GSNI Core No 13/603, drilled 16-24th April 1984, sampled by D J Large, University of Nottingham, 24-25th May 2005
Location
National G 09513 2554, 200m at 034 from Ballymoney railway station

Sample	Depth (m)	Rocktype	Description	Bulk δ13C (‰ vPDB)	% Carbon
BM1-1000	139.18	Clay	Sand, wood and lignite-bearing		
BM1-1001	139.33	Clay			
BM1-1002	139.48	Clay			
BM1-1003	139.63	Clay	dark, lignite-bearing	-25.2	
BM1-1004	139.78	Clay	dark, lignite-bearing	-25.3	
BM1-1005	139.93	Lignite		-22.6	
BM1-1006	140.08	Lignite		-23.2	
BM1-1007	140.23	Lignite		-25.1	
BM1-1008	140.38	Clay	lignite-bearing	-25.9	
BM1-1009	140.53	Lignite	wood-rich	-21.3	
BM1-1010	140.73	Lignite		-23.9	
BM1-1011	140.88	Lignite	dark	-26.2	
BM1-1012	141.03	Lignite	amber-bearing	-24.3	
BM1-1013	141.18	Lignite	wood	-22.3	
BM1-1014	141.33	Lignite	friable	-24.2	
BM1-1015	141.48	Lignite	wood-rich	-24.2	
BM1-1016	141.63	Lignite	charcoal-bearing	-23.9	
BM1-1017	141.78	Lignite		-25.2	
BM1-1018	141.93	Lignite		-24.9	
BM1-1019	142.08	Lignite	charcoal and amber-bearing	-24	
BM1-1020	142.23	Lignite	amber-rich	-25.1	
BM1-1021	142.38	Lignite	pale	-24	
BM1-1022	142.53	Lignite	wood	-23.4	
BM1-1023	142.6	Lignite	wood	-23.3	
BM1-1024	142.7	Lignite		-23.7	
BM1-1025	142.85	Lignite		-25.6	
BM1-1026	143	Lignite		-24.9	
BM1-1027	143.15	Lignite	wood-rich	-24.2	
BM1-1028	143.3	Lignite		-23.6	

BM1-1029	143.45	Lignite		-24.3	
BM1-1030	143.6	Lignite		-23.9	
BM1-1031	143.75	Lignite		-24	
BM1-1032	143.9	Lignite		-24.2	
BM1-1033	144.05	Lignite	dark	-24.2	
BM1-1034	144.2	Lignite		-24	
BM1-1035	144.35	Clay	5cm clay parting on top of dark lignite grades	-24.3	
BM1-1036	144.5	Clay	5cm clay parting on top of dark lignite grades	-23.8	
BM1-1037	144.65	Lignite		-26	
BM1-1038	144.8	Lignite	pale wood with amber in dark matrix	-23.5	
BM1-1039	145.25	Lignite	dark	-25	
BM1-1040	145.4	Lignite	dark	-23.8	
BM1-1041	145.55	Lignite	charcoal layer	-26.6	
BM1-1042	145.7	Lignite		-24.5	
BM1-1043	145.8	Lignite	pale	-25.9	
BM1-1044	145.95	Lignite	dark	-25.7	
BM1-1045	146.4	Lignite		-24.6	
BM1-1046	146.55	Clay	clay lenses	-24.2	
BM1-1047	146.7	Lignite	dark	-25.3	
BM1-1048	146.85	Lignite	charcoal	-24.2	
BM1-1049	147	Lignite		-24.1	
BM1-1050	147.15	Lignite		-24	
BM1-1051	147.3	Lignite		-24.6	
BM1-1052	147.45	Lignite	gelified getting paler upwards	-24.7	
BM1-1053	147.6	Lignite	gelified getting paler upwards	-24.2	
BM1-1054	147.75	Lignite	gelified getting paler upwards	0	54.9
BM1-1055	148.05	Lignite	wood-bearing lignite	-23.1	
BM1-1056	148.2	Lignite		-22.3	
BM1-1057	148.35	Lignite		-24.7	
BM1-1058	148.5	Clay	2 samples, 15 cm of mixed clay with lignite, cl	-25	
BM1-1059	148.65	Clay	2 samples, 15 cm of mixed clay with lignite, cl	-24	
BM1-1060	148.8	Lignite		-24.1	
BM1-1061	148.95	Lignite		-24.6	
BM1-1062	149.1	Lignite	pale	-24.1	
BM1-1063	149.25	Lignite	Lginite with thin clay partings	-24.3	
BM1-1064	149.4	Lignite	Lginite with thin clay partings	-25.2	

BM1-1065	149.55	Lignite	Lginite with thin clay partings	-24.5
BM1-1066	149.7	Lignite	Lginite with thin clay partings	-24.6
BM1-1067	149.85	Lignite	Lginite with thin clay partings	-23.8
BM1-1068	150	Lignite	Pale yellow brown fragments	-23.9
BM1-1069	150.15	Lignite	amber-bearing	-24.8
BM1-1070	150.3	Lignite	amber-bearing	-24
BM1-1071	150.45	Lignite		-22.8
BM1-1072	150.6	Lignite		-25.4
BM1-1073	150.75	Lignite	Pale	-24.8
BM1-1074	150.9	Lignite		-24
BM1-1075	151.05	Lignite	very dark wood-rich	-22.3
BM1-1076	151.2	Lignite		-25
BM1-1077	151.35	Lignite	wood-rich	-23.8
BM1-1078	151.55	Lignite		-23.9
BM1-1079	151.7	Lignite	wood	-23.2
BM1-1080	151.85	Lignite		-24.2
BM1-1081	152	Lignite	pale lignite	-24.7
BM1-1082	152.15	Lignite	wood-rich lignite	-25.4
BM1-1083	152.3	Lignite		-22.3
BM1-1084	152.45	Lignite	wood	-22.6
BM1-1085	152.6	Lignite	wood	-23
BM1-1086	152.75	Lignite	wood	-23.1
BM1-1087	152.9	Lignite	wood	-22.9
BM1-1088	153.05	Lignite	dark	-24.4
BM1-1089	153.2	Lignite	wood-rich	-23.5
BM1-1090	153.35	Lignite	gelified	-24.2
BM1-1091	153.5	Clay	laminated	-24.1
BM1-1092	153.65	Lignite		-25.1
BM1-1093	153.8	Lignite		-23.8
BM1-1094	153.95	Lignite		-23.6
BM1-1095	154.1	Lignite	wood-rich	-23.1
BM1-1096	154.25	Lignite	wood-rich	-24
BM1-1097	154.4	Lignite		-24.4
BM1-1098	154.55	Lignite	dark, no wood, hard	-24.7
BM1-1099	154.7	Lignite		-24.4
BM1-1100	154.85	Lignite	hard massive	-23.8

BM1-1101	155	Lignite	hard massive	-23.5
BM1-1102	155.15	Lignite	wood-rich	-23.1
BM1-1103	155.3	Lignite		-24.9
BM1-1104	155.45	Lignite		-25
BM1-1105	155.6	Lignite		-25.7
BM1-1106	155.73	Lignite	charcoal rich	-22.4
BM1-1107	155.9	Clay	clay at 155.74 to 155.84, lignite at 155.9	-24.3
BM1-1108	156.2	Lignite	clay-rich	-23.5
BM1-1109	156.35	Lignite	wood-rich	-24.7
BM1-1110	156.5	Lignite		-23.2
BM1-1111	156.65	Lignite	wood	-22.9
BM1-1112	156.8	Lignite	dark lignite, no wood	-24.9
BM1-1113	156.95	Lignite		-23.6
BM1-1114	157.1	Lignite	pale wood-rich	-22.2
BM1-1115	157.25	Lignite	pale wood-rich	-25.2
BM1-1116	157.4	Lignite	pale wood-rich	-24
BM1-1117	157.55	Lignite	pale wood-rich	-24
BM1-1118	157.7	Lignite	pale wood-rich	-23.7
BM1-1119	157.85	Lignite	pale wood-rich	-24.5
BM1-1120	158	Lignite	pale wood-rich	-25.6
BM1-1121	158.15	Clay	clay	-25.2
BM1-1122	158.3	Lignite		-23.4
BM1-1123	158.45	Lignite		-23.3
BM1-1124	158.6	Lignite		-24.9
BM1-1125	158.75	Lignite	clay-rich	-24.6
BM1-1126	158.9	Lignite	dark	-25.1
BM1-1127	159.05	Clay	charcoal-bearing	-25.3
BM1-1128	159.15	Clay	charcoal-bearing	-24.2
BM1-1129	159.3	Lignite	dark clay-bearing	-23.3
BM1-1130	159.45	Lignite	wood-rich	-23.7
BM1-1131	159.6	Lignite	dark clay-bearing	-24.8
BM1-1132	159.75	Lignite	dark	-24.3
BM1-1133	159.9	Lignite	paler	-24.9
BM1-1134	160.05	Lignite	pale with dark wood	-25.7
BM1-1135	160.19	Lignite	wood-rich	-22.8
BM1-1136	160.35	Clay	plant fragments	-26.2

BM1-1137	160.5	Clay		-26.1	
BM1-1138	160.65	Clay		-26.2	
BM1-1139	160.8	Lignite	dark clay-bearing	-24.4	
BM1-1140	160.95	Lignite	wood	-23.5	
BM1-1141	161.1	Lignite		-24.4	
BM1-1142	161.25	Lignite	vitrinite	-24.1	
BM1-1143	161.4	Lignite	paler	-24.8	
BM1-1144	161.55	Lignite	paler	-25.4	
BM1-1145	161.7	Lignite	hard dark lignite with amber	-24.6	
BM1-1146	161.85	Lignite	hard dark lignite with amber	-23.7	
BM1-1147	162	Lignite	hard dark lignite with amber	-24.4	
BM1-1148	162.15	Lignite	paler lignite	-24.4	
BM1-1149	162.3	Lignite	wood	-24.1	
BM1-1150	162.45	Lignite		-24.5	
BM1-1151	162.75	Lignite		-24.1	
BM1-1152	162.9	Lignite	dark, amber-bearing lignite	-24.2	
BM1-1153	163.05	Lignite	dark, amber-bearing lignite	-24.9	
BM1-1154	163.2	Lignite	pale lignite	-24.6	
BM1-1155	163.35	Lignite	pale lignite	-25.2	
BM1-1156	163.5	Lignite	mixed dark and pale lignite	-25	
BM1-1157	163.65	Lignite	dark lignite	-25.1	
BM1-1158	163.8	Lignite	woody lignite	-23.1	
BM1-1159	163.95	Lignite	woody lignite	-22.9	
BM1-1160	164.1	Lignite	woody lignite	-22.9	
BM1-1161	164.25	Lignite	woody lignite	-24.5	
BM1-1162	164.4	Lignite	dark lignite no wood	-23.3	
BM1-1163	164.55	Lignite	paler lignite	-24.4	
BM1-1164	164.7	Lignite	dark and woody lignite	-23.6	
BM1-1165	164.85	Lignite	paler woody lignite	-24.6	63.89
BM1-1166	165	Lignite	woody lignite	-23.9	
BM1-1167	165.15	Lignite	mixed dark and pale lignite	-23.7	
BM1-1168	165.3	Lignite	dark wood-rich	-23.4	
BM1-1169	165.45	Lignite	dark wood-rich	-23.8	62.72
BM1-1170	165.6	Lignite	dark wood-rich	-24.2	
BM1-1171	165.75	Lignite	dark wood-rich	-24.4	
BM1-1172	165.9	Lignite	dark and wood-rich possible darkening upwar	-24	49.53

BM1-1173	166.05	Lignite	dark	-23	
BM1-1174	166.2	Lignite		-23.1	
BM1-1175	166.35	Lignite	wood	-21.6	55.97
BM1-1176	166.5	Lignite		-23	60.50
BM1-1177	166.65	Lignite	wood-rich	-23.9	
BM1-1178	166.8	Lignite		-24.3	
BM1-1179	166.95	Lignite		-23.9	53.04
BM1-1180	167.1	Lignite	vitrinite	-24.8	
BM1-1181	167.25	Lignite		-24.1	
BM1-1182	167.4	Lignite		-23.7	
BM1-1183	167.55	Lignite		-25.2	64.44
BM1-1184	167.7	Lignite		-24.3	
BM1-1185	167.85	Lignite	vitrinite	-23.6	
BM1-1186	168	Lignite	charcoal	-25.1	
BM1-1187	168.15	Lignite		-23.2	56.76
BM1-1188	168.3	Lignite		-23.1	
BM1-1189	168.45	Lignite		-24	
BM1-1190	168.6	Lignite		-24.1	
BM1-1191	168.75	Lignite	very dark	-23.7	52.97
BM1-1192	168.9	Lignite		-24.3	
BM1-1193	169.05	Lignite	vitrinite	-23.2	
BM1-1194	169.2	Lignite		-23.6	
BM1-1195	169.35	Lignite	wood-rich	-22.9	61.87
BM1-1196	169.5	Lignite	wood	-22.7	
BM1-1197	169.65	Lignite	mixed pale and dark	-23.7	
BM1-1198	169.8	Lignite	dark	-23.4	
BM1-1199	169.95	Lignite	dark	-22.9	60.69
BM1-1200	170.1	Lignite	wood-rich	-21.5	
BM1-1201	170.25	Lignite	dark	-23.5	
BM1-1202	170.4	Lignite		-23.8	
BM1-1203	170.55	Lignite		-22.7	
BM1-1204	170.7	Lignite		-23.6	
BM1-1205	170.85	Lignite		-24.5	
BM1-1206	171	Lignite	pale reedy?	-24.7	34.89
BM1-1207	171.15	Lignite		-23.1	
BM1-1208	171.3	Lignite		-23.6	

BM1-1209	171.45	Lignite		-24.3	
BM1-1210	171.6	Lignite		-24.3	
BM1-1211	171.75	Lignite		-23.1	
BM1-1212	171.9	Lignite	wood	-24.5	
BM1-1213	172.05	Lignite	amber-bearing	-23.7	
BM1-1214	172.2	Lignite		-24.7	
BM1-1215	172.35	Lignite		-24.2	
BM1-1216	172.5	Lignite	mixed pale and dark	-25.4	
BM1-1217	172.74	Lignite	pale	-25.4	
BM1-1218	172.85	Lignite	pale	-25.9	
BM1-1219	173	Lignite	dark	-24.6	
BM1-1220	173.15	Clay		-23.6	
BM1-1221	173.3	Clay		-24.7	
BM1-1222	173.45	Lignite	dark	-24.4	
BM1-1223	173.6	Lignite	wood-rich	-23.4	
BM1-1224	173.75	Lignite	dark	-24.7	
BM1-1225	173.9	Lignite	dark	-23.3	
BM1-1226	174.05	Clay	clay with needle like organic structures	-25.1	
BM1-1227	174.2	Lignite	clay-rich		
BM1-1228	174.35	Lignite		-23.5	
BM1-1229	174.5	Lignite	dark with leaves?	-23.6	
BM1-1230	174.65	Lignite	dark	-24.9	
BM1-1231	174.8	Lignite	wood	-22.6	
BM1-1232	174.95	Lignite	wood	-22.1	
BM1-1233	175.1	Lignite	dark wood-rich	-24.8	
BM1-1234	175.25	Lignite	charcoal	-22.6	
BM1-1235	175.4	Lignite	wood	-22.9	
BM1-1236	175.55	Lignite		-24	
BM1-1237	175.7	Clay		-23.7	
BM1-1238	175.85	Lignite	dark vitreous	-23.6	
BM1-1239	176	Lignite	dark	-23.1	
BM1-1240	176.15	Lignite	dark		
BM1-1241	176.3	Lignite	dark	-25.4	55.86
BM1-1242	176.45	Lignite	dark	-24	
BM1-1243	176.6	Lignite	dark	-24.2	
BM1-1244	176.75	Lignite	dark	-24.4	

BM1-1245	176.9	Lignite	dark	-24.6	
BM1-1246	177.05	Clay		-26.1	
BM1-1247	177.2	Clay		-26.7	
BM1-1248	177.35	Clay		-24.8	
BM1-1249	177.5	Lignite	wood-rich	-25.1	
BM1-1250	177.75	Lignite	dark lignite - hard	-23.4	
BM1-1251	177.9	Lignite	charcoal and clay -bearing		
BM1-1252	178.05	Lignite	very dark wood-rich	-23.9	
BM1-1253	178.2	Lignite	pale reddish woody lignite	-23.3	
BM1-1254	178.35	Lignite	wood	-22.6	
BM1-1255	178.5	Clay	charcoal-bearing		
BM1-1256	178.65	Clay	lignite-rich	-25.5	
BM1-1257	178.8	Clay		-25.9	
BM1-1258	178.95	Clay	lignite-rich	-24.3	
BM1-1259	179.08	Lignite	dark	-24.9	
BM1-1260	179.25	Lignite	dark wood - hard	-22.9	
BM1-1261	179.4	Lignite	dark wood - hard	-23	
BM1-1262	179.55	Lignite	vitreous	-22.8	
BM1-1263	179.7	Lignite	vitreous	-23.5	
BM1-1264	179.85	Lignite	vitreous	-23.8	
BM1-1265	180	Lignite	mixed pale and dark	-24.3	41.05
BM1-1266	180.15	Lignite	dark	-24.3	
BM1-1267	180.3	Lignite	dark wood	-21.5	
BM1-1268	180.45	Lignite	pale	-25.3	
BM1-1269	180.6	Lignite		-24.2	
BM1-1270	180.75	Lignite		-25	
BM1-1271	180.9	Lignite	wood	-21.9	
BM1-1272	181.05	Lignite	wood and iron oxides	-21.8	
BM1-1273	181.2	Clay		-26.6	
BM1-1274	181.35	Lignite	wood	-22.1	
BM1-1275	181.5	Lignite	wood	-23.6	
BM1-1276	181.65	Lignite	dark woody lignite	-24.6	
BM1-1277	181.8	Lignite	clay-rich	-24.9	
BM1-1278	182.1	Lignite	wood	-22.2	
BM1-1279	182.25	Clay	lignite-rich	-24.4	
BM1-1280	182.4	Lignite	wood	-22.4	

BM1-1281	182.7	Lignite	charcoal, lignite and clay	-24.9
BM1-1282	182.85	Lignite	charcoal, lignite and clay	-24.2
BM1-1283	183	Lignite	wood	-22.3
BM1-1284	183.15	Lignite	clay-rich	-23.7
BM1-1285	183.3	Lignite	clay-rich	-24.2
BM1-1286	183.45	Clay	clay	-24.3
BM1-1287	183.6	Clay	top of clay	-25.8
BM1-1288	183.75	Clay	clay	-25
BM1-1289	183.9	Lignite	clay-rich	-26.4
BM1-1290	184.05	Lignite	wood and clay -bearing	-23.8
BM1-1291	184.2	Lignite	vitreous	-24.6
BM1-1292	184.35	Lignite	vitreous	-24.8
BM1-1293	184.5	Lignite	vitreous wood	-22.5
BM1-1294	185.2	Lignite		-22.4
BM1-1295	185.35	Lignite	wood	-22.7
BM1-1296	185.5	Clay		-26.6
BM1-1297	185.65	Lignite	dark	-24
BM1-1298	185.8	Lignite		-24.9
BM1-1299	185.97	Lignite		-24.6
BM1-1300	186.15	Clay		-25.9
BM1-1301	186.3	Clay		-26.6
BM1-1302	186.45	Lignite		-25.3
BM1-1303	186.6	Clay	mixed clay and lignite	-26.9
BM1-1304	186.75	Lignite		-26.5
BM1-1305	186.9	Clay		-26.5
BM1-1306	187.05	Clay	rooted	-25.7
BM1-1307	187.2	Lignite		-26
BM1-1308	187.35	Lignite		-26.1
BM1-1309	187.5	Lignite	pale	-25.4
BM1-1310	187.8	Lignite		-23.3
BM1-1311	187.95	Clay	mixed clay and lignite	-24.2
BM1-1312	188.1	Lignite		-21.9
BM1-1313	188.25	Lignite	wood	-22.5
BM1-1314	188.4	Lignite	dark	-23
BM1-1315	188.55	Clay		-23.5
BM1-1316	188.7	Lignite	wood - hard	-23.4

BM1-1317	188.85	Clay		-25.7
BM1-1318	189	Lignite	wood-rich	-24.9
BM1-1319	189.15	Lignite		-23.6
BM1-1320	189.3	Lignite		-26
BM1-1321	189.45	Lignite	clay-rich	-26
BM1-1322	189.6	Clay		-25.7
BM1-1323	189.75	Clay		
BM1-1324	189.9	Clay		
BM1-1325	190.2	Clay		
BM1-1326	190.35	Clay	clay and resin, thin Fe rich red layer between samples	
BM1-1327	210.82	Clay	lignite - clay contact	
BM1-1328	210.92	Clay	lignitic clay grading down into lignite and hematite	
BM1-1329	211.07	Clay	lignitic clay grading down into wood-bearing lignite and hematite	
BM1-1330	211.36	Hematite	hematite	
BM1-1331	211.5	Lignite	wood	-22.6

		NMR derived carbon distribution (%)						
Sample	Depth (m)	Aliphatic not O substituted 0-50 ppm*	Methoxyl 50-60 ppm*	Carbohydrate 60-90 ppm*	Carbohydrate and aliphatic lignin 90-110 ppm*	Aromatic lignin 110-160 ppm*	carboxyl/ carbonyl 160-210 ppm*	Aromatic carbon /Aliphatic carbon
BM1-1134	160.05	59.1	3.4	2.5	2.1	27.8	5.1	0.47
BM1-1141	161.1	52.1	3.4	2.6	4.7	33.3	3.8	0.64
BM1-1142	161.25	24.8	5.8	4.1	9.1	53.7	2.5	2.17
BM1-1144	161.55	53.4	2.5	2.5	1.7	32.2	7.6	0.6
BM1-1146	161.85	37	5	3.4	3.4	46.2	5	1.25
BM1-1148	162.15	57.8	2.2	2.7	2.2	30.2	4.9	0.52
BM1-1150	162.45	46.2	3.4	2.5	2.5	36.1	9.2	0.78
BM1-1152	162.9	49.4	3.5	1.7	2.6	38.1	4.8	0.77
BM1-1154	163.2	59.7	3.5	2.6	2.6	26.8	4.8	0.45
BM1-1156	163.5	51.9	3.3	2.5	2.5	35.1	4.6	0.68
BM1-1158	163.8	21.7	7.5	5	2.5	56.7	6.7	2.62
BM1-1161	164.25	56.8	2.5	1.7	1.7	32.2	5.1	0.57
BM1-1163	164.55	50.6	3.4	2.6	2.1	34.3	6.9	0.68
BM1-1165	164.85	52.8	2.2	1.7	1.7	36.4	5.2	0.69
BM1-1167	165.15	38.4	3.5	2.2	4.4	43.7	7.9	1.14
BM1-1169	165.45	28.1	6.1	2.6	3.5	55.3	4.4	1.97
BM1-1170	165.6	44.4	3.8	2.6	3	41	5.1	0.92
BM1-1172	165.9	51.5	2.2	0.9	3.5	37.6	4.4	0.73
BM1-1174	166.2	44.8	3.4	2.6	2.2	40.5	6.5	0.9
BM1-1176	166.5	38.3	3.9	1.7	3.9	46.1	6.1	1.2
BM1-1177	166.65	36.2	3.4	2.6	4.3	47.4	6	1.31
BM1-1179	166.95	50.4	3.4	2.1	2.1	35	6.8	0.69
BM1-1181	167.25	28.6	4.8	4.3	6.9	48.5	6.9	1.7
BM1-1183	167.55	54.3	3.4	1.7	0.9	32.8	6.9	0.6
BM1-1185	167.85	38.3	4.3	3.5	2.6	44.3	7	1.16
BM1-1187	168.15	38.7	2.7	1.8	3.6	44.1	9	1.14
BM1-1189	168.45	54.4	2.6	2.6	1.8	33.3	5.3	0.61
BM1-1191	168.75	36.4	2.7	2.7	4.5	44.5	9.1	1.23
BM1-1193	169.05	33	4.5	3.6	3.6	49.1	6.3	1.49
BM1-1195	169.35	25	6.9	4.3	3.4	57.8	2.6	2.31
BM1-1197	169.65	41.4	2.7	1.8	4.5	43.2	6.3	1.04
BM1-1199	169.95	27.6	6	3.4	3.4	54.3	5.2	1.97
BM1-1200	170.1	28.9	6.1	4.4	2.6	53.5	4.4	1.85
BM1-1202	170.4	44.8	2.6	1.7	3.4	41.4	6	0.92
BM1-1204	170.7	42.6	2.6	2.6	3.5	40.9	7.8	0.96
BM1-1206	171	57.5	3.3	2.5	2.5	30	4.2	0.52
BM1-1208	171.3	47.9	3.4	1.7	2.5	39.5	5	0.82
BM1-1210	171.6	51.7	3.4	2.5	2.5	33.9	5.9	0.66
BM1-1212	171.9	26.1	6.1	5.2	2.6	53	7	2.03
BM1-1214	172.2	37.9	3.4	2.6	3.4	44	8.6	1.16
BM1-1216	172.5	47.9	2.6	2.6	2.6	35.9	8.5	0.75
BM1-1218	172.85	57	2.6	2.6	1.8	29.8	6.1	0.52

Notes * ppm refers to the spectral range on the 13C-NMR spectrum.

Orbital Tuning of Ballymoney Lignite d13C record. Tuned to arbitrary section of Laskar 2004 Oligocene eccentricity curve between 25.8 and 27.1 Ma

Depth (m)*	Age Relative to top of seam (Ma)	d13C (‰ vPDB)	d13C Trend ‰ (mean value subtracted)
139.63	0	-25.2	-0.037066096
139.7097	0.0013	-25.58657764	-0.047145791
139.7894	0.0026	-25.20652249	-0.056828358
139.8691	0.0038	-23.52346137	-0.066257883
139.9488	0.0051	-22.56159199	-0.075728073
140.0285	0.0064	-22.76786218	-0.085346818
140.1082	0.0077	-23.52114348	-0.09503442
140.1879	0.009	-24.57693403	-0.104574972
140.2676	0.0102	-25.46021694	-0.113683225
140.3473	0.0115	-25.86155029	-0.122107939
140.427	0.0128	-24.73810888	-0.129704134
140.5067	0.0141	-21.43261462	-0.136456021
140.5864	0.0154	-21.9359033	-0.142441394
140.6661	0.0166	-22.98564564	-0.147628899
140.7458	0.0179	-24.15646342	-0.151921793
140.8255	0.0192	-25.82740308	-0.155186203
140.9052	0.0205	-25.99467021	-0.15729129
140.9848	0.0218	-24.94434705	-0.158182441
141.0645	0.023	-23.84357915	-0.157927999
141.1442	0.0243	-22.75756184	-0.156658195
141.2239	0.0256	-22.41450831	-0.154503708
141.3036	0.0269	-23.97544538	-0.151559252
141.3833	0.0282	-24.23314628	-0.147874725
141.463	0.0294	-24.2164505	-0.143519356
141.5427	0.0307	-24.06970414	-0.138555533
141.6224	0.032	-23.90440256	-0.133065197
141.7021	0.0333	-24.48253052	-0.127183829
141.7818	0.0346	-25.20105661	-0.121021279
141.8615	0.0358	-25.12392711	-0.1146539
141.9412	0.0371	-24.85497391	-0.108174931
142.0209	0.0384	-24.32867796	-0.101694126
142.1006	0.0397	-24.01598068	-0.095356839
142.1803	0.041	-24.87307396	-0.089281617
142.26	0.0422	-24.92807275	-0.083565801
142.3397	0.0435	-24.26374597	-0.078307143
142.4194	0.0448	-23.8278001	-0.073596049
142.4991	0.0461	-23.50497855	-0.069518923
142.5788	0.0474	-23.31107017	-0.066169029
142.6585	0.0486	-23.45808271	-0.063634218
142.7382	0.0499	-24.15423608	-0.061958519
142.8179	0.0512	-25.49233814	-0.061119946
142.8976	0.0525	-25.38232356	-0.061070644
142.9773	0.0538	-25.01051031	-0.061766217
143.057	0.0556	-24.63869707	-0.063179436
143.1367	0.0575	-24.26688382	-0.065301284
143.2164	0.0594	-23.91315401	-0.068122009
143.2961	0.0613	-23.61646399	-0.071609291
143.3758	0.0631	-23.89787968	-0.075696368
143.4555	0.065	-24.29636506	-0.08029055
143.5352	0.0669	-24.045735	-0.085309136
143.6148	0.0688	-23.90545521	-0.090688684
143.6945	0.0706	-23.94811398	-0.096370708

143.7742	0.0725	-24.02893692	-0.102308739
143.8539	0.0744	-24.14489265	-0.108468034
143.9336	0.0763	-24.219796	-0.114808498
144.0133	0.0781	-24.21443045	-0.121278066
144.093	0.08	-24.15943787	-0.127831273
144.1727	0.0819	-24.02980223	-0.134442593
144.2524	0.0838	-24.05254421	-0.141095896
144.3321	0.0856	-24.26801302	-0.147771999
144.4118	0.0875	-24.15734554	-0.154450796
144.4915	0.0894	-23.81307704	-0.161097828
144.5712	0.0913	-24.7746609	-0.167669127
144.6509	0.0931	-26.00001002	-0.174106489
144.7306	0.095	-24.68222517	-0.180353944
144.8103	0.0969	-23.48517553	-0.186375101
144.89	0.0988	-23.5595047	-0.192140741
144.9697	0.0999	-23.90135062	-0.19761804
145.0494	0.1011	-24.35831287	-0.202762102
145.1291	0.1022	-24.77799105	-0.207510089
145.2088	0.1034	-25.00798472	-0.211787901
145.2885	0.1046	-24.79388662	-0.215517368
145.3682	0.1057	-23.96644672	-0.218621672
145.4479	0.1069	-24.38180127	-0.221033109
145.5276	0.108	-26.35626404	-0.222689643
145.6073	0.1092	-25.94354101	-0.223533452
145.687	0.1104	-24.49989812	-0.223524421
145.7667	0.1115	-25.55544509	-0.222632427
145.8464	0.1127	-25.86363304	-0.220820682
145.9261	0.1138	-25.75579403	-0.218064045
146.0058	0.115	-25.56893303	-0.214362848
146.0855	0.1162	-25.37505225	-0.209745211
146.1652	0.1173	-25.1807432	-0.204255527
146.2448	0.1185	-24.98591074	-0.197933425
146.3245	0.1196	-24.79045972	-0.190827231
146.4042	0.1208	-24.59427594	-0.182994879
146.4839	0.122	-24.38170655	-0.174506213
146.5636	0.1231	-24.19516779	-0.165448388
146.6433	0.1243	-24.92358082	-0.15592131
146.723	0.1254	-25.22020524	-0.146031068
146.8027	0.1266	-24.47737071	-0.135892273
146.8824	0.1278	-24.17976113	-0.12562646
146.9621	0.1297	-24.12664495	-0.115327673
147.0418	0.1317	-24.07352877	-0.105095254
147.1215	0.1336	-24.0204126	-0.095036971
147.2012	0.1356	-24.11192366	-0.085248564
147.2809	0.1376	-24.53095687	-0.075830589
147.3606	0.1395	-24.71629083	-0.066875948
147.4403	0.1415	-24.72529527	-0.058466171
147.52	0.1435	-24.48265149	-0.050668973
147.5997	0.1454	-24.2073312	-0.043538354
147.6794	0.1474	-23.99306048	-0.037119583
147.7591	0.1493	-23.79607107	-0.03145536
147.8388	0.1513	-23.60897615	-0.026570886
147.9185	0.1533	-23.42445793	-0.022473856
147.9982	0.1552	-23.23519859	-0.019156623
148.0779	0.1572	-22.99973128	-0.016596466
148.1576	0.1591	-22.48486699	-0.0147571

148.2373	0.1611	-22.55585611	-0.013589104
148.317	0.1631	-24.22442383	-0.013027967
148.3967	0.165	-24.92945371	-0.012996784
148.4764	0.167	-25.06432343	-0.013419626
148.5561	0.169	-24.64030308	-0.014224282
148.6358	0.1709	-24.04271826	-0.01534129
148.7155	0.1729	-23.98392893	-0.016700698
148.7952	0.1748	-24.08501011	-0.018226641
148.8748	0.1768	-24.35976331	-0.019823992
148.9545	0.1788	-24.60145238	-0.021421668
149.0342	0.1808	-24.34460359	-0.022912965
149.1139	0.1829	-24.09539776	-0.024230983
149.1936	0.185	-24.16328101	-0.025393832
149.2733	0.1871	-24.38590585	-0.026437313
149.353	0.1891	-24.97638968	-0.027302144
149.4327	0.1912	-25.15309009	-0.027941142
149.5124	0.1933	-24.66008713	-0.028316777
149.5921	0.1954	-24.50653808	-0.028412355
149.6718	0.1974	-24.62464834	-0.028217315
149.7515	0.1995	-24.37733206	-0.027720717
149.8312	0.2016	-23.87380617	-0.026909156
149.9109	0.2036	-23.75166142	-0.025763297
149.9906	0.2057	-23.86994298	-0.024256391
150.0703	0.2078	-24.3585023	-0.022360961
150.15	0.2099	-24.80356133	-0.020060395
150.2297	0.2119	-24.47605988	-0.017358486
150.3094	0.214	-23.9591932	-0.014267824
150.3891	0.2161	-23.28139298	-0.010805794
150.4688	0.2182	-22.81854745	-0.006988972
150.5485	0.2202	-24.61590267	-0.002824483
150.6282	0.2223	-25.32197086	0.001694113
150.7079	0.2244	-25.01425093	0.006568202
150.7876	0.2265	-24.62411272	0.011772213
150.8673	0.2285	-24.19895367	0.017259157
150.947	0.2306	-23.58048503	0.022975503
151.0267	0.2327	-22.52450854	0.028867441
151.1064	0.2348	-22.9723119	0.034877719
151.1861	0.2364	-24.92021615	0.040960264
151.2658	0.2381	-24.51714441	0.047071275
151.3455	0.2397	-23.81517922	0.053171857
151.4252	0.2413	-23.83090465	0.059198375
151.5048	0.243	-23.92480254	0.065107808
151.5845	0.2446	-23.77711773	0.070849638
151.6642	0.2463	-23.2578658	0.076372536
151.7439	0.2479	-23.39780571	0.081626709
151.8236	0.2496	-24.03706179	0.086569992
151.9033	0.2512	-24.37220675	0.091170039
151.983	0.2529	-24.63018447	0.095392462
152.0627	0.2545	-24.97053638	0.099197593
152.1424	0.2561	-25.36054686	0.102544951
152.2221	0.2578	-24.09170089	0.105394557
152.3018	0.2594	-22.29890349	0.1077029
152.3815	0.2611	-22.43339201	0.109435227
152.4612	0.2627	-22.61996442	0.110584135
152.5409	0.2644	-22.84240496	0.111156124
152.6206	0.266	-23.031742	0.111165332

152.7003	0.2677	-23.08940444	0.110629585
152.78	0.2693	-23.09059645	0.109570021
152.8597	0.271	-22.94663062	0.108011157
152.9394	0.2726	-23.10053459	0.105980639
153.0191	0.2742	-24.15957296	0.10351605
153.0988	0.2759	-24.22585001	0.100669033
153.1785	0.2775	-23.53978735	0.097491703
153.2582	0.2792	-23.73409359	0.094033322
153.3379	0.2808	-24.16153904	0.090347761
153.4176	0.2825	-24.17397714	0.086488842
153.4973	0.2841	-24.09353188	0.082504993
153.577	0.2858	-24.62178929	0.078446171
153.6567	0.2878	-25.09630315	0.07436492
153.7364	0.2898	-24.38250251	0.070300822
153.8161	0.2919	-23.77614781	0.066296285
153.8958	0.2939	-23.68519187	0.062368611
153.9755	0.296	-23.53723631	0.058534786
154.0552	0.298	-23.19749529	0.054806574
154.1348	0.3	-23.18655165	0.051193793
154.2145	0.3021	-23.78418537	0.04771364
154.2942	0.3041	-24.11399944	0.044401558
154.3739	0.3061	-24.32623128	0.041297584
154.4536	0.3082	-24.51782301	0.038428925
154.5333	0.3102	-24.6745759	0.035812173
154.613	0.3123	-24.66636567	0.033458682
154.6927	0.3143	-24.43872767	0.031373468
154.7724	0.3163	-24.11576403	0.029556866
154.8521	0.3184	-23.80565634	0.02801343
154.9318	0.3204	-23.63757111	0.026751636
155.0115	0.3225	-23.48451035	0.025773696
155.0912	0.3245	-23.26030618	0.025070901
155.1709	0.3265	-23.1312492	0.024633169
155.2506	0.3286	-24.27928353	0.024455663
155.3303	0.3306	-24.95617344	0.024528177
155.41	0.3326	-24.96876925	0.024830359
155.4897	0.3347	-25.12301314	0.025339284
155.5694	0.3367	-25.57873376	0.02602647
155.6491	0.3388	-24.84007789	0.026856132
155.7288	0.3407	-22.42140135	0.027760602
155.8085	0.3425	-23.14786997	0.028677993
155.8882	0.3444	-24.24339382	0.029555772
155.9679	0.3463	-24.20577031	0.030336272
156.0476	0.3482	-23.87616856	0.030968768
156.1273	0.3501	-23.5551993	0.031400495
156.207	0.352	-23.50517295	0.031580608
156.2867	0.3539	-24.2624902	0.031463058
156.3664	0.3558	-24.65662481	0.031012219
156.4461	0.3577	-23.80129729	0.030193505
156.5258	0.3596	-23.09076791	0.028967669
156.6055	0.3615	-22.86777875	0.027306734
156.6852	0.3634	-23.18990504	0.025198578
156.7648	0.3653	-24.73178506	0.022652777
156.8445	0.3672	-24.57831027	0.019698263
156.9242	0.369	-23.87605205	0.016360217
157.0039	0.3709	-23.14387078	0.012660503
157.0836	0.3728	-22.38941446	0.008624499

157.1633	0.3747	-23.04765452	0.004283794
157.243	0.3766	-25.15825755	-0.000310118
157.3227	0.3785	-24.65564845	-0.005095437
157.4024	0.3804	-24.00236767	-0.010023126
157.4821	0.3823	-24.01036011	-0.015047906
157.5618	0.3842	-23.99138538	-0.020130536
157.6415	0.3861	-23.76473202	-0.025230233
157.7212	0.388	-23.73739801	-0.030324555
157.8009	0.3899	-24.14592841	-0.03537014
157.8806	0.3918	-24.67240138	-0.040330576
157.9603	0.3927	-25.29862595	-0.045168297
158.04	0.3937	-25.70333812	-0.049849772
158.1197	0.3947	-25.43840954	-0.054353356
158.1994	0.3957	-24.73288253	-0.058671859
158.2791	0.3966	-23.64202477	-0.062812916
158.3588	0.3976	-23.1611203	-0.066790603
158.4385	0.3986	-23.22965069	-0.07061733
158.5182	0.3995	-23.97459037	-0.074303536
158.5979	0.4005	-24.87606633	-0.077849791
158.6776	0.4015	-24.75151292	-0.081253565
158.7573	0.4025	-24.60479903	-0.084522843
158.837	0.4034	-24.87150919	-0.087668912
158.9167	0.4044	-25.13097313	-0.090702557
158.9964	0.4054	-25.31731401	-0.093633637
159.0761	0.4064	-25.17863635	-0.096468083
159.1558	0.4073	-24.19842398	-0.099212769
159.2355	0.4083	-23.59562416	-0.101875171
159.3152	0.4093	-23.28924968	-0.104455418
159.3948	0.4103	-23.43164069	-0.106945508
159.4745	0.4112	-23.81001113	-0.109327557
159.5542	0.4122	-24.4851102	-0.111573109
159.6339	0.4132	-24.79902606	-0.113646305
159.7136	0.4142	-24.35366562	-0.11550945
159.7933	0.4151	-24.43108941	-0.117120984
159.873	0.4161	-24.75864426	-0.118431942
159.9527	0.4171	-25.1353774	-0.119395315
160.0324	0.418	-25.58542954	-0.119973944
160.1121	0.419	-24.7337562	-0.120147337
160.1918	0.42	-22.79971071	-0.119917116
160.2715	0.421	-24.40448694	-0.119283322
160.3512	0.4219	-26.19164569	-0.118224525
160.4309	0.4229	-26.14682833	-0.116725404
160.5106	0.4239	-26.10129244	-0.114791408
160.5903	0.4249	-26.19613152	-0.112439716
160.67	0.4258	-26.14758366	-0.109707006
160.7497	0.4268	-25.14501314	-0.106657994
160.8294	0.4278	-24.1954846	-0.103369317
160.9091	0.4288	-23.63837078	-0.099914684
160.9888	0.431	-23.5877683	-0.096364888
161.0685	0.4332	-24.23439019	-0.09279395
161.1482	0.4354	-24.32591083	-0.089243653
161.2279	0.4376	-24.05432216	-0.085790745
161.3076	0.4398	-24.33169642	-0.082493579
161.3873	0.442	-24.7146271	-0.079406455
161.467	0.4442	-25.11967583	-0.076570805
161.5467	0.4464	-25.4010827	-0.074011809

161.6264	0.4486	-25.1243953	-0.071740248
161.7061	0.4508	-24.60128841	-0.069760621
161.7858	0.4531	-24.10318287	-0.068073264
161.8655	0.4553	-23.66952144	-0.066670667
161.9452	0.4575	-24.06068064	-0.065541781
162.0248	0.4597	-24.41245792	-0.064663858
162.1045	0.4619	-24.43084248	-0.063997055
162.1842	0.4641	-24.35628495	-0.063489455
162.2639	0.4663	-24.15969204	-0.063069252
162.3436	0.4685	-24.1530782	-0.062662929
162.4233	0.4707	-24.45014425	-0.062215045
162.503	0.4729	-24.47173718	-0.061636372
162.5827	0.4751	-24.3518252	-0.060859436
162.6624	0.4773	-24.20551221	-0.05981967
162.7421	0.4796	-24.106978	-0.058454917
162.8218	0.4818	-24.10784593	-0.056707395
162.9015	0.483	-24.19201803	-0.0545285
162.9812	0.4843	-24.53962444	-0.05187991
163.0609	0.4856	-24.907139	-0.048732878
163.1406	0.4869	-24.7284037	-0.045072666
163.2203	0.4882	-24.62884818	-0.040902034
163.3	0.4894	-25.02517356	-0.036234825
163.3797	0.4907	-25.18972751	-0.031093925
163.4594	0.492	-25.06461476	-0.025515485
163.5391	0.4933	-25.00362953	-0.01954698
163.6188	0.4946	-25.10659259	-0.013242461
163.6985	0.4958	-24.71424735	-0.006663029
163.7782	0.4971	-23.33028288	0.000113147
163.8579	0.4984	-23.00077556	0.007005933
163.9376	0.4997	-22.9131681	0.013936261
164.0173	0.501	-22.87615792	0.020860806
164.097	0.5022	-22.89341502	0.027733166
164.1767	0.5035	-23.57699929	0.034518646
164.2564	0.5048	-24.49796875	0.041192546
164.3361	0.5061	-23.88265033	0.047733594
164.4158	0.5074	-23.31931454	0.05411797
164.4955	0.5086	-24.0075845	0.060323478
164.5752	0.5099	-24.36931974	0.066339124
164.6548	0.5112	-23.80431507	0.072162028
164.7345	0.5125	-23.71518637	0.077794107
164.8142	0.5138	-24.45809682	0.083246934
164.8939	0.5158	-24.45874921	0.088538327
164.9736	0.5178	-24.00741489	0.093683509
165.0533	0.5199	-23.83717442	0.098691305
165.133	0.5219	-23.73643707	0.103563027
165.2127	0.524	-23.53740828	0.108298382
165.2924	0.526	-23.37392534	0.112904783
165.3721	0.528	-23.57276873	0.117384881
165.4518	0.5301	-23.78523344	0.121731408
165.5315	0.5321	-23.99769815	0.125930359
165.6112	0.5341	-24.21000231	0.129955292
165.6909	0.5362	-24.35380572	0.13377501
165.7706	0.5382	-24.39925027	0.137358922
165.8503	0.5403	-24.2238057	0.140673695
165.93	0.5423	-23.88628928	0.143684611
166.0097	0.5443	-23.30128042	0.146355704

166.0894	0.5464	-22.93147022	0.148646495
166.1691	0.5484	-23.09761588	0.150512777
166.2488	0.5505	-22.73464729	0.151912885
166.3285	0.5525	-21.64787033	0.15280634
166.4082	0.5545	-22.00166675	0.153168477
166.4879	0.5566	-22.84741752	0.153008684
166.5676	0.5586	-23.38842907	0.152356628
166.6473	0.5606	-23.84936036	0.151247982
166.727	0.5627	-24.15133308	0.149720648
166.8067	0.5647	-24.29871897	0.147810906
166.8864	0.5668	-24.10236411	0.145569976
166.9661	0.5685	-23.91070344	0.143066743
167.0458	0.5702	-24.5256023	0.140375035
167.1255	0.5719	-24.74354252	0.137595001
167.2052	0.5736	-24.3496992	0.134815053
167.2848	0.5753	-24.0027813	0.132108599
167.3645	0.577	-23.77509758	0.129573394
167.4442	0.5788	-23.92479537	0.127285982
167.5239	0.5805	-25.08718483	0.125327369
167.6036	0.5822	-24.95293235	0.123775878
167.6833	0.5839	-24.44113185	0.122695738
167.763	0.5856	-24.01877866	0.122138608
167.8427	0.5873	-23.66049142	0.122150129
167.9224	0.589	-24.14962976	0.122762194
168.0021	0.5908	-25.10576378	0.123994199
168.0818	0.5925	-24.18994053	0.125850791
168.1615	0.5942	-23.18857008	0.128314787
168.2412	0.5959	-23.00477988	0.13136424
168.3209	0.5976	-23.15805815	0.13497816
168.4006	0.5993	-23.70423698	0.139130179
168.4803	0.601	-24.04738268	0.143787396
168.56	0.6028	-24.11944137	0.148906466
168.6397	0.6045	-24.04465882	0.154431687
168.7194	0.6062	-23.78521428	0.160296314
168.7991	0.6079	-23.78834505	0.166422389
168.8788	0.6096	-24.24412138	0.172732617
168.9585	0.6113	-24.01576419	0.179136452
169.0382	0.613	-23.27227909	0.185539838
169.1179	0.6148	-23.35179386	0.19186522
169.1976	0.6166	-23.61955818	0.198002068
169.2773	0.6185	-23.28851238	0.203859959
169.357	0.6203	-22.90467834	0.209340738
169.4367	0.6222	-22.72124042	0.214352598
169.5164	0.6241	-22.7144933	0.218816013
169.5961	0.6259	-23.35378281	0.222663796
169.6758	0.6278	-23.68366873	0.225846694
169.7555	0.6297	-23.53875765	0.228327734
169.8352	0.6315	-23.32260655	0.23006363
169.9148	0.6334	-23.05818143	0.231008196
169.9945	0.6352	-22.63140713	0.231133483
170.0742	0.6371	-21.69548793	0.230428667
170.1539	0.639	-21.85272806	0.228893854
170.2336	0.6408	-23.25346173	0.226550371
170.3133	0.6427	-23.73638615	0.22343464
170.393	0.6446	-23.82747347	0.219580795
170.4727	0.6464	-23.22877517	0.215015416

170.5524	0.6483	-22.67009841	0.209758902
170.6321	0.6501	-23.13973941	0.203838191
170.7118	0.652	-23.61778502	0.197298002
170.7915	0.6539	-24.09583062	0.190205592
170.8712	0.6557	-24.56761349	0.182631647
170.9509	0.6576	-24.75231024	0.174634139
171.0306	0.6594	-24.57793636	0.16626727
171.1103	0.6613	-23.43523354	0.157584094
171.19	0.6632	-23.17096138	0.148633867
171.2697	0.665	-23.43689421	0.139474193
171.3494	0.6669	-23.78644258	0.13017237
171.4291	0.6688	-24.17134809	0.120834294
171.5088	0.6707	-24.40757599	0.111526138
171.5885	0.6725	-24.33581012	0.102335544
171.6682	0.6744	-23.87814888	0.093329894
171.7479	0.6763	-23.1361229	0.084559499
171.8276	0.6782	-23.65847919	0.076090786
171.9073	0.6801	-24.4980221	0.068006142
171.987	0.682	-24.05503893	0.060383618
172.0667	0.6839	-23.71866801	0.053287955
172.1464	0.6858	-24.31523749	0.046775114
172.2261	0.6877	-24.69786558	0.040894563
172.3058	0.6896	-24.29880755	0.035684217
172.3855	0.6915	-24.34070039	0.031173299
172.4652	0.6934	-25.12566669	0.027394371
172.5448	0.6953	-25.45133647	0.024383103
172.6245	0.6972	-25.42209623	0.02216746
172.7042	0.699	-25.36477508	0.020757854
172.7839	0.7009	-25.57890849	0.020147478
172.8636	0.7028	-25.87966519	0.020324657
172.9433	0.7047	-25.21912458	0.021268826
173.023	0.7066	-24.49562679	0.022944337
173.1027	0.7085	-23.91079217	0.025304393
173.1824	0.7104	-23.59898418	0.028295389
173.2621	0.7123	-24.38886581	0.031864929
173.3418	0.7142	-24.69151121	0.035967044
173.4215	0.7161	-24.53051787	0.040549737
173.5012	0.718	-24.15963757	0.045553728
173.5809	0.7199	-23.54536318	0.050910369
173.6606	0.7218	-23.6566412	0.056540683
173.7403	0.7237	-24.61586686	0.062368868
173.82	0.7255	-24.20604413	0.068325816
173.8997	0.7274	-23.30534005	0.074317865
173.9794	0.7293	-24.16027491	0.080283315
174.0591	0.7312	-25.10096724	0.086147694
174.1388	0.7331	-24.77913028	0.091823182
174.2185	0.735	-24.22572254	0.097218643
174.2982	0.7369	-23.70756687	0.102241199
174.3779	0.7388	-23.48256159	0.106796829
174.4576	0.7407	-23.50707257	0.110804388
174.5373	0.7426	-23.75896415	0.114206074
174.617	0.7445	-24.6811409	0.116952688
174.6967	0.7464	-24.59601549	0.118993604
174.7764	0.7483	-23.07163118	0.120269459
174.8561	0.7502	-22.26559432	0.120720219
174.9358	0.752	-22.06456858	0.120311938

175.0155	0.7539	-22.98942603	0.11904666
175.0952	0.7558	-24.73220226	0.116962245
175.1748	0.7577	-23.92296605	0.114111741
175.2545	0.7596	-22.61067089	0.110538214
175.3342	0.7615	-22.64044818	0.106288893
175.4139	0.7634	-22.92133321	0.101427739
175.4936	0.7653	-23.63403748	0.096036103
175.5733	0.7672	-23.99309082	0.090212176
175.653	0.7691	-23.81697019	0.084059894
175.7327	0.771	-23.68105245	0.077680018
175.8124	0.7729	-23.6352363	0.071164367
175.8921	0.7748	-23.53306606	0.06461823
175.9718	0.7767	-23.21420523	0.058099624
176.0515	0.7787	-23.16617389	0.051671526
176.1312	0.7806	-23.86723438	0.045411222
176.2109	0.7826	-24.81091129	0.039403962
176.2906	0.7845	-25.38558395	0.033729534
176.3703	0.7865	-24.86941415	0.02845425
176.45	0.7885	-24.00682299	0.023624046
176.5297	0.7904	-24.09224756	0.019270482
176.6094	0.7924	-24.19847991	0.0154159
176.6891	0.7943	-24.30471227	0.012075863
176.7688	0.7963	-24.41094463	0.009264179
176.8485	0.7982	-24.51717698	0.006990342
176.9282	0.8002	-24.66066897	0.005260169
177.0079	0.8022	-25.5135371	0.004071193
177.0876	0.8041	-26.29830808	0.003407433
177.1673	0.8061	-26.66764025	0.003244134
177.247	0.808	-26.42358195	0.003551496
177.3267	0.81	-25.10697753	0.004287717
177.4064	0.8119	-24.8330888	0.005402677
177.4861	0.8139	-25.12951987	0.006856623
177.5658	0.8158	-24.78552948	0.008615983
177.6455	0.8178	-24.10458439	0.010648337
177.7252	0.8198	-23.52173501	0.012921936
177.8048	0.8221	-23.39596955	0.015404144
177.8845	0.8244	-23.62174879	0.018071198
177.9642	0.8267	-23.90211686	0.020915509
178.0439	0.829	-23.94812732	0.023945481
178.1236	0.8314	-23.66098179	0.027180448
178.2033	0.8337	-23.33207431	0.030644811
178.283	0.836	-22.95080298	0.034365171
178.3627	0.8383	-22.59449076	0.038366412
178.4424	0.8406	-22.87932655	0.042666915
178.5221	0.843	-23.84978727	0.047291932
178.6018	0.8453	-24.94232688	0.052278684
178.6815	0.8476	-25.61576569	0.057656899
178.7612	0.8499	-25.89733301	0.063436414
178.8409	0.8523	-25.72517073	0.069606708
178.9206	0.8546	-24.65808777	0.076131259
179.0003	0.8569	-24.39360033	0.082944137
179.08	0.8592	-24.92537142	0.089967733
179.1597	0.8615	-24.09199379	0.097103357
179.2394	0.8639	-22.99148842	0.104222532
179.3191	0.8662	-22.92744192	0.111220667
179.3988	0.8685	-23.00454609	0.117957749

179.4785	0.8708	-22.88114555	0.124309065
179.5582	0.8731	-22.79643672	0.130147615
179.6379	0.8755	-23.13562686	0.135352664
179.7176	0.8778	-23.51491403	0.139811394
179.7973	0.8801	-23.66682666	0.143412585
179.877	0.8824	-23.84276881	0.146064354
179.9567	0.8847	-24.11275169	0.147703591
180.0364	0.8871	-24.35833801	0.14833189
180.1161	0.8894	-24.35891259	0.147718096
180.1958	0.8917	-23.91892854	0.147294046
180.2755	0.894	-21.9557948	0.146182739
180.3552	0.8963	-22.21675781	0.144104993
180.4348	0.8987	-24.97008601	0.141203879
180.5145	0.901	-24.98876342	0.137571818
180.5942	0.9033	-24.24485097	0.133321752
180.6739	0.9056	-24.56474828	0.128577671
180.7536	0.9079	-25.02751118	0.123469065
180.8333	0.9103	-23.67339667	0.118116244
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180.9927	0.9149	-21.49477007	0.107111552
181.0724	0.9172	-21.9328157	0.101684518
181.1521	0.9196	-24.93902605	0.096469892
181.2318	0.9219	-26.42561948	0.09159325
181.3115	0.9242	-23.15052515	0.087155876
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181.5506	0.9312	-23.87320964	0.077035736
181.6303	0.9335	-24.41214761	0.074864345
181.71	0.9358	-24.79444849	0.073333345
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181.8694	0.9404	-24.6693022	0.072157307
181.9491	0.9428	-23.81124196	0.072439686
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182.1085	0.9462	-22.20937939	0.074404767
182.1882	0.9478	-23.27939054	0.075931209
182.2679	0.9495	-24.39141057	0.077724677
182.3476	0.9512	-23.16332407	0.079710111
182.4273	0.9529	-22.43906206	0.081800327
182.507	0.9546	-23.07934628	0.083895267
182.5867	0.9563	-24.04668362	0.085933115
182.6664	0.958	-24.78930109	0.087842144
182.7461	0.9597	-24.83096742	0.089568089
182.8258	0.9614	-24.45628945	0.091066714
182.9055	0.9631	-23.65275115	0.092308783
182.9852	0.9648	-22.43565072	0.093284719
183.0648	0.9665	-22.64449877	0.094004347
183.1445	0.9682	-23.58989443	0.094506212
183.2242	0.9699	-23.93556811	0.094850979
183.3039	0.9716	-24.17985023	0.095109812
183.3836	0.9733	-24.25481422	0.095376861
183.4633	0.975	-24.30183981	0.095729365
183.543	0.9767	-25.08724592	0.096256801
183.6227	0.9784	-25.82515542	0.097038233
183.7024	0.9801	-25.34044576	0.098156028
183.7821	0.9818	-25.06795109	0.099681272
183.8618	0.9842	-26.05290371	0.101666901

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184.0212	0.9892	-24.2244801	0.107099575
184.1009	0.9917	-23.95793427	0.110492206
184.1806	0.9942	-24.45863429	0.114259768
184.2603	0.9966	-24.73686118	0.11832279
184.34	0.9991	-24.83149568	0.122588507
184.4197	1.0016	-24.03559901	0.126910839
184.4994	1.0041	-22.57016705	0.13113061
184.5791	1.0066	-22.39179442	0.135065669
184.6588	1.009	-22.30090352	0.138524662
184.7385	1.0115	-22.24751216	0.141340062
184.8182	1.014	-22.22604671	0.143366243
184.8979	1.0165	-22.23093349	0.144459776
184.9776	1.019	-22.25659887	0.144486957
185.0573	1.0214	-22.29746917	0.143337086
185.137	1.0239	-22.34797075	0.14093069
185.2167	1.0264	-22.40266588	0.137227551
185.2964	1.0289	-22.52184347	0.132223586
185.3761	1.0314	-22.81301631	0.12594861
185.4558	1.0338	-25.28180994	0.118470847
185.5355	1.0363	-26.50194705	0.109910151
185.6152	1.0388	-24.6146799	0.100403113
185.6948	1.0413	-24.15008076	0.090089537
185.7745	1.0438	-24.76159222	0.079144609
185.8542	1.0456	-24.82762941	0.067772647
185.9339	1.0475	-24.54078673	0.056194983
186.0136	1.0494	-24.77737011	0.044655055
186.0933	1.0513	-25.38510873	0.03336593
186.173	1.0532	-25.95956656	0.022573015
186.2527	1.055	-26.37318713	0.012515198
186.3324	1.0569	-26.58515968	0.00342227
186.4121	1.0588	-25.66463841	-0.004500631
186.4918	1.0607	-25.47431344	-0.01108518
186.5715	1.0626	-26.62704927	-0.016179577
186.6512	1.0644	-26.81975667	-0.019646161
186.7309	1.0663	-26.55761723	-0.021375899
186.8106	1.0682	-26.49757079	-0.021293309
186.8903	1.0701	-26.52124843	-0.019362467
186.97	1.072	-26.20659066	-0.015607913
187.0497	1.0738	-25.71138335	-0.010126836
187.1294	1.0757	-25.81385588	-0.003053228
187.2091	1.0776	-25.99412885	0.005458248
187.2888	1.0795	-26.09710367	0.01521724
187.3685	1.0814	-26.09282326	0.025991029
187.4482	1.0832	-25.77412434	0.037501487
187.5279	1.0851	-25.32090344	0.049435414
187.6076	1.087	-24.79008213	0.061437245
187.6873	1.0889	-24.18167158	0.0731838
187.767	1.0908	-23.59467603	0.084346493
187.8467	1.0926	-23.31093057	0.094604346
187.9264	1.0945	-24.07438504	0.103662211
188.0061	1.0964	-23.66939679	0.111258666
188.0858	1.0983	-22.03686297	0.117133281
188.1655	1.1002	-22.10127503	0.121069477
188.2452	1.102	-22.43356755	0.122966844
188.3248	1.1039	-22.70325733	0.122820069

188.4045	1.1058	-22.96883822	0.120693302
188.4842	1.1077	-23.23441911	0.116710217
188.5639	1.1096	-23.5	0.111032416
188.6436	1.1137	-23.43017373	0.103832685
188.7233	1.1179	-23.6062054	0.095339391
188.803	1.122	-25.24738073	0.085863025
188.8827	1.1262	-25.60069741	0.075757091
188.9624	1.1303	-25.15077782	0.065311578
189.0421	1.1345	-24.52952825	0.054769028
189.1218	1.1386	-23.76719558	0.044323538
189.2015	1.1428	-24.15641795	0.034116865
189.2812	1.1469	-25.87620415	0.024343327
189.3609	1.1511	-26.05205338	0.015368602
189.4406	1.1552	-26.01495681	0.007543136
189.5203	1.1594	-25.88108638	0.001186709
189.6	1.1635	-25.7	-0.003462515

* A constrained cubic spline was fitted to the d13C vs depth curve prior to tuning.