APPENDIX J:

RADIOMETRIC DATING RESULTS

BETA ANALYTIC, INC.

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

Mr. Darden Hood
Director

Mr. Ronald Hatfield
Mr. Christopher Patrick
Deputy Directors

Ms. Carter Shields

Report Date: 12/18/00

Parsons Engineering Science, Inc.

Material Received: 11/13/00

Sample Data	Measured Radiocarbon Age	13C / 12C Ratio	Conventional Radiocarbon Age(*)
Beta - 149032	3870 +/- 40 BP	-25.4 o/oo	3860 +/- 40 BP
SAMPLE : 5054			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 2460 to 2200 (Cal BP 4410 to 4150)		
Beta - 149033	270 +/- 40 BP	-27.1 o/oo	240 +/- 40 BP
SAMPLE : 5065			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(organic sediment): acid washes		
2 SIGMA CALIBRATION :	Cal AD 1530 to 1560 (Cal BP 420 to 390)	AND Cal AD 1630 to 1680 (Cal BP 320 to 270)	
	Cal AD 1740 to 1800 (Cal BP 200 to 150)	AND Cal AD 1930 to 1950 (Cal BP 20 to 0)	
Beta - 149034	4810 +/- 50 BP	-27.1 o/oo	4780 +/- 50 BP
SAMPLE : 5019			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 3660 to 3500 (Cal BP 5600 to 5450)	AND Cal BC 3440 to 3380 (Cal BP 5390 to 5330)	
Beta - 149035	1850 +/- 40 BP	-25.3 o/oo	1850 +/- 40 BP
SAMPLE : 5005			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal AD 70 to 250 (Cal BP 1880 to 1700)		
Beta - 149036	1250 +/- 40 BP	-26.9 o/oo	1220 +/- 40 BP
SAMPLE : 5008			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal AD 690 to 900 (Cal BP 1260 to 1060)		

Ms. Carter Shields

Report Date: 12/18/00

Sample Data	Measured Radiocarbon Age	13C / 12C Ratio	Conventional Radiocarbon Age(*)
Beta - 149037	200 +/- 40 BP	-26 o/oo	180 +/- 40 BP
SAMPLE : 5028			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal AD 1650 to 1710 (Cal BP 300 to 240)	AND Cal AD 1720 to 1880 (Cal BP 230 to 70)	
	Cal AD 1910 to 1950 (Cal BP 40 to 0)		
Beta - 149038	2820 +/- 40 BP	-27.4 o/oo	2780 +/- 40 BP
SAMPLE : 5035			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 1010 to 830 (Cal BP 2960 to 2780)		
Beta - 149039	3810 +/- 40 BP	-27.6 o/oo	3770 +/- 40 BP
SAMPLE : 5013			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 2300 to 2120 (Cal BP 4250 to 4060)	AND Cal BC 2100 to 2040 (Cal BP 4050 to 3990)	
Beta - 149040	3160 +/- 60 BP	-23.4 o/oo	3190 +/- 60 BP
SAMPLE : 5063			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(organic sediment): acid washes		
2 SIGMA CALIBRATION :	Cal BC 1600 to 1380 (Cal BP 3550 to 3320)		
Beta - 149041	730 +/- 40 BP	-27.9 o/oo	680 +/- 40 BP
SAMPLE : 5066			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT :	(organic sediment): acid washes		
2 SIGMA CALIBRATION :	Cal AD 1270 to 1320 (Cal BP 680 to 630)	AND Cal AD 1340 to 1390 (Cal BP 600 to 560)	

Ms. Carter Shields

Report Date: 12/18/00

Sample Data	Measured Radiocarbon Age	13C / 12C Ratio	Conventional Radiocarbon Age(*)
Beta - 149042	2240 +/- 40 BP	-23.2 o/oo	2270 +/- 40 BP

SAMPLE : 5064
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (organic sediment): acid washes
2 SIGMA CALIBRATION : Cal BC 400 to 340 (Cal BP 2350 to 2290) AND Cal BC 320 to 210 (Cal BP 2270 to 2160)

Beta - 149043	990 +/- 40 BP	-23.9 o/oo	1010 +/- 40 BP

SAMPLE : 5036
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (organic sediment): acid washes
2 SIGMA CALIBRATION : Cal AD 980 to 1050 (Cal BP 970 to 900) AND Cal AD 1100 to 1140 (Cal BP 850 to 810)

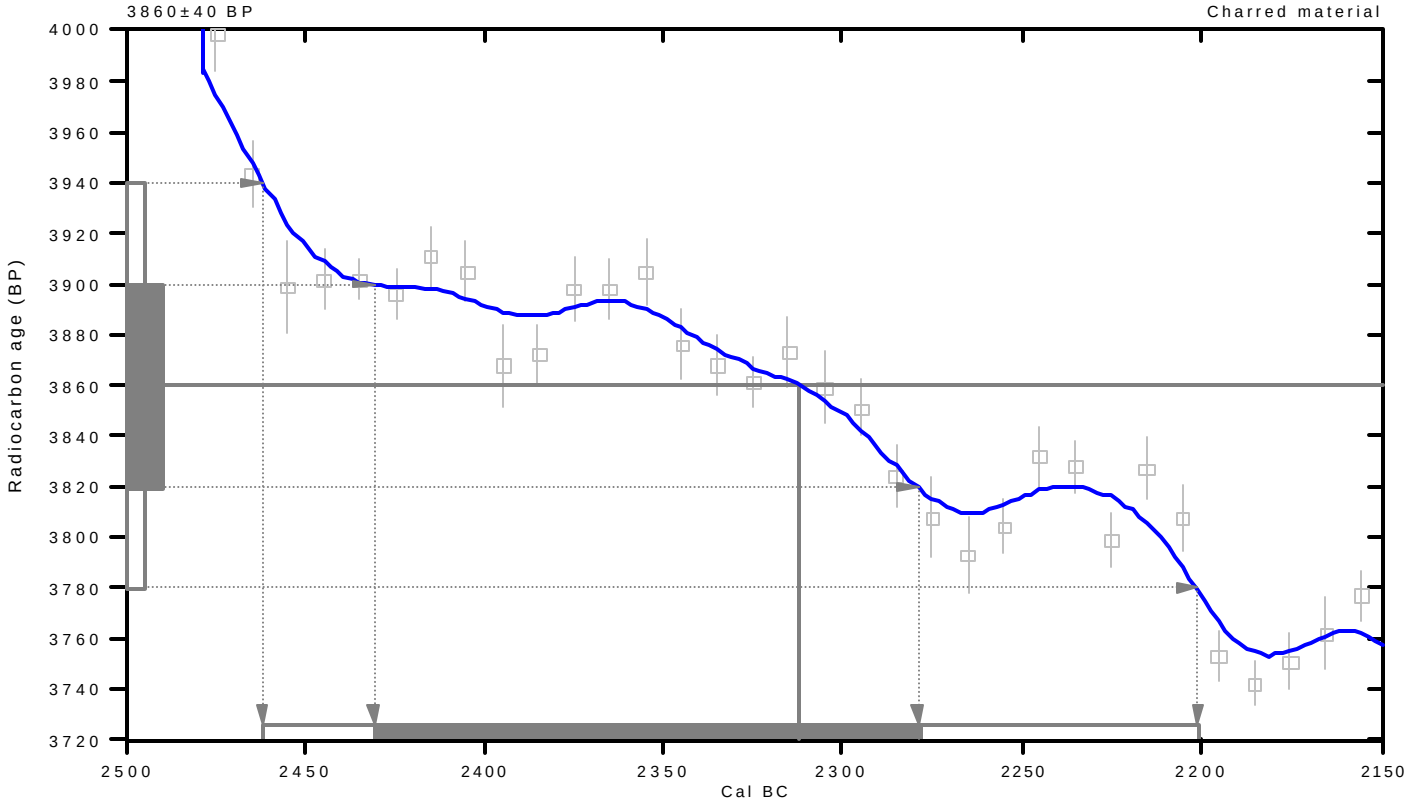
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.4:lab. mult=1)

Laboratory number:	**Beta-149032**
Conventional radiocarbon age:	**3860±40 BP**
2 Sigma calibrated result: (95% probability)	**Cal BC 2460 to 2200 (Cal BP 4410 to 4150)**

Intercept data

Intercept of radiocarbon age with calibration curve:	Cal BC 2310 (Cal BP 4260)
1 Sigma calibrated result: (68% probability)	Cal BC 2430 to 2280 (Cal BP 4380 to 4230)



References:

Database used

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

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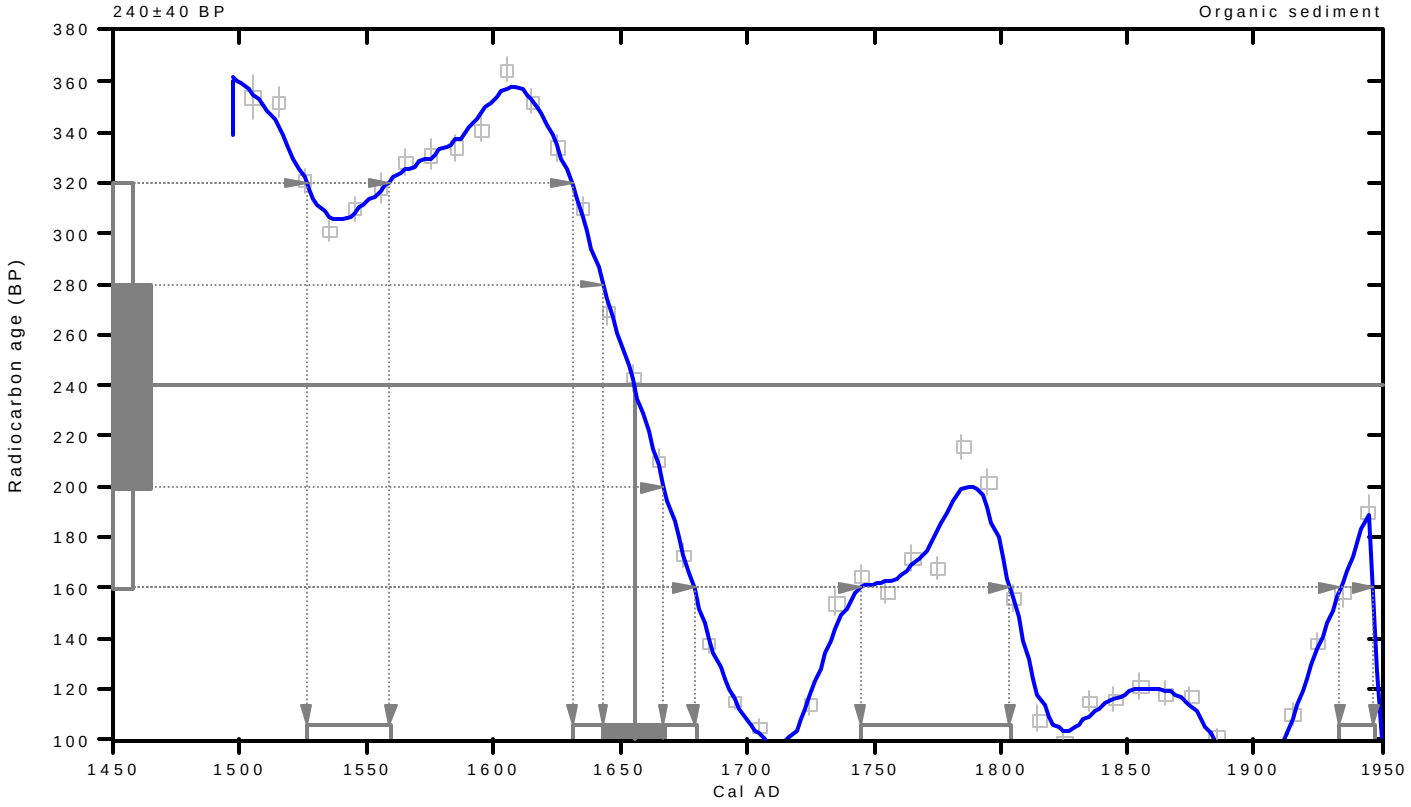
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27.1:lab. mult=1)

Laboratory number:	**149033**
Conventional radiocarbon age:	**240±40 BP**
2 Sigma calibrated results: (95% probability)	**Cal AD 1530 to 1560 (Cal BP 420 to 390) and Cal AD 1630 to 1680 (Cal BP 320 to 270) and Cal AD 1740 to 1800 (Cal BP 200 to 150) and Cal AD 1930 to 1950 (Cal BP 20 to 0)**

Intercept data

Intercept of radiocarbon age with calibration curve:	Cal AD 1660 (Cal BP 290)
1 Sigma calibrated result: (68% probability)	Cal AD 1640 to 1670 (Cal BP 310 to 280)



References:

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Calibration Database

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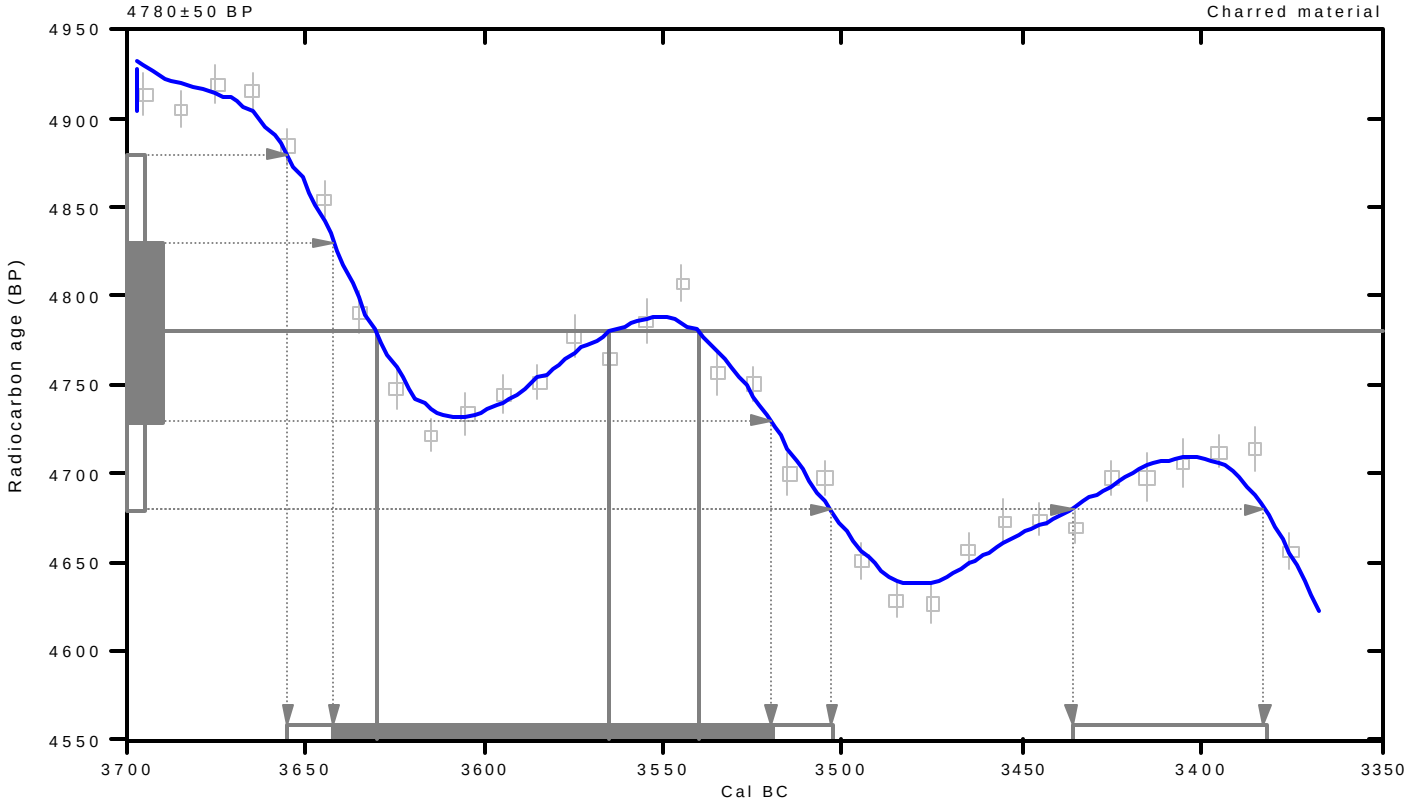
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27.1:lab. mult=1)

Laboratory number:	**Beta-149034**
Conventional radiocarbon age:	**4780±50 BP**
2 Sigma calibrated results: (95% probability)	**Cal BC 3660 to 3500 (Cal BP 5600 to 5450) and Cal BC 3440 to 3380 (Cal BP 5390 to 5330)**

Intercept data

Intercepts of radiocarbon age with calibration curve:	Cal BC 3630 (Cal BP 5580) and Cal BC 3560 (Cal BP 5520) and Cal BC 3540 (Cal BP 5490)
1 Sigma calibrated result: (68% probability)	Cal BC 3640 to 3520 (Cal BP 5590 to 5470)



References:

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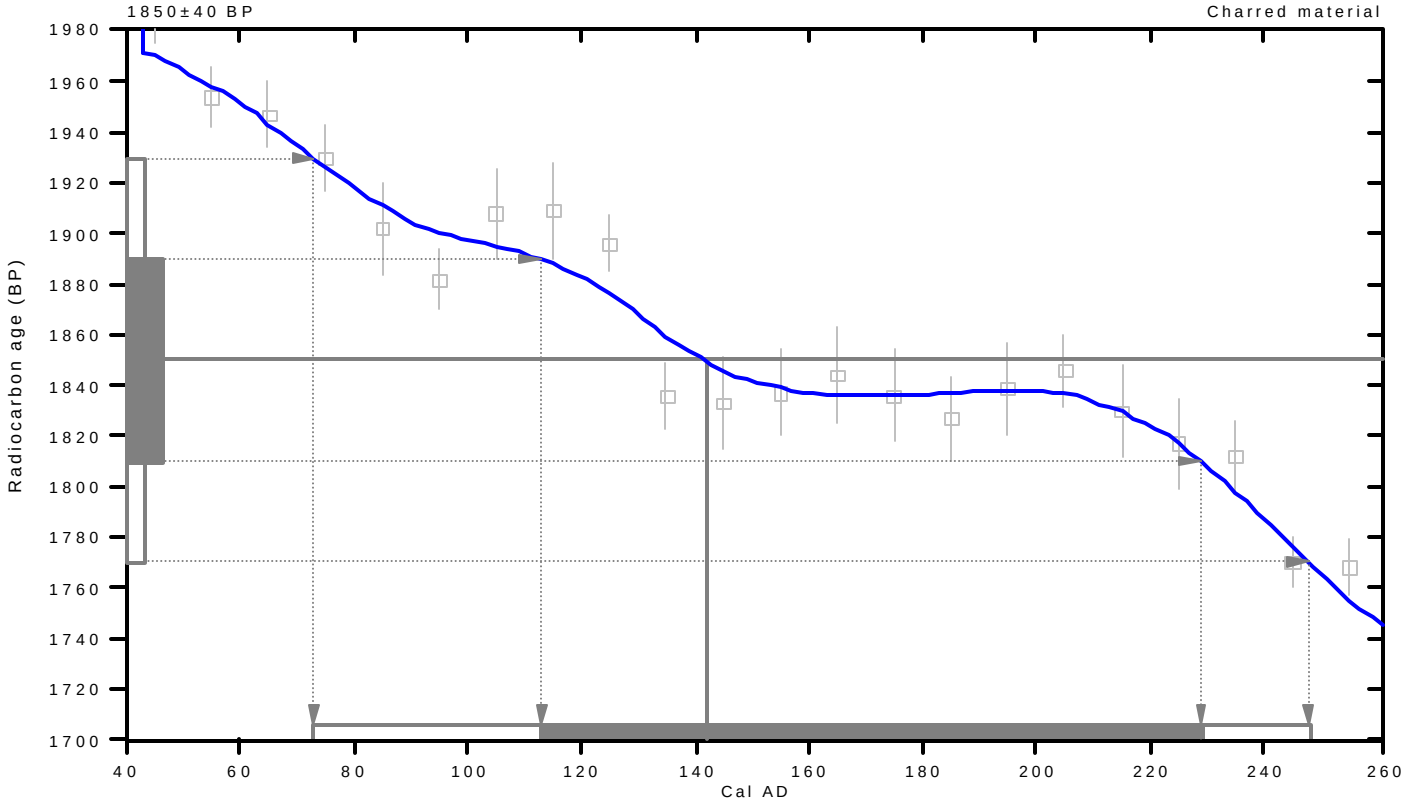
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.3:lab. mult=1)

Laboratory number:	**Beta-149035**
Conventional radiocarbon age:	**1850±40 BP**
2 Sigma calibrated result: (95% probability)	**Cal AD 70 to 250 (Cal BP 1880 to 1700)**

Intercept data

Intercept of radiocarbon age with calibration curve:	Cal AD 140 (Cal BP 1810)
1 Sigma calibrated result: (68% probability)	Cal AD 110 to 230 (Cal BP 1840 to 1720)



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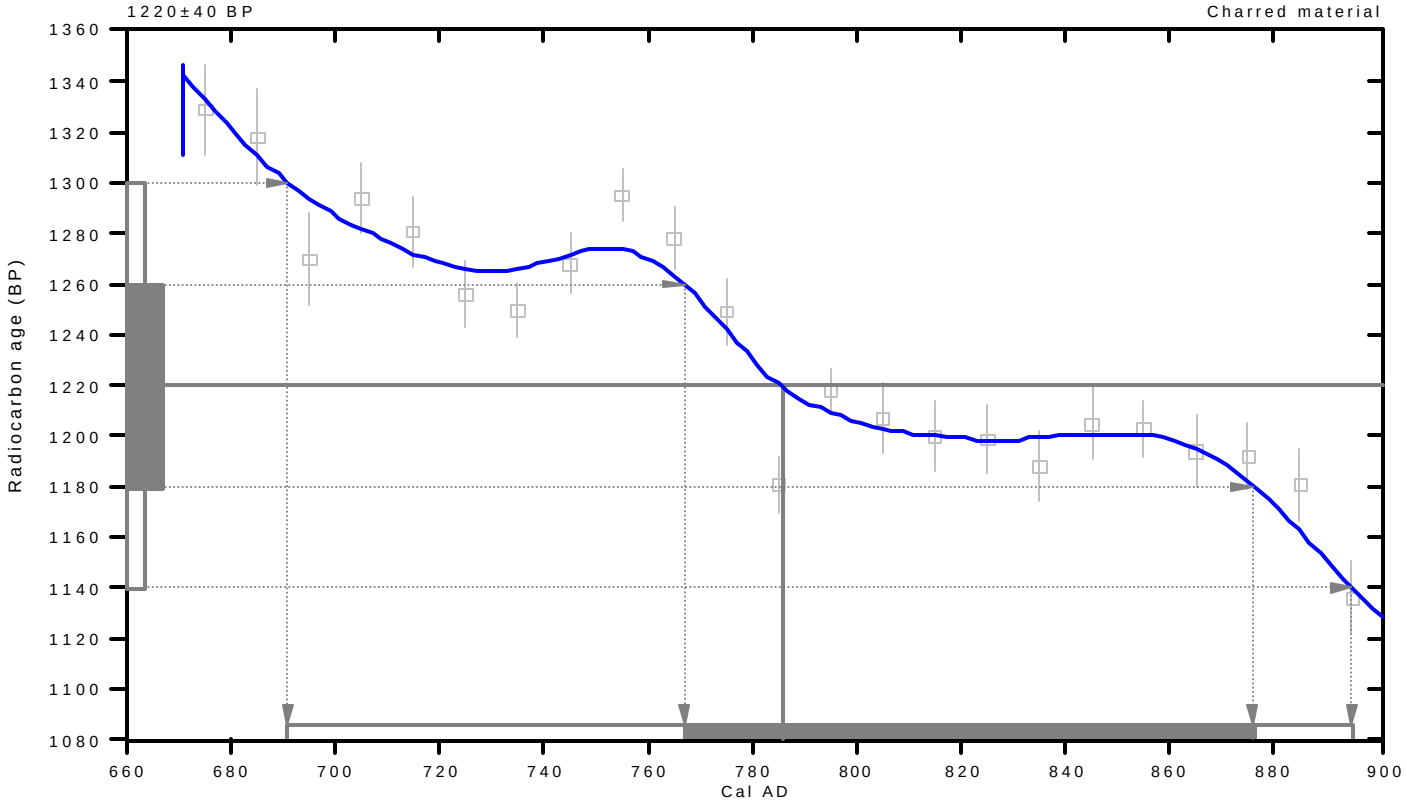
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.9:lab. mult=1)

Laboratory number:	**Beta-149036**
Conventional radiocarbon age:	**1220±40 BP**
2 Sigma calibrated result: (95% probability)	**Cal AD 690 to 900 (Cal BP 1260 to 1060)**

Intercept data

Intercept of radiocarbon age with calibration curve:	Cal AD 790 (Cal BP 1160)
1 Sigma calibrated result: (68% probability)	Cal AD 770 to 880 (Cal BP 1180 to 1070)



References:

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Calibration Database

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INTCAL98 Radiocarbon Age Calibration

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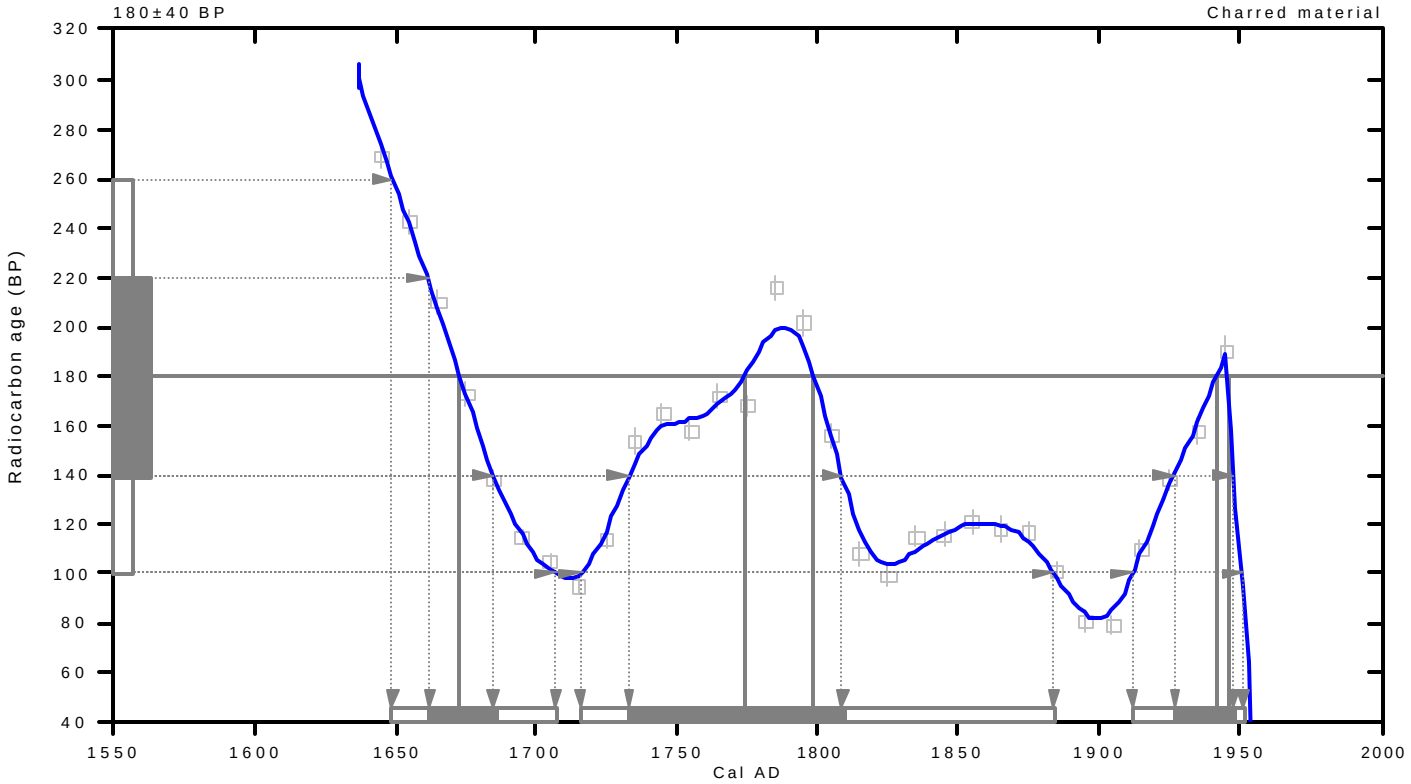
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26:lab. mult=1)

Laboratory number:	**Beta-149037**
Conventional radiocarbon age:	**180±40 BP**
2 Sigma calibrated results: (95% probability)	**Cal AD 1650 to 1710 (Cal BP 300 to 240) and Cal AD 1720 to 1880 (Cal BP 230 to 70) and Cal AD 1910 to 1950 (Cal BP 40 to 0)**

Intercept data

Intercepts of radiocarbon age with calibration curve:	Cal AD 1670 (Cal BP 280) and Cal AD 1770 (Cal BP 180) and Cal AD 1800 (Cal BP 150) and Cal AD 1940 (Cal BP 10) and Cal AD 1950 (Cal BP 0)
1 Sigma calibrated results: (68% probability)	Cal AD 1660 to 1680 (Cal BP 290 to 260) and Cal AD 1730 to 1810 (Cal BP 220 to 140) and Cal AD 1930 to 1950 (Cal BP 20 to 0)



References:

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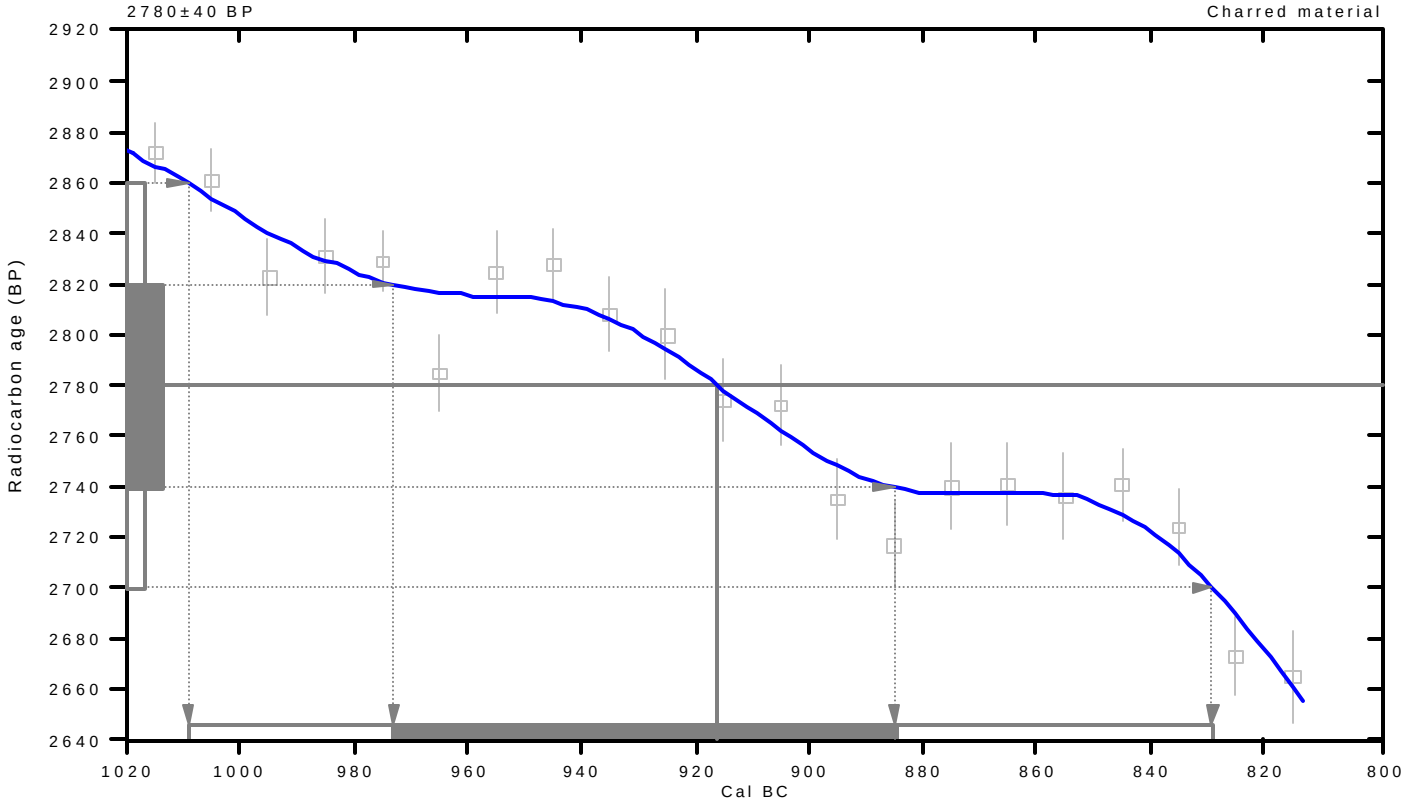
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27.4:lab. mult=1)

Laboratory number:	**Beta-149038**
Conventional radiocarbon age:	**2780±40 BP**
2 Sigma calibrated result: (95% probability)	**Cal BC 1010 to 830 (Cal BP 2960 to 2780)**

Intercept data

Intercept of radiocarbon age with calibration curve:	Cal BC 920 (Cal BP 2870)
1 Sigma calibrated result: (68% probability)	Cal BC 970 to 880 (Cal BP 2920 to 2840)



References:

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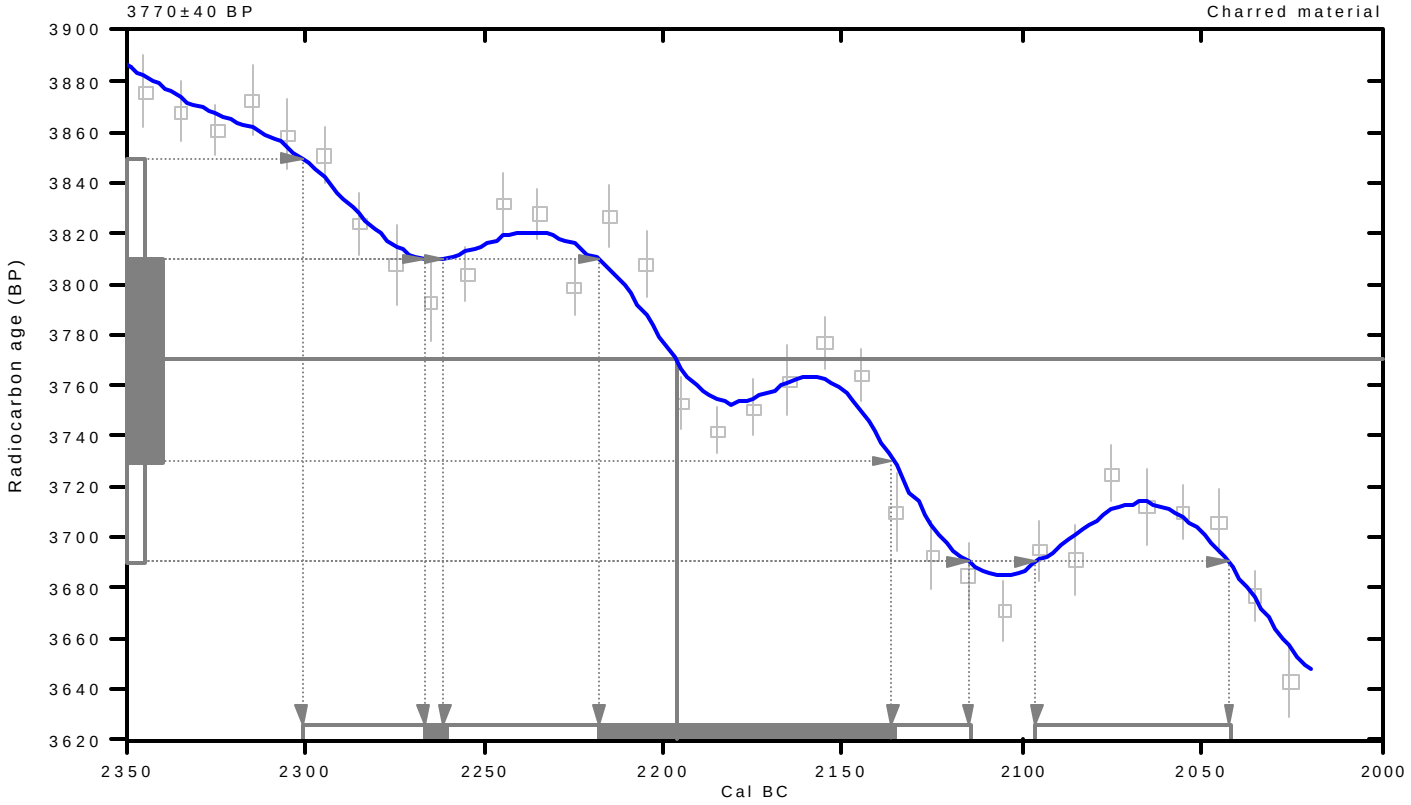
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27.6:lab. mult=1)

Laboratory number:	**Beta-149039**
Conventional radiocarbon age:	**3770±40 BP**
2 Sigma calibrated results: **(95% probability)**	**Cal BC 2300 to 2120 (Cal BP 4250 to 4060) and Cal BC 2100 to 2040 (Cal BP 4050 to 3990)**

Intercept data

Intercept of radiocarbon age with calibration curve:	Cal BC 2200 (Cal BP 4150)
1 Sigma calibrated results: (68% probability)	Cal BC 2270 to 2260 (Cal BP 4220 to 4210) and Cal BC 2220 to 2140 (Cal BP 4170 to 4090)



References:

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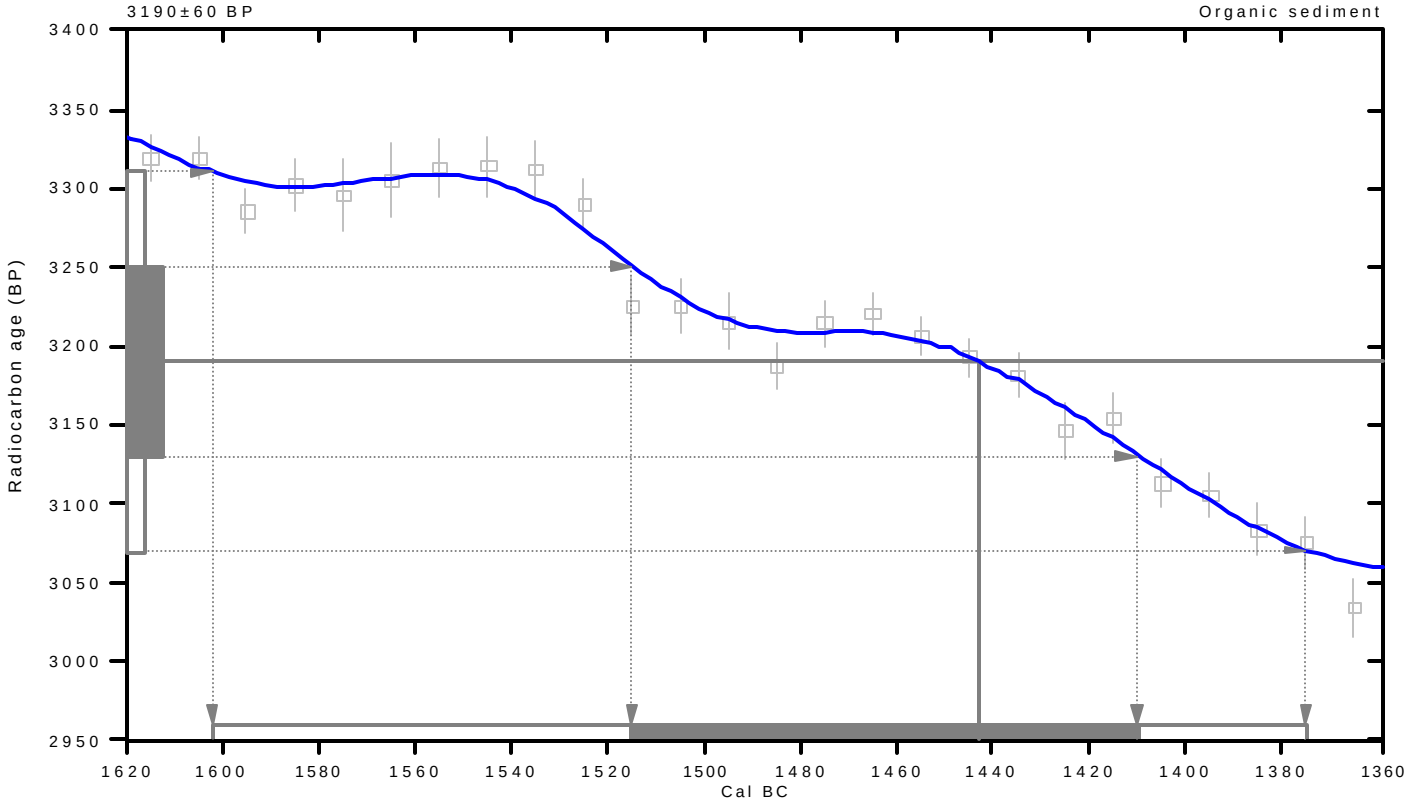
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.4:lab. mult=1)

Laboratory number:	**149040**
Conventional radiocarbon age:	**3190±60 BP**
2 Sigma calibrated result: (95% probability)	**Cal BC 1600 to 1380 (Cal BP 3550 to 3320)**

Intercept data

Intercept of radiocarbon age with calibration curve:	Cal BC 1440 (Cal BP 3390)
1 Sigma calibrated result: (68% probability)	Cal BC 1520 to 1410 (Cal BP 3460 to 3360)



References:

Database used

Calibration Database

Editorial Comment

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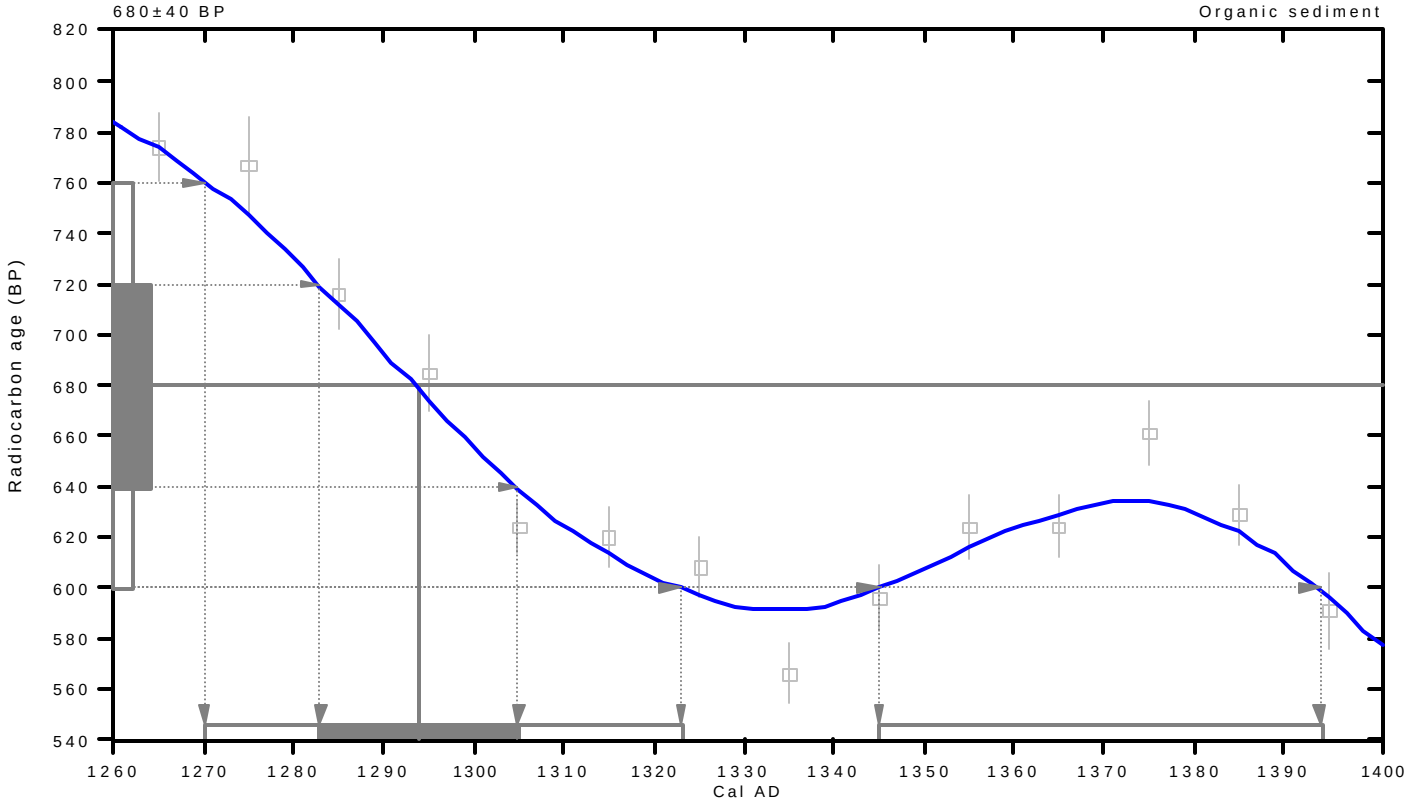
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-27.9:lab. mult=1)

Laboratory number:	**149041**
Conventional radiocarbon age:	**680±40 BP**
2 Sigma calibrated results: (95% probability)	**Cal AD 1270 to 1320 (Cal BP 680 to 630) and Cal AD 1340 to 1390 (Cal BP 600 to 560)**

Intercept data

Intercept of radiocarbon age with calibration curve:	Cal AD 1290 (Cal BP 660)
1 Sigma calibrated result: (68% probability)	Cal AD 1280 to 1300 (Cal BP 670 to 640)



References:

Database used

Calibration Database

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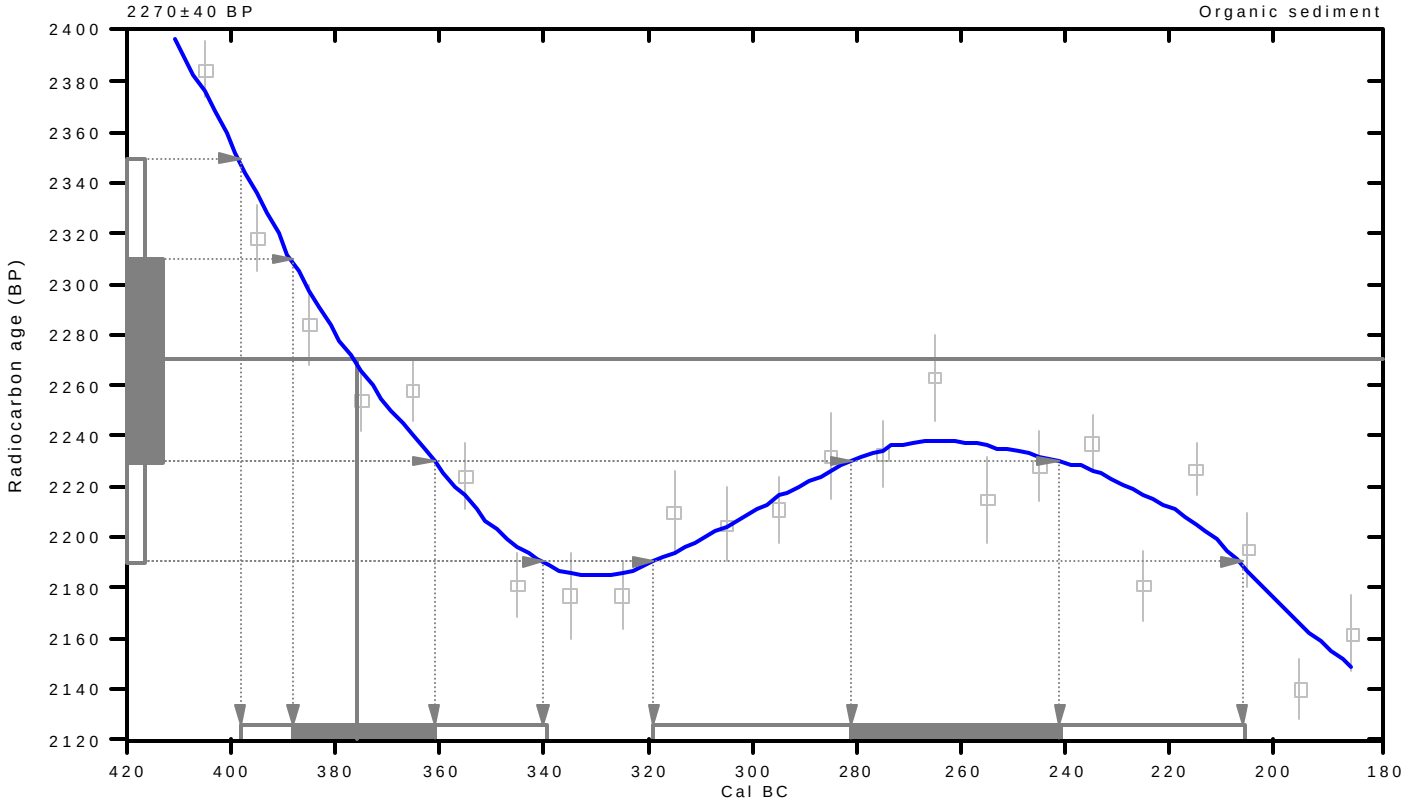
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.2:lab. mult=1)

Laboratory number:	**149042**
Conventional radiocarbon age:	**2270±40 BP**
2 Sigma calibrated results: (95% probability)	**Cal BC 400 to 340 (Cal BP 2350 to 2290) and Cal BC 320 to 210 (Cal BP 2270 to 2160)**

Intercept data

Intercept of radiocarbon age with calibration curve:	Cal BC 380 (Cal BP 2330)
1 Sigma calibrated results: (68% probability)	Cal BC 390 to 360 (Cal BP 2340 to 2310) and Cal BC 280 to 240 (Cal BP 2230 to 2190)



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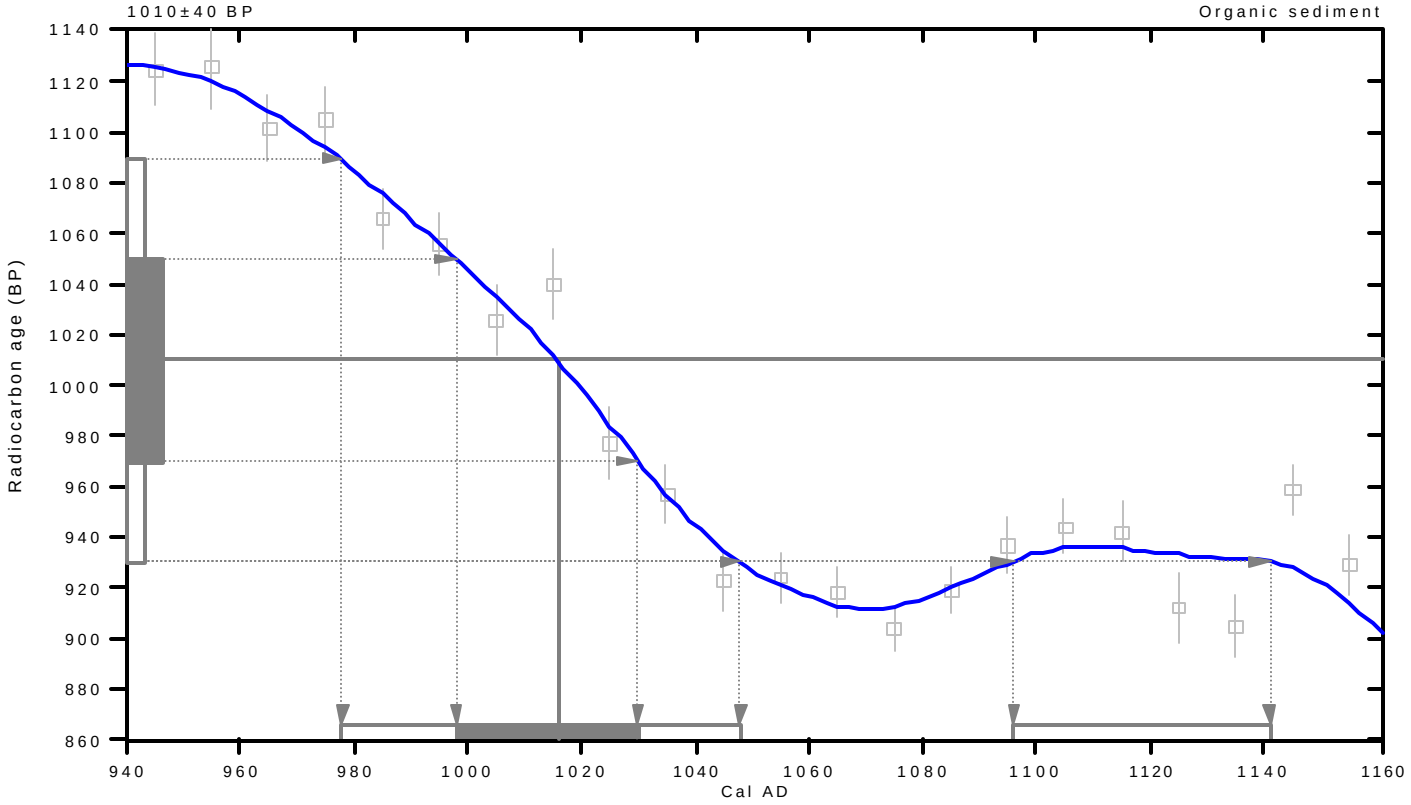
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.9:lab. mult=1)

Laboratory number:	**149043**
Conventional radiocarbon age:	**1010±40 BP**
2 Sigma calibrated results: (95% probability)	**Cal AD 980 to 1050 (Cal BP 970 to 900) and Cal AD 1100 to 1140 (Cal BP 850 to 810)**

Intercept data

Intercept of radiocarbon age with calibration curve:	Cal AD 1020 (Cal BP 930)
1 Sigma calibrated result: (68% probability)	Cal AD 1000 to 1030 (Cal BP 950 to 920)



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