GENESIS OF MAGNETITE DEPOSITS IN THE IRON MASK BATHOLITH
(92I/9W, 10E)

By Robert Cann
Graduate Student
Department of Geological Sciences, University of British Columbia

INTRODUCTION

The Iron Mask batholith, near Kamloops, contains several magnetite-rich rock units and a number of dyke-like magnetite lodes. Genesis of the magnetite lodes is not understood, and possible petrogenetic interrelations between the lodes and the batholithic rocks are being investigated by studying trace element patterns in magnetite from several localities and from different types of occurrences.

This study, under the direction of Professor Colin Godwin, is being supported financially by the British Columbia Ministry of Mines and Petroleum Resources and the University of British Columbia.

PURPOSE

Significant magnetite, in the form of dyke-like lodes (Cockfield, 1948), occurs in close spatial relationship to copper deposits such as the Afton mine. The genetic relationship of these massive magnetite lodes to the copper deposits of the Iron Mask is unknown, as is the origin of the magnetite deposits. However, the proximity of these deposits to magnetite-rich intrusive units of the Iron Mask batholith suggests that they might be magmatic injection deposits. The three main objectives of this study, therefore, are to:

(1) determine the origin of the magnetite lodes,

(2) determine which intrusive unit they originated from if they are magmatic,

(3) determine if relationships exist between magnetite deposits and copper mineralization.

FIELDWORK

Fieldwork in the area was completed in 1977. Magnetite lodes exposed in three pits 1.2 kilometres southeast of Afton (Fig. 17) were mapped at a scale of 1:120 (1 centimetre = 1.2 metres) and a large amount of core from the Afton property was examined for possible relationships between magnetite lodes and copper mineralization. More than 40 samples were collected (Fig. 17) for separation and analysis of the magnetite. Sampling was carried out on units defined by Northcote (1977). In addition to the samples shown on Figure 17, massive, disseminated and vein-like magnetite was sampled at Cherry Bluffs (approximately 11 kilometres west of Afton), and disseminated magnetite was sampled in fresh picrite on Watching Creek (Cockfield, 1948) on the north side of Kamloops Lake.

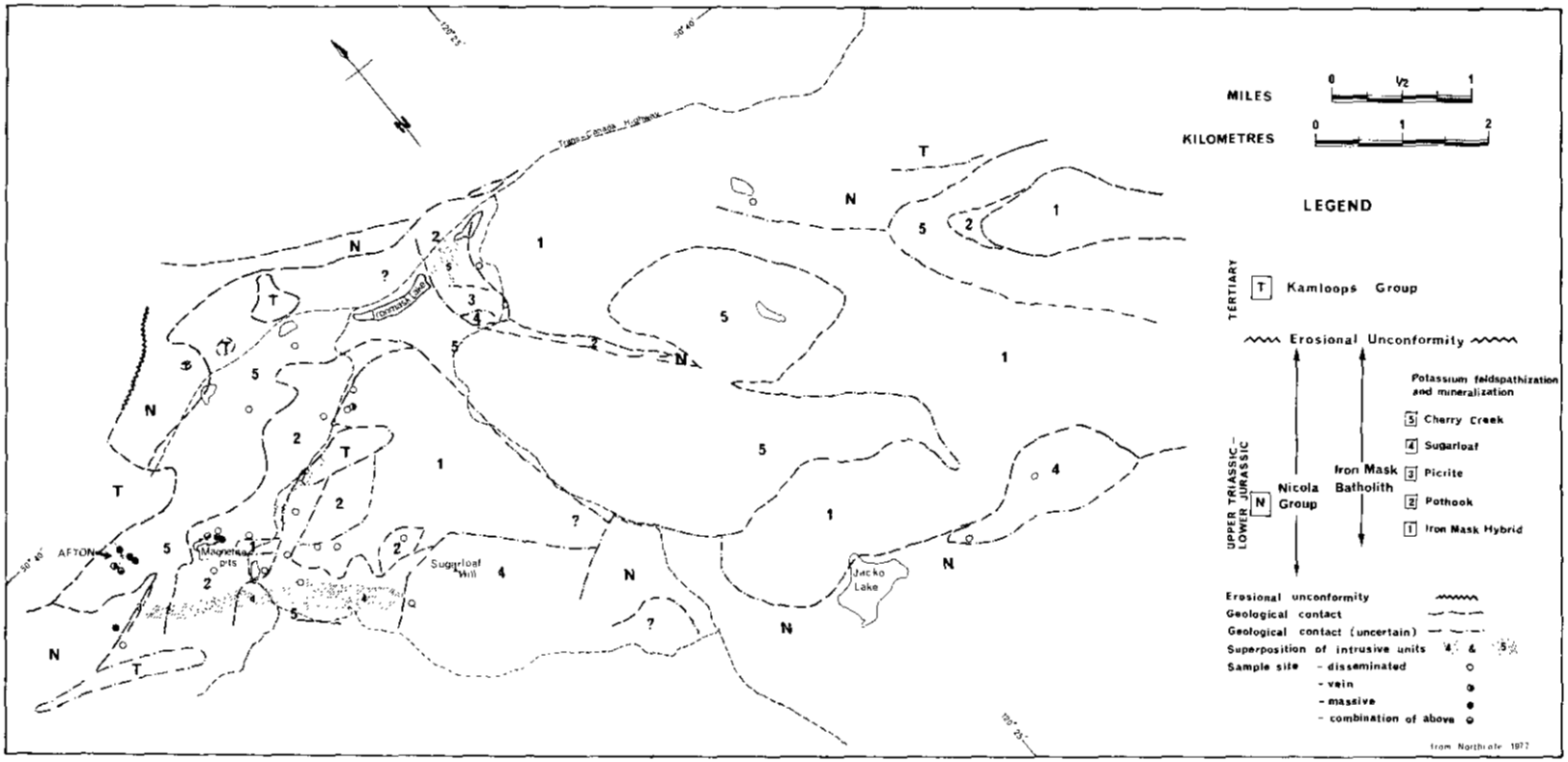

Figure 17. General geology and sample sites for magnetite study, Iron Mask batholith.

LABORATORY WORK

The principal method to be used in this study will be analysis of the magnetite for trace elements Ti, Cr, V, Cu, Pb, Zn, Mg, Mn, Ag, Ni, Co, and Cd. Distributions of these trace elements will allow correlations to be made that might indicate the unit which is the source of the magnetite in the lodes, and shed light on the genesis of these deposits. In addition, the stages of differentiation of units in the Iron Mask batholith might be reflected by the abundance of certain trace elements. Analyses will be conducted during the winter of 1977-78 by the atomic absorption methods.

REFERENCES

Cockfield, W. E. (1948): Geology and Mineral Deposits of Nicola Map-Area, British Columbia, *Geol. Surv., Canada,* Mem. 249.

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