GRBD 40412 GEOLOGY
PETROGRAPHY: RL 40, RL-263, BROSNAHAN,
6/92

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TO : FILE

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TO: Kristen Kenner
Lac-Reno

FAX NO:

FROM: DAVID R. BROSNAHAN
MINERALOGIST
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Dear Kristen,

The two rock samples submitted with your May 27 cover letter are similar to samples examined before. The tan is due to minor sericite/illite in quartz and feldspar. X-ray diffraction patterns match illite due to a comparatively weak 10 Å reflection. The patterns are identical to those of similar samples described in the Bond Gold Geochemistry Department's 8/9/90 report on hydrothermal alteration. The material is probably consistent with Phil Matter's petrographic identification of sericite/hydromica. (I'm referring to his petrographic analyses of 4/6/91 that I sent to you.) Therefore optically some of the material must be sericite, probably based on birefringence.

In the microprobe, RL-40 @ 414' showed mostly sericite/illite alteration. An X-ray diffractogram from a darker tan portion revealed kaolinite. This probably originated from late microveinlets of kaolinite cutting wall rock seen in the same portion in the probe.

Identification of the tan in RL-263 @ 662' was complicated by the larger quantity of green material. X-ray diffraction reveals much more kaolinite than sericite/illite in the green. Evidence of kaolinite did not occur in a powder from a mostly tan portion; illite peaks were the only prevalent clay.

I could not determine why the sericite/illite is tan with the microprobe. I thought maybe common ≈1 μm TiO_2 crystals were the cause, but they also occur in the green.

Based upon the similarity of these samples with four trachytes characterized by Phil Matter, and written up in the above mentioned report, I would refer to this alteration as sericitization. I sent the formerly studied samples including chips and thin sections back to Cindy Walck, in case you would like to look at them for comparison.

X-ray diffraction of the clay in the vial showed sericite ± illite > kaolinite (60:40? sericite:kaolinite). This sericite displayed a stronger 10 Å reflection. I noticed that one of the late kaolinite microveinlets in these new samples contained sericite also. That may be the explanation.

Please call if you have any questions. These rocks are difficult. I'd rely strongly on Phil Matter's petrography.

Very truly yours,

Dave Brosnahan

Sample #	ID	Unit	Location	Petrog Study	Whole Rock	Have T.S.	Have Plug/H.S.	F.I.	xrd	Probe	Photo	Detail assay	References/Reports	Comments
90–40	RL41 11'		DH	x		x	x		x	x			B3/90, B8/90	Strongly alt'd & veined
90–41	RL41 230.5'	Bud	DH	x		x	x		x	x			B3/90, B8/90	green Bud
90–42	RL41 367'	Lbt	DH	x		x	x		x	x			B3/90, B8/90	good Lbt
90–43	RL41 424'	Lbt	DH	x		x	x		x	x			B3/90, B8/90, Matr91, Pstr91	good alt'd Lbt
90–44	RL41 432'	Lbt	DH	x		no	x		x	x			B3/90, B8/90	
90–45	RL41 434'	Lbt	DH	x		no	x		x	x			B3/90, B8/90	
90–46	RL41 468'	Lbt	DH	x		no	x		x	x			B3/90, B8/90	
90–47	RL41 480'	Lbt	DH	x		x	x		x	x			B3/90, B8/90. Matr91	
90–48	RL41 598.5	Doz	DH	x		x	x		x	x			B3/90, B8/90, Matr91	alt'd
90–49	RL52 405'	Lbt	DH	x		no	x		x	x			B3/90, B8/90	
90–50	RL55 523.5	Lbt	DH	x		x	x	x	x	x			B3/90, B8/90, Matr91, Pstr91	veined
90–51	RL55 546	Lbt	DH	x		no	x		x	x			B3/90, B8/90	
90–102	DH barite	Choc?	DH			no	x	x		x			B3/90, B8/90	
90–106	DH	C2C?	DH	x		x	x		x	x			B3/90, B8/90	
90–147	RL91 487.7	Lbt	DH	x		x	x						BRBU	
90–148	RL91 615'	Lbt	DH	x		x	x						BRBU	
90–149	RL91 737.7'	Lbt	DH	x		x	x						BRBU	
90–150	RL91 836'	Lbt	DH	x		x	x						BRBU	
90–151	RL91 916.5'	Lbt	DH	x		x	x						BRBU	
90–152	RL91 936.5'	Lbt	DH	x		x	x						BRBU	
90–153	RL108 347	Lbt	DH	x		x	x						BRBU	
90–154	RL108 730'	Lbt	DH	x		x	x						BRBU	
90–155	RL108 797'	Lbt	DH	x		x	x						BRBU	
90–156	RL112 654'	Lbt	DH	x		x	x						BRBU	
90–177	H.S. from big and		South Rdg			x	x							
90–178	Little Chocolate		South Rdg			x	x							
90–179	"		South Rdg			x	x							
90–180	"		South Rdg			x	x							
90–201	RL100 988.2	Lbt/Srf	DH			no	x			x			BBrs	
90–202	RL100 988.8	Lbt/srf	DH			no	x			x			BBrs	
90–203	RL93 1024.8	Lbt/srf	DH			no	x						BBrs	
90–204	RL94 1050'	Lbt	DH			no	x						BBrs	
90–205	RL100 691	Lbt	DH			no	x							
90–206	RL106 257.5	Choc or Tmb	DH			no	x							
90–207	RL88 810'	Lbt	DH			no	x			x			BBrs	
90–208	RL88 754.3	Lbt	DH			no	x			x			BBrs	
90–216	RL95 1049.6	Lbt	DH	x		x	x				x		Pstr91	m–s clay alt, py vns
90–217	RL95 1099.5	Lbt	DH	x		x	x				x		Pstr91	m–s alt
90–218	RL97 887.5	Lbt	DH	x		x	x						Pstr91	str clay
90–219	RL97 1143	Doz	DH			no	x							Si–clay vein
90–220	RL100 901'	Lbt	DH			no	x				x	x		argillized
90–221	RL100 905.4'	Lbt	DH			no	x				x	x		mod alt, no veins

Sample #	ID	Unit	Location	Petrog Study	Whole Rock	Have T.S.	Have Plug/H.S.	F.I.	xrd	Probe	Photo	Detail assay	References/Reports	Comments
90–222	RL100 909'	Lbt	DH			no	x				x	x		White si+clay vns
90–223	RL100 937.9'	Lbt	DH			no	x			x	x	x	BBrs	w–m alt
90–224	RL100 938.2	Lbt	DH			no	x			x	x	x	BBrs	Si+clay veins
90–225	RL100 940	Lbt vein	DH			no	x			x	x	x	BBrs	Si+clay vein only
90–226	RL100 960	Lbt vein	DH			no	x			x	x	x	BBrs	Si+clay vein only
90–227	RL100 960.1	Lbt shear	DH			no	x				x	x	BBrs	Clay gouge
90–228	RL100 1017	Lbt/Srf	DH			no	x				x			Kaol+stib vein
90–229	RL101 475	Bud	DH	x		x	x				x		Pstr91	Red and green Bud, glassy, clayey
90–230	RL101 496'	Bud	DH	x		x	x				x		Pstr91	Red Bud
90–231	RL101 950.7	Lbt	DH	x		x	x				x		Matr91, Pstr91	W–M bleach
90–232	RL101 832.5'	Lbt	DH	x		x	x				x		BBrs, Matr91, Pstr91	W–M bleach
90–233	RL130 594.5	Lbt	DH	x		x	x				x	x	BBrs, Matr91, Pstr91	Str alt, Hydrothermal breccia
90–234	RL130 578.5'	Lbt	DH	x		x	x				x	x	Pstr91	Str alt, Q+kaol+stib? vn
90–235	RL159 658.5'	Lbt	DH	x		x	x				x	x	BBrs, Matr91, Pstr91	Str alt, Q+calc+bar+ser+py vns
S–16		Choc			#1 alt	x	x						GM88	
S–22		WRorDoz	RB cyn		#2 alt	x	x						GM88	
S–21		Choc	DH		#3	x	x						GM88	
S–49		Doz?	So. Rdg.		#161	x	x						GM88	
S–94		Ti	MM212		#4	x	x						GM88	
S–95		Choc?	N. Kamma		#5 alt	x	x						GM88	
S–97			Chance		#6	x	x						GM88	Dk fg
S–98		WR	WMM212		#7	x	x						GM88	
S–99		Os–and	Oscar		#8	x	x						GM88	
S–100		WR	WR cyn		#10	x	x						GM88	
S–101		WR	WR cyn		#11	x	x						GM88	
S–102		WR	Gator		#12	x	x						GM88	
S–103		WR	Gator		#13	x	x						GM88	
S–104		WR	N. Kamma		#14	x	x						GM88	
S–105		WR?	N. Kamma		#15 alt	x	x						GM88	
S–106		WR	WR		#16	x	x						GM88	
S–107		Choc	N.EQ.		#17	x	x						GM88	
S–108			W WR Cyn		#18	x	x						GM88	Dk fg
S–109		Doz? vitr	W WR Cyn		#19	x	x						GM88	
S–110		Doz?	W WR Cyn		#20 alt	x	x						GM88	
S–111		Ti	RB pk		#21	x	x						GM88	dike
S–112			Brimstone		#22	x	x						GM88	
S–113			Brimstone		#23 alt	x	x						GM88	
S–114			Placerites		#24	x	x						GM88	
S–115			Placerites		#25	x	x						GM88	
S–116			Placerites		#26	x	x						GM88	

Sample #	ID	Unit	Location	Petrog Study	Whole Rock	Have T.S.	Have Plug/H.S.	F.I.	xrd	Probe	Photo	Detail assay	References/Reports	Comments
S–117			Placerites		#27	x	x						GM88	
S–118			NE of Moon		#28	x	x						GM88	
S–119					#29								GM88	
S–120			Floka		#30	x	x						GM88	
S–121		Tmb	RB cyn		#31	x	x						GM88	
S–122		Bud	RB cyn		#32	x	x						GM88	
S–123		Os–and	RB cyn		#33	x	x						GM88	
S–124		WR	Short sh		#34	x	x						GM88	
S–125		Choc	Gator		#35	x	x						GM88	
S–126		Choc	E N Eq		#36	x	x						GM88	
S–127			SE of Osc		#37	x	x						GM88	
S–128			SE of Osc		#38	x	x						GM88	
S–129		Choc	Kamma Pk		#39	x	x						GM88	
S–130			Lantern		#40	x	x						GM88	
S–131			Lantern		#41	x	x						GM88	
S–132			Placerites		#42	x	x						GM88	
S–133			Placerites		#43	x	x						GM88	
S–134			S of Osc		#44	x	x						GM88	
S–135		Tmb	Litl Choc		#45	x	x						GM88	
S–136		Bud	Bud Pass		#46	x	x						GM88	Red Bud
S–137		Choc	Choc Pk		#47	x	x						GM88	
S–138		Badg clast			#48 alt	x	x						GM88	
S–139		Doz?	RB shear		#49 alt	x	x						GM88	
S–140		Choc	Degerstr		#50 alt	x	x						GM88	
S–141		Choc	Degerstr		#51 alt	x	x						GM88	
S–142		Bud vitr	Schoolbus		#52	x	x						GM88	Vitrophyre
S–143		WR	Schoolbus		#53	x	x						GM88	
S–144		Bud	Schoolbus		#54	x	x						GM88	Red Bud
S–145		WR	Schoolbus		#55	x	x						GM88	
S–146		Badg clast	RB Pk		#56	x	x						GM88	
S–147		Badg clast	RB Pk		#57	x	x						GM88	
S–148		Badg clast	RB Pk		#58	x	x						GM88	
S–149		Badg clast	RB Pk		#59	x	x						GM88	
S–150		Badg clast	Gold Hill		#60	x	x						GM88	
S–151		Ti	E Drmlnd		#61	x	x						GM88	
S–152		Badg clast	Gold Hill		#62 alt	x	x						GM88	
S–153		Badg clast	Gold Hill		#63	x	x						GM88	
S–154		Badg clast	Gold Hill		#64	x	x						GM88	
S–155			SE of Osc		#65 alt	x	x						GM88	
S–156			Mouth DL		#66	x	x						GM88	Porph @ mouth of DL Cyn
S–157			Mouth DL		#67 alt	x	x						GM88	Porph @ mouth of DL Cyn

Sample #	ID	Unit	Location	Petrog Study	Whole Rock	Have T.S.	Have Plug/H.S.	F.I.	xrd	Probe	Photo	Detail assay	References/Reports	Comments
		Doz?	W WR cyn		#69								GM88	
		Doz?	Jun cyn		#70								GM88	
		WR	N RB pk		#71								GM88	
		WR?	N RB pk		#72								GM88	
		Doz?	So. Rdg.		#73								GM88	
		WR	Schoolbus		#74 alt?								GM88	
	RE–5 192'			x			X						Schur89	
	RE–5 267'			x			X						Schur89	
	RE–5 282'			x			X						Schur89	
	RE–5 302'			x			X						Schur89	
	RE–5 337'			x			X						Schur89	
	RE–5 382'			x			X						Schur89	
	RE–5 412'			x			X						Schur89	
	RE–5 417'			x			X						Schur89	
	RE–5 422'			x			X						Schur89	
	RE–5 450'			x									Schur89	
	RE–5 487'			x			X						Schur89	
	RE–5 507'			x			X						Schur89	
	RE–5 532'			x			X						Schur89	
	RE–5 542'			x		X	X						Schur89	
	RE–5 562'			x		X	X						Schur89	
	RE–5 572'			x		X	X						Schur89	
	RE–5 597'			x		X	X						Schur89	
	RE–5 682'			x		X	X						Schur89	
	RE–5 767'			x		X	X						Schur89	
C–2494	W. Chance	?	W. Chance	x									Schur91	
C–2496	Chance	?	Chance	x									Schur91	
C–2499	Chance	?	Chance	x									Schur91	
C–3672	Oscar	Choc?	Oscar	x	x						x (TS)		Fuchs91	
A–494			Lantern	x									Pstr87	
B–153		tuff	Lantern	x									Pstr87	
B–158		gravel	Sulfur	x									Pstr87	Silicified gravel
B–184		boulders	Rabbithole	x									Pstr87	
B–481			Sulfur	x									Pstr87	Silver Camel
B–4755		gravel	Sulfur	x									Pstr87	Silicified gravel
B–4804			Jasp. Pk.	x									Pstr87	

Sample #	ID	Unit	Location	Petrog Study	Whole Rock	Have T.S.	Have Plug/H.S.	F.I.	xrd	Probe	Photo	Detail assay	References/Reports	Comments
B-6534			Lantern	x									Pstr87	S.P. Ridge bldr.
B-6546			Placerites	x									Pstr87	
B-6558			Placerites	x									Pstr87	
B-6726			Sawtooth	x									Pstr87	
B-6728			Sawtooth	x									Pstr87	black breccia
B-6733		boulders	Sawtooth	x									Pstr87	Silicified boulders