PRELIMINARY INTERPRETATION OF LEAD ISOTOPES IN GALENA–LEAD FROM BRITISH COLUMBIA MINERAL DEPOSITS

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INTRODUCTION

Analysis of lead isotopes from mineral deposits in British Columbia is part of an ongoing lead isotope-oriented metallogenic study of the Canadian Cordillera. A total of 80 new analyses from 48 deposits, reported in Tables 1 to 5 (*see* pp. 178-182), have been completed since early 1979 in the Geology-Geophysics Laboratory at the University of British Columbia.

Data are discussed in terms of major tectonic belts (Sutherland Brown, *et al.*, 1971), and data presentation (Tables 1 to 5) is organized in the same fashion. Table 1, Insular Belts, lists 12 analyses from 7 deposits; Table 2, Central Coast Crystalline Belt, reports 23 analyses from 17 deposits; Table 3, Southern Coast Crystalline Belt, contains 26 analyses from 10 deposits; Table 4, Intermontane Belt, shows 11 analyses from 8 deposits; and Table 5, Eastern Fold Belt, reports 8 analyses from 6 deposits. Locations of deposits analysed are on Figure 57. Averaged values for age categories within each belt or table are shown on Figure 58. This is an interim report since some tectonic belts are not represented in Tables 1 to 5, many more analyses are in progress, and analyses completed prior to this study are not considered here. Our comments are restricted entirely to preliminary evaluation of the new data reported and will be updated as additional analyses are compiled.

SAMPLE PREPARATION AND ANALYSIS

All analyses were done on samples of pure galena or, in the case of very fine-grained sulphides, on samples of mixed sulphides containing galena. Sulphide samples were dissolved using HCl and HNO_3, and the resulting solution was filtered and evaporated until a precipitate of $PbCl_2$ crystals was obtained. Following washing of these crystals in H_2O and ethyl alcohol, they were redissolved in H_2O to provide a concentrated $PbCl_2$ solution which was further purified by passing it through anion exchange columns.

Electroplating of lead from this solution followed by dissolving in HNO_3 and by evaporation provided about 50 grams of $Pb(NO_3)_2$ for each sample. About 1μ gm of lead was then loaded onto single rhenium filaments, using the standard silica gel technique.

Isotopic analyses were done using a 90-degree, 12-inch mass spectrometer. Samples and standards were analysed at temperatures of 1100 degrees to ±100 degrees centigrade. Runs on samples were interspersed with runs of the Broken Hill No. 1 standard. Reproducibility of individual analyses of this standard is generally about 0.1 per cent at 1 sigma and this is considered to be the reproducibility of the sample analyses. All isotopic ratios reported in the tables have been normalized to their absolute values by intercomparison with the Broken Hill No. 1 standard. The absolute value of this standard was taken to be: $^{206}Pb/^{204}Pb = 16.003$, $^{207}Pb/^{204}Pb = 15.389$, and $^{208}Pb/^{204}Pb = 35.657$ (Cooper, *et al.*, 1969).

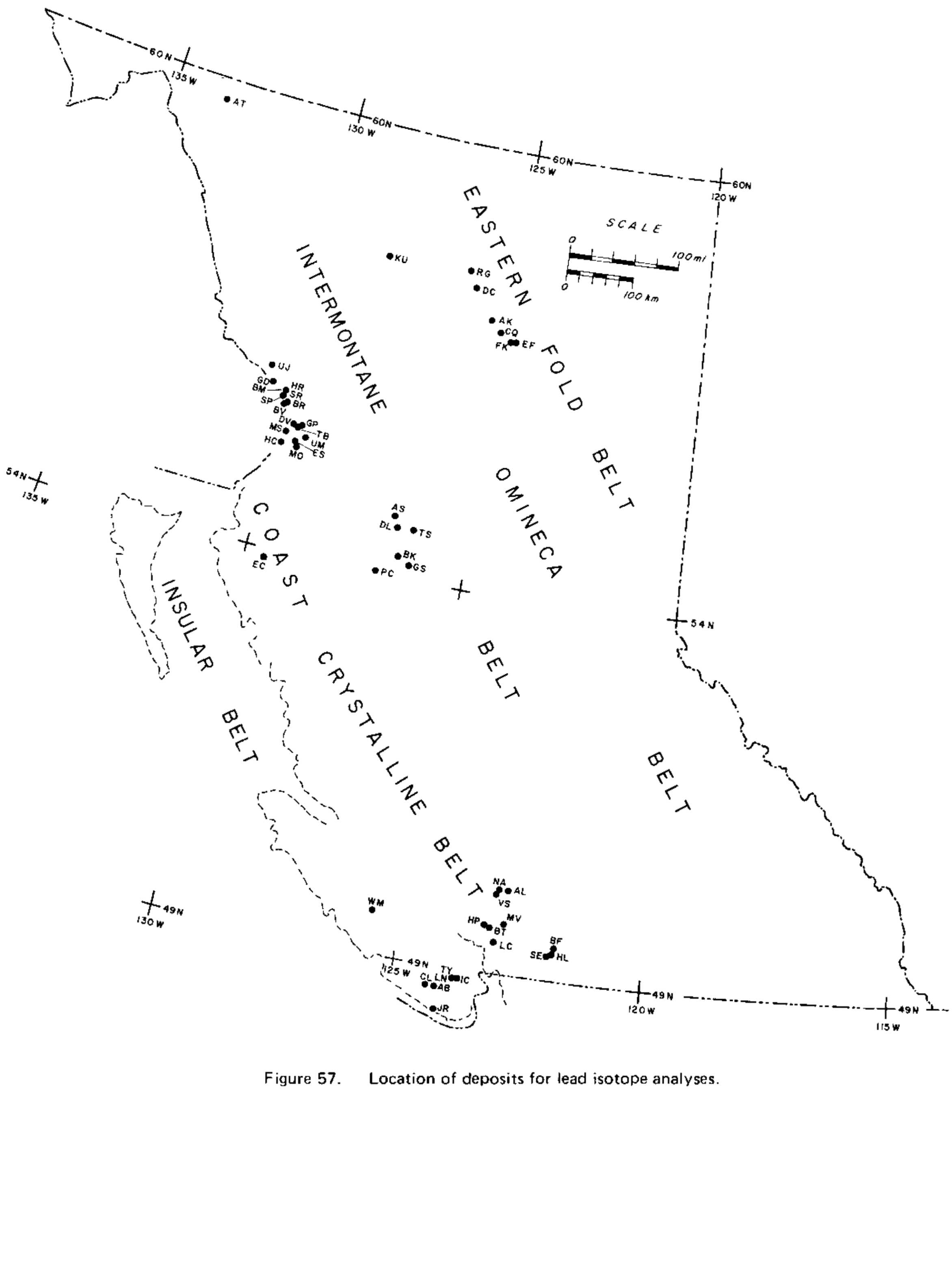

Figure 57. Location of deposits for lead isotope analyses.

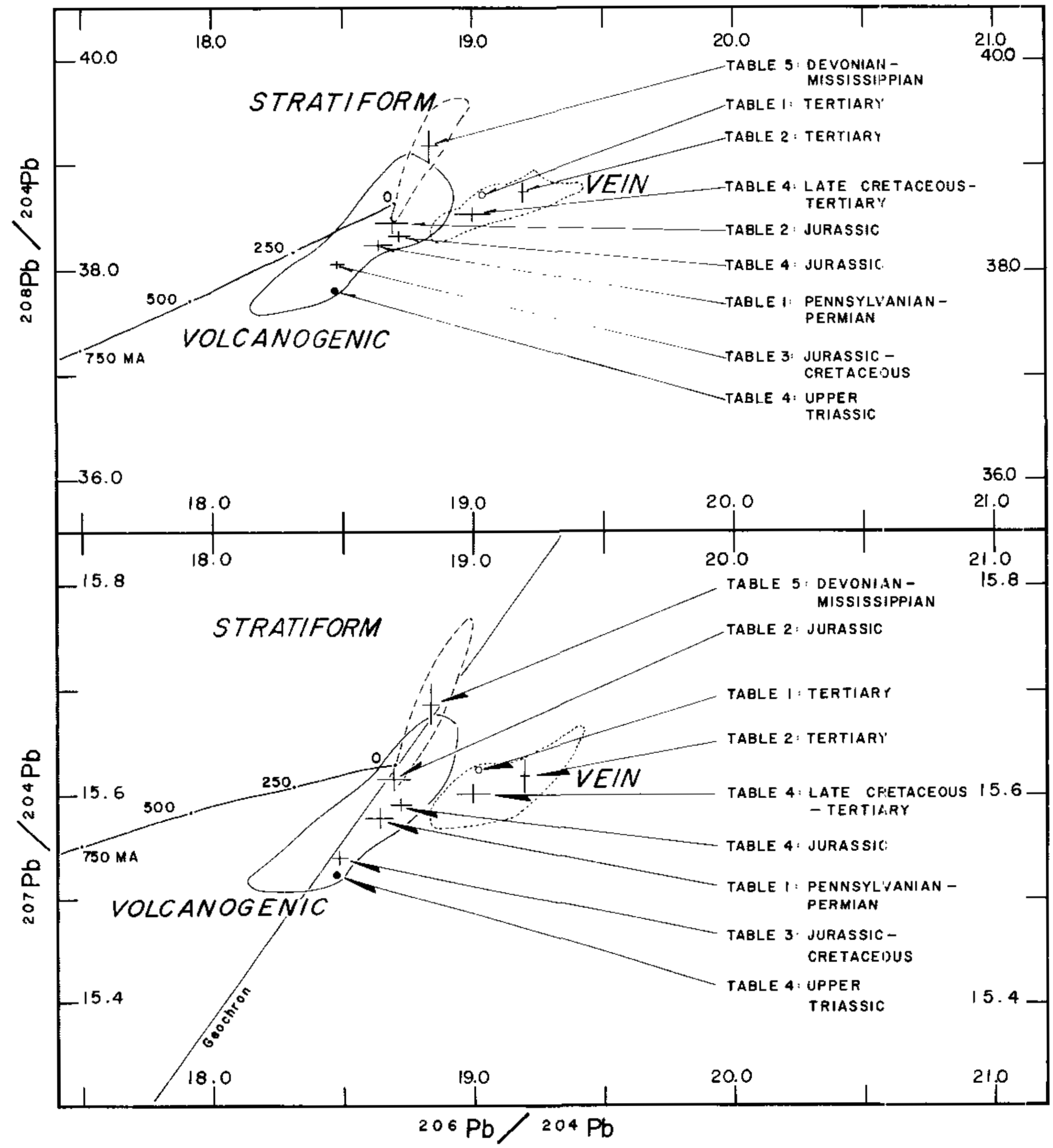

Figure 58. Lead isotope analyses — averaged values.

INSULAR BELT

Data, listed in Table 1, are generalized on Figure 58. Most deposits are demonstrably volcanogenic in origin (for example, Western Mines, Tyee, etc.), however, the origin is uncertain for some showings.

Results for those deposits hosted by the Sicker volcanic rocks of Pennsylvanian/Permian age cluster roughly about a point centred near the geochron (zero isochron) but significantly below the normal crustal growth curve of Stacey and Kramers (1974). These features indicate a multistage evolution, part of which was in a low U/Pb and Th/Pb environment. A linear trend in the $^{207}Pb/^{204}Pb$ versus $^{206}Pb/^{204}Pb$ data can be defined by a York II cubic regression line. This trend, if real, and if interpreted as a two-stage model with final mineralization about 250 Ma ago, indicates a source rock (basement complex ?) about 2000 Ma in age. More work is required to examine this possibility.

The Tertiary Sunro deposit, in Metchosin volcanic rocks, also developed in a low U/Pb and Th/Pb environment. However, the lead is more radiogenic than that from lead in Sicker volcanic rocks, presumably because of the younger, Tertiary age for Sunro.

COAST CRYSTALLINE BELT

Lead isotope data for deposits in the central part of the Coast Crystalline Belt are in Table 2. Most results are from deposits in metamorphosed Hazelton volcanic rocks of Jurassic age, and many are of volcanogenic origin. Because of the complex geological history in this area, the origin is uncertain for some showings described as veins. Some vein deposits, however, are demonstrably Tertiary in age (for example, late-stage veins at British Columbia Molybdenum), because of their association with Tertiary intrusive rocks.

Data from most deposits contained in Jurassic volcanic rocks cluster closely to the composition of average modern-day lead (Fig. 58). Consequently, they are abnormally enriched in radiogenic lead because their true age is *circa* 200 Ma. This anomaly requires a multi-stage origin which to a first approximation is estimated by a two-stage model based on a York II cubic regression line through the $^{207}Pb/^{204}Pb$ data. This model requires a source for radiogenic lead of about 2400 Ma, although there is a large uncertainty attached to this model age. Obviously, more high quality analyses are required to investigate this problem adequately. Lead from the Ecstall and Big Missouri deposits is the least radiogenic and lies significantly to the left of the geochron on Figure 58; thus, single stage ages based on the model of Stacey and Kramers (1974) can be calculated and are 134 Ma and 173 Ma respectively. These ages are in reasonable agreement with the age of host rocks. Several authors (for example, Cannon, *et al.*, 1972) have suggested that the greatest economic potential for lead-zinc deposits, in a constant geological setting in a given area, is for those with the least radiogenic isotopic ratio of lead. According to this empirical relationship, the lead from the Ecstall and Big Missouri indicates areas of significant potential for large lead-bearing deposits, a possibility in accord with the origin and known reserves at the Ecstall deposit.

Tertiary deposits sampled in the central part of the Coast Crystalline Belt contain more radiogenic lead than do older deposits, perhaps in part due to their young age. In general, however, they are too highly radiogenic to attribute their greater content of radiogenic lead only to decreased age. A more complex history of evolution is necessary; more data are required.

Lead isotope data for deposits in the southern part of the Coast Crystalline Belt are in Table 3. Analyses are either from volcanogenic deposits or from veins which are probably closely related spatially to volcanogenic deposits. Volcanic host rocks are Jurassic in the Seneca—Harrison Lake area, but might be as young as Early Cretaceous in the Britannia—Northair area.

isotopic ratios plot on the geochron and are substantially below the normal crustal evolutionary growth curve. Thus lead from these deposits evolved in an environment with significantly lower U/Pb and Th/Pb ratios than that of deposits from the central part of the Coast Crystalline Belt.

Some data for galena from the Van Silver deposits represent veinlets cutting intrusive rocks of the Garibaldi Volcanic Suite (for example, TUN. and MILL). The young vein leads have similar isotopic compositions to older, volcanogenic leads (for example, Tedi), indicating that Late Tertiary mineralization has occurred without significant contamination by a radiogenic component. This uniformity of lead isotope composition points to a close genetic relationship between lead deposits in and near the Callaghan Creek pendant depsite the several ages of mineralization (Miller and Sinclair, 1978, 1979).

INTERMONTANE BELT

The relatively few new lead isotope dates for deposits in the Intermontane Belt are mainly from the Smithers area and are given in Table 4. Deposits hosted by Hazelton volcanic rocks of Jurassic age are probably volcanogenic unless closely related spatially to stocks as young as Tertiary. The Kutcho volcanogenic deposit occurs in volcanic rocks which are probably Triassic in age. Lead isotope data from deposits in Jurassic rocks are relatively uniform in composition and cluster close to the geochron only slightly below the normal crustal growth curve. Isotopic values are comparable to those found in volcanogenic deposits of the neighbouring central Coast Crystalline Belt. The Kutcho deposit is an obvious anomaly, but is separated widely geographically from the other deposits and occurs in older Triassic rocks.

OMINECA BELT

No new data have been obtained for the Omineca Belt.

EASTERN MARGINAL BELT

Lead isotope data for the Eastern Marginal Belt, given in Table 5, are for shale-hosted, stratiform zinc-lead-silver deposits in the Driftpile–Gataga area of northeastern British Columbia. These data cluster near the geochron but are significantly above the general growth curve for crustal leads for both thorium-derived ^{208}Pb and ^{206}Pb and ^{207}Pb. On fossil evidence, the deposits formed very near the Devonian/Mississippian boundary (W. Roberts, 1979, personal communication). Earlier lead isotope studies (Godwin, *et al.*, 1979) indicate a basement source of 1500 Ma for this area.

CONCLUSIONS

The comparatively few new lead isotope analyses on galena from mineral deposits in British Columbia show that lead isotopes provide a useful means of investigating different ages and geochemistries of basement rocks throughout the Canadian Cordillera. More data obviously are desirable and will result in refined interpretations. A number of specific conclusions can be drawn from data presented.

(1) Insular Belt lead isotope ratios from deposits hosted by Sicker volcanic rocks suggest the possible existence of an approximately 2000-Ma-old basement complex.

(2) Central Coast Crystalline Belt lead isotope data from Jurassic volcanogenic or related deposits suggest the possibility that basement rocks *circa* 2500 Ma old underlie this area.

(3) Southern Coast Crystalline Belt lead isotope ratios from volcanogenic or related deposits developed in a significantly different Pb-U-Th environment than did lead in comparable deposits in the central Coast Crystalline Belt.

(4) Tertiary mineralization at Van Silver deposits have lead isotope ratios indistinguishable from volcanogenic deposits in Lower Cretaceous Gambier Group rocks, indicating that a close genetic relationship is likely. In other cases lead may be mobilized and contaminated with a radiogenic component to produce, for example, Tertiary lead highly enriched in a radiogenic component. Examples of this may include Tertiary porphyry and related deposits.

(5) Most lead ratios from *circa* Mesozoic volcanogenic and related deposits appear to have developed in a relatively low U/Pb and low Th/Pb environment relative to the normal crustal evolution curve defined by Stacey and Kramers (1975) and implies growth in a more primitive environment. This characteristic is common to such deposits in the Insular, Coast Crystalline, and Intermontane Belts. Data are not yet available for the Omineca Belt.

(6) Leads from several volcanogenic deposits with 'least radiogenic' isotopic ratios allow calculation of reasonable single stage ages, and may specify areas of high mineral potential.

(7) Eastern Fold Belt lead isotope ratios from Devonian/Mississippian stratiform lead-zinc-barite deposits evolved in a high U/Pb and Th/Pb environment relative to normal crustal evolution. Evolution of the lead in the Selwyn shale basin is an acceptable explanation of the pattern found.

Our comparatively few, new lead isotope analyses on galena from mineral deposits in British Columbia show that such studies provide important restrictions on ore genesis, age of mineralization, and age and geochemical attributes of the source rocks (*see* Sinclair, 1965). Much more data are desirable and will provide a useful means of studying metallogeny of the Canadian Cordillera.

ACKNOWLEDGMENTS

The writers thank A. Garven for helping to collate much of the data. Financial assistance for lead isotope studies in the Canadian Cordillera have been most generously provided by: British Columbia Ministry of Energy, Mines and Petroleum Resources, Cominco Ltd., Cyprus Anvil Mining Corporation, and Rio Tinto Canadian Exploration Limited. A number of geologists from the Ministry of Energy, Mines and Petroleum Resources and industry kindly have contributed specimens for this study.

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TABLE 1: LEAD ISOTOPE ANALYSES[1] ON GALENA[2] FROM MINERAL DEPOSITS

Insular Belt

Sample Number	Deposit Name	Map Name	Lat.° North	Long.° West	Lead Isotope Data (Relative 1S Error as %) $^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$	Remarks
Tertiary								
G679JR-001	Sunro (Jordan R.)	JR	48.44	124.04	19.018 (.06)	15.624 (.10)	38.714 (.13)	
Number of deposits (n) = 1	arith. average = $\bar{x}$				[19.018 (.06)]	[15.624 (.10)]	[38.714 (.13)]	
Number of analyses = 1	std. error mean $= S \cdot n^{-1/2}$				-----	-----	-----	
Pennsylvanian - Permian								
G79AB-001	Alpha and Beta	AB	48.73	124.09	18.882 (.07)	15.617 (.10)	38.406 (.07)	massive
G79CL-001	Cowichan Lake	CL	48.7A	124.3A	18.646 (.03)	15.581 (.05)	38.276 (.10)	massive
G49CL-002	Cowichan Lake	CL	48.7A	124.3A	18.666 (.02)	15.589 (.07)	38.396 (.10)	massive
G79CL-003	Cowichan Lake	CL	48.7A	124.3A	18.702 (.07)	15.546 (.10)	38.086 (.30)	massive
Average for Cowichan Lake		CL	48.7A	124.3A	[18.671 (.04)]	[15.572 (.07)]	[38.252 (.16)]	
G79IC-001	Iron Clad	IC	48.85	123.68	18.682 (.08)	15.581 (.09)	38.304 (.12)	disseminated[3]
G79LN-001	Lenora	LN	48.87	123.78	18.534 (.04)	15.538 (.09)	38.216 (.04)	massive
G79LN-002	Lenora	LN	48.87	123.78	18.562 (.08)	15.572 (.08)	38.230 (.09)	massive
Average for Lenora		LN	48.87	123.78	[18.548 (.06)]	[15.555 (.08)]	[38.223 (.06)]	
G79TY-001	Tyee	TY	48.87	123.78	18.558 (.08)	15.577 (.07)	38.123 (.11)	massive
G79WM-001	Western: Myra	WM	49.57	125.59	18.506 (.06)	15.579 (.04)	38.186 (.07)	massive
G79WM-002	Western: Myra Z	WM	49.57	125.59	18.488 (.07)	15.554 (.07)	38.089 (.06)	massive
G79WM-003	Western	WM	49.57	125.59	18.484 (.06)	15.551 (.09)	38.115 (.03)	massive
Average for Western		WM	49.57	125.59	[18.493 (.06)]	[15.561 (.07)]	[38.130 (.05)]	
Number of deposits (n) = 6	arith. average = $\bar{x}$				[18.639 (.06)]	[15.577 (.08)]	[38.240 (.10)]	
Number of analyses = 11	std. error mean $= S \cdot n^{-1/2}$				0.057	0.009	0.044	

1. All analyses done in the Geology - Geophysics Laboratory, The University of British Columbia.

2. All analyses done on galena samples unless otherwise noted.

3. Sample is galena poor and mainly pyrite and chalcopyrite.

TABLE 2: LEAD ISOTOPE ANALYSES[1] ON GALENA[2] FROM MINERAL DEPOSITS

Central Coast Crystalline Belt

Sample Number	Deposit Name	Map Name	Lat.° North	Long.° West	Lead Isotope Data (Relative 1S Error as %) $^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$	Remarks
Tertiary								
G79BR-001[3]	RAF: Bear R. area	BR	55.98	129.89	19.231 (.05)	15.629 (.04)	38.712 (.07)	age uncertain
G78NC4155[4]	B.C. Molybdenum	MO	55.42	129.42	19.203 (.14)	15.537 (.10)	38.893 (.13)	K-Ar: 51 Ma
G79SB-001[3]	Packer Fraction	SB	56.11	130.02	19.155 (.08)	15.585 (.05)	38.602 (.06)	age uncertain
Number of deposits (n) = 3 arith. average = $\bar{X}$					[19.196 (.09)]	[15.617 (.06)]	[38.736 (.09)]	
Number of analyses = 3 std. error mean = $S \cdot n^{-1/2}$					0.022	0.016	0.085	
Jurassic								
G78BV-001	Bayview	BV	55.96	129.98	18.501 (.14)	15.592 (.08)	38.213 (.08)	
G78BM-001	Big Missouri	BM	56.11	130.03	18.175 (.06)	15.521 (.06)	37.634 (.09)	
G78DV-001	Dolly Varden	DV	55.74	129.63	18.948 (.09)	15.673 (.03)	38.779 (.11)	
G78DV-002	Dolly Varden	DV	55.74	129.63	18.866 (.08)	15.628 (.11)	38.432 (.16)	
Average for Dolly Varden		DV	55.74	129.63	[18.907 (.08)]	[15.651 (.07)]	[38.605 (.14)]	
G78EC-001	Ecstall River	EC	53.87	129.51	18.303 (.04)	15.549 (.02)	37.788 (.04)	
G78ES-001[3]	Esperanza	ES	55.49	129.49	18.791 (.14)	15.617 (.05)	38.620 (.10)	
G78NC8136[4]	Galena Property	GP	55.72	129.52	18.912 (.11)	15.668 (.06)	38.784 (.20)	
G79GD-001[3]	Granduc	GD	56.21	130.33	18.722 (.11)	15.600 (.10)	38.428 (.11)	
G79HR-001[3]	Hercules (Dumas)	HR	56.16	130.05	18.753 (.07)	15.634 (.06)	39.057 (.10)	
G78HC-001	Hidden Creek	HC	55.44	129.81	18.489 (.13)	15.590 (.09)	38.380 (.11)	
G78MS-001	Mastadon	MS	55.59	129.76	18.758 (.10)	15.654 (.06)	38.546 (.10)	
G78SP-001	Silbak-Premier	SP	56.05	130.02	18.825 (.06)	15.577 (.06)	38.357 (.07)	
G78SP-002	Silbak-Premier	SP	56.05	130.02	18.849 (.06)	15.639 (.04)	38.551 (.10)	
G78SP-003	Silbak-Premier	SP	56.05	130.02	18.839 (.05)	15.632 (.06)	38.475 (.07)	
G79Pr-001[3]	Silbak-Premier	SP	56.05	130.02	18.767 (.06)	15.594 (.13)	38.494 (.08)	
Average for Silbak-Premier		SP	56.05	130.02	[18.820 (.06)]	[15.605 (.07)]	[38.469 (.08)]	
G78TB-001	Torbit	TB	55.69	129.49	18.844 (.11)	15.580 (.03)	38.295 (.05)	
G78TB-002	Torbit	TB	55.69	129.49	18.856 (.10)	15.610 (.05)	38.287 (.20)	
G78NC6995	Torbit	TB	55.69	129.49	18.918 (.05)	15.642 (.08)	38.546 (.05)	
Average for Torbit		TB	55.69	129.49	[18.872 (.09)]	[15.611 (.05)]	[38.376 (.10)]	
G78NC198[4]	United Metals	UM	55.55	129.28	18.858 (.07)	15.671 (.07)	38.503 (.18)	
G78UJ-001	Unuk River	UJ	56.41	130.49	18.861 (.08)	15.629 (.08)	38.373 (.15)	
Number of deposits (n) = 14 arith. average = $\bar{X}$					[18.694 (.09)]	[15.614 (.06)]	[38.456 (.11)]	
Number of analyses = 20 std. error mean = $S \cdot n^{-1/2}$					0.063	0.011	0.103	

1. All analyses done in the Geology - Geophysics Laboratory, The University of British Columbia.

2. All analyses done on galena samples unless otherwise noted.

3. Sample submitted by T. Grove, BCMOM.

4. Sample submitted by N. Carter, BCMOM.

TABLE 1: LEAD ISOTOPE ANALYSES[1] ON GALENA[2] FROM MINERAL DEPOSITS

Southern Coast Crystalline Belt

Sample Number	Deposit Name	Map Name	Lat.° North	Long.° West	Lead Isotope Data (Relative 1S Error as %) $^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$	Remarks
Jurassic - Lower Cretaceous								
G78AL-001	Fitzsimmons Creek	AL	50.12	122.93	18.466 (.05)	15.525 (.05)	38.047 (.07)	massive
G79BF-001	Big Foot	BF	49.44	121.84	18.494 (.07)	15.525 (.04)	38.030 (.07)	stockwork
G79BF-002	Big Foot	BF	49.44	121.84	18.496 (.04)	15.550 (.10)	38.077 (.14)	stockwork
Average for Big Foot		BF	49.44	121.84	[18.495 (.06)]	[15.538 (.07)]	[38.054 (.11)]	
BRITN-493	Britannia: E Blf.	BT	49.61	123.14	18.53. (.10)	15.573 (.08)	38.097 (.08)	massive
BRITN-494	Britannia: Vict	BT	49.61	123.14	18 +59 (.09)	15.556 (.08)	37.952 (.13)	massive
BRITN-495	Britannia: Vict	BT	49.61	123.14	ꞁ8.524 (.05)	15.579 (.06)	38.221 (.06)	massive
BRITN-496	Britannia: Vane	BT	49.61	123.14	18.502 (.07)	15.548 (.03)	38.054 (.11)	massive
G78BT-001	Britannia: Bluff	BT	49.61	123.14	18.484 (.07)	15.521 (.07)	38.035 (.06)	massive
G78BT-002	Britannia: No 5	BT	49.61	123.14	18.544 (.08)	15.591 (.09)	38.145 (.05)	massive
G78BT-003	Britannia: No 8	BT	49.61	123.14	18.502 (.09)	15.568 (.07)	38.092 (.08)	massive
Average for Britannia		BT	49.61	123.14	[18.507 (.08)]	[15.562 (.07)]	[38.085 (.08)]	
G79HL-001	Harrison Lake	HL	49.35	121.83	18.482 (.07)	15.563 (.07)	38.043 (.10)	stockwork
G79HP-001	Hopkins	HP	49.64	123.29	18.532 (.05)	15.599 (.08)	38.093 (.12)	massive
G78LC-001	Lynn Creek	LC	49.42	123.06	18.474 (.04)	15.529 (.03)	38.028 (.15)	massive (skarn?)
G79MV-001	McVicar: Ruth	MV	49.66	123.02	18.408 (.08)	15.545 (.02)	37.976 (.09)	massive
G79MV-002	McVicar: Whistler	MV	49.66	123.02	18.467 (.07)	15.549 (.10)	38.058 (.08)	massive
Average for McVicar		MV	49.66	123.02	[18.438 (.08)]	[15.547 (.06)]	[38.017 (.09)]	
G79NA-001	Northair: Manif.	NA	50.13	123.10	18.378 (.10)	15.511 (.06)	38.960 (.07)	massive
G78NA-002	Northair: Discov.	NA	50.13	123.10	18.472 (.06)	15.537 (.05)	38.101 (.11)	massive
G78NA-003	Northair: Warman	NA	50.13	123.10	18.441 (.10)	15.517 (.08)	38.034 (.10)	massive
G78NA-004	Northair: Warman	NA	50.13	123.10	18.429 (.05)	15.527 (.07)	38.012 (.04)	vein
Average for Northair		NA	50.13	123.10	[18.430 (.08)]	[15.523 (.06)]	[38.026 (.08)]	
G78SE-003	Seneca	SE	49.32	121.95	18.312 (.10)	15.516 (.08)	37.895 (.07)	massive
G78SE-005	Seneca	SE	49.32	121.95	18.319 (.10)	15.516 (.09)	37.914 (.08)	stockwork
Average for Seneca		SE	49.32	121.95	[18.316 (.10)]	[15.516 (.08)]	[37.905 (.08)]	
G78VS-001	Van Silver: Tedi	VS	50.06	123.14	18.427 (.09)	15.556 (.07)	38.079 (.09)	disseminated
G78VS-002	Van Silver: Mill	VS	50.06	123.14	18.664 (.06)	15.552 (.08)	38.190 (.05)	vein in tert. intr.
G78VS-005	Van Silver: Tun.	VS	50.06	123.14	18.712 (.04)	15.583 (.09)	38.223 (.12)	veinlet
G78VS-006	Van Silver: Tun.	VS	50.06	123.14	18.462 (.07)	15.519 (.08)	38.002 (.07)	disseminated
average for Van Silver		VS	50.06	123.14	[18.553 (.06)]	[15.552 (.08)]	[38.124 (.08)]	
Number of deposits (n) = 10	<u>arith. average</u> = $\overline{X}$				[18.481 (.07)]	[15.541 (.06)]	[38.055 (.10)]	
Number of analyses = 26	<u>std. error mean</u> = $S \cdot n^{-1/2}$				0.028	0.007	0.027	

1. All analyses done in the Geology - Geophysics Laboratory, The University of British Columbia.

2. All analyses done on galena samples unless otherwise noted.

TABLE 4: LEAD ISOTOPE ANALYSES[1] ON GALENA[2] FROM MINERAL DEPOSITS

Intermontane Belt

Sample Number	Deposit Name	Map Name	Lat.° North	Long.° West	Lead Isotope Data (Relative 1S Error as) $^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$	Remarks
Cretaceous - Tertiary								
G79AT-001	Atlin Ruffner	AT	59.73	133.53	19.066 (.05)	15.599 (.09)	38.580 (.11)	
G79AT-002	Atlin Ruffner	AT	59.73	133.53	19.101 (.05)	15.637 (.08)	38.718 (.09)	
Average for Atlin Ruffner		AT	59.73	133.53	[19.084 (.05)]	[15.618 (.08)]	[38.649 (.10)]	
S78GS-003	Goosley: Galena	GS	54.18	126.25	18.863 (.06)	15.577 (.07)	38.387 (.20)	K-Ar: 50MA
G78SG-002	Goosley: Main	GS	54.18	126.25	19.402 (.06)	15.661 (.06)	38.772 (.12)	
G78SG-003	Goosley: S. Tail	GS	54.18	126.25	18.860 (.05)	15.553 (.04)	38.301 (.05)	
Average for Goosley		GS	54.18	126.25	[19.042 (.06)]	[15.597 (.06)]	[38.487 (.12)]	
G79PC-036	Poplar Porphyry	PC	54.02	126.98	18.861 (.10)	15.588 (.07)	38.438 (.08)	
Number of deposits (n) = 3	arith. average = $\bar{X}$				[18.995 (.07)]	[15.601 (.07)]	[38.524 (.10)]	
Number of analyses = 6	std. error mean = $S \cdot n^{-1/2}$				0.068	0.009	0.064	
Jurassic								
G78AS-001	Ascott	AS	54.79	126.72	18.666 (.09)	15.592 (.07)	38.349 (.10)	
G78BK-001	Bob Creek	BK	54.30	126.60	18.834 (.09)	15.608 (.07)	38.444 (.04)	
G78DL-002	Del Santo	DL	54.65	126.70	18.643 (.08)	15.586 (.08)	38.219 (.04)	
G78TS-001	Topley Silver	TS	54.60	126.26	18.735 (.07)	15.578 (.08)	38.346 (.05)	
Number of deposits (n) = 4	arith. average = $\bar{X}$				[18.720 (.08)]	[15.591 (.08)]	[38.340 (.06)]	
Number of analyses = 4	std. error mean = $S \cdot n^{-1/2}$				0.043	0.006	0.046	
Upper Triassic								
G78KU-001	Kutcho Ck.	KU	58.20	128.37	18.469 (.07)	15.524 (.13)	37.815 (.09)	
Number of deposits (n) = 1	arith. average = $\bar{X}$				[18.469 (.07)]	[15.524 (.13)]	[37.815 (.09)]	
Number of analyses = 1	std. error mean = $S \cdot n^{-1/2}$				----	----	----	

1. All analyses done in the Geology - Geophysics Laboratory, The University of British Columbia.

2. All analyses done on galena samples unless otherwise noted.

TABLE 5: LEAD ISOTOPE ANALYSES[1] ON GALENA[2] FROM MINERAL DEPOSITS

Eastern Fold Belt

Sample Number	Deposit Name	Map Name	Lat.° North	Long.° West	Lead Isotope Data (Relative 1S Error as %) $^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$	Remarks
Devonian - Mississippian								
G78AK-001	Alcock	AK	57.67	125.42	18.984 (.09)	15.764 (.08)	39.561 (.09)	
G78CQ-001	Cirque	CQ	57.52	125.12	18.795 (.08)	15.689 (.08)	39.166 (.08)	
G78DC-001	Driftpile Creek	DC	58.07	125.92	18.864 (.07)	15.666 (.07)	39.093 (.05)	
G78DC-002	Driftpile Creek	DC	58.07	125.92	18.860 (.09)	15.686 (.06)	39.202 (.10)	
G78DC-003	Driftpile Creek	DC	58.07	125.92	18.852 (.08)	15.655 (.06)	39.043 (.13)	
Average for Driftpile Creek		DC	58.07	125.92	[18.859 (.08)]	[15.669 (.06)]	[39.113 (.09)]	
G78EF-001	Elf	EF	57.42	124.72	18.834 (.09)	15.661 (.09)	39.310 (.04)	
G78FK-001	Fluke	FK	57.42	124.87	18.846 (.08)	15.714 (.04)	39.477 (.06)	
G79RG-001	Rough	RG	58.27	126.17	18.709 (.03)	15.617 (.07)	38.548 (.11)	
Number of deposits (n) = 6	arith. average = $\bar{X}$				[18.838 (.08)]	[15.686 (.07)]	[39.196 (.08)]	
Number of analyses = 8	std. error mean = $S \cdot n^{-1/2}$				0.037	0.020	0.148	

1. All analyses done in the Geology - Geophysics Laboratory, The University of British Columbia.

2. All analyses done on galena samples unless otherwise noted.