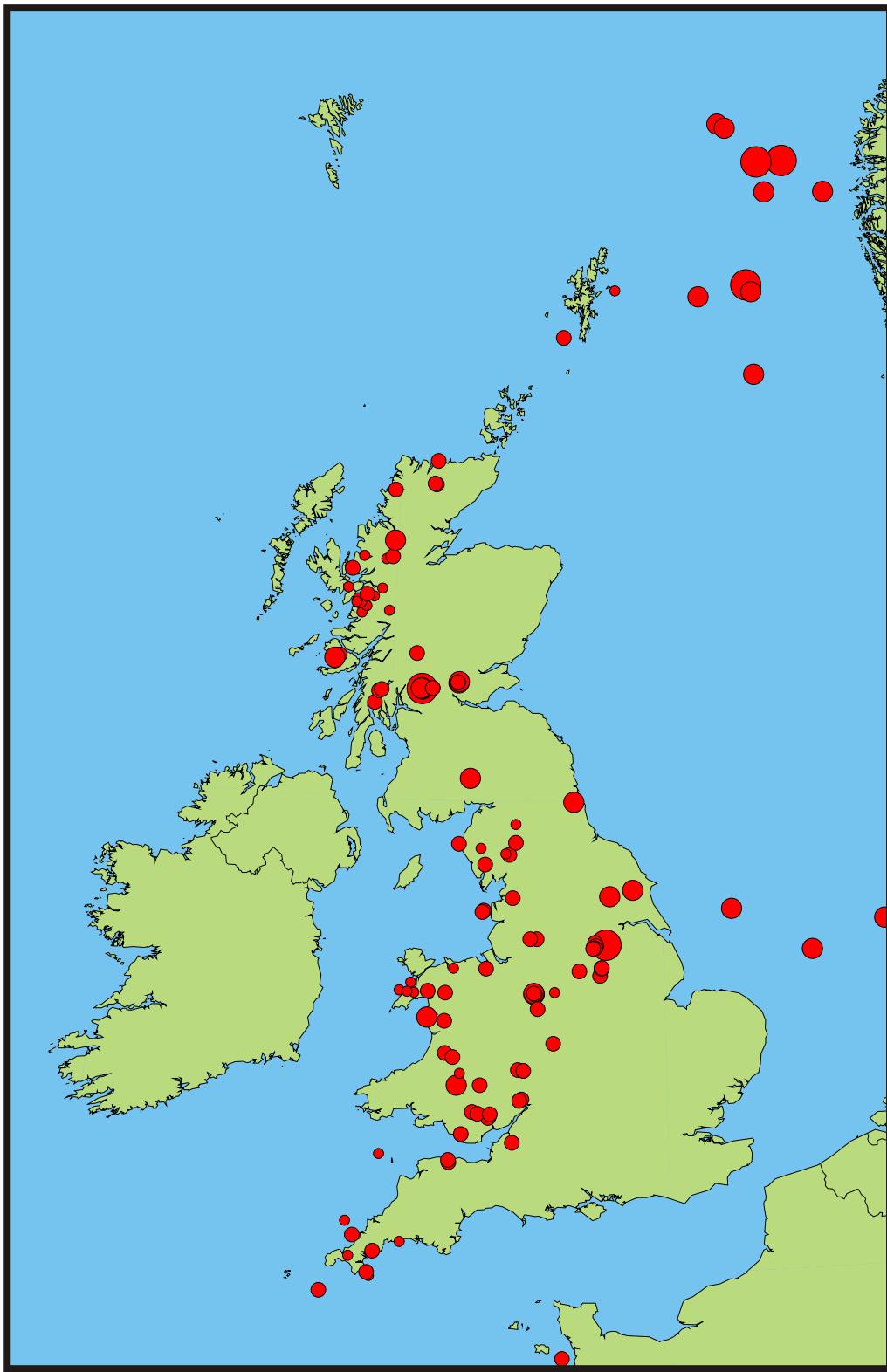




# British Geological Survey

## BULLETIN OF BRITISH EARTHQUAKES 2003



British Geological Survey  
Murchison House  
West Mains Road  
Edinburgh EH9 3LA  
Scotland

Tel: 0131-667-1000  
Fax: 0131-667-1877  
Internet: <http://www.earthquakes.bgs.ac.uk/>



BRITISH GEOLOGICAL SURVEY

REPORT CR/04/074N

# Bulletin of British Earthquakes 2003

B. A. Simpson (Editor)

*Contributors:* J Bukits, G D Ford, and D D Galloway

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☎ 01491-838800 Fax 01491-692345

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☎ 01793-411500 Fax 01793-411501  
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Table 1. Catalogue of events in chronological order: 2003.

Table 2. Phase Data of the earthquakes in Table 1.

Table 3. Geographic coordinates and instrumentation of BGS seismograph stations.

# 1 Introduction

The British Geological Survey's (BGS) Seismic Monitoring and Information Service operates a nationwide network of seismograph stations in the United Kingdom (UK). The whole of the UK, including coastal waters, is covered within the limits of the detection capabilities of the seismograph network. Location accuracy is extended in offshore areas through data exchange with neighbouring countries. Seismic phase data, location details and magnitudes are presented in this Bulletin for all earthquakes detected and located by BGS during 2003 in Tables 1 and 2, together with maps showing the larger magnitude events since 1979 ( $ML > 2.5$ ) and since 1970 ( $ML > 3.5$ ). The bulletin covers all of the UK land mass and its coastal waters including the North Sea to 800 kmE and 1500 kmN.

All events believed to be of true tectonic origins are included. Coalfield events are also included. These are small events occurring near coal workings that are believed to be caused by the redistribution of stress as the coal is extracted and, in some cases by collapse in old workings. They are indicated by C/F in the comments column of Tables 1, 2.

Acoustic disturbances, such as sonic booms from supersonic aircraft, are included when they are felt. The air-borne waves are readily identified by their slow travel time across an array or by their signature on a microphone but they are frequently mistaken as small earthquakes by local people. They are indicated by 'SONIC' in both the locality and comments column of Table 1.

Significant non-natural events, such as explosions, which received media attention or were greater than magnitude 2.5 ML or felt by local residents, are also included in Table 1. Smaller events that are known, or suspected to be of explosive origin are excluded from the bulletin where possible. These include explosions due to quarrying, mining, weapon testing or disposal, naval exercises, geophysical prospecting and civil engineering. Unfortunately, identification by record character, location and time of occurrence is not always conclusive and some man-made events may be included in the bulletin or, more rarely, a small natural event may have been excluded.

# 2 Summary of 2003 Seismicity

There were 146 earthquakes located by the monitoring network during the year (Figure 1), with 32 of them having magnitudes of 2.0 ML or greater. Ten events with a magnitude of 2.0 ML or greater were reported, together with a further 14 smaller ones, bringing the total to 24 felt earthquakes in 2003.

The largest onshore earthquake had a magnitude of 3.2 ML and occurred near Aberfoyle on 20 June (Appendix 4), at a depth of 5.2 km. BGS received reports, via the Police and residents of the Aberfoyle area, such as, "the whole house shook" and "there was a rumble like thunder". This event was followed by two aftershocks on the same day with magnitudes of 2.8 and 2.5 ML. Reports were also received for both of these events with intensities of 3 EMS.

The largest offshore earthquake occurred in the Northern North Sea on 15 December, with a magnitude of 3.9 ML. It was located approximately 265 km east of Lerwick, Shetland

Islands. A further 14 events occurred in the North Sea and surrounding waters during the year, with magnitudes ranging between 0.3 and 3.0 ML. The earthquake with a magnitude of 0.3 ML was detected approximately 30 km east of Yell, Shetland Islands on 30 June. On 23 July, an earthquake with a magnitude of 1.2 ML was located approximately 25 km west of Sumburgh Head in the West Fair Isle Basin.

An earthquake with a magnitude of 1.4 ML occurred in the Manchester area on 5 January. The BGS received one report for this event from a resident of Manchester, who described, "felt a slight shudder" indicating an intensity of 2 EMS. This earthquake locates in the same general area as the series of events that occurred throughout late 2002.

On 12 January, an earthquake with a magnitude of 2.4 ML, occurred near Blackford, Tayside. Reports such as, "there was the usual heavy sudden bang followed immediately by the shaking of the bedroom walls and the shuddering of the floor" and "there was a rumble like a heavy lorry passing", indicate an intensity of at least 3 EMS. A further eight earthquakes were detected in the Blackford area during 2003, with magnitudes ranging from 0.7 – 2.2 ML. Three of these further events were reported by local residents. This is an area that has continued to be active in recent years; 49 events occurred in 1997, of which five were felt by local residents; 10 events occurred in 1998, of which 2 were felt by local residents, 3 events occurred in 1999, 4 events occurred in 2000, of which 3 were felt, 3 events occurred in 2001, of which all were felt and 4 events occurred in 2002, of which one was felt. These are all in the same general area as the magnitude 3.2 ML Ochil Hills earthquake in 1979, which had a maximum intensity of 5 EMS.

An earthquake with a magnitude of 1.5 ML occurred on 22 February, near Inveraray, Strathclyde. Reports received from Furnace and Cairndow describing, "a loud bang", "a 300 year old house shaking" and "a trolley rattling", indicate an intensity of 3 EMS.

A magnitude 2.1 ML earthquake occurred on 3 March, with a location on the Isle of Mull, Strathclyde region. BGS received one report for this event from the Isle of Mull, describing, "I heard a loud roar and things rattled on the walls", indicating an intensity of 3 EMS. A further event occurred on the Isle of Mull on 17 February with a magnitude of 1.9 ML.

Six events occurred during 2003, in the Newcastle-Under-Lyme region of Staffordshire, with magnitudes ranging from 1.4 – 2.3 ML. No reports were received for any of these events.

A magnitude 3.1 ML earthquake occurred on 19 August, near Doncaster, South Yorkshire. BGS received reports, via residents of Retford, Nottinghamshire, such as, "the whole house shook", "the sensation woke me from sleep" and "the radiators rattled", indicating an intensity of 4 EMS. This event is the largest in the area since the magnitude 3.2 ML East Retford earthquake on 22 March 1984, which was felt with intensities of 3 EMS.

An earthquake with a magnitude of 2.1 ML occurred near Loch Fannich, Highland on 11 November. BGS received a single report for this earthquake from a resident of Achanalt which described, " I heard a loud deep explosion and the house shook" indicating an intensity of 2 EMS.

Three events occurred in the Caernarvon Bay area of Gwynedd, on 18 April, 2 June and 23 August, with magnitudes of 0.4, 0.9 and 0.6 ML, respectively.

Near Pontypool, Gwent, three events occurred throughout the year, with magnitudes of 1.1, 1.6 and 1.5 ML, respectively.

The coalfield areas of Yorkshire, Nottinghamshire and Mid Glamorgan continued to experience shallow earthquake activity that is believed to be mining induced. Some, 16 coalfield events, with magnitudes ranging between 0.9 and 1.8 ML, were detected during the year. Local residents reported six of these events. Of these 16 events, 10 events were located in the Maltby area of South Yorkshire, with magnitudes ranging between 1.0 and 1.5 ML.

### 3 The BGS UK Seismograph Network

Operational seismograph stations in December 2003 are shown in Figure 2. The UK seismograph network consists of a number of sub-networks, which, in turn, consist of up to ten 'outstation' vertical seismometers radio-linked over distances of up to 100 km to a central site. Here, the data, along with that from a local 3-component set of two horizontal and one vertical seismometer, are recorded digitally with the SEISLOG data acquisition system (Utheim and Havskov, 1993). The system records data continuously, but also creates event-triggered files. The sub-networks are accessed for data transfer from Edinburgh several times a day through Internet or dial-up modems. Once transferred, the events are analysed to provide rapid response for location and magnitude. At a number of sites, low-gain vertical seismometers are installed to extend the dynamic range of the system (by 34 db) to stronger motions, and low frequency microphones are used to aid the discrimination of sonic booms. In addition, strong motion accelerometers have been installed at locations throughout the country and record accelerations up to 0.1g. A number of broadband seismic stations provide data with a larger dynamic range and over a wider frequency band.

The detection capabilities of a network depend upon station distribution, instrument sensitivity and background noise levels. Figure 3 shows the magnitude detection thresholds for seismograph stations operational in December 2003. The contours illustrate the lower threshold magnitude for an earthquake to significantly exceed 4 nanometers of noise (average) at 10 Hz on at least four seismographs. These detection levels hold true only if all stations are continuously monitored. Small events in unmonitored areas may go undetected unless they are felt and reported to BGS by local inhabitants, but detection capabilities by this process are strongly dependent on the population density.

The whole of the UK is covered by the seismograph network for approximately magnitude 1.5 ML, and above, at times of average ambient noise levels. Noise sources such as wind, waves, traffic and livestock vary considerably with time (typically 0.5 to 15 nanometers, at 10 Hz) causing the magnitude thresholds to increase or decrease. In conditions of high noise, 0.8 ML should be added to the contour values, causing the threshold to rise to about 2.3 ML. Normally, however, an earthquake of this size would be felt, if not detected, in the areas of poorer instrumental coverage. The bulletin can, therefore, be assumed to be complete for all earthquakes of magnitude 2.3 ML and above.

Given the variability in the earthquake detection threshold, as governed by ambient noise conditions and the geometry of the observing network, the bulletin is biased towards certain localities. Figure 4 shows only earthquakes with magnitude 2.5 ML or greater, in the period 1979 to 2003. The data set is considered complete for these magnitudes in all localities onshore. Seismicity for the period 1970 to 2003 is shown in Figure 5 with a threshold magnitude of 3.5 ML. This is the period covered by BGS instrumentation that in

the early years, only consisted of the network around Edinburgh (LOWNET) and Eskdalemuir (ESK) and a station near Kyle of Lochalsh (KYL). The dataset is likely to be complete for such magnitudes.

## 4 Hypocentre Parameters and Their Errors

### 4.1 EPICENTRE LOCATION

By accurately timing the signal onsets at a minimum of three stations, a location can be found for an earthquake that satisfies the observed pattern of arrivals. Instrumental locations in the bulletin were obtained using the computer program HYPO71 (Lee and Lahr, 1975) that iteratively adjusts a trial hypocentre (latitude, longitude, depth, and origin time) until the observed and computed arrival times coincide closely.

The accuracy of locations is dependent on distances from the closest stations, the distribution of the stations around the epicentre, the resolution to which signal onsets can be timed from the records, and the accuracy with which the seismic wave velocity through the earth can be modelled.

### 4.2 DEPTH DETERMINATION

The accurate determination of earthquake depth presents a more difficult problem, mainly because phase arrival patterns at the seismographs can still be satisfied for a large range of depths merely by adjusting the origin time to suit. Constraints on the depth can usually only be imposed when a station is very near the epicentre and even then the accuracy depends on the velocity model.

The best depth determinations have been obtained when an earthquake or earthquake series occurred almost beneath a network. For events at larger distances, and where the error columns (ERH and ERZ), in the tables, are blank, the depth errors can be up to tens of kilometres. The quality factor of the event, as listed in the tables (SQD), is an indication of the depth error. As a general guide only, A\*A, A\*B, B\*A and possibly B\*B class events, have reliable depths.

### 4.3 MAGNITUDE

All earthquakes in the bulletin have been assigned a local magnitude (ML) as defined by Richter (1935):

$$ML = \log_{10} (A/A_0)$$

where A is the maximum deflection (centre to peak in mm) registered by the earthquake on a Wood-Anderson seismograph and  $A_0$  is that for a 'standard' magnitude zero earthquake at the same distance. The  $A_0$  term is thus a distance correction factor tabulated by Richter out to 200 km, and later adjusted to include up to 600 km. Although Richter intended his method to be an approximate quantification of earthquake size and his attenuation term,  $A_0$ , strictly only applies to California, the formula is still used world-wide today. The ML magnitudes in this bulletin have been calculated according to Richter by converting the output of the BGS instruments to an equivalent Wood-Anderson deflection. Ideally, the

measurements are made on two horizontal instruments and averaged but, if this was not possible, the mean of the magnitudes from a number of verticals has been used. Ground motion registered at a seismograph varies with site conditions, direction from the earthquake, and the nature of the ray path. Consequently, it is important to take the mean from a good distribution of stations. The resulting errors on magnitudes quoted in the bulletin will normally be less than 0.4 ML.

#### **4.4 INTENSITY**

Intensity is a measure of the effect of the shaking on people, structures and objects. It decreases with distance from a maximum value ( $I_{max}$ ) usually found close to the epicentre. The maximum felt intensity is quoted, where known, on the European Macroseismic Scale (EMS), (Grünthal, 1998).

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# Appendix 1 Key to Bulletin Encoding

YearMoDy	Year, month and day of event.
HrMn Secs	Time of occurrence of event in hours, mins and secs, (UTC).
Lat	Latitude of the event, positive latitude indicates north.
Lon	Longitude of the event, negative longitude indicates west.
kmE	UK National Grid Reference in kilometres east of grid origin.
kmN	UK National Grid Reference in kilometres north of grid origin.
Dep	Depth of the hypocentre in kilometres.
Mag	Richter local magnitude of the event.
Locality	A geographical indication of the epicentral area, usually the nearest town followed by the region. A key to the abbreviations used in the locality column are given below.
Int	Maximum EMS intensity. 2+ indicates felt, no macroseismic details. 3+, 4+ etc indicates felt at 3 or 4, but no survey carried out. 3, 4, 5 etc describes the maximum EMS intensity produced by the event.
Comments	Additional comments about the event eg: C/F, see below under comments abbreviations.

The following abbreviations are extracted from the output of the location program HYPO71 (Lee and Lahr, 1975)

No	Total number of P and S readings used in the event location.
DM	Epicentral distance in kilometres to the closest station.
Gap	Largest azimuthal separation in degrees between stations.
RMS	Root Mean Square of the travel time residuals in seconds.
ERH	Standard error of the epicentre in kilometres. When this column is blank, the error is large and indeterminate.
ERZ	Standard error of the focal depth in kilometres. When this column is blank, the error is large and indeterminate.
SQD	S is quality factor ascribed to RMS, D is quality ascribed to number and distribution of stations.

## Locality abbreviations

Sonic	Sonic boom	N Yorkshire	North Yorkshire
Expl	Explosion	Notts	Nottinghamshire
D & G	Dumfries and Galloway	Lincs	Lincolnshire
Gtr	Greater	N'umberlnd	Northumberland
Her & Worcs	Hereford and Worcester	Staffs	Staffordshire
S'Clyde	Strathclyde	Leics	Leicestershire
S Yorkshire	South Yorkshire	W Mids	West Midlands
New-U-Lyme	Newcastle-Under-Lyme	Salop	Shropshire
Penin	Peninsula		

## Comments abbreviations

Sonic	Sonic boom
Expl	Explosion
C/F	Coalfield type event
...	and felt elsewhere

## Appendix 2 Key to Phase Data Encoding

Time	Time of occurrence of event in hours, mins and secs, (UTC).
Lat	Latitude of the event, N indicates North.
Lon	Longitude of the event, W indicates West, E indicates East.
Depth	Depth of the hypocentre in kilometres.
Grid Ref	UK National Grid Reference in kilometres east (kmE) and kilometres north (kmN) of grid origin.
Quality	Solution quality of hypocentre averaged from QS and QD. A, excellent; B, good; C, fair; D, poor
RMS	Root Mean Square of the travel time residuals in seconds.
Magnitude	Richter local magnitude of the event.
Locality	A geographical indication of the epicentral area, usually the nearest town followed by the region.
Intensity	Maximum EMS intensity. 2+ indicates felt, no macroseismic details. 3+, 4+ etc indicates felt at 3 or 4, but no survey carried out. 3, 4, 5 etc describes the maximum EMS intensity produced by the event.
Comments	Additional comments about the event eg: C/F see list of comments abbreviations below.
STAT	Station name
CO	Station component S=short period Z=vertical N=north south E=east west
DIST	Distance from earthquake to station (km)
PHAS	Phase identifier; the first letter characterizes onset E=emergent I=impulsive, the second indicates the phase eg P, S, PG and PN.
WT	Hypo weighting factor to arrival 0 or blank=full weighting to 4=zero weighting (ignore). 9=use P S interval only for this line.
P	Polarity C=Compression/up D=Dilatation/down
HrMn	Hour, Minute of event
SECS	Seconds of event
AMPL	Amplitude centre to peak in nanometres (nm)
PERI	Period in seconds

## Appendix 3 The European Macroseismic Scale (EMS 98)

### 1 - Not felt

Not felt, even under the most favourable circumstances.

### 2 - Scarcely felt

Vibration is felt only by individual people at rest in houses, especially on upper floors of buildings.

### 3 - Weak

The vibration is weak and is felt indoors by a few people. People at rest feel a swaying or light trembling.

### 4 - Largely observed

The earthquake is felt indoors by many people, outdoors by very few. A few people are awakened. The level of vibration is not frightening. Windows, doors and dishes rattle. Hanging objects swing.

### 5 - Strong

The earthquake is felt indoors by most, outdoors by few. Many sleeping people awake. A few run outdoors. Buildings tremble throughout. Hanging objects swing considerably. China and glasses clatter together. The vibration is strong. Top heavy objects topple over. Doors and windows swing open or shut.

### 6 - Slightly damaging

Felt by most indoors and by many outdoors. Many people in buildings are frightened and run outdoors. Small objects fall. Slight damage to many ordinary buildings eg; fine cracks in plaster and small pieces of plaster fall.

### 7 - Damaging

Most people are frightened and run outdoors. Furniture is shifted and objects fall from shelves in large numbers. Many ordinary buildings suffer moderate damage: small cracks in walls; partial collapse of chimneys.

### 8 - Heavily damaging

Furniture may be overturned. Many ordinary buildings suffer damage: chimneys fall; large cracks appear in walls and a few buildings may partially collapse.

### 9 - Destructive

Monuments and columns fall or are twisted. Many ordinary buildings partially collapse and a few collapse completely.

### 10 - Very destructive

Many ordinary buildings collapse.

### 11 - Devastating

Most ordinary buildings collapse.

### 12 - Completely devastating

Practically all structures above and below ground are heavily damaged or destroyed.

-----\*\*\*\*-----

A complete description of the EMS-98 scale is given in: Grunthal, G., (Ed) 1998. European Macroseismic scale 1998. Cahiers du Centre European de Geodynamique et de Seismologie. Vol 15.



## Appendix 4 Significant earthquakes in 2003

### THE ABERFOYLE EARTHQUAKE, 20 JUNE 2003

The largest onshore earthquake had a magnitude of 3.2 ML and occurred near Aberfoyle on 20 June, at a depth of 5.2 km. BGS received reports, via the Police and residents of the Aberfoyle area, such as, "the whole house shook" and "there was a rumble like thunder". This event was followed by two aftershocks on the same day with magnitudes of 2.8 and 2.5 ML. Reports were also received for both of these events with intensities of 3 EMS. Figure 6 shows a seismogram recorded for the largest earthquake. There were a total of 11 earthquakes detected in the Aberfoyle earthquake sequence during 2003, with locations approximately 3.5 km southwest of the village of Aberfoyle. A total of 8 of the events were reported by local residents. Visual inspection of the seismograms recorded from the earthquakes in the sequence indicated a high degree of similarity between the individual events. The similarity of recordings suggested that the events were located within a small source volume and the result of similar source mechanisms, and was used to obtain consistent phase arrival times. It was found that the earthquakes were confined to a zone approximately 1000 m long and 200 m wide striking in SW-NE. This falls into the Highland Boundary Fault Zone (HBFZ), which presents a major tectonic boundary extending across the entire width of Central Scotland in NE-SW direction. Due to the similarities in the waveform signals, a joint focal mechanism based on first motion polarities was determined through a grid-search (Snoke et al., 1984) for the events in the sequence. Polarity readings from 13 stations were used (Figure 7). The first nodal plane strikes WSW-ENE and dips to the NW with both left-lateral and normal movement. The second nodal plane strikes NNW-SSE and dips eastward with both right-lateral and normal movement. The alignment of the epicentre locations in SW-NE direction suggests that the first nodal plane was the actual fault plane. This fault plane follows the strike direction of the HBFZ. However, the P axis points SSW, in disagreement with the regional stress pattern possibly indicating local variation from the regional stress pattern.



## KEY

MAGNITUDE (ML)

	$\geq 5.0$
	4.0 – 4.9
	3.0 – 3.9
	2.0 – 2.9
	1.0 – 1.9
	< 1.0

## KEY TO EPICENTRE MAPS



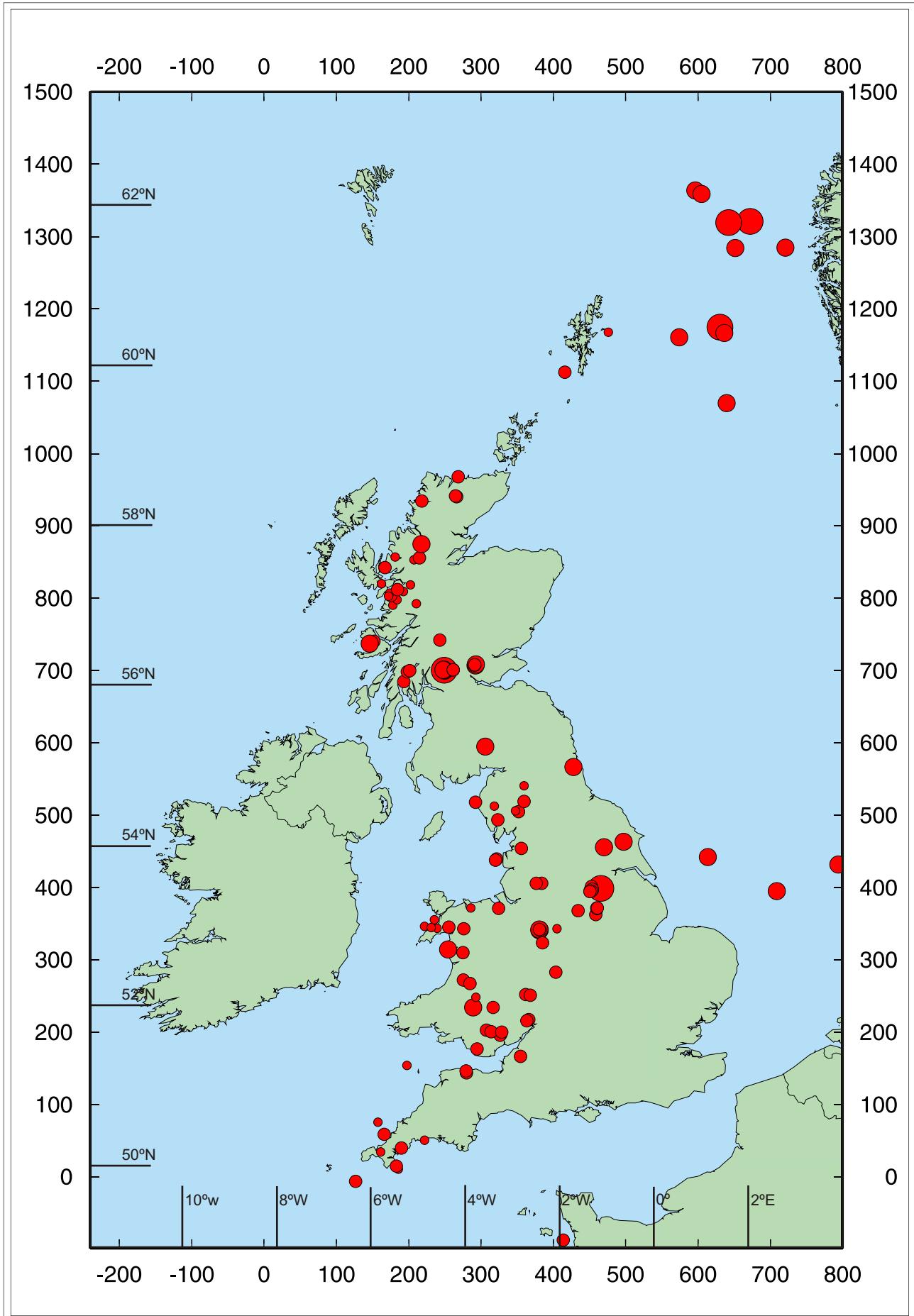


Figure 1. Epicentres of all UK earthquakes located in 2003.

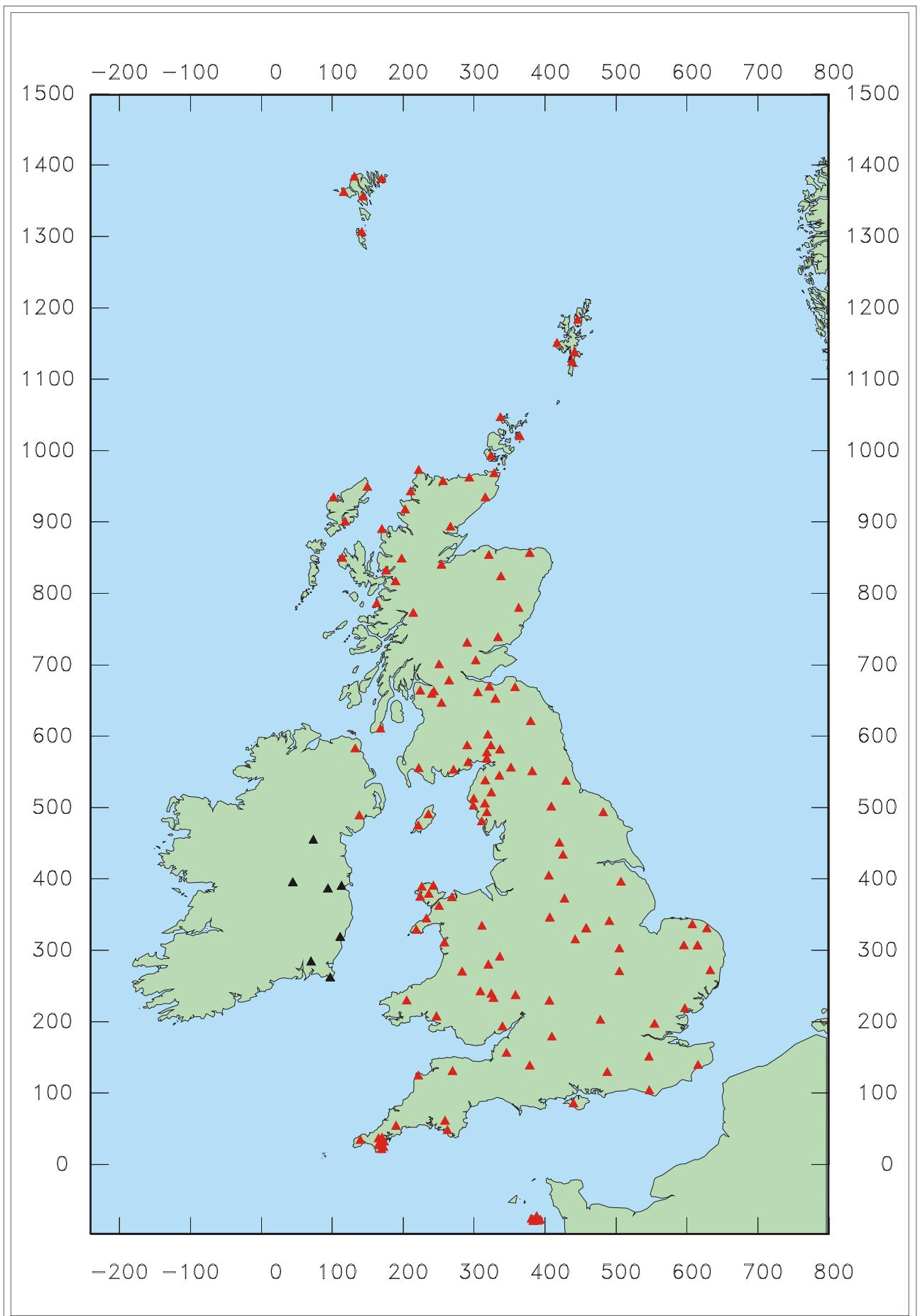


Figure 2. Seismograph network operational in December 2003. Colour coding shows the rapid access stations (red) and DIAS stations (black).

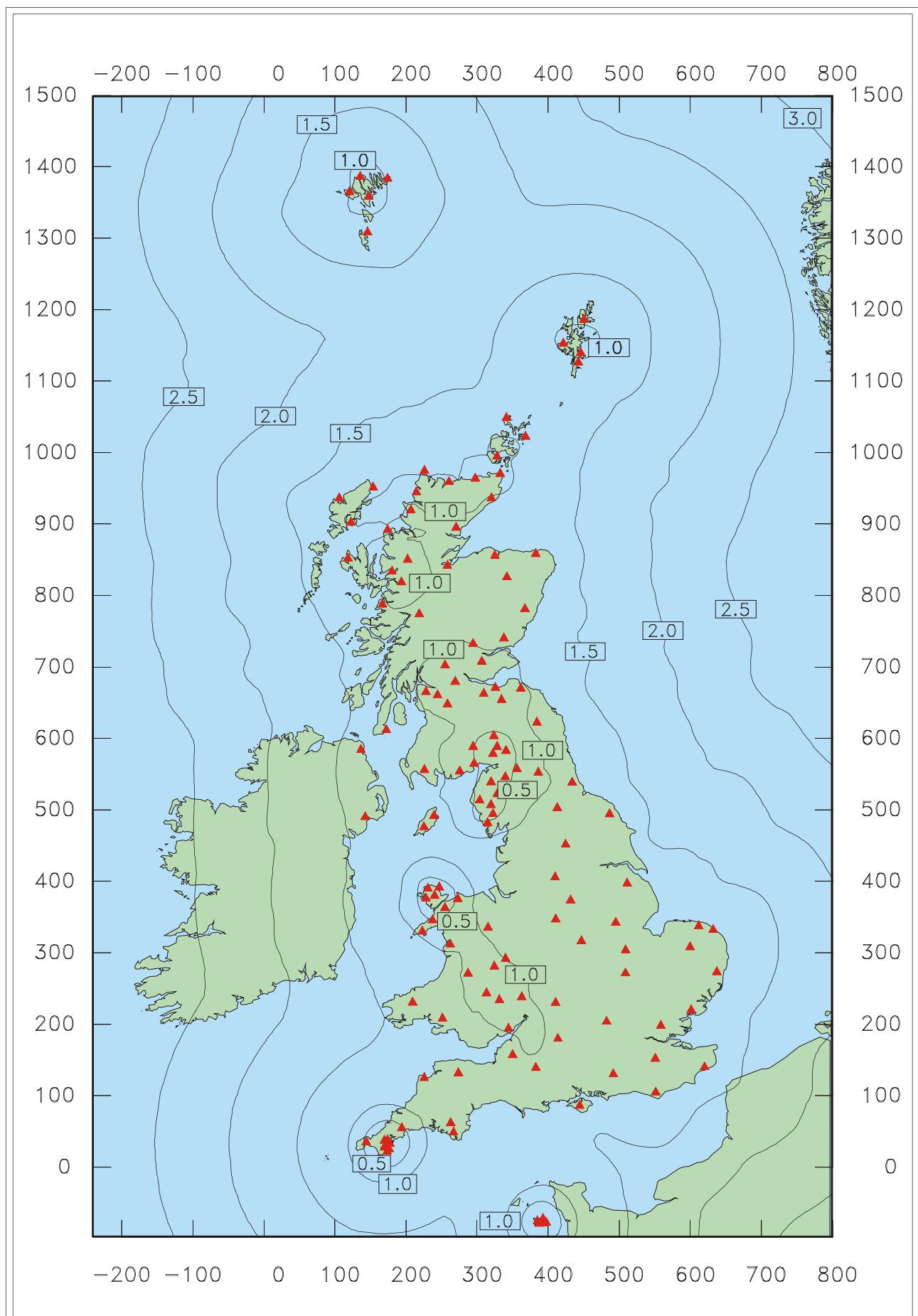


Figure 3. Earthquake detection capability in December 2003. Contour values are Richter local magnitude (ML) for 4 nanometres of noise (average) and S-wave amplitude twice that at the fourth nearest station.

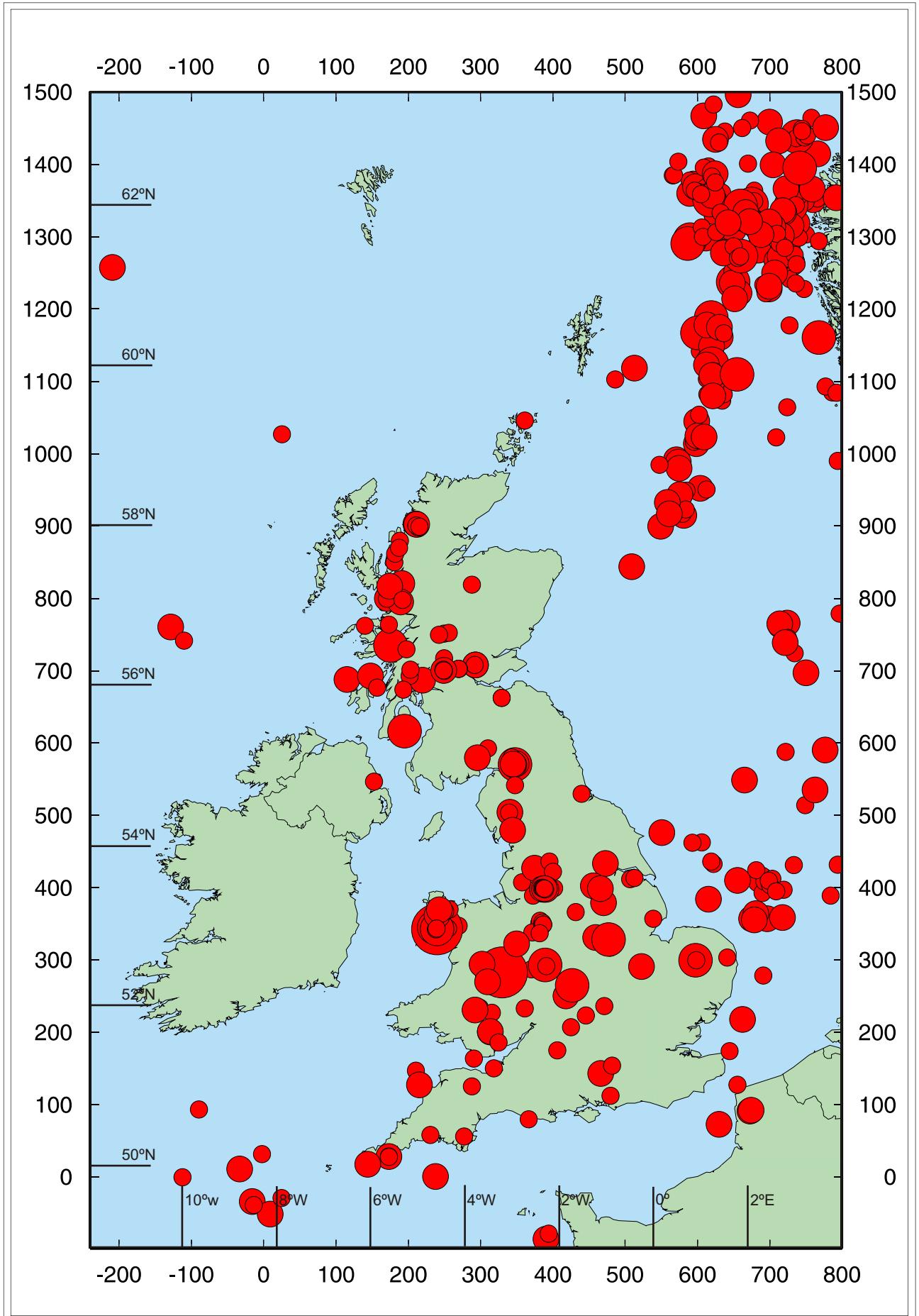


Figure 4. Epicentres of earthquakes with magnitudes 2.5 ML or greater, for the period 1979 to 2003.

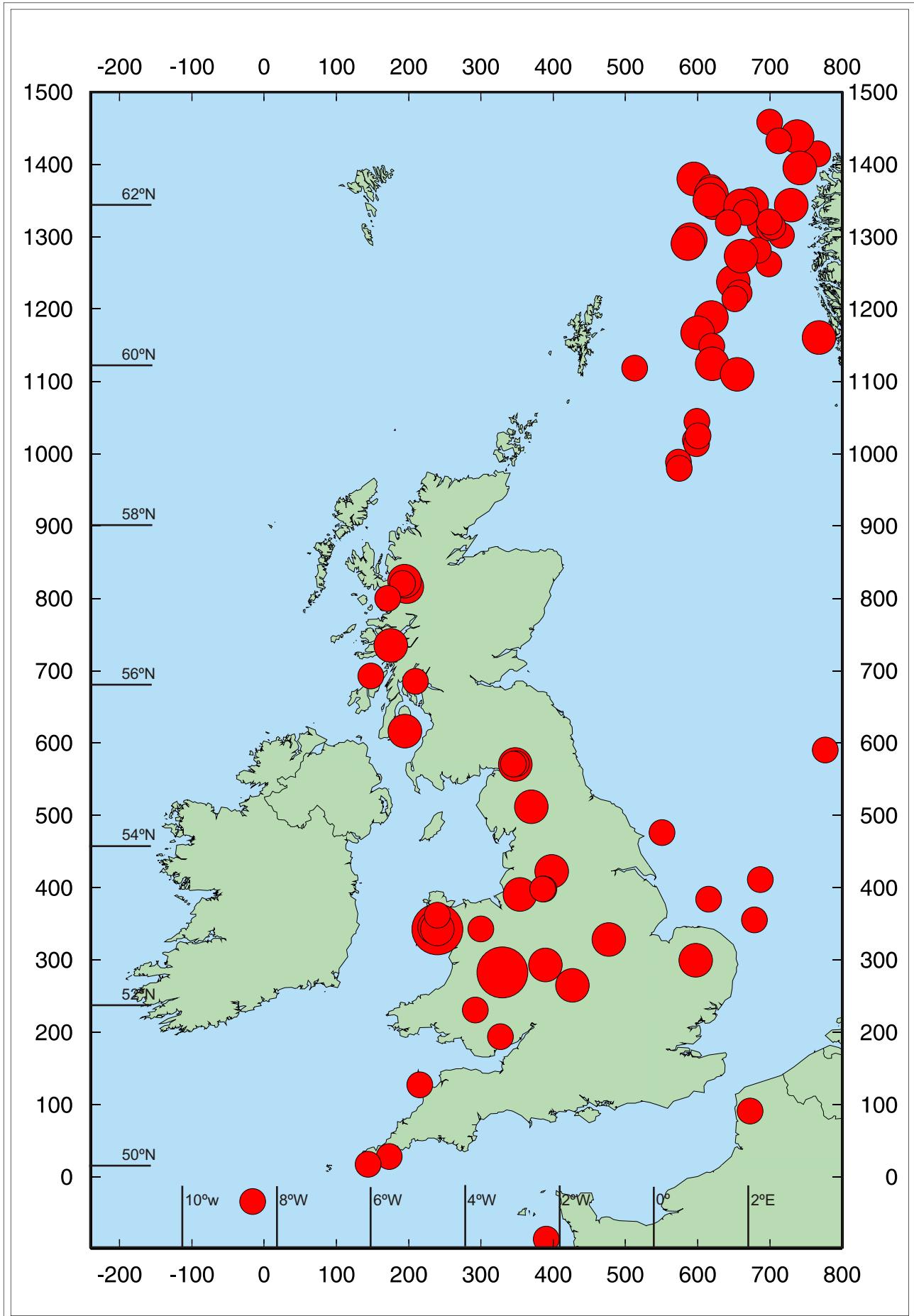


Figure 5. Epicentres of earthquakes with magnitudes 3.5 ML or greater, for the period 1970 to 2003.

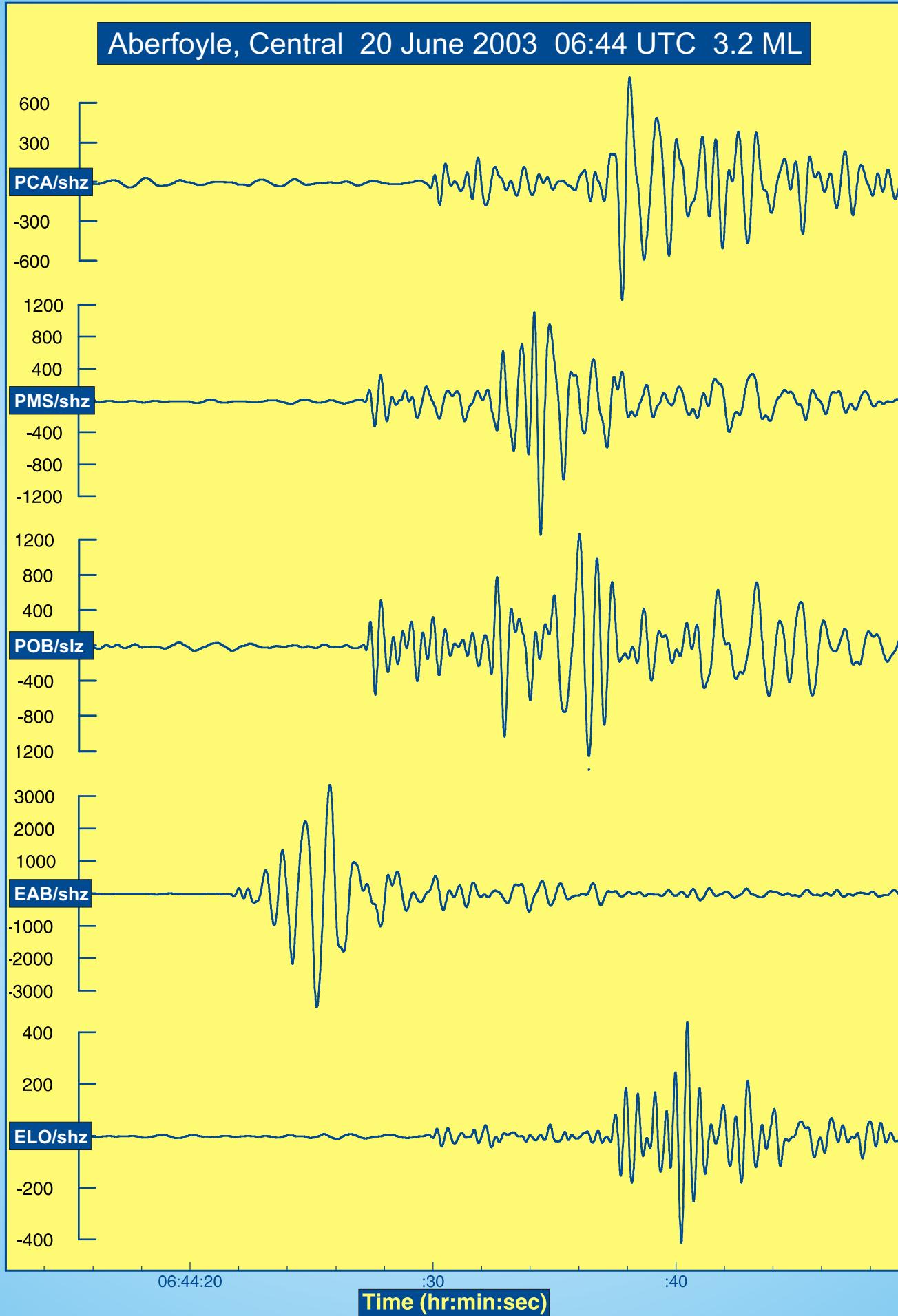


Figure 6. Seismograms of the Aberfoyle earthquake of 20 June 2003 06:44 UTC 3.2 ML recorded on the Paisley and LOWNET seismic networks.

## FAULT PLANE SOLUTION : ABERFOYLE EARTHQUAKE OF 20 JUNE 2003

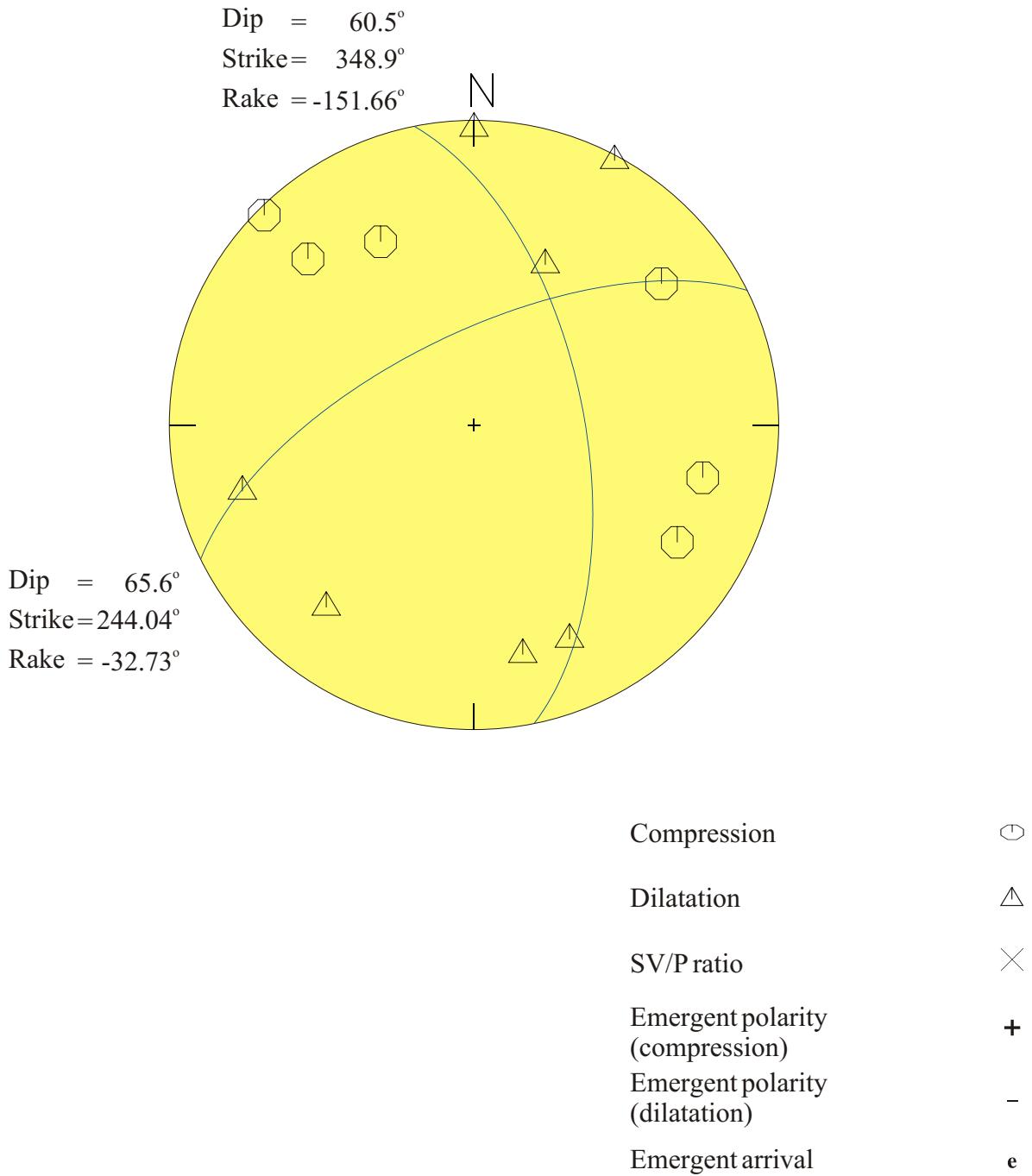


Figure 7. Equal area projection of the upper lower hemisphere for the Aberfoyle earthquake 20 June 2003 06:44 UTC 3.2 ML. The axes of maximum and minimum compressive stress are denoted by P and T respectively.



**TABLE 1: CATALOGUE OF EVENTS LISTED CHRONOLOGICALLY: 2003**

Year	Mo	Dy	Hr	Mn	Secs	Lat	Lon	kmE	kmN	Dep	Mag	Locality	Int	No	DM	Gap	RMS	ERH	ERZ	SQD	Comments
2003	01	05	20	18	38.2	53.55	-2.25	383.8	405.9	5.0	1.4	MANCHESTER AREA	2+	7	26	228	0.16	2.20	3.00	B*D	FELT MANCHESTER
2003	01	06	21	36.05	7.53.63	3.96	793.7	431.4	15.0	2.7	1.6	SOUTHERN NORTH SEA		8	90	330	0.29			D*D	
2003	01	12	05	41	53.1	56.24	-3.74	292.1	706.9	4.7	2.4	BLACKFORD, TAYSIDE	3+	12	15	103	0.07	0.30	0.70	A*C	FELT BLACKFORD
2003	01	14	05	01	59.2	49.95	-4.99	185.5	10.2	14.9	0.3	OFF LIZARD POINT		9	17	333	0.04	1.20	0.30	B*D	15KM SE OF LIZARD POINT
2003	01	17	12	02	23.4	53.23	-3.13	324.3	371.0	5.4	1.2	MOLD, CLWYD		9	52	302	0.09	2.10	18.20	C*D	
2003	01	18	02	59.40	6.52.98	-4.15	255.5	345.0	15.7	1.2	1.0	PORTHMADOG, GWYNEDD	2+	14	18	76	0.10	0.50	1.20	A*B	FELT HARLECH
2003	01	21	01	40	55.8	51.67	-3.06	326.9	197.5	9.4	1.6	PONTYPOOL, GWENT		7	37	177	0.06	0.90	13.80	C*C	
2003	01	23	17	34	43.1	51.72	-3.34	307.7	202.9	10.3	1.5	MERTHYR TYDFIL, M GLAMORGAN		8	38	101	0.09	1.10	22.60	C*C	
2003	01	25	19	20	55.9	51.67	-3.05	327.3	197.3	3.2	1.5	PONTYPOOL, GWENT		10	17	82	0.12	0.70	1.50	A*C	
2003	01	30	00	35	14.1	51.66	-3.05	327.3	197.3	3.2	1.5	PONTYPOOL, GWENT	2+	11	25	111	0.10	0.70	1.80	A*C	FELT GLENDEVON
2003	01	20	16	19	59.5	7.57	-3.76	291.2	707.7	5.8	1.6	BLACKFORD, TAYSIDE	3+							*	SONIC-FELT NORTH WALES...
2003	01	20	20	04	14.1	56.25	-3.76	291.2	707.7	5.8	1.6	SONIC-NORTH WALES									
2003	02	04	16	19	59.5	7.57	-3.76	291.2	707.7	5.8	1.6	SONIC-NORTH WALES									
2003	02	06	03	55	13.8	56.01	-5.32	193.1	684.7	6.7	1.3	LOCH FYNE, STRATHCLYDE		6	40	305	0.07	10.70	26.20	D*D	
2003	02	07	17	40	40.2	50.21	-4.97	187.9	38.7	7.2	0.6	FALMOUTH, CORNWALL		12	12	315	0.03	0.40	0.70	A*D	7KM NE OF FALMOUTH
2003	02	07	18	15	29.7	50.22	-4.94	190.0	39.5	5.5	1.1	FALMOUTH, CORNWALL		14	14	206	0.05	0.60	1.20	A*D	7KM NE OF FALMOUTH
2003	02	08	03	22	11.5	52.97	-4.39	239.4	343.5	22.9	0.8	PWLLELI, GWYNEDD		10	3	133	0.04	0.50	0.40	A*B	8KM N OF PWLLELI
2003	02	17	23	47	14.9	56.49	-6.03	151.8	740.6	8.1	1.9	MULL, STRATHCLYDE		15	49	214	0.14	1.40	1.50	B*D	
2003	02	19	22	23	45.7	53.16	-1.12	458.7	362.6	6.8	1.0	MANSFIELD, NOTTS	2+	7	29	169	0.05	0.50	1.20	A*C	C/F, FELT MANSFIELD
2003	02	21	11	03	13.2	54.33	-3.18	323.2	493.7	2.9	1.1	DUNNERDALE, CUMBRIA		15	1	186	0.12	0.90	0.20	A*D	
2003	02	21	11	26	06.6	52.96	-2.29	380.5	340.6	3.9	2.0	NEWCASTLE-U-LYME, STAFFS		7	31	153	0.08	1.00	1.80	A*C	
2003	02	22	11	24	08.6	52.97	-2.28	381.0	341.5	5.3	2.3	NEWCASTLE-U-LYME, STAFFS		9	30	120	0.09	0.60	1.50	A*C	
2003	02	22	22	23	11.3	51.13	-5.25	198.0	698.0	6.6	1.5	INVERARAY, STRATHCLYDE	3+	9	45	203	0.15	2.30	2.90	B*D	FELT FURNACE & CAIRNDOW
2003	02	22	23	05	29.2	52.97	-2.27	382.0	341.7	2.7	1.4	NEWCASTLE-U-LYME, STAFFS		5	29	195	0.01	0.30	0.50	A*D	
2003	02	23	08	29	14.7	58.33	-4.28	266.4	940.0	7.6	1.7	STRATHNAVER, HIGHLAND		15	39	99	0.41	1.50	13.60	C*C	
2003	02	24	03	21	02.0	58.34	-4.31	264.9	941.2	8.2	1.6	STRATHNAVER, HIGHLAND		18	39	100	0.36	1.30	9.90	C*C	
2003	03	01	00	07	04.1	53.24	-1.10	460.3	371.9	2.9	1.0	WORKSOP, NOTTS	2+	6	29	218	0.24	5.40	6.90	D*D	C/F, FELT EDWINSTOWE
2003	03	01	01	20	14.0	52.97	-2.29	380.5	341.7	3.9	2.2	NEWCASTLE-U-LYME, STAFFS		7	31	162	0.08	0.70	1.40	A*C	
2003	03	01	01	17	26.3	52.33	-3.83	275.5	271.8	14.4	1.8	DEVIL'S BRIDGE, DYFED		10	47	108	0.21	1.40	2.20	B*C	
2003	03	03	03	08	57.41.0	56.46	-6.12	145.9	737.3	7.9	2.1	ISLE OF MULL, S'CLYDE	3+	10	54	196	0.15	2.10	2.20	B*D	FELT ISLE OF MULL
2003	03	05	00	12	52.7	52.96	-2.28	381.5	340.7	4.7	1.7	NEWCASTLE-U-LYME, STAFFS		6	30	160	0.08	1.70	2.60	B*C	
2003	03	05	00	19	55.59	52.16	-2.56	361.5	251.6	19.9	1.0	LEOMINSTER, HER & WOR		6	14	227	0.06	1.10	2.00	B*D	9KM S OF LEOMINSTER
2003	03	06	01	27	48.1	49.11	-1.81	413.5	87.4	12.1	1.4	SE OF JERSEY, CHANNEL ISLES		5	19	351	0.02	4.50	3.90	C*D	20KM SE OF JERSEY
2003	03	08	10	59.00	2.52.98	-2.29	380.4	342.0	2.6	1.9	NEWCASTLE-U-LYME, STAFFS		7	31	140	0.06	0.80	1.50	A*C		
2003	03	08	18	21	48.12.1	53.84	-3.19	321.5	439.3	10.6	1.6	IRISH SEA		16	43	85	0.23	0.90	15.70	C*C	9KM W OF BLACKPOOL
2003	03	16	00	07	21.2	56.26	-3.74	292.0	708.7	3.1	0.9	BLACKFORD, TAYSIDE	2+	10	15	107	0.05	0.30	0.80	A*C	FELT BLACKFORD
2003	03	17	10	24	41.2	51.65	-3.06	326.6	195.4	5.0	1.1	CWMBRAN, GWENT		7	18	248	0.10	1.00	1.90	B*D	
2003	03	24	12	30	44.7	52.44	-1.95	403.5	282.5	15.5	1.6	BIRMINGHAM, W MIDLANDS		10	53	98	0.12	0.70	1.10	A*D	
2003	03	25	04	22	45.59.1	54.54	-3.66	292.9	517.5	3.0	0.7	OFF WHITEHAVEN, CUMBRIA		16	11	95	0.19	0.50	1.10	B*C	5KM OFFSHORE
2003	03	27	22	25	43.30.3	53.21	-1.07	462.1	368.8	0.7	0.9	WORKSOP, NOTTS	2+	7	31	185	0.21	2.60	1.60	C*D	C/F, FELT EDWINSTOWE
2003	03	28	20	47	47.14.7	54.55	-3.67	292.2	517.9	2.5	1.2	OFF WHITEHAVEN, CUMBRIA		15	12	95	0.08	0.30	0.50	A*C	5KM OFFSHORE
2003	03	29	22	25	45.13.6	54.76	-2.63	359.5	540.5	10.7	0.8	PENRITH, CUMBRIA		13	17	163	0.09	0.40	1.60	A*C	10KM NE OF PENRITH
2003	04	02	21	10	27.13.1	56.95	-5.65	177.9	790.0	5.2	0.8	LOCH MORAR, HIGHLAND		5	11	228	0.09	1.10	1.10	B*D	
2003	04	03	10	21	00.0	0.00	0.00	0.0	0.0	0.0	0.0	SONIC-HUMBERSIDE	2+					*			SONIC-FELT BRIDLINGTON
2003	04	07	05	28	09.7	60.39	-2.18	630.2	1174.7	8.6	3.0	NORTHERN NORTH SEA		19	59	147	0.43	2.60	3.70	C*D	
2003	04	09	21	58.50.5	61.36	-2.70	651.3	1284.1	9.4	2.4	NORTHERN NORTH SEA		16	16	176	0.18	1.00	2.50	B*D		
2003	04	12	10	46	37.5	54.50	-3.27	318.1	512.6	12.3	0.8	BUTTERMERE, CUMBRIA		15	6	119	0.13	0.60	1.00	A*B	5KM S OF BUTTERMERE
2003	04	14	12	43	54.83.3	51.70	-3.25	313.9	200.7	2.1	1.4	BARGOED, MID GLAMORGAN		5	31	255	0.04	1.20	1.40	B*D	C/F
2003	04	18	03	01	28.7	49.99	-5.03	183.0	14.7	25.6	1.2	OFF LIZARD PT, CORNWALL		7	12	323	0.01	0.50	0.30	A*D	13KM NE OF LIZARD POINT
2003	04	18	11	35.24.0	53.07	-4.45	235.7	355.2	3.9	0.4	CAERNARVON BAY, GWYNEDD		4	10	168	0.01	0.00	0.00	A*D		
2003	04	19	07	00	22.21.1	57.55	-5.66	181.1	856.9	12.5	0.6	LOCH TORRIDON, HIGHLAND		4	22	286	0.09	0.00	0.00	A*D	
2003	04	21	23	08	12.1	60.29	1.15	573.9	1160.4	15.5	2.0	NORTHERN NORTH SEA		5	30	348	0.27			D*D	
2003	04	22	23	22	23.58.9	53.83	-3.22	319.9	437.4	8.2	1.1	IRISH SEA		7	86	189	0.21	2.80	7.10	C*D	11KM WEST OF BLACKPOOL
2003	04	22	23	23	23.52.5	53.83	-4.45	243.3	741.7	6.7	1.7	NW OF KILLIN, CENTRAL		7	41	163	0.12	1.40	17.90	C*C	15KM NW OF KILLIN
2003	05	08	18	10	39.82.4	51.99	-3.62	289.0	234.2	7.3	2.3	LLANDOVERY, POWYS		24	26	68	0.17	0.50	2.20	B*C	15KM EAST OF LLANDOVERY

**TABLE 1: CATALOGUE OF EVENTS LISTED CHRONOLOGICALLY: 2003**

20030509	183653.5	57.41	-5.88	167.1	842.0	5.3	1.7	APPLECROSS, HIGHLAND	10	16	191	0.16	1.40	1.60	B*D	5KM OFFSHORE	
20030510	020307.3	51.48	-3.52	294.3	176.5	7.0	1.4	COWBRIDGE, SOUTH GLAM	12	50	143	0.06	0.50	1.90	A*C		
20030514	024122.7	57.21	-5.28	202.2	818.1	7.0	0.2	SHIEL BRIDGE, HIGHLAND	3	9	327	0.17	0.00	0.00	B*D	10KM SE OF SHIEL BRIDGE	
20030516	143941.0	62.10	1.76	596.0	1363.7	10.6	2.8	NORTHERN NORTH SEA	10	82	247	0.15	3.70	3.60	C*D		
20030518	034754.2	61.31	3.99	720.6	1284.4	11.2	2.7	NORTHERN NORTH SEA	14	50	168	0.36	2.80	2.60	C*C		
20030526	131323.7	57.53	-5.22	207.1	853.0	9.7	0.6	GLEN CARRON, HIGHLAND	5	6	322	0.02	0.70	0.30	A*D		
20030531	225120.1	50.33	-4.50	222.1	50.4	11.5	0.3	ENGLISH CHANNEL	7	48	352	0.02	1.90	6.40	C*D		
20030602	205205.5	52.98	-4.65	222.0	346.2	12.6	0.9	CAERNARVON BAY, GWYNEDD	9	15	240	0.10	2.30	0.70	B*D		
20030606	064740.5	53.99	-0.93	469.9	455.6	11.3	2.3	YORK, NORTH YORKSHIRE	9	42	122	0.08	0.40	1.00	A*C		
20030607	175257.6	50.38	-5.29	166.2	58.7	11.9	1.0	OFFSHORE NEWQUAY, CORNWALL	7	22	294	0.30	2.70	3.10	C*D	18KM WEST OF NEWQUAY	
20030607	211403.8	52.00	-3.21	316.6	234.1	23.0	1.1	TALGARTH, POWYS	6	10	247	0.02	0.40	0.30	A*D		
20030615	000022.7	53.55	-2.36	376.2	405.6	8.0	1.6	BOLTON, GTR MANCHESTER	14	64	149	0.22	1.20	3.30	B*D		
20030615	124144.6	59.45	2.23	639.6	1069.6	6.8	2.1	NORTHERN NORTH SEA	11	5	305	0.36	28.90	35.30	D*D		
20030616	023835.8	52.71	-4.15	254.6	314.3	11.7	2.3	CARDIGAN BAY	16	8	123	0.23	1.80	1.00	B*B		
20030616	160956.7	54.05	-0.52	496.9	462.9	11.8	2.0	DRIFFIELD, HUMBERSIDE	11	33	187	0.21	1.40	2.80	B*D	5KM NW OF DRIFFIELD	
20030616	231834.1	54.99	-1.57	427.6	566.8	8.9	2.3	NEWCASTLE, TYNE & WEAR	14	29	213	0.21	1.40	6.50	C*D		
20030618	142143.5	62.05	1.92	604.7	1358.8	9.0	2.5	NORTHERN NORTH SEA	7	32	353	0.07			D*D		
20030620	064419.6	56.17	-4.43	249.0	700.6	5.2	3.2	ABERFOYLE, CENTRAL	3+	27	6	96	0.22	0.70	0.90	B*B	FELT ABERFOYLE...
20030620	065324.6	56.18	-4.44	248.6	701.4	5.4	2.8	ABERFOYLE, CENTRAL	3+	19	6	107	0.19	1.00	1.30	B*B	FELT ABERFOYLE...
20030620	090327.4	56.17	-4.43	249.3	699.7	4.3	2.5	ABERFOYLE, CENTRAL	3+	18	6	95	0.18	0.70	1.00	B*B	FELT ABERFOYLE...
20030623	100507.6	56.16	-4.43	248.8	699.3	3.2	1.3	ABERFOYLE, CENTRAL	14	7	96	0.12	0.50	0.90	A*B		
20030624	005951.5	54.44	-2.74	351.8	504.7	13.3	1.1	KENDAL, CUMBRIA	8	79	175	0.11	2.70	1.50	C*D		
20030624	022645.2	54.45	-2.81	347.6	506.1	4.4	0.9	KENDAL, CUMBRIA	11	41	171	0.30	4.00	8.10	C*C		
20030624	032314.7	57.02	-5.55	184.3	797.6	6.1	0.4	KNOYDART, HIGHLAND	6	20	215	0.17	3.80	3.10	C*D		
20030625	115354.8	56.16	-4.43	249.2	699.5	2.7	1.4	ABERFOYLE, CENTRAL	2+	12	6	96	0.12	0.60	1.10	A*B	FELT ABERFOYLE
20030626	095713.1	56.17	-4.44	248.5	700.0	4.4	1.5	ABERFOYLE, CENTRAL	14	7	106	0.15	0.80	0.90	A*B		
20030627	020932.2	56.17	-4.44	248.8	700.1	4.8	2.8	ABERFOYLE, CENTRAL	3+	19	6	96	0.22	0.80	1.00	B*B	FELT ABERFOYLE...
20030627	021123.1	56.17	-4.45	247.8	700.4	3.1	1.3	ABERFOYLE, CENTRAL	2+	14	7	115	0.11	0.60	0.80	A*B	FELT ABERFOYLE
20030627	031257.1	56.16	-4.43	249.4	699.5	3.1	1.3	ABERFOYLE, CENTRAL	6	6	164	0.08	1.70	1.80	B*C		
20030629	231217.7	52.98	-1.93	405.0	343.1	12.7	0.5	CHEADLE, STAFFORDSHIRE	6	7	241	0.03	0.60	0.30	A*D		
20030630	150842.2	60.39	-0.62	476.0	1167.8	9.4	0.3	OFF SHETLAND ISLES	6	31	274	0.10	3.20	23.70	C*D	30KM EAST OF YELL	
20030703	072555.9	57.07	-5.71	175.3	803.7	5.7	1.3	KNOYDART, HIGHLAND	3	18	162	0.02	0.00	0.00	A*D		
20030708	070205.1	52.67	-3.85	275.1	309.9	8.9	1.0	MACHYNLLETH, POWYS	12	13	126	0.10	0.70	1.00	A*B	8KM N OF MACHYNLLETH	
20030709	010918.5	57.10	-5.73	173.9	807.0	2.5	0.0	KNOYDART, HIGHLAND	5	21	174	0.08	0.20	0.30	A*D		
20030709	022846.8	50.53	-5.42	157.7	75.5	11.7	0.4	W OF TREVOSE HEAD, CORNWALL	12	40	216	0.21	1.70	1.80	B*D	30KM W OF TREVOSE HEAD	
20030712	083556.7	56.25	-3.74	292.0	707.5	3.9	0.7	BLACKFORD, TAYSIDE	9	15	105	0.09	0.40	1.50	A*C		
20030712	140949.7	52.12	-3.57	292.7	248.0	11.2	0.8	LLANGAMMARCH WELLS, POWYS	10	21	147	0.09	0.60	1.20	A*C		
20030712	201141.2	53.83	1.24	613.3	441.7	3.3	2.1	SOUTHERN NORTH SEA	10	5	282	0.37	6.60	5.60	D*D		
20030714	062237.6	56.15	-5.20	201.2	699.6	14.5	1.2	FURNACE, STRATHCLYDE	7	44	140	0.04	0.90	1.70	A*C		
20030719	154211.9	58.26	-5.10	218.3	934.3	4.3	1.2	KYLESTROME, HIGHLAND	9	66	230	0.16	1.40	4.30	B*D		
20030723	232032.1	59.90	-1.72	415.7	1112.3	21.2	1.2	OFF SHETLAND ISLES	8	30	160	0.06	0.90	2.60	B*C	24KM W OF SUMBURGH HEAD	
20030726	035209.0	52.29	-3.69	284.7	266.8	20.2	1.0	RHAYADER, POWYS	8	37	187	0.06	0.90	2.80	B*D		
20030802	004504.1	53.98	-2.68	355.6	454.0	7.7	1.5	LANCASTER, LANCS	16	49	73	0.17	0.70	15.10	C*C	10KM SE OF LANCASTER	
20030803	072230.5	53.23	-3.71	285.7	371.6	13.6	0.2	CONWY, GWYNEDD	8	13	325	0.06	1.10	0.60	B*D	8KM SE OF CONWY	
20030806	234719.8	57.13	-5.42	192.8	809.3	14.1	0.0	SHIEL BRIDGE, HIGHLAND	5	9	226	0.08	2.90	3.40	C*D	10KM S OF SHIEL BRIDGE	
20030813	001549.0	52.97	-3.84	276.3	342.7	14.8	1.0	FFESTINIOG, GWYNEDD	11	29	107	0.08	0.50	3.10	B*B	6KM E OF FFESTINIOG	
20030816	165944.4	50.16	-5.34	161.4	34.4	6.0	0.8	CAMBORNE, CORNWALL	9	9	162	0.05	0.60	1.60	A*C	6KM SW OF CAMBORNE	
20030819	194618.6	53.48	-1.01	465.5	398.8	13.2	3.1	DONCASTER, S YORKSHIRE	3+	12	43	80	0.07	0.30	2.50	B*C	FELT RETFORD
20030823	033520.6	56.17	-4.43	248.8	699.7	2.8	1.5	ABERFOYLE, CENTRAL	3+	16	7	96	0.10	0.40	0.80	A*B	FELT ABERFOYLE
20030823	121828.1	52.97	-4.52	231.1	344.4	17.9	0.6	CAERNARVON BAY, GWYNEDD	7	6	223	0.07	1.40	0.90	B*D		
20030827	200403.9	57.55	-5.09	214.9	855.6	8.8	1.0	KINLOCHEWE, HIGHLAND	5	41	214	0.16	0.60	6.70	C*D	12KM SE OF KINLOCHEWE	
20030902	193203.7	51.18	-3.71	280.1	143.8	6.9	1.2	LYNTON, DEVON	9	14	155	0.11	1.70	1.60	B*C	5KM SE OF LYNTON	
20030903	212907.0	56.26	-3.73	292.7	708.4	7.4	2.2	BLACKFORD, TAYSIDE	3+	5	14	195	0.02	1.20	1.20	B*D	FELT BLACKFORD
20030914	130233.7	49.78	-5.79	126.8	-6.5	3.2	1.0	OFF LAND'S END, CORNWALL	8	45	324	0.04	1.00	15.40	C*D	30KM SW OF LAND'S END	
20030915	080048.5	56.18	-4.45	248.0	701.0	4.6	2.2	ABERFOYLE, CENTRAL	3+	13	7	208	0.09	0.60	0.50	A*D	FELT ABERFOYLE

**TABLE 1: CATALOGUE OF EVENTS LISTED CHRONOLOGICALLY: 2003**

20030916	001126.3	51.25	-4.90	197.8	154.0	7.4	0.8	BRISTOL CHANNEL	13	40	263	0.39	4.90	12.40	C*D	OFF LUNDY ISLAND	
20030916	124601.7	56.00	-4.04	272.8	680.2	0.0	1.8	RISKEND QUARRY, KILSYTH	2+	6	4	91	0.05	0.40	0.60	A*B	FELT KILSYTH
20030919	090456.9	51.85	-2.49	366.0	217.1	8.8	1.9	DRYBROOK, GLOUCS		13	21	83	0.08	0.40	4.30	B*C	
20030922	152012.2	52.81	-2.22	385.1	323.4	9.0	1.5	STAFFORD, STAFFORDSHIRE		11	35	97	0.14	0.80	3.50	B*C	5KM W OF STAFFORD
20030924	131829.9	54.56	-2.63	359.2	518.7	8.2	1.8	PENRITH, CUMBRIA		18	31	154	0.18	0.80	25.10	C*C	8KM SE OF PENRITH
20030926	224137.4	56.24	-3.75	291.5	707.1	3.8	1.1	BLACKFORD, TAYSIDE		10	15	105	0.09	0.50	1.10	A*C	
20030926	230856.9	56.24	-3.75	291.6	707.1	3.9	0.9	BLACKFORD, TAYSIDE		8	15	105	0.07	0.40	1.20	A*C	
20030927	010803.5	56.24	-3.75	291.4	707.1	3.8	0.9	BLACKFORD, TAYSIDE		10	15	105	0.10	0.40	1.10	A*C	
20030927	045726.5	53.36	2.65	709.0	395.0	7.4	2.9	SOUTHERN NORTH SEA		12	0	316	0.40	8.10	6.50	D*D	
20031019	011323.0	61.67	3.14	671.7	1320.7	18.7	3.0	NORWEGIAN SEA		24	1	185	0.42	2.30	3.60	C*D	
20031021	065813.4	57.06	-5.76	172.2	802.8	7.2	0.9	MALLAIG, HIGHLAND		9	16	163	0.10	2.60	6.20	C*C	6KM NE OF MALLAIG
20031023	125000.0	0.00	0.00		0.0	SONIC-EAST LOTHIAN			3+						*	SONIC-FELT EAST LOTHIAN	
20031030	000518.5	53.21	-1.49	434.1	367.8	13.1	1.1	CHESTERFIELD, DERBYSHIRE		8	6	99	0.09	0.70	0.90	A*B	
20031031	190451.1	56.25	-3.75	291.4	707.9	5.3	1.3	BLACKFORD, TAYSIDE		13	15	107	0.10	0.40	0.80	A*C	
20031101	092109.8	57.21	-5.93	162.6	819.8	7.0	0.7	SKYE, HIGHLAND		7	22	133	0.05	0.30	1.90	A*C	
20031106	195737.8	55.02	-1.53	429.8	569.1	0.0	1.4	EXPL-WHITLEY BAY	2+	15	31	246	0.18	2.20	1.60	B*D	FELT WHITLEY BAY
20031111	193837.7	57.72	-5.06	217.7	874.4	7.1	2.1	LOCH FANNICH, HIGHLAND	2+	17	46	74	0.25	0.50	2.40	B*C	FELT ACHANALT
20031113	022203.9	56.98	-5.12	210.4	792.5	7.4	0.7	LOCH ARKAIG, HIGHLAND		5	31	296	0.11	10.60	20.70	D*D	
20031114	203050.6	55.24	-3.48	305.8	595.4	3.2	1.0	JOHNSTONEBRIDGE, D & G		12	13	183	0.13	0.70	1.40	A*D	
20031117	105954.4	58.58	-4.26	268.4	968.0	4.6	1.9	OFF BETTYHILL, HIGHLAND		15	29	142	0.15	0.60	1.50	B*C	
20031121	205741.4	53.23	-1.10	460.1	371.1	4.2	1.7	WORKSOP, NOTTS		9	29	87	0.24	1.40	4.40	B*C	C/F, 6KM SSE OF WORKSOP
20031122	031209.9	52.15	-2.47	368.0	250.7	19.4	1.0	BROMYARD, HER & WOR		7	14	258	0.05	0.70	1.00	A*D	
20031122	190858.5	60.31	2.28	636.4	1166.4	8.4	2.7	NORTHERN NORTH SEA		10	87	322	0.25	39.10	48.10	D*D	
20031122	212248.7	51.40	-2.65	354.4	166.5	14.7	1.8	BRISTOL, AVON		13	11	85	0.16	0.80	1.50	B*A	
20031126	143710.5	51.84	-2.54	363.0	215.9	14.0	1.0	CINDERFORD, GLOUCS		8	22	221	0.06	0.60	0.60	A*D	
20031127	212718.5	57.15	-5.56	184.5	811.8	2.7	1.1	LOCH HOURN, HIGHLAND		7	11	162	0.16	1.20	9.30	C*C	
20031202	032329.9	53.47	-1.19	453.9	397.8	0.2	1.1	MALTBY, S YORKSHIRE	2+	5	33	282	0.08	6.40	6.20	D*D	C/F, FELT MALTBY
20031202	231807.8	53.47	-1.20	453.0	397.5	0.2	1.2	MALTBY, S YORKSHIRE		7	32	171	0.15	1.50	2.00	B*C	C/F
20031205	034954.8	53.46	-1.24	450.7	396.7	1.0	1.5	MALTBY, S YORKSHIRE	2+	8	30	167	0.16	1.00	1.50	B*C	C/F, FELT MALTBY
20031206	044516.0	53.45	-1.23	451.3	395.3	1.0	1.2	MALTBY, S YORKSHIRE		5	30	279	0.06	5.80	5.70	D*D	C/F
20031207	001534.5	53.51	-1.21	452.4	401.3	1.0	1.1	MALTBY, S YORKSHIRE		5	35	288	0.13	15.90	20.10	D*D	C/F
20031207	115647.6	53.46	-1.19	453.9	396.6	1.0	1.1	MALTBY, S YORKSHIRE		5	32	280	0.05	5.20	5.10	D*D	C/F
20031207	195643.5	53.47	-1.19	453.5	397.8	1.0	1.0	MALTBY, S YORKSHIRE		5	33	282	0.13	16.70	16.30	D*D	C/F
20031208	032639.3	53.45	-1.22	451.6	394.9	1.0	1.1	MALTBY, S YORKSHIRE		5	30	278	0.08	7.90	7.80	D*D	C/F
20031208	054502.7	53.45	-1.21	452.7	394.9	1.0	1.3	MALTBY, S YORKSHIRE		5	30	278	0.16	11.80	11.70	D*D	C/F
20031208	183036.8	53.42	-1.32	450.4	394.3	1.0	1.4	MALTBY, S YORKSHIRE	2+	6	38	111	0.24	1.90	3.60	B*C	C/F, FELT MALTBY
20031212	023940.5	51.69	-3.04	328.5	199.8	15.3	1.1	PONTYPOOL, GWENT		8	17	202	0.06	0.90	0.70	A*D	
20031212	141111.1	55.24	-3.48	305.8	594.9	3.3	2.0	JOHNSTONEBRIDGE, D & G		18	13	91	0.20	0.50	2.20	B*C	
20031214	194200.1	53.23	-1.09	460.9	371.3	1.3	1.8	WORKSOP, NOTTS		7	29	156	0.10	0.80	1.30	A*C	C/F, 7KM S OF WORKSOP
20031215	042823.9	61.68	2.58	642.2	1319.5	22.0	3.9	NORTHERN NORTH SEA		28	31	180	0.72	3.00	5.20	D*D	
20031218	074935.5	56.18	-4.23	261.5	700.7	4.3	1.0	THORNHILL, CENTRAL		11	7	125	0.08	0.40	0.60	A*B	5KM W OF THORNHILL
20031218	124125.6	56.18	-4.23	261.5	700.8	4.2	1.3	THORNHILL, CENTRAL		12	7	126	0.07	0.40	0.60	A*B	5KM W OF THORNHILL
20031225	221336.6	51.20	-3.73	279.5	146.3	2.5	1.7	LYNTON, DEVON		13	16	106	0.15	0.80	1.10	B*C	7KM SE OF LYNTON



**TABLE 2: PHASE DATA 2003**

January 5 2003 Time: 20:18 38.2 UTC										Magnitude: 1.4 ML	YRE	SZ	91	EP	1	C	12:02	49.43				
Lat: 53.549N Lon: -2.245W										Depth: 5.0 km	WCB	SZ	96	EP	2		12:02	50.42				
Grid Ref: 383.79 kmE 405.93 kmN										RMS: 0.16 secs	WCB	SN	96	ES	3		12:03	01.03				
Locality: MANCHESTER AREA										Quality: C	WCB	SN	96	AMPL			12:03	01.56				
Comment: FELT MANCHESTER										Intensity: 2+	WCB	SE	96	AMPL			12:03	01.97				
											YRC	SZ	96	EP	2		12:02	50.30				
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	January 18 2003 Time: 02:59 40.6 UTC										Magnitude: 1.2 ML		
KBI	SZ	58	EP	3		20:18	48.63			Lat: 52.982N Lon: -4.153W	WPM	SZ	35	ES	2		02:59	51.75				
KWE	SZ	65	EP	2		20:18	49.23			Grid Ref: 255.51 kmE 344.96 kmN	WFB	SZ	34	ES	2		02:59	51.44				
CWF	SZ	110	EP	2		20:18	56.23			Locality: PORTHMADOG, GWYNEDD	WFB	SZ	34	IP	1	D	02:59	46.92				
CWF	SN	110	AMPL			20:19	11.89	11	0.15	Comment: FELT HARLECH	YLL	SZ	18	IP		C	02:59	44.82				
CWF	SE	110	AMPL			20:19	12.75	9	0.18		YLL	SZ	18	ES	2		02:59	47.56				
KSY	SZ	128	EP	3		20:18	59.94				HSA	SZ		EP	2		03:00	03.19				
SSP	SZ	139	EP	2		20:19	01.01				MCH	SE		AMPL			03:00	20.56				
SSP	SN	139	AMPL			20:19	19.38	5	0.20		HAE	SZ		EP	2		03:00	05.24				
SSP	SE	139	ES	2		20:19	17.26				MCH	SN		AMPL			03:00	20.17				
SSP	SE	139	AMPL			20:19	19.88	7	0.24		MCH	SE		ES	2		03:00	18.56				
SBD	SZ	99	EP	2		20:18	54.43				MCH	SZ		EP	2		03:00	02.64				
MCH	SN	180	ES	2		20:19	27.30				HPE	SZ		EP	3		03:00	01.00				
MCH	SE	180	AMPL			20:19	28.66	7	0.36		WCB	SE		51			02:59	56.00				
LHO	SZ	26	IP	C		20:18	43.09				YRE	SZ	18	IP		D	02:59	44.90				
January 6 2003 Time: 21:36 05.7 UTC										Magnitude: 2.7 ML	YRH	SZ	36	IP	1	C	02:59	47.26				
Lat: 53.631N Lon: 3.958W										Depth: 15.0 km	WPM	SZ	35	IP		C	02:59	47.21				
Grid Ref: 793.74 kmE 431.44 kmN										RMS: 0.29 secs	SSP	SE	94	AMPL			03:00	11.73				
Locality: SOUTHERN NORTH SEA										Quality: D	SSP	SN	94	AMPL			03:00	10.86				
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI		SSP	SN	94	ES	3		03:00	07.85				
AWI	SZ	190	EP	3		21:36	33.98				SSP	SZ	94	EP	1	D	02:59	56.54				
AWI	SZ	190	ES	3		21:36	54.99				SBD	SZ	61	EP	3		02:59	51.47				
KSY	SZ	312	EP	2		21:36	49.81				WCB	SN	51	AMPL			02:59	55.95				
CWF	SZ	366	EP	2		21:36	55.55				WCB	SE	51	ES	3		02:59	55.78				
KBI	SZ	367	EP	2		21:36	55.69				WCB	SZ	51	IP		D	02:59	49.47				
SWK	SZ	505	EP	3		21:37	11.86				WME	SZ	47	EP	1	C	02:59	48.89				
LHO	SZ	385	EP	2		21:36	58.55				YRC	SZ	41	EP	2		02:59	47.94				
AEU	SZ	214	EP	3		21:36	37.20				WLF	SZ	38	IP	1	D	02:59	47.43				
AEU	SN	214	ES	3		21:36	59.81															
AEU	SN	214	AMPL			21:37	04.02	48	0.28													
AEU	SE	214	AMPL			21:37	11.31	74	0.48													
January 12 2003 Time: 05:41 53.1 UTC										Magnitude: 2.4 ML	January 21 2003 Time: 01:40 55.8 UTC										Magnitude: 1.6 ML	
Lat: 56.242N Lon: -3.742W										Depth: 4.7 km	Lat: 51.671N Lon: -3.058W	STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	Depth: 9.4 km
Grid Ref: 292.07 kmE 706.85 kmN										RMS: 0.07 secs	Grid Ref: 326.87 kmE 197.48 kmN	MCH	SZ	37	IP	C		01:41	02.25		Quality: C	
Locality: BLACKFORD, TAYSIDE										Quality: B	HEX	SZ	85	EP	2		01:41	09.88				
Comment: FELT BLACKFORD										Intensity: 3+	HSA	SZ	76	EP	3		01:41	08.59				
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI		HAE	SZ	54	EP	2		01:41	05.08				
PCA	SZ	68	IP	C		05:42	04.78				HTR	SZ	48	EP	2		01:41	04.01				
EDI	SN	50	AMPL			05:42	08.21	51	0.10		HTR	SZ	48	ES	3		01:41	10.11				
EDI	SE	50	ES	2		05:42	08.04				MCH	SE	37	AMPL			01:41	07.52	123	0.26		
EDI	SZ	50	IP	D		05:42	01.83				MCH	SN	37	AMPL			01:41	07.43	52	0.18		
EAU	SZ	48	IP	C		05:42	01.58				MCH	SE	37	ES	1		01:41	07.22				
ELO	SZ	26	IP	C		05:41	57.96															
PCO	SZ	36	IP	C		05:41	59.72															
ELO	SZ	26	ES	3		05:42	01.31															
EBH	SZ	15	ES	3		05:41	58.07															
EBH	SZ	15	IP	C		05:41	56.04															
BTA	SZ	163	EP	2		05:42	20.63															
EAB	SZ	37	IP	C		05:41	59.93															
PMS	SZ	77	EP	1	C	05:42	05.83															
EDI	SE	50	AMPL			05:42	08.51	142	0.34													
BBO	SN	171	AMPL			05:42	42.47	33	0.38													
BBO	SE	171	AMPL			05:42	42.13	44	0.48													
BBO	SZ	171	EP	2		05:42	19.99															
BTA	SE	163	AMPL			05:42	41.06	84	0.53													
BTA	SN	163	AMPL			05:42	42.20	55	0.24													
BHH	SN	132	AMPL			05:42	33.80	204	0.29													
BHH	SE	132	AMPL			05:42	33.45	241	0.31													
BHH	SN	132	ES	2		05:42	30.50															
BHH	SZ	132	EP	2		05:42	15.36															
ESY	SZ	79	IP	D		05:42	06.47															
January 14 2003 Time: 05:01 59.2 UTC										Magnitude: 0.3 ML	January 23 2003 Time: 17:34 31.7 UTC										Magnitude: 1.5 ML	
Lat: 49.953N Lon: -4.990W										Depth: 14.9 km	Lat: 51.716N Lon: -3.336W	STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	Depth: 10.3 km
Grid Ref: 185.52 kmE 10.21 kmN										RMS: 0.04 secs	Grid Ref: 307.68 kmE 202.85 kmN	MCH	SZ	39	EP	2		17:34	38.72			
Locality: OFF LIZARD POINT										Quality: C	HEX	SZ	80	EP	3		17:34	48.46				
Comment: 15KM SE OF LIZARD PT											SSP	SZ	79	EP	2		17:34	45.20				
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI		HEX	SZ	79	EP	2		17:34	44.97				
CMA	SZ	17	EP	2		05:02	03.11				HAE	SZ	65	EP	3		17:34	43.12				
CGH	SZ	17	EP	2		05:02	03.04				HTR	SZ	41	IP	1	C	17:34	38.89				
CGW	SZ	23	EP	2		05:02	03.99				HSA	SZ	57									

**TABLE 2: PHASE DATA 2003**

STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	WCB	SE	47	ES	3	03:21	30.20			
PMS	SZ	76	EP	2		00:35	26.82			WCB	SN	47	AMPL		03:21	30.96	4	0.07	
ESY	SZ	80	EP	2		00:35	27.59			WME	SZ	49	EP	2	03:21	24.47			
EDR	SZ	106	EP	3		00:35	30.94			SBD	SZ	77	EP	3	03:21	28.80			
ESK	SZ	110	EP	3		00:35	33.05			SSP	SN	106	ES	2	03:21	46.16	6	0.16	
PCO	SZ	36	IP	1	C	00:35	20.60			SSP	SN	106	AMPL		03:21	47.63	3	0.24	
ESK	SN	110	ES	3		00:35	45.69			SSP	SE	106	AMPL		03:21	47.87			
ESK	SE	110	AMPL			00:35	48.09	38	0.32										
XAL	SZ	183	EP	3		00:35	44.31												
EDI	SN	51	AMPL			00:35	29.29	18	0.08										
ESK	SN	110	AMPL			00:35	48.16	30	0.18										
PCA	SZ	69	EP	1	C	00:35	25.85												
EDI	SE	51	ES	3		00:35	29.19												
ELO	SZ	25	IP		C	00:35	18.80												
EAB	SZ	37	IP		C	00:35	20.77												
EAB	SZ	37	ES	3		00:35	25.31												
ELO	SZ	25	ES	2		00:35	22.12												
EAU	SZ	49	EP	2		00:35	22.58												
EDI	SZ	51	EP	2		00:35	22.94												
EDI	SE	51	AMPL			00:35	29.48	29	0.23										
<b>February 6 2003</b>		<b>Time: 03:51 35.8 UTC</b>					<b>Magnitude: 1.3 ML</b>					<b>February 17 2003</b>					<b>Magnitude: 1.9 ML</b>		
Lat: 56.011N		Lon: -5.320W					Depth: 6.7 km					Lat: 56.492N					Depth: 8.1 km		
Grid Ref: 193.07 kmE		684.73 kmN					RMS: 0.07 secs					Grid Ref: 151.84 kmE					RMS: 0.14 secs		
Locality: LOCH FYNE,STRATHCLYDE		Quality: D					Locality: MULL,STRATHCLYDE					Locality: MULL,STRATHCLYDE					Quality: C		
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
PMS	SZ	40	IP		C	03:51	42.86			KPL	SE	97	AMPL		23:47	47.21	37	0.18	
PMS	SZ	40	AMPL			03:51	49.28	17	0.21	EDR	SZ	219	EP	3	23:47	47.66			
EAB	SZ	64	EP	2		03:51	46.52			REB	SZ	187	EP	2	23:47	43.00			
PCA	SZ	75	EP		C	03:51	48.36			RRH	SZ	164	EP		23:47	40.97			
PCA	SZ	75	AMPL			03:52	00.14	7	0.12	RRR	SE	153	AMPL		23:48	00.04	24	0.27	
PCO	SZ	76	EP	1	C	03:51	48.54			RRR	SN	153	AMPL		23:47	59.64	26	0.16	
PCO	SZ	76	ES	3		03:51	57.79			RRR	SZ	153	IP	1	D	23:47	39.03		
PCO	SZ	76	AMPL			03:51	58.07	16	0.27	ELO	SZ	143	EP	3		23:47	37.56		
KAR	SZ	106	EP	3		03:51	54.19			PCA	SZ	141	EP	3		23:47	36.87		
ELO	SZ	112	EP	3		03:51	54.29			EAB	SZ	110	ES	3		23:47	45.95		
KPL	SZ	149	EP	3		03:51	59.68			PCO	SZ	132	EP	2		23:47	36.15		
KPL	SE	149	ES	3		03:52	16.62			KAC	SZ	121	EP	2		23:47	34.29		
KPL	SN	149	AMPL			03:52	20.75	7	0.19	EAB	SZ	110	EP			23:47	32.82		
KPL	SE	149	AMPL			03:52	21.63	8	0.12	PCO	SZ	108	ES	3		23:47	45.41		
<b>February 7 2003</b>		<b>Time: 17:40 40.2 UTC</b>					<b>Magnitude: 0.6 ML</b>					<b>February 19 2003</b>					<b>Magnitude: 1.0 ML</b>		
Lat: 50.209N		Lon: -4.973W					Depth: 7.2 km					Lat: 53.157N					Depth: 0.8 km		
Grid Ref: 187.92 kmE		38.67 kmN					RMS: 0.03 secs					Grid Ref: 458.70 kmE					RMS: 0.05 secs		
Locality: FALMOUTH,CORNWALL		Quality: C					Locality: MANSFIELD,NOTTS					Locality: MANSFIELD,NOTTS					Quality: B		
Comment: 7KM NE OF FALMOUTH																	Intensity: 2+		
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
CR2	SZ	15	IP		C	17:40	43.07			KBI	SZ	29	EP			22:35	03.44		
CR2	SN	15	ES	1		17:40	45.23			KEY	SZ	31	EP	3		22:35	03.99		
CR2	SN	15	AMPL			17:40	45.38	23	0.08	KSY	SZ	42	EP	3		22:35	05.56		
CR2	SE	15	AMPL			17:40	45.44	18	0.06	CWF	SZ	48	EP	1	D	22:35	06.65		
CGH	SZ	22	EP	1	C	17:40	44.25			CWF	SE	48	ES	3		22:35	13.15		
CCO	SZ	18	IP		C	17:40	43.56			CWF	SE	48	AMPL			22:35	13.47	17	0.37
CCO	SZ	18	ES	3		17:40	46.24			CWF	SN	48	AMPL			22:35	14.52	9	0.14
CCA	SZ	18	IP		C	17:40	43.60			KWE	SZ	51	EP	3		22:35	07.14		
CST	SZ	14	IP		C	17:40	42.88			LHO	SZ	65	EP	3		22:35	09.38		
CST	SZ	14	ES	3		17:40	44.96												
CBW	SZ	12	IP		C	17:40	42.68												
CBW	SZ	12	ES	3		17:40	44.53												
CGW	SZ	22	IP		C	17:40	44.16												
CMA	SZ	18	EP	1		17:40	43.53												
CGW	SZ	20	IP		C	18:15	33.29												
CCA	SZ	21	EP	2		18:15	33.33												
CGW	SZ	24	EP	2		18:15	33.89												
CGH	SZ	24	EP	2		18:15	33.94												
<b>February 8 2003</b>		<b>Time: 03:21 15.8 UTC</b>					<b>Magnitude: 0.8 ML</b>					<b>February 21 2003</b>					<b>Magnitude: 2.0 ML</b>		
Lat: 52.965N		Lon: -4.391W					Depth: 22.9 km					Lat: 52.962N					Depth: 3.9 km		
Grid Ref: 239.44 kmE		343.50 kmN					RMS: 0.04 secs					Grid Ref: 380.53 kmE					RMS: 0.08 secs		
Locality: PWLLHELI,GWYNEDD		Quality: B					Locality: NEWCASTLE-U-LYME,STAFFS					Locality: NEWCASTLE-U-LYME,STAFFS					Quality: B		
Comment: 8KM N OF PWLLHELI							STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI			
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	KWE	SZ	31	IP	C	11:26	12.23			
YRE	SZ	3	IP		D	03:21	19.51			KWE	SZ	31	ES	3	11:26	15.83			
YRE	SZ	3	ES	3		03:21	22.16			KBI	SZ	61	IP	C	11:26	17.08			
YRH	SZ	22	IP		C	03:21	20.91			SBD	SZ	66	EP	1	C	11:26	17.89		
YLL	SZ	25	IP		C	03:21	21.24			CWF	SZ	71	IP	1	C	11:26	18.79		
YRC	SZ	34	EP	2		03:21	22.43			CWF	SN	71	ES	3		11:26	27.11		
WLF	SZ	36	EP	2		03:21	22.63			CWF	SN	71	AMPL			11:26	31.50	29	0.22
WPM	SZ	46	EP	2		03:21	24.14												

**TABLE 2: PHASE DATA 2003**

**TABLE 2: PHASE DATA 2003**

WCB	SN	157	AMPL	02:02	29.41	14	0.27	March 6 2003	Time: 01:27 48.1 UTC	Magnitude: 1.4 ML
WCB	SE	157	AMPL	02:02	29.96	15	0.22	Lat: 49.113N	Lon: -1.814W	Depth: 12.1 km
KWE	SZ	31	IP	C	02:01	49.66		Grid Ref: 413.55 kmE	-87.42 kmN	RMS: 0.02 secs
KBI	SZ	60	IP	C	02:01	54.49		Locality: SE OF JERSEY, CHANNEL ISLES		Quality: D
<b>March 1 2003</b>				Time: 17:26 43.0 UTC	Magnitude: 1.8 ML					
Lat: 52.330N Lon: -3.828W				Depth: 14.4 km						
Grid Ref: 275.46 kmE 271.79 kmN				RMS: 0.21 secs						
Locality: DEVIL'S BRIDGE, DYFED				Quality: C						
STAT	CO	DIST	PHAS	WT P	HrMn	SECS	AMPL PERI	STAT	CO DIST PHAS WT P HrMn SECS	AMPL PERI
SSP	SZ	50	IP	C	17:26	51.87		JRS	SN 22 AMPL	01:27 56.02
SSP	SN	50	ES	1	17:26	57.77		JRS	SE 22 ES 2	01:27 55.77
SSP	SN	50	AMPL		17:26	58.19	155 0.10	JRS	SE 22 AMPL	01:27 56.12
SSP	SE	50	AMPL		17:26	58.77	84 0.14	JRS	SE 22 IP	01:27 52.49
HAE	SZ	94	EP	2	17:26	58.89				
HGH	SZ	104	EP	1	C	17:27	00.55			
HTR	SZ	47	EP	1	D	17:26	51.52			
MCH	SZ	68	IP		D	17:26	54.72			
MCH	SN	68	ES	2		17:27	02.52			
MCH	SN	68	AMPL			17:27	03.00			
MCH	SE	68	AMPL			17:27	03.37			
LHO	SZ	190	EP	3		17:27	12.48			
HSA	SZ	68	IP	1	C	17:26	54.81			
HPE	SZ	78	IP		C	17:26	55.86			
HEX	SZ	141	IP		D	17:27	06.62			
WPM	SZ	104	EP	1	D	17:27	00.17			
YRE	SZ	83	EP	2		17:26	57.06			
YRH	SZ	78	EP	2		17:26	56.25			
<b>March 3 2003</b>				Time: 08:57 41.0 UTC	Magnitude: 2.1 ML					
Lat: 56.459N Lon: -6.125W				Depth: 7.9 km						
Grid Ref: 145.90 kmE 737.27 kmN				RMS: 0.15 secs						
Locality: ISLE OF MULL, S'CLYDE				Quality: C						
Comment: FELT ISLE OF MULL				Intensity: 3+						
STAT	CO	DIST	PHAS	WT P	HrMn	SECS	AMPL PERI	STAT	CO DIST PHAS WT P HrMn SECS	AMPL PERI
KAR	SZ	54	IP	D	08:57	50.12		KBI	SZ 60 EP 1 C	10:59 10.65
KAR	SZ	54	ES	3	08:57	56.33		HGH	SZ 153 EP 2	10:59 25.65
KPL	SZ	102	IP		D	08:57	57.69	MCH	SE 119 AMPL	10:59 37.17
KPL	SE	102	ES	2		08:58	09.67	MCH	SN 119 AMPL	10:59 37.11
KPL	SE	102	AMPL			08:58	11.81	MCH	SN 119 ES 2	10:59 33.67
KPL	SN	102	AMPL			08:58	13.24	MCH	SZ 119 EP 3	10:59 20.22
KAC	SZ	126	IP	D	08:58	01.60		HAE	SZ 106 EP 3	10:59 18.13
PCO	SZ	136	EP	2		08:58	02.81	SSP	SN 83 ES 3	10:59 24.32
PCA	SZ	144	EP	2		08:58	03.61	SSP	SE 83 AMPL	10:59 26.16
RRR	SZ	157	IP	C		08:58	06.02	SSP	SN 83 AMPL	10:59 25.31
RRR	SN	157	ES	2		08:58	24.04	SSP	SZ 83 EP 2	10:59 14.39
RRR	SN	157	AMPL			08:58	26.54	LHO	SZ 70 EP 2	10:59 12.27
RRR	SE	157	AMPL			08:58	28.06	SBD	SZ 66 EP 2	10:59 11.54
REB	SZ	192	EP	2		08:58	09.83	KWE	SN 31 ES 3	10:59 09.53
GAL	SN	198	AMPL			08:58	38.05	KWE	SZ 31 IP C	10:59 05.84
GAL	SE	198	AMPL			08:58	39.16			
GCL	SZ	154	EP	2		08:58	05.40			
GAL	SZ	198	EP	2		08:58	11.36			
<b>March 5 2003</b>				Time: 00:12 52.7 UTC	Magnitude: 1.7 ML					
Lat: 52.963N Lon: -2.276W				Depth: 4.7 km						
Grid Ref: 381.45 kmE 340.70 kmN				RMS: 0.08 secs						
Locality: NEWCASTLE-U-LYME, STAFFS				Quality: C						
STAT	CO	DIST	PHAS	WT P	HrMn	SECS	AMPL PERI	STAT	CO DIST PHAS WT P HrMn SECS	AMPL PERI
KWE	SZ	30	IP	C	00:12	58.17		GCD	SZ 123 EP 3	21:48 32.60
KWE	SZ	30	ES	3	00:13	01.80		XDE	SZ 76 EP 2	21:48 24.99
KBI	SZ	60	IP		D	00:13	03.01	BBO	SZ 100 EP 2	21:48 28.88
LHO	SZ	71	EP	2		00:13	04.61	CSF	SZ 67 EP 2	21:48 23.28
SSP	SZ	83	EP	2		00:13	06.74	CSF	SZ 67 ES 3	21:48 31.66
SSP	SE	83	ES	2		00:13	16.54	LMI	SZ 43 IP D	21:48 19.50
SSP	SN	83	AMPL			00:13	17.63	GIM	SN 97 ES 3	21:48 40.71
SSP	SE	83	AMPL			00:13	18.48	GIM	SN 97 AMPL	21:48 44.18
HAE	SZ	105	EP	2		00:13	10.76	BBO	SN 100 AMPL	21:48 43.11
WPM	SZ	114	EP	2		00:13	12.17	WCB	SN 43 AMPL	21:48 28.37
WPM	SZ	114	ES	3		00:13	25.48	WCB	SZ 104 EP 2	21:48 23.28
MCH	SZ	118	EP	2		00:13	12.39	WCB	SN 104 AMPL	21:48 44.88
MCH	SN	118	ES	2		00:13	26.12	WCB	SE 104 ES 2	21:48 40.29
MCH	SE	118	AMPL			00:13	29.50	WCB	SE 104 AMPL	21:48 42.71
MCH	SN	118	AMPL			00:13	29.82	WME	SZ 89 EP 2	21:48 25.05
WFB	SZ	123	EP	2		00:13	12.77	WLF	SZ 101 EP 3	21:48 28.90
YLL	SZ	128	EP	3		00:13	13.76	WPM	SZ 80 EP 2	21:48 32.96
YLL	SZ	128	ES	3		00:13	28.53	WIM	SZ 103 EP 3	21:48 29.24
YRE	SZ	144	EP	2		00:13	16.07	HPK	SN 104 AMPL	21:48 43.67
YRE	SZ	144	ES	3		00:13	32.07	HPK	SE 104 ES 2	21:48 41.84
YRH	SZ	159	EP	2		00:13	18.21	HPK	SE 104 AMPL	21:48 44.09
WCB	SN	159	ES	3		00:13	36.38	LHO	SZ 94 EP 2	21:48 27.35
<b>March 16 2003</b>				Time: 00:07 21.2 UTC	Magnitude: 0.9 ML					
Lat: 56.259N Lon: -3.743W				Depth: 3.1 km						
Grid Ref: 292.01 kmE 708.71 kmN				RMS: 0.05 secs						
Locality: BLACKFORD, TAYSIDE				Quality: B						
Comment: FELT BLACKFORD				Intensity: 2+						
STAT	CO	DIST	PHAS	WT P	HrMn	SECS	AMPL PERI	STAT	CO DIST PHAS WT P HrMn SECS	AMPL PERI
EHB	SZ	15	IP	C	00:07	24.19		EHB	SZ 15 EP 3	00:07 32.61
EHB	SZ	15	ES	3	00:07	26.29		EAB	SZ 38 IP C	00:07 30.09
ELO	SZ	24	EP			00:07	25.70	EAB	SZ 38 ES 3	00:07 30.09
PCO	SZ	37	EP	2		00:07	28.06	ELO	SZ 50 EP 2	00:07 30.09
EAB	SZ	38	IP			00:07	28.04	EDU	SZ 50 EP 2	00:07 30.09
EAB	SZ	38	ES	3		00:07	32.61	EDU	SZ 51 EP 2	00:07 30.09
EAU	SZ	50	EP	2		00:07	30.09	EDI	SZ 51 ES 2	00:07 30.09
EDI	SZ	51	EP	2		00:07	30.22	EDI	SZ 51 AMPL	00:07 30.22
EDI	SN	51	ES	2		00:07	36.72	EDI	SN 51 AMPL	00:07 36.72
EDI	SE	51	AMPL			00:07	36.99	EDI	SE 51 AMPL	00:07 36.99
PCB	SZ	70	IP	D		00:07	33.37	PCB	SZ 70 IP D	00:07 33.37
EDR	SZ	104	EP	2		00:07	39.57	EDR	SZ 104 EP 2	00:07 39.57
<b>March 17 2003</b>				Time: 10:24 14.2 UTC	Magnitude: 1.1 ML					

**TABLE 2: PHASE DATA 2003**

Lat: 51.653N Lon: -3.060W Grid Ref: 326.64 kmE 195.44 kmN Locality: CWMBRAN, GWENT										Depth: 5.0 km RMS: 0.10 secs Quality: C															
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI						
GHG	SZ	18	ES	3	10:24	20.07		BWH	SZ	70	EP	2	20:47	32.64											
MCH	SZ	39	EP	2	10:24	21.21		ECK	SZ	79	EP	2	20:47	35.00	9	0.19									
MCH	SE	39	ES	2	10:24	26.21		BBH	SZ	81	EP	2	20:47	28.81											
MCH	SN	39	AMPL		10:24	26.41	14 0.19	ESK	SZ	91	EP	3	20:47	30.26											
MCH	SE	39	AMPL		10:24	26.51	37 0.27	ESK	SE	91	ES	3	20:47	42.74											
HTR	SZ	50	EP	3	10:24	22.89		XAL	SZ	100	EP	2	20:47	44.39	35	0.20									
HTR	SZ	50	ES	3	10:24	29.09		XDE	SZ	12	IP	D	20:47	32.46											
HAE	SZ	56	EP	2	10:24	24.08																			
HGH	SZ	18	IP	C	10:24	17.71																			
<b>March 24 2003</b> Time: 12:30 44.7 UTC										<b>Magnitude: 1.6 ML</b> Lat: 52.440N Lon: -1.948W Grid Ref: 403.52 kmE 282.53 kmN Locality: BIRMINGHAM, W MIDLANDS										<b>March 29 2003</b> Time: 02:51 36.6 UTC		Magnitude: 0.8 ML Depth: 10.7 km RMS: 0.09 secs Quality: B			
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI						
SSW	SZ	53	EP	2	12:30	54.02		BTA	SZ	17	IP	D	02:51	40.31											
HAE	SZ	61	IP	C	12:30	54.90		BTA	SN	17	ES	2	02:51	42.75											
KWE	SZ	65	IP	D	12:30	55.69		BTA	SN	17	AMPL		02:51	43.06	72	0.16									
KWE	SZ	65	ES	3	12:31	03.49		BTA	SE	17	AMPL		02:51	43.33	36	0.24									
SSP	SZ	79	IP	C	12:30	58.16		BDL	SZ	21	IP	C	02:51	40.76											
SSP	SN	79	ES	2	12:31	07.65		XAL	SZ	29	IP	C	02:51	42.01											
SSP	SN	79	AMPL		12:31	08.02	54 0.23	BBO	SZ	40	IP	C	02:51	43.48											
SSP	SE	79	AMPL		12:31	08.10	19 0.12	BBO	SN	40	ES	2	02:51	48.35											
MCH	SZ	87	IP	C	12:30	59.03		BBO	SN	40	AMPL		02:51	50.16	5	0.08									
MCH	SN	87	ES	2	12:31	09.38		BBO	SE	40	AMPL		02:51	51.18	7	0.17									
MCH	SN	87	AMPL		12:31	09.86	22 0.10	BBH	SZ	46	IP	D	02:51	44.81											
MCH	SE	87	AMPL		12:31	09.90	24 0.10	CSF	SZ	53	EP	2	02:51	45.69											
HTR	SZ	99	IP	C	12:31	00.71		BHH	SZ	53	EP	3	02:51	46.01											
KUF	SZ	108	IP	C	12:31	01.84		BHH	SN	53	ES	2	02:51	52.34											
<b>March 25 2003</b> Time: 04:55 59.1 UTC										<b>Magnitude: 0.7 ML</b> Lat: 54.542N Lon: -3.656W Grid Ref: 292.87 kmE 517.54 kmN Locality: OFF WHITEHAVEN, CUMBRIA										<b>March 29 2003</b> Time: 02:51 36.6 UTC		Magnitude: 0.8 ML Depth: 10.7 km RMS: 0.09 secs Quality: B			
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI						
CSF	SZ	29	EP	2	04:56	04.43		BTA	SZ	17	IP	D	02:51	40.31											
CSF	SZ	29	ES	3	04:56	08.12		BTA	SN	17	ES	2	02:51	42.75											
BBO	SZ	34	IP	C	04:56	05.21		BTA	SE	17	AMPL		02:51	43.06	72	0.16									
BBO	SE	34	ES	2	04:56	10.28		BDL	SZ	21	IP	C	02:51	40.76											
BBO	SN	34	AMPL		04:56	11.58	6 0.23	XAL	SZ	29	IP	C	02:51	42.01											
GCD	SZ	40	IP	D	04:56	06.14		BBO	SZ	40	IP	C	02:51	43.48											
LMI	SN	42	ES	2	04:56	12.32		BBO	SN	40	AMPL		02:51	48.35											
LMI	SN	42	AMPL		04:56	12.85	6 0.16	BBO	SE	40	AMPL		02:51	50.16	5	0.08									
LMI	SE	42	AMPL		04:56	13.19	8 0.27	BHH	SZ	46	IP	D	02:51	51.18	7	0.17									
GIM	SZ	60	EP	3	04:56	09.80		CSF	SZ	53	EP	2	02:51	44.81											
GIM	SN	60	ES	3	04:56	17.36		BHH	SZ	53	EP	3	02:51	45.69											
GIM	SN	60	AMPL		04:56	19.23	5 0.20	CSF	SN	53	EP	2	02:51	46.01											
GIM	SE	60	AMPL		04:56	21.72	4 0.11	BHH	SN	53	ES	2	02:51	52.34											
BHH	SZ	68	EP	2	04:56	10.76		BHH	SN	53	AMPL		02:51	54.38	9	0.26									
BHH	SE	68	ES	2	04:56	19.56		BHH	SE	53	AMPL		02:51	55.04											
BHH	SN	68	AMPL		04:56	23.45	10 0.15	ESK	SZ	57	IP	D	02:51	46.30											
BWH	SZ	71	IP	D	04:56	11.34		ESK	SE	62	EP	2	02:51	47.21											
BTA	SZ	75	EP	3	04:56	12.54		ESK	SZ	72	EP	2	02:51	48.85											
BTA	SN	75	AMPL		04:56	25.08	4 0.29	ESK	SN	72	ES	2	02:51	57.27											
BTA	SE	75	AMPL		04:56	26.02	4 0.23	ESK	SN	72	AMPL		02:51	59.77	3	0.13									
BBH	SZ	81	EP	2	04:56	13.02		ESK	SE	72	AMPL		02:51	59.79	3	0.19									
XDE	SZ	12	IP	D	04:56	01.50																			
XDE	SZ	12	ES	3	04:56	03.48																			
LMI	SZ	42	EP	2	04:56	06.70																			
<b>March 27 2003</b> Time: 22:54 30.3 UTC										<b>Magnitude: 0.9 ML</b> Lat: 53.213N Lon: -1.070W Grid Ref: 462.12 kmE 368.82 kmN Locality: WORKSOP, NOTTS										<b>April 2 2003</b> Time: 21:07 13.1 UTC		Magnitude: 0.8 ML Depth: 5.2 km Grid Ref: 177.92 kmE 790.00 kmN Locality: LOCH MORAR, HIGHLAND			
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI						
KBI	SZ	31	EP	2	22:54	36.16		KAR	SZ	11	IP	C	21:07	15.56											
KBI	SZ	31	ES	3	22:54	40.86		KSB	SZ	32	EP	2	21:07	19.09											
KBI	SZ	31	AMPL		22:54	41.95	18 0.35	KPL	SZ	44	EP	1	C	21:07	21.10										
KSY	SZ	43	EP	3	22:54	38.04		KPL	SN	44	ES				21:07	26.50									
KSY	SZ	43	ES	3	22:54	44.34		KPL	SN	44	AMPL		21:07	26.70	6	0.07									
KWE	SZ	56	EP	2	22:54	40.46		KPL	SE	44	AMPL		21:07	26.76	14	0.20									
KWE	SZ	56	AMPL		22:54	48.02	10 0.23	KAC	SZ	65	EP	3	21:07	47.75											
LHO	SZ	64	EP	2	22:54	42.15																			
LHO	SZ	64	ES	3	22:54	49.87																			
<b>March 28 2003</b> Time: 20:47 14.7 UTC										<b>Magnitude: 1.2 ML</b> Lat: 54.545N Lon: -3.667W Grid Ref: 292.21 kmE 517.91 kmN Locality: OFF WHITEHAVEN, CUMBRIA										<b>April 7 2003</b> Time: 05:28 09.7 UTC		Magnitude: 3.0 ML Depth: 8.6 km RMS: 0.43 secs Quality: D			
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI						
CSF	SZ	30	IP	C	20:47	20.21		SUE	SN	159	IP	C	05:28	34.38											
CSF	SZ	30	ES	3	20:47	23.88		ARNS	SZ	169	IP	C	05:28	35.25											
BBO	SZ	35	IP	C	20:47	20.96		RUND	SZ	174	IP	D	05:28	36.33											
BBO	SE	35	ES	3	20:47	25.95		LRW	SN	188	AMPL		05:29	03.04	94	0.26									
GCD	SZ	40	IP	D	20:47	21.89		LRW	SE	188	EP	2	05:28	38.31											
LMI	SZ	43	IP	D	20:47	22.47		LRW	SE	188	ES	2	05:28	58.76											
LMI	SN	43	ES	2	20:47	28.04		LRW	SE	188	AMPL		05:29	00.74	106	0.34									
LMI	SE	43	AMPL		20:47	28.96	20 0.29																		

**TABLE 2: PHASE DATA 2003**

FOO	SZ	ES	3	21:59	23.16		Grid Ref: 181.06 kmE 856.92 kmN Locality: LOCH TORRIDON,HIGHLAND	RMS: 0.09 secs Quality: C
SUE	SZ	116	IP	1	D	21:59	08.88	STAT CO DIST PHAS WT P HrMn SECS AMPL PERI
SUE	SZ	116	ES	2		21:59	22.17	KAC SZ 22 IP C 07:00 26.54
ASK	SZ	168	EP	2		21:59	16.13	KPL SZ 23 EP 2 07:00 26.74
ASK	SZ	168	ES	3		21:59	35.14	KPL SN 23 ES 3 07:00 29.87
BER	SZ	180	EP	3		21:59	17.54	KPL SN 23 AMPL 07:00 30.01 8 0.13
EGD	SZ	183	IP	1	C	21:59	18.12	KPL SE 23 AMPL 07:00 30.23 16 0.10
HYA	SZ	188	EP	2		21:59	18.61	KSB SZ 40 EP 2 C 07:00 29.43
YEL	SZ	224	EP	3		21:59	22.83	
LRW	SN	252	EP	3		21:59	26.51	
LRW	SE	252	AMPL			22:00	06.74	April 21 2003 Time: 23:08 12.1 UTC Magnitude: 2.0 ML
LRW	SN	252	AMPL			22:00	08.35	Lat: 60.291N Lon: 1.147W Depth: 15.5 km
SAN	SZ	262	EP	3		21:59	27.44	Grid Ref: 573.95 kmE 1160.42 kmN RMS: 0.27 secs
WAL	SZ	265	EP	3		21:59	28.17	Locality: NORTHERN NORTH SEA Quality: D
ODD1	SZ	269	IP	1	C	21:59	27.98	STAT CO DIST PHAS WT P HrMn SECS AMPL PERI
ODD1	SZ	269	ES			21:59	55.92	YEL SZ 130 AMPL 23:08 51.56 48 0.16
KMY	SZ	278	EP	2		21:59	30.06	LRW SE 130 EP 3 23:08 31.86
MOL	SZ	288	EP	2		21:59	30.84	LRW SE 130 ES 3 23:08 46.49
BLS5	SZ	299	EP	2		21:59	33.08	LRW SE 130 AMPL 23:08 48.93 34 0.36
BLS5	SZ	299	ES	3		22:00	03.55	SAN SZ 136 EP 3 23:08 32.91
							SAN SZ 136 ES 3 23:08 48.55	
							WAL SZ 153 EP 3 23:08 35.24	
<b>April 12 2003</b>		<b>Time: 10:46 37.5 UTC</b>		<b>Magnitude: 0.8 ML</b>				
Lat: 54.502N		Lon: -3.265W		Depth: 12.3 km				
Grid Ref: 318.07 kmE 512.64 kmN		RMS: 0.13 secs		Quality: B				
Locality: BUTTERMERE,CUMBRIA								
Comment: 5KM S OF BUTTERMERE								
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL PERI
CKE	SZ	14	IP		C	10:46	40.79	
XDE	SZ	15	IP		C	10:46	41.04	
XDE	SZ	15	ES	3		10:46	43.00	
CDU	SZ	19	EP	2		10:46	41.42	
BBO	SZ	26	IP		D	10:46	42.55	
BBO	SN	26	ES	2		10:46	45.86	
BBO	SE	26	AMPL			10:46	46.13	April 22 2003 Time: 23:52 58.9 UTC Magnitude: 1.1 ML
BBO	SN	26	AMPL			10:46	46.20	Lat: 53.826N Lon: -3.217W Depth: 8.2 km
LMI	SZ	32	IP		D	10:46	43.42	Grid Ref: 319.93 kmE 437.38 kmN RMS: 0.21 secs
LMI	SE	32	ES	2		10:46	47.42	Locality: IRISH SEA Quality: D
LMI	SN	32	AMPL			10:46	47.84	Comment: 11KM WEST OF BLACKPOOL
LMI	SE	32	AMPL			10:46	48.20	STAT CO DIST PHAS WT P HrMn SECS AMPL PERI
BDL	SZ	40	IP		C	10:46	44.64	WME SZ 86 EP 1 C 23:53 13.08
BNA	SZ	57	EP	2		10:46	47.42	KBI SZ 129 EP 3 23:53 19.62
BTA	SZ	59	IP		C	10:46	47.62	YRE SZ 124 EP 3 23:53 19.23
BTA	SN	59	ES	2		10:46	55.28	WIM SZ 102 EP 3 23:53 15.84
BTA	SN	59	AMPL			10:46	55.62	WCB SN 101 AMPL 23:53 29.83 7 0.45
BTA	SE	59	AMPL			10:46	58.07	WCB SN 101 ES 3 23:53 28.33
BWH	SZ	79	EP	2		10:46	51.09	WCB SE 101 AMPL 23:53 29.31 6 0.19
CSF	SZ	6	IP		D	10:46	40.05	WCB SE 101 ES 3 23:53 28.24
CSF	SZ	6	ES	3		10:46	41.75	WLF SZ 98 EP 3 23:53 15.26
<b>April 14 2003</b>		<b>Time: 14:35 48.3 UTC</b>		<b>Magnitude: 1.4 ML</b>				
Lat: 51.698N		Lon: -3.246W		Depth: 2.1 km				
Grid Ref: 313.93 kmE 200.72 kmN		RMS: 0.04 secs		Quality: C				
Locality: BARGOED,MID GLAMORGAN								
Comment: C/F								
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL PERI
MCH	SZ	37	EP	2		14:35	55.15	KSB SZ 92 EP 2 18:10 09.28
MCH	SE	37	ES	2		14:36	00.09	MDO SZ 101 EP 3 18:10 10.94
MCH	SE	37	AMPL			14:36	00.36	EDJ SE 109 ES 3 18:10 25.39
MCH	SN	37	AMPL			14:36	00.69	EDI SE 109 AMPL 18:10 29.35 32 0.27
HAE	SZ	61	EP	2		14:35	59.10	EDI SN 109 AMPL 18:10 29.69 28 0.27
SSP	SZ	81	EP	3		14:36	03.90	KPL SZ 111 EP 3 18:10 13.10
HPE	SZ	109	EP	2		14:36	06.57	KPL SN 111 AMPL 18:10 27.47 13 0.21
HTL	SZ	117	EP	2		14:36	08.56	KPL SE 111 AMPL 18:10 27.80 17 0.24
HTL	SE	117	ES	2		14:36	22.30	KAC SZ 116 EP 3 18:10 13.63
HTL	SE	117	AMPL			14:36	24.03	EDI SZ 109 EP 3 18:10 12.88
HTL	SN	117	AMPL			14:36	25.73	
HGH	SZ	31	IP		C	14:35	54.09	
HTR	SZ	42	IP		D	14:35	55.99	
<b>April 18 2003</b>		<b>Time: 03:01 28.7 UTC</b>		<b>Magnitude: 1.2 ML</b>				
Lat: 49.992N		Lon: -5.028W		Depth: 25.6 km				
Grid Ref: 183.02 kmE 14.71 kmN		RMS: 0.01 secs		Quality: C				
Locality: OFF LIZARD PT,CORNWALL								
Comment: 13KM NE OF LIZARD POINT								
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL PERI
CGH	SZ	12	EP	2		03:01	33.32	CWF SE 178 EP 1 C 19:38 34.01
CBW	SZ	18	IP		D	03:01	33.85	CWF SN 178 AMPL 19:38 51.38
CCO	SZ	20	EP	2		03:01	33.97	CWF SN 178 ES 3 19:38 12.58
CR2	SN	22	EP	2		03:01	34.19	CWF SN 178 ES 3 19:39 11.61
CR2	SE	22	ES	1		03:01	38.19	KWE SZ 166 EP 3 19:38 50.35
CR2	SN	22	AMPL			03:01	38.28	CWF SE 178 EP 1 C 19:38 34.01
CR2	SE	22	AMPL			03:01	38.35	CWF SN 178 AMPL 19:38 13.98 64 0.34
CST	SZ	25	EP	2		03:01	34.48	SSP SZ 58 IP C 19:38 34.01
CCA	SZ	26	IP	1	D	03:01	34.63	KBI SZ 199 EP 2 19:38 51.38
<b>April 18 2003</b>		<b>Time: 11:35 24.0 UTC</b>		<b>Magnitude: 0.4 ML</b>				
Lat: 53.069N		Lon: -4.452W		Depth: 3.9 km				
Grid Ref: 235.71 kmE 355.23 kmN		RMS: 0.01 secs		Quality: C				
Locality: CAERNARVON BAY,GWYNEDD								
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL PERI
YRE	SZ	10	IP		D	11:35	26.13	MCH SZ 43 IP C 19:38 31.47
YRC	SZ	22	IP	1	C	11:35	28.14	MCH SN 43 ES 1 19:38 36.79
WLF	SZ	25	IP		C	11:35	28.64	MCH SE 43 AMPL 19:38 36.92 397 0.12
WCB	SZ	35	EP	2		11:35	30.41	MCH SN 43 AMPL 19:38 36.97 440 0.11
WCB	SE	35	AMPL			11:35	34.99	HSA SZ 46 IP C 19:38 32.04
WCB	SN	35	AMPL			11:35	35.03	HPE SZ 80 EP 2 19:38 37.18
<b>April 19 2003</b>		<b>Time: 07:00 22.1 UTC</b>		<b>Magnitude: 0.6 ML</b>				
Lat: 57.549N		Lon: -5.660W		Depth: 12.5 km				

**TABLE 2: PHASE DATA 2003**

YLL	SZ	133	EP	3	19:38	45.15		SUE	SN	50	ES	2	03:48	08.57					
WPM	SZ	142	EP	3	19:38	46.72		SUE	SN	50	AMPL		03:48	09.25	369	0.13			
WLF	SZ	154	EP	3	19:38	48.70		SUE	SE	50	AMPL		03:48	09.28	457	0.22			
WME	SZ	163	EP		19:38	49.83		FOO	SZ	64	IP	D	03:48	04.47					
WCB	SZ	166	EP	3	19:38	50.05		FOO	SN	64	ES	2	03:48	11.73					
WCB	SE	166	ES	3	19:39	08.99		FOO	SN	64	AMPL		03:48	13.05	368	0.23			
<b>May 9 2003</b>		Time: 18:36 53.5 UTC				Magnitude: 1.7 ML				Depth: 5.3 km				368 0.23					
Lat: 57.409N		Lon: -5.878W				RMS: 0.16 secs				D 03:48				288 0.11					
Grid Ref: 167.13 kmE 842.04 kmN		Locality: APPLECROSS, HIGHLAND				Quality: C				FOO SN 64 AMPL				348 0.47					
Comment: 5KM OFFSHORE										FOO SE 64 AMPL				479 0.31					
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	ASK	SZ	114	IP	C	03:48	12.63			
KPL	SZ	16	IP	C	18:36	56.73				HYA	SZ	119	EP	1	03:48	13.35			
KPL	SN	16	ES	1	18:36	58.81				HYA	SN	119	ES	2	03:48	27.22			
KPL	SN	16	AMPL		18:36	58.94	156 0.12			HYA	SN	119	AMPL		03:48	28.64	348 0.47		
KPL	SE	16	AMPL		18:36	59.03	160 0.20			HYA	SE	119	AMPL		03:48	28.77	479 0.31		
KSB	SZ	35	IP	C	18:36	59.90													
KAC	SZ	36	EP	3	18:37	00.41													
RRR	SZ	50	EP	1	C	18:37	02.37												
RRR	SE	50	ES	2		18:37	08.46												
RRR	SE	50	AMPL		18:37	08.82	46 0.29												
RRR	SN	50	AMPL		18:37	09.04	25 0.20												
RRH	SZ	75	EP	2		18:37	05.96												
REB	SZ	87	EP	3		18:37	09.57												
MDO	SZ	91	EP	3		18:37	09.15												
RTO	SZ	110	EP	3		18:37	11.49												
RFO	SZ	112	EP	2		18:37	11.75												
MCD	SZ	159	EP	1	D	18:37	20.19												
MCD	SE	159	ES	3		18:37	39.46												
MCD	SE	159	AMPL		18:37	40.55	30 0.30												
MCD	SN	159	AMPL		18:37	41.36	28 0.50												
<b>May 10 2003</b>		Time: 02:03 07.3 UTC				Magnitude: 1.4 ML													
Lat: 51.477N		Lon: -3.522W				Depth: 7.0 km													
Grid Ref: 294.29 kmE 176.49 kmN		RMS: 0.06 secs				Quality: B													
Locality: COWBRIDGE, SOUTH GLAM																			
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	KAC	SZ	6	IP	D	13:13	25.77			
MCH	SZ	68	EP	3	02:03	18.65				KPL	SN	33	AMPL		13:13	34.23	8 0.14		
SSP	SN	108	AMPL		02:03	39.54	8 0.39			KPL	SE	33	ES	2	13:13	34.07			
SSP	SE	108	AMPL		02:03	38.87	11 0.39			KPL	SZ	33	EP	1	13:13	29.74			
SSP	SN	108	ES	3	02:03	38.13				KAC	SZ	6	ES	2	13:13	27.32			
SSP	SZ	108	EP		02:03	25.20				MDO	SZ		EP	3	13:13	32.04			
SWK	SZ	96	EP	3	02:03	23.30													
HAE	SZ	92	EP	3	02:03	22.38													
HTL	SN	86	AMPL		02:03	33.88	10 0.20												
HTL	SE	86	AMPL		02:03	33.12	16 0.33												
HTR	SZ	69	EP	3	02:03	18.86													
HTL	SE	86	ES		02:03	32.09													
HTL	SZ	86	EP	1	C	02:03	21.53												
MCH	SN	68	AMPL		02:03	27.27	33 0.20												
MCH	SE	68	AMPL		02:03	27.19	29 0.16												
MCH	SN	68	ES	2		02:03	27.05												
SMD	SZ	59	EP	3		02:03	17.20												
HGH	SZ	53	IP	C	02:03	16.37													
HEX	SZ	50	IP	C	02:03	15.83													
<b>May 14 2003</b>		Time: 02:41 22.7 UTC				Magnitude: 0.2 ML													
Lat: 57.211N		Lon: -5.275W				Depth: 7.0 km													
Grid Ref: 202.22 kmE 818.15 kmN		RMS: 0.17 secs				Quality: C													
Locality: SHIEL BRIDGE, HIGHLAND																			
Comment: 10KM SE OF SHIEL BRIDGE																			
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	YRE	SZ	15	IP	C	20:52	08.90			
KSB	SZ	9	IP	D	02:41	24.97				YRC	SZ	30	EP	1	20:52	10.92			
KPL	SZ	27	EP	2	02:41	27.30				YRC	SE	30	ES	3	20:52	14.83			
KPL	SE	27	ES	2	02:41	31.51				WCB	SZ	45	EP	1	C	20:52	13.59		
KPL	SE	27	AMPL		02:41	31.86	7 0.17			WCB	SN	45	ES	4	20:52	18.52			
KPL	SN	27	AMPL		02:41	31.96	3 0.21			WCB	SE	45	AMPL		20:52	18.84	12 0.20		
<b>May 16 2003</b>		Time: 14:39 41.0 UTC				Magnitude: 2.8 ML													
Lat: 62.102N		Lon: 1.757W				Depth: 10.6 km													
Grid Ref: 596.03 kmE 1363.66 kmN		RMS: 0.15 secs				Quality: D													
Locality: NORTHERN NORTH SEA																			
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	JUNE 6 2003	CO	DIST	PHAS	WT	P	HrMn	SECS	Magnitude: 2.3 ML	
FOO	SZ	182	EP	2		14:40	08.20			Lat: 53.992N	LWH	SZ	42	EP	2	06:47	47.85	Depth: 11.3 km	
FOO	SN	182	AMPL			14:40	31.12	62 0.34		Grid Ref: 469.88 kmE 455.60 kmN	LDU	SZ	46	EP	3	06:47	48.67	RMS: 0.08 secs	
FOO	SE	182	ES	2		14:40	27.79			Locality: YORK, NORTH YORKSHIRE	LMK	SZ	72	IP	D	06:47	52.84	Quality: B	
FOO	SE	182	AMPL			14:40	31.35	41 0.25			LRN	SZ	74	IP	1	D	06:47	53.16	
SUE	SZ	198	EP	2		14:40	09.93				LHO	SZ	78	IP	C	06:47	53.70		
SUE	SN	198	ES	2		14:40	31.05				KBI	SZ	91	IP	1	D	06:47	55.77	
SUE	SN	198	AMPL			14:40	32.70	82 0.31			KSY	SZ	117	EP	2		06:47	59.59	
SUE	SE	198	AMPL			14:40	33.28	99 0.28			KWE	SZ	124	EP	2		06:48	00.12	
HYA	SZ	257	EP	2		14:40	18.58				XAL	SZ	128	EP	2		06:48	00.39	
LRW	SZ	270	EP	2		14:40	19.15				CWF	SZ	142	EP	3		06:48	03.20	
LRW	SN	270	ES	2		14:40	47.27				CWF	SE	142	ES	4		06:48	18.19	
LRW	SN	270	AMPL</																

**TABLE 2: PHASE DATA 2003**

June 7 2003												Time: 17:52 57.6 UTC												Magnitude: 1.0 ML																							
Lat: 50.381N												Lon: -5.289W												Depth: 11.9 km																							
Grid Ref: 166.23 kmE												58.71 kmN												RMS: 0.30 secs																							
Locality: OFFSHORE NEWQUAY,CORNWALL												Quality: D																																			
Comment: 18KM WEST OF NEWQUAY																																															
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI			WME	SZ	78	IP	D	02:38	48.57																													
CCA	SZ	22	IP	1	D	17:53	01.84					WCB	SZ	79	EP	2	02:38	48.85																													
CCA	SZ	22	ES	2		17:53	05.52					WCB	SN	79	AMPL		02:38	59.84	61	0.27																											
CCA	SZ	22	AMPL			17:53	05.65	29	0.12			HTR	SZ	92	EP	2	02:38	50.76																													
CST	SZ	23	IP		D	17:53	02.13					HPE	SZ	96	EP	1	C	02:38	50.55																												
CR2	SZ	25	EP	2		17:53	02.42					MCH	SN	111	ES	2		02:39	06.64																												
CR2	SN	25	AMPL			17:53	06.69	17	0.08			MCH	SE	111	AMPL			02:39	07.56	50	0.13																										
CBW	SZ	29	IP		D	17:53	03.14					HTL	SE	192	ES	2		02:39	26.32																												
CPZ	SZ	33	EP	2		17:53	01.74					CWF	SN	192	ES	2		02:39	26.23																												
CPZ	SZ	33	AMPL			17:53	05.78	29	0.08			KBI	SZ	187	EP	2		02:39	04.49																												
CGH	SZ	38	EP	1	D	17:53	04.50					HEX	SZ	184	EP	2		02:39	03.86																												
June 7 2003												Time: 21:14 03.8 UTC												Magnitude: 1.1 ML																							
Lat: 51.999N												Lon: -3.214W												Depth: 23.0 km																							
Grid Ref: 316.64 kmE												234.10 kmN												RMS: 0.02 secs																							
Locality: TALGARTH,POWYS												Quality: C																																			
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI			HTL	SE	192	EP	2		02:39	05.00	37	0.06																										
HTR	SZ	10	EP	3		21:14	07.94					CWF	SE	192	AMPL			02:39	28.53																												
MCH	SZ	15	IP	C		21:14	08.30					CWF	SN	192	AMPL			02:39	29.18	52	0.08																										
MCH	SN	15	ES	1		21:14	11.62					HTL	SN	192	AMPL			02:39	30.05	56	0.34																										
MCH	SE	15	AMPL			21:14	11.72	43	0.08			CWF	SZ	192	EP	2		02:39	31.48	54	0.23																										
MCH	SN	15	AMPL			21:14	11.73	101	0.10			XAL	SZ	272	EP	2		02:39	14.29																												
HAE	SZ	46	EP	3		21:14	12.17					WCB	SN	79	ES	2		02:38	58.29																												
SSP	SZ	47	EP	3		21:14	12.29					MCH	SZ	111	EP	2		02:38	53.49																												
SSP	SE	47	AMPL			21:14	18.84	6	0.09			WFB	SZ	8	IP	C		02:38	38.22																												
SSP	SE	47	AMPL			21:14	19.14	14	0.25			June 16 2003												Time: 16:09 56.7 UTC												Magnitude: 2.0 ML											
Lat: 51.999N												Lon: -3.214W												Depth: 23.0 km												RMS: 0.02 secs											
Grid Ref: 316.64 kmE												Locality: TALGARTH,POWYS												Quality: C												Comment: 5KM NW OF DRIFFIELD											
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI			HTL	SN	192	EP	2																															
KBI	SZ	64	EP	2		00:00	33.23					CWF	SN	155	AMPL			16:10	41.13	23	0.09																										
KWE	SZ	68	IP	D		00:00	34.15					CWF	SE	155	AMPL			16:10	40.83	25	0.09																										
LMI	SZ	98	EP	2		00:00	38.99					CWF	SN	155	ES	3		16:10	39.29																												
LMI	SN	98	ES	2		00:00	50.09					KWE	SZ	145	EP	3		16:10	19.89																												
LMI	SE	98	AMPL			00:00	52.30	25	0.18			KBI	SZ	111	EP	3		16:10	13.92																												
LMI	SN	98	AMPL			00:00	52.73	27	0.18			LCP	SZ	98	EP	2		16:10	12.89																												
WPM	SZ	108	EP	1	C	00:00	40.32					LHO	SZ	105	EP	1	C	16:10	13.46																												
CWF	SZ	114	EP	2		00:00	41.11					LRN	SZ	93	ES	3		16:10	23.46																												
CWF	SN	114	ES	2		00:00	55.08					LRN	SZ	93	EP	2		16:10	11.95																												
CWF	SE	114	AMPL			00:00	57.09	14	0.17			LMK	SZ	68	ES	3		16:10	16.53</td																												

**TABLE 2: PHASE DATA 2003**

**TABLE 2: PHASE DATA 2003**

Locality: KENDAL, CUMBRIA								Quality: C											
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	POB	SZ	36	ES	3	02:09	43.55			
BDL	SZ	41	IP		D	02:26	52.25			PMS	SZ	41	IP	D	02:09	39.41			
BBO	SZ	43	IP		D	02:26	52.89			PMS	SZ	41	ES	3	02:09	44.60			
BBO	SE	43	ES	2		02:26	58.62			PCA	SZ	54	IP	D	02:09	41.59			
BBO	SN	43	AMPL			02:26	58.72	3	0.35	ELO	SZ	56	EP	2	02:09	41.43			
BBO	SE	43	AMPL			02:26	58.92	4	0.16	EBH	SZ	58	EP	2	02:09	42.36			
BTA	SZ	52	EP	3		02:26	53.64			EAU	SZ	72	IP	C	02:09	44.49			
BTA	SN	52	ES	2		02:26	59.94			EDI	SZ	83	EP	2	02:09	46.10			
BTA	SN	52	AMPL			02:27	00.61	12	0.15	EDI	SE	83	ES	2	02:09	56.11			
BTA	SE	52	AMPL			02:27	03.20	25	0.38	EDI	SN	83	AMPL		02:10	00.52			
BHH	SN	77	ES	2		02:27	08.33			EDI	SE	83	AMPL		02:10	00.72			
BHH	SE	77	AMPL			02:27	09.04	8	0.18	EDU	SZ	98	EP	2	02:09	48.07			
BHH	SN	77	AMPL			02:27	09.24	14	0.18	GMK	SZ	117	IP	C	02:09	51.04			
BBH	SZ	77	EP	2		02:26	58.63			ESY	SZ	117	EP	2	02:09	51.72			
BHH	SZ	77	EP	2		02:26	58.66			KAR	SZ	120	IP	C	02:09	52.24			
LCP	SZ	92	EP	3		02:27	01.01			BWH	SZ	121	IP	D	02:09	52.41			
BWH	SZ	98	EP	2		02:27	02.02			KSB	SZ	131	IP	C	02:09	53.85			
LHO	SZ	118	EP	3		02:27	04.03			BHH	SZ	142	EP	2	02:09	55.82			
										BHH	SN	142	ES	2	02:10	12.45			
June 24 2003 Time: 03:23 14.7 UTC								Magnitude: 0.4 ML											
Lat: 57.019N Lon: -5.555W								Depth: 6.1 km											
Grid Ref: 184.25 kmE 797.62 kmN								RMS: 0.17 secs											
Locality: KNOYDART, HIGHLAND								Quality: D											
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	BBH	SZ	149	IP	C	02:09	57.16			
KAR	SZ	20	EP	2		03:23	18.55			KPL	SZ	150	EP	2	02:09	56.74			
KAR	SZ	20	ES	3		03:23	21.45			KPL	SE	150	ES	2	02:10	13.98			
KSB	SZ	23	IP		D	03:23	19.06			KPL	SE	150	AMPL		02:10	17.58			
KSB	SZ	23	ES	3		03:23	21.88			KPL	SN	150	AMPL		02:10	19.88			
KPL	SZ	36	IP		C	03:23	21.41			BCC	SZ	150	EP	2	02:09	57.27			
KPL	SE	36	ES	2		03:23	25.59			GCL	SZ	162	IP	C	02:09	57.44			
KPL	SE	36	AMPL			03:23	25.97	7	0.17	MCD	SZ	173	EP	2	02:09	59.61			
KPL	SN	36	AMPL			03:23	26.18	4	0.25	MCD	SE	173	AMPL		02:10	24.73			
										MCD	SN	173	AMPL		02:10	25.08			
June 25 2003 Time: 11:53 54.8 UTC								Magnitude: 1.4 ML											
Lat: 56.165N Lon: -4.429W								Depth: 2.7 km											
Grid Ref: 249.19 kmE 699.54 kmN								RMS: 0.12 secs											
Locality: ABERFOYLE, CENTRAL								Quality: B											
Comment: FELT ABERFOYLE								Intensity: 2+											
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	BBO	SZ	176	EP	2	02:09	59.58			
EAB	SZ	6	IP		C	11:53	56.27			BBO	SN	176	AMPL		02:10	22.74			
EAB	SZ	6	ES	3		11:53	57.02			BBO	SE	176	AMPL		02:10	25.02			
PCO	SZ	28	IP		C	11:54	00.23			BTA	SZ	179	EP	3	02:10	01.45			
PCO	SZ	28	ES	3		11:54	03.69			BTA	SN	179	ES	2	02:10	21.93			
PMS	SZ	41	IP		D	11:54	02.09			BTA	SE	179	AMPL		02:10	23.51			
PMS	SZ	41	EP		D	11:54	02.09			BTA	SE	179	AMPL		02:10	24.14			
PCA	SZ	53	IP		D	11:54	04.23			BDL	SZ	179	EP	2	02:10	01.64			
PCA	SZ	53	ES	3		11:54	10.97												
ELO	SZ	56	EP	2		11:54	04.53			June 27 2003 Time: 02:11 23.1 UTC									
GMK	SZ	117	EP	2		11:54	13.75			Magnitude: 1.3 ML									
KAR	SZ	120	EP	2		11:54	14.84			Depth: 3.1 km									
KSB	SZ	131	IP		D	11:54	16.58			Grid Ref: 247.80 kmE 700.38 kmN									
GAL	SZ	146	EP	2		11:54	18.91			Locality: ABERFOYLE, CENTRAL									
GAL	SN	146	ES	2		11:54	36.39			Quality: B									
GAL	SN	146	AMPL			11:54	37.72	5	0.16	Comment: FELT ABERFOYLE									
GAL	SE	146	AMPL			11:54	37.72	7	0.19										
KPL	SZ	151	EP	2		11:54	19.70			STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
KPL	SE	151	ES	2		11:54	37.02			EAB	SZ	7	IP	D	02:11	24.81			
KPL	SE	151	AMPL			11:54	39.87	11	0.32	EAB	SZ	7	ES	3	02:11	25.76			
KPL	SN	151	AMPL			11:54	40.02	5	0.31	PCO	SZ	30	IP	C	02:11	28.69			
										PMS	SZ	41	IP	D	02:11	32.93			
June 26 2003 Time: 09:57 13.1 UTC								Magnitude: 1.5 ML											
Lat: 56.169N Lon: -4.440W								Depth: 4.4 km											
Grid Ref: 248.51 kmE 700.01 kmN								RMS: 0.15 secs											
Locality: ABERFOYLE, CENTRAL								Quality: B											
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	KPL	SZ	149	EP	2	02:11	48.27			
EAB	SZ	7	IP		D	09:57	14.79			KPL	SE	149	ES	2	02:12	05.70			
EAB	SZ	7	ES	3		09:57	15.73			KPL	SN	149	AMPL		02:12	07.07			
PCO	SZ	29	IP		C	09:57	18.68			KPL	SE	149	AMPL		02:12	08.57			
PCO	SZ	29	ES	3		09:57	22.36			EDI	SZ	84	EP	3	02:11	37.39			
PMS	SZ	41	IP		D	09:57	20.45												
PMS	SZ	41	ES	3		09:57	25.73			June 27 2003 Time: 03:12 57.1 UTC									
PCA	SZ	53	IP		D	09:57	22.63			Magnitude: 1.3 ML									
ELO	SZ	56	EP	2		09:57	22.50			Depth: 3.1 km									
ELO	SZ	56	ES	3		09:57	29.99			RMS: 0.08 secs									
EBH	SZ	59	EP	2		09:57	23.34			Locality: ABERFOYLE, CENTRAL									
EDI	SE	83	ES	2		09:57	37.20			STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
EDI	SE	83	AMPL			09:57	37.86	15	0.25	EAB	SZ	6	IP	D	03:12	58.54			
EDI	SN	83	AMPL			09:57	41.70	20	0.52	PCO	SZ	28	IP	1	03:13	02.44			
EDU	SZ	98	EP	3		09:57	29.05			ELO	SZ	56	EP	3	03:13	06.88			
KAR	SZ	120	EP	2		09:57	33.29			EAU	SZ	71	EP	1	03:13	09.31			
KSB	SZ	131	EP	2		09:57	35.03			EDI	SE	82	ES	4	03:13	20.96			
KPL</td																			

**TABLE 2: PHASE DATA 2003**

**TABLE 2: PHASE DATA 2003**

MVH SZ 66 IP C 15:42 23.06

**July 23 2003** Time: 23:20 32.1 UTC Magnitude: 1.2 ML  
 Lat: 59.896N Lon: -1.719W Depth: 21.2 km  
 Grid Ref: 415.70 kmE 1112.30 kmN RMS: 0.06 secs  
 Locality: OFF SHETLAND ISLES Quality: C  
 Comment: 24KM W OF SUMBURGH HEAD

STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
YEL	SZ	81	EP	3	23:20	45.27			
SAN	SZ	30	IP		D	23:20	38.22		
SAN	SZ	30	ES	3	23:20	42.74			
WAL	SZ	41	IP	C	23:20	39.70			
WAL	SZ	41	ES	3	23:20	45.01			
OST	SZ	102	EP	3	23:20	48.25			
LRW	SZ	40	IP		D	23:20	39.56		
LRW	SN	40	ES	2	23:20	45.11			
LRW	SN	40	AMPL		23:20	45.61	19 0.13		
LRW	SE	40	AMPL		23:20	45.56	32 0.10		

**July 26 2003** Time: 03:52 09.0 UTC Magnitude: 1.0 ML  
 Lat: 52.287N Lon: -3.691W Depth: 20.2 km  
 Grid Ref: 284.68 kmE 266.82 kmN RMS: 0.06 secs  
 Locality: RHAYADER, POWYS Quality: C

STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
YRE	SZ	92	EP	3	03:52	24.03			
HAE	SZ	83	EP	1	D	03:52	22.81		
HGH	SZ	94	EP	1	D	03:52	24.57		
HTR	SZ	37	EP	1	C	03:52	15.97		
MCH	SZ	57	EP	2		03:52	18.75		
MCH	SN	57	AMPL		03:52	26.17	9 0.10		
MCH	SE	57	ES	3		03:52	25.91		
MCH	SE	57	AMPL		03:52	26.21	16 0.09		
SSP	SZ	42	IP		C	03:52	16.65		
SSP	SN	42	ES	3	C	03:52	22.06		
SSP	SN	42	AMPL		03:52	22.32	18 0.09		
SSP	SE	42	AMPL		03:52	22.55	9 0.16		

**August 2 2003** Time: 00:45 04.1 UTC Magnitude: 1.5 ML  
 Lat: 53.980N Lon: -2.677W Depth: 7.7 km  
 Grid Ref: 355.58 kmE 453.99 kmN RMS: 0.17 secs  
 Locality: LANCASTER, LANCs Quality: C

Comment: 10KM SE OF LANCASTER

STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
LMI	SZ	49	EP	2		00:45	12.61		
LMI	SE	49	ES	2		00:45	18.64		
LMI	SN	49	AML		00:45	19.58	16 0.16		
LMI	SE	49	AML		00:45	20.27	14 0.19		
HPK	SZ	69	EP	2		00:45	15.89		
HPK	SN	69	ES	2		00:45	23.94		
HPK	SE	69	AML		00:45	25.10	54 0.21		
HPK	SN	69	AML		00:45	27.56	67 0.24		
LHO	SZ	73	IP	1	D	00:45	16.17		
LHO	SZ	73	ES	3		00:45	24.77		
BBO	SZ	92	EP	2		00:45	19.31		
BBO	SN	92	ES	2		00:45	29.93		
BBO	SE	92	AML		00:45	32.00	11 0.22		
BBO	SN	92	AML		00:45	32.03	9 0.10		
BDL	SZ	93	EP	1	D	00:45	19.48		
BTA	SZ	103	EP	2		00:45	21.21		
BTA	SN	103	ES	2		00:45	32.89		
BTA	SE	103	AML		00:45	33.34	23 0.26		
BTA	SN	103	AML		00:45	34.51	32 0.13		
WPM	SZ	114	EP	3		00:45	22.54		
LCP	SZ	115	EP	2		00:45	22.78		
KWE	SZ	121	EP	3		00:45	24.16		
GIM	SZ	122	EP	3		00:45	23.28		
GIM	SN	122	ES	3		00:45	36.60		
GIM	SN	122	AML		00:45	39.86	6 0.16		
GIM	SE	122	AML		00:45	40.58	7 0.28		
WME	SZ	126	EP	3		00:45	23.44		
BHH	SE	129	ES	2		00:45	40.01		
BHH	SN	129	AML		00:45	40.98	17 0.35		
BHH	SE	129	AML		00:45	41.62	9 0.45		
BBH	SZ	129	EP	2		00:45	25.16		
BHH	SZ	129	EP	2		00:45	24.16		
WIM	SZ	132	EP	3		00:45	24.83		

**August 3 2003** Time: 07:22 30.5 UTC Magnitude: 0.2 ML  
 Lat: 53.229N Lon: -3.712W Depth: 13.6 km  
 Grid Ref: 285.72 kmE 371.62 kmN RMS: 0.06 secs  
 Locality: CONWY, GWYNEDD Quality: C

Comment: 8KM SE OF CONWY

STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
WPM	SZ	13	EP	1	D	07:22	33.65		
WPM	SZ	13	ES	3		07:22	35.77		
YLL	SZ	32	IP	C	07:22	36.29			
YLL	SZ	32	ES	3	07:22	40.24			
WLF	SZ	46	EP	2	07:22	38.34			
WLF	SZ	46	ES	3	07:22	44.08			
YRC	SZ	58	EP	2	07:22	40.33			
WCB	SZ	58	EP	2	07:22	40.32			
WCB	SN	58	AML		07:22	49.87	1 0.08		
WCB	SE	58	AML		07:22	50.20	2 0.08		
WFB	SZ	65	EP	2	07:22	40.83			

**August 6 2003** Time: 23:47 19.8 UTC Magnitude: 0.0 ML  
 Lat: 57.128N Lon: -5.423W Depth: 14.1 km  
 Grid Ref: 192.85 kmE 809.32 kmN RMS: 0.08 secs  
 Locality: SHIEL BRIDGE, HIGHLAND Quality: D

**Comment: 10KM S OF SHIEL BRIDGE**

STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
KSB	SZ	9	IP		D	23:47	22.65		
KSB	SZ	9	ES	3		23:47	25.35		
KPL	SZ	27	IP		D	23:47	25.06		
KPL	SN	27	AML			23:47	25.24	3	0.12
KPL	SE	27	ES	2		23:47	28.82		
KAR	SZ	34	EP	3		23:47	29.13	2	0.18

**August 13 2003** Time: 00:15 49.0 UTC Magnitude: 1.0 ML  
 Lat: 52.967N Lon: -3.842W Depth: 14.8 km  
 Grid Ref: 276.28 kmE 342.66 kmN RMS: 0.08 secs  
 Locality: FFESTINIOG, GWYNEDD Quality: B

Comment: 6KM E OF FFESTINIOG

STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
YLL	SZ	29	IP		D	00:15	54.48		
YLL	SZ	29	ES	3		00:15	58.06		
WPM	SZ	33	IP		D	00:15	55.16		
WPM	SZ	33	ES	3		00:15	58.79		
WFB	SZ	34	IP		C	00:15	55.21		
YRE	SZ	39	IP		C	00:15	56.06		
SBD	SZ	40	EP	2		00:15	56.05		
WLF	SZ	52	IP		D	00:15	57.71		
WME	SZ	57	EP	2		00:15	58.58		
WCB	SZ	66	IP		D	00:15	59.83		
WCB	SE	66	ES	3		00:16	07.64		
WCB	SE	66	AML			00:16	07.84	6	0.24
WCB	SN	66	AML			00:16	07.96	6	0.32
SSP	SZ	79	EP	2		00:16	02.55		
SSP	SE	79	ES	2		00:16	11.94		
SSP	SE	79	AML			00:16	12.35	10	0.27
SSP	SN	79	AML			00:16	12.37	6	0.37
HTR	SZ	106	EP	2		00:16	06.87		
MCH	SZ	122	EP			00:16	09.08		
MCH	SN	122	AML			00:16	27.47	3	0.14
MCH	SE	122	AML			00:16	27.88	3	0.38
HAE	SZ	136	EP	2		00:16	11.34		

**August 16 2003** Time: 16:59 44.4 UTC Magnitude: 0.8 ML  
 Lat: 50.160N Lon: -5.341W Depth: 6.0 km  
 Grid Ref: 161.39 kmE 34.35 kmN RMS: 0.05 secs  
 Locality: CAMBORNE, CORNWALL Quality: B

STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
CST	SZ	13	IP		C	16:59	46.92		
CR2	SN	12	ES	1	C	16:59	48.38		
CR2	SN	12	AML			16:59	48.50	111	0.08
CR2	SZ	12	IP		C	16:59	46.78		
CBW	SZ	16	IP		C	16:59	47.37		
CBW	SZ	16	ES	3		16:59	49.23		
CBW	SZ	16	AML			16:59	49.56	17	0.08
CCA	SZ	9	IP		C	16:59	46.27		
CCA	SZ	9	AML			16:59	47.65	33	0.08
CCO	SZ	11	IP		D	16:59	46.55		
CCO	SZ	11	ES	3		16:59	47.95		
CCO	SZ	11	AML			16:59	48.16	40	0.07
CGH	SZ	18	IP		D	16:59	47.68		
CGH	SZ	18	AML			16:59	50.12	28	0.09
CPZ	SZ	17	EP	1	C	16:59	47.57		

**August 19 2003** Time: 19:46 18.6 UTC Magnitude: 3.1 ML  
 Lat: 53.481N Lon: -1.013W Depth: 13.2 km  
 Grid Ref: 465.46 kmE 398.77 kmN RMS: 0.07 secs  
 Locality: DONCASTER, S YORKSHIRE Quality: C

Comment: FELT RETFORD Intensity: 3+

STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
KBI	SZ	43	IP		C	19:46	26.25		
KEY2	AZ	67	EP	4		19:46	30.97		
KEY2	AN	67	ES	4		19:46	39.54		
KEY2	AN	67	AML			19:46	40.13	1881	0.10
KEY2	AE	67	AML			19:46	41.38	2590	0.16
HPK	SN	67	ES	2		19:46	37.89		
CWF	SN	85	ES	2		19:46	42.84		
KUF	SZ	105	EP	2		19:46	35.34		
SSP	SN	184	AML			19:47	09.57	181	0.38
SSP	SE	184	AML			19:47	11.04	162	0.27
HAE	SZ	191	EP	2		19:46	46.64		
MCH	SZ	213	EP	4		19:46	49.10		
MCH	SE	213	AML			19:47	16.99	138	0.29
MCH	SN	213	AML			19:47	17.89	126	0.19
HGH	SZ	238	EP	2		19:46	52.44		
CWF	SZ	85	IP		D	19:46	32.47		
KSY	SZ	64	IP		D	19:46	29.41		
KSY	SZ	64	ES	3		19:46	37.19		
KWE	SZ	76	IP		C				

**TABLE 2: PHASE DATA 2003**

Grid Ref: 248.80 kmE 699.72 kmN Locality: ABERFOYLE, CENTRAL Comment: FELT ABERFOYLE										RMS: 0.10 secs Quality: B Intensity: 3+	ED1	SN	50	AML	21:29	24.71	62	0.12							
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI		EDR	SZ	104	EP	3	21:29	23.94								
EAB	SZ	7	IP		D	03:35	22.11			MME	SZ	127	EP	2	21:29	28.45									
PCO	SZ	29	IP		C	03:35	26.00			MDO	SZ	138	EP	2	21:29	30.14									
PCO	SZ	29	ES	3		03:35	29.64			KSB	SZ	148	EP	2	21:29	32.01									
POB	SZ	36	IP	1	D	03:35	27.19			MCD	SN	151	ES	3	21:29	49.65									
PMS	SZ	41	IP		D	03:35	27.78			MCD	SE	151	AML		21:29	51.38	132 0.22								
PCA	SZ	53	IP		D	03:35	29.94			MCD	SN	151	AML		21:29	51.59	137 0.17								
ELO	SZ	56	EP	3		03:35	30.36			GMK	SZ	155	EP	3	21:29	31.72									
EBH	SZ	58	EP	1	C	03:35	30.69			GAL	SZ	167	EP	3	21:29	32.88									
EAU	SZ	71	EP	1	C	03:35	32.82			GAL	SE	167	ES	3	21:29	53.10									
EDI	SZ	82	EP	2		03:35	34.64			KPL	SN	168	ES	2	21:29	55.06									
EDI	SN	82	ES	3		03:35	44.48			KPL	SN	168	AML		21:29	55.95	43 0.23								
EDI	SE	82	AML			03:35	49.39	17	0.16	KPL	SE	168	AML		21:29	56.44	52 0.32								
EDI	SN	82	AML			03:35	51.06	16	0.23							21	0.39								
GMK	SZ	117	EP	2		03:35	39.61			<b>September 14 2003 Time: 13:02 33.7 UTC</b>				<b>Magnitude: 1.0 ML</b>											
KAR	SZ	120	EP	3		03:35	40.58			Lat: 49.778N Lon: -5.795W				Depth: 3.2 km											
KSB	SZ	131	IP	1	C	03:35	42.18			Grid Ref: 126.85 kmE -6.55 kmN				RMS: 0.04 secs											
GAL	SZ	146	EP	3		03:35	44.35			Locality: OFF LAND'S END, CORNWALL				Quality: D											
GAL	SE	146	ES	3		03:36	00.85			Comment: 30KM SW OF LAND'S END															
GAL	SE	146	AML			03:36	03.44	9	0.27	STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL PERI							
GAL	SN	146	AML			03:36	03.59	7	0.17	CCO	SZ	59	EP	2	13:02	44.01									
KPL	SZ	150	EP	3		03:35	45.24			CCA	SZ	61	EP	2	13:02	44.46									
KPL	SN	150	AML			03:36	05.67	6	0.22	CR2	SZ	62	EP		13:02	44.64									
KPL	SE	150	AML			03:36	05.90	12	0.16	CR2	SE	62	ES	2	13:02	52.88									
GCL	SZ	161	EP	2		03:35	45.78			CR2	SN	62	AML		13:02	55.64	10 0.11								
										CBW	SZ	64	EP	2	13:02	44.83	10 0.07								
<b>August 23 2003 Time: 12:18 28.1 UTC</b>										CST				Magnitude: 0.6 ML											
Lat: 52.970N Lon: -4.516W				Depth: 17.9 km				Grid Ref: 231.06 kmE 344.44 kmN				RMS: 0.07 secs				Quality: C									
Locality: CAERNARVON BAY, GWYNEDD										<b>September 15 2003 Time: 08:00 48.5 UTC</b>				<b>Magnitude: 2.2 ML</b>											
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	Lat: 56.177N Lon: -4.448W				Depth: 4.6 km											
YRE	SZ	6	IP		D	12:18	31.28			Grid Ref: 248.04 kmE 700.99 kmN				RMS: 0.09 secs											
YLL	SZ	30	EP	1	C	12:18	33.92			Locality: ABERFOYLE, CENTRAL				Quality: C											
WLF	SZ	36	IP	1	C	12:18	34.61			Comment: FELT ABERFOYLE				Intensity: 3+											
WFB	SZ	45	EP	2	C	12:18	36.06			STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL PERI							
WCB	SZ	45	EP	2	C	12:18	36.20			EAB	SZ	7	IP		D	08:00	50.21								
WCB	SE	45	ES	3		12:18	41.43			PCO	SZ	30	IP		C	08:00	54.10								
WCB	SE	45	AML			12:18	42.32	6	0.08	PCO	SZ	30	ES	3		08:00	57.91								
WCB	SN	45	AML			12:18	42.49	4	0.15	POB	SZ	37	EP	2		08:00	55.21								
WPM	SZ	52	IP	1	C	12:18	37.13			PMS	SZ	41	EP	1	D	08:00	55.90								
<b>August 27 2003 Time: 20:04 03.9 UTC</b>										PMS				Magnitude: 1.0 ML											
Lat: 57.553N Lon: -5.093W				Depth: 8.8 km				RMS: 0.16 secs				PCO				Quality: D									
Locality: KINLOCHEWE, HIGHLAND										Comment: 12KM SE OF KINLOCHEWE															
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	KPL	SZ	41	IP												
KPL	SZ	41	EP	3		20:04	11.26			PCO	SZ	30	IP												
KPL	SN	41	ES	2		20:04	16.20			PCO	SZ	30	ES	3											
KPL	SN	41	AML			20:04	16.44	12	0.11	POB	SZ	37	EP	2											
KPL	SE	41	AML			20:04	16.54	11	0.31	PMS	SZ	41	EP	1	D										
KSB	SZ	43	EP	2		20:04	11.59			PCO	SZ	41	ES	3											
MDO	SZ	46	EP	2		20:04	11.78			POB	SZ	37	EP	2											
MCD	SZ	110	EP	2		20:04	22.19			PMS	SZ	41	EP	1											
MCD	SN	110	AML			20:04	36.83	6	0.13	PCO	SZ	41	EP	1											
MCD	SE	110	AML			20:04	37.17	7	0.23	PCO	SZ	41	ES	3											
<b>September 2 2003 Time: 19:32 03.7 UTC</b>										Magnitude: 1.2 ML				PCO				Quality: C							
Lat: 51.180N Lon: -3.715W				Depth: 6.9 km				RMS: 0.11 secs																	
Grid Ref: 280.11 kmE 143.80 kmN										<b>September 16 2003 Time: 00:11 26.3 UTC</b>				<b>Magnitude: 0.8 ML</b>											
Locality: LYNTON, DEVON										Lat: 51.249N Lon: -4.898W				Depth: 7.4 km				RMS: 0.39 secs							
Comment: 5KM SE OF LYNTON										Locality: BRISTOL CHANNEL				Quality: D											
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	Comment: OFF LUNDY ISLAND															
HGH	SZ	81	EP	2		19:32	17.09			HTL	SN	41	ES	2		00:11	38.47								
MCH	SZ	104	EP	3		19:32	20.66			HTL	SN	41	E			00:11	38.47								
MCH	SE	104	ES	3		19:32	32.40			HTL	SN	41	AML			00:11	38.83	6	0.27						
MCH	SN	104	ES	3		19:32	32.85			HTL	SE	41	AML			00:11	40.24	5	0.28						
MCH	SE	104	AML			19:32	33.16	6	0.32	HEX	SZ	79	EP	2		00:11	39.09								
MCH	SN	104	AML			19:32	38.22	7	0.19	DYA	SZ	113	EP	3		00:11	45.18								
HAE	SZ	125	EP	2		19:32	24.31			DYA	SN	113	ES	3		00:11	59.29								
SSP	SZ	144	EP	1	C	19:32	27.16			DYA	SN	113	AML			00:12	01.78	3	0.32						
SSP	SN	144	AML			19:32	46.47	9	0.21	DYA	SE	113	AML			00:12	01.79	2	0.25						
SSP	SE	144	AML			19:32	47.12	8	0.28	CCA	SZ	120	EP	2		00:11	45.94								
HEX	SZ	14	IP		C	19:32	06.77			CR2	SZ	122	EP	3		00:11	45.97								
HEX	SZ	14	ES	3		19:32	08.69																		

**TABLE 2: PHASE DATA 2003**

**TABLE 2: PHASE DATA 2003**

OBR	SZ	489	EP	3	01:14	27.97			RRH	SZ	99	IP	D	19:38	54.26										
ORE	SZ	518	EP	3	01:14	32.01			KSB	SZ	61	EP	1	19:38	48.01										
ORE	SE	518	ES	3	01:15	21.77			KPL	SN	56	AML		19:38	58.47	46	0.34								
ORE	SE	518	AML		01:15	23.89	30 0.11		KPL	SE	56	AML		19:38	54.00	59	0.14								
ORE	SN	518	AML		01:15	24.99	27 0.17		KPL	SE	56	ES	2	19:38	53.57										
<b>October 21 2003</b> Time: 06:58 13.4 UTC      Magnitude: 0.9 ML																									
Lat: 57.060N Lon: -5.758W Depth: 7.2 km RMS: 0.10 secs Quality: C																									
Grid Ref: 172.16 kmE 802.79 KmN Locality: MALLAIG,HIGHLAND Comment: 6KM NE OF MALLAIG																									
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	MDO	SZ	52	ES	3	19:38	52.43									
KAR	SZ	16	IP		D	06:58	16.79			RRR	SN	47	AML		19:38	52.12	111	0.26							
KAR	SZ	16	ES	3		06:58	19.07			RRR	SE	47	AML		19:38	51.83	92	0.20							
KSB	SZ	26	IP		D	06:58	18.45			RRR	SE	47	ES	2	19:38	51.41									
KSB	SZ	26	ES	3		06:58	21.76			RRR	SZ	47	IP	C	19:38	45.93									
KPL	SZ	32	IP		D	06:58	19.32			REB	SZ	46	ES	3	19:38	51.16									
KPL	SE	32	ES	2		06:58	23.28			REB	SZ	46	IP	C	19:38	45.70									
KPL	SE	32	AML			06:58	23.66	22 0.16		<b>November 13 2003</b> Time: 02:22 03.9 UTC      Magnitude: 0.7 ML															
KPL	SN	32	AML			06:58	23.66	13 0.15		Lat: 56.985N Lon: -5.121W Grid Ref: 210.42 kmE 792.51 kmN Locality: LOCH ARKAIG,HIGHLAND															
RRR	SZ	89	EP	3		06:58	29.65			STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	Depth: 7.4 km RMS: 0.11 secs Quality: D					
RRR	SE	89	ES	2		06:58	38.59			KSB	SZ	31	IP	C	02:22	09.48				AMPL PERI					
MDO	SZ	94	EP	2		06:58	29.19			KAR	SZ	44	EP	2	02:22	11.56									
MDO	SZ	94	ES	3		06:58	39.98			KPL	SZ	51	EP	2	02:22	12.87									
<b>October 30 2003</b> Time: 00:05 18.5 UTC      Magnitude: 1.1 ML																									
Lat: 53.206N Lon: -1.490W Depth: 13.1 km RMS: 0.09 secs Quality: B																									
Grid Ref: 434.09 kmE 367.77 kmN Locality: CHESTERFIELD,DERBYSHIRE																									
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	BWH	SZ	13	IP	C	20:30	53.31				Magnitude: 1.0 ML					
KBI	SZ	6	IP		D	00:05	21.14			BWH	SZ	13	ES	3	20:30	54.92									
KBI	SZ	6	ES	3		00:05	22.88			ESK	SZ	19	IP	C	20:30	54.43									
KWE	SZ	32	IP		C	00:05	24.44			ESK	SE	19	ES	2	20:30	56.86									
LHO	SZ	45	IP		D	00:05	26.28			ESK	SE	19	AML		20:30	57.13	38	0.09							
CWF	SZ	53	EP	2		00:05	27.58			ESK	SN	19	AML		20:30	58.13	29	0.13							
CWF	SN	53	ES	2		00:05	33.59			BHH	SZ	24	IP	C	20:30	55.19									
CWF	SN	53	AML			00:05	33.78	18 0.08		BHH	SE	24	ES	2	20:30	58.16									
CWF	SE	53	AML			00:05	33.81	14 0.09		BHH	SN	24	AML		20:30	58.35	62	0.15							
KSY	SZ	66	EP	2		00:05	29.60			ECK	SZ	24	IP	C	20:30	55.09									
LMK	SZ	83	IP		C	00:05	32.29			BHH	SE	24	AML		20:30	58.31	52	0.11							
<b>October 31 2003</b> Time: 19:04 51.1 UTC      Magnitude: 1.3 ML																									
Lat: 56.251N Lon: -3.753W Depth: 5.3 km RMS: 0.10 secs Quality: B																									
Grid Ref: 291.38 kmE 707.91 kmN Locality: BLACKFORD, TAYSIDE																									
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI	BBO	SZ	58	EP	2	20:31	00.79				Magnitude: 1.9 ML					
EBH	SZ	15	IP		D	19:04	54.17			BBO	SE	58	ES	3	20:31	08.21									
EBH	SZ	15	ES	3		19:04	56.31			BBO	SE	58	AML		20:31	10.12	4	0.20							
ELO	SZ	25	IP	1	D	19:04	55.86			BBO	SE	58	AML		20:31	10.15	7	0.24							
ELO	SZ	25	ES	3		19:04	58.99			BTA	SZ	63	EP	3	20:31	01.91									
PCO	SZ	36	IP		C	19:04	57.68			BTA	SE	63	ES	3	20:31	09.44									
EAB	SZ	37	IP		C	19:04	57.82			BTA	SN	63	AML		20:31	12.33	10	0.19							
EAU	SZ	49	EP	2		19:04	59.79			GAL	SZ	89	EP	3	20:31	05.26									
EDI	SZ	51	EP	1	C	19:05	00.00			GAL	SN	89	ES	3	20:31	15.82									
EDI	SE	51	ES	2		19:05	06.26			GAL	SE	89	AML		20:31	16.53	4	0.19							
EDI	SN	51	AML			19:05	06.47	20 0.20		GAL	SN	89	AML		20:31	16.71	9	0.22							
EDU	SZ	57	EP	2		19:05	00.87			GMK	SZ	135	EP	3	20:31	12.55									
EDU	SZ	57	ES	3		19:05	07.77			<b>November 1 2003</b> Time: 09:21 09.8 UTC      Magnitude: 0.7 ML															
PCA	SZ	69	IP	1	C	19:05	02.93			ORE	SN	29	ES	2	11:00	03.57									
PMS	SZ	77	EP	2		19:05	03.80			ORE	SN	29	AML		11:00	03.68	384	0.09							
MME	SZ	128	EP	2		19:05	12.35			ORE	SN	64	EP	2	11:00	05.39									
MDO	SZ	138	EP	3		19:05	14.23			ORE	SZ	65	EP	2	11:00	05.54									
<b>November 1 2003</b> Time: 09:21 09.8 UTC      Magnitude: 0.7 ML																									
Lat: 57.208N Lon: -5.932W Depth: 7.0 km RMS: 0.05 secs Quality: B																									
Grid Ref: 162.58 kmE 819.80 kmN Locality: SKYE,HIGHLAND																									
Comment: FELT ACHANALT Intensity: 2+																									

**TABLE 2: PHASE DATA 2003**

CWF	SE	57	AML	20:57	59.24	22	0.30		SSP	SE	75	AML	14:37	35.06	5	0.27
CWF	SN	57	AML	20:58	00.93	19	0.18		SSP	SN	75	AML	14:37	35.03	4	0.27
LMK	SZ	57	EP	2	20:57	51.47			SSP	SZ	75	EP	2	14:37	23.33	
LHO	SZ	61	IP	C	20:57	51.67			HTR	SZ	57	IP	C	14:37	20.22	
HPK	SZ	88	EP	3	20:57	56.42			MCH	SN	36	AML	14:37	22.36	32	0.12
HPK	SE	88	AML		20:58	11.33	55	0.22	MCH	SE	36	AML	14:37	22.22	18	0.28
HPK	SN	88	AML		20:58	12.68	79	0.29	MCH	SZ	36	IP	D	14:37	17.05	
HLM	SZ	144	EP	3	20:58	05.87			HGH	SZ	29	IP	C	14:37	15.96	
SBD	SZ	149	EP	2	20:58	06.58			HAE	SZ	22	IP	D	14:37	14.83	
SSP	SZ	163	EP	2	20:58	08.69										
SSP	SN	163	ES	2	20:58	28.52										
SSP	SN	163	AML		20:58	30.80	11	0.57								
SSP	SE	163	AML		20:58	33.01	8	0.33								
HAE	SZ	165	EP	2	20:58	08.77										
MCH	SZ	188	IP	C	20:58	12.03										
MCH	SN	188	ES	2	20:58	34.54										
MCH	SE	188	AML		20:58	35.74	11	0.32								
MCH	SN	188	AML		20:58	36.32	16	0.21								
<b>November 22 2003 Time: 03:12 09.9 UTC Magnitude: 1.0 ML Lat: 52.153N Lon: -2.467W Depth: 19.4 km Grid Ref: 368.04 kmE 250.69 kmN Locality: BROMYARD, HER &amp; WOR</b>																
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI							
MCH	SZ	40	IP	C	03:12	17.33										
HGH	SZ	62	EP	2	03:12	20.61										
HTR	SZ	56	EP	2	03:12	19.41										
SSP	SE	53	AML		03:12	26.69	5	0.19								
SSP	SN	53	AML		03:12	26.23	6	0.16								
SSP	SZ	53	EP	2	03:12	19.19										
SSP	SE	53	ES	2	03:12	25.84										
MCH	SE	40	AML		03:12	23.29	25	0.10								
MCH	SN	40	AML		03:12	23.04	31	0.08								
MCH	SN	40	ES	2	03:12	22.64										
HAE	SZ	14	IP	D	03:12	13.93										
<b>November 22 2003 Time: 19:08 58.5 UTC Magnitude: 2.7 ML Lat: 60.313N Lon: 2.281W Depth: 8.4 km Grid Ref: 636.38 kmE 1166.38 kmN Locality: NORTHERN NORTH SEA</b>																
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI							
YEL	SZ	187	EP	1	19:09	26.43										
YEL	SZ	187	ES	3	19:09	47.89										
LRW	SZ	193	EP	3	19:09	26.48										
LRW	SN	193	ES	2	19:09	47.93										
LRW	SN	193	AML		19:09	57.84	27	0.14								
LRW	SE	193	AML		19:09	57.95	31	0.28								
SAN	SZ	198	EP	1	19:09	27.45										
WAL	SZ	216	EP	1	19:09	30.04										
OST	SZ	305	EP	1	19:09	41.20										
OWE	SZ	318	EP	1	19:09	42.83										
OHO	SZ	353	EP	1	19:09	46.65										
ORE	SZ	396	EP	1	19:09	51.51										
ORE	SE	396	AML		19:10	31.97	31	0.05								
ORE	SN	396	AML		19:10	32.61	34	0.25								
<b>November 22 2003 Time: 21:22 48.7 UTC Magnitude: 1.8 ML Lat: 51.395N Lon: -2.655W Depth: 14.7 km Grid Ref: 354.40 kmE 166.51 kmN Locality: BRISTOL, AVON Quality: B</b>																
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI							
SMD	SZ	11	IP	D	21:22	52.05										
SMD	SZ	11	ES	3	21:22	53.44										
HGH	SZ	29	IP	D	21:22	54.23										
HGH	SZ	29	ES	3	21:22	58.21										
SWK	SZ	40	IP	D	21:22	55.77										
SWN	SZ	61	IP	C	21:22	59.00										
SWN	SN	61	ES	2	21:23	07.04										
SWN	SE	61	AML		21:23	07.62	65	0.44								
SWN	SN	61	AML		21:23	12.13	62	0.33								
MCH	SZ	71	EP	2	21:23	00.60										
MCH	SN	71	ES	2	21:23	09.24										
MCH	SN	71	AML		21:23	09.41	36	0.13								
MCH	SE	71	AML		21:23	09.61	58	0.18								
HAE	SZ	72	IP	C	21:23	00.47										
HAE	SZ	72	ES	3	21:23	09.38										
HTR	SZ	87	EP	2	21:23	02.99										
HEX	SZ	88	EP	1	C	21:23	03.50									
HSA	SZ	111	EP	2	21:23	07.15										
SSP	SZ	118	EP	1	D	21:23	07.89									
SSP	SE	118	ES	2	21:23	21.61										
SSP	SE	118	AML		21:23	22.38	21	0.39								
SSP	SN	118	AML		21:23	22.97	22	0.21								
HLM	SZ	126	EP	2	21:23	09.15										
SKP	SZ	133	EP	2	21:23	09.95										
HTL	SZ	135	EP	2	21:23	10.45										
HTL	SN	135	ES	2	21:23	26.27										
HTL	SN	135	AML		21:23	29.12	13	0.15								
HTL	SE	135	AML		21:23	32.80	18	0.31								
HPE	SZ	158	EP	2	21:23	13.69										
<b>November 26 2003 Time: 14:37 10.5 UTC Magnitude: 1.0 ML Lat: 51.840N Lon: -2.537W Depth: 14.0 km Grid Ref: 363.01 kmE 215.86 kmN Locality: CINDERFORD, GLOUCS Quality: C</b>																
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI							
MCH	SE	36	ES	2	14:37	21.88										
HLM	SZ	79	ES	3	14:37	33.28										
HLM	SZ	79	IP	1	D	14:37	23.77									
<b>November 26 2003 Time: 21:27 18.5 UTC Magnitude: 1.1 ML Lat: 57.146N Lon: -5.562W Depth: 2.7 km Grid Ref: 184.54 kmE 811.77 kmN Locality: LOCH HOURN, HIGHLAND Quality: C</b>																
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI							
KSB	SZ	11	IP	D	21:27	20.89										
KSB	SZ	11	ES	3	21:27	22.15										
KPL	SZ	22	IP	C	21:27	22.90										
KPL	SN	22	AML		21:27	23.03	26	0.11								
KPL	SE	22	ES	2	21:27	25.58										
KPL	SE	22	AML		21:27	25.91	64	0.23								
KSK	SZ	77	EP	2	21:27	31.93										
KAR	SZ	30	IP	C	21:27	24.19										
KAR	SZ	30	ES	3	21:27	27.88										
<b>November 27 2003 Time: 03:12 09.9 UTC Magnitude: 1.0 ML Lat: 52.153N Lon: -2.467W Depth: 19.4 km Grid Ref: 368.04 kmE 250.69 kmN Locality: BROMYARD, HER &amp; WOR Quality: C</b>																
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI							
KBI	SZ	33	EP	3	03:23	36.33										
KWE	SZ	67	EP	3	03:23	42.11										
KSY	SZ	70	EP	3	03:23	42.35										
CWF	SZ	82	EP													

**TABLE 2: PHASE DATA 2003**

KWE	SZ	69	EP	2	00:15	46.85	December 12 2003 Time: 14:11 11.1 UTC						Magnitude: 2.0 ML	
KSY	SZ	73	EP	1	C	00:15	Lat: 55.239N Lon: -3.482W						Depth: 3.3 km	
CWF	SZ	86	EP	1	C	00:15	Grid Ref: 305.77 kmE 594.89 kmN						RMS: 0.20 secs	
CWF	SN	86	ES	3		00:15	Locality: JOHNSTONEBRIDGE, D & G						Quality: C	
CWF	SE	86	AML			00:16	01.66	9	0.33				AMPL PERI	
CWF	SN	86	AML			00:16	03.90	7	0.18					
December 7 2003 Time: 11:56 47.6 UTC							Magnitude: 1.1 ML							
Lat: 53.464N Lon: -1.188W							Depth: 1.0 km							
Grid Ref: 453.91 kmE 396.64 kmN							RMS: 0.05 secs							
Locality: MALTBY, S YORKSHIRE							Quality: D							
Comment: C/F														
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI					
KBI	SZ	33	EP	2		11:56	53.96	BWH	SZ	13	IP	C	14:11 13.79	
KWE	SZ	66	EP	3		11:56	59.21	BWH	SZ	13	ES	3	14:11 15.46	
KSY	SZ	69	EP	1	D	11:56	59.75	BTA	SN	63	ES	2	14:11 29.95	
CWF	SZ	81	EP	2		11:57	01.69	BTA	SN	63	AML		14:11 32.81	
CWF	SN	81	ES	3		11:57	11.97	GAL	SE	89	ES	2	14:11 36.63	
CWF	SE	81	AML			11:57	16.16	GAL	SZ	135	IP	D	14:11 33.00	
CWF	SN	81	AML			11:57	16.23	GMK	SZ					
December 7 2003 Time: 19:56 43.5 UTC							Magnitude: 1.0 ML							
Lat: 53.474N Lon: -1.194W							Depth: 1.0 km							
Grid Ref: 453.47 kmE 397.79 kmN							RMS: 0.13 secs							
Locality: MALTBY, S YORKSHIRE							Quality: D							
Comment: C/F														
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI					
KBI	SZ	33	EP	2		19:56	49.67	PCA	SZ	71	EP	1	14:11 23.46	
KWE	SZ	67	EP	2		19:56	55.48	EDI	SZ	78	IP	D	14:11 24.90	
KSY	SZ	70	EP	2		19:56	55.75	EDI	SN	78	ES	2	14:11 34.16	
CWF	SZ	82	EP	2		19:56	58.09	EDI	SN	78	AML		14:11 35.55	
CWF	SN	82	ES	3		19:57	07.79	EDI	SE	78	AML		14:11 36.92	
CWF	SE	82	AML			19:57	12.52	GAL	SZ	89	IP	C	14:11 25.56	
CWF	SN	82	AML			19:57	12.53	GAL	SN	89	AML		14:11 39.21	
December 8 2003 Time: 03:26 39.3 UTC							Magnitude: 1.1 ML							
Lat: 53.448N Lon: -1.224W							Depth: 1.0 km							
Grid Ref: 451.56 kmE 394.85 kmN							RMS: 0.08 secs							
Locality: MALTBY, S YORKSHIRE							Quality: D							
Comment: C/F														
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI					
KBI	SZ	30	EP	2		03:26	44.88	ESK	SZ	20	IP	C	14:11 14.90	
KWE	SZ	63	EP	3		03:26	50.77	ESK	SN	20	ES	1	14:11 17.39	
KSY	SZ	69	EP	1	D	03:26	51.39	ESK	SE	20	AML		14:11 18.67	
CWF	SZ	79	EP	2		03:26	53.11	ESK	SE	20	AML		14:11 17.59	
CWF	SE	79	ES	3		03:27	03.02	BCC	SZ	30	IP	D	14:11 16.73	
CWF	SE	79	AML			03:27	07.07	BDL	SZ	60	IP	D	14:11 21.72	
CWF	SN	79	AML			03:27	07.86	BHH	SZ	23	IP	C	14:11 15.63	
December 8 2003 Time: 05:45 02.7 UTC							Magnitude: 1.3 ML							
Lat: 53.448N Lon: -1.206W							Depth: 1.0 km							
Grid Ref: 452.74 kmE 394.87 kmN							RMS: 0.16 secs							
Locality: MALTBY, S YORKSHIRE							Quality: D							
Comment: C/F														
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI					
KBI	SZ	30	EP	1	C	05:45	08.48	December 14 2003 Time: 19:42 00.1 UTC					Magnitude: 1.8 ML	
KWE	SZ	64	EP	2		05:45	14.33	STAT	CO	DIST	PHAS	WT	IP	14:42 27.10
KSY	SZ	68	EP	3		05:45	14.56	KBI	SZ	30	EP	2	14:42 23.46	
CWF	SZ	79	EP	2		05:45	16.68	KSY	SZ	45	EP	2	14:42 08.40	
CWF	SE	79	ES	3		05:45	26.40	KWE	SZ	56	IP		14:42 10.30	
CWF	SE	79	AML			05:45	31.24	CWF	SZ	57	EP	2	14:42 10.33	
CWF	SE	79	AML			05:45	31.42	CWF	SE	57	ES	3	14:42 17.91	
December 8 2003 Time: 18:30 36.8 UTC							Magnitude: 1.4 ML							
Lat: 53.425N Lon: -1.316W							Depth: 1.0 km							
Grid Ref: 450.43 kmE 394.25 kmN							RMS: 0.24 secs							
Locality: MALTBY, S YORKSHIRE							Quality: C							
Comment: C/F, FELT MALTBY							Intensity: 2+							
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI					
CWF	SZ	76	EP	2		18:30	49.94	December 15 2003 Time: 04:28 23.9 UTC					Magnitude: 3.9 ML	
CWF	SN	76	AML			18:31	01.79	SNART	SZ	EP	1	C	04:29 23.29	
CWF	SE	76	ES	3		18:30	59.61	STAV	SZ	EP	2		10.51	
CWF	SE	76	AML			18:31	00.90	STAV	SN	ES	3		44.61	
KBI	SZ	76	EP	3		18:30	41.63	DOMB	SZ	IP	1	D	04:29 11.26	
KWE	SZ	76	EP	3		18:30	46.67	FOO	SZ	131	IP	1	D	04:29 43.29
LHO	SZ	38	EP	1	C	18:30	44.12	FOO	SE	131	ES	3		04:29 58.18
HPK	SZ	63	EP	3		18:30	48.11	FOO	SN	131	AML		04:29 00.13	1202 0.28
HPK	SN	63	AML			18:31	00.88	FOO	SE	131	AML		04:29 00.94	738 0.15
HPK	SE	63	ES	3		18:30	54.92	ASK	SZ	195	IP	1	D	04:29 51.82
HPK	SE	63	AML			18:30	59.63	HYA	SZ	201	IP	1	C	04:29 53.13
December 12 2003 Time: 02:39 40.5 UTC							Magnitude: 1.1 ML							
Lat: 51.692N Lon: -3.035W							Depth: 15.3 km							
Grid Ref: 328.49 kmE 199.75 kmN							RMS: 0.06 secs							
Locality: PONTYPOOL, GWENT							Quality: C							
STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI					
HGH	SZ	17	IP	C	02:39	44.50	KMY	SZ	313	EP	1	C	04:29 05.80	
MCH	SZ	34	IP	C	02:39	46.91	KMY	SE	313	ES	2		04:29 35.96	
MCH	SE	34	ES	2		02:39	51.58	KMY	SE	313	AML		04:29 39.81	338 0.17
MCH	SN	34	AML			02:39	51.69	KMY	SE	313	AML		04:29 40.17	251 0.20
MCH	SE	34	AML			02:39	51.73	KBL55	SZ	329	IP	1	C	04:29 08.97
HTR	SZ	46	IP	D	02:39	48.58	KBL55	SE	329	ES	2		04:29 41.30	
HAE	SZ	51	IP	C	02:39	49.34	KBL55	SE	329	ES	2		04:29 24.45	
SSP	SZ	81	EP	3		02:39	54.10	OST	SZ	404	EP	3		04:29 27.97
SSP	SN	81	ES	2		02:40	03.77	OHO	SZ	452	EP	2		04:29 14.73
SSP	SE	81	AML			02:40	03.87	OBR	SZ	468	EP	1	C	04:29 26.64
SSP	SN	81	AML			02:40	04.84	ORE	SZ	496	EP	2		04:29 24.45
SWK	SZ	82	EP	3		02:39	54.26	ORE						

**TABLE 2: PHASE DATA 2003**

FTO	SN	498	ES	3	04:30	15.63		
FTO	SN	498	AML		04:30	16.57	32	0.39
FTO	SE	498	AML		04:30	17.87	32	0.55
MCD	SZ	563	EP	3	04:29	35.79		
MCD	SN	563	ES	3	04:30	29.03		
MCD	SE	563	AML		04:30	31.11	173	0.47
MCD	SN	563	AML		04:30	31.68	176	0.11
MVH	SZ	565	EP	3	04:29	35.97		
MDO	SZ	614	EP	3	04:29	41.94		
ELO	SZ	683	EP	3	04:29	50.84		
ESY	SZ	709	EP	3	04:29	54.56		
EDI	SZ	723	EP	3	04:29	56.03		
EDI	SE	723	ES	3	04:31	03.26		
EDI	SN	723	AML		04:31	07.89	63	0.18
EDI	SE	723	AML		04:31	08.56	74	0.38
EAB	SZ	730	EP	3	04:29	56.41		
EAU	SZ	738	EP	3	04:29	57.65		
PCO	SZ	742	EP	3	04:29	58.07		
PMS	SZ	776	EP	3	04:30	01.83		

December 18 2003 Time: 07:49 35.5 UTC Magnitude: 1.0 ML  
Lat: 56.179N Lon: -4.232W Depth: 4.3 km  
Grid Ref: 261.48 kmE 700.68 kmN RMS: 0.08 secs  
Locality: THORNHILL, CENTRAL Quality: B  
Comment: 5KM W OF THORNHILL

STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
EAB	SZ	7	IP		C	07:49	37.22		
EAB	SZ	7	ES	3		07:49	38.31		
PCO	SZ	23	IP		C	07:49	39.81		
PCO	SZ	23	ES	3		07:49	43.16		
ELO	SZ	46	IP		C	07:49	43.67		
PMS	SZ	49	IP		D	07:49	44.26		
PMS	SZ	49	ES	3		07:49	50.44		
PCA	SZ	53	IP		D	07:49	44.80		
EAU	SZ	61	IP		C	07:49	46.19		
EDI	SZ	71	EP	2		07:49	47.95		
EDI	SN	71	ES	2		07:49	56.32		
EDI	SE	71	AML			07:50	01.47	9	0.30
EDI	SN	71	AML			07:50	02.41	8	0.33

December 18 2003 Time: 12:41 25.6 UTC Magnitude: 1.3 ML  
Lat: 56.180N Lon: -4.232W Depth: 4.2 km  
Grid Ref: 261.50 kmE 700.81 kmN RMS: 0.07 secs  
Locality: THORNHILL, CENTRAL Quality: B  
Comment: 5KM W OF THORNHILL

STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
EAB	SZ	7	IP		C	12:41	27.32		
EAB	SZ	7	ES			12:41	28.40		
PCO	SZ	23	IP		C	12:41	29.96		
ELO	SZ	46	IP		C	12:41	33.77		
PMS	SZ	49	IP		D	12:41	34.38		
PMS	SZ	49	ES	3		12:41	40.52		
PCA	SZ	53	IP		D	12:41	34.95		
EAU	SZ	62	IP		C	12:41	36.28		
EDI	SZ	71	EP	2		12:41	37.95		
EDI	BZ	71	EP	2		12:41	37.98		
EDI	BN	71	ES	2		12:41	46.44		
EDI	BE	71	AML			12:41	46.71	17	0.31
EDI	BN	71	AML			12:41	52.48	14	0.31

December 25 2003 Time: 22:13 36.6 UTC Magnitude: 1.7 ML  
Lat: 51.203N Lon: -3.725W Depth: 2.5 km  
Grid Ref: 279.52 kmE 146.34 kmN RMS: 0.15 secs  
Locality: LYNTON, DEVON Quality: C  
Comment: 7KM SE OF LYNTON

STAT	CO	DIST	PHAS	WT	P	HrMn	SECS	AMPL	PERI
MCH	SE	102	AML			22:14	06.23	15	0.30
MCH	SN	102	AML			22:14	11.31	20	0.23
SWK	SZ	104	EP	2		22:13	54.30		
HPE	SZ	109	EP	3		22:13	55.22		
SSP	SZ	142	EP	2		22:14	00.03		
HAE	SZ	124	EP	2		22:13	57.36		
SSP	SN	142	AML			22:14	19.54	21	0.17
SSP	SE	142	AML			22:14	20.20	17	0.27
HTL	SE	58	AML			22:13	56.58	47	0.36
HTR	SZ	102	EP	2		22:13	53.52		
MCH	SE	102	ES	2		22:14	05.90		
MCH	SZ	102	EP	2		22:13	53.60		
HGH	SZ	80	IP		C	22:13	50.18		
SMD	SZ	71	IP		C	22:13	48.88		
HTL	SN	58	AML			22:13	56.62	30	0.24
HTL	SN	58	ES	2		22:13	54.42		
HTL	SZ	58	IP		C	22:13	46.75		
HEX	SZ	16	ES	3		22:13	41.84		
HEX	SZ	16	IP		C	22:13	39.85		

TABLE 3

## GEOGRAPHIC COORDINATES OF SEISMOGRAPH STATIONS, 2003

Code	Name	Lat	Lon	KmE (km)	KmN (km)	Ht (m)	Comp
ABA	BACONSTHORPE	52.8884	1.1453	611.58	337.00	74	1
AEA	EAST ANGLIA UNIV	52.6208	1.2403	619.30	307.53	45	3M
AEU	EAST ANGLIA	52.6202	1.2347	618.93	307.45	28	SM
APA	PACKWAY	52.3006	1.4782	637.12	272.68	58	1
AWH	WHINBURGH	52.6297	0.9507	599.67	307.68	64	1R
AWI	WITTON	52.8319	1.4471	632.17	331.65	46	1
BBH	BRUNTSHEIL	55.1333	-2.9299	340.72	582.50	216	1
BBO	BOTHEL	54.7367	-3.2464	319.76	538.69	209	3
BCC	CHAPELCROSS	55.0153	-3.2201	321.99	569.66	138	1SM
BCM	CHAPELCROSS MIC	55.0151	-3.2212	321.92	569.64	78	M
BDL	DOBCROSS HALL	54.8030	-2.9385	339.68	545.76	157	1
BHH	HOWATS HILL	55.0931	-3.2181	322.27	578.31	216	3
BNA	NEW ABBEY	54.9658	-3.6242	296.03	564.68	28	1
BTA	TALKIN	54.9057	-2.6844	356.12	557.00	279	3
BWH	WARDLAW	55.1758	-3.6549	294.62	588.09	269	1
CBW	BUDOCK WATER	50.1482	-5.1144	177.53	32.29	94	1
CCA	CARNMENELLIS	50.1866	-5.2277	169.62	36.90	210	1
CCO	CONSTANTINE	50.1357	-5.1957	171.66	31.14	168	1
CDU	DUNNERDALE	54.3362	-3.1952	322.30	494.08	355	1
CGH	GOONHILLY	50.0507	-5.1649	173.46	21.60	97	1
CGW	GWEEK	50.1006	-5.2228	169.56	27.32	9	1
CKE	KESWICK	54.5877	-3.1059	328.54	521.96	304	1
CMA	MANACCAN	50.0821	-5.1274	176.29	24.98	42	1
CPZ	PENZANCE	50.1566	-5.5828	144.12	34.72	199	1R
CR2	ROSEMANOWES 2	50.1667	-5.1687	173.74	34.51	143	3
CRQ	ROSEMANOWES	50.1672	-5.1726	173.46	34.57	156	SM
CSA	ST AUSTELL	50.3527	-4.8919	194.30	54.38	112	1
CSF	SCAFELL	54.4478	-3.2430	319.41	506.55	540	1
CSM	SELLAFIELD MIC	54.4183	-3.4913	303.24	503.58	50	M
CST	STITHIANS	50.1952	-5.1635	174.24	37.66	141	1
CWF	CHARNWOOD FST	52.7385	-1.3076	446.74	315.91	203	3BB
DCO	COMBE FARM	50.3201	-3.8721	266.74	48.43	117	1R
DYA	YADSWORTHY	50.4353	-3.9310	262.88	61.34	292	3RMLG
EAB	ABERFOYLE	56.1887	-4.3373	254.97	702.02	279	1R
EAU	AUCHINOON	55.8454	-3.4474	309.38	662.30	359	1R
EBH	BLACK HILL	56.2476	-3.5084	306.54	707.13	375	1R
EBL	BROAD LAW	55.7723	-3.0445	334.48	653.71	436	1R
ECK	CAULDKAINE HILL	55.1810	-3.1292	328.10	588.00	351	1R
EDI	EDINBURGH	55.9233	-3.1875	325.80	670.66	125	3BB
EDR	DRUMTOCHTY	56.9190	-2.5393	367.17	780.97	401	1R
EDU	DUNDEE	56.5477	-3.0110	337.85	739.97	421	1R
ELO	LOGIEALMOND	56.4703	-3.7112	294.59	732.21	523	1R
ESK	ESKDALEMUIR	55.3165	-3.2052	323.52	603.16	261	3RMLG
ESY	STONEYPATH	55.9175	-2.6141	361.62	669.55	337	1R
FHV	HALDARSVIK	62.2597	-7.0984	135.46	1385.95	380	1R
FSD	SUDUROY	61.5701	-6.7884	145.86	1308.06	480	1R
FSV	SVINOY	62.2598	-6.3550	173.99	1383.14	430	1R
FTO	TORSHAVN	62.0199	-6.8274	147.51	1358.21	325	3R
FVA	VAGAR	62.0575	-7.3520	120.46	1364.55	430	1R
GAL	GALLOWAY	54.8664	-4.7114	226.02	555.78	117	3MLG
GCD	CASTLE DOUGLAS	54.8630	-3.9403	275.48	553.76	184	1R
GCL	CUSHENDALL	55.0783	-6.1264	136.66	583.77	278	1R
GIM	ISLE OF MAN (North)	54.2923	-4.4672	239.44	491.35	346	3R
GMK	MULL OF KINTYRE	55.3458	-5.5934	172.19	611.64	164	1R
GMM	MTNS OF MOURNE	54.2377	-5.9498	142.66	489.67	155	1R
HAE	ALDERS END	52.0368	-2.5434	362.73	237.79	260	1R
HBL2	BONNYLANDS	52.0508	-3.0384	328.80	239.71	437	SM
HCG	CRAIG GOCH	52.3231	-3.6570	287.08	270.78	533	1R
HEX	EXMOOR	51.0664	-3.8026	273.71	131.28	230	1R

**TABLE 3: continued**

Code	Name	Lat	Lon	KmE (km)	KmN (km)	Ht (m)	Comp
HGH	GRAY HILL	51.6379	-2.8057	344.25	193.59	223	1R
HLM	LONG MYND	52.5184	-2.8807	340.25	291.57	429	1
HPE	PEMBROKE	51.9372	-4.7746	209.29	230.21	349	1R
HPK	HAVERAH PARK	53.9581	-1.6241	424.66	451.42	233	3R
HSA	SWANSEA	51.7500	-4.1532	251.38	207.94	293	1R
HTL	HARTLAND	50.9943	-4.4849	225.64	124.66	86	3RMLGSMBB
HTR	TREWERN HILL	52.0785	-3.2679	313.12	243.04	337	1R
JDC	DAM (CREST)	49.1947	-2.0469			39	SM
JDG	DAM (GALLERY)	49.1947	-2.0469			7	SM
JRS	MAISON ST LOUIS	49.1922	-2.0922			56	3RLG
JSA	ST AUBINS	49.1878	-2.1717			39	1R
JVM	VALLE D.L.MARE	49.2169	-2.2067			64	1R
KAC	ACHNASHELLACH	57.4989	-5.2988	202.36	850.19	206	1R
KAR	ARISAIG	56.9188	-5.8290	166.98	787.34	186	1
KBI	BIRLEY GRANGE	53.2543	-1.5279	431.49	373.17	272	1
KEY	KEYWORTH	52.8779	-1.0757	462.20	331.59	59	LG
KEY2	KEYWORTH (SM)	52.8790	-1.0770	462.13	331.73	76	SM
KNR	NEVIS RANGE	56.8219	-4.9714	218.68	773.97	1147	1R
KPL	PLOCKTON	57.3391	-5.6527	180.21	833.50	13	3RLGSM
KSB	SHIEL BRIDGE	57.2099	-5.4214	193.40	818.40	417	1R
KSX	SCOVAL	57.4659	-6.7002	118.21	851.46	265	1R
KSY	SYSTON	52.9642	-0.5872	494.88	341.73	121	1R
KTG	TILBROOK GRNGE	52.3264	-0.4019	508.90	271.06	83	1
KUF	UFFORD	52.6170	-0.3907	508.94	303.39	38	1R
KWE	WEAVER FARM	53.0164	-1.8412	410.65	346.61	328	1R
LCP	CASSOP	54.7370	-1.4744	433.84	538.14	185	1R
LDU	LEEDS	53.8058	-1.5540	429.37	434.51	74	MLGSM
LHO	HOLMEFIRTH	53.5453	-1.8548	409.62	405.44	462	1R
LMI	MILLOM	54.2206	-3.3070	314.79	481.35	129	3R
LMK	MARKET RASEN	53.4569	-0.3260	511.14	396.90	146	1R
LRN	RICHMOND	54.4165	-1.8007	412.93	502.37	313	1R
LRW	LERWICK	60.1360	-1.1779	445.66	1139.27	98	3RMLG
LWH	WHINNY NAB	54.3338	-0.6717	486.36	493.97	277	1R
MCD	COLEBURN DISTIL	57.5828	-3.2541	325.02	855.42	293	3RMLGSM
MCH	MICHAELCHURCH	51.9974	-2.9983	331.47	233.74	219	BBSM
MDO	DOCHFOUR	57.4409	-4.3633	258.17	841.39	415	1R
MFI	FISHRIE	57.6119	-2.2956	382.34	858.00	232	1R
MLA	LATHERON	58.3055	-3.3627	320.15	935.98	188	1
MME	MEIKLE CAIRN	57.3149	-2.9647	341.90	825.32	475	1
MVH	ACHVAICH	57.9250	-4.1825	270.75	894.90	185	1
OBR	BRABSTER	58.6142	-3.1626	332.47	970.13	89	1R
ODR	DOUNREAY	58.5822	-3.7256	299.68	967.27	100	SM
OHO	HOY	58.8322	-3.2465	328.05	994.48	172	1R
ORE	REAY	58.5480	-3.7622	297.45	963.52	100	3RMLG
OST	STRONSAY	59.0860	-2.5516	368.39	1022.20	21	1R
OTO	TONGUE	58.4953	-4.3939	260.49	958.79	338	1R
OWE	WESTRAY	59.3180	-3.0289	341.44	1048.36	87	1R
PCA	CARROT	55.7007	-4.2550	258.30	647.55	302	1
PCO	CORRIE	55.9880	-4.1002	269.00	679.21	267	1
PGB	GLENIFFERBRAES	55.8115	-4.4837	244.38	660.37	199	3
PMS	MUIRSHIEL	55.8459	-4.7452	228.15	664.82	351	1
POB	OBSERVATORY	55.8458	-44299	247.88	664.06	34	MLG
RCR	CAPE WRATH	58.6245	-4.9987	225.90	974.58	100	1R
REB	EISG-BRACHAIDH	58.1194	-5.2802	206.82	919.16	100	1R
RFO	FORSNAVAL	58.2133	-7.0052	106.10	935.83	195	1R
RRH	RHENIGIDALE	57.9197	-6.6881	122.43	901.86	103	1R
RRR	RUBHA REIDH	57.8577	-5.8067	174.19	891.68	61	3RMLGSM
RSC	SCOURIE	58.3485	-5.1683	214.61	944.33	60	1R
RTO	TOLSTA	58.3778	-6.2092	153.95	950.93	74	1R
SAN	SANDWICK	60.0179	-1.2392	442.41	1126.08	150	1

**TABLE 3: continued**

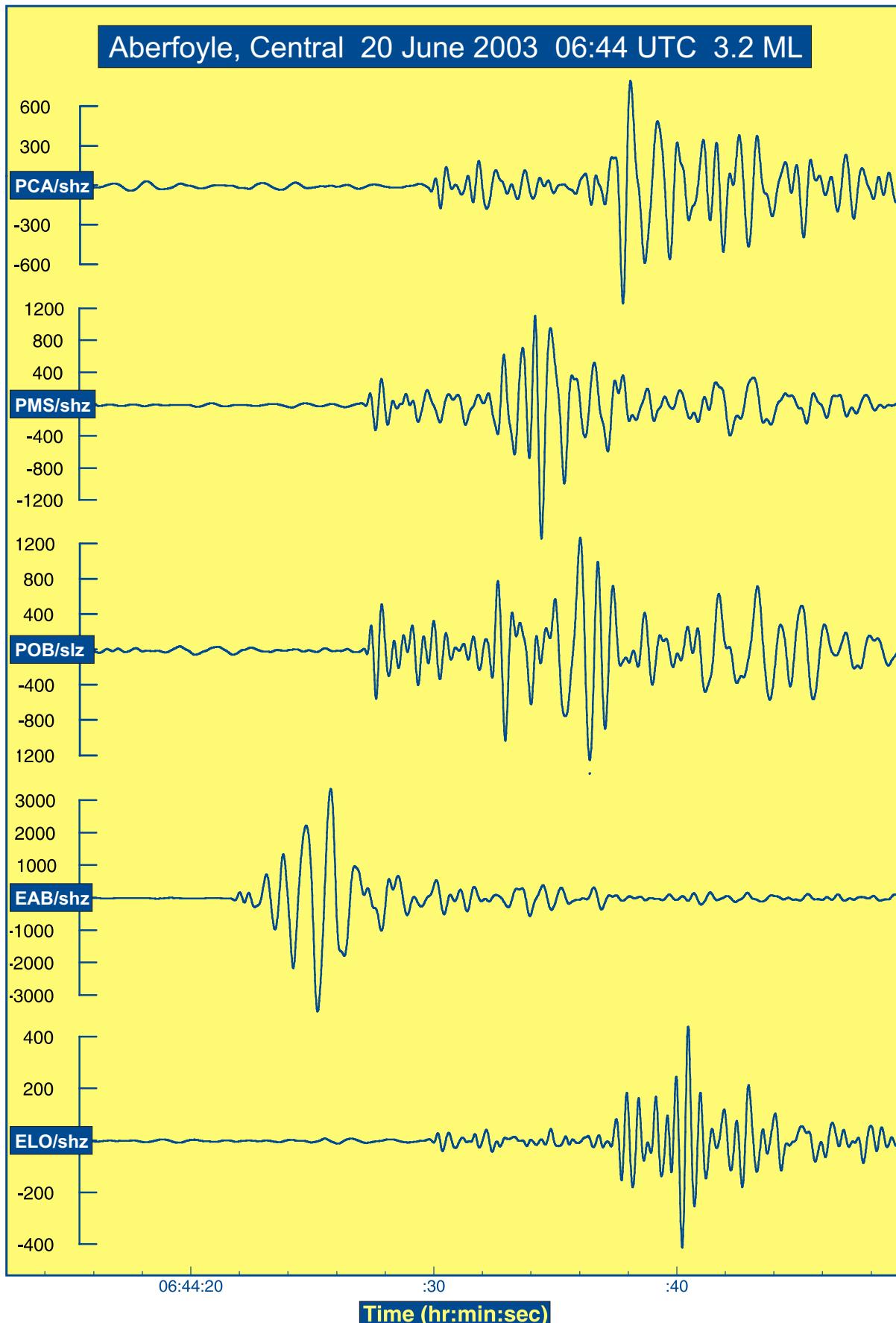
<b>Code</b>	<b>Name</b>	<b>Lat</b>	<b>Lon</b>	<b>KmE (km)</b>	<b>KmN (km)</b>	<b>Ht (m)</b>	<b>Comp</b>
SBD	BRYN DU	52.9055	-3.2585	315.37	335.01	489	1
SFH	HASELMERE	51.0604	-0.6912	491.71	129.88	260	1
SHSD	LERWICK	60.1360	-1.1779	445.66	1139.27	98	BBSM
SIW	ISLE OF WHITE	50.6711	-1.3747	444.18	85.97	162	1
SKP	KOPHILL	51.7218	-0.8096	482.22	203.29	212	1
SMD	MENDIPS	51.3083	-2.7170	350.03	156.88	310	1
SSP	STONEY POUND	52.4177	-3.1119	324.39	280.59	428	3
SSW	STOW-ON-WOLD	51.9667	-1.8499	410.31	229.86	291	1
SWK	WARMINSTER	51.1483	-2.2471	382.72	138.87	266	1
SWN	SWINDON	51.5137	-1.8007	413.83	179.49	192	3MLGSM
TBW	BRENTWOOD	51.6549	0.2913	558.48	197.66	89	1R
TCR	COLCHESTER	51.8347	0.9212	601.24	219.20	45	1R
TEB	EASTBOURNE	50.8187	0.1457	551.13	104.39	68	1R
TFO	FOLKESTONE	51.1135	1.1409	619.81	139.66	202	3MLGSM
TSA	SEVENOAKS	51.2426	0.1561	550.48	151.53	177	1
WAL	WALLS	60.2564	-1.6173	421.18	1152.46	167	1
WCB	CHURCH BAY	53.3782	-4.5467	230.62	389.87	139	3MSM
WFB	FAIRBOURNE	52.6831	-4.0383	262.23	311.48	316	1R
WIM	ISLE OF MAN(South)	54.1475	-4.6738	225.39	475.73	386	1R
WLF	LLYNFAES	53.2894	-4.3966	240.27	379.65	58	1
WME	MYNDD EILIAN	53.3969	-4.3032	246.88	391.40	129	1R
WPM	PENMAENMAWR	53.2581	-3.9048	272.95	375.18	353	1R
XAL	ALLEDALLE	54.8617	-2.2147	386.22	551.91	458	1R
XDE	DENT	54.5056	-3.4902	303.52	513.29	301	1R
XSO	SOURHOPE	55.4924	-2.2510	384.14	622.10	516	1R
YEL	YELL	60.5509	-1.0830	450.29	1185.55	203	1
YLL	LLANBERIS	53.1402	-4.1704	254.84	362.57	159	1R
YRC	RHOSCOLYN	53.2508	-4.5753	228.21	375.77	22	1R
YRE	YR EIFL	52.9811	-4.4254	237.19	345.43	193	1R
YRH	RHIW	52.8336	-4.6288	222.94	329.51	286	1R

**Component Codes:**

- 1 Single vertical seismometer
- 3 Orthogonal set of 3 seismometers
- M Low-frequency microphone
- R Station coordinates registered with the International Seismological Centre (ISC), England and the National Earthquake Information Centre (NEIC), USA
- LG Single low-gain vertical seismometer
- SM Strong motion seismometers
- BB Broadband Instrument







Seismograms of the Aberfoyle earthquake of 20 June 2003 06:44 UTC 3.2 ML recorded on the Paisley and LOWNET seismic networks.