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PRELIMINARY GEOLOGIC MAP AND DATA TABLE FROM THE OPHIR C-1 AND WESTERN MEDFRA C-6 QUADRANGLES, ALASKA

by

Thomas K. Bundtzen, DeAnne S. Pinney, and Gregory M. Laird

July 1997

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Introduction

During May and June of 1996, the Alaska Division of Geological and Geophysical Surveys conducted 1:63,360 scale geologic mapping in the Ophir C-1 and western Medfra C-6 quadrangle of western Alaska. This report presents preliminary geological information collected during the study. The 1:63,360 scale geologic map and complete map unit descriptions are accompanied by fossil identifications (table 1), major oxide analyses and CIPW normative mineralogy of igneous rocks (table 2), and geochemical results from 25 mineralized zones and prospects investigated during geologic mapping (table 3).

Bedrock Geology

We have benefited from regional geologic mapping coverage of the Medfra quadrangle (Patton and others, 1980) and Ophir quadrangle (Chapman and others, 1985). The study area is underlain by three layered geologic rock packages. Granitic orthogneiss (PzpCgo), phyllitic schist, and metaconglomerate (PzpCph) of the Ruby terrane are poorly dated, Late Proterozoic-to-Paleozoic regionally metamorphosed rocks that are structurally juxtaposed along a buried high angle (?) fault against the Innoko terrane in the northwestern portion of the map area.

The Innoko terrane underlies about 65% of the study area, and is comprised of deep water clastic sedimentary rocks and chert (KPqs, TrMcs, TrMs, TrMc), discontinuous carbonate units (TrMls, TrMd), and volcanogenic sediments and mafic flows of tholeiitic composition (TrMbc, TrMv,JTrt, JTrma) that range in age from Late Devonian (?) to Jurassic. An unnamed metamorphic complex (PzpCs) is exposed in two structural windows beneath the Innoko terrane along the Innoko River and Colorado Creek.

Cretaceous flysch (Kcvs) was apparently deposited in a northeast-trending structural trough that separates the Triassic-Jurassic tuffs and related units in the southeast portion of the map area (JTrt, JTrma) from older cherts, clastic rocks, and pillow basalts (TrMcs, TrMc, TrMs, TrMbc,TrMv) that underlie much of the map's central region. The distribution of the Cretaceous flysch is probably controlled by a complicated structural graben that separates these two Innoko terrane rock packages.

Intruding and overlying the older layered rocks are various lithologies of the Late Cretaceous-Early Tertiary Cripple Creek Mountains volcano-plutonic complex (CCM). The CCM complex includes intrusive phases ranging in composition from ankaramite to granite (TKgb, TKm, TKbp, TKg, TKgp), felsic ring dikes (TKf), and volcanic and subvolcanic rocks that predate the intrusive phases (TKgrt, TKva). We believe the older felsic pyroclastic phase (TKgrt) that now rims the Cripple Creek Mountains is part of a collapsed caldera feature. Similar features are described in the Horn and Chuilnik Mountains, near Aniak, which are part of the Kuskokwim Mineral Belt of southwest Alaska. (Bundtzen and Miller, 1997). Patton and others (1980) report an age of 71.3 Ma for the Cripple Creek Mountains intrusion. Our radiometric age dating of igneous and metamorphic rocks from the study area is in progress.

Quaternary Geology

Seventeen unconsolidated units that depict fluvial (Ql), lacustrine and alluvial (Qa, Qfp, Qaf, Qag, Qas), colluvial (Qc, Qca, Qcs, Qct), eolian (Qel), glacial (Qdt), and mixed environments (Qer, Qht, Qps, Qs, Qtk) cover about 55% of the map area. Most of the map area was not subjected to Pleistocene glaciation; however, limited cirque and valley glaciation took place in the higher elevations of the Cripple Creek Mountains.

Structural Geology

The area has a complex structural history. The Ruby terrane and unnamed metamorphic rocks underlying the Innoko terrane were subjected to greenschist to amphibolite facies conditions during mid-Cretaceous and possibly during older times (Miller and others, 1991). In the Hunch Mountain area, the metasedimentary rocks of the Ruby terrane are characterized by a strong cataclastic deformational fabric.

The Innoko terrane was subjected to a period of northwest-trending, sub-isoclinal folding that was later superimposed by a northeast vergent, sub-isoclinal folding event and accompanying synkenematic thrust faulting. The two folding events are best observed in the Graham Creek area. Later, a northeast-trending high angle fault system juxtaposed tuff-dominant units of Jurassic-Triassic age against deep water sediments, sedimentary, and volcanic rocks of Upper Devonian-to-Triassic age. Northwest-trending high-angle faults cut most of the northeast trending faults, and are apparently the youngest structures in the study area.

Economic Geology

Placer gold deposits on Colorado, Cripple, and Bear Creeks were discovered and developed just prior to World War I and have produced about 265,000 ounces (8,240 kg) of gold or about 38% of the total gold produced in the Innoko Mining district. Early prospectors and companies located and briefly developed the Wyoming, Moose Jaw, and Saddle hardrock gold-antimony-vein deposits, which are hosted in hornfels and granite of the Cripple Creek Mountains. The placer paystreaks head into the Cripple Creek Mountains, which have recently become a focus of hardrock exploration by the mineral industry. Brief geochemical and descriptive data for 25 mineral occurrences and prospects in the study area are given in Table 3. Several important stibnite-gold-quartz veins, gossaniferous breccia zones, and gold-bearing stockwork deposits are conspicuously alligned along a northeast-trending zone that cuts through the northern Cripple Creek Mountains (table 3). A feature of future exploration significance is the intersection of the northeast-trending fault with the younger northeast faults that cut the Cripple Creek Mountains.

Acknowledgments

Stephanie Foggia ably assisted all three geologists during the numerous field traverses completed in the study area. We especially thank the employees of Rosander Mining Company for providing warm hospitality and useful geologic discussions during our investigations. James Barker from Northwest Land Resources Inc. provided stimulating discussions about the region's polymetallic lode and placer gold deposits.

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Table 1
Fossil Identifications From the Ophir C-1 and Western Medfra C-6 Quadrangles, Alaska

Map/Field Numbers	Map Unit	Description	Age Estimate	References
1 (96GL176B)	TrMls	Massive lense of sandy limestone contains indeterminate pelecypod fragments but no conodonts	Indeterminate	Norm Savage, written commun. (1997)
2 (96BT172)	TrMcs	Silicified, circular and spherical radiolaria and irregular cylindrical tubes that exhibit aggultinated-siliceous walls ; in coarse-grained, calcareous sandstone. Cryptostome bryozoans and pelmatozoan debris encased in packstone clasts.	Late (?) Paleozoic	P.L. Brenckle, written commun.(1997)
3 (80ch-60B)	TrMc	*Capnodoce* sp. in chert	Triassic(?)	Chapman and others (1985)
4 (80ch-61B)	TrMc	*Latentibifistula* sp., fragments	Pennsylvanian to Early Permian	Chapman and others (1985)
5 (80ch-62B)	TrMc	*Tormentum* sp.	Mississippian to Permian	Chapman and others (1985)
6 (78aPa-2)	TrMc	Interminate radiolarians as seen in thin section.	Indeterminate	Chapman and others (1985)
7 (96BT189)	PKqs	Organic debris with dark brown walls composed of bundles of undulating tubes that may be remains of vascular plants.	Mesozoic (?)	P.L. Brenckle, written commun. (1997)
8 (96BT120)	TrMc	Poorly preserved radiolaria in variagated chert.	Indeterminate	E.A. Pessagno, written commun. (1997)

Table 1: Fossils 1
Map numbers keyed to ▲ on map.

9 (77ch-26)	TrMc	*Albaillella* sp. segmented and assymetrical; and bipolar sponge spicules.	Middle or Late Mississippian	Chapman and others (1985)
10 (78Pa-1,4)	Kcs	*Inoceramus* sp. prisms.	Cretaceous	Chapman and others (1985)
11 (96BT191)	PKqs	Abundant, flat pelecypod and gastropod shell fragments in coarse-grained, quartzose sandstone.	Mesozoic	R.B. Blodgett, written commun. (1997)
12 (96BT138)	TrMcs	Poorly preserved radiolaria from chert in calcareous sandstone section.	Indeterminate	E.A. Pessagno, written commun. (1997)
13 (96GL35)	Kcs	Poorly preserved indeterminate radiolaria in variagated chert layer within coarse sandstone.	Indeterminate	E.A. Pessagno, written commun. (1997)
14 (96GL54)	JTrt	Irregular cylindrical tubes that exhibit aggultinated-siliceous -wall structure. Ringlike structures in thin section are probably cross sections of the tubes.	Indeterminate	P.L. Brenckle, written commun. (1997)
15 (96BT28)	PKls	Either *(1) Atomodesma* sp. or *(2) Inoceramus* sp. prisms in light gray siliceous limestone lense; dissolved residues did not contain conodonts.	(1) Permian or (2) Cretaceous	R.B. Blodgett and Norm Savage, written commun. (1997)
16 (96BT171)	TrMcs	Brachiopod fragments and silicified circular/spherical radiolaria (?) in shale. Possible vascular plant debris in sandstone.	Probably Late Paleozoic	P.L. Brenckle, written commun. (1997)

Table 1: Fossils 2
Map numbers keyed to ▲ on map.

17 (96BT110)	TrMbc	Abundant *Fenestrellid* (?) bryozoan fragments and a few micritic clasts or burrows with encased shell fragments .	Late (?) Paleozoic	P.L. Brenckle, written commun. (1997)
18 (96BT133)	TrMcs	Pelmatozoan fragments and indeterminate microfossils in peloidal casts of pebble-rich sandstone.	Probably Paleozoic	P.L. Brenckle, written commun. (1997)
19 (96BT131)	TrMcs	Brachiopod spines and radiolaria in coarse, calcareous sandstone	Indeterminate	P.L. Brenckle, written commun. (1997)
20 (96BT107)	TrMbc	Abundant poorly-preserved *Spumellaria* and rare multicyrtid *Nassellariina* radiolaria; *Ceratokiscum* spp.	Multicyrtid Nasellariina are usually found in Mesozoic-Cenozoic deposits (particularly Triassic) and rarely in Late Paleozoic deposits	E.S. Pesangno and B. Holdsworth, written commun. (1997)
21 (96BT130)	TrMcs	Single brachiopod spine in coarse sandstone.	Indeterminate	P.L. Brenckle, written commun. (1997)
22 (96BT100)	TrMv	*Veghicyclia* spp., *Pseudoheliodiscus* spp., *Sarla* spp., *Capnodoce* spp. ? radiolaria in maroon chert within basaltic-andesite flow.	Biostratigraphic/ chronostratigraphic determination: *Betracium* zone, *Pantanellium* subzone, lower upper Norian, Upper Triassic	E.S. Pessangno, written commun. (1997)
23 (96BT102)	TrMv	Poorly-preserved, indeterminate radiolaria in gray chert.	Indeterminate	E.S. Pessangno, written commun. (1997)
24 (96BT152)	TrMc	Abundant *Ceratokiscum* spp., abundant Spumellaria in chert.	Silurian to Permian	E.S. Pesssangno, written commun. (1997)
25 (96BT150)	TrMc	Poorly-preserved radiolaria	Indeterminate	E.S. Pessangno, written commun. (1997)

Table 1: Fossils 3
Map numbers keyed to ▲ on map.

Table 2

Major-oxide determinations and CIPW normative mineralogy for selected igneous rocks from the Ophir C-1 and western Medfra C-6 quadrangles, Alaska

Samples analyzed by X-Ray fluorescence spectrography by Chemex Laboratories, Sparks, Nevada, USA)

Major Oxides in Weight Percent

Map no.:	1	2	3	4	5	6	7	8
Field no.:	96BT205	96BT153	96BT158	96BT15	96BT13	96BT211	96BT26	96BT29b
Rock Type	Olivine basalt	Olivine basalt	Olivine basalt	Basaltic andesite	Basaltic andesite	Monzonite	Granite porphyry	Granite porphyry
(unit)	(TrMbc)	(TrMbc)	(TrMbc)	(TrMv)	(TrMv)	(TKm)	(TKgp)	(TKgp)
SiO_2	46.96	47.64	47.26	52.33	54.12	58.20	69.39	72.96
Al_2O_3	12.67	14.05	14.14	15.00	14.92	15.67	14.44	15.17
Fe_2O_3	3.92	4.04	3.09	5.65	3.02	2.20	1.70	1.42
FeO	6.80	6.06	3.16	5.96	6.25	4.34	0.33	0.26
MgO	9.19	8.31	6.21	3.85	3.03	4.38	0.28	0.49
CaO	12.71	8.05	13.74	6.21	8.44	5.70	3.16	1.10
Na_2O	1.80	3.65	2.92	4.57	4.46	3.63	1.01	1.01
K_2O	0.36	0.24	1.72	0.64	0.62	3.08	3.24	4.55
TiO_2	1.36	1.51	0.65	0.88	1.15	0.79	0.21	0.21
P_2O_5	0.13	0.17	0.08	0.19	0.18	0.33	0.10	0.07
MnO	0.17	0.16	0.17	0.19	0.14	0.11	0.04	0.01
Cr_2O_3	0.05	0.01	0.02	0.00	0.00	0.00	0.00	0.00
LOI	3.40	4.11	4.89	4.00	3.04	0.62	4.93	2.03
Totals	99.52	98.00	98.05	99.47	99.37	99.05	98.49	99.28

CIPW Normative Minerology in Weight Percent from *Igpet-2* Program by Terra Softa Inc.

	1	2	3	4	5	6	7	8
Quartz	0.00	0.00	0.00	4.81	5.08	7.07	44.21	46.51
Corundum	0.00	0.00	0.00	0.00	0.00	0.00	3.77	6.75
Orthoclase	2.13	1.42	10.16	3.78	3.66	18.20	19.15	26.89
Albite	15.23	30.89	13.88	38.67	37.74	30.72	8.55	8.55
Anorthite	25.43	21.25	20.40	18.53	18.86	17.37	15.02	5.00
Olivine	2.15	6.09	0.00	0.00	0.00	0.00	0.00	0.00
Diopside	29.44	14.03	34.94	8.96	18.05	7.07	0.00	0.00
Hyperstene	13.12	11.09	0.00	10.42	5.96	12.54	0.70	1.22
Hematite	0.00	0.00	0.00	0.00	0.00	0.00	1.30	1.24
Magnetite	5.68	5.86	4.48	8.19	4.38	3.19	0.59	0.26
Nepheline	0.00	0.00	5.86	0.00	0.00	0.00	0.00	0.00
Wollas-tenite	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00
Ilmenite	2.58	2.87	3.13	1.67	2.18	1.50	0.40	0.40
Apatite	0.30	0.39	0.19	0.44	0.42	0.76	0.23	0.16
Plagioclase comp.	An_{63}	An_{41}	An_{60}	An_{32}	An_{33}	An_{36}	An_{64}	An_{37}

LOI=loss on ignition
Map numbers keyed to circled numbers on map.

Table 2 - *Continued*

Major-oxide determinations and CIPW normative mineralogy for selected igneous rocks from the Ophir C-1 and western Medfra C-6 quadrangles, Alaska

Major Oxides in Weight Percent

Map no.:	9	10	11	12	13	14	15	16	17
Field no.:	96BT29f	96BT22	96BT21	96BT24	96BT36a	96BT73	96BT74	96BT49b	96BT65b
Rock Type (unit)	Basaltic andesite (TKva)	Quartz syenite (TKm)	Alkali gabbro (TKgb)	Border phase syenite (TKbp)	Wehrlite (TKgb)	Diorite (TKm)	Alkali gabbro (TKgb)	Monzonite (TKm)	Granite porphyry (TKgrt)
SiO_2	48.20	63.82	54.22	61.48	43.47	52.88	49.71	52.25	67.20
Al_2O_3	17.96	15.12	15.86	15.38	3.16	16.36	12.36	15.57	15.66
Fe_2O_3	4.97	0.96	2.60	0.75	3.56	3.34	3.28	2.90	1.22
FeO	6.70	3.60	5.49	4.36	14.40	5.60	7.16	7.41	2.07
MgO	4.65	2.96	4.29	2.96	18.49	4.54	10.98	4.94	1.08
CaO	2.90	4.83	5.77	3.87	13.06	6.87	11.18	8.22	2.00
Na_2O	3.39	3.04	3.52	3.33	0.37	3.58	1.78	4.69	3.64
K_2O	4.69	2.99	4.45	2.43	0.74	3.02	0.37	0.68	3.17
TiO_2	1.69	0.57	0.91	0.65	0.87	0.89	0.58	1.06	0.43
P_2O_5	0.26	0.20	0.64	0.23	1.34	0.77	0.27	0.18	0.15
MnO	0.14	0.12	0.15	0.09	0.32	0.16	0.19	0.18	0.08
Cr_2O_3	0.00	0.00	0.00	0.00	0.09	0.00	0.01	0.00	0.00
LOI	3.65	1.06	0.67	3.42	0.01	0.81	1.41	0.75	2.15
Totals	99.20	99.27	98.57	98.95	99.88	98.82	99.28	98.83	98.85

CIPW Normative Minerology in Weight Percent
from *Igpet-2* Program by Terra Softa Inc.

Quartz	0.00	19.01	0.00	17.80	0.00	0.32	0.18	0.00	27.20
Corundum	0.00	0.00	0.00	0.79	0.00	0.00	0.00	0.00	2.96
Orthoclase	27.72	17.67	26.30	17.80	4.37	17.85	2.19	4.02	18.73
Albite	28.69	25.72	29.79	28.18	3.13	30.29	15.06	39.69	30.80
Anorthite	12.69	18.78	14.33	17.70	4.78	19.65	24.64	19.43	8.94
Olivine	11.72	0.00	2.98	0.00	32.92	0.00	0.00	6.04	0.00
Diopside	0.00	3.17	8.24	0.00	41.49	7.64	23.33	16.57	0.00
Hyperstene	1.07	10.92	9.28	13.85	3.18	13.95	25.98	5.70	4.92
Hematite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Magnetite	7.21	1.39	3.77	1.09	5.16	4.84	4.76	4.20	1.77
Nepheline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wollas-tenite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilmenite	3.21	1.08	1.73	1.23	1.65	1.69	1.10	2.01	0.82
Apatite	0.60	0.46	1.48	0.53	3.10	1.78	0.63	0.42	0.35
Plagioclase comp.	An_{31}	An_{42}	An_{32}	An_{39}	An_{60}	An_{39}	An_{62}	An_{33}	An_{22}

Table 3
Analytical Results from Mineralized Prospects and Occurrences in the Cripple Creek Mountains Area, Ophir C-1 and Medfra C-6 Quadrangles, Alaska[1]

Map No.	Field No.	Au (ppb)	Ag (ppm)	As (ppm)	Ba (ppm)	Cr (ppm)	Cu (ppm)	Hg (ppb)	Pb (ppm)	Sb (ppm/%))	Zn (ppm)
1	96BT-164c	ND	ND	6	1,820	96	21	20	6	ND	16
2	96BT-158b	ND	ND	ND	50	273	9	ND	ND	ND	42
3	96GL-45	ND	ND	16	410	74	56	30	ND	ND	246
4a	96BT-45a	93	1	400	80	30	5	ND	ND	45.7%	15
4b	96BT-45c	63	ND	230	ND	330	5	ND	ND	1,500	ND
4c	96BT-45d	652	ND	2,830	80	260	15	ND	15	17,400	15
4d	96BT-45e	155	ND	1,820	40	240	5	ND	ND	1,400	ND
4e	96BT-45f	32	ND	1,190	100	70	5	ND	ND	31.0%	15
5	96GL-77	ND	ND	2	180	306	22	20	ND	ND	28
6	96BT-66	ND	ND	30	10	274	14	140	ND	ND	8
7	96GL-40a	ND	ND	26	410	80	55	30	nd	2	102
8a	96BT-46a	270	ND	460	120	258	28	2,800	4	20	10
8b	96BT-46b	186	ND	1,190	100	70	5	ND	ND	590	5
8c	96BT-46c	80	ND	68	40	218	3	3,540	4	12	10
8d	96BT-46f	785	ND	406	50	358	6	1,640	4	16	10
8e	96BT-46h	620	ND	1,815	380	88	44	190	2	34	20
9a	96BT-48a	80	ND	226	10	116	4	590	2	24	8
9b	96BT-48c	ND	ND	350	70	72	41	280	ND	154	80
9c	96BT-48d	40	ND	1,675	190	83	73	780	2	218	100
10	96GL-5	ND	0.2	ND	470	348	59	40	2	ND	124
11a	96BT-31b	1,675	1.0	14,600	160	150	20	50,000	15	2,060	5
11b	96BT-31c	248	1.0	830	60	50	20	50,000	ND	38.3%	5
11c	96BT-31d	31	1.0	580	ND	50	20	40,000	ND	44.9%	5
11d	96BT-31e	31	1.0	2,720	80	320	10	ND	5	50,200	35
12	96BT-27c	660	ND	564	250	78	23	360	ND	14	6
13a	96BT-29b	515	ND	330	50	151	111	100	ND	8	10
13b	96BT-29d	180	0.2	56	20	271	32	40	ND	2	ND
14a	96BT-22a	10	0.2	150	170	77	93	920	26	10	72
14b	96BT-22e	15	ND	240	20	61	178	2,550	26	10	74
14c	96BT-22f	65	ND	3,470	340	109	41	2,930	ND	62	90
14d	96BT-22g	760	0.2	10,000	520	147	58	5,010	ND	98	130
14e	96BT-22h	710	0.2	10,000	620	159	54	5,360	2	98	120
15	96BT-23	15	ND	318	40	151	20	720	ND	20	36
16	96BT-23b	40	ND	1,175	110	182	87	1,950	ND	28	146
17	96BT-91b	ND	ND	106	320	26	209	290	ND	2	232
18	96GL-28	ND	ND	174	290	74	80	3,850	6	52	118
19	96GL-26	ND	ND	ND	290	80	72	10	2	ND	52
20	96GL-21	ND	ND	184	180	143	17	280	2	10	104
21	96BT-37b	ND	ND	22	330	151	211	100	ND	ND	44
22	96BT-63c	434	ND	3,370	100	280	10	70	15	9,900	20
23	96BT-74c	ND	ND	ND	1,630	140	42	50	2	2	58
24a	96BT-75a	ND	ND	ND	520	67	50	50	2	2	58
24b	96BT-75b	ND	ND	ND	130	154	37	120	2	ND	34
25a	96BT-71b	93	ND	9,500	100	330	20	270000	5	760	5
25b	96BT-71c	ND	ND	9,980	60	230	20	260000	5	260	10

[1] Analyses by Chemex Labs, Inc. in Sparks, Nevada using fire assay techniques for Au, As, and Sb; the remaining elements were analyzed using ICP methods. Be, Bi, Cd, Ga, La, Mo, Ni, Sc, Tl, U, V, and W were below limits of detection in all samples. Analyses are keyed to numbered squares on map.

Table 3: 1
Map numbers keyed to squares on map.

Brief Descriptions of Sample Data Presented in Table 3

1. Grab sample of altered, ferrigenous felsic meta-tuff in Ruby Terrane.

2. Grab sample of 3-cm-thick quartz vein in olivine pillow basalt.

3. Ferricrete gossan in hornfels.

4a-e. Chip-channel samples of stibnite-quartz mineralization at the Wyoming Lode; about 500 feet (152 m) of vein strike length and 350 vertical feet (106 m) in two parallel veins that strike about N65E sampled; 4a-2 m chip channel of massive stibnite in east end pit; 4b-disseminated stibnite from west end pit; 4c-south vein pit at east end sampled with abundant vein breccia; 4d-disseminated stibnite in south quartz vein about 60 m west of 4c; 4e-massive stibnite-quartz vein about 1 m thick from highest pit.

5. Quartz vein in metachert.

6. Ferrigenous volcaniclastic conglomerate grab sample.

7. Grab sample of altered tuff.

8a-e. Chip-channel samples of mineralized stockwork in trenched Saddle prospect with three distinct N45-55E trending stockwork zones sampled: 8a-2 m sample from south zone; 8b-3 m sample from middle zone; 8c-2 m zone from fresh granite; 8d-3 m zone from north zone; 8e-grab sample from vegetated trenches west of the north zone.

9a-c. Zone of brecciated ferricrete gossan stockwork veins in hornfels sampled along a N20W, 365 foot (111 m) long sample traverse: 9a-3 m wide ferricrete flooding zone at north end; 9b-3 m wide ferricrete flooding zone midway through traverse; 9c-3 m wide ferricrete flooding zone at south end of sample traverse.

10. Grab sample of altered, dolomitized mafic (?) dike in valley floor.

11a-d. Chip-channel samples from Moose Jaw Antimony Lode, N55E trending stibnite-quartz vein deposit; about 700 feet (213 m) of vein strike length sampled: 11a-quartz stockwork veins in hornfels; 11b-massive stibnite-quartz vein 250 feet (76 m) northeast of main pit; 11c-massive stibnite-quartz vein 550 feet (167 m) northeast east of main pit; 11d-disseminated stibnite in quartz vein 150 feet (46 m) southwest of main pit.

12. Vein rich granite porphyry with tourmaline rossettes near center of soil sample anomaly at Neirod Granite Porphyry prospect.

13a. Quartz vein stockwork in Neirod or Eldorado Creek Granite porphyry body; grab sample only

13b. Contact zone with hematite.

14a-e. Extensive altered zone on west limit of Cripple Creek Mountains Pluton east of Eldorado Creek; sample discontinuus for about 1968 feet (600 m): 14a-ferricrete breccia in border phase; 14b-ferrigenous breccia in hornfels (?); 14c-quartz vein stockwork in contact phase; 14d-quartz vein stockwork in contact phase; 14e-quartz vein stockwork in hornfels with visible arsenopyrite.

15. Tight breccia in hornfels; grab sample.

Table 3: 2
Map numbers keyed to squares on map.

Brief Descriptions of Sample Data Presented in Table 3 - *Continued*

16. Epidote magnetite skarn grab sample.

17. Ferricrete flooding in hornfels grab sample.

18. Border phase of monzonite sampled.

19. Fe alteration zone in monzonite.

20. Altered rhyolite porphyry dike grab sample.

21. Disseminated chalcopyrite in contact phase of Cripple Creek Mountains pluton.

22. Thin stibnite-quartz vein rubble in hornfels tracable for about 100 feet (30 m).

23. Grab sample of fresh alkali gabbro.

24a-b. Two grab samples in gossaniferous stockwork in border phase of Cripple Creek Mountains pluton.

25a-b. Two grab samples of N25E trending, 300 foot (91 m) long zone or vein in hornfels that contains unusual purple to pink oxide coating.

Map numbers keyed to squares on map.