

## **IRON MASK BATHOLITH**

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### **INTRODUCTION**

Regional mapping at 1:15 840 of a strip 3 kilometres wide was completed along the north side and around the northwest end of the Iron Mask batholith. Intrusive contacts with Nicola rocks and the trace of the Nicola-Kamloops unconformity were of particular interest. This information will update the Ministry of Mines and Petroleum Resources' Preliminary Map 26.

Contacts between rock units are better defined, rock descriptions are improved, and relationships between rock units are better understood as a result of detailed mapping and logging drill core from certain mining properties. The area around Afton mine southeast of Sugarloaf Hill was mapped at a scale of 1:4 800. Core from 27 diamond-drill holes totalling 5 200 metres was logged from Canadian Superior's Comet Project southeast of Iron Mask Lake and core from four diamond-drill holes totalling 900 metres was logged from Nahatlatch Resources' 1977 drilling on the Rainbow claims east of Sugarloaf Hill.

The next phase of the program will be to combine regional geology with detailed property geology provided by Gordon P. E. White, District Geologist, Kamloops, in a joint publication.

### **VOLCANIC-PLUTONIC RELATIONSHIP**

Numerous outcrop areas of Nicola rock were located which contain Cherry Creek and Cherry Creek-like angular fragments in volcanic rock and rounded cobbles and pebbles in sedimentary units. Additional areas were found where these or similar rock units are intruded by Cherry Creek unit so that volcanic-plutonic relationships and the shallow subvolcanic environment postulated for Cherry Creek rocks appears valid (Northcote, 1974, 1976). However, the possibility that some rocks of perhaps Early Cretaceous age, as postulated by Cockfield (1948), Le Cheminant (1972), and others, cannot be discounted until all similar rock units, particularly less intensely altered, hematitic, friable members underlying the pre-Tertiary unconformity, have been positively dated. Fossil ammonites, collected in 1974, in mature sedimentary rocks from the east fork of Alkali Creek are indeterminate (E. T. Tozer, personal communication). During the 1977 field season a second locality, south of Hughes Lake, of presumably the same rock unit contains two types of ammonites which hopefully will yield a reasonably accurate age, possibly Early Jurassic (H. W. Tipper, personal communication).

### **RELATIONSHIP AMONG INTRUSIVE UNITS**

There appears to be a complete gradation from medium to coarse-grained rock, commonly forming the matrix of the Iron Mask unit, through medium to coarse-grained Pothook diorite, with varied mafic content, through Cherry Creek macro-varieties to related Cherry Creek micro and porphyritic varieties. Locally, intrusive contacts are evident among these units as well, particularly in areas of dyking of macro-Cherry Creek varieties by micro and porphyritic Cherry Creek varieties.

The youngest Cherry Creek rocks are commonly richest in K-feldspar and albite. Some of these varieties are the result of injection of highly differentiated magma that crystallized as dykes. However, most of the K-feldspar and albite enrichment appears to be the result of permeation of K and Na-rich differentiates through previously crystallized more basic Cherry Creek rocks. Thus, the composition of the rock is changed and original textures become obliterated. Brecciation and mineralization commonly accompanied K and Na enrichment.

A myriad of very closely related Cherry Creek-Pothook varieties resulted from differentiation of magma, intrusion and permeation by K and Na-rich differentiates, contamination by assimilation of more basic material, and rapidly fluctuating conditions of pressure, temperature, and volatile content during crystallization. It becomes very arbitrary and perhaps somewhat meaningless to attempt to subdivide these varieties to the extreme. However, zones of brecciation, K and Na enrichment, and structural linears can be delineated and are the most significant zones for mineral exploration within the batholith.

Picrite appears to be one of the oldest rocks present in the area of the Iron Mask batholith. Refractive indices can be used to help distinguish picrite from Nicola and some fine-grained, dark Iron Mask varieties. Picrite is cut by hornblende-rich Cherry Creek-like rocks in the Iron Mask mine area. Cherry Creek rocks, younger than picrite, are commonly contaminated at picrite contacts. Picrite appears to predate some varieties of Iron Mask unit as well. Material from the Larsen dump near Bowers Lake shows picrite cut by the coarse-grained gabbroic variety of the Iron Mask unit. It is possible that picrite flowed up from a deep source through deep-seated structures to be emplaced in earliest Nicola time and was followed and engulfed by different Iron Mask magma from a higher crustal level, which produced the intrusive units of the Iron Mask batholith.

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