

VI.6. DATATIONS BY URANIUM SERIES

Curtis McKINNEY*

1. SAMPLES

Lab. N°	Origins
248	Sondage 3a, prof. : 90-100cm; pièce n° 68, molaire de bovidé (15-5-1990)
249	Sondage 3a; prof. : 60-70cm; pièce n° 38, lamelle de dent de cerf
250	Sondage 3a; prof. : 80-90cm, pièce n° 53; molaire de cheval (15-5-1990)

2. SYNOPSIS OF CHEMICAL PROCEDURE

The samples of teeth are separated into enamel, dentine, and cementum. The enamel because of their generally low uranium content compared to the other material, must be carefully cleaned of any adhering dentine by density separations. The samples are fired to 800 degrees centigrade for six to eight hours, spiked with tracers of $^{228}\text{Th}/^{232}\text{U}$, and dissolved in nitric acid. By a combination ion exchange and coprecipitation techniques, uranium and thorium are separated and purified. The purified elements are extracted by a solution of thenoyl-trifluoroacetone in benzene which is then added dropwise onto steel planchettes, evaporated and plated by firing. The planchettes are counted in an alpha spectrometer and evaluated by standard techniques. Details for the chemical and spectrometric procedures are found in Ivanovich and Harmon (1982).

The three samples have consistent uranium concentrations and $^{234}\text{U}/^{238}\text{U}$ ratios (considering the 20 errors) indicating a common geochemical environment. The age of #249 was computed using the $^{234}\text{U}/^{238}\text{U}$ ratio of #250 since the ^{234}U peak was obscured on the alpha spectrum. The ^{238}U peak was clear and a substitution was made to produce a rough age estimate. The $^{234}\text{U}/^{238}\text{U}$ is consistent in single component sites based on unpublished research from this laboratory. Sample #250 is the most reliable of the three because the U yield was high enough to produce a clear spectra. The age of the deposit is 48.9 ka BP \pm 5.8/5.5. Samples #248 and #249 had low U yields producing ambiguous spectral results, therefore, the ages are not reliable.

* Southern Methodist University, 75175 Dallas-Texas, U.S.A.

3. RESULTS

Lab#	U yield %	Th yield %	U ppm (\pm)	^{234}U (+) ^{238}U	^{230}Th ^{232}Th	^{230}Th (+) ^{234}U	Age ka BP	\pm ka 20
248 Enamel	132	43.7	.4(.1)	.95(.44)	>1000.	.215(.08)	26.4	11. 10.
249 Enamel	3.4	29.2	.43(.09)	-----	>1000.	.31(.06)	39.8	10. 9.
250 Enamel	24.6	40.7	.48(.03)	1.3(.1)	>1000.	.37(.03)	48.9	5.8 5.5

The lab #s represent : #248 = 6 Esc. 53a 90-100cm N° 68>5/5/90
 #249 = 6 Esc. 53a 80-90cm N° 53 A5/5/90
 #250 = 6 Esc. 53a 80-90cm N° 53>5/5/90

4. REFERENCES

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