Mazatzal Mountains

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
18-1-149	5.300	±0.2	Intrusive siliceous rx (Tis) of Wrucke & Conway (1987); biotite	Mazatzal Mountains	34.273	111.694	Ted McKee (unpub data, 1990)	
WM249	8.300	±0.8	younger basalt (Tyb) of Wrucke & Conway (1987)	Mazatzal Mountains	34.06	111.707	Ted McKee (unpub data, 1990)	
18-1-137	8.900	±2.6	Intrusive siliceous rx (Tis) of Wrucke & Conway (1987); hornblende	Mazatzal Mountains	34.272	111.688	Ted McKee (unpub data, 1990)	
WM585	9.300	±0.5	probably equiv of younger basalt (Tyb) of Wrucke & Conway (1987)	Mazatzal Mountains	34.355	111.704	Ted McKee (unpub data, 1990)	
WM588	9.900	±0.5	older basalt (Tob) of Wrucke & Conway (1987)	Mazatzal Mountains	34.242	111.602	Ted McKee (unpub data, 1990)	
20-1-316B	10.200	±0.8	basalt undivided (Tbu) of Wrucke & Conway (1987). Recollection of 20-1-316.	Mazatzal Mountains	34.215	111.508	Ted McKee (unpub data, 1990)	
TM110	10.300	±1.8	basalt undivided (Tbu) of Wrucke & Conway (1987). Recollection of 20-1-316.	Mazatzal Mountains	34.305	111.574	Ted McKee (unpub data, 1990)	
20-1-316	10.600	±0.8	basalt undivided (Tbu) of Wrucke & Conway (1987)	Mazatzal Mountains	34.215	111.508	Ted McKee (unpub data, 1990)	
WM335A	11.000	±0.6	siliceous tuff (Tst) of Wrucke & Conway (1987); biotite	Mazatzal Mountains	34.151	111.698	Ted McKee (unpub data, 1990)	
TM116	11.000	±1.1	basalt undivided (Tbu) of Wrucke & Conway (1987)	Mazatzal Mountains	34.281	111.584	Ted McKee (unpub data, 1990)	
WM342	11.200	±0.9	basalt undivided (Tbu) of Wrucke & Conway (1987)	Mazatzal Mountains	34.244	111.514	Ted McKee (unpub data, 1990)	
WM590	12.300	±0.8	older basalt (Tob) of Wrucke & Conway (1987)	Mazatzal Mountains	34.051	111.577	Ted McKee (unpub data, 1990)	
WM592	13.400	±0.4	older basalt (Tob) of Wrucke & Conway (1987)	Mazatzal Mountains	33.987	111.594	Ted McKee (unpub data, 1990)	
WM586	13.400	±0.8	basalt undivided (Tbu) of Wrucke & Conway (1987). Collected 15 m W of WM205.	Mazatzal Mountains	34.276	111.619	Ted McKee (unpub data, 1990)	
WM587	14.000	±0.5	older basalt (Tob) of Wrucke & Conway (1987)	Mazatzal Mountains	34.12	111.572	Ted McKee (unpub data, 1990)	
WM593	15.300	±0.5	older basalt (Tob) of Wrucke & Conway (1987)	Mazatzal Mountains	33.977	111.605	Ted McKee (unpub data, 1990)	
20-1-326	16.100	±0.15	older basalt (Tob) of Wrucke & Conway (1987)	Mazatzal Mountains	34.099	111.381	Ted McKee (unpub data, 1990)	
WM205	16.200	±1.6	basalt undivided (Tbu) of Wrucke & Conway (1987)	Mazatzal Mountains	34.276	111.619	Ted McKee (unpub data, 1990)	
SC44	6.200	±1.0	Dacite of Mt. Triplett of Wrucke & others (in press)	San Carlos Reservation	33.33	110.348	Ted McKee (unpub data, 1990)	Age not used; 3.4±0.5 Ma from another spl used due to better fit w/ ages of assoc units

Salt River Canyon

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
UAKA 83-93	16.24	±0.54	Coon Creek basalt	Salt River Canyon	33.683	110.837	Damon et al., 1996	directly underlies lakebed sediments
UAKA 75-104	16.12	±0.39	Little Butte basalt	Salt River Canyon	32.708	110.667	Damon et al., 1996	caps tertiary gravel (Whitetail equiv?) & appears to be concordant w/ surface which lies above Jones Water basalt
UAKA 83-91	14.84	±0.35	Coon Creek basalt	Salt River Canyon; spl from intersection of N30E trending dike, 1.3km long, 220m wide & Coon Crk	33.667	110.842	Damon et al., 1996	basalt dike along Cherry Crk fault zone
UAKA 83-92	14.84	±0.34	Black Mesa basalt	Salt River Canyon	33.675	110.871	Damon et al., 1996	basalt directly overlying lakebed sediments

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
970712F	15.46	±0.58	Bidahochi Fm, felsic ash bed	Hopi Buttes; Member 1 at East Point Mesa	35.389	109.951	Dallegge, 1999	
970719E	15.19	±0.11	Bidahochi Fm, felsic ash bed	Hopi Buttes; Member 2 at SW end of Wood Chop Mesa	35.424	110.041	Dallegge, 1999	
970705C	14.81 to 71.98		Bidahochi Fm, felsic ash bed	Hopi Buttes; Member 5 N of Greasewood Trading Post	35.558	109.832	Dallegge, 1999	
970315C	13.85	±0.02	Bidahochi Fm, felsic ash bed	Hopi Buttes; Member 3 N of Greasewood Trading Post	35.558	109.832	Dallegge, 1999	
HB96-1	13.71	±0.08	Bidahochi Fm, felsic ash bed	Hopi Buttes; Member 3 at Triplets Mesa	35.319	110.292	Dallege et al., 1998	
UAKA 73-137	10.85	±0.20	Bidahochi Formation air-fall tuff	Hopi Buttes	35.634	110.082	Reynolds et al., 1986	Vitric tuff lying in upper unit 5 of Bidahochi beds, ~8 m stratigraphically above basalt (UAKA 73-133) dated at 6.86 my. Date prob too old due to excess argon.
UAKA 74-132	8.49	±0.27	Hopi Buttes Diatreme 14	Hopi Buttes; ring dike at S edge of diatreme 14, elev 5980'	35.326	110.327	Damon and Spencer (written commun., 2000)	Dense monchiquite basalt
UAKA 74-131	7.84	±0.74	Hopi Buttes Diatreme 14	Hopi Buttes; top of butte SE of diatreme 14, elev 6420'	35.323	110.319	Damon and Spencer (written commun., 2000)	Monchiquite basalt, fine grained, olivine slightly altered
UAKA 76-11	7.84	±.185	Bidahochi basalt bomb	Hopi Buttes; bomb at top of bed correlative w/ Bidahichi Fm.	35.556	110.09	Damon and Spencer (written commun., 2000)	Source of tuff is unnamed diatreme in SW S15, T2N, R21E; elev 6225'
UAKA 76-12	7.82	±0.18	Bidahochi dike	Hopi Buttes; dike strikes N45E	35.561	110.093	Damon and Spencer (written commun., 2000)	Monchiquite basalt dike that intrudes a sequence of tuffs including the one from which RLS 7510-9 was taken. Appears to feed a flow that partially caps an unnamed diatreme 3 mi SSW of White Cone settlement
980118B	7.71	±0.06	Phlogopite, mafic tuff	Hopi Buttes; Member 5 at Flat Tire Mesa	35.546	110.152	Dallegge, 1999	
UAKA 74-146	7.35	±0.17	Bobcat Butte diatreme	Hopi Buttees, spatter of Bobcat Butte diatreme	35.473	110.406	Damon and Spencer (written commun., 2000)	Vesicular monchiquite basalt w/ pyroxene & biotite phenos to 3 cm
	7.21	±0.45	Lava groundmass	Hopi Buttes; Martinez maar			Vazquez, 1998	
UAKA 76-10	7.01	±0.16	Na-Ah-Tee 2 basalt	Hopi Buttes; near top of hill w/ microwave tower (n-Ah-Tee 2), elev 6775'	35.471	110.188	Damon and Spencer (written commun., 2000)	Monchiquite basalt, fine grained.
UAKA 76-20	7.00	±0.24	Hopi Buttes diatreme	Hopi Buttes; diatreme centered in S20, 6 mi SW of White Cone Trading Post	35.549	110.156	Damon and Spencer (written commun., 2000)	Monchiquite basalt, very dense w/ porphyritic olivine. Appears to be a dike emplaced btwn vent tuffs & outer sedimentary rocks.
	6.99	±0.75	Lava groundmass	Hopi Buttes; Haskie maar			Vazquez, 1998	
UAKA 73-133	6.86	±0.16	Bidahochi Formation basalt	Hopi Buttes; S end of Roberts Mesa	35.629	110.099	Reynolds et al., 1986	Basalt on top of middle volcanic member of Bidahochi Fm
	6.81	±0.06	Amphibole megacryst	Hopi Buttes; Churro maar			Vazquez, 1998	
UAKA 74-134	6.81	±0.4	Petrified Forest maar	Petrified Forest	35.076	109.802	Damon et al., 1996	Probably related to Hopi Buttes maars. Dense monchiquite basalt w/ xenoliths of baked ss, maar is ~1 mi in diameter.

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
UAKA 73-133	6.86	±0.16	trachybasalt	Hopi Buttes; 3.5 km NW of White Cone Trading Post			Reynolds et al., 1986	
UAKA 74-145	6.62	±0.14	Bobcat Butte diatreme	Hopi Buttes; Bobcat Butte	35.472	110.404	Damon and Spencer (written commun., 2000)	basalt dike cutting all units at Bobcat Butte, including lakebeds at top of the butte
UAKA 76-8	6.60	±0.15	Flat mesa basalt	Hopi Buttes; lava flow capping Flat Mesa ~1 m above base of flow, elev 6400'	35.463	110.245	Damon and Spencer (written commun., 2000)	Monchiquite basalt, very dense & fine grained. Basal 30-50 cm is brecciated
UAKA 76-7	6.56	±0.17	Gray Mesa basalt	Hopi Buttes; lava flow capping Gray Mesa, spl from dense zone 15-30 cm above base of flow, elev 6285'	35.475	110.113	Damon and Spencer (written commun., 2000)	Monchiquite basalt, dk gray, slightly vuggy. Basal part of flow is brecciated & overlies bedded tuffs
UAKA 76-9	6.55	±0.14	Tesihim Butte basalt	Hopi Buttes; near margin of flow capping Tesihim Butte, 1 m above base, elev 6280'	35.543	110.099	Damon and Spencer (written commun., 2000)	Monchiquite basalt, dk gray, vuggy, porphyritic
	6.53	±0.59	Lava groundmass	Hopi Buttes; Haskie maar			Vazquez, 1998	
UAKA 85-88	6.26	±0.29	Woodruff Butte basalt	Holbrook area; monchiquite basalt on top of Woodruff Butte	34.799	110.041	Damon et al., 1996	
UAKA 76-6	5.98	±0.13	Deshgish Butte basalt	Hopi Buttes; top of Deshgish Butte, elev ~6385'	35.52	110.068	Damon and Spencer (written commun., 2000)	Dense porphyritic basalt from a dike or pressure ridge. May be feeder dike for flow that caps the butte
HB1	5.70	±1.10	Hopi Buttes diatreme	Hopi Buttes; Hoskietsko Butte	35.378	110.058	Reynolds et al., 1986	Gabbro xenolith from sml monchiquite diatreme; apatite age reflects cooling of the diatreme during or subsequent to emplacement
UAKA 74-133a	4.41	±0.18	White Cone basalt	Hopi Buttes; near top of first diatreme N of White Cone Peak, N edge, elev 6635'	35.596	110.042	Damon and Spencer (written commun., 2000)	Basalt spatter flow in agglomerate
UAKA 74-147a	4.23	±0.59	Hokietsko Butte basalt	Hopi Buttes; dike at NW edge of Hokietsko Butte at elev 5720'	35.377	110.059	Damon and Spencer (written commun., 2000)	Basalt dike is the latest recognized event at this butte
KA-1027	4.20		Bidahochi Fm trachybasalt	Hopi Buttes; White Cone Peak	35.579	110.056	Reynolds et al., 1986	Trachybasalt separating upper & lower members of Bidahochi Fm
HB2	2.17	±0.20	Hopi Buttes diatreme	Hopi Buttes; Coliseum diatreme	35.383	110.137	Reynolds et al., 1986	Granodiorite xenolith from diatreme, age is average of 3 grains & reflects annealing before or during emplacement of diatreme
UAKA 72-62	0.529	±0.079	Tappan Springs basalt	SFVF	35.887	111.455	Reynolds et al., 1986	Flow has been downcut by LCR & cut by NE trending graben at Moenkopi Wash, occupies channel of ancestral Colorado R

Mogollon Rim Area

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
UAKA 91-29	27.160	±0.6	Reed Gulch basalt	Tonto Basin; north end; basalt capped ridge on SW side of Reed Gulch	33.987	111.333	Damon et al., 1996	Stratigraphically lowest basalt, interbedded w/ gravels of basin-fill
UAKA 87-20	18.550	±0.56	Punkin Center tuff	Tonto Basin; butte 0.8 mi NW of Punkin Center	33.883	111.317	Damon et al., 1996	Water laid tuff
UAKA 77-79	14.250	±0.74	Milk Ranch Point basalt	Mogollon Rim (Tonto Segment)	34.377	111.416	Damon et al., 1996	100' above contact of basalt w/ Corduroy Mbr of Supai; volcanics ~300' thick
UAKA 73-78	11.400	±0.27	Baker Butte basalt	Mogollon Rim (Tonto Segment); Baker Butte	34.286	111.377	Reynolds et al., 1986	Flat-lying basalt sequence above Permian cliff makers at plateau edge
UAKA 76-62	6.270	±0.19	Chevelon Butte basalt	Mogollon Slope; N side, elev 6800'	34.692	110.845	Damon et al., 1996	Flat-lying basalt of basal flow at Chevelon Butte
UAKA 74-137	1.63	±0.05	Corduroy Canyon basalt	Mogollon Rim (Apache Segment); top of flow near hairpin bend at Corduroy Crk, N side of cliff along Hwy 60	34.039	110.247	Damon et al., 1996	Light gray olivine basalt; olivine fairly fresh

Verde Valley Area

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
UAKA 77-76	15.400	±0.40	Beavertail Butte basalt	Dry Beaver Creek; Beavertail Butte	34.751	111.789	Reynolds et al., 1986	Basalt overlies gravels that rest on Supai Fm
UAKA 91-70	15.080	±0.4	Hickey Volcanics	Sycamore Canyon; basal olivine basalt flow in 7-flow sequence capping Black Mtn	34.897	112.034	Damon et al., 1996	
A-43	15.000	±1.10	Hickey Formation trachyandesite	Verde Valley; along Verde fault near Jerome	34.741	112.107	Reynolds et al., 1986	
MM-3B	14.700	±0.60	Sycamore Canyon basalt	Sycamore Canyon; Mooney Trail	34.917	112.05	Reynolds et al., 1986	Basalt flow directly above gravel unit that is 35 m thick w/ clasts up to 5 cm in diameter & composed of angular pebbles & some Tertiary volcanic clasts
UAKA 77-168	14.600	±0.40	Wet Beaver Creek basalt	Wet Beaver Creek; near campground	34.669	111.699	Reynolds et al., 1986	Nearly flat-lying basalt cap overlying gravels above Supai Fm
UAKA 87-184	14.540	±0.33	House Mountain basalt	Verde Valley; base of ancestral Mogollon Rim; SE peak of House Mtn volcanic complex at the bnd of the Transition Zone & the Colorado Plateau	34.775	111.833	Damon et al., 1996	can be used to show the average rate of retreat on uppper Paleozoic strata since emplacement of the basalt
UAKA 66-55	13.900	±0.30	Dry Beaver Creek basalt	Verde Valley; 0.4 km W of trib to Dry Beaver Creek	34.7335	111.783	Reynolds et al., 1986	Flow overlies unconsolidated gravels
PR-2	13.800	±0.50	Hickey Formation basalt	Prescott area; near Glassford Hill NE of Prescott	34.579	112.375	Reynolds et al., 1986	
UAKA 77-77	13.750	±0.33	Beavertail Butte basalt	Dry Beaver Creek; Beavertail Butte	34.759	111.791	Reynolds et al., 1986	Basalt is faulted & is at a higher elevation & lateral to UAKA 77-76 (15.4 my)
MM-1	13.700	±0.50	Hickey Formation basalt	Black Hills; Mingus Mtn	34.703	112.092	Reynolds et al., 1986	
UAKA 87-188	13.180	±0.36	House Mountain basalt	Verde Valley; base of ancestral Mogollon Rim; bend of Oak Creek in Hidden Valley on the W side of House Mtn volcanic complex	34.79	111.886	Damon et al., 1996	overlies Beavertail Butte Fm. Can be used to show the average rate of retreat on uppper Paleozoic strata since emplacement of the basalt
B-21	13.100	±2.20	Hickey Formation basalt	Hackberry Mountain area; SE Verde Valley	34.417	111.783	Reynolds et al., 1986	
UAKA 66-28	13.100	±1.60	Hickey Formation basalt	Hackberry Mountain area; SE Verde Valley	34.535	111.937	Reynolds et al., 1986	Flow caps Government Hill & Black Hills
MM:2D	12.870	±0.60	Slide Rock gravels - basalt cobble	Oak Creek Canyon; near Slide Rock Bridge	34.946	111.752	Reynolds et al., 1986	Basalt cobble 9 m below 8 my flow
MM:2E	12.500	±0.50	Slide Rock gravels - basalt cobble	Oak Creek Canyon; near Slide Rock Bridge	34.946	111.752	Reynolds et al., 1986	Basalt cobble 18 m below 8.15 my flow

Verde Valley Area

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
PED-29-66	12.100	±1.30	Casner Mtn basalt	Sycamore Canyon; Casner Mtn	34.965	111.986	Reynolds et al., 1986	Overlies probable rim gravel on Kaibab Limestone
B-16	12.000	±1.20	Hickey Formation basalt	Hackberry Mountain area; SE Verde Valley	34.433	111.767	Reynolds et al., 1986	
B-15	12.000	±1.30	Hickey Formation basalt	Hackberry Mountain area; SE Verde Valley	34.433	111.767	Reynolds et al., 1986	
MM-2	11.900	±0.50	Hickey Formation basalt	Black Hills; Mingus Mtn	34.699	112.121	Reynolds et al., 1986	
B-19	11.600	±0.02	Hickey Formation basalt	Hackberry Mountain area; SE Verde Valley	34.417	111.783	Reynolds et al., 1986	
B-18	11.600	±0.60	Hickey Formation basalt	Hackberry Mountain area; SE Verde Valley	34.417	111.783	Reynolds et al., 1986	
B-17B	11.600	±0.30	Hickey Formation basalt	Hackberry Mountain area; SE Verde Valley	34.433	111.775	Reynolds et al., 1986	
B-24	11.500	±0.40	Hickey Formation basalt	Hackberry Mountain area; SE Verde Valley	34.417	111.783	Reynolds et al., 1986	
B-22	11.500	±0.80	Hickey Formation basalt	Hackberry Mountain area; SE Verde Valley	34.417	111.783	Reynolds et al., 1986	
B-25	11.400	±0.30	Hickey Formation basalt	Hackberry Mountain area; SE Verde Valley	34.408	111.833	Reynolds et al., 1986	
MM:3A	11.400	±0.50	Sycamore Canyon basalt	Sycamore Canyon; Mooney Trail	35.917	112.05	Reynolds et al., 1986	Second basalt flow above gravel
MY-7	11.350	±0.50	Hickey Formation basalt	Agua Fria area; SE of Estler Peak	34.381	112.005	Reynolds et al., 1986	
B-23	11.300	±1.80	Hickey Formation basalt	Hackberry Mountain area; SE Verde Valley	34.408	111.833	Reynolds et al., 1986	
B-12	11.300	±2.60	Thirteenmile Rock basalt	Hackberry Mountain area; SE Verde Valley	34.442	111.757	Reynolds et al., 1986	
T-14	11.300	±0.70	Thirteenmile Rock dacite tuff	Hackberry Mountain area; SE Verde Valley	34.433	111.767	Reynolds et al., 1986	
T-13	10.700	±0.60	Thirteenmile Rock dacite tuff	Hackberry Mountain area; SE Verde Valley	34.433	111.767	Reynolds et al., 1986	
UAKA 77-164	10.570	±0.31	West Clear Creek basalt	West Clear Creek; near Bull Pen Ranch gate	34.541	111.708	Reynolds et al., 1986	Lowermost exposed flow above buried Supai Fm
B-10	10.400	±0.80	Thirteenmile Rock basalt	Hackberry Mountain area; SE Verde Valley	34.4	111.758	Reynolds et al., 1986	
MM-2C	10.300	±0.40	Slide Rock gravels - basalt cobble	Oak Creek Canyon; near Slide Rock Bridge	34.946	111.752	Reynolds et al., 1986	Basalt cobble 6 m below 8.1 my flow
B-11	10.200	±0.40	Thirteenmile Rock basalt	Hackberry Mountain area; SE Verde Valley	34.45	111.792	Reynolds et al., 1986	
UAKA 73-161	10.160	±0.22	Fossil Creek basalt	Fossil Creek Canyon; flat lying volcanic sequence 383 m above canyon bottom	34.407	111.573	Reynolds et al., 1986	
UAKA 73-83	10.010	±0.23	Verde Hot Springs andesite	Verde Valley; pink andesite near water level of Verde River	34.357	111.708	Reynolds et al., 1986	
B-9	10.000	±0.70	Thirteenmile Rock basalt	Hackberry Mountain area; SE Verde Valley	34.45	111.792	Reynolds et al., 1986	

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
B-8	10.000	±0.70	Thirteenmile Rock basalt	Hackberry Mountain area; SE Verde Valley	34.45	111.792	Reynolds et al., 1986	
T-6	9.300	±0.40	Thirteenmile Rock dacite tuff	Hackberry Mountain area; SE Verde Valley	34.45	111.792	Reynolds et al., 1986	
UAKA 77-160	9.300	±0.21	Fossil Creek basalt	Fossil Creek Canyon; flat lying flow in 488 m thick volcanic section on S side of canyon	34.407	111.562	Reynolds et al., 1986	
B-7	9.200	±0.40	Thirteenmile Rock basalt	Hackberry Mountain area; SE Verde Valley	34.45	111.792	Reynolds et al., 1986	
B-1	8.500	±1.30	Thirteenmile Rock basalt	Hackberry Mountain area; SE Verde Valley	34.433	111.792	Reynolds et al., 1986	
B-3	8.300	±0.80	Thirteenmile Rock basalt	Hackberry Mountain area; SE Verde Valley	34.45	111.792	Reynolds et al., 1986	
B-5	8.300	±0.50	Thirteenmile Rock basalt	Hackberry Mountain area; SE Verde Valley	34.45	111.792	Reynolds et al., 1986	
B-1	8.300	±2.20	Thirteenmile Rock basalt	Hackberry Mountain area; SE Verde Valley	34.45	111.792	Reynolds et al., 1986	Prelim age of 6.4 my listed in Elston & others, 1974
MM-2A	8.150	±0.30	Oak Creek basalt	Oak Creek Canyon; E wall of Oak Creek Cyn	34.946	111.752	Reynolds et al., 1986	Basalt flow that covers a gravel deposit in a large channel exposed in the E wall of canyon. Gravels represent several stages of deposition & are approx 40 m thick w/ boulders as large as 1.2 m in diameter.
CD6	8.000	±0.30	Sycamore Canyon basalt	Sycamore Canyon; NW of Sycamore Creek	34.998	112.055	Reynolds et al., 1986	Basalt on Mogollon Rim
T-1	7.900	±0.50	Thirteenmile Rock dacite tuff	Hackberry Mountain area; SE Verde Valley	34.433	111.783	Reynolds et al., 1986	Hackberry Mtn dacite
UAKA 71-19	7.800	±0.23	Verde Formation air-fall tuff	Verde Valley	34.489	111.78	Reynolds et al., 1986	Air-fall vitric tuff in upper Verde Fm. Wingfield Mesa tuff
UAKA 77-75	6.550	±0.23	Slide Rock basalt	Oak Creek Canyon; E wall of Oak Creek Cyn near Slide Rock Lodge	34.936	111.742	Reynolds et al., 1986	120 m thick basal basalt flow, flat-lying sequence above gravel that overlies Supai Fm
UAKA 77-72	6.400	±0.25	Horse Mesa basalt	Dry Beaver Creek; SW tip of Horse Mesa jeep trail	34.767	111.714	Reynolds et al., 1986	Basalt cap above gravels that overlie Supai Fm
UAKA 73-84	6.300	±0.14	Ikes Backbone basalt	Lower Verde River; spl from highest pt on ridge NE of microwave tower btwn Fossil Crk & Verde R, elev 1323 m	34.342	111.68	Damon et al., 1996	Overlies pyroclastic deposits. Topmost pyroclostics dip 3° NE & lowermost are folded & faulted

Verde Valley Area

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
PA2	6.260	±0.30	Perkinsville Formation basalt	Chino Valley; Hell Canyon N of Drake	34.982	112.374	Reynolds et al., 1986	
UAKA 71-22	6.240	±1.00	Verde Formation air-fall tuff	Verde Valley; Gypsum quarry	34.53	111.784	Reynolds et al., 1986	Chemical & stratigraphic equivalent of Wingfield Mesa tuff
UAKA 71-39	5.690	±0.22	Verde Formation air-fall tuff	Verde Valley; Wingfield Mesa	34.521	111.772	Reynolds et al., 1986	Air-fall tuff in upper Verde Fm. Stratigraphically 30-43 m below air-fall vitric tuff dated at 7.80 my.
VV1	5.680	±0.2	Verde Formation basalt	Verde Valley; 13 km N of Camp Verde	34.717	111.905	Reynolds et al., 1986	
UAKA 80-62	5.660	±0.17	Verde Formation basalt	Verde Valley; ridge of SW side of Hog Canyon	34.676	111.776	Damon et al., 1996	Basalt flow interbedded w/ lacustrine/fluvial sediments of Verde Fm
UAKA 80-61	5.460	±0.18	Verde Formation basalt	Verde Valley; ridge 400 m W of USFS Rd 119	34.671	111.742	Damon et al., 1996	Basalt flow interbedded w/ lacustrine/fluvial sediments of Verde Fm
CD7	4.960	±0.2	Perkinsville Formation basalt	Chino Valley; NE of Perkinsville	34.998	112.122	Reynolds et al., 1986	
CD4	4.870	±0.2	Perkinsville Formation basalt	Chino Valley; NW of Perkinsville	34.909	112.211	Reynolds et al., 1986	
PA3	4.600	±0.2	Perkinsville Formation basalt	Chino Valley; near Paulden	34.869	112.47	Reynolds et al., 1986	Along upper Verde River
CD2	4.600	±0.2	Verde Formation basalt	Verde Valley; N of Clarkdale	34.828	112.046	Reynolds et al., 1986	In Verde River channel
UAKA 82-97	0.720	±0.25	Verde Formation dacite	Verde Valley; 0.3 mi N of North Mine Spring	34.492	111.852	Damon et al., 1996	Dacite within Verde Formation

Lower Colorado R & Lake Mead

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
	18.500	±0.2	Peach Springs Tuff				Nielson et al., 1990	
BC-424	13.400	±0.20	Mount Davis basalt	Lake Mead area; S end of cape on Fire Mtn	35.678	114.641	Reynolds et al., 1986	
UAKA 85-39	13.270	±0.34	Hoover Dam rock	Lake Mead area	36.3	114.295	Damon et al., 1996	
UAKA 85-38	12.720	±0.33	Hoover Dam lamprophyre	Hoover Dam area; near Fortification Hill	36.054	114.652	Damon et al., 1996	
UAKA 76-99	12.670	±0.3	Glass tuff in Muddy Crk Fm	Lake Mead; Pierce Ferry	36.128	114.035	Damon et al., 1996	2" thick air-fall ash bed btwn thin laminated mud beds, ash may be reworked
B84:42	11.600	±1.20	Grand Wash Trough air-fall tuff	Grand Wash area; W of Grand Wash Cliffs	36.127	114.026	Reynolds et al., 1986	Stratigraphically below Hualapai Limestone
B84:43	11.100	±1.30	Grand Wash Trough air-fall tuff	Grand Wash area; W of Grand Wash Cliffs	36.127	114.026	Reynolds et al., 1986	Stratigraphically below Hualapai Limestone
733C	10.900	±0.60	Muddy Creek Formation basalt	Lake Mead area; 6.8 km S of Temple Bar	35.998	114.294	Reynolds et al., 1986	From lower 2 flows below Hualapai Limestone member of Muddy Creek Fm
B84:41	10.800	±0.08	Grand Wash Trough air-fall tuff	Grand Wash area; W of Grand Wash Cliffs	36.127	114.026	Reynolds et al., 1986	Stratigraphically below Hualapai Limestone
PED-11-64	10.640	±1.10	Muddy Creek Formation basalt	lake Mead area	36.046	114.657	Reynolds et al., 1986	Fortification Hill Basalt member, lowest basalt on hill
PED-06-66	9.530	±1.10	Camptonite dike	Lake Mead area; dike along Hwy 93, 14km SE of Hoover Dam	35.989	114.654	Reynolds et al., 1986	Chilled border of dike intruded into Muddy Creek Fm. Dates vary widely due to excess argon problems
BA-1	8.660	±2.20	Hualapai tuff	White Hills	35.926	114.417	Reynolds et al., 1986	Basaltic shards in air-fall tuff, lower part of Haulapai Limestone Member
UAKA 85-37	7.080	±0.21	Hoover Dam basalt	Lake Mead area	36.22	114.742	Damon et al., 1996	basalt dike
PED-34-66	6.870	±0.2	Cottonwood basalt (lower flow)	Upper Grand Wash Trough; SW of Mud Mtn	36.634	113.889	Reynolds et al., 1986	Overlies Tertiary red sltst & cgl of the Grand Wash Trough
A70:27	6.000	±1.00	Muddy Creek Formation basalt	Lake Mead area; along Hwy 93, 24 km SE of Hoover Dam	35.847	114.589	Reynolds et al., 1986	Fortification Hill Basalt member
PED-06-66	5.980	±0.70	Camptonite dike	Lake Mead area; dike along Hwy 93, 14km SE of Hoover Dam	35.989	114.654	Reynolds et al., 1986	Dike intruded Muddy Creek Fm. Dates vary widely due to excess argon problems
	5.970	±0.07	Tuff bed w/in Hualapai Ls	Lake Mead; Meadview	35.975	114.413	Spencer, et al., 1998	Within upper Hualapai Ls

Lower Colorado R & Lake Mead

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
UAKA 74-138	5.840	±0.18	Muddy Creek Formation basalt	Lake Mead area	36.047	114.66	Reynolds et al., 1986	Lowermost flow of Fortification Hill Basalt Member. Predates downcutting by Colorado River.
PED-36-66	5.450	±1.11	Mud Mountain (Muddy Creek Fm)	Upper Grand Wash Cliffs	36.609	113.782	Reynolds et al., 1986	Overlies Tertiary rocks of the Grand Wash Trough
PED-06-66	5.350	±0.3	Camptonite dike	Lake Mead area; dike along Hwy 93, 14km SE of Hoover Dam	35.989	114.654	Reynolds et al., 1986	Dike intruded Muddy Creek Fm. Dates vary widely due to excess argon problems
BC405	5.000	±0.4	Muddy Creek Formation basalt	Lake Mead area; SE of Hoover Dam	35.944	114.657	Reynolds et al., 1986	Fortification Hill Basalt member
PED-35-66	4.730	±0.18	Cottonwood basalt (upper flow)	Grand Wash Trough	36.627	113.89	Reynolds et al., 1986	
A70:28	4.700	±0.3	Camptonite dike	Lake Mead area; dike along Hwy 93, 14km SE of Hoover Dam	35.924	114.632	Reynolds et al., 1986	Dike intruded Muddy Creek Fm. Dates vary widely due to excess argon problems
UAKA 89-23	4.700	±0.07	Pakoon Springs basalt (upper flow)	Grand Wash Trough	36.4	113.933	Damon et al., 1996	Overlies older basalt flows & Tertiary rocks of the Grand Wash Trough
PED-06-66	4.460	±0.10	Camptonite dike	Lake Mead area; dike along Hwy 93 S of Lake Mead	35.989	114.662	Reynolds et al., 1986	Dike intruded Muddy Creek Fm. Dates vary widely due to excess argon problems
UAKA 65-09	3.800	±0.11	Grand Wash Bay basalt	Lake Mead area; columnar basalt flow in Grand Wash Bay	36.205	114.017	Reynolds et al., 1986	Rests on eroded Muddy Creek Fm & fluvial gravels deposited by Colorado R. Postdates major downcutting of 810 m.
UAKA 64-08	3.790	±0.46	Sandy Point basalt	Lake Mead area; Iceberg Canyon, S side of Sandy Point	36.109	114.107	Reynolds et al., 1986	Overlies Colorado R gravels
UAKA 89-24	3.240	±0.05	Grand Wash Bay basalt	Lake Mead area	36.267	113.983	Damon et al., 1996	Uppermost basalt flow at Grand Wash Bay

Grand Canyon & Colorado Plateau

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
UAKA 88-47	19.940	±0.4	Peach Springs basalt	Hualapai Plateau; 1.3 mi N of Peach Springs	35.431	113.398	Damon et al., 1996	Overlies Peach Springs Tuff
UAKA 86-205	19.030	±0.44	Separation Hill basalt	Hualapai Plateau	35.787	113.597	Damon et al., 1996	Overlies Tertiary gravels on plateau surface
	18.500	±0.2	Peach Springs tuff	Hualapai Plateau			Nielson et al., 1990	Overlies Tertiary sediments at Peach Springs & in Milkweed & Horse Flat Canyons
UAKA 88-49	17.400	±0.3	Grand Pipe neck basalt	Sanup Plateau; neck exposed in Pakoon Ls. 1¼ mi N of Colorado R Mile 273	36.116	113.878	Damon et al., 1996	
IM-83-1	17.400	±0.9	Iron Mountain basalt	Haulapai Plateau; W rim of Grapevine Cyn	35.843	114.024	Reynolds et al., 1986	Overlies Tertiary gravels prob time equiv w/ Buck & Doe cgl. & Tapeats Ss. Flow is pre-faulting along the SW margin of the Hualapai Plateau & post-development of major embayments into it.
UAKA 88-51	15.250	±0.24	Grapevine Canyon basalt	Hualapai Plateau; Buck & Doe Rd at Gravevine Cyn	35.915	113.904	Wenrich et al., 1995	Overlies Redwall Ls & older Paleozoic rocks
PED-30-66	14.630	±1.10	Blue Mountain basalt	Aubrey Valley; upper Blue Mtn Cyn	35.598	113.222	Reynolds et al., 1986	Overlies Tertiary Blue Mtn gravels deposited on Esplanade Ss
MM:4B	14.400	±0.5	Long Point basalt (lower flow)	Coconino Plateau; Near Long Point Dam, N of Seligman	35.686	112.597	Reynolds et al., 1986	Overlies Tertiary gravels
UAKA 86-204	13.470	±0.3	227 Mile intrusive	Western Grand Canyon; 1 mi N of Colorado R Mile 227	35.765	113.399	Damon et al., 1996	Forms sill & dike complex in Watahomigi Fm
UAKA 71-37	9.730	±0.91	Red Butte basalt	Coconino Plateau; ~12 mi S of Tusayan	35.819	112.09	Reynolds et al., 1986	Basalt from 3 m above base of flow capping Red Butte. Flow is on the Valencia Surface & is an older stage basalt. Overlies Chinle & Moenkopi Fms
UAKA 88-50	9.190	±0.13	Garrett dikes	Sanup Plateau; ~2 mi S of Fort Garrett & 6 mi N of Colorado R Mile 264	36.107	113.78	Wenrich et al., 1995	Exposed in Hermit Fm but intrudes all Paleozoic rocks up through Kaibab Fm
SP-80-1	9.070	±0.8	Snap Point basalt	Shivwits Plateau; ~9 mi N of Colorado R Mile 267	36.173	113.811	Reynolds et al., 1986	Post-dates Grand Wash fault & erosional stripping to Kaibab Ls. Overlies Tertiary stream channel gravels on upper Grand Wash Cliffs. Flows are associated w/ Garrett dikes

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
UAKA 71-37	8.930	±0.23	Red Butte basalt	Coconino Plateau; ~12 mi S of Tusayan	35.819	112.09	Reynolds et al., 1986	Basalt from 3 m above base of flow capping Red Butte on the Valencia surface & is an alder stage basalt. Overlies Chinle & Moenkopi Fms
UAKA 71-38	8.780	±0.22	Red Butte basalt	Coconino Plateau; ~12 mi S of Tusayan; caps resistant bench of Red Butte	35.814	112.092	Reynolds et al., 1986	Presumably a slump block. Overlies Chinle & Moenkopi Fms
UAKA 88-48	8.200	±0.1	Price Point basalt (lower flow)	Shivwits Plateau; ~5 mi W of Colorado R Mile 207	36.979	113.414	Damon et al., 1996	Overlies alluvial deposits & Kaibab Fm
	7.640	±0.3	Shivwits basalt	Shivwits Plateau; head of Green Spring Cyn.	35.089	113.474	Reynolds et al., 1986	Lowest basalt that rests on a low-relief surface cut in Permian rock. Overlies Kaibab Fm & Moenkopi Fm
PED-37-66	7.060	±0.49	Mount Dellenbaugh basalt	Shivwits Plateau; Mount Dellenbaugh	36.109	113.542	Reynolds et al., 1986	Overlies Kaibab Fm & Moenkopi Fm
MM:4A	7.030	±0.4	Long Point basalt (upper flow)	Coconino Plateau; N of Seligman near Long Point Dam	35.686	112.597	Reynolds et al., 1986	Second basalt flow above gravel near dam. Overlies Tertiary gravels & lower basalt flow
PED-38-66	6.780	±0.15	Dellenbaugh basalt	Shivwits Plateau; ~3 mi NW of Mount Dellenbaugh on Dellenbaugh Rd	36.153	113.583	Reynolds et al., 1986	Overlies Kaibab Fm & Moenkopi Fm
UAKA 86-105	6.340	±0.16	Parashant dikes	Western Grand Canyon; ~1 mi N of Shults Spr in Parashant Cyn, ~6 mi N of Colorado R Mile 199	36.118	113.314	Wenrich et al., 1995	Intrudes all Paleozoic formations
	6.200	±0.3	Shivwits basalt	Shivwits Plateau; exact location unknown	36.294	113.811	Reynolds et al., 1986	Overlies sequence similar to "rim gravels". Prob overlies Kaibab Fm & Moenkopi Fm
UAKA 86-200	5.760	±0.26	202 Mile dikes	Western Grand Canyon; ~½ mi W of Colorado R Mile 202	36.046	113.363	Wenrich et al., 1995	Spl from top of Redwall Ls horizon; dikes intrude all Paleozoic rocks from Colorado R to Shivwitz Plateau
	5.400	±0.70	Mt. Rushmore rhyodacite	Coconino Plateau; ~8 mi E of Seligman, Mt. Rushmore dome	35.348	112.722	Reynolds et al., 1986	Overlies basalt flows
PED-39-66	4.750	±0.26	Poverty Mtn basalt	Shivwits Plateau; W end of Poverty Mtn	36.431	113.558	Reynolds et al., 1986	Overlies Kaibab Fm & Moenkopi Fm
UAKA 86-203	4.560	±0.12	Whitmore Hill vent	Western Grand Canyon; 1 mi W of Colorado R Mile 188	36.14	113.227	Damon et al., 1996	Includes dikes & basalt flow on slopes of the Hermit Fm
24-B91	4.300	±0.6	Diamond Butte basalt	Shivwits Plateau; 12 mi N of abandoned town of Mt. Trumbull (Bundyville); flow on top of Diamond Butte	36.564	113.35	Wenrich et al., 1995	Overlies upper part of Moenkopi Fm

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
28-B91	3.700	±0.6	Black Rock Mountain basalt	Shivwits Plateau; ~18 mi SW of St. George; caprock for Black Rock Mtn	36.78	113.742	Wenrich et al., 1995	Overlies Moenkopi Fm
PED-42-66	3.670	±0.07	Mount Trumbull basalt	Uinkaret Plateau; caprock for Mt. Trumbull	36.398	113.154	Reynolds et al., 1986	Overlies Chinle & Moenkopi Fms; treated spl
18-B91	3.660	±0.54	Hobble basalt	Shivwits Plateau; N of Hidden Canyon & E of Grand Wash Cliffs	36.625	113.483	Wenrich et al., 1995	Overlies Moenkopi Fm in graben & Kaibab Fm on plateau
PED-40-66	3.600	±0.18	Bundyville basalt	Shivwits Plateau; 3 mi E of abandoned town of Mt. Trumbull (Bundyville)	36.408	113.292	Reynolds et al., 1986	Downthrown block of Hurricane Fault; overlies Chinle & Moenkopi Fms
19-B91	3.500	±0.6	Hurricane Wash basalt	Shivwits Plateau; below Hurricane Cliffs	36.911	113.367	Wenrich et al., 1995	Overlies Chinle & Moenkopi Fms
PED-42-66	3.470	±0.63	Mount Trumbull basalt	Uinkaret Plateau; caprock for Mt. Trumbull	36.398	113.154	Reynolds et al., 1986	Overlies Chinle & Moenkopi Fms; untreated spl
29-B91	3.100	±0.4	Wolf Hole Mountain basalt	Shivwits Plateau; ~23 mi S of St. George	36.783	113.608	Wenrich et al., 1995	Overlies Moenkopi Fm
PED-43-66	2.630	±0.34	Mount Logan basalt	Uinkaret Plateau; S face of Mt. Logan	36.351	113.202	Reynolds et al., 1986	Overlies Chinle & Moenkopi Fms
PED-33-66	2.440	±0.51	Seegmiller Mountain basalt	Shivwits Plateau; ~20 mi S of St. George in Main Street Valley	36.846	113.641	Reynolds et al., 1986	Overlies Moenkopi Fm
	2.400	±0.7	Mt. Floyd rhyodacite	Coconino Plateau; ~10 mi NE of Seligman	35.39	112.721	Reynolds et al., 1986	Overlies Mt. Floyd basalts
PED-32-66	2.350	±0.31	Seegmiller Mountain basalt	Shivwits Plateau; ~20 mi S of St. George in Main Street Valley	36.846	113.641	Reynolds et al., 1986	Overlies Moenkopi Fm
	1.800	±0.3	Prospect lava dam	Western Grand Canyon, location unknown, assumed to be near Colorado R Mile 179			Hamblin, 1994	
27-B92	1.700	±0.4	Little Black Mountain basalt	St. George Basin; ~7 mi SE of St. George	36.992	113.5	Wenrich et al., 1995	Overlies Chinle
21-B91	1.600	±0.3	West Mesa basalt	Shivwits Plateau; ~18 mi SE of St. George & ~6 mi W of Hurricane Cliffs	36.867	113.425	Wenrich et al., 1995	Overlies Moenkopi Fm
20-B91	1.400	±0.25	East Mesa basalt	Shivwits Plateau; ~15 mi SE of St. George & ~4 mi W of Hurricane Cliffs	36.903	113..417	Wenrich et al., 1995	Overlies Kaibab Fm & Moenkopi Fm
	1.200	±0.5	Toroweap Lava Dam	Western Grand Canyon, location unknown, assumed to be near Colorado R Mile 179			Hamblin, 1994	
PED-05-65	1.180	±0.18	Lower Canyon basalt (Lava Falls)	Western Grand Canyon	36.202	113.078	Reynolds et al., 1986	Colorado R has cut through the 168 m thick basalt dam plus 15 m of Paleozoic strata
25-B91	1.000	±0.4	Little Tanks basalt	Shivwits Plateau; ~1 mi S of Diamond Butte & ~11 mi N of abandoned town of Mt. Trumbull (Bundyville)	36.544	113.378	Wenrich et al., 1995	Overlies Kaibab Fm

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
UAKA 87-128	0.990	±0.09	Whitmore lava dam	Western Grand Canyon, exact location unknown, assumed to be near Colorado R Mile 188			Hamblin, 1994	
	0.890	±?	basalt at Colorado R Mile 183	Western Grand Canyon, exact location unknown			Hamblin, 1994	intra canyon basalt flow
23-B91	0.830	±0.28	Antelope Knoll basalt	Uinkaret Plateau; ~5 mi E of Hurricane Cliffs on Navajo Trail Rd	36.807	113.208	Wenrich et al., 1995	Overlies alluvium of ancestral Clay Hole Wash & Kaibab Fm
UAKA 86-201	0.780	±0.15	Yumtheska vent west	Central Grand Canyon; ~2½ SE of Colorado R Mile 159 (159 Mile dike system)	36.275	112.769	Damon et al., 1996	cinder cone & basalt flow overlies Esplanade Ss
	0.780	±0.12	Gray Ledge dam	Western Grand Canyon; exact location unknown, assumed to be near Colorado R Mile 183			Hamblin, 1994	
UAKA 86-202	0.760	±0.08	Tuckup Canyon basalt	Central Grand Canyon; ~5 N of Colorado R Mile 164	36.344	112.889	Damon et al., 1996	Overlies Esplanade Ss
UAKA 73-23	0.649	±0.23	Shadow Mtn basalt	Cameron area	35.996	111.447	Reynolds et al., 1986	One lobe of this flow has been cut by a graben
	0.640	±?	basalt at Colorado R Mile 182.2	Central Grand Canyon; exact location unknown			Wenrich et al., 1995	intra canyon basalt flow
	0.635	±0.02	Toroweap basalt	Kanab Plateau; upper Toroweap Valley			Wenrich et al., 1995	Sage basalt of Billingsley & Workman, 1999; overlies Kaibab Fm, offset by Toroweap fault
UAKA 87-126	0.620	±0.05	layered diabase dam	Western Grand Canyon; exact location unknown, assumed to be near Colorado R Mile 183			Damon et al., 1996	layered diabase dam
	0.610	±0.13	Prospect lava dam	Western Grand Canyon; exact location unknown, assumed to be near Colorado R Mile 179			Hamblin, 1994	
GC-26-93	0.604	±0.008	Black ledge flow	Western Grand Canyon; Granite Park area, Colorado River Mile 207 to 209			Lucchitta et al., 2000	main part of flow
22-B91	0.580	±0.3	Black Knoll vent	Uinkaret Plateau; ~11 SW of Colorado City	36.851	113.081	Wenrich et al., 1995	Overlies Moenkopi Fm
	0.580	±0.03	"D" lava dam	Western Grand Canyon; exact location unknown, assumed to be near Colorado R Mile 179.5			Hamblin, 1994	
	0.570	±?	basalt at Colorado R Mile 181	Western Grand Canyon; exact location unknown			Wenrich et al., 1995	intra canyon basalt flow
UAKA 87-129	0.550	±0.03	Black Ledge dam	Western Grand Canyon; exact location unknown, assumed to be near Colorado R Mile 184			Damon et al., 1996	
	0.530	±?	Prospect Canyon basalt	Western Grand Canyon; ~1 mi S of Colorado R Mile 179			Wenrich et al., 1995	
GC-29-93	0.524	±0.007	Black ledge flow	Western Grand Canyon; Granite Park area, Colorado River Mile 207 to 209			Lucchitta et al., 2000	thin flow within sediment overlying main part of flow

Sample Number	Age (Ma)	Reliability (Ka)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
	0.440	±0.04	massive diabase dam	Western Grand Canyon; exact location unknown, assumed to be near Colorado R Mile 192.4			Hamblin, 1994	
UAKA 85-415	0.407	±0.07	The Cork	Central Grand Canyon; ~1 mi NW of Colorado R Mile 159 (159 Mile dike system)	36.302	112.803	Wenrich et al., 1995	dike in the Esplanade Ss
	0.402	±36	Prospect basalt (upper flow)	Western Grand Canyon; ~1 mi S of Colorado R Mile 179	36.18	113.08	Fenton, 1998	Overlies older basalt flows
	0.306	±37	Prospect basalt (uppermost flow)	Western Grand Canyon; ~1 mi S of Colorado R Mile 179	36.18	113.08	Fenton, 1998	Overlies older basalt flows
	0.200	±?	Toroweap Valley basalt	Western Grand Canyon; in Torowaep Valley near Vulcans Throne, exact location unknown			Wenrich et al., 1995	basalt cascades into Toroweap Valley from Uinkaret Plateau & into Grand Canyon W of Vulcans Throne at Colorado R Mile 180
UAKA 88-53	0.170	±0.39	basalt at Colorado R Mile 206	Western Grand Canyon; left bank of Colorado R near water level	35.991	113.341	Damon et al., 1996	Ledge basalt ?
	0.153	±13	Whitmore Cascade	Western Grand Canyon; lower Whitmore Canyon ~3 mi N of Colorado R Mile 188	36.17	113.21	Fenton, 1998	basalt flows
	0.140	±?	basalt at Colorado R Mile 192	Western Grand Canyon; exact location unknown			Wenrich et al., 1995	intra canyon basalt flow
	0.128	±09	Toroweap Terrace basalt	Toroweap Valley, ½ mi N of Colorado R Mile 180	36.2	113.08	Fenton, 1998	surface flows W of Vulcans Throne
	0.090	±06	Bar-Ten Cascade basalt	Western Grand Canyon; upper Whitmore Cyn, ~8 mi N of Colorado R Mile 188	36.23	113.22	Fenton, 1998	
	0.074	±04	Vulcans Throne basalt	Toroweap Valley, ½ mi N of Colorado R Mile 179	36.22	113.08	Fenton, 1998	Overlies older basalt flows
	0.038	±03	Prospect Cone basalt	Western Grand Canyon; mouth of Prospect Cyn S of & above Colorado R Mile 179	36.16	113.07	Fenton, 1998	cinder cone
	0.001	±?	Little Spring basalt	Uinkaret Plateau; ~3 mi S of Mt. Trumbull			Fenton (oral commun., 2000)	Overlies Pleistocene basalt flows & pyroclastic deposits

Hualapai Plateau and Aquarius Mountains

[Samples with asterisk* are Silicic Volcanic Clasts in Cretaceous-Eocene(?) "Rim gravels"]

Sample Number	Age (Ma)	Reliability (Ma)	Sample Locality & Type	General Locality	Latitude	Longitude	Reference	Comments
Basalt of Austin Peak	18.2	±1.5	Basalt intruded(?) by Fort Rock volcanics in Aquarius Mts. Contact obscure.	Outcrop in stream bed 1/2 mile SE of Austin Peak, Austin Peak Quad.	35.0825	113.506	Young & McKee, 1978; Fuis, 1974	Date by E.H. McKee
PED-27-63	18.3	±0.6	First dated sample of Peach Sp.Tuff, upper Milkweed Canyon, west of Hualapai Indian Res. fence	near windmill in freshly blasted cut, Milkweed Canyon SW Quad. Section 36, T26N, R14W	35.59	113.725	Young & Brennan, 1974; Damon, 1964	Date by P.E. Damon
R-79-K1	24.7	±3.5	Basalt(?) 2 mi. W of Pony Mesa on Penitentiary Mt. Quad. In Aquarius Mts.	2nd flow 50 ft. above thin gravels on Precambrian granite at Aquarius Cliffs	35.02	113.477	Young & McKee, 1978	Date by E.H. McKee
RAY-78-A2	24.9	±0.9	Basaltic andesite 0.9 mi. SW of R-79-K1 (Could be same flow as R-79-K1 on W. side of same mesa).	Lowest flow exposed in SW side of small wash I mi. west of Pony Mesa (colluvium covers base of section).	35.014	113.49	Young, 1979	Date by E.H. McKee
RAY-78-P	65.5	±3.5	Pluton intruding Tapeats, Bright Angel, and Muav Fms. near Clay Springs.	On Grand Wash Cliffs, Music Mt. NE Quad. ~25 miles S. of mouth of Grand Canyon.	35.71	113.856	Young, 1979; Young, 1999 (in Billingsley et al., 1999)	Date by E.H.McKee
RAY-S-93-1*	84.1	±2.5	Volcanic clast in Music Mt. Fm. I mile W. of Supai Road (high % volcanics)	Collected on side road to Thornton Lookout, Frazier Wells Quad. (6700 ft elev. in Section 5, T28N, R7W	35.84	113.05	Young, 1999 (in Billingsley et al., 1999)	Date by E.H. McKee
RAY-S-93-2*	79.6	±2.3	Volcanic clast in Music Mt. Fm. on Supai Road (high % volcanics)	Collected near 6450 ft. elev. in Section 9, T28N, R7W	35.82	113.0375	Young, 1999 (in Billingsley et al., 1999)	Date by E.H. McKee
RAY-S-93-3*	72	±2.3	Volcanic clast in Music Mt. Fm. on Supai Road (high % volcanics)	Collected near 6450 ft. elev. in Section 9, T28N, R7W	35.82	113.0375	Young, 1999 (in Billingsley et al., 1999)	Date by E.H. McKee
RY-88-LB1*	99.2	±3.0	Volcanic clast from volcanic-rich "Rim gravels" under basalts at N. end of Long Pt., Tin House Quad.	Collected in Sect. 33, T27N, R3W, northwest of Little Baldy Tk. More than 50% of in-place clasts are volcanics.	35.68	112.6	Young, 1989; Billingsley et al., 1999	Date by E.H. McKee

All samples except UAKA 77- 171 collected by or with R.A. Young and clast ages are unpublished dates by E.H. McKee.
Music Mt. Formation is equivalent to "Rim gravel" of other workers (Young, 1999).

Hualapai Plateau and Aquarius Mountains

[Samples with asterisk* are Silicic Volcanic Clasts in Cretaceous-Eocene(?) "Rim gravels"]

RY-88-LB2*	103.3	±3.0	Volcanic clast from volcanic-rich "Rim gravels" under basalts at N. end Long Pt. Tin House Quad.	Collected in Sect. 33, T27N, R3W, northwest of Little Baldy Tk. More than 50% of in-place clasts are volcanic.	35.68	112.6	Young, 1989; Billingsley et al., 1999	Date by E.H. McKee
RY-88-LB3*	78.4	±2.3	Volcanic clast from volcanic-rich "Rim gravel" under basalt at N. end Long Pt. Tin House Quad.	Collected in Sect. 33, T27N, R3W, northwest of Little Baldy Tk. More than 50% of in-place clasts are volcanic.	35.68	112.6	Young, 1989; Billingsley et al., 1999	Date by E.H. McKee
RYBT-87-4*	63.7	±2.0	Volcanic clast from "Rim gravel" lag west of Long Pt.	Collected from lag gravel 1 mi. N of Black Tank Camp; Black Tank, Ariz. Quad	35.653	112.68	Young, 1989; Billingsley et al., 1999	Date by E.H. McKee
RYFT-87-3*	73.9	±2.2	Volcanic clast from "Rim gravels" west of Long Pt.	Collected at elev. 6300 feet in Rose Well Camp East, Quad. 1 mi. SW of Furguson Tank	35.724	112.786	Young, 1989; Billingsley et al., 1999	Date by E.H McKee
RYPC-87-2*	70	±2.1	Volcanic clast from basal Music Mt. Fm. in lower Peach Springs Canyon	Collected near basal contact with Tapeats Sandstone near elev. 3840	35.597	113.452	Young, 1989; Billingsley et al., 1999	Date by E.H. McKee
RYPC-87-5*	117.1	±3.5	Volcanic clast from Music Mt. Fm. in Peach Springs Wash; near top of section.	Collected on road at power line crossing near elev. 4440 ft. Peach Springs Quadrangle	35.56	113.42	Young, 1999 (in Billingsley et al., 1999)	Date by E.H.McKee
RYPC-87-6*	83.5	±2.5	Volcanic clast from Music Mt. Fm. in Peach Springs Wash; middle of section.	Collected at pump station at 4000 ft elev., Sect. 34, T26N, R11W; Peach Springs Quad.	35.59	113.438	Young, 1999 (in Billingsley et al., 1999)	Date by E.H. McKee
UAKA 77-171*	73.4	±1.52	Trackyte clast collected from "Rim gravel" on Kaibab Fm. by W. Peirce.	Gravel near elev. 6440 ft on road to Supai on E. side of Hualapai Reservation	35.678	113.142	Koons, 1948; UAKA, Peirce, personal comm.	Date by P.E. Damon
Y-P1-83*	80	±2.4	Volcanic clast from "Rim gravel" under basalt on N. edge Mt. Floyd volcanics.	Collected in Section 14, T27N, R5W of Rose Well E. Quadrangle	35.725	112.78	Young, 1989; Billingsley et al., 1999	Date by E.H. McKee
Y-P2-83*	81.2	±2.4	Volcanic clast from "Rim gravel" under basalt on N. edge Mt. Floyd volcanics.	Same apparent lithology as Y-P1-83. Same gravel outcrop. From same source flow?	35.725	112.78	Young, 1989; Billingsley et al., 1999	Date by E.H. McKee

All samples except UAKA 77- 171 collected by or with R.A. Young and clast ages are unpublished dates by E.H. McKee.
Music Mt. Formation is equivalent to "Rim gravel" of other workers (Young, 1999).

Salt River Region
Chronology Compiled by Andre Potochnik

Age	Technique	Separate	Rock Type	Formation	Location	Lab	Lab number	Reference
1.76+-0.15	K/Ar	WR	basalt flow	Corduroy Ck. Basalt flow	Ft. Apache Res.	Univ. Of AZ	UAKA 75-52a	Peirce et al. 1979
9.74+-0.21	K/Ar	WR	basalt flow	Mt. Baldy basalt, basal	Ft. Apache Res.	Univ. Of AZ	UAKA 75-77	unpublished
11.74	K/Ar	WR	basalt flow	Flying V basalt	Ft. Apache Res.	Univ. Of AZ	UAKA-73-75	Damon et al, 1996
14.67+-0.34	K/Ar	WR	basalt flow	Black Mesa basalt	Salt River Canyon	Univ. Of AZ	?	Potochnik and Faulds 1998
16.21+-0.45	K/Ar	WR	basalt flow	Black Mesa basalt	Salt River Canyon		?	Potochnik and Faulds 1998
18.56+-0.07	Ar 40-39	sanidine	ash flow tuff	Apache Leap tuff	Salt River Canyon	?	?	Spencer et al 1996
21.90+-1.92	K/Ar	WR	basalt flow	Blue House Mtn.	Ft. Apache Res.	Univ. Of AZ	UAKA 76-109	Peirce et al. 1979
24.78 +-0.48	K/Ar	WR	basalt flow	Natanes v-clastics	Ft. Apache Res.	Univ. Of AZ	UAKA 87-185	unpublished
26.7	K/Ar	WR	basalt flow	Silver Butte basalt	Ft. Apache Res.	Univ. Of AZ	?	Damon et al, 1996
28.03+-0.60	K/Ar	WR	rhyolite plug	Round Top rhyolite	Ft. Apache Res.	Univ. Of AZ	UAKA 76-110	Peirce et al. 1979
33.20+-0.60	K/Ar	biot.	fall-out tuff	Whitetail Cgl.	Ray, AZ	?	?	Banks et al. 1972
33.32+-0.59	Ar 40-39	biot.	Blue Ridge tuff	Mogollon Rim Fm.	Clints Well	New Mexico Tech.	ARP91-3	unpublished
33.50+-0.60	K/Ar	biot.	fall-out tuff	Whitetail Cgl.	Aravaipa, AZ	New Mexico Tech.	?	Krieger et al. 1979
33.55+-0.41	Ar 40-39	biot.	top tuff	Mogollon Rim Fm.	Ft. Apache Res.	New Mexico Tech.	ARP91-1	Potochnik and Faulds 1998
34.15+-0.60	Ar 40-39	biot.	Nash Cyn. Tuff	Mogollon Rim Fm.	Ft. Apache Res.	New Mexico Tech.	ARP91-6	unpublished
35.21+-0.40	Ar 40-39	biot.	pink tuff	Mogollon Rim Fm.	Ft. Apache Res.	New Mexico Tech.	ARP91-4	unpublished
35.22+-0.90	Ar 40-39	biot.	7200' tuff	Mogollon Rim Fm.	Ft. Apache Res.	New Mexico Tech.	ARP91-2	Potochnik and Faulds 1998
37.50+-0.80	K/Ar	biot.	7600' tuff	Mogollon Rim Fm.	Ft. Apache Res.	Univ. Of AZ	UAKA 87-005	Potochnik 1989
37.60+-0.80	K/Ar	biot.	pink tuff	Mogollon Rim Fm.	Ft. Apache Res.	Univ. Of AZ	UAKA 87-004	Potochnik 1989
54.56+-1.17	K/Ar	WR	latite clast	Mogollon Rim Fm.	Ft. Apache Res.	Univ. Of AZ	UAKA 76-106b	Peirce et al. 1979
56.79+-1.19	K/Ar	WR	andesite clast	Mogollon Rim Fm.	Ft. Apache Res.	Univ. Of AZ	UAKA 76-106a	Peirce et al. 1979