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COLLEGE OF SCIENCE
DEPARTMENT OF GEOLOGY
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April 19, 1996

Rich Lively
Minnesota Geological Survey
2642 University Ave.
St. Paul, Minnesota 55117

Re: Alpha counting of sand and coral samples

Rich,

I appreciate you taking the time to speak with me the other day about alpha counting. As discussed, I am enclosing the samples we wish to have analyzed by alpha counting. The following samples are contained in this package:

1.) Coral Specimen; 10 feet bls
2.) MWC2-A, Sample -15; 55-57 feet bls
3.) MWC6-A, Sample 13; 80-82 feet bls

The unconsolidated samples are Steve Krupa's and the coral sample is Jeff Giddings. Listed below is the phone number for each one of us. As we had agreed, the samples would cost $250.00 per sample. It is our understanding that you would evaluate the coral sample and inform us on the potential validity of obtaining usable results prior to actually conducting the alpha counting. Also please analyze MWC2-A, Sample 15 before MWC6-A, Sample 13. Depending upon the results of MWC2-A, we will proceed with MWC6-A, Sample 13. If for some reason you foresee a long delay in obtaining the counts (greater than seven weeks) please notify us immediately. Finally, please return any unused sample.

Respectfully,

Steve Krupa

Jeff Giddings

Steve Krupa (407)-687-6923 (W); 736-3941(H) email steve.krupa@sfwmd.gov
Jeff Giddings (407)-687-6939 (W); 737-1727(H) email jeff.giddings@sfwmd.gov
c: Dr. Charles Finkl

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5 June 1996

Steve Krupa
Department of Geology
Florida Atlantic University
P.O. Box 3091
Boca Raton, Florida 33431-0991

Dear Steve,

Enclosed are the sample coral, MWC2a, the non-carbonate residue from MWC6a and the sheet outlining the result from the U/Th analysis of MWC6a.

The calculated age for this sample is 317,000 ± 67000 years before the present. However, as we discussed on the phone, the 234U/238U isotopic activity ratio is less than 1. This would only occur if the water that deposited the calcite was depleted in 234U, which is highly unlikely, or the uranium in the solid phase has been remobilized and 234U has been preferentially removed. The latter is the more likely explanation. This means that the sample represents an open system and the calculated age is invalid. The validity is based on the assumption that U or Th has not moved in or out of the samples after deposition. Although it appears that some uranium has left the system and the true age may be younger than 300,000 years, it cannot from this sample, be shown what the actual age should be, nor can a gain of U be ruled out. The simplest and most realistic interpretation is that the sample represents an open system and the age is unknown.

The ratio of 230Th/232Th of 35 indicates that all of the measured 230Th in the sample is of radiogenic origin and not derived from detrital material. As we discussed, the U concentration is high and it might be interesting to develop a hydrological model for concentrating U in a relatively narrow zone.

I am sorry that with the lab shutting down more samples could not be analyzed, the situation sounds geologically interesting and worth further exploration.

If you have any questions about the results give me a call or e-mail.

Best Regards,

Rich

Rich Lively

U-series Isotopic Data and Calculated Age
6/3/96

| *Sample I.D.* | *MGS Lab#* | *Start date* |
|---|---|---|
| mwc6a-s13 | 556 | 5/10/96 |

| | |
|---|---|
| **Sample Mass (g)** | 6.21 |
| **Spike Mass (g)** | 1.2663 |
| **Spike ratio** | 1.0206 |
| **U Delay (d)** | 4 |
| **Th Delay (d)** | 22 |

**COUNT TIMES IN SECONDS**

| *U* | *Th* | *Bkg* |
|---|---|---|
| 317471 | 325025 | 100000 |

**TOTAL COUNTS**

| *U-238* | *U-234* | *U-232* | *Th-232* | *Th-230* | *Th-228* | *Ra-224* |
|---|---|---|---|---|---|---|
| 25913 | 25705 | 4161 | 494 | 16811 | 3442 | 1432 |

**BACKGROUND COUNTS**

| *U-238* | *U-234* | *U-232* | *Th-232* | *Th-230* | *Th-228* | *Ra-224* |
|---|---|---|---|---|---|---|
| 5 | 5 | 10 | 5 | 5 | 10 | 5 |

**BACKGROUND CORRECTED ACTIVITIES AND ERRORS (cpm)**

| | *Activity* | *error* | | *Activity* | *error* |
|---|---|---|---|---|---|
| *U-238* | 4.894 | 0.0305 | *Th-232* | 0.088 | 0.0044 |
| *U-234* | 4.855 | 0.0303 | *Th-230* | 3.100 | 0.0240 |
| *U-232* | 0.780 | 0.0124 | *Th-228* | 0.539 | 0.0110 |
| | | | *Ra-224* | 0.261 | 0.0072 |

**CALCULATED RESULTS AND ERRORS**

| | |
|---|---|
| *U Yield (%)* | 20.5 |
| *Th Yield (%)* | 13.9 |
| *U Conc. (ppm)* | 16.43 0.703 |

| | *Ratio* | *error* | | | |
|---|---|---|---|---|---|
| *234U/238U* | 0.992 | 0.0088 | *Initial 234U/238U A.R.* | 0.980 | 0.0430 |
| *230Th/234U* | 0.943 | 0.0296 | | | |
| *230Th/232Th* | 35.15 | 1.767 | | | |

| | *years* | *error* |
|---|---|---|
| *Calculated Age* | 317855 | 67520 |
| *Upper limit* | 86138 | |
| *Lower limit* | 48901 | |