



A property owned by Hollinger Mines Limited was tested by a reconnaissance electromagnetic survey. The type of survey is known as VLF or 20 KHz E.M. Specifically an EM-16 unit was used.

Many anomalies were located ranging from uninteresting to good. Various conductor strikes are represented.

Several anomalies should be tested using lower frequency electromagnetic apparatus but not as an ultimate test for explaining the conductive mediums.

## Introduction

In early 1970 a geophysical survey was performed to test this entire property for subsurface conductivities in a fast and cheap manner.

Many conductive zones were detected and an analysis of the results forms the scope of this report.

## Property

The property designated as the Bristol-Godfrey 5 Group contains 58 contiguous claims owned by Hollinger Mines Limited. These are:

~~P-9887~~

	P-100728 to 100731 inclusive
P-100736 to P-100753 inclusive	P-100772 to 100780 inclusive
P-100813 to P-100825 inclusive and	P-100880 to 100892 inclusive

The group, staked in 1969 straddles the boundary between Godfrey and Bristol Townships. Both are in the Porcupine Mining Division.

## Location and Access

The property is situated 8 miles west of the Town of Timmins between highways 101 to Wawa and 576 to Kamiskotia Lake. From either highway it is no less than  $1\frac{1}{2}$  roadless miles to the edge of the group. During the winter months, the Township boundary through the center of the property becomes a haulage road that serves a sawmill situated on highway 101 near the east boundary of Bristol Township.

## Topography

Generally the area is very level and consists of spruce muskeg with a tundra type vegetation. Occasional productive spruce growths are associated with deciduous poplar stands. In the west and southwest part of the property the land rises gradually to the

to the west for a distance of more than half a mile. The total change in elevation here could be as much as 100 feet. Along this ridge, deciduous vegetation predominates including a rare abundance of small maples. Minor birch groves and cedar swamps appear at random elsewhere on the property.

### Geology

The geology of Godfrey Township was mapped by N. Hogg in 1951 and 1952. (1) The geology of Bristol Township was mapped by S. A. Ferguson between 1953 and 1955. (2) Here, extensive use was made of magnetometer profiles resulting in considerable added information in the drift covered portions of the Township.

In spite of these two geological surveys, the area within the boundaries of the property is left uncoloured except for diabase dykes detected by the geophysics. The only outcropping within the group is near the south boundary. It contains east striking flows of rhyolite and andesite intersected by a north striking diabase dyke. The possibility of a major rhyolite andesite contact in this area is suggested by Ferguson's mapping.

Two diamond drill holes in the northwest claims are reported as having encountered sedimentary graphitic material. Earlier this month a diamond drill hole tested one of the better electromagnetic anomaly near the Township line in the center of the group. Narrow slaty graphitic sediments were intersected in a dacitic lava.

### Previous Work

Prior to the acquisition of the property by Hollinger the only known previous workings within the group were the diamond drilling by the Canadian Nickel Co. in the northwest corner and the geophysics mentioned above. The extent of the field work leading to the drilling of these two holes is not known but it is felt that it was limited to the immediate area surrounding an airborne electromagnetic response.

In the fall of 1969 the reconnaissance grid lines were cut from the base lines bearing  $68^{\circ}$ . In January 1970 the remaining northwest part of the property was grided from a  $90^{\circ}$  striking base line.

Early in 1970 and prior to this survey, a geomagnetic survey covering the  $68^{\circ}$  oriented grid was awarded to a local geophysical contractor. Geomagnetic coverage of the remaining portion was completed by Hollinger personnel.

#### Personnel

The entire survey was performed by W. King, D. Tremblay and W. Caughell did the plotting and drafting of the plans. The author evaluated the anomalies and interpreted the conductor strikes. All are employees of Hollinger Mines Limited.

#### Instrument Used

The survey was performed using an EM-16 electromagnetic receiver manufactured by Geonics Limited of Toronto. The inclinometer on the unit (Ser. #48) is calibrated in percent, therefore all readings were recorded to the nearest unit percent. See Appendix I for manufacturer's brochure.

#### Survey Method

All the instrument readings were obtained along cut and measured picket lines spaced 400 feet apart, striking 158 degrees on the southern grid and 180 degrees in the northwest section. Observations were taken at a measured 100 ft interval. The operator made the observations on a signal received from a transmitting station located near the Town of Cutler in the state of Maine. (Designated NAA). This locality bears 100 degrees from the survey area. Throughout the survey, the operator maintained the direction of the transmitted signal in the direction of his right shoulder.

This results in the profile configuration shown ~~xxxxx~~ on the accompanying maps, when negative readings are plotted on the side of the line in the direction of the transmitter and conversely.

### Field Production

The survey was performed at intervals during the months of February, March and April of 1970.

A total of 2037 observations were made over 38.02 miles of survey lines.

### Results

In total, 300 cross-overs were obtained. From these, 47 separate conductors are interpreted varying in interest from nil to very interesting, 29 of the most interesting anomalies occurring within the claim group are labelled.

The conductors in the south half trend north of east but are generally east striking near the Township line. In the north west corner, the conductors strike southeast.

### Presentation of Data

As previously mentioned the readings presented in profile form are plotted with the negative values to the right of the line towards the direction of the transmitter. It is interesting to note here, and this applies elsewhere on the accompanying maps, that the transmitting stations Cuttler Maine and Seattle Washington being diametrically opposite, there is no appreciable difference in the resulting measurements. However when using the west station the operator must face south so that the terminology persist. For this reason our legend on the maps does not show polarity.

Also, for convenience the profile scale for the Bristol North East Sheet is double the scale of the plotting on the North-West sheet. These are 1" = 20% and 1" = 40%.

### Description of Anomalies

The numbered anomalies that lie with the Bristol-Godfrey 5 group of claims are

10 to 34 inclusive  
and 37 to 40 inclusive

Because of the transition that V.L.F. interpretation is presently undergoing, the writer feels that a more detailed evaluation of each anomaly other than that presented on the map would be superfluous.

All the labelled anomalies are believed to represent conductivity originating from a bedrock source. Amongst these, anomalies 29 and 30 are due to slaty graphitic bands encountered in the previously mentioned drilling. Anomalies 11 at it's northwest extremity and anomalies 21 and 25 are also potential drill targets. The strong real (in-phase) profiles between anomalies 22 and 23 are thought to represent clay edge effects near the outcrop area. Empirically, in other clay covered areas it is the opinion of the writer that strong imaginary (out-of-phase) responses tend to represent large features like large orebodies while strong real (in-phase) responses can be obtained from small features such as a wire fence. Then any combination of these two parameters represents distance to conductor and conductivity itself. Conceivably a large conductive medium overlain by conductive material would give rise to a response on the imaginary component but fail to show any change in the real profile. The condition of proper line, and especially transmitter, orientation is imperative for proper analysis of these data.

### Recommendation

The numbered anomalies should be tested with conventional electromagnetic tools using wide coil separations. The anomalies that are thus confirmed should be tested with diamond drilling.

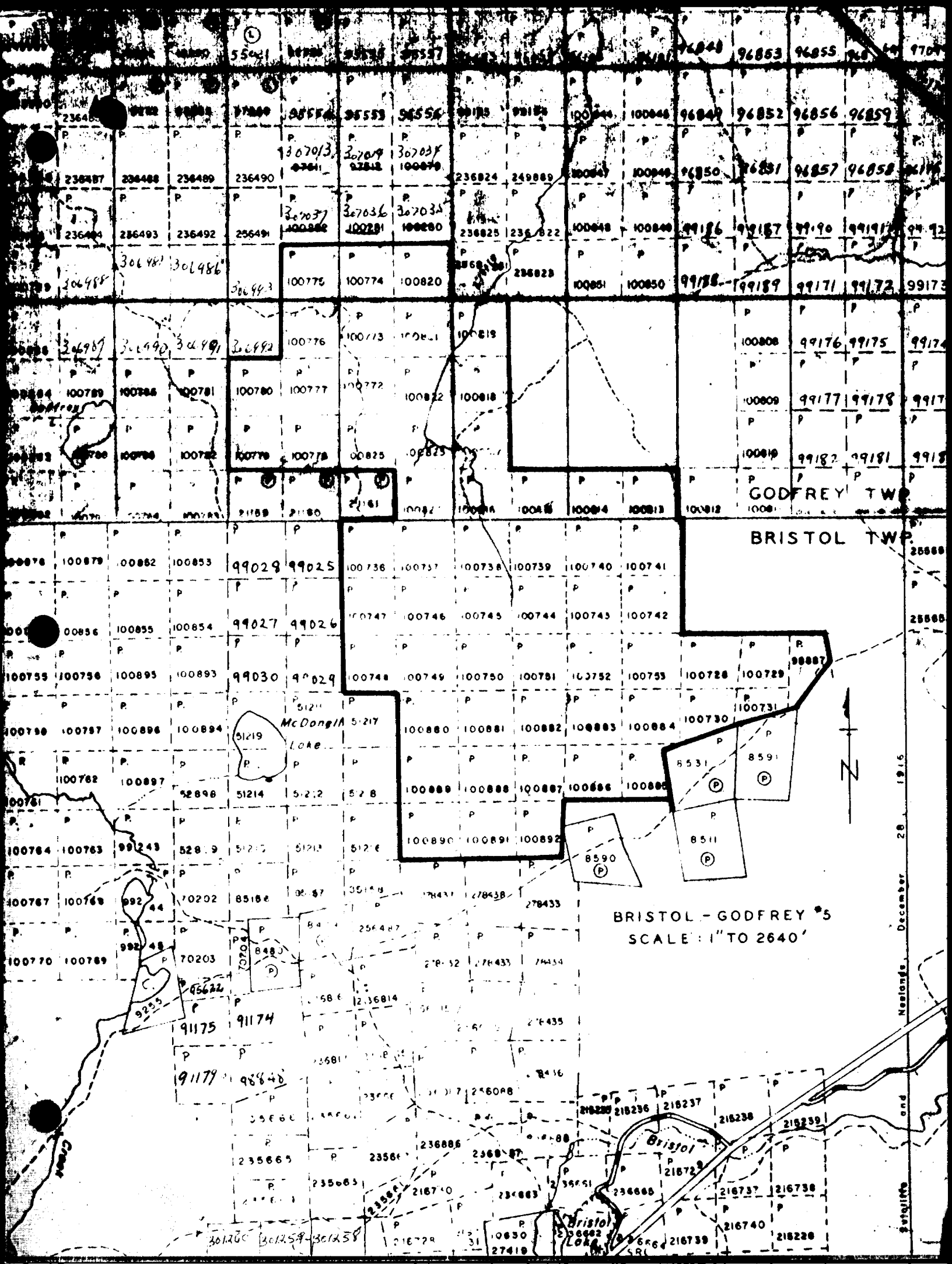
The unconfirmed anomalies should be tested using the induced polarization method. The programme could continue depending on the encouragement from the results.

### Conclusions

A survey initiated for its low cost and rapidity has revealed the presence of several conditions for encountering economic sulphide concentrations. The investigation should persist.

### References

- 1) Geology of Godfrey Township By Nelson Hogg  
Ontario Department of Mines. Vol. 63 Part 7, 1954.
- 2) Geology of Bristol Township By S. A. Ferguson  
Ontario Department of Mines Vol. 66 part 7, 1957.





# Jamieson Twp. (M.288)

Gap Radar Sta.  
Dept of National Defence  
Withdrawn from Staking  
Sec. 34(1) of Mining Act. File 169031

## THE TOWNSHIP OF GODFREY

DISTRICT OF  
COCHRANE

PORCUPINE  
MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

### LEGEND

PATENTED LAND  
CROWN LAND SALE  
LEASES  
LOCATED LAND  
LICENSE OF OCCUPATION  
MINING RIGHTS ONLY  
SURFACE RIGHTS ONLY  
ROADS  
IMPROVED ROADS  
KING'S HIGHWAYS  
RAILWAYS  
POWER LINES  
MARSH OR MUSKES  
MINES  
CANCELLED

⊙ C.S.  
⊙ L.O.  
⊙ M.R.O.  
⊙ S.R.O.

### NOTES

400' surface rights reservation around all lakes and rivers.

Flooding rights on either side of the Mettagama to H.E.P.C.

PLAN NO. **M.284**

ONTARIO  
DEPARTMENT OF MINES  
AND NORTHERN AFFAIRS

Turnbull Twp. (M.316)

Mountjoy Twp. (M.302)

Bristol Twp. (M.264)



42A05NE0500 2.277 GODFREY

HZ Tittle P. Eng.



2.277

HOLLINGER MINES LTD.

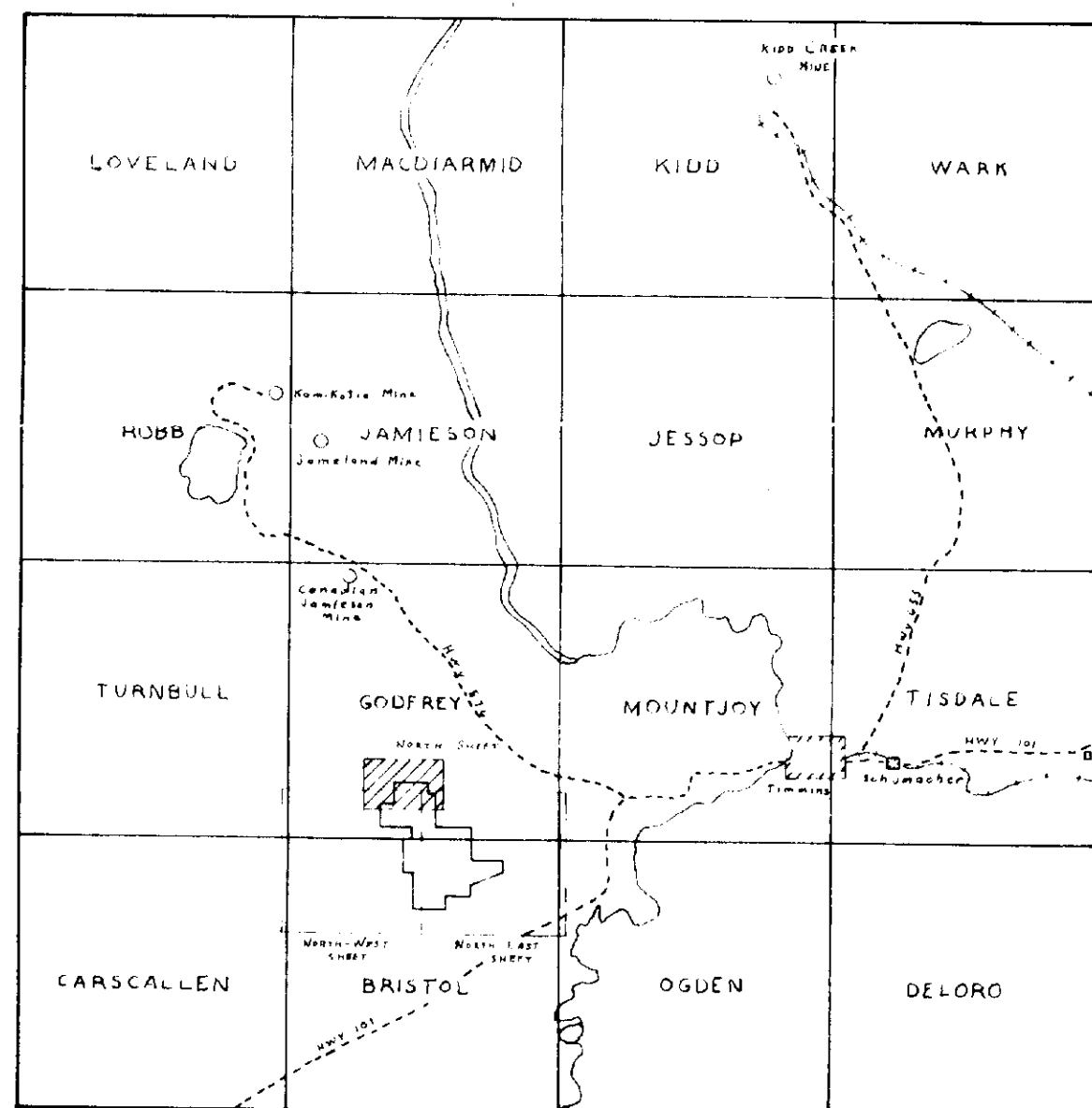
# GODFREY GROUP NO. 5

GODFREY TWP. ONT.

20 KHz E.M. SURVEY

SCALE: 1 INCH TO 400 FEET

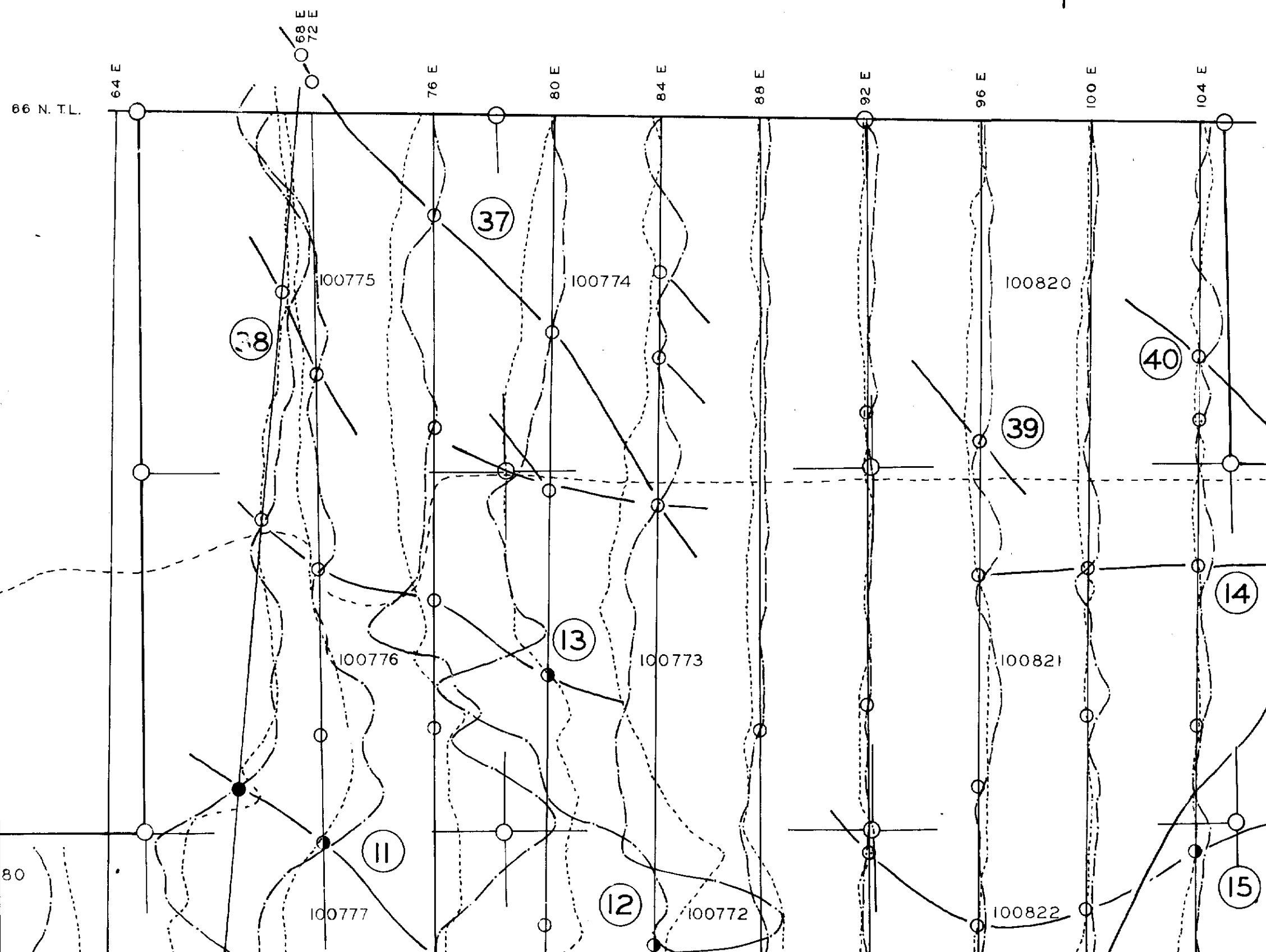
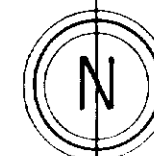
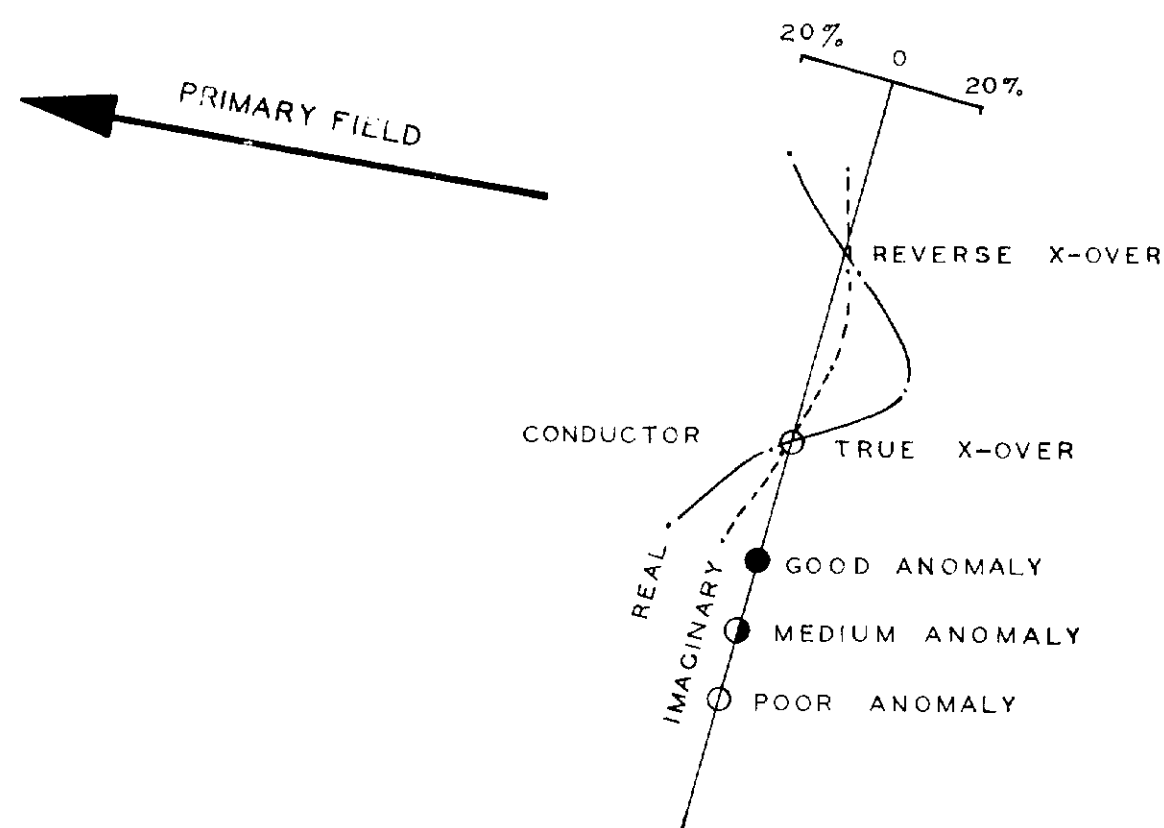
NORTH SHEET



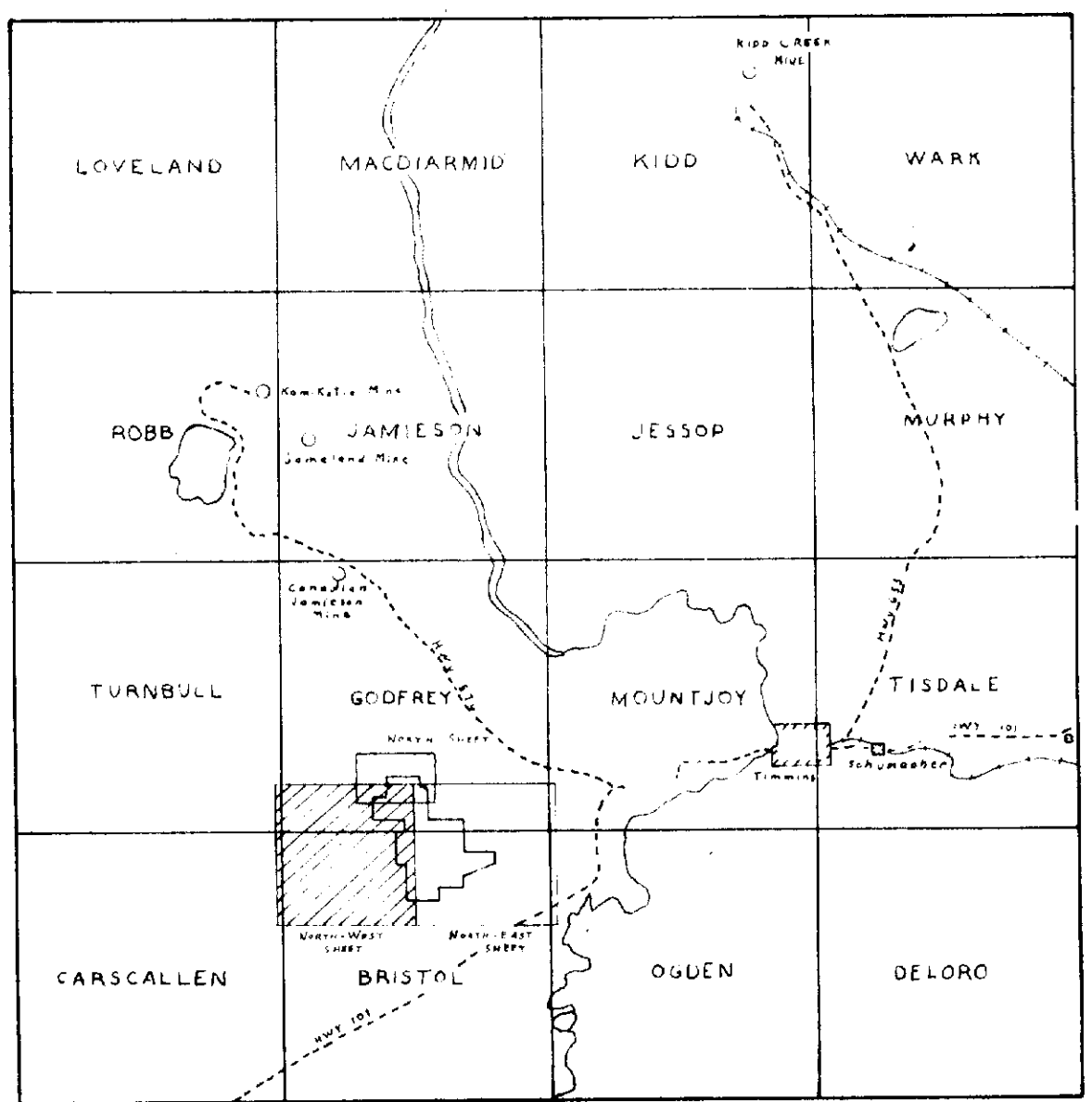
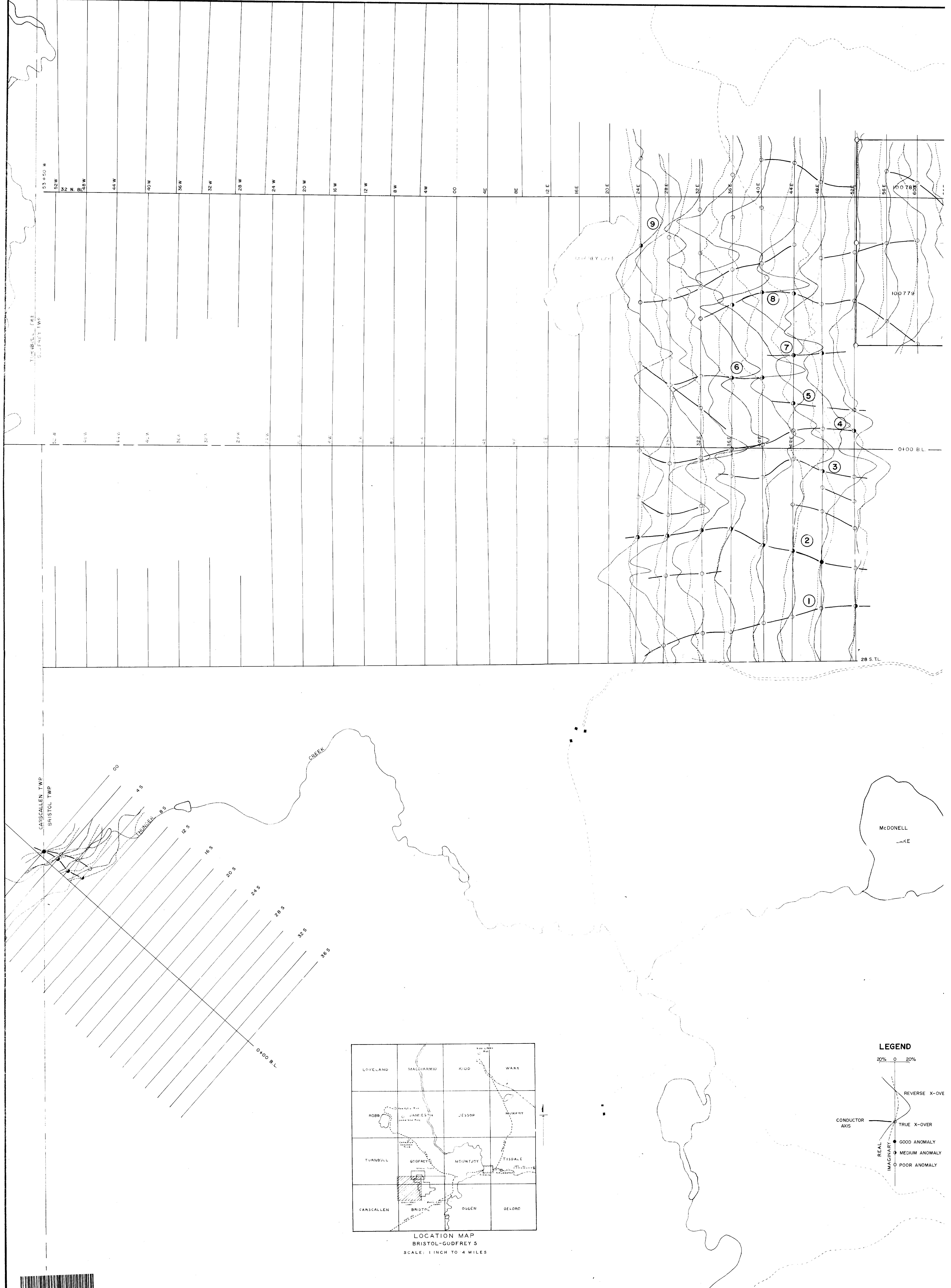
LOCATION MAP  
BRISTOL-GODFREY 5

SCALE: 1 INCH TO 4 MILES

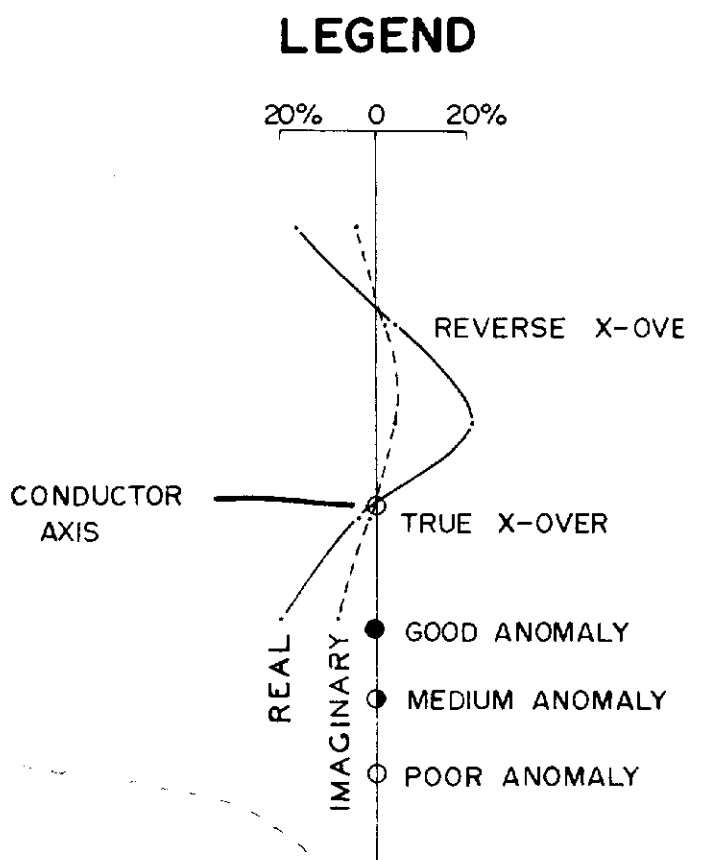
## LEGEND



42A05NE0600 2.277 GODFREY



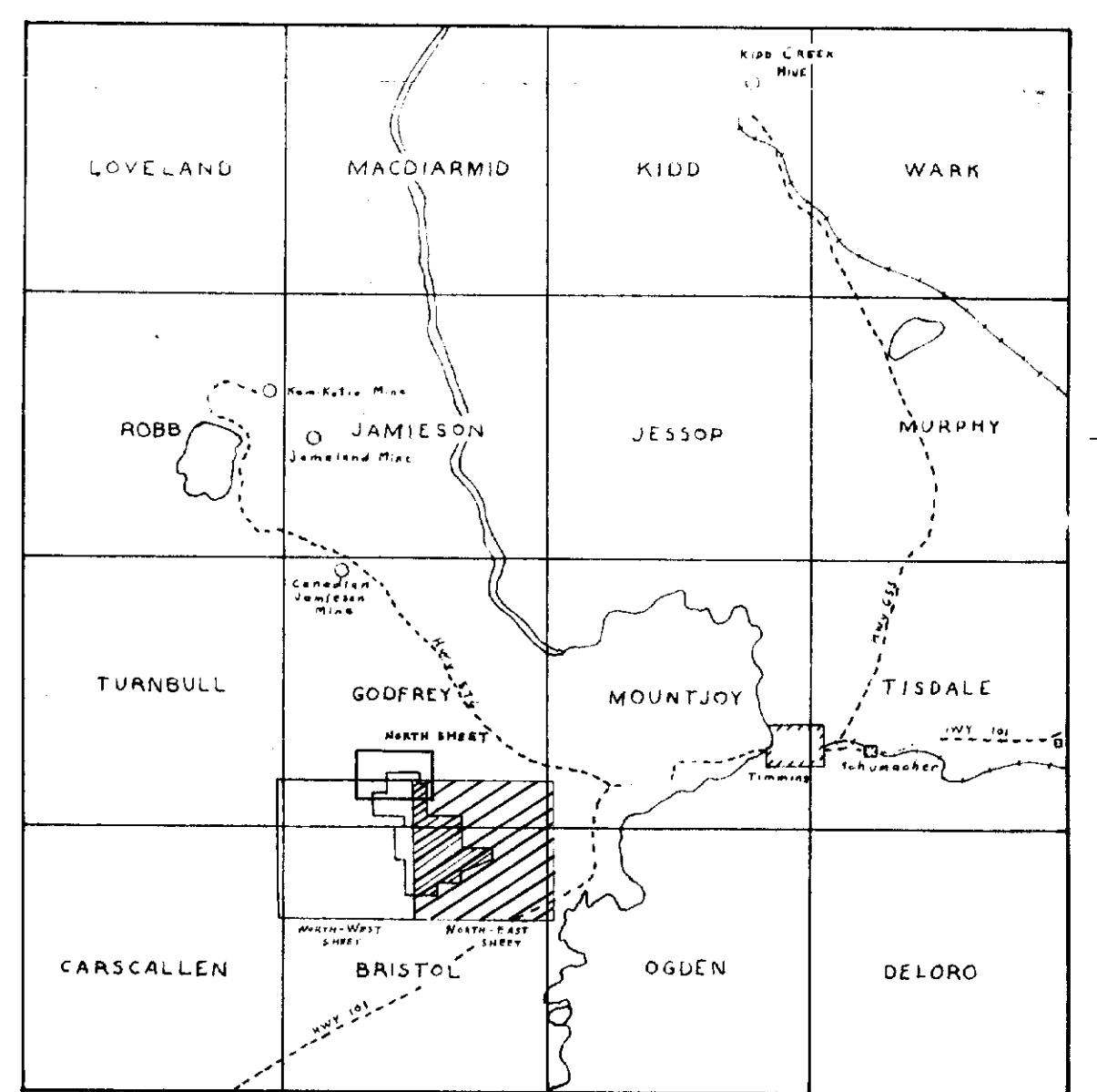
LOCATION MAP  
BRISTOL-GODFREY 5  
SCALE: 1 INCH TO 4 MILES







GODFREY TWP.  
BRISTOL TWP.



LOCATION MAP  
BRISTOL-GODFREY 5  
SCALE: 1 INCH TO 4 MILES

