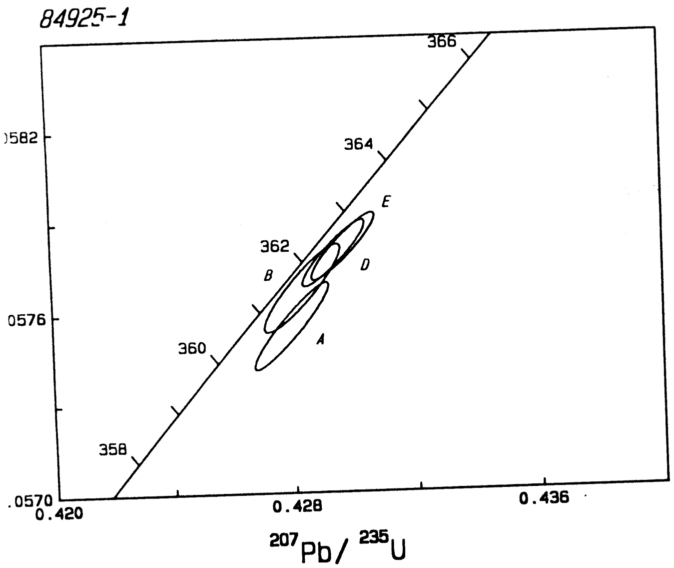
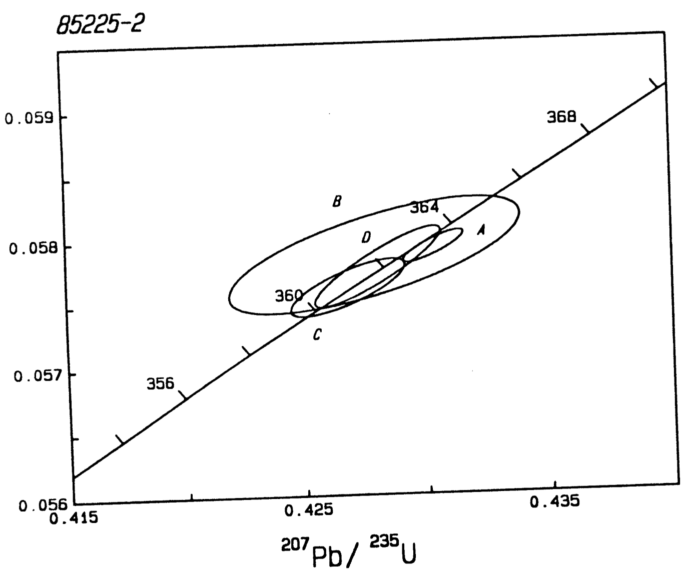


2. U-Pb concordia diagram of Sample 84925-1, Saltspring Intrusion. Error ellipses reflect
ertainty.



re 3. U-Pb concordia diagram of sample 85225-2, Saltspring Intrusion. Error ellipses reflect
ncertainty.

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Pb loss, and the best estimation for the age of formation of the porphyry is interpreted to be 367 ± 2 Ma, the mean of the ^{207}Pb-^{206}Pb ages.

Sample 85225-2

Sample 85225-2 is another specimen of the Saltspring Intrusions from Mt. Sicker on Vancouver Island. The sample is a quartz-feldspar porphyry with medium grained phenocrysts of rounded quartz and euhedral feldspar. The porphyry also clearly intrudes the Nitinat volcanic breccia at this locality.

Zircons from this sample are euhedral, mostly clear grains of igneous habit with some rod-like and irregular inclusions. Four zircon analyses overlap and intersect concordia, indicating an age of 362 ± 2 Ma which is interpreted as the age of crystallization of the quartz-feldspar porphyry (Fig. 3). These results were previously described in Roddick et al. (1987).

Sicker Rhyolite (P13-307)

The "Sicker Rhyolite" is a quartz-feldspar porphyritic rhyolite which is exposed in the Buttle Lake uplift (Fig. 1). Sample P13-307 is a specimen of drill core collected from the H-W mine (Westmin Resources Limited). This rock is part of a sequence of silicic pyroclastic rocks and related hypabyssal intrusions of dacite and quartz-feldspar porphyry, previously called the Myra Formation (Muller, 1980, 1983; Brandon et al., 1986), and which is now referred to as part of the McLaughlin Ridge Formation (Massey and Friday, 1988). These rocks overlie the Nitinat Formation within the Sicker Group.

Five fractions of clear, euhedral prismatic zircons with minor inclusions were analyzed from the sample. These analyses plot in a short linear array below concordia (Fig. 4). The zircons, which have only undergone very light abrasion, have experienced some Pb loss. The mean of the ^{207}Pb-^{206}Pb ages of the five analyses, 366 ± 4 Ma, is taken to be the best estimation for the *minimum* age of formation of the rhyolite. The zircons could be older, since the age of the Pb loss event need not have been recent, but the consistency of the ^{207}Pb-^{206}Pb ages of the five fractions suggests that 366 ± 4 Ma is a reasonable estimate of the crystallization age.

Mafic Intrusion (84822-1C)

Mafic intrusions which are probaby related to the Late Triassic Karmutsen Formation volcanics are widespread throughout the Sicker Group rocks in the Saltspring Island - Cowichan Lake area (Brandon et al., 1986), typically occurring as thick sills and dykes. Sample 84822-1C is a medium-grained, porphyritic gabbroic rock which intrudes

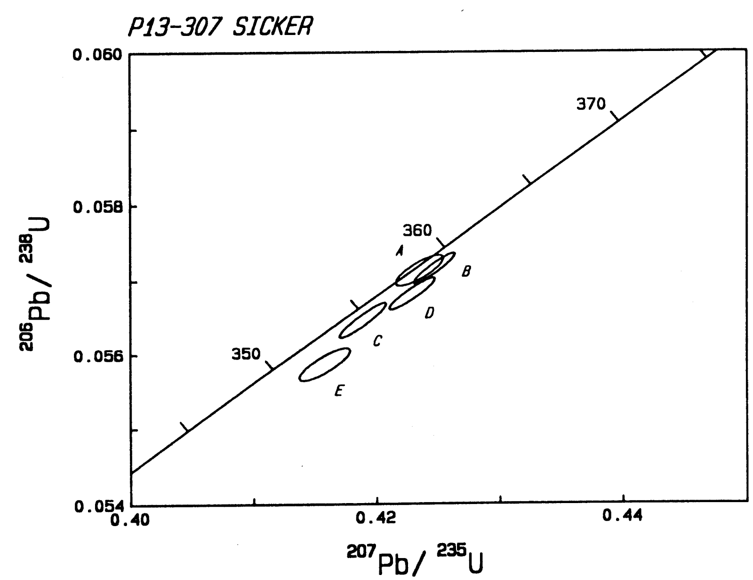

Figure 4. U-Pb concordia diagram of sample P13-307, Sicker rhyolite. Error ellipses reflect 2σ uncertainty.

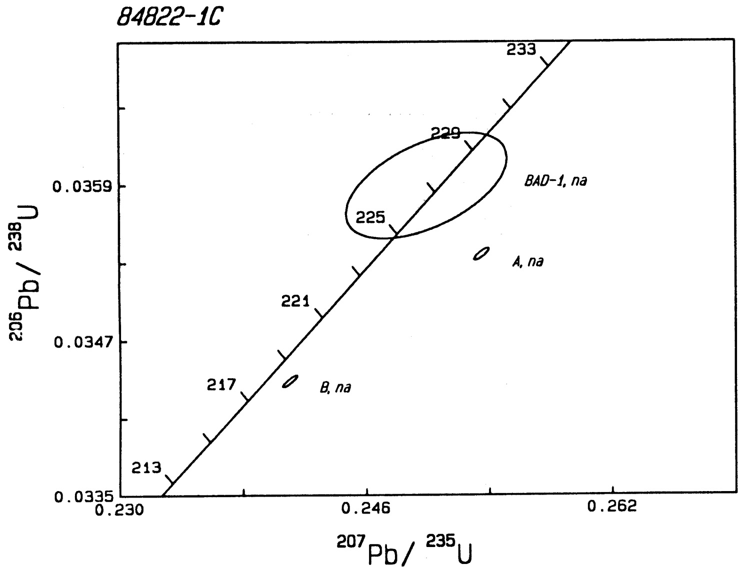

Figure 5. U-Pb concordia diagram of sample 84822-1C, mafic intrusion. Error ellipses reflect 2σ uncertainty.

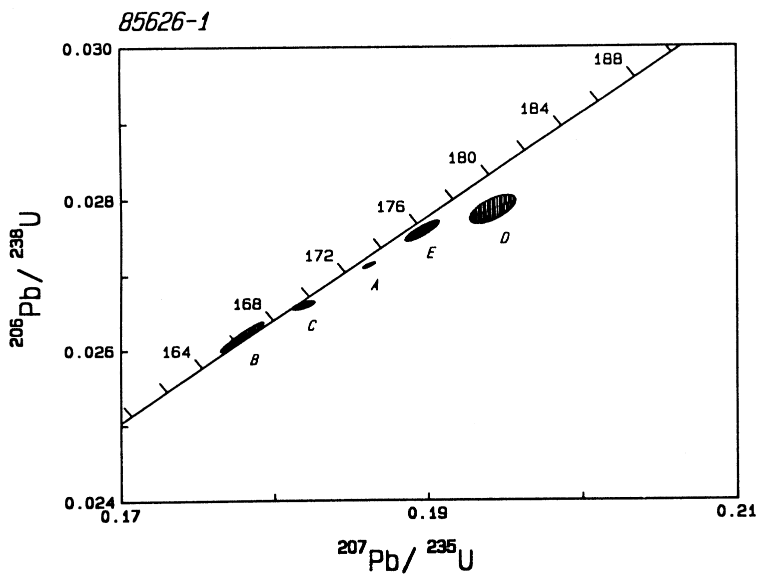

Figure 6. U-Pb concordia diagram of sample 85626-1, Island Intrusion. Error ellipses reflect 2σ uncertainty.

quartz porphyry of the Saltspring Intrusions. The gabbro is composed of plagioclase, clinopyroxene (commonly altered to uralitic amphibole) and minor skeletal ilmenite.

Two fractions composed of numerous very small zircons and one fraction of baddeleyite were analyzed from this sample; the material was generally rather poor quality, and there was sufficient baddeleyite for only one analysis.

The baddeleyite analysis overlaps concordia at 227 ± 3 Ma, which is interpreted to be the minimum age of crystallization of the mafic intrusion (Fig. 5). Since the baddeleyite may also have lost some lead, the crystallization age might have been somewhat older. The zircons, which were not abraded, may have experienced minor Pb loss and fraction A, with a ^{207}Pb-^{206}Pb age of 285 Ma, suggests the possibility that it contained xenocrysts of older age, possibly from assimilation of host rocks of Devonian age. The data from this sample are of only modest quality, but we interpret 227 ± 3 Ma as the present best estimate of age for the gabbroic magma. This age is consistent with the Carnian-Norian age span of the Karmutsen volcanic rocks, with which the gabbro is thought to be comagmatic.

Island Intrusion (85626-1)

Several granodioritic stocks of Middle Jurassic age, the Island Intrusions, occur in the Vancouver Island area. Sample 85626-1 is a medium grained, undeformed biotite-quartz diorite with minor hornblende. This pluton cuts highly deformed and metamorphosed Sicker Group rocks, and clearly postdated Sicker ductile deformation and cleavage formation.

Five fractions of clear euhedral zircons containing minor inclusions were analyzed. The analyses of discordant zircon fractions A, E, and D are interpreted to reveal components of inheritance (Fig. 6). Analyses B and C overlap concordia, but do not agree; fraction B may have lost Pb. As a result of this complex pattern we suggest an age of 168 ± 2 Ma for crystallization of this intrusion. The age of the inherited component is probably Paleozoic, possibly the Devonian Sicker volcanic and plutonic rocks which form the country rock of this intrusion.

CONCLUSIONS

Some of the main conclusions of the U-Pb age determinations are as follows:

1. The Saltspring Intrusions are late Devonian in age.
2. The felsic volcanics of the McLaughlin Ridge Formation in the Buttle Lake uplift are also late Devonian in age and could be extrusive equivalents of the Saltspring Intrusions, a possibility originally suggested by Muller (1980) (see also Brandon et al., 1986; Massey and Friday, 1988).
3. The age of a gabbroic dyke which intrudes Sicker Group is estimated to be 227 ± 3 Ma; this strengthens the correlation of the gabbro with the Late Triassic Karmutsen volcanics (Brandon et al., 1986; Massey and Friday, 1988, 1989).
4. Initial deformation of the Sicker Group is pre-Middl Jurassic. The age of an Island Intrusion (168 ± 2 Ma provides this constraint on the minimum age of thi deformation (see also Brandon et al., 1986; Massey an Friday, 1988, 1989).

ACKNOWLEDGMENTS

M. Brandon collected most of the samples analyzed in thi study. Rick Walker provided the sample from the H-W min (Westmin Resources). Nick Massey and Rod Kirkham ar thanked for discussions. M. Villeneuve reviewed th manuscript.

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APPENDIX 1

Sample locations for U-Pb dating

84925-1: Saltspring Intrusion, quartz-feldspar porphyry; southern Saltspring Island, along the coast, on the south side of cove just north of Beaver Point, Victoria map area, B.C. (92B/14); 123°22′14″ W - 48°46′30″ N; UTM 10u, 472774E-5402291N.

85225-2: Saltspring Intrusion, quartz-feldspar porphyry; east side of Mt. Sicker, third outcrop (north end of outcrop) on west side of Highway 1 going south from Chemainus River (2.25 km south of bridge), Victoria map area, Vancouver Island, B.C. (92B/13); 123°42′50″ W - 48°51′38″ N; UTM 10u, 447637E-5411981N.

P13-307: Sicker Volcanics, quartz-feldspar porphyry; H-W mine (Westmin), Buttle Lake, Alberni map area, Vancouver Island, B.C. (92F/12); 125°35′20″ W - 49°34′15″ N; UTM 10u, 312820E-5493917N.

85626-1: Island Intrusion, quartz diorite; Moresby Island (southeast of Saltspring Island), location is approximately 1 km southeast of Seymour Point, Victoria map area, B.C. (92B/11); 123°19′22″ W - 48°42′45″ N; UTM 10u, 476255E-5395328N.

84822-1C: mafic intrusion; easternmost quarry on north fork of dirt road off Shasta St. (sample collected from west side of main quarry), Crofton, Victoria map area, Vancouver Island, B.C. (92B/13); 123°40′08″ W - 48°51′41″ N; UTM 10u, 450931E-5412038N.

New U-Pb dates from southwe

Randall R. Parrish[1] and Ja

Parrish, R.R. and Monger, J.W.H., 1992: New U-Pb d
Radiogenic Age and Isotopic Studies: Report 5; Geologica

Abstract

U-Pb dates are presented for seventeen samples of igne
the Ashcroft (92I), Hope (92H), and Vancouver (92G) map
Ma to 63 Ma and reflect changing patterns of ism in th
Canadian Cordillera.

Résumé

Les datations U-Pb de 17 échantillons de roches ignées re
correspondant aux cartes d'Ashcroft (92I), de Hope (92H) et
varient de plus de 200 Ma à 63 Ma et reflètent le pl
intramontagneuses et littorales dans le sud de la Cordillère

INTRODUCTION

Sampling of rock units for dating using various isotopic systems was carried out in the last decade during 1:250 000 scale re-mapping of Hope (92H), Ashcroft (92I), and Vancouver (92G) map areas (Monger, 1989; Monger, 1991a). The new dates supplement the numerous (ca. 300), mainly K-Ar dates collected in these areas over the past three decades by many workers, which are listed on the "Isotope date location maps" of Hope and Ashcroft areas (Monger, 1989) and shown on the geological map of Vancouver, west half (Roddick and Woodsworth, 1979). Much of the isotopic dating done in Hope and Ashcroft map areas reflects interest in mineral deposits associated with relatively high level plutonic rocks of the Intermontane Belt (Fig. 1), and for of the latter, K-Ar dates are sufficient to give g approximations of times of crystallization. For example, genesis of Highland Valley porphyry copper ores is intimately associated with crystallization history of the Late Triassic Guichon Creek Batholith (Fig. 1; McMillan, 1976), which has been dated mostly by K-Ar. By contrast, the southern Coast Belt comprises abundant granitic rocks (about 80% of all exposed lithologies). For these, several isotope systems are needed, as crystallization ages may be very

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