

900253



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CERTIFICATE OF ANALYSIS
REPORT 12094

TO: CANADA/YUKON GEOSCIENCE OFFICE
ATTN: DANIELE HEON
YUKON GOVERNMENT
BOX 2703 (F-3)
WHITEHORSE, YUKON
Y1A 2C6

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DATE SUBMITTED
29-Jan-97

WORKORDER 13202-

TOTAL PAGES 2

6 ROCKS Proj. 201003-099

	METHOD	DETECTION LIMIT	METHOD CODE
WRMAJ %	XRF-F	.01	XRF-102
WRMIN PPM	XRF-F	2.	XRF-102

*** UNLESS INSTRUCTED OTHERWISE WE WILL DISCARD PULPS IN 90 DAYS ***
AND REJECTS IN 30 DAYS FROM THE DATE OF THIS REPORT

DATE 17-FEB-97

CERTIFIED BY

Dr. Hugh de Souza, General Manager



Member of the SGS Group (Société Générale de Surveillance)



XRF - WHOLE ROCK ANALYSIS

17-FEB-97

REPORT 12094

WORKORDER 13202

SAMPLE \ %	SIO2	AL2O3	CAO	MGO	NA2O	K2O	FE2O3	MNO	TIO2	P2O5	CR2O3	LOI	SUM
96DH-3B	95.5	1.29	.04	<.01	.66	.03	1.94	<.01	.089	<.01	.04	.35	100.2
96DH-3C	96.2	1.88	.07	<.01	.57	.13	.60	<.01	.064	.02	.03	.40	100.2
96DH-13A	96.1	1.49	.12	<.01	.49	.09	.78	<.01	.074	.12	.03	.70	100.1
96DH-13B	91.7	3.32	.05	<.01	1.74	.13	1.02	<.01	.142	.05	.01	1.95	100.3
96DH-13C	97.1	1.21	.01	<.01	.51	<.01	.68	<.01	.041	.02	.03	.50	100.2
96DH-14	87.4	5.60	.35	.17	3.07	.11	1.42	<.01	.142	.06	.01	1.75	100.3
D 96DH-3B	95.5	1.27	.03	<.01	.64	.02	1.92	<.01	.091	<.01	.02	.40	100.2

D - QUALITY CONTROL DUPLICATE

*** XRF W.R.A. SUMS INCLUDE ALL ELEMENTS DETERMINED. FOR SUMMATION, ELEMENTS ARE CALCULATED AS OXIDES ***



SAMPLE \ PPM	RB	SR	Y	ZR	NB	BA
96DH-3B	<2	143	<2	174	5	1950
96DH-3C	9	104	15	182	5	1520
96DH-13A	<2	217	6	180	10	557
96DH-13B	14	109	9	192	12	1690
96DH-13C	3	69	6	177	12	229
96DH-14	<2	174	<2	143	5	1290
D 96DH-3B	<2	143	<2	174	4	1970

D - QUALITY CONTROL DUPLICATE





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PLEASE DELIVER THE FOLLOWING TO:

NAME: DANIELE HEON
FIRM: CANADA/YUKON GEOSCIENCE OFFICE
FAX NO. 14033936232

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COMMENTS (IF ANY):

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3-674

teachers
parents

SAMPLE

NA2O % XRF-F 0.01	MGO % XRF-F 0.01	AL2O3 % XRF-F 0.01	SIO2 % XRF-F 0.01	P2O5 % XRF-F 0.01	K2O % XRF-F 0.01	CAO % XRF-F 0.01	TIO2 % XRF-F 0.001	CR2O3 % XRF-F 0.01
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96DH-3B	0.66	<.01	1.29	95.5	<.01	0.03	0.04	0.089	0.04
96DH-3C	0.57	<.01	1.88	96.2	0.02	0.13	0.07	0.064	0.03
96DH-13A	0.49	<.01	1.49	96.1	0.12	0.09	0.12	0.074	0.03
96DH-13B	1.74	<.01	3.32	91.7	0.05	0.13	0.05	0.142	0.01
96DH-13C	0.51	<.01	1.21	97.1	0.02	<.01	0.01	0.041	0.03
96DH-14	3.07	0.17	5.60	87.4	0.06	0.11	0.35	0.142	0.01
D 96DH-3B	0.64	<.01	1.27	95.5	<.01	0.02	0.03	0.091	0.02

SAMPLE

MNO % XRF-F 0.01	FE2O3 % XRF-F 0.01	RB PPM XRF-F 2	SR PPM XRF-F 2	Y PPM XRF-F 2	ZR PPM XRF-F 2	NB PPM XRF-F 2	BA PPM XRF-F 20	LOI % XRF-F 0.01
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96DH-3B	<.01	1.94	<2	143	<2	174	5	1950	0.35
96DH-3C	<.01	0.60	9	104	15	182	5	1520	0.40
96DH-13A	<.01	0.78	<2	217	6	180	10	557	0.70
96DH-13B	<.01	1.02	14	109	9	192	12	1690	1.95
96DH-13C	<.01	0.68	3	69	6	177	12	229	0.50
96DH-14	<.01	1.42	<2	174	<2	143	5	1290	1.75
D 96DH-3B	<.01	1.92	<2	143	<2	174	4	1970	0.40

SAMPLE

SUM %
XRF-F
0.1

96DH-3B	100.2
96DH-3C	100.2
96DH-13A	100.1
96DH-13B	100.3
96DH-13C	100.2
96DH-14	100.3
D 96DH-3B	100.2

39.90
26.70

Hey Daniele

I spent about four hours looking at your thin sections. Answering your volcanic-or-not question has not been easy on the basis of texture (but read on). From the chemistry, I would say that a volcanic origin is extremely unlikely. Few rhyolites have silica contents over 85%.

In thin section, most of the rocks consist of subhedral to euhedral albitic plagioclase and orthoclase set in a densely intergrown groundmass of silt-size quartz grains sharing angular grain boundaries. In some sections, layers in the groundmass are present, defined by variations in grain size. In at least one of the sections, fine grained, preferentially oriented phyllosilicates (clay/muscovite) are present in the groundmass. The relative abundance and preferred orientation of these flakes also provide a sense of layering, and the appearance of a sedimentary origin.

Scattered throughout the rocks are vugs, many of which have linings of dark material, probably earthy hematite and manganese oxide. These vugs are *not* igneous vesicles, for two reasons. Firstly, they are not spatially related to the coarser layers in the groundmass. They are often connected by fractures, lined by opaque minerals, which run at an angle to the groundmass layering. If the variations in groundmass are taken to be flowbands, then the vugs would be spatially associated with these layers (coarser, more quartz-rich flowbands were richer in volatiles; they commonly open up into gashes and strung-out vesicles). Second, these vugs crosscut not only groundmass, but also the feldspar blasts. In at least two sections, vugs exist not only as pockets within groundmass, but they "take a bite out of" feldspar blasts, i.e., the edge of a vug cuts away part of a feldspar grain. Clearly, these vugs represent a secondary porosity generated by a process much later than that which produced the groundmass/blast texture.

Another argument against an igneous origin for the rocks is the complete absence of any ferromagnesian minerals, i.e., not a sniff of biotite, hornblende, etc. In at least one of the sections I would expect some mafic minerals!

I do not have an iron-clad explanation for the origin of the rocks. They do look somewhat like rhyolites, although there are no devitrification textures (which I would expect for rhyolite of such high silica contents). If it were not for the feldspar grains, I would have no trouble calling the rocks "highly compacted, very quartz-rich siltstone." However, it is inconceivable that near-pure quartz siltstone would contain numerous, large detrital feldspar grains.

My best guess is that the rocks were initially quartz-rich siltstones which were later affected by hydrothermal alteration, leading to the growth of feldspar metasomablasts, and finally subjected to near-surface weathering/fracturing and development of secondary porosity in the form of vugs and metal-oxide staining. Does my suggestion of hydrothermal alteration fit with field observations?

I'll courier the samples back to you on Tuesday. Sorry that I can't do it earlier, but I only got to the sections on Friday, and I won't be going in to the university on Monday. In a rare moment of putting family ahead of