Alicia Mullins

From: David Pickett [dpickett@swri.edu]
Sent: Monday, July 31, 2000 6:53 PM
To: Bret Leslie
Cc: William Murphy (wmurphy)
Subject: U-Th Samples
Attachments: Final summary of U_Th concs.xls

Bret,

Attached is a summary Excel file of the carbonate U-Th concentration data. The U-Th isotopic analyses underway now at Austin are as follows (more sample info on spreadsheet):

1st batch:

N99-1 (from NOPI-12)
N99-26 (from NOPI-499)
N99-28 (from NOPI-305)
N99-30 (from NOPI-305)
N99-32 (from NOPI-306)

Then, depending on initial results:

N99-35 (from NOPI-458)
N99-16 (from NOPI-501)
N99-18 (from NOPI-436)
N99-5 (from NOPI-24)
N99-11 (from NOPI-166)
N99-4 (from NOPI-19)
N99-33 (from NOPI-434)

The opals are almost ready, but I've given up on getting them in time for my talk. (The guy at Austin says they obtain U concentrations for the purpose of calculating spike amounts by sending them to Minnesota for ICP-MS; I'll get that done here, but not in time to get results so they can spike right.) I still think they can do them this FY. The opals are all from samples Nacho collected last year from the area to the left of the Level +00 adit:

IR-99-1 Opal 1
IR-99-1 Opal 2
IR-99-10 Opal

The two opals from IR-99-1 represent the older, clear opal and a later, bright yellow opal. In this sample and some of the others, it is clear that some opal predates uranophane (and/or other U mineral?). Uranophane needles are both coeval with and postdate the outer opal layer. I found it impossible to sample the clear opal that coats uranophane needles, but I suspect the yellow layer I did sample is really a mixture. The clear, slightly greenish opal is oldest and does not cover uranophane in any sample I've seen. (I've taken lots of pictures; I can send you some later.) This clear opal _seems_ to be the same type as what you dated at 54 ky. Does this mean we have very young uranophane? I'd like to know. Talk about your recent mobility....

I chose IR-99-1 because of the clear petrographic relationships and amount of opal.

IR-99-10 is also greenish, glassy, botryoidal opal covering altered tuff. There are no visible U minerals nor yellow opal on this sample, which is why I chose it. I have not found a rock from which I could sample opal that

clearly postdates all U minerals. Plus, I didn't see a reason to analyze any other separates from NOPI-ECP-19.0/5.0, which you dated, and which are all "dirty."

As for Goldschmidt, I am giving a 15-minute talk. The session is not good for U-series; I got a little unlucky with my symposium choice. I expect most of my useful interactions will take place at other people's posters. I'll keep you posted. At least the presentation format allows freedom from poster format hassles.

David

sample #	CNWRA NOPI-#-F	type	est. % non-carb in orig powder	grain size μ	U ppb uncorr	Th ppb uncorr	Th/U	mass correction	U ppm corr	Th ppm corr	isotopes 1st batch	isotpes 2nd batch
N99-1	12-SEP1	cc	4.8	250	51200	1815	0.035	0.582	29.776	1.056	X	
N99-2	501-W	cc	4.0	-	252	885	3.512	0.578	.146	.511		
N99-3	19-SEP1-P	cc, gray	6.4	250	18900	331	0.018	0.588	11.119	.195		
N99-4	19-SEP2	cc, gray	7.5	63	18100	196	0.011	0.593	10.735	.116		X
N99-5	24-SEP1	cc	3.6	250	30800	927	0.030	0.576	17.74	.534		X
N99-22	***24-SEP1 rep***	***cc***	***3.6***	***250***	***29300***	***924***	***0.032***	***0.576***	***16.876***	***.532***		
N99-6	24-SEP2	cc	5.6	63	24600	1001	0.041	0.585	14.392	.586		
N99-7	29-SEP1	cc	4.3	250	7920	804	0.102	0.579	4.589	.466		
N99-8	29-SEP2	cc	6.4	63	6980	1025	0.147	0.588	4.107	.603		
N99-9	164-SEP1	cc, gray?	56.8	250	34600	20700	0.598	0.810	28.027	16.768		
N99-21	**164-SEP1 rep**	**cc, gray?**	**57.3**	**250**	**34800**	**21900**	**0.629**	**0.810**	**28.189**	**17.74**		
N99-10	164-SEP4	cc, gray?	31.2	<63	48400	24800	0.512	0.697	33.753	17.295		
N99-11	166-SEP1-P	cc, gray	7.0	250	27600	1150	0.042	0.591	16.316	.68		X
N99-12	166-SEP2	cc, gray	8.1	63	22500	1210	0.054	0.596	13.409	.721		
N99-13	179-SEP1-P	cc, gray	15.0	250	14700	7300	0.497	0.626	9.204	4.571		
N99-14	179-SEP2	cc, gray	13.2	63	13800	6280	0.455	0.618	8.533	3.883		
N99-15	501-G-SEP1	cc, gray	8.4	250	23400	577	0.025	0.597	13.976	.345		
N99-16	501-G-SEP3	cc, gray	6.0	63	22700	580	0.026	0.587	13.318	.34		X
N99-17	436-L1-SEP1	cal	16.1	250	50200	3600	0.072	0.631	31.683	2.272		
N99-18	436-L1-SEP4	cal	9.6	<63	45600	3560	0.078	0.603	27.481	2.145		X
N99-19	436-L2-SEP2	cal	17.8	125	37900	10100	0.266	0.639	24.203	6.45		
N99-20	436-L2-SEP4	cal	14.6	<63	61700	19000	0.308	0.624	38.527	11.864		
N99-23	499-L2-SEP1	cal	27.8	250	55800	12100	0.217	0.683	38.093	8.26		
N99-24	499-L2-SEP3	cal	24.4	63	40600	12200	0.300	0.667	27.096	8.142		
N99-25	499-L3-SEP1	cal, sil	32.7	250	73100	398	0.005	0.704	51.454	.28		
N99-26	499-L3-SEP4	cal, sil	30.8	<63	91700	367	0.004	0.696	63.811	.255	X	
N99-27	305-L1-SEP2	cal	24.5	125	261000	684	0.003	0.668	174.305	.457		
N99-28	305-L1-SEP4	cal	22.2	<63	217000	326	0.002	0.658	142.734	.214	X	
N99-29	305-L2-SEP1	cal	26.4	250	284000	272	0.001	0.676	192.122	.184		
N99-30	305-L2-SEP4	cal	18.7	<63	244000	400	0.002	0.642	156.748	.257	X	
N99-31	306-SEP1	cal, sil	38.3	250	461000	643	0.001	0.729	335.939	.469		
N99-37	**306-SEP1 rep**	**cal, sil**	**39.0**	**250**	**479000**	**666**	**0.001**	**0.729**	**349.056**	**.485**		
N99-32	306-SEP4	cal, sil	35.9	<63	449000	542	0.001	0.718	322.362	.389	X	
N99-33	434-SEP2	cal, sil	4.2	125	145000	4210	0.029	0.579	83.921	2.437		X
N99-34	434-SEP4	cal, sil	7.8	<63	140000	5380	0.038	0.595	83.249	3.199		
N99-35	458-SEP1	cal, sil	92.6	250	116000	7520	0.065	0.968	112.242	7.276		X
N99-36	458-SEP4	cal, sil	91.4	<63	90200	9850	0.109	0.962	86.774	9.476		