DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

Open-file Report
77-724
Table 3

Table 3.--Analyses of Pah Canyon and Yucca Mountain Members and tuff of Pinyon Pass of the Paintbrush Tuff, Nye County, Nevada

[Major oxide analyses 1-7 by P. L. D. Elmore, S. D. Botts, G. W. Chloe, H. Smith, J. Kelsey, Lowell Artis, and J. Glenn; 8-10 by P. L. D. Elmore, S. D. Botts, G. W. Chloe, Lowell Artis, and H. Smith. Minor-element analyses 1-3 by William Crandell; 8-10 by J. C. Hamilton. Leaders,---, no analyses made or constituent not given.]

	Pah Canyon Member				Tuff of Pinyon Pass			Yucca Mountain Member		
					Densely welded crystallized tuff					
	Densely welded crystallized tuff	Partly welded crystallized tuff	Densely welded crystallized tuff		Crystal-rich caprock	Lower rhyolite (crystal-rich pumice)	Upper rhyolite	Densely welded crystallized tuff		
Sample localities (figure 2)	1	2	3	4	5	6	7	8	9	10
Field No.	67FB-1B	67FB-1A	67FB-3E	67FB-3D	67FB-2D	67FB-2B	67FB-2C	62L-50-q	62L-50-Y	62L-50-qq
Chemical laboratory No.	WL69669	WL69668	WL69675	WL69674	WL69672	WL69670	WL69671	160675	160677	160676
Spectrographic laboratory No.	WL69669	WL69668	WL69675	WL69674	WL69672	WL69670	WL69671	303625	303627	303626
A. Major oxides (weight percent), recalculated to 100 percent without H_2O, F, Cl, and CO_2 as $CaCO_3$										
SiO_2	73.6	73.9	73.8	74.0	72.8	75.5	76.6	76.3	76.9	77.0
Al_2O_3	14.4	14.4	14.1	14.2	14.7	13.4	12.6	13.1	12.8	12.6
Fe_2O_3	1.44	1.22	1.42	1.32	1.71	1.25	1.12	.81	.95	.84
Sum as FeO	1.40	1.15	1.32	1.27	1.56	1.17	1.05	0.90	0.88	0.92
FeO	.10	.06	.04	.08	.02	.04	.04	.17	.03	.16
MgO	.31	.30	.33	.38	.28	.66	.23	.20	.07	.31
CaO	.31	.58	.93	.65	.61	1/ 1.15	.64	.12	.18	.08
Na_2O	3.7	3.0	3.8	3.5	4.2	2.4	3.8	4.3	4.2	4.1
K_2O	5.8	6.2	5.2	5.5	5.1	5.2	4.8	4.7	4.6	4.7
TiO_2	.29	.26	.28	.26	.33	.22	.17	.13	.15	.14
P_2O_5	.05	.02	.02	.02	.05	.04	.02	.02	.03	.02
MnO	.10	.10	.06	.05	.11	.09	.10	.12	.10	.12
Total	99.96	100.04	99.88	99.96	99.91	99.95	100.12	99.97	100.01	100.07
B. Minor elements (weight percent)										
B	0.0	0.003	0.0	0.0	0.0	0.005	0.005	<0.003	<0.003	<0.003
Ba	.3	.2	.2	.2	.07	.1	.05	.01	.01	.01
Be	.0003	.0003	.0003	.0003	.0003	.0005	.0003	.0007	.0005	.0007
Ce	.03	.02	.02	.02	.03	.015	.01	<.02	<.02	<.02
Co	.0	.0	.0	.0	.0	.0	.0	<.0005	<.0005	<.0005
Cr	.0	.0	.0	.0	.0	.0	.0003	<.0001	<.0001	<.0001
Cu	.0002	.0003	.0015	.00005	.002	.00015	.0003	.0003	.0005	.0002
Ga	.002	.002	.002	.002	.002	.002	.002	.003	.003	.003
La	.02	.015	.015	.015	.02	.01	.007	.003	.003	.003
Mo	.0003	.0	.0	.0003	.0	.0	.0	.001	.001	.001
Nb	.0015	.0015	.0015	.0015	.002	.0015	.002	.003	.002	.003
Nd	.02	.015	.015	.015	.02	.01	.0	<.01	<.01	<.01
Ni	.0	.0	.0	.0	.0	.0015	.001	<.0003	<.0003	<.0003
Pb	.003	.005	.003	.003	.005	.003	.007	.005	.005	.003
Sc	.0007	.0005	.0007	.0005	.0007	.0003	.0003	<.0005	<.0005	<.0005
Sr	.015	.015	.015	.015	.01	.07	.07	.003	.002	.003
V	.001	.0005	.0007	.0007	.0015	.0005	.0003	.001	<.001	.002
Y	.003	.003	.003	.003	.003	.003	.003	.003	.003	.003
Yb	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003
Zr	.02	.02	.02	.02	.03	.02	.02	.02	.02	.02
C. Norms (weight percent), from recalculated analyses										
Quartz	29.1	31.5	29.2	30.9	26.9	38.3	34.8	32.7	34.2	34.7
Orthoclase	34.0	36.6	30.5	32.5	30.4	30.8	28.2	27.9	27.3	27.7
Albite	31.3	24.9	32.6	29.3	35.8	20.3	31.8	36.5	35.7	34.5
Anorthite	1.2	2.6	4.5	3.1	2.7	5.4	3.0	.5	.7	.3
Corundum	1.6	1.9	.5	1.5	1.2	1.9	.1	.7	.6	.7
Enstatite	.8	.8	.8	.9	.7	1.6	.6	.5	.2	.8
Ferrosilite	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Magnetite	.0	.0	.0	.0	.0	.0	.0	.6	.0	.5
Hematite	1.4	1.2	1.4	1.3	1.7	1.3	1.1	.4	.9	.5
Ilmenite	.4	.3	.2	.3	.3	.3	.3	.2	.3	.3
Rutile	.06	.04	.2	.1	.2	.1	.01	.0	.0	.0
Apatite	.1	.10	.05	.05	.1	.1	.05	.05	.1	.05
Total	99.96	99.94	99.95	99.95	100.00	100.10	99.96	100.05	100.0	100.05
D. Minerals (volume percent)										
Quartz	0.1	0.1	0.0	tr	tr	0.0	tr	--	--	--
Alkali feldspar	5.9	2.9	4.7	4.5	15.0	4.8	1.3	--	--	--
Plagioclase	4.5	3.8	5.4	5.5	.4	2.5	.2	--	--	--
Biotite	.7	.3	.5	.4	.3	.3	tr	--	--	--
Clinopyroxene	.2	.0	tr	.1	.3	.1	tr	--	--	--
Hornblende	.0	.0	.0	.0	tr	tr	tr	--	--	--
Sphene	tr	tr	tr	tr	tr	tr	tr	--	--	--
Opaques	.2	.2	.3	.3	.3	.2	tr	--	--	--
Groundmass	88.3	92.7	89.2	89.1	83.6	92.0	98.5	--	--	--
Modal points counted	3500	1580	1550	1500	2360	2200	6800	--	--	--
E. Major oxides (weight percent), original analyses										
SiO_2	71.6	72.8	72.9	72.7	72.2	72.4	75.4	76.0	76.4	75.4
Al_2O_3	14.0	14.2	13.9	14.0	14.6	12.9	12.4	13.0	12.7	12.3
Fe_2O_3	1.4	1.2	1.4	1.3	1.7	1.2	1.1	.81	.94	.82
FeO	.10	.06	.04	.08	.02	.04	.04	.17	.03	.16
MgO	.30	.30	.33	.37	.28	.63	.23	.20	.07	.30
CaO	1.6	.57	.92	.64	.61	1.2	.63	.12	.18	.32
Na_2O	3.6	2.9	3.8	3.4	4.2	2.3	3.7	4.3	4.2	4.0
K_2O	5.6	6.1	5.1	5.4	5.1	5.0	4.7	4.7	4.6	4.6
H_2O+	.49	.74	.69	.68	.45	2.3	1.2	0.68	0.40	0.93
H_2O-	.14	.36	.28	.52	.36	1.5	.23			
TiO_2	.28	.26	.28	.26	.33	.21	.17	.13	.15	.14
P_2O_5	.05	.02	.02	.02	.05	.04	.02	.02	.03	.02
MnO	.10	.10	.06	.05	.11	.09	.10	.12	.10	.12
CO_2	1.0	<.05	<.05	<.05	<.05	.08	<.05	<.05	<.05	.19
Total	100.26	99.66	100.00	99.00	100.06	99.89	99.97	100.30	99.85	99.30
Powder density	--	--	--	--	--	--	--	2.45	2.51	2.54

1/ CaO high probably due to low determination of CO_2; thin section contained sparse calcite in groundmass.