

I Geological & Geophysical Report  
II Aero Group, 3 miles south of Kains  
Lake 50°, 127° N.W. N.W.  
III J. M. Black, P.Eng. 92 L/12E  
IV Western Canada Steel Limited  
V June 21, 22, June 30, July 1-3,  
July 25-28, 1967

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GEOLOGICAL AND GEOPHYSICAL REPORT ON AKRO GROUP

by J. M. Black, P.Eng.

TABLE OF CONTENTS

Introduction	Page 1
Geology	" 1
Magnetics	" 2
Electromagnetics	" 2
General Interpretation	" 3
Employment	" 3
Figure 1: Magnetic Survey #1	
Figure 2: Magnetic and EM Survey #2	
Figure 3: EM Survey #3	

## AERO GROUP

### INTRODUCTION

This group is three miles south of Kains Lake and is reached by following a tag line southward for about two miles from a logging access road on a branch of Dick <sup>South</sup> Teeth creek.

This group has been reported on in 1965 (geophysical report #649).

The claims have not been surveyed and all locations are approximate. The area surveyed comprises fractions between older claims.

The only outcrops found are in the bed of Wanekana Creek. The rest of the group is gently sloping and many parts of it are open and do not support trees because of poor drainage.

Both magnetic and electro-magnetic surveys were made. The magnetometer used was a Sharpe EMF-3 Series #40512. It is read directly in gammas and these are shown on Figures 1 & 2 in hundreds of gammas.

The EM instrument was a minigun, type 1681 #24 made by ABEM. It operates at a frequency of 3520 cycles per second and the oscillator and receiver were joined by a 200' cable. The receiver gives in-phase and out of phase components in percentages, more or less than the norm established for the background. One man carried the oscillator and the other the receiver and took the readings. The location shown for the readings is the location of the mid point of the cable, i.e. the oscillator and the receiver were each 100' away from each reading shown. The results of different days' results are not exactly comparable because of changes of batteries and minor adjustments.

Traverses were made along blazed and tagged lines and by pace and compass from such lines.

### GEOLOGY

Outcrops comprise greenstone and a medium-grained intermediate intrusive. The relationship between them is not exposed.

The greenstone is massive, dark green and fine-grained. Some of it is slightly magnetic and some of it contains pyrite. It is probably part of a thick volcanic series, exposed in hills north of the group where it strikes west-northwest and dips moderately towards the southwest.

Most of the outcrops are the intermediate intrusive. It is grey-green and coarser grained than the greenstone. In some of the outcrops a plainer structure is present and the rock appears gneissic. The attitude of the plains is not uniform. The intrusive is cut by quartz veinlets and contains abundant pyrite. It may be one of the sources of the widespread volcanics exposed nearby and, hence, may be of about the same general age.

## MAGNETICS

The results of the magnetometer survey are shown on Figures 1 & 2.

An anomaly found on the boundary between Aero 6 and Aero 4, is the strongest found on the group. The isomagnetic lines have been sketched on Figure 2.

Northwest of it is a broad area with low readings and in this area, closest to the high readings, are some negative readings: one of -3,700 gammas. In this location, where these readings are possibly not caused by the lower pole of a causative body, the negative readings may be caused by negative polarity of part of the same mass that causes the high positive readings. Other negative readings occur southwest of the high readings and other low readings occur southeast of them. These latter low readings may be caused by the lower pole of the causative mass, if it continues southward as it appears to do.

The low readings to the northwest extend over to low and negative readings that occur near the southern part of the line between Wanekana 2 and Aero 6. This line was traversed to determine if a magnetic anomaly that occurs east of it extends westward but no significant high readings were obtained.

The sharp changes in intensity near the high readings suggest that the top of the causative body is close to the surface.

The location of these anomalous readings and the strongest ones found in 1965, suggest that all of them may be caused by bodies in or near a group of beds that strike west-northwestward.

## ELECTROMAGNETICS

Reconnaissance surveys were made on the west, south and central parts of the group.

The traverse on the west had generally high in-phase readings and negative out of phase readings, indicating no conductors.

The central traverse generally had low in-phase readings and positive out of phase readings, again indicating no conductor.

On the traverse near the south boundary, the in-phase readings are generally high and the out of phase moderately negative from 0 to -5. However, at one point near the east margin of the magnetic anomaly, the out of phase is -10 and the in-phase 108.5. The -10 indicates the possible occurrence of a conductive mass. The moderately high in-phase reading would ordinarily indicate the absence of a conductor, but when magnetite predominates in a body the effects of the magnetism nullify the electrical response and result in above normal in-phase readings (see Parasnis D. S. Mining Geophysics, Elsevier 1966, p. 324). This presumably is the explanation here and it may be expected that the body that causes the magnetic anomaly contains abundant magnetite and possibly it also contains some other conductor.

A detailed survey was made in the south central part of the group where sharp magnetic anomalies were found in 1965. The results are shown on Figure 3.

The in-phase are generally less than 100 but a few on the periphery of the area are much higher so a dashed contour line at about 95 and others within its limit for lower readings. The area within the outer line includes all the magnetic anomalies. Two areas with low readings, north and south of the main magnetic anomaly, indicate that possibly the rock outside the magnetic anomaly conducts better. However, it may be considered that the mass that causes the magnetism is a good conductor but that, as mentioned above, the magnetism nullifies and reduces the in-phase response.

In the southeast part of the in-phase, is a low reading of 66.5 and north and south of it are readings of 103 and 105, indicating a conductor below the low reading. This is within the central magnetic anomaly and indicates that it is also a conductor and suggests the presence of pyrrhotite and possibly other sulphides.

The out of phase readings are generally weak - the strongest being -8. A contour, including most of the negative readings, includes the main magnetic anomalies and, if another traverse had been run on the east, might have included the smallest magnetic anomaly also. This indicates that the rocks in the area in the vicinity of the magnetic anomalies, generally conducts somewhat better than those at some distance from the anomalies.

#### GENERAL INTERPRETATION

Magnetometer surveys indicate the occurrence of two strongly anomalous areas along a line parallel to the regional trend. This suggests that a bed or group of beds, locally is replaced by magnetite and/or pyrrhotite. The EM readings suggest that, within some of these replacement bodies, sulphides may be present, possibly only pyrrhotite.

#### EMPLOYMENT

The work was done by J. M. Black alone, except of the days when EM work was done, when one man was employed to carry the oscillator. The work was done on the following dates: June 21, 22, June 30 half day, July 1 & 2, July 3 half day and July 25-28.



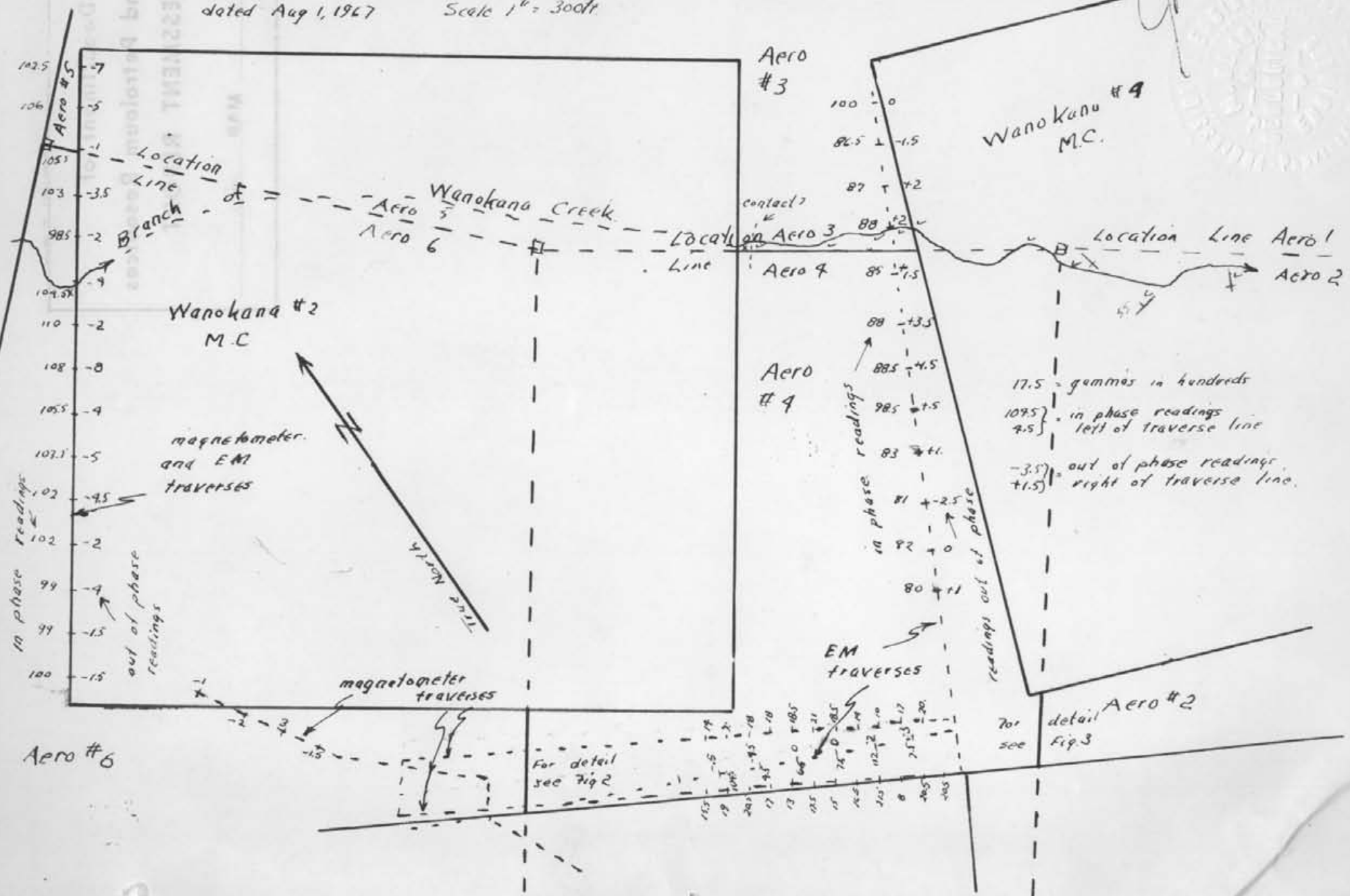
J. M. Black, P.Eng.

Aug 1/67

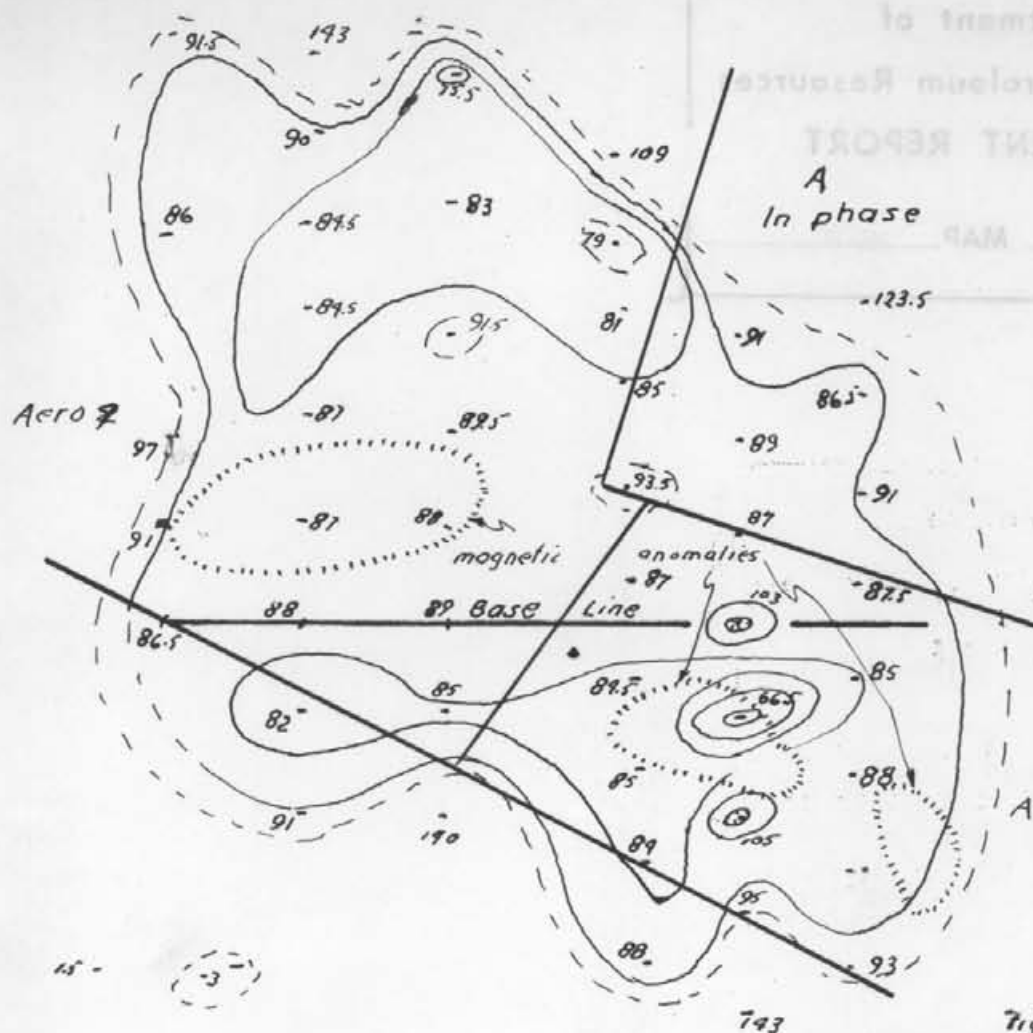
Figure 1  
 To accompany geological & geophysical  
 report by J.M. Black P.Eng. on Aero group  
 near Wanokana creek, Nanaimo M.D  
 dated Aug 1, 1967 Scale 1" = 300ft

x - volcanic greenstone  
 v - intermediate (gabbroic)  
 intrusive.

*J.M. Black Aug 1/67*

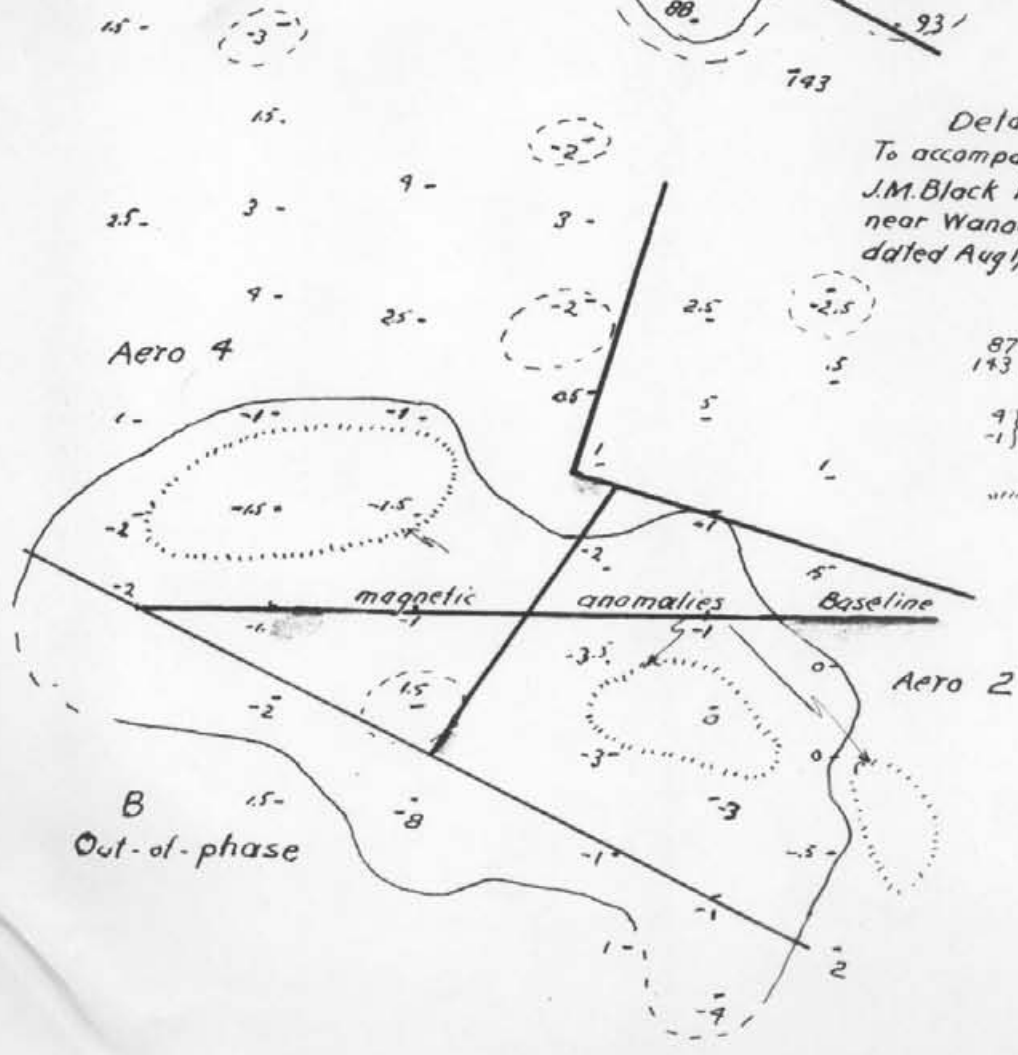






Aero 2 Aug 1/67

Figure 3.  
 Detailed EM. survey  
 To accompany geophysical report by  
 J.M. Black P. Eng. on Aero group  
 near Wanakana creek Nanaimo M.D.  
 dated Aug 1, 1967 Scale 1" = 100 ft.



87 } in phase  
 143 }  
 9 } out of phase.  
 -1 }  
 with magnetic anomaly  
 from 1965 report.

B  
Out-of-phase