



Consistent Accuracy  
Delivered On Time.

Beta Analytic Inc.  
4985 SW 74 Court  
Miami, Florida 33155 USA  
Tel: 305-667-5167  
Fax: 305-663-0964  
beta@radiocarbon.com  
www.radiocarbon.com

DR. MURRY TAMERS  
MR. DARDEN HOOD  
Directors

Mr. Ronald Hatfield  
Mr. Christopher Patrick  
Deputy Directors

## INTERNATIONAL RADIOCARBON INTERCALIBRATION RESULTS

At the request of a number of our clients, the opposite side of this page lists our Radiometric and AMS results from the last two international radiocarbon intercalibration comparison studies (TIRI and FIRI). As you expect, our results are consistently accurate. However, the overall ranges from the participants was poor. In the case of an 11,800 BP sample, AMS results were wrong by as much as 1200 years and for a 46,000 BP sample, AMS results were wrong by as much as 16,000 years.

A word of caution in using this type of data to compare laboratory capabilities. Since all the participants know they are being tested, the comparison samples are naturally given a lot of extra special attention. This means the tests are only a reflection of best methods and calibration, not the day-to-day accuracy of results. That is determined by the the experience and priorities of the technician working on the samples, the intensity of the calibration program, and the degree of quality control implementation.

### **Accountable professionals analyze your samples at Beta.**

They are accountable for their work since their livelihoods depend upon consistently accurate results. Students are not used in the analyses (as university labs do).

Each sample is analyzed using the combined experience of professionals. Their only priority throughout the day is to work on your samples.

### **Over 4000 reference standards are analyzed annually in conjunction with unknown samples.**

These consist of NIST, NBS, and TIRI standards, as well as internal reference standards and radiometric samples which are synthesized to graphite and then sent to multiple AMS detectors as blinds. This ensures accurate measurement within the detector and intercalibration between our 63 radiometric detectors and 9 AMS detectors.

### **Staff scrutiny, external audits, and unique internal controls on our quality ensure accurate results.**

Every one of your results is scrutinized by at least five of our professionals through out the analysis. Each one cross checking the other and ensuring the result is reported accurately. We are externally audited every year by the Department of Energy and US Geogical Survey and our unique ability to compare our radiometric results with our AMS results ensures consistent accuracy and external control on all our facilities.

Each one cross checking the other and ensuring the result is reported accurately.

### **You can rely on Beta results being consistently as accurate as intercomparison study samples.**

**with your samples and who analyze them with students who are obligated to greater priorities.**

We want your samples and apply our best methods to every one of them. **It is risky to expect this same guarantee from university labs who are burdened**

## **Be Assured, at Beta...**

*Your Radiometric and AMS results will always be accurate and consistent from one year to the next.*

*Only professional technicians will work with your samples. Students, intern or part-time technicians are never allowed.*

*We consider the day-to-day accuracy of your samples far more important than random comparison samples.*

*We know your reputation depends on us and we take that VERY SERIOUSLY.*

*We appreciate your business and will always make quality, delivery, and customer service our highest priorities.*

BETA FIRI AND TIRI COMPARATIVE RESULTS

<b>FIRI STANDARD NAME (2000 - 2001)</b>	<b>EXPECTED or CONSENSUS AGE</b>	<b>BETA RADIOMETRIC AGE</b>	<b>BETA AMS AGE</b>	<b>Normal Statistical Agreement with Expected Age</b>	<b>Variations from the expected age reported by other laboratories from around the world</b>
A-Kauri Wood	45868 +/- NA	> 43760 BP	45970 +/- 790 BP	YES	23000 to 55000 BP
B-Kauri Wood	46504 +/- NA	> 44650 BP	46660 +/- 770 BP	YES	18000 to 55000 BP
C-Marine Turbidite	18173 +/- 11 BP	18110 +/- 110 BP	18170 +/- 50 BP	YES	14600 to 18640 BP
D-Belfast Pine	4508 +/- 3 BP	4360 +/- 60 BP	4500 +/- 20BP	YES	2990 to 5060 BP
E-Humic Acid	11778 +/- 7 BP	11600 +/- 70 BP	11770 +/- 70 BP	YES	7700 to 15150 BP
F-Belfast Pine	4508 +/- 3 BP	4450 +/- 50 BP	4470 +/- 20 BP	YES	4100 to 5870 BP
G-Glengoyne Barley Mash	110.69 +/-0.1% Modern	110.4 +/- 0.6% Modern	110.8 +/-0.3% Modern	YES	94.2 to 121.0 % Modern
H-Hohenheim Oak	2232 +/- 5 BP	2200 +/- 50 BP	2180 +/- 20 BP	YES	1530 to 2980 BP
I-Belfast Cellulose	4485 +/- 5 BP	4380 +/- 50 BP	4500 +/- 20 BP	YES	3780 to 5650 BP
J-Glengoyne Barley Mash	110.69 +/-0.1% Modern	109.4 +/-0.7% Modern	110.9 +/- 0.3% Modern	YES	97.1 to 122.0 % Modern
<b>TIRI STANDARD NAME (1993 - 1994)</b>	<b>EXPECTED or CONSENSUS AGE</b>	<b>BETA RADIOMETRIC AGE</b>	<b>BETA AMS AGE</b>	<b>Normal Statistical Agreement with Expected Age</b>	<b>Variations from the expected age reported by other laboratories from around the world</b>
A-Barley Mash	116.4 +/-0.1% Modern	116.7 +/-0.6% Modern	116.3 +/-0.6% Modern	YES	101.7 to 131.7 % Modern
B-Belfast Pine	4503 +/- 6 BP	4480 +/- 60 BP	4510 +/- 40 BP	YES	3900 to 5640 BP
C-IAEA Cellulose	129.7 +/-0.1% Modern	129.1 +/-0.6% Modern	129.8 +/-0.5% Modern	YES	112.4 to 132.3 % Modern
D-Hekla Peat	3810 +/- 7 BP	3820 +/- 60 BP	3800 +/- 70 BP	YES	3500 to 4200 BP
E-Ellanmore Humic	11129 +/- 12 BP	11180 +/- 70 BP	11090 +/- 50 BP	YES	9153 to 12510 BP
H-Ellanmore Whole Peat	11152 +/- 23 BP	10950 +/- 60 BP	10960 +/- 80 BP	YES	10552 to 11560 BP
I-Travertine	11060 +/- 17 BP	10990 +/- 60 BP	11260 +/- 50 BP	YES	9990 to 11550 BP
J-Crannog Wood	1605 +/- 8 BP	1510 +/- 50 BP	1550 +/- 60 BP	YES	1365 to 1800 BP
K-Turbidite Carbonate	18155 +/- 34 BP	18190 +/- 100 BP	18290 +/- 70 BP	YES	15980 to 21700 BP
L-Whalebone	12788 +/- 30 BP	12890 +/- 90 BP	12750 +/- 70 BP	YES	12230 to 13120 BP
M-Icelandic Peat	1682 +/- 15 BP	1720 +/- 60 BP	1660 +/- 60 BP	YES	1448 to 3570 BP
F-Icelandic Doublespar	46750 +/- 208 BP	> 45000 BP	> 50000 BP	YES*	29000 to 62000 BP
G-Fuglaness Wood	39784 +/- 620 BP	44550 +/- 1620 BP	44310 +/- 1370 BP	YES*	31800 to 53000 BP

\* TIRI samples F and G gave widely varying results as reported by most laboratories. Sample F has since been shown to be radiocarbon dead (> 50 Ky). Sample G should have been sub-fossil. Both BETA results are consistent with those estimations.