UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Analytical results and sample locality maps of skarn, porphyry, and vein samples from the Dillon, Butte, and Dubois 1° x 2° quadrangles, Idaho-Montana

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STUDIES RELATED TO CUSMAP

This report presents the results of analyses of rock samples that were collected in a geochemical survey of the Dillon 1° x 2° quadrangle, Montana-Idaho. Geochemical samples were collected as one of several multidisciplinary studies associated with the Conterminous United States Mineral Appraisal Program (CUSMAP).

INTRODUCTION

Rock samples were collected as part of a reconnaissance geochemical survey that was conducted in the Dillon, Montana-Idaho, 1° x 2° quadrangle from 1978 through 1981. Additional rock samples were collected from the adjacent Butte and Dubois 1° x 2° quadrangles.

The Dillon quadrangle comprises about 11,000 mi^2 (17,700 km^2) in Montana and Idaho. Dillon is located from 45°00'00" to 46°00'00" latitude and 112°00'00" to 114°00'00" longitude. Additional samples were collected from the Butte 1° x 2° quadrangle to a northernmost latitude of 46°15'00". Likewise, samples were collected from the Dubois 1° x 2° quadrangle to a southernmost latitude of 44°30'00". Access to the study area is provided on the north by Interstate 90 and by Interstate 15 on the south.

The Dillon quadrangle contains complex thrust-faulted terranes of Precambrian and Phanerozoic sedimentary rocks on a Precambrian crystalline basement. These terranes were intruded by calc-alkaline batholithic rocks in the Mesozoic. Mesozoic-Tertiary volcanic rocks are also found in the area. During the Tertiary, large grabens were formed that are presently filled with volcanic rocks and fluvial sedimentary rocks.

The topographic relief in the Dillon quadrangle varies from about 3,900 ft (1,182 m) to approximately 11,000 ft (3,333 m).

METHODS OF STUDY

Sample Media

Analyses of unaltered or unmineralized rock samples provide background geochemical data for individual rock units. On the other hand, analyses of altered or mineralized rocks, where present, may provide useful geochemical information about the major- and trace-element assemblages associated with a mineralizing system.

Sample Collection

Rock samples were collected at 2,219 sites (Plates 1-4). However, the data in this report represent only those rocks collected from quartz veins, wall rocks, porphyries, and skarns. Sampling density varied with the spatial distribution of the outcrops.

Sample Preparation

Rock samples were crushed using a "chimpmunk-jaw crusher" and then pulverized to less than 0.15 mm using a "vertical pulverizer" with ceramic plates.

Sample Analysis

Spectrographic method

The prepared rock samples were analyzed for 31 elements using a semiquantitative, direct-current arc emission spectrographic method (Grimes and Marranzino, 1968). The elements analyzed and their lower limits of determination are listed in Table 1. Spectrographic results were obtained by visual comparison of spectra derived from the sample against spectra obtained from standards made from pure oxides and carbonates. Standard concentrations are geometrically spaced over any given order of magnitude as follows: 100, 50, 20, 10, and so forth. Samples whose concentrations are estimated to fall between those values are assigned values of 70, 30, 15, and so forth. The precision of the analytical method is approximately plus or minus one reporting interval at the 83 percent confidence level and plus or minus two reporting intervals at the 96 percent confidence level (Motooka and Grimes, 1976). Values determined for the major elements (iron, magnesium, calcium, and titanium) are given in weight percent; all others are given in parts per million (micrograms/gram). Analytical data for samples from the Dillon 1° x 2° quadrangle and vicinity are listed in Tables 3-6.

Chemical Methods

Other methods of analysis used on samples from the Dillon 1° x 2° quadrangle and vicinity are summarized in Table 2.

ROCK ANALYSIS STORAGE SYSTEM

Upon completion of all analytical work, the analytical results were entered into a computer-based file called Rock Analysis Storage System (RASS). This data base contains both descriptive geological information and analytical data. Any or all of this information may be retrieved and converted to a binary form (STATPAC) for computerized statistical analysis or publication (VanTrump and Miesch, 1976).

DESCRIPTION OF DATA TABLES

Data in tables 3-6 are arranged so that column 1 contains the USGS-assigned sample numbers. These numbers correspond to the numbers shown on the site location maps (Plates 1-4). Columns in which the element headings show the letter "s" below the element symbol are emission spectrographic analyses; "aa" indicates atomic absorption analyses; and inst indicates instrumental analyses. A letter "N" in the tables indicates that the element was looked for but not detected at the lower limit of the analytical method used for that element. If an element was detected, but below the determination limits in Table 1, a "less than" symbol (<) is shown in the tables in front of the lower limit of determination. If an element was detected at concentrations above the highest reporting value, a "greater than" symbol (>) is shown in the tables in front of the upper limit of determination. If an element was not looked for in a sample, two dashes (--) are entered in tables 3-6 in place of an analytical value. Because of the formatting used in the computer program that produced tables 3-6, some of the elements listed in these tables (Fe, Mg, Ca, Ti, Ag, and Be) carry one or more nonsignificant digits to the right of the significant digits. The analysts did not determine these elements to the accuracy suggested by the extra zeros.

REFERENCES CITED

Almond, Hy, 1953, Field methods for the determination of traces of arsenic in soils--Confined-spot procedure using a modified Gutzeit apparatus: Analytical Chemistry, v. 25, no. 11, p. 1766.

Chao, T. T., Sanzolone, R. F., and Hubert, A. E., 1978, Flame and flameless atomic-absorption determination of tellurium in geological materials: Analytica Chimica Acta, v. 96, p. 251-257.

Grimes, D. J., and Marranzino, A. P., 1968, Direct-current arc and alternating-current spark emission spectrographic field methods for the semiquantitative analysis of geologic materials: U.S. Geological Survey Circular 591, 6 p.

McNerney, J. J., Buseck, P. R., and Hanson, R. C., 1972, Mercury detection by means of thin gold films: Science, v. 178, p. 611-612.

Motooka, J. M., and Grimes, D. J., 1976, Analytical precision of one-sixth order semiquantitative spectrographic analyses: U.S. Geological Survey Circular 738, 25 p.

Thompson, C. E., Nakagawa, H. M., and Van Sickle, G. H., 1968, Rapid analysis for gold in geologic materials, in Geological Survey research 1968: U.S. Geological Survey Professional Paper 600-B, p. B130-B132.

VanTrump, George, Jr., and Miesch, A. T., 1976, The U.S. Geological Survey RASS-STATPAC system for management and statistical reduction of geochemical data: Computers and Geosciences, v. 3, p. 475-488.

Vaughn, W. W., and McCarthy, J. H., Jr., 1964, An instrumental technique for the determination of submicrogram concentrations of mercury in soils, rocks, and gas, in Geological Survey research 1964: U.S. Geological Survey Professional Paper 501-D, p. D123-D127.

Viets, J. G., 1978, Determination of silver, bismuth, cadmium, copper, lead, and zinc in geologic materials by atomic absorption spectrometry with tricaprylylmethylammonium chloride: Analytical Chemistry, v. 50, p. 1097-1101.

Ward, F. N., Lakin, H. W., Canney, F. C., and others, 1963, Analytical methods used in geochemical exploration by the U.S. Geological Survey: U.S. Geological Survey Bulletin 1152, 100 p.

Ward, F. N., Nakagawa, H. M., Harms, T. F., and Van Sickle, G. H., 1969, Atomic-absorption methods useful in geochemical exploration: U.S. Geological Survey Bulletin 1289, 45 p.

Welsch, E. P., 1983, Spectrophotometrical determination of tungsten in geological materials by complexing with dithiol: Talanta (in press).

Welsch, E. P., and Chao, T. T., 1976, Determination of trace amounts of tin in geological materials by atomic-absorption spectrometry: Analytica Chimica Acta, v. 82, p. 337-342.

TABLE 1.--Limits of determination for the spectrographic analysis of rocks, based on a 10-mg sample

Elements	Lower determination limit	Upper determination limit
	Percent	
Iron (Fe)	0.05	20
Magnesium (Mg)	.02	10
Calcium (Ca)	.05	20
Titanium (Ti)	.002	1
	Parts per million	
Manganese (Mn)	10	5,000
Silver (Ag)	0.5	5,000
Arsenic (As)	200	10,000
Gold (Au)	10	500
Boron (B)	10	2,000
Barium (Ba)	20	5,000
Beryllium (Be)	1	1,000
Bismuth (Bi)	10	1,000
Cadmium (Cd)	20	500
Cobalt (Co)	5	2,000
Chromium (Cr)	10	5,000
Copper (Cu)	5	20,000
Lanthanum (La)	20	1,000
Molybdenum (Mo)	5	2,000
Niobium (Nb)	20	2,000
Nickel (Ni)	5	5,000
Lead (Pb)	10	20,000
Antimony (Sb)	100	10,000
Scandium (Sc)	5	100
Tin (Sn)	10	1,000
Strontium (Sr)	100	5,000
Vanadium (V)	10	10,000
Tungsten (W)	50	10,000
Yttrium (Y)	10	2,000
Zinc (Zn)	200	10,000
Zirconium (Zr)	10	1,000
Thorium (Th)	100	2,000

Table 2.--Commonly used chemical methods

[AA = atomic absorption; Inst = instrumental; SI = specific ion; S = spectrophotometry; and F = fluorometry; Cm = colorimetric]

Element or constituent determined	Method	Determination limit (micrograms/ gram or ppm)	Reference
Gold (Au)	AA	0.05	Thompson and others, 1968
Mercury (Hg)	Inst	0.02	Modification of McNerney and others, 1972, and Vaughn, and McCarthy, 1964
Arsenic (As)	Cm	10 ppm	Almond, 1953
Arsenic (As)	Cm-T	1 ppm	Ward and others, 1963
Arsenic (As)	AA	5 or 10	Modification of Viets, 1978
Antimony (Sb)	AA	2	
Zinc (Zn)	AA	5	
Bismuth (Bi)	AA	1	
Cadmium (Cd)	AA	0.1	
Copper (Cu)	AA	5	
Zinc (Zn)	AA	5	
Fluorine (F)	SI	100	Hopkins, 1977
Tellurium (Te)	AA	0.1	Chao and others, 1978
Tin (Sn)	AA	1	Welsch and Chao, 1976
Tungsten (W)	S/Cm	0.5 or 1	Welsch, 1983

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
0BI4539	45 45 3	112 54 47	.10	.30	.70	.020	200	1,000.0	N	N	30	>5,000	<1.0
0BI4540	45 45 13	112 55 3	.20	.15	.20	.020	70	500.0	200	N	30	>5,000	1.0
0BI4541	45 45 29	112 56 13	.30	.30	.70	.007	150	700.0	5,000	N	30	2,000	1.0
0CI4542	45 42 0	112 57 20	.10	1.50	3.00	<.002	200	1,500.0	2,000	N	15	100	1.0
0CI4543	45 41 30	112 56 53	.30	.05	.05	.015	100	300.0	300	N	20	70	1.0
0DI4544	45 36 15	112 55 50	20.00	.10	.10	.020	1,500	300.0	2,000	N	<10	30	1.0
0DI4545	45 36 15	112 55 50	2.00	.10	1.00	.007	100	500.0	3,000	N	10	20	1.0
0DI4546	45 36 15	112 55 50	10.00	.50	2.00	.007	2,000	700.0	5,000	10	10	70	1.5
0DI4547	45 36 15	112 55 50	10.00	.70	3.00	.020	1,500	200.0	1,000	N	10	N	2.0
0DI4548	45 36 15	112 55 50	.70	5.00	7.00	.015	1,000	300.0	1,500	N	20	N	1.5
0DI4549	45 35 46	112 54 55	2.00	.70	5.00	.300	300	700.0	1,500	N	100	200	1.5
0DI4550	45 35 46	112 54 55	3.00	.05	.15	.005	200	200.0	700	N	20	20	1.0
0FJ4551	45 17 13	112 51 55	20.00	.15	2.00	.020	>5,000	50.0	1,500	N	10	100	1.0
0FP4552	45 20 23	112 2 12	3.00	.15	1.00	.200	700	300.0	N	50	15	1,000	1.0
0FP4556	45 15 57	112 1 35	1.50	1.00	3.00	.050	1,500	50.0	<200	N	20	1,000	1.0
0FP4557	45 15 57	112 1 35	5.00	1.00	2.00	.200	1,000	100.0	N	N	20	>5,000	1.5
0FP4559	45 15 30	112 0 5	3.00	.50	1.50	.030	200	500.0	N	50	20	5,000	1.0
0FP4560	45 15 45	112 0 25	3.00	.70	1.50	.150	300	N	N	N	30	700	2.0
0GP4554	45 14 51	112 4 5	7.00	5.00	10.00	.007	3,000	5.0	N	N	20	150	1.0
0GP4555	45 14 51	112 4 5	3.00	.70	2.00	.015	>5,000	N	1,000	N	30	2,000	7.0
0XHK4516	46 0 38	112 38 52	5.00	.15	.20	.100	150	7.0	>10,000	N	50	100	2.0
0XHK4517	46 0 38	112 38 52	1.00	.30	.50	.030	700	20.0	2,000	N	150	50	1.5
0XHK4518	46 0 38	112 38 52	2.00	.15	.30	.050	1,000	20.0	10,000	N	150	70	2.0
0XHK4519	46 0 42	112 38 47	2.00	.10	.15	.100	700	100.0	3,000	N	100	500	2.0
0XHK4520	46 0 42	112 38 47	.70	.10	1.50	.070	150	200.0	200	N	100	200	3.0
0XHK4521	46 0 44	112 38 33	1.50	.07	.10	.020	150	500.0	300	N	150	300	5.0
0XHL4523	46 0 32	112 35 32	1.00	.15	.07	.010	>5,000	500.0	<200	N	20	50	1.5
0XHL4524	46 0 32	112 35 32	2.00	.10	<.05	.020	>5,000	200.0	300	N	20	1,000	1.5
0XHL4525	46 0 50	112 34 43	.70	.20	.05	.100	150	1.0	N	N	70	100	2.0
0XHL4526	46 0 48	112 34 31	2.00	.10	.10	.030	3,000	1,000.0	200	N	50	70	3.0
0XHL4527	46 0 27	112 34 42	.20	.15	.05	.030	>5,000	100.0	N	N	20	100	1.5
0XHL4528	46 0 27	112 34 42	.50	.05	.07	.010	>5,000	100.0	N	N	15	50	3.0
0XHL4529	46 0 28	112 34 27	1.50	.15	.05	.030	5,000	700.0	200	N	30	150	2.0
0XHL4530	46 0 30	112 34 12	2.00	.10	.10	.020	5,000	200.0	N	N	20	<20	1.0
0XHL4530	46 0 30	112 34 12	2.00	.10	.10	.015	>5,000	200.0	N	N	15	N	<1.0
0XHL4531	46 0 45	112 34 15	3.00	.50	1.50	.100	>5,000	200.0	200	N	20	500	2.0
0XHL4532	46 0 48	112 34 31	3.00	.10	.05	.002	>5,000	300.0	500	N	10	500	2.0
0XHL4533	46 1 5	112 34 46	.70	.15	.20	.070	5,000	1.5	N	N	30	100	3.0
0XHL4533	46 1 5	112 34 46	.70	.30	.10	<.002	>5,000	1,500.0	300	N	N	N	1.5
0XHL4534	46 1 12	112 34 46	1.00	.20	.07	.050	>5,000	5,000.0	500	N	20	50	1.5
0XHL4535	46 1 11	112 34 50	1.00	.15	.07	.050	>5,000	100.0	<200	N	50	150	1.5
0XHL4536	46 1 16	112 35 0	.70	.30	1.00	.030	>5,000	100.0	300	N	20	70	2.0
0XHL4537	46 1 25	112 35 18	.50	.03	.10	.010	>5,000	200.0	200	N	20	50	2.0
0XHL4538	46 1 26	112 35 30	1.50	.15	.15	.020	>5,000	200.0	N	N	50	150	3.0
1DC-4601	45 33 36	113 43 55	2.00	.07	.05	.070	200	500.0	300	N	50	500	2.0

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
0BI4539	N	50	N	N	150	N	N	N	7	2,000	1,000	N	N	100
0BI4540	N	20	N	N	500	N	N	N	7	10,000	1,000	N	N	1,000
0BI4541	300	30	N	N	700	N	N	N	7	>20,000	5,000	N	N	<100
0CI4542	<10	500	N	N	15,000	N	100	N	7	>20,000	2,000	N	N	<100
0CI4543	100	50	N	N	5,000	N	5	N	5	>20,000	300	N	N	N
0DI4544	300	100	N	30	15,000	20	15	N	5	15,000	3,000	N	N	<100
0DI4545	50	100	N	N	10,000	N	N	N	5	>20,000	1,000	N	N	N
0DI4546	200	150	N	20	10,000	<20	20	N	<5	15,000	1,500	N	N	<100
0DI4547	200	150	N	N	20,000	<20	5	N	5	20,000	700	N	N	<100
0DI4548	N	150	N	N	2,000	N	N	N	<5	20,000	500	N	N	<100
0DI4549	N	300	10	100	3,000	70	N	N	20	>20,000	1,000	7	N	100
0DI4550	N	50	N	10	1,000	N	15	N	5	7,000	300	N	N	N
0FJ4551	150	200	10	10	1,500	<20	7	N	5	10,000	100	N	N	<100
0FP4552	N	N	20	10	200	20	10	N	15	1,500	N	<5	N	100
0FP4556	N	200	7	N	2,000	<20	15	N	7	2,000	N	N	N	150
0FP4557	N	>500	20	50	2,000	<20	50	N	50	3,000	100	10	N	500
0FP4559	N	N	15	10	700	20	150	N	50	10,000	N	<5	N	150
0FP4560	N	N	7	20	100	50	N	N	30	70	N	5	N	150
0GP4554	N	N	5	10	15	20	5	N	5	200	N	N	N	<100
0GP4555	N	N	15	N	50	N	70	N	70	50	N	N	N	100
0XHK4516	N	20	N	10	20	20	7	N	10	50	300	5	N	<100
0XHK4517	N	300	N	N	30	N	N	N	7	7,000	<100	N	N	N
0XHK4518	N	300	N	10	30	<20	15	N	7	10,000	150	N	N	N
0XHK4519	N	20	N	10	70	20	10	N	7	500	100	<5	N	100
0XHK4520	N	20	N	10	1,000	50	7	N	7	500	100	<5	N	100
0XHK4521	N	N	N	N	200	70	10	N	7	300	100	N	N	<100
0XHL4523	N	150	N	N	700	50	N	N	<5	10,000	N	N	N	<100
0XHL4524	N	100	N	N	500	N	7	N	5	5,000	N	N	N	N
0XHL4525	N	N	N	N	20	50	5	30	5	50	N	N	N	<100
0XHL4526	N	500	N	N	1,000	<20	20	N	<5	>20,000	<100	N	N	<100
0XHL4527	N	N	N	N	70	20	30	N	5	200	N	N	N	100
0XHL4528	N	N	N	N	30	N	50	N	5	200	N	N	N	200
0XHL4529	N	200	N	N	700	20	5	N	5	20,000	<100	N	N	<100
0XHL4530	N	300	N	N	200	N	5	N	5	>20,000	N	N	N	<100
0XHL4530	N	200	N	N	200	N	N	N	<5	>20,000	N	N	N	N
0XHL4531	N	30	10	15	100	<20	10	N	7	2,000	N	5	N	150
0XHL4532	N	500	N	10	1,000	<20	N	N	5	15,000	<100	N	N	<100
0XHL4533	N	N	N	10	15	50	N	20	5	150	N	N	N	100
0XHL4533	N	30	N	N	1,000	N	5	N	<5	10,000	500	N	N	N
0XHL4534	N	N	N	N	5,000	N	5	N	7	2,000	2,000	N	N	N
0XHL4535	N	N	N	N	150	20	100	N	5	1,000	N	N	N	N
0XHL4536	N	N	N	N	100	<20	50	N	10	700	N	N	N	300
0XHL4537	N	N	N	N	150	<20	7	N	5	500	<100	N	N	100
0XHL4538	N	N	10	N	300	<20	10	N	7	700	100	N	N	<100
1DC-4601	50	70	20	15	20,000	N	10	N	10	5,000	5,000	N	N	<0

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
0BI4539	20	N	N	2,000	10	N	--	--	--	--	--	1,600.00	--	--
0BI4540	50	N	N	300	15	N	--	--	--	--	--	260.00	--	--
0BI4541	50	N	N	500	10	<100	--	--	--	--	--	300.00	--	--
0CI4542	30	N	N	>10,000	15	N	--	--	--	--	--	>2,000.00	--	--
0CI4543	15	N	N	>10,000	15	N	--	--	--	--	--	>2,000.00	--	--
0DI4544	200	N	<10	>10,000	N	N	--	--	--	--	--	>2,000.00	--	--
0DI4545	15	N	N	>10,000	N	N	--	--	--	--	--	>2,000.00	--	--
0DI4546	20	<50	N	>10,000	N	N	--	--	--	--	--	>2,000.00	--	--
0DI4547	100	N	<10	>10,000	30	N	--	--	--	--	--	>2,000.00	--	--
0DI4548	30	N	N	>10,000	10	N	--	--	--	--	--	>2,000.00	--	--
0DI4549	70	N	20	>10,000	500	<100	--	--	--	--	--	>2,000.00	--	--
0DI4550	70	N	N	10,000	N	N	--	--	--	--	--	>2,000.00	--	--
0FJ4551	200	200	<10	>10,000	30	N	--	--	--	--	--	>2,000.00	--	--
0FP4552	200	<50	15	<200	30	N	--	--	--	--	--	100.00	--	--
0FP4556	70	N	N	>10,000	N	N	--	--	--	--	--	>2,000.00	--	--
0FP4557	300	<50	15	>10,000	100	N	--	--	--	--	--	>2,000.00	--	--
0FP4559	30	N	N	N	30	<100	--	--	--	--	--	70.00	--	--
0FP4560	50	N	50	N	150	<100	--	--	--	--	--	80.00	--	--
0GP4554	15	N	<10	<200	20	N	--	--	--	--	--	70.00	--	--
0GP4555	300	70	N	<200	30	N	--	--	--	--	--	70.00	--	--
0XHK4516	70	N	10	200	15	N	--	--	--	--	--	80.00	--	--
0XHK4517	15	N	<10	>10,000	10	N	--	--	--	--	--	>2,000.00	--	--
0XHK4518	20	N	<10	>10,000	100	N	--	--	--	--	--	>2,000.00	--	--
0XHK4519	100	70	10	<200	50	N	--	--	--	--	--	80.00	--	--
0XHK4520	70	50	30	N	50	N	--	--	--	--	--	70.00	--	--
0XHK4521	70	70	<10	N	70	N	--	--	--	--	--	45.00	--	--
0XHL4523	30	N	<10	>10,000	30	N	.75	.06	<.1	--	--	>2,000.00	--	--
0XHL4524	20	N	N	>10,000	10	<100	2.00	.06	.5	--	--	>2,000.00	--	--
0XHL4525	15	N	20	200	100	<100	<.05	.02	<.1	--	--	35.00	--	--
0XHL4526	10	N	N	>10,000	50	N	1.50	.28	.2	--	--	>2,000.00	--	--
0XHL4527	30	N	15	<200	30	<100	<.05	.02	<.1	--	--	140.00	--	--
0XHL4528	50	N	10	200	10	<100	.05	.08	<.1	--	--	120.00	--	--
0XHL4529	15	N	50	>10,000	70	<100	.55	.06	<.1	--	--	>2,000.00	--	--
0XHL4530	20	N	N	>10,000	N	<100	1.00	.20	.9	--	--	>2,000.00	--	--
0XHL4530	20	N	N	>10,000	10	N	.85	.08	.6	--	--	>2,000.00	--	--
0XHL4531	70	N	10	2,000	100	N	.60	.04	<.1	--	--	>2,000.00	--	--
0XHL4532	30	N	15	>10,000	N	N	.40	.36	.6	--	--	>2,000.00	--	--
0XHL4533	20	N	20	N	70	N	N	.02	<.1	--	--	100.00	--	--
0XHL4533	50	N	20	10,000	N	N	.25	.30	<.1	--	--	>2,000.00	--	--
0XHL4534	30	N	10	3,000	10	<100	2.50	.32	<.1	--	--	>2,000.00	--	--
0XHL4535	15	N	15	500	100	N	<.05	.16	<.1	--	--	560.00	--	--
0XHL4536	100	N	20	300	20	<100	.30	.06	<.1	--	--	340.00	--	--
0XHL4537	30	N	50	200	10	N	.15	.34	<.1	--	--	180.00	--	--
0XHL4538	30	N	70	500	10	N	.15	.24	<.1	--	--	520.00	--	--
1DC-4601	20	N	10	500	100	N	880.00	>0	100.0	--	<0	6.90	1.8	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
OBI4539	>200	40	--	--	--	--	--
OBI4540	>200	120	--	--	--	--	--
OBI4541	>200	>1,600	--	--	--	--	--
OCI4542	>200	400	--	--	--	--	--
OCI4543	100	100	--	--	--	--	--
ODI4544	>200	200	--	--	--	--	--
ODI4545	>200	>1,600	--	--	--	--	--
ODI4546	>200	1,600	--	--	--	--	--
ODI4547	120	200	--	--	--	--	--
ODI4548	100	200	--	--	--	--	--
ODI4549	>200	800	--	--	--	--	--
ODI4550	>200	200	--	--	--	--	--
OFJ4551	35	160	--	--	--	--	--
OFP4552	25	10	--	--	--	--	--
OFP4556	15	10	--	--	--	--	--
OFP4557	40	<10	--	--	--	--	--
OFP4559	20	<10	--	--	--	--	--
OFP4560	N	<10	--	--	--	--	--
OGP4554	3	<10	--	--	--	--	--
OGP4555	4	200	--	--	--	--	--
OXHK4516	100	>1,600	--	--	--	--	--
OXHK4517	15	800	--	--	--	--	--
OXHK4518	35	1,600	--	--	--	--	--
OXHK4519	40	1,200	--	--	--	--	--
OXHK4520	40	80	--	--	--	--	--
OXHK4521	60	100	--	--	--	--	--
OXHL4523	10	100	--	1.0	--	<100	--
OXHL4524	5	160	--	1.0	--	130	--
OXHL4525	N	<10	--	2.0	--	140	--
OXHL4526	10	160	--	1.0	--	160	--
OXHL4527	5	20	--	2.0	--	140	--
OXHL4528	4	40	--	3.0	--	<100	--
OXHL4529	15	120	--	1.0	--	160	--
OXHL4530	5	100	--	2.0	--	120	--
OXHL4530	10	120	--	3.0	--	120	--
OXHL4531	2	80	--	5.0	--	190	--
OXHL4532	10	160	--	1.0	--	200	--
OXHL4533	2	10	--	2.0	--	<100	--
OXHL4533	>200	1,600	--	<1.0	--	<100	--
OXHL4534	>200	200	--	<1.0	--	<100	--
OXHL4535	20	40	--	1.0	--	150	--
OXHL4536	10	100	--	7.0	--	130	--
OXHL4537	20	20	--	5.0	--	<100	--
OXHL4538	40	40	--	5.0	--	<100	--
1DC-4601	--	--	--	--	--	--	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct.	Mg-pct.	Ca-pct.	Ti-pct.	Mn-ppm	Ag-ppm	As-ppm	Au-ppm	B-ppm	Ba-ppm	Be-ppm
			s	s	s	s	s	s	s	s	s	s	s
1DC-4602	45 33 33	113 43 49	3.00	.05	.05	.070	150	500.0	N	N	30	700	2.0
1FC-4607	45 19 25	113 43 25	2.00	.05	.05	.020	100	20.0	N	50	15	>0	1.0
1FC-4608	45 19 25	113 43 25	3.00	.10	.07	.030	200	10.0	N	N	10	>0	1.0
1FP-4571	45 16 31	112 0 2	3.00	.02	.05	.010	15	300.0	500	<0	20	>0	<0
1FP-4572	45 16 18	112 0 42	3.00	.07	1.00	.100	500	500.0	N	<0	20	5,000	1.0
1FP-4573	45 16 20	112 0 41	2.00	.07	.20	.070	300	200.0	N	<0	20	5,000	<0
1FP-4574	45 16 13	112 0 46	2.00	.07	1.00	.050	300	200.0	N	<0	15	5,000	1.0
1GD-4605	45 11 25	113 35 16	3.00	.70	5.00	.100	1,500	20.0	N	N	50	300	1.5
1GD-4606	45 11 25	113 35 16	1.00	.15	.50	.050	1,000	3.0	N	N	20	300	1.5
1GD-4609	45 10 1	113 35 16	3.00	.20	2.00	.150	1,500	50.0	N	<0	1,500	300	2.0
1GD-4610	45 10 1	113 35 16	7.00	.10	.05	.200	1,000	100.0	N	20	1,000	500	2.0
1XHL4592	46 1 5	112 35 30	3.00	.03	.10	.002	>0	200.0	200	N	<0	70	1.5
1XHL4594	46 1 0	112 35 23	3.00	.07	.20	.020	>0	100.0	200	N	10	100	1.5
1XHL4595	46 1 5	112 35 58	2.00	.05	.15	.003	>0	200.0	<0	N	20	150	2.0
1XHL4596	46 1 15	112 35 45	2.00	.10	.30	.070	>0	100.0	<0	N	10	200	1.5
1XHL4597	46 2 3	112 35 47	5.00	.05	.10	.030	700	700.0	300	N	100	150	1.0
1XHL4598	46 1 41	112 33 30	5.00	.20	.70	.050	>0	300.0	700	N	20	150	1.5
1XHL4599	46 2 20	112 33 13	2.00	.50	2.00	.020	>0	20.0	N	N	N	50	2.0
1XHL4600	46 2 16	112 32 46	2.00	.30	2.00	.070	>0	1,000.0	<0	N	10	500	2.0
78J005	45 24 32	112 58 47	5.00	.50	.70	.300	1,000	2.0	N	N	50	1,000	2.0
78J006	45 24 32	112 58 56	1.00	.07	.07	.050	200	7.0	N	N	15	100	1.0
78J009	45 24 40	112 59 39	3.00	.50	.50	.200	500	.7	N	N	15	700	2.0
78J013	45 24 15	113 0 1	5.00	1.00	1.50	.300	700	1.5	N	N	15	1,000	2.0
78J014	45 23 57	112 59 52	1.50	.15	.07	.150	300	10.0	N	N	30	300	1.5
78P005	45 24 8	112 52 53	>20.00	.07	.05	.010	700	5.0	2,000	N	N	300	2.0
78P050	45 29 20	113 2 40	5.00	.15	.10	.100	700	500.0	3,000	N	20	20	1.5
78P066	45 30 38	112 57 12	3.00	.70	.70	.300	1,000	N	N	N	30	700	2.0
78P121	45 32 45	113 0 50	2.00	.10	<.05	.030	150	1.5	N	N	20	70	1.0
78P122	45 32 48	113 0 27	1.50	.10	.05	.050	200	5.0	N	N	20	100	1.0
78P123	45 32 48	113 0 15	15.00	.07	<.05	.020	70	50.0	N	N	20	700	<1.0
78P124	45 32 47	113 0 5	2.00	.20	.50	.150	500	N	N	N	100	500	2.0
78P129	45 32 12	113 0 18	2.00	.20	.05	.100	300	1.5	N	N	30	300	1.0
78P132	45 32 13	113 1 47	10.00	.20	.20	.100	700	N	N	N	50	700	2.0
78P138A	45 37 15	113 4 32	5.00	.50	.15	.200	1,000	N	N	N	150	700	2.0
78P155	45 31 16	113 1 44	1.50	.15	N	.100	150	.5	N	N	20	700	2.0
78P156	45 30 47	113 1 27	.10	.03	N	.015	150	N	N	N	10	70	<1.0
78P164	45 28 37	113 2 40	2.00	.30	<.05	.100	200	.5	N	N	15	300	2.0
78P165	45 28 30	113 2 48	3.00	.30	.05	.150	1,500	1.0	N	N	100	1,000	3.0
78P166	45 28 12	113 3 20	7.00	.03	N	.015	200	7.0	N	N	20	100	1.0
78P169	45 29 20	113 3 12	3.00	.50	<.05	.100	300	100.0	1,000	N	20	150	5.0
78P177	45 35 13	113 1 40	.50	.30	.07	.020	30	1.5	N	N	1,000	200	1.0
78P183	45 23 51	113 5 1	5.00	1.00	.15	.300	200	.5	N	N	70	500	1.5
78P186	45 23 19	113 5 58	2.00	.07	.50	.015	100	30.0	N	N	15	100	1.0
78P188	45 23 29	113 5 35	3.00	.10	<.05	.050	200	2.0	N	N	15	100	1.5
78P214	45 27 12	113 3 16	1.00	.05	N	.020	30	700.0	200	N	50	150	1.5

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
1DC-4602	100	50	15	10	>0	N	70	N	15	7,000	1,000	N	N	<0
1FC-4607	15	N	10	15	300	<0	100	N	15	5,000	N	<0	N	200
1FC-4608	20	N	50	20	1,000	N	300	N	50	3,000	N	5	N	300
1FP-4571	N	50	7	10	3,000	<0	200	N	15	5,000	1,000	N	N	200
1FP-4572	N	50	30	15	1,000	30	50	N	70	3,100	N	<0	N	200
1FP-4573	N	N	7	20	150	20	100	N	10	2,000	N	5	N	200
1FP-4574	N	N	10	20	200	N	70	N	30	1,500	N	<0	N	200
1GD-4605	N	N	70	20	500	20	N	N	100	1,500	N	7	N	150
1GD-4606	N	N	7	10	200	20	N	N	10	500	N	5	N	N
1GD-4609	300	N	10	20	>0	200	50	N	30	20	N	7	N	<0
1GD-4610	1,000	N	10	30	>0	20	200	N	20	--	--	--	--	--
1XHL4592	N	N	N	N	300	N	100	N	7	1,500	100	N	N	500
1XHL4594	N	N	N	N	100	20	30	N	7	1,000	<0	<0	N	150
1XHL4595	N	N	N	<0	150	N	15	N	7	500	<0	<0	N	200
1XHL4596	N	N	N	10	100	30	10	N	7	500	100	<0	N	100
1XHL4597	100	N	N	N	200	N	20	N	7	30,000	200	5	N	<0
1XHL4598	N	N	5	N	300	20	15	N	5	2,000	N	5	N	<0
1XHL4599	N	30	N	N	50	N	5	N	5	3,000	N	10	N	N
1XHL4600	N	50	<0	N	2,000	N	100	N	7	10,000	200	5	N	<0
78J005	N	N	15	15	50	50	7	<20	10	50	N	10	N	300
78J006	70	N	N	10	50	30	20	<20	5	50	N	<5	N	<100
78J009	150	N	7	10	50	20	50	<20	7	70	N	7	<10	300
78J013	15	N	20	20	100	50	20	<20	15	50	N	15	N	500
78J014	50	N	5	15	30	20	15	<20	10	70	N	5	N	<100
78P005	10	N	150	20	1,500	N	15	<20	100	150	150	5	N	100
78P050	30	150	5	10	20,000	20	300	<20	5	7,000	3,000	<5	10	300
78P066	N	N	10	15	N	30	N	<20	5	50	N	10	N	300
78P121	N	N	10	10	<5	20	N	<20	10	15	N	N	N	<100
78P122	N	N	5	10	30	20	N	<20	10	100	N	N	N	<100
78P123	10	N	10	15	20	<20	5	<20	10	1,500	N	N	N	<100
78P124	N	N	5	10	<5	20	N	<20	10	15	N	5	N	100
78P129	N	N	5	10	5	20	N	<20	10	10	N	<5	N	<100
78P132	15	N	10	10	20	<20	50	<20	7	30	N	7	N	<100
78P138A	N	N	10	30	20	50	N	<20	20	15	N	10	N	<100
78P155	30	N	N	15	30	<20	30	<20	5	20	N	<5	N	150
78P156	N	N	N	10	<5	20	N	N	5	<10	N	<5	N	<100
78P164	N	N	N	10	50	20	50	<20	5	<10	N	<5	<10	<100
78P165	N	N	5	10	20	30	15	<20	5	20	<100	<5	N	<100
78P166	10	N	N	10	70	<20	200	<20	5	100	200	<5	N	<100
78P169	70	20	N	10	5,000	<20	7	20	5	3,000	500	7	30	<100
78P177	N	N	N	20	10	20	N	N	5	20	N	N	N	100
78P183	N	N	15	100	15	70	N	<20	30	50	N	15	N	<100
78P186	<10	N	N	20	10	20	30	<20	7	100	<100	N	N	<100
78P188	N	N	N	20	<5	20	10	<20	10	15	N	<5	N	<100
78P214	N	N	N	10	1,500	20	70	<20	5	10,000	1,000	N	N	N

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
1DC-4602	50	<0	10	700	100	N	580.00	>0	20.0	--	<0	6.50	3.2	--
1FC-4607	80	200	N	N	20	N	5.00	N	N	--	<0	17.00	2.3	--
1FC-4608	50	100	10	N	20	N	10.00	2.00	N	--	<0	2.90	4.0	--
1FP-4571	15	N	<0	3,000	N	N	>0	>0	400.0	--	<0	9.50	21.0	--
1FP-4572	30	N	15	5,000	150	N	>0	2.00	10.0	--	<0	6.50	46.0	--
1FP-4573	70	N	15	2,000	100	N	1,500.00	1.00	10.0	--	<0	5.50	52.0	--
1FP-4574	70	N	<0	<0	50	N	180.00	2.00	10.0	--	<0	17.00	5.6	--
1GD-4605	30	N	20	N	30	<0	25.00	1.00	10.0	--	<0	N	<0	--
1GD-4606	20	N	10	N	50	N	10.00	N	N	--	<0	N	<0	--
1GD-4609	30	N	30	N	100	N	15.00	1.00	N	--	100	40.00	.8	--
1GD-4610	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1XHL4592	70	50	20	2,000	10	N	1,500.00	40.00	40.0	--	200	.01	.1	--
1XHL4594	30	50	70	2,000	10	N	1,800.00	25.00	60.0	--	240	.10	<0	--
1XHL4595	50	50	50	500	10	N	500.00	20.00	60.0	--	600	1.00	.2	--
1XHL4596	50	N	20	1,000	15	N	1,400.00	35.00	40.0	--	400	1.00	.1	--
1XHL4597	50	N	10	2,000	10	N	1,800.00	100.00	40.0	--	600	2.50	1.1	--
1XHL4598	30	N	10	7,000	15	N	>0	10.00	200.0	--	360	1.00	.1	--
1XHL4599	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1XHL4600	70	N	15	7,000	20	N	>0	60.00	80.0	--	600	4.50	<0	--
78J005	100	<50	20	N	150	N	--	--	--	--	--	70.00	--	--
78J006	30	2,000	<10	N	20	N	--	--	--	--	--	15.00	--	--
78J009	70	1,000	15	N	100	N	--	--	--	--	--	30.00	--	--
78J013	100	<50	20	N	150	N	--	--	--	--	--	50.00	--	--
78J014	70	<50	10	N	50	N	--	--	--	--	--	80.00	--	--
78P005	100	<50	70	500	10	N	--	--	--	--	--	150.00	--	--
78P050	50	70	10	10,000	50	N	--	--	--	--	--	>2,000.00	--	--
78P066	150	N	30	N	70	N	--	--	--	--	--	35.00	--	--
78P121	50	N	10	N	20	N	--	--	--	--	--	15.00	--	--
78P122	30	N	<10	N	70	N	--	--	--	--	--	20.00	--	--
78P123	50	N	<10	N	N	N	--	--	--	--	--	75.00	--	--
78P124	70	N	10	N	70	N	--	--	--	--	--	30.00	--	--
78P129	70	N	<10	N	50	N	--	--	--	--	--	50.00	--	--
78P132	70	150	10	N	50	N	--	--	--	--	--	45.00	--	--
78P138A	300	N	20	N	500	N	--	--	--	--	--	20.00	--	--
78P155	70	200	<10	N	70	N	--	--	--	--	--	10.00	--	--
78P156	10	N	N	N	N	N	--	--	--	--	--	10.00	--	--
78P164	100	70	<10	N	70	N	--	--	--	--	--	20.00	--	--
78P165	50	N	10	<200	100	N	--	--	--	--	--	150.00	--	--
78P166	30	70	N	N	10	N	--	--	--	--	--	85.00	--	--
78P169	150	150	10	1,000	100	N	--	--	--	--	--	1,000.00	--	--
78P177	10	N	<10	N	70	N	--	--	--	--	--	5.00	--	--
78P183	70	N	50	N	200	N	--	--	--	--	--	25.00	--	--
78P186	50	N	<10	N	30	N	--	--	--	--	--	20.00	--	--
78P188	30	N	N	200	150	N	--	--	--	--	--	200.00	--	--
78P214	10	N	N	200	50	N	--	--	--	--	--	260.00	--	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
1DC-4602	--	--	--	--	--	--	--
1FC-4607	--	--	--	--	--	--	--
1FC-4608	--	--	--	--	--	--	--
1FP-4571	--	--	--	--	--	--	--
1FP-4572	--	--	--	--	--	--	--
1FP-4573	--	--	--	--	--	--	--
1FP-4574	--	--	--	--	--	--	--
1GD-4605	--	--	--	--	--	--	--
1GD-4606	--	--	--	--	--	--	--
1GD-4609	--	--	--	--	--	--	--
1GD-4610	--	--	--	--	--	--	--
1XHL4592	--	--	--	--	--	--	--
1XHL4594	--	--	--	--	--	--	--
1XHL4595	--	--	--	--	--	--	--
1XHL4596	--	--	--	--	--	--	--
1XHL4597	--	--	--	--	--	--	--
1XHL4598	--	--	--	--	--	--	--
1XHL4599	--	--	--	--	--	--	--
1XHL4600	--	--	--	--	--	--	--
76J005	10	20	--	--	--	--	--
78J006	2	20	--	--	--	--	--
78J009	N	<10	--	--	--	--	--
78J013	N	<10	--	--	--	--	--
78J014	2	10	--	--	--	--	--
78P005	100	320	--	--	--	--	--
78P050	>200	>1,600	--	--	--	--	--
78P066	N	10	--	--	--	--	--
78P121	N	<10	--	--	--	--	--
78P122	4	10	--	--	--	--	--
78P123	8	20	--	--	--	--	--
78P124	N	10	--	--	--	--	--
78P129	<1	10	--	--	--	--	--
78P132	N	<10	--	--	--	--	--
78P138A	<1	10	--	--	--	--	--
78P155	<1	10	--	--	--	--	--
78P156	<1	<10	--	--	--	--	--
78P164	<1	<10	--	--	--	--	--
78P165	15	10	--	--	--	--	--
78P166	150	20	--	--	--	--	--
78P169	>200	320	--	--	--	--	--
78P177	2	10	--	--	--	--	--
78P183	<1	<10	--	--	--	--	--
78P186	10	10	--	--	--	--	--
78P188	1	10	--	--	--	--	--
78P214	>200	120	--	--	--	--	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
78P217	45 27 43	113 4 12	1.50	.02	N	.007	2,000	300.0	3,000	N	10	100	1.0
78P219	45 27 53	113 3 34	1.50	.03	N	.007	30	5.0	N	N	10	200	1.0
78P86	45 33 48	113 1 19	10.00	.15	<.05	.070	100	150.0	N	N	15	5,000	1.5
78P87	45 33 50	113 1 4	>20.00	.30	<.05	.300	150	20.0	N	N	30	700	2.0
78P88	45 34 3	113 1 0	15.00	.10	<.05	.020	1,000	2.0	N	N	15	700	2.0
78P89	45 34 3	113 1 0	3.00	.70	.05	.150	5,000	N	N	N	15	1,000	2.0
79BB120	45 32 53	113 0 3	2.00	<.02	N	<.002	100	1,000.0	1,000	N	10	1,000	<1.0
79BB122	45 40 20	112 59 30	.50	3.00	5.00	.010	200	70.0	N	N	10	50	<1.0
79BB124	45 30 34	113 2 32	2.00	.70	<.05	.300	500	3.0	N	N	30	700	5.0
79BB125	45 30 31	113 2 34	3.00	.50	1.00	.500	700	1.0	N	N	30	1,000	1.0
79BB129	45 36 20	113 1 42	.30	7.00	7.00	.015	200	500.0	N	N	N	150	N
79BB139	45 40 6	113 1 21	.20	.50	1.00	.020	200	150.0	1,000	N	15	70	N
79BB166	45 33 32	113 15 24	5.00	<.02	<.05	.002	<10	150.0	500	N	10	20	<1.0
79BB167	45 25 33	113 1 27	2.00	.30	.20	.150	500	1.0	N	N	15	700	2.0
79BB16B	45 25 47	113 1 47	2.00	.70	.20	.150	700	1.5	N	N	15	1,000	2.0
79BB169	45 38 44	112 58 40	3.00	.07	.10	.005	30	300.0	2,000	N	10	50	<1.0
79BB171	45 44 41	113 8 41	5.00	1.00	1.00	.300	1,000	2.0	N	N	30	700	1.5
79BB205	45 39 40	112 57 0	2.00	.50	.05	.300	150	1.0	N	N	15	500	1.5
79G119	45 29 46	113 1 52	3.00	.50	.10	.150	150	1.0	N	N	20	1,000	1.0
79G120	45 29 30	113 2 2	1.50	.15	.05	.050	150	.5	N	N	15	100	1.5
79P002	45 37 40	113 4 24	.20	.10	N	.070	70	N	N	N	200	30	<1.0
79P026	45 18 35	113 4 53	.50	10.00	15.00	.020	200	500.0	1,000	N	15	<20	N
79P028	45 33 20	112 58 13	1.50	.70	2.00	.200	700	.7	N	N	30	1,000	2.0
79P039	45 36 0	112 59 50	5.00	1.00	2.00	.005	70	700.0	700	N	10	500	1.0
79P064	45 27 43	112 2 44	10.00	.20	N	.100	100	1.5	N	N	20	700	2.0
80P017	45 23 38	112 58 52	1.50	.20	.50	.100	1,000	.5	N	N	50	300	2.0
80P019	45 23 41	112 59 7	1.00	.20	<.05	.070	500	1.0	N	N	20	150	1.5
80P020	45 21 22	112 57 41	5.00	.07	N	.070	10	N	N	10	30	50	1.0
80P021	45 21 26	112 57 43	10.00	.02	N	.005	70	7.0	N	50	20	50	5.0
80P027A	44 59 57	113 19 15	3.00	.20	.10	.015	150	15.0	N	N	10	300	1.0
80P030	45 3 7	112 25 3	7.00	.70	2.00	.100	150	15.0	N	N	10	2,000	N
80P038	45 2 15	112 35 9	1.00	.07	.05	.030	10	10.0	300	N	20	>5,000	1.0
80P050	45 20 58	113 59 58	7.00	2.00	.70	.070	1,000	10.0	N	N	15	300	1.0
80P051	45 4 27	113 51 20	3.00	.02	N	.002	10	10.0	N	N	<10	150	1.0
80P056	45 15 57	113 45 32	1.50	.50	.10	.150	200	7.0	N	N	10	500	2.0
80P057	45 15 56	113 45 31	2.00	.10	N	.050	70	100.0	N	N	10	300	1.0
80P058	45 15 54	113 45 27	1.00	.10	<.05	.050	15	20.0	N	N	10	200	1.5
80P063	45 17 30	113 56 54	10.00	.50	7.00	.700	>5,000	N	N	N	<10	1,000	<1.0
80P065	45 17 56	113 56 52	7.00	2.00	.70	.200	>5,000	2.0	N	N	<10	>5,000	<1.0
80P067	45 17 48	113 59 21	10.00	.02	N	.002	500	N	N	N	10	30	<1.0
80P068	45 14 38	113 41 2	7.00	.03	N	.003	700	3.0	N	N	10	200	N
80P069	45 14 39	113 40 0	3.00	.50	.30	.150	700	150.0	N	N	10	200	<1.0
80P070	45 33 25	113 57 59	1.50	.02	N	.010	>5,000	N	N	N	<10	2,000	1.5
80P077	45 54 17	113 0 45	5.00	.15	N	.150	20	.7	N	N	10	>5,000	<1.0
80P078	45 54 17	113 0 45	1.50	.70	<.05	.070	15	N	N	N	30	>5,000	1.0

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
78P217	70	30	N	20	10,000	<20	N	30	5	7,000	700	N	N	<100
78P219	<10	N	N	15	20	<20	15	<20	5	30	N	N	N	<100
78P86	N	N	15	10	70	<20	10	<20	15	700	N	<5	N	<100
78P87	N	N	15	15	30	30	N	<20	<5	500	N	20	N	100
78P88	N	N	7	15	50	<20	N	<20	10	300	N	N	N	<100
78P89	N	N	5	N	N	100	N	N	5	100	N	5	N	100
79BB120	N	100	<5	10	1,000	N	15	N	<5	>20,000	10,000	N	N	<100
79BB122	<10	20	N	N	300	20	N	N	<5	15,000	N	N	<10	<100
79BB124	N	N	N	N	70	30	N	<20	<5	150	N	<5	<10	100
79BB125	N	N	7	N	15	20	N	<20	<5	100	N	5	N	300
79BB129	N	70	N	N	3,000	N	N	N	<5	700	1,000	N	N	100
79BB139	100	50	N	N	7,000	N	N	N	5	2,000	3,000	N	N	<100
79BB166	15	70	30	N	2,000	N	200	N	5	2,000	2,000	N	N	<100
79BB167	N	N	5	N	50	20	70	<20	<5	30	N	5	N	150
79BB168	10	N	7	N	10	20	20	N	<5	50	N	5	N	150
79BB169	100	N	N	N	10,000	N	20	N	5	5,000	1,500	N	50	<100
79BB171	N	N	15	N	150	30	N	<20	10	20	N	7	N	200
79BB205	N	N	N	20	7	20	N	<20	10	<10	N	7	N	<100
79G119	N	N	N	N	70	20	100	N	<5	30	N	N	N	150
79G120	N	N	N	N	200	N	10	N	<5	100	N	N	N	<100
79P002	N	N	N	N	<5	N	N	N	<5	N	N	N	N	<100
79P026	20	N	<5	20	5,000	N	15	N	5	>20,000	1,000	N	N	150
79P028	N	N	7	10	30	20	N	N	7	300	N	5	N	300
79P039	500	100	10	10	20,000	N	N	N	30	15,000	3,000	<5	20	<100
79P064	10	N	7	10	70	N	700	N	<5	1,000	<100	<5	15	N
80P017	N	N	7	<10	30	N	N	N	N	15	N	5	N	N
80P019	N	N	<5	<10	20	20	N	N	N	300	N	<5	N	N
80P020	30	N	70	10	50	20	<5	N	30	N	N	N	N	N
80P021	200	N	20	15	1,000	N	7	N	20	20	N	N	N	N
80P027A	10	N	100	<10	>20,000	N	7	N	200	300	N	<5	N	N
80P030	<10	N	70	100	>20,000	<20	N	N	150	10	N	5	N	500
80P038	N	N	20	20	10,000	N	N	N	20	50	N	<5	N	500
80P050	10	N	50	15	100	<20	5	N	50	200	N	20	N	<100
80P051	50	N	N	<10	20,000	<20	N	N	<5	50	<100	<5	N	N
80P056	N	N	15	20	200	30	50	N	15	1,000	N	5	N	200
80P057	N	>500	50	10	7,000	<20	N	N	10	20,000	N	<5	N	N
80P058	N	20	<5	10	2,000	20	N	N	7	3,000	N	<5	N	N
80P063	N	N	30	200	10	>1,000	10	2,000	50	70	100	10	30	2,000
80P065	30	N	50	500	100	500	50	500	500	2,000	N	10	N	700
80P067	N	N	100	<10	10	N	N	N	70	<10	N	N	N	N
80P068	30	N	20	<10	2,000	N	30	N	10	50	N	N	N	N
80P069	500	N	10	20	15,000	N	N	N	15	2,000	N	5	N	<100
80P070	N	N	50	N	70	N	N	N	10	<10	100	N	N	N
80P077	<10	N	20	50	100	200	50	N	20	20	N	5	N	500
80P078	N	N	<5	<10	100	30	N	30	7	10	N	5	N	700

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
78P217	<10	3,000	10	5,000	N	N	--	--	--	--	--	>2,000.00	--	--
78P219	10	50	<10	N	N	N	--	--	--	--	--	25.00	--	--
78P86	30	N	30	500	100	N	--	--	--	--	--	150.00	--	--
78P87	70	N	50	N	300	N	--	--	--	--	--	30.00	--	--
78P88	50	N	20	500	N	N	--	--	--	--	--	220.00	--	--
78P89	70	N	15	N	70	N	--	--	--	--	--	15.00	--	--
79BB120	<10	N	N	>10,000	N	N	--	--	--	--	--	>2,000.00	--	--
79BB122	<10	N	N	N	30	N	--	--	--	--	--	130.00	--	--
79BB124	50	<50	<10	N	70	N	--	--	--	--	--	50.00	--	--
79BB125	50	N	<10	N	100	N	--	--	--	--	--	55.00	--	--
79BB129	10	N	N	300	<10	N	--	--	--	--	--	480.00	--	--
79BB139	<10	N	N	1,000	N	N	--	--	--	--	--	>2,000.00	--	--
79BB166	<10	N	N	1,000	N	N	--	--	--	--	--	1,300.00	--	--
79BB167	50	50	10	N	70	N	--	--	--	--	--	40.00	--	--
79BB168	50	N	N	N	100	N	--	--	--	--	--	30.00	--	--
79BB169	10	N	N	1,500	N	N	--	--	--	--	--	1,600.00	--	--
79BB171	100	N	15	N	150	N	--	--	--	--	--	70.00	--	--
79BB205	50	N	15	N	300	N	--	--	--	--	--	25.00	--	--
79G119	30	<50	N	N	100	N	--	--	--	--	--	50.00	--	--
79G120	30	N	N	N	<10	N	--	--	--	--	--	130.00	--	--
79P002	15	N	N	N	200	N	--	--	--	--	--	5.00	--	--
79P026	7,000	N	N	N	10	N	--	--	--	--	--	100.00	--	--
79P028	70	N	<10	N	100	N	--	--	--	--	--	40.00	--	--
79P039	10	N	N	7,000	N	N	--	--	--	--	--	>2,000.00	--	--
79P064	50	50	N	N	100	N	--	--	--	--	--	90.00	--	--
80P017	50	N	10	N	100	N	.70	--	--	--	--	55.00	--	--
80P019	30	N	<10	N	50	N	<.05	--	--	--	--	90.00	--	--
80P020	20	N	<10	N	70	N	24.00	--	--	--	--	5.00	--	--
80P021	70	N	10	N	30	N	7.00	--	--	--	--	20.00	--	--
80P027A	10	N	10	200	15	N	.30	--	--	--	--	130.00	--	--
80P030	100	N	15	N	150	N	.05	--	--	--	--	50.00	--	--
80P038	10	N	15	N	30	N	<.05	--	--	--	--	30.00	--	--
80P050	15	N	20	200	70	N	6.50	--	--	--	--	100.00	--	--
80P051	<10	N	N	N	<10	N	.10	--	--	--	--	5.00	--	--
80P056	30	N	15	1,000	150	N	.30	--	--	--	--	700.00	--	--
80P057	10	N	<10	>10,000	100	N	6.00	--	--	--	--	>2,000.00	--	--
80P058	10	N	15	5,000	100	N	.75	--	--	--	--	>2,000.00	--	--
80P063	100	N	2,000	200	50	N	.05	--	--	--	--	320.00	--	--
80P065	30	N	700	1,000	70	1,500	1.80	--	--	--	--	700.00	--	--
80P067	<10	N	10	N	N	300	.35	--	--	--	--	10.00	--	--
80P068	N	150	N	N	N	N	28.00	--	--	--	--	30.00	--	--
80P069	100	N	10	N	50	N	.15	--	--	--	--	25.00	--	--
80P070	<10	N	<10	N	10	N	.15	--	--	--	--	15.00	--	--
80P077	100	70	30	N	150	N	.30	--	--	--	--	130.00	--	--
80P078	100	N	20	N	70	N	.20	--	--	--	--	130.00	--	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
78P217	>200	400	--	--	--	--	--
78P219	5	20	--	--	--	--	--
78P86	20	20	--	--	--	--	--
78P87	4	10	--	--	--	--	--
78P88	10	20	--	--	--	--	--
78P89	N	20	--	--	--	--	--
79BB120	>200	800	--	--	--	--	--
79BB122	40	10	--	--	--	--	--
79BB124	5	10	--	--	--	--	--
79BB125	5	<10	--	--	--	--	--
79BB129	>200	200	--	--	--	--	--
79BB139	>200	1,200	--	--	--	--	--
79BB166	>200	200	--	--	--	--	--
79BB167	4	10	--	--	--	--	--
79BB168	3	<10	--	--	--	--	--
79BB169	>200	>1,600	--	--	--	--	--
79BB171	1	10	--	--	--	--	--
79BB205	<1	<10	--	--	--	--	--
79G119	<1	10	--	--	--	--	--
79G120	20	40	--	--	--	--	--
79P002	<1	10	--	--	--	--	--
79P026	>200	800	--	--	--	--	--
79P028	3	<10	--	--	--	--	--
79P039	>200	400	--	--	--	--	--
79P064	25	40	--	--	--	--	--
80P017	<1	40	--	--	--	--	--
80P019	3	<10	--	--	--	--	--
80P020	1	10	--	--	--	--	--
80P021	5	40	--	--	--	--	--
80P027A	2	120	--	--	--	--	--
80P030	<1	10	--	--	--	--	--
80P038	30	200	--	--	--	--	--
80P050	<1	10	--	--	--	--	--
80P051	25	<10	--	--	--	--	--
80P056	3	10	--	--	--	--	--
80P057	4	10	--	--	--	--	--
80P058	<1	<10	--	--	--	--	--
80P063	2	<10	--	--	--	--	--
80P065	<1	10	--	--	--	--	--
80P067	<1	<10	--	--	--	--	--
80P068	15	10	--	--	--	--	--
80P069	1	<10	--	--	--	--	--
80P070	10	1	--	--	--	--	--
80P077	<1	80	--	--	--	--	--
80P078	<1	10	--	--	--	--	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
80P082	45 11 7	112 57 17	.70	.07	2.00	.005	>5,000	300.0	700	N	10	30	<1.0
80P083	45 11 21	112 56 49	2.00	.30	1.50	<.002	>5,000	150.0	N	N	N	50	1.0
80P090	45 42 38	112 32 17	2.00	.70	.10	.100	500	1.0	300	N	100	150	1.0
80P091	45 43 14	112 33 6	1.50	.70	.05	.020	300	.5	N	N	15	<20	<1.0
80P092	45 43 34	112 33 28	10.00	1.00	<.05	.100	200	15.0	N	N	50	200	2.0
80P093	45 45 56	112 31 46	.50	.05	N	.015	50	1,000.0	5,000	N	15	300	2.0
80P094	45 37 59	112 35 52	10.00	2.00	2.00	.002	5,000	300.0	700	N	10	70	<1.0
80P095	45 37 59	112 35 52	7.00	5.00	10.00	.015	5,000	200.0	700	N	10	100	<1.0
80P097	45 38 28	112 35 14	10.00	.30	.05	.200	70	50.0	N	N	20	700	2.0
80P100	45 40 24	112 42 5	15.00	.05	.20	.050	1,500	70.0	N	N	<10	70	2.0
80P103	45 11 23	112 57 20	7.00	.07	1.00	.002	1,000	200.0	1,000	N	10	200	1.0
80P104	45 11 23	112 57 20	5.00	.05	.10	.003	>5,000	100.0	700	N	10	500	1.0
80P105	45 11 23	112 57 20	10.00	.03	.15	<.002	>5,000	300.0	1,500	N	<10	20	1.5
80P107	45 11 57	112 57 45	.20	1.00	10.00	.002	1,000	20.0	N	N	<10	70	<1.0
80P108	45 37 38	113 2 48	5.00	.20	2.00	.150	>5,000	N	N	N	10	500	10.0
81P001	45 22 18	113 40 21	2.00	.02	<.05	.015	10	300.0	N	10	10	300	<1.0
81P002	45 22 17	113 40 19	.15	.03	<.05	.005	15	<.5	N	N	10	30	<1.0
81P003	45 22 25	113 40 40	2.00	.03	<.05	.015	10	20.0	N	N	10	100	<1.0
81P004	45 22 25	113 40 41	.10	.02	.10	.005	10	500.0	N	20	20	500	<1.0
81P006	45 19 21	113 43 28	7.00	.02	N	.005	150	N	N	N	<10	200	<1.0
81P008	45 19 21	113 43 28	3.00	.05	.10	.050	70	1.0	N	N	15	5,000	1.0
81P009	45 19 22	113 43 26	.50	.05	.05	.030	150	700.0	N	N	10	>5,000	1.0
81P012	45 22 18	113 40 21	3.00	1.50	3.00	.300	700	300.0	N	N	10	3,000	1.5
81P013	45 14 0	113 35 30	.30	.07	.10	.200	200	200.0	N	N	10	>5,000	<1.0
81P016	45 13 10	113 26 40	.70	.20	.10	.100	50	.5	N	N	50	500	1.0
81P019	45 13 54	113 27 5	20.00	.70	.07	.150	300	5.0	500	N	10	300	1.0
81P021	45 39 45	113 40 33	.30	.10	.05	.200	100	N	N	N	30	300	1.5
81P024	45 11 23	113 35 25	10.00	3.00	3.00	>1.000	1,500	N	N	N	50	300	1.0
81P025	45 11 23	113 35 25	3.00	1.50	10.00	.150	1,500	.7	N	N	50	500	1.5
81P027	45 11 8	113 35 33	5.00	.30	.10	.300	200	7.0	N	N	15	3,000	<1.0
81P029	45 8 37	113 34 55	.50	.02	<.05	.007	10	20.0	N	N	15	200	<1.0
81P032	45 37 25	113 52 10	1.50	.07	.05	.030	100	N	N	N	70	50	1.0
81P033	45 51 51	113 52 35	3.00	.20	1.00	.100	700	1.0	N	N	30	1,000	2.0
81P037	45 48 40	113 57 12	1.00	.20	.50	.100	200	N	N	N	100	300	3.0
81P040	45 39 47	113 56 15	7.00	5.00	3.00	.100	>5,000	20.0	N	N	10	500	7.0
81P043	45 37 14	113 53 43	.70	.15	.05	.100	200	N	N	N	30	200	1.5
81P045	45 30 11	113 50 5	.70	.10	<.05	.020	20	20.0	N	N	15	300	1.0
81P046	45 31 35	113 49 55	10.00	.30	<.05	.100	700	7.0	N	N	20	500	2.0
81P047	45 33 54	113 49 30	1.50	.02	<.05	.030	150	N	N	N	10	70	1.0
81P048	45 47 48	112 0 5	1.00	.05	.15	.150	20	20.0	200	N	70	700	N
81P049	45 55 57	112 2 38	7.00	.05	<.05	.050	>5,000	200.0	N	N	30	200	1.5
81P050	45 55 35	112 2 38	7.00	1.50	.70	.002	>5,000	20.0	N	N	N	>5,000	1.0
81P051	45 55 38	112 1 49	20.00	.02	<.05	.030	>5,000	200.0	200	N	10	1,000	2.0
81P053	45 54 57	112 1 27	5.00	.10	N	.200	70	5.0	N	N	20	2,000	1.0
81P054	45 54 49	112 1 52	20.00	<.02	N	.002	20	70.0	300	N	N	200	<1.0

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
80P082	N	>500	<5	10	10,000	N	20	N	10	20,000	2,000	N	10	<100
80P083	N	N	N	<10	200	N	N	N	<5	2,000	200	N	N	N
80P090	N	N	200	30	200	20	N	N	30	70	N	5	N	N
80P091	N	N	100	<10	150	N	N	N	10	20	N	N	N	N
80P092	N	N	30	100	>20,000	N	N	N	20	100	N	10	150	N
80P093	N	70	N	N	20,000	N	15	N	<5	10,000	2,000	N	N	100
80P094	N	500	<5	10	2,000	N	10	N	5	>20,000	700	N	500	<100
80P095	N	300	<5	<10	1,000	N	7	N	7	>20,000	200	N	200	100
80P097	50	N	5	100	500	20	7	N	10	20,000	150	10	10	500
80P100	50	N	10	10	10,000	<20	7	N	15	1,000	N	5	N	<100
80P103	N	70	N	10	2,000	N	5	N	15	15,000	100	N	50	N
80P104	N	100	N	<10	1,000	N	5	N	15	10,000	500	N	N	N
80P105	N	300	N	<10	20,000	N	7	N	20	2,000	5,000	5	100	N
80P107	N	N	N	10	70	<20	N	N	5	200	N	N	N	<100
80P108	15	N	20	30	70	30	N	20	20	20	N	5	20	N
81P001	50	30	N	N	1,000	N	1,500	N	5	>20,000	N	N	20	100
81P002	N	N	N	N	20	<20	30	N	5	200	N	N	N	N
81P003	70	N	N	<10	100	<20	700	N	5	2,000	N	N	<10	N
81P004	700	N	N	10	100	20	>2,000	N	5	>20,000	N	N	100	<100
81P006	N	N	10	<10	50	N	300	N	50	100	N	N	N	N
81P008	<10	N	200	70	30	N	300	N	70	300	N	<5	N	150
81P009	>1,000	50	5	10	2,000	20	10	N	10	>20,000	<100	N	N	500
81P012	10	N	7	30	150	50	10	<20	5	1,500	N	10	<10	700
81P013	30	N	5	10	>20,000	N	200	N	5	>20,000	<100	N	N	300
81P016	N	N	N	10	70	70	N	N	5	200	N	N	N	<100
81P019	N	N	500	70	>20,000	N	N	N	>5,000	1,500	N	5	N	N
81P021	N	N	N	20	10	30	N	N	10	15	N	5	N	<100
81P024	N	N	70	150	150	30	N	<20	100	70	N	20	N	300
81P025	N	N	10	20	100	<20	N	N	30	150	N	7	N	300
81P027	N	N	15	15	20,000	N	N	N	30	50	N	7	N	<100
81P029	15	N	5	N	700	<20	5	N	5	15,000	N	N	N	<100
81P032	N	N	5	<10	20	20	N	N	15	10	<100	5	N	N
81P033	10	N	10	N	50	20	N	<20	5	50	N	<5	N	200
81P037	N	N	<5	N	15	20	N	N	5	20	N	<5	N	100
81P040	N	N	200	15	15,000	20	N	N	50	20	N	15	N	100
81P043	N	N	<5	10	N	100	N	N	5	10	N	<5	N	<100
81P045	70	N	N	<10	100	20	N	N	5	300	N	N	N	N
81P046	100	N	30	100	150	N	50	N	100	100	N	15	N	N
81P047	N	N	5	N	7	<20	N	N	7	N	N	N	N	N
81P048	N	<20	N	15	20	30	5	<20	5	70	N	N	N	100
81P049	N	50	N	10	700	N	20	N	10	>20,000	500	5	N	200
81P050	N	150	N	N	300	N	N	N	7	>20,000	N	5	N	1,500
81P051	N	N	15	<10	2,000	50	10	N	20	>20,000	100	30	N	200
81P053	<10	N	10	30	30	70	15	<20	20	300	N	7	10	100
81P054	50	N	10	N	7,000	N	N	N	20	>20,000	N	10	N	<100

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
80P082	1,000	N	10	>10,000	10	N	.20	--	--	--	--	>2,000.00	--	--
80P083	50	N	<10	10,000	N	N	.10	--	--	--	--	>2,000.00	--	--
80P090	50	N	N	200	70	N	<.05	--	--	--	--	160.00	--	--
80P091	<10	N	<10	N	20	N	<.05	--	--	--	--	15.00	--	--
80P092	70	N	20	500	30	N	25.00	--	--	--	--	440.00	--	--
80P093	<10	N	N	10,000	20	N	.35	--	--	--	--	>2,000.00	--	--
80P094	70	N	N	>10,000	<10	N	.45	--	--	--	--	>2,000.00	--	--
80P095	30	N	N	>10,000	15	N	.30	--	--	--	--	>2,000.00	--	--
80P097	100	70	10	10,000	100	N	.30	--	--	--	--	680.00	--	--
80P100	50	N	10	300	20	N	20.00	--	--	--	--	80.00	--	--
80P103	1,000	N	10	>10,000	N	N	2.00	--	--	--	--	>2,000.00	--	--
80P104	70	N	10	>10,000	N	N	.70	--	--	--	--	>2,000.00	--	--
80P105	50	N	30	>10,000	N	N	.35	--	--	--	--	>2,000.00	--	--
80P107	10	N	N	200	N	N	.15	--	--	--	--	220.00	--	--
80P108	100	70	10	500	20	N	<.05	--	--	--	--	520.00	--	--
81P001	15	500	N	N	N	N	6.50	--	--	--	--	10.00	--	--
81P002	15	100	N	N	N	N	<.05	--	--	--	--	5.00	--	--
81P003	50	700	N	N	N	N	.30	--	--	--	--	5.00	--	--
81P004	70	500	<10	N	N	N	10.00	--	--	--	--	30.00	--	--
81P006	70	200	N	N	N	N	.05	--	--	--	--	5.00	--	--
81P008	70	50	10	N	50	<100	11.00	--	--	--	--	5.00	--	--
81P009	30	<50	10	N	30	N	4.00	--	--	--	--	5.00	--	--
81P012	70	150	15	N	150	N	.05	--	--	--	--	160.00	--	--
81P013	20	<50	<10	N	15	N	.05	--	--	--	--	20.00	--	--
81P016	30	N	15	N	150	N	<.05	--	--	--	--	10.00	--	--
81P019	100	N	50	500	150	N	.25	--	--	--	--	320.00	--	--
81P021	30	N	20	N	150	N	<.05	--	--	--	--	5.00	--	--
81P024	300	N	50	<200	100	N	N	--	--	--	--	70.00	--	--
81P025	50	N	15	N	70	N	N	--	--	--	--	15.00	--	--
81P027	100	N	15	N	50	N	<.05	--	--	--	--	60.00	--	--
81P029	10	N	10	N	15	N	28.00	--	2.2	--	--	15.00	--	--
81P032	70	N	<10	N	15	N	N	--	<.1	--	--	15.00	--	--
81P033	50	N	<10	N	100	N	N	--	.1	--	--	50.00	--	--
81P037	20	N	<10	N	50	N	N	--	N	--	--	25.00	--	--
81P040	70	N	70	500	30	N	.20	--	.4	--	--	440.00	--	--
81P043	20	N	10	N	150	N	N	--	N	--	--	15.00	--	--
81P045	15	N	N	N	10	N	32.00	--	9.0	--	--	10.00	--	--
81P046	100	N	30	N	50	N	2.00	--	2.6	--	--	85.00	--	--
81P047	10	N	<10	N	N	N	<.05	--	<.1	--	--	25.00	--	--
81P048	700	N	10	<200	150	N	2.50	--	5.1	--	--	140.00	--	--
81P049	30	N	30	7,000	30	N	.10	--	<.1	--	--	>2,000.00	--	--
81P050	30	N	<10	10,000	N	N	.05	--	<.1	--	--	>2,000.00	--	--
81P051	100	N	30	10,000	10	N	2.50	--	.1	--	--	>2,000.00	--	--
81P053	150	100	50	N	150	N	.30	--	.4	--	--	50.00	--	--
81P054	20	N	10	N	N	N	.85	--	21.0	--	--	340.00	--	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
80P082	>200	200	--	--	--	--	--
80P083	120	40	--	--	--	--	--
80P090	3	200	--	--	--	--	--
80P091	1	20	--	--	--	--	--
80P092	4	60	--	--	--	--	--
80P093	>200	1,200	--	--	--	--	--
80P094	180	400	--	--	--	--	--
80P095	160	200	--	--	--	--	--
80P097	140	30	--	--	--	--	--
80P100	4	20	--	--	--	--	--
80P103	100	200	--	--	--	--	--
80P104	>200	400	--	--	--	--	--
80P105	>200	>1,200	--	--	--	--	--
80P107	20	10	--	--	--	--	--
80P108	25	20	--	--	--	--	--
81P001	15	N	--	--	--	220	--
81P002	N	10	--	--	--	260	--
81P003	N	20	--	--	--	<100	--
81P004	15	10	--	--	--	<100	--
81P006	N	10	--	--	--	N	--
81P008	N	10	--	--	--	<100	--
81P009	20	10	--	--	--	<100	--
81P012	N	10	--	--	--	810	--
81P013	25	20	--	--	--	<100	--
81P016	N	10	--	--	--	290	--
81P019	5	200	--	--	--	400	--
81P021	N	N	--	--	--	170	--
81P024	N	N	--	--	--	500	--
81P025	N	10	--	--	--	130	--
81P027	<1	10	--	--	--	110	--
81P029	10	10	--	--	--	120	--
81P032	<1	N	--	--	--	<100	--
81P033	N	10	--	--	--	280	--
81P037	<1	N	--	--	--	320	--
81P040	1	N	--	--	--	300	--
81P043	N	10	--	--	--	400	--
81P045	4	N	--	--	--	<100	--
81P046	2	20	--	--	--	<100	--
81P047	N	20	--	--	--	<100	--
81P048	10	100	--	--	--	120	--
81P049	160	20	--	--	--	120	--
81P050	15	10	--	--	--	<100	--
81P051	40	100	--	--	--	200	--
81P053	4	N	--	--	--	200	--
81P054	15	100	--	--	--	<100	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC APSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct.	Mg-pct.	Ca-pct.	Ti-pct.	Mn-ppm	Ag-ppm	As-ppm	Au-ppm	B-ppm	Ba-ppm	Be-ppm
			s	s	s	s	s	s	s	s	s	s	s
81P055	45 39 59	112 7 51	1.00	.15	3.00	.050	300	20.0	N	10	20	300	5.0
81P058	45 55 16	112 15 58	10.00	.03	.10	.020	700	100.0	700	<10	30	150	N
81P059A	45 57 30	112 16 38	10.00	5.00	15.00	.005	1,500	N	N	N	30	150	<1.0
81P059B	45 57 30	112 16 38	.50	.03	.05	.020	10	15.0	N	N	30	200	<1.0
81P063	45 41 44	112 20 3	20.00	1.50	.10	.150	1,000	7.0	N	N	10	200	N
81P065	45 40 50	112 20 15	1.00	.10	<.05	.030	150	500.0	N	N	30	500	N
81P068	45 39 22	112 19 48	7.00	.03	<.05	.020	150	500.0	N	100	10	100	N
81P069	45 39 22	112 19 48	3.00	1.00	.20	.100	200	30.0	N	N	15	100	N
81P070	45 33 50	112 11 54	10.00	1.00	7.00	.050	2,000	10.0	N	N	10	70	<1.0
81P071	45 33 52	112 11 22	5.00	.70	2.00	.010	3,000	10.0	<200	10	10	200	<1.0
81P072	45 33 34	112 11 20	5.00	.50	.15	.002	2,000	200.0	200	N	10	50	<1.0
81P073	45 33 12	112 10 42	1.00	.05	<.05	.100	30	20.0	<200	N	20	70	<1.0
81P074	45 32 21	112 12 25	20.00	1.00	2.00	.050	2,000	100.0	2,000	70	10	30	1.0
81P075	45 32 34	112 12 2	3.00	.50	.15	.100	3,000	3.0	N	N	70	1,000	2.0
81P076	45 32 33	112 12 0	7.00	1.50	7.00	.050	2,000	1.0	200	N	10	200	1.5
81P077	45 32 24	112 11 15	7.00	7.00	7.00	.200	1,500	1.0	N	N	10	1,500	1.0
81P078	45 32 24	112 11 15	20.00	.50	1.00	.100	3,000	100.0	1,500	N	10	500	<1.0
81P079	45 32 35	112 10 42	2.00	.50	1.00	.050	1,500	100.0	300	N	20	200	1.0
81P081	45 33 25	112 6 19	15.00	.10	<.05	.150	100	100.0	1,000	50	20	200	1.5
81P083	45 33 3	112 6 42	5.00	.10	.05	.100	70	5.0	1,000	N	20	300	2.0
82P002	45 46 47	112 12 57	20.00	.07	.10	.050	150	N	1,500	N	N	500	70.0
82P017	45 22 47	112 55 45	1.00	.30	<.05	.200	150	1.5	N	N	50	200	3.0
82P018	45 22 47	112 55 15	2.00	.30	<.05	.150	100	3.0	1,000	N	30	150	1.5
82P019	45 22 42	112 55 38	10.00	.15	<.05	.050	70	N	N	N	10	100	5.0
82P070	45 45 27	112 56 28	.07	1.50	3.00	.020	70	150.0	1,500	N	<10	500	<1.0
82P075	45 44 25	112 52 12	>20.00	.02	.07	.007	300	N	700	N	N	30	3.0
82P077	45 44 52	112 51 57	5.00	<.02	.07	N	200	1.0	700	N	<10	<20	10.0
8AD0400	45 59 29	113 32 54	10.00	.05	<.05	.100	500	15.0	200	N	20	>5,000	1.0
8AI2135	45 53 29	112 56 27	15.00	1.50	2.00	.020	3,000	7.0	200	N	10	500	<1.0
8AI2138	45 53 31	112 56 28	7.00	.70	1.50	.007	300	100.0	>10,000	N	10	50	<1.0
8AI2139	45 53 30	112 56 28	15.00	.02	.15	.050	100	150.0	>10,000	15	10	200	<1.0
8AI2140	45 54 34	112 55 1	2.00	.70	.70	.010	1,000	30.0	1,500	N	10	70	3.0
8AI2142	45 54 40	112 54 59	7.00	.10	1.00	.005	300	150.0	10,000	10	300	70	<1.0
8AI2143	45 54 40	112 54 59	20.00	.30	1.00	.007	1,000	200.0	3,000	N	10	100	5.0
8AI2144	45 55 53	112 55 41	7.00	.70	1.00	.010	500	1,000.0	200	N	10	20	<1.0
8AI2146	45 55 53	112 55 41	.30	3.00	5.00	.015	150	1,000.0	N	N	15	100	1.0
8AI2147	45 55 49	112 55 40	7.00	.30	.10	.010	50	500.0	500	N	15	70	1.0
8AI2149	45 57 15	112 52 54	3.00	1.00	1.50	.200	200	3.0	N	N	100	700	1.0
8AI2150	45 57 16	112 52 54	7.00	1.50	.50	.300	300	1.0	N	N	150	1,000	1.5
8AI2151	45 57 15	112 52 54	5.00	1.00	1.50	.200	300	1.5	N	N	15	500	1.0
8AI2153	45 56 13	112 57 12	5.00	5.00	10.00	.010	1,000	30.0	N	N	30	N	<1.0
8BL6063	45 46 42	112 34 48	20.00	.30	.50	.050	200	.7	300	N	10	70	1.0
8BL6065	45 47 42	112 30 30	>20.00	.10	.10	.030	150	3.0	300	N	<10	<20	<1.0
8BL6067	45 47 51	112 30 50	20.00	3.00	1.50	.010	700	1.5	N	10	50	<20	<1.0
8BL6068	45 47 51	112 30 50	10.00	5.00	10.00	.010	1,000	1.5	N	15	N	<20	<1.0

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
81P055	N	N	N	<10	50	N	N	<20	10	100	N	N	N	<100
81P058	15	N	50	N	3,000	N	70	N	30	300	500	5	N	N
81P059A	N	N	30	N	10	20	N	N	15	100	N	<5	N	200
81P059B	N	N	N	N	1,000	20	N	N	5	150	100	N	N	N
81P063	50	N	200	1,000	3,000	N	10	N	200	100	N	20	N	100
81P065	10	100	7	10	700	N	5	N	10	20,000	700	<5	N	N
81P068	300	20	30	10	15,000	<20	10	N	20	10,000	N	<5	N	<100
81P069	15	20	10	15	2,000	<20	20	N	30	15,000	N	5	N	150
81P070	10	150	20	10	700	<20	N	N	30	2,000	N	5	N	150
81P071	N	30	7	10	70	<20	N	N	20	1,500	N	<5	N	100
81P072	70	>500	70	<10	20,000	<20	N	N	150	3,000	N	<5	N	<100
81P073	30	N	N	10	500	<20	N	N	5	>20,000	N	<5	N	N
81P074	N	200	20	30	200	20	N	N	70	>20,000	<100	5	N	100
81P075	N	100	20	20	20	20	N	N	50	1,500	N	N	N	100
81P076	N	N	70	1,500	50	N	N	N	2,000	20	N	7	N	100
81P077	N	N	100	2,000	70	<20	N	N	500	50	N	20	N	500
81P078	N	200	15	700	2,000	<20	N	N	200	7,000	N	5	N	<100
81P079	<10	500	7	20	1,000	<20	N	N	30	>20,000	<100	5	N	<100
81P081	15	N	30	100	300	20	N	N	20	3,000	1,000	7	N	<100
81P083	15	N	20	15	300	20	N	N	30	50	N	5	N	<100
82P002	N	N	5	300	20	N	N	N	70	70	N	5	N	N
82P017	N	N	N	<10	10	20	N	N	<5	70	N	<5	N	N
82P018	N	N	<5	10	30	20	N	N	5	200	N	<5	N	N
82P019	10	N	5	<10	150	<20	N	N	10	30	N	5	N	N
82P070	100	N	5	15	70	<20	N	N	5	>20,000	1,000	N	N	N
82P075	N	N	30	<10	30	<20	<5	N	20	100	N	<5	N	N
82P077	N	N	5	<10	7	<20	5	N	15	30	500	N	N	N
8AD0400	N	N	50	20	15,000	20	10	N	50	150	500	5	N	100
8AI2135	15	N	10	20	70	<20	5	N	15	1,500	N	<5	N	<100
8AI2138	N	300	N	30	1,500	20	10	N	5	>20,000	1,000	N	15	<100
8AI2139	N	300	N	20	2,000	20	5	N	5	>20,000	300	N	20	100
8AI2140	N	50	N	100	1,000	30	15	N	50	15,000	7,000	N	500	<100
8AI2142	N	20	N	50	700	300	N	N	5	20,000	7,000	N	150	<100
8AI2143	N	100	15	100	1,500	50	15	<20	50	>20,000	>10,000	N	500	<100
8AI2144	N	300	N	N	5,000	20	N	<20	5	>20,000	500	N	150	<100
8AI2146	<10	100	N	20	500	20	N	<20	<5	>20,000	300	N	30	100
8AI2147	N	20	N	10	100	20	N	N	5	>20,000	300	N	20	<100
8AI2149	10	N	30	70	500	70	7	<20	30	500	N	15	10	200
8AI2150	N	N	15	150	300	70	N	20	30	150	N	15	N	150
8AI2151	<10	N	20	50	1,000	70	5	<20	30	100	N	10	10	150
8AI2153	200	N	20	10	3,000	<20	N	N	7	50	N	N	30	<100
8BL6063	N	N	100	10	1,500	<20	10	<20	15	10	<100	N	N	<100
8BL6065	N	N	150	20	5,000	<20	15	<20	15	<10	N	<5	N	<100
8BL6067	N	N	50	10	1,500	<20	N	<20	10	<10	N	N	N	<100
8BL6068	50	N	30	10	1,000	<20	N	N	10	<10	N	5	N	100

TABLE 3. SPECTROGRAPHIC AND ATOMIC APSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
81P055	1,000	N	N	N	10	N	16.00	--	20.0	--	--	50.00	--	--
81P058	200	70	10	N	N	N	34.00	--	.5	--	--	120.00	--	--
81P059A	70	N	15	300	N	N	.20	--	<.1	--	--	360.00	--	--
81P059B	100	N	N	N	N	N	.80	--	<.1	--	--	25.00	--	--
81P063	200	N	20	N	30	N	2.50	--	13.0	--	--	190.00	--	--
81P065	500	N	N	2,000	15	N	1.50	--	<.1	--	--	>2,000.00	--	--
81P068	300	N	N	2,000	N	N	220.00	--	3.8	--	--	1,800.00	--	--
81P069	2,000	N	10	700	100	N	10.00	--	.6	--	--	560.00	--	--
81P070	30	N	30	10,000	15	N	.05	--	<.1	--	--	>2,000.00	--	--
81P071	10	N	<10	5,000	N	N	33.00	--	<.1	--	--	>2,000.00	--	--
81P072	10	N	N	>10,000	N	N	2.50	--	1.5	--	--	>2,000.00	--	--
81P073	70	N	N	N	20	N	.30	--	<.1	--	--	200.00	--	--
81P074	50	N	20	>10,000	15	N	720.00	--	<.1	--	--	>2,000.00	--	--
81P075	20	N	<10	>10,000	30	N	.50	--	<.1	--	--	>2,000.00	--	--
81P076	20	N	<10	700	N	N	.20	--	.3	--	--	1,800.00	--	--
81P077	100	N	10	500	50	N	N	--	N	--	--	200.00	--	--
81P078	100	<50	<10	10,000	30	N	4.50	--	<.1	--	--	>2,000.00	--	--
81P079	20	N	10	>10,000	15	N	1.00	--	<.1	--	--	>2,000.00	--	--
81P081	100	N	N	700	20	N	25.00	--	1.1	--	--	500.00	--	--
81P083	50	N	<10	N	200	N	6.00	--	.1	--	--	45.00	--	--
82P002	150	<50	20	200	15	N	N	--	--	2,000	--	150.00	--	--
82P017	20	N	15	N	200	N	N	--	--	50	--	45.00	--	--
82P018	30	N	20	N	150	N	.10	--	--	1,400	--	120.00	--	--
82P019	70	N	15	N	100	N	1.40	--	--	40	--	85.00	--	--
82P070	20	N	N	300	10	N	N	--	--	1,700	--	190.00	--	--
82P075	30	N	10	N	N	N	N	--	--	1,400	--	100.00	--	--
82P077	30	<50	N	N	<10	N	N	--	--	240	--	50.00	--	--
8AD0400	30	N	30	N	200	N	--	--	--	--	--	100.00	--	--
8AI2135	500	<50	<10	700	10	N	--	--	--	--	--	1,000.00	--	--
8AI2138	200	N	N	>10,000	10	N	--	--	--	--	--	>2,000.00	--	--
8AI2139	300	N	N	7,000	15	N	--	--	--	--	--	>2,000.00	--	--
8AI2140	3,000	100	50	2,000	<10	N	--	--	--	--	--	1,600.00	--	--
8AI2142	500	<50	150	200	N	N	--	--	--	--	--	100.00	--	--
8AI2143	3,000	70	150	3,000	20	N	--	--	--	--	--	1,600.00	--	--
8AI2144	70	N	N	>10,000	<10	N	--	--	--	--	--	>2,000.00	--	--
8AI2146	700	N	N	10,000	10	N	--	--	--	--	--	>2,000.00	--	--
8AI2147	100	N	N	2,000	10	N	--	--	--	--	--	2,100.00	--	--
8AI2149	150	N	30	N	150	<100	--	--	--	--	--	40.00	--	--
8AI2150	200	N	30	N	150	N	--	--	--	--	--	35.00	--	--
8AI2151	100	N	20	N	100	N	--	--	--	--	--	50.00	--	--
8AI2153	30	N	<10	300	N	N	--	--	--	--	--	300.00	--	--
8BL6063	70	N	N	200	20	N	--	--	--	--	--	110.00	--	--
8BL6065	70	N	10	N	15	N	--	--	--	--	--	120.00	--	--
8BL6067	<10	N	10	N	<10	N	--	--	--	--	--	40.00	--	--
8BL6068	70	N	10	N	<10	N	--	--	--	--	--	160.00	--	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
81P055	5	20	--	--	--	<100	--
81P058	>200	400	--	--	--	<100	--
81P059A	1	20	--	--	--	<100	--
81P059B	40	20	--	--	--	<100	--
81P063	3	80	--	--	--	<100	--
81P065	>200	120	--	--	--	<100	--
81P068	5	N	--	--	--	120	--
81P069	2	N	--	--	--	120	--
81P070	1	40	--	--	--	<100	--
81P071	1	20	--	--	--	<100	--
81P072	2	100	--	--	--	<100	--
81P073	5	40	--	--	--	<100	--
81P074	15	600	--	--	--	<100	--
81P075	N	10	--	--	--	120	--
81P076	10	100	--	--	--	120	--
81P077	N	10	--	--	--	500	--
81P078	30	1,000	--	--	--	<100	--
81P079	25	100	--	--	--	<100	--
81P081	>200	100	--	--	--	160	--
81P083	20	200	--	--	--	<100	--
82P002	130	--	--	--	--	--	--
82P017	3	--	--	--	--	--	--
82P018	9	--	--	--	--	--	--
82P019	12	--	--	--	--	--	--
82P070	700	--	--	--	--	--	--
82P075	6	--	--	--	--	--	--
82P077	210	--	--	--	--	--	--
8AD0400	>200	160	--	N	--	--	--
8AI2135	5	200	--	50.0	--	--	N
8AI2138	>200	>1,600	--	N	--	--	7
8AI2139	80	>1,600	--	N	--	--	15
8AI2140	>200	1,600	--	80.0	--	--	>100
8AI2142	>200	1,600	--	N	--	--	90
8AI2143	>200	1,600	--	20.0	--	--	30
8AI2144	>200	200	--	N	--	--	65
8AI2146	120	80	--	N	--	--	15
8AI2147	140	300	--	<1.0	--	--	20
8AI2149	3	40	--	N	--	--	<2
8AI2150	4	120	--	<1.0	--	--	<2
8AI2151	2	20	--	N	--	--	<2
8AI2153	4	10	--	N	--	--	10
8BL6063	20	300	2	--	--	--	3
8BL6065	10	200	N	--	--	--	N
8BL6067	<1	20	1	--	--	--	<2
8BL6068	5	20	N	--	--	--	4

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct.	Mg-pct.	Ca-pct.	Ti-pct.	Mn-ppm	Ag-ppm	As-ppm	Au-ppm	B-ppm	Ba-ppm	Be-ppm
			s	s	s	s	s	s	s	s	s	s	s
8BP8068	45 47 7	112 5 56	20.00	.03	<.05	.050	500	30.0	N	20	<10	70	1.0
8BP8069	45 47 8	112 5 59	15.00	.50	.07	.300	300	30.0	N	<10	20	500	1.0
8BP8072	45 47 12	112 5 56	10.00	.07	.05	.070	70	50.0	N	N	10	200	1.0
8BP8073	45 45 51	112 5 39	15.00	.02	.70	.070	5,000	<.5	700	N	10	200	1.5
8BP8089	45 47 38	112 0 4	1.50	.10	.20	.300	50	50.0	200	10	50	700	<1.0
8BP8090	45 47 38	112 0 5	1.00	.03	.10	.050	300	10.0	200	<10	20	70	<1.0
8CI2103	45 40 25	112 57 14	2.00	.05	.05	.050	150	70.0	500	N	20	1,000	1.0
8CI2106	45 40 28	112 57 14	7.00	.03	.05	.030	200	150.0	200	N	15	>5,000	<1.0
8CI2107	45 41 28	112 56 54	.30	.07	.10	.030	50	200.0	1,000	N	20	70	<1.0
8CI2109	45 41 40	112 55 50	.10	.10	.20	.003	200	300.0	700	N	15	50	<1.0
8CI2181	45 41 24	112 58 51	1.00	.02	.07	.010	15	10.0	N	N	15	150	<1.0
8CI2260	45 43 19	112 54 21	.20	5.00	10.00	.030	1,500	1,000.0	700	N	20	>5,000	<1.0
8CI2261	45 43 9	112 54 6	.30	7.00	10.00	.030	500	10.0	N	N	15	70	<1.0
8CI2262	45 43 19	112 54 10	.15	3.00	5.00	.030	100	700.0	N	N	20	1,500	<1.0
8CI2263	45 43 30	112 54 20	.70	2.00	3.00	.003	50	500.0	200	N	20	5,000	<1.0
8CI2265	45 43 53	112 54 7	1.50	.10	.10	.030	70	700.0	200	N	20	100	1.0
8CI2266	45 43 56	112 54 5	.05	.20	.50	.007	30	700.0	3,000	N	15	200	<1.0
8CI2267	45 43 56	112 54 4	.05	.10	.15	.002	30	500.0	2,000	N	20	300	<1.0
8CI2268	45 42 58	112 53 53	15.00	.15	.05	.050	10	10.0	200	N	20	50	1.0
8CI2269	45 42 59	112 53 55	.30	7.00	10.00	.020	500	200.0	300	N	20	70	<1.0
8CI2270	45 42 58	112 53 54	3.00	.30	1.00	.030	50	2,000.0	300	N	20	2,000	<1.0
8CN6077	45 42 3	112 19 8	15.00	1.00	3.00	.050	5,000	20.0	N	N	20	200	5.0
8CN6078	45 41 52	112 18 52	20.00	1.00	1.00	.007	150	10.0	N	10	30	50	1.0
8CN6079	45 41 47	112 18 54	5.00	1.50	1.50	.500	1,500	3.0	N	N	30	200	1.0
8CN6080	45 41 57	112 19 9	15.00	1.00	10.00	.100	3,000	70.0	N	N	<10	N	1.5
8CO8029	45 39 55	112 7 52	2.00	1.00	5.00	.100	1,000	5.0	200	N	15	200	1.0
8CO8030	45 39 56	112 7 51	5.00	.70	3.00	.100	300	3.0	1,500	N	30	150	2.0
8CP8095	45 40 0	112 0 46	10.00	.15	.10	.200	200	15.0	300	<10	15	1,000	1.0
8DF2133	45 33 50	113 14 55	2.00	.05	.15	.070	50	1,000.0	500	N	20	50	3.0
8DI2114	45 35 47	112 56 33	1.50	.20	.15	.100	20	300.0	300	N	50	50	1.0
8DI2115	45 36 16	112 55 47	.70	2.00	5.00	.030	1,500	500.0	1,500	N	20	30	<1.0
8DI2118	45 36 17	112 55 47	20.00	.07	.15	.007	700	100.0	1,000	N	<10	20	1.5
8DI2220	45 35 24	112 56 53	7.00	2.00	5.00	.500	1,000	.5	N	N	20	1,000	1.0
8DO8016	45 35 36	112 7 45	15.00	.15	.07	.070	1,000	100.0	300	20	10	150	1.0
8DO8020	45 35 35	112 9 47	>20.00	.07	.10	.015	700	30.0	500	10	<10	150	3.0
8DO8035	45 32 29	112 11 54	7.00	.10	.15	.030	5,000	70.0	700	15	15	700	1.5
8DO8037	45 32 22	112 12 22	.70	.03	.15	.030	70	1.5	N	N	20	70	<1.0
8DO8040	45 31 41	112 11 47	7.00	1.50	1.00	.150	>5,000	50.0	300	N	20	150	1.0
8DO8043	45 32 22	112 11 13	10.00	.05	<.05	.100	2,000	70.0	10,000	20	20	70	<1.0
8DO8045	45 32 3	112 9 53	10.00	.02	N	.070	300	100.0	1,000	50	<10	150	1.0
8DO8046	45 31 33	112 8 6	15.00	1.00	2.00	.020	2,000	70.0	700	10	<10	150	5.0
8DP8007	45 31 20	112 2 40	15.00	.03	.10	.002	1,000	70.0	200	N	<10	<20	<1.0
8DP8013	45 35 2	112 6 51	7.00	1.00	1.50	.150	5,000	20.0	N	N	50	100	1.0
8DP8021	45 36 8	112 1 48	5.00	.20	.07	.150	200	15.0	N	<10	20	500	3.0
8DP8049	45 32 12	112 6 18	7.00	.70	1.00	.100	3,000	70.0	300	20	15	100	1.0

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
8BP8068	70	N	30	50	500	<20	10	N	30	20	N	5	N	<100
8BP8069	100	N	30	300	1,000	20	5	<20	30	100	N	15	N	<100
8BP8072	15	N	30	70	15,000	20	<5	N	50	150	N	10	N	<100
8BP8073	N	N	15	50	700	30	15	<20	15	2,000	<100	10	N	100
8BP8089	N	N	7	70	20	70	N	<20	15	150	N	7	N	100
8BP8090	N	<20	5	200	20	20	15	N	15	20	N	<5	N	<100
8CI2103	100	N	N	10	1,000	20	N	<20	5	20,000	100	5	N	<100
8CI2106	70	30	N	15	5,000	20	N	<20	5	>20,000	100	<5	N	700
8CI2107	70	20	N	10	700	20	N	<20	5	>20,000	1,000	N	N	<100
8CI2109	N	30	N	10	1,000	20	N	<20	5	15,000	1,000	N	N	<100
8CI2181	15	20	N	20	<5	20	N	<20	10	3,000	N	<5	N	<100
8CI2260	<10	100	<5	20	700	20	20	<20	10	>20,000	5,000	<5	N	500
8CI2261	N	N	N	15	300	20	N	<20	<5	300	N	<5	N	100
8CI2262	<10	70	N	15	500	20	10	<20	7	5,000	300	N	N	100
8CI2263	15	100	N	15	200	20	10	<20	10	7,000	2,000	<5	N	150
8CI2265	N	20	N	20	500	20	N	<20	10	500	100	N	N	<100
8CI2266	15	500	N	15	3,000	20	7	<20	10	>20,000	>10,000	N	N	<100
8CI2267	20	30	N	10	700	20	N	<20	10	>20,000	>10,000	N	N	<100
8CI2268	N	N	N	100	500	20	10	<20	20	500	N	<5	N	<100
8CI2269	<10	150	N	10	3,000	30	N	<20	10	20,000	500	N	N	100
8CI2270	N	20	N	20	2,000	20	100	<20	15	5,000	700	N	N	100
8CN6077	100	N	20	70	3,000	20	10	<20	30	10	N	5	N	150
8CN6078	N	N	N	50	1,000	<20	10	N	10	10	N	5	N	150
8CN6079	N	N	30	70	70	20	N	<20	50	20	N	20	N	100
8CN6080	70	N	20	70	20,000	<20	20	N	30	N	N	7	50	<100
8CO8029	N	20	10	20	20	20	15	<20	50	100	<100	5	N	100
8CO8030	N	20	15	50	50	50	50	<20	50	100	<100	5	N	200
8CP8095	100	N	50	70	700	100	5	<20	50	150	N	5	N	100
8DF2133	N	70	N	20	700	20	2,000	<20	5	>20,000	5,000	5	30	<100
8DI2114	N	100	N	10	>20,000	20	10	<20	10	>20,000	2,000	<5	N	<100
8DI2115	30	200	N	20	10,000	20	N	<20	5	>20,000	2,000	<5	N	100
8DI2118	30	50	10	20	7,000	30	7	<20	10	7,000	7,000	N	N	<100
8DI2220	N	N	50	50	150	30	5	<20	20	30	N	20	N	500
8DO8016	70	150	20	10	2,000	50	30	<20	20	3,000	<100	5	N	<100
8DO8020	30	N	50	50	1,500	20	10	<20	50	100	<100	7	N	<100
8DO8035	N	30	15	50	500	<20	N	N	30	3,000	<100	5	N	100
8DO8037	N	N	7	30	5	20	N	<20	7	70	N	<5	N	<100
8DO8040	30	200	20	100	3,000	50	N	<20	50	1,500	N	10	N	100
8DO8043	N	20	10	200	700	20	N	<20	30	20,000	<100	7	N	150
8DO8045	N	>500	50	20	3,000	<20	N	N	150	3,000	N	<5	N	N
8DO8046	50	150	20	200	>20,000	<20	N	N	50	7,000	150	<5	N	100
8DP8007	30	500	200	10	3,000	20	N	<20	50	15,000	<100	N	N	<100
8DP8013	30	N	30	300	100	20	N	<20	70	1,000	N	15	N	100
8DP8021	10	N	5	7	700	20	100	<20	5	1,000	<100	<5	N	100
8DP8049	30	N	30	70	700	<20	N	N	70	300	N	7	N	<100

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
8BP8068	20	N	20	200	30	N	--	--	--	--	--	65.00	--	--
8BP8069	150	<50	20	N	70	N	--	--	--	--	--	55.00	--	--
8BP8072	70	N	10	200	30	N	--	--	--	--	--	100.00	--	--
8BP8073	100	50	30	1,000	50	N	--	--	--	--	--	880.00	--	--
8BP8089	150	<50	50	200	200	N	--	--	--	--	--	260.00	--	--
8BP8090	70	N	15	500	50	N	--	--	--	--	--	360.00	--	--
8CI2103	20	N	N	200	30	N	--	--	--	--	--	240.00	--	--
8CI2106	20	N	N	5,000	10	N	--	--	--	--	--	>2,000.00	--	--
8CI2107	200	N	N	1,000	30	N	--	--	--	--	--	>2,000.00	--	--
8CI2109	50	N	N	7,000	10	N	--	--	--	--	--	>2,000.00	--	--
8CI2181	20	N	<10	500	10	N	--	--	--	--	--	180.00	--	--
8CI2260	20	50	N	3,000	15	N	--	--	--	--	--	2,000.00	--	--
8CI2261	20	N	N	200	30	N	--	--	--	--	--	300.00	--	--
8CI2262	30	N	N	7,000	15	N	--	--	--	--	--	>2,000.00	--	--
8CI2263	150	N	N	3,000	N	N	--	--	--	--	--	>2,000.00	--	--
8CI2265	50	N	<10	N	10	N	--	--	--	--	--	80.00	--	--
8CI2266	50	N	N	7,000	N	N	--	--	--	--	--	>2,000.00	--	--
8CI2267	500	N	N	200	N	N	--	--	--	--	--	130.00	--	--
8CI2268	200	N	N	1,000	15	N	--	--	--	--	--	2,000.00	--	--
8CI2269	300	N	10	7,000	N	N	--	--	--	--	--	>2,000.00	--	--
8CI2270	50	N	N	300	10	N	--	--	--	--	--	300.00	--	--
8CN6077	70	70	30	300	15	N	--	--	--	--	--	340.00	--	--
8CN6078	150	70	10	N	<10	N	--	--	--	--	--	45.00	--	--
8CN5079	200	50	20	N	70	N	--	--	--	--	--	110.00	--	--
8CN6080	100	N	30	700	30	N	--	--	--	--	--	1,100.00	--	--
8CO8029	500	N	10	300	20	N	--	--	--	--	--	240.00	--	--
8CO8030	700	N	15	200	30	N	--	--	--	--	--	190.00	--	--
8CP8095	50	<50	30	N	200	N	--	--	--	--	--	50.00	--	--
8DF2133	70	70	30	500	100	N	--	--	--	--	--	400.00	--	--
8DI2114	50	N	N	7,000	50	N	--	--	--	--	--	>2,000.00	--	--
8DI2115	30	N	10	>10,000	15	N	--	--	--	--	--	>2,000.00	--	--
8DI2118	50	N	50	5,000	<10	N	--	--	--	--	--	>2,000.00	--	--
8DI2220	200	N	30	N	50	N	--	--	--	--	--	25.00	--	--
8DO8016	20	N	10	7,000	50	N	--	--	--	--	--	>2,000.00	--	--
8DO8020	100	N	30	2,000	10	N	--	--	--	--	--	640.00	--	--
8DO8035	20	N	15	2,000	50	N	--	--	--	--	--	>2,000.00	--	--
8DO8037	20	N	15	N	70	N	--	--	--	--	--	95.00	--	--
8DO8040	100	N	20	>10,000	30	N	--	--	--	--	--	>2,000.00	--	--
8DO8043	70	N	10	1,000	30	N	--	--	--	--	--	600.00	--	--
8DO8045	30	N	<10	>10,000	N	N	--	--	--	--	--	>2,000.00	--	--
8DO8046	2,000	<50	10	5,000	15	N	--	--	--	--	--	>2,000.00	--	--
8DP8007	10	N	N	>10,000	N	N	--	--	--	--	--	>2,000.00	--	--
8DP8013	100	N	20	N	100	N	--	--	--	--	--	50.00	--	--
8DP8021	30	50	15	N	50	N	--	--	--	--	--	50.00	--	--
8DP8049	50	N	15	N	30	N	--	--	--	--	--	110.00	--	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
8BP8068	N	10	--	5.0	--	--	N
8BP8069	N	30	--	15.0	--	--	N
8BP8072	N	60	--	<1.0	--	--	<2
8BP8073	40	400	--	15.0	--	--	N
8BP8089	4	200	--	5.0	--	--	N
8BP8090	4	200	--	N	--	--	N
8CI2103	60	200	2	--	--	--	4
8CI2106	60	100	N	--	--	--	5
8CI2107	>200	800	N	--	--	--	<2
8CI2109	>200	200	N	--	--	--	N
8CI2181	3	10	--	2.0	--	--	N
8CI2260	>200	400	2	--	--	--	--
8CI2261	20	10	<1	--	--	--	--
8CI2262	200	160	<1	--	--	--	--
8CI2263	>200	160	<1	--	--	--	--
8CI2265	40	40	<1	--	--	--	--
8CI2266	>200	>1,600	<1	--	--	--	--
8CI2267	>200	>1,600	<1	--	--	--	--
8CI2268	60	160	2	--	--	--	--
8CI2269	160	60	<1	--	--	--	--
8CI2270	>200	120	<1	--	--	--	--
8CN6077	3	20	1	--	--	--	5
8CN6078	10	10	1	--	--	--	<2
8CN6079	<1	20	15	--	--	--	N
8CN6080	<1	5	N	--	--	--	3
8CO8029	10	150	15	--	--	--	<2
8CO8030	40	1,200	7	--	--	--	2
8CP8095	2	500	--	10.0	--	--	N
8DF2133	>200	200	20	--	--	--	<2
8DI2114	>200	100	N	--	--	--	<2
8DI2115	>200	1,200	N	--	--	--	N
8DI2118	>200	1,600	N	--	--	--	N
8DI2220	N	10	1	--	--	--	N
8DO8016	40	150	N	--	--	--	4
8DO8020	20	200	N	--	--	--	N
8DO8035	100	1,600	<1	--	--	--	8
8DO8037	<1	40	2	--	--	--	<2
8DO8040	3	<10	N	--	--	--	4
8DO8043	100	>1,600	N	--	--	--	10
8DO8045	10	100	N	--	--	--	<2
8DO8046	>200	600	N	--	--	--	8
8DP8007	20	100	N	--	--	--	3
8DP8013	10	80	2	--	--	--	<2
8DP8021	35	40	80	--	--	--	2
8DP8049	4	150	1	--	--	--	<2

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
8EC0114	45 22 31	113 39 39	5.00	1.00	.15	.300	500	10.0	N	N	20	1,500	1.5
8EH2121	45 28 59	113 2 52	5.00	<.02	.05	.002	1,500	200.0	5,000	N	10	100	1.0
8EH2123	45 29 19	113 2 38	2.00	.70	1.50	.200	700	1.5	N	N	10	700	2.0
8EH2124	45 29 18	113 2 37	10.00	.20	N	.070	150	20.0	N	N	20	200	3.0
8EH2125	45 29 18	113 2 37	3.00	<.02	<.05	.002	2,000	1,000.0	>10,000	10	10	<20	<1.0
8EH2127	45 27 34	113 3 11	1.00	<.02	<.05	.007	30	700.0	<200	10	20	700	1.0
8EH2129	45 27 12	113 3 14	.10	.02	.05	.030	30	1,000.0	200	N	50	500	1.5
8EH2132	45 29 22	113 2 18	5.00	.07	N	.050	500	500.0	5,000	N	15	20	2.0
8EH2239	45 29 26	113 2 51	10.00	.02	N	.002	150	10.0	300	N	15	30	1.0
8EH2272	45 25 44	113 0 43	5.00	.70	.50	.300	1,000	5.0	N	N	100	500	2.0
8EH2276	45 25 14	113 0 6	3.00	1.00	1.50	.500	700	N	N	N	10	700	2.0
8EI2258	45 29 38	112 49 59	3.00	.50	.30	.300	1,000	N	N	N	30	300	1.5
8EI2271	45 29 28	112 49 54	3.00	.20	.15	.200	1,500	3.0	N	N	20	300	2.0
8EI2281	45 24 45	112 52 42	10.00	.03	.05	.030	500	10.0	N	N	15	100	1.5
8EI2401	45 23 4	112 49 23	20.00	1.50	3.00	.070	300	500.0	500	15	50	50	<1.0
8EP8005	45 28 55	112 2 11	20.00	1.50	7.00	.100	1,500	20.0	N	N	<10	70	7.0
8FC0080	45 19 23	113 43 23	7.00	.20	.10	.050	500	3.0	N	N	15	5,000	1.0
8FC0082	45 16 59	113 41 29	1.50	.50	.10	.150	150	1.0	N	N	20	300	3.0
8FC0083	45 17 0	113 41 30	5.00	.05	.05	.050	70	3.0	N	N	20	150	1.5
8FC0084	45 17 4	113 41 19	2.00	.50	.15	.300	100	N	N	N	70	500	2.0
8FC0085	45 17 4	113 41 11	1.50	.50	.15	.150	700	N	N	N	30	300	1.0
8FC0086	45 17 5	113 41 16	5.00	.15	.15	.030	200	5.0	N	10	20	200	1.5
8FC0087	45 17 4	113 41 20	2.00	.30	.10	.150	500	1.5	N	N	30	300	3.0
8FC0088	45 17 4	113 41 24	3.00	.05	.10	.030	700	3.0	N	<10	15	100	1.5
8FC0089	45 17 4	113 41 30	3.00	.15	.07	.100	70	1.0	N	N	70	300	1.5
8FC0090	45 17 4	113 41 29	1.50	.50	.10	.150	500	N	N	N	50	500	2.0
8FC0091	45 17 5	113 41 30	3.00	.70	.10	.500	150	N	N	N	100	700	2.0
8FH2071	45 18 5	113 1 23	7.00	.30	.07	.020	1,000	3.0	<200	10	10	100	1.0
8FH2072	45 18 5	113 1 23	>20.00	.05	.15	.030	1,500	2.0	300	N	N	300	2.0
8FH2075	45 19 1	113 2 5	1.00	1.00	1.50	.070	500	200.0	N	N	50	500	1.0
8FI2026	45 15 1	112 54 18	15.00	.07	.30	.100	150	1.5	200	N	20	300	1.0
8FI2028	45 15 57	112 54 52	.20	.10	1.00	.020	100	1.0	<200	<10	20	500	<1.0
8FI2029	45 15 57	112 54 52	7.00	.15	.20	.300	300	.5	3,000	N	50	200	1.0
8FI2030	45 15 56	112 54 52	5.00	.20	.15	.300	20	<.5	2,000	N	100	1,000	1.0
8FI2031	45 15 57	112 54 52	1.00	7.00	15.00	.020	200	.5	N	N	20	50	<1.0
8FI2032	45 16 24	112 54 57	1.50	.50	.30	.030	1,500	500.0	>10,000	N	10	20	<1.0
8FI2033	45 16 27	112 54 34	5.00	.70	.50	.200	1,000	10.0	1,000	15	200	500	1.5
8FI2035	45 16 47	112 52 56	>20.00	.70	1.50	.050	500	20.0	700	N	<10	200	1.5
8FI2060	45 18 32	112 52 36	.50	.05	.05	.070	20	7.0	200	N	20	50	1.0
8FI2062	45 18 15	112 53 10	10.00	.03	.30	.030	150	30.0	1,500	N	10	<20	<1.0
8FI2063	45 18 34	112 53 10	10.00	.50	.30	.150	500	20.0	>10,000	15	100	100	3.0
8FI2064	45 18 31	112 53 25	15.00	.15	.30	.100	70	50.0	>10,000	20	70	200	2.0
8FI2065	45 18 52	112 52 55	3.00	.10	.05	.100	50	30.0	2,000	N	70	50	1.0
8FI2067	45 18 35	112 54 0	5.00	.50	.05	.100	150	20.0	10,000	N	70	30	1.0
8FI2068	45 18 27	112 53 59	7.00	.07	<.05	.100	30	30.0	>10,000	10	50	30	1.0

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
8EC0114	N	N	15	70	500	30	1,500	<20	10	300	N	15	15	300
8EH2121	100	300	N	10	7,000	20	7	20	5	10,000	1,500	<5	N	<100
8EH2123	N	N	N	10	30	30	N	20	5	100	N	10	<10	500
8EH2124	70	N	15	10	700	20	200	N	5	150	N	<5	10	<100
8EH2125	70	200	N	10	>20,000	20	<5	<20	5	15,000	7,000	<5	N	<100
8EH2127	N	50	N	10	1,500	20	300	<20	5	10,000	3,000	<5	N	<100
8EH2129	N	50	N	10	2,000	50	150	<20	5	3,000	5,000	<5	N	<100
8EH2132	70	150	N	10	15,000	20	10	20	5	5,000	3,000	<5	N	<100
8EH2239	N	N	N	<10	1,500	20	50	<20	7	100	200	N	N	<100
8EH2272	N	N	10	15	70	30	N	<20	5	70	N	10	N	200
8FH2276	N	N	10	15	70	30	10	20	5	50	N	10	N	500
8EI2258	N	N	7	10	N	30	N	<20	5	30	N	7	N	200
8EI2271	N	N	10	15	20	30	N	100	7	150	N	10	N	100
8EI2281	20	N	30	20	5,000	20	100	<20	5	20	N	<5	N	<100
8EI2401	30	150	20	70	1,000	20	20	<20	100	20,000	2,000	5	N	100
8EP8005	50	N	20	70	7,000	200	N	<20	20	<10	N	5	20	<100
8FC0080	N	N	20	70	300	20	200	<20	30	3,000	N	5	N	200
8FC0082	N	N	5	50	5	50	N	<20	10	200	N	5	N	<100
8FC0083	<10	N	30	30	50	20	15	<20	15	700	N	<5	N	<100
8FC0084	N	N	5	150	N	50	N	<20	10	20	N	10	N	100
8FC0085	N	N	N	70	N	30	N	<20	7	50	N	7	N	<100
8FC0086	<10	N	20	30	500	20	N	<20	15	3,000	N	5	N	<100
8FC0087	<10	N	7	70	15	30	N	<20	10	500	N	5	N	<100
8FC0088	<10	N	15	50	150	20	15	<20	15	1,500	N	<5	N	<100
8FC0089	N	N	15	50	200	20	N	<20	15	1,000	N	5	N	<100
8FC0090	N	N	7	30	<5	20	N	<20	10	50	N	7	N	<100
8FC0091	N	N	10	150	5	100	N	<20	15	100	N	15	<10	100
8FH2071	N	N	10	15	1,500	20	N	N	20	20	N	N	N	<100
8FH2072	30	N	N	10	10,000	20	N	<20	7	70	<100	N	N	<100
8FH2075	<10	20	N	20	1,000	20	N	<20	5	15,000	500	<5	N	100
8FI2026	N	N	N	200	10	50	20	N	15	20	N	5	N	500
8FI2028	N	N	N	15	<5	20	N	<20	5	N	300	<5	N	<100
8FI2029	N	N	20	30	50	100	7	<20	20	30	300	20	N	150
8FI2030	N	N	10	50	50	100	10	<20	5	100	300	20	N	100
8FI2031	N	N	5	10	<5	20	5	N	20	20	100	5	N	100
8FI2032	N	>500	5	10	1,000	30	30	<20	5	>20,000	10,000	<5	N	100
8FI2033	N	N	20	50	50	50	N	<20	10	300	150	15	N	<100
8FI2035	>1,000	N	200	30	200	<20	20	<20	10	300	<100	N	N	100
8FI2060	N	N	N	20	20	30	N	<20	10	500	N	N	N	<100
8FI2062	N	20	N	15	500	20	50	<20	5	15,000	150	<5	15	100
8FI2063	N	150	15	100	1,000	20	5	<20	50	20,000	300	10	30	<100
8FI2064	N	100	30	50	300	70	N	<20	100	15,000	200	7	20	200
8FI2065	N	N	N	30	70	20	15	N	10	3,000	N	7	N	<100
8FI2067	N	50	15	30	100	20	N	N	70	2,000	<100	10	N	<100
8FI2068	N	N	15	50	100	20	N	N	50	3,000	<100	10	N	<100

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
8EC0114	100	50	15	N	100	100	--	--	--	--	--	80.00	--	--
8EH2121	10	2,000	N	>10,000	N	N	--	--	--	--	--	>2,000.00	--	--
8EH2123	70	N	20	<200	70	N	--	--	--	--	--	130.00	--	--
8EH2124	70	<50	<10	1,000	100	N	--	--	--	--	--	1,800.00	--	--
8EH2125	10	500	<10	>10,000	N	N	--	--	--	--	--	>2,000.00	--	--
8EH2127	15	N	N	700	10	N	--	--	--	--	--	1,200.00	--	--
8EH2129	10	N	10	500	20	N	--	--	--	--	--	540.00	--	--
8EH2132	30	1,000	10	>10,000	30	N	--	--	--	--	--	>2,000.00	--	--
8EH2239	10	150	10	1,000	N	N	--	--	--	--	--	>2,000.00	--	--
8EH2272	70	100	30	N	150	N	--	--	--	--	--	60.00	--	--
8EH2276	100	50	50	N	100	N	--	--	--	--	--	70.00	--	--
8EI2258	100	N	20	N	100	N	--	--	--	--	--	20.00	--	--
8EI2271	70	N	30	N	100	N	--	--	--	--	--	100.00	--	--
8EI2281	50	200	20	300	15	N	--	--	--	--	--	180.00	--	--
8FI2401	100	N	N	5,000	20	N	--	--	--	--	--	>2,000.00	--	--
8EP8005	100	N	50	300	30	N	--	--	--	--	--	180.00	--	--
8FC0080	50	150	N	N	30	N	--	--	--	--	--	10.00	--	--
8FC0082	70	N	20	N	150	N	--	--	--	--	--	10.00	--	--
8FC0083	30	50	15	N	50	N	--	--	--	--	--	10.00	--	--
8FC0084	100	N	30	N	500	N	--	--	--	--	--	<5.00	--	--
8FC0085	50	N	30	N	150	N	--	--	--	--	--	15.00	--	--
8FC0086	50	100	30	300	70	N	--	--	--	--	--	160.00	--	--
8FC0087	70	N	30	N	200	N	--	--	--	--	--	10.00	--	--
8FC0088	70	<50	15	N	70	N	--	--	--	--	--	60.00	--	--
8FC0089	150	<50	15	N	150	100	--	--	--	--	--	10.00	--	--
8FC0090	50	N	70	N	150	100	--	--	--	--	--	10.00	--	--
8FC0091	150	N	30	N	700	100	--	--	--	--	--	5.00	--	--
8FH2071	70	N	N	N	<10	N	--	--	--	--	--	140.00	--	--
8FH2072	700	N	10	300	<10	N	--	--	--	--	--	360.00	--	--
8FH2075	50	N	10	N	50	N	--	--	--	--	--	85.00	--	--
8FI2026	100	N	70	N	50	N	--	--	--	--	--	45.00	--	--
8FI2028	10	N	N	N	15	N	--	--	--	--	--	30.00	--	--
8FI2029	200	<50	30	200	200	N	--	--	--	--	--	180.00	--	--
8FI2030	200	<50	30	N	300	N	--	--	--	--	--	65.00	--	--
8FI2031	20	N	10	N	10	N	--	--	--	--	--	150.00	--	--
8FI2032	300	N	10	>10,000	50	N	--	--	--	--	--	280,000.00	--	--
8FI2033	200	N	30	2,000	200	N	--	--	--	--	--	1,900.00	--	--
8FI2035	500	50	20	300	20	N	--	--	--	--	--	110.00	--	--
8FI2060	70	N	10	<200	100	N	--	--	--	--	--	170.00	--	--
8FI2062	200	N	N	3,000	15	N	--	--	--	--	--	5,600.00	--	--
8FI2063	300	N	20	5,000	70	N	--	--	--	--	--	4,600.00	--	--
8FI2064	500	N	50	2,000	100	N	--	--	--	--	--	1,100.00	--	--
8FI2065	50	N	15	500	50	N	--	--	--	--	--	480.00	--	--
8FI2067	30	N	15	3,000	50	N	--	--	--	--	--	2,800.00	--	--
8FI2068	30	N	15	500	70	N	--	--	--	--	--	380.00	--	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
8EC0114	<1	10	--	80.0	--	--	N
8EH2121	>200	200	>200	--	--	--	2
8EH2123	3	<10	5	--	--	--	N
8EH2124	10	30	50	--	--	--	4
8EH2125	>200	>1,600	1	--	--	--	<2
8EH2127	>200	20	N	--	--	--	N
8EH2129	>200	120	N	--	--	--	N
8EH2132	>200	1,600	1	--	--	--	5
8EH2239	120	100	>200	--	--	--	N
8EH2272	5	10	20	--	--	--	--
8EH2276	<1	10	20	--	--	--	--
8EI2258	1	<10	<1	--	--	--	--
8EI2271	5	10	<1	--	--	--	--
8EI2281	10	80	150	--	--	--	--
8EI2401	>200	400	--	5.0	--	--	--
8EP8005	1	<10	N	--	--	--	2
8FC0080	1	10	--	140.0	--	--	N
8FC0082	1	<10	--	5.0	--	--	N
8FC0083	2	10	--	20.0	--	--	<2
8FC0084	<1	<10	--	2.0	--	--	N
8FC0085	<1	<10	--	3.0	--	--	N
8FC0086	2	10	--	80.0	--	--	N
8FC0087	1	<10	--	7.0	--	--	N
8FC0088	2	10	--	10.0	--	--	N
8FC0089	1	<10	--	5.0	--	--	N
8FC0090	<1	<10	--	5.0	--	--	N
8FC0091	<1	<10	--	2.0	--	--	N
8FH2071	10	80	--	2.0	--	--	<2
8FH2072	40	400	--	N	--	--	<2
8FH2075	>200	40	--	1.0	--	--	N
8FI2026	5	200	--	5.0	--	--	2
8FI2028	40	80	--	N	--	--	<2
8FI2029	200	2,000	--	5.0	--	--	<2
8FI2030	140	1,200	--	2.0	--	--	<2
8FI2031	40	80	--	N	--	--	<2
8FI2032	>200	12,000	--	N	--	--	<2
8FI2033	120	1,600	--	3.0	--	--	<2
8FI2035	40	1,600	--	10.0	--	--	<2
8FI2060	10	100	--	2.0	--	--	<2
8FI2062	180	>1,600	--	2.0	--	--	30
8FI2063	140	>1,600	--	2.0	--	--	10
8FI2064	100	>1,600	--	<1.0	--	--	20
8FI2065	10	>1,600	--	1.0	--	--	2
8FI2067	25	>1,600	--	1.5	--	--	<2
8FI2068	20	>1,600	--	1.0	--	--	<2

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	P-ppm s	Ba-ppm s	Be-ppm s
8FI2252	45 18 54	112 52 6	2.00	3.00	10.00	.100	5,000	15.0	500	N	50	300	1.0
8FI2254	45 20 9	112 50 59	1.00	.10	.15	.100	70	50.0	N	N	30	300	2.0
8FI2255	45 20 17	112 51 5	1.50	10.00	15.00	.200	100	10.0	N	N	100	70	<1.0
8FI2256	45 21 15	112 49 41	1.50	.50	.30	.100	700	.5	N	N	200	500	2.0
8FI2405	45 16 41	112 51 55	10.00	.15	.10	.100	1,000	3.0	1,000	15	50	500	1.5
8FI2406	45 16 26	112 52 10	1.50	2.00	3.00	.020	1,000	1.5	200	N	30	>5,000	<1.0
8FI2407	45 16 25	112 52 9	3.00	.50	.50	.050	500	3.0	300	N	20	200	<1.0
8FI2410	45 16 33	112 52 12	.50	.30	1.00	.050	100	300.0	1,500	N	50	>5,000	<1.0
8FJ2039	45 16 42	112 50 46	5.00	.50	.05	.200	300	15.0	300	N	50	300	2.0
8FJ2041	45 17 9	112 50 40	20.00	.03	.10	.070	3,000	20.0	700	N	10	200	1.0
8FJ2042	45 17 17	112 50 36	20.00	.02	.05	.050	700	10.0	700	N	10	200	5.0
8FJ2045	45 17 12	112 50 28	7.00	1.50	.50	.030	>5,000	300.0	N	N	30	>5,000	3.0
8FJ2046	45 17 22	112 50 35	15.00	2.00	.20	.150	5,000	20.0	N	N	100	50	5.0
8FJ2050	45 18 31	112 50 32	10.00	.05	.05	.150	150	200.0	5,000	<10	10	100	<1.0
8FJ2053	45 18 56	112 50 30	10.00	.05	.15	.050	100	70.0	1,000	N	<10	50	1.0
8FJ2059	45 19 24	112 50 30	15.00	.70	.50	.150	500	30.0	10,000	20	200	100	3.0
8FJ2196	45 18 22	112 48 18	15.00	.15	.15	.015	1,000	10.0	2,000	N	10	50	<1.0
8FJ2199	45 20 4	112 51 1	1.00	1.50	15.00	.100	300	2.0	N	N	100	50	<1.0
8FJ2200	45 20 4	112 51 1	1.50	1.00	2.00	.150	150	7.0	<200	<10	150	70	1.0
8GC0092	45 14 28	113 40 7	1.50	.50	.05	.150	150	.5	N	N	20	300	2.0
8GC0094	45 14 50	113 40 13	5.00	.70	<.05	.150	5,000	30.0	<200	N	30	>5,000	1.5
8GD0097	45 14 16	113 30 13	2.00	.50	.15	.020	70	20.0	N	N	20	>5,000	1.0
8GD0098	45 13 59	113 29 44	7.00	.20	.15	.050	700	500.0	N	N	30	>5,000	1.0
8GD0102	45 11 23	113 30 37	.50	.20	.20	.030	300	.7	N	N	20	100	1.0
8GD0105	45 8 34	113 30 26	.50	.07	.10	.100	500	7.0	N	N	20	300	1.0
8GD0109	45 8 35	113 30 27	1.00	.05	.10	.050	150	20.0	N	N	15	2,000	1.0
8GD0113	45 11 24	113 33 28	7.00	.07	.05	.070	2,000	200.0	N	N	20	>5,000	1.5
8GI2001	45 9 31	112 58 51	20.00	.15	1.50	.020	1,000	5.0	N	10	10	200	1.5
8GI2007	45 10 6	112 57 23	1.50	.03	.20	.030	2,000	150.0	500	N	20	70	2.0
8GI2008	45 10 24	112 57 16	7.00	.03	1.00	.030	1,500	200.0	700	N	10	100	<1.0
8GI2009	45 10 37	112 57 4	7.00	<.02	.15	.002	1,500	500.0	700	N	10	150	<1.0
8GI2010	45 11 35	112 57 24	5.00	.10	5.00	.015	>5,000	500.0	700	N	10	200	1.5
8GI2012	45 11 57	112 57 58	1.00	.05	1.50	.050	700	100.0	200	<10	20	150	1.5
8GI2016	45 11 48	112 57 45	3.00	1.00	7.00	.010	>5,000	1,000.0	N	N	<10	20	<1.0
8GI2017	45 11 57	112 55 21	.20	.70	1.50	.020	>5,000	1,000.0	200	N	15	200	<1.0
8GI2020	45 11 55	112 55 19	1.50	1.00	10.00	.150	>5,000	500.0	200	N	50	500	1.0
8GI2021	45 12 2	112 55 14	3.00	1.00	10.00	.150	>5,000	300.0	N	N	20	500	1.0
8GI2024	45 11 55	112 55 11	2.00	5.00	7.00	.030	>5,000	500.0	N	N	10	70	<1.0
8GI2025	45 14 45	112 54 30	1.50	.07	.50	.150	150	1.5	N	N	50	150	2.0
8GI2184	45 9 12	112 59 13	20.00	.15	.15	.050	150	1.5	N	<10	<10	70	1.0
8GI2186	45 9 20	112 59 4	20.00	.20	1.00	.050	70	20.0	700	15	10	100	3.0
8GI2191	45 9 27	112 59 2	15.00	.15	10.00	.150	2,000	N	N	N	<10	<20	<1.0
8GI2192	45 9 26	112 59 1	10.00	.07	.15	.030	200	2.0	N	N	<10	<20	1.5
8GI2242	45 11 11	112 56 55	10.00	.50	1.00	.015	>5,000	200.0	700	<10	10	30	2.0
8GI2243	45 11 8	112 56 57	7.00	.50	1.50	.030	>5,000	1,000.0	200	N	20	700	1.0

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
8FI2252	N	N	7	30	20	20	15	N	20	150	<100	7	N	150
8FI2254	N	N	N	20	50	20	20	<20	15	50	100	N	N	<100
8FI2255	N	N	N	70	<5	30	N	<20	15	10	N	10	N	100
8FI2256	N	N	N	10	50	30	N	20	<5	20	N	<5	N	150
8FI2405	N	N	20	30	100	20	100	<20	50	150	500	7	N	<100
8FI2406	N	N	5	20	15	20	10	<20	10	50	1,000	<5	N	300
8FI2407	N	N	<5	15	15	20	10	N	20	100	500	<5	N	<100
8FI2410	N	>500	N	20	70	20	20	<20	10	>20,000	>10,000	<5	N	1,000
8FJ2039	N	N	N	30	150	100	20	<20	5	3,000	<100	10	10	<100
8FJ2041	N	150	N	50	1,500	20	10	<20	15	3,000	N	7	N	<100
8FJ2042	N	50	10	30	10,000	20	N	N	50	15,000	N	15	N	100
8FJ2045	N	>500	500	20	10,000	70	20	N	100	20,000	N	<5	N	200
8FJ2046	N	150	50	50	15,000	30	N	N	50	10,000	N	7	N	<100
8FJ2050	N	20	N	30	700	<20	300	N	15	15,000	2,000	N	10	100
8FJ2053	20	50	N	10	1,000	<20	15	N	<5	15,000	300	N	N	<100
8FJ2059	N	100	20	70	500	<20	10	N	50	5,000	100	10	N	<100
8FJ2196	N	150	N	50	200	20	N	<20	5	3,000	N	<5	N	<100
8FJ2199	N	N	N	50	10	20	N	N	10	50	<100	7	N	150
8FJ2200	N	N	N	50	15	20	7	<20	15	10	<100	7	N	<100
8GC0092	N	N	5	20	20	70	N	<20	5	20	N	10	<10	<100
8GC0094	15	N	15	50	5,000	20	20	<20	10	150	200	7	N	100
8GD0097	30	N	10	50	20,000	20	100	<20	20	300	<100	5	N	150
8GD0098	10	N	15	30	>20,000	20	20	<20	10	15,000	N	5	N	200
8GD0102	N	N	N	10	10	20	N	<20	7	70	N	<5	N	<100
8GD0105	10	N	7	20	300	30	N	<20	7	5,000	N	5	N	<100
8GD0109	<10	N	N	10	1,000	20	7	<20	7	15,000	N	<5	N	100
8GD0113	500	N	30	20	10,000	<20	500	20	15	3,000	N	<5	N	150
8GI2001	N	N	10	15	2,000	<20	50	N	5	<10	N	N	50	<100
8GI2007	N	200	<5	50	2,000	20	50	N	15	20,000	3,000	<5	15	100
8GI2008	N	50	<5	20	2,000	20	7	N	7	10,000	1,500	5	15	200
8GI2009	N	20	<5	20	700	20	10	N	7	15,000	1,000	N	50	<100
8GI2010	N	200	<5	30	5,000	20	15	N	10	15,000	500	N	10	100
8GI2012	N	N	<5	20	150	20	N	<20	10	500	150	N	N	<100
8GI2016	N	300	N	N	1,500	20	N	N	<5	10,000	1,500	N	N	100
8GI2017	N	200	<5	20	2,000	30	5	N	7	5,000	2,000	N	N	100
8GI2020	N	20	5	50	500	20	15	<20	20	1,500	500	5	N	100
8GI2021	N	300	<5	70	700	30	N	<20	15	5,000	700	7	N	150
8GI2024	N	150	N	30	700	20	10	N	20	5,000	1,500	5	N	100
8GI2025	N	N	7	50	10	70	15	<20	50	15	N	7	N	300
8GI2184	N	N	50	20	700	20	10	<20	5	10	N	N	N	<100
8GI2186	N	N	10	50	1,500	<20	20	N	7	200	100	7	N	<100
8GI2191	N	N	10	100	500	<20	50	N	5	<10	N	N	N	<100
8GI2192	N	N	10	20	500	20	N	<20	5	<10	N	<5	N	<100
8GI2242	N	30	20	50	200	20	5	N	10	1,000	200	20	N	<100
8GI2243	N	150	N	50	1,000	20	20	<20	5	1,000	1,500	5	N	<100

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
8FI2252	100	N	15	200	30	N	--	--	--	--	--	200.00	--	--
8FI2254	500	N	N	N	20	N	--	--	--	--	--	90.00	--	--
8FI2255	70	N	20	N	50	N	--	--	--	--	--	30.00	--	--
8FI2256	30	N	20	N	200	N	--	--	--	--	--	30.00	--	--
8FI2405	1,000	<50	20	500	50	N	--	--	--	--	--	480.00	--	--
8FI2406	50	N	<10	300	10	N	--	--	--	--	--	420.00	--	--
8FI2407	150	N	N	500	10	N	--	--	--	--	--	520.00	--	--
8FI2410	100	N	<10	>10,000	30	N	--	--	--	--	--	>2,000.00	--	--
8FJ2039	150	<50	30	700	200	N	--	--	--	--	--	580.00	--	--
8FJ2041	200	N	20	>10,000	50	N	--	--	--	--	--	9,600.00	--	--
8FJ2042	100	N	30	7,000	20	N	--	--	--	--	--	9,400.00	--	--
8FJ2045	100	N	300	>10,000	10	N	--	--	--	--	--	110,000.00	--	--
8FJ2046	150	N	150	>10,000	50	N	--	--	--	--	--	38,000.00	--	--
8FJ2050	150	<50	N	2,000	50	N	--	--	--	--	--	3,000.00	--	--
8FJ2053	70	N	N	5,000	10	N	--	--	--	--	--	4,000.00	--	--
8FJ2059	200	N	30	2,000	50	N	--	--	--	--	--	1,700.00	--	--
8FJ2196	500	N	15	5,000	10	N	--	--	--	--	--	>2,000.00	--	--
8FJ2199	50	N	20	N	50	N	--	--	--	--	--	95.00	--	--
8FJ2200	100	N	10	N	50	N	--	--	--	--	--	90.00	--	--
8GC0092	20	N	50	N	150	100	--	--	--	--	--	5.00	--	--
8GC0094	50	300	15	N	70	100	--	--	--	--	--	25.00	--	--
8GD0097	50	N	<10	N	10	100	--	--	--	--	--	10.00	--	--
8GD0098	20	N	10	N	30	100	--	--	--	--	--	25.00	--	--
8GD0102	20	N	N	N	30	100	--	--	--	--	--	10.00	--	--
8GD0105	30	N	20	N	100	100	--	--	--	--	--	15.00	--	--
8GD0109	20	50	15	N	70	100	--	--	--	--	--	20.00	--	--
8GD0113	20	2,000	15	N	70	100	--	--	--	--	--	20.00	--	--
8GI2001	100	N	10	700	<10	N	--	--	--	--	--	780.00	--	--
8GI2007	50	N	N	>10,000	15	N	--	--	--	--	--	32,000.00	--	--
8GI2008	200	N	10	7,000	15	N	--	--	--	--	--	15,000.00	--	--
8GI2009	500	N	10	5,000	N	N	--	--	--	--	--	3,400.00	--	--
8GI2010	1,000	N	10	>10,000	10	N	--	--	--	--	--	44,000.00	--	--
8GI2012	500	N	N	500	30	N	--	--	--	--	--	480.00	--	--
8GI2016	100	N	20	10,000	N	N	--	--	--	--	--	30,000.00	--	--
8GI2017	100	N	<10	10,000	N	N	--	--	--	--	--	12,000.00	--	--
8GI2020	150	N	15	1,000	70	N	--	--	--	--	--	760.00	--	--
8GI2021	70	N	20	>10,000	200	N	--	--	--	--	--	52,000.00	--	--
8GI2024	30	N	<10	7,000	20	N	--	--	--	--	--	8,000.00	--	--
8GI2025	70	N	50	N	300	N	--	--	--	--	--	170.00	--	--
8GI2184	30	200	N	700	20	N	--	--	--	--	--	660.00	--	--
8GI2186	150	50	10	N	15	N	--	--	--	--	--	140.00	--	--
8GI2191	70	50	20	N	30	N	--	--	--	--	--	25.00	--	--
8GI2192	150	<50	N	N	N	N	--	--	--	--	--	50.00	--	--
8GI2242	150	N	70	2,000	15	N	--	--	--	--	--	>2,000.00	--	--
8GI2243	100	N	20	7,000	20	N	--	--	--	--	--	>2,000.00	--	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
8FI2252	40	200	2	--	--	--	--
8FI2254	40	20	2	--	--	--	--
8FI2255	3	30	<1	--	--	--	--
8FI2256	1	10	<1	--	--	--	--
8FI2405	>200	1,600	--	30.0	--	--	--
8FI2406	>200	80	--	2.0	--	--	--
8FI2407	>200	200	--	3.0	--	--	--
8FI2410	>200	>1,600	--	3.0	--	--	--
8FJ2039	40	400	--	2.0	--	--	<2
8FJ2041	20	800	--	N	--	--	2
8FJ2042	10	400	--	1.0	--	--	6
8FJ2045	15	80	--	N	--	--	N
8FJ2046	5	400	--	N	--	--	N
8FJ2050	>200	4,000	--	3.0	--	--	15
8FJ2053	160	1,600	--	1.0	--	--	5
8FJ2059	60	1,600	--	<1.0	--	--	N
8FJ2196	20	1,600	--	N	--	--	N
8FJ2199	25	10	--	N	--	--	N
8FJ2200	60	20	--	<1.0	--	--	N
8GC0092	1	<10	--	2.0	--	--	N
8GC0094	160	60	--	>200.0	--	--	N
8GD0097	25	40	--	1.0	--	--	<2
8GD0098	5	10	--	1.0	--	--	N
8GD0102	<1	<10	--	1.0	--	--	N
8GD0105	1	<10	--	<1.0	--	--	N
8GD0109	3	10	--	1.0	--	--	<2
8GD0113	5	<10	--	>200.0	--	--	N
8GI2001	3	80	--	10.0	--	--	35
8GI2007	>200	200	--	<1.0	--	--	10
8GI2008	>200	400	--	<1.0	--	--	10
8GI2009	>200	200	--	<1.0	--	--	65
8GI2010	>200	400	--	1.0	--	--	6
8GI2012	120	160	--	3.0	--	--	<2
8GI2016	>200	40	--	N	--	--	<2
8GI2017	>200	160	--	N	--	--	2
8GI2020	>200	120	--	1.0	--	--	2
8GI2021	>200	120	--	1.0	--	--	2
8GI2024	>200	160	--	<1.0	--	--	<2
8GI2025	5	40	--	2.0	--	--	<2
8GI2184	1	10	--	>200.0	--	--	2
8GI2186	60	400	--	20.0	--	--	N
8GI2191	2	<10	--	10.0	--	--	2
8GI2192	15	40	--	5.0	--	--	<2
8GI2242	120	200	N	--	--	--	N
8GI2243	>200	400	N	--	--	--	N

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
8GI2247	45 9 54	112 55 18	5.00	<.02	.07	.002	>5,000	.5	<200	N	N	100	1.0
8GN8064	45 12 3	112 20 29	5.00	.50	.15	.300	700	.5	1,000	N	50	150	1.5
8GN8065	45 11 58	112 20 23	7.00	.50	.10	.300	5,000	2.0	200	N	70	150	2.0
8GN8066	45 12 4	112 20 35	3.00	1.00	1.00	.150	2,000	3.0	<200	N	30	500	1.0
8HL8063	45 7 24	112 32 53	5.00	.50	10.00	.005	>5,000	N	700	N	<10	5,000	10.0
8XBE4006	44 47 3	113 25 33	5.00	.70	1.00	.150	500	5.0	N	N	500	1,000	2.0
8XBE4008	44 47 14	113 26 35	15.00	.20	.50	.020	1,000	30.0	200	N	15	300	10.0
8XBE4009	44 47 21	113 27 41	10.00	.50	.50	.002	>5,000	30.0	N	N	10	700	2.0
8XBE4012	44 47 15	113 26 35	7.00	3.00	5.00	.030	700	20.0	N	N	30	700	2.0
8XBF4020	44 47 39	113 19 56	20.00	.15	.07	.030	500	1.0	1,000	N	10	50	1.0
8XBF4022	44 45 39	113 20 30	20.00	.50	1.50	.050	150	1.5	2,000	N	10	1,000	2.0
8XCE4014	44 44 0	113 24 0	20.00	.70	1.00	.015	2,000	N	200	N	10	300	2.0
8XCE4015	44 44 0	113 24 0	10.00	.15	.20	.050	200	<.5	<200	N	20	150	5.0
8XCF4016	44 42 30	113 21 40	10.00	1.00	1.50	.030	500	10.0	300	N	15	700	15.0
8XCF4017	44 42 30	113 21 40	3.00	.30	.10	.200	200	10.0	1,500	N	50	1,000	2.0
8XGG4043	46 13 54	113 11 56	>20.00	.05	<.05	.050	150	1.0	700	10	50	300	7.0
8XGG4044	46 13 55	113 11 57	10.00	.07	.50	.020	700	.7	700	10	70	200	3.0
8XGG4046	46 10 29	113 14 40	5.00	.03	<.05	.002	200	N	<200	N	15	>5,000	<1.0
8XGG4047	46 10 29	113 14 40	15.00	.10	.50	.050	500	N	500	N	100	200	1.0
8XGG4048	46 12 42	113 14 21	20.00	.15	.10	.050	500	7.0	1,000	N	500	200	<1.0
8XGG4049	46 12 35	113 14 0	15.00	.15	.10	.020	3,000	N	300	N	10	300	1.0
8XGG4050	46 12 14	113 13 18	20.00	.30	1.00	.050	1,000	5.0	500	15	70	300	1.5
8XGG4055	46 11 50	113 13 0	1.50	.03	.10	.050	300	N	200	N	70	100	1.5
8XHD4041	46 3 7	113 31 29	1.00	.15	.05	.150	70	.5	N	N	50	300	2.0
9DA7050	45 33 27	113 55 1	2.00	.10	.05	.070	200	<.5	N	N	100	>5,000	2.0
9DA7059	45 0 0	112 53 17	15.00	.10	.10	.100	70	1.0	N	N	<10	20	70.0
9DA7060	45 0 0	112 53 17	7.00	.50	.10	.070	300	15.0	200	N	10	N	5.0
9DA7061	45 0 0	112 53 17	15.00	1.00	.15	.500	1,000	N	N	N	<10	700	1.5
9DF6857	45 37 8	113 20 10	2.00	.50	.70	.200	700	N	N	N	15	1,000	2.0
9DF6858	45 37 8	113 20 10	1.50	.20	<.05	.100	1,500	2.0	N	N	15	300	30.0
9DF6859	45 37 8	113 20 10	3.00	.20	<.05	.070	700	70.0	N	N	20	200	10.0
9X4100	44 42 13	113 18 30	.50	7.00	10.00	.015	300	150.0	N	N	<10	200	<1.0
9X4101	44 42 25	113 18 15	2.00	.02	<.05	.100	N	70.0	N	N	20	700	1.0
9X4102	44 42 5	113 18 15	20.00	.30	.10	.020	1,500	1.0	N	N	N	200	2.0

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
8GI2247	N	N	10	10	5	30	N	<20	5	100	N	<5	N	<100
8GN8064	N	N	20	100	2,000	50	7	<20	30	30	N	10	N	<100
8GN8065	N	N	100	150	10,000	30	5	<20	100	<10	N	15	N	200
8GN8066	N	N	15	70	5,000	20	N	<20	20	20	N	5	N	100
8HL8063	N	N	50	50	50	20	50	<20	20	N	N	N	N	1,000
8XBE4006	15	N	5	50	100	70	30	<20	30	100	N	7	N	300
8XBE4008	N	N	150	10	500	20	50	N	500	5,000	200	5	N	<100
8XBE4009	N	50	7	10	15	20	N	N	20	7,000	<100	N	N	<100
8XBE4012	N	20	50	10	200	<20	30	N	100	10,000	<100	<5	N	100
8XBE4020	N	30	150	50	2,000	<20	100	N	1,500	1,500	100	N	N	<100
8XBE4022	N	50	200	70	5,000	20	200	N	2,000	150	200	5	N	100
8XCE4014	N	20	150	10	<5	20	70	N	200	30	<100	5	N	<100
8XCE4015	N	20	50	100	1,000	20	100	N	200	<10	N	5	N	100
8XCE4016	N	20	150	20	20,000	20	500	N	1,000	3,000	<100	5	10	100
8XCE4017	N	N	70	50	10,000	30	20	<20	100	70	200	10	15	<100
8XGG4043	20	N	20	50	100	30	N	N	20	50	N	<5	N	<100
8XGG4044	30	N	15	20	100	20	N	<20	20	10	N	<5	N	<100
8XGG4046	N	N	<5	10	15	20	N	N	10	10	N	<5	N	200
8XGG4047	N	N	15	30	70	20	N	N	20	50	<100	<5	N	<100
8XGG4048	50	N	<5	30	1,000	20	N	N	5	10	1,000	<5	N	<100
8XGG4049	N	N	15	20	70	20	N	N	7	10	N	<5	N	<100
8XGG4050	N	N	200	20	5,000	200	N	N	100	10	N	20	N	<100
8XGG4055	N	N	7	15	10	20	N	<20	10	N	N	<5	N	<100
8XHD4041	N	N	<5	20	20	20	5	<20	10	70	N	<5	N	<100
9DA7050	N	N	5	10	200	<20	70	N	5	10	N	<5	N	200
9DA7059	N	N	20	20	2,000	N	N	N	15	<10	N	5	N	100
9DA7060	N	N	70	10	20,000	N	N	N	50	N	N	5	N	<100
9DA7061	N	N	100	200	200	30	N	<20	150	20	N	30	N	<100
9DF6857	N	N	N	N	5	50	N	N	<5	20	N	<5	N	300
9DF6858	<10	N	N	N	50	30	N	N	<5	30	N	<5	N	<100
9DF6859	70	N	N	N	50	<20	50	N	<5	20	N	N	N	<100
9X4100	N	100	N	10	150	20	N	N	<5	>20,000	150	<5	N	100
9X4101	N	N	N	N	100	70	N	30	5	>20,000	<100	N	N	N
9X4102	N	N	30	N	700	500	50	N	50	100	100	5	N	<100

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
8GI2247	20	N	15	300	N	N	--	--	--	--	--	>2,000.00	--	--
8GN8064	150	N	70	N	100	N	--	--	--	--	--	35.00	--	--
8GN8065	150	N	70	N	70	N	--	--	--	--	--	40.00	--	--
8GN8066	100	N	15	N	20	N	--	--	--	--	--	40.00	--	--
8HL8063	100	150	10	N	10	N	--	--	--	--	--	30.00	--	--
8XBE4006	500	N	50	300	70	N	--	--	--	--	--	190.00	--	--
8XBE4008	70	N	100	3,000	20	N	--	--	--	--	--	>2,000.00	--	--
8XBE4009	50	N	10	5,000	N	N	--	--	--	--	--	>2,000.00	--	--
8XBE4012	20	N	30	2,000	50	N	--	--	--	--	--	>2,000.00	--	--
8XBF4020	1,000	N	20	2,000	15	N	--	--	--	--	--	>2,000.00	--	--
8XBF4022	1,500	N	15	500	10	N	--	--	--	--	--	1,100.00	--	--
8XCE4014	20	N	10	700	<10	N	--	--	--	--	--	500.00	--	--
8XCE4015	150	N	70	3,000	20	N	--	--	--	--	--	>2,000.00	--	--
8XCF4016	100	N	200	1,000	15	N	--	--	--	--	--	>2,000.00	--	--
8XCF4017	70	N	30	200	150	N	--	--	--	--	--	320.00	--	--
8XGG4043	20	N	30	N	15	N	--	--	--	--	--	130.00	--	--
8XGG4044	30	N	20	N	<10	N	--	--	--	--	--	200.00	--	--
8XGG4046	<10	N	<10	N	<10	N	--	--	--	--	--	20.00	--	--
8XGG4047	100	50	20	N	30	N	--	--	--	--	--	70.00	--	--
8XGG4048	70	N	15	N	30	N	--	--	--	--	--	45.00	--	--
8XGG4049	20	N	15	N	<10	N	--	--	--	--	--	80.00	--	--
8XGG4050	70	70	200	N	70	N	--	--	--	--	--	35.00	--	--
8XGG4055	20	N	15	N	50	N	--	--	--	--	--	5.00	--	--
8XHD4041	30	N	20	N	200	N	--	--	--	--	--	25.00	--	--
9DA7050	20	N	<10	N	150	N	--	--	--	--	--	<5.00	--	--
9DA7059	70	N	30	N	10	N	--	--	--	--	--	10.00	--	--
9DA7060	20	N	20	<200	20	N	--	--	--	--	--	160.00	--	--
9DA7061	200	N	30	N	150	N	--	--	--	--	--	60.00	--	--
9DF6857	20	N	10	N	100	N	--	--	--	--	--	45.00	--	--
9DF6858	10	50	N	<200	70	N	--	--	--	--	--	100.00	--	--
9DF6859	15	N	N	200	50	N	--	--	--	--	--	150.00	--	--
9X4100	10	N	N	10,000	10	N	--	--	--	--	--	>2,000.00	--	--
9X4101	<10	N	15	N	500	N	--	--	--	--	--	30.00	--	--
9X4102	15	N	100	700	<10	N	--	--	--	--	--	800.00	--	--

TABLE 3. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF QUARTZ VEIN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
8GI2247	10	160	N	--	--	--	N
8GN8064	10	300	--	N	--	--	<2
8GN8065	1	100	--	N	--	--	<2
8GN8066	1	80	--	N	--	--	<2
8HL8063	10	400	--	>200.0	--	--	N
8XBE4006	5	10	--	<1.0	--	--	N
8XBF4008	140	200	--	N	--	--	N
8XBE4009	25	40	--	N	--	--	N
8XBE4012	40	160	--	N	--	--	N
8XBF4020	80	800	--	N	--	--	N
8XBF4022	140	1,600	--	1.0	--	--	2
8XCE4014	15	10	--	1.0	--	--	N
8XCE4015	15	80	--	N	--	--	N
8XCF4016	30	200	--	N	--	--	4
8XCF4017	120	400	--	N	--	--	10
8XGG4043	5	1,000	--	N	--	--	--
8XGG4044	25	800	--	10.0	--	--	--
8XGG4046	5	40	--	5.0	--	--	--
8XGG4047	25	160	--	50.0	--	--	--
8XGG4048	>200	1,000	--	2.0	--	--	--
8XGG4049	5	160	--	2.0	--	--	--
8XGG4050	5	160	--	100.0	--	--	--
8XGG4055	1	20	--	1.0	--	--	--
8XHD4041	<1	<10	--	7.0	--	--	--
9DA7050	3	<10	--	--	--	--	--
9DA7059	<1	20	--	--	--	--	--
9DA7060	1	160	--	--	--	--	--
9DA7061	1	10	--	--	--	--	--
9DF6857	N	10	--	--	--	--	--
9DF6858	2	10	--	--	--	--	--
9DF6859	20	10	--	--	--	--	--
9X4100	120	200	--	--	--	--	--
9X4101	60	80	--	--	--	--	--
9X4102	120	80	--	--	--	--	--

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
0XHL4522	46 0 36	112 36 35	.50	.10	.50	.070	2,000	3.0	N	N	100	200	5.0
78J002	45 24 30	112 58 35	1.00	.10	.30	.070	300	N	N	N	15	150	1.5
78J003	45 24 30	112 58 35	3.00	1.00	1.50	.300	700	N	N	N	15	1,000	1.5
78J004	45 24 30	112 58 36	5.00	1.00	1.50	.300	1,000	N	N	N	10	1,000	1.5
78J007	45 24 32	112 58 56	5.00	1.00	1.50	.300	1,000	N	N	N	10	1,000	1.0
78J008	45 24 40	112 59 39	3.00	1.00	1.50	.300	1,000	N	N	N	<10	1,000	1.5
78J010	45 24 18	112 59 59	.50	.03	.50	.050	100	N	N	N	15	50	2.0
78J011	45 24 15	113 0 1	3.00	.70	1.00	.300	700	<.5	N	N	15	700	1.5
78J012	45 24 15	113 0 1	3.00	1.00	1.50	.300	1,000	N	N	N	15	700	1.5
78J015	45 23 57	112 59 52	5.00	.70	1.00	.300	1,000	3.0	N	N	20	700	1.5
78J016	45 23 57	112 59 52	3.00	1.00	1.50	.300	1,000	N	N	N	15	700	1.5
78P033	45 39 4	112 58 55	.50	7.00	20.00	.030	500	1.5	N	N	20	<20	<1.0
78P049	45 26 10	112 59 37	3.00	1.00	1.50	.300	1,000	N	N	N	15	1,000	1.5
78P051	45 25 20	112 59 34	2.00	.20	.70	.200	500	N	N	N	15	700	2.0
78P052	45 25 20	112 59 34	1.50	.50	1.00	.150	500	N	N	N	15	1,000	2.0
78P053	45 25 18	112 59 33	2.00	1.00	1.00	.300	700	N	N	N	10	500	1.5
78P056	45 25 9	112 59 32	5.00	1.50	2.00	.300	1,500	N	N	N	15	700	2.0
78P060	45 25 20	113 0 8	3.00	1.00	1.50	.200	700	N	N	N	15	700	2.0
78P061	45 25 28	112 59 56	1.50	.70	1.00	.150	500	.5	N	N	15	1,000	2.0
78P063	45 30 53	112 58 0	3.00	.50	.30	.200	1,500	N	N	N	50	500	3.0
78P064	45 31 3	112 58 9	3.00	.70	.50	.200	1,000	N	N	N	50	700	2.0
78P067	45 30 38	112 57 12	5.00	1.50	1.50	.300	1,000	N	N	N	15	1,000	1.5
78P100	45 31 40	113 2 40	10.00	.70	1.50	.300	500	.7	N	N	15	1,000	2.0
78P101	45 31 37	113 2 47	7.00	.70	2.00	.300	500	N	N	N	10	1,000	<1.0
78P104	45 31 35	113 3 13	2.00	.50	1.50	.200	50	N	N	N	10	1,500	2.0
78P106	45 31 25	113 3 15	3.00	.70	1.50	.200	300	N	N	N	<10	1,500	5.0
78P112	45 33 11	113 3 44	1.50	.30	.15	.200	50	N	N	N	15	500	2.0
78P114	45 33 25	113 1 22	10.00	2.00	10.00	.500	1,500	N	N	N	10	1,000	2.0
78P114A	45 33 25	113 1 22	5.00	.70	.10	.300	5,000	N	N	N	100	1,500	7.0
78P116	45 34 58	113 3 21	.20	.15	.05	.050	15	N	N	N	15	50	<1.0
78P120	45 32 42	113 0 55	5.00	.70	1.50	.500	700	N	N	N	30	1,000	2.0
78P125	45 32 38	112 59 50	10.00	.20	.07	.200	2,000	N	N	N	100	500	1.5
78P127	45 32 22	112 59 30	10.00	.70	2.00	.700	2,000	N	N	N	70	1,000	2.0
78P128	45 32 22	112 59 31	15.00	7.00	15.00	.700	2,000	N	N	N	<10	2,000	1.5
78P144	45 23 45	113 58 42	3.00	1.00	2.00	.300	200	N	N	N	15	500	2.0
78P145	45 23 45	113 58 42	5.00	.70	.30	.200	3,000	N	N	N	15	500	2.0
78P146	45 2 45	113 45 45	10.00	.30	.20	.200	1,500	.5	N	N	30	2,000	5.0
78P154	45 31 27	113 3 8	5.00	.50	.70	.200	150	.5	N	N	100	1,000	3.0
78P157	45 30 42	113 1 22	5.00	.50	.15	.300	700	N	N	N	150	500	5.0
78P158	45 30 10	113 1 21	.70	.10	N	.015	70	2.0	N	N	15	150	1.0
78P161	45 29 58	113 2 0	2.00	.20	1.00	.150	300	.5	N	N	50	500	3.0
78P163	45 28 48	113 2 44	3.00	.20	.15	.150	700	N	N	N	200	500	3.0
78P185	45 23 31	113 5 51	3.00	.50	.05	.300	300	1.0	N	N	70	300	2.0
78P190	45 23 25	113 5 2	.70	1.00	2.00	.100	200	5.0	N	N	10	700	2.0
78P192B	45 23 12	113 5 5	5.00	5.00	5.00	.300	500	N	N	N	100	1,000	1.0

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
0XHL4522	N	N	N	N	5	100	7	<20	5	70	N	5	N	<100
78J002	N	N	5	10	<5	20	10	50	5	100	N	5	N	100
78J003	N	N	10	15	15	20	N	<20	7	50	N	10	N	300
78J004	N	N	15	30	10	30	N	<20	7	50	N	15	N	500
78J007	N	N	15	20	10	50	5	<20	10	50	N	15	N	500
78J008	N	N	15	15	10	30	15	<20	10	50	N	15	N	500
78J010	N	N	N	10	<5	20	N	<20	5	100	N	5	N	100
78J011	N	N	10	15	50	50	10	<20	10	50	N	10	N	500
78J012	N	N	15	15	<5	20	N	<20	10	50	N	15	N	500
78J015	10	N	15	20	150	30	N	<20	5	70	N	15	N	300
78J016	N	N	15	15	<5	30	10	<20	15	50	N	10	N	500
78P033	N	N	<5	50	30	20	N	N	15	15	N	<5	N	700
78P049	N	N	10	10	<5	50	10	<20	10	50	N	10	<10	500
78P051	N	N	N	10	10	50	10	<20	5	50	N	7	N	500
78P052	N	N	N	10	<5	50	<5	<20	5	50	N	5	N	700
78P053	N	N	5	10	15	70	15	<20	10	20	N	10	N	500
78P056	N	N	20	20	30	50	20	<20	15	30	N	15	N	500
78P060	N	N	15	10	50	70	50	<20	5	50	N	10	N	500
78P061	N	N	N	15	30	200	15	<20	5	70	N	7	N	700
78P063	N	N	15	15	<5	30	N	<20	7	70	N	10	N	300
78P064	N	N	15	20	<5	30	7	<20	7	50	N	15	N	300
78P067	N	N	15	10	N	30	N	<20	5	70	N	15	N	500
78P100	N	N	10	N	70	70	N	20	7	30	N	10	N	300
78P101	N	N	10	10	150	100	N	<20	7	30	N	10	N	500
78P104	N	N	N	N	100	70	7	<20	7	15	N	5	N	700
78P106	N	N	N	15	30	20	7	<20	7	20	N	5	N	700
78P112	N	N	5	15	<5	30	N	<20	10	<10	N	5	N	100
78P114	N	N	15	20	15	100	N	<20	10	50	N	20	N	100
78P114A	N	N	15	20	<5	50	N	<20	15	100	N	20	N	300
78P116	N	N	N	20	N	20	N	N	10	<10	N	<5	N	N
78P120	N	N	10	10	10	<20	N	<20	10	70	N	7	N	500
78P125	N	N	20	10	5	50	10	<20	10	50	N	5	N	150
78P127	N	N	15	50	15	50	N	<20	20	50	N	15	N	500
78P128	N	N	30	700	100	100	N	<20	200	30	N	30	N	1,000
78P144	N	N	7	50	30	20	N	<20	50	20	N	10	N	300
78P145	N	N	7	30	50	30	10	<20	10	50	N	7	N	<100
78P146	N	N	7	<10	5	100	N	20	7	150	N	5	N	100
78P154	N	N	N	10	50	50	30	<20	5	50	N	5	N	500
78P157	N	N	7	<10	20	30	15	20	5	50	N	7	N	500
78P158	15	N	N	10	15	<20	5	<20	5	20	N	<5	N	<100
78P161	N	N	5	15	50	20	20	20	7	70	N	5	N	200
78P163	N	N	7	10	20	50	30	20	7	70	N	5	N	100
78P185	N	N	7	50	10	50	N	<20	20	100	N	10	N	<100
78P190	N	N	10	50	300	30	50	20	20	15	N	N	N	100
78P192B	N	N	10	150	10	100	N	20	30	100	N	15	N	300

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
0XHL4522	20	N	50	N	70	<100	.150	<.020	<.100	--	--	15	--	--
78J002	20	<50	30	N	30	N	--	--	--	--	--	10	--	--
78J003	70	N	20	N	100	N	--	--	--	--	--	50	--	--
78J004	150	N	30	N	150	N	--	--	--	--	--	50	--	--
78J007	100	N	30	N	100	N	--	--	--	--	--	40	--	--
78J008	100	N	20	N	100	N	--	--	--	--	--	55	--	--
78J010	20	N	10	N	30	N	--	--	--	--	--	10	--	--
78J011	100	N	20	N	100	N	--	--	--	--	--	25	--	--
78J012	100	N	30	N	70	N	--	--	--	--	--	40	--	--
78J015	100	N	30	N	100	N	--	--	--	--	--	160	--	--
78J016	100	N	30	N	100	N	--	--	--	--	--	40	--	--
78P033	50	N	<10	N	10	N	--	--	--	--	--	20	--	--
78P049	100	N	15	N	150	N	--	--	--	--	--	40	--	--
78P051	50	N	20	N	150	N	--	--	--	--	--	35	--	--
78P052	70	N	20	N	100	N	--	--	--	--	--	30	--	--
78P053	100	N	30	N	100	N	--	--	--	--	--	70	--	--
78P056	150	<50	20	N	150	N	--	--	--	--	--	70	--	--
78P060	100	N	30	N	100	N	--	--	--	--	--	50	--	--
78P061	50	N	30	N	100	N	--	--	--	--	--	20	--	--
78P063	100	N	20	N	100	N	--	--	--	--	--	60	--	--
78P064	150	N	20	N	70	N	--	--	--	--	--	40	--	--
78P067	150	N	30	N	150	N	--	--	--	--	--	40	--	--
78P100	150	N	30	N	150	N	--	--	--	--	--	50	--	--
78P101	150	N	15	N	150	N	--	--	--	--	--	30	--	--
78P104	50	N	15	N	200	N	--	--	--	--	--	10	--	--
78P106	50	N	10	N	150	N	--	--	--	--	--	15	--	--
78P112	30	N	20	N	200	N	--	--	--	--	--	10	--	--
78P114	200	N	30	N	150	N	--	--	--	--	--	50	--	--
78P114A	200	N	20	N	100	N	--	--	--	--	--	60	--	--
78P116	20	N	10	N	70	N	--	--	--	--	--	5	--	--
78P120	150	N	10	N	150	N	--	--	--	--	--	45	--	--
78P125	200	N	15	300	70	N	--	--	--	--	--	180	--	--
78P127	200	N	20	N	200	N	--	--	--	--	--	80	--	--
78P128	300	N	50	N	200	N	--	--	--	--	--	70	--	--
78P144	100	N	15	N	200	N	--	--	--	--	--	65	--	--
78P145	70	N	20	N	300	N	--	--	--	--	--	45	--	--
78P146	50	N	15	500	200	N	--	--	--	--	--	180	--	--
78P154	50	N	10	N	150	N	--	--	--	--	--	10	--	--
78P157	100	<50	15	N	200	N	--	--	--	--	--	50	--	--
78P158	20	700	N	N	N	N	--	--	--	--	--	20	--	--
78P161	50	N	15	N	70	N	--	--	--	--	--	60	--	--
78P163	70	N	15	N	150	N	--	--	--	--	--	70	--	--
78P185	70	N	30	N	300	N	--	--	--	--	--	160	--	--
78P190	30	<50	10	N	70	N	--	--	--	--	--	40	--	--
78P192B	100	N	50	N	200	N	--	--	--	--	--	15	--	--

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
0XHL4522	<1	10	--	10.000	--	<100.000	--
78J002	<1	<10	--	--	--	--	--
78J003	N	20	--	--	--	--	--
78J004	N	20	--	--	--	--	--
78J007	N	20	--	--	--	--	--
78J008	N	10	--	--	--	--	--
78J010	N	<10	--	--	--	--	--
78J011	N	20	--	--	--	--	--
78J012	N	<10	--	--	--	--	--
78J015	N	<10	--	--	--	--	--
78J016	N	<10	--	--	--	--	--
78P033	2	20	--	--	--	--	--
78P049	N	<10	--	--	--	--	--
78P051	<1	<10	--	--	--	--	--
78P052	N	<10	--	--	--	--	--
78P053	<1	10	--	--	--	--	--
78P056	<1	10	--	--	--	--	--
78P060	<1	20	--	--	--	--	--
78P061	<1	<10	--	--	--	--	--
78P063	<1	<10	--	--	--	--	--
78P064	N	<10	--	--	--	--	--
78P067	N	<10	--	--	--	--	--
78P100	<1	10	--	--	--	--	--
78P101	<1	10	--	--	--	--	--
78P104	N	10	--	--	--	--	--
78P106	N	10	--	--	--	--	--
78P112	N	<10	--	--	--	--	--
78P114	N	10	--	--	--	--	--
78P114A	N	10	--	--	--	--	--
78P116	N	20	--	--	--	--	--
78P120	N	20	--	--	--	--	--
78P125	N	10	--	--	--	--	--
78P127	N	10	--	--	--	--	--
78P128	N	<10	--	--	--	--	--
78P144	N	<10	--	--	--	--	--
78P145	N	20	--	--	--	--	--
78P146	1	20	--	--	--	--	--
78P154	2	10	--	--	--	--	--
78P157	<1	<10	--	--	--	--	--
78P158	<1	<10	--	--	--	--	--
78P161	2	<10	--	--	--	--	--
78P163	<1	<10	--	--	--	--	--
78P185	2	<10	--	--	--	--	--
78P190	5	20	--	--	--	--	--
78P192B	<1	20	--	--	--	--	--

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
78P193	45 23 18	113 5 0	1.50	.20	.50	.200	200	10.0	N	N	10	2,000	2.0
78P197	45 23 7	113 4 15	3.00	1.00	2.00	.500	2,000	N	N	N	30	200	5.0
78P207	45 26 32	113 5 12	3.00	.70	.05	.300	300	100.0	N	N	20	1,000	2.0
78P216	45 28 14	113 5 12	2.00	.30	.10	.100	300	10.0	N	N	50	1,500	2.0
78P90	45 34 20	113 0 55	1.00	.30	<.05	.070	200	N	N	N	70	300	1.5
78P99	45 31 40	113 2 40	7.00	1.00	.50	.200	300	3.0	N	N	200	1,500	3.0
79BB138	45 40 7	113 1 20	.70	3.00	10.00	.020	700	50.0	N	N	30	70	N
79G118	45 29 44	113 1 55	5.00	1.00	.10	.500	700	<.5	N	N	10	1,000	1.0
79P025	45 34 37	113 54 45	10.00	7.00	10.00	.500	1,500	N	N	N	10	150	N
79P051	45 21 40	112 1 35	5.00	.70	.50	.300	1,500	.7	N	N	70	1,000	2.0
79P052	45 21 23	112 1 34	3.00	1.00	5.00	.200	700	N	N	N	10	1,500	2.0
79P060	45 27 35	112 3 33	5.00	1.00	2.00	.500	1,500	2.0	N	N	50	1,500	3.0
80P016	45 23 25	112 58 42	3.00	.30	.50	.200	500	N	N	N	50	500	2.0
80P018	45 23 41	112 58 59	3.00	.20	.07	.200	700	N	N	N	20	500	2.0
80P031	45 4 51	112 24 38	7.00	10.00	.30	.070	500	N	N	N	70	N	N
80P032	45 4 55	112 25 5	10.00	10.00	1.00	.100	1,000	N	N	N	10	50	<1.0
80P033	45 5 7	112 24 32	7.00	10.00	1.50	.100	1,000	N	N	N	<10	100	N
80P034	45 5 9	112 23 44	10.00	10.00	1.00	.100	1,000	N	N	N	<10	N	<1.0
80P046	45 21 28	113 59 27	5.00	.30	<.05	.150	20	15.0	N	N	15	700	1.0
80P048	45 20 43	113 59 15	3.00	3.00	1.00	.200	300	5.0	N	N	<10	1,000	2.0
80P052	45 4 27	113 51 20	3.00	.30	<.05	.150	20	N	N	N	15	3,000	1.5
80P060	45 17 4	113 41 31	3.00	.07	<.05	.020	50	1.0	N	N	10	200	1.5
80P097	45 38 28	112 35 14	10.00	.30	.05	.200	70	50.0	N	N	20	700	2.0
80P101	45 40 19	112 42 5	3.00	.70	1.00	.200	500	1.0	N	N	10	1,500	1.5
80P102	45 11 23	112 57 20	2.00	.70	2.00	.150	200	N	N	N	10	700	1.5
81P005	45 22 18	113 40 45	5.00	1.50	2.00	.300	700	N	N	N	50	1,000	1.5
81P014	45 14 0	113 35 0	7.00	2.00	.05	.500	2,000	1.5	N	N	100	700	1.0
81P015	45 13 50	113 26 54	7.00	7.00	5.00	.300	1,500	N	N	N	50	700	<1.0
81P020	45 40 10	113 40 35	3.00	.30	<.05	.200	200	N	N	N	20	500	2.0
81P028	45 30 48	113 23 29	10.00	3.00	5.00	.700	1,500	N	N	N	20	1,000	1.0
81P031	45 39 23	113 54 28	1.00	.10	.20	.003	300	10.0	N	N	15	100	10.0
81P034	45 51 51	113 52 35	3.00	.30	.70	.150	200	N	N	N	20	1,000	1.5
81P035	45 53 21	113 50 45	2.00	.70	1.00	.200	300	N	N	N	70	1,000	3.0
81P036	45 50 10	113 59 5	1.50	.30	1.00	.150	300	N	N	N	15	1,500	1.5
81P038	45 44 28	113 57 25	3.00	.70	.20	.200	15	N	N	N	30	700	5.0
81P039	45 41 57	113 58 25	5.00	.50	.70	.300	1,000	N	N	N	10	3,000	1.5
81P041	45 40 51	113 56 30	2.00	.70	.70	.150	500	N	N	N	50	1,000	3.0
81P042	45 40 51	113 56 30	3.00	.20	.05	.150	500	N	N	N	100	300	3.0
81P052	45 55 38	112 1 49	5.00	.20	.05	.200	700	10.0	N	N	150	1,500	5.0
81P057	45 39 55	112 7 49	7.00	2.00	5.00	.300	1,000	N	N	N	70	2,000	1.0
81P082	45 33 25	112 6 19	7.00	2.00	3.00	.500	2,000	2.0	N	N	20	500	2.0
82P020	45 20 36	112 53 23	.70	.30	1.50	.050	500	1.0	N	N	70	300	1.0
82P020	45 20 36	112 53 23	.70	.30	1.50	.050	500	1.0	N	N	70	300	1.0
82P021	45 25 10	112 56 5	2.00	.20	.15	.200	150	N	N	N	20	300	1.0
82P022	45 25 7	112 56 8	1.00	.50	.50	.300	200	30.0	300	N	50	500	1.0

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
78P193	<10	N	15	50	3,000	<20	30	20	20	70	<100	N	N	100
78P197	N	N	5	50	70	100	N	20	5	20	N	20	N	1,000
78P207	50	N	N	15	100	30	5	20	5	2,000	N	10	20	150
78P216	N	N	10	20	50	50	20	20	10	200	N	<5	N	100
78P90	N	N	5	15	<5	30	N	<20	10	10	N	5	N	<100
78P99	N	N	5	20	300	20	10	<20	10	100	N	10	20	150
79BB138	50	N	5	N	500	N	N	N	5	1,000	100	N	N	100
79G118	N	N	N	10	700	30	100	N	<5	30	N	5	<10	100
79P025	N	N	70	100	150	N	N	N	50	10	N	50	N	500
79P051	N	N	10	N	30	30	N	<20	5	100	N	10	N	150
79P052	N	N	7	N	5	20	N	N	<5	30	N	7	N	500
79P060	N	N	20	150	50	30	10	<20	100	70	N	10	N	300
80P016	N	N	15	10	10	70	10	<20	<5	30	N	10	N	200
80P018	N	N	15	10	10	20	<5	<20	5	20	N	7	N	300
80P031	N	N	100	1,500	150	N	N	N	2,000	<10	N	10	N	N
80P032	N	N	100	5,000	150	N	N	N	1,500	<10	N	15	15	N
80P033	N	N	100	2,000	50	N	N	N	1,500	N	N	15	N	N
80P034	N	N	100	3,000	100	N	N	N	1,000	N	N	15	<10	N
80P046	N	N	N	30	300	N	N	<20	10	50	N	7	N	<100
80P048	N	N	5	50	200	50	7	<20	5	50	N	7	<10	200
80P052	N	N	5	30	1,000	N	N	N	7	15	N	5	N	N
80P060	N	N	15	<10	30	N	10	N	10	500	N	N	N	N
80P097	50	N	5	100	500	20	7	N	10	20,000	150	10	10	500
80P101	N	N	7	<10	100	50	N	20	<5	50	N	<5	N	300
80P102	N	N	15	15	15	50	N	20	7	30	N	7	N	150
81P005	N	N	20	20	7	100	N	<20	15	20	N	10	N	500
81P014	N	N	70	700	100	N	N	N	150	300	N	50	N	N
81P015	N	N	70	1,500	150	N	N	N	200	10	N	50	N	150
81P020	N	N	15	50	100	50	N	<20	100	30	N	5	N	<100
81P028	N	N	50	20	30	30	N	20	10	50	N	20	N	700
81P031	N	N	5	N	5,000	N	N	N	5	100	N	N	N	N
81P034	N	N	5	N	5	30	N	<20	5	30	N	<5	N	300
81P035	N	N	7	20	15	30	N	N	15	50	N	7	10	500
81P036	N	N	5	N	5	30	N	<20	5	50	N	5	N	700
81P038	N	N	10	30	7	30	N	N	15	50	N	5	<10	<100
81P039	N	N	7	10	50	70	N	<20	<5	30	N	20	N	300
81P041	N	N	5	30	7	20	N	<20	20	30	N	5	N	500
81P042	N	N	15	70	30	20	<5	N	70	100	N	7	N	<100
81P052	N	N	5	30	500	30	5	<20	5	5,000	N	10	N	200
81P057	N	N	50	200	100	20	N	N	100	30	N	20	N	1,000
81P082	N	N	30	300	30	30	N	N	100	30	N	30	N	100
82P020	N	N	N	N	15	<20	N	N	<5	30	N	N	N	300
82P020	N	N	N	N	15	<20	N	N	<5	30	N	N	N	300
82P021	N	N	7	<10	20	30	15	N	<5	50	N	<5	N	150
82P022	N	N	5	<10	15	30	N	N	5	50	N	<5	N	200

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
78P193	70	50	10	N	70	N	--	--	--	--	--	80	--	--
78P197	100	N	50	N	150	N	--	--	--	--	--	30	--	--
78P207	100	50	20	500	150	N	--	--	--	--	--	600	--	--
78P216	30	<50	20	200	100	N	--	--	--	--	--	130	--	--
78P90	30	N	10	N	70	N	--	--	--	--	--	10	--	--
78P99	150	N	15	N	150	N	--	--	--	--	--	35	--	--
79BB138	10	N	N	500	N	N	--	--	--	--	--	700	--	--
79G118	100	<50	10	300	300	N	--	--	--	--	--	200	--	--
79P025	300	N	20	N	20	N	N	N	N	N	N	30	--	N
79P051	150	N	20	N	300	N	--	--	--	--	--	55	--	--
79P052	100	N	15	N	150	N	--	--	--	--	--	50	--	--
79P060	100	N	15	N	200	N	--	--	--	--	--	50	--	--
80P016	100	N	20	N	100	N	<.050	--	--	--	--	55	--	--
80P018	70	N	15	N	70	N	<.050	--	--	--	--	85	--	--
80P031	20	N	<10	N	20	N	N	--	--	--	--	15	--	--
80P032	50	N	10	<200	30	100	<.050	--	--	--	--	15	--	--
80P033	70	N	10	<200	30	N	<.050	--	--	--	--	10	--	--
80P034	70	N	10	<200	50	N	<.050	--	--	--	--	10	--	--
80P046	50	N	20	N	300	N	<.050	--	--	--	--	15	--	--
80P048	70	N	15	N	100	N	.100	--	--	--	--	40	--	--
80P052	50	50	30	N	300	N	<.050	--	--	--	--	5	--	--
80P060	<10	N	10	N	30	N	2.500	--	--	--	--	35	--	--
80P097	100	70	10	10,000	100	N	.300	--	--	--	--	680	--	--
80P101	30	N	<10	N	150	N	.100	--	--	--	--	40	--	--
80P102	70	N	10	N	100	N	.050	--	--	--	--	25	--	--
81P005	150	N	20	N	150	N	N	--	--	--	--	65	--	--
81P014	300	N	20	200	70	N	N	--	--	--	--	140	--	--
81P015	300	N	15	N	30	N	<.050	--	--	--	--	30	--	--
81P020	50	N	10	<200	150	N	<.050	--	--	--	--	75	--	--
81P028	300	N	50	N	50	N	N	--	N	--	--	75	--	--
81P031	30	N	N	N	<10	N	.150	--	<.100	--	--	180	--	--
81P034	50	N	10	N	100	N	N	--	N	--	--	30	--	--
81P035	70	N	10	N	100	N	N	--	N	--	--	45	--	--
81P036	20	N	10	N	150	N	N	--	N	--	--	30	--	--
81P038	100	N	10	N	100	N	N	--	N	--	--	55	--	--
81P039	10	N	20	N	500	N	N	--	N	--	--	50	--	--
81P041	50	N	10	N	100	N	N	--	N	--	--	50	--	--
81P042	70	N	15	N	100	N	N	--	N	--	--	180	--	--
81P052	100	50	20	700	150	N	.200	--	<.100	--	--	840	--	--
81P057	200	N	15	N	100	N	N	--	N	--	--	85	--	--
81P082	200	N	20	N	100	N	<.050	--	N	--	--	150	--	--
82P020	10	N	10	N	50	N	<.050	--	--	40.000	--	20	--	--
82P020	10	N	10	N	50	N	<.050	--	--	40.000	--	20	--	--
82P021	70	N	15	N	70	N	N	--	--	180.000	--	60	--	--
82P022	70	N	10	N	100	N	<.050	--	--	530.000	--	35	--	--

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
78P193	15	20	--	--	--	--	--
78P197	<1	<10	--	--	--	--	--
78P207	3	10	--	--	--	--	--
78P216	10	<10	--	--	--	--	--
78P90	<1	10	--	--	--	--	--
78P99	2	20	--	--	--	--	--
79RB138	80	100	--	--	--	--	--
79G118	N	10	--	--	--	--	--
79P025	<1	<10	--	N	N	N	N
79P051	4	<10	--	--	--	--	--
79P052	<1	<10	--	--	--	--	--
79P060	2	10	--	--	--	--	--
80P016	N	<10	--	--	--	--	--
80P018	N	10	--	--	--	--	--
80P031	N	<10	--	--	--	--	--
80P032	N	10	--	--	--	--	--
80P033	N	10	--	--	--	--	--
80P034	<1	20	--	--	--	--	--
80P046	<1	20	--	--	--	--	--
80P048	N	<10	--	--	--	--	--
80P052	3	80	--	--	--	--	--
80P060	<1	20	--	--	--	--	--
80P097	140	30	--	--	--	--	--
80P101	<1	10	--	--	--	--	--
80P102	<1	<10	--	--	--	--	--
81P005	N	N	--	--	--	600.000	--
81P014	N	N	--	--	--	400.000	--
81P015	N	N	--	--	--	400.000	--
81P020	<1	10	--	--	--	250.000	--
81P028	N	10	--	--	--	500.000	--
81P031	1	N	--	--	--	120.000	--
81P034	N	10	--	--	--	320.000	--
81P035	N	20	--	--	--	320.000	--
81P036	N	20	--	--	--	240.000	--
81P038	N	N	--	--	--	700.000	--
81P039	N	20	--	--	--	400.000	--
81P041	N	20	--	--	--	500.000	--
81P042	3	20	--	--	--	500.000	--
81P052	10	20	--	--	--	800.000	--
81P057	8	10	--	--	--	600.000	--
81P082	1	10	--	--	--	600.000	--
82P020	3	--	--	--	--	--	--
82P020	3	--	--	--	--	--	--
82P021	5	--	--	--	--	--	--
82P022	7	--	--	--	--	--	--

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
82P023	45 31 48	112 34 6	3.00	1.50	2.00	.300	700	N	N	N	50	200	1.0
82P073	45 44 40	112 52 27	5.00	.50	.50	.700	700	<.5	1,000	N	150	300	<1.0
8AD0401	45 59 29	113 32 54	3.00	.50	.20	.100	1,500	.5	N	N	15	>5,000	<1.0
8AD0402	45 59 29	113 32 54	3.00	2.00	2.00	.150	5,000	N	N	N	20	>5,000	1.0
8AD0403	45 59 29	113 32 54	2.00	2.00	2.00	.200	3,000	N	N	N	150	2,000	2.0
8AI2136	45 53 28	112 56 25	.20	7.00	20.00	.010	500	N	N	N	10	<20	<1.0
8AI2137	45 53 30	112 56 23	.20	.20	1.00	.070	70	.5	N	N	15	1,000	1.0
8AI2141	45 54 34	112 55 1	.20	1.50	20.00	.007	150	3.0	N	N	N	<20	<1.0
8AI2145	45 55 58	112 55 47	.15	7.00	15.00	.002	200	10.0	N	N	10	N	<1.0
8AI2148	45 55 49	112 55 40	.15	3.00	5.00	.007	150	7.0	N	N	10	N	1.0
8AI2152	45 57 20	112 53 0	7.00	1.50	1.00	.200	150	3.0	N	N	20	200	1.0
8AI2154	45 56 14	112 57 12	1.50	5.00	15.00	.020	1,000	15.0	N	N	50	20	<1.0
8BL6056	45 46 42	112 34 27	2.00	.70	1.00	.200	700	N	N	N	10	700	2.0
8BL6057	45 46 47	112 33 50	1.50	.70	1.00	.200	500	N	N	N	15	1,000	2.0
8BL6058	45 46 41	112 34 47	.30	2.00	2.00	.007	150	.5	N	N	10	100	1.0
8BL6059	45 46 41	112 35 1	.30	7.00	10.00	.030	150	N	N	N	10	50	<1.0
8BL6060	45 46 35	112 34 46	7.00	2.00	3.00	.500	1,500	.5	N	N	20	700	1.0
8BL6061	45 46 44	112 35 6	5.00	3.00	7.00	.300	1,500	N	N	N	20	150	1.5
8BL6062	45 46 37	112 34 49	.30	5.00	10.00	.020	300	N	N	N	15	<20	<1.0
8BL6066	45 47 44	112 30 43	.30	.05	.10	.020	70	N	N	N	20	20	1.0
8BP8067	45 47 7	112 5 56	7.00	2.00	.20	.500	1,000	N	N	N	20	200	1.0
8BP8070	45 47 4	112 5 55	15.00	.30	.07	.300	700	10.0	200	N	20	300	3.0
8BP8071	45 47 4	112 5 56	10.00	.50	.50	.300	700	5.0	200	N	20	300	3.0
8BP8074	45 45 51	112 5 39	.20	.02	.10	.050	20	<.5	N	N	20	200	<1.0
8BP8075	45 45 51	112 5 39	1.50	.50	.10	.500	70	.5	<200	N	100	700	1.0
8BP8076	45 47 38	112 0 4	5.00	1.00	1.00	.500	500	N	N	N	15	700	1.0
8BP8077	45 47 38	112 0 5	5.00	1.00	1.50	.500	1,000	N	N	N	150	700	1.0
8BP8088	45 47 38	112 0 4	5.00	.20	.07	.200	50	500.0	500	10	30	300	2.0
8BP8091	45 47 42	112 0 10	5.00	2.00	.50	.200	700	<.5	N	N	20	200	<1.0
8BP8092	45 47 38	112 0 5	.70	.05	.10	.070	100	<.5	N	N	30	50	<1.0
8BP8093	45 47 38	112 0 4	1.50	2.00	15.00	.300	1,000	<.5	N	N	50	150	<1.0
8CI2104	45 40 24	112 57 13	10.00	2.00	1.00	1.000	1,000	N	N	N	50	1,500	2.0
8CI2105	45 40 28	112 57 15	10.00	2.00	1.00	1.000	1,500	N	N	N	50	1,000	2.0
8CI2108	45 41 28	112 56 55	.10	.02	.05	.002	50	20.0	200	N	15	50	<1.0
8CI2110	45 41 41	112 55 52	1.50	.50	.20	.700	700	10.0	N	N	100	200	2.0
8CI2264	45 43 55	112 54 13	.15	.15	.20	.020	150	200.0	N	N	20	70	<1.0
8CL6094	45 39 17	112 37 8	10.00	2.00	.15	.700	2,000	1.0	N	N	200	700	1.5
8CL6095	45 39 17	112 37 8	10.00	2.00	3.00	.700	2,000	N	N	N	20	1,000	1.0
8CL6096	45 39 12	112 37 9	2.00	10.00	15.00	.005	700	3.0	N	N	10	<20	<1.0
8CO8027	45 39 55	112 7 52	7.00	1.00	1.00	.500	500	N	N	N	150	300	3.0
8CO8028	45 39 54	112 7 50	5.00	1.50	10.00	.150	700	N	N	N	100	300	1.0
8CP8094	45 40 1	112 0 47	3.00	1.00	1.00	.500	1,000	N	N	N	10	1,000	2.0
8DF2134	45 33 50	113 14 55	2.00	.20	.30	.200	500	7.0	N	N	50	500	2.0
8DH2237	45 36 0	113 1 55	.50	.30	.05	.050	70	.5	N	N	30	200	1.0
8DH2238	45 36 0	113 1 55	.20	.70	.15	.150	100	.5	N	N	200	500	2.0

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
82P023	N	N	10	70	50	30	N	<20	30	50	N	10	N	150
82P073	N	N	20	<10	20	30	N	N	5	150	N	10	N	300
8AD0401	N	N	<5	15	150	20	N	N	7	15	N	<5	N	300
8AD0402	N	N	10	15	100	30	5	N	15	150	N	5	N	700
8AD0403	N	N	10	70	20	50	N	<20	20	150	N	10	N	100
8AI2136	N	N	N	15	<5	20	N	N	<5	70	N	N	N	200
8AI2137	N	N	N	<10	<5	50	N	<20	<5	100	N	N	N	150
8AI2141	N	N	N	70	10	30	N	N	<5	3,000	<100	N	10	150
8AI2145	N	70	N	10	30	30	N	N	<5	500	<100	N	N	<100
8AI2148	N	N	N	15	20	20	N	N	<5	300	N	N	N	<100
8AI2152	30	N	7	70	500	<20	5	<20	7	100	N	10	70	150
8AI2154	10	N	10	10	3,000	20	N	N	<5	50	N	N	20	100
8BL6056	N	N	5	10	<5	70	N	<20	5	15	N	15	N	300
8BL6057	N	N	5	15	<5	50	N	<20	10	30	N	5	N	500
8BL6058	N	N	N	10	5	30	N	N	5	10	N	<5	N	<100
8BL6059	N	N	N	20	5	30	N	N	5	<10	N	<5	N	100
8BL6060	N	N	30	100	150	50	N	<20	30	20	N	30	N	1,000
8BL6061	N	N	20	500	70	30	N	<20	70	20	N	50	15	1,000
8BL6062	N	N	N	10	10	20	N	N	<5	10	N	N	N	100
8BL6066	N	N	N	N	20	20	N	<20	5	50	N	<5	N	<100
8BP8067	N	N	30	500	70	20	N	N	50	15	N	15	N	150
8BP8070	20	N	30	300	200	<20	7	N	50	500	N	15	N	100
8BP8071	N	N	20	200	200	20	15	N	30	200	N	15	N	100
8BP8074	N	N	N	10	20	30	N	<20	10	10	N	<5	N	<100
8BP8075	N	N	5	200	20	70	N	<20	15	150	N	10	N	300
8BP8076	N	N	10	50	30	50	N	<20	15	20	N	15	N	1,000
8BP8077	N	N	15	200	50	100	N	<20	50	30	N	15	N	200
8BP8088	N	100	5	70	200	50	30	<20	20	100	<100	10	N	100
8BP8091	N	N	30	300	50	20	N	N	50	20	N	15	N	100
8BP8092	N	N	7	20	10	50	N	30	20	10	N	<5	N	<100
8BP8093	N	N	7	70	10	100	5	20	10	50	N	10	N	500
8CI2104	N	30	30	200	50	30	N	<20	50	150	N	30	N	100
8CI2105	N	N	50	300	100	20	N	<20	50	150	N	30	N	<100
8CI2108	10	N	N	10	20	20	N	<20	5	1,500	N	<5	N	<100
8CI2110	N	N	5	70	30	100	N	50	5	150	N	10	10	<100
8CI2264	<10	N	N	20	50	20	N	<20	10	200	100	N	N	<100
8CL6094	N	N	30	300	70	70	N	<20	70	300	N	20	15	100
8CL6095	N	N	30	700	100	50	N	<20	70	100	N	30	N	700
8CL6096	N	<20	N	20	<5	20	N	<20	<5	1,500	N	<5	N	100
8CO8027	N	N	20	200	70	70	N	<20	70	30	N	15	N	100
8CO8028	N	N	15	150	20	50	N	<20	30	20	N	15	N	150
8CP8094	N	N	10	20	10	100	10	<20	10	70	N	15	15	150
8DF2134	N	N	N	70	20	50	20	<20	10	200	N	10	N	100
8DH2237	N	N	15	20	10	50	N	<20	10	10	N	N	N	<100
8DH2238	N	N	10	50	5	50	N	<20	7	15	N	5	N	<100

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
82P023	150	N	30	300	100	N	N	--	--	5.000	--	280	--	--
82P073	150	N	20	N	30	N	.250	--	--	1,400.000	--	60	--	--
8AD0401	30	N	15	N	100	N	--	--	--	--	--	15	--	--
8AD0402	30	N	30	N	100	N	--	--	--	--	--	20	--	--
8AD0403	70	N	30	N	100	N	--	--	--	--	--	15	--	--
8AI2136	10	N	N	N	10	N	--	--	--	--	--	140	--	--
8AI2137	10	N	10	N	30	N	--	--	--	--	--	50	--	--
8AI2141	70	N	30	N	10	N	--	--	--	--	--	100	--	--
8AI2145	20	N	N	500	N	N	--	--	--	--	--	>2,000	--	--
8AI2148	20	N	N	N	10	N	--	--	--	--	--	430	--	--
8AI2152	150	N	10	N	200	N	--	--	--	--	--	20	--	--
8AI2154	20	N	<10	N	15	N	--	--	--	--	--	140	--	--
8BL6056	70	N	30	N	150	N	--	--	--	--	--	55	--	--
8BL6057	50	N	15	N	100	N	--	--	--	--	--	35	--	--
8BL6058	30	N	N	N	10	N	--	--	--	--	--	20	--	--
8BL6059	15	N	10	N	15	N	--	--	--	--	--	15	--	--
8BL6060	200	N	30	N	70	N	--	--	--	--	--	40	--	--
8BL6061	150	N	30	N	50	N	--	--	--	--	--	40	--	--
8BL6062	20	N	N	N	10	N	--	--	--	--	--	20	--	--
8BL6066	10	N	10	N	N	N	--	--	--	--	--	10	--	--
8BP8067	200	N	30	N	100	N	--	--	--	--	--	85	--	--
8BP8070	150	<50	30	300	70	N	--	--	--	--	--	65	--	--
8BP8071	150	<50	20	N	50	N	--	--	--	--	--	30	--	--
8BP8074	15	N	<10	N	50	N	--	--	--	--	--	25	--	--
8BP8075	100	50	30	N	300	N	--	--	--	--	--	65	--	--
8BP8076	200	N	20	N	70	N	--	--	--	--	--	65	--	--
8BP8077	150	N	50	N	150	N	--	--	--	--	--	45	--	--
8BP8088	7,000	<50	20	500	70	N	--	--	--	--	--	440	--	--
8BP8091	150	N	20	N	50	N	--	--	--	--	--	40	--	--
8BP8092	30	N	10	N	70	N	--	--	--	--	--	25	--	--
8BP8093	100	N	30	N	100	N	--	--	--	--	--	30	--	--
8CI2104	200	N	30	2,000	100	N	--	--	--	--	--	>2,000	--	--
8CI2105	300	N	50	N	100	N	--	--	--	--	--	160	--	--
8CI2108	30	N	N	N	10	N	--	--	--	--	--	90	--	--
8CI2110	70	N	50	N	300	N	--	--	--	--	--	55	--	--
8CI2264	70	N	N	N	N	N	--	--	--	--	--	120	--	--
8CL6094	150	N	30	300	100	N	--	--	--	--	--	300	--	--
8CL6095	500	N	30	N	100	N	--	--	--	--	--	75	--	--
8CL6096	20	N	N	N	<10	N	--	--	--	--	--	140	--	--
8CO8027	150	<50	30	N	70	N	--	--	--	--	--	45	--	--
8CO8028	50	N	20	N	30	N	--	--	--	--	--	30	--	--
8CP8094	100	N	70	N	150	N	--	--	--	--	--	50	--	--
8DF2134	70	N	30	N	500	N	--	--	--	--	--	15	--	--
8DH2237	20	N	10	N	50	N	--	--	--	--	--	10	--	--
8DH2238	30	N	30	N	150	N	--	--	--	--	--	5	--	--

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
82P023	2	--	--	--	--	--	--
82P073	17	--	--	--	--	--	--
8AD0401	10	<10	--	2.000	--	--	--
8AD0402	2	10	--	1.000	--	--	--
8AD0403	2	10	--	3.000	--	--	--
8AI2136	N	10	--	2.000	--	--	N
8AI2137	<1	10	--	2.000	--	--	N
8AI2141	30	10	--	<1.000	--	--	N
8AI2145	40	10	--	N	--	--	N
8AI2148	5	10	--	N	--	--	N
8AI2152	3	200	--	N	--	--	40.000
8AI2154	1	10	--	N	--	--	4.000
8BL6055	<1	<10	2	--	--	--	N
8BL6057	<1	<10	2	--	--	--	N
8BL6058	1	<10	2	--	--	--	N
8BL6059	N	<10	1	--	--	--	N
8BL6060	<1	<10	1	--	--	--	<2.000
8BL6061	1	<10	1	--	--	--	2.000
8BL6062	N	<10	2	--	--	--	<2.000
8BL6066	<1	<10	1	--	--	--	<2.000
8BP8067	N	80	--	1.000	--	--	N
8BP8070	N	100	--	20.000	--	--	N
8BP8071	N	100	--	15.000	--	--	N
8BP8074	N	40	--	2.000	--	--	N
8BP8075	3	60	--	20.000	--	--	N
8BP8076	N	80	--	2.000	--	--	N
8BP8077	N	<10	--	<1.000	--	--	N
8BP8088	100	400	--	3.000	--	--	<2.000
8BP8091	N	<10	--	N	--	--	N
8BP8092	N	<10	--	N	--	--	N
8BP8093	2	10	--	10.000	--	--	N
8CI2104	2	<10	3	--	--	--	N
8CI2105	2	<10	1	--	--	--	N
8CI2108	20	100	<1	--	--	--	N
8CI2110	10	10	5	--	--	--	N
8CI2264	80	40	<1	--	--	--	--
8CL6094	2	160	--	3.000	--	--	7.000
8CL6095	N	80	--	N	--	--	N
8CL6096	2	<10	--	N	--	--	N
8CO8027	3	40	10	--	--	--	3.000
8CO8028	2	10	5	--	--	--	<2.000
8CP8094	N	<10	--	1.000	--	--	<2.000
8DF2134	10	10	5	--	--	--	<2.000
8DH2237	<1	<10	N	--	--	--	N
8DH2238	N	<10	<1	--	--	--	N

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
8DI2113	10	N	N	5,000	20	N	--	--	--	--	--	>2,000	--	--
8DI2116	20	N	N	N	15	N	--	--	--	--	--	400	--	--
8DI2117	20	N	N	N	15	N	--	--	--	--	--	110	--	--
8DI2120	20	N	20	500	100	N	--	--	--	--	--	1,000	--	--
8DI2216	20	N	<10	N	20	N	--	--	--	--	--	15	--	--
8DI2221	50	N	20	N	30	N	--	--	--	--	--	15	--	--
8DI2224	50	N	20	200	150	N	--	--	--	--	--	35	--	--
8DI2226	20	N	15	N	10	N	--	--	--	--	--	80	--	--
8DI2232	150	N	20	200	100	N	--	--	--	--	--	140	--	--
8DO8017	70	<50	20	N	70	N	--	--	--	--	--	75	--	--
8DO8018	50	N	20	N	100	N	--	--	--	--	--	110	--	--
8DO8019	50	N	15	N	30	N	--	--	--	--	--	35	--	--
8DO8033	30	N	10	1,000	70	N	--	--	--	--	--	1,000	--	--
8DO8034	30	N	N	N	70	N	--	--	--	--	--	70	--	--
8DO8036	<10	N	10	N	10	N	--	--	--	--	--	45	--	--
8DO8038	200	N	30	N	70	N	--	--	--	--	--	30	--	--
8DO8039	100	N	20	N	70	N	--	--	--	--	--	60	--	--
8DO8041	150	N	30	<200	70	N	--	--	--	--	--	110	--	--
8DO8042	100	N	30	500	200	N	--	--	--	--	--	380	--	--
8DO8044	100	N	30	N	150	N	--	--	--	--	--	50	--	--
8DO8047	30	N	10	N	N	N	--	--	--	--	--	400	--	--
8DP8008	20	N	N	<200	N	N	--	--	--	--	--	90	--	--
8DP8009	50	N	20	N	200	N	--	--	--	--	--	80	--	--
8DP8010	300	N	50	200	150	N	--	--	--	--	--	55	--	--
8DP8011	200	N	50	<200	150	N	--	--	--	--	--	50	--	--
8DP8012	100	N	20	N	70	N	--	--	--	--	--	35	--	--
8DP8014	30	N	20	N	150	N	--	--	--	--	--	50	--	--
8DP8015	150	N	30	300	150	N	--	--	--	--	--	150	--	--
8DP8022	50	<50	10	N	30	N	--	--	--	--	--	60	--	--
8DP8023	50	N	15	N	30	N	--	--	--	--	--	40	--	--
8DP8024	50	N	10	N	50	N	--	--	--	--	--	70	--	--
8DP8048	200	N	30	N	70	N	--	--	--	--	--	55	--	--
8EC0115	150	<50	20	N	100	100	--	--	--	--	--	65	--	--
8EH2122	70	100	10	700	100	N	--	--	--	--	--	560	--	--
8EH2126	70	<50	20	1,000	150	N	--	--	--	--	--	1,400	--	--
8EH2128	50	N	15	700	70	N	--	--	--	--	--	800	--	--
8EH2130	70	N	20	N	100	N	--	--	--	--	--	75	--	--
8EI2280	70	N	15	N	70	N	--	--	--	--	--	90	--	--
8EI2283	50	500	N	N	N	N	--	--	--	--	--	80	--	--
8EI2402	10	N	N	<200	<10	N	--	--	--	--	--	220	--	--
8EP8004	150	N	30	N	70	N	--	--	--	--	--	40	--	--
8EP8006	150	<50	20	500	50	N	--	--	--	--	--	420	--	--
8FC0079	50	N	20	N	300	N	--	--	--	--	--	10	--	--
8FC0081	70	N	20	N	150	N	--	--	--	--	--	5	--	--
8FH2070	200	N	30	N	150	N	--	--	--	--	--	20	--	--

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
8DI2113	45 35 39	112 56 20	.50	7.00	10.00	.010	500	2.0	N	N	10	<20	<1.0
8DI2116	45 36 17	112 55 49	.15	5.00	7.00	.030	200	3.0	N	N	15	<20	<1.0
8DI2117	45 36 17	112 55 47	.15	5.00	5.00	.030	200	2.0	N	N	10	<20	<1.0
8DI2120	45 36 15	112 54 44	2.00	.70	15.00	.020	70	5.0	N	N	20	200	1.0
8DI2216	45 35 52	112 57 1	.70	7.00	15.00	.070	100	N	N	N	50	<20	<1.0
8DI2221	45 35 24	112 56 53	.70	2.00	20.00	.100	150	N	N	N	15	100	<1.0
8DI2224	45 35 14	112 56 54	5.00	7.00	7.00	.200	700	N	N	N	30	20	<1.0
8DI2226	45 35 14	112 56 53	.07	1.50	20.00	.007	50	N	N	N	<10	20	<1.0
8DI2232	45 36 17	112 55 47	7.00	2.00	5.00	.500	1,000	5.0	N	N	15	1,000	1.5
8DO8017	45 35 37	112 7 46	3.00	.50	.50	.200	1,000	1.0	N	N	100	700	1.5
8DO8018	45 35 36	112 7 45	3.00	.50	.70	.150	700	5.0	N	N	30	1,000	2.0
8DO8019	45 35 34	112 9 47	.70	1.00	20.00	.070	700	1.0	N	N	10	30	<1.0
8DO8033	45 32 29	112 11 54	2.00	.30	.20	.100	1,500	5.0	<200	N	70	500	1.5
8DO8034	45 32 30	112 11 55	1.50	.50	.70	.100	150	N	N	N	20	500	1.5
8DO8036	45 32 23	112 12 23	N	.70	20.00	<.002	10	N	N	N	N	N	<1.0
8DO8038	45 32 23	112 12 24	7.00	2.00	3.00	.500	1,500	1.0	N	N	10	100	<1.0
8DO8039	45 31 41	112 11 46	5.00	5.00	2.00	.200	1,000	N	N	N	10	1,000	2.0
8DO8041	45 31 41	112 11 46	5.00	1.50	1.50	.300	1,000	N	N	N	15	200	1.0
8DO8042	45 32 13	112 11 17	7.00	1.50	1.50	.300	1,000	7.0	200	N	150	300	1.5
8DO8044	45 32 33	112 11 27	5.00	.70	.15	.500	150	N	N	N	200	700	1.0
8DO8047	45 31 44	112 8 21	2.00	5.00	7.00	.030	5,000	3.0	N	N	10	<20	<1.0
8DP8008	45 31 20	112 2 40	1.50	5.00	15.00	.010	>5,000	N	N	N	<10	<20	<1.0
8DP8009	45 31 31	112 2 56	2.00	.70	1.00	.200	500	N	N	N	15	700	2.0
8DP8010	45 31 20	112 2 40	10.00	2.00	3.00	1.000	1,500	N	N	N	10	300	<1.0
8DP8011	45 35 4	112 6 52	7.00	1.50	2.00	.500	1,500	N	N	N	10	200	1.0
8DP8012	45 35 3	112 6 54	3.00	1.00	1.50	.150	500	N	N	N	15	500	1.0
8DP8014	45 35 2	112 6 51	1.50	.10	.10	.070	700	N	N	N	20	100	<1.0
8DP8015	45 35 2	112 6 52	10.00	2.00	3.00	1.000	1,500	.5	N	N	10	200	1.5
8DP8022	45 36 43	112 2 51	1.50	.20	.07	.070	300	3.0	N	N	50	1,500	2.0
8DP8023	45 36 42	112 2 50	1.50	.50	.50	.150	500	10.0	N	N	20	1,000	2.0
8DP8024	45 36 44	112 2 51	1.00	.15	.30	.100	300	.5	N	N	30	700	2.0
8DP8048	45 32 11	112 6 17	7.00	5.00	2.00	.500	1,000	1.5	N	N	15	500	1.0
8EC0115	45 22 31	113 39 39	5.00	1.50	1.00	.300	700	2.0	N	N	20	700	2.0
8EH2122	45 29 0	113 2 52	1.50	.70	.05	.200	500	20.0	<200	N	50	300	5.0
8EH2126	45 29 0	113 2 52	3.00	.70	1.00	.200	2,000	20.0	300	N	100	500	5.0
8EH2128	45 27 33	113 3 9	1.00	.20	<.05	.150	50	30.0	N	N	200	700	3.0
8EH2130	45 27 12	113 3 14	2.00	.50	.30	.200	500	2.0	N	N	100	500	2.0
8EI2280	45 24 48	112 52 53	2.00	.50	1.00	.200	500	N	N	N	15	700	1.5
8EI2283	45 24 45	112 52 42	5.00	.03	.05	.010	30	10.0	N	N	15	50	1.0
8EI2402	45 23 4	112 49 24	.50	7.00	15.00	.007	500	5.0	N	N	10	<20	<1.0
8EP8004	45 29 0	112 2 17	5.00	1.50	2.00	.500	1,000	.7	N	N	10	150	1.0
8EP8006	45 28 56	112 2 11	3.00	.70	1.00	.200	1,000	3.0	N	N	50	200	1.5
8FC0079	45 19 27	113 43 28	2.00	.50	1.00	.300	700	N	N	N	50	1,000	2.0
8FC0081	45 16 59	113 41 30	1.50	.50	.15	.200	200	N	N	N	70	500	1.5
8FH2070	45 18 6	113 1 23	5.00	1.00	.15	.500	200	2.0	N	N	50	700	1.0

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
8DI2113	N	70	N	<10	100	20	N	N	<5	150	<100	<5	N	200
8DI2116	N	N	N	10	100	30	N	<20	<5	200	N	<5	N	100
8DI2117	N	N	N	10	50	30	N	<20	<5	150	N	<5	N	100
8DI2120	N	N	N	50	150	70	N	20	5	150	N	5	N	200
8DI2216	N	N	5	50	<5	20	N	<20	15	10	N	5	N	200
8DI2221	N	N	N	70	<5	20	N	N	5	15	N	7	N	1,000
8DI2224	N	N	20	20	N	20	5	<20	10	<10	N	15	N	100
8DI2226	N	N	N	30	N	30	N	N	7	15	N	<5	N	500
8DI2232	N	N	30	700	50	70	7	<20	100	50	N	20	N	700
8DO8017	N	N	5	10	70	50	N	<20	5	50	N	7	N	100
8DO8018	30	N	30	10	50	100	200	<20	5	70	N	7	N	300
8DO8019	N	N	N	20	10	20	N	<20	<5	50	N	5	N	500
8DO8033	N	20	7	50	70	70	N	N	20	300	N	5	N	150
8DO8034	N	N	5	20	20	20	N	N	10	30	N	5	N	500
8DO8036	N	N	N	N	<5	20	N	N	N	30	N	<5	N	300
8DO8038	N	N	30	500	70	<20	N	<20	70	15	N	30	N	150
8DO8039	N	N	30	1,000	70	50	N	<20	300	15	N	15	N	700
8DO8041	N	N	30	150	70	20	N	<20	70	30	N	15	N	200
8DO8042	N	N	30	700	70	70	N	<20	100	1,000	N	15	N	150
8DO8044	N	N	20	200	20	50	N	<20	70	70	N	15	N	150
8DO8047	N	N	N	70	70	20	N	N	5	200	N	<5	N	100
8DP8008	N	N	7	15	50	20	N	N	5	300	N	N	N	<100
8DP8009	N	N	10	20	15	70	N	<20	10	150	N	10	N	150
8DP8010	N	N	50	150	100	30	N	<20	70	15	N	50	N	200
8DP8011	N	N	30	150	70	20	N	<20	50	20	N	30	N	200
8DP8012	N	N	15	30	30	20	N	<20	20	20	N	15	N	300
8DP8014	N	N	N	10	15	50	N	20	5	30	N	N	N	100
8DP8015	N	N	50	100	200	50	N	<20	50	10	N	30	N	300
8DP8022	N	N	5	5	200	20	200	<20	10	100	N	5	N	150
8DP8023	N	N	7	5	5,000	30	1,000	<20	<5	70	N	5	10	200
8DP8024	N	N	N	5	30	20	5	<20	<5	20	N	5	N	200
8DP8048	N	N	50	1,000	70	50	N	<20	300	70	N	20	N	700
8EC0115	N	N	20	70	70	30	30	<20	10	70	N	15	10	500
8EH2122	<10	N	N	15	200	50	7	20	5	500	<100	10	10	150
8EH2126	15	N	10	10	1,000	30	5	<20	5	2,000	300	10	N	100
8EH2128	N	N	N	10	150	150	50	<20	5	1,500	<100	5	N	<100
8EH2130	N	N	N	<10	20	100	20	<20	5	70	N	7	N	150
8EI2280	N	N	5	10	15	30	N	<20	5	30	N	7	N	500
8EI2283	50	N	N	10	70	20	70	20	5	300	N	N	N	<100
8EI2402	N	N	N	15	20	20	N	<20	5	150	N	<5	N	150
8EP8004	N	N	30	200	100	20	15	<20	70	15	N	20	N	300
8EP8006	N	N	15	150	150	30	N	<20	50	500	N	10	N	100
8FC0079	N	N	N	70	<5	30	N	<20	10	50	N	7	N	100
8FC0081	N	N	5	70	N	50	N	<20	15	20	N	7	N	100
8FH2070	N	N	20	70	100	50	N	<20	20	30	N	20	N	100

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
8DI2113	15	15	<1	--	--	--	N
8DI2116	10	10	N	--	--	--	N
8DI2117	4	10	<1	--	--	--	N
8DI2120	10	30	N	--	--	--	N
8DI2216	N	<10	2	--	--	--	N
8DI2221	N	<10	N	--	--	--	N
8DI2224	N	<10	5	--	--	--	<2.000
8DI2226	N	<10	N	--	--	--	N
8DI2232	2	<10	N	--	--	--	N
8DO8017	5	10	10	--	--	--	<2.000
8DO8018	1	10	5	--	--	--	<2.000
8DO8019	2	15	2	--	--	--	<2.000
8DO8033	3	120	1	--	--	--	3.000
8DO8034	<1	10	3	--	--	--	3.000
8DO8036	<1	10	1	--	--	--	N
8DO8038	<1	10	<1	--	--	--	<2.000
8DO8039	3	<10	<1	--	--	--	N
8DO8041	N	10	<1	--	--	--	<2.000
8DO8042	3	100	3	--	--	--	<2.000
8DO8044	<1	20	1	--	--	--	<2.000
8DO8047	3	20	5	--	--	--	N
8DP8008	N	<10	1	--	--	--	N
8DP8009	3	<10	1	--	--	--	N
8DP8010	3	<10	2	--	--	--	N
8DP8011	N	<10	<1	--	--	--	N
8DP8012	<1	10	<1	--	--	--	N
8DP8014	<1	10	5	--	--	--	<2.000
8DP8015	1	10	N	--	--	--	<2.000
8DP8022	5	10	1	--	--	--	2.000
8DP8023	<1	30	N	--	--	--	2.000
8DP8024	N	<10	5	--	--	--	2.000
8DP8048	5	10	<1	--	--	--	N
8EC0115	<1	<10	--	15.000	--	--	N
8EH2122	40	80	>200	--	--	--	N
8EH2126	160	200	1	--	--	--	N
8EH2128	35	20	1	--	--	--	N
8EH2130	10	15	5	--	--	--	N
8EI2280	<1	<10	2	--	--	--	--
8EI2283	4	20	>200	--	--	--	--
8EI2402	5	<10	--	1.000	--	--	--
8EP8004	N	<10	<1	--	--	--	<2.000
8EP8006	1	40	5	--	--	--	N
8FC0079	<1	<10	--	2.000	--	--	N
8FC0081	<1	<10	--	2.000	--	--	N
8FH2070	5	80	--	2.000	--	--	N

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct.	Mg-pct.	Ca-pct.	Ti-pct.	Mn-ppm	Ag-ppm	As-ppm	Au-ppm	B-ppm	Ba-ppm	Be-ppm
			s	s	s	s	s	s	s	s	s	s	s
8FH2073	45 18 54	113 1 55	3.00	.70	1.50	.200	200	N	N	N	15	1,000	1.5
8FH2074	45 18 53	113 1 54	.30	.20	.15	.150	50	N	N	N	30	200	1.0
8FH2079	45 18 40	113 2 20	7.00	2.00	7.00	.500	1,000	N	N	N	10	500	1.0
8FH2083	45 20 6	113 2 31	7.00	2.00	2.00	.500	1,000	N	N	N	20	1,000	1.0
8FI2027	45 15 53	112 54 46	5.00	1.50	1.00	.500	700	N	N	N	20	700	1.0
8FI2034	45 16 26	112 54 33	.10	7.00	10.00	.003	150	1.0	N	N	10	<20	<1.0
8FI2036	45 16 47	112 52 55	2.00	3.00	7.00	.200	500	1.0	N	N	20	500	1.0
8FI2037	45 16 42	112 52 31	5.00	1.00	1.50	.200	700	N	N	N	10	700	1.0
8FI2061	45 18 32	112 52 35	1.50	.05	.05	.050	50	10.0	5,000	N	30	50	1.0
8FI2066	45 18 52	112 52 55	2.00	.70	.07	.300	150	1.0	<200	N	200	200	1.5
8FI2253	45 18 54	112 52 6	1.50	1.00	1.00	.200	500	1.0	N	N	15	1,000	2.0
8FI2403	45 16 41	112 51 56	5.00	.70	.50	.500	700	3.0	1,000	<10	200	1,000	2.0
8FI2404	45 16 42	112 51 56	3.00	1.00	2.00	.700	100	2.0	200	10	150	700	1.0
8FI2408	45 16 25	112 52 9	7.00	1.00	1.00	.500	2,000	1.0	1,000	N	150	500	1.0
8FI2409	45 16 26	112 52 10	.50	7.00	10.00	.020	500	1.0	N	N	15	30	<1.0
8FI2411	45 16 33	112 52 12	.15	7.00	10.00	.003	200	5.0	N	N	20	100	<1.0
8FJ2040	45 17 8	112 50 52	3.00	.70	1.00	.200	700	N	N	N	15	1,000	1.5
8FJ2043	45 17 7	112 50 34	5.00	1.00	1.00	.200	1,000	1.0	N	N	15	1,000	1.5
8FJ2044	45 17 16	112 50 42	10.00	.50	.10	.200	150	5.0	N	N	10	700	1.0
8FJ2047	45 17 16	112 50 26	1.50	2.00	10.00	.200	700	3.0	N	N	20	300	1.0
8FJ2048	45 17 16	112 50 26	5.00	2.00	1.50	.500	1,500	5.0	N	N	15	1,000	1.0
8FJ2051	45 18 30	112 50 31	7.00	1.50	.30	.500	500	20.0	N	N	50	1,000	1.5
8FJ2054	45 18 55	112 49 58	1.00	.70	1.50	.200	500	10.0	N	N	30	1,000	1.5
8FJ2056	45 18 57	112 49 57	2.00	.70	1.50	.300	700	2.0	N	N	20	1,500	2.0
8FJ2057	45 18 57	112 49 58	1.50	5.00	10.00	.150	1,500	N	N	N	10	<20	<1.0
8FJ2058	45 19 12	112 50 23	5.00	1.00	.15	.200	500	2.0	N	N	300	200	2.0
8FJ2197	45 18 21	112 48 19	.70	1.00	20.00	.050	200	.5	N	N	<10	100	<1.0
8FJ2198	45 18 20	112 48 18	5.00	1.50	1.50	.500	1,000	<.5	N	N	10	700	1.0
8GC0093	45 14 27	113 40 7	3.00	1.00	.15	.200	700	N	N	N	30	500	2.0
8GC0095	45 14 37	113 39 48	2.00	1.00	.30	.150	700	<.5	N	N	50	700	2.0
8GC0096	45 14 39	113 39 48	1.50	.70	20.00	.150	300	2.0	N	N	20	300	<1.0
8GD0099	45 14 1	113 29 46	1.50	.70	<.05	.200	150	15.0	N	N	50	300	1.5
8GD0100	45 11 21	113 30 35	10.00	3.00	5.00	.100	2,000	2.0	N	N	50	500	1.5
8GD0101	45 11 21	113 30 34	1.00	.70	.30	.150	200	.5	N	N	50	500	2.0
8GD0103	45 11 21	113 30 34	2.00	1.00	.10	.300	200	N	N	N	100	700	1.5
8GD0104	45 11 21	113 30 35	2.00	1.00	.30	.200	100	N	N	N	50	500	2.0
8GD0106	45 8 33	113 30 26	1.50	.50	1.00	.200	1,000	N	N	N	70	500	2.0
8GD0107	45 8 34	113 30 27	2.00	.50	.10	.200	1,500	2.0	N	N	30	500	3.0
8GD0108	45 8 33	113 30 25	5.00	1.00	.70	.500	700	N	N	N	100	700	3.0
8GI2002	45 9 31	112 58 52	5.00	2.00	2.00	.500	1,000	N	N	N	<10	700	1.5
8GI2004	45 9 26	112 58 37	.70	.50	7.00	.150	500	<.5	N	N	30	150	1.5
8GI2005	45 9 26	112 58 37	1.50	.50	1.50	.300	1,000	N	N	N	50	700	3.0
8GI2006	45 9 26	112 58 37	.50	.20	5.00	.100	150	.5	N	N	30	150	<1.0
8GI2011	45 11 35	112 57 3	5.00	1.50	1.50	.500	1,000	5.0	N	N	10	1,000	1.5
8GI2013	45 11 57	112 57 58	10.00	.70	.70	.300	700	70.0	500	N	200	150	3.0

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
8FH2073	N	N	10	15	50	100	N	<20	5	30	N	7	N	300
8FH2074	N	N	N	20	10	70	N	<20	5	10	N	5	N	<100
8FH2079	N	N	30	150	50	50	N	<20	30	15	N	30	N	700
8FH2083	N	N	30	70	10	70	N	<20	15	15	N	20	N	500
8FI2027	N	N	20	50	30	70	5	<20	20	30	N	20	N	200
8FI2034	N	N	N	10	5	30	N	N	<5	200	N	<5	N	<100
8FI2036	20	N	10	100	10	30	N	<20	20	30	N	10	N	300
8FI2037	N	N	20	30	5	50	N	<20	10	70	N	15	N	500
8FI2061	N	N	15	20	100	30	5	<20	10	10,000	<100	<5	N	<100
8FI2066	N	N	15	100	50	30	N	<20	50	150	N	10	N	<100
8FI2253	N	N	N	10	N	100	N	<20	5	100	N	5	N	500
8FI2403	N	N	20	70	70	100	10	20	15	200	<100	20	N	100
8FI2404	N	N	N	100	<5	100	10	<20	5	50	<100	20	N	100
8FI2408	N	N	20	70	30	100	20	<20	20	70	<100	20	N	<100
8FI2409	N	N	<5	10	<5	30	10	N	5	50	300	<5	N	100
8FI2411	N	N	N	15	<5	20	5	<20	7	300	1,000	<5	N	300
8FJ2040	N	N	10	20	50	70	N	<20	5	100	N	10	N	300
8FJ2043	N	N	15	10	150	50	N	<20	5	700	N	10	N	300
8FJ2044	N	N	10	10	200	70	15	<20	5	100	N	10	10	<100
8FJ2047	N	N	10	100	70	20	N	<20	30	150	N	10	N	150
8FJ2048	N	N	15	500	50	20	N	N	70	70	N	15	N	200
8FJ2051	N	N	15	50	70	70	N	<20	50	500	N	15	N	100
8FJ2054	<10	N	N	N	30	50	N	<20	<5	300	N	10	N	300
8FJ2056	<10	N	5	10	70	50	N	<20	<5	300	N	10	N	300
8FJ2057	N	N	5	50	5	30	N	<20	20	200	N	7	N	100
8FJ2058	N	N	10	100	50	50	N	<20	70	300	N	10	N	<100
8FJ2197	N	N	N	50	70	20	N	N	5	50	N	<5	N	700
8FJ2198	N	N	20	70	20	70	N	<20	5	70	N	15	N	500
8GC0093	N	N	15	70	15	20	N	<20	20	30	N	15	N	<100
8GC0095	N	N	7	70	50	50	N	<20	15	N	N	7	N	<100
8GC0096	N	N	10	200	50	30	30	<20	50	100	N	10	<10	1,000
8GD0099	N	N	7	70	150	30	N	<20	10	150	N	7	N	<100
8GD0100	N	N	50	500	200	20	N	<20	100	100	N	20	N	300
8GD0101	N	N	7	50	30	50	N	<20	10	150	N	5	N	100
8GD0103	N	N	5	70	10	100	N	<20	10	20	N	7	N	<100
8GD0104	N	N	7	70	10	50	N	<20	10	50	N	7	N	100
8GD0106	N	N	7	50	10	50	N	<20	10	70	N	10	N	150
8GD0107	N	N	30	70	7,000	70	N	20	15	5,000	N	10	10	<100
8GD0108	N	N	15	150	70	100	N	20	30	150	N	20	10	150
8GI2002	N	N	20	70	70	50	5	<20	20	15	N	20	N	700
8GI2004	N	N	5	10	<5	50	N	<20	10	15	N	5	N	100
8GI2005	N	N	5	<10	<5	100	5	<20	5	20	N	10	N	200
8GI2006	N	N	<5	30	<5	20	N	<20	7	10	N	5	N	100
8GI2011	N	N	50	70	30	70	N	<20	15	150	N	15	N	300
8GI2013	N	N	150	50	500	150	10	<20	50	1,000	500	10	N	<100

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
8FH2073	70	N	20	N	150	N	--	--	--	--	--	30	--	--
8FH2074	30	N	30	N	300	N	--	--	--	--	--	10	--	--
8FH2079	200	N	50	N	50	N	--	--	--	--	--	30	--	--
8FH2083	150	N	30	N	200	N	--	--	--	--	--	50	--	--
8FI2027	200	N	30	N	200	N	--	--	--	--	--	80	--	--
8FI2034	20	N	N	N	15	N	--	--	--	--	--	95	--	--
8FI2036	100	N	30	N	200	N	--	--	--	--	--	35	--	--
8FI2037	150	N	30	N	70	N	--	--	--	--	--	35	--	--
8FI2061	150	N	N	200	70	N	--	--	--	--	--	140	--	--
8FI2066	100	N	20	200	100	N	--	--	--	--	--	130	--	--
8FI2253	20	N	15	N	150	N	--	--	--	--	--	30	--	--
8FI2403	500	<50	50	<200	200	N	--	--	--	--	--	170	--	--
8FI2404	200	<50	30	N	200	N	--	--	--	--	--	15	--	--
8FI2408	300	<50	30	N	200	N	--	--	--	--	--	65	--	--
8FI2409	20	<50	N	N	10	N	--	--	--	--	--	35	--	--
8FI2411	20	N	N	N	N	N	--	--	--	--	--	140	--	--
8FJ2040	100	N	20	200	100	N	--	--	--	--	--	170	--	--
8FJ2043	150	N	20	500	100	N	--	--	--	--	--	520	--	--
8FJ2044	100	<50	20	200	100	N	--	--	--	--	--	200	--	--
8FJ2047	100	N	20	200	200	N	--	--	--	--	--	400	--	--
8FJ2048	200	N	20	500	150	N	--	--	--	--	--	540	--	--
8FJ2051	200	N	50	5,000	200	N	--	--	--	--	--	3,000	--	--
8FJ2054	70	N	30	700	200	N	--	--	--	--	--	760	--	--
8FJ2056	70	N	30	<200	300	N	--	--	--	--	--	180	--	--
8FJ2057	50	N	15	200	50	N	--	--	--	--	--	1,500	--	--
8FJ2058	100	N	20	500	150	N	--	--	--	--	--	460	--	--
8FJ2197	30	N	15	N	20	N	--	--	--	--	--	30	--	--
8FJ2198	200	N	30	N	200	N	--	--	--	--	--	40	--	--
8GC0093	100	N	30	N	300	100	--	--	--	--	--	35	--	--
8GC0095	70	<50	20	N	70	100	--	--	--	--	--	10	--	--
8GC0096	500	N	30	N	50	100	--	--	--	--	--	80	--	--
8GD0099	70	N	15	N	200	100	--	--	--	--	--	<5	--	--
8GD0100	500	N	30	N	100	100	--	--	--	--	--	60	--	--
8GD0101	50	N	20	N	70	100	--	--	--	--	--	5	--	--
8GD0103	100	N	70	N	150	100	--	--	--	--	--	10	--	--
8GD0104	100	N	20	N	150	100	--	--	--	--	--	5	--	--
8GD0106	70	N	20	N	200	100	--	--	--	--	--	30	--	--
8GD0107	100	N	70	N	200	100	--	--	--	--	--	20	--	--
8GD0108	150	N	50	N	300	100	--	--	--	--	--	40	--	--
8GI2002	200	N	30	N	150	N	--	--	--	--	--	35	--	--
8GI2004	30	N	20	N	200	N	--	--	--	--	--	45	--	--
8GI2005	30	N	30	N	300	N	--	--	--	--	--	40	--	--
8GI2006	30	N	15	N	150	N	--	--	--	--	--	20	--	--
8GI2011	150	N	20	200	200	N	--	--	--	--	--	140	--	--
8GI2013	200	N	100	1,000	300	N	--	--	--	--	--	1,500	--	--

TABLE 4. SPECTROGRAPHIC AND ATOMIC ARSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
8FH2073	1	20	--	<1.000	--	--	<2.000
8FH2074	<1	10	--	1.000	--	--	N
8FH2079	<1	<10	--	1.000	--	--	<2.000
8FH2083	N	10	--	15.000	--	--	N
8FI2027	4	120	--	<1.000	--	--	<2.000
8FI2034	4	10	--	<1.000	--	--	N
8FI2036	4	40	--	N	--	--	<2.000
8FI2037	3	<10	--	1.000	--	--	N
8FI2061	25	>1,600	--	1.000	--	--	5.000
8FI2066	2	200	--	2.000	--	--	<2.000
8FI2253	2	<10	<1	--	--	--	--
8FI2403	60	1,600	--	20.000	--	--	--
8FI2404	35	160	--	20.000	--	--	--
8FI2408	40	400	--	20.000	--	--	--
8FI2409	20	40	--	1.000	--	--	--
8FI2411	200	<10	--	<1.000	--	--	--
8FJ2040	2	10	--	1.000	--	--	<2.000
8FJ2043	2	40	--	1.000	--	--	<2.000
8FJ2044	2	20	--	5.000	--	--	2.000
8FJ2047	2	10	--	<1.000	--	--	<2.000
8FJ2048	2	20	--	1.000	--	--	<2.000
8FJ2051	4	20	--	<1.000	--	--	N
8FJ2054	3	40	--	N	--	--	N
8FJ2056	1	10	--	N	--	--	N
8FJ2057	<1	80	--	2.000	--	--	N
8FJ2058	3	120	--	2.000	--	--	<2.000
8FJ2197	N	10	--	N	--	--	N
8FJ2198	<1	10	--	N	--	--	N
8GC0093	<1	<10	--	7.000	--	--	N
8GC0095	1	<10	--	3.000	--	--	N
8GC0096	4	10	--	5.000	--	--	<2.000
8GD0099	<1	<10	--	1.000	--	--	N
8GD0100	<1	10	--	<1.000	--	--	N
8GD0101	<1	<10	--	2.000	--	--	N
8GD0103	<1	<10	--	1.000	--	--	N
8GD0104	<1	<10	--	1.000	--	--	N
8GD0106	<1	<10	--	1.000	--	--	N
8GD0107	<1	10	--	5.000	--	--	N
8GD0108	<1	<10	--	1.000	--	--	N
8GI2002	2	<10	--	<1.000	--	--	<2.000
8GI2004	2	10	--	1.000	--	--	<2.000
8GI2005	2	10	--	1.000	--	--	<2.000
8GI2006	1	<10	--	<1.000	--	--	<2.000
8GI2011	10	20	--	2.000	--	--	<2.000
8GI2013	>200	800	--	3.000	--	--	<2.000

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
8GI2014	45 11 48	112 57 44	7.00	1.50	3.00	.500	1,500	500.0	N	N	20	1,000	1.0
8GI2015	45 11 48	112 57 45	7.00	2.00	2.00	.300	2,000	2.0	N	N	20	1,500	1.0
8GI2018	45 11 57	112 55 20	.50	5.00	15.00	.010	3,000	50.0	N	N	10	150	<1.0
8GI2019	45 11 55	112 55 19	.70	3.00	10.00	.150	700	30.0	N	N	30	200	1.0
8GI2022	45 11 50	112 55 5	.05	1.50	15.00	.007	700	2.0	N	N	N	20	1.0
8GI2023	45 11 55	112 55 11	5.00	.70	3.00	.500	1,500	10.0	N	N	15	1,000	1.5
8GI2183	45 8 58	112 58 41	5.00	1.50	2.00	.500	1,500	N	N	N	10	1,000	1.5
8GI2185	45 9 7	112 59 7	.50	1.50	20.00	.070	200	.5	N	N	15	50	<1.0
8GI2187	45 9 20	112 59 4	.70	1.50	20.00	.070	300	1.5	N	N	30	70	<1.0
8GI2188	45 9 20	112 59 4	3.00	1.00	1.50	.200	700	.7	N	N	15	1,000	2.0
8GI2189	45 8 58	112 58 41	1.00	1.50	20.00	.150	300	N	N	N	20	100	<1.0
8GI2190	45 9 26	112 59 1	5.00	1.50	2.00	.300	1,000	N	N	N	15	500	1.0
8GI2193	45 9 27	112 59 2	7.00	2.00	5.00	.500	1,000	N	N	N	10	700	<1.0
8GI2194	45 9 26	112 59 2	10.00	5.00	7.00	.070	1,500	15.0	N	N	50	<20	1.0
8GI2244	45 11 8	112 56 57	5.00	1.00	10.00	.500	3,000	3.0	N	N	10	20	1.0
8GI2245	45 9 58	112 55 18	5.00	.20	.10	.300	2,000	2.0	N	N	20	200	1.5
8GI2246	45 9 54	112 55 18	3.00	.20	.10	.300	700	10.0	N	N	30	150	2.0
8GI2248	45 9 2	112 55 34	5.00	1.50	1.50	.300	1,500	1.0	N	N	10	1,000	1.5
8GI2249	45 9 3	112 55 35	5.00	1.00	1.50	.200	5,000	.5	N	N	10	1,000	1.5
8XBE4007	44 47 15	113 26 35	.15	7.00	20.00	.007	300	1.5	N	N	<10	<20	<1.0
8XBE4010	44 47 21	113 27 41	1.50	.20	.05	.150	700	5.0	N	N	70	300	1.5
8XBE4011	44 47 21	113 27 41	2.00	3.00	15.00	.200	700	N	N	N	200	500	1.0
8XBE4013	44 47 8	113 25 40	1.50	.70	.15	.150	100	2.0	N	N	100	500	2.0
8XBF4023	44 45 38	113 20 30	1.50	.50	.05	.200	100	1.5	N	N	50	150	1.0
8XCF4018	44 42 30	113 21 40	.20	1.00	20.00	.030	150	1.0	N	N	20	100	1.0
8XCF4019	44 42 30	113 21 40	5.00	.30	.50	.150	15	2.0	N	N	50	200	1.0
8XGG4045	46 13 54	113 11 56	1.00	.10	<.05	.100	70	1.0	N	N	70	300	2.0
8XGG4051	46 12 14	113 13 18	5.00	1.00	3.00	.500	200	N	N	N	20	200	2.0
8XHD4041	46 3 7	113 31 29	1.00	.15	.05	.150	70	.5	N	N	50	300	2.0

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
8GI2014	N	N	30	15	50	50	N	<20	5	70	N	20	N	500
8GI2015	N	N	30	10	15	30	N	<20	5	70	N	20	N	500
8GI2018	N	N	<5	30	70	20	N	N	5	300	200	N	N	150
8GI2019	N	N	5	70	30	20	N	<20	15	150	N	7	N	200
8GI2022	N	N	N	20	<5	30	N	<20	5	20	N	5	N	150
8GI2023	N	N	15	20	20	70	N	<20	5	150	N	10	N	500
8GI2183	N	N	20	100	70	50	10	<20	30	30	N	15	N	500
8GI2185	N	N	N	70	10	20	N	N	5	15	N	7	N	700
8GI2187	N	N	10	100	70	20	N	N	5	20	N	7	N	700
8GI2188	N	N	10	10	30	50	N	<20	5	50	N	10	N	500
8GI2189	N	N	10	100	<5	20	N	N	15	10	N	10	N	700
8GI2190	N	N	20	10	50	50	N	<20	5	15	N	20	N	700
8GI2193	N	N	30	150	50	30	N	<20	20	20	N	30	N	700
8GI2194	N	N	50	70	5,000	<20	N	<20	20	<10	N	<5	30	<100
8GI2244	N	N	15	50	<5	70	7	<20	5	100	N	20	N	100
8GI2245	N	N	15	50	20	50	15	20	5	150	N	15	N	100
8GI2246	N	N	N	30	5	70	15	20	5	200	N	15	N	100
8GI2248	N	N	15	30	5	100	N	20	5	50	N	15	N	700
8GI2249	N	N	15	20	5	50	N	20	5	100	N	15	N	700
8XBE4007	N	N	N	70	N	20	N	N	5	70	N	<5	N	200
8XBE4010	N	N	5	30	10	30	N	<20	20	1,000	<100	5	N	<100
8XBE4011	N	N	20	200	10	30	N	<20	30	50	N	15	N	500
8XBE4013	N	N	N	70	20	30	N	<20	20	100	N	7	<10	150
8XBF4023	N	N	10	70	70	30	100	<20	100	20	N	7	N	<100
8XCF4018	N	N	N	50	70	20	N	N	20	20	N	5	N	300
8XCF4019	N	N	N	300	70	50	300	<20	30	200	N	7	N	200
8XGG4045	N	N	7	20	10	30	N	N	10	20	N	<5	N	<100
8XGG4051	N	N	10	10	50	70	N	N	5	10	N	15	20	300
8XHD4041	N	N	<5	20	20	20	5	<20	10	70	N	<5	N	<100

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa
8GI2014	200	N	30	N	150	N	--	--	--	--	--	60	--	--
8GI2015	200	N	30	N	150	N	--	--	--	--	--	85	--	--
8GI2018	70	N	10	200	N	N	--	--	--	--	--	180	--	--
8GI2019	70	N	20	700	70	N	--	--	--	--	--	900	--	--
8GI2022	15	N	10	N	<10	N	--	--	--	--	--	70	--	--
8GI2023	150	N	30	N	100	N	--	--	--	--	--	130	--	--
8GI2183	150	N	30	N	200	N	--	--	--	--	--	50	--	--
8GI2185	30	N	20	N	30	N	--	--	--	--	--	30	--	--
8GI2187	20	N	15	N	20	N	--	--	--	--	--	45	--	--
8GI2188	70	N	20	N	200	N	--	--	--	--	--	50	--	--
8GI2189	70	N	20	N	50	N	--	--	--	--	--	15	--	--
8GI2190	200	N	30	N	100	N	--	--	--	--	--	25	--	--
8GI2193	300	N	30	N	100	N	--	--	--	--	--	30	--	--
8GI2194	20	50	20	700	10	N	--	--	--	--	--	1,400	--	--
8GI2244	150	N	50	N	150	N	--	--	--	--	--	90	--	--
8GI2245	100	N	20	200	150	N	--	--	--	--	--	190	--	--
8GI2246	150	N	30	N	150	N	--	--	--	--	--	60	--	--
8GI2248	150	N	50	N	200	N	--	--	--	--	--	60	--	--
8GI2249	150	N	30	<200	150	N	--	--	--	--	--	130	--	--
8XBE4007	50	N	15	N	N	N	--	--	--	--	--	45	--	--
8XBE4010	100	N	20	N	150	N	--	--	--	--	--	110	--	--
8XBE4011	150	N	30	N	50	N	--	--	--	--	--	55	--	--
8XBE4013	70	N	15	N	100	N	--	--	--	--	--	60	--	--
8XBF4023	2,000	N	20	N	50	N	--	--	--	--	--	30	--	--
8XCF4018	70	N	15	N	20	N	--	--	--	--	--	45	--	--
8XCF4019	2,000	N	20	N	50	N	--	--	--	--	--	40	--	--
8XGG4045	20	N	15	N	100	N	--	--	--	--	--	25	--	--
8XGG4051	100	N	30	N	100	N	--	--	--	--	--	10	--	--
8XHD4041	30	N	20	N	200	N	--	--	--	--	--	25	--	--

TABLE 4. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF WALL ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Sb-ppm aa	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
8GI2014	5	20	--	<1.000	--	--	<2.000
8GI2015	3	10	--	2.000	--	--	<2.000
8GI2018	100	40	--	1.000	--	--	2.000
8GI2019	15	20	--	1.000	--	--	<2.000
8GI2022	2	20	--	1.000	--	--	<2.000
8GI2023	10	10	--	1.000	--	--	2.000
8GI2183	2	<10	--	N	--	--	<2.000
8GI2185	<1	10	--	N	--	--	N
8GI2187	<1	10	--	1.000	--	--	N
8GI2188	<1	<10	--	2.000	--	--	<2.000
8GI2189	<1	<10	--	N	--	--	N
8GI2190	N	<10	--	N	--	--	N
8GI2193	N	<10	--	N	--	--	N
8GI2194	3	60	--	1.000	--	--	9.000
8GI2244	2	60	N	--	--	--	N
8GI2245	2	30	1	--	--	--	N
8GI2246	5	40	3	--	--	--	N
8GI2248	<1	<10	1	--	--	--	N
8GI2249	<1	<10	1	--	--	--	N
8XBE4007	<1	<10	--	N	--	--	N
8XBE4010	4	<10	--	N	--	--	N
8XBE4011	2	<10	--	N	--	--	N
8XBE4013	3	<10	--	N	--	--	N
8XBF4023	10	80	--	N	--	--	<2.000
8XCF4018	1	10	--	N	--	--	N
8XCF4019	10	10	--	5.000	--	--	<2.000
8XGG4045	<1	<10	--	7.000	--	--	--
8XGG4051	1	<10	--	5.000	--	--	--
8XHD4041	<1	<10	--	7.000	--	--	--

TABLE 5. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF PORPHYRY ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
0CI4502	45 39 35	112 57 45	.70	10.00	20.00	.015	700	N	N	N	<10	150	1.5
0CI4503	45 39 35	112 57 45	1.00	10.00	20.00	.005	1,500	1.0	N	N	N	700	1.0
0CI4504	45 39 35	112 57 45	1.50	.30	.30	.150	100	1.5	N	N	30	1,500	3.0
0CI4505	45 39 35	112 57 45	1.00	.20	.50	.150	70	1.0	N	N	50	1,500	2.0
0CI4506	45 39 35	112 57 45	2.00	.30	.10	.150	150	1.0	N	N	50	1,500	2.0
0CI4507	45 39 35	112 57 45	.30	.02	N	.015	50	3.0	N	N	20	50	<1.0
0CI4508	45 39 35	112 57 45	1.00	.20	.15	.100	70	.5	N	N	20	1,500	1.5
0CI4509	45 39 35	112 57 45	.70	.30	.30	.200	70	N	N	N	20	1,500	1.5
0CI4510	45 39 35	112 57 45	15.00	.30	.20	.200	100	N	N	N	20	2,000	1.5
0CI4511	45 39 35	112 57 45	1.00	.20	.20	.150	70	.5	N	N	20	1,500	2.0
0CI4512	45 39 35	112 57 45	2.00	.50	.10	.300	150	2.0	N	N	100	2,000	5.0
0CI4513	45 39 35	112 57 45	.50	7.00	20.00	.020	1,000	N	N	N	N	20	1.5
0CI4514	45 39 35	112 57 45	.10	10.00	20.00	.003	300	N	N	N	N	N	1.0
0CI4515	45 39 35	112 57 45	.10	10.00	20.00	.005	500	N	N	N	N	N	1.0
0CI4563	45 39 35	112 57 45	.10	10.00	20.00	.002	500	.5	N	N	N	N	1.0
78J019	45 25 13	112 59 30	2.00	.50	1.00	.200	500	N	N	N	15	1,000	2.0
78P001	45 27 52	112 53 8	1.50	.70	1.50	.200	700	3.0	N	N	15	1,500	2.0
78P002	45 27 52	112 53 8	2.00	.70	1.00	.200	1,000	5.0	N	N	20	1,500	2.0
78P003	45 27 47	112 53 15	2.00	.70	1.00	.200	200	<.5	N	N	15	1,000	1.5
78P004	45 27 47	112 53 28	1.00	.10	.30	.100	100	1.0	N	N	10	500	2.0
78P045	45 26 11	112 59 33	.07	.03	<.05	.030	30	N	N	N	15	70	1.0
78P046	45 26 11	112 59 33	1.50	.50	.70	.200	500	N	N	N	15	700	1.0
78P047	45 26 11	112 59 33	1.00	.10	<.05	.050	100	N	N	N	15	200	1.0
78P048	45 26 11	112 59 33	5.00	.50	.30	.150	300	N	N	N	15	1,000	1.0
78P054	45 25 11	112 59 32	5.00	.02	.05	.020	50	5.0	N	N	15	70	1.0
78P055	45 25 9	112 59 32	7.00	.02	.05	.010	70	5.0	N	N	15	50	<1.0
78P057	45 25 5	112 59 32	5.00	.15	.05	.100	5,000	3.0	N	N	30	1,500	2.0
78P058	45 25 2	113 0 4	7.00	.20	.05	.150	300	15.0	N	N	20	500	1.5
78P059	45 25 20	113 0 8	7.00	1.00	7.00	.150	2,000	N	N	N	15	700	2.0
78P062	45 25 44	113 0 20	3.00	.03	.05	.020	70	1.5	N	N	10	200	1.0
78P102	45 31 37	113 2 47	20.00	.05	<.05	.050	15	10.0	N	N	<10	50	3.0
78P103	45 31 36	113 3 8	2.00	.50	2.00	.200	70	N	N	N	<10	1,500	<1.0
78P105	45 31 33	113 3 5	15.00	.50	1.50	.200	200	N	N	N	10	1,000	1.5
78P107	45 31 11	113 3 23	3.00	.50	.20	.200	150	2.0	N	N	30	1,000	2.0
78P108	45 31 17	113 3 26	3.00	.50	.05	.200	200	10.0	N	N	30	700	5.0
78P109	45 31 17	113 3 26	1.50	.15	<.05	.070	200	20.0	N	N	10	50	1.5
78P110	45 31 21	113 3 26	1.50	.20	1.50	.150	200	N	N	N	10	1,000	1.0
78P150	45 31 33	113 2 15	20.00	.50	.70	.200	1,000	1.5	N	N	50	700	2.0
78P152	45 31 33	113 2 40	3.00	1.00	1.50	.200	300	.7	N	N	15	1,000	2.0
78P95	45 31 18	113 3 18	2.00	.20	.70	.200	300	N	N	N	10	1,000	3.0
78P96	45 31 48	113 2 21	5.00	.50	.30	.300	150	2.0	N	N	30	700	2.0
78P97	45 31 44	113 2 29	5.00	.50	.30	.200	200	N	N	N	15	700	2.0
79BB109	45 29 15	113 6 14	3.00	.30	<.05	.150	200	.5	N	N	50	700	2.0
79BB110	45 27 48	112 53 12	.70	.05	.50	.030	300	N	N	N	50	100	5.0
79BB111	45 27 48	112 53 12	2.00	.30	.70	.150	300	N	N	N	10	700	1.5

TABLE 5. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF PORPHYRY ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
0CI4502	N	N	N	N	30	N	30	N	<5	15	N	N	N	150
0CI4503	N	N	N	N	70	N	15	N	N	20	N	N	N	200
0CI4504	N	N	N	N	30	20	700	N	5	70	N	N	10	500
0CI4505	N	N	N	N	20	70	500	N	7	70	N	N	N	700
0CI4506	N	N	N	N	50	30	1,000	N	5	70	N	N	15	300
0CI4507	N	N	N	N	20	<20	1,500	N	10	50	N	N	<10	N
0CI4508	N	N	N	N	30	30	500	N	5	70	N	N	10	500
0CI4509	N	N	N	N	5	50	200	N	<5	70	N	N	<10	700
0CI4510	N	N	N	N	15	50	200	N	5	100	N	N	<10	700
0CI4511	N	N	N	N	10	N	700	N	5	50	N	N	<10	300
0CI4512	N	N	N	N	100	30	500	N	5	70	N	N	15	300
0CI4513	N	N	N	10	10	20	7	N	N	10	N	N	N	100
0CI4514	N	N	N	N	7	20	N	N	N	70	N	N	N	150
0CI4515	N	N	N	N	5	20	N	N	N	10	N	N	N	100
0CI4563	N	N	N	N	10	20	N	N	N	20	N	N	N	150
78J019	N	N	5.0	10	20	100	7	<20	10	20	N	7	N	500
78P001	N	N	5.0	15	150	100	N	20	5	50	N	5	N	700
78P002	10	N	5.0	15	70	50	20	20	<5	150	N	5	N	500
78P003	N	N	N	10	30	30	150	<20	<5	20	N	5	20	300
78P004	N	N	N	N	30	20	70	20	7	100	N	<5	N	200
78P045	N	N	N	10	<5	20	2,000	<20	15	N	N	<5	30	<100
78P046	N	N	N	10	10	30	1,000	50	10	70	N	7	20	300
78P047	N	N	N	10	10	20	500	<20	10	N	N	N	10	<100
78P048	N	N	5.0	10	70	30	20	20	5	100	N	5	30	300
78P054	N	N	N	10	70	20	500	N	7	300	<100	N	N	<100
78P055	N	N	N	10	70	20	500	N	5	500	<100	N	N	<100
78P057	10	N	20.0	10	100	20	15	N	7	20	N	5	N	100
78P058	1,000	N	7.0	10	70	20	5	<20	7	500	N	7	20	100
78P059	N	N	15.0	30	30	50	150	<20	7	70	N	10	N	300
78P062	N	N	5.0	20	70	20	500	<20	7	500	N	N	10	N
78P102	N	N	7.0	N	15	<20	500	<20	5	500	N	N	N	N
78P103	N	N	<5.0	N	70	50	5	<20	5	10	N	5	N	700
78P105	N	N	N	N	50	20	20	20	5	30	N	7	N	200
78P107	N	N	10.0	10	100	50	5	<20	7	2,000	N	5	N	100
78P108	N	N	N	10	150	50	200	<20	7	2,000	N	5	N	100
78P109	15	N	N	20	100	20	>2,000	N	10	2,000	N	N	50	<100
78P110	N	N	N	20	30	50	7	<20	5	100	N	<5	N	700
78P150	N	N	10.0	15	150	20	15	20	5	70	N	10	N	200
78P152	N	N	7.0	20	50	30	N	<20	7	50	N	10	N	500
78P95	N	N	N	20	30	30	20	<20	10	30	N	<5	N	500
78P96	N	N	N	20	50	20	100	<20	7	30	N	5	N	100
78P97	N	N	10.0	10	70	30	N	<20	10	20	N	10	N	100
79BB109	N	N	7.0	N	70	30	50	N	<5	15	N	5	N	100
79BB110	N	N	N	N	N	20	N	<20	<5	30	N	<5	N	<100
79BB111	N	N	N	N	5	50	10	<20	<5	10	N	<5	N	300

TABLE 5. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF PORPHYRY ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa	Sb-ppm aa
0CI4502	15	N	N	N	N	N	--	--	--	--	--	60	--	--	N
0CI4503	20	N	N	N	N	N	--	--	--	--	--	130	--	--	N
0CI4504	30	N	N	N	150	<100	--	--	--	--	--	20	--	--	N
0CI4505	30	N	<10	N	150	N	--	--	--	--	--	10	--	--	1.0
0CI4506	50	N	N	N	150	N	--	--	--	--	--	20	--	--	<1.0
0CI4507	10	N	N	N	N	N	--	--	--	--	--	15	--	--	N
0CI4508	30	N	N	N	150	N	--	--	--	--	--	<5	--	--	N
0CI4509	30	N	N	N	150	N	--	--	--	--	--	5	--	--	N
0CI4510	50	N	N	N	200	N	--	--	--	--	--	5	--	--	N
0CI4511	50	N	N	N	100	N	--	--	--	--	--	10	--	--	1.0
0CI4512	70	N	N	N	200	N	--	--	--	--	--	25	--	--	5.0
0CI4513	15	N	N	N	10	N	--	--	--	--	--	75	--	--	N
0CI4514	15	N	N	N	N	N	--	--	--	--	--	30	--	--	<1.0
0CI4515	15	N	N	N	N	N	--	--	--	--	--	60	--	--	N
0CI4563	15	N	N	N	N	N	--	--	--	--	--	35	--	--	N
78J019	100	N	20	N	150	N	--	--	--	--	--	30	--	--	N
78P001	70	<50	20	N	100	N	--	--	--	--	--	50	--	--	<1.0
78P002	50	50	15	N	150	N	--	--	--	--	--	80	--	--	<1.0
78P003	70	<50	10	N	100	N	--	--	--	--	--	40	--	--	<1.0
78P004	30	50	10	N	70	N	--	--	--	--	--	5	--	--	<1.0
78P045	10	N	N	N	15	N	--	--	--	--	--	<5	--	--	N
78P046	100	<50	15	N	100	N	--	--	--	--	--	20	--	--	<1.0
78P047	50	N	<10	N	20	N	--	--	--	--	--	5	--	--	N
78P048	150	<50	10	N	70	N	--	--	--	--	--	25	--	--	<1.0
78P054	20	50	N	N	N	N	--	--	--	--	--	20	--	--	35.0
78P055	20	N	N	N	N	N	--	--	--	--	--	20	--	--	40.0
78P057	70	<50	15	N	50	N	--	--	--	--	--	100	--	--	20.0
78P058	70	70	10	N	50	N	--	--	--	--	--	40	--	--	<1.0
78P059	100	<50	50	N	70	N	--	--	--	--	--	80	--	--	<1.0
78P062	30	N	N	N	N	N	--	--	--	--	--	50	--	--	15.0
78P102	30	N	N	N	<10	N	--	--	--	--	--	70	--	--	N
78P103	50	N	10	N	150	N	--	--	--	--	--	10	--	--	N
78P105	70	N	15	N	150	N	--	--	--	--	--	40	--	--	<1.0
78P107	70	N	20	1,500	200	N	--	--	--	--	--	800	--	--	5.0
78P108	70	N	10	1,500	150	N	--	--	--	--	--	1,300	--	--	30.0
78P109	30	N	N	1,500	20	N	--	--	--	--	--	1,300	--	--	2.0
78P110	30	N	10	N	200	N	--	--	--	--	--	50	--	--	<1.0
78P150	100	N	20	200	150	N	--	--	--	--	--	130	--	--	4.0
78P152	100	N	20	N	100	N	--	--	--	--	--	30	--	--	<1.0
78P95	30	N	10	N	200	N	--	--	--	--	--	15	--	--	N
78P96	100	N	15	N	150	N	--	--	--	--	--	40	--	--	3.0
78P97	100	N	15	N	150	N	--	--	--	--	--	35	--	--	N
79BB109	70	N	<10	N	70	N	--	--	--	--	--	30	--	--	<1.0
79BB110	10	N	10	N	50	N	--	--	--	--	--	10	--	--	<1.0
79BB111	20	<50	15	N	150	N	--	--	--	--	--	20	--	--	N

TABLE 5. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF PORPHYRY ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
0CI4502	10	--	--	--	--	--
0CI4503	<10	--	--	--	--	--
0CI4504	20	--	--	--	--	--
0CI4505	10	--	--	--	--	--
0CI4506	10	--	--	--	--	--
0CI4507	<10	--	--	--	--	--
0CI4508	10	--	--	--	--	--
0CI4509	10	--	--	--	--	--
0CI4510	10	--	--	--	--	--
0CI4511	<10	--	--	--	--	--
0CI4512	10	--	--	--	--	--
0CI4513	10	--	--	--	--	--
0CI4514	<10	--	--	--	--	--
0CI4515	<10	--	--	--	--	--
0CI4563	<10	--	--	--	--	--
78J019	<10	--	--	--	--	--
78P001	<10	--	--	--	--	--
78P002	<10	--	--	--	--	--
78P003	<10	--	--	--	--	--
78P004	<10	--	--	--	--	--
78P045	10	--	--	--	--	--
78P046	20	--	--	--	--	--
78P047	10	--	--	--	--	--
78P048	<10	--	--	--	--	--
78P054	10	--	--	--	--	--
78P055	10	--	--	--	--	--
78P057	30	--	--	--	--	--
78P058	10	--	--	--	--	--
78P059	<10	--	--	--	--	--
78P062	20	--	--	--	--	--
78P102	10	--	--	--	--	--
78P103	10	--	--	--	--	--
78P105	10	--	--	--	--	--
78P107	20	--	--	--	--	--
78P108	10	--	--	--	--	--
78P109	10	--	--	--	--	--
78P110	20	--	--	--	--	--
78P150	20	--	--	--	--	--
78P152	20	--	--	--	--	--
78P95	10	--	--	--	--	--
78P96	20	--	--	--	--	--
78P97	10	--	--	--	--	--
79BB109	20	--	--	--	--	--
79BB110	<10	--	--	--	--	--
79BB111	<10	--	--	--	--	--

TABLE 5. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF PORPHYRY ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
79BB112	45 27 45	112 53 2	<.05	.02	<.05	.020	50	N	N	N	10	100	<1.0
79BB113	45 27 40	112 53 0	.50	.05	.20	.050	70	N	N	N	10	150	3.0
79BB129	45 31 17	113 3 27	3.00	.70	<.05	.300	700	10.0	N	N	20	700	1.0
79BB131	45 37 37	113 0 3	.20	.02	<.05	.002	50	.7	N	N	15	500	1.0
79BB132	45 37 31	113 0 34	3.00	.50	.05	.200	300	1.0	N	N	50	1,000	5.0
79BB134	45 37 45	113 0 41	3.00	.30	.05	.150	70	N	N	N	20	1,000	3.0
79BB136	45 37 50	113 0 8	1.50	.20	.50	.200	500	N	N	N	<10	500	2.0
79BB164B	45 28 56	113 5 58	20.00	.05	.05	.030	70	10.0	200	N	N	700	N
79BB202	45 41 10	113 12 0	2.00	.50	N	.150	100	1.0	N	N	20	200	1.0
79BB204	45 41 20	113 11 40	3.00	.50	N	.100	200	1.5	N	N	10	500	2.0
80P047	45 20 49	113 58 48	3.00	.15	<.05	.150	70	5.0	N	N	10	300	1.5
80P049	45 20 43	113 59 19	2.00	1.50	.20	.500	100	2.0	N	N	10	1,000	3.0
82P013	45 28 53	113 5 53	7.00	.15	.15	.100	100	1.0	<200	N	10	150	1.0
8CH2102	45 38 0	113 0 30	1.50	.30	.30	.150	150	N	N	N	20	700	3.0
8CI2111	45 25 18	113 0 32	1.00	.20	.20	.150	100	.5	N	N	15	700	2.0
8CI2112	45 39 19	112 57 47	.50	5.00	10.00	.005	500	.5	N	N	N	30	<1.0
8CI2240	45 39 28	112 57 38	1.00	.30	.07	.150	100	<.5	N	N	10	5,000	1.0
8CI2241	45 39 27	112 57 36	2.00	.20	.10	.150	100	2.0	N	N	20	1,000	1.5
8EI2273	45 25 10	112 52 46	5.00	.70	1.50	.300	1,000	N	N	N	20	200	2.0
8EI2274	45 25 8	112 52 49	.30	.07	.70	.030	100	N	N	N	15	700	1.0
8EI2275	45 25 7	112 52 49	5.00	.70	.50	.300	1,000	N	N	N	30	700	2.0
8EI2285	45 25 9	112 52 37	10.00	.05	<.05	.050	20	7.0	N	N	15	100	1.0
8EI2286	45 25 11	112 52 38	7.00	.70	.50	.300	1,500	N	N	N	70	700	1.5
8EI2287	45 25 10	112 52 37	2.00	.50	1.00	.200	700	N	N	N	50	1,000	2.0
8EJ2233	45 26 4	112 52 27	5.00	.70	1.00	.200	700	1.0	N	N	15	1,000	1.5
8EJ2234	45 26 4	112 52 28	5.00	.50	1.00	.200	700	N	N	N	10	1,000	1.5
8EJ2235	45 26 11	112 52 16	5.00	.70	.10	.200	700	.7	N	N	30	700	1.0
8EJ2236	45 26 11	112 52 17	2.00	.15	.05	.070	70	2.0	N	N	30	700	1.0
8GI2250	45 8 45	112 56 15	10.00	.10	5.00	.200	1,000	20.0	N	N	10	500	1.0
8GI2251	45 8 45	112 56 15	7.00	1.00	2.00	.700	5,000	N	N	N	15	700	1.0
8XDD4064	44 36 44	113 33 54	3.00	.20	.20	.200	300	2.0	N	N	30	1,500	5.0
8XDD4065	44 36 44	113 33 40	2.00	.70	1.00	.200	1,500	.5	N	N	10	1,000	5.0
8XDD4066	44 36 42	113 33 25	3.00	.70	1.00	.300	2,000	.5	N	N	15	1,500	2.0
8XDD4067	44 36 45	113 33 3	3.00	.70	.50	.200	20	.5	N	N	50	1,000	3.0
8XDD4068	44 36 55	113 33 6	2.00	.30	.15	.150	20	<.5	N	N	30	700	7.0
8XDD4069	44 37 5	113 33 12	3.00	.15	.10	.150	10	<.5	N	N	50	1,000	2.0
8XDD4070	44 37 10	113 33 17	5.00	1.00	1.50	.300	300	.5	N	N	10	1,500	3.0
8XDD4071	44 37 3	113 33 11	2.00	.30	.07	.150	10	1.0	N	N	50	700	5.0
9BL6189	45 49 39	112 30 57	3.00	.30	.05	.300	300	3.0	N	N	150	500	3.0
9BM6184	45 52 2	112 27 0	.70	.20	.07	.100	30	.5	N	N	50	2,000	1.5
9BM5185	45 51 24	112 26 15	5.00	.30	.50	.200	500	N	N	N	70	2,000	5.0
9BM6186	45 51 36	112 27 10	.70	<.02	.05	.020	10	.5	N	N	15	150	2.0
9BM6187	45 51 36	112 28 44	5.00	<.02	N	.100	100	.7	N	N	15	20	1.5
9BM5188	45 51 38	112 27 54	.20	<.02	.15	.070	20	3.0	N	N	15	200	2.0
9DH10000	45 31 20	113 3 20	1.50	.30	.50	.150	30	N	N	N	20	1,000	2.0

TABLE 5. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF PORPHYRY ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
79BB112	N	N	N	N	5	20	15	N	<5	N	N	N	N	<100
79BB113	N	N	N	N	20	20	10	<20	<5	70	N	N	N	100
79BB129	<10	<20	N	N	30	20	700	<20	<5	5,000	N	5	N	<100
79BB131	N	N	N	N	15	N	N	N	<5	<10	N	N	N	N
79BB132	N	N	N	N	70	20	30	<20	<5	20	N	<5	10	100
79BB134	N	N	N	N	7	30	50	<20	<5	15	N	N	10	100
79BB136	N	N	7.0	N	15	20	N	<20	<5	20	N	<5	N	150
79BB164B	N	N	150.0	15	300	N	700	N	10	20	N	N	N	<100
79BB202	N	N	N	N	15	<20	10	N	10	N	N	N	<10	N
79BB204	N	N	N	N	50	N	70	N	5	N	N	N	15	<100
80P047	<10	N	N	20	100	20	30	N	5	<10	N	5	10	N
80P049	N	N	7.0	100	300	50	<5	<20	15	70	N	20	15	150
82P013	N	N	20.0	10	300	20	30	N	10	70	N	<5	N	100
8CH2102	N	N	N	10	20	50	200	<20	5	30	N	5	15	500
8CI2111	N	N	N	<10	20	70	500	<20	5	100	N	5	15	500
8CI2112	N	N	N	<10	100	20	15	N	<5	20	N	<5	N	200
8CI2240	N	N	N	10	15	100	1,500	<20	5	100	N	N	15	500
8CI2241	N	N	N	15	30	20	2,000	<20	20	20	N	<5	20	300
8EI2273	N	N	10.0	30	5	30	20	<20	5	30	N	15	N	500
8EI2274	N	N	N	N	<5	20	15	<20	5	70	N	<5	N	300
8EI2275	N	N	10.0	10	70	50	20	<20	10	70	N	10	N	300
8EI2285	N	N	30.0	10	30	<20	500	<20	7	150	N	N	10	<100
8EI2286	N	N	15.0	20	200	50	20	<20	10	70	N	15	N	500
8EI2287	N	N	N	10	50	50	50	<20	5	50	N	5	N	500
8EJ2233	N	N	10.0	20	200	150	20	<20	5	30	N	10	10	500
8EJ2234	N	N	7.0	15	30	100	100	20	5	50	N	7	15	500
8EJ2235	N	N	7.0	15	70	20	150	20	5	50	N	7	20	150
8EJ2236	N	N	7.0	15	70	20	2,000	<20	5	100	N	N	20	100
8GI2250	N	N	10.0	15	500	20	15	<20	5	300	N	10	N	200
8GI2251	N	N	20.0	30	20	70	N	<20	7	100	N	15	N	100
8XDD4064	N	N	10.0	10	2,000	150	100	50	30	70	N	5	N	200
8XDD4065	N	N	100.0	15	10,000	70	150	50	30	20	N	5	N	300
8XDD4066	N	N	70.0	10	10,000	70	300	20	20	30	N	5	N	500
8XDD4067	N	N	5.0	20	200	70	50	20	10	20	N	5	N	300
8XDD4068	N	N	N	N	70	100	N	50	5	50	N	<5	N	100
8XDD4069	N	N	N	N	70	100	N	30	5	100	N	<5	N	<100
8XDD4070	N	N	7.0	20	2,000	150	10	50	20	30	N	10	N	700
8XDD4071	N	N	N	<10	30	100	N	30	5	50	N	5	<10	<100
9BL6189	N	N	.5	20	20	30	10	N	20	50	100	7	N	700
9BM6184	N	N	N	N	15	50	20	N	<5	30	N	<5	N	200
9BM6185	N	N	N	N	<5	100	N	<20	<5	20	N	<5	N	300
9BM6186	N	N	N	N	70	N	500	<20	<5	15	N	<5	N	<100
9BM6187	N	N	N	N	700	<20	500	20	5	10	N	<5	N	<100
9BM6188	10	N	N	N	20	20	2,000	<20	5	30	N	N	N	<100
9DH10000	N	N	N	N	10	30	500	N	<5	20	N	<5	<10	300

TABLE 5. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF PORPHYRY ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa	Sb-ppm aa
79BB112	<10	50	N	N	N	N	--	--	--	--	--	10	--	--	N
79BB113	10	<50	N	N	30	N	--	--	--	--	--	25	--	--	<1.0
79BB129	50	N	10	2,000	50	N	--	--	--	--	--	1,500	--	--	5.0
79BB131	<10	N	N	N	N	N	--	--	--	--	--	10	--	--	3.0
79BB132	50	N	<10	N	150	N	--	--	--	--	--	50	--	--	10.0
79BB134	50	N	N	N	100	N	--	--	--	--	--	10	--	--	2.0
79BB136	30	N	10	N	100	N	--	--	--	--	--	25	--	--	N
79BB164B	150	<50	50	500	20	N	--	--	--	--	--	400	--	--	10.0
79BB202	20	N	10	N	300	N	--	--	--	--	--	35	--	--	<1.0
79BB204	30	N	N	N	50	N	--	--	--	--	--	25	--	--	2.0
80P047	30	N	20	N	200	N	.05	--	--	--	--	35	--	--	3.0
80P049	100	N	30	N	200	N	<.05	--	--	--	--	15	--	--	<1.0
82P013	30	N	15	<200	70	N	N	--	--	260	--	210	--	--	3.0
8CH2102	70	N	N	N	150	N	--	--	--	--	--	15	--	--	1.0
8CI2111	50	N	N	N	100	N	--	--	--	--	--	10	--	--	1.0
8CI2112	20	N	N	200	<10	N	--	--	--	--	--	340	--	--	10.0
8CI2240	30	N	10	N	70	N	--	--	--	--	--	5	--	--	<1.0
8CI2241	50	N	<10	N	70	N	--	--	--	--	--	5	--	--	<1.0
8FI2273	150	<50	20	N	150	N	--	--	--	--	--	50	--	--	1.0
8EI2274	10	50	N	N	50	N	--	--	--	--	--	10	--	--	<1.0
8EI2275	100	50	20	N	100	N	--	--	--	--	--	70	--	--	1.0
8FI2285	20	N	N	N	N	N	--	--	--	--	--	20	--	--	10.0
8FI2286	150	150	30	N	150	N	--	--	--	--	--	120	--	--	1.0
8EI2287	50	N	20	N	150	N	--	--	--	--	--	30	--	--	2.0
8FJ2233	70	<50	30	N	100	N	--	--	--	--	--	40	--	--	N
8EJ2234	70	<50	30	N	100	N	--	--	--	--	--	40	--	--	N
8EJ2235	100	<50	15	N	100	N	--	--	--	--	--	35	--	--	1.0
8EJ2236	50	<50	15	300	50	N	--	--	--	--	--	280	--	--	15.0
8GI2250	50	N	20	500	100	N	--	--	--	--	--	1,100	--	--	5.0
8GI2251	150	N	30	<200	300	N	--	--	--	--	--	150	--	--	1.0
8XDD4064	70	N	20	N	150	N	N	.02	.07	--	--	80	--	--	15.0
8XDD4065	50	N	20	N	150	N	<.05	.02	.01	--	--	75	--	--	3.0
8XDD4066	70	N	20	N	200	N	<.05	.03	.01	--	--	160	--	--	3.0
8XDD4067	70	N	10	N	150	N	<.05	<.02	.03	--	--	25	--	--	2.0
8XDD4068	50	N	10	N	200	N	N	<.02	.20	--	--	15	--	--	<1.0
8XDD4069	30	N	10	N	150	N	N	<.02	1.00	--	--	10	--	--	N
8XDD4070	100	N	15	N	150	N	N	<.02	.10	--	--	80	--	--	<1.0
8XDD4071	30	N	10	N	150	N	N	.04	.16	--	--	10	--	--	<1.0
9BL5189	100	<50	15	N	100	N	--	--	--	--	--	15	--	--	4.0
9BM6184	10	N	10	N	70	N	--	--	--	--	--	<5	--	--	.5
9BM6185	50	N	15	N	100	N	--	--	--	--	--	15	--	--	<.5
9BM6186	<10	N	<10	N	70	N	--	--	--	--	--	<5	--	--	.5
9BM6187	30	N	N	N	10	N	--	--	--	--	--	10	--	--	4.0
9BM6188	<10	N	<10	N	50	N	--	--	--	--	--	<5	--	--	1.0
9DH10000	30	N	<10	N	150	N	--	--	--	--	--	40	--	--	1.0

TABLE 5. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF PORPHYRY ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
79BB112	<10	--	--	--	--	--
79BB113	<10	--	--	--	--	--
79BB129	10	--	--	--	--	--
79BB131	10	--	--	--	--	--
79BB132	40	--	--	--	--	--
79BB134	10	--	--	--	--	--
79BB136	<10	--	--	--	--	--
79BB164B	100	--	--	--	--	--
79BB202	10	--	--	--	--	--
79BB204	20	--	--	--	--	--
80P047	80	--	--	--	--	--
80P049	10	--	--	--	--	--
82P013	--	--	--	--	--	--
8CH2102	<10	5	--	--	--	N
8CI2111	10	5	--	--	--	N
8CI2112	10	<1	--	--	--	N
8CI2240	20	N	--	--	--	N
8CI2241	50	N	--	--	--	N
8EI2273	10	1	--	--	--	--
8EI2274	<10	3	--	--	--	--
8EI2275	20	15	--	--	--	--
8EI2285	20	2	--	--	--	--
8EI2286	20	150	--	--	--	--
8EI2287	10	10	--	--	--	--
8EJ2233	<10	1	--	--	--	N
8EJ2234	<10	5	--	--	--	N
8EJ2235	<10	10	--	--	--	N
8EJ2236	<10	N	--	--	--	N
8GI2250	40	1	--	--	--	--
8GI2251	20	<1	--	--	--	--
8XDD4064	40	--	--	--	--	--
8XDD4065	20	--	--	--	--	--
8XDD4066	20	--	--	--	--	--
8XDD4067	20	--	--	--	--	--
8XDD4068	20	--	--	--	--	--
8XDD4069	80	--	--	--	--	--
8XDD4070	40	--	--	--	--	--
8XDD4071	30	--	--	--	--	--
9BL6189	--	--	20	30	--	--
9BM6184	--	--	2	65	--	--
9BM5185	--	--	2	30	--	--
9BM6186	--	--	N	25	--	--
9BM6187	--	--	1	30	--	--
9BM6188	--	--	N	25	--	--
9DH10000	10	--	--	--	--	--

TABLE 5. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF PORPHYRY ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Latitude	Longitude	Fe-pct.	Mg-pct.	Ca-pct.	Ti-pct.	Mn-ppm	Ag-ppm	As-ppm	Au-ppm	B-ppm	Ba-ppm	Be-ppm
			s	s	s	s	s	s	s	s	s	s	s
9DH10001	45 31 21	113 3 11	1.50	.30	.50	.100	50	N	N	N	20	1,000	2.0
9DH10003	45 31 13	113 3 25	7.00	.70	<.05	.150	300	7.0	N	N	15	500	3.0
B50	45 9 3	112 55 35	7.00	1.50	2.00	.300	1,000	N	N	N	<10	1,000	1.5
B51	45 9 3	112 55 35	10.00	.50	.20	.300	150	N	N	N	<10	1,000	2.0
B52	45 9 3	112 55 35	10.00	.70	.30	.300	50	N	N	N	15	1,000	1.5

TABLE 5. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF PORPHYRY ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
9DH10001	N	N	N	N	7	50	20	N	<5	20	N	N	N	300
9DH10003	N	N	5.0	N	15	<20	10	N	<5	150	N	5	N	<100
B50	N	N	10.0	N	20	70	N	<20	10	20	N	10	N	500
B51	N	N	N	N	70	70	N	<20	5	30	N	10	10	200
B52	N	N	N	<10	50	70	N	<20	7	70	N	10	N	150

TABLE 5. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF PORPHYRY ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa	Sb-ppm aa
9DH10001	30	N	<10	N	100	N	--	--	--	--	--	10	--	--	<1.0
9DH10003	100	N	10	<200	70	N	--	--	--	--	--	60	--	--	<1.0
B50	100	N	20	N	300	N	N	.02	.01	--	--	80	--	--	N
B51	150	N	20	N	300	N	N	.03	.07	--	--	25	--	--	N
B52	150	N	20	N	300	N	N	.02	.05	--	--	20	--	--	N

TABLE 5. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF PORPHYRY ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
9DH10001	10	--	--	--	--	--
9DH10003	10	--	--	--	--	--
B50	20	--	--	--	--	--
B51	20	--	--	--	--	--
B52	10	--	--	--	--	--

TABLE 6. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF SKARN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	As-ppm cm	W-ppm cm	W-ppm cm	As-ppm cm	F-ppm si	Sn-ppm aa
78P011	<10	--	--	--	--	--
78P013	40	--	--	--	--	--
78P032	80	--	--	--	--	--
81P061	20	--	--	--	<100	--
81P066	10	--	--	--	<100	--
8BG2155	10	--	>200	--	--	N
8BL5064	<10	2	--	--	--	2
8CN6076	10	2	--	--	--	<2
8DI2217	<10	3	--	--	--	N
8DI2218	<10	3	--	--	--	N
8DI2222	10	75	--	--	--	N
8DI2230	<10	5	--	--	--	N
8DI2231	10	<1	--	--	--	N
8DJ2100	<10	>200	--	--	--	<2
8DO8031	<10	N	--	--	--	<2
8DO8032	<10	<1	--	--	--	<2
8EJ2088	10	200	--	--	--	<2
8EJ2097	20	>200	--	--	--	<2
8FJ2288	40	--	150	--	--	--
8EJ2289	<10	--	7	--	--	--
8EJ2290	<10	--	50	--	--	--
8FJ2291	<10	--	15	--	--	--
8FJ2292	10	--	15	--	--	--
8EJ2293	80	--	200	--	--	--
8EJ2294	20	--	15	--	--	--
8EJ2295	10	--	20	--	--	--
8EJ2296	20	--	>200	--	--	--
8EJ2297	600	--	>200	--	--	--
8EJ2298	10	--	>200	--	--	--
8EJ2299	10	--	20	--	--	--
8FH2076	20	--	2	--	--	N
8FH2080	40	--	N	--	--	<2
8FH2081	30	--	5	--	--	N
8FH2082	10	--	>200	--	--	N
8FH2085	40	--	>200	--	--	<2
8FH2086	10	--	5	--	--	N
8FH2087	60	--	200	--	--	<2
8FJ2049	20	--	<1	--	--	<2
8FJ2052	20	--	<1	--	--	N
8FJ2055	10	--	5	--	--	N
8GI2003	20	--	3	--	--	<2
8GI2195	120	--	1	--	--	30
8XGG4052	40	--	50	--	--	--
8XGG4053	10	--	1	--	--	--
8XGG4054	40	--	7	--	--	--

TABLE 6. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF SKARN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	Te-ppm aa	As-ppm aa	Cu-ppm aa	Zn-ppm aa	Cd-ppm aa	Bi-ppm aa	Sb-ppm aa
78P011	50	50	20	N	50	N	--	--	--	--	--	70	--	--	<1
78P013	150	70	30	300	15	N	--	--	--	--	--	260	--	--	4
78P032	70	150	10	500	15	N	--	--	--	--	--	190	--	--	3
81P061	200	50	30	>10,000	20	N	2.0	--	7.0	--	--	>2,000	--	--	3
81P066	100	N	30	2,000	20	N	.7	--	.5	--	--	1,200	--	--	2
8BG2155	300	150	50	200	200	N	--	--	--	--	--	50	--	--	<1
8BL5064	150	N	100	N	50	N	--	--	--	--	--	15	--	--	<1
8CN6076	30	N	10	500	N	N	--	--	--	--	--	190	--	--	2
8DI2217	150	N	50	N	70	N	--	--	--	--	--	15	--	--	N
8DI2218	100	N	30	N	150	N	--	--	--	--	--	10	--	--	N
8DI2222	200	50	30	N	30	N	--	--	--	--	--	15	--	--	N
8DI2230	300	N	50	N	70	N	--	--	--	--	--	40	--	--	<1
8DI2231	200	N	30	N	50	N	--	--	--	--	--	30	--	--	N
8DJ2100	300	200	50	200	70	N	--	--	--	--	--	45	--	--	<1
8DO8031	50	N	30	700	<10	N	--	--	--	--	--	190	--	--	<1
8DO8032	70	N	20	N	70	N	--	--	--	--	--	10	--	--	<1
8EJ2088	200	200	20	N	50	N	--	--	--	--	--	40	--	--	2
8EJ2097	200	100	20	N	30	N	--	--	--	--	--	30	--	--	<1
8EJ2288	50	200	10	<200	30	N	--	--	--	--	--	95	--	--	1
8EJ2289	30	N	15	N	20	N	--	--	--	--	--	120	--	--	<1
8EJ2290	150	<50	50	N	200	N	--	--	--	--	--	60	--	--	N
8EJ2291	100	<50	20	<200	150	N	--	--	--	--	--	170	--	--	<1
8EJ2292	100	<50	30	N	150	N	--	--	--	--	--	25	--	--	N
8EJ2293	30	100	20	200	N	N	--	--	--	--	--	95	--	--	5
8EJ2294	20	<50	N	N	N	N	--	--	--	--	--	70	--	--	<1
8EJ2295	30	N	10	300	20	N	--	--	--	--	--	40	--	--	N
8EJ2296	50	100	10	N	20	N	--	--	--	--	--	50	--	--	N
8EJ2297	50	300	30	500	10	N	--	--	--	--	--	540	--	--	15
8EJ2298	50	100	30	N	70	N	--	--	--	--	--	50	--	--	N
8EJ2299	70	<50	30	N	100	N	--	--	--	--	--	20	--	--	N
8FH2076	20	N	10	N	20	N	--	--	--	--	--	20	--	--	1
8FH2080	30	N	30	<200	10	N	--	--	--	--	--	300	--	--	2
8FH2081	100	N	N	N	<10	N	--	--	--	--	--	40	--	--	2
8FH2082	150	500	20	N	<10	N	--	--	--	--	--	20	--	--	N
8FH2085	200	100	20	N	N	N	--	--	--	--	--	40	--	--	<1
8FH2086	20	N	15	N	N	N	--	--	--	--	--	25	--	--	N
8FH2087	100	200	15	N	N	N	--	--	--	--	--	30	--	--	N
8FJ2049	10	N	N	300	N	N	--	--	--	--	--	500	--	--	<1
8FJ2052	15	N	N	N	10	N	--	--	--	--	--	400	--	--	4
8FJ2055	150	N	30	>10,000	100	N	--	--	--	--	--	28,000	--	--	2
8GI2003	150	N	30	N	100	N	--	--	--	--	--	35	--	--	1
8GI2195	<10	N	15	N	10	N	--	--	--	--	--	60	--	--	1
8XGG4052	50	N	50	N	<10	N	--	--	--	--	--	20	--	--	4
8XGG4053	100	N	30	N	70	N	--	--	--	--	--	55	--	--	N
8XGG4054	100	N	30	N	70	N	--	--	--	--	--	35	--	--	<1

TABLE 6. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF SKARN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY--Continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s
78P011	N	N	20	70	500	20	50	N	30	N	N	10	N	100
78P013	N	N	30	20	700	20	70	<20	30	10	N	7	N	150
78P032	N	N	20	50	100	20	20	<20	30	100	N	5	N	200
81P061	70	150	100	30	>20,000	N	N	N	50	20,000	N	7	N	200
81P066	N	N	70	30	>20,000	100	N	N	20	20	N	5	N	<100
8BG2155	15	N	15	50	70	70	10	<20	10	50	N	20	10	200
8BL6064	N	N	5	300	10	50	N	<20	7	10	N	20	70	200
8CN5076	<10	N	15	<10	20	<20	N	N	30	<10	N	N	N	300
8DI2217	N	N	20	20	<5	50	10	<20	10	50	N	20	N	700
8DI2218	N	N	20	20	10	20	7	<20	10	20	N	10	N	300
8DI2222	N	N	30	50	15	<20	N	N	15	10	N	10	20	300
8DI2230	N	N	15	10	30	<20	150	<20	5	10	N	20	N	200
8DI2231	N	N	30	50	70	30	10	<20	10	20	N	30	N	700
8DJ2100	50	N	20	300	700	20	300	<20	50	100	N	20	30	200
8DO8031	N	N	50	20	5,000	<20	N	<20	10	<10	N	5	N	<100
8DO8032	N	N	5	15	70	70	N	20	5	15	N	7	N	700
8EJ2088	N	N	10	50	50	<20	500	<20	10	30	N	7	20	100
8EJ2097	N	N	15	70	<5	<20	100	<20	20	N	N	7	20	<100
8EJ2288	70	N	50	50	15,000	<20	15	<20	70	15	N	5	N	<100
8EJ2289	N	N	N	50	20	<20	N	N	10	70	N	<5	N	1,500
8EJ2290	<10	N	10	300	50	<20	7	<20	15	20	N	20	N	100
8EJ2291	50	N	50	15	150	<20	20	20	5	100	N	10	N	300
8EJ2292	N	N	10	15	30	70	150	<20	5	20	N	15	N	500
8EJ2293	N	N	20	20	200	<20	20	N	10	15	N	<5	20	<100
8EJ2294	N	N	20	15	300	<20	15	N	10	20	N	<5	N	<100
8EJ2295	N	N	100	10	70	<20	N	<20	15	<10	N	<5	50	<100
8EJ2296	N	N	30	15	1,500	<20	50	<20	15	<10	N	<5	20	<100
8EJ2297	N	N	30	70	1,500	<20	500	<20	50	20	N	<5	N	100
8EJ2298	N	N	15	20	50	20	300	<20	15	10	N	10	N	<100
8EJ2299	N	N	10	10	20	50	10	20	5	20	N	10	N	500
8FH2076	N	N	N	10	10	20	N	<20	5	70	N	<5	N	100
8FH2080	N	N	500	20	>20,000	20	N	<20	70	10	N	7	N	<100
8FH2081	N	N	100	30	2,000	20	N	<20	7	<10	N	5	N	<100
8FH2082	N	N	20	50	20	20	200	<20	20	10	N	5	20	<100
8FH2085	20	N	15	30	2,000	50	100	<20	20	10	N	N	15	N
8FH2086	N	N	N	50	30	30	N	N	10	15	N	N	N	300
8FH2087	N	N	10	20	50	<20	500	<20	10	<10	N	N	50	N
8FJ2049	N	N	N	N	70	<20	N	N	<5	2,000	N	N	N	150
8FJ2052	N	N	7	15	20	<20	N	N	<5	1,000	N	<5	N	<100
8FJ2055	20	300	10	70	100	50	10	<20	15	500	N	15	15	200
8GI2003	N	N	10	50	5	20	N	N	10	10	N	15	N	<100
8GI2195	N	N	50	20	5,000	<20	N	<20	5	10	N	5	50	<100
8XGG4052	N	N	50	<10	5,000	20	N	N	15	<10	N	7	N	100
8XGG4053	N	N	20	10	50	30	N	<20	7	30	N	15	N	500
8XGG4054	N	N	100	<10	1,500	50	N	<20	20	20	N	10	N	100

TABLE 6. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF SKARN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
78P011	45 23 35	112 50 45	7.0	5.0	10.0	.100	3,000	.5	N	N	30	100	1.0
78P013	45 23 38	112 49 17	5.0	.5	.2	.070	>5,000	7.0	<200	N	20	1,000	1.5
78P032	45 39 4	112 58 55	15.0	2.0	10.0	.030	>5,000	3.0	N	N	10	N	3.0
81P061	45 41 37	112 18 38	7.0	1.0	3.0	.100	>5,000	150.0	N	N	70	50	2.0
81P066	45 36 5	112 11 9	20.0	1.0	7.0	.070	2,000	30.0	N	N	<10	20	2.0
8BG2155	45 51 23	113 9 6	7.0	1.5	15.0	.200	>5,000	N	N	N	10	50	5.0
8BL6064	45 47 41	112 30 28	5.0	1.0	15.0	.300	1,000	N	N	N	15	50	1.0
8CN6076	45 41 51	112 18 59	15.0	1.5	7.0	.002	>5,000	2.0	N	N	50	500	3.0
8DI2217	45 35 52	112 57 1	5.0	3.0	10.0	.500	1,000	N	N	N	20	100	1.5
8DI2218	45 35 42	112 56 59	5.0	3.0	10.0	.300	1,000	N	N	N	20	100	3.0
8DI2222	45 35 24	112 56 53	15.0	1.5	10.0	.150	2,000	N	N	N	10	70	<1.0
8DI2230	45 35 24	112 56 44	7.0	1.0	15.0	.200	1,500	N	N	N	<10	<20	<1.0
8DI2231	45 35 25	112 56 46	7.0	2.0	5.0	.500	1,000	.5	N	N	20	500	1.0
8DJ2100	45 31 21	112 50 10	10.0	1.5	10.0	.200	>5,000	.7	N	N	10	N	1.0
8DO8031	45 36 11	112 11 17	>20.0	.5	3.0	.020	3,000	10.0	N	N	<10	N	1.0
8DO8032	45 36 11	112 11 17	1.5	.7	1.0	.150	500	N	N	N	10	1,000	1.5
8EJ2088	45 24 44	112 48 5	15.0	1.0	10.0	.150	5,000	N	N	N	<10	N	<1.0
8EJ2097	45 29 9	112 48 9	10.0	1.0	10.0	.100	5,000	N	N	N	10	N	<1.0
8EJ2288	45 24 47	112 48 11	20.0	1.5	7.0	.050	2,000	15.0	N	N	15	50	<1.0
8EJ2289	45 24 47	112 48 11	.2	1.0	20.0	.020	700	2.0	<200	N	<10	50	<1.0
8EJ2290	45 24 47	112 48 12	5.0	1.0	15.0	.300	5,000	N	N	N	30	50	<1.0
8EJ2291	45 24 3	112 49 11	7.0	1.0	5.0	.200	3,000	15.0	N	N	15	300	<1.0
8EJ2292	45 24 3	112 49 11	3.0	1.0	2.0	.300	1,500	N	N	N	15	1,000	1.0
8EJ2293	45 23 20	112 49 40	10.0	.7	10.0	.002	5,000	N	<200	N	10	200	1.0
8EJ2294	45 23 22	112 50 28	7.0	7.0	7.0	.010	1,500	1.5	N	N	70	<20	1.0
8EJ2295	45 23 24	112 50 31	20.0	3.0	1.0	.020	1,500	N	N	N	30	20	<1.0
8EJ2296	45 23 24	112 50 31	10.0	5.0	7.0	.050	2,000	3.0	N	N	70	<20	1.5
8EJ2297	45 23 50	112 49 8	15.0	.5	2.0	.020	>5,000	N	700	N	20	20	3.0
8EJ2298	45 23 50	112 49 8	7.0	1.5	15.0	.150	>5,000	N	N	N	10	<20	<1.0
8EJ2299	45 23 50	112 49 9	2.0	1.0	2.0	.200	1,000	N	N	N	15	700	1.5
8FH2076	45 18 53	113 2 1	.7	7.0	10.0	.050	700	1.5	N	N	50	<20	1.0
8FH2080	45 18 45	113 2 23	2.0	5.0	.5	.015	1,500	N	N	N	500	150	1.0
8FH2081	45 18 54	113 2 34	20.0	1.5	1.5	.030	300	3.0	N	N	10	150	<1.0
8FH2082	45 20 6	113 2 32	15.0	1.5	10.0	.030	>5,000	N	N	N	10	<20	<1.0
8FH2085	45 19 14	113 3 11	10.0	3.0	7.0	.070	1,500	10.0	N	N	15	N	1.0
8FH2086	45 19 14	113 3 11	.1	5.0	15.0	.003	30	N	N	N	15	N	<1.0
8FH2087	45 19 15	113 3 4	15.0	2.0	10.0	.007	2,000	N	N	N	15	N	<1.0
8FJ2049	45 17 25	112 50 34	.5	5.0	20.0	<.002	>5,000	10.0	N	N	N	<20	<1.0
8FJ2052	45 18 30	112 50 32	.2	5.0	5.0	.015	700	3.0	N	N	<10	<20	<1.0
8FJ2055	45 19 5	112 50 6	7.0	1.5	7.0	.200	3,000	15.0	N	N	20	200	2.0
8GI2003	45 9 31	112 58 51	7.0	1.5	15.0	.200	3,000	N	N	N	<10	50	<1.0
8GI2195	45 9 27	112 59 2	20.0	3.0	2.0	.100	1,000	15.0	N	N	20	<20	<1.0
8XGG4052	46 12 8	113 13 7	>20.0	1.0	2.0	.030	300	2.0	N	N	10	150	1.0
8XGG4053	46 11 50	113 13 1	5.0	1.0	2.0	.500	1,000	N	N	N	10	700	2.0
8XGG4054	46 11 50	113 13 0	10.0	.3	.1	.200	500	1.5	<200	N	70	700	1.5

TABLE 6. SPECTROGRAPHIC AND ATOMIC ABSORPTION ANALYSES OF SKARN ROCK SAMPLES FROM THE DILLON 1 X 2 QUADRANGLE, MONTANA-IDAHO AND VICINITY

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
78P011	45 23 35	112 50 45	7.0	5.0	10.0	.100	3,000	.5	N	N	30	100	1.0
78P013	45 23 38	112 49 17	5.0	.5	.2	.070	>5,000	7.0	<200	N	20	1,000	1.5
78P032	45 39 4	112 58 55	15.0	2.0	10.0	.030	>5,000	3.0	N	N	10	N	3.0
81P061	45 41 37	112 18 38	7.0	1.0	3.0	.100	>5,000	150.0	N	N	70	50	2.0
81P066	45 36 5	112 11 9	20.0	1.0	7.0	.070	2,000	30.0	N	N	<10	20	2.0
8BG2155	45 51 23	113 9 6	7.0	1.5	15.0	.200	>5,000	N	N	N	10	50	5.0
8BL6064	45 47 41	112 30 28	5.0	1.0	15.0	.300	1,000	N	N	N	15	50	1.0
8CN6076	45 41 51	112 18 59	15.0	1.5	7.0	.002	>5,000	2.0	N	N	50	500	3.0
8DI2217	45 35 52	112 57 1	5.0	3.0	10.0	.500	1,000	N	N	N	20	100	1.5
8DI2218	45 35 42	112 56 59	5.0	3.0	10.0	.300	1,000	N	N	N	20	100	3.0
8DI2222	45 35 24	112 56 53	15.0	1.5	10.0	.150	2,000	N	N	N	10	70	<1.0
8DI2230	45 35 24	112 56 44	7.0	1.0	15.0	.200	1,500	N	N	N	<10	<20	<1.0
8DI2231	45 35 25	112 56 46	7.0	2.0	5.0	.500	1,000	.5	N	N	20	500	1.0
8DJ2100	45 31 21	112 50 10	10.0	1.5	10.0	.200	>5,000	.7	N	N	10	N	1.0
8DO8031	45 36 11	112 11 17	>20.0	.5	3.0	.020	3,000	10.0	N	N	<10	N	1.0
8DO8032	45 36 11	112 11 17	1.5	.7	1.0	.150	500	N	N	N	10	1,000	1.5
8EJ2088	45 24 44	112 48 5	15.0	1.0	10.0	.150	5,000	N	N	N	<10	N	<1.0
8EJ2097	45 29 9	112 48 9	10.0	1.0	10.0	.100	5,000	N	N	N	10	N	<1.0
8EJ2288	45 24 47	112 48 11	20.0	1.5	7.0	.050	2,000	15.0	N	N	15	50	<1.0
8EJ2289	45 24 47	112 48 11	.2	1.0	20.0	.020	700	2.0	<200	N	<10	50	<1.0
8EJ2290	45 24 47	112 48 12	5.0	1.0	15.0	.300	5,000	N	N	N	30	50	<1.0
8EJ2291	45 24 3	112 49 11	7.0	1.0	5.0	.200	3,000	15.0	N	N	15	300	<1.0
8EJ2292	45 24 3	112 49 11	3.0	1.0	2.0	.300	1,500	N	N	N	15	1,000	1.0
8EJ2293	45 23 20	112 49 40	10.0	.7	10.0	.002	5,000	N	<200	N	10	200	1.0
8EJ2294	45 23 22	112 50 28	7.0	7.0	7.0	.010	1,500	1.5	N	N	70	<20	1.0
8EJ2295	45 23 24	112 50 31	20.0	3.0	1.0	.020	1,500	N	N	N	30	20	<1.0
8EJ2296	45 23 24	112 50 31	10.0	5.0	7.0	.050	2,000	3.0	N	N	70	<20	1.5
8EJ2297	45 23 50	112 49 8	15.0	.5	2.0	.020	>5,000	N	700	N	20	20	3.0
8EJ2298	45 23 50	112 49 8	7.0	1.5	15.0	.150	>5,000	N	N	N	10	<20	<1.0
8EJ2299	45 23 50	112 49 9	2.0	1.0	2.0	.200	1,000	N	N	N	15	700	1.5
8FH2076	45 18 53	113 2 1	.7	7.0	10.0	.050	700	1.5	N	N	50	<20	1.0
8FH2080	45 18 45	113 2 23	2.0	5.0	.5	.015	1,500	N	N	N	500	150	1.0
8FH2081	45 18 54	113 2 34	20.0	1.5	1.5	.030	300	3.0	N	N	10	150	<1.0
8FH2082	45 20 6	113 2 32	15.0	1.5	10.0	.030	>5,000	N	N	N	10	<20	<1.0
8FH2085	45 19 14	113 3 11	10.0	3.0	7.0	.070	1,500	10.0	N	N	15	N	1.0
8FH2086	45 19 14	113 3 11	.1	5.0	15.0	.003	30	N	N	N	15	N	<1.0
8FH2087	45 19 15	113 3 4	15.0	2.0	10.0	.007	2,000	N	N	N	15	N	<1.0
8FJ2049	45 17 25	112 50 34	.5	5.0	20.0	<.002	>5,000	10.0	N	N	N	<20	<1.0
8FJ2052	45 18 30	112 50 32	.2	5.0	5.0	.015	700	3.0	N	N	<10	<20	<1.0
8FJ2055	45 19 5	112 50 6	7.0	1.5	7.0	.200	3,000	15.0	N	N	20	200	2.0
8GI2003	45 9 31	112 58 51	7.0	1.5	15.0	.200	3,000	N	N	N	<10	50	<1.0
8GI2195	45 9 27	112 59 2	20.0	3.0	2.0	.100	1,000	15.0	N	N	20	<20	<1.0
8XGG4052	46 12 8	113 13 7	>20.0	1.0	2.0	.030	300	2.0	N	N	10	150	1.0
8XGG4053	46 11 50	113 13 1	5.0	1.0	2.0	.500	1,000	N	N	N	10	700	2.0
8XGG4054	46 11 50	113 13 0	10.0	.3	.1	.200	500	1.5	<200	N	70	700	1.5

81 f 83 Follows

5

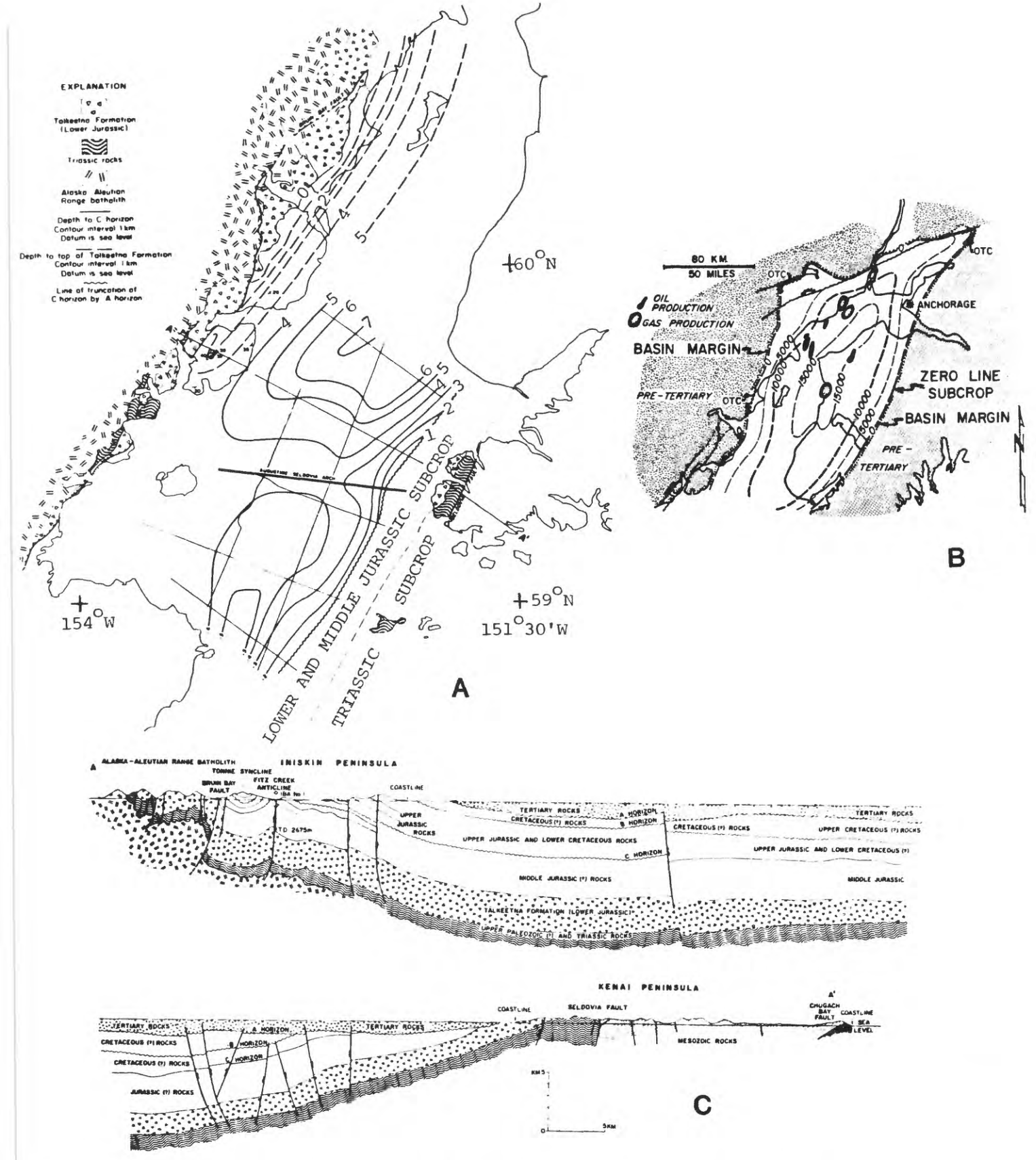
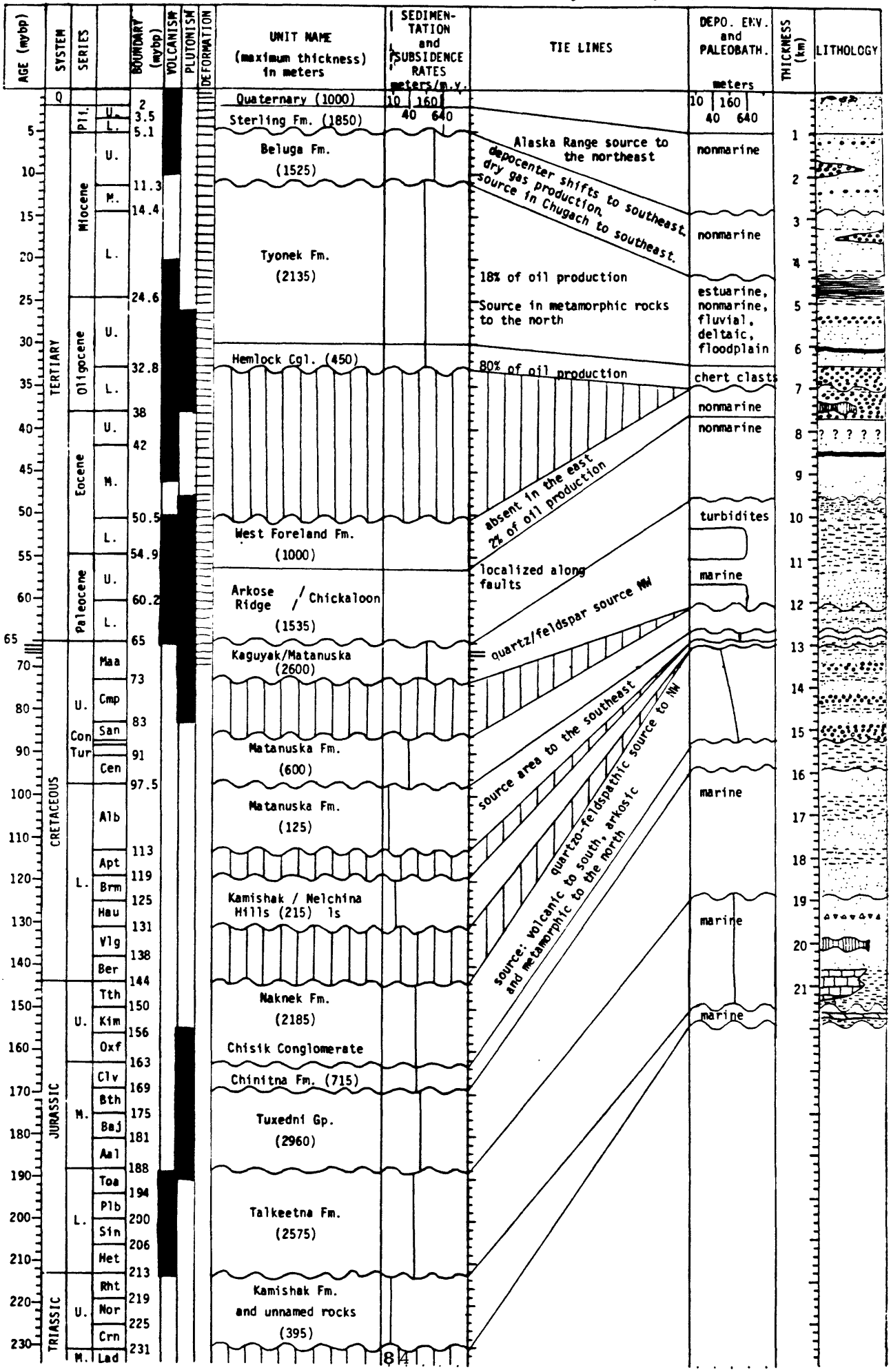


Figure 49. Maps and cross section of Cook-Shelikof basin. A) Structure contours on Mesozoic strata. Solid lines are on a Middle Jurassic horizon and dashed lines are on an Early Jurassic horizon. From Fisher and Magoon, 1978. B) Isopach map of the Kenai Group (Neogene) in upper Cook Inlet. Contour interval 5000 feet. From Kirschner and Lyon, 1973. C) Structure section across Cook Inlet. See A for the location. From Fisher and Magoon, 1978.

Figure 50

COOK-SHELIKOF BASIN

Data from Fisher and Magoon, 1978; Kirschner and Lyon, 1973; Magoon and others, 1980; and Magoon and Claypool, 1981



Volcanism occurred in the area from 213 to 188 Ma, 65 to 50 Ma, 45 to 20 Ma, and 10 Ma to present. Plutonism occurred from 190 to 154 Ma, 83 to 47 Ma, and 38 to 26 Ma. Most of the Alaska-Aleutian Range batholith was emplaced between about 176 and 154 Ma (Fisher and Magoon, 1978).

Prominent Seismic Horizons-- Three unconformities in Lower Cook Inlet form prominent seismic horizons: (1) The Barremian-Maestrichtian unconformity (ca. 119 to 73 Ma), (2) the Maestrichtian-late Paleocene unconformity (ca. 65 to 60 Ma), and (3) the early Eocene-Oligocene unconformity (ca. 51 to 33 Ma).

Gravity-- See Fisher, von Huene, and Steele (1983) for gravity information.

Magnetics-- There is a magnetic anomaly along the Border Ranges fault on the southeastern side of the basin that can be traced offshore (Fisher, 1981). Results of an aeromagnetic survey are published in Grantz and others (1963).

Petroleum Geology-- The Middle Jurassic Tuxedni Group are probably the source rocks for oil in Upper Cook Inlet. Vitrinite reflectance values from the Lower Cook Inlet COST well range up to a maximum of 0.65% at the base of the Late Jurassic (3776 m). Laumontite was encountered at 2145 m (Late Jurassic) in the Lower Cook Inlet COST well.

Oil production in Upper Cook Inlet is from the West Foreland Formation (2%), the Hemlock Conglomerate (80%), and the rest of the Tyonek Formation (18%). Dry gas production comes from the Sterling and Beluga Formations (Kirschner and Lyon, 1973; Claypool and others, 1980).

Maps and Other Illustrations-- For location and structure-contour maps of Lower Cook Inlet, and for seismic profiles, cross sections, and stratigraphic columns, see Fisher and Magoon, 1978. For an isopach map, cross sections, and stratigraphic columns for Upper Cook Inlet see Kirschner and Lyon, 1973. A geologic map of the area has been prepared by Magoon, Adkison, and Egbert (1976).

Degree of coverage-- In Upper Cook Inlet there are large amounts of private data. In Lower Cook Inlet there is one COST well and a multichannel seismic grid with 30 km line spacing. A multichannel seismic grid with 50 km line spacing covers Shelikof Strait.

Other Information-- The Cook-Shelikof basin is divided politically into Upper Cook Inlet (State of Alaska), Lower Cook Inlet (largely Federal), and Shelikof Strait (largely Federal).

References-- For more detailed information see Fisher and Magoon, 1978; Kirschner and Lyon, 1973; Magoon and Claypool, 1981; Stone and others, 1982; Fisher, 1981; Magoon and others, 1980; Grantz and others, 1963; Claypool and others, 1980; Bruns, 1982a; and Magoon, Adkison, and Egbert, 1976.

MIDDLETON SEGMENT, GULF OF ALASKA TERTIARY PROVINCE

General Information-- The Middleton segment of the Gulf of Alaska Tertiary province is located at lat. 59° to 60°30'N., long. 144° to 148°W. (Figure 51). It has an area of 16,000 square km. Water depths range from 0 to 4000 m. There are up to 5.5 km of middle Eocene and younger strata. The Middleton segment is in the Gulf of Alaska planning area.

Geologic and Geographic Boundaries-- The Contact fault and anticlines of the central shelf bound the Middleton segment on the north. To the northwest, deformed Tertiary rocks of the Prince William Terrane crop out in Prince William Sound and on Montague Island. The continental slope bounds the basin on the south. In the east and southeast, the northeast-trending Kayak-Aleutian subduction zone (upper plate to the northwest) bounds the Middleton segment. The Pinnacle fault forms the northeastern boundary.

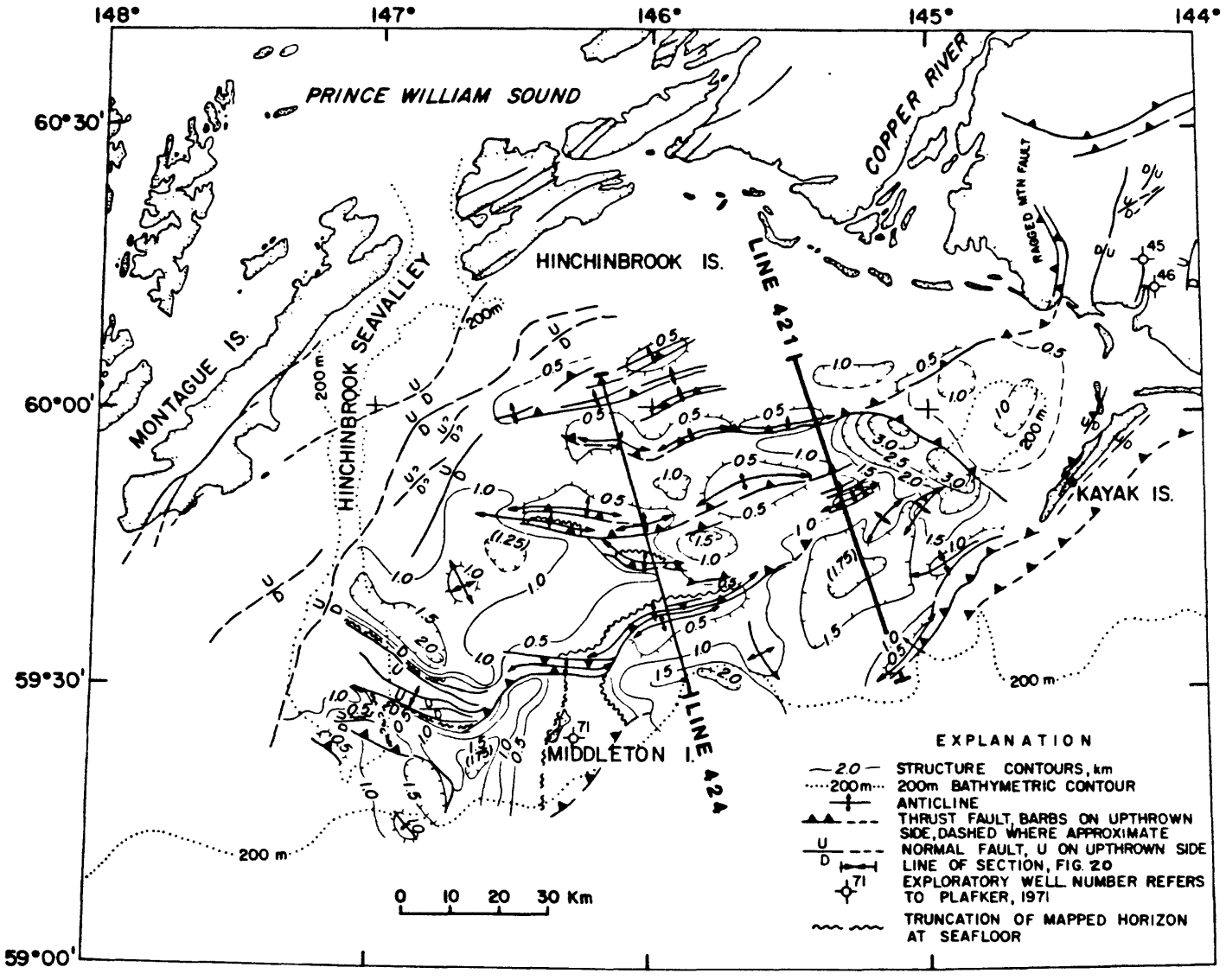


Figure 51. Middleton segment structure contours and trends on a seismic horizon in approximately Pleistocene strata. Contour interval 0.5 km. From Bruns, 1982a.

Basin Shape-- Offshore, four small subbasins combine to form a northeast trending, arcuate (convex to the southeast) basin that is deepest in the southwest and is truncated to the south and east (Plate 1). Before the subbasins developed there existed a single seaward-thickening basin.

Structural Geology-- Some of the anticlines and thrust faults separating the subbasins are oriented perpendicular to the northeast trends of the Kayak zone (thrust faults) and the Aleutian subduction zone. This deformation may have resulted from subduction of two blocks of different thicknesses, the Yakutat block (continental crust) in the east and oceanic crust in the west.

Recently formed structures include young, growing, asymmetric anticlines that are fault bounded on their southern sides.

The Ragged Mountain fault (a northeast- to north-trending thrust fault located along the northwest side of the basin) thrusts deformed early Tertiary rocks of the Orca Group over younger rocks to the south.

The northwest-trending Pinnacle fault, located along the northeastern end of the basin, has 4 km of Neogene sediment on its southern side overthrust by poorly reflecting (early Tertiary Orca Group?) rocks on its northern side.

Basement-- Acoustic basement is formed by the Paleocene Orca Group and Eocene plutonic rocks. Crustal basement, inferred from tectonics, is the subducting (accreting?) Yakutat block, plutonic rocks, or oceanic crust (seaward of the Yakutat block).

Basin Type-- The Middleton segment is part of a forearc basin.

Stratigraphy-- Grain size in Paleocene Orca Group rocks decreases to the south. Coarse-grained units include Orca Group conglomerates. These conglomerates have been interpreted as submarine fan feeder-channel deposits. The upper part of the Oligocene Redwood Formation also includes coarse-grained units.

Prior to the formation of the subbasins, a seaward-thickening section was present. Younger units that fill the subbasins are lens or wedge shaped.

Submarine mafic volcanic rocks are present in the Poul Creek Formation (late Eocene-early Miocene) and in the Orca Group (Paleocene-early Eocene). Orca Group strata also include tuffaceous beds.

Granitic rocks of Eocene age give K/Ar ages of 53.5 to 50.5 Ma (Winkler and Plafker, 1981).

Deformation in many areas is contemporaneous with depositon. Late Pleistocene tilting, faulting, and uplift resulted in the formation of Middleton Island, a shelf edge high.

In some areas, Orca Group rocks are metamorphosed to zeolite, prehnite-pumpellyite, and lower greenschist facies.

Prominent Seismic Horizons-- Two prominent horizons present in the Middleton segment have been designated the "M1" and "M2" horizons (Figure 52). M1 is a mid-upper Pleistocene(?) unconformity. M2 is an unconformity underlain by an early Miocene or Paleogene sequence and overlain by latest Miocene beds (ca. 6.5 Ma).

Pleistocene rocks in the interval between M1 and the seafloor, equivalent to the Yakataga Formation onshore, have seismic velocities of 2.2 to 3.2 km/sec. Velocities of 4.5 to 4.9 km/sec are recorded from rocks between the M1 and M2 horizons.

Gravity-- Free-air gravity data is published in Burkhard and others, 1980a, b.

Magnetics-- A magnetic lineament map has been published by Schwab and others, 1980.

Petroleum Geology-- Late Eocene to early Miocene Poul Creek and Redwood Formations contain potential source rocks. The Orca Group (Paleocene-early

Figure 52 MIDDLETON SEGMENT Data from T. Bruns, in prep., 1984

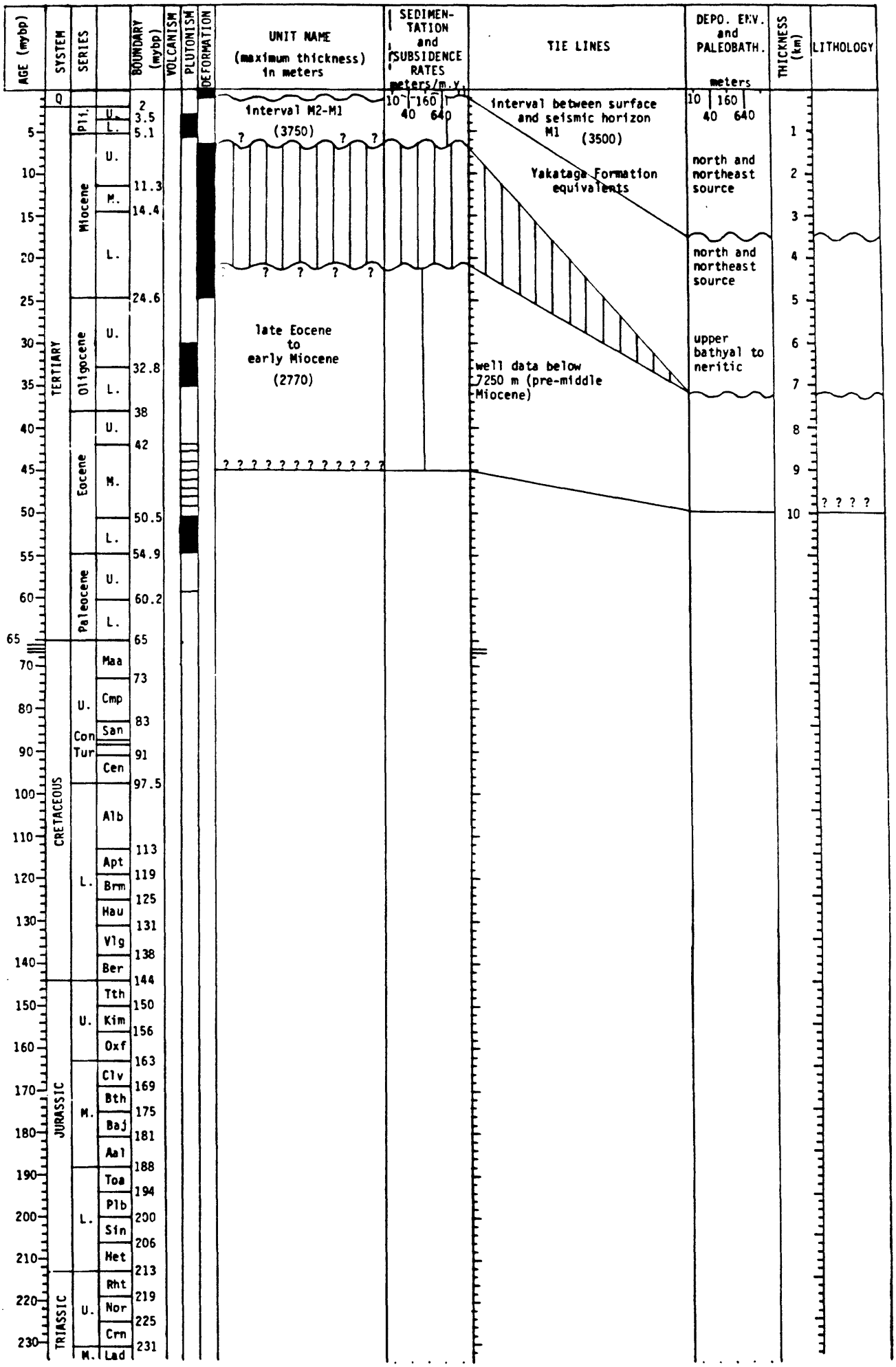
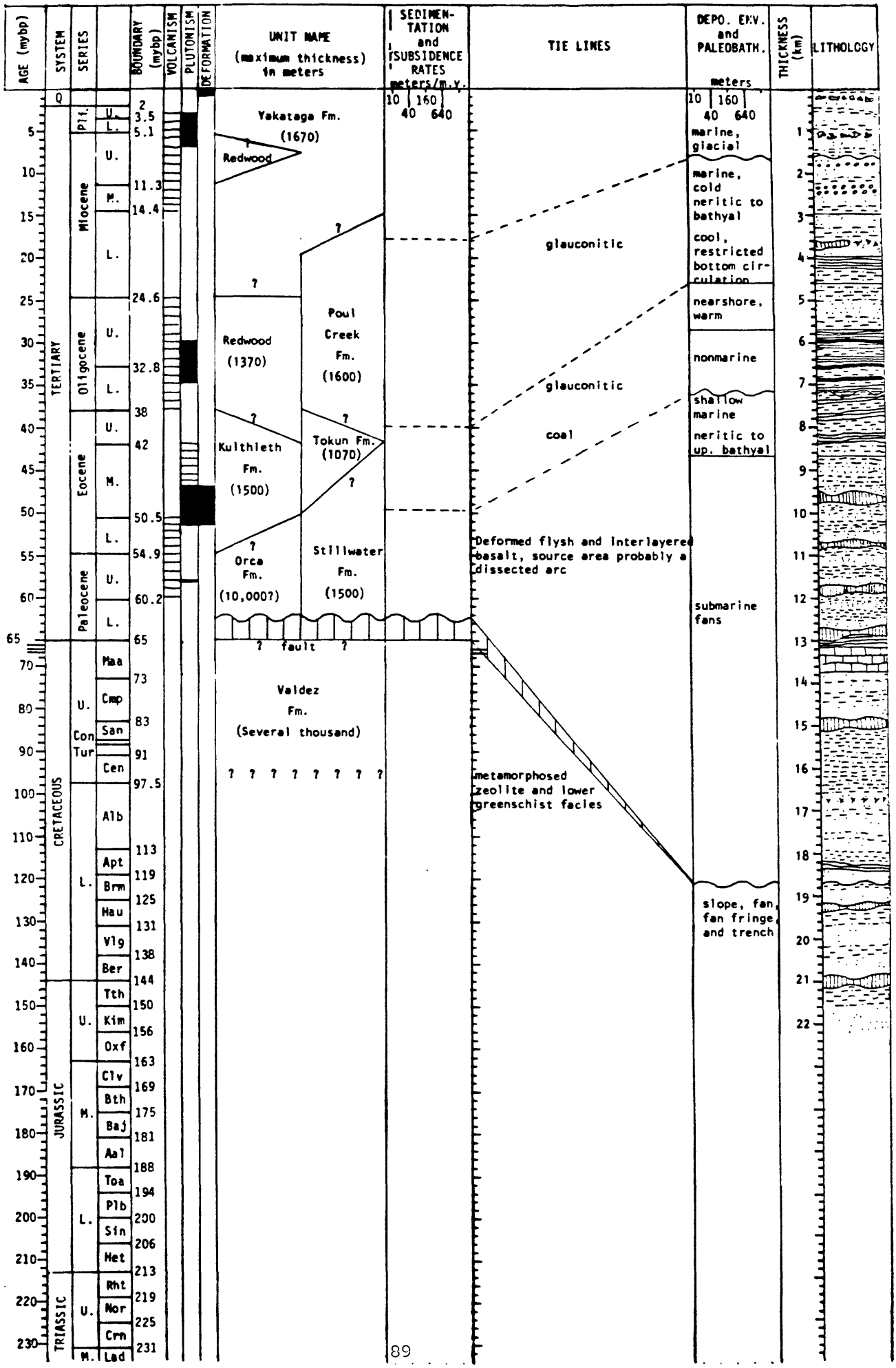


Figure 53

MIDDLETON SEGMENT
ONSHORE

Data from Winkler and Plafker, 1981



Eocene) is highly deformed and has negligible resource potential.

Maps and Other Illustrations-- Structure-contour and location maps, along with seismic profiles, appear in Bruns, 1982a. Stratigraphic columns are presented by Winkler and Plafker, 1981.

Other Information-- The stratigraphy of adjacent onshore areas is complex (Figure 53).

References-- For more detailed information see Bruns, 1982a, 1985; Burkhard and others, 1980a, b; Naugler and Wageman, 1973; Schwab and others, 1980; and Winkler and Plafker, 1981.

YAKATAGA SEGMENT, GULF OF ALASKA TERTIARY PROVINCE

General Information-- The Yakataga segment is located between lat. 59° and 60°30'N., long. 141° and 145°W. It has an area of 15,000 square km in water depths up to 4000 m. This area contains up to 7 km of Eocene and younger sedimentary fill. It is part of the Gulf of Alaska planning area.

Geologic and Geographic Boundaries-- The northern margin of the Yakataga segment is formed by the east-trending Contact and Chugach-St. Elias thrust faults (Figure 54). Kayak Island and the northeast-trending Kayak thrust zone (upper plate to the northwest) border the segment in the northwest. The Middleton segment lies west of Yakataga, beyond the southwest-trending Kayak-Aleutian subduction zone. Khitrov ridge forms the southern boundary of the Yakataga segment. The Yakutat segment is east and southeast of the Yakataga segment; the two segments are separated by Pamplona spur, a northeast-trending zone of thrust faults that have upper plates to the northwest. Also located along the southeastern boundary of the segment is the pre-Pliocene, west-northwest trending, left-lateral Transition fault. Icy Bay is located northeast of the basin.

Basin Shape-- The segment consists of several small, elongate subbasins with thrust faults along their northwest sides.

Structural Geology-- Broad, doubly-plunging, northeast- or east-trending, asymmetric anticlines have high-angle thrust faults on their seaward sides. There are antithetic faults on the north or northwest flanks of the anticlines. Northwest-southeast compression has resulted in 2-4 km shortening in this segment (Bruns and Schwab, 1983). Deformation has been less intense offshore than it has onshore. Three structural zones are oriented parallel to the shoreline. Near shore there has been continuous deformation throughout the Cenozoic. The age and intensity of deformation decreases seaward.

Sedimentation, subsidence, and uplift rates on the order of 1000 m/m.y. (locally as high as 10,000 m/m.y.) have been measured for the latest 4300 year period.

There has been recent reactivation of some older structures.

Basement-- Eocene (50-55 Ma) basaltic rocks form the acoustic basement. Crustal basement consists of Eocene basaltic rocks of the northwest part of the Yakutat block. In the southwest, oceanic crust (36 to 42 Ma) underlies Khitrov Ridge.

Basin Type-- The Yakataga segment is a transform margin basin located near the junction of transform and convergent margins.

Stratigraphy-- Coarse-grained units include conglomerates in the Yakutat Group, in unnamed Paleocene-Eocene rocks, in the Kulthieth Formation, and in the Yakataga Formation.

Volcanism includes Eocene basalts of the Yakutat block (55 to 50 Ma).

Prominent Seismic Horizons-- There are four prominent seismic horizons in the Yakataga segment: "A", "B", "C", and "D" (Figure 55). Horizon A is a middle Pleistocene unconformity on the tops of the basin anticlines. Horizon

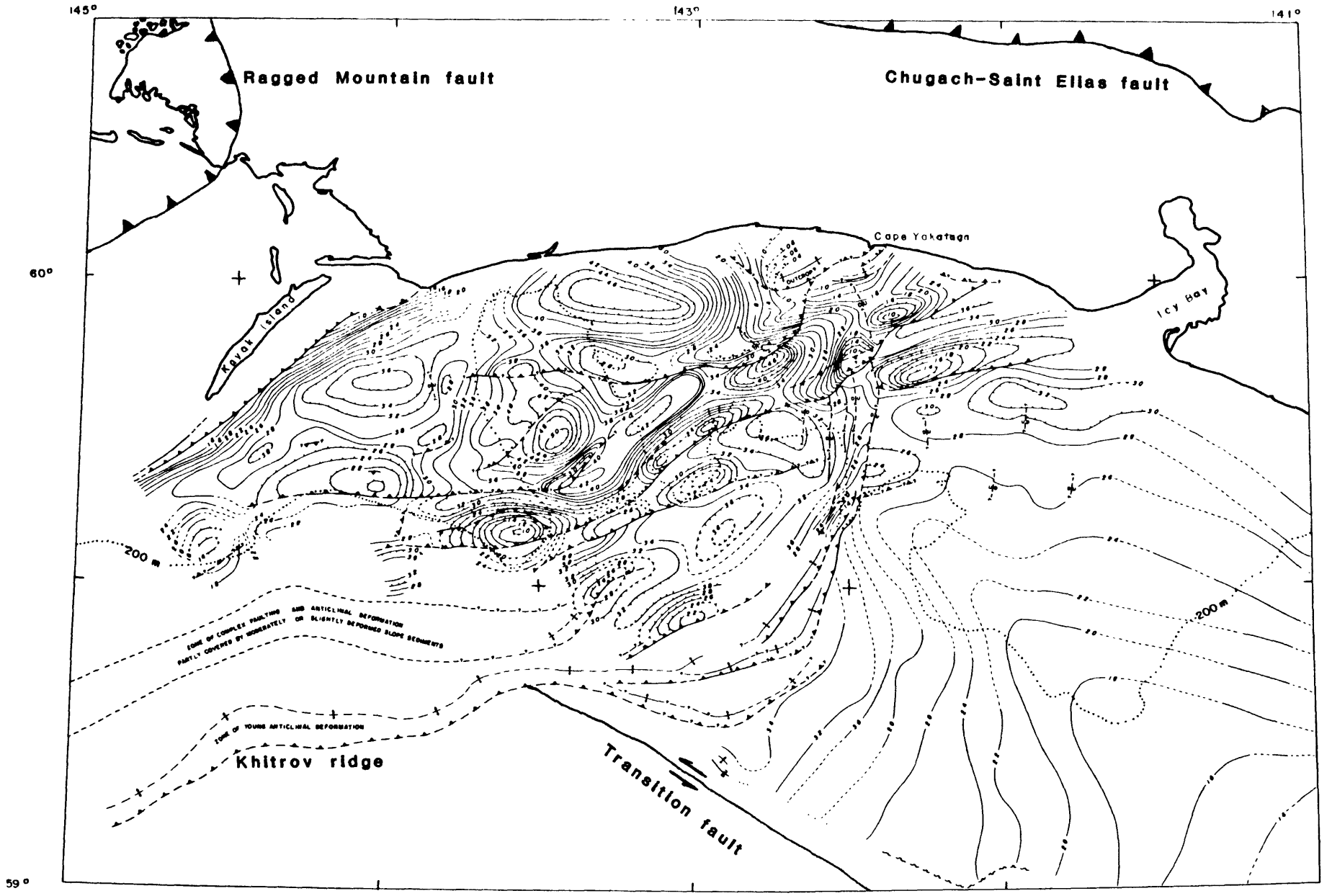


Figure 54. Structure-contour map of the Yakataga segment of the Gulf of Alaska basin. Contours on a seismic horizon in approximately middle Pliocene strata. Contour interval 0.2 km. Adapted from Bruns, 1982a.

Figure 55

YAKATAGA SEGMENT
OFFSHORE

Data from Bruns and Schwab, 1983

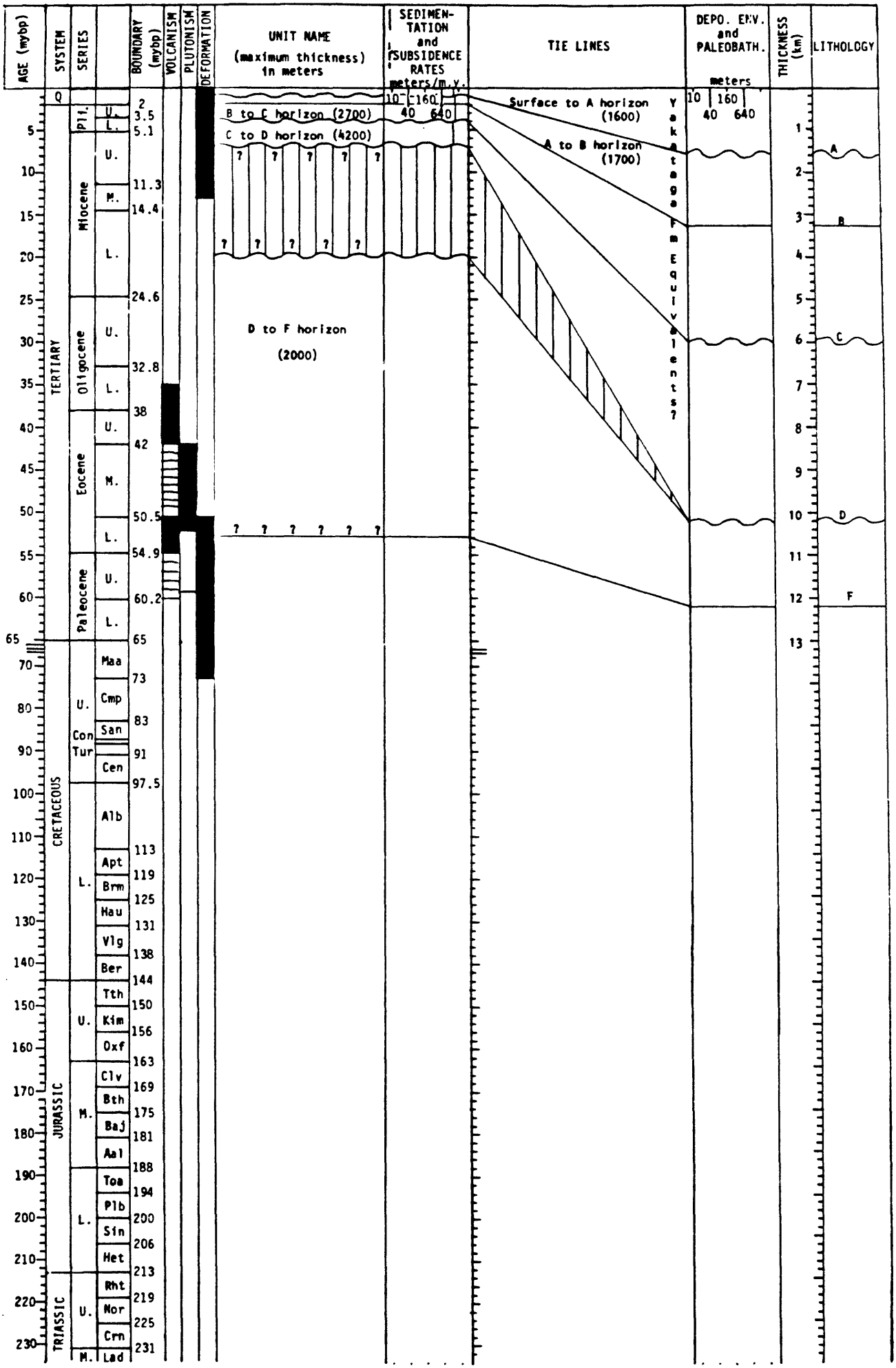
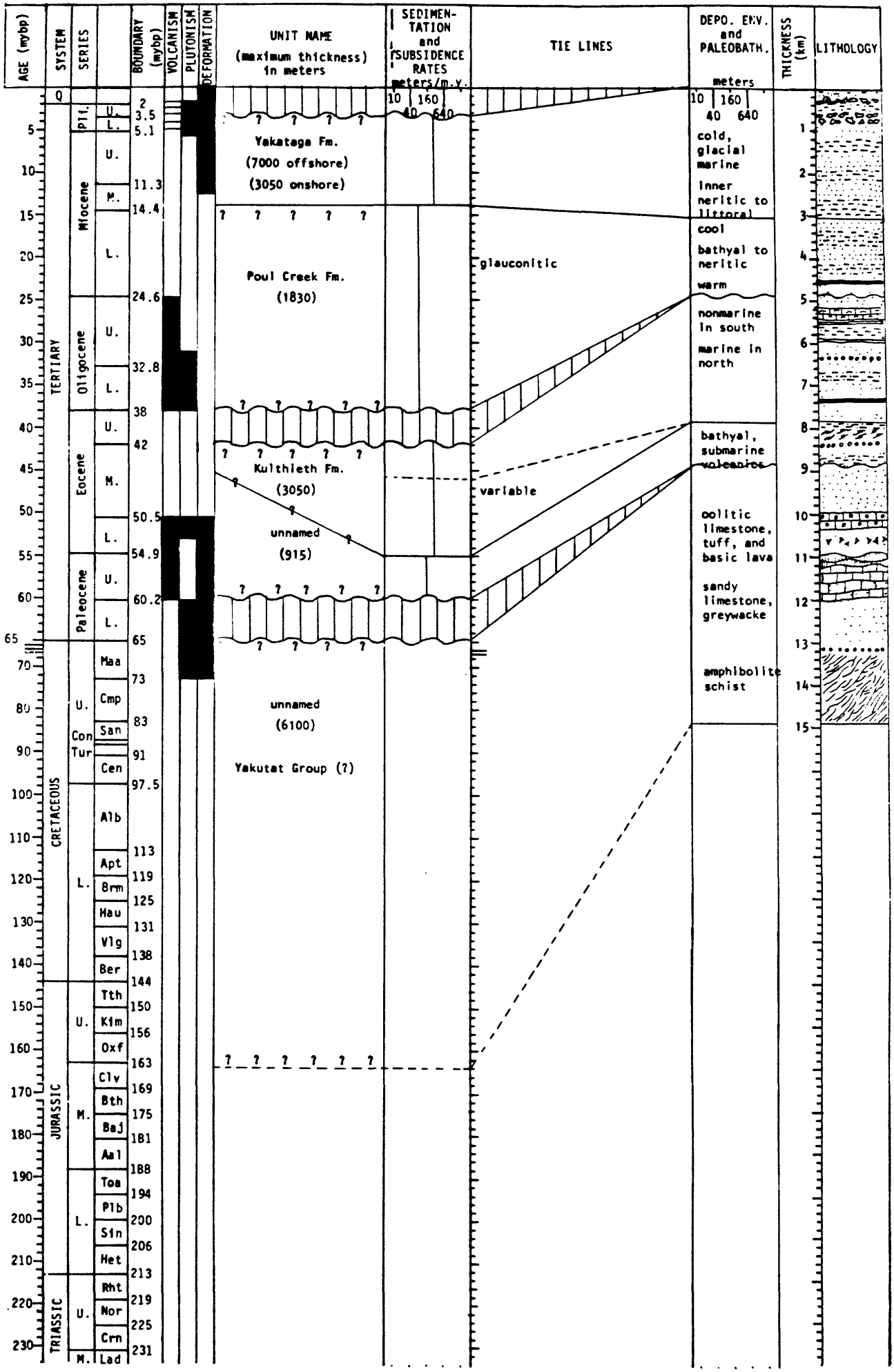


Figure 56

YAKATAGA SEGMENT
ONSHORE

Data from Stonely, 1967; Plafker, 1971; and Bruns and Schwab, 1983



B is an early Pleistocene horizon. Horizon C is a late Pliocene (about 3.5 Ma) non-depositional unconformity. Horizon D (middle Miocene to early Pliocene?) occurs at the base of the Yakataga Formation.

Gravity-- A map of free-air gravity data has been published by Burkhard and others, 1980b.

Magnetics-- Magnetic lineaments are discussed in Bruns and Schwab (1983) and in Schwab and others (1980). Schwab and Bruns (1979) present a residual magnetic map. Aeromagnetics are presented by Taylor and O'Neill (1974). Paleomagnetic results are discussed in Gromme and Hillhouse (1981) who locate the Chugach terrane at lat. 38°N. plus or minus 10° between 39 and 43 Ma.

Petroleum Geology-- The geothermal gradient ranges from 10 to 30°C/km and is highest in the northern and northeastern parts of the basin.

There is poor to negligible source potential in late Cenozoic strata (Bruns, 1982a). The Oligocene-Miocene section is immature, an inadaquate source.

Excellent trap potential exists in numerous large anticlines (Bruns, 1982a), petroleum seeps occur in adjacent onshore structures. Reservoir potential is poor to negligible.

Maps and Other Illustrations-- See Bruns and Schwab (1983) for location and structure-contour maps, seismic profiles, and cross sections. Structure-contour maps and cross sections also appear in Bruns, 1982a. See Plafker (1971) for stratigraphic columns.

Degree of coverage-- There have been more than ten wells drilled offshore and more than 50 wells drilled onshore. There is complete coverage by multichannel reflections seismic data with 10 km line spacing. Seismic refraction data is presented in Bayer and others, 1978. Sections from equivalent strata onshore (Figure 56) have been described by Stonely (1967) and Plafker (1971).

Other Information-- There is faunal evidence for origin of the Yakutat block at lat. 40°N., near the present location of California (Bruns, 1983).

References-- For more detailed information see Bruns, 1985; Bruns and Schwab, 1983; Schwab and others, 1980; Naugler and Wageman, 1973; Schwab and Bruns, 1979; Burkhard and others, 1980b; Plafker, 1971; Stonely, 1967; Winkler and Plafker, 1981; Taylor and O'Neill, 1974; Gromme and Hillhouse, 1981; and Bayer and others, 1978.

YAKUTAT SEGMENT, GULF OF ALASKA TERTIARY PROVINCE

General Information-- The Yakutat segment of the Gulf of Alaska Tertiary province is located at lat. 58° to 60°30'N., long. 137° to 143°W (Figure 57). It has an area of 35,000 square km in water depths of up to 2800 m. More than 9 km of Cenozoic sedimentary strata underlie the area (Plate 1, Figure 58). The Yakutat segment is part of the Gulf of Alaska planning area.

Geologic and Geographic Boundaries-- The east-trending Chugach-St. Elias thrust fault lies north of the Yakutat segment. In the northwest and west are Icy Bay and the Pamplona zone, a northeast-trending zone of upper-plate-to-the-northwest thrust faults. The Pacific Ocean basin lies to the southwest and south. The west-northwest trending left-lateral Transition fault truncates the Paleogene section at the continental slope. Southeast of the Yakutat segment is the Southeastern Alaska segment of the Gulf of Alaska Tertiary province. The Fairweather fault, a northwest-trending right-lateral fault, lies east and northeast of the Yakutat segment.

Basin Shape-- There are two offshore basins, one in the eastern part of the segment and one in the western part. Their major axes parallel the coast. The eastern basin is elongate along a northwest-southeast trend with

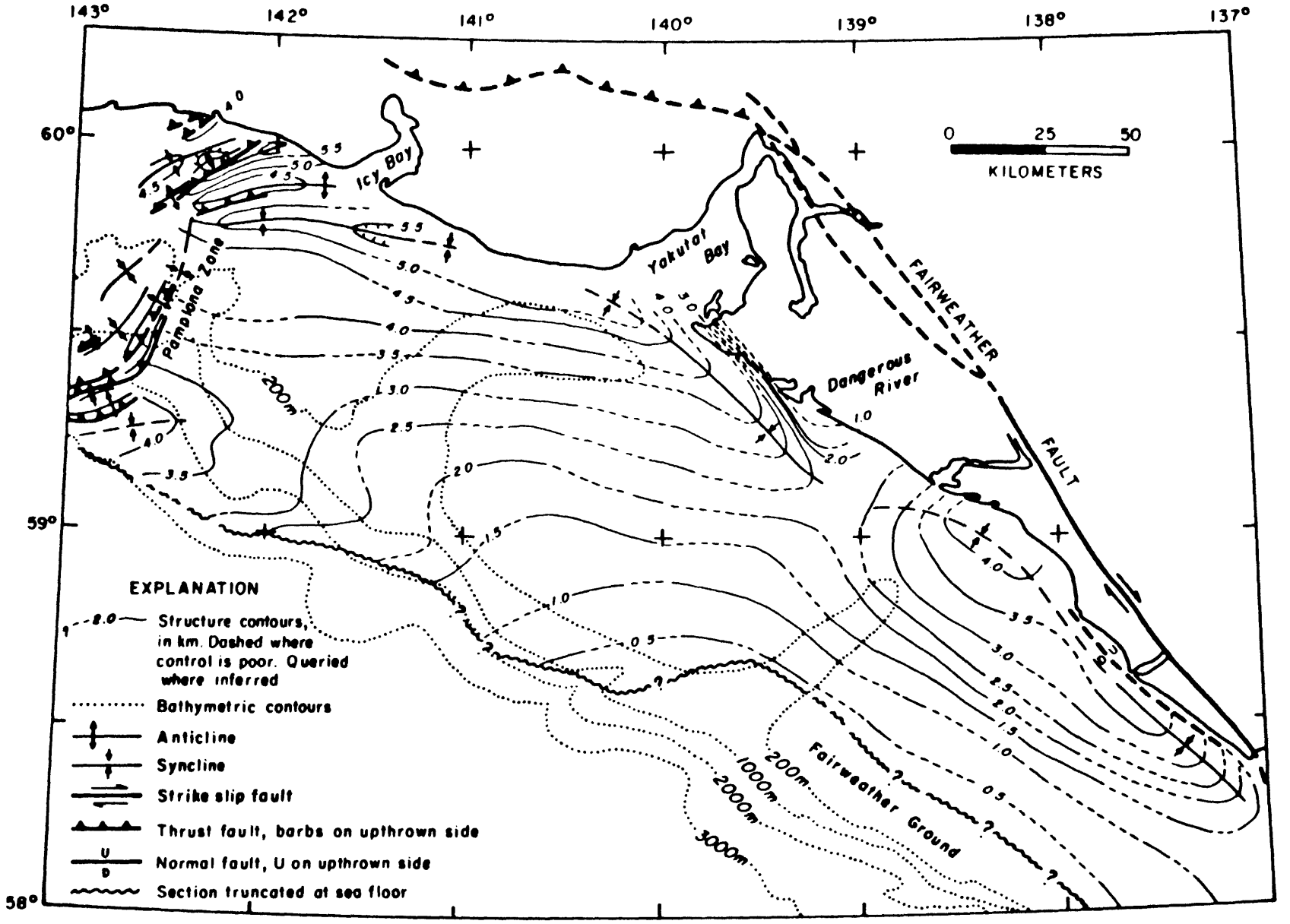
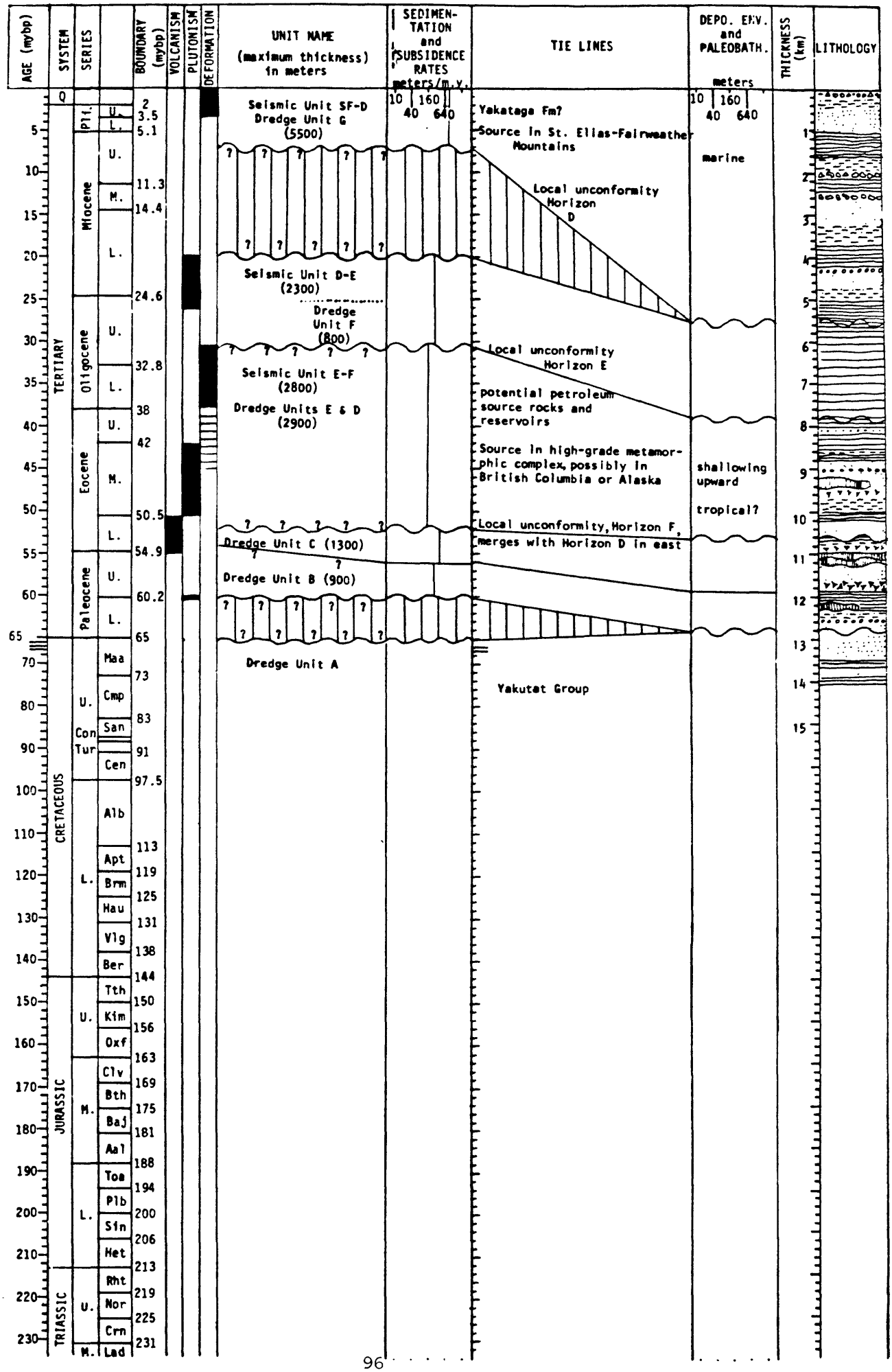


Figure 57. Structure-contour map of the Yakutat segment of the Gulf of Alaska basin. Contours on a seismic horizon at approximately the base of Neogene sedimentary strata. From Bruns, 1982a.

Figure 58

YAKUTAT SEGMENT
OFFSHORE

Data from Bruns, 1982b; and
Plafker and others, 1980.



the thickest section in its northern part. The western basin is elongate along a west-northwest to east-southeast trend with the thickest section on the landward side.

Structural Geology-- Fairweather Ground is a west-northwest-trending structural high at the shelf edge that is cored by rocks of Mesozoic to early Tertiary age. Since "D" time (late Miocene or Pliocene) it has been uplifted more than 2 km with the fastest uplift occurring in the Plio-Pleistocene; Neogene sediments onlap its landward side.

The north-northwest trending Dangerous River zone separates the eastern and western basins. Acoustic basement shallows more than 2 km along the Dangerous River zone. Paleogene strata of the western basin are truncated by, or onlap, the Dangerous River zone. Folding and faulting are present in basin sediments adjacent to the zone's northern end.

In the eastern basin, dips are generally toward the basin axis. The basin fill is deformed near the up-to-the-northeast Lituya fault zone that parallels the coast near Lituya Bay.

Minor deformation occurred prior to the late Miocene or Pliocene in the western basin.

Basement-- Yakutat block basaltic rocks (Eocene) with sedimentary interbeds form the acoustic basement beneath the western basin. Acoustic basement beneath the eastern basin is made up of rocks of the Yakutat Formation.

Crustal basement is inferred to be oceanic west of the Dangerous River zone and transitional east of the zone.

Basin Type-- A transform margin during the Neogene, the Yakutat segment may be underlain by dispersed remnants of a Paleogene passive margin sequence, the "Yakutat block."

Stratigraphy-- Coarse-grained units include Plio-Pleistocene tillites and glacial marine deposits (Figure 59).

Paleogene units in the western basin thicken to 5 km about 65 km southwest of Yakutat and then thin farther to the southwest. Neogene units in both basins thicken shoreward.

Prominent Seismic Horizons-- There are three prominent seismic horizons, "D", "E", and "F", in the Yakutat segment (Figure 58). Horizon D is of late (?) Miocene age and forms a widespread unconformity at the base of the Yakataga Formation. Horizon E is locally an unconformity that is probably of middle Oligocene age. Horizon F, at the top of the acoustic basement, is probably of early Eocene age and is locally an unconformity.

Sediments above horizon D thicken landward and may onlap D. The sequence between horizons D and E onlaps horizon E in the seaward parts of the basins, but they are concordant closer to shore. The sequence between horizons E and F thickens seaward.

Gravity-- See Bruns (1982b) and Burkhard and others (1980a, b) for gravity data.

Magnetics-- See Bruns (1982b) and Schwab and others (1980) for magnetics data.

Petroleum Geology-- The geothermal gradient is 20 to 30°C/km. Values for vitrinite reflectance range from 0.3 to 0.6%. Paleogene dredge samples from the slope are marginally mature.

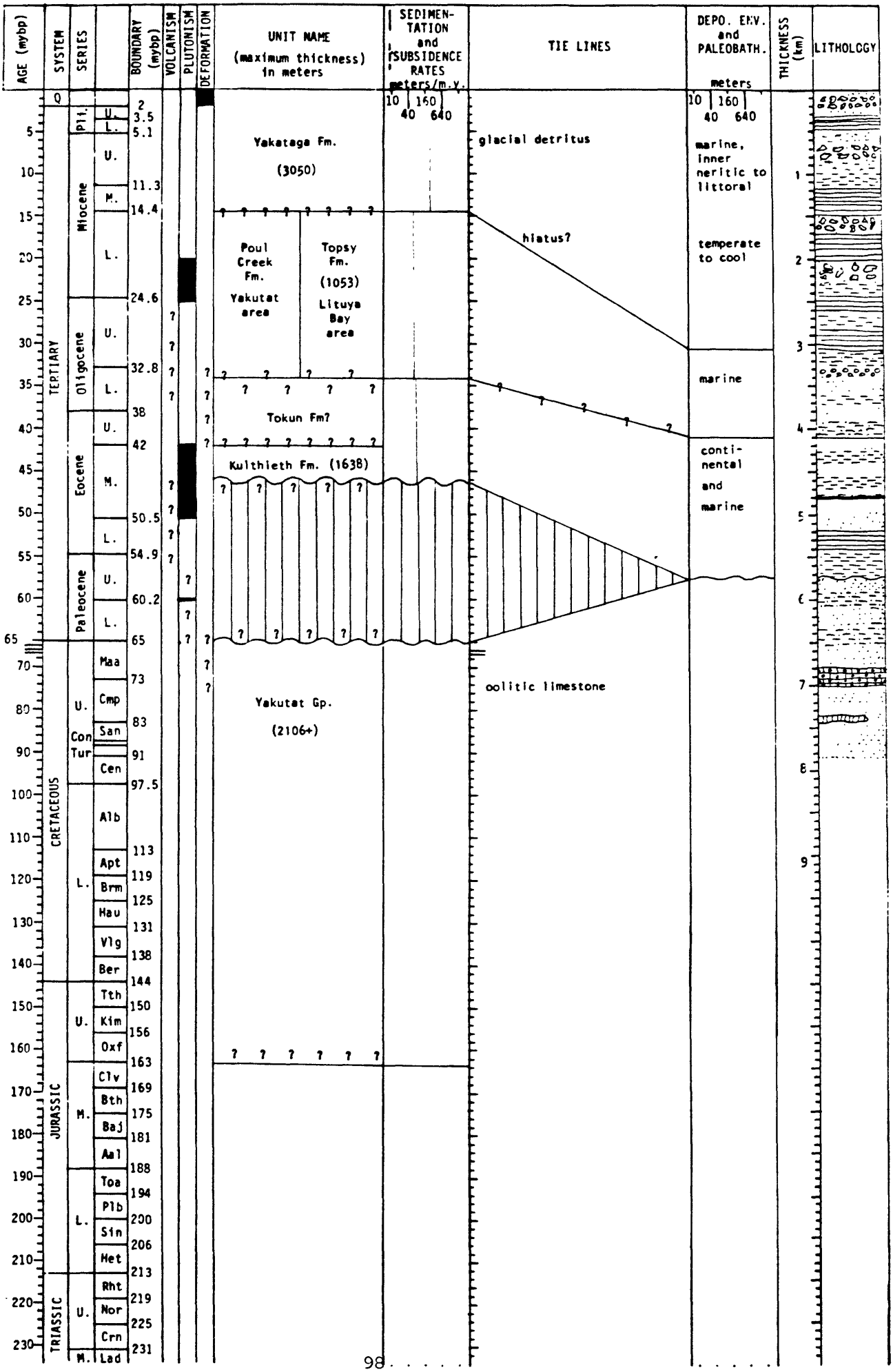
Diagenetic features include deformation of soft sediment grains, formation of carbonate, silica, zeolite, and chlorite cements or grain overgrowths. Some secondary porosity has developed locally.

Maps and Other Illustrations-- See Bruns (1982a, b) for location, isopach, and structure maps and for seismic profiles. Cross sections and

Figure 59

YAKUTAT SEGMENT ONSHORE

Data from Plafker, 1971; and Stonely, 1967



stratigraphic columns are also shown in Bruns, 1982b. Stratigraphic columns appear in Plafker, 1971.

Degree of coverage-- The area is covered by a grid of multichannel seismic reflection lines with 25 to 50 km spacing. Several wells penetrate Cretaceous units. There are dredge samples from sites spaced about every 25 km. Four core holes were drilled offshore.

References-- For more detailed information see Bruns, 1982a, b, 1983, 1985; Bruns and others, 1981; Burkhard and others, 1980a, b; Plafker, 1971; Plafker and others, 1980; Schwab and others, 1980; Stonely, 1967; and Keller and others, 1984.

SOUTHEASTERN SEGMENT, GULF OF ALASKA TERTIARY PROVINCE

General Information-- The Southeastern segment of the Gulf of Alaska Tertiary province is located at lat. 54° to 58°N., long. 132° to 131°W (Figure 60). It has an area greater than 25,000 square km in water from 0 to 2400 m deep. The sedimentary section in this segment contains up to 5 km of Neogene strata. The Southeastern segment is part of the Gulf of Alaska Planning area.

Geologic and Geographic Boundaries-- Cross Sound is north of the Southeastern segment. The continental slope forms the northwestern, western, and southwestern boundaries of this segment. Dixon Entrance and the U.S.-Canada border form a political boundary along the southern side of the basin. The northwest-trending, left-lateral Fairweather fault forms the southeastern margin of this segment. To the east is the Chatham Strait fault.

Basin Shape-- Two north-south trending, elongate subbasins are separated by the Fairweather fault zone. The eastern subbasin thickens toward the Fairweather fault, the western subbasin thins seaward.

Structural Geology-- Folds and faults are associated with splays of the Queen Charlotte-Fairweather fault system. These include two zones of en echelon structures.

Folds at the base of the slope are probably Quaternary. The magnitude of folding decreases to the north. There is only minor deformation from Chatham Strait to Sitka; the strata are undeformed from Sitka north to Cross Sound.

Abyssal strata onlap the margin near Cross Sound.

Basement-- The acoustic basement is highly consolidated, probably similar to Mesozoic and Paleozoic rocks exposed onshore.

Crustal basement is inferred to be oceanic crust outboard of the Queen Charlotte-Fairweather fault and Mesozoic and Paleozoic continental crust inboard of the fault.

Basin Type-- The Southeastern segment of the Gulf of Alaska Tertiary province developed on a narrow transform margin.

Stratigraphy-- In the eastern subbasin, the sedimentary units thicken towards the Fairweather fault. Sedimentary units thin seaward in the western subbasin.

Quaternary volcanism onshore may be reflected in sedimentation offshore.

Prominent Seismic Horizons-- There is a prominent seismic horizon at the top of the acoustic basement (Figure 61).

Gravity-- See Bruns and others (1981) for gravity data.

Magnetics-- See Bruns (1982a) for a location map, seismic profiles, and cross sections.

Petroleum Geology-- A reconnaissance multichannel seismic reflection grid with 25 to 50 km line spacing covers the area.

References-- For more detailed information see Bruns, 1982a; and Bruns and others, 1981.

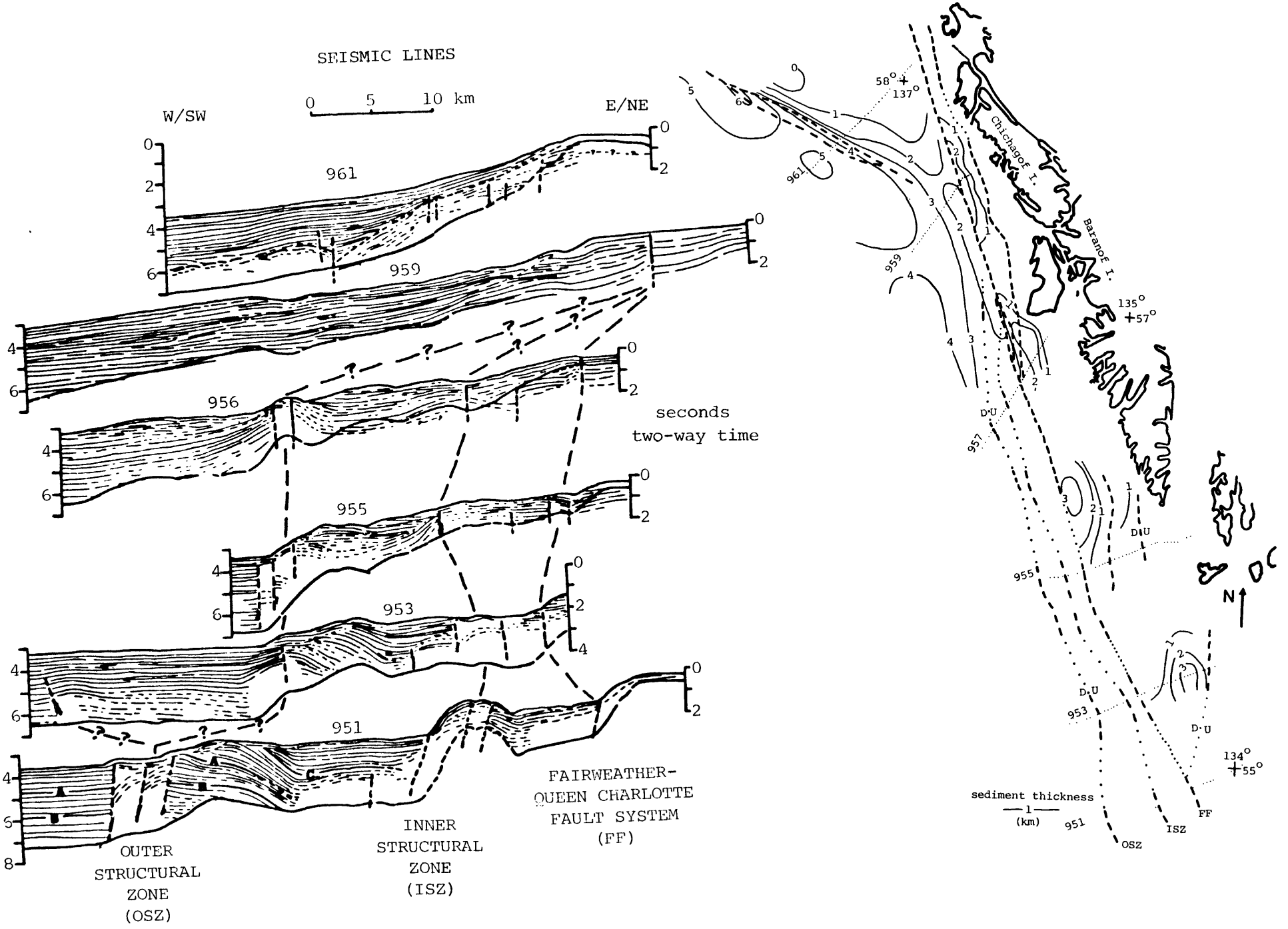
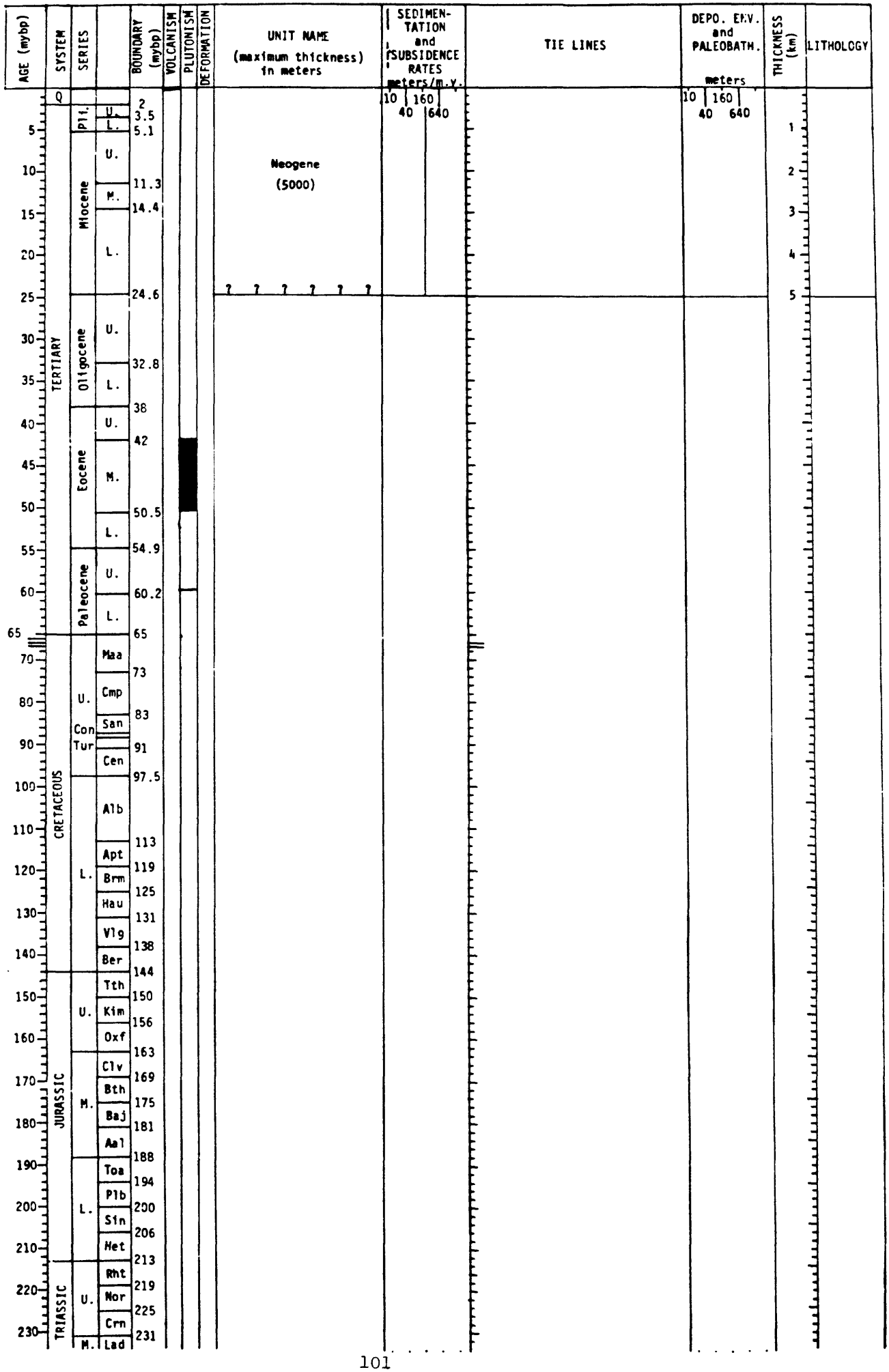


Figure 60. Generalized location of structural trends and line drawings of seismic profiles from the Southeastern Alaska segment. From Bruns, 1982a; Bruns and others, in press.

Figure 61 SOUTHEASTERN ALASKA Data from Bruns, 1982a



PACIFIC OCEAN SEGMENT IN THE GULF OF ALASKA

General Information-- Sediment filling the Pacific Ocean basin in the Gulf of Alaska is thickest along the base of the continental slope and thins seaward. The greatest thickness of sedimentary strata is 6 km, deposited seaward of the Yakutat segment. Off the Southeastern segment the section is 3 to 4 km thick and strata are 2 to 3 km thick seaward of the Middleton and Yakataga segments (Figure 62). These sections occur where water depths are 1600 to 4000 m.

Geologic and Geographic Boundaries-- The left-lateral Transition fault and the base of the slope lie north of the Pacific Ocean segment. To the west is the convergent margin of the Aleutian trench. In the south the section thins to 2 km in the first 60 km seaward from the base of the slope.

East of the Pacific Ocean segment is the right-lateral transform margin and the base of the slope.

Basin Shape-- The main depocenter is elongate parallel to the coast and the strata thin seaward.

Structural Geology-- Anticlines at the base of the slope developed during Pliocene and Pleistocene time.

Basement-- Basement is Oligocene oceanic crust.

Basin Type-- The basin is a filled trough or trench.

Stratigraphy-- Strata filling the trough probably include turbidites and pelagic and hemipelagic sediments. Coarse-grained units include turbidite sands. Pre-Pliocene strata are thickest at the base of the slope and thin seaward.

Prominent Seismic Horizons-- Three prominent horizons are designated "A1", "A2", and "A3" (Figure 63). Horizon A1 is lies at the base of the Pleistocene section. Horizon A2 is inferred to lie at the base of the Pliocene section. Horizon A3 is on oceanic crust (Bruns, 1982b).

Gravity-- See Bruns and others (1981) for gravity data.

Petroleum Geology-- The geothermal gradient is low (Bruns, 1982a). Source rocks are probably immature (Bruns, 1982a). Traps are present at the base of the slope, but not seaward of the slope (Bruns, 1982a).

Degree of Coverage-- A few multichannel and several single-channel seismic lines cover the segment.

Other Information-- Off southeastern Alaska, Baranof fan fills a trough (trench?) with 5 km of sediment.

References-- For more detailed information see Bruns, 1982a and b; Bruns and others, 1981; and Burkhard and others, 1980a and b.

QUEEN CHARLOTTE BASIN

General Information-- Queen Charlotte basin is located in Canadian territory at lat. 52°N., long. 131°W (Figure 64). It has an area of 35,000 square km. The basin filling strata are exposed onshore and extend into water depths of 1000 m offshore. Water depths over most of the basin are less than 200 m. The basin contains up to 5 km of upper Tertiary fill and more than 5 km of Mesozoic and middle Tertiary strata.

Geologic and Geographic Boundaries-- North of Queen Charlotte basin is Dixon Entrance and the U.S. - Canada border. The Queen Charlotte Islands and the right-lateral Sandspit fault lie northwest of the basin. West of the basin is the right-lateral Queen Charlotte fault. A ridge-transform-trench triple junction occurs southwest of the basin. Vancouver Island is south of Queen Charlotte basin. To the east lie the coast mountains metamorphic complex and the coastal crystalline belt of mainland British Columbia.

Basin Shape-- The basin is elongate along a northwest-southeast trend,

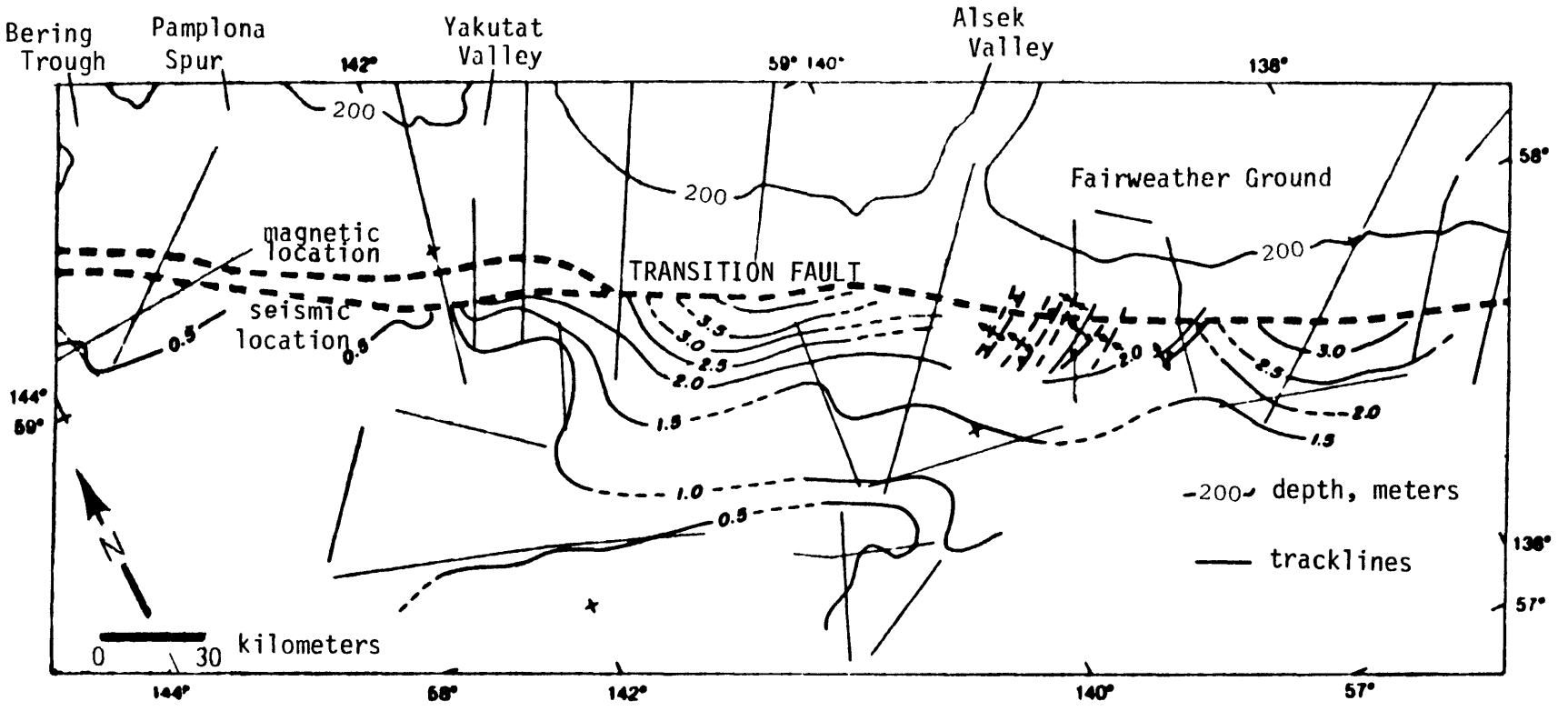
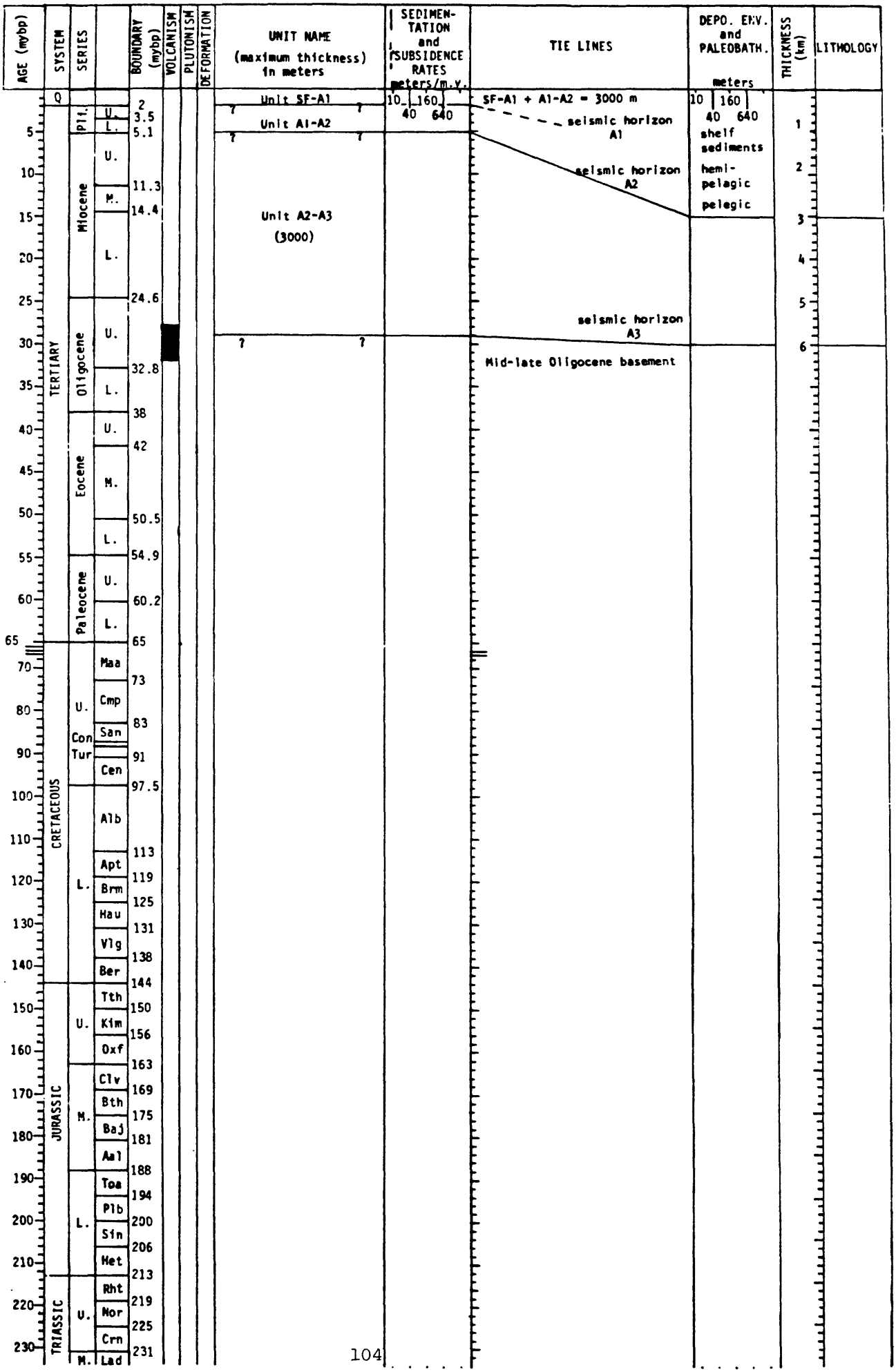


Figure 62. Pacific Ocean basin segment of the Gulf of Alaska basin. Contours are kilometers of pre-Pliocene sediment thickness. Modified from Bruns, 1985.

Figure 63

PACIFIC OCEAN BASIN IN GULF OF ALASKA

Data from Bruns, 1982b



400 km long by 100 km wide. A narrow strip of Tertiary sediment along the western margin of the Queen Charlotte Islands is sometimes considered part of the Queen Charlotte basin as it connects to the main part of the basin in the south.

Structural Geology-- There are three large northwest-trending zones of right-slip faulting: (1) the Sandspit fault was active mainly in the Cretaceous but shows evidence for movement as recent as 1929, (2) the Rennell Sound-Louscoone fault zone was most active in the early Cretaceous, and (3) the Queen Charlotte fault zone that is currently active. Each of these faults dips steeply to the northeast and has a dip-slip component that is down to the east. Smaller faults that cut upper Eocene and younger strata trend northeast. Tertiary sediments have been gently folded.

Basement-- Acoustic and magnetic basement may be an early Tertiary volcanic unit. This unit is probably underlain by older sedimentary rocks in some areas. Basement includes the rocks of the Mesozoic volcanic belt and Paleozoic intrusives. Crustal basement is continental.

Basin Type-- Queen Charlotte basin is a transform margin basin inboard of the active transform fault. It may have been a forearc or intra-arc basin earlier in its history.

Stratigraphy-- Upper Tertiary facies change from predominantly marine in Queen Charlotte Sound to non-marine farther north (Figure 65). Sediments on the western side of Queen Charlotte Island thicken eastward. This eastward thickening is particularly well developed in Miocene sediments that onlap the basement (Shouldice, 1971).

Volcanic rocks includes those of the Early Cretaceous Longarm Formation and 2 km of early Tertiary subaerial basalt and rhyolite of the Masset Formation. Arc type volcanism ended in the Pliocene. Plutonism occurred in the middle Jurassic and early Tertiary.

Metamorphism in the coastal mountains of British Columbia occurred during the Cretaceous.

Prominent Seismic Horizons-- Prominent seismic horizons include a pre-upper Miocene unconformity and the top of the Tertiary volcanic sequence. There is regional evidence for an unconformity at about the base of the Pliocene.

Gravity-- A gravity model and comparison of gravity derived thickness maps with isopach maps derived from seismic data is presented by Chase and others, 1975. The model suggests older sedimentary rocks underlie the early Tertiary volcanic sequence.

Magnetics-- An aeromagnetic map and regional magnetic map appear in Shouldice, 1973. Broad anomalies within the basin relate to the depth of the early Tertiary volcanic sequence (Shouldice, 1973).

Petroleum Geology-- Numerous sandstone units are present in the Tertiary sequence. Oil stained sandstone was drilled in one well (Figure 65).

Shouldice (1973) says it is not possible to correlate from one drill hole to another on the basis of lithologies or log characteristics.

Maps and Other Illustrations-- See Shouldice (1973) for location and isopach maps, seismic profiles, cross sections, and stratigraphic columns.

Degree of coverage-- Coverage includes seismic reflection data and well data from 14 wells. Of these, 6 are onshore on the northeastern Queen Charlotte Islands and 8 are offshore east and southeast of the Queen Charlotte Islands.

Other Information-- Pronounced topograhic relief exists at the top of the Tertiary volcanic sequence (Shouldice, 1973).

References-- For more detailed information see Chase and others, 1975;

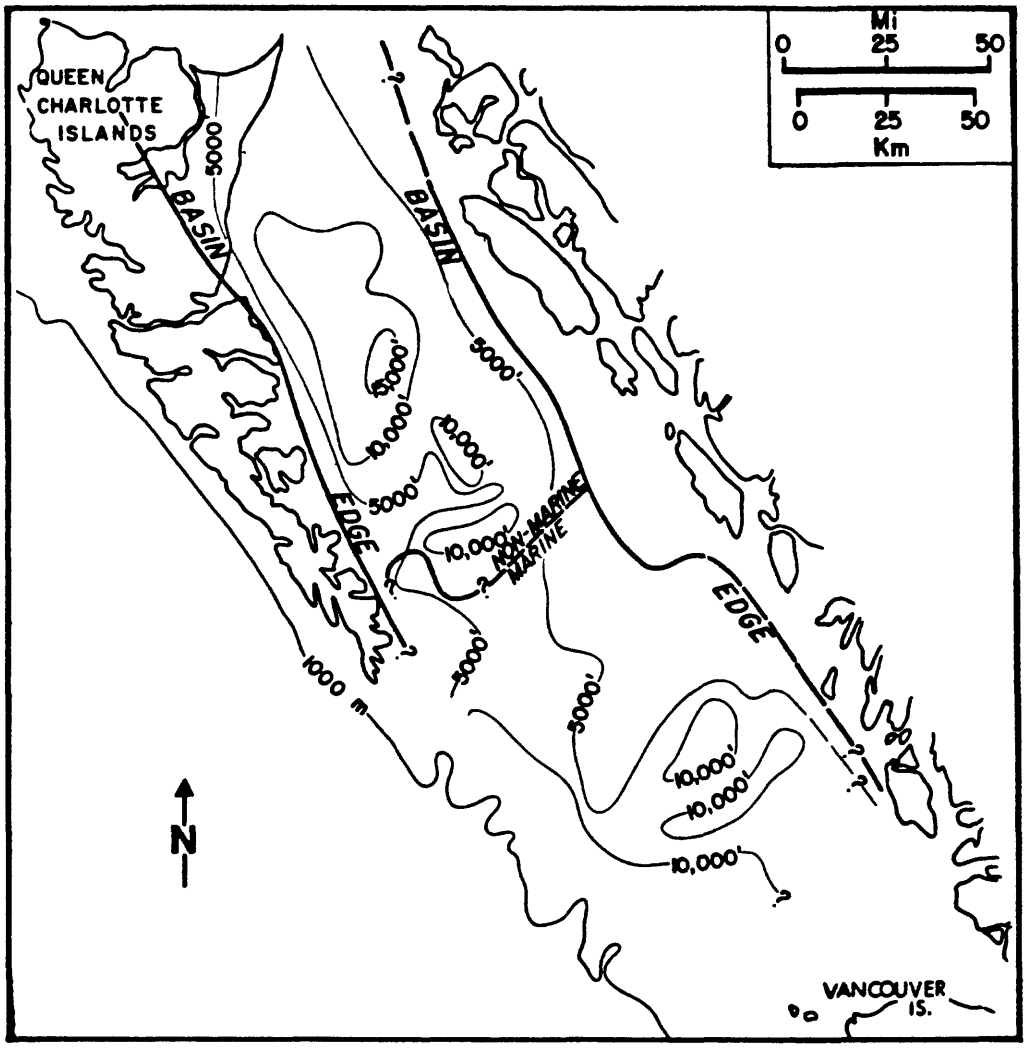
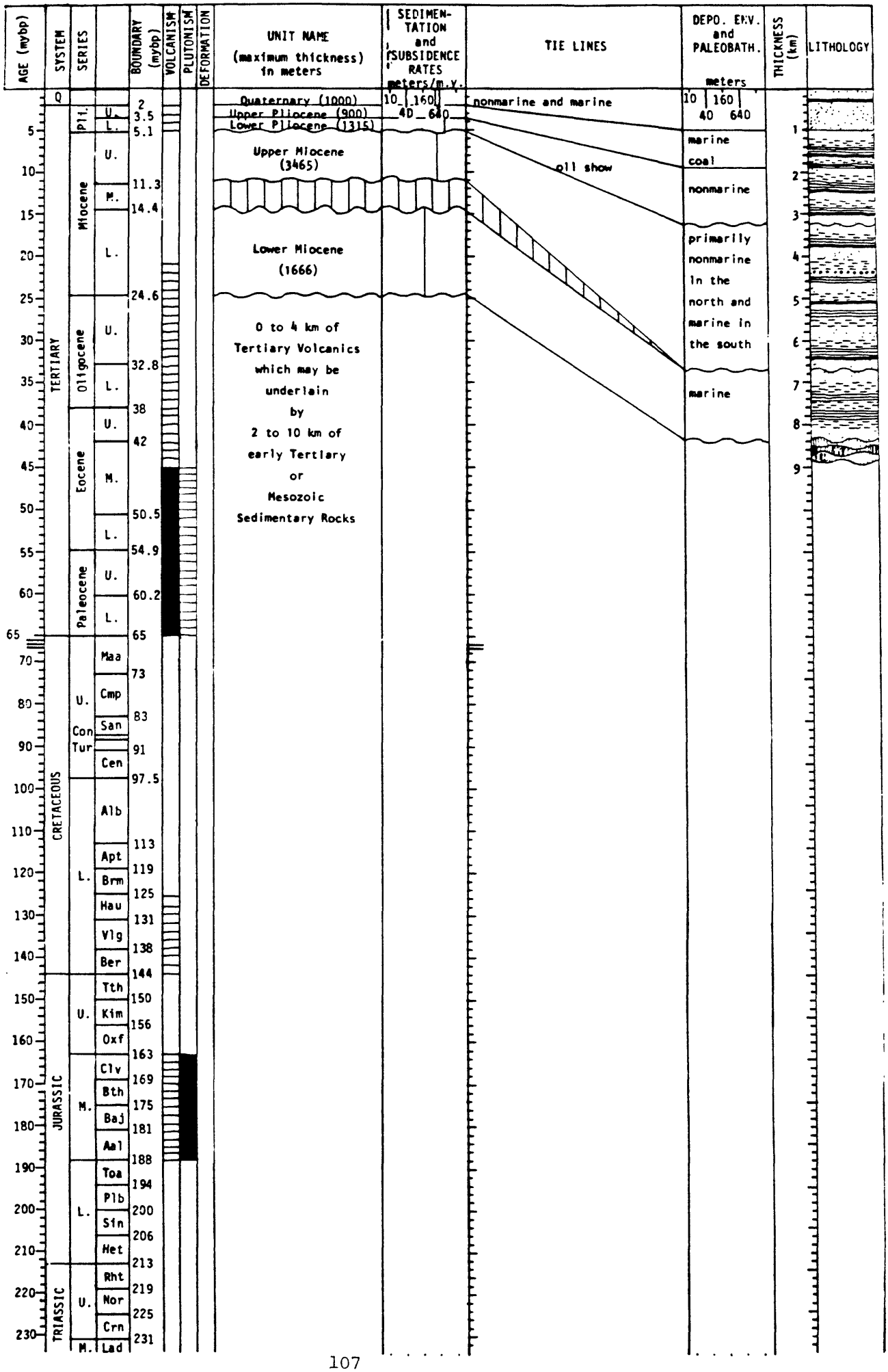


Figure 64. Isopach map of low velocity (Tertiary?) sediments, Queen Charlotte basin. Contour interval 5000 feet. From Shouldice, 1973.

Figure 65

QUEEN CHARLOTTE BASIN

Data from Shouldice, 1973; and Stacey, 1975



Shouldice, 1971, 1973; and Stacey, 1975.

APPENDIX

KEY TO LITHOLOGIC SYMBOLS USED ON BASIN HISTORY DIAGRAMS

REFERENCES

Bailey, K.A., and others, 1976, Preliminary residual magnetic map of the eastern Bering shelf and parts of western Alaska: U.S. Geological Survey Misc. Investigations Map I-716, 1:2,500,000.

Bayer, K.C., and others, 1978, Refraction studies between Icy Bay and Kayak Island, eastern Gulf of Alaska: U.S. Geological Survey Journal Research, v. 7, p. 625-636.

Barnes, D.F., 1976, Bouguer gravity map of Alaska: U.S. Geological Survey Open-File Report 76-70, 1 p., 1:2,500,000.

Beikman, H.M., 1980, Geologic map of Alaska: U.S. Geological Survey, scale 1:2,500,000.

Ben-Avraham, Z., and Cooper, A.K., 1981, Early evolution of the Bering Sea by collision of oceanic rises and North Pacific subduction zones: G.S.A. Bull., v. 92, p. 485-495.

Biostratigraphics, Inc., 1981, Alaskan North Slope generalized subsurface biostratigraphic chart: San Diego, California.

Box, S.E., 1985, Early Cretaceous orogenic belt in northwestern Alaska: internal organization, lateral extent, and tectonic interpretation, in Howell, D.G., ed., Tectonostratigraphic terranes of the circum-Pacific region: Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, no. 1, p. 137-146.

Brockway, R., and others, 1975, Bristol Bay region, "Stratigraphic correlation section," southwest Alaska: The Alaska Geological Society, Anchorage, Alaska.

Bruns, T.R., 1985, Tectonics of the Yakutat block, an allochthonous terrane in the northern Gulf of Alaska: U.S. Geological Survey Open-File Report 85-13, 112 p.

..... 1984, Convergent margin--the Middleton segment: in preparation.

..... 1983, A model for the origin of the Yakutat Block, an accreting terrane in the northern Gulf of Alaska: Geology, v. 11, p. 718-721.

..... 1982a, Hydrocarbon resource report for proposed OCS lease sale 88: southeastern Alaska, northern Gulf of Alaska, Cook Inlet, and Shelikof Strait, Alaska: U.S. Geological Survey Open-File Report 82-928, 133 p.

..... 1982b, Structure and petroleum potential of the continental margin between Cross Sound and Icy Bay, northern Gulf of Alaska: U.S. Geological Survey Open-File Report 82-929, 65 p.

..... and others, in press, Geology and petroleum potential of the Shumagin margin, Alaska, in Scholl, D.W., Grantz, Arthur, and Vedder, J.G., eds., Geology and resource potential of the continental margin of western North America -- Beaufort Sea to Baja California: A.A.P.G. Mem.

..... and others, 1981a, Gravity map, Cross Sound to Icy Bay, northern Gulf of Alaska: U.S. Geological Survey Misc. Field Studies Map, MF-1306, 1:500,000.

..... and others, 1981b, Gravity map, Dixon Entrance to Cross Sound, northeastern Gulf of Alaska: U.S. Geological Survey Misc. Field Studies Map, MF-1307, 1:500,000.

..... and Schwab, W.C., 1983, Structure maps and seismic stratigraphy of the Yakataga segment of the continental margin, northern Gulf of Alaska: U.S. Geological Survey Misc. Field Studies Map, MF-1424, 4 sheets, 1:250,000.
..... and von Huene, Roland, 1985, Summary geologic report for the Shumagin outer continental shelf (OCS) planning area, Alaska: U.S. Geological Survey Open-File Report 85-32, 56 p.
.... 1977, Sedimentary basins on the Shumagin shelf, western Gulf of Alaska: Offshore Technology Conference, OTC 2732, p. 41-45.
Bruynzeel, J.W., Guldenzopf, E.C., and Pickard, J.E., 1982, Petroleum exploration of N.P.R.A., 1974-1981: Tetra Tech, Inc. Report 8200, Houston, Texas, 183 p.
Burk, C.A., 1965, Geology of the Alaska Peninsula--island arc and continental margin: G.S.A. Mem. 99, 250 p.
Burkhard, N., and others, 1980a, Map of free-air gravity anomalies, eastern Gulf of Alaska: U.S. Geological Survey Misc. Field Studies Map MF-1172, 1:500,000.
..... and others, 1980b, Map of free-air gravity anomalies, western Gulf of Alaska: U.S. Geological Survey Misc. Field Studies Map MF-1173, 1:500,000.
Carman, G.J., and Hardwick, Peter, 1983, Geology and regional setting of Kuparuk oil field, Alaska: A.A.P.G. Bull., v. 67, p. 1032-1037.
Chase, R.L., Tiffin, D.L., and Murray, J.W., 1975, The western Canadian continental margin, in Yorath, C.J., Parker, E.R., and Glass, D.J., eds., Canada's continental margins and offshore petroleum exploration: C.S.P.G. Mem. 4, p. 701-721.
Childs, J.R., Cooper, A.K., and Wright, A.W., 1981, Residual magnetic map of Umnak plateau region, southeastern Bering Sea: U.S. Geological Survey Geophysical Investigations Map GP-939, 1 sheet, 1:1,000,000.
..... Magistrale, H., and Cooper, A.K., 1985a, Free-air gravity map of the Bering Sea: U.S. Geological Survey Misc. Field Studies Map MF-1728.
.... 1985b, Free-air gravity map of the Umnak Plateau region, southeastern Bering Sea: U.S. Geological Survey Geophysical Investigations map GP-970.
.... 1985c, Free-air gravity map of the central and northern Bering Sea: U.S. Geological Survey Geophysical Investigations map GP-971.
Claypool, G.E., Threlkeld, C.N., and Magoon, L.B., 1980, Biogenic and thermogenic origins of natural gas in Cook Inlet basin, Alaska: A.A.P.G. Bull., v. 64, p. 1131-1139.
Cooper, A.K., Marlow, M.S., and Ben-Avraham, Z., 1981, Multi-channel seismic evidence bearing on the origin of Bowers Ridge, Bering Sea: G.S.A. Bull., v. 92, p. 474-484.
..... Marlow, M.S., and Scholl, D.W., 1976, Mesozoic magnetic lineations in the Bering Sea marginal basin: J.G.R., v. 81, p. 1916-1934.
..... and others, 1980, Resource report for the deep-water areas of proposed lease sale no. 70, St. George basin, Alaska:

U.S. Geological Survey Open-File Report 80-246, 94 p.
..... and others, 1979a, Structure-contour map on acoustic basement in the Bering Sea: U.S. Geological Survey Misc. Field Studies Map MF-1165, 1:2,500,000.
..... and others, 1979b, Hydrocarbon potential of Aleutian basin, Bering Sea: A.A.P.G. Bull., v. 63, p.2070-2087.
Decker, John, and Karl, Susan, 1977, Preliminary aeromagnetic map of the Brooks Range and arctic slope, Alaska: U.S. Geological Survey Open-File Report 77-166E, 1:1,000,000.
DeLong, S.E., Fox, P.J., and McDowell, F.W., 1978, Subduction of the Kula Ridge at the Aleutian Trench: G.S.A. Bull., v. 89, p. 83-95.
Detterman, R.L., 1985, The Paleogene sequence on the Alaska Peninsula (abs.): A.A.P.G. Bull., v. 69, p. 661.
..... 1973, Mesozoic sequence in arctic Alaska, in Pitcher, M.G., ed., Arctic geolgy: A.A.P.G. Mem. 19, p. 376-387.
Drummond, J.M., 1978, Evolution of Tertiary marine sedimentary basins in British Columbia: Bull. Can. Petrol. Geol., v. 26, p. 33-56.
Ehm, Arlen, 1983, Oil and gas basins map of Alaska: Alaska Department of Natural Resources Special Report 32, 1:2,500,000.
Eittreim, Steve, Grantz, Arthur, and Whitney, O.T., 1979, Cenozoic sedimentation and tectonics of Hope basin, southern Chukchi Sea, in Sisson, A., ed., The relationship of plate tectonics to Alaskan geology and resources: Sixth Alaska Geological Society Symposium, Anchorage, Alaska, April, 1977, p. B1-B11.
..... Grantz, Arthur, and Whitney, O.T., 1978, Isopach maps of Tertiary sediments, Hope basin, southern Chukchi Sea, Alaska: U.S. Geological Survey Misc. Field Studies Map MF-906.
Fisher, M.A., 1982, Petroleum geology of Norton basin, Alaska: A.A.P.G. Bull., v. 66, p. 286-301.
..... 1981, Location of the Border Ranges fault southwest of Kodiak Island, Alaska: G.S.A. Bull., v. 92, p. 19-29.
..... 1980, Petroleum geology of Kodiak shelf, Alaska: A.A.P.G. Bull., v. 64, p. 1140-1157.
..... 1979, Structure and tectonic setting of the continental shelf southwest of Kodiak Island, Alaska: A.A.P.G. Bull., v. 63, p. 301-310.
..... and Magoon, L.B., 1982, Geology, structure, and petroleum potential of the lower Cook Inlet--Shelikof Strait region, in Bruns, T.R., ed., Hydrocarbon resource report for proposed OCS lease sale 88: southeastern Alaska, northern Gulf of Alaska, Cook Inlet, and Shelikof Strait, Alaska: U.S. Geological Survey Open-File Report 82-928, p. 53-67.
..... and Magoon, L.B., 1978, Geologic framework of lower Cook Inlet, Alaska: A.A.P.G. Bull., v. 62, p. 373-402.
..... Patton, W.W., Jr., and Holmes, M.L., 1982, Geology of Norton basin and continental shelf beneath northwestern Bering Sea, Alaska: A.A.P.G. Bull., v. 66, p. 255-285.
..... and von Huene, Roland, 1982, Map showing the geologic structure of the continental shelf southeast and southwest

of Kodiak Island, Alaska, from 24-fold seismic data: U.S. Geological Survey Misc. Field Studies Map MF-1457, 1:500,000.

.... 1980, Structure of upper Cenozoic strata beneath Kodiak shelf, Alaska: A.A.P.G. Bull., v. 64, p. 1014-1033.

.... and Steele, W.C., 1983, Marine free-air gravity map of the western Gulf of Alaska, lower Cook Inlet and Shelikof Strait, Alaska: U.S. Geological Survey Open-File Report 83-52, 2 sheets, 1:500,000.

Geist, E.L., Childs, J.R., and Scholl, D.W., in press, New data on the origin and evolution of Amlia and Amukta summit basins, Aleutian Ridge: Marine and Petroleum geology.

Grantz, Arthur, Eittreim, Steve, and Whitney, O.T., 1981, Geology and physiography of the continental margin north of Alaska and implications for the origin of the Canada Basin, in Nairn, A.E.M., Churkin, M., and Stehli, F.G., eds., The ocean basins and margins: Plenum Publishing, v. 5, p. 439-492.

..... Eittreim, Steve, and Dinter, D.A., 1979, Geology and tectonic development of the continental margin north of Alaska: Tectonophysics, v. 59, p. 263-291.

..... Holmes, M.C., and Kososki, B.A., 1976, Geologic framework of the Alaskan continental terrace in the Chukchi and Beaufort Seas, in Yorath, C.J., Parker, E.R., and Glass, D.J., eds., Canada's continental margins and offshore petroleum exploration: C.S.P.G. Mem. 4, p. 669-700.

..... and May, S.D., 1984a, Summary geologic report for Barrow Arch Outer Continental Shelf (OCS) Planning Area, Chukchi Sea, Alaska: U.S. Geological Survey Open-File Report 84-395, 40 p.

..... and May, S.D., 1984b, Sedimentary structures of the continental margin north of Alaska: 27th International Geological Congress, Moscow, v. 4, p. 125-142.

..... and May, S.D., 1983, Rifting history and structural development of the continental margin north of Alaska; in Watkins, J.S., and Drake, C.L., eds., Studies in continental margin geology: A.A.P.G. Mem., no. 34, p. 77-100.

..... and others, 1982a, Geologic framework, hydrocarbon potential, and environmental conditions for exploration and development of proposed oil and gas lease sale 87 in the Beaufort and northeast Chukchi Seas: U.S. Geological Survey Open-File Report 82-482, 71 p.

..... and others, 1982b, Geologic framework, hydrocarbon potential, and environmental conditions for exploration and development of proposed oil and gas lease sale 85 in the central and northern Chukchi Sea: U.S. Geological Survey Open-File Report 82-1053, 84 p.

..... Zietz, I., and Andreason, G.E., 1963, An aeromagnetic reconnaissance of the Cook Inlet area, Alaska: U.S. Geological Survey Prof. Paper 316-G, p. 117-134.

Gromme, C.S., and Hillhouse, J.W., 1981, Paleomagnetic evidence for northward movement of the Chugach terrane, southern and southeastern Alaska: U.S. Geological Survey Circular 823-B, p. B70-B72.

Gryc, George, 1971, Summary of potential petroleum resources of Region 1 (Alaska and Hawaii)--Alaska, in Cram, I.H., ed., Future petroleum provinces of the United States--their geology and potential: A.A.P.G. Mem., no. 15, p. 55-67.

Harbert, W.P., Cox, Alan, and McLean, Hugh, 1984, Preliminary paleomagnetic results from Umnak Island, Aleutian Ridge (abs.): G.S.A. Abstracts with Programs, v. 16, no. 5, p. 288.

Hoare, J.M., 1961, Geology and tectonic setting of lower Kuskokwim-Bristol Bay region, Alaska: A.A.P.G. Bull., v. 45, p. 594-611.

Holmes, M.L., Meeder, C.A., and Creager, K.C., 1978, Sonobuoy refraction data near Kodiak, Alaska: U.S. Geological Survey Open-File Report 78-368, p. 1-9.

Hudson, T., 1979, Calc-alkaline plutonism along the Pacific rim of southern Alaska: U.S. Geological Survey Open-File Report 79-953, 31 p.

Jones, B.C., Oil and gas developments in Alaska in 1982: A.A.P.G. Bull., v. 67, p. 1593-1599.

Jones, D.L., and others, 1981, Tectonostratigraphic terrane map of Alaska: U.S. Geological Survey Open-File Report 81-792, 21 p., 2 sheets.

Jones, H.P., and Speers, R.G., 1976, Permo-Triassic reservoirs of Prudhoe Bay field, North Slope, Alaska, in Braunstein, J., ed., North American oil and gas fields: A.A.P.G. Mem. 24, p. 23-50.

Keller, G., and others, 1984, Paleoclimatic evidence for Cenozoic migration of Alaskan terranes: Tectonics, v.3, p. 473-495.

Kirschner, C.E., and Lyon, C.A., 1973, Stratigraphic and tectonic development of Cook Inlet petroleum province, in Arctic Geology: A.A.P.G. Mem. 19, p. 396-407.

Ludwig, W.J., and Houtz, R.E., 1979, Isopach map of sediments in the Pacific Ocean Basin and marginal sea basins: A.A.P.G., Tulsa, Oklahoma, scale 1:18,999,369.

Magoon, L.B., Adkison, W.L., and Egbert, R.M., 1976, Map showing geology, wildcat wells, Tertiary plant fossil localities, K-Ar dates, and petroleum operations, Cook Inlet area, Alaska: U.S. Geological Survey Misc. Inv. series map I-1019, scale 1:250,000.

..... and Claypool, G.E., 1981, Petroleum geology of Cook Inlet basin--an exploration model: A.A.P.G. Bull., v. 75, p. 1043-1061.

..... Griesbach, F.B., and Egbert, R.M., 1980, Nonmarine Upper Cretaceous rocks, Cook Inlet, Alaska: A.A.P.G. Bull., v. 64, p. 1249-1266.

Marlow, M.S., and Cooper, A.K., 1980, Mesozoic and Cenozoic structural trends under southern Bering Sea shelf: A.A.P.G. Bull., v. 64, p. 2139-2155.

..... and others, 1983a, Tectonic evolution of Gulf of Anadyr and formation of Anadyr and Navarin basins: A.A.P.G. Bull., v. 67, p. 646-665.

..... and others, 1983b, Supplemental resource report for OCS lease sale no. 83, Navarin basin, Alaska: U.S. Geological Survey Open-File Report 83-707, 41 p.

..... and others, 1981, Hydrocarbon resource report for proposed OCS sale no. 83, Navarin basin, Alaska: U.S. Geological Survey Open-File Report 81-252, 83 p.
..... and others, 1980, A preliminary summary of regional geology, petroleum potential, environmental geology, and technology for exploration and development for proposed OCS lease sale no. 75, northern Aleutian shelf, Bering Sea, Alaska: U.S. Geological Survey Open-File Report 80-653, 54 p.
..... and others, 1979a, Isopach map of strata above acoustic basement in the Bering Sea: U.S. Geological Survey Misc. Field Studies Map MF-1165, 1:2,500,000.
..... and others, 1979b, Resource report for proposed OCS lease sale no. 70, St. George basin, Alaska: U.S. Geological Survey Open-File Report 79-1650, 76 p.
..... and others, 1976, Structure and evolution of Bering Sea shelf south of St. Lawrence Island: A.A.P.G. Bull., v. 60, p. 161-183.
..... and others, 1973, Tectonic history of the central Aleutian arc: G.S.A. Bull., v. 84, p. 1555-1564.
..... and others, 1970, Buldir depression--a late Tertiary graben on the Aleutian Ridge, Alaska: Marine Geology, v. 8, p. 85-108.
..... Scholl, D.W., and Cooper, A.K., 1977, St. George basin, Bering Sea shelf: a collapsed Mesozoic margin, in Island arcs, deep sea trenches and back-arc basins: Am. Geophy. Union, Maurice Ewing Series, v. 1, p. 211-219.
May, S.D., 1985, Free-air gravity anomaly map of the Chukchi and Alaskan Beaufort Seas, Arctic Ocean: U.S. Geological Survey Miscellaneous Investigations Series I-1182-E, 1:1,000,000, 1 sheet.
McCarthy, Jill, and others, 1984, Speculations on the petroleum geology of the accretionary body: an example from the central Aleutians: Marine and Petroleum Geology, v. 1, p. 151-167.
McLean, H., 1979a, Review of petroleum geology of Anadyr and Khatyrka basins, U.S.S.R.: A.A.P.G. Bull., v. 63, p. 1467-1477.
..... 1979b, Tertiary stratigraphy and petroleum potential of Cold Bay--False Pass area, Alaska Peninsula: A.A.P.G. Bull., v. 63, p. 1522-1526.
Mertie, J.B., Jr., 1938, The Nushagak district, Alaska: U.S. Geological Survey Bull. 903, 96 p.
Molenaar, C.M., 1983, Depositional relations of Cretaceous and Lower Tertiary rocks, northeastern Alaska: A.A.P.G. Bull., v. 67, p. 1066-1080.
Moore, G.W., 1969, New formations on Kodiak and adjacent islands, Alaska: U.S. Geological Survey Bull. 1274-A, p. A27-A35.
Moore, J.C., 1974, Geologic and structural map of the Sanak Islands, southwestern Alaska: U.S. Geological Survey Misc. Investigation Series I-817, 1:63,360.
..... and others, 1983, Paleogene evolution of the Kodiak Islands, Alaska: consequences of ridge-trench interaction in a more southerly latitude: Tectonics, v. 2, p. 265-293.

Naugler, F.P., and Wageman, J.M., 1973, Gulf of Alaska; magnetic anomalies, fracture zones and plate interactions: G.S.A. Bull., v. 84, p. 1575-1584.

Newman, G.W., Mull, C.G., and Watkins, N.D., 1979, Northern Alaska paleomagnetism, plate rotation and tectonics, in Sisson, A., ed., Relationship of plate tectonics to Alaskan geology and resources: Sixth Alaska Geological Society Symposium, Anchorage, Alaska, April, 1977, p. C1-C7.

Nilsen, T.H., and Moore, G.W., 1979, Reconnaissance study of Upper Cretaceous to Miocene stratigraphic units and sedimentary facies, Kodiak and adjacent islands, Alaska, with a section on sedimentary petrology by Winkler, G.R.: U.S. Geological Survey Prof. Paper 1093, 34 p.

Ostenso, N.A., 1968, A gravity survey of the Chukchi Sea region, and its bearing on westward extension of structure in northern Alaska: G.S.A. Bull., v. 79, p. 241-254.

Patton, W.W., 1971, Petroleum possibilities of the Yukon-Koyukuk Province, Alaska, in Cram, I.H., ed., Future petroleum provinces of the United States--their geology and potential: A.A.P.G. Mem. 15, p. 100-104.

Plafker, G., and others, 1980, Preliminary geology of the continental slope adjacent to OCS lease sale 55, eastern Gulf of Alaska; petroleum resource implications: U.S. Geological Survey Open-File Report 80-1089, 72 p.

..... 1971, Possible future petroleum resources of Pacific margin Tertiary basin, Alaska, in Cram, I.H., ed., Future petroleum provinces of the United States--their geology and potential: A.A.P.G. Mem. 15, v. 1, p. 120-135.

Plumley, P.W., Coe, R.S., and Byrne, Tim, 1983, Paleomagnetism of the Paleocene Ghost Rocks Formation, Prince William terrane, Alaska: Tectonics, v. 2, p. 295-314.

Platt, R.M., and others, 1972, Extension of Alaska structural trends beneath Bristol Bay, Bering shelf, Alaska: J.G.R, v. 77, p. 4994-4999.

Ruppel, B.D., and McHendrie, A.G., 1976, Free-air gravity anomaly map of the eastern Chukchi and southern Beaufort Seas: U.S. Geological Survey Misc. Field Studies Map MF-785.

Scholl, D.W., Grantz, Arthur, and Vedder, J.G., in press, Geology and resource potential of the continental margin of western North America -- Beaufort Sea to Baja California: A.A.P.G. Mem.

..... Marlow, M.S., and Buffington, E.C., 1975, Summit basins of Aleutian Ridge, North Pacific: A.A.P.G. Bull., v. 59, p. 799-816.

..... Vallier, T.L., and Stevenson, A.J., 1983, Geologic evolution of the Aleutian Ridge--implications for petroleum resources: Journal of the Alaska Geological Society, Proceedings of the 1982 Symposium, v. 3, p. 33-46.

..... Vallier, T.L., and Stevenson, A.J., 1982a, Arc, forearc, and trench sedimentation and tectonics; Amlia corridor of the Aleutian Ridge, in Watkins, J.S., and Drake, C.L., eds., Studies in continental margin geology: A.A.P.G. Mem. 34, p. 413-439.

..... Vallier, T.L., and Stevenson, A.J., 1982b, Sedimentation

and deformation in the Amlia fracture zone sector of the Aleutian Trench: Marine Geology, v. 48, p. 105-134.
Schwab, W.C., Bruns, T.R., and von Huene, R., 1980, Maps showing structural interpretation of magnetic lineaments in the northern Gulf of Alaska: U.S. Geological Survey Misc. Field Studies Map MF-1245.
Shouldice, D.H., 1973, Western Canadian continental shelf, in McCrossan, R.G., ed., The future petroleum provinces of Canada--their geology and potential: C.S.P.G. Mem. 1, p. 7-35.
..... 1971, Geology of the western Canadian continental shelf: Bull. Can. Pet. Geol., v. 19, p. 405-436.
Stacey, R.A., 1975, Structure of the Queen Charlotte Basin, in Yorath, C.J., Parker, E.R., and Glass, D.J., eds., Canada's continental margins and offshore petroleum exploration: C.S.P.G. Mem. 4, p. 723-741.
Stevenson, A.J., Scholl, D.W., and Vallier, T.L., 1983, Tectonic and geologic implications of the Zodiac fan, Aleutian Abyssal plain, northeast Pacific: G.S.A. Bull., v. 94, p. 259-273.
Stewart, R.J., 1978, Neogene volcaniclastic sediments from Atka basin, Aleutian Ridge: A.A.P.G. Bull., v. 63, p. 87-97.
Stone, D.B., Panuska, B.C., and Packer, D.R., 1982, Paleo-latitudes versus time for southern Alaska: J.G.R., v. 87, no. B5, p. 3697-3707.
Stonely, Robert, 1967, The structural development of the Gulf of Alaska sedimentary province in southern Alaska: Quarterly Jour. Geol. Soc. of London, v. 123, p. 25-57.
Tailleur, I.L., and Engwicht, S.E., 1978, Generalized structure map of top, middle, and basal Tertiary markers with geothermal gradients, eastern North Slope petroleum province, Alaska: U.S. Geological Survey Misc. Field Studies Map, MF 928-B, 1 sheet, 1:500,000.
Taylor, P.T., and O'Neill, N.J., 1974, Results of an aeromagnetic survey in Gulf of Alaska: J.G.R., v. 79, p. 719-723.
Tiffin, D.L., Cameron, B.E.B., and Murray, J.W., 1972, Tectonics and depositional history of the continental margin off Vancouver Island, British Columbia: Can. Jour. Earth Sci., v. 9, p. 280-296.
Turner, R.F., ed., 1985, Geologic report for the Navarin Basin planning area, Bering Sea, Alaska: U.S. Department of Interior, Minerals Management Service, OCS Report MMS 85-0045, 156 p.
..... ed., 1984a, Geological and operational summary, St. George basin COST No. 1 well, Bering Sea, Alaska: U.S. Department of the Interior, Minerals Management Service, OCS Report MMS 84-0016, 105 p.
..... ed., 1984b, Geological and operational summary, St. George basin COST No. 2 well, Bering Sea, Alaska: U.S. Department of the Interior, Minerals Management Service, OCS Report MMS 84-0018, 100 p.
..... ed, 1984c, Geological and operational summary, Navarin basin COST No. 1 well, Bering Sea, Alaska: U.S. Department of the Interior, Minerals Management Service, OCS Report MMS

84-0031, 245 p.
..... ed., 1983a, Geological and operational summary Norton Sound COST No. 1 well, Norton Sound, Alaska: U.S. Geological Survey Open-File Report 83-124, 164 p.
..... ed., 1983b, Geological and operational summary Norton Sound COST No. 2 well, Norton Sound, Alaska: U.S. Geological Survey Open-File Report 83-557, 154 p.
U.S. Geological Survey, 1978, Miscellaneous Field Studies Maps, MF 928A-V.
Vallier, T.L., and others, in press, Geologic framework of the Aleutian structural arc, Alaska: Geological Society of America, Decade of North American Geology (DNAG) Alaska volume.
Watts, A.B., 1975, Gravity field of the northwest Pacific Ocean basin and its margin--Aleutian Island arc-trench system: G.S.A. Map-chart series, MC-10.
Winkler, G.R., and Plafker, G., 1981, Geologic map and cross sections of the Cordova and Middleton Island quadrangles, southern Alaska: U.S. Geological Survey Open-File Report 81-1164, 26 p., 1 sheet.