

CHALLENGER TOWNSHIP (AI)General Geology

The long shore line of Lake Wabatongushi, though not rich in outcrops in this Township, cuts across the general structural trend and affords an opportunity for closer study of rock associations. Biotite-feldspar-quartz granite and gneisses are the principal rock types. Both, over large areas, are rich in inclusions, amphibolitic and gabbroic in type; biotite being decidedly less common in inclusions than in the area of the May report. Several inclusions were seen that resembled quartzites. No sedimentary or volcanic rocks were found in outcrop; one large block (4x5x3') of iron formation with magnetite and a block of slaty, gabbroic rock were found, as well as a small piece of fossiliferous dolomite.

On the aerial photos of the eastern part of this Township, a very fine pattern of parallel, straight lines striking in a northeasterly direction may be seen. Although the outcrop exposure is poor, these lineations were found to coincide generally with the strike of the outcrops, the gneissosity, and the inclusions.

Several other more widely spaced linear patterns are seen on the photos. These correspond fairly well with joint planes and, in most cases, are followed by diabase dykes. Diabase dykes were most commonly seen striking 155-165°, several at 40°, and three at 30°.

A pink-feldspar granite, in places with biotite and frequently with a fine amphibole-like or altered biotite-like mineral has been seen in all areas mapped this season. Its relationship to the grey granites and gneisses with which it has been associated was not clear. From field work in Challenger Township it is felt that these pink rocks represent contact alteration of the grey, biotite granite and gneiss by diabase. The features of this contact effect are the appearance of pink feldspar; the alteration of biotite to what appears to be amphibole; epidotization of the host contact, frequently accompanied by brecciation, pyrite deposition, the deleting of quartz from the granite to form a syenite, and the appearance of quartz veins and the apparent silicification of the diabase (may be epidote effect, not quartz). Brecciation of the red (syenite) with specularite was noted at one point.

These red, feldspathic rocks associated with diabase have been mentioned in government reports, but mentioned briefly or said to be separate injections parallel to the diabase in the same joint fracture.

A brief outline of the reasons for supposing them to be alteration effects caused by diabase dykes are:

- 1) They are of the same grain size and texture as the grey granites and gneisses.
- 2) Both of the diabase contacts are involved.
- 3) Where gneissose they have the same gneissosity (attitude) as the grey gneiss.
- 4) They frequently contain inclusions, inclusions that are similar to those in the grey granite and gneiss.



- 5) They grade gradually into grey granite or gneiss.
- 6) Their occurrence allows the prediction of diabase nearby.
- 7) Their width appears to be proportional to the diabase dykes width. This may be of significance in relation to the rock types seen about such strong lineations such as that of Hobon Lake. Burwash (CDM: XLIV, 1935, p. 37) mentions Algonian granites that are cut by red granite dykes that have been intruded by diabase. It is intended to observe whether these red dykes are as common or present with the diabase dykes in areas of sedimentary and volcanic rocks. Specimens have been collected for petrographic study. The effects appear to be most pronounced in association with diabase dykes striking  $165^{\circ}$ , but these are far more common, in outcrop at least, than are diabase dykes of other attitudes.

#### Economic Geology

The large boulder of magnetite iron formation (SA 3-161), and a piece of pyrite rich float (SA 3-160) were the only economic findings in this Township. The presence of the iron formation block (which was coarsely garnetiferous, rich in pyrite and cherty) suggests the extension of volcanics and sediments from the south. Magnetometer work is indicated as a means of investigating this further.

The pyrite occurrences in the red feldspar rocks were sampled (SA 3-059). Several other samples of these rocks are believed to have been taken this season when the relationship of these rocks to diabase was not recognized as it is now postulated to be.

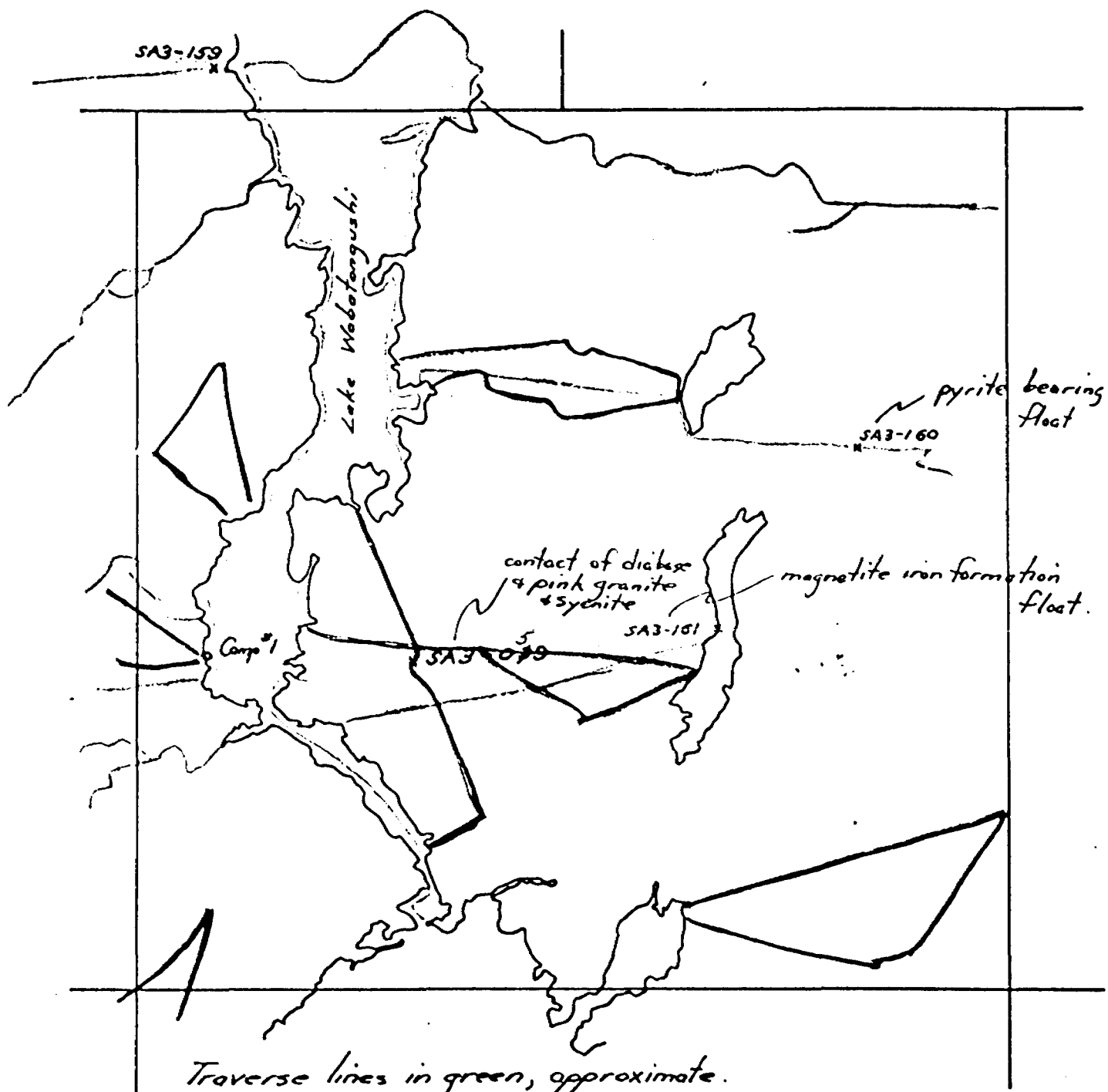
There are some small esker-like banks of sand along Lake Wabatongushi that will be sampled.

Work is continuing.

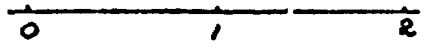
James A. MacIntosh.

July 4th, 1962.

Sault Algoma No. 1 Project (ACR)  
 June 1962 Report - Challenger Twp. (AI)  
 J. A. MacIntosh



Traverse lines in green, approximate.  
 Prospecting areas & lines in red.  
 miles



52 3-159  
-162



020

CHALLENGER TOWNSHIP (AI)

Work Done

One traverse was run in this Township. No new geologic or economic features were noted. A good exposure of Franz Tower hill type granite and of the sequence from diabase to red granite to grey granite were seen.

Work is completed in this Township.

James A. MacIntosh,

August 7, 1962.

**RECEIVED**

OCT 21 1965

RESIDENT GEOLOGIST  
SAULT STE. MARIE

RECEIVED FROM  
ALGOMA CENTRAL RAILWAY

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

Sault Algoma No. 1 Project (A.C.R.)  
July 1962 Report - Challenger Twp. (AI)

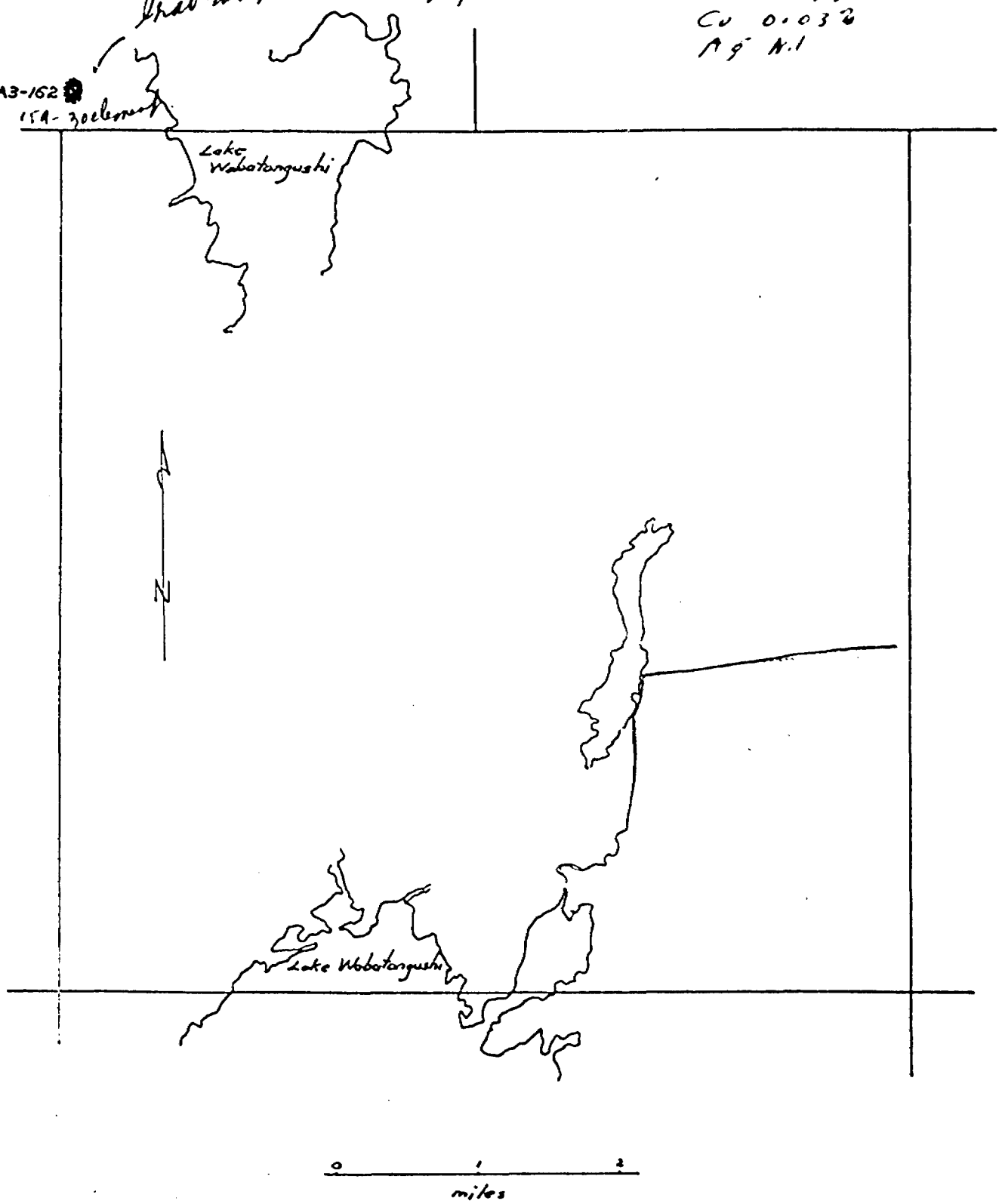
J. A. MacIntosh


Shal sample, chilled edge of diabase dike with chalcopyrite, pyrite

Cu 0.03%

Ag N.I

SA3-162  
15A-30 elements



Traverse lines shown as   
Lines & Areas of prospecting as 