GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

Table II. Gold Analyses, Spi Lake Area

Sample Number	Gold p.p.b. (ounces/ton in brackets)	Rock Type	Setting	Northing	Easting
1	<5	Banded, foliate, chlorite, garnet, magnetite exhalite	120 feet thick, main zone oxide exhalite; extension of upper unit 4 into adjacent mafic flow sequence	6879400N	635400E
2	<5	Sugary chert	10-foot-thick mixed facies interflow exhalite, probable extension of upper unit 4 into adjacent mafic flow sequence	6879900N	635700E
3	50,25	Pyritic massive sugary chert	Banded sulphide chert exhalite in zone up to 10 feet thick; associated with sample 4, near base of unit 2.	6878400N	638600E
"	5	" "	"	"	"
"	"	Pyritic laminated sugary chert	"	"	"
4	30	Pyrrhotite-rich sugary chert	Banded sulphide, chert exhalite in zone up to 15 feet thick; near base of unit 2	6878700N	638700E
"	<5	Massive sugary chert	"	"	"
5	10,L5	Banded magnetite and sugary chert plus some disseminated pyrite	Extension of samples #3 & #4. Main exhalite zone up to 150 feet thick, banded chert, pyrrhotite magnetite and chlorite, near base of unit 2.	6878500N	639300E
6	10	Banded, boudinaged and foliate chert plus heavy	Sulfide facies banded exhalite, (maximum 50' thick) of main zone; extension of upper unit 2 into adjacent mafic flow sequence	6880500N	640600E
"	5	Brecciated, banded pyrite and chert	"	"	"
7	20	Laminated sugary chert and magnetite	One foot-thick-banded interflow oxide exhalite in mafic flow sequence, unit 1 (?)	6878200N	647000E
8	25,10	Laminated sugary chert plus magnetite and pyrite	Minimum 1 1/2-foot-thick banded mixed chert magnetite, pyrite exhalite in adjacent flow sequence just under extension of unit 2	6879700N	648000E
9	5	Banded magnetite and chlorite, trace pyrite	Two-or 3-foot-thick oxide exhalite band near base of unit 2	6869000N	647300E
10	<5,<5	Pyritic felsic volcanic	Gossan in felsic pyroclastics of unit 2	6870100N	649700E
11	5	Sugary jasper, with disseminated pyrite veined by quartz	Zero to 10-foot-thick oxide exhalite zone, boudinaged; probable extension of main zone in unit 4	6866800N	652400E
"	<5	Sugary banded magnetite and chert	"	"	"
12	<5	Pyritic felsic schist	Gossan on felsic breccia of unit 4, narrow zones	6890500N	653800E
"	5	Massive carbonate with trace pyrite	Discontinuous zones in felsic breccias of unit 4	"	"
13	<5	Massive siliceous carbonate, trace pyrite	"Larder Lake" type carbonate exhalite several tens of feet thick associated with fine-grained sediments near top of unit 4	6880800N	346300E
14	3500(.112) 10750(.344) 16750(.536)	Coarse-grained siliceous carbonate with disseminated arsenopyrite cut by irregular quartz veins.	In "Larder Lake" type carbonate exhalite up to 100 feet thick associated with clastic sediments near top (?) of unit 4	6875800N	346700E
15	<5	Banded, brecciated chert and magnetite	Several-foot-thick oxide facies exhalite band in felsic volcanics of unit 4 May be extension of main zone	6876100N	348200E
16	<5	Banded chert and tuff	"Larder Lake" type carbonate exhalite at least 75 feet thick near top of unit 4	6878600N	348000E
"	"	Massive grey-green siliceous carbonate	"	"	"
"	25	Foliated grey siliceous carbonate, trace pyrite	"	"	"
"	<5	Massive grey-green carbonate vague quartz veins, some disseminated pyrite	"	"	"
"	"	Foliate, chloritic carbonate	"	"	"
"	5,L5	Beige siliceous carbonate	"	"	"
"	20	Black shale with disseminated pyrite	"	"	"
17	85,5	Silicate-rich, massive iron sulphide; plus chalcoprite and sphalerite	Polymetallic sulphide facies of the main exhalite zone within unit 4	6885100N	349500E
"	55	Silicate-rich massive sulphide; sphalerite and pyrite with some chalcopyrite	"	"	"
"	30	Massive pyrite, some chalcopyrite	"	"	"
"	20,25	Galena-rich massive pyrite, some sphalerite	(This specimen also contains 80 p.p.m. silver)	"	"
18	<5,L5 <5	Siliceous siderite with disseminated pyrite	Carbonate facies exhalite of main zone in unit 4	6881400N	355000E
"	<5	Banded, chert and siderite	"	"	"
19	10	Massive intermediate lava with spheroidal aggregrates of pyrite	Along strike extension of #20	6881600N	36?800E
20	370	Massive iron sulphide with sugary chert	Interflow sulphide exhalite and veins up to several feet thick in flow sequence of unit 5	6881500N	364200E
"	1430(.046) 80	Massive pyrite with lesser sphalerite and chalcopyrite	"	"	"
"	910(.029)	Felsic volcanic veined and spotted with pyrrhotite and chalcopyrite	"	"	"
21	20	Silicates plus coarse pyrite and trace of chalcopyrite	Large gossan on pyritic mafic tuffs interbedded with gabbroic flow sequence of unit 3 and near granite contact	6877800N	379600E
22	5	Silicates plus some pyrite	Pyritic, tuffaceous interflow material in mafic low sequence, unit 3 in contact zone of granite	6877200N	381100E
23	240,245	Massive iron sulphides plus iron silicates and quartz	Interflow sulphide exhalite, less than 10 feet thick in large xenolith in agmatite near unit 4 or 8	6873600N	383000E
24	5	Laminated magnetite	Probable main zone exhalite near top of felsic volcanics in unit 4 (or 6?)	6876000N	384300E
25	20	Banded chert calc-silicate, magnetite	High-grade metamorphosed extension of main exhalite zone in unit 4 (?) in septum between major lobes of Kaminak Batholith	6883400N	397100E
26	220,220	Massive pyrite with trace chalcopyrite	Massive sulphide exhalite in possible extension of upper unit 6	6911800N	376000E
"	110	Massive quartz with spheroidal aggregates of pyrite	"	"	"
27	5	Pyritic intermediate volcanic	Light gossan near top of felsic unit 4	6905300N	376600E
28	<5 to 20	Mixed facies, banded exhalite; locally rich in iron sulphides trace chalcopyrite	Main exhalite zone up to 150 feet thick in unit 4. Prominently banded with chert magnetite, pyrite and chlorite	6904300N to 6903500N	376300E to 378100E
29	15	Banded magnetite, chert, and trace pyrite	Mixed facies exhalite from main zone at the top of unit 4	6902600N	385400E
30	55,15	Massive pyrrhotite	Spot outcrop of sulphide facies within main zone of exhalite near top of unit 4	6902300N	386600E
31	5	Banded, brecciated chert/limestone	Carbonate phase of the main exhalite zone near the top of unit 4	69002200N	387400E
32	25	Brecciated bands of laminated pyrite in a siliceous carbonate matrix	Sulphide-rich phase of the main exhalite zone near the top of unit 4	6902100N	388100E
33	80	Cherty tuffs with disseminated pyrite and minor chalcopyrite	Gossan in intermediate, predominantly flow sequence of unit 5	6904600N	387800E
34	35	Laminated chert fragments in coarse massive pyrite matrix	Sulphide-rich phase of main exhalite zone at top of unit 4	6903500N	389200E
"	10	Laminated pyrite, chert carbonate and silicates	Sulphide-rich phase of carbonate exhalite main zone at the top of unit 4	"	"
"	15	Laminated siderite and chert with minor pyrite	Main exhalite zone, carbonate facies at top of unit 4. Overlain by carbonate-rich pillow lava	"	"
35	20	Pyritic, siliceous massive siderite	Main exhalite zone, carbonate facies, at top of unit 4. Mainly well banded	6903000N	389900E
36	<5,15	Banded chert/magnetite	Oxide exhalite from main zone at top of unit 4	6902200N	391200E
37	5	Banded carbonate and chert	Thin carbonate exhalite zone in felsic breccia near base of unit 6	6906200N	393600E
38	5	Banded chert/siderite exhalite; no visible sulphide	One-foot-thick exhalite zone in felsic tuffs of unit 6	6904900N	396600E
39	260, 295	Pyritic, siliceous, massive carbonate	Carbonate exhalite fragment in rhyolite breccias toward the top of unit 6	6907100N	399300E
40	15	Massive fine-grained carbonate	Carbonate exhalite fragment in rhyolite breccia towards the top of unit 6	6906200N	400300E
41	10	Massive, fine-grained carbonate and sericite schist	Carbonate exhalite fragments in rhyolite breccia towards the top of unit 6	6905500N	401900E
42	20	Rhyolite breccia with trace pyrite	"Mill Rock" towards top of unit 6	6913600N	406000E
43	<5	Massive pyrite lenses in sugary quartz	50-foot-thick gossan zone in felsic volcanics of unit 6. Possibly sulphide exhalite	6914400N	410400E
44	15	Sugary quartz with pyrite laminae	Possible 2-foot-thick pod of exhalite in rhyolite pyroclastics of unit 6	6914100N	411500E
45	<5	Siliceous calcium carbonate plus silicates	Tuffaceous limestone exhalite, probable main zone near top of unit 6	6912300N	424400E
46	275,290	Pyritic felsic volcanic tuff and breccia	Near top of unit 6	6912100N	425400E
47	5	Pyritic interflow tuff	Intermediate tuff about 20 feet thick in mafic flow sequence immediately above unit 6	6911300N	42600E

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Table I. Chemical Analyses, Kaminak Section

Sample Number	Rock Type	MnO	TiO_2	CaO	K_2O	SiO_2	Al_2O_3	MgO	FeO	Fe_2O_3	Na_2O	P_2O_5	CO_2	H_2OT
36	Andesite Flow Breccia	0.18	1.06	5.9	0.8	55.0	15.2	5.1	7.5	2.6	3.6	0.16	0.3	3.5
37	Andesite Pillow Lava	0.12	0.69	6.4	0.3	61.5	13.2	3.9	5.1	2.2	3.9	0.13	<0.05	1.7
39	Andesite Flow Breccia	0.11	0.77	4.3	1.5	56.0	14.6	6.1	6.0	1.8	2.6	0.14	3.5	4.5
40	Andesite Breccia	0.13	1.24	3.0	<0.05	54.6	14.6	4.0	7.7	1.7	5.4	0.21	2.1	3.2
41	Andesite Massive Lava	0.10	1.19	3.2	0.4	53.6	16.7	4.8	8.6	1.7	4.6	0.20	2.9	3.9
42	Andesite Flow Breccia?	0.12	0.90	5.2	0.6	55.0	14.4	4.4	7.6	1.9	3.2	0.21	4.2	3.6
43	Andesite Pillow Lava	0.17	0.84	7.9	0.3	54.1	13.7	4.6	6.5	1.9	3.3	0.14	4.5	3.4
56	Rhyolite Massive Porphyry	0.08	0.28	1.4	2.6	71.7	13.1	1.7	2.9	1.3	2.1	0.04	1.1	1.8
57	Dacite Massive Lava	0.12	0.80	3.9	0.4	65.0	13.1	1.1	5.4	1.8	4.7	0.20	1.4	1.0
58	Rhyodacite Tuff	0.08	0.47	2.3	2.6	68.1	13.6	0.9	3.1	0.9	2.7	0.10	2.1	1.7
59	Rhyodacite Breccia	0.09	0.40	2.9	3.4	66.1	15.0	1.0	2.0	2.2	2.3	0.07	4.0	1.6
60	Rhyolite Tuff	0.05	0.27	1.8	4.2	71.0	13.2	0.4	1.3	1.9	2.0	0.03	1.7	1.3
61	Dacite Breccia	0.13	0.83	4.1	4.2	60.0	17.0	2.1	3.6	1.6	1.4	0.16	3.0	3.0
62	Andesite? Pillow Lava	0.24	1.08	9.6	<0.05	51.0	13.1	3.1	7.1	2.5	4.3	0.20	6.1	2.6
67	Andesite Massive Lava	0.12	1.23	4.4	0.4	56.7	14.5	2.7	7.7	2.1	4.3	0.18	2.7	3.1
68	Andesite Pillow Lava	0.16	0.96	7.9	0.2	53.3	13.6	3.5	6.2	1.7	3.6	0.14	5.3	2.8
69	Dacite Massive Lava	0.11	1.04	4.6	0.3	62.4	14.0	2.0	4.4	3.6	5.0	0.20	1.2	1.8
70	Dacite Breccia	0.11	1.28	3.6	0.4	57.9	12.9	2.3	6.4	3.2	4.7	0.19	2.7	2.8
71	Rhyolite Massive Porphyry	0.07	0.25	1.4	1.8	73.6	11.9	0.4	2.0	1.6	3.5	0.02	1.4	1.1
72	Andesite Breccia	0.10	1.13	3.4	1.4	56.0	15.3	3.4	7.0	1.7	4.0	0.19	2.6	3.5
73	Rhyolite Massive Lava	0.06	0.24	1.4	1.2	73.2	12.0	0.5	3.6	<0.05	4.4	<0.005	1.8	0.8
74	Dacite Massive Porphyry	0.07	0.51	4.2	3.2	60.5	16.3	1.9	1.7	1.9	3.9	0.15	5.3	1.5
75	Rhyolite Flow Breccia	0.06	0.27	1.2	2.7	72.6	13.5	0.4	2.2	1.3	3.0	0.02	0.8	1.3
76	Rhyolite Porphyry	0.06	0.21	1.6	2.3	74.0	12.3	0.5	1.6	1.3	2.3	<0.005	1.9	1.2
77	Rhyolite Porphyry	0.05	0.28	1.9	4.4	70.2	14.7	1.2	2.5	1.3	0.2	0.03	1.4	2.3
80	Dacite Flow Breccia	0.09	0.69	5.1	2.3	60.8	15.5	1.6	3.4	1.4	3.0	0.17	3.6	2.4
93	Rhyolite Breccia	0.10	0.21	1.1	2.4	76.4	11.5	0.2	0.5	3.1	0.9	0.02	1.0	1.8
95	Rhyolite Flow Breccia	0.07	0.74	4.2	1.4	70.0	12.3	0.6	1.6	1.1	3.6	0.16	4.2	1.0
3029	Rhyodacite Tuff	0.08	0.45	1.9	2.8	67.3	15.0	1.1	2.4	1.2	3.1	0.07	3.0	1.7
3030	Andesite Flow Breccia	0.16	0.99	7.9	0.8	56.9	13.6	3.0	6.9	2.3	2.9	0.17	1.7	2.8
3031	Basaltic Andesite Pillow Breccia	0.14	0.78	8.9	1.2	51.1	14.5	4.3	6.5	1.8	3.2	0.19	5.0	3.7
3032	Andesite Massive Lava	0.16	0.90	7.2	0.9	57.1	13.8	5.0	7.2	2.1	2.6	0.20	1.3	2.3
3033	Andesite Pillow Lava	0.16	0.73	9.5	0.7	53.9	12.9	4.9	6.9	0.9	3.0	0.19	3.8	3.2
3034	Rhyolite Porphyry	0.11	0.43	3.4	2.9	70.4	13.6	1.3	3.5	0.9	1.9	0.08	0.7	1.6
3035	Basaltic Andesite Pillow Lava	0.14	1.26	9.6	1.0	55.5	14.3	4.6	7.9	1.1	2.7	0.27	0.4	2.2
3036	Rhyolite Tuff	0.06	0.33	3.4	0.7	71.9	12.3	0.3	3.0	0.3	4.8	0.05	1.4	0.9
3037	Basalt? Pillow Lava	0.20	1.21	8.3	0.6	45.5	15.1	3.1	7.1	2.2	2.7	0.28	10.0	3.2
3038	Basalt Pillow Lava	0.36	1.96	10.3	<0.05	44.0	12.2	5.0	11.9	2.6	1.5	0.24	6.3	5.1
3039	Dacite Breccia	0.14	0.73	2.9	0.8	61.8	14.9	4.9	5.1	0.5	5.3	0.28	0.2	2.6
3040	Rhyodacite Massive Lava	0.09	0.36	5.5	3.5	68.3	12.3	1.5	3.6	0.3	1.9	0.07	2.4	1.6
3041	Dacite Tuff	0.12	0.70	5.4	1.3	60.8	13.0	6.0	6.7	0.8	3.2	0.16	0.1	2.4
3042	Rhyodacite Porphyry	0.09	0.60	6.1	1.2	66.1	14.9	2.5	4.5	<0.05	2.9	0.23	0.4	1.6
3043	Dacite Massive Lava	0.18	0.64	4.9	0.9	62.6	15.6	2.4	5.6	0.2	5.0	0.22	1.1	1.8
3044	Basalt Massive Lava	0.24	1.49	10.1	0.3	48.6	12.1	6.3	12.9	2.1	2.1	0.12	0.1	2.8
3045	Cherty Dacite Tuff	0.16	0.44	4.7	1.5	65.0	14.4	2.5	3.9	0.9	3.1	0.10	0.5	1.9
3046	Andesite Pillow Lava	0.18	1.55	7.8	0.3	58.3	13.4	3.9	7.3	0.4	3.6	0.36	0.8	2.1
3047	Andesite Massive Lava	0.13	0.79	8.7	0.4	58.9	14.9	5.5	6.2	0.8	2.2	0.19	0.6	2.7
3048	Dacite Flow Breccia	0.13	0.63	4.9	0.3	60.6	15.8	3.1	6.1	0.7	5.1	0.12	0.5	1.9
3049	Andesite Pillow Lava	0.15	0.59	5.9	0.5	56.8	15.0	6.6	6.9	0.6	2.9	0.11	<0.05	2.9
3050	Dacite Breccia	0.13	0.53	5.9	1.2	59.7	15.7	5.0	5.9	0.9	3.3	0.09	0.8	2.9
3051	Andesite Breccia	0.13	1.17	6.8	0.2	57.8	14.1	3.1	6.6	3.4	3.8	0.28	0.1	2.3
3052	Andesite Breccia	0.34	0.73	6.7	3.3	52.4	13.9	4.2	8.6	1.9	0.7	0.12	2.3	3.9
3053	Andesite Breccia	0.19	0.61	5.6	0.6	55.0	14.4	6.2	7.6	1.8	3.5	0.11	0.4	3.2

Table III. Trace-element concentrations in various fractions of till

		Copper (Cu)						Zinc (Zn)						Lead (Pb)					
	Sample no. / Fraction	A	B	C	D	E	F	A	B	C	D	E	F	A	B	C	D	E	F
Southern Lake	CN 246	160	725	138	117/74	485	25	35	149	37	48/65	32	62	10	39	17	17/21	33	27
	CN 146	58	174	30	25	94	19	49	150	55	47	16	50	12	26	15	15	32	23
	CN 271	58	-	181	117	229	36	20	-	80	65	23	56	6	-	15	22	26	22
	CN 282	48	150	35	30	68	33	29	127	46	50	19	58	8	16	12	18	40	22
Spi Lake	C 25A	12	49	20	14	32	12	13	86	48	48	28	76	9	20	24	22	44	48
	C 25B	8	70	24	15	14	7	11	120	69	68	130	95	9	40	28	25	50	37
	C 25C	23	62	17	12	50	13	40	130	57	48	33	76	14	30	23	33	52	23
	C 25D	44	100	-	12	37	24	56	132	-	47	31	78	16	26	-	27	51	51
	C 25E	80	382	90	77	56	22	185	1050	224	170	150	115	12	40	25	35	50	36
	C 25F	15	97	33	16	37	20	14	120	72	40	88	86	11	39	24	33	63	23
	C 25G	10	70	20	2	16	8	10	97	44	41	31	68	9	39	19	24	53	32
	C 25I	24	133	52	28	26	8	32	220	152	63	175	62	100	700	192	135	230	76

Sample no. / Fraction	Nickel (Ni) A	B	C	D	E	F	Cobalt (Co) A	B	C	D	E	F	Silver (Ag) A	B	C	D	E	F
CN 246	225	1250	123	141/130	340	84	23	87	26	29/29	77	47	0.7	2.4	1.1	1.9/1.0	1.3	1.4
CN 146	24	70	35	25	13	60	16	24	17	18	22	40	0.8	1.4	1.0	1.4	1.6	2.0
CN 271	9	-	55	44	19	75	7	-	31	31	29	24	0.5	-	1.4	1.4	1.2	2.0
CN 282	25	33	35	32	22	74	14	16	20	22	26	68	0.6	0.7	1.1	0.8	1.2	2.1
C 25A	12	36	33	31	14	58	4	15	20	16	18	64	0.3	0.8	1.4	0.9	0.8	1.6
C 25B	8	42	34	33	14	67	4	23	23	16	14	48	0.3	1.0	1.4	1.0	0.7	1.8
C 25C	20	51	35	36	15	82	8	18	21	15	19	33	0.5	1.1	1.3	1.1	0.7	23.3
C 25D	26	62	-	36	15	111	8	22	-	17	15	87	0.5	1.2	-	1.1	0.7	2.5
C 25E	9	38	30	29	12	56	5	14	19	13	13	41	0.4	1.2	0.9	1.0	0.7	1.6
C 25F	9	40	30	27	14	100	4	20	17	12	14	88	0.3	1.0	0.9	0.9	0.7	3.5
C 25G	9	44	32	31	13	46	3	20	19	14	16	35	0.3	0.7	1.0	0.9	0.7	1.3
C 25I	6	37	30	29	12	43	5	19	19	14	12	32	0.6	3.6	3.0	1.8	3.0	1.11

Explanation: CN samples; Till samples near Copperneedle Esker anomalies near south end of Southern Lake;
C samples; Till samples in vicinity of Cu-Zn-Pb showing on Spi Lake (Lat. 62°04' Long. 95°47.5');

A, -250-mesh separate;
B, -2μ separate (clay);
C, 18-60-mesh rock fragments – bromoform separate;
D, 60-250-mesh grains, bromoform separate, (particles from 2.85-3.3 s.g.);
E, 60-250-mesh grains, methylene iodide separate (particles <3.3 s.g.);
F, magnetic grains from 60-250-mesh separate.

To accompany GSC Paper 73-34 by R.H. Ridler and W.W. Shilts

Tables I, II & III