KETCHEM DOME PROSPECT - FIELD REPORT
October 29, 1984

Introduction

The Ketchem Dome prospect is located on the northern flank of Ketchem Done in section 1 and 2, T7N, R14E, on the Circle B-2 Quadrangle, Alaska. The area was originally staked by Resource Associates of Alaska, Inc. (1), who optioned the property to the Houston Oil and Minerals Company. The claims are now controlled by Joe Vogler, a placer miner from Fairbanks.

During the summer of 1984, two days were spent sampling mineralization in the Ketchem Dome/Creek area. High concentrations of lithophile elements were found.

Results of Investigations

In the Ketchem Dome area three types of mineralization were sampled. Two samples of radioactive pegmatites consisting mostly of quartz and orthoclase, but with minor amounts of malachite staining, fluorite, and allanite(?) were collected from section 25 (figure 1 and table 1). These pegmatites form conspicuous outcrops in the otherwise weathered coarse-grained granite. One sample contained 164 ppm U and 700 ppm Nb; the other contained 20 ppm Sn.

One sample of Mn-stained, garnet-pyroxene-quartz-calcite-rhodochrosite(?) skarn was collected at the 2,400 ft elevation of the ridge north of Ketchem Dome (figure 1). This skarn forms a $\geq$ 4 ft lens which forms the resistant backbone to this east-trending ridge. The sample contains 510 ppm Sn^{n}, 800 ppm W and 1,000 ppm Zn (tables 1 and 2). The Sn and W may be contained within garnet and scheelite, respectively.

Six samples of greisen were collected from float, rubble, or outcrop. All of the samples contain anomalous amounts of Sn and most contain elevated to anomalous concentrations of W, Cu, Pb, and Zn (table 3). One sample also contains 13.06 ppm Ag.

At the 2875 ft elevation on the ridge north of Ketchem Dome four trenches expose outcrops of greisen mineralization. The greisen occurs as east-trending zoned veins with selvages of sericite- or chlorite-sericite alterd granite grading to cores of dense, black chlorite with traces of limonite after pyrite, cut by veinlets of quartz. Purple fluorite occurs as fractures cutting the greisen. Sampling of the trenches by Houston showed up to 2.3 pct Sn in the greisen zones and 0.05 to 0.40 pct Sn in 6- to 10-ft channel samples across the zones (2). Sample CI21532, high-graded chlorite vein material collected from the trench dump piles, contains 0.76 pct Sn. Head analyses of a 120-lb bulk channel sample across one of the veins has not yet been received.

Table 4 gives results of major-oxide and trace-element analyses of samples of moderately coarsely crytalline porphyritic biotite granite and of seriate biotite granite from the Ketchem Dome area. The coarser-grained granite underlies much of the lower elevations of the area; the seriate granite underlies much of the ridge north of Ketchem Dome. The two samples have very similar major-oxide compositions, however, although the seriate granite is host to the Sn-bearing greisen veins, the sample of coarser-grained granite contains more Sn.

Three panned concentrates were collected in the Ketchem Creek area: one from Mary Louise Creek; one from the east-flowing stream in section 1; and one on Ketchem Creek near the confluence with the

east-flowing stream. All three samples have anomalous tin and tungsten concentrations. The highest values (1.16 pct Sn and 0.213 pct W) were found in the east-flowing stream.

Discussion

Greisen veins on Ketchem Dome parallel a regional east-trending, approximately 6-mile-long topographic linear. The linear cuts both of the intrusive rock types together with the metasedimentary country rocks. Occurrences of placer tin to the west of Ketchem Dome correlate with the east-trending linear as do high concentrations of tin and tungsten in a panned concentrate sample collected from the drainage due east of the greisen occurrences. Lack of greisen in the saddle 1 mile west of Ketchem Dome, however, suggests that if this is a mineralization trend, the mineralization is discontinuous.

The composition of and apparent structural control on the greisen at Ketchem Dome is very similar to that of other greisen occurrences in Interior Alaska (e.g. Lime Peak, Sithylemenkat). This suggests that although the greisen at Ketchem is hosted by sericite granite and that although the variety of mineralization styles would suggest the various granites to be enriched in lithophile elements, the greisen itself is not genetically related to any one rock type.

Conclusions

Ketchem Dome is host to at least three styles of lithophile-element enriched occurrences of mineralization: (1) Pegmatites containing U, Nb, and Sn; (2) Skarn containing Sn and W, and (3) greisen containing Sn, W, and Ag. Tin-bearing greisen veins are exposed in trenches on

the north side of Ketchem Dome. Although the veins are narrow, their coincidence to a regional topographic linear and possible trend of mineralization and high tin concentrations in a drainage due east of the veins suggests the possibility for small to moderate tonnages of tin-bearing material along a continuous strike length.

Table 1. - Results of trace element analyses (in ppm) of two samples of pegmatites and one sample of skarn, Ketchem Dome prospect area.

Sample Field No.	U	Th	Sn	W	Nb	Ta	Au	Ag	Cu	Pb	Zn
Ci21537	9.5	<30	19.8	<5	<100	NA	<.007	.57	190	50	550
Ci21538	164	40	<5	16	700	NA	NA	NA	NA	NA	NA
Ci21542	NA	NA	510	800	<100	<100	NA	NA	NA	NA	NA

Descriptions:

Ci21537 — 2-ft chip-channel sample of pegmatite dike with a malachite-stained fluorite-bearing quartz core grading outward to a brecciated margin composed largely of K-feldspar.

Ci21538 — Random chip of coarse K-feldspar-quartz simple pegmatite.

Ci21542 — Random chip from $\geq$4 ft lens of banded Mn-stained, garnet-pyroxene-quartz-calcite-rhodochrosite(?) skarn.

Table 2. - Results of trace-element analyses (in ppm) of samples of quartz-chlorite-sericite greisen, Ketchem Dome prospect area

Sample Field No.	Sn	W	Cu	Pb	Zn	Remarks
Ci21251	89	4500	10	33	1010	Sample of float.
Ci21252	140	240	48	86	530	Random chip of float.
Ci21254	31	10	530	50	94	Sample of float.
Ci21255	1570	20	24	33	120	Sample from trench dump.
Ci21532	7590	100	100	86	220	High-grade of vein material.
Ci21220	89	6	21	33	320	Chip of greisen rubble.

Table 3. - Results of major-oxide (in percent) and trace-element (ppm) analyses of samples from the Ketchem Dome prospect area.

Sample Field No.	SiO_2	Al_2O_3	CaO	Fe_2O_3	FeO	K_2O	MgO	Na_2O	P_2O_5
Ci21529	77.9	12.8	0.73	0.14	1.36	4.3	0.11	3.3	--
Ci21531	78.3	12.9	0.59	0.01	1.69	4.7	0.08	3.2	--

	Sn	W	Nb
Ci21529	9.1	<5	<100
Ci21531	<5.0	<5	<100

Descriptions:

Ci21529: Moderately coarsely crystalline porphyritic biotite granite.
Ci21531: Seriqite biotite granite.

.12 .01 .015 .053
.47 .01 .05 .052
.48

Table 4. - Results of analyses[1] (in ppm) of panned concentrates from Ketchem Dome area.

Sample Field No.	Au	Ag	Sn	W	Ta	Nb	Remarks
Ci21222P	61.53	19.85	1470	1290	<100	<50	One unscreened pan, two colors Au.
Ci21539P	NA	NA	11600	2130	<100	<50	Two pans, one from active stream, one from frozen bank.
Ci21540P	.258	<.3	1880	500	<100	<50	One pan from bench gravels of Ketchem Creek.

[1]Analyses by X-ray fluorescence, Reno Research Laboratory, Reno, Nevada.

June 6-9

Circle B2 Master Map May 16-18, 1984

DW, JB, D.S.

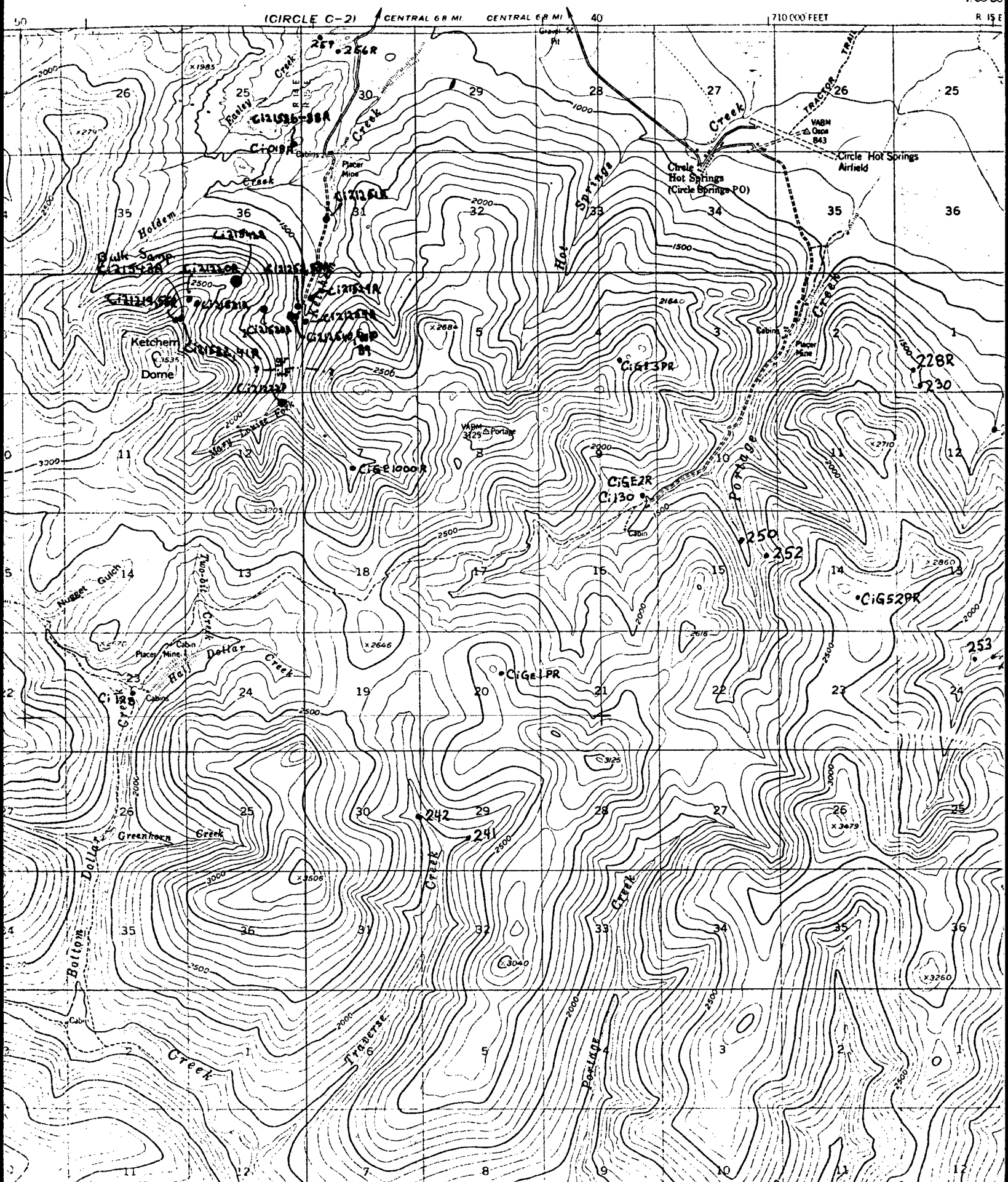

Table 2

RENO RESEARCH CENTER
SPECTROGRAPHIC LABORATORY REPORT

SUBMITTED BY-FAIRBANKS
DATE SUBMITTED-07/23/84
DATE COMPLETED-08/22/84
OPERATOR-MHW
RUN NO.-407-#804

SAMPLE NUMBERS

ELEMENTS	21533	21535	31536	21537	21538	21542
	CONCENTRATION, PERCENT					
AG	<.008	<.0005	<.0005	<.0005	<.0005	<.006
AL	.3	>4.	>4.	>3.	>4.	>4.
AS	<.009	<.01	<.009	<.07	<.01	<.05
AU	<.002	<.002	<.002	<.002	<.002	<.003
B	<.003	.02	.01	.009	.01	<.02
BA	.02	.05	<.002	.004	<.002	<.002
BE	.004	.001	.003	.001	.004	.006
BI	<.01	<.02	<.02	<.01	<.03	<.01
CA	<.05	.3	.3	.3	.8	>10.
CD	<.0005	<.0005	<.0005	<.0005	<.0005	<.0005
CO	<.001	<.001	<.001	<.001	<.001	<.001
CR	<.0003	.003	.005	.01	.003	.003
CU	.02	<.0006	<.0006	.02	<.0006	<.0006
FE	>10.	3.	.8	2.	.6	7.
GA	<.0007	<.0002	<.0002	<.0002	<.0002	<.0002
K	<1.	>10.	4.	3.	<1.	<.6
LA	<.01	<.01	<.01	<.01	<.01	<.01
LI	<.002	>.06	<.002	<.002	<.002	<.002
MG	.02	.1	.001	.05	.004	.4
MN	.1	.09	.03	.07	.03	>10.
MO	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
NA	<.3	3.	5.	<.3	10.	<.3
NB	<.007	<.007	<.007	<.007	<.02	<.007
NI	<.003	<.0004	<.0005	.0009	<.0003	<.004
P	<2.	<.7	<.7	<.7	<.7	<.7
PB	<.005	<.002	<.002	<.002	<.002	<.003
PD	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
PT	<.001	<.0006	<.0006	<.0006	<.0006	<.0008
SB	<.3	<.06	<.06	<.06	<.06	<.1
SC	<.0004	<.0004	<.0004	<.0004	<.0004	<.0004
SI	5.	>10.	>10.	>10.	>10.	>10.
SN	<.2	<.002	<.0006	<.004	<.0006	<.05
SR	<.0001	.0002	<.0001	<.0001	<.0001	.002
TA	<.09	<.02	<.02	<.02	<.02	<.02
TE	<.04	<.04	<.04	<.06	<.04	<.04
TI	<.03	<.04	<.03	<.03	<.03	.1
V	<.005	<.005	<.005	<.005	<.005	<.005
Y	<.0009	<.0009	<.0009	<.0009	<.0009	<.0009
ZN	.03	.003	.005	.08	.01	.1
ZR	<.006	<.003	<.003	<.003	<.003	<.003

REMARKS

RENO RESEARCH CENTER
SPECTROGRAPHIC LABORATORY REPORT

SUBMITTED BY-FAIRBANKS
DATE SUBMITTED-07/23/84
DATE COMPLETED-08/22/84
OPERATOR-MHW
RUN NO.-407-#804

ELEMENTS	SAMPLE NUMBERS 21251	21252	21253	21254	21255	21529	21531	21532
	CONCENTRATION, PERCENT							
AG	<.005	<.002	<.001	<.0005	<.0005	<.002	<.0005	<.002
AL	>3.	>4.	>3.	>3.	>3.	>4.	>4.	>3.
AS	<.03	<.009	<.009	.1	<.01	<.009	<.01	<.009
AU	<.003	<.002	<.002	<.002	<.002	<.002	<.002	<.002
B	<.01	.009	<.008	.009	.01	.01	.01	.01
BA	.06	.2	.03	.3	.002	.01	.03	<.002
BE	.02	.009	.0004	.0003	.04	.002	.002	.001
BI	<.02	<.02	<.02	<.02	<.02	<.03	<.02	<.02
CA	>10.	9.	3.	<.05	<.05	.6	.4	<.05
CD	<.0005	<.0005	<.0005	<.002	<.0005	<.0005	<.0005	<.0005
CO	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
CR	<.0006	.003	.002	.002	<.0008	.002	.003	.003
CU	<.0006	.0007	.002	.05	<.0006	<.0006	<.0006	.003
FE	7.	6.	5.	5.	5.	2.	2.	5.
GA	<.0003	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002
K	<.6	3.	<2.	>10.	6.	>10.	>10.	<1.
LA	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
LI	<.002	.03	>.05	<.004	.02	>.08	.008	.01
MG	.5	1.	1.	.2	.01	.04	.04	.006
MN	>8.	>3.	.4	.3	.4	.08	.1	.6
MO	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
NA	<.3	<.7	<.3	<.3	<.3	5.	5.	<.3
NB	<.007	<.01	<.01	<.007	<.007	<.01	<.009	<.007
NI	<.004	<.001	.003	<.0006	<.0004	<.0005	<.0004	<.0002
P	<.7	<.7	<.7	<.7	<.7	<.7	<.7	<.7
PB	<.003	<.004	<.002	<.002	<.002	<.002	<.002	<.002
PD	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
PT	<.0006	<.0006	<.0006	<.0006	<.0006	<.0006	<.0006	<.0006
SB	<.1	<.1	<.06	<.06	<.06	<.06	<.06	<.06
SC	<.0004	<.0004	<.0004	<.0004	<.0004	<.0004	<.0004	<.0004
SI	>10.	>10.	>10.	>10.	>10.	>10.	>10.	>10.
SN	<.007	<.01	<.006	<.003	<.3	<.001	<.0007	<.8
SR	.007	.02	.0007	.002	<.0001	<.0001	.0001	<.0001
TA	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
TE	<.04	<.04	<.04	<.04	<.04	<.04	<.04	<.04
TI	.09	.3	.4	.08	<.03	<.03	<.03	<.03
V	<.005	<.005	<.009	<.005	<.005	<.005	<.005	<.005
Y	<.0009	<.0009	<.0009	<.0009	<.0009	<.0009	<.0009	<.0009
ZN	.1	.05	.02	.006	.03	.003	.003	.05
ZR	<.003	<.003	<.003	<.003	<.003	<.003	<.003	<.003

REMARKS