readings were taken at 50' intervals along the grid lines and a total of 6216 stations were established.

All readings have been tied into a base system on the grid and drifts have been corrected.

A Crone dual frequency (1800 cps.and 480 cps) transceiver unit with a sensitivity of il was used for the regular electromagnetic survey. The survey was carried out using an in-line method and a coll separation of 200 feet. Readings were taken along the grid lines at 100 foot intervals on high frequency (1800 cps). In

anomalous areas readings were taken on both high and low frequencies at 50 foot intervals. The dip angles shown on the plan are the resultant angles. A total of 2735 stations were read with the regular EM unit.

Due to the disseminated nature of the nickel copper showing it was decided to also survey the area with an electromagnetic unit utilizing the low radio frequencies. Instruments utilizing these frequencies are capable of detecting a much smaller concentration of sulphides than instruments using the regular electromagnetic frequencies.

For the radio frequency survey a Crone Radem receiver unit with a sensitivity of ± 1° was used. Readings were taken from two different transmitting stations (Annapolis, Maryland and Cutler, Maine) at 100 foot intervals along the grid lines. A total of 5510 station readings were taken.

#### SURVEY RESULTS

#### Magnetic-

correlating the stronger linear magnetic anomalies with the mapped metagabbros shows them to be coincident. Projecting the same shows the metagabbro to be much more extensive than mapped and actually extends fully across the claim group and continues both

to the north and to the south.

The magnetic anomalies underlying Dayohessarah Lake give strong evidence of a synclinal fold underlying the Lake. The nose of the fold appears to lie at the north end of the lake just to the west of Dayohessarah Creek. The axis trends to the southward from the nose for approximately half a mile and then swings into the south east out of the map area. Magnetic evidence also indicates that the metagabbro in this area is undoubtedly a sill interfolded with the metasediments and metavolcanics and having exposure only on the limbs and nose of the fold.

The other linear anomalies of lesser magnitude are coincident in spots to mapped diabase dike and their strength and pattern would tend to support the evidence that this is their source.

### Crone Dual Frequency Electromagnetic

The dual frequency electromagnetic survey detected only 1 single line conductor. This is located on L 44 W at 2+00S near the shore of Dayohessarah Lake. Conductivity is good and the dip is vertical

### Crone Radem Electromagnetic

Numerous Radem conductors were located varying in strength of response from very weak to strong. The bulk of the Radem anomalies appear to be directly associated with the high magnetic anomalies which were interpreted as metagabbro. This could be caused by sheared or mineralized contacts, by combinations of these, or

by disseminated sulphides within the metagabbro itself.

The single line conductor detected by the dual frequency electromagnetic unit on L44W at 2+00S was extended across Lines 48W, 52W and 56W.

The diabase dike interpreted along the east boundary of the group also in places is associated with a medium strength Radem conductor. This dike could be filling an old fault zone which could be the source of the Radem anomaly.

Other weaker anomalies are often associated with low swampy ground and swampy creek beds.

The Radem anomaly of most immediate interest lies to the northwest of the nickel copper showing and to the north of the copper bearing float. The copper nickel showing is located at 46W 13+00N. The above mentioned anomaly crosses lines 48W and 52W at 14+00N. The copper bearing float is located at 49W from 7N to 10N.

#### RECOMMENDATIONS

A program of geological mapping, prospecting and trenching should greatly aid in sorting out the numerous magnetically associated Radem conductors.

Any drill program should be contingent upon the result of the above.

Respectfully submitted

WE Myman

W. E. Nyman



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#### SPECIAL PROVISION

#### ASSESSMENT WORK DETAILS

NAMES AND ADDRESSES
Chief Line Cutter or Contractor Jean Alix Company Limited, Val D'or, Quebec
Party Chief William Nyman, P.O. Box 1040, Wawa, Ontario
Consultant Duncan Crone, 979 Lakeshore Rd. East, Port Credit, Ontario
COVERING DATES
Line Cutting February 9 to March 10, 1969
Field and Office February 20 to March 19, 1969 May 1 to May 4, 1969
INSTRUMENT DATA
Make, Model and Type Crone Radem Electromagnetic
Scale Constant or Sensitivity ± 1° or provide copy of instrument data from Manufacturer's brochure
Total Number of Stations Within Claim Group
Number of Miles of Line cut Within Claim Group 58.8 miles
ASSESSMENT WORK CREDITS REQUESTED
Geological Survey Days per Claim
Geophysical Survey 20 Days per Claim
MINING CLAIMS TRAVERSED
SSM 101000 - SSM 101011 incl. SSM 102511 - SSM 102522 incl.
SSM 104366 - SSM 104376 incl. SSM 104378 - SSM 104382 incl.
SSM 107437 - SSM 107461 incl. SSM 107659
TOTAL 66 claims
DATE May 4, 1969 SIGNED WE Myman

A separate form is required for each type of survey

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Consultant Duncan Crone, 979 Lakeshore Rd. East, Port Credt, Ontario
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Field and Office February 20 to March 19, 1969 April 26 to 30, 1969
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Party Chief William Nyman, P.O. Box 1040, Wawa, Ontario
Consultant Duncan Crone, 979 Lakeshore Rd. East, Port Credit, Ontario
COVERING DATES
Line Cutting February 9, 1969 to March 10, 1969
Field and Office February 20 to March 19, 1969 April 20 to 25, 1969
INSTRUMENT DATA
Make, Model and Type Sharpe MF-1 Fluxgate Magnetometer
Scale Constant or Sensitivity 20 gammas per scale division or provide copy of instrument data from Manufacturer's brochure
Total Number of Stations Within Claim Group 6216
Number of Miles of Line cut Within Claim Group 58.8 miles
ASSESSMENT WORK CREDITS REQUESTED
Geological Survey Days per Claim
Geophysical Survey 40 Days per Claim
MINING CLAIMS TRAVERSED
SSM 101000 - SSM 101011 incl. SSM 102511 - SSM 102522 incl.
SSM 104366 - SSM 104376 incl. SSM 104378 - SSM 104382 incl.
SSM 107437 - SSM 107461 incl. SSM 107659
TOTAL 66 claims
DATE May 4, 1969 SIGNED WE Myman

A separate form is required for each type of survey

# Submission of Geological and Geophysical Surveys as Assessment Work

#### SPECIAL PROVISION

If, in the opinion of the Minister, a ground geophysical survey meets the requirements prescribed for such a survey, including:

- (a) coverage
- (b) line spacing not exceeding 400 foot intervals
- (c) stations not exceeding 100 foot intervals or
- (d) the average number of readings per claim not less than 40 readings,

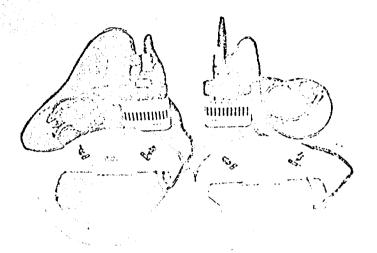
it will qualify for a credit of 40 assessment work days for each claim so covered. It will not be necessary for the applicant to furnish any data or breakdown concerning the persons employed in the survey except for the names and addresses of those in charge of the various phases (linecutting contractor, etc.). It will be assumed that the required number of man days were spent in producing the survey to qualify for the specified credit.

An additional ground geophysical survey using the same grid system and otherwise meeting these requirements will qualify for an assessment work credit of 20 days.

A geological survey using the same grid system, and meeting the requirements for submission of geological surveys for maximum credits will qualify for an assessment work credit of 20 days. If line cutting has not previously been reported with any other survey and is reported in conjunction with the geological survey a credit of 40 days per claim will be allowed for the survey.

Credits for partial coverage or for surveys not meeting requirements for full credit will be granted on a pro-rata basis.

#### **EQUIPMENT SPECIFICATIONS**



The Dual Frequency Unit

Each unit is composed of two almost identical transceiver sets consisting of a coil with clinometer, earphones, circuit box and knapsack. The units are shipped in wood boxes complete with 2 spare power batteries, 3 spare amplifier mercury batteries, spare fuses and a complete 14-page instruction and interpretation booklet.

Frequency of operation: Hi-1800 cps, Dual-480 and 1800 cps.

Maximum range: Hi-300'; Dual-400' at 430 cps and 500' at 1800 cps.

Weight per set: Hi 10 lbs., Dual 15 lbs. Shipping weight (box complete with spares): Hi 39 lbs., Dual 55 lbs.

Earphones: crystal type.

Batteries: power -- 12 volt Burgess, TW2 life of 1 to 2 months. Amplifier -- 1.4 volt mercury.

Mallory 4RM-1 life of 3 months.

Clinometers: magnetically damped, range of ±70 degrees.

5,000 cps units are also available for the detection of disseminated sulphides and other poor conductors.



The High Irrequency Unit

## CRONE GEOPHYSICS LIMITED

ONTARIO, CANADA

#### THE CRONE EM METHOD AND EQUIPMENT

#### USES:

- -accurate EM surveys without elevation or positioning errors.
- —dependable results without line cutting even in rugged terrain areas.
- -ground location of airborne anomalies.
- —evaluation of showings; dip, strike, length and conductivity information when the showing is examined.

#### FLEXIBILITY:

—use the patented Crone method, vertical loop broadside or fixed transmitter methods, with the same equipment.

#### **EQUIPMENT:**

- -compact, rugged and reliable.
- -simple to operate.
- -2 units to choose from:
  - (1) Hi frequency unit 10 lbs. per man
  - (2) Dual frequency unit 15 lbs. per man

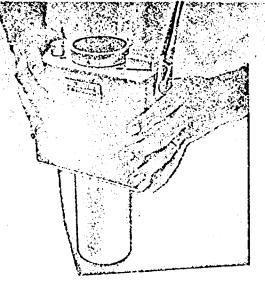
#### THE CRONE METHOD:

This method was first developed for Noranda Mines Limited in 1957. At present it is one of the most commonly used EM methods with over 50 units in the field in Canada alone.

It is based on the transmission of similar EM fields from two locations and measurement of their dip angles at the same locations. These two dip angles are then added together and equal zero if no conductors are present. This process very accurately eliminates both elevation and orientation effects that restrict the operational procedure and ultimate accuracy of most other EM methods.

Letters patents: Canadian #631,506 and U.S. #309,911





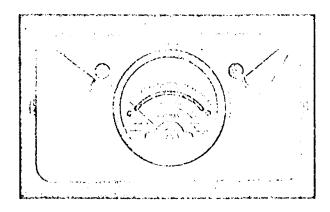
## FLUXGATE MAGNETOMETER

The MF 1 Fluxgate Magnetometers and their extended sensitivity series, the MF-1-100's are designed primarily for the oil and mineral exploration industries. They incorporate advanced transistorized circuitry and extensive temperature compensation with light weight and a self-levelling mechanism. Although the basic MF-1 and MF-1-100 are intended primarily for accurate ground surveys in the mining industry, modifications are available for base station recording, for vertical gradient measurements, for measuring susceptibilities, determining remanence of rock samples and for storm monitoring on aeromagnetic surveys.

1.4 U.SCA4.8

#### (a) MF-1

The MF-1 Fluxgate Magnetometer is a vertical component magnetometer designed for accurate ground surveys in



the mining industry. Advanced transistorized circuitry and extensive temperature compensation is the core of its accuracy, comparable to precision tripod mounted Schmidt type magnetometers. It is a hand held instrument and needs only coarse levelling and no orientation. Features such as direct reading of gamma values and the possibility of accurate zero settings at base stations ensure simplicity of operation and high field economy. The readability is 5 gammas on the 1000 gamma range.

#### (b) MF-1-G

The MF-1-G Fluxgate Magnetometer has the same electronics and specifications as the MF-1. The difference lies in that the sensor is detached and enclosed in a small cylindrical tube thus permitting the sensor (geoprobe) to be oriented and tilted in any desired direction. Since a 25 foot connecting cable joins the sensor to the instrument housing, the geoprobe may be placed away from local epurious magnetic disturbances in the vicinity of the electronics housing. Thus this magnetometer may be used for the study of the magnetic properties of rocks, remanence etc.

#### (c) MF-1-GS

The MF-1-GS Magnetometer again has the same electronics and specifications as the MF-1 but has two sensors, the attached self-levelling sensor of the MF-1 as well as the detached geoprobe of the MF-1-G. Thus this magnetometer may be employed on rapid ground magnetometer surveys and also used for vertical gradient measurements and to measure the magnetic properties of tacks.

SSM-1492

# SPECIFICATIONS OF FLUXGATE MAGNETOMETER MODEL MIF-1

Ranges: Plus or minus -1,000 gammas f. sc. 3,000 10,000 30,000 100,000 Sensitivity 20 gammas/div. 200 500 2,000 Meter: Taut-band suspension 1000 gammas scale 1%" long — 50 div. 3000 gammas scale 1 11/16" long — 60 div. 1000 to 10,000 gamma ranges  $\pm$  0.5% of full scale Accuracy: 30,000 and 100,0000 gamma ranges  $\pm$  1% of full scale Operating Temperature: -40°C to -1-40°C -40°F to -1-100°F Temperature Stability: Less tl.an 2 gammas per °C (1 gamma /°F) Hoise Level: Total I gamma P-P Long Term Stability: ± 1 gamma for 24 hours at constant temperature **Bucking Adjustments:** 10,000 to 75,000 gamma, by 9 steps of approximately 8,000 gam-(Latitude) mas and fine control by 10 turn potentiometer. Convertible for southern hemisphere or ± 30,000 gammas equatorial. Recording Output: 1.7 ma per oersted for 1000 to 100,000 gamma ranges with maximum termination of 15,000 ohms. Response: DC to 5 cps (3db down) Connector: Amphenol 91-MC3F1 **Batteries:** 12 x 1.5V-flashlight batteries "C" cell type) (AC Power supply available) Consumption: 50 milliamperes Instrument — 6½" x 3½" x 12½" 165 x 90 x 320 mm Dimensions: Battery pack - 4" x 2" x 7" 100 x 50 x 180 mm

Weights:

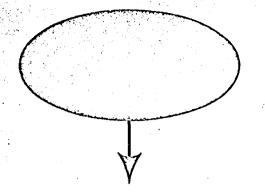
254 mm dia. x 410 mm
Instrument — 5 lbs. 12 oz. 2.6 kg.
Battery Pack — 2 lbs. 4 oz. 1.0 kg.
Shipping — 13 lbs. 6.0 kg.

Shipping Container — 10" dia x 16"



SCINT PEX LIMITED

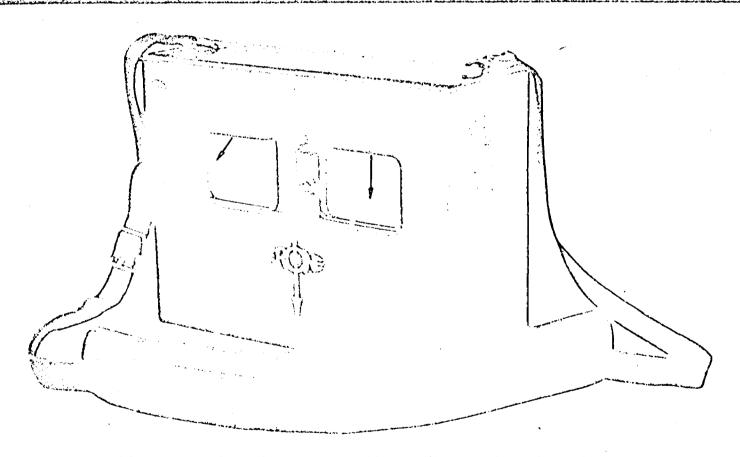
79 Martin Ross Avenue, Downsview, Ontario, Canada



### CRONE GEOPHYSICS LIMITED

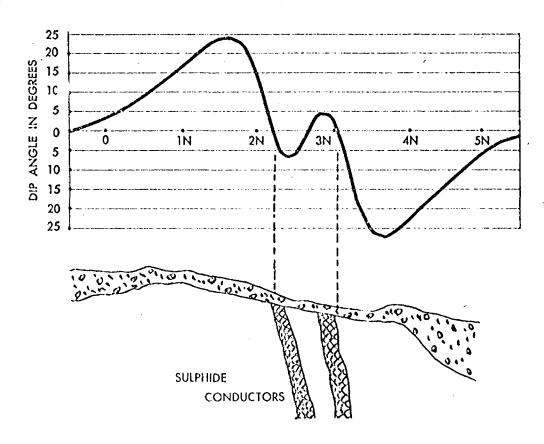
979 LAKESHORE ROAD E. PORT CREDIT, ONTARIO CANADA

Phone: 274-3704



This is a rugged, simple to operate, ONE MAN EM unit. It can be used without line cutting and is thus ideally suited for GROUND LOCATION OF AIRBORNE CONDUCTORS and the CHECKING OUT OF MINERAL SHOWINGS. This instrument utilizes higher than normal EM frequencies and is capable of detecting DISSEMINATED SULPHIDE DEPOSITS and SMALL SULPHIDE BODIES. It accurately isolates BANDED CONDUCTORS and operates through areas of HIGH HYDRO NOISE. The method is capable of deep penetration but due to the high frequency used it is affected by clay and conductive overburden. Anomalies detected in such areas should be checked with other methods before drilling.

Example of a RADEM traverse over a Banded Conductor in the Timmins area of Ontario.



#### SPECIFICATIONS

READOUT -- Dip angle of resultant VLF magnetic field component from an inclinometer of ± ½ degree sensitivity

NULL

INDICATOR --- Both audio (loudspeaker) and visual by means of an averaging field strength meter

TUNING -- Preset switch tuning

BATTERIES -- 2 of 9 volt Eveready # 216, independent test indicators

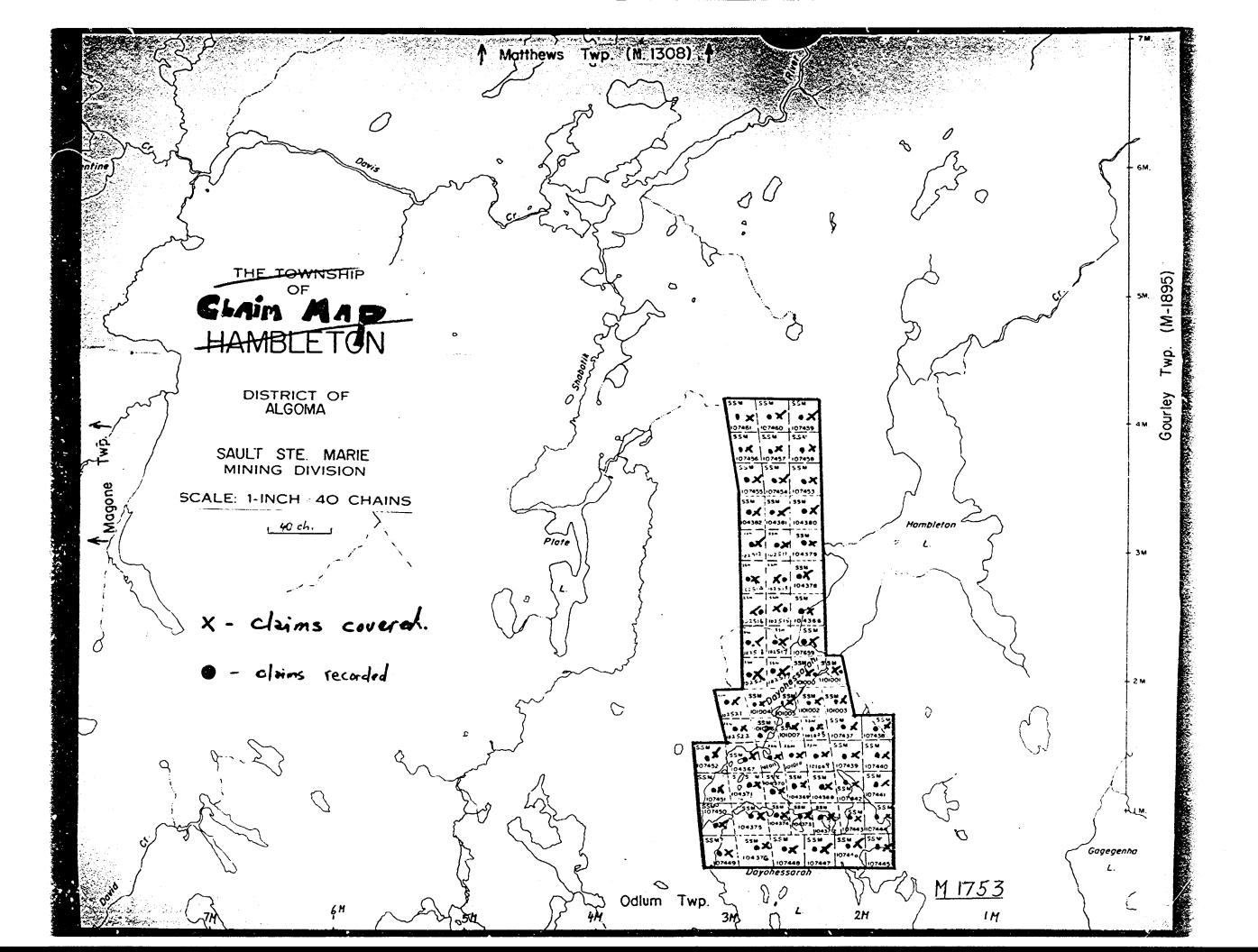
STATIONS -- Standard 5 stations -- Cutler, Maine 17.8; Seattle, Wash. 18.6; Ft. Collins, Colorado 20.0; Annapolis, Md. 21.4; Balboa, Panama 24.0 KCs.

Optional --- N.W. Cape, Australia 15.5; Lualualei, Hawaii 23.4; Rugby, England 16.0 KCs.
 Other stations as they become operational

WEIGHT — Receiver --- 4 lb. Leather Case --- 2 lb. Shipping Weight --- 15 lb.

PRICE -- \$2,250.00 Canadian

RENTAL --- \$150.00 per month



# SEE MAPS:

# HAMBLETON-0010-C1:

