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Lead isotope data base for sulfide occurrences from Alaska, December, 1989

by

J.D. Gaccetta[1] and S.E. Church[2]

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[1]JMM Consulting Engineers Inc., 3501 N. Causeway Blvd., Suite 300, Metairie, LA 70002
[2]DFC, P.O. Box 25046, MS 973, Denver, CO 80225

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INTRODUCTION

The lead isotope data base for sulfide deposits and occurrences in Alaska was initiated in conjunction with the Alaska Mineral Resource Appraisal Program (AMRAP), and is a direct outgrowth of the "Common-Pb in sulfides from Alaska" project. The initial report from this project was published by Church and others (1987). Since our last report, we have started a new laboratory and have analyzed more than one hundred new samples. We continue to concentrate our Pb-isotope studies in areas where the results will have the maximum impact on the assessment of the mineral endowment and geologic history of Alaska. We continue to solicit the cooperation of geologists working in Alaska in the collection of well-documented samples for this project (see Appendix II). The primary objectives of the project are three-fold:

1.) to utilize Pb-isotope signatures, in conjunction with the regional mapping, to assess the relative ages and categorize the types of deposits studied,
2.) to relate the Pb-isotope and trace-element geochemical signatures of specific deposit and occurrences to ore-forming processes, and
3.) to use these data to correlate lithotectonic terranes within the northern Cordillera.

PRESENTATION OF THE DATA

The data presented in Tables 1-6 represent the work completed on the project through December 1, 1989. The deposits from which samples have been obtained are grouped by 1° x 3° quadrangle, and the state of Alaska is divided up into the six regions used in other data compilations by the U.S. Geological Survey (Figure 1). All abbreviations used in the data tables are documented in Appendix I. Mining regions and district names defined by the U.S. Bureau of Mines (Ransome and Kerns, 1954) have also been used throughout this report (Figure 2). Many of the deposits are briefly described by Berg and Cobb (1967); no attempt will be made in this report to summarize the voluminous literature on ore deposits that has been published since then.

Deposit Information

Information on each specific deposit or occurrence has been provided largely by the sample contributor (Contr.) on the form used for sample submission for this project (see Appendix II). Specific geologic information on the deposit or occurrence also has been obtained from published literature. However, the information on deposit characteristics has been supplemented by the authors, either from the information provided by the contributor or taken from the literature. Contributors were given the opportunity to modify the descriptive data in the tables prior to publication. This process should have minimized

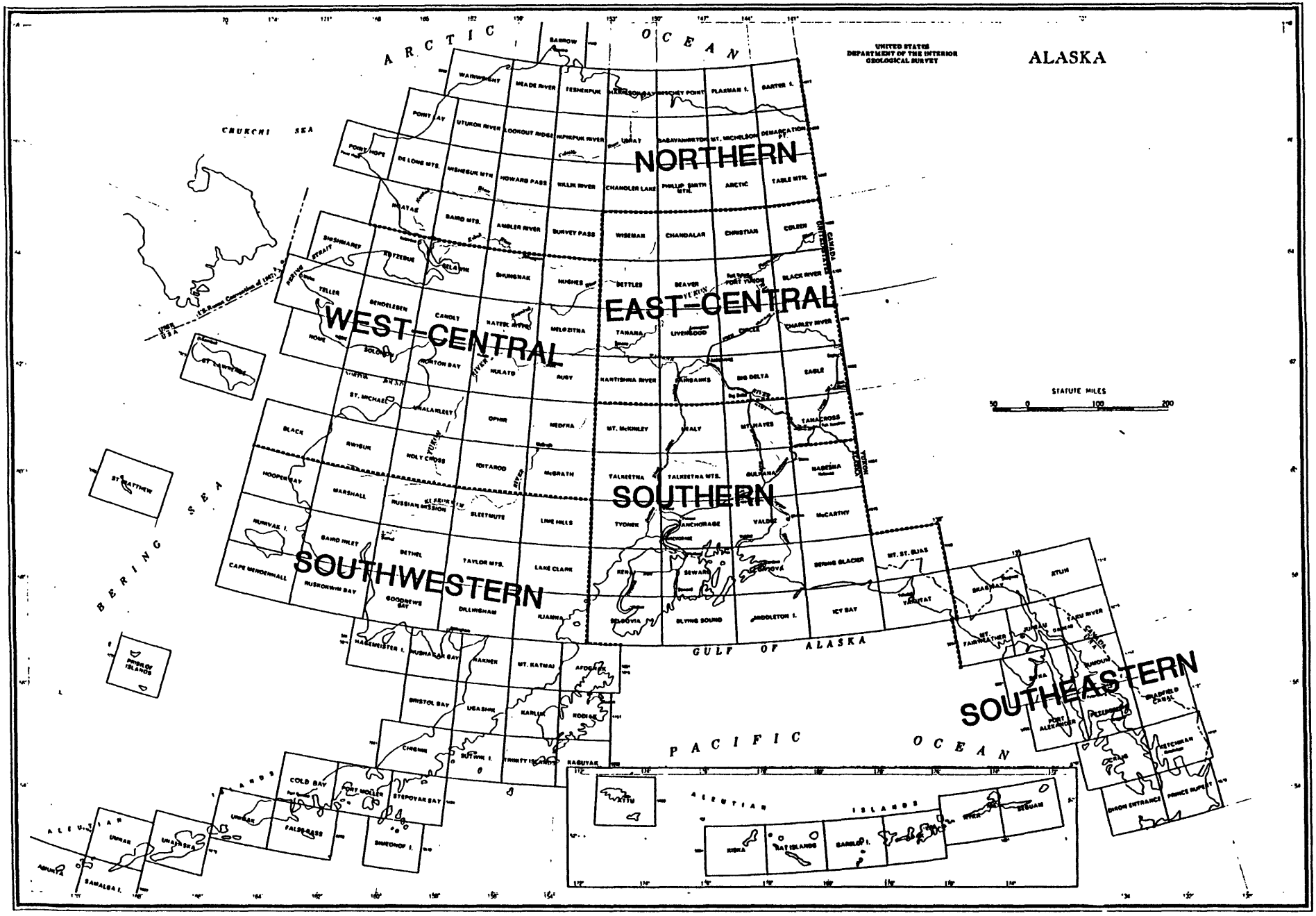

Figure 1. Regions of Alaska used in this report. Tables 1-6 give the analytical results for each region. Table 1: NORTHERN ALASKA, Table 2: WEST-CENTRAL ALASKA, Table 3: EAST-CENTRAL ALASKA, Table 4: SOUTHERN ALASKA, Table 5: SOUTHWESTERN ALASKA, Table 6: SOUTHEASTERN ALASKA.

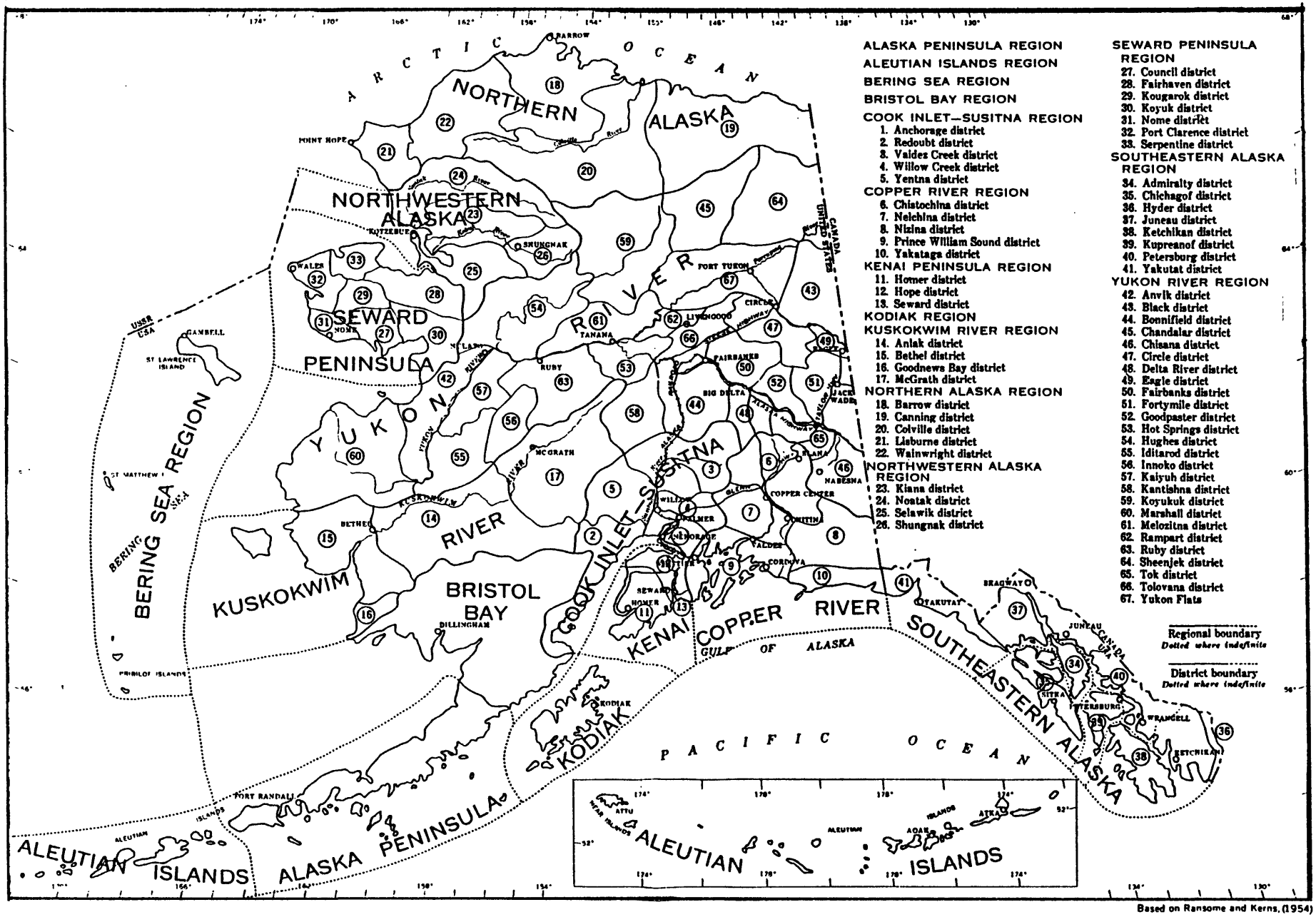

Figure 2. Mining regions and districts of Alaska (Ransome and Kerns, 1954). Abbreviations used in Tables 1-6 are defined in Appendix I; subdistricts are not included.

errors. Blanks in the tables indicate a lack of information. The deposit classification used in this report is based on the compilation by Cox and Singer (1986) and is included here only for the purpose of dialogue. Certainly, there will not be widespread agreement among geologists on the classification of deposits into model types! We solicit any new information that knowledgeable readers might have on the classification of specific deposits that we have studied.

The sample source indicates whether the sample came from outcrop, core, dump, and so forth. We have recently added samples to the data base which have been obtained from museums (Mu). Since these samples have a higher level of uncertainty associated with them (i.e., their exact sample locality), they are classified separately. The deposit characteristics are short summaries (limited to three words) which describe the host rock, structure, and texture of the deposit. Veins are characterized as predominantly calcite or quartz veins in the texture column and the sulfides are disseminated within the gangue minerals of the vein. Formation names have not been used, but the assemblage of rocks containing the deposit have been designated using the lithotectonic terranes (LTT) defined by Monger and Berg (1984) for southeastern Alaska (Table 6), and by Jones and others (1984) for the rest of Alaska. The reader is referred to these publications for detailed geologic and stratigraphic information on these rock assemblages. Abbreviations for the LTT units are given in Appendix I.

Chemistry and Mass Spectrometry

Most of the new Pb-isotope data presented in Tables 1-6 have been analyzed by J.D. Gaccetta in the U.S. Geological Survey, Branch of Geochemistry isotope laboratory. Analytical results from all sulfide samples from Alaska have been included in the compilation except those from the early work of Kulp (Russell and Farquhar, 1960, p. 187). Upon visiting the American Museum of Natural History, we were unable to verify the localities of the samples analyzed so we have dropped them from this compilation. Pb-isotope data from the studies of whole-rock Pb, largely from Cenozoic volcanic rocks, have not been included in this data base. References to the whole-rock Pb data are cited in the Pb-isotope bibliography for Alaska. All of the results from references published since 1978 have been made using the silica-gel emitter method. These data have all been corrected for thermal fractionation using the NBS SRM-981 common-Pb standard (Catanzaro and others, 1968) and are accurate, at the 2 sigma level, to within $\pm$ 0.1 % or better. Triple-filament analyses have a reported accuracy of $\pm$ 0.1 % per mass unit (Doe and Zartman, 1979). Analyses reported in Doe (1970) were determined using the PbS method and were normalized to the CIT reference Pb value. These data have been corrected for thermal fractionation (Doe and Rohrbough, 1979) and have an uncertainty of about $\pm$ 0.15 % per mass unit. Analyses done by Teledyne during the late 1970's have been shown to contain analytical errors (Lueck, 1980; Gulson, 1986, p. 128-129). Our results on samples from the same localities, as well as from different localities in Alaska where we have access to unpublished Teledyne analyses, confirm these reported uncertainties. We recommend that data from this

laboratory be used with caution or ignored when making interpretations of the Pb-isotope data.

Lead-isotopic determinations have been made largely on sulfides. We report analyses from two types of samples: analyses made on those that contain galena (indicated by GN in the sample mineralogy column) and analyses on either mixed sulfides or on other discrete sulfide phases. Where mixed sulfides have been analyzed, we have given the Pb concentration in the sample determined either by d.c.-arc emission spectrography or by atomic absorption spectrophotometry in the solution used for Pb-isotopic analysis. Previous studies of mixed sulfides, or of separate sulfide minerals that have 100 ppm or more of Pb, indicate that the Pb-isotopic data obtained from this type of sample are comparable to that obtained from galena (e.g. Church and others, 1986; Gulson, 1986).

Several different chemical procedures have been used on special samples analyzed in this study. In general, galenas have been hand-picked for analysis where possible. Galena samples were prepared for analysis by digestion with ultrapure warm HNO_3 (2-5 mg in 1 mL). The samples were then diluted to 10 mL with deionized water and sufficient solution pipetted out that one µg of Pb was available for analysis (usually about 10 µL). Mixed sulfides were digested in hot ultrapure HCl, HNO_3, or aqua regia. The solution was decanted and converted first to the chloride medium and then to the bromide medium. Lead was isolated from other cations using anion exchange in the bromide medium; ultrapure reagents were used throughout the procedure. Blanks were in the subnanogram range and are negligible. The sample was loaded on the resin in 0.75M-1.0M HBr, washed with 1.0M HBr and then with 1.5M HCl. The Pb was then eluted with 8M HCl following the procedures used by the Branch of Isotope Geology, U.S. Geological Survey (K.R. Simmons, oral commun., 1988). Molybdenites were prepared by digestion in hot ultrapure 6M HCl. A white precipitate, probably $Mo_3Cl_4(OH)_2 \cdot 2H_2O$, formed; the Pb remained in solution. Pb was purified by anion exchange in the bromide medium. High-antimony sulfides required special preparation because Sb is also adsorbed on the anion exchange resin in the HBr procedure described above. These samples are digested in 12M ultrapure HCl in quartz. The sample is then heated to dryness driving off much of the volatile $SbCl_3$ and leaving Pb in the residue. Final separation of the Pb is done by anion exchange in the bromide medium. Rarely was it necessary to electroplate the Pb samples obtained from the column separation procedure prior to mass spectrometric analysis, however, when necessary, electrodeposition on a platinum anode was used.

The isotopic composition of Pb determined at the U.S. Geological Survey, Denver, Co., (Tables 1-6) was done on a 30.5 cm, 68° sector, solid-source mass spectrometer of NBS design. This instrument was completely rebuilt by W.A. Bowman, NBS, for this phase of the project during 1987. Samples were analyzed using the single Re-filament, silica-gel emitter technique at 1250 ± 20° C (Cameron and others, 1969). Two sets of eight ratio pairs for $^{204}Pb/^{206}Pb$ and one set each of eight ratio pairs for $^{207}Pb/^{206}Pb$ and for $^{208}Pb/^{206}Pb$ are taken over a period of 30 to 40 minutes in a typical analysis. Published data are indicated and the reference given using a year and reference # code (e.g., Doe (1970) is indicated as the first reference in the Pb-isotope bibliography for Alaska published in 1970 and is indicated in the

data tables as reference 70.1, and soforth). Unpublished results are included here for information only and will be published formally in interpretative manuscripts. Requests to use our data in other manuscripts should be obtained by writing S.E. Church.

ACKNOWLEDGMENTS

Research in the U.S. Geological Survey, particularly in Alaska, is a team effort. Certainly, we have not visited all of the deposits or occurrences from which we have analyzed samples. Many geologists who have worked or are now doing field studies in Alaska have contributed samples to this project. We could not conduct this survey without the contributions made by many who have visited mineralized areas in the field. To them, we express our thanks for providing samples and field information about each occurrence. Their efforts are acknowledged individually in the data tables; you are encouraged to contact them if you wish further information on a particular sulfide occurrence.

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Table 1. Lead isotope data from sulfide occurrences from northern Alaska

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
AMBLER RIVER							
Ambler #1	DH1 (117')	67 16 30	157 02	cp, py			
Arctic	AT12-3B	67 11 30	156 25 00	cp	18.308	15.569	38.061
Arctic	AT39-14	67 11 30	156 25 00	cp, py, gn	18.330	15.587	38.140
Arctic	DH34 (600')	67 11 30	156 25 00	cp	18.365	15.598	38.177
Arctic (I-3)	AC-1-77	67 11 30	156 25 00	GN	18.340	15.560	38.146
Berna	86JS38F	67 42 25	156 30 00	bar, gn			
Dead Creek (I-2)	74AWM1610	67 13 10	156 32	GN	18.347	15.558	38.218
East Dead Cr	EDC	67 13 10	156 32	cp, py			
Pardner's Hill	PH-1	67 03 45	157 01 30	bn, cp			
Pardner's Hill	PH-2	67 03 45	157 01 30	bn			
Ruby Cr	77AB93	67 04 30	156 58	sl, gn			
Ruby Cr	Crscut (975')	67 04 25	156 57 45	GN	18.612	15.600	38.106
Ruby Cr	DH25 (115')	67 04 25	156 57 45	bn, tt			
Ruby Cr	DH34 (1014')	67 04 25	156 57 45	gn, sl, cp			
Ruby Cr	DH34 (268')	67 04 25	156 57 45	GN	18.233	15.589	38.084
Ruby Cr	DH40 (970')	67 04 25	156 57 45	GN, cp	18.576	15.590	38.091
Ruby Cr	DH45 (1030')	67 04 25	156 57 45	py			
Ruby Cr	DH54 (1676')	67 04 25	156 57 45	GN	18.191	15.583	38.065
Ruby Cr	DH93 (2211')	67 04 25	156 57 45	sl			
Ruby Cr	HC-RCA-2	67 04 25	156 57 45	sl, gn			
Ruby Cr	HC-RCA-46	67 04 25	156 57 45	sl			
Ruby Cr	LY-BN	67 04 30	156 58	cp			
Ruby Cr	OD3265	67 04 25	156 57 45	bn, cp			
Smucker	4B	67 18	157 09	cp, py			
Smucker	DH3 (616')	67 18	157 09	cp	18.358	15.601	38.240
Smucker (I-1)	SM-567	67 18	157 09	GN	18.397	15.661	38.202
Snow	DH21 (149')	67 16 15	157 01 50	cp, gn (6.5 % Pb)			
Snow	DH24 (329')	67 16 15	157 01 50	cp, gn (3.5 % Pb)			
Sunshine Cr	SSC-1	67 13 30	156 40	cp, sl, gn, py			
West Dead Cr	DH4 (635')	67 13 10	156 32	cp, py			
ARCTIC							
Porcupine Lake		68 49 00	146 29 00	fl, tt			
BAIRD MOUNTAINS							
Frost	83JS14V	67 25	160 45	GN, bar, fl, cp, sl	18.434	15.603	38.234
Omar	OM074	67 29 34	160 52 39	cp, bn, tt, gn, py (100 ppm Pb)	20.464	15.721	38.208
Omar	OM122	67 29 32	160 52 37	cp (70 ppm Pb)	18.791	15.622	38.229
Powdermilk	85JS109C	67 27 40	160 46	GN, sl, py, bar	18.193	15.588	38.040
Powdermilk	85JS39	67 27 38	160 48 08	GN, sl, py, bar	18.164	15.577	37.989
CHANDLER LAKE							
Grizzly Cr	CL784R	68 05 38	150 43 13	GN, cal	18.658	15.622	38.638
Grizzly Cr	CL784R	68 05 38	150 43 13	GN, cal	18.716	15.629	38.614

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Ki	AAH	D	D	DGGS	H
ALH	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D	DC	86.1
MD	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D	DC	87.3
CGS	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D	RV	R-87
TD	O	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D		82.1
	R	carb-hstd	stratabound		B Bar	31b	NW/Nt	AAE	O-S?		JMS	H
TD	O	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D	DGGS	82.1
	O	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D	DGGS	H
	O	carb-hstd			Kip Cu	32c	NW/Sh	AAH	S-D?		JMS	H
	O	carb-hstd		massive	Kip Cu	32c	NW/Sh	AAH	D		LY	H
	C	carb-hstd		breccia	Kip Cu	32c	NW/Sh	AAH	D		AB	H
HS	D	carb-hstd		breccia	Kip Cu	32c	NW/Sh	AAH	D		DC	86.1
	C	carb-hstd	crs-cuting	breccia	Kip Cu	32c	NW/Sh	AAH	D		DC	H
	C	carb-hstd	crs-cuting	breccia	Kip Cu	32c	NW/Sh	AAH	D		DC	H
HS	C	carb-hstd	breccia		Kip Cu	32c	NW/Sh	AAH	D		DC	86.1
CGS	C	carb-hstd	crs-cuting	breccia	Kip Cu	32c	NW/Sh	AAH	D		RV	R-87
	C	carb-hstd	breccia	dissem	Kip Cu	32c	NW/Sh	AAH	D		DC	H
HS	C	carb-hstd	breccia		Kip Cu	32c	NW/Sh	AAH	D		DC	86.1
	C	carb-hstd	crs-cuting	breccia	Kip Cu	32c	NW/Sh	AAH	D		DC	H
	C	carb-hstd		breccia	Kip Cu	32c	NW/Sh	AAH	D		HC	H
	C	carb-hstd		breccia	Kip Cu	32c	NW/Sh	AAH	D		HC	H
	O	carb-hstd		breccia	Kip Cu	32c	NW/Sh	AAH	D		LY	H
	Mu	carb-hstd		breccia	Kip Cu	32c	NW/Sh	AAH	D		SM	H
	O	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Ki	AAH	D	D	DGGS	H
CGS	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Ki	AAH	D	D	RV	R-87
TD	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Ki	AAH	D	D		82.1
	C	scht-hstd	stratiform	massive	K-VMS	28a	NW/Ki	AAH	D	D	DGGS	H
	C	scht-hstd	stratiform	massive	K-VMS	28a	NW/Ki	AAH	D	D	DGGS	H
	O	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Ki	AAH	D	D	JMS	H
	O	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D	DGGS	H
	R	carb-hstd	crs-cuting	vein	Pm-MV	22c	NA/Cn	AAH	M		JCB	H
MD	O	carb-hstd	shear zn	vein			NW/Ki	AAE	O-D		JMS	R-87
MD	O	carb-hstd	shear zn	breccia	Kip Cu	32c	NW/Ki	AAE	D		PF	88.1
MD	O	carb-hstd	crs-cuting	cal vein	Kip Cu	32c	NW/Ki	AAE	D		PF	88.1
MD	O	carb-hstd	stratabound	dissem	Replc	19a	NW/Ki	AAE	O		JMS	R-87
MD	O	carb-hstd	stratabound	dissem	Replc	19a	NW/Ki	AAE	O		JMS	R-87
MD	R	thrust zn	shear zn	qz/cal vein	mV		YR/Kk	AAE	M		SC	R-87
JDG	R	thrust zn	shear zn	qz/cal vein	mV		YR/Kk	AAE	M		SC	R-89

Table 1. Lead isotope data from sulfide occurrences from northern Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
CHANDLER LAKE--(cont.)							
Inukpasugruk Cr	84AKD430R	68 05 00	151 49 35	py, cp (50 ppm Pb)			
Itkillik River	CL848R	68 14 45	150 24 05	GN	18.586	15.610	38.628
Thibideaux Mtn	84CL401	68 17 31	150 08 00	py (150 ppm Pb)			
Three River Mtn	84CL444R	68 04 30	151 39 22	py (200 ppm Pb)	18.753	15.627	38.870
DELONG MOUNTAINS							
Competition Cr		68 08 20	163 03 05				
Drinkwater	A109sph	68 04	162 50	sl	18.390	15.583	38.165
Husky	HD-1	68 04	162 32	GN	18.475	15.608	38.309
Ikalukrok Cr	AL-1	68 03	163 00 10	py			
Lik	Lik	68 12	162 58	GN	18.422	15.614	38.298
Red Dog	78ARD-1	68 04 00	162 49 30	GN	18.414	15.602	38.254
Red Dog	A110sphA	68 04 00	162 49 30	sl	18.393	15.573	38.151
Red Dog	A110sphB	68 04 00	162 49 30	sl	18.404	15.585	38.181
Red Dog	LL26-18	68 04 00	162 49 30	GN	18.404	15.590	38.228
Red Dog	LL26-6B	68 04 00	162 49 30	sl, GN, py	18.403	15.602	38.254
Red Dog	LL4-14	68 04 00	162 49 30	GN, bar	18.413	15.604	38.197
Red Dog	RD-63B	68 04 00	162 49 30	GN	18.409	15.598	38.238
DEMARCATION POINT							
	85AB15	69 15 45	143 30 05	(55 ppm Pb)			
HOWARD PASS							
Drenchwater	77ANK-13H	68 35	158 42 30	GN, sl, bar	18.428	15.609	38.351
Drenchwater	78PM-052	68 35	158 42 30	GN	18.406	15.592	38.270
Kivliktort Mtn	AKD600B	68 18	156 38	GN	18.436	15.604	38.292
Koiyaktot Mtn	AKD601B	68 13	156 19	GN	18.422	15.609	38.304
Story Creek	79Md194B	68 23	157 58	GN, sl	18.404	15.595	38.224
Story Creek	STA 1.77	68 23	157 58	sl, GN, py	18.427	15.599	38.272
Story Creek	STA B-0	68 23	157 58	sl, GN, py	18.415	15.606	38.288
Whoopee Cr	WHC-10A	68 14	157 50	sl, GN	18.406	15.600	38.265
Whoopee Cr	WHC-3	68 14	157 50	sl (1000 ppm Pb)	18.398	15.595	38.253
KILLIK RIVER							
	AKD633			GN			
Kady	AKD605B	68 12	155 02	GN, sl, cp, py	18.404	15.605	38.315
Kady	AKD605D	68 12	155 02	GN, sl, cp, py	18.382	15.588	38.228
Kakivilak Cr	AKD068	68 09 14	155 00 42	GN	18.490	15.604	38.271
Kayak concretions	AKD613A	68 17 45	155 41 05	sl, GN, blk cal concretions	18.583	15.611	38.450
Kikiktat Mtn	AKD073	68 22 36	154 47 37	cp (8 ppm Pb)	18.854	15.582	38.287
Vidlee	AKD610B	68 07 35	155 16 45	GN, cp, sl	18.416	15.609	38.278

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
	O	cong-hstd	stratiform	dissem	cement		YR/Kk	AAE	D		SC	H
MD	R	msd-hstd	crs-cuting	qz vein	mV		NA/Cv	AAE	D		SC	R-87
	O	cong-hstd	stratiform	dissem	cement		NA/Cv	AAE	D		SC	H
MD	O	cong-hstd	stratiform	dissem	cement		YR/Kk	AAE	D		SC	R-87
	O	sh-hstd	stratiform		sd Cu	30b	NA/Ls	AAE	P	P	LY	H
KM	O	sh-hstd	stratiform	massive	SEDEX	31a	NA/Ls	AAD	M	M		86.5
MD	O	sh-hstd	crs-cuting	vein	SEDEX	31a	NW/Nt	AAD	D	M	JH	87.3
	O	sd-hstd	stratiform		SEDEX	31a	NA/Ls	AAE	M	M	LY	H
MD	C	sh-hstd	stratiform	dissem	SEDEX	31a	NA/Ls	AAD	M	M	MA	87.3
MD	O	sh-hstd	stratiform	massive	SEDEX	31a	NA/Ls	AAD	M	M		85.2
KM	O	sh-hstd	stratiform	massive	SEDEX	31a	NA/Ls	AAD	M	M		86.5
KM	O	sh-hstd	stratiform	massive	SEDEX	31a	NA/Ls	AAD	M	M		86.5
GC	O	sh-hstd		vein	SEDEX	31a	NA/Ls	AAD	M	M		80.1
GC	O	sh-hstd	breccia	qz vein	SEDEX	31a	NA/Ls	AAD	M	M		86.6
GC	R	sh-hstd	banded	vein	SEDEX	31a	NA/Ls	AAD	M	M		80.1
MD	O	sh-hstd	stratiform	massive	SEDEX	31a	NA/Ls	AAD	M	M		85.2
		cg					NA/Cn	AAN	383 Ma		AB	H
MD	O	sh-hstd	stratiform	dissem	SEDEX	31a	NA/Cv	AAD	M	M		80.1
GC	O	sh-hstd	stratiform	dissem	SEDEX	31a	NA/Cv	AAD	M	M		85.2
MD	O	ss-hstd	crs-cuting	vein	SEDEX	31a	NA/Cv	AAE			SC	R-87
MD	O	ss-hstd	stratiform	dissem	SEDEX	31a	NA/Cv	AAE			SC	R-87
GC	O	sd-hstd	breccia	massive	SEDEX	31a	NA/Cv	AAD	M	eM		80.1
MD	O	sd-hstd	breccia	vein	SEDEX	31a	NA/Cv	AAE	M	eM	JMS	87.3
MD	O	sd-hstd	crs-cuting	vein	SEDEX	31a	NA/Cv	AAE	M	eM	JMS	87.3
MD	O	sd-hstd	breccia	vein	SEDEX	31a	NW/Nt	AAE	D	eM	JMS	87.3
MD	O	sd-hstd	crs-cuting	vein	SEDEX	31a	NW/Nt	AAE	D	eM	JMS	87.3
					mV		NA/Cv	AAE			SC	H
MD	R	sd-hstd	crs-cuting	qz vein	SEDEX	31a	NA/Cv	AAE	D		SC	89.3
JDG	R	sd-hstd	crs-cuting	qz vein	SEDEX	31a	NA/Cv	AAE	D		SC	R-89
MD	R	msd-hstd	crs-cuting	qz vein	mV		NA/Cv	AAE	D		SC	R-87
MD	R	shale	stratiform		syngen		NA/Cv	AAE	M	M	SC	R-87
MD	O	mvolcanics		opn-sp fil			NA/Cv	AM	J		SC	R-87
MD	O	sd-hstd	crs-cuting	vein			NA/Cv	AAE	D		SC	89.3

Table 1. Lead isotope data from sulfide occurrences from northern Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
MISHEGUK MOUNTAINS							
Atneerich Cr	AC-1	68 27 25	161 54 10	bar			
Atneerich Cr	AC-2	68 27 25	161 54 10	py			
Ginny Cr	78Ek127A	68 17	161 16	GN, sl, ank, py	18.395	15.592	38.236
MOUNT MICHELSON							
Cache Cr	87MR11A	69 30 50	145 39 20	py (270 ppm Pb)			
Mt Michelson	85AB45	69 20 15	144 07	GN			
Nanook Cr	87AB24	69 32 10	146 03	cc, ep, Cu, cv (2100 ppm Pb)			
NOATAK							
Rabbit Cr	WB16670	67 36 30	163 25	py, po, cp, bn			
Rabbit Cr	WB16672	67 36 30	163 25	py, po, cp, bn			
PHILIP SMITH MTNS							
MF Chandalar R.	76ARR47	68 01 40	147 52 30	GN	18.728	15.619	38.256
MF Chandalar R.	PS232RA	68 02 05	147 49 50	GN	18.545	15.606	38.285
SURVEY PASS							
Akabiuak Pass	78ADG202E	67 28	154 41	GN, sl, cp, asp	18.377	15.601	38.177
Arrigetch Cr	78AMH110D	67 26	154 03	sl, GN	18.300	15.579	38.050
Beaver Cr	77AGK325C	67 07	155 24	GN, sl	18.497	15.604	38.206
BT	DH4 (145′)	67 07	155 51	cp, py			
BT (I-4)	BT-77	67 07	155 51	GN	18.393	15.651	38.270
Cynbad	DH1 (80′)	67 07	155 44	gn, sl, cp, py			
Kiwi	DH1 (165′)	67 06	155 00	cp, py			
Sun	DH20 (358′)	67 04 30	155 01 30	cp	18.304	15.591	38.105
Sun	DH21 (43′)	67 04 30	155 01 30	py, cp, sl, gn	18.284	15.574	38.079
Sun (I-5)	Sun-10	67 04 30	155 01 30	GN	18.244	15.561	37.975
Sun (I-6)	Sun-12	67 04 30	155 01 30	GN	18.200	15.517	37.904
U. Alatna area	77ADG340D	67 50	155 15	GN, cp, sl	18.364	15.591	38.274
TABLE MOUNTAIN							
Bear Mtn	59ABeC-2C	68 22 20	142 02 00	GN, cp, ml	18.786	15.631	38.955
Bear Mtn	59ABeC-5A	68 22 45	142 00 30	GN, ml	18.760	15.624	38.938

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
	O	sd-hstd	bedded		B Bar	31b	NW/Nt	AAE	Tr	Tr	LY	H
	O	sd-hstd	stratiform	massive	SEDEX	31a	NW/Nt	AAE	Tr	Tr	LY	H
GC	O	sh-hstd		vein	SEDEX	31a	NW/Nt	AAD	D	eM		86.6
	O	sh-hstd	breccia	cement	SEDEX	31a	NA/Cn	AAN	M		AB	H
	O	intrusive?			Greisen	15c	NA/Cn	AAN	383 Ma	383 Ma	AB	H
	O	basalt	amyg-filled	veins	Bas Cu	23	NA/Cn	AAN	Pc-C		AB	H
	O	scht-hstd	crs-cuting	qz vein	SEDEX	31a	NA/Nt	AAE		D	JCB	H
	O	scht-hstd	crs-cuting	qz vein	SEDEX	31a	NA/Nt	AAE	D	D	JCB	H
MD	O	carb-hstd	crs-cuting	qz vein	FV		YR/Ch	AAE	D		JC	R-87
MD	O	carb-hstd	crs-cuting	vein	FV		YR/Ch	AAE	D		JC	R-87
MD	O	sd-hstd	crs-cuting	qz vein	Pm-MV	22c	NW/Nt	AAH	D	D	DG	87.3
MD	O	sd-hstd	crs-cuting	qz vein	Pb-Zn skn	18c	YR/Kk	AAH	D	D	DG	87.3
MD	O	msd-hstd	contact	replac	Pb-Zn skn	18c	NW/Sh	AAH	D	D	DG	87.3
	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D	DGGS	H
TD	O	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D		82.1
	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D	DGGS	H
	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D	DGGS	H
CGS	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D	RV	R-87
JDG	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D	JMS	R-89
TD	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D		82.1
TD	C	mvol-hstd	stratiform	dissem	K-VMS	28a	NW/Sh	AAH	D	D		82.1
MD	O	sd-hstd	crs-cuting	qz vein	Pm-MV	22c	YR/Kk	AAE	D	D	DG	87.3
MD	O	felsic dike	shear zn	qz vein	H-F Mo	16	YR/Sj	AAN	Pz	56 Ma	WB	R-87
MD	O	msd-hstd		vein	H-F Mo	16	YR/Sj	AAN	Pz	56 Ma	WB	R-87

Table 2. Lead isotope data from sulfide occurrences from west-central Alaska

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
BENDELEBEN							
Berg	83AGe146C	65 45 21	162 22 52	lm (1600 ppm Pb)	18.402	15.638	38.263
Foster	83GD-1	65 01	162 35	GN, py, lm	19.188	15.641	38.820
Foster	OMB-3-82A	65 01 42	162 34 15	GN, lm, py	19.242	15.640	38.776
Foster	OMB-5-82	65 02 52	162 22 22	GN	19.382	15.656	38.811
Hannum Cr	HCA	65 56	163 21	GN	18.967	15.610	38.812
Hannum Cr	HCB	65 56	163 21	GN	18.961	15.597	38.804
Hannum Cr	HCC	65 56	163 21	sl (17 ppm Pb)			
Hannum Cr	SB1045	65 56	163 21	GN	19.024	15.689	38.971
Hannum Cr	SPB-1-83	65 55 30	163 21 00	GN, sl	18.966	15.621	38.848
Hannum Cr	SPB-31-82D	65 55 35	163 20 50	GN, py, lm	19.012	15.629	38.879
Hannum Cr	SPB-31-82F	65 55 35	162 20 50	sl			
Independence Mine	KU-PB	65 40	162 28	GN	18.894	15.619	38.718
Independence Mine	SPB-33-82D	65 40 20	162 28 20	GN, pl, lm, tt	18.904	15.630	38.760
NF Granite Cr	71AGK282C	65 13 50	162 31 45	GN, sl, cp, fl	18.919	15.569	38.651
Omilak	83AGe072c	65 02 34	162 39 35	GN, st, py, asp, cp	20.136	15.710	38.844
Omilak East	OME-S2 (252')	65 03 00	162 32 30	gn, sl (3300 ppm Pb)	19.281	15.649	38.796
Pargon River	SPB-19-82	65 12 18	163 49 05	GN, cp, ml, lm, py, ch	18.921	15.608	38.753
Pargon River	SPB-21-82B	65 11 56	163 52 10	cp, ml, lm, mt, cr	18.901	15.611	38.722
Serpentine Hot Springs	70AH714C	65 50 15	164 32 45	gn (7000 ppm Pb)	19.321	15.589	38.795
Windy Cr	84AGe075B	65 08 17	162 31 59	fl (35 ppm Pb)	24.998	15.888	40.387
Windy Cr	SPB-15-82	65 11 30	162 36	py			
Windy Cr	SPB-8-82A	65 10 43	162 37 00	mly, fl			
CANDLE							
Bear Cr	68AGK175F	65 32 40	161 04 00	GN, cal, sl, py	18.952	15.614	38.721
Peace River	68AHD104	65 27 25	161 04 45	py (470 ppm Pb)	19.044	15.618	38.862
Quartz Cr	68AHD75	65 25 00	161 21 30	gn (900 ppm Pb)	18.812	15.604	38.589
Quartz Cr	68AMM213B	65 30 45	161 25 20	sulfides	18.802	15.561	38.481
Quartz Cr	68AMM215B	65 34 30	161 20 30	sulfides	18.814	15.587	38.413
Quartz Cr Pluton	68AER124B	65 35 15	161 30 20	gn, sl (180 ppm Pb)			
Quartz Cr Pluton	68AGK38	65 32 25	161 25 30	tu, gn (3300 ppm Pb)	18.854	15.633	38.642
Quartz Cr Pluton	68AHD226	65 27 20	161 24 00	GN, sl, py	18.782	15.590	38.490
IDITAROD							
Beaver Cr	85BT99	62 55 35	156 48 40	po, cp			
Cirque Prospect	I-0096RC	62 50 45	156 58 29	cp, py, gn (35000 ppm Pb)	18.923	15.607	38.583
DeCourcy Mine	I-036	62 03 34	158 27 22	st, cn, cal (80 ppm Pb)	18.854	15.605	38.580
Golden Horn	I-GHA	62 26 55	157 55 05	asp, tn, st, sch, Au (10000 Pb)	18.872	15.591	38.457
Granite Cr	I-001RB	62 28 54	157 54 41	st, tn, sch, cs (10000 ppm Pb)	18.838	15.592	38.429
Hornfels Mountain	84BT34x	62 25 30	157 01 55	tu			
Independence Mine	I-122A	62 56 53	156 28 42	py, cp (1500 ppm Pb)	18.837	15.598	38.546
Miller Prospect	85AM172	62 12 50	158 24 00	cn, realgar, qz			
Snow Gulch	I-032	62 03 39	158 11 15	st (500 ppm Pb)	18.961	15.616	38.649
Tolstoi Prospect	I-0099R	62 55 03	156 58 45	cp, py, gn, tu (7000 ppm Pb)	18.915	15.600	38.554
Willow Cr	I-280	62 21 25	156 59 00	st, cn (75 ppm Pb)	18.869	15.616	38.509

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
JDG	R	msd-hstd	breccia	gossan	Replc	19a	SP/Fh	SD	O/C		BG	R-89
MD	R	marb-hstd	shear zn	vein	mPm-MV	22c	SP/Co	SD	Pz/Pc		DG	R-87
JDG	O	marb-hstd	shear-zn	vein	mPm-MV	22c	SP/Co	SD	Pz/Pc		JB	R-89
MD	R	marb-hstd	shear zn	vein	mPm-MV	22c	SP/Co	SD	Pz/Pc		JB	R-87
JDG	P	msd-hstd	stratabound	dissem	SEDEX/Replc	31a/19a	SP/Fh	SD	C	C	LY	R-89
JDG	P	msd-hstd	stratabound	massive	SEDEX/Replc	31a/19a	SP/Fh	SD	C	C	LY	R-89
	P	msd-hstd	breccia	veinletts	SEDEX/Replc	31a/19a	SP/Fh	SD	C	C	LY	A
JDG	D			massive	SEDEX	31a	SP/Fh	SD	C	C	HK	R-89
MD	P	msd-hstd	stratiform	dissem	SEDEX	31a	SP/Fh	SD	C	C	JB	R-87
MD	P	msd-hstd	stratiform	dissem	SEDEX	31a	SP/Fh	SD	C	C	JB	R-87
	O	msd-hstd	breccia	veinletts	SEDEX	31a	SP/Fh	SD	C	C	JB	A
JDG	M	msd-hstd	crs-cuting	vein	Pm-MV	22c	SP/Fh	SD	Pz	K	LY	R-89
MD	P	msd-hstd	crs-cuting	vein	Pm-MV	22c	SP/Fh	SD	Pz	K	JB	R-87
JDG		msd-hstd	breccia	dissem	Pm-MV	22c	SP/Ky		Pz/Pc/K	K	RASS	R-89
MD	D	marb-hstd	stratabound	replac	Replc	19a	SP/Co	SD	Pz/Pc	K	BG	R-87
JDG	C	msd-hstd	crs-cuting	vein/dissem	mPm-MV	22c	SP/Ky	SD	Pz/Pc	K	BG	R-89
MD	O	msd/dike	shear zn	qz vein	Pm-MV	22c	SP/Co	SD	Pz/Pc	K	JB	R-87
MD	R	msd-hstd	fault	replac	Replc/Pm-MV	19a/22c	SP/Co	SD	Pz/Pc	K	JB	R-87
JDG	O	msd-hstd	fault	vein	Sn-MV	15b	SP/Fh	SD	C-O	K	RASS	R-89
JDG	R	monzonite			Porp Mo	16/21b	SP/Ky	SD	K	K	BG	R-89
	O	monzonite	crs-cuting	qz vein	Porp Mo	16/21b	SP/Ky	SD		K	JB	H
	O	monzonite	frac-fill		Porp Mo	16/21b	SP/Ky	SD	K	K	JB	A
JDG		volc-hstd	crs-cuting	vein	Pm-MV	22c	SP/Fh	SD	J/K	K	RASS	R-89
JDG		syenite		dissem	Pm-MV	22c	SP/Fh	SD	K	K	RASS	R-89
JDG		volc-hstd		dissem	Pm-MV	22c	SP/Fh	SD	J/K	K	RASS	R-89
JDG	R			gossan	Pm-MV	22c	SP/Fh	SD			RASS	R-89
JDG		alt andesite			Pm-MV	22c	SP/Fh	SD	J/K	K	RASS	R-89
	R			qz vein	Pm-MV	22c	SP/Fh	SD			RASS	R-89
JDG		qz monzonite		vein	Pm-MV	22c	SP/Fh	SD	K	K	RASS	R-89
JDG	O	volc-hstd	crs-cuting	vein	Pm-MV	22c	SP/Fh	SD	J/K	K	RASS	R-89
	O	msd-hstd		massive	Pm-MV	22c	YR/In	K	K	K	TB	H
MD	O	monzonite	shear zn	qz vein	Pm-MV	22c	YR/In	K	K	K	JG	R-87
MD	R	sd-hstd	breccia	qz/cal vein	Pm-MV	22c	YR/Id	K	K	K	JG	R-87
MD	P	monzonite	concordant	contact	Pm-MV	22c	YR/Id	K	K	K	JG	R-87
MD	M	sd-hstd		qz vein	Pm-MV	22c	YR/Id	K	K	K	JG	R-87
	R	msd-hstd	stockwork	gossan	Greisen	15c	YR/Av	K	K	K	TB	H
MD	P	dacite dike	dissem	qz/cal vein	Pm-MV	22c	YR/Id	K	K	K	JG	R-87
	O	sd-hstd	shear zn		HS-Hg	27a	YR/Id	K	K	K	TB	H
MD	P	sd-hstd	crs-cuting	qz vein	Pm-MV	22c	YR/Id	K	K	K	JG	R-87
MD	R	monzonite	shear zn	qz vein	Pm-MV	22c	YR/In	K	K	K	JG	R-87
MD	P	sd-hstd	breccia	qz vein	Pm-MV	22c	YR/Id	K	K	K	JG	R-87

Table 2. Lead isotope data from sulfide occurrences from west-central Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
McGRATH							
Bowser's Cr	82BT236	62 11 05	153 41 45	GN, sl, cp, po	19.019	15.636	38.636
Bowser's Cr	OD45416	62 11 05	153 41 45	GN	19.068	15.616	38.630
Chip Loy	2541	62 10 40	154 52 30	po, pn			
Post Lake	83BT158	62 07 15	153 01 40	po, cp			
Rat Fork	2512	62 19 15	153 53 10	gn, sl, cc, cal			
Sheep Cr		62 19	153 53	GN, sl, py			
Sheep Cr	2519	62 19 15	153 49 15	GN			
Smith Lake	81BT17	62 19 30	153 44 20	GN, po			
Tin Cr	81BT418	62 25 00	153 38 20	gn, sl, cc			
Valeska Lake	81BT547	62 23 30	153 40 30	GN			
Vinesale	82BT200a	62 42 00	155 42 20	tt, tu, cp, il			
White Mtns	79BT540	62 11 10	154 50 40	cn, cal			
Windy Fork	KS26880	62 06	154 04 30	sl			
MEDFRA							
Nixon Fork	NF1-3	63 14	154 46	gn, px, cp, py Au			
NOME							
Anvil Creek	86AGe022D	64 35 10	165 22 49	st, asp (60 ppm Pb)	19.209	15.696	38.876
Anvil Creek	NM91330.02	64 35 10	165 22 49	st (3 ppm Pb)			
Aurora Cr	86AGe006B	64 43 07	165 36 32	gn, sl, py, ml (2000 ppm Pb)			
Aurora Cr	DH77-1 (329')	64 43	165 37	GN, sl (3650 ppm Pb)			
Christian Cr	RM-1	64 47 30	165 09	GN			
Galena	86AGe008Y	64 43 30	165 49 19	gn, hm (1000 ppm Pb)	18.291	15.576	38.025
Hed and Strand	86AGe010B	64 47 12	165 18 23	Au, st, asp (1280 ppm Pb)			
Quarry	DH77-1 (98')	64 42	165 46	GN, sl, bar	18.358	15.652	38.218
Quarry barite	86AGe002C	64 42 07	165 46 00	GN, bar, sl, ml	18.294	15.587	38.060
Quartz Gulch	86AGe018A	64 34 46	165 24 00	asp, st (1100 ppm Pb)	19.300	15.649	38.584
Sliscovitch Vein	NM77705.0004	64 45 00	165 18 00	st (35 ppm Pb)			
Sophie Gulch	85AGe021C	64 34 51	165 23 32	sl, gn, py, asp (265 ppm Pb)	19.486	15.657	38.615
Steep Cr	86AGe025A	64 45 57	165 23 24	GN, sl, ml	18.239	15.572	37.954
Thompson	86AGe001A	64 47 05	165 10 10	py, sl, gn (175 ppm Pb)	18.262	15.568	38.174
OPHIR							
Nierod Prospect		63 32 00	156 00 25	py, po, Au			
SOLOMON							
Bluff	85AGe035A	64 34 14	163 14 48	Au, asp, lm (7 ppm Pb)			
Dry Canyon	83AGe061A	64 51 42	162 27 20	py, gn, sl, cpy (500 ppm Pb)	19.050	15.638	38.833
Kwiniuk River	70AMM156	64 42 35	162 21 00	lm (180 ppm Pb)	19.038	15.571	38.018
Rock Creek	SO17616	64 52 00	162 21 00	py, hm			
Uncle Sam Mine	NM77714	64 39	164 17	st (440 ppm Pb)			
Wheeler	SPB-1-82B	64 58 35	164 38 20	GN, py, ank, mt, fl	18.408	15.607	38.263

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
JDG	O	marb-hstd			Pb-Zn skn	18c	KR/Mg	DL	S	T	TB	R-89
JDG	Mu	marb-hstd			Pb-Zn skn	18c	KR/MG	DL	S	T	SM	R-89
	O	sh-hstd	crs-cuting	massive	Stwtr	1	KR/Mg	DL	O	T	TB	H
	O	sh-hstd	crs-cuting	massive	Pm-MV	22c	KR/Mg	DL	O	T	TB	H
	O	marb-hstd	massive	vein	Pb-Zn skn	18c	KR/Mg	DL	S	T	TB	A
	O	carb/dioriteign contact		replac	Pb-Zn skn	18c	KR/Mg	DL	S	K	DS	H
	O	sh-hstd	stratiform	massive	SEDEX	31a	KR/Mg	DL	S	S	TB	A
	O	ss-hstd	crs-cuting	vein	Pb-Zn skn	18c	KR/Mg	DL	S	T	TB	A
	O	sd/dike	shear zn		Pb-Zn skn	18c	KR/Mg	DL	S	25 Ma	TB	H
	O	mvol-hstd	ign contact	opn-sp fil	Pb-Zn skn	18c	KR/Mg	DL	K	T	TB	A
	R	monz	stockwork	vein	Pm-MV	22c	KR/Mg	K	Mz	70 Ma	TB	H
	O	sd-hstd	shear zn		HS-Hg	27a	KR/Mg	DL	O	T	TB	H
	R	msd-hstd	breccia		Replc/Pm-MV	19a/22c	KR/Mg	DL			JCB	H
	O	monzodioriteign contact			Cu-skn	18b	KR/Mg	NX	Pz	Mz	RN	H
JDG	R	msd-hstd	crs-cuting	qz vein	St-MV	27d	SP/Nm	SD	C-O	K	BG	R-89
	Mu	msd-hstd	crs-cuting	qz vein	St-MV	27d	SP/Nm	SD	C-O	K	USNM	A
	R	msd-hstd	stratiform	dism/banded	SEDEX	31a	SP/Nm	SD	C-O	C-O	BG	A
	C	msd-hstd	stratabound	dism/banded	SEDEX/Replc	31a/19a	SP/Nm	SD	C-O	C-O	LY	A
	O	msd-hstd	stratiform	massive	SEDEX	31a	SP/Nm	SD	C-O	C-O	LY	A
JDG	P	msd-hstd	breccia	dissem	SEDEX	31a	SP/Nm	SD	C-O	C-O	BG	R-89
	D	mvol-hstd	crs-cuting	vein	St-MV	27d	SP/Nm	SD	O	K	BG	A
JDG	C	msd-hstd	crs-cuting	dissem/vein	SEDEX/Replc	31a/19a	SP/Nm	SD	C-O	C-O	LY	R-89
JDG	Q	msd-hstd	stratiform	dissem	SEDEX	31a	SP/Nm	SD	C-O	C-O	BG	R-89
JDG	D	msd-hstd	crs-cuting	vein	mAu-V/St-MV	36a/27d	SP/Nm	SD	C-O	K	BG	R-89
	Mu	mvol-hstd	crs-cuting	vein	St-MV	27d	SP/Nm	SD	C-O	K	USNM	A
JDG	R	msd-hstd	crs-cuting	vein	mAu-V	36a	SP/Nm	SD	C-O	K	BG	R-89
JDG	P	carb-hstd	stratabound	banded	SEDEX	31a	SP/Nm	SD	O	O	BG	R-89
JDG	P	msd-hstd	stratiform	banded	SEDEX	31a	SP/Nm	SD	C-O	C-O	BG	R-89
	O	msd/dike	crs-cuting				YR/In				TB	H
	O	msd-hstd	fault	vein	mAu-V	36a	SP/Co	SD	O-C	K	BG	A
MD	P	msd-hstd		gossan	Pm-MV	22c	SP/Co	SD	Pz/Pc	K	BG	R-89
JDG		carb-hstd		gossan			SP/Co	SD	Pz		RASS	R-89
	O	qz monz	qz vein	dissem			SP/Ky	SD	Darby pl		JCB	A
	Mu	msd-hstd		qz vein	St-MV	27d	SP/Nm	SD	C-O	K	USNM	A
MD	P	msd-hstd	stringers	qz vein			SP/Kg	SD	C/Pc		JB	R-87

Table 2. Lead isotope data from sulfide occurrences from west-central Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
TELLER							
Bessie & Maple	73AGK12G	65 27	167 12	GN	18.961	15.628	38.854
BR Granite	60ASN145	65 31 30	167 10	Feldspar	19.05	15.67	38.96
Brooks Mtn	NM116275.002	65 31 30	167 09 10	cal, asp, sl (42 ppm Pb)			
Brooks Mtn	NM116275.004	65 31 30	167 09 10	GN, cs	18.997	15.633	38.828
Dolcoath	74AGK2016a	65 29 30	167 08 30	sulfosalt, asp, tu, tp, fl	18.960	15.611	38.747
Dolcoath	OD22257	65 29 30	167 08 30	st (35 ppm Pb)			
Ear Mtn		65 55 40	166 14 30	cs, sulfides			
Ear Mtn	27866	65 55 40	166 14 30	(200 ppm Pb)			
Ear Mtn	28439	65 56	166 11	(160 ppm Pb)			
Ear Mtn	Ear Mtn	65 55 40	166 14 30	cs, sulfides			
Hume Cr Granite	ATS184A	64 54	166 05	Feldspar	18.94	15.67	38.76
Kougarok	K82SCB111	65 42 50	165 13 40	tu, cs, tp (55 ppm Pb)			
Lost River	73AGK31B	65 28 10	167 09 30	GN	18.961	15.627	38.847
Lost River Granite	68ASN-2			GN	18.968	15.63	38.831
Reed Prospect	73AGK14AC	65 31	167 10	GN	18.959	15.630	38.847

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
MD	O	granite		qz vein	Pm-MV	22c	SP/Pc	YO	86 Ma	86 Ma	DG	R-87
MD	O	granite						YO	86 Ma	86 Ma	PS	70.1
	Mu	granite	ign contact	qz vein	Sn-Skn	14b	SP/Pc	YO	86 Ma	86 Ma	USNM	A
JDG	Mu	granite	ign contact	qz vein	Sn-Skn	14b	SP/Pc	YO	86 Ma	86 Ma	USNM	R-89
JDG	O	dike			Sn-Skn	14b	SP/Pc	YO	86 Ma	86 Ma	DG	R-89
	Mu				Sn-Skn	14b	SP/Pc	YO		86 Ma	SM	A
	O	granite	ign contact		Greisen	14c	SP/Pc	YO		K	LY	H
		msd-hstd	ign contact	vein	Sn-skn	14b	SP/Pc	YO	Pz	K-T	RN	A
		msd-hstd	ign contact	vein	Sn-skn	14b	SP/Pc	YO	Pz	K-T	RN	A
	D	msd-hstd	ign contact		Sn-skn	14b	SP/Pc	YO			JCB	H
MD	O	granite						YO			PS	70.1
	O	granite			Greisen	15c	SP/Sr	SD	72 Ma	72 Ma	CP	A
MD	O	granite		qz vein	Pm-MV	22c	SP/Pc	YO	86 Ma	86 Ma	DG	R-87
JDG	O	granite	magmatic	alt zone			SP/Pc	YO	86 Ma	86 Ma	PS	R-89
MD	O	granite		qz vein	Pm-MV	22c	SP/Pc	YO	86 Ma	86 Ma	DG	R-87

Table 3. Lead isotope data from sulfide occurrences from east-central Alaska

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
BEAVER							
Kanuti	Kanuti	66 38 30	149 46 00	mly			
BETTLES							
Hot Springs Pluton	KA9946	66 20 02	150 55 10	secondary uranium			
Sithylemenkat	PB12355	66 01 25	151 08 40	lm			
BIG DELTA							
Black Shell Creek	78AFr238	64 52 54	145 37 30	GN	18.431	15.662	38.379
Blue Lead	76BT-5	64 21 40	144 11 50	py, st, asp, gn			
Gray Lead	76BTMH6	64 21 05	144 12 45	st, tt, Au, cal			
Porcupine Cr	78AFr231	64 35 30	144 26 30	GN	18.788	15.650	39.043
CHANDALAR							
Evelyn Lee	Evelyn Skn	67 39 25	149 16 15	py, cp			
Gayle Skarn	AMW318	67 51 35	148 43 30	gn, sl			
Geroe Cr	CH279R	67 46 30	148 36	mly (500 ppm Pb)			
Mikado mine	Mikado	67 32 40	148 13 40	GN, asp, py, sl, st, Au	18.804	15.662	38.938
Mikado mine	MM-86-1	67 32 40	148 13 40	GN, sl, py, Au	18.787	15.633	38.820
Summit mine	SM-86-1	67 32 30	148 12	GN, asp, py, Au	18.766	15.633	38.845
Venus Prospect	76DSC100-102	67 38	149 22	mt, cp, py			
Venus-Victor	75AWM1689	67 37 45	149 21 10	mt, py, cp			
CIRCLE							
	2866	65 06	144 31	py, gn, sch, cs	19.203	15.653	39.057
Faith Cr	30425	65 23 40	146 15 50	py, sl, gn	19.089	15.633	39.025
Faith Cr	84CI015R	65 23 40	146 15 50	GN, sl, st, asp, py	19.136	15.715	39.291
Gold Dust	G3176	65 25 00	145 28 15	GN, Au, py	19.041	15.676	39.034
Hope Cr	32501	65 25	146 19	po, asp, Au, gn, st (390 ppm Pb)			
Independence Cr	83AMZ036E	65 27 33	145 13 27	GN, py			
Ketchum Dome	CI21532	65 28 00	144 47 10	cs			
Lime Peak	32508	65 36 30	146 52	fl, gn, asp, cs, cp (14000 Pb)			
N Fork Prospect	1560R	65 40 00	146 36 30	GN			
Table Mtn	30458	65 27	145 55	tu, asp, gn, Au, st, fl (310 Pb)			
COLEEN							
Cone Prospect	OC	67 29 40	141 08 00	gn, clay			
Old Crow batholith	OC24815	67 32 40	141 07 45	GN			
White Mtn Skarn	OCH-14	67 30 40	141 14 30	cp, py, bn			
EAGLE							
40 mile	JA001	64 07 30	141 06 15	GN, Au	19.382	15.671	39.255
Copper Cr skarn		64 50 10	143 10 00				
McKibben's Prospect	75AFr105	64 06 35	143 12 10	GN, st			
My Creek	76BTMH14	64 05 45	143 15 30	st, gn, sl			
Purdy "Lead-Silver"	76BTMH1C	64 07	141 55	GN, sl			

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
		monzonite	stringer	frac-fill	L-F Mo	21b	YR/Yf	RB			JCB	H
	R	rhyolite			Porp	21a	YR/Kk	RB			JCB	H
	O		vein		Greisen	15c	YR/Kk	RB		K	JCB	A
MD	O	msd-hstd		replac	Pm-MV	22c	YR/Fb	YT	Pz	K-Cz	HF	R-87
	D	monzonite	qz vein	massive	Pm-MV	22c	YR/Gp	YT	K	K	TB/RN	A
	O	monzonite	qz vein	dissem.	Pm-MV	22c	YR/Gp	YT	K	K	TB	A
ALH	O	msd-hstd	stratiform	dissem	K-VMS/SEDEX	28a/31a	YR/Fb	YT	Pz	Pz	HF	R-87
	O	msd-hstd	ign contact	massive	Cu-skn	18b	YR/Kk	AAH	D	D	MW	H
	O	marb-hstd	veinletts		Pb-Zn skn	18c	YR/Kk	AAH	D	D	RASS	H
	O	metagranite		dissem	L-F Mo	21b	YR/Kk	AAH	D	D	RASS	H
TD	M	msd-hstd	shear zn	qz vein	Pm-MV	22c	YR/Cl	AAH	D	D		83.1
MD	M	m/sd-hstd	shear zn	qz vein	Pm-MV	22c	YR/Cl	AAH	D	D	SR	R-87
MD	M	msd-hstd	shear zn	qz vein	Pm-MV	22c	YR/Cl	AAH	D	D	SR	R-87
	O	carb-hstd	ign contact	massive	Cu-skn	18b	YR/Kk	AAH	D	D	RASS	H
	O	carb-hstd	ign contact	massive	Cu-skn	18b	YR/Kk	AAH	D	D	MW	H
CRC	O	granite	qz vein		Pm-MV	22c	YR/Ci	YT	K		RN	R-89
CRC	O	scht-hstd	stratabound		Pm-MV	22c	YR/Ci	YT	Pz	90 Ma	RN	R-89
MD	O	msd-hstd	crs-cuting	qz vein	Pm-MV	22c	YR/Fb	YT	Pz		RT	R-87
MD	S				Plc-Au	39	YR/Ci	YT	Q		JCA	R-87
	O	scht/granite	ign contact	dissem	Pm-MV	22c	YR/Fb	YT	Pz	K	RN	A
	O	msd-hstd	crs-cuting	qz vein	Pm-MV	22c	YR/Ci	YT	Pz	K	WM	A
	P	monzonite	vein		Greisen	15c	YR/Ci	YT			JCB	A
	O	granite		vein	Griesen	15c	YR/Tv	YT	57 Ma	57 Ma	RN	A
	O	granite		frac-fill	Greisen	15c	YR/Ci	YT	K	K	MW	A
	O	scht/granite	ign contact	qz vein	Pm-MV	22c	YR/Ci	YT	Pz	70 Ma	RN	A
		scht-hstd	crs-cuting		Pm-MV	22c	YR/Sj	PC	Pz		JCB	H
	O	granite	crs-cuting	qz vein	Pm-MV	22c	YR/Sj		D	D	JCB	H
		scht-hstd	ign contact	massive	Cu-skn	18b	YR/Sj	PC			JCB	H
MD	P	msd-hstd	crs-cuting	qz vein	Pm-MV	22c	YR/Ea	YT	Pz		JCA	R-87
	P				W-skn	14a	YR/Ci	YT			JCB	H
	O	msd-hstd	crs-cuting	qz vein	Pm-MV	22c	YR/Ci	YT	Pz		HF	H
	O	scht-hstd	shear zn	replac	Sb-MV	27d	YR/Fm	YT	Pz		TB	A
JDG	O	scht-hstd	shear zn	gossan	Pm-MV	22c	YR/Fm	YT	Pz		TB	A

Table 3. Lead isotope data from sulfide occurrences from east-central Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
FAIRBANKS							
Buzby lead-copper		64 00 00	147 27	cp, py, GN	19.213	15.693	39.112
California Cr	76BT2090	64 03 50	148 43 40	st, sulfosalts			
Cleary Schist	84ASCF12	64 47 35	148 08 40	lm			
Ester Dome	84ASCF09	64 52 25	148 04 20	st			
Flume Cr	FC-1	64 00 50	147 17 30	GN	19.168	15.669	39.058
Grant Mine	Elm Vein	64 53 00	147 57 30	sl, Au, sulfosalts			
Grant Mine	Odea Vein	64 53 00	147 57 30	st, sl, sulfosalts, Au			
Liberty Bell	76BT2081	64 03 10	148 50 50	asp, bis, cp, po (30 ppm Pb)	19.061	15.637	38.870
Liberty Bell	76BT2082	64 03 10	148 50 50	asp, bis, cp, po (6 ppm Pb)	19.173	15.649	38.874
Liberty Bell	LB-1	64 03 10	148 50 50	py (7 ppm Pb)	19.078	15.628	38.838
Liberty Bell	LB-asp	64 03 10	148 50 50	asp, cp, 2-tu, ap			
Rogosh Prospect	84ASCF08	64 53 35	147 59 15	GN, sl, py, Au	19.102	15.638	39.105
Ryan Lode	87BT340	64 51 50	147 59 30	asp, py, Au, bg			
Scrafford Prospect	84ASCF03	64 59 55	147 35 30	st			
St Patricks Mine	G3091	64 52 25	147 29 10	st, Au			
KANTISHNA RIVER							
Cosna	CI26553A	64 30 30	152 00 10	GN, cs			
LIVENGOOD							
Chatham Prospect	80BTCHAT	65 04 10	147 25 15	gn, sl, bar	19.126	15.683	39.157
Chechacko Vein	TS-1 (Gem)	65 03 42	147 27 45	GN, py, sl	19.046	15.619	38.961
Christina Vein	84ASCF06	65 04 20	147 22 40	GN, asp	19.139	15.696	39.226
Cleary Hill	G3134	65 02 50	147 27 10	cp, st, GN	19.127	15.680	39.176
Cleary Hill Mine	OD22150	65 04	147 26	GN, sl			
Cleary Road	TS-2	65 02 50	147 27 10	GN, st, lm	19.087	15.663	39.044
Gem Claim	JA071M (TS1)	65 03 42	147 27 45	GN	19.158	15.709	39.264
Geraghty Mine	G-1	65 29 55	148 30 40	GN	19.004	15.636	38.793
Hi Yu	G3132	65 04 35	147 16 40	py, cp, GN, bg	19.161	15.693	39.224
Kavilita Vein	80BTKAV	65 03 35	147 25 00	GN, sl, sulfosalts			
Mt. Schwatka	BE12127A	65 54 40	147 05	(11000 ppm Pb)	19.322	15.700	39.211
Mt. Schwatka	BE9186	65 54 40	147 01 20	dl (700 ppm Pb)	19.037	15.662	39.035
Nordell Mine	84ASCF04A	65 04 55	147 22 50	GN, sl, py, cp	19.139	15.694	39.214
Pedro Dome		65 02 00	147 30 00	GN	19.118	15.688	39.146
Sawtooth	sawt	65 22 05	149 31 00	st			
Silver Fox	84ASCF02	65 00 30	147 33 15	GN	19.126	15.687	39.167
Silver Fox	Busty Bell	65 00 30	147 33 15	GN	19.126	15.693	39.177
Steamboat Creek		65 01 30	147 30 00	GN	19.132	15.685	39.160
Twin Cr	OD22128	65 54	147 28	GN			
Wackowitz	TS-3	65 02 45	147 30 00	GN, st, lm	19.027	15.612	38.932

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
TD	O	scht-hstd		qz vein	Pm-MV	22c	YR/Bf	YT	Pz	K	TB	79.2
	O	scht-hstd	qz vein		Pm-MV	22c	YR/Bf	YT	M	K	TB	A
	O	scht-hstd			K-VMS	28a	YR/Fb	YT			SC	A
	P	scht-hstd			St-MV	27d	YR/Fb	YT	Pz		SC	A
MD	D			vein	Pm-MV	22c	YR/Bf	YT			JCA	R-87
	M	scht-hstd	fault	qz vein	Pm-MV	22c	YR/Fb	YT	Pz	K	TB	A
	M	scht-hstd		qz vein	Pm-MV	22c	YR/Fb	YT	Pz	K	TB	A
JDG	O	scht-hstd	lens	vein	Pm-MV	22c	YR/Bf	YT	M	K	TB	R-89
JDG	O	scht-hstd	lens	vein	Pm-MV	22c	YR/Bf	YT	M	K	TB	R-89
JDG	O	scht-hstd	lens	vein	Pm-MV	22c	YR/Bf	YT	M	K	TB	R-89
		scht-hstd	replac	vein	Replc	19a	YR/Bf	YT	Pz	K	TB	A
MD	P	granite		qz vein	Pm-MV	22c	YR/Fb	YT		K	SC	R-87
	O	scht-hstd	shear zn	qz vein	Pm-MV	22c	YR/Fb	YT	Pz	K	TB	A
	P	scht-hstd		vein	St-MV	27d	YR/Fb	YT	Pz		SC	A
	M	granite	lens	qz vein	Pm-MV	22c	YR/Fb	YT	Pz	K	JCA	A
	R	msd-hstd	crs-cuting	vein	Pm-MV	22c	YR/Hs	MAN			JCB	A
JDG	O	scht-hstd		replac	Replc	19a	YR/Fb	YT	Pz	K	TB	R-89
TD	P	msd-hstd	shear zn	replac	Replc	19a	YR/Fb	YT	Pz		TS	R-87
MD	P	msd-hstd		qz vein	Pm-MV	22c	YR/Fb	YT	Pz		SC	R-87
MD	O	msd-hstd	shear zn	qz vein	Pm-MV	22c	YR/Fb	YT	Pz		JCA	R-87
	Mu	scht-hstd	ign contact	qz vein	Pm-MV	22c	YR/Fb	YT	Pz	K	SM	A
TD	O	msd-hstd	concordant	qz vein	Pm-MV	22c	YR/Fb	YT	Pz		TS	R-87
MD	P	m/sd-hstd	shear zn	qz vein	Pm-MV	22c	YR/Fb	YT	Pz		JCA	R-87
MD	S				Plc-Au	39	YR/Tv	LG			JC	R-87
MD	P	msd-hstd		qz vein	Pm-MV	22c	YR/Fb	YT			JCA/TB	R-87
JDG	O	scht-hstd	fault	vein	Pm-MV	22c	YR/Fb	YT	Pz/Pc	K	TB	R-89
JDG	O	carb-hstd			Pm-MV	22c	YR/Tv	WHM	O?		JCB	R-89
JDG	O	carb-hstd			Pm-MV	22c	YR/Tv	WHM	O?		JCB	R-89
MD	M		crs-cuting	qz vein	Pm-MV	22c	YR/Fb	YT	Pz		SC	R-87
MD	O			vein	Pm-MV	22c	YR/Fb	YT			RF	79.1
	D			massive	St-MV	15b	YR/Rm	MAN			JCB	A
JDG	M	grndiorite		qz vein	Pm-MV	22c	YR/Fb	YT	90 Ma	90 Ma	SC	R-89
MD	M	grndiorite		vein	Pm-MV	22c	YR/Fb	YT	92 Ma	92 Ma	RF	79.1
MD	D			vein	Pm-MV	22c	YR/Fb	YT			RF	79.1
	Mu	scht-hstd		vein	Pm-MV	22c	YR/Fb	YT	Pz	K	SM	A
TD	O	msd-hstd	concordant	qz vein	Pm-MV	22c	YR/Fb	YT	Pz		TS	R-87

Table 3. Lead isotope data from sulfide occurrences from east-central Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
TANACROSS							
Asarco	76BTMH8	63 22 10	142 30 00	py, cp			
Discovery	1636-86	63 16 29	143 48 10	GN	19.229	15.706	39.237
Discovery	183252	63 15 25	143 48 40	(2800 ppm Pb)	19.158	15.731	39.250
Discovery	192046	63 15 10	143 47 30	asp (2000 ppm Pb)	19.325	15.725	39.386
Discovery	2312-86	63 16 30	143 48 30	GN	19.251	15.734	39.340
Discovery	69921	63 16 35	143 48 40	(10000 ppm Pb)	19.237	15.728	39.349
Mosquito	76BTMH15	63 53 10	143 28 15	py, cp, mly			
Tok Prospect	76BTMH1	63 41 00	142 14 00	cp, py			
Tok Stibnite	76BTMH16	63 15 00	143 48 00	st			
TANANA							
Cooney Cr	G3212	65 08 25	150 42 30	GN, Au, cn, py	18.901	15.629	38.715
Manley dome	MHS	65 02 00	150 44 10	GN, lm	20.840	15.838	40.777
Omega Cr	G3200	65 10 50	150 19 30	GN, Au	18.993	15.652	38.764
WISEMAN							
	79-DN150a	67 17 25	151 19 25	GN, tt, py	19.310	15.666	39.103
	79DN178-2	67 19 28	152 35 03	py (300 ppm Pb)			
A-6 #7	412	67 10 28	152 49 01	(200 ppm Pb)			
Amawk Cr	W-2232	67 58 25	150 29 00	GN	18.704	15.629	38.785
Amawk Cr	W-972	67 58 30	150 30 00	cr, GN, cp, sl, bar, asp, Au	18.703	15.623	38.778
B-3 #5	478	67 26 45	151 28 38	(200 ppm Pb)			
B-4 #19	378	67 22 17	151 32 42	(300 ppm Pb)			
BP Prospect	79DNX262	67 23 53	152 50 36	gn, cp, po, ml			
C-2 #6	82ABE302C	67 32 25	150 32 46	(500 ppm Pb)			
C-6 #1	81ABE101	67 43 42	152 34 58	(200 ppm Pb)			
D-1 #2	2252	67 56 16	150 29 18	(100 ppm Pb)			
D-2 #3	2240	67 51 11	150 33 55	(100 ppm Pb)			
Frog	many	67 18 45	153 00	cp, sl			
Frog (Dnx 78)	W-218	67 18 51	152 55 30	GN, sl, asp, py	17.837	15.553	37.508
McCamant Cr	77Dn40	67 22 58	151 58 47	GN, ml (7000 ppm Pb)	18.369	15.586	38.182
Michigan Cr	79Dn69a	67 18 17	151 14 22	py, po, cp, sl, gn			
NF Koyukuk R.	W-2120	67 45 20	151 00 40	sl, cp, bar, Au, gn (3000 Pb)			
RO-1	DDH1 (50')	67 08 30	152 54	GN, cp			
Smith Dome	W-1739B	67 28 00	150 08 30	st (700 ppm Pb)	18.466	15.608	38.631
WI A-5	80DN21	67 09 49	152 19 29	cp, py (500 ppm Pb)			
WI B-3	77PE57	67 18 38	151 28 34	(100 ppm Pb)			
WI B-4	77DN77	67 21 06	151 41 39	py (200 ppm Pb)			
WI B-4	79DN243B	67 26 45	151 28 38	sl (200 ppm Pb)			
WI B-5 #3	80DN67 (513)	67 28 40	152 20 12	(140 ppm Pb)			
WI B-5 #5	77DN98 (20)	67 27 59	152 16 19	gn (200 ppm Pb)			
Wild Lake	79DN199	67 31 19	151 35 04	gn (2000 ppm Pb)			

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
	O	dacite		dissem.	Porp	21a	YR/Fm	YT	56 Ma	56 Ma	TB	H
JDG	O	scht-hstd		qz vein	mAu-V	36a	YR/Tk	YT	Pz		SNK	R-89
JDG	O	scht-hstd		qz vein	mAu-V	36a	YR/TK	YT	Pz		SNK	R-89
JDG	R	scht-hstd		qz vein	mAu-V	36a	YR/Tk	YT	Pz		SNK	R-89
JDG	O	scht-hstd		qz vein	mAu-V	36a	YR/Tk	YT	Pz		SNK	R-89
JDG	O	scht-hstd		qz vein	mAu-V	36a	YR/Tk	YT	Pz		SNK	R-89
	O	dacite		dissem	Porp	21a	YR/Fm	YT	56-60 Ma	56-60 Ma	TB	H
	O	dacite		dissem.	Porp	21a	YR/Fm	YT	60 Ma	60 Ma	TB	H
	O	scht-hstd	fault	qz vein	St-MV	27d	YR/Tk	YT			TB	A
MD	S				Plc-Au	39	YR/Hs	MAN			JC	R-87
MD	O		crs-cuting	vein	Pm-MV	22c	YR/Hs	MAN			JC	R-87
MD	S				Plc-Au	39	YR/Hs	MAN			JC	R-87
MD	O	msd-hstd	crs-cuting	qz vein	mPb Zn skn	18c	YR/Kk	AAH	D	J	JC/DN	R-87
	O	msd-hstd	stratiform	gossan	K-VMS	28a	YR/Kk	AAH	D	D	AB	H
							YR/Kk	AAH			RASS	H
MD	O	msd-hstd	crs-cuting	vein	Pm-MV	22c	YR/Kk	AAE	D		RASS	R-87
MD	O	msd-hstd	shear zn	vein	Pm-MV	22c	YR/Kk	AAE	D		RASS	R-87
							YR/Kk	AAH			RASS	H
							YR/Kk	AAH			RASS	H
	O	scht-hstd	qz vein		Pb-Zn skn	18c	YR/Kk	AAH			AB	H
							YR/Kk	AAH			RASS	H
							YR/Kk	AAE			RASS	H
							YR/Kk	AAN			RASS	H
							YR/Kk	AAN			RASS	H
	C	carb-hstd		vein/replac	mPb-Zn skn	18c	YR/Kk	AAH		Pc	DGGS	H
MD	O	scht-hstd		vein	mPb-Zn skn	18c	YR/Kk	AAH	Pc	Pc	RASS	R-87
MD	O	scht-hstd		dissem	K-VMS	28a	YR/Kk	AAH	D	D	JC/DN	R-87
	O	scht-hstd	stratiform	massive	K-VMS	28a	YR/Kk	AAH			AB/DN	H
	O	msd-hstd	crs-cuting	qz vein	mAu-V	36a	YR/Kk	AAN	C-S		RASS	H
	C	mvol-hstd	stratiform	dissem	K-VMS	28a	YR/Kk	AAH	D	D	DGGS	H
MD	O	msd-hstd	crs-cuting	vein	St-MV	27d	YR/Kk	AAH	D		RASS	R-87
	O	scht-hstd		dissem	K-VMS	28a	YR/Kk	AAH			AB	H
	O	scht-hstd					YR/Kk	AAH			AB	H
	O	msd-hstd			K-VMS	28a	YR/Kk	AAH			AB	H
	O	marb-hstd			K-VMS	28a	YR/Kk	AAH			AB	H
	O	marb-hstd		gossan	K-VMS	28a	YR/Kk	AAH			AB	H
	R	msd-hstd	stratiform	gossan	K-VMS	28a	YR/Kk	AAH			AB	H
					Pb-Zn skn	18c	YR/Kk	AAH			AB	H

Table 4. Lead isotope data from sulfide occurrences from southern Alaska

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
ANCHORAGE							
Bruno-Agostino	GD-12	61 02 50	149 06 10	cp, GN, mly, Au	18.940	15.591	38.560
Holland	6544R	61 49 00	149 17 27	cp, tt (200 ppm Pb)	18.867	15.593	38.523
Homestake	HO-12	61 09 15	148 09 15	GN, ank	18.966	15.610	38.636
Independence Mine	6543R	61 47 18	149 18 20	gn, cp (1000 ppm Pb)	18.827	15.590	38.499
Jewel	Jewel	61 02 10	149 06 10	GN, asp	18.963	15.620	38.670
Miner's Bay	81AMH070A,C	61 05 20	146 26 00	cp, pn, po			
Miner's River	MR-1	61 05 15	147 20 00	GN, sl, py, cp, asp	19.060	15.627	38.722
Wheeler	W17A	61 44 55	149 24 50	py, lm (300 ppm Pb)	18.948	15.607	38.630
BLYING SOUND							
Resurrection Pen.	RP-1	59 57 30	149 16 00	GN, py, sl	18.788	15.566	38.366
CORDOVA							
Copper Mtn.	C004	60 51 25	146 34 15	cp, po (240 ppm Pb)	18.969	15.600	38.607
Ellamar	82DG004A	60 53 25	146 38 30	cp, py, po, sl (70 ppm Pb)	18.917	15.607	38.579
Fidalgo	74AK29A	60 47 40	146 17 45	cp, po	19.174	15.653	38.844
McKinley Lake	MK-1	60 28 25	145 11 25	GN, py, asp, sl, Au	19.054	15.632	38.729
Reynolds	C026AA	60 53 10	146 37 20	cp (75 ppm Pb)	18.945	15.600	38.580
Schlosser	C023A-25	60 46 25	146 24 50	cp (20 ppm Pb)	18.946	15.614	38.713
Scott Glacier	047D	60 38 40	145 15 00	cp, py (1000 ppm Pb)	19.066	15.629	38.721
GULKANA							
Hogan Hill	85AIL027B	62 41 13	145 26 40	py, cp, bn, sl, gn			
HEALY							
Anderson Mtn.		63 48 35	147 55 50	sl, cp, GN	18.848	15.677	39.112
Anderson Mtn	AM-3	63 48 35	147 55 50	cp, py, gn (3000 ppm Pb)	18.884	15.699	38.709
Cirque	C-3	63 47 00	147 38 00	py, cp (2000 ppm Pb)	18.742	15.690	38.706
Denali Copper	79AIL088A	63 08 10	147 08 20	cp, py (70 ppm Pb)	18.886	15.570	38.461
Dry Creek (Red Mtn)	DC-9	63 55 25	147 23 15	GN, cp	18.765	15.675	38.824
Eagle	Eagle	63 16	149 32	asp, sl, gn			
Glory Creek	GC-1	63 50 35	147 30 35	GN, sl, cp, py	19.407	15.683	39.157
Golden Zone	81CX3	63 12 50	149 38 40	(100 ppm Pb)	19.151	15.602	38.687
Golden Zone	HKD-1,2	63 12 50	149 38 40				
Healy Creek	HC-2	63 49 05	148 16 15	GN, py	18.692	15.687	38.718
Honolulu porphyry	DDH1 (66.8')	63 02 00	149 29 00	GN			
Kansas Creek	81CX21	63 51 30	147 30 00	st (300 ppm Pb)	19.166	15.692	39.044
L. Honolulu Creek	81CX12	63 02 00	149 29 00	(1000 ppm Pb)	19.031	15.605	38.597
Lucrata	87BT90	63 15 40	149 01 15	asp, tt, cp, gn			
Mt. Lathrop	30756	63 55	148 24 30	py (190 ppm Pb)			
Mt. Lathrop	30761	63 55	148 24 30	py (50 ppm Pb)			
Nim	87BT89	63 16 28	149 26 10	asp, mly, cp			
Nim	Nim	63 17	149 27	asp, cp, mly, py, bn, gn, sl			
North Carolina	81CX10	63 06 10	149 24 50	st (150 ppm Pb)	19.020	15.642	38.761
Ohio Creek	81CX6	63 10 55	149 54 55	(2000 ppm Pb)	19.151	15.632	38.733
Sheep Creek	81CX17	63 55 10	148 16 50	(500 ppm Pb)	18.858	15.706	38.985

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
MD	M	msd-hstd	shear zn	opn-sp fil	mAu-V	36a	CR/An	CG	Te		RG	R-87
MD	M	tonalite	magmatic	opn-sp fil	Pm-MV	22c	CR/Wl	PE	K-T	66 Ma	DM	89.1
MD	M	msd-hstd	shear zn	opn-sp fil	mAu-V	36a	CR/Pw	CG	To		RG	R-87
MD	M	tonalite	shear zn	opn-sp fil	Pm-MV	22c	CR/Wl	PE	K-T	66 Ma	DM	89.1
MD	M	msd-hstd	shear zn	opn-sp fil	mAu-V	36a	CR/An	CG	Te		SC	R-87
	O	diorite	magmatic	dissem/vein			CR/Pw	CG	Te	Te	SN	H
MD	M	msd-hstd	shear zn	opn-sp fil	Pm-MV	22c	CR/Pw	PW	Te		RG	R-87
MD	P	msd-hstd	concordant	qz vein	FV		CR/Wl	PE	J		MS	89.1
MD	R	ophiolite	shtd-dike	qz-vein	C-VMS	24a	KP/Sw	CG	K-Cz	K-Cz	SN	R-87
MD	D	msd-hstd		massive	K-VMS	28a	CR/Pw	PW	Te	Te	MS	R-87
MD	D	msd-hstd	lens	massive	K-VMS	28a	CR/Pw	PW	Te	Te	RG	R-87
MD	M	mvol-hstd	shear zn	massive	K-VMS	28a	CR/Pw	PW	Te	Te	SN	R-87
MD	O	msd-hstd	shear zn	opn-sp fil	mAu-V	36a	CR/Pw	PW	To	<35 Ma	RG	R-87
MD	M	msd-hstd		massive	K-VMS	28a	CR/Pw	PW	Te	Te	MS	R-87
MD	M	msd-hstd	lens	massive	K-VMS	28a	CR/Pw	PW	Te	Te	MS	R-87
MD	M	msd-hstd	stratiform		K-VMS	28a	CR/Pw	PW	Te	Te	RG	R-87
	Q	grndiorite		vein	Porp	21a	YR/Cc	WR	J	J	WN/IL	H
TD	O	scht-hstd	stratiform	dissem	K-VMS	28a	YR/Bf	YT	D	D	TB	79.2
MD	O	mvol-hstd	stratiform	massive	K-VMS	28a	YR/Bf	YT	D	D	JK	87.3
MD	R	mvol-hstd	stratiform	massive	K-VMS	28a	YR/Bf	YT	D-M	D-M	JK	87.3
ALH	O	basalt	stratiform	massive	Bas Cu	23	CS/Vl	WR	Tr	Tr	IL	R-87
MD	O	mvol-hstd	stratiform		K-VMS	28a	YR/Bf	YT	D-M	D-M	JK	87.3
	O	gabbro	crs-cuting	qz vein	Pm-MV	22c	CS/Vl	CH	Tr	K	RN	A
MD	P	granite		vein	Pm-MV	22c	YR/Bf	YT	K-T	K-T	SC	87.3
MD	O	granite	breccia	vein	Pm-MV	22c	CS/Vl	CH		60 Ma	RASS	R-87
	O	grndiorite	breccia	vein	Pm-MV	22c	CS/Vl	CH		60 Ma	HK	H
MD	O	msd-hstd			K-VMS	28a	YR/Bf	YT	D-M	D-M	SC	87.3
	C	granite	stockwork	dissem	Porp	20a	CS/Vl	BP	Te	53 Ma	CH	H
MD	O	msd-hstd	crs-cuting	vein	St-MV	27d	YR/Bf	YT	D-M	71 Ma	RASS	87.3
MD	O	granite	crs-cuting	vein	Pm-Sn MV	20b	CS/Vl	BP	Te	53 Ma	RASS	R-87
	O	sd-hstd	crs-cuting	qz vein	Pm-MV	22c	CS/Vl	CH	K	68 Ma	TB	H
	O	scht-hstd	stratiform	massive	K-VMS	28a	YR/Bf	YT	Pz	Pz	RN	H
	O	scht-hstd	stratiform	dissem	K-VMS	28a	YR/Bf	YT	Pz	Pz	RN	H
	O	volc-hstd	stockwork	vein	Porp	21a	CS/Vl	CH	K-T	60 Ma	TB	A
	O	granite		qz vein	Pm-MV	22c	CS/Vl	CH	K	60 Ma	RN	H
MD	O	msd-hstd	crs-cuting	vein	St-MV	27d	CS/Vl	BP	K-J	T	RASS	R-87
MD	O	msd-hstd		vein	Greisen	15c	CS/Vl	CH	K-J	60 Ma	RASS	R-87
MD	O	mvol-hstd			K-VMS	28a	YR/Bf	YT	D-M	D-M	RASS	87.3

Table 4. Lead isotope data from sulfide occurrences from southern Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
HEALY--(cont.)							
Sheep Creek	DDH1 (210')	63 55	148 18	gn, sl, py, cp (2000 ppm Pb)	18.929	15.691	38.822
Snow Mtn Gulch	SMG-1	64 00 00	147 25 00	GN, sl	18.680	15.678	38.845
Virginia Creek	VC-2	63 49 35	147 48 00	cp, py (1500 ppm Pb)	18.821	15.695	38.709
W Fork L Delta R.	WF-1	63 48 10	147 29 40	cp, py (5000 ppm Pb)	18.728	15.688	38.699
West Fork Glacier	79CQ48	63 28 24	147 35 15	(200 ppm Pb)	18.779	15.663	38.667
McCARTHY							
Big Horn	KK-65	61 39 30	143 37	bn, cp			
Big Horn	KK-76	61 39 30	143 36	bn			
Bonanza	Kn-1075	61 31	142 50	cc, cv, bn, cp			
Bonanza	OD20710	61 31	142 50	cc (N20 ppm Pb)			
Bonanza (200')	Kn-27	61 31	142 50	en			
Bonanza (400')	Kn-12	61 31	142 50	cv, en			
Bonanza (890 stope, 800')	Kn-48	61 31	142 50	bn, cp in cc			
Bonanza (stope 1582, 100')	Kn-1040	61 31	142 50	cc, en, cv			
Celeno Peak	YC-320	61 21 30	142 00 00	mly			
Chititu Cr	EMK-Cu-Nu	61 21 45	141 32	native Cu			
Clear Cr	KK-107	61 37 30	143 50	py			
Dall skarn	NM-1	61 27	142 23	cp			
Erickson	EMK-ER	61 24 30	142 15 20	cc (N20 ppm Pb)			
Germantown, Nugget Cr	KK-52	61 39	143 45	cp, bn			
Glacier Tunnell	Kn-171	61 32 40	142 54	en, lz			
Glacier Tunnell (140')	Kn-170	61 32 40	142 54	cv, bn in cc			
Gold King (Crumb Gulch)	EMK-CG	61 22	142 38	st			
Gold King Mine	GKM	61 22 00	142 38 00	cn, st			
Green Butte	EMK-GB	61 29 15	142 46	cc			
Jumbo	EMK-J1	61 31	142 51	cc, bn, cp, ml			
Jumbo	OD20748	61 31	142 51	cc			
Jumbo (200')	Kn-1186	61 31	142 51	cp, bn, cl, cv			
Jumbo (300')	Kn-1196	61 31	142 51	cp, bn, py			
Jumbo (stope 510, 500')	Kn-65	61 31	142 51	GN, cc, en, cp, bn	18.968	15.621	38.669
Jumbo (surface)	Kn-1120	61 31	142 51	bn, cp in cc			
Mother Lode	Kn-66	61 31 30	142 49	cp, bn in cc			
Mother Lode (1000')	Kn-115	61 31 30	142 49	cc, cv			
Mother Lode (1250')	Kn-162	61 31 30	142 49	cp, bn in cc			
Mother Lode (1400')	Kn-131	61 31 30	142 49	cc, cv, en			
Mother Lode (1750')	Kn-148	61 31 30	142 49	cv			
Nelson	EMK-N	61 27	142 43	cc (100 ppm Pb)			
Nikolai	EMK-NK 1-4	61 28 10	142 40 40	bn, cc, cp (N20 ppm Pb)			
O'Hara	O'Hara	61 20 10	143 50 30	gn, sl, py, po			
Peavine	EMK-PV	61 26 50	142 29	ml, py, bn (L20 ppm Pb)			
Tjosevig Mine	OD20631	61 30	142 46 20	bn, cc (N20 ppm Pb)			
Valdez, Nugget Cr	KK-5	61 38 45	143 45	bn, gn?			
Valdez, Nugget Cr	KK-7	61 38 45	143 44	bn			
War Eagle	OD20617	61 32 30	143 50	cp, bn (N20 ppm Pb)			
Westover	EMK-WO	61 23	142 30	bn, cp, cc (150 ppm Pb)			

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
JDG	C	mvol-hstd	stratiform	massive	K-VMS	28a	YR/Bf	YT	D-M	D-M	JH	R-89
MD	O	msd-hstd	stratiform		K-VMS	28a	YR/Bf	YT	M	M	JK	87.3
MD	O	mvol-hstd	stratiform	massive	K-VMS	28a	YR/Bf	YT	D-M	D-M	JK	87.3
MD	O	mvol-hstd	stratiform		K-VMS	28a	YR/Bf	YT	D-M	D-M	JK	87.3
MD	O	carb-hstd		replac			CS/Vl	MK	Tr	K	RASS	87.3
	Mu	volc-hstd	replac	massive	Bas Cu	23	Cr/Cc	WR	Tr		HC	H
	Mu	volc-hstd		qz vein	Bas Cu	23	CR/Cc	WR	Tr		HC	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		HC	H
	Mu	carb-hstd	vein	massive	Bas Cu	23	CR/Nz	WR	Tr		SM	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		YM	H
	Mu	carb-hstd	replac	banded	Bas Cu	23	CR/Nz	WR	Tr		YM	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		YM	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		HC	H
	Mu	qrndiorite	pegmatite	qz vein	L-F Mo	21b	CR/Nz	GN?	K		YM	H
	placer				Bas Cu	23	CR/Nz	WR			EMK	H
	Mu	qrndiorite	replac	qz vein	Cu skn	18b	CR/Cc	WR			HC	H
	P	carb-hstd		massive	Cu-skn	18b	CR/Nz	WR	P		CH	H
	P	mvol-hstd	vein	massive	Bas Cu	23	CR/Nz	WR	Tr		EMK	H
	Mu	volc-hstd	replac	massive	Bas Cu	23	CR/Cc	WR	Tr		HC	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		YM	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		YM	H
	P	msd-hstd	ign contact	qz vein	St-MV	27d	CR/Nz	WR	Pz	K	EMK	H
	M		crs-cuting	qz vein	St-MV	27d	CR/Nz	WR	Pz	K	TB	H
	P	carb-hstd	stratabound	massive	Bas Cu	23	CR/Nz	WR	Tr		EMK	H
		carb-hstd	stratabound	massive	Bas Cu	23	CR/Nz	WR	Tr		EMK	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		SM	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		HC	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		HC	H
JDG	Mu	carb-hstd	stratabound	breccia	Bas Cu	23	CR/Nz	WR	Tr		YM	R-89
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		HC	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		YM	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	Cr/Nz	WR	Tr		YM	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		YM	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		YM	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		YM	H
	P	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		EMK	H
	P	sd & mvol	strat cntct	massive	Bas Cu	23	CR/Nz	WR	Tr		EMK	H
	P	carb-hstd		veins	K-VMS	28a	CR/Nz	WR	P	P	EMK	H
	P	carb-hstd	shear zn		Bas Cu	23	CR/Nz	WR	Tr		EMK	H
	Mu	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		SM	H
	Mu	mvol-hstd	shear zn	cal vein	Bas Cu	23	Cr/cc	WR	Tr		HC	H
	Mu	volc-hstd	replac	massive	Bas Cu	23	CR/Cc	WR	Tr		HC	H
	Mu	carb-hstd	ign contact	massive	Cu skn	18b	CR/Cc	WR	Tr	K-T	SM	H
	P	carb-hstd	replac	massive	Bas Cu	23	CR/Nz	WR	Tr		EMK	H

Table 4. Lead isotope data from sulfide occurrences from southern Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
MOUNT HAYES							
Ann Creek	79AIL091B	63 20 24	145 46 34	py, po (20 ppm Pb)	18.848	15.591	38.408
AR Gold Zone	326767	63 17 10	144 14 45		18.971	15.711	38.835
Cantwell Glacier	79AIL081A	63 21 07	145 39 29	po, cp (30 ppm Pb)			
DDN	80AIL028A	63 16 31	144 16 23	gn (200 ppm Pb)	18.911	15.729	38.828
DDY	81AIL162A	63 15 32	144 14 20	GN	18.896	15.716	38.779
Discovery Zn-PPD	PPD	63 08 30	144 02 36	GN, sl, cp	18.666	15.674	38.600
E. Fork, Broxson Gulch	79AIL030A	63 21 00	146 02 40	py, cp, po (25 ppm Pb)			
E. Fork, Broxson Gulch	79AIL030B	63 21 00	146 02 40	py, cp, po (30 ppm Pb)			
E. Fork, Broxson Gulch	79AIL030C	63 21 00	146 02 40	py, cp, po (30 ppm Pb)			
E. Fork, Broxson Gulch	79AIL030E	63 21 00	146 02 40	py, cp, po (25 ppm Pb)			
Eastern Star	79AIL012A	63 18 52	145 59 05	py, cp (10 ppm Pb)			
Eastern Star	79AIL012C	63 18 52	145 59 05	py, cp (10 ppm Pb)			
Emerick Dike	AK18694	63 21 15	145 41 10	cp, pn, gn			
Kathleen Margaret Vein	79AIL038D	63 17 00	146 33 04	(70 ppm Pb)	18.724	15.565	38.369
Lam. Zn. N. Cirque	LZ-U	63 10 46	144 08 55	GN, sl, cp	18.645	15.681	38.630
LP-PP2	81ANK184B	63 14 22	144 07 00	gn (700 ppm Pb)	18.931	15.726	38.899
Miller Creek	85AIL018A	63 21 22	145 41 58	po			
Miller Creek	85AIL018B	63 21 22	145 41 58	po			
Miller Creek	85AIL019A	63 21 00	145 41 10	po			
Miyaoka	82AIL052A	63 41 20	146 39 34	(50 ppm Pb)	18.985	15.716	38.872
North Rainbow Mtn	79AIL024A	62 20 52	145 42 24	py (60 ppm Pb)			
Paxson Mtn	79AIL059A	63 02 14	145 33 44	cp, bn, az, ml (20 ppm Pb)			
Rainy Creek	79AIL019B	63 19 13	145 57 48	(30 ppm Pb)	18.720	15.569	38.196
Rainy Creek	79AIL019E	63 19 13	145 57 48	(35 ppm Pb)	18.744	15.577	38.213
Roberts #1	82AIL044A	63 35 59	146 14 48	(500 ppm Pb)	18.889	15.691	38.670
Rumble Creek	RC	63 14 22	144 10 00	cp, py, GN	18.672	15.690	38.663
Trio	81AIL126C	63 15 44	144 02 02	GN	18.886	15.719	38.839
Trio	81AIL140A	63 15 53	144 02 18	GN	18.834	15.692	38.748
W. Delta River	79AIL092D	63 20 25	145 46 43	cp, po (30 ppm Pb)			
W. Delta River	79AIL092E	63 20 25	145 46 43	cp, po (30 ppm Pb)			
W. Fork Chistochina R.	79AIL069B	63 11 01	144 58 24	po, py (85 ppm Pb)	18.986	15.610	38.383
Zackly	85AIL035A	63 13 12	146 42 12	cp, bn, cc, mly, hm			
Zackly	85AIL036A	63 13 10	146 41 54	py, cp, bn, cc, mly, hm			
Zackly	85AIL037A	63 13 00	146 41 40	py, cp, bn, cc, mly, hm			
MOUNT McKINLEY							
Alpha Prospect	75BT2038	63 31 20	151 01 10	gn, sl	19.182	15.677	38.935
Bosart		63 34	150 54 40	GN	19.035	15.655	38.818
Bunnell Mine	BMO-1	63 28 50	151 04 15	GN, tt, st, sl, cp, sch, bg	19.195	15.656	38.920
Chitsia	75AST1734	63 57 35	150 18 45				
Eagles Den	75AST2037	63 30 17	151 00 00	st, asp			
Friday Cr	NMNH91332	63 32 30	150 58	GN			
Golden Eagle	75BTGE	63 32 35	150 56 50	GN, tt, sl, ank	19.125	15.755	39.105
Last Chance	75AST2844	63 36 35	150 49 15	st, py, gn			
Little Annie		63 32 256	150 57 20	GN	19.000	15.630	38.763

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
ALH	O	mvol-hstd		qz vein	Pm-MV	22c	CS/Vl	WR/Sr	Tr		WN/IL	R-87
JDG	O	msd-hstd		qz/cal vein	Pm-MV	22c	YR/Tk	YT	Pz		SNK	R-89
	O	qz diorite	stockwork	qz vein	Porp	21a	YR/Dr	WR/Sr	J-K	J-K	WN/IL	H
ALH	O	mvol-hstd	stratiform		K-VMS	28a	YR/Tk	YT/Jc			WN/IL	87.3
ALH	O	mvol-hstd	stratiform		K-VMS	28a	YR/Tk	YT/Jc			WN/IL	87.3
MD	O	mvol-hstd	stratiform		K-VMS	28a	YR/Tk	YT/Jc			SLC	87.3
	O	gabbro	podiform	cumulate	Stwtr	1	YR/Dr	WR/Sr	Tr	Tr	WN/IL	H
	O	gabbro	podiform	cumulate	Stwtr	1	YR/Dr	WR/Sr	Tr	Tr	WN/IL	H
	O	gabbro	podiform	cumulate	Stwtr	1	YR/Dr	WR/Sr	Tr	Tr	WN/IL	H
	O	gabbro	podiform	cumulate	Stwtr	1	YR/Dr	WR/Sr	Tr	Tr	WN/IL	H
	O	diorite	lens	dissem	Porp	21a	YR/Dr	WR/Sr	J-K	J-K	WN/IL	H
	O	diotite	lens	dissem	Porp	21a	YR/Dr	WR/Sr	J-K	J-K	WN/IL	H
	O	gabbro		dissem	Stwtr	1	YR/Dr	WR/Tg	Tr	Tr	JCB	H
ALH	O	mvol-hstd	crs-cuting	qz vein	mV		CS/Vl	WR/Tg	Tr	K	WN/IL	R-87
MD	O	mvol-hstd	stratiform		K-VMS	28a	YR/Tk	YT/Jc			SLC	87.3
ALH	O	mvol-hstd	stratiform		K-VMS	28a	YR/Tk	YT/Jc			WN/IL	87.3
	O	serpentine	lens	vein	Stwtr	1	YR/Dr	WR/Tg	Tr	Tr	WN/IL	H
	O	serpentine	lens	vein	Stwtr	1	YR/Dr	WR/Tg	Tr	Tr	WN/IL	H
	O	serpentine	lens	vein	Stwtr	1	YR/Dr	WR/Tg	Tr	Tr	WN/IL	H
ALH	O	mvol-hstd	stratiform		K-VMS	28a	YR/Bf	YT/Hg			WN/IL	87.3
	O	msd-hstd	shear zn	qz vein	mV		YR/Dr	WR/Sr	IP-P	K?	WN/IL	H
	O	volc-hstd		qz vein	mV		CS/Cc	WR/Tg	Tr	K?	WN/IL	H
ALH	O	carb-hstd	contact	replac	skn	18?	YR/Dr	WR/Sr	lPz		WN/IL	R-87
ALH	O	carb-hstd	contact	replac	skn	18?	YR/Dr	WR/Sr	lPz		WN/IL	R-87
ALH	O	mvol-hstd	stratiform		K-VMS	28a	YR/Bf	YT/Hg			WN/IL	87.3
MD	R	mvol-hstd	stratiform		K-VMS	28a	YR/Tk	YT/Jc	D	D	JK	87.3
ALH	O	mvol-hstd	stratiform		K-VMS	28a	YR/Tk	YT/Jc			WN/IL	87.3
ALH	O	mvol-hstd	stratiform		K-VMS	28a	YR/Tk	YT/Jc			WN/IL	87.3
	O	gabbro	shear zn	vein	Stwtr	1	YR/Dr	WR/Sr	Tr	Tr	WN/IL	H
	O	gabbro	shear zn	vein	Stwtr	1	YR/Dr	WR/Sr	Tr	Tr	WN/IL	H
ALH	O	grndiorite		massive	Porp	21a	CS/Cc	WR/Sr			WN/IL	R-87
	O	carb-hstd	contact	replac	Cu skn	18b	CS/Vl	WR/Tg	K	125 Ma	WN/IL	H
	O	carb-hstd	contact	replac	Cu skn	18b	CS/Vl	WR/Tg	K	125 Ma	WN/IL	H
	O	carb-hstd	contact	replac	Cu skn	18b	CS/Vl	WR/Tg	K	125 Ma	WN/IL	H
JDG	O	scht-hstd	crs-cuting	vein	Pm-MV	22c	YR/Kn	YT	Pz	K	TB	R-89
TD	M	scht-hstd	shear zn	qz vein	Pm-MV	22c	YR/Kn	YT	Pz	K	TB	81.1
MD	M	granite	breccia	qz vein	Pm-MV	22c	YR/Kn	YT	K	K	HK	R-87
	O	mvol-hstd	stratiform		K-VMS	28a	YR/Kn	YT	M		TB	INS
	O	scht-hstd	crs-cuting	qz vein	Pm-MV	22c	YR/Kn	YT	Pz	K	TB	H
	Mu	scht-hstd	breccia	qz vein	Pm-MV	22c	YR/Kn	YT	Pz	K	USNM	H
JDG	O	scht-hstd	fault-zn	vein	Pm-MV	22c	YR/Kn	YT	Pz	K	TB	R-89
	O	scht-hstd	shear zn		St-MV	27d	YR/Kn	YT	Pc	K	TB	H
TD	P	scht-hstd	shear zn	qz vein	Pm-MV	22c	YR/Kn	YT	Pz	K	TB	81.1

Table 4. Lead isotope data from sulfide occurrences from southern Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
MOUNT McKINLEY--(cont.)							
Lloyd prospect	30592	63 34 30	150 45 20	py, sl, cp, gn (14000 ppm Pb)			
Lloyd Prospect	87KC14	63 34 30	150 45 20	sl, py, gn (110 ppm Pb)	18.739	15.640	38.490
Mt. Erelson	E83-GC (HH)	63 23 25	150 19 58	GN, sl, cp, cal, ep			
Saddle	75ASTSADDLE	63 33 45	150 48 15	py, cp, sulfosalts	19.123	15.674	39.132
Slate Creek	75AST2920	63 29 00	151 04 00	st, asp, sl, gn			
Spruce Peak	88RN05	63 35 20	150 43 30	py, asp, gn, sl, Au	18.113	15.649	38.175
Stampede	75AST1503	63 44 30	150 22 15	st, sl, sulfosalts			
Stampede	OD24151	63 45	150 25	st, Au			
USBM Galena	DDH17 (236')	63 32 15	150 50 58	GN, asp, py, tt	19.089	15.643	38.853
USBM Jupiter-Mars	DDH12 (226')	63 33 25	150 53 00	GN, sl, py, lm	19.125	15.665	38.894
USBM Jupiter-Mars	DDH12 (267')	63 33 25	150 53 00	GN, sl, py, lm			
USBM Jupiter-Mars	DDH16 (165')	63 33 15	150 53 45	GN, tt, asp, py, lm	19.119	15.637	38.795
USBM Little Maud	DH5 (46-50')	63 62 30	150 57 20	GN, asp, py, lm			
Weiler	87BTWE	63 33 25	150 51 05	GN, tt, ank	19.040	15.683	38.940
NABESANA							
Bond Creek	many	62 13	142 44	cp, py			
Nebesna Mine	83BT120	61 22 28	143 01 15	cp, py, mt, ep, gypsum			
Orange Hill	many	62 14 30	142 51 00	cp, mly, py			
Rambler	84AIL068A	62 23 00	143 03 00	mt, cp, py			
Sultzer Prospect	SNP	62 06 30	142 30	cp, ml			
SELDOVIA							
Nuka-Beauty Bay	NBB	59 33	150 40	asp, gn	18.952	15.603	38.594
Port Dick	OD23723	59 19	151 20	bn, cp	18.893	15.595	38.508
SEWARD							
Beatson	81AKK008B	60 30 15	147 53 40	po, cp, py	19.125	15.652	38.883
Beatson	BTS-2	60 30 15	147 53 40	po, cp (80 ppm Pb)	19.090	15.638	38.808
Beatson	LC4471	60 02 50	146 54	po	19.109	15.632	38.799
Beatson	LC4567	60 02 50	147 54	cp	19.057	15.618	38.713
Beatson	LC4568	60 02 50	147 54	py, cp	19.062	15.615	38.711
Beatson	Lt1003	60 02 50	147 54	cp, sl	19.111	15.650	38.834
Beatson	Lt1015	60 02 50	147 54	cp	19.056	15.611	38.693
Bird Point	SD81009R	60 55 40	148 21 30	asp, po, GN	18.996	15.628	38.719
Cedar Bay	CB-1	60 57 25	147 22 30	cp, asp, sl, po (3000 ppm Pb)	19.096	15.635	38.759
Culross Mine	338G	60 44 10	148 10 25	gn, sl, py, Au (220 ppm Pb)	19.005	15.620	38.662
Four-mile	PB-1	60 10 25	149 26 40	sl, cp, po, GN, Au	18.989	15.621	38.659
Granite Mine	GR-1	60 58 15	148 12 30	py, GN, sl, po, asp, st, cp, Au	18.920	15.600	38.567
Hirshey-Carlson	HC	60 47 45	149 31 50	asp, GN, sl, Au	19.065	15.649	38.824
Kenai Star	KS-1	60 49 25	149 30 55	GN	19.058	15.644	38.813
Lucky Strike	LS-1	60 46 40	149 33 10	sl, asp, py, GN, Au, ank	19.065	15.645	38.811
Lynx Creek	81BS115H	60 40 20	149 19 30	py, cp (140 ppm Pb)	18.561	15.517	38.134
Oracle	81BS113AA	60 36 45	149 34 20	GN, asp, Au	19.009	15.626	38.720
Primrose	PR-7	60 19 40	149 25 00	asp, Au, GN, sl, py, cp, po	19.020	15.630	38.709

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
	O	scht-hstd	stratiform	dissem	K-VMS	28a	YR/Kn	YT	Pz	Pz	RN	A
JDG	O	scht-hstd	stratiform		K-VMS	28a	YR/Kn	YT	Pz	Pz	TB	R-89
	O	carb-hstd	ign-contact	vein	Pb-Zn skn	18c	CS/Vc	MK	Tr	38 Ma	AB	A
JDG	O	scht-hstd	stratiform		K-VMS	28a	YR/Kn	YT	Pz	Pz	TB	R-89
	O	scht-hstd	crs-cuting	qz vein	Pm-MV	22c	YR/Kn	YT	Pz	K	TB	H
CRC	O		stratabound		VH sulso	22a	YR/Kn	YT	Pz	Pz	RN	R-89
	O	scht-hstd	shear zn	qz vein	St-MV	27d	YR/KN	YT	Pz	eT	TB	H
	Mu	scht-hstd	crs-cuting	qz vein	St-MV	27d	Yr/Kn	YT	Pz	K	SM	H
JDG	C	msd-hstd	breccia	qz vein	Pm-MV	22c	YR/Kn	YT	Pz	K	DGGS	R-89
JDG	C	msd-hstd	breccia	qz vein	Pm-MV	22c	YR/Kn	YT	Pz?	K	DGGS	R-89
	C	msd-hstd	breccia	qz vein	Pm-MV	22c	YR/Kn	YT	Pz?	K	DGGS	A
JDG	C	msd-hstd	breccia	qz vein	Pm-MV	22c	YR/Kn	YT	Pz?	K	DGGS	R-89
	C	msd-hstd	breccia	qz vein	Pm-MV	22c	YR/Kn	YT	Pz?	K	DGGS	A
JDG	O	scht-hstd	stratiform	qz vein	Pm-MV	22c	YR/Kn	YT	Pz	K	TB	R-89
	C	grndiorite	stockwork	dissem	Porp	21a	YR/Cs	Cz	P	K	DGGS	H
	O	qz diorite	ign contact		Cu skn	18b	YR/Cs	WR	Tr	108 Ma	TB	H
	C	qz diorite	stockwork	dissem	Porp	21a	YR/Cs	Cz	K	105 Ma	DGGS	H
	O	carb-hstd	contact	replac	Cu skn	18b	YR/Cs	Cz	lTr	K?	WN/IL	H
	O	volc-hstd	stratiform	massive	C-VMS	24a	YR/Cs	WR	Tr	Tr	TB	H
JDG	V	msd-hstd	shear zn	qz vein	mAu-V	36a	KP/Hm	CG	K	K-T	RG	R-89
JDG	Mu	msd-hstd	stockwork	vein	Replc	19a	KP/Hm	CG			SM	R-89
MD	O	sd-hstd	stratiform	massive	K-VMS	28a	CR/Pw	PW	Te	Te	RK	R-87
MD	O	sd-hstd	stratiform	massive	K-VMS	28a	CR/Pw	PW	Te	Te	RG	R-87
JDG	Mu	sd-hstd	stratiform	massive	B-VMS	28b	CR/Pw	PW	Te	Te	MIT	R-89
JDG	Mu	sd-hstd	stratiform	massive	B-VMS	28b	CR/Pw	PW	Te	Te	MIT	R-89
JDG	Mu	sd-hstd	stratiform	massive	B-VMS	28b	CR/Pw	PW	Te	Te	MIT	R-89
JDG	Mu	sd-hstd	stratiform	massive	B-VMS	28b	CR/Pw	PW	Te	Te	HC	R-89
JDG	Mu	sd-hstd	stratiform	massive	B-VMS	28b	CR/Pw	PW	Te	Te	HC	R-89
MD	M	msd-hstd	shear zn	opn-sp fil	mAu-V	36a	CS/An	CG	Te		RT	R-87
MD	O	granite	shear zn	qz vein	Pm-MV	22c	CR/Pw	PW	Te	Te	RG	R-87
MD	M	mvol-hstd	shear zn	qz vein	mAu-V	36a	CR/Pw	PW	To	35 Ma	MS	R-87
MD	M	msd-hstd	shear zn	opn-sp fil	mAu-V	36a	KP/Hp	CG	Te		RG	R-87
MD	M	granite	shear zn	opn-sp fil	mAu-V	36a	CR/Pw	CG	Te		RG	R-87
MD	M	msd-hstd	shear zn	opn-sp fil	mAu-V	36a	KP/Hp	CG	Te		RG	R-87
MD	M	felsic dike	fract zn	qz vein	mAu-V	36a	KP/Hp	CG	Te	Te	RG	R-87
MD	M	msd-hstd	shear zn	opn-sp fil	mAu-V	36a	KP/Hp	CG	Te		RG	R-87
MD	O	sd-hstd	stratabound	massive	B-VMS	28b	CR/Pw	CG	Te	Te	MS	R-87
MD	M	felsic dike	fract zn	qz vein	mAu-V	36a	KP/Hp	CG	Te	Te	MS	R-87
MD	M	msd-hstd	shear zn	opn-sp fil	mAu-V	36a	KP/Sw	CG	Te		RG	R-87

Table 4. Lead isotope data from sulfide occurrences from southern Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	^{206}Pb / ^{204}Pb	^{207}Pb / ^{204}Pb	^{208}Pb / ^{204}Pb
SEWARD--(cont.)							
Rua Cove	81AKK006M	60 21 10	147 38 40	po (10 ppm Pb)	19.164	15.618	38.665
Rua Cove	RC-34	60 21 10	147 38 40	po	19.023	15.612	38.635
Rua Cove	RC2829	60 21 10	147 38 40	po, cp	19.008	15.601	38.589
Rua Cove	RC2926	60 21 10	147 38 40	py, cp	19.075	15.608	38.598
Schoonover	OD91384	60 17 30	149 26	cp, gn, asp, sl	19.002	15.620	38.647
Shell Mine	81BS116BB	60 40 20	149 32 30	gn, lm (1800 ppm Pb)	19.041	15.635	38.758
TALKEETNA							
Boulder Creek	73AR127	62 54	150 09	GN	19.129	15.643	38.874
Boulder Creek	73AR144	62 54	150 09	GN	19.146	15.654	38.918
Dall skarn	TCS-1	62 35 45	152 13	cp			
Mt. Foraker	MF-1	62 44 45	151 49 45	mly			
Shellabarger Pass	AGC233	62 33 30	152 47 30	gn, cp, sl	18.723	15.578	38.216
Shellabarger Pass	AGC182	62 33 30	152 47 30	gn, cp, sl	18.734	15.578	38.216
Shellabarger Pass	AGC197	62 33 30	152 47 30	gn, cp, sl	18.746	15.603	38.292
Shellabarger Pass	AGC200	62 33 30	152 47 30	gn, cp, sl	18.740	15.594	38.229
Shellabarger Pass	AGC232	62 33 30	152 47 30	gn, cp, sl	18.727	15.581	38.229
TALKEETNA MOUNTAINS							
	# 88, OFR 78	62 16	149 25				
Coal Creek	many	62 59	149 50	cs, sl, po, asp, gn, tp, tu			
VALDEZ							
Donohue	Donohue	61 11 50	146 11 45	GN, sl, Au	19.049	15.642	38.762
Hubbard-Elliott	OD20613	61 39 15	144 04	bn, cp, ml (N20 ppm Pb)			
Mayfield	MA-1	61 09 30	146 48 00	py, cp, GN, sl, asp, Au	18.939	15.610	38.644
Midas Mine level 3	MI-20	61 00 40	146 16 00	cp, py	19.113	15.636	38.745
Upper Millionaire	UM	61 13 10	146 21 30	GN, sl, Au	18.937	15.618	38.668

Analyst	Sample Source	Deposit Characteristics			Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
		host rock	structure	texture								
MD	O	ophiolite	lens	massive	C-VMS	24a	CR/Pw	PW	Te	Te	RK	R-87
JDG	M	ophiolite	lens	massive	C-VMS	24a	CR/Pw	PW	Te	Te	SN	R-89
JDG	M	ophiolite	lens	massive	C-VMS	24a	CR/Pw	PW	Te	Te	USBM	R-89
JDG	M	ophiolite	lens	massive	C-VMS	24a	CR/Pw	PW	Te	Te	USBM	R-89
JDG	Mu	sd-hstd	crs-cuting	qz vein	mAu-V	36a	KP/Sw	CG	Te		SM	R-89
MD	M	felsic dike	fract zn	qz vein	mAu-V	36a	KP/Hp	CG	Te	Te	MS	R-87
MD/BD	O	granite		vein	Pm-Sn MV	20b	YR/Kn	YT			BR	R-87
MD/BD	O	granite		vein	Pm-Sn MV	20b	YR/Kn	YT			BR	R-87
	P	carb-hstd		replac	Cu skn	18b	CS/Yn	MY		65 Ma	CH	H
	O	dunite		qz vein	L-F Mo	21b	CS/Yn	MY		36 Ma	SN	H
JDG	O	msd-hstd	stratiform	massive	C-VMS	24a	KR/Mg	DL	1D	1D	RASS	R-89
JDG	O	msd-hstd	stratiform	massive	C-VMS	24a	KR/Mg	DL	1D	1D	RASS	R-89
JDG	O	msd-hstd	stratiform	massive	C-VMS	24a	KR/Mg	DL	1D	1D	RASS	R-89
JDG	O	msd-hstd	stratiform	massive	C-VMS	24a	KR/Mg	DL	1D	1D	RASS	R-89
JDG	O	msd-hstd	stratiform	massive	C-VMS	24a	KR/Mg	DL	1D	1D	RASS	R-89
		grndiorite		dissem	Porp	21a	CS/Yn	WR	K-T	K-T	RASS	H
	C	granite	stockwork	qz vein	Greisen	15c	CS/Vl	WF	52 Ma	52 Ma	NG	H
MD	M	msd-hstd	shear zn	opn-sp fil	mAu-V	36a	CR/Pw	CG	Te		RG	R-87
	Mu				Pm-MV	22c	CR/Cc	WR			SM	H
MD	M	msd-hstd	shear zn	opn-sp fil	mAu-V	36a	CR/Pw	CG	Te		RG	R-87
MD	M	msd-hstd		massive	K-VMS	28a	CR/Pw	CG	K	K	SN	R-87
MD	M	msd-hstd	shear zn	opn-sp fil	mAu-V	36a	CR/Pw	CG	Te		RG	R-87

Table 5. Lead isotope data from sulfide occurrences from southwestern Alaska

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
CHIGNIK							
Bee Creek	many	56 30	158 24	cp, mly, py, gn, asp			
Chignik A-2	83AWS57C	56 00 03	158 38 16	(1500 ppm Pb)			
Warner Bay	77AWS87A	56 09 40	158 24 15	GN, cp, sl, mly	18.894	15.544	38.398
GOODNEWS							
Kisogle Mtn	KW20130P	59 21 30	161 09 45	(280 ppm Pb)			
Kisogle Mtn	KW20131P	59 21 40	161 09 45	(280 ppm Pb)			
Snow Gulch	KW20148R	59 34 34	161 24 30				
Snow Gulch	KW20153R	59 33 55	161 24 15	rk			
Snow Gulch	KW20159R	59 33 55	161 24 45				
Tatlignagpeke Mtn	AAGDS-6682	59 21 50	161 27 45	(102 ppm Pb)			
Togiak River	74AHr140	59 18 10	160 10 30	sl, py			
Wattamuse Cr	#69-70	59 20	161 14 30	Au			
Wattamuse Cr	AAGDS-6667	59 20	161 14 30	(784 ppm Pb)			
HAGEMEISTER ISLAND							
Security Cove	AAGDS-6672	58 39 30	161 57	(3500 ppm Pb)			
ILIAMNA							
Battle Lake	K4100RA	59 06 30	154 52 30	bn, ch, lm, Au (500 ppm Pb)			
McNeil Prospect	K3606RC	59 08 30	154 39 00	cp, py, asp, sl, gn (200 ppm Pb)			
Paint River/Crevice Crk	DDH1 (193')	59 08 20	154 39 00	sl, GN			
KARLUK							
Cape Kubugakli	Ug86001	57 53 15	155 04 15	tt (50 ppm Pb)			
LAKE CLARK							
Glacier Fork	LC-16F	60 51	153 14	cp, sl, gt, px			
Kasna Cr	EMC-KC	60 10	154 03 30	st, lm, py			
Kasna Cr	LC-46	60 10	154 03 30	mt, cp, hm, gt, px			
Saddle Prospect		60 42 10	154 35 30	tt, asp			
MOUNT KATMAI							
Cape Douglas	K3604RB	58 40 55	153 52 15	py, sl, gn (200 ppm Pb)			
KL Prospect	K3607RB	58 54 12	154 53 20	py, gn, sl (200 ppm Pb)			
KL Prospect	K3608RB	58 54 21	154 54 12	py, gn, sl (300 ppm Pb)			
KL skarn	K3610RD	58 49 09	154 53 20	sl, asp, gn (300 ppm Pb)			
Kulik Lake	K4574RA	58 56 32	154 45 50	py, tt (300 ppm Pb)			
Margot Cr	K3414CM	58 16 13	155 26 27	GN (300 ppm Pb)			
Mt. Griggs	K3408RD	58 19 11	155 00 05	GN, py, sl, tt			
Walatka Mtns	K3505RC	58 53 23	154 58 25	GN, py, cp, ep (30 ppm Pb)			

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
	C	diorite	stockwork	dissem	Porp	21a	AP	Cz	J	3.5 Ma	JH/FW	H
	O	sd-hstd	crs-cuting	qz vein	Porp	21a	AP	Cz	J	6-10 Ma	FW	H
ALH/BD	O	sd-hstd	breccia	vein	Porp	21a	AP	Cz	J	6-7 Ma	FW	83.4
	conctr	soil			Plc-Au	39a	KR/Gb	GB	Mz	K	USBM	H
	soil	soil			Plc-Au	39a	KR/Gb	GB	Mz		USBM	H
	O	amphibolite		dissem			KR/Gb	KIL	Pz		USBM	H
	O	gneiss						KIL	Pc		USBM	H
	R	diorite			rock		KR/Gb	KIL			USBM	H
	O	basalt					KR/Gb	GD	J	J	USBM	H
	O			vein	Pm-MV	22c	BB	TG	J-K		RASS	H
	Cr				Plc-Au	39a	KR/Gb	GD	Mz	Q	USBM	H
	soil						KR/Gb	GD			USBM	H
	O	felsic					KR/Gb	GD	Pz	Pz	USBM	H
	P	volc-hstd	shear zn	qz vein			BB	Cz			SC	H
	P	sd-hstd	lens	replac	Cu skn	18b	BB	Cz	J		SC	H
	C	sd-hstd	crs-cuting	qz vein	Cu skn	18b	BB	Cz	J		DGGS	H
	O	grndiorite	shear zn	opn-sp fil	Pm-MV	22c	BB	Cz	Tm	15 Ma	SC	H
	O	carb-hstd	contact	replac	Cu skn	18b	BB	KH	Tr	K	DC	H
	O	carb-hstd	ign contact	replac	Fe skn	18d	BB	KH	Tr	K	EMK	H
	O	carb-hstd	contact	replac	Fe skn	18d	BB	KH	Tr	K	DC	H
	O	msd-hstd	shear zn	qz vein	Pm-MV	22c	BB	KH	T	T	TB	H
	O	grndiorite	stringers	qz vein	Porp	21a	BB	Cz			SC	H
	O	grndiorite	stringers	opn-sp fil	Porp	21a	BB	Cz			SC	H
	P	msd-hstd	crs-cuting	qz vein			BB	Cz			SC	H
	O	msd-hstd		replac	Cu-skn	18b	BB	Cz	J		SC	H
	R	volc-hstd		vein	Pm-MV	22c	BB	Cz			SC	H
	O	grndiorite		dissem	Porp	21a	BB	Cz			SC	H
	R	grndiorite		vein	Porp	21a	BB	Cz	Cz		SC	H
	O	qtz diorite	magmatic	dissem	Porp	21a?	BB	PE	J		SC	H

Table 5. Lead isotope data from sulfide occurrences from southwestern Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	^{206}Pb / ^{204}Pb	^{207}Pb / ^{204}Pb	^{208}Pb / ^{204}Pb
PORT MOLLER							
Apollo Mine	PMF089R2	55 11 37	160 33 20	GN			
Moss Cape	83AJM607	55 08 38	161 57 35	(100 ppm Pb)			
Mud Bay	85AWS281C	55 43 46	160 30 47	GN			
PM C-4	84AYB671A	55 36 24	161 05 57	py (100 ppm Pb)			
Pyramid	83ADT118	55 37 49	160 44 19	(300 ppm Pb)			
Susie adit	82AWS50A	55 17 28	160 28 25	cp, sl, py (10,000 ppm Pb)			
RUSSIAN MISSION							
Mission Creek	85BT184	61 38 50	159 07	asp, cp, tt, po, tu			
SLEETMUTE							
Red Devil	87BT21	61 45 30	157 19 05	cn, st, realgar			
STEPOVAK BAY							
Mitrofania Island	84AGE11C	55 50 58	158 52 54	(300 ppm Pb)			
SB C-5	83AWS86B	55 42 14	159 32 53	(100 ppm Pb)			
TYONEK							
Trimble Glacier		61 44	152 05	mly, py			
UGASHIK							
David Island	Ug86005	57 01 35	156 29 27	py (50 ppm Pb)			
Kilokak Cape	80CE154	57 11 20	156 20 11	(200 ppm Pb)	18.140	15.584	37.851
Mike	79DT45B	57 03 07	157 15 24	py, mly (55 ppm Pb)			
Mike	Ug86031	57 03 00	157 16 15	asp, sl (100 ppm Pb)			
Rex	79CE40	57 14 23	157 02 35	GN, py, mly (140 ppm Pb)	18.909	15.594	38.522
Rex	Ug86018	57 14 10	157 04 35	GN, sl (300 ppm Pb)			
UNALASKA							
Hague Mine	OD23712	54 51 25	166 32 50	GN, sl, py	18.746	15.545	38.254

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
	M	volc-hstd	crs-cuting	vein	Pm-MV	22c	AP	Cz	To	To-Tm	JF	A
	O	volc-hstd	crs-cuting	qz vein	Pm-MV	22c	AP	Cz	Tm	3 Ma	FW	H
	O	sd-hstd	crs-cuting	qz vein	Pm-MV	22c	AP	Cz	To-Te	Tm	FW	H
	O	volc-hstd	crs-cuting	qz vein	Pm-MV	22c	AP	Cz	Cz	Tp/Q?	FW	H
	O	sd-hstd	crs-cuting	qz vein	Porp	21a	AP	Cz	K-Te	6 Ma	FW	H
	D	volc-hstd	crs-cuting	vein	Pm-MV	22c	AP	Cz	To	To	FW	H
	O	monzonite	joints	qz vein	Pm Sn-MV	20b	YR/An	K	70 Ma	70 Ma	TB	H
	R		shear zn	qz lens	HS-Hg	27a	YR/An		K	K	TB	H
	O	volc-hstd	crs-cuting	qz vein	Pm-MV	22c	AP	Cz	Tm	6-10 Ma	FW	H
	O	volc-hstd	shear zn	opn-sp fil	Pm-MV	22c	AP	Cz	To	To?/Tm?	FW	H
	O	granite	qz vein		H-F Mo	16	CS/Yn			T	EMK	H
	O	volc-hstd	lens	massive	VH sulso	22a	AP	Cz	Cz	3-5 Ma	SC	H
MD	O	sd-hstd	crs-cuting	vein	Pm-MV	22c	AP	PE	J	30 Ma	RASS	R-87
	O	granite	stockwork	veinlet	L-F Mo	21b	AP	Cz	K	2 Ma	RASS	H
	O	granite	stockwork	veinlet	L-F Mo	21b	AP	Cz	K	2-4 Ma	SC	H
MD	O	grndiorite	stockwork	veinlet	Porp	21a	AP	Cz	K-Te	34-38 Ma	RASS	R-87
	O	grndiorite	stockwork	veinlet	Porp	21a	AP	Cz	K-Te	34-38 Ma	SC	H
JDG	Mu	grndiorite		qz vein	Porp	21a	AI		T	T	SM	R-89

Table 6. Lead isotope data from sulfide occurrences from southeastern Alaska

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
BRADFIELD CANAL							
Sunset Mine	NMNH77702	56 01	130 13	GN, py			
CRAIG							
Beauty Claim	OD20611	55 08 30	132 05	tt, cp, py			
Big Harbor	OD20607	55 22	132 58	cp			
Copper City (Red Wing)	NMNH76567	55 08	132 27	cp, sl, gn			
Copper Mtn	NMNH91391	55 14	132 37	mly			
Copper Queen	NMNH76558	55 32	132 23	py, mt			
Coronation Is	NMNH91335	55 55	134 21	GN			
Cymru Mine	LC4480	55 08	132 12				
Green Monster	OD20604	55 15	132 32	cp, bn			
Khayyam (Omar Mine)	LC4478	55 18	132 23				
Lucky Boy	NMNH91334	55 09	132 14	GN, sl, py			
Mahoney Mine	NMNH91389	55 26	131 31	GN, sl, py			
Mamie	LC4484	53 31	132 17	cp			
Mamie	NMNH76550	53 31	132 17	cp			
Moonshine	84ASh50	55 10 24	132 22 55	GN, cr			
Niblack	LC4476	55 04	132 09	py			
Niblack	Niblack	55 04	132 09	py			
Niblack Anchorage	NMNH91348	55 04	132 09	cp			
Poorman Mine	LC4485	55 34	132 26	cp			
Ruby Tuesday	71L88a	55 12 45	132 19 30				
Ruby Tuesday	RT-1,2	55 12 45	132 19 30	sl, gn, cp			
Rush & Brown	NMNH89958	55 37	132 35	cp			
Salt Chuck	87GH43A	55 38	132 33	bn, mg			
Salt Chuck	NMNH77703.0002	55 38	132 33	bn			
Sulzer Mine	NMNH77410	55 15	132 32	cp, mly			
Sulzer Mine	NMNH89959	55 15	132 32	cp, py			
DIXON ENTRANCE							
Bokan Mtn (Cheri)	SE24238	54 55	132 10	gn(?), REE			
Dotsun Dike	SE21489	54 54 30	132 07	qz, REE			
Polsin and Ickson	SE24627	54 47 22	132 52 58	cp, py			
JUNEAU							
Alaska Juneau Mine							
South Pit	79GD-1	58 18 30	134 21	GN	19.572	15.687	38.898
South Pit	AJ-3759	58 18 30	134 21	GN	19.544	15.646	38.724
South Pit	AJSP-3	58 18 25	134 21	GN	19.539	15.655	38.775
Level 4, 400 Stope	AJ-3756	58 18 30	134 21	GN	19.558	15.662	38.819
Level 4, 400 Stope	AJ-3757	58 18 30	134 21	GN			
Level 4, 400 Stope	AJ-3758	58 18 30	134 21	GN			
Level 6, 800 Stope	AJ-3853	58 18 30	134 21	GN			
Level 6, 91 Winze	AJ-3852	58 18 30	134 21	GN			
L-6 Silver Bow fault	AJ-3851	58 18 30	134 21	GN			

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
	Mu	grndiorite		qz vein	Pm-MV	22c	SE/Hy	TA			USNM	A
	Mu	carb-hstd	crs-cuting	qz vein	Pm-MV	22c	SE/Kt	AXC			SM	H
	Mu	scht-hstd	stratiform	massive	K-VMS	28a	SE/Kt	AXC	Pz		SM	H
	Mu	mvol-hstd	stratiform	massive	K-VMS	28a	SE/Kt	AXC			USNM	H
	Mu	ls/diorite	ign contact	replac	Cu skn	18b	SE/Kt	AXC			USNM	H
	Mu	mvol/synite	ign contact	massive	Cu skn	18b	SE/Kt	AXC			USNM	H
	Mu	carb-hstd	ign contact	qz vein	Pb-Zn skn	18c	SE/Ku	AXC			USNM	A
	Mu	carb-hstd	crs-cuting	replac	Pm-MV	22c/19a	SE/Kt	AXC			MIT	H
	Mu	msd/grndiorite	ign contact	massive	Cu skn	18b	SE/Kt	AXC			USNM	H
	Mu	msd/diorite	ign contact	massive	Cu skn	18b	SE/Kt	AXC			MIT	H
	Mu	scht-hstd	breccia	qz vein	Pm-MV	22c	SE/Kt	AXC			USNM	A
	Mu	scht/granite	magmatic	qz vein	Pm-MV	22c	SE/Kt	TUS			USNM	A
	Mu	mvol/diorite	crs-cuting		Pm-MV	22c	SE/Kt	AXC			MIT	H
	Mu	mvol/diorite	crs-cuting		Pm-MV	22c	SE/Kt	AXC			USNM	H
	O	carb-hstd			Pb-Sn skn	18c	SE/Kt				DG	H
	Mu	mvol-hstd	stratiform	massive	K-VMS	28a	SE/Kt	AXC	Pz	Pz	MIT	H
	M	scht-hstd	stratiform	massive	K-VMS	28a	SE/Kt	AXC	Pz	Pz	LY/JA	H
	Mu	scht-hstd	stratiform	massive	K-VMS	28a	SE/Kt	AXC	Pz	Pz	USNM	H
	Mu	mvol-hstd		massive	K-VMS	28a	SE/Kt	AXC			MIT	H
	O	scht-hstd	stratiform	massive	K-VMS	28a	SE/Kt	AX		Pz	TB	H
	M	scht-hstd	stratiform	massive	K-VMS	28a	SE/Kt	AXC	Pz	Pz	LY	H
	Mu	mvol-hstd			Cu skn	18b	SE/Kt	AXC			USNM	H
	D	ultramafic	magmatic	zoned	UM Cu	6b	SE/Kt	AXC	429 Ma	429 Ma	RL	H
	Mu	ultramafic	magmatic	zoned	UM Cu	6b	SE/Kt	AXC			USNM	H
	Mu	ls/diorite	ign contact	massive	Cu skn	18b	SE/Kt	AXC			USNM	H
	Mu	ls/diorite	ign contact	massive	Cu skn	18b	SE/Kt	AXC			USNM	H
	O	dike	ign contact	dissem			SE/Kt	AXC	J		JCB	H
		diorite					SE/Kt				JCB	H
							SE/Kt				JCB	H
HS	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	DG	R-87
KM	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	R-87
KM	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	TL	R-87
KM	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	R-87
	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	H
	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	H
	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	H
	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	H
	M	msd-hstd	shear zn	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	H

Table 6. Lead isotope data from sulfide occurrences from southeastern Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
JUNEAU--(cont.)							
Alaska Juneau Mine--(cont.)							
Level 7, 800 Stope	AJ-3848	58 18 30	134 21	GN			
Level 7, 830 Stope	AJ-3847	58 18 30	134 21	GN			
Level 8, 1000 Stope	AJ-3846	58 18 30	134 21	GN	19.553	15.676	38.845
Level 8, 53 Winze	AJ-3845	58 18 30	134 21	GN	19.553	15.674	38.820
Level 9, 1010 Stope	AJ-3844	58 18 30	134 21	GN	19.578	15.685	38.862
Alaskan Treasure	86RN38C	58 13 20	134 19 30	GN	18.425	15.510	37.924
Ascension	I-3763	58 16 52	134 18 38	GN	19.513	15.667	38.854
Ascension	I-3764	58 16 52	134 18 38	GN			
Ascension Mine	NMNH62217	58 16 52	134 29	GN			
Bessie	83EW36B	58 35 10	134 52 08	asp, py, sl gn, Au			
Comet	OD23708	58 51 25	135 04 50	gn, py			
E Pluribus Unum	83EW80A	58 35 56	134 48 22	asp, gn, py, sl, Au (7000 Pb)			
Funter Bay	NMNH91362	58 16	134 50	gn, py			
Glacier Mine	GM-3765	58 17 10	134 18 50	GN			
Greens Creek	83DB103	58 04	134 37	cp, gn, py			
Greens Creek	PS-27 (660')	58 04	134 37	cp, gn	18.670	15.610	38.449
Ground Hog	GH-3671	58 15	134 20	GN	19.545	15.663	38.796
Ground Hog	GH-3672	58 15	134 20	GN			
Jualin Mine	NMNH76553.0001	58 50 27	135 02 35	cp, gn, sl			
Mammoth	LC035	58 06 50	134 38 20	gn, sl, py, mar			
Mexican	OD22204	58 15 50	134 22 15	py			
Perseverance	P-3670	58 18	134 20	GN	19.535	15.65	38.748
Reagan	R-3766	58 16 30	134 16 50	GN			
Savage	JA0124R	58 51 40	135 05 20	GN	18.898	15.579	38.299
Treadwell	87RN276	58 16 02	134 22 45	ak, gn, py	18.559	15.525	38.070
Treadwell	JA0143R9	58 15 42	134 22 10	cp, py	18.554	15.537	38.113
Treadwell	NMNH76554	58 16	134 22 40	sl, py, gn			
Treadwell (?? AJ ??)	OD22207	58 16	134 22 40	gn, py, sl, Au			
William Henry Bay	SE23969	58 45 40	135 15	py, gn, mly			
Willian Henry Bay	SE23937	58 45 40	135 15	py, gn, mly			
KETCHIKAN							
Caamano Pt	OD22147	55 31	131 58 30	st			
Laskawonda	NMNH76563	55 21	131 38	py, cp			
Quartz Hill	QH-1	55 24 30	130 37 30	mly			
Sea Level Mine	NMNH76570	55 22	131 11	py, gn, sl			
Tangas Mtn	NMNH91346	55 03	131 21	tt, cp			
War Eagle Mine	NMNH77690.0001	55 11	131 45	py, cp, Au			
PETERSBURG							
Castle Is	NMNH98310.0002	56 39 05	133 09 30	bar w/sulfides			
Glacier Basin	80DG010Z,10Y	56 29	132 01	GN, fl	19.218	15.638	38.781
Glacier Basin Silver	NMNH91331	56 29	132 01	GN	19.246	15.670	38.873
Helen S	79DG132A	56 34 11	133 04 03	sl, GN, py, asp			
Kupreanof Island	79DG135A	56 40 18	133 15 25	py, sl, GN, bar			

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	H
	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	H
KM	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	R-87
KM	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	R-87
KM	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	R-87
JDG	D	scht-hstd		dissem	K-VMS	28a	SE/Ju	GN	Mz	Mz	RN	R-89
KM	M	msd-hstd	concordant	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	R-87
	M	msd-hstd	concordant	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	H
	Mu	msd-hstd		qz vein	mAu-V	36a	SE/Ju	TU	Mz	55 Ma	USNM	A
	M	mvol-hstd	sheeted vein	qz vein	mAu-V	36a	SE/Ju	AXC	Mz	Ta-Te	RN	H
	Mu	diorite		qz vein	mAu-V	36a	SE/Ju	TU	lTr	lK-eCz	SM	H
	M	scht-hstd		qz/cal vein	mAu-V	36a	SE/Ju	AXC	Mz	Ta-Te	RN	H
	Mu			qz vein	mAu-V	36a	SE/Ju	AXA			USMN	H
	M	msd-hstd	concordant	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	H
	M	volc-hstd	stratiform	massive	K-VMS	28a	SE/Ad	AXA	P-Tr	P-Tr	DB	H
ALH	M	volc-hstd	stratiform	massive	K-VMS	28a	SE/Ad	AXA	P-Tr	P-Tr	DG	R-87
KM	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	R-87
	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	H
	Mu	diortie		qz/cal vein	mAu-V	36a	SE/Ju	TU	Mz	lK-eCz	USNM	H
	Mu	mvol-hstd		qz vein	mAu-V	36a	SE/Ju	TU	Mz		MIT	H
	Mu	scht-hstd	crs-cuting	dissem	mAu-V	36a	SE/Ju	TU	l Tr	lK-eCz	SM	H
KM	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	R-87
	M	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	55 Ma	ER	H
MD	P	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	lTr	Te	TL	R-87
JDG	M-O	diorite/monz		dissem	mAu-V	36a	SE/Ju	TU	Mz	lK-eCz	RN	R-89
MD	O	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	Mz	55 Ma	TL	R-87
	Mu	diorite		dissem	mAu-V	36a	SE/Ju	TU	Mz	lK-eCz	USMN	A
	Mu	mvol/diorite	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	Mz	lK-eCz	SM	H
	R	scht/syenite	crs-cuting	cal vein	Pm-MV	22c	SE/Ju	AXC	Pz		JCB	H
	P	scht-hstd	crs-cuting	cal vein	Pm-MV	22c	SE/Ju	AXC	Pz		JCB	H
	Mu	scht-hstd	breccia	cal vein	St-MV	27d	SE/Kt	TU			SM	H
	Mu	scht-hstd	crs-cuting	qz vein	Pm-MV	22c	SE/Kt	AXN			USNM	H
	P	grndiorite	stockwork	qz vein	L-F Mo	21b	SE/Kt				JA	H
	Mu	mvol-hstd		qz vein	Pm-MV	22c	SE/Kt	TUS	Mz-Pz		USNM	H
	Mu	ls/granite	ign contact	vein	Cu skn	18b	SE/Kt	AXN			USNM	H
	Mu	mvol-hstd	crs-cuting	qz vein	Pm-MV	22c	SE/Kt	AXN			USNM	H
	Mu	sd-hstd	stratiform	massive	B Bar	31b	SE/Ku	AXA	Pz	Pz	USNM	H
JDG	O	granite		qz vein	Pm-MV	22c	SE/Pb	AXA	T	Cz	DG	R-89
JDG	Mu	granite		qz vein	Pm-MV	22c	SE/Pb	AXA	T	T	USNM	R-89
	D	mvol-hstd	stratabound	dissem	K-VMS	28a	SE/Kp	AXA	lTr	lTr	DG	A
	O	volc-hstd	stratiform	massive	K-VMS	28a	SE/Kp	AXA	lTr	lTr	DG	A

Table 6. Lead isotope data from sulfide occurrences from southeastern Alaska--(cont.)

QUADRANGLE Locality Name	Sample No.	Latitude	Longitude	Sample Mineralogy	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{204}Pb$	$^{208}Pb/^{204}Pb$
PETERSBURG--(cont.)							
Maid of Mexico	79DG141A	56 33 54	133 01 57	GN, sl			
Salmon Bay	79DG070A	56 19 12	133 10 06	GN, REE & U, Th-rich min.			
St Johns Harbor	79DG102E	56 25 07	132 57 13	py, cp, sl, gn			
Taylor Creek	79DG136A	56 47 38	133 21 45	py, GN, sl			
Trokna Silver	NMNH77732	56 29	132 01	GN	19.256	15.657	38.862
Zarembo Quarry	79DG073F	56 22 56	132 53 53	GN, py, cp, sl			
PORT ALEXANDER							
Cache Mine (Stewart)	NMNH9882	56 59	135 06	py			
Cornwallis Point	EMK-CP	56 55 45	134 13	bar, witherite			
Halway & Millstick Mine	NMNH34413	56 59	135 07	asp			
Julia Mine, Silver Bay	NMNH62219.0002	56 59	135 08	GN			
SITKA							
Bohemia Basin		57 59 05	136 27 01	po, cp, py			
Bohemia Basin, Yakobi Is	USBM-BB	57 59 05	136 27 01	cp, py, pn, po			
Chichagof	chv	58 40	136 05 30	GN			
Mirror Harbor Mine	OD20646	57 47 30	135 19	cp			
Patty	DDH1:110	57 33 30	134 03 20	GN			
Patty	DDH2:110	57 33 30	134 03 20	GN			
Patty	DDH2:50,67	57 33 30	134 03 20	py, cp			
Pybus	DDH2:245	57 24	134 13 30	py, cp			
Pyrola	83EW053C	57 57 50	134 33 05	py, cp (700 ppm Pb)	18.568	15.603	38.299
Pyrola	PYR-1	57 57 50	134 33 05	py, cp	18.52	15.57	38.224
SKAGWAY							
12 Mile A	AJ7SV596	59 18 30	135 40	gn, cp (5000 Pb)			
Glacier Creek	GLC-1	59 24	136 23	py, cp, tt, mt, sl, gn	18.417	15.421	38.049
Golden Eagle	85BT52	59 21 03	136 12 30				
Upper Jarvis	84BT305	59 23 20	136 24 30				
Lower Jarvis	84BT340	59 25 25	136 23 10				
Lost Silver Ledge Mine	AJ5SV333	59 20 10	136 06 30	GN, sl, tt, cp			
Merril's Silver	J83-772	59 23	136 09	GN, tt			
Mt. Henry Clay	83DB110A	59 22	136 25	sl, py, cp	18.924	15.589	38.281
Wolf Den Mine	AJ7SV615	59 24	136 17	(645 ppm Pb)			
SUMDUM							
Point Astley	G7AHx	57 42 25	133 37 25	py, sl, gn, po, cp, cc, cv			
Point Astley	PTAS	57 42 25	133 37 25				
Sumdum Chief	88GB17	57 39	133 27	gn, asp, py, sl, cp			
Sweetheart Ridge	AHSR-7	57 55 25	133 37 15	sl, cp, GN	18.882	15.662	38.571
Sweetheart Ridge	HSR80-1	57 55 25	133 37 15	sl, cp, GN	18.963	15.671	38.646
Sweetheart Ridge	SW-4	57 55 25	133 37 15	sl, cp, GN	18.871	15.656	38.514

Analyst	Sample Source	Deposit Characteristics: host rock	structure	texture	Deposit Type	Model No.	USBM Region/ District	LTT	Age of Host	Age of Min.	Contr.	Publ. Pb Ref.
	D	msd-hstd	crs-cuting	qz vein	K-VMS?	28a	SE/Kp	AXA	lTr	lTr	DG	H
	O	alk-granite	crs-cuting	cal vein	Pm-MV	22c	SE/Kt	AXA			DG	H
	O	volc-hstd	lens	massive	K-VMS	28a	SE/Pb	AXA	lTr	lTr	DG	A
	O	msd-hstd	stratiform	dissem	K-VMS	28a	SE/Kp	AXA			DG	H
JDG	Mu	granite		qz vien	Pm-MV	22c	SE/Pb	AXA	T	T	USNM	R-89
	Q	msd-hstd	crs-cuting	qz vein	K-VMS?	28a	SE/Pb	AXA	lTr	lTr	DG	H
	Mu			qz vein	mAu-V	36a	SE/Ch	CG			USNM	H
	O	carb-hstd	karst	bedded	B Bar?	31b	SE/Kp	AXC	Pz		EMK	H
	Mu	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ch	CG			USNM	H
	Mu	msd-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ch	CG			USNM	A
	M	norite					SE/Ch					H
	M	norite	magmatic		Stwtr	1	SE/Ch	CG			JCB	H
	M	sh-hstd	fault zn	qz vein	mAu-V	36a	SE/Ch	CG	K	Te-Ta	RG	H
	Mu	norite	magmatic	massive	Stwtr	1	SE/Ch	CG			SM	H
	C	msd-hstd	crs-cuting	vein	K-VMS	28a	SE/Ad	AXA			DGGS	H
	C	msd-hstd	crs-cuting	vein	K-VMS	28a	SE/Ad	AXA			DGGS	H
	C	msd-hstd		dissem	K-VMS	28a	SE/Ad	AXA			DGGS	H
	C	msd-hstd		massive	K-VMS	28a	SE/Ad	AXA			DGGS	H
MD	O	msd-hstd	stratiform	dissem	K-VMS	28a	SE/Ad	AXA			DB	R-87
TD		msd-hstd	stratiform	dissem	K-VMS	28a	SE/Ad	AXA				84.1
	O	mvol-hstd	crs-cuting	qz vein	Pm-MV	22c	SE/Ju	AXC	Tr		JS	H
TD		vol-hstd	stratiform	massive	K-VMS	28a	SE/Ad	AXC	lTr	lTr		84.1
	O	sh-hstd	crs-cuting		Pm-MV	22c	SE/Ju	AX	D-M	Mz	TB	H
	O	scht-hstd	stratiform	massive	K-VMS	28a	SE/Ju	AX	Tr	Tr	TB	H
	O	scht-hstd	stratiform		K-VMS	28a	SE/Ju	AX	Tr	Tr	TB	H
	M	scht-hstd	crs-cuting	qz vein	Pm-MV	22c	SE/Ju	AXC			JS	H
	P	scht-hstd	crs-cuting	qz vein	Pm-MV	22c	SE/Ju	AXC	Pz		JS	H
MD	R	msd-hstd	stratabound	massive	K-VMS	28a	SE/Ad	AXC			DB	R-87
	O	mvol-hstd	stratbound	massive	K-VMS	28a	SE/Ju	AXC	Tr	Tr	JS	H
	O	msd-htsd	stratabound	dissem	K-VMS	28a	SE/Pb	TU	Tr?	Tr?	CH	H
	M	mvol-hstd	stratabound	massive	K-VMS	28a	SE/Pb	TU	Tr	Tr	AB	H
	M	scht-hstd	crs-cuting	qz vein	mAu-V	36a	SE/Ju	TU	Mz	55 Ma	RN	H
ALH	O	mvol-hstd	stratabound	dissem	K-VMS	28a	SE/Ju	TU			DB	R-87
ALH	O	msd-hstd	concordant	dissem	K-VMS	28a	SE/Ju	TU			DB	R-87
ALH	O	mvol-hstd	stratabound	massive	K-VMS	28a	SE/Ju	TU			DB	R-87

APPENDIX I

Summary of abbreviations used in Tables 1-6

SAMPLE MINERALOGY

ank	ankerite	ang	anglesite	asp	arsenopyrite
Au	gold	az	azurite	bar	barite
bg	boulangerite	bis	bismuthinite	bn	bornite
cal	calcite	cs	cassiterite	cr	cerussite
cc	chalcocite	cp	chalcopyrite	ch	chyrsocolla
cn	cinnabar	cv	covellite	dl	dolomite
en	enargite	ep	epidote	fl	fluorite
gn	galena	gt	garnet	hm	hematite
il	ilmenite	lm	limonite	mar	mariposite
mt	magnetite	ml	malachite	mly	molybdenite
pn	pentlandite	py	pyrite	pl	pyrolusite
px	pyroxene	po	pyrrhotite	qz	quartz
sch	scheelite	scr	scrodite	si	siderite
sl	sphalerite	st	stibnite	tn	tennantite
tp	topaz	tt	tetrahedrite	tu	tourmaline

SAMPLE SOURCE

Core	Dump	Mine	Museum
Outcrop	Prospect pit	Rubblecrop	Stream bed
Quarry			

DEPOSIT CHARACTERISTICS (abbreviations underlined)

Host rock terms

Igneous rocks	Sedimentary rocks	Metamorphic rocks
dacite	carbonate-hosted	marble-hosted
diorite	conglomerate-hosted	metasediment-hosted
dunite	sediment-hosted	metavolcanic-hosted
felsic	shale-hosted	schist-hosted
gabbro	sandstone-hosted	serpentine
granodiorite	limestone	
granite		
monzonite		
ophiolite		
tonalite		
ultramafic		

Structural terms

breccia	concordant	cross-cutting	gossan
ign. contact	lens	magmatic	podiform
shear zone	sheeted-dike	sheeted vein	stockwork
stratabound	stratiform	stringer	

Textural terms

banded	cumulate	disseminated	massive
replacement	vein	open-space filling	zoned

DEPOSIT-TYPES (after Cox and Singer, 1986)

Synonym	Model no.	Descriptive deposit names
DEPOSITS RELATED TO MAFIC AND ULTRAMAFIC INTRUSIONS		
Stwtr	1	Stillwater nickel-copper
Bush Cu	2a	Bushveld chromite
MR	2b	Mersensky Reef PGE
Bush	3	Bushveld Fe-Ti-V
Dul Cu	5a	Duluth Cu-Ni-PGE
Nor PGE	5b	Noril'sk Cu-Ni-PGE
Komat	6a	Komatiitic nickel-copper
UM Cu	6b	Dunitic nickel-copper
Volc Ni	7a	Synorogenic-synvolcanic nickel-copper
An-Ti	7b	Anorthositic titanium
Pod Cr	8a	Podiform chromite
LF Co	8c	Limassol Forest cobalt-nickel
Serp Ab	8d	Serpentine-hosted asbestos
Ak PGE	9	Alaskan PGE
DEPOSITS RELATED TO ALKALIC INTRUSIONS		
Carb	10	Carbonatite deposits
Dia	12	Diamond pipes
DEPOSITS RELATED TO FELSIC INTRUSIONS		
W-skn	14a	Tungsten skarns
Sn-skn	14b	Tin skarns
Rep Sn	14c	Replacement tin
W-MV	15a	Tungsten veins
Sn-MV	15b	Tin veins
Greisen	15c	Tin greisen
H-F Mo	16	Climax molybdenum
Porp Cu	17	Porphyry copper
Po Cu-skn	18a	Porphyry copper, skarn-related deposits
Cu-skn	18b	Copper skarns
Pb-Zn skn	18c	Lead-zinc skarns
Fe-skn	18d	Iron skarns
Carb Ab	18e	Carbonate-hosted asbestos
Replc	19a	Polymetallic replacement deposits
Rep Mn	19b	Replacement manganese
Porp Sn	20a	Porphyry tin
Pm Sn MV	20b	Tin polymetallic veins
Po Cu-Au	20c	Porphyry copper-gold
Porp	21a	Porphyry copper-molybdenum
L-F Mo	21b	Porphyry molybdenum, low-fluorine type
VH sulso	22a	Volcanic-hosted Cu-As-Sb
Pm-Te MV	22b	Au-Ag-Te veins
Pm MV	22c	Polymetallic veins
DEPOSITS RELATED TO SUBAERIAL MAFIC EXTRUSIVE ROCKS		
Bas Cu	23	Basaltic copper

DEPOSITS RELATED TO MARINE MAFIC EXTRUSIVE ROCKS

C-VMS	24a	Cyprus massive sulfide
B-VMS	24b	Besshi massive sulfide
Vol-Mn	24c	Volcanogenic manganese
BB-Co	24d	Blackbird cobalt-copper

DEPOSITS RELATED TO SUBAERIAL FELSIC TO MAFIC EXTRUSIVE ROCKS

HS-Au	25a	Hot-springs gold-silver
Crd MV	25b	Creede epithermal veins
Com MV	25c	Comstock epithermal veins
S-MV	25d	Sado epithermal veins
QA-Au	25e	Epithermal quartz-alunite gold
Vol U	25f	Volcanogenic uranium
Mn-MV	25g	Epithermal manganese
Rhy Sn	25h	Rhyolite-hosted tin
Vol Mt	25i	Volcanogenic-hosted magnetite
Carlin	26a	Carbonate-hosted gold-silver
HS-Hg	27a	Hot-springs mercury
Alm Hg	27b	Almaden mercury
SilC Hg	27c	Silica-carbonate mercury
St-MV	27d	Stibnite veins
Dis Sb	27e	Disseminated antimony deposits

DEPOSITS RELATED TO MARINE FELSIC TO MAFIC EXTRUSIVE ROCKS

K-VMS	28a	Kuroko massive sulfides
Alg Fe	28b	Algoma iron

DEPOSITS HOSTED IN CLASTIC SEDIMENTARY ROCKS

Cg-Au	29a	Quartz pebble conglomerate Au-U
OD-Cu	29b	Olympic Dam Cu-U-Au
ss Pb-Zn	30a	Sandstone-hosted lead-zinc
sd Cu	30b	Sediment-hosted copper
sd U	30c	Sandstone-hosted uranium
SEDEX	31a	Sedimentary exhalative zinc-lead
B Bar	31b	Bedded barite
Emer	31c	Emerald veins

DEPOSITS HOSTED IN CARBONATE ROCKS

SEM Pb-Zn	32a	SE Missouri lead-zinc
Apl Zn	32b	Appalachian zinc
Kip Cu	32c	Kipushi Cu-Pb-Zn

CHEMICAL-SEDIMENTARY DEPOSITS

Sup Fe	34a	Superior iron
sd Mn	34b	Sedimentary manganese
Up P	34c	Upwelling-type phosphate deposits
Warm P	34d	Warm-current-type phosphate deposits

DEPOSITS RELATED TO REGIONAL METAMORPHISM

mAu-V	36a	Low-sulfide gold-quartz veins
Home	36b	Homestake gold
Unc	37a	Unconformity uranium-gold
Au FF	37b	Gold on flat faults

DEPOSITS RELATED TO SURFICIAL PROCESSES AND UNCONFORMITIES

Lat Ni	38a	Lateritic nickel deposits
Baux	38b	Laterite-type bauxite deposits
Karst	38c	Karst-type bauxite deposits
Plc Au	39a	Placer gold-PGE
Plc PGE	39b	Placer PGE-gold
Plc Ti	39c	Shoreline placer titanium
Plc Dia	39d	Diamond placers
Plc Sn	39e	Alluvial placer tin

Other abbreviations used

FV	fissure vein of uncertain type
mV	metamorphic vein

U.S. Bureau of Mines (Abbreviations used for mining regions and districts; after Ransome and Kerns, 1954)

AP ALASKAN PENINSULA

AI ALEUTIAN ISLANDS

BS BERING SEA

BB BRISTOL BAY

CS COOK INLET-SUSITNA RIVER
- An Anchorage
- Rd Redoubt
- Vl Valdez Creek
- Wl Willow Creek
- Yn Yentna

CR COPPER RIVER
- Cc Chistochina
- Nc Nelchina
- Nz Nizina
- Pw Prince William Sound
- Yt Yakataga

KP KENAI PENINSULA
- Hp Hope
- Hm Homer
- Sw Seward

KD KODIAK

KR KUSKOKWIM RIVER

Ak	Aniak
Bt	Bethel
Gb	Goodnews Bay
Mg	McGrath

NA NORTHERN ALASKA

Ba	Barrow
Cn	Canning
Cv	Colville
Ls	Lisburne
Ww	Wainwright

NW NORTHWESTERN ALASKA

Ki	Kiana
Nt	Noatak
Sl	Selawik
Sh	Shungnak

SP SEWARD PENINSULA

Co	Council
Fh	Fairhaven
Kg	Kougarok
Ky	Koyuk
Nm	Nome
Pc	Port Clarence
Sr	Serpentine

SE SOUTHEAST ALASKA

Ad	Admirality
Ch	Chichagof
Hy	Hyder
Ju	Juneau
Kt	Ketchikan
Kp	Kupreanof
Pb	Petersburg
Yk	Yakutat

YR YUKON RIVER

Av	Anvik
Bl	Black
Bf	Bonnifield
Ch	Chandalar
Cs	Chisana
Ci	Circle
Dr	Delta River
Ea	Eagle
Fb	Fairbanks
Fm	Fortymile
Gp	Goodpaster
Hs	Hot Springs
Hu	Hughes
Id	Iditarod
In	Innoko
Ka	Kaiyuh
Kn	Kantishna

Kk Koyukuk
Ma Marshall
Ml Melozitna
Rm Rampart
Ru Ruby
Sj Sheenjek
Tk Tok
Tv Tolovana
Yf Yukon Flats

Lithotectonic terranes (LTT)

Alaska (from Jones and others, 1984; Monger and Berg, 1984)

AAC Coldfoot subterrane of the Arctic Alaska terrane
AAD DeLong Mountains subterrane of the Arctic Alaska terrane
AAE Endicott Mountains subterrane of the Arctic Alaska terrane
AAH Hammond subterrane of the Arctic Alaska terrane
AAN North Slope subterrane of the Arctic Alaska terrane
AM Amgayucham terrane
AX Alexander terrane
AXA Admirality subterrane of the Alexander terrane
AXC Craig subterrane of the Alexander terrane
AXN Annette subterrane of the Alexander terrane
BP Broad Pass terrane
BR Bridge River terrane
BRY Baldry terrane
BV Barkerville terrane
CC Cache Creek terrane
CCB Bonaparte subterrane of the Cache Creek terrane
CCF French Range subterrane of the Cache Creek terrane
CCM Marble Range subterrane of the Cache Creek terrane
CCN Nakina subterrane of the Cache Creek terrane
CCP Pavilion subterrane of the Cache Creek terrane
CCS Sentinel subterrane of the Cache Creek terrane
CG Chugach terrane
CH Chulitna terrane
CK Chilliwack terrane
CR Crescent terrane
CW Clearwater terrane
CZ Crazy Mountains terrane
DL Dillinger terrane
HZ Hozameen terrane
GD Goodnews terrane
IN Innoko terrane
KA Kandik River terrane
KG Kagvik terrane
KH Kahiltna terrane
KIL Kilbuck terrane
KK Kachimak terrane
KL Kluane terrane
KO Kootenay terrane
KY Koyukuk terrane
LG Livengood terrane
MAN Manley terrane
MD McLeod terrane

MK McKinley terrane
ML MacLaren terrane
MO Monashee terrane
MN Minchumina terrane
MNK Minook terrane
MT Methow-Tyaughton terrane
MY Mystic terrane
NK Nooksack terrane
NN Nenana terrane
NX Nixon terrane
NY Nyack terrane
PC Porcupine terrane
PE Peninsular terrane
PN Pingston terrane
PW Prince William terrane
QN Quesnellia terrane
QNR Harper River subterrane of the Quesnellia terrane
QNO Okanagan subterrane of the Quesnellia terrane
RB Ruby terrane
SD Seward terrane
SE Saint Elias terrane
SH Shuksan terrane
SHE Sheenjek terrane
SK Skagit terrane
SM Slide Mountain terrane
ST Stikinia terrane
SU Sustina terrane
SV Seventymile terrane
TA Tracy Arm terrane
TG Togiak terrane
TK Tikchik terrane
TU Taku terrane
TZ Tozitna terrane
VEN Venetie terrane
WC Woodchopper Canyon terrane
WF West Fork terrane
WHM White Mountains terrane
WM Windy-McKinley terrane
WR Wrangellia terrane
WS Wickersham terrane
WY Windy terrane
YA Yakutat terrane
YO York terrane
YT Yukon Tanana terrane

Geologic symbols used to designate geologic ages of units or rock assemblages that are not accreted

Cz Rocks of Cenozoic age
K Rocks of late Cretaceous age
T Rocks of Tertiary age

GN Gravina-Nutzotin Belt

Abbreviations used for ages of the geologic time scale

Cz	Cenozoic	Tertiary	0-66.4 Ma
	Tq	Quaternary	1.6 Ma
	Tp	Pliocene	5.3 Ma
	Tm	Miocene	23.7 Ma
	To	Oligocene	36.6 Ma
	Te	Eocene	57.8 Ma
	Ta	Paleocene	66.4 Ma
Mz	Mesozoic		66.4-245 Ma
	K	Cretaceous	144 Ma
	J	Jurassic	208 Ma
	Tr	Triassic	245 Ma
Pz	Paleozoic		245-570 Ma
	P	Permian	266 Ma
	IP	Pennsylvanian	320 Ma
	M	Mississippian	360 Ma
	D	Devonian	408 Ma
	S	Silurian	438 Ma
	O	Ordovician	505 Ma
	C	Cambrian	570 Ma
Pc	Precambrian		>570 Ma

The time-stratigraphic terms, early(e), middle(m), and late(l), have been applied as modifiers to the age designations where the fossil data are sufficiently restrictive. Radiometric ages are used where available and are expressed in million years (Ma). Many of the geologic ages are uncertain.

Names and addresses of analysts

MB M.L. Bevier, Canadian Geological Survey, 601 Booth St., Ottawa, Ontario, K1A 0E8 CANADA
GC G.L. Cumming, Dept. Geology, Univ. Alberta, Edminton, CANADA
MD M.H. Delevaux, USGS, PO Box 25046, MS 963, Denver, CO 80225
JDG J.D. Gaccetta, USGS, PO Box 25046, MS 973, Denver, CO 80225
ALH A.P. LeHuray, Lamont-Doherty Geol. Obs, Palisades, NY 10964
KM K.J. Mizon, CSIRO, PO Box 136, North Ryde, AUSTRALIA
HS H.J. Stein, USGS, PO Box 25046, MS 905, Denver, CO 80225
CGS Ralph Thorpe, Canadian Geological Survey, 601 Booth St., Ottawa, Ontario, K1A 0E8 CANADA
K.M. Dawson, Canadian Geological Survey, 100 W. Pender St., Vancouver, British Columbia, V6B 1R8 CANADA
CRC Chempet Research Corp., 330 N. Zachary Ave., Suite 107, Moorpark, CA 93201

Names and addresses of contributors

JA J.C. Antweiler, USGS, PO Box 25046, MS 973, Denver, CO 80225
MA M.E. Allen, Freeport-McMoRan Gold Co., PO Box 41330, Reno, NV 89504
AB Arnie Bakke, Department of Natural Resources, Division of Geological and Geophysical Surveys, 794 University Ave., Fairbanks, AK 99510
DB D.A. Brew, USGS, MS 904, 345 Middlefield Rd., Menlo Park, CA 94025
JB J.A. Briskey, USGS, 913 National Center, Reston, VA 22092
JCB J.C. Barker, USBM, 206 O'Neill Resources Bldg, University of Alaska, Fairbanks, AK 99775
TB T.K. Bundtzen, Department of Natural Resources, Division of Geological and Geophysical Surveys, 794 University Ave., Fairbanks, AK 99510
WB W.P. Brosge', USGS, MS 904, 345 Middlefield Rd., Menlo Park, CA 94025
DC D.P. Cox, USGS, MS 901, 345 Middlefield Rd., Menlo Park, CA 94025
JC J.B. Cathrall, USGS, PO Box 25046, MS 973, Denver, CO 80225
SC S.E. Church, USGS, PO Box 25046, MS 973, Denver, CO 80225
SL S.L. Culp, Consulting Geologist, 816 Laurel, Fort Collins, CO
HF H.L. Foster, USGS, MS 904, 345 Middlefield Rd., Menlo Park, CA 94025
JF J.G. Frisken, USGS, PO Box 25046, MS 973, Denver, CO 80225
PF P.F. Folger, USGS, PO Box 25046, MS 973, Denver, CO 80225
RF Bob Forbes, Dept. of Natural Resources, Division of Geological and Geophysical Surveys, 794 University Ave., Fairbanks, AK 99701
BG B.M. Gamble, USGS, 4200 University Dr., Anchorage, AK 99508
DG D.J. Grybeck, USGS, 4200 University Dr., Anchorage, AK 99508
JG J.E. Gray, USGS, PO Box 25046, MS 973, Denver, CO 80225
NG J.N. Grant, Billiton International Metals, PO Box 436, 2260 AK Leidschendam, THE NETHERLANDS
RG R.J. Goldfarb, USGS, PO Box 25046, MS 973, Denver, CO 80225
CH C.C. Hawley, Consulting Geologist, Anchorage, AK 99502
JH J.W. Hammitt, Kennicott, PO Box 11248, Salt Lake City, UT 84147
HK H.D. King, USGS, PO Box 25046, MS 973, Denver, CO 80225
JK J.M. Kelly, Consulting Geologist, Salt Lake City, UT
RK R.A. Koski, USGS, MS 999, 345 Middlefield Rd., Menlo Park, CA 94025
RVK R.V. Kirkham, Canadian Geological Survey, 601 Booth St., Ottawa, Ontario K1A 0E8 CANADA
IL I.M. Lange, Dept. Geology, Univ. of Montana, Missoula, MT 59801
TL T.D. Light, USGS, 4200 University Dr., Anchorage, AK 99508
DM D.H. McGuire, USGS, PO Box 25046, MS 973, Denver, CO 80225
EMK E. MacKevett, Consulting Geologist, San Lois Obisbio, CA
WM W.D. Menzie, USGS, Branch of Resource Analysis, 913 National Center, Reston, VA 22092
RN R.J. Newberry, Dept. of Geology, University of Alaska, Fairbanks, AK 99775
SNK S.K. Newkirk, Dept. of Geology, Univ. of Arizona, Tuscon, AZ 85721
SN S.W. Nelson, USGS, 4200 University Dr., Anchorage, AK 99508
WN W.J. Nokleberg, USGS, MS 904, 345 Middlefield Rd., Menlo Park, CA 94025
CP C.C. Puchner, Consulting Geologist, Fairbanks, AK
BR B.L. Reed, USGS, 4200 University Dr., Anchorage, AK 99508

ER Earl Redman, USBM, PO Box 20550, Juneau, AK 99802
SR Scott Rose, Consulting Geologist, Anchorage, AK
DS Don Singer, USGS, MS 901, 345 Middlefield Rd., Menlo Park, CA 94025
JMS J.M. Schmidt, USGS, 4200 University Dr., Anchorage, AK 99508
JS Jan Still, USBM, PO Box 20550, Juneau, AK 99802
MS M.L. Silberman, USGS, PO Box 25046, MS 973, Denver, CO 80225
PS C.L. Sainsbury, 5332 Maggie Lane, Evergreen, CO
TS T.E. Smith, Dept. of Natural Resources, Division of Geological and Geophysical Surveys, 794 University Ave., Fairbanks, AK 99701
RT R.B. Tripp, USGS, PO Box 25046, MS 973, Denver, CO 80225
FW F.H. Wilson, USGS, 4200 University Dr., Anchorage, AK 99508
MW M.A. Wiltse, Dept. of Natural Resources, Division of Geological and Geophysical Surveys, 794 University Ave., Fairbanks, AK 99701
LY L.E. Young, Cominco Alaska, 5660 B Street, Anchorage, AK 99518

Institutions

DGGS Division of Geological and Geophysical Surveys, PO Box 772116, Eagle River, AK 99577
HC Harvard Collection, Geological and Mineralogical Museum, c/o Carl Francis, Curator, 24 Oxford St., Harvard University, Cambridge, MA 02138
MIT Lundgren Collection, Dept. of Earth and Planetary Sciences, c/o Roger Burns, Mass. Inst. of Technology, Cambridge, MA 02139
SM Ore Deposits Collection, c/o Marco Einaudi, Dept. of Applied Earth Sciences, Stanford University, Stanford, CA 94305
YM Yale Peabody Museum of Natural History, c/o E.W. Faller, 170 Whitney Ave., PO Box 6666, and Ore Deposits Collection, c/o B.J. Skinner, Dept. of Geology and Geophysics, Yale University, New Haven, CN 06511
USBM U.S. Bureau of Mines geologists, Alaska Field Operations Center, 201 E. Ninth Ave., Anchorage, AK
USNM U.S. National Museum of Natural History, Smithsonian Inst., c/o S.S. Sorensen, Washington D.C. 20560

Other codes used

A Currently being analyzed in the mass spectrometer laboratory.
H Currently on hand; sample pending evaluation for Pb-isotopic analysis.

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APPENDIX II

SAMPLE INFORMATION SHEET FOR COMMON-Pb ISOTOPIC ANALYSIS

Contributor: _____
address: _____
_____
_____
_____
phone: _____
date: _____

Send to: S.E. Church
Branch of Geochemistry
U.S. Geological Survey
P.O. Box 25046, MS 973
Denver, CO 80225
(303) 236-1900
FTS 776-1900

SAMPLE No._____ **Lab. No.** _____
Sample Location: Lat._____ Long. _____
or sec. _____ Township _____ & Range _____
Quadrangle _____ State _____
Name of deposit or occurrence_____
USBM Region _____ District _____

GEOLOGIC INFORMATION
Sample Source_____ Type of host-rock_____
Age of host-rock (how obtained?) _____
Formation _____
Lithotectonic terrane (if appropriate) _____
Descriptive information (structure, texture, form, etc.) _____
_____
Mineralogy of sample _____
Mineralogy of deposit _____
Gangue minerals _____
Structural and Stratigraphic relations _____
_____
Deposit type (Singer and Cox, 1986) _____
Age of Mineralization (how obtained?) _____
Size of deposit _____

Other field information:

Chemical data available: Chemical analysis ( ) Modal analysis ( )
Thin or polished sections ( ) Spectrographic analysis ( )
Stable isotopic data ( ) Other (specify)_____

Are detailed studies of this deposit or occurrence published or in progress? _____

References to geology or description of occurrence: