AGE OF THE COLDWATER STOCK AND NICOLA BATHOLITH, NEAR MERRITT (92H)

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The Coldwater stock intrudes Late Triassic Nicola Group volcanic rocks (Figure 1). A previous attempt to date the stock by K-Ar methods gave discordant results of 215 to 234 and 267 Ma (Preto, et al., 1979). Stratigraphically, this apparent age was difficult to reconcile. Consequently, a series of samples was collected (Table 1; Figure 1) and subsequently analysed by K-Ar and Rb-Sr methods (Table 2; Figure 1).

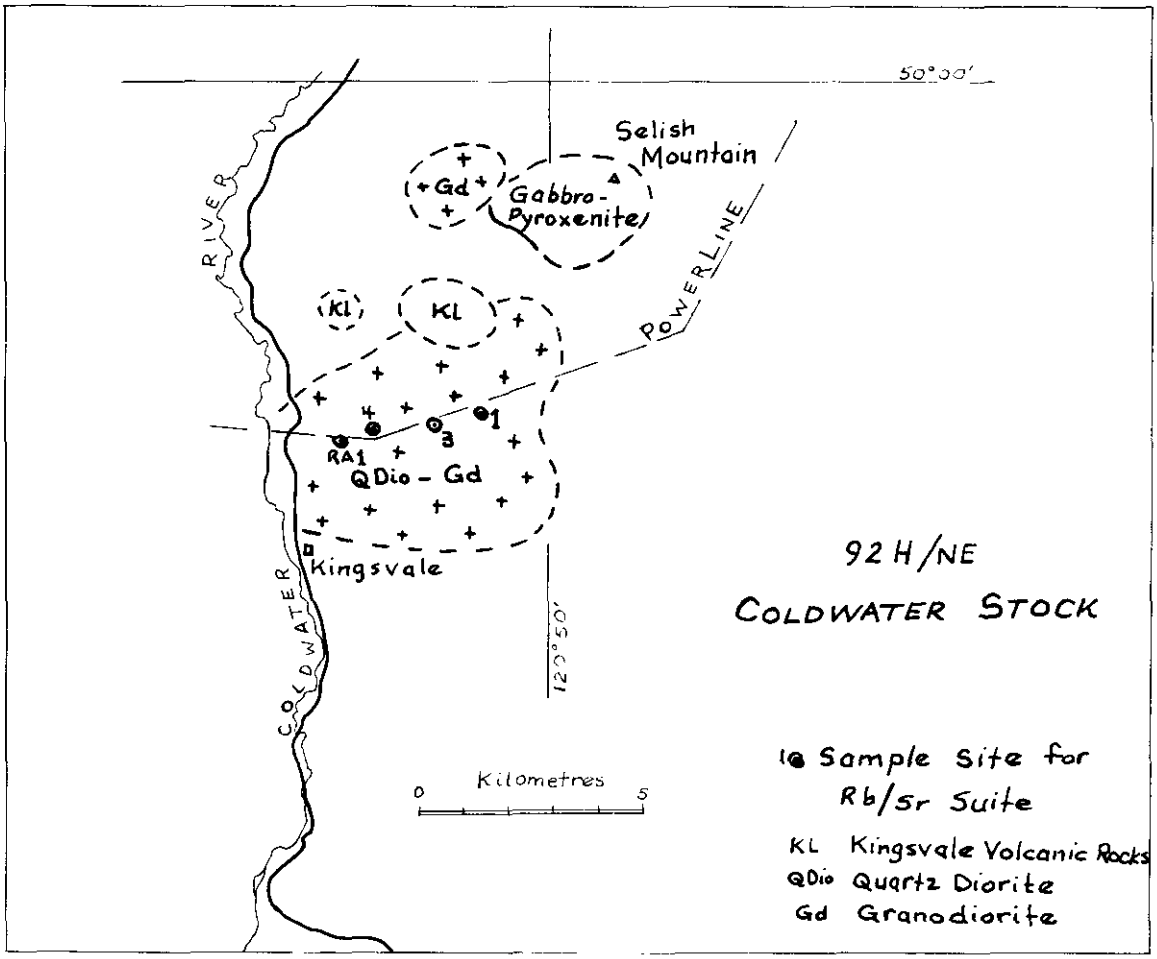

Figure 1. Generalized geological setting and location of age dating sample suite, Coldwater stock.

TABLE 1. SAMPLE DESCRIPTIONS, Rb-Sr COLLECTION

92H/NE, COLDWATER STOCK AREA

CW 79-1

Dark grey fine to medium-grained *biotite hornblende quartz diorite* (CI 30-35). Hornblende pleochroic from green to tan and is secondary after pyroxene and is markedly poikilitic. Tiny actinolite needles, chlorite and epidote, replace hornblende locally. Biotite is pleochroic from dark brown to tan and chloritized along cleavage planes. Plagioclase (andesine) forms subhedral eroded laths. It has remnant complex zoning and weak to moderate sericite alteration. Quartz is interstitial and K-feldspar uncommon. Accessory minerals are magnetite, apatite, sphene, and zircon (?).

CW 79-3

Grey medium-grained biotite hornblende quartz diorite (CI 28-35). Hornblende is pleochroic from dark green to tan, poikilitic, anhedral, and generally occurs in clumps of grains. Locally, hornblende is altered to actinolite. Biotite is pleochroic from red-brown to tan and is locally chloritized. Eroded plagioclase (andesine) laths have moderately sericitized cores. Quartz is more abundant than in CW 79-1 and is interstitial. Minor amounts of K-feldspar occur. Magnetite occurs as an accessory mineral.

CW 79-4

Relatively leucocratic grey hornblende biotite granodiorite (CI 12-18). Hornblende occurs as fine subhedral to anhedral grains that are pleochroic in green. Biotite is pleochroic from red-brown to tan, medium grained, anhedral, and is altered to chlorite and epidote along cleavage traces locally. Quartz has open interstitial texture and is abundant. K-feldspar is cloudy, interstitial, and locally forms myrmekitic intergrowths at plagioclase contacts. Accessory minerals are magnetite, sphene, and apatite.

TABLE 2. COLDWATER STOCK ISOTOPIC DATING RESULTS

Sample No. (CW 79-)	Description	Sr ppm	Rb ppm	$^{87}Rb/^{86}Sr$	$^{87}Sr/^{86}Sr$	Age	Initial $^{87}Sr/^{86}Sr$
1	Biotite hornblende quartz diorite	355	11.9	0.097	0.70384		
3	Biotite hornblende quartz diorite	329	27.5	0.242	0.70420	192±32 @	0.70357±16
4	Biotite granodiorite	273	44.6	0.473	0.70479	194±33 @	0.70356±16
RA 1	Biotite hornblende granodiorite	293	45.1	0.446	0.70488		
						K-Ar bio =	212±7
RA 1 biotite	------	24.2			0.782	K-Ar hbl =	208±7
		24.7	220.0	26.3	0.780	207±4 @	0.70347±6
		23.7		27.1	0.7878	219±10 @	0.7035

K-Ar analysis of biotite from sample RA 1 gave an apparent age of 208±7 Ma; hornblende from the same sample gave 212±7 Ma. Rb-Sr results are summarized in Table 1. Samples 1, 3, 4, and RA 1 gave an isochron of 194±10, whereas Rb-Sr in biotite from RA 1 gave age 219±10 Ma at initial strontium ratio 0.7035 (Figure 2). The small range of rubidium and strontium concentrations limits the precision of these results.

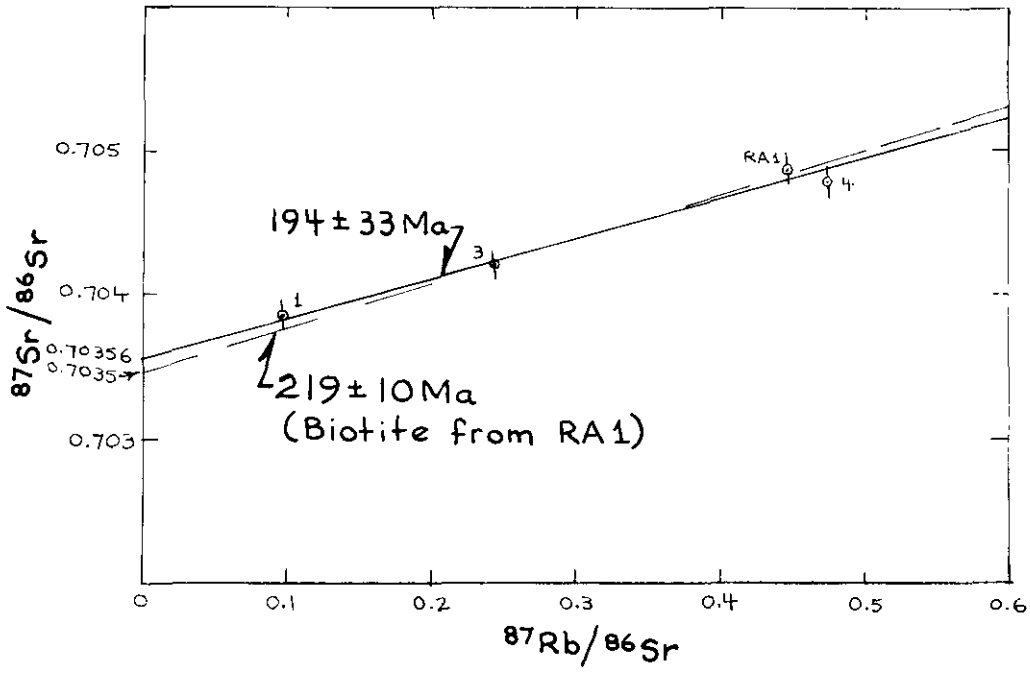

Figure 2. Plot of rubidium-strontium isotopic analyses, Coldwater stock.

In summary, isotopic dating indicates an age of approximately 210 Ma for the Coldwater stock. The age accords well with those from other intrusive bodies that cut Nicola Group rocks and the stock is not anomalously old as suggested by earlier data.

NICOLA BATHOLITH

New Rb-Sr isotopic data from the Nicola Batholith are intriguing. Earlier K-Ar work (Preto, et al., 1979) gave a range of ages for biotites from 37.3 to 59.8 Ma and for hornblendes from 60.2 to 70.6 Ma. Among the samples were two biotite-hornblende pairs that gave nearly concordant results of 56.9 and 63.6 Ma and suggest that the batholith is of Paleocene age. Biotite from a satellitic stock at Rey Lake gave a latest Cretaceous age of 68.9±2.5 Ma (McMillan, 1974).

The new data suggest that at least some of the deformed granitic or gneissic rocks in the Nicola Batholith are Early Jurassic or older (minimum 185 Ma). The younger dates probably represent new magmatic material that intruded the older pluton, although it could be remobilized older material.

REFERENCES

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