BULLETIN NUMBER 34

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SEISMICITY OF THE SOUTHEASTERN UNITED STATES DURING 1999 included 81 tectonic (not induced) earthquakes and 56 earthquakes associated with reservoirs with magnitudes exceeding 1.0. The largest earthquake reported during the year was mb(Lg) = 3.1 occurring on January 17, 1999. The epicenter was near Barbourville, Kentucky.

Figure 1 is an epicenter map of earthquakes located during the report period. Figures 2 and 3 are cumulative epicenter maps for the period from July 1977 through December 1999, covered by SEUSSN Bulletins 1 through 34.

SOUTHEASTERN U.S. EARTHQUAKES DURING 1999 lists hypocentral parameters, magnitudes, and arrival times for tectonic earthquakes in the southeastern United States.

SOUTHEASTERN U.S. RESERVOIR ACTIVITY DURING 1999 lists hypocentral parameters, magnitudes, and arrival times for earthquakes near the reservoirs in South Carolina.

SEISMIC STATION LISTING AND NETWORK MAPS contains a listing of seismic stations potentially operational during the report period and maps showing the major network operators in the region. The SEUSSN monitoring area is considered to include all of Florida, Georgia, Alabama, South Carolina, North Carolina, Virginia, West Virginia (south of latitude 37.72 deg N), Maryland, and Delaware; and includes Tennessee and Kentucky - east of longitude 87 degrees West (see Figure 4).

INTERNET ACCESS TO SOUTHEASTERN U.S. EARTHQUAKE CATALOG INFORMATION AND ELECTRONIC VERSIONS OF THE BULLETIN describes how to download southeastern U.S. earthquake catalogs and electronic versions of the SEUSSN Bulletins via the Virginia Tech Seismological Observatory website http://www.geol.vt.edu/outreach/vtso. Hypocentral parameters of events in Bulletin 34 are accessible via the CNSS catalog at http://quake.geo.berkeley.edu/cnss.

DEFINITIONS AND NETWORK OPERATOR CODES contains definitions of various terms and abbreviations used in the Bulletin as well as a listing of codes for network operators and/or contributors.

Publications reported to us during the report period concerning seismicity in the southeast are Open-File Report 99-03-01, Earthquake Hazard Maps for Maryland and Educational Series No. 9, Earthquakes in Maryland.

Acknowledgments

This report is the thirty-fourth SOUTHEASTERN UNITED STATES SEISMIC NETWORK BULLETIN and covers the period from January through December, 1999. The organizations supplying data for this Bulletin are Auburn University, Charleston Southern University, Delaware Geological Survey, Georgia Institute of Technology, Maryland Geological Survey, Millersville University, United States Geological Survey, University of Florida, University of Memphis (Center for Earthquake Research and Information), University of South Carolina, University of Tennessee/Tennessee Valley Authority- Joint Institute for Energy and Environment, Virginia Polytechnic Institute and State University (Virginia Tech Seismological Observatory), and the Westinghouse Savannah River Company.

Several of the plots in this report were generated using the Generic Mapping Tools (GMT) software package developed by Wessel and Smith (1991).

References

Bollinger, G. A., Frederick C. Davison, Jr., Matthew S. Sibol, and Jeffrey B. Birch, (1989), Magnitude recurrence relations for the southeastern United States and its subdivisions, Journal of Geophysical Research, 94, pp. 2857-2873.

Chapman, M. C., J. A. Snoke, and G. A. Bollinger, (1988), A procedure for calibrating short-period telemetered seismograph systems, Bulletin of the Seismological Society of America, 78, pp. 2077-2088.

Hoaglin, David C., Frederick Mosteller, and John W. Tukey, (1983), Understanding Robust And Exploratory Data Analysis, John Wiley & Sons, New York, NY, 447 pp.

Lahr, J. C., (1980), HYPOELLIPSE/VAX: A computer program for determining local earthquake hypocentral parameters, magnitude, and first-motion pattern, U.S. Geological Survey Open-File Report 80-59, 59 pp.

Lee, W. H. K., and J. C. Lahr, (1974), HYPO71: A computer program for determining hypocenter, magnitude, and first motion pattern of local earthquakes, U.S. Geological Survey Open-File Report 75-311, Revised: January 1974, 134 pp.

Lee, W. H. K., and S. W. Stewart, (1981), Principles and Applications of Microearthquake Networks, Academic Press, New York, NY, 293 pp.

Nuttli, O. W., (1973), Seismic wave attenuation and magnitude relations for eastern North America, Journal of Geophysical Research, 78, pp. 876-885.

Shedlock, Kaye M., (1987), Earthquakes recorded by the South Carolina Seismic Network (1974-1986), U.S. Geological Survey Open-File Report 87-437, 92 pp.

Wessel, P., and W. H. F. Smith, (1991), Free software helps map and display data, EOS Trans. Am. Geophys. Union, 72, pp. 441, 445-446.

SEUSSN EARTHQUAKE CATALOG STATISTICS

TABLE 1. SEUSSN Report Period Earthquake Catalog Statistics

Period: January through December 1999 (1 year)	Tectonic
Number of Earthquakes with M ≥ 0.0	81
Number of Earthquakes with M ≥ 2.0	24
Number of Earthquakes with M ≥ 3.0	1
Number of Earthquakes with M ≥ 4.0	0
Number of Felt Earthquakes	5
Number of Earthquakes with Known ERZ ≤ 5.0 km	73

Largest Earthquake: 1 January 1999; 18:38 - Barbourville, KY, MD= 3.1, III MM

Period: July 1977 through December 1999 (22.5 years)	Tectonic
Number of Earthquakes with M ≥ 0.0	1772
Number of Earthquakes with M ≥ 2.0	670
Number of Earthquakes with M ≥ 3.0	106
Number of Earthquakes with M ≥ 4.0	8
Number of Felt Earthquakes	220

Number of Earthquakes with Known ERZ ≤ 5.0 km 1335

Largest Earthquake: 27 July 1980; 18:52 - Sharpsburg, KY, mb= 5.2, MMI= VII

SOUTHEASTERN U.S. EARTHQUAKES DURING 1999

Events are listed chronologically (this also applies to multiple hypocenter locations for the same event). All times are Universal Coordinated Time. Most entries in the listing are self-explanatory. Items that might require further explanation are defined in the section entitled DEFINITIONS AND NETWORK OPERATOR CODES.

*****1999 JANUARY 01; 08:47 - MAYNARDVILLE, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990101	084731.1	36.272	83.702	21.7	8	15	239	0.0	C	B/D	1.4	271	0.9	1.5	B		1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	14.8	237	iPd	08:47:35.40 (0.01)	eS	08:47:38.51 (-0.01)
UTK	EGT	54.9	138	eP	:40.63 (0.01)	eS	:47.61 (0.02)
UTK	TKL	68.4	185	eP	:42.53 (-0.05)	iS	:50.97 (-0.00)
UTK	MYNC	138.4	196	eP	:57.25 (3.96X)	eS	:48:09.50 (0.08)
UTK	ABTN	221.0	260	eP	:48:16.51 (11.19X)	eS	:29.94 (-0.23)

*****1999 JANUARY 01; 14:23 - CALHOUN, KENTUCKY*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990101	142348.2	37.405	87.241	14.9	12	67	183	0.3	C	B/D	0.4	309	0.3	1.6	B		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	HAKY	67.0	119	eP	14:23:59.09 (-0.20)	eS	14:24:07.48 (0.07)
UTK	MOTN	109.6	217	eP	:24:05.88 (-0.08)	iS	:19.13 (0.15)
UTK	WCI	118.4	41	iPd	:07.02 (-0.31)	iS	:21.69 (0.33)
UTK	ABTN	196.6	149	eP	:18.94 (-0.59)	iS	:42.48 (0.23)
UTK	PDTN	267.4	152	iP-	:29.72 (0.90)	eS	:58.26 (-0.07)
UTK	CRTN	331.6	113	eP	:38.68 (1.93)	eS	:25:06.83 (-5.21X)
UTK	TKL	366.0	1221			eS	:17.47 (-1.88)

*****1999 JANUARY 04; 08:22 - MT. STERLING, KENTUCKY*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990104	082223.0	38.079	84.043	10.0F	14	204	148	0.6	D	D/D	1.5	39	0.5	33.3	D		2.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	WCI	203.6	275	iP+	08:22:55.40 (-0.14)	eS	08:23:19.15 (-0.03)
UTK	CRTN	209.3	175	eP+	:55.65 (-0.78)	eS	:20.35 (-0.37)
UTK	HAKY	249.1	245	eP+	:23:01.78 (-0.02)	eS	:31.05 (1.05)
UTK	TKL	269.7	175	iPu	:04.40 (0.04)	eS	:35.33 (0.90)
UTK	DATN	301.0	198	eP	:43.30 (2.15X)	eS	:43.30 (2.15)
UTK	MYNC	333.6	181	eP	:13.37 (1.12)	eS	:48.72 (0.64)
UTK	BLA	333.8	106	eP	:26.53 (14.24X)	eS	:52.68 (4.53)
UTK	MOTN	385.2	246	P	:23.58 (5.00X)	eS	:24:03.78 (4.76X)
UTK	MCWV					eS	:06.51 (3.41)
UTK	MSAL	429.2	214	eP	:29.08 (5.07X)	eS	:10.79 (2.37)

*****1999 JANUARY 06; 07:14 - CHARLESTON, SOUTH CAROLINA*****

CSU Between Middleton Place and Summerville, SC. No felt reports. Magnitude 1.75

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990106	071436.8	32.917	80.129	8.0	14	2	173	0.2	C	B/C	0.4	360	0.4	0.5			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MGS	2.4	208	iPd	07:14:38.54 (-0.14)	iSd	07:14:39.04 (-0.34)
USC	RGR	6.2	260	iPd	:38.91 (-0.06)	iSd	:40.45 (0.64)
USC	CSB	9.4	35	iPd	:39.28 (0.12)	iSd	:41.37 (-0.02)
USC	CSU	9.4	35	iPu	:39.35 (0.17)	iSu	:41.24 (-0.22)
USC	SVS	12.5	297	iPd	:39.75 (-0.09)	iSd	:41.24 (-0.23)
USC	WAS	15.5	240	iPd	:40.38 (0.05)	iSd	:42.36 (-0.28)
USC	HBF	19.4	280	iPd	:40.83 (-0.04)	iSd	:43.05 (-0.05)

Additional Data

CSU	RGR	P	07:14:39
	CSU	P	:39
	WAS	P	:42

*******1999 JANUARY 06; 09:26 - LEXINGTON, TENNESSEE*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990106	092622.9	35.592	88.445	0.02	31	8	64	0.5	C	C/B	0.3	287	0.2	0.6	A		2.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	BHDM	8.0	17	iPc	09:26.24.14 (-0.14)	iS	09:26.25.35 (0.01)
UTK	PWLA	76.2	153	iPc	:35.75 (0.19)	eS	:45.35 (0.40)
UTK	RELT	91.7	303	eP	:37.68 (-0.38)		
UTK	GLST	106.9	315	iPd	:40.49 (-0.05)	eS	:57.79 (4.16X)
UTK	MOTN	121.1	20	eP+	:42.84 (-0.01)	eS	:56.96 (-0.69)
UTK	SFTN	145.2	260	eP	:46.49 (-0.27)	eS	:27:04.27 (-0.17)
UTK	OXF	148.6	217	eP-	:46.99 (-0.33)	eS	:05.44 (0.01)
UTK	WADM	149.1	306	eP	:47.81 (0.42)	eS	:07.62 (2.07X)
UTK	MSAL	181.2	117	eP+	:51.94 (-0.69)	iS	:14.07 (-0.33)
UTK	TWAR	193.6	263	eP	:53.75 (-0.72)	eS	:18.15 (0.60)
UTK	ABTN	213.8	81	eP	:57.59 (0.08)	eS	:22.69 (-0.09)
UTK	HAKY	236.8	44	iPu	:27:00.54 (0.05)	eS	:29.28 (1.35)
UTK	PDTN	238.3	98	iP-	:00.53 (-0.16)	eS	:29.54 (1.26)
UTK	DATN	304.7	91	eP	:10.50 (1.65)	eS	:45.96 (3.57X)
UTK	WCI	344.9	32	eP	:15.89 (2.20)	eS	:53.71 (2.93)
UTK	ORT	376.1	83	eP	:20.45 (2.91X)	eS	:28:00.67 (3.24X)
UTK	MYNC	396.7	97	eP	:22.19 (2.12)	eS	:04.01 (2.20)
UTK	CRTN	421.1	79	eP	:24.84 (1.79)	eS	:11.45 (4.48X)
UTK	TKL	423.2	88	eP	:27.38 (4.09X)	eS	:11.50 (4.12X)
UTK	MIAR	481.9	258	eP	:30.50 (0.05)	eS	:20.38 (0.62)

*******1999 JANUARY 09; 16:15 - TRENTON, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
WSRC	990109	161542.7	33.147	81.135	21.7	10		214	0.1	C	B/D	1.7			2.2					

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
WSRC	SRAV				16:15:46.6		
WSRC	SRPW				:16:02.1		
WSRC	SRPD				:04.9		
WSRC	MR02				:11.0		
WSRC	JSC				:16.5		
WSRC	COW				:15.49		

*******1999 JANUARY 16; 22:49 - ATHENS, TENNESSEE*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990116	224928.9	35.576	84.609	9.9	19	46	106	0.2	C	B/C	0.3	5	0.2	1.7	B		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	ORT	46.2	37	iP-	22:49:36.56 (0.01)	iS	22:49:42.49 (0.22)
UTK	MYNC	70.8	142	ePu	:40.59 (0.12)	eS	:49.04 (0.03)
UTK	TKL	76.2	83	eP	:41.13 (-0.18)	iS	:50.25 (-0.22)
UTK	ANTN	86.8	320	iPd	:42.75 (-0.24)	eS	:52.96 (-0.42)
UTK	CRTN	98.0	45	eP	:44.50 (-0.26)	eS	:56.88 (0.45)
UTK	PDTN	117.5	254	eP	:48.09 (0.26)	eS	:50:02.09 (0.35)
UTK	EGT	124.0	73	eP	:48.68 (-0.20)	eS	:03.95 (0.38)
UTK	ABTN	140.0	285	eP+	:51.28 (-0.09)	iS	:07.90 (0.03)
UTK	MSAL	204.6	247	eP	:50:06.06 (4.50X)	eS	:25.44 (0.12)
UTK	HAKY	245.5	314			iS	:35.99 (0.88)
UTK	WVT	297.4	283	eP	:19.38 (5.76X)	eS	:47.83 (1.67)
UTK	MOTN	325.4	292	iPu	:20.03 (2.96X)	eS	:55.43 (3.28X)

*******1999 JANUARY 17; 18:38 - BARBOURVILLE, KENTUCKY*******

NEIC Felt in Bell and Knox Counties, Kentucky. Standard deviation 0.5 on 11 of 11 observations.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
NEIC	990117	183804.7	36.854	83.691	5.0F	11	201					5.3		4.3			3.0			F
UTK	990117	183805.1	36.894	83.799	1.0	25	77	104	0.7	D	D/D	0.6	248	0.4	0.9	A		3.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
NEIC	MYNC	201.3	191	eP	18:38:36.83 (0.0)	eS	18:38:59.09 (X)
NEIC	WCI	275.8	304	eP	:46.61 (0.1)	eS	:39:18.43 (X)
NEIC	BLA	293.6	81	ePn	:49.42 (0.6)	eSn	:22.59 (X)
NEIC	JSC	361.4	142	ePn	:57.21 (-0.1)		
NEIC	LHS	371.4	134	ePn	:58.22 (-0.4)		
NEIC	WVT	379.2	259	ePn	:59.64 (0.0)		
NEIC	GOGA	382.5	177	(Pn)	:39:00.45 (0.4)		
NEIC	PWLA	445.9	244	ePn	:07.69 (-0.5)		
NEIC	MCWV	458.1	46	ePn	:08.88 (-0.8)		
NEIC	GLST	504.8	264	(P)	:16.11 (0.4)		
NEIC	SSPA	656.1	49	(Pn)	:35.28 (0.4)		
UTK	CRTN	77.1	183	iPd	18:38:18.32 (0.52)	eS	18:38:26.11 (-1.13X)
UTK	ORT	118.3	203	eP-	:24.75 (0.30)	iS	:39.59 (0.79)
UTK	EGT	119.0	158	iPu	:24.73 (0.14)	eS	:38.67 (-0.40)
UTK	TKL	137.1	179	iPd	:27.40 (-0.06)	iS	:43.65 (-0.30)
UTK	MYNC	204.1	188	eP	:37.04 (-0.99)	eS	:39:01.41 (-0.83)
UTK	OLT	222.8	210	eP	:39.52 (-1.46X)	eS	:06.70 (-0.54)
UTK	ABTN	235.5	242	eP+	:42.30 (-0.68)	eS	:10.23 (-0.36)
UTK	PDTN	257.7	226	eP	:44.84 (-1.04)	eS	:16.84 (1.25)
UTK	WCI	269.3	304	eP+	:47.09 (-0.20)	eS	:18.34 (0.31)
UTK	BLA	302.5	82	eP-	:53.49 (2.05)	eS	:28.74 (3.54X)
UTK	MSAL	344.9	230	eP	:56.48 (-0.14)	eS	:37.83 (3.67X)
UTK	MOTN	375.2	267	eP	:39:00.42 (0.08)	eS	:41.40 (0.80)
UTK	GOGA	387.5	175	eP	:00.50 (-1.36)	eS	:40.02 (-3.22)
UTK	MCWV	462.4	47	eP	:09.34 (-1.76)	eS	:57.09 (-2.13)
UTK	OXF	572.2	244	eP	:33.19 (8.56X)	eS	:40:24.83 (2.21)

*******1999 JANUARY 18; 07:00 - ALABAMA*******

NEIC Mine collapse. m_b = 4.8 (based on 18 teleseismic stations; standard deviation 1.0 on 66 of 81 observations).

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I

NEIC 990118 070053.5 33.405 87.255 1.0F 66 190 6.0 3.3 4.0

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
NEIC	PWLA	190.2	337	eP	07:01:25.14	(0.6)	eS	07:01:47.17	(X)
NEIC	WVT	306.9	350	eP	:41.10	(1.4)	eS	:02:17.55	(X)
NEIC	SFTN	333.6	311	eP	:44.15	(1.1)			
NEIC	MYNC	342.5	56	eP	:46.16	(1.9)			
NEIC	RELT	346.9	328	(P)	:45.12	(0.4)			
NEIC	GOGA	352.5	89	ePc	:48.37	(2.9)			
NEIC	GLST	368.1	330	eP	:48.21	(0.8)			
NEIC	TWAR	373.6	307	eP	:48.62	(0.5)			
NEIC	WADM	402.5	326	(P)	:52.23	(0.4)			
NEIC	TKL	405.9	51	Pn	:53.40	(1.1)	Sn	:37.70	(X)
NEIC	WCI	542.7	9	eP	:02:09.22	(-0.5)			
NEIC	MIAR	597.1	284	eP	:15.88	(-0.9)			
NEIC	CCM	629.4	326	eP	:19.55	(-1.3)			
NEIC	BLO	643.8	6	P	:22.50	(0.0)			
NEIC	HBF	643.8	93	(P)	:23.13	(0.6)			
NEIC	BLA	750.6	54	eP	:35.24	(-1.0)			
NEIC	DWPF	809.5	135	eP	:43.29	(-0.2)			
NEIC	MCWV	959.6	42	eP	:03:00.23	(-2.2X)			
NEIC	WMOK	1073.1	281	eP	:14.18	(-2.4X)			
NEIC	JFWS	1087.5	347	eP	:14.03	(-4.3X)			
NEIC	SSPA	1155.4	43	eP	:23.79	(-3.0X)			
NEIC	CBKS	1272.1	302	eP	:38.56	(-2.6X)			
NEIC	BINY	1390.0	42	eP	:51.52	(-3.9X)			
NEIC	LTX	1622.4	258	eP	:04:20.94	(-2.3X)			
NEIC	GLD	1751.4	299	eP	:37.23	(-1.1X)			
NEIC	ANMO	1775.8	281	eP	:38.76	(-2.4X)			
NEIC	ISCO	1784.7	299	eP	:40.50	(-1.9X)			
NEIC	RSSD	1875.9	314	eP	:49.24	(-3.4X)			
NEIC	ULM	1875.9	342	P	:05:03.30	(-3.1X)			
NEIC	BW06	2206.2	305	eP	:28.48	(-0.4)			
NEIC	PDAR	2206.2	305	P	:28.80	(-0.1)			
NEIC	WUAZ	2222.9	283	eP	:30.19	(-0.3)			
NEIC	DAU	2267.3	297	eP	:35.39	(0.6)			
NEIC	HAYW	2222.9	306	(P)	:36.45	(-1.4)			
NEIC	MSU	2310.7	291	eP	:37.38	(-1.4)			
NEIC	CTU	2315.2	298	eP	:37.81	(-1.3)			
NEIC	HWUT	2324.1	300	eP	:39.66	(-0.3)			
NEIC	AHID	2325.2	304	(P)	:39.31	(-0.7)			
NEIC	STEW	2343.0	307	eP	:41.88	(0.1)			
NEIC	ARUT	2414.1	289	eP	:49.42	(1.3)			
NEIC	HVU	2426.4	300	eP	:49.65	(0.4)			
NEIC	PTI	2427.5	303	(P)	:50.04	(0.7)			
NEIC	LRM	2549.8	310	eP	:06:01.70	(1.4)			
NEIC	ELK	2605.4	296	P	:08.00	(2.8X)			
NEIC	HLID	2608.7	304	eP	:07.08	(1.7)			
NEIC	TPNV	2659.9	287	(P)	:10.67	(0.8)			
NEIC	MNV	2605.4	290	P	:26.10	(1.5)			
NEIC	SCHQ	2866.7	28	P	:27.70	(0.4)			
NEIC	DPW	3041.3	311	eP	:41.81	(-0.2)			
NEIC	FRB	3616.2	15	P	:07:27.30	(-0.4)			
NEIC	YKA	3041.3	338	P	:37.60	(-1.8)	PcP	07:10:17.20	(X)
NEIC	DLBC	4215.6	325	P	:08:14.70	(0.9)			
NEIC	INK	4852.7	337	P	:09:00.70	(-0.1)	PcP	:48.70	(X)
NEIC	ILAR	5275.3	330	P	:31.50	(0.3)			
NEIC	EKA	6680.8	41	P	:11:02.60	(-1.7)			
NEIC	SPITS	6704.2	13	P	:03.60	(-2.0)			
NEIC	LDF	7122.3	48	iPd	:30.70	(-0.3)			
NEIC	ESDC	7219.0	58	P	:37.10	(0.2)			
NEIC	BGF	7417.0	49	iPd	:47.60	(-0.5)			
NEIC	SSF	7439.2	48	iPd	:48.00	(-1.4)			
NEIC	LOR	7453.7	48	iPd	:48.60	(-1.7)			
NEIC	HAU	7588.2	46	iPd	:57.40	(-0.5)			
NEIC	CDF	7630.5	46	iPd	:12:00.00	(-0.3)			
NEIC	HINF	7631.6	46	eP	:11:59.80	(-0.5)			

NEIC	LPG	7740.6	49	iPd	:12:05.90	(-0.8)
NEIC	MBDF	7780.6	49	eP	:09.00	(0.2)
NEIC	GRF	7820.6	43	ePc	:11.10	(0.4)
NEIC	FINES	7922.9	28	P	:15.70	(-0.3)
NEIC	BRG	7926.3	41	eP	:17.20	(0.8)
NEIC	GERES	8024.1	43	P	:22.50	(0.7)
NEIC	VRAC	8178.7	42	P	:29.70	(-0.1)
NEIC	PLCA	8380.0	167	P	:41.30	(1.0)
NEIC	SKO	7926.3	46	eP	:13:17.50	(3.8X)
NEIC	OHR	8964.9	47	eP	:07.80	(-1.6)
NEIC	PDY	9545.3	350	P	:36.00	(0.2)
NEIC	ARU	9554.2	18	P	:36.50	(0.3)
NEIC	ZAL	10313.7	5	P	:14:08.30	(-0.2)
NEIC	CMAR	14243.5	353	PKP	:20:03.70	(0.2)
NEIC	ASAR	14243.5	274	PKP	:26.20	(-4.6X)

*****1999 JANUARY 18; 14:47 - RUTLEDGE, TENNESSEE*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990118	1447	01.2	36.345	83.481	8.2	10	36	304	0.2	D	C/D	1.6	339	1.2	1.8	B		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	36.1	244	eP-	14:47:07.15 (-0.07)	iS	14:47:11.77 (0.06)
UTK	EGT	52.0	161	eP	:10.96 (1.19X)	eS	:17.60 (1.45X)
UTK	ORT	88.5	237	eP	:15.61 (0.03)	eS	:26.21 (0.01)
UTK	MYNC	152.7	203	eP	:26.17 (0.45)	eS	:43.49 (-0.25)
UTK	ABTN	242.0	259	eP	:39.49 (0.22)	eS	:48:07.21 (0.22)
UTK	PDTN	244.8	242	eP	:39.66 (0.04)	eS	:06.25 (-1.34)

*****1999 JANUARY 18; 17:02 - CHATTANOOGA, TENNESSEE*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990118	1702	52.2	35.281	85.279	21.7	15	30	109	0.2	B	B/B	0.6	343	0.3	0.9	A		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	DATN	30.0	36	iP	17:02:58.29 (0.10)	iS	17:03:02.53 (-0.04)
UTK	PDTN	51.9	269	ePd	:03:01.31 (0.10)	iS	:07.81 (-0.01)
UTK	ANTN	99.0	2	eP	:08.49 (0.14)	eS	:20.03 (-0.10)
UTK	ABTN	100.8	312	eP	:08.66 (0.04)	eS	:20.06 (-0.53)
UTK	MYNC	107.3	102	eP	:10.52 (0.89)	eS	:21.77 (-0.57)
UTK	MSAL	136.0	250	eP	:13.85 (-0.16)	eS	:29.72 (-0.14)
UTK	TKL	142.9	73	eP	:16.50 (1.43X)	eS	:31.80 (0.12)
UTK	WVT	249.4	293			eS	:57.05 (-0.23)
UTK	GOGA	266.1	141	eP	:36.17 (4.22X)	eS	:04:01.10 (0.25)

*****1999 JANUARY 30; 05:32 - CARYVILLE, TENNESSEE*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990130	0532	08.2	36.307	84.163	24.3	16	31	189	0.3	C	B/D	0.6	341	0.4	1.0	A		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	31.3	112	iPu	05:32:14.65 (0.11)	eS	05:32:19.16 (-0.03)
UTK	ORT	46.0	196	eP+	:16.12 (-0.36)	iS	:22.63 (0.08)
UTK	TKL	80.1	154	iPu	:21.17 (-0.32)	iS	:31.43 (0.22)
UTK	EGT	90.0	120	eP	:23.42 (0.39)	eS	:33.62 (-0.25)
UTK	MYNC	136.9	179	eP	:29.78 (-0.37)	eS	:46.35 (0.23)
UTK	ABTN	181.4	256	eP	:36.43 (-0.52)	iS	:58.40 (0.57)
UTK	SLTN	183.9	85	iP-	:37.38 (-0.01)	eS	:59.31 (0.71)
UTK	PDTN	190.8	234	eP	:39.10 (0.71)	eS	:33:00.53 (0.21)

*****1999 FEBRUARY 03; 16:13 - FAYETTEVILLE, TENNESSEE*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990203	161304	.5	35.052	86.501	9.1	12	28	147	0.2	C	C/C	1.5	340	0.3	4.3	C		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	MSAL	27.7	215	iPd	16:13:09.19 (-0.04)	iS	16:13:12.81 (0.05)
UTK	PDTN	64.2	67	ePd	:14.94 (-0.08)	iS	:22.99 (0.15)
UTK	ABTN	99.1	21	eP	:20.34 (-0.21)	eS	:32.19 (-0.18)
UTK	ANTN	169.3	42	eP	:31.15 (-0.49)	eS	:51.83 (0.28)
UTK	WVT	169.8	315	iPd	:31.70 (0.02)	iS	:51.82 (0.19)
UTK	MYNC	216.5	89	eP	:41.27 (2.24X)	iS	:14:01.52 (-2.64X)
UTK	MOTN	219.6	323	eP	:38.31 (-1.18)	eS	:04.48 (-0.46)

*****1999 FEBRUARY 10; 09:31 - GREENVILLE, KENTUCKY*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990210	093151	.2	37.281	87.244	9.6	11	99	175	0.3	C	B/D	1.3	310	0.3	1.8	B		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	MOTN	99.0	222	eP+	09:32:07.58 (1.13)	iS	09:32:19.25 (-0.26)
UTK	WCI	129.2	37	iP+	:12.74 (0.39)	iS	:27.97 (-0.07)
UTK	WVT	138.0	202	iPd	:14.12 (0.34)	eS	:30.67 (0.32)
UTK	ABTN	185.2	146	iPu	:20.27 (-0.58)	iS	:42.43 (-0.05)
UTK	ANTN	217.8	124	eP	:28.47 (3.02X)	eS	:49.46 (-0.98)
UTK	PDTN	255.5	150	eP	:29.29 (-0.74)	eS	:58.76 (0.41)

*****1999 MARCH 09; 06:25 - FAIRVIEW, GEORGIA*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990309	062543	.8	34.959	85.412	0.6	21	53	109	0.3	D	C/D	0.4	357	0.2	1.1	A		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	PDTN	53.0	311	eP-	06:25:52.62 (0.11)	iS	06:25:59.05 (0.05)
UTK	MSAL	116.0	264	eP	:26:02.84 (0.06)	iS	:26:16.73 (-0.13)
UTK	MYNC	117.9	83	iP	:03.53 (0.42)	eS	:16.93 (-0.50)
UTK	ABTN	120.8	329	ePd	:03.44 (-0.11)	eS	:18.02 (-0.19)
UTK	SHAL	123.6	242	iP+	:03.93 (-0.08)	eS	:18.92 (-0.07)
UTK	ANTN	135.6	7	eP	:06.19 (0.25)	eS	:20.62 (-1.66X)
UTK	ORT	145.7	43	eP-	:07.59 (0.06)	eS	:25.97 (0.94)
UTK	TKL	168.0	62	eP	:10.98 (-0.06)	iS	:30.70 (-0.39)
UTK	CRTN	198.1	46	eP	:14.81 (-0.99)	eS	:39.78 (0.45)
UTK	EGT	218.6	61			eS	:46.87 (-1.92X)
UTK	GOGA	248.2	133			eS	:50.83 (-1.47)
UTK	WVT	254.9	301	eP	:24.83 (0.58)	eS	:55.10 (1.38)
UTK	MOTN	296.8	309			eS	:27:04.43 (1.77)

*****1999 MARCH 13; 06:57 - JEFFERSON CITY, TENNESSEE*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990313	065756	.6	36.036	83.652	9.9	18	25	114	0.3	C	B/C	0.4	256	0.3	1.0	A		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	24.9	317	iPu	06:58:00.99 (0.01)	eS	06:58:04.01 (-0.23)
UTK	EGT	35.2	115	iP	:02.85 (0.25)	eS	:07.21 (0.15)
UTK	TKL	43.3	195	eP	:03.72 (-0.11)	iS	:09.13 (-0.07)
UTK	ORT	60.6	257	eP	:06.63 (0.07)	iS	:13.96 (0.05)
UTK	MYNC	115.1	202	iP-	:15.20 (0.03)	eS	:28.45 (-0.36)
UTK	ANTN	143.0	277	iP	:19.25 (-0.33)	iS	:36.34 (-0.10)
UTK	SLTN	144.9	71	iP-	:20.15 (0.25)	iS	:36.42 (-0.58)

UTK	PDTN	216.2	248	eP	:30.83	(-0.23)	iS :57.27 (1.16)
UTK	ABTN	222.3	266	eP	:32.29	(0.30)	eS :57.69 (-0.02)

*******1999 MARCH 20; 17:45 - CHARLESTON, SOUTH CAROLINA*******

CSU Between Middleton Place and Summerville, SC. Not felt. Magnitude 1.0

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990320	174508.8	32.940	80.252	15.5	12	7	136	0.1	C	B/C	0.8	360	0.8	1.0			1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	RGR	6.5	123	iPu	17:45:11.84 (-0.18)	iSd	17:45:13.90 (0.25)
USC	WAS	10.4	190	iPd	:12.43 (0.03)	iSu	:14.81 (0.07)
USC	MGS	11.4	114	iPd	:12.36 (-0.11)	iSu	:14.57 (0.02)
USC	CSU	17.7	73	iPu	:13.14 (0.16)	iSd	:16.00 (-0.63)
USC	DRC	22.6	326	iPd	:14.31 (0.28)	iSd	:17.24 (-0.27)
USC	TWB	23.9	36	iPu	:14.04 (0.02)	iSd	:16.96 (0.00)

Additional Data

CSU	RGR	P	17:45:8.82
	WAS	P	:14
	CSU	P	:15
	DRC	P	:17

*******1999 MARCH 29; 14:49 - CHARLESTON, SOUTH CAROLINA*******

NEIC Felt at Goose Creek and Summerville.

CSU Felt IV in Summerville, SC. Magnitude 2.97

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
NEIC	990329	144936.5	33.000	80.200	5.0F	7	21										2.9			F
USC	990329	144937.8	33.064	80.140	10.7	12	7	111	0.1	B	B/B	0.8	360	0.8	1.2			3.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
NEIC	DRC	21.1	304	P	14:49:44.00 (3.6)		
NEIC	JSC	172.4	326	eP	:50:04.80 (0.0)		
NEIC	LHS	173.5	341	eP	:05.07 (0.1)		
NEIC	GOGA	308.0	279	eP	:22.29 (-0.1)		
NEIC	CEH	336.9	17	(P)	:24.68 (-1.3)		
NEIC	MYNC	429.2	304	(P)	:37.40 (-0.5)		
NEIC	BLA	468.1	358	(P)	:59.80 (17.1)		
USC	TWB	6.6	32	iPd	14:49:40.28 (-0.10)	iSu	14:49:41.31 (0.03)
USC	CSU	10.8	143	iPd	:40.71 (0.12)	iSd	:42.93 (-0.31)
USC	RGR	18.0	196	iPd	:41.70 (-0.09)	iSd	:43.92 (-0.17)
USC	MGS	18.4	180	iPu	:41.93 (0.06)	iSd	:44.28 (-0.06)
USC	DRC	23.7	282	iPd	:42.90 (0.02)	iSd	:46.47 (0.19)
USC	WAS	27.0	207	iPd	:43.17 (-0.03)	iSu	:47.09 (0.06)

Additional Data

CSU	CSU	P	14:49:40.2
	RGR	P	:42.1
	DRC	P	:43.2
	WAS	P	:43.7

*******1999 MARCH 29; 16:43 - CHARLESTON, SOUTH CAROLINA*******

CSU Summerville, SC (aftershock). Not felt. Magnitude 2.0

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990329	164307.8	33.057	80.147	7.9	12	8	109	0.1	B	B/B	0.4	360	0.4	1.1			2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	TWB	7.6	33	iPd	16:43:10.08 (-0.07)	iSd	16:43:10.85 (-0.01)
USC	CSU	10.6	138	iPd	:10.46 (0.12)	iSu	:12.61 (-0.13)
USC	RGR	17.2	195	iPu	:11.48 (-0.04)	iSu	:13.58 (-0.01)
USC	MGS	17.7	178	iPu	:11.67 (0.03)	iSu	:14.01 (0.12)
USC	DRC	23.2	284	iPu	:12.81 (0.05)	iSd	:16.07 (0.02)
USC	WAS	26.1	207	iPu	:12.94 (-0.10)	iSu	:16.80 (0.08)

Additional Data

CSU	CSU	P	16:44:11
	RGR	P	:12
	DRC	P	:13.5
	WAS	P	:15

*******1999 MARCH 30; 08:48 - PINEVILLE, KENTUCKY*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990330	084801.3	36.810	83.745	3.4	16	68	214	0.4	D	C/D	0.9	266	0.6	1.9	B		2.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	68.2	187	eP+	08:48:12.64 (0.02)	eS	08:48:21.24 (0.28)
UTK	EGT	108.5	158	iPd	:19.43 (0.33)	eS	:35.30 (3.06X)
UTK	ORT	111.8	207	iPu	:19.88 (0.28)	eS	:33.72 (0.61)
UTK	TKL	127.8	181	eP-	:21.88 (-0.28)	eS	:37.33 (-0.14)
UTK	DATN	188.9	220	eP	:32.45 (0.64)	eS	:53.38 (-0.80)
UTK	MYNC	195.7	190	eP	:32.39 (-0.48)	iS	:55.69 (-0.32)
UTK	WCI	278.6	305	iP+	:43.94 (-0.52)	eS	:49:16.39 (0.56)
UTK	MSAL	342.7	231	eP	:48.87 (-3.50X)	eS	:32.18 (2.65X)
UTK	SHAL	369.5	225	eP	:54.20 (-1.48)	eS	:41.24 (5.99X)
UTK	WVT	373.8	260	eP	:59.85 (3.65X)	eS	:35.97 (-0.17)
UTK	GOGA	377.9	176	eP	:49:01.61 (4.92X)	eS	:43.84 (6.84X)
UTK	MOTN	379.6	268	iPd	:46.53 (-10.38X)	eS	:37.22 (-0.16)

*******1999 APRIL 02; 11:03 - TELLICO PLAINS, TENNESSEE*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990402	110324.6	35.485	84.146	12.8	13	39	185	0.3	C	B/D	0.8	18	0.5	2.6	B		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	TKL	38.8	60	iPu	11:03:31.23 (0.03)	iS	11:03:36.18 (0.09)
UTK	ORT	49.3	343	eP	:32.82 (0.00)	eS	:38.79 (-0.09)
UTK	CRTN	84.0	19	iP	:38.34 (0.07)	eS	:48.22 (-0.10)
UTK	DATN	85.3	271			eS	:48.29 (-0.42)
UTK	OLT	88.1	245	eP	:39.56 (0.65)	eS	:48.71 (-0.73)
UTK	EGT	89.5	59	eP	:38.22 (-0.95)	iS	:47.31 (-2.59X)
UTK	PDTN	156.6	262			eS	:04:07.91 (-0.19)
UTK	ABTN	183.2	285	iPu	:54.17 (0.29)	eS	:15.89 (0.70)

*******1999 APRIL 02; 11:34 - TELLICO PLAINS, TENNESSEE*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990402	113442.6	35.498	84.139	11.9	13	38	183	0.1	D	C/D	0.5	340	0.4	3.2	C		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)

UTK	TKL	37.5	62	iPd	11:34:48.92	(-0.04)	iS	11:34:53.80	(0.11)
UTK	ORT	48.0	342	eP+	:50.51	(-0.09)	iS	:56.59	(0.07)
UTK	CRTN	82.4	19	eP	:56.02	(0.02)	eS	:35:05.79	(-0.07)
UTK	DATN	86.0	270	eP	:57.12	(0.55)	eS	:05.48	(-1.38X)
UTK	EGT	88.2	59	eP	:56.82	(-0.13)	eS	:08.57	(1.05X)
UTK	OLT	89.3	245	eP	:57.22	(0.13)	eS	:07.57	(-0.18)
UTK	PDTN	157.4	261	eP	:35:07.85	(0.03)	eS	:25.84	(-0.49)
UTK	ABTN	183.4	284	eP	:13.32	(1.39X)	eS	:33.58	(0.27)

*****1999 APRIL 05; 14:52 - SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990405	145239.6	34.119	81.109	0.1	13	14	271	0.1	C		1.4	360	1.4	2.0			1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)	
USC	MR02	13.9	306	iPu	14:52:41.77	(-0.15)	iSu	14:52:43.70 (-0.02X)
USC	JSC	22.6	322	iPu	:43.25	(-0.01)	iSd	:46.01 (-0.07)
USC	MR05	26.5	308	iPd	:43.90	(0.02)	iSu	:47.15 (-0.01)
USC	MR01	29.2	324	iPu	:44.32	(0.01)	iSu	:47.88 (-0.03)
USC	MR10	32.0	319	iPu	:44.81	(0.06)	iSu	:48.74 (0.04)
USC	MR07	34.3	324	iPu	:45.18	(0.07)	iSu	:49.34 (0.01)
USC	LHS	48.6	35	iPu	:47.39	(0.01)	iSu	:53.33 (0.00)

*****1999 APRIL 05; 15:30 - MAYNARDVILLE, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990405	153025.3	36.370	83.762	19.6	7	20	277	0.1	C	B/D	0.8	11	0.8	1.1	A		1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)	
UTK	CRTN	20.2	201	iPd	15:30:29.97	(0.10)	iS	15:30:33.13 (-0.10)
UTK	EGT	66.7	141	iP+	:36.45	(-0.05)	eS	:44.60 (-0.13)
UTK	ORT	70.7	224	iP	:36.94	(-0.13)	eS	:45.77 (0.06)
UTK	TKL	79.0	181	eP	:40.08	(1.74X)	iS	:47.95 (0.04)

*****1999 APRIL 12; 06:42 - CLEVELAND, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990412	064240.3	35.017	84.822	11.2	23	24	195	0.3	C	B/D	0.6	341	0.2	1.5	B		2.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)	
UTK	OLT	23.6	309	iPd	06:42:44.80	(0.24)		
UTK	DATN	58.7	336	iPu	:50.02	(0.03)	eS	06:42:56.39 (-0.77)
UTK	PDTN	97.9	287	eP+	:56.18	(0.02)	iS	:43:07.63 (-0.18)
UTK	ORT	109.6	25	ePu	:58.21	(0.21)	eS	:11.69 (0.69)
UTK	TKL	118.9	53	eP-	:59.28	(-0.19)	iS	:13.37 (-0.16)
UTK	ANTN	133.4	344	eP	:43:01.85	(0.08)	eS	:17.03 (-0.49)
UTK	ABTN	151.5	310	eP-	:04.64	(0.03)	eS	:22.66 (0.23)
UTK	CRTN	158.5	34	eP+	:05.65	(-0.08)	eS	:23.66 (-0.70)
UTK	EGT	169.6	54	eP	:08.21	(0.71)		
UTK	MSAL	170.2	264	iPd	:07.17	(-0.40)	eS	:27.35 (-0.19)
UTK	SHAL	175.4	249	eP	:08.31	(-0.08)	eS	:29.53 (0.56)
UTK	HAKY	281.0	326	eP	:22.65	(-0.25)	eS	:55.97 (2.09X)
UTK	MOTN	336.7	303	eP	:30.44	(0.68)	eS	:44:07.55 (1.79)

*****1999 APRIL 15; 01:11 - KNOXVILLE, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990415	011157.0	35.893	84.003	16.5	19	27	109	0.3	B	B/B	0.3	270	0.3	0.9	A		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	ORT	27.4	274	eP	01:12:02.11	(-0.04)	iS	01:12:06.01	(0.05)
UTK	TKL	33.2	141	eP-	:02.93	(-0.04)	iS	:07.57	(0.19)
UTK	CRTN	37.1	23	iP-	:03.47	(-0.07)	iS	:08.31	(-0.06)
UTK	EGT	63.6	89	eP	:08.99	(1.40X)	eS	:16.18	(0.78)
UTK	MYNC	91.5	187	eP	:11.90	(-0.01)	iS	:22.30	(-0.58)
UTK	DATN	107.3	246	eP	:13.99	(-0.40)	eS	:27.92	(0.76)
UTK	OLT	124.0	229	eP	:17.64	(0.64)	eS	:32.29	(0.61)
UTK	SLTN	180.0	70	eP	:25.83	(0.12)	eS	:47.68	(1.08)
UTK	PDTN	181.0	248	eP	:25.75	(-0.05)	eS	:47.93	(1.19)
UTK	ABTN	190.2	270	eP	:26.99	(-0.23)	iS	:49.53	(0.35)

*****1999 APRIL 17; 00:31 - SWEETWATER, TENNESSEE*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990417	0031	00.3	35.649	84.318	15.9	11	29	141	0.1	C	B/C	0.8	18	0.4	1.5	B		1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	ORT	28.9	2	iPu	00:31:05.54	(-0.10)	iS	00:31:09.63	(0.06)
UTK	TKL	49.3	89				iS	:14.83	(0.05)
UTK	CRTN	74.8	35	eP	:12.51	(-0.09)	iS	:21.83	(0.20)
UTK	OLT	84.8	229				eS	:24.84	(0.51)
UTK	ANTN	100.8	305	eP	:16.46	(-0.22)	eS	:28.79	(0.09)
UTK	PDTN	145.2	254	eP	:23.08	(-0.55)	eS	:41.69	(1.03X)
UTK	ABTN	164.1	280	eP	:26.60	(0.04)	iS	:45.84	(0.18)

*****1999 APRIL 20; 07:17 - WHITESBURG, KENTUCKY*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990420	0717	30.3	37.029	82.904	2.3	8	96	267	0.3	D	C/D	7.9	2	1.2	17.3	D		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	SLTN	95.5	133	eP	07:17:45.84	(-0.14)	eS	07:17:57.97	(0.35)
UTK	CRTN	124.4	223	ePu	:50.54	(-0.06)	eS	:18:05.83	(0.24)
UTK	TKL	171.0	207	eP	:57.55	(-0.40)	eS	:18.05	(-0.23)
UTK	ORT	176.6	226	eP	:59.56	(0.72)	eS	:20.29	(0.47)

*****1999 APRIL 24; 10:43 - SWEETWATER, TENNESSEE*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990424	1043	52.0	35.560	84.442	13.6	12	41	150	0.3	C	C/C	0.9	6	0.5	4.4	C		1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	ORT	40.7	18	eP	10:43:59.21	(0.24)	iS	10:44:04.07	(-0.01)
UTK	DATN	58.8	264	eP	:44:00.10	(-1.67X)	eS	:08.71	(-0.24)
UTK	TKL	61.5	80	iP-	:02.75	(0.57)	iS	:09.53	(-0.13)
UTK	OLT	69.8	229	eP	:03.46	(-0.01)	eS	:13.15	(1.24X)
UTK	CRTN	89.4	37	eP	:06.57	(0.00)	eS	:16.50	(-0.75)
UTK	EGT	110.2	70	eP	:10.47	(0.60)	eS	:19.49	(-3.49X)
UTK	PDTN	131.7	256	eP	:12.53	(-0.69)	eS	:28.47	(-0.30)
UTK	ABTN	155.1	284	eP	:15.96	(-0.95X)	eS	:34.82	(-0.32)

*****1999 APRIL 27; 01:06 - BLAINE, TENNESSEE*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990427	0106	51.9	36.119	83.693	7.4	13	16	180	0.2	C	B/C	0.9	241	0.4	1.8	B		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	

UTK	CRTN	16.0	304	iP+	01:06:54.81	(-0.01)	eS	01:06:56.94	(-0.04)
UTK	EGT	43.1	124	eP	:58.74	(-0.34)	eS	:07:05.07	(0.65)
UTK	TKL	51.7	188	eP	:07:00.58	(0.15)	iS	:06.80	(0.05)
UTK	ORT	59.8	247	eP	:01.79	(0.05)	eS	:09.38	(0.36)
UTK	MYNC	122.5	199	eP	:11.38	(-0.34)	iS	:25.98	(-0.30)
UTK	PDTN	216.5	245				eS	:52.93	(1.20)
UTK	ABTN	219.3	264	eP	:26.76	(-0.21)	eS	:52.81	(0.34)

*****1999 MAY 07; 09:06 - MAGGIE VALLEY, NORTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990507	090600.6	35.496	83.144	0.0	16	47	146	0.4	C	C/C	0.7	310	0.4	2.0	B		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	EGT	47.1	343	eP-	09:06:08.22 (-0.16)	iS	09:06:14.10 (-0.05)
UTK	TKL	59.9	288	iPd	:10.88 (0.38)	eS	:17.63 (-0.20)
UTK	CRTN	100.4	321	iP-	:17.32 (0.16)	eS	:29.65 (0.23)
UTK	MYNC	101.0	243	iP-	:16.79 (-0.48)	eS	:29.89 (0.28)
UTK	SLTN	139.9	41	iPu	:23.43 (-0.10)	eS	:42.17 (1.76)
UTK	DATN	176.3	271	eP	:34.17 (4.94X)	eS	:53.69 (3.51X)
UTK	ANTN	203.0	292	eP	:36.34 (2.89X)	eS	:59.23 (1.66)
UTK	GOGA	233.1	187	eP	:40.78 (2.61)	eS	:07:03.60 (-1.97)
UTK	PDTN	247.1	265	eP	:40.33 (0.12)	eS	:09.58 (0.53)
UTK	ABTN	271.9	280			eS	:13.49 (-0.85)

*****1999 MAY 13; 03:00 - MILLPORT, ALABAMA *****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990513	030051.2	33.536	87.962	6.6	12	160	252	0.3	C	B/D	1.1	1	0.4	1.8	B		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	SHAL	160.3	51	eP	03:01:16.89 (-0.10)		
UTK	PLAL	160.8	356	eP	:16.61 (-0.46)	iS	03:01:36.12 (0.07)
UTK	OXF	172.0	309	eP	:18.87 (0.04)	iS	:39.17 (0.07)
UTK	MSAL	187.7	39	iPu	:21.55 (0.23)	eS	:43.48 (0.08)
UTK	PDTN	273.6	45	eP	:34.34 (0.97)	eS	:02:04.24 (0.19)
UTK	ABTN	311.0	33	eP	:38.73 (0.74)	eS	:11.62 (-0.42)
UTK	TKL	450.5	57	eP	:02:07.03 (11.85X)	eS	:39.85 (-1.94)

*****1999 MAY 13; 10:38 - PULASKI, TENNESSEE*****

UTK Felt in and near Pulaski, Tennessee.

NEIC Felt at Pulaski.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990513	103859.9	35.092	87.028	20.0	32	42	102	0.5	C	C/C	0.3	355	0.2	0.5	A		2.8		F
NEIC	990513	103859.9	35.092	87.026	22.0	7	97											2.8		F

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	MSAL	42.2	130	iPu	10:39:07.80 (0.41)	eS	10:39:13.27 (0.36)
UTK	SHAL	82.8	152	ePu	:13.43 (-0.10)	eS	:23.65 (0.13)
UTK	PLAL	96.4	263	iP	:15.36 (-0.24)	iS	:27.11 (0.03)
UTK	PDTN	109.2	79	eP-	:17.32 (-0.25)	iS	:30.52 (0.05)
UTK	ABTN	121.3	43	iPd	:19.34 (-0.09)	iS	:33.49 (-0.17)
UTK	DATN	182.3	75	eP	:28.29 (-0.52)	eS	:49.63 (-0.16)
UTK	OLT	182.8	87	iPu	:28.59 (-0.28)	eS	:50.59 (0.70)
UTK	MOTN	190.2	333	eP	:29.05 (-0.95)	iS	:52.58 (0.74)

UTK	TQTN	214.6	77	iP+	:32.85	(-0.59)	eS	:58.46	(0.64)
UTK	OXF	227.2	254	eP	:35.32	(0.33)	iS	:40:00.44	(-0.05)
UTK	ORT	263.2	69	eP	:39.49	(0.04)	eS	:10.77	(2.56X)
UTK	MYNC	264.4	90	eP	:39.39	(-0.24)	eS	:08.74	(0.22)
UTK	TKL	302.2	77	eP	:43.88	(-0.38)	eS	:17.95	(1.41)
UTK	CRTN	313.7	66	eP	:45.48	(-0.21)	eS	:20.74	(1.72)
UTK	EGT	350.1	74	eP	:49.80	(-0.45)	eS	:28.62	(1.73)
UTK	WCI	351.2	10	eP	:51.53	(1.25)	eS	:29.71	(2.77)
UTK	GOGA	377.2	119	eP	:49.77	(-3.72X)	eS	:29.07	(-3.43X)
UTK	SLTN	468.3	70	eP	:40:03.94	(-0.91)			
NEIC	PLAL	96.7	263	eP	10:39:15.40	(-0.8)	eS	10:39:26.23	(X)
NEIC	UTMT	216.8	310	(P)	:30.22	(-1.9)			
NEIC	OXF	226.8	254	(P)	:35.24	(1.7)			
NEIC	MYNC	264.7	90	eP	:39.15	(0.8)			
NEIC	WCI	354.7	10	(P)	:47.00	(-2.8)			
NEIC	GOGA	377.0	119	(P)	:50.10	(-2.6)			
NEIC	MIAR	602.7	266	(P)	:40:19.34	(-2.1)			

*****1999 MAY 14; 15:36 - TRINITY, ALABAMA *****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990514	153633	.8	34.693	87.148	2.2	11	47	171	0.2	C	B/C	0.7	352	0.3	1.4	B		1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	MSAL	46.6	68	iPu	15:36:41.66 (0.18)	iS	15:36:47.14 (-0.05)
UTK	SHAL	57.8	120	iPd	:43.22 (-0.11)		
UTK	PLAL	90.8	291	iPu	:48.81 (0.12)	iS	:59.71 (-0.02)
UTK	PDTN	134.9	61	iP+	:55.41 (-0.34)	iS	:37:12.20 (0.27)
UTK	ABTN	162.6	35	eP	:37:03.12 (3.00X)	eS	:19.07 (-0.42)
UTK	MOTN	226.7	341	eP	:11.74 (1.51)	eS	:36.62 (-0.20)
UTK	MYNC	279.3	80	eP	:18.29 (1.16)	eS	:46.69 (-2.00X)

*****1999 MAY 15; 18:16 - ASHEVILLE, NORTH CAROLINA*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990515	181645	.2	35.734	82.414	0.0	14	82	182	0.8	D	D/D	1.5	328	0.6	2.1	B		1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	EGT	82.1	283	iP-	18:16:57.95 (-0.78)	eS	18:17:07.55 (-1.22X)
UTK	SLTN	83.0	18	eP+	:59.12 (0.24)	eS	:08.89 (-0.15)
UTK	TKL	123.4	266	eP	:17:05.13 (-0.28)	eS	:21.30 (0.90)
UTK	CRTN	138.7	292	eP	:07.37 (-0.50)	eS	:25.35 (0.76)
UTK	ORT	172.0	277	eP	:13.77 (0.65)	eS	:36.10 (2.44)
UTK	MYNC	172.1	245	eP	:14.39 (1.26)	eS	:35.27 (1.58)
UTK	GOGA	275.2	201	eP	:32.60 (4.38X)	eS	:18:00.15 (0.59)
UTK	ABTN	334.4	274	eP	:36.54 (0.99)	eS	:14.15 (1.90)

*****1999 MAY 16; 15:40 - MCKEE, KENTUCKY*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990516	154014	.6	37.445	84.157	23.1	18	141	187	0.6	D	D/D	1.4	236	0.9	1.1	B		2.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	141.0	168	eP+	15:40:36.93 (-0.23)	eS	15:40:54.09 (0.50)
UTK	ANTN	170.7	214	eP	:44.53 (2.81X)	eS	:41:01.05 (-0.38)
UTK	ORT	170.9	184	iP-	:42.58 (0.85)	iS	:01.33 (-0.12)
UTK	EGT	187.8	156	eP	:47.74 (3.37X)	eS	:07.50 (1.52)
UTK	TKL	201.2	170	eP	:45.35 (-0.86)	eS	:09.18 (-0.01)
UTK	WCI	211.7	294	eP	:41.74 (-5.74X)	eS	:11.92 (0.53)
UTK	SLTN	212.8	121	eP	:51.35 (3.62X)	eS	:12.91 (1.08)

UTK	DATN	231.3	201	eP	:51.60	(1.65)	eS	:17.19 (1.52)
UTK	ABTN	245.7	226	eP	:50.54	(-1.16)	eS	:16.51 (-2.18)
UTK	MYNC	263.1	179	eP	:55.94	(2.08)	eS	:22.92 (0.49)
UTK	OLT	266.3	197	eP	:54.86	(0.62)	eS	:21.88 (-1.21)

*******1999 MAY 17; 17:29 - CLEVELAND, TENNESSEE*******

UTK Mainshock with two small aftershocks nine hours later.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990517	172933.2	35.307	84.928	0.8	20	20	60	0.5	D	D/C	0.4	310	0.3	1.3	A		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	OLT	19.5	207	iPd	17:29:36.28 (-0.12)	iS	17:29:38.89 (0.11)
UTK	DATN	25.8	326	eP	:37.14 (-0.31)	eS	:40.14 (-0.47)
UTK	TQTN	29.6	38	eP	:38.26 (0.18)	eS	:42.23 (0.52)
UTK	MYNC	77.3	109	eP	:46.59 (0.63)	iS	:55.34 (-0.08)
UTK	ORT	87.6	40	eP	:48.17 (0.51)	iS	:58.90 (0.53)
UTK	ANTN	99.8	344	eP	:46.89 (-2.74X)	eS	:30:00.19 (-1.62)
UTK	TKL	111.8	69	eP	:51.22 (-0.32)	eS	:04.03 (-1.09)
UTK	CRTN	139.6	44	eP	:55.77 (-0.23)	eS	:14.77 (1.98)
UTK	GOGA	249.5	147	eP	:30:13.52 (0.52)	eS	:42.80 (0.82)
UTK	PLAL	289.0	264	iP	:16.91 (-0.96)	iS	:51.66 (1.26)
UTK	MOTN	311.9	299	eP	:17.67 (-3.02X)	eS	:56.75 (1.47)

*******1999 MAY 18; 02:34 - CLEVELAND, TENNESSEE*******

UTK Aftershock following May 17 mainshock.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990518	023415.6	35.313	84.952	6.2	15	19	91	0.4	C	C/C	0.6	229	0.4	3.1	C		1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	OLT	19.2	200	eP-	02:34:18.92 (-0.02)	eS	02:34:21.33 (-0.09)
UTK	DATN	24.1	330	iP	:19.86 (0.14)	eS	:22.23 (-0.54)
UTK	TQTN	30.5	42	eP	:21.77 (1.04X)	eS	:23.95 (-0.57X)
UTK	MYNC	79.6	109	eP	:29.30 (0.70)	iS	:38.03 (-0.19)
UTK	PDTN	81.8	267	eP	:28.91 (-0.03)	eS	:38.72 (-0.10)
UTK	ORT	88.5	41	eP	:30.79 (0.78)	eS	:41.53 (0.85)
UTK	TKL	113.5	70	eP	:35.03 (1.00)	iS	:46.83 (-0.76)
UTK	ABTN	122.6	302	eP	:35.76 (0.29)	eS	:48.70 (-1.38X)
UTK	CRTN	140.7	45	eP	:39.08 (0.76)	eS	:55.91 (0.90)

*******1999 MAY 18; 02:45 - CLEVELAND, TENNESSEE*******

UTK Aftershock following May 17 mainshock.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990518	024521.0	35.307	84.951	5.8	17	19	71	0.5	C	C/C	0.4	356	0.3	1.7	B		1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	OLT	18.7	201	iP-	02:45:24.12 (-0.13)	iS	02:45:26.73 (0.08)
UTK	DATN	24.6	330	eP	:25.03 (-0.17)	eS	:28.15 (-0.15)
UTK	MYNC	79.4	109	iP	:34.42 (0.45)	iS	:43.17 (-0.40)
UTK	PDTN	81.8	268	eP	:29.79 (-4.56X)	eS	:43.93 (-0.30)
UTK	ORT	88.8	41	eP	:36.04 (0.56)	eS	:46.73 (0.53)
UTK	TKL	113.7	70			eS	:51.80 (-1.26)
UTK	ABTN	123.0	302	iPd	:40.88 (-0.05)	eS	:54.78 (-0.81)
UTK	CRTN	141.1	45	eP	:43.81 (0.02)	eS	:46:02.22 (1.68)
UTK	GOGA	250.8	147			eS	:30.37 (1.28)

UTK	PLAL	287.0	264	eP	:46:06.72	(1.84)	eS	:39.67 (2.86)

*******1999 MAY 22; 08:55 - DECATUR, TENNESSEE*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990522	085536.8	35.603	84.714	21.4	19	10	123	0.3	B	B/B	0.3	332	0.2	0.5	A		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	TQTN	9.7	186	iPu	08:55:40.36 (-0.20)	iS	08:55:43.36 (0.02)
UTK	DATN	35.6	251	eP	:43.49 (0.04)	eS	:47.85 (-0.53)
UTK	ORT	50.3	47	eP+	:45.29 (-0.22)	iS	:52.35 (0.40)
UTK	OLT	57.6	209	iP-	:46.36 (-0.24)	iS	:53.98 (0.16)
UTK	MYNC	79.2	138	iP-	:49.85 (-0.03)	iS	:59.68 (0.20)
UTK	TKL	85.4	86	eP	:50.90 (0.09)	iS	:56:00.80 (-0.27)
UTK	CRTN	103.0	50	eP+	:53.10 (-0.41)	eS	:07.03 (1.30)
UTK	PDTN	109.4	251	iP	:54.42 (-0.06)	iS	:07.59 (0.20)
UTK	ABTN	130.0	284	eP	:57.34 (-0.31)	iS	:12.91 (0.07)
UTK	MSAL	197.1	245			eS	:30.41 (-0.11)
UTK	SLTN	251.7	67	iP	:56:23.98 (9.10X)	eS	:46.87 (4.27X)

*******1999 MAY 22; 15:20 - MARYVILLE, TENNESSEE*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990522	152054.4	35.728	83.902	19.6	18	14	67	0.4	B	C/A	0.3	252	0.3	0.5	A		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	TKL	13.9	124	eP-	15:20:58.35 (0.01)	iS	15:21:01.45 (0.24)
UTK	ORT	41.7	299	iPu	:21:01.80 (-0.04)	iS	:07.45 (0.16)
UTK	CRTN	52.7	6	eP	:03.15 (-0.32)	eS	:09.76 (-0.36)
UTK	MYNC	75.4	196	eP-	:06.75 (-0.18)	iS	:15.83 (-0.27)
UTK	TQTN	78.3	253	eP	:12.02 (4.66X)	eS	:20.00 (3.15X)
UTK	DATN	110.3	257	eP	:14.69 (2.37X)	eS	:25.83 (0.47)
UTK	OLT	120.4	238	iP	:14.55 (0.69)	eS	:28.96 (0.95)
UTK	SLTN	179.0	63	eP-	:22.48 (-0.42)	iS	:44.26 (0.69)
UTK	PDTN	183.8	255	eP	:23.40 (-0.18)	eS	:45.31 (0.59)
UTK	ABTN	200.3	276	eP	:25.03 (-1.08)	eS	:49.58 (0.50)
UTK	GOGA	260.0	171	P	:36.97 (3.35X)	eS	:22:04.65 (2.54)

*******1999 MAY 27; 11:21 - MARYVILLE, TENNESSEE*******

UTK Felt (II) in and near Maryville.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990527	112100.5	35.756	83.955	14.1	18	20	73	0.2	B	B/B	0.3	266	0.3	0.9	A		1.9		2

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	TKL	19.7	123	iP+	11:21:04.35 (-0.04)	iS	11:21:07.44 (0.13)
UTK	ORT	35.9	298	ePu	:06.66 (-0.04)	iS	:11.50 (0.20)
UTK	CRTN	50.3	12	eP-	:08.82 (-0.07)	iS	:14.97 (-0.16)
UTK	MYNC	77.3	192	iP+	:13.05 (-0.05)	iS	:22.09 (-0.31)
UTK	DATN	106.3	255	iP	:17.56 (-0.12)	eS	:30.45 (0.13)
UTK	OLT	118.0	236	eP	:20.07 (0.56)	eS	:33.26 (-0.24)
UTK	PDTN	180.0	253	eP-	:29.32 (0.11)	eS	:50.35 (0.23)
UTK	SLTN	182.0	65	iP	:30.01 (0.43)	iS	:51.61 (0.86)
UTK	ABTN	195.2	275	eP	:31.37 (-0.17)	eS	:54.46 (0.33)

*******1999 MAY 27; 19:28 - SOUTH CAROLINA*******

NEIC Felt at Moore.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
NEIC	990527	192803.6	34.830	82.000	5.0F	4	91											2.4		F
USC	990527	192803.7	34.746	82.065	3.0	14	68	175	0.2	C	B/D	2.3	360	2.3	2.1			2.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
NEIC	JSC	91.2	132	eP	19:28:23.95 (3.9)	(S)	19:28:35.72 (X)
NEIC	MYNC	195.7	279	ePn	:34.01 (-1.0)	eS	:57.59 (X)
NEIC	GOGA	207.9	221	(P)	:36.32 (-0.2)	eS	:59.82 (X)
NEIC	CEH	289.1	65	(P)	:44.27 (-2.8)	eS	:29:21.09 (X)
USC	SMM	68.3	278	iPu	19:28:14.93 (0.06)	iSu	19:28:23.61 (0.06)
USC	BG3	83.9	289	iPu	:17.15 (-0.22)	iSu	:28.36 (0.34)
USC	SMT	85.4	284	iPd	:17.53 (-0.09)	iSd	:28.45 (-0.01)
USC	JSCV	90.0	125	ePd	:18.39 (0.02)	iSd	:29.78 (-0.02)
USC	CCK	90.1	290	iPu	:18.11 (-0.28)	eSd	:29.96 (0.14)
USC	LHS	119.3	105	iPu	:24.13 (1.06)	iSd	:38.19 (0.04)
USC	MYNC	192.0	281	eP	:34.50 (0.31)	eS	:57.60 (-0.35)

*****1999 MAY 28; 12:11 - WHITWELL, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990528	121157.9	35.163	85.571	7.9	10	28	136	0.2	C	C/C	1.2	11	1.0	2.2	B		1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	PDTN	28.1	296	iP	12:12:02.96 (0.31)	iS	12:12:06.14 (-0.05)
UTK	DATN	57.8	50	eP	:07.37 (-0.00)	eS	:13.22 (-1.22X)
UTK	ABTN	93.8	329	eP-	:13.02 (-0.11)	eS	:24.49 (0.12)
UTK	MSAL	106.6	251	eP	:16.43 (1.29X)	eS	:28.32 (0.48)
UTK	SHAL	124.3	230	eP	:17.42 (-0.53)	eS	:32.33 (-0.37)
UTK	MYNC	132.0	94	eP	:21.05 (1.89X)	eS	:34.75 (-0.05)
UTK	ORT	141.6	54	eP	:20.45 (-0.22)	eS	:39.90 (2.49X)

*****1999 MAY 29; 22:59 - MASCOT, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990529	225904.1	36.106	83.706	3.4	21	16	124	0.3	C	C/C	0.3	225	0.3	1.0	A		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	16.0	311	ePu	22:59.06.76 (-0.03)	iS	22:59.08.89 (0.09)
UTK	EGT	43.3	122	eP	:11.64 (0.38)	eS	:17.41 (0.83)
UTK	TKL	50.1	187	iPu	:12.00 (-0.38)	iS	:18.50 (-0.03)
UTK	ORT	58.2	248	eP	:13.73 (0.01)	eS	:20.97 (0.11)
UTK	TQTN	113.1	235	eP	:22.90 (0.37)	eS	:35.49 (-0.68)
UTK	MYNC	120.7	199	eP+	:23.88 (0.11)	eS	:38.31 (0.02)
UTK	DATN	141.7	242	eP	:26.11 (-0.99X)	eS	:43.38 (-0.65)
UTK	SLTN	147.3	75	eP	:27.68 (-0.33)	eS	:45.33 (-0.27)
UTK	OLT	159.7	229	eP	:29.89 (-0.04)	eS	:49.47 (0.55)
UTK	PDTN	214.9	245	eP+	:38.12 (-0.51)	eS	23:00:05.20 (1.31)
UTK	ABTN	218.1	264	eP	:38.75 (-0.38)	eS	:04.92 (0.19)
UTK	GOGA	299.7	176	eP	:53.64 (3.85X)	eS	:26.57 (3.50X)

*****1999 MAY 30; 01:26 - CHARLESTON, SOUTH CAROLINA*****

CSU Between Middleton Place and Summerville, SC. Not felt. Magnitude <1.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990530	012636.3	32.918	80.139	5.4	8	2	144	0.0	C	C/C	1.4	360	1.4	1.4			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)

USC	MGS	2.2	185	iPu	01:26:37.71	(0.00)	iSd	01:26:38.05 (-0.02)
USC	RGR	5.3	257	iPd	:38.00	(0.00)	iSu	:39.42 (-0.01)
USC	CSU	9.9	40	iPu	:38.63	(0.13)	iSu	:40.51 (-0.14)
USC	WAS	14.7	238	iPd	:39.52	(0.00)	iSd	:41.55 (-0.08)

Additional Data

CSU	RGR	P	01:26:38
	CSU	P	:40
	WAS	P	:41.5

*****1999 MAY 30; 03:41 - MASCOT, TENNESSEE*****

UTK Aftershock of earthquake that occurred five hours earlier.

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990530	0341	56.8	36.103	83.716	5.0	10	16	121	0.1	C	C/C	1.3	342	0.9	3.9	C		1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	15.6	314	iPu	03:41:59.52 (-0.05)	iS	03:42:01.62 (0.04)
UTK	EGT	43.8	121	eP	:42:04.52 (0.35)	eS	:09.78 (0.19)
UTK	TKL	49.6	186	iP-	:04.72 (-0.34)	iS	:11.15 (0.00)
UTK	ORT	57.2	248	eP	:09.25 (2.96X)	eS	:16.52 (3.24X)
UTK	MYNC	120.1	198	eP	:16.48 (0.11)	iS	:30.78 (0.05)
UTK	SLTN	148.3	75	eP	:20.71 (-0.14)	eS	:43.04 (4.55X)
UTK	PDTN	213.9	245	eP	:25.75 (-5.41X)		
UTK	ABTN	217.1	264	eP	:39.53 (7.87X)	eS	:57.23 (0.17)

*****1999 JUNE 04; 23:16 - WILLIAMSBURG, KENTUCKY*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990604	2316	51.8	36.672	83.972	3.9	20	54	149	0.9	D	D/D	0.7	21	0.6	1.3	A		1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	53.7	167	iPd	23:17:01.04 (0.34)	eS	23:17:08.05 (0.76)
UTK	ORT	89.8	200	eP	:06.72 (0.22)		
UTK	TKL	113.9	171	iPd	:09.07 (-1.30)	eS	:23.93 (-0.16)
UTK	ANTN	125.9	244	eP	:11.57 (-0.73)	eS	:28.58 (1.20)
UTK	DATN	164.3	218	eP	:19.34 (0.98)		
UTK	SLTN	167.6	98	eP-	:19.38 (0.47)	eS	:42.25 (3.42)
UTK	MYNC	177.9	185	eP	:20.72 (0.22)	eS	:44.02 (2.45)
UTK	OLT	193.8	210	eP	:23.79 (0.79)	eS	:47.56 (1.66)
UTK	ABTN	211.0	246	eP	:25.16 (-0.54)	eS	:52.42 (1.90)
UTK	PDTN	229.7	228	eP	:28.97 (0.32)	eS	:57.46 (1.99)
UTK	WCI	271.7	310	eP	:32.89 (-1.11)	eS	:18:05.31 (0.60)

*****1999 JUNE 12; 22:35 - RUSSELLVILLE, ALABAMA *****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990612	2235	44.2	34.542	87.825	4.5	11	111	173	0.3	D	C/D	1.0	360	0.4	2.9	C		1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	MSAL	110.8	72	eP-	22:36:02.56 (0.30)	eS	22:36:15.60 (0.00)
UTK	SHAL	113.1	96			eS	:17.32 (1.10)
UTK	OXF	145.4	269	eP	:09.72 (1.97X)	eS	:24.89 (-0.14)
UTK	PDTN	198.0	65	eP+	:15.67 (-0.37)	eS	:39.65 (0.27)
UTK	ABTN	215.9	46	eP	:18.74 (-0.14)	eS	:43.73 (-0.46)
UTK	MOTN	230.8	356	eP	:21.38 (0.20)	iS	:48.39 (0.31)
UTK	MYNC	343.4	79			eS	:37:13.09 (0.69)

*****1999 JUNE 17; 05:53 - TAZEWELL, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990617	055316.6	36.458	83.477	10.5	8	93	323	1.0	D	D/D	1.5	254	1.0	99.0	D		1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	EGT	63.9	165	eP	05:53:32.00 (4.88X)	eS	05:53:42.01 (7.11X)
UTK	TKL	92.7	197	iP	:30.83 (-0.79)	iS	:42.25 (-0.44)
UTK	ORT	96.2	231	iP+	:32.53 (0.36)	eS	:42.77 (-0.86)
UTK	SLTN	121.6	90	eP	:40.92 (4.69X)	eS	:54:00.94 (10.28X)
UTK	MYNC	164.5	201	eP	:45.04 (2.08)	eS	:04.22 (1.93)
UTK	DATN	179.9	234	eP	:45.82 (0.42)	eS	:06.07 (-0.43)
UTK	ABTN	245.2	256	eP	:56.45 (1.58X)	eS	:17.73 (-4.96X)

*****1999 JUNE 25; 17:31 - DALTON, GEORGIA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990625	173107.2	34.793	84.973	21.7	13	40	256	0.2	C	B/D	1.2	346	0.6	1.8	B		1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	OLT	39.8	353	eP	17:31:14.30 (-0.16)	iS	17:31:19.91 (0.11)
UTK	DATN	79.1	353	eP	:20.66 (0.39)	eS	:29.56 (-0.31)
UTK	TQTN	83.3	16			eS	:31.48 (0.55)
UTK	PDTN	96.1	304	ePu	:22.85 (-0.01)	eS	:34.11 (-0.20)
UTK	ORT	137.9	26			eS	:46.06 (0.72)
UTK	TKL	145.3	48	eP	:29.95 (-0.45)	eS	:47.23 (-0.06)
UTK	ANTN	154.7	351	eP	:33.03 (1.17X)	eS	:48.80 (-1.00)
UTK	ABTN	159.2	320	eP-	:33.05 (0.51)	eS	:51.11 (0.15)

*****1999 JUNE 28; 00:00 - SYLVA, NORTH CAROLINA*****

UTK Foreshock.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990628	000048.6	35.480	83.190	13.4	11	57	323	0.8	D	D/D	2.9	20	1.1	1.8	C		1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	TKL	56.6	291	eP+	00:00:57.28 (-0.69)	iS	00:01:04.95 (0.07)
UTK	ORT	111.6	296	eP	:01:08.19 (1.56)		
UTK	OLT	170.8	258	eP	:16.02 (0.07)	eS	:34.26 (-1.63)
UTK	DATN	172.1	271	eP-	:17.25 (1.08)	eS	:38.52 (2.26X)
UTK	ANTN	199.8	293	eP	:21.50 (1.07)	eS	:46.43 (2.86X)
UTK	PDTN	242.8	265	iP+	:26.28 (0.01)	eS	:53.15 (-0.52)
UTK	ABTN	268.1	281	eP	:29.86 (0.46)	eS	:02:01.63 (2.56)

*****1999 JUNE 28; 01:38 - SYLVA, NORTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990628	013823.6	35.409	83.221	10.5	12	55	268	0.7	D	D/D	2.1	21	1.2	1.9	B		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	EGT	55.0	353	eP	01:38:33.42 (0.66)	eS	01:38:42.16 (2.65X)
UTK	TKL	57.2	299	iP+	:32.55 (-0.53)	eS	:40.10 (0.05)
UTK	ORT	112.7	300	eP	:42.91 (1.08)	eS	:39:00.91 (5.71X)
UTK	TQTN	137.1	275	eP	:51.13 (5.47X)	eS	:02.01 (0.17)
UTK	OLT	166.5	261	eP	:49.29 (-1.04)	eS	:07.81 (-2.07X)
UTK	DATN	169.6	274	eP	:52.22 (1.40)	eS	:12.72 (1.98X)

UTK	ANTN	200.5	296	eP	:56.68 (0.99)	eS :20.97 (1.98X)
UTK	PDTN	239.4	267	eP	:39:00.52 (-0.68)	eS :28.21 (-0.29)
UTK	ABTN	266.8	282	eP	:05.22 (0.64)	eS :35.80 (1.44)

*******1999 JUNE 28; 01:53 - SODDY-DAISY, TENNESSEE*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990628	015303.9	35.343	85.072	10.0	13	18	95	0.3	C	C/B	0.3	274	0.3	1.2	A		1.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	DATN	17.5	356	iPu	01:53:07.51 (0.28)	eS	01:53:09.42 (-0.28)
UTK	OLT	21.8	169	iP+	:07.83 (-0.02)	iS	:10.71 (-0.06)
UTK	TQTN	36.8	58	eP	:10.22 (0.11)	iS	:14.92 (0.20)
UTK	PDTN	71.2	264	eP	:16.13 (0.59)	iS	:23.94 (-0.17)
UTK	ORT	93.7	48	iP+	:19.47 (0.37)	eS	:33.00 (2.74X)
UTK	ABTN	111.6	303	iP+	:22.20 (0.27)	eS	:35.03 (-0.13)
UTK	TKL	122.8	73	eP	:22.30 (-1.39)	eS	:36.90 (-1.31)

*******1999 JULY 06; 06:21 - SWEETWATER, TENNESSEE*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990706	062104.0	35.634	84.335	30.0	14	31	76	0.5	C	C/B	0.5	239	0.3	1.4	B		1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	ORT	30.7	5	eP	06:21:11.16 (0.37)	iS	06:21:15.95 (0.18)
UTK	TKL	50.8	87	eP	:12.48 (-0.84)	iS	:19.83 (-0.31)
UTK	MYNC	65.0	163	iP+	:15.89 (0.59)	iS	:23.44 (-0.13)
UTK	OLT	82.5	230	eP	:17.33 (-0.51)	eS	:25.97 (-1.99)
UTK	EGT	98.3	72	eP	:19.84 (-0.39)		
UTK	ANTN	100.5	307	iP	:20.08 (-0.45)	eS	:28.28 (-4.32X)
UTK	PDTN	143.2	254	eP	:28.09 (1.12)	eS	:41.99 (-1.69)
UTK	ABTN	162.9	280	eP	:30.81 (0.85)	eS	:48.23 (-0.61)

*******1999 JULY 16; 01:54 - MASCOT, TENNESSEE*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990716	015422.8	36.044	83.669	4.2	15	37	156	0.2	C	B/C	0.6	19	0.5	2.1	B		1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	EGT	37.0	115	iP	01:54:28.94 (0.01)	eS	01:54:33.75 (0.24)
UTK	TKL	43.8	193			S-P	5.00 SEC (-0.31)
UTK	ORT	59.2	256	iPu	:32.36 (-0.19)	iS	:40.16 (0.36)
UTK	MYNC	115.3	201	eP	:41.63 (0.08)	eS	:55.43 (0.01)
UTK	ANTN	141.4	276	eP	:44.45 (-1.23X)	eS	:55:02.24 (-0.29)
UTK	SLTN	146.1	72	eP	:46.33 (-0.13)	eS	:04.04 (0.16)
UTK	OLT	157.8	231	iP	:48.82 (0.56)	eS	:06.74 (-0.26)
UTK	PDTN	215.1	247	eP	:53.47 (-3.83X)	eS	:23.53 (1.00)
UTK	ABTN	220.8	266	eP	:58.39 (0.20)	eS	:24.25 (0.22)

*******1999 JULY 24; 22:45 - CHARLESTON, SOUTH CAROLINA*******

CSU Not felt. Magnitude 1.24

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990724	224550.7	32.925	80.150	5.1	8	3	162	0.0	C	B/C	1.2	360	1.2	1.3			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MGS	3.1	164	iPu	22:45:52.12 (-0.02)	iSd	22:45:52.85 (0.31)

USC	RGR	4.6	245	iPd	:52.26	(-0.01)	iSd	:53.58 (-0.03)
USC	CSU	10.1	47	iPd	:52.90	(-0.01)	iSd	:54.72 (0.27)
USC	WAS	14.3	233	iPd	:53.86	(0.02)	iSd	:55.95 (0.07)

*****1999 JULY 26; 15:35 - CHARLESTON, SOUTH CAROLINA*****

CSU Not felt. Magnitude 1.16.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990726	153547.9	32.942	80.178	8.4	8	4	204	0.0	D	C/D	1.7	360	1.7	1.7			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	RGR	4.1	202	iPd	15:35:49.83	(-0.06)	iSd	15:35:51.46	(-0.07)
USC	MGS	6.0	145	iPu	:50.10	(0.00)	iSn	:51.85	(-0.02)
USC	CSU	11.1	64	iPd	:50.55	(0.00)	iSd	:52.46	(0.04)
USC	WAS	13.7	220	iPd	:51.22	(0.06)	iSd	:53.25	(-0.03)

*****1999 JULY 31; 09:47 - MOULTON, ALABAMA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990731	094700.8	34.443	87.311	0.0	25	65	182	0.4	D	C/D	0.5	355	0.2	0.9	A		2.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	SHAL	65.2	91	eP	09:47:11.82	(0.25)	eS	09:47:19.70	(0.15)
UTK	PDTN	162.3	55	eP-	:27.05	(-0.16)	eS	:46.99	(0.36)
UTK	OXF	192.9	273	eP+	:31.76	(-0.26)	iS	:55.19	(0.24)
UTK	WVT	193.0	346	iPu	:31.99	(-0.05)	eS	:54.99	(-0.00)
UTK	ABTN	193.9	34	eP	:32.48	(0.29)	eS	:54.89	(-0.37)
UTK	OLT	223.5	69	iPu	:36.44	(-0.43)	iS	:48:03.48	(0.20)
UTK	DATN	234.6	59	iPu	:37.99	(-0.63)	eS	:06.20	(-0.01)
UTK	MOTN	248.9	346	ePu	:40.10	(-0.52)	eS	:10.25	(0.65)
UTK	ANTN	269.3	44	eP	:44.12	(0.94)	eS	:15.87	(1.83)
UTK	MYNC	299.7	76	eP	:47.58	(0.66)	eS	:19.84	(-0.67)
UTK	ORT	318.5	58	eP	:50.37	(1.15)	eS	:26.18	(1.70)
UTK	CRTN	370.9	57	eP	:55.02	(-0.67)			
UTK	WCI	426.6	11	eP	:48:10.84	(8.31X)	eS	:49.01	(1.51)
UTK	SLTN	520.8	63	eP	:13.14	(-1.12)			

*****1999 AUGUST 14; 04:15 - LOUDON, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990814	041559.3	35.679	84.208	12.2	14	27	85	0.2	C	B/C	0.6	271	0.4	1.9	B		1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	ORT	27.0	341	iPu	04:16:03.92	(-0.14)	iS	04:16:07.77	(0.13)
UTK	TKL	39.3	93				S-P	4.77 SEC	(-0.10)
UTK	CRTN	66.6	30	eP	:10.41	(0.22)	eS	:17.99	(-0.25)
UTK	MYNC	67.5	174	eP	:10.62	(0.28)	eS	:18.50	(-0.01)
UTK	EGT	85.8	73	eP	:13.16	(-0.08)	eS	:25.47	(1.93X)
UTK	OLT	94.6	232	eP	:15.77	(1.18)	eS	:24.82	(-1.05)
UTK	SLTN	206.3	65	eP	:32.08	(-0.09)	eS	:58.00	(1.91)

*****1999 AUGUST 14; 09:49 - JEFFERSON, NORTH CAROLINA*****

UTK Slightly smaller, apparently related earthquake occurred a few hours later.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990814	094910.7	36.391	81.251	0.0	14	78	136	0.3	D	C/D	1.6	359	0.5	2.3	B		1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	SLTN	78.2	274	eP	09:49:23.49	(-0.16)	eS	09:49:33.28	(0.06)
UTK	BLA	117.3	39	eP	:30.08	(0.07)	eS	:44.28	(0.00)
UTK	EGT	192.1	254	eP	:41.10	(-0.78)	eS	:50:06.71	(1.95X)
UTK	CEH	202.0	105	eP	:44.28	(0.89)	eS	:07.48	(0.10)
UTK	CRTN	233.6	266	eP	:47.55	(-0.84)	eS	:16.25	(0.38)
UTK	TKL	241.5	251				S-P	28.85 SEC	(0.45)
UTK	ORT	280.0	260	eP-	:54.18	(-0.22)	eS	:26.49	(0.30)
UTK	MYNC	298.5	242	iP	:56.22	(-0.48)	eS	:29.20	(-0.97)

*******1999 AUGUST 14; 16:07 - INDEPENDENCE, VIRGINIA*******

UTK Earthquake apparently related to a slightly larger earthquake that occurred a few hours earlier.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990814	160718.9	36.568	81.236	3.3	10	80	210	0.2	D	D/D	7.8	2	1.2	4.2	D		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	SLTN	80.4	260	eP	16:07:32.25	(0.05)	eS	16:07:41.99	(-0.03)
UTK	EGT	199.6	249	eP	:51.04	(-0.07)	eS	:08:15.33	(0.61)
UTK	CEH	206.8	111	eP	:54.75	(2.54X)	eS	:16.70	(0.09)
UTK	CRTN	237.2	261	eP	:56.74	(-0.26)	eS	:24.83	(0.15)
UTK	TKL	249.8	247				S-P	28.88 SEC	(-0.02)
UTK	MYNC	309.4	238	eP	:08:05.75	(-0.15)	eS	:38.15	(-1.94)

*******1999 AUGUST 24; 01:48 - COHUTTA, GEORGIA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990824	014850.2	34.943	84.987	0.0	18	80	170	0.3	D	C/D	1.4	332	0.4	2.5	B		2.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	MYNC	79.8	79	eP+	01:49.03.55	(0.13)	eS	01:49.12.95	(-0.23)
UTK	ORT	123.8	30	ePu	:10.46	(-0.10)	eS	:25.64	(0.05)
UTK	MSAL	154.5	267	eP-	:15.03	(-0.40)	eS	:34.51	(0.56)
UTK	SHAL	158.4	250	iP	:15.94	(-0.11)	eS	:35.80	(0.78)
UTK	EGT	186.6	55	eP+	:20.12	(-0.41)	eS	:44.45	(1.66X)
UTK	WVT	289.5	298	eP	:35.84	(0.77)	eS	:50:06.99	(-0.71)
UTK	SLTN	308.2	56	eP	:38.30	(0.79)	eS	:12.36	(0.44)
UTK	MOTN	328.8	305	eP	:36.62	(-3.29X)	eS	:17.11	(1.03)
UTK	WCI	382.8	342	eP	:46.06	(-0.51)	eS	:28.61	(1.00)
UTK	OXF	407.8	265	eP	:47.79	(-1.86)	eS	:31.34	(-1.59)

*******1999 SEPTEMBER 02; 21:48 - CHATTANOOGA, TENNESSEE*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990902	214849.7	35.182	85.395	15.8	17	34	137	0.4	C	C/C	0.5	341	0.3	1.2	A		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	OLT	34.0	96	iPd	21:48:56.11	(0.38)	eS	21:49:00.87	(0.68)
UTK	DATN	45.1	38	eP	:57.15	(-0.24)	iS	:02.95	(-0.12)
UTK	MYNC	116.1	96	iP	:49:08.18	(-0.26)	iS	:21.83	(-0.38)
UTK	MSAL	122.5	253	iP+	:09.01	(-0.40)	eS	:24.58	(0.67)
UTK	ORT	127.6	50	eP	:10.30	(0.07)	eS	:26.89	(1.55)
UTK	SHAL	138.2	233	eP	:11.55	(-0.34)	eS	:28.69	(0.51)
UTK	CRTN	180.4	51	eP	:18.75	(0.32)	eS	:40.99	(1.65)
UTK	EGT	206.2	67	iPu	:22.10	(-0.33)	eS	:46.51	(0.29)
UTK	WVT	244.3	296	eP	:32.31	(5.04X)	eS	:55.14	(0.52)
UTK	MOTN	283.0	305	eP	:38.73	(6.67X)	eS	:50:05.73	(2.84X)

*****1999 SEPTEMBER 17; 12:13 - KNOXVILLE, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990917	121310.9	36.171	83.932	3.3	6	9	240	0.1	D	C/D	1.6	284	0.6	2.5	B		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	8.8	68	iPd	12:13:12.50 (0.05)	iS	12:13:13.41 (-0.21)
UTK	ORT	44.4	229	eP	:21.25 (3.01X)	eS	:30.38 (6.69X)
UTK	EGT	64.5	117	eP	:20.56 (-1.01X)	eS	:29.79 (0.30)
UTK	TKL	58.6	166	iP	:20.67 (0.09)	iS	:27.77 (0.00)
UTK	MYNC	123.0	188	eP	:35.39 (4.46X)	eS	:45.41 (-0.30)

*****1999 SEPTEMBER 17; 12:24 - TELLICO PLAINS, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990917	122414.9	35.383	84.273	13.7	15	37	101	0.3	C	C/C	0.5	295	0.3	2.2	B		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	MYNC	36.7	159	iP-	12:24:21.54 (0.23)	iS	12:24:25.99 (0.00)
UTK	TKL	54.6	56	iP-	:23.60 (-0.44)	iS	:30.60 (-0.14)
UTK	ORT	58.5	357	iPd	:24.92 (0.27)	eS	:31.44 (-0.35)
UTK	OLT	73.0	250	eP	:26.45 (-0.46)	eS	:35.45 (-0.28)
UTK	DATN	75.0	280	eP	:26.64 (-0.59)	eS	:35.86 (-0.41)
UTK	CRTN	98.8	23	eP	:31.45 (0.48)	eS	:43.22 (0.49)
UTK	EGT	105.4	57	eP	:37.11 (5.07X)	eS	:47.57 (2.97X)
UTK	MSAL	226.7	255	iP-	:50.18 (-0.44)	eS	:25:14.16 (-2.39X)
UTK	SLTN	227.2	58	eP	:51.46 (0.67)	eS	:16.03 (-0.81)

*****1999 SEPTEMBER 22; 15:37 - TAZEWELL, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	990922	153729.6	36.345	83.641	34.8	9	24	214	0.6	D	D/D	1.6	339	1.1	1.2	B		1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	24.1	228	eP	15:37:36.69 (0.32)	iS	15:37:41.19 (-0.08)
UTK	EGT	58.1	148	eP	:37.11 (-3.28X)	eS	:46.64 (-1.59)
UTK	ORT	76.8	231	eP	:41.62 (-1.30)	eS	:52.48 (-0.11)
UTK	SLTN	136.9	85	eP	:51.02 (-0.83)	eS	:38:08.70 (0.70)
UTK	MYNC	147.7	197	eP	:54.69 (1.25)	eS	:12.24 (1.51)

*****1999 SEPTEMBER 22; 20:14 - SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990922	201403.8	35.024	82.352	2.2	15	47	196	0.5	D		3.1	360	3.1	69.4			2.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	SMM	46.5	243	iPu	20:14:11.51 (0.13)	S	20:14:17.00 (-0.32)
USC	BG3	53.1	266	iPu	:12.87 (0.44)	S	:19.04 (-0.15)
USC	SMT	57.5	260	iPu	:13.56 (0.41)	S	:20.04 (-0.42)
USC	MMC	58.2	242	iPu	:13.43 (0.17)	S	:20.15 (-0.51)
USC	CCK	58.4	270	iPu	:13.86 (0.56)	S	:20.71 (-0.02)
USC	RBN	68.6	303	iPu	:14.05 (-1.29)	S	:22.36 (-2.00)
USC	BRB	79.6	4	iPu	:16.73 (-0.41)	S	:26.60 (-0.96)
USC	SMN	90.0	46	iPu	:16.80 (-1.75)	S	:27.01 (-3.08X)
USC	MR05	125.5	132	iPu	:24.22 (0.10X)	S	:39.12 (-0.87X)
USC	JSC	129.7	130	iPd	:24.83 (0.04X)	S	:41.26 (0.08X)
USC	MR02	138.1	132	iPu	:27.00 (0.80X)	S	:43.05 (-0.65X)

*******1999 SEPTEMBER 24; 06:15 - SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990924	061543.3	35.012	82.399	2.0	11	49	253	0.1	D		1.0			16.6			2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	BG3	48.6	268	iPd	06:15:51.28 (0.07)	S	06:15:57.39 (-0.02)
USC	SMT	52.9	260	iPu	:51.90 (-0.01)	S	:58.55 (-0.10)
USC	CCK	54.1	271	iPu	:52.16 (0.07)	S	:59.16 (0.19)
USC	JVW	54.7	268	iPu	:52.18 (0.00)	S	:59.08 (-0.06)
USC	RBN	65.7	306	iPu	:54.55 (0.18)	S	:16:03.13 (0.10)
USC	BRB	81.3	7	iPu	:56.47 (-0.45)	S	:06.69 (-0.88X)
USC	SMN	94.1	48	iPu	:57.09 (-1.62X)	S	:07.36 (-3.40X)
USC	MR02	140.5	130	iPu	:16:04.19 (1.90X)	S	:20.82 (-3.07X)
USC	LHS	157.3	112	iPu	:07.12 (-1.62X)	S	:27.21 (-1.40X)

*******1999 SEPTEMBER 27; 04:03 - CHARLESTON, SOUTH CAROLINA*******

CSU Between Middleton Place and Summerville, SC. Not felt. Magnitude 1.599.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990927	040353.2	33.043	80.182	10.1	12	10	169	0.1	C	B/C	0.6	360	0.6	1.4			1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	SVS	10.3	217	iPu	04:03:56.07 (-0.08)	iSu	04:03:57.39 (-0.30)
USC	TWB	10.9	43	iPd	:56.14 (-0.11)	iSd	:57.58 (0.11)
USC	CSU	12.1	121	iPu	:56.19 (0.01)	iSu	:58.40 (-0.52)
USC	RGR	15.0	184	iPu	:56.72 (-0.04)	iSd	:58.55 (-0.16)
USC	HBF	17.6	233	iPd	:57.16 (0.01)	iSd	:59.28 (0.02)
USC	WAS	23.3	201	iPd	:58.08 (-0.01)	iSd	:04:01.55 (0.09)

*******1999 SEPTEMBER 30; 04:37 - SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990930	043721.2	35.000	82.332	0.9	14	55	117	0.2	D	C/D	0.5	360	0.5	99.0			2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	BG3	54.7	269	iPd	04:37:29.98 (-0.03)	iSd	04:37:36.15 (-0.78)
USC	MMC	58.6	246	iPd	:30.53 (-0.11)	iSu	:37.21 (-0.83)
USC	SMT	58.8	263	iPd	:30.63 (-0.05)	iSu	:37.24 (-0.88)
USC	CCK	60.2	273	iPd	:31.15 (0.22)	iSu	:38.56 (-0.01)
USC	RBNC	71.5	304	iPu	:32.97 (0.18)	iSu	:41.28 (-0.58)
USC	SMNC	90.6	44	iPd	:35.62 (-0.21)	iSd	:47.84 (0.56)
USC	JSC	126.5	129	iPd	:41.67 (0.09)	iSd	:57.85 (0.33)

*******1999 OCTOBER 05; 19:23 - MIDDLESBOROUGH, KENTUCKY*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991005	192322.4	36.676	83.552	31.6	9	59	242	0.5	D	D/D	1.6	329	1.0	2.3	B		1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	58.8	206	iP	19:23:32.77 (-0.16)	iS	19:23:40.74 (0.10)
UTK	EGT	89.0	165	eP	:37.94 (0.63)	eS	:50.95 (2.76X)
UTK	ORT	108.6	219	eP	:38.91 (-1.28)	iS	:53.66 (0.51)
UTK	TKL	114.7	190	eP	:39.90 (-1.19)	eS	:54.45 (-0.26)
UTK	SLTN	130.7	101	eP	:45.23 (1.65)	eS	:24:00.62 (1.63)

*****1999 OCTOBER 09; 07:03 - CHARLESTON, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991009	070341.9	33.033	80.161	9.5	8	10	163	0.1	C	B/C	1.2	360	1.2	2.1			1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	CSU	10.0	122	iPd	07:03:45.00 (0.48)	iSd	07:03:46.25 (-0.72)
USC	TWB	10.5	31	iPu	:44.80 (-0.03)	iSd	:46.30 (0.33)
USC	SVS	10.8	228	iPd	:44.85 (0.01)	iSu	:46.30 (-0.07)
USC	RGR	14.3	192	iPd	:45.30 (0.00)	iSd	:47.10 (0.00)

*****1999 OCTOBER 11; 21:50 - ONEONTA, ALABAMA*****

UTK Probably a blast.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991011	215038.8	33.862	86.474	0.0	13	64	235	0.6	D	D/D	1.0	291	0.9	1.1	A		2.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	SHAL	64.4	349	ePu	21:50:49.61 (0.14)	iS	21:50:57.27 (-0.07)
UTK	MSAL	110.7	350	eP+	:56.98 (-0.07)	eS	:51:09.59 (-0.94)
UTK	OXF	280.0	286	eP	:51:21.22 (-1.26)	eS	:55.70 (1.44)
UTK	ANTN	280.2	24	eP	:22.51 (-0.05)	eS	:55.78 (1.39)
UTK	ORT	301.5	41	eP	:25.96 (0.80)	eS	:52:02.92 (4.03X)
UTK	CRTN	353.5	42	eP+	:31.17 (-0.42)	eS	:10.97 (0.96)
UTK	EGT	368.0	51	eP	:33.05 (-0.39)	eS	:14.56 (1.34)

*****1999 OCTOBER 19; 09:38 - VONORE, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991019	093814.2	35.593	84.239	20.2	8	36	155	0.3	C	C/C	2.3	25	0.4	6.8	D		1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	ORT	35.6	350	iP	09:38:21.08 (0.33)	iS	09:38:25.46 (-0.13)
UTK	TKL	42.7	80	eP	:21.63 (-0.12)	iS	:27.30 (-0.04)
UTK	DATN	77.5	263	eP	:26.37 (-0.63)	eS	:34.07 (-2.34X)
UTK	OLT	86.6	236	eP	:28.49 (0.10)	eS	:38.89 (0.09)
UTK	EGT	91.7	68	eP	:34.42 (3.21X)	eS	:43.09 (2.88X)
UTK	ANTN	110.2	306	eP	:29.30 (-2.72X)	eS	:43.72 (-1.32)

*****1999 OCTOBER 30; 08:57 - SOUTH CAROLINA*****

NEIC Felt near Taylors.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991030	085726.8	35.033	82.376	2.0	16	29	193	0.2	D		0.8	360	0.8	32.2			2.3		
NEIC	991030	085727.0	34.900	82.300	5.0F	3	118											2.3		F

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	TRY	28.6	25	iPd	08:57:31.78 (0.04)	S	08:57:35.39 (-0.19)
USC	SMM	45.0	240	iPu	:34.21 (0.03)	S	:39.62 (-0.31)
USC	BG3	50.9	265	iPu	:35.24 (0.10)	S	:41.60 (-0.03)
USC	SMT	55.5	258	iPu	:36.12 (0.25)	S	:42.94 (0.00)
USC	CCK	56.2	269	iPu	:36.04 (0.05)	S	:42.92 (-0.22)
USC	MMC	56.7	240	iPu	:36.23 (0.16)	S	:43.46 (0.17)
USC	RBN	66.2	303	iPu	:37.99 (-0.01)	S	:46.62 (-0.10)
USC	SMN	90.9	48	iPu	:41.25 (-0.50)	S	:53.51 (0.12)

USC	JSC	132.0	129	iPd	:47.51	(-0.70X)	S	:58:05.10	(0.20X)
USC	LHS	156.0	113	iPd	:52.31	(0.22X)	S	:12.00	(0.20X)
NEIC	JSC	117.9	125	eP	08:57:47.53	(0.2)			
NEIC	LHS	144.6	109	eP	:51.41	(-0.1)	eS	08:58:10.40	(X)
NEIC	BLA	306.9	33	(P)	:58:11.83	(-1.0)			

*****1999 OCTOBER 30; 09:10 - SOUTH CAROLINA*****

NEIC Felt near Taylors.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
NEIC	991030	091020.1	34.900	82.300	5.0F	3	118										2.2			F
USC	991030	091020.2	34.000	82.363	0.8	16	32	200	0.6	D	D/D	0.5	360	0.5	0.5		1.8			

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
NEIC	JSC	117.9	125	eP	09:10:40.62 (0.2)		
NEIC	LHS	144.6	109	eP	:44.63 (0.0)	eS	09:11:02.81 (X)
NEIC	BLA	306.9	33	(P)	:11:07.47 (1.6)		
USC	TRYN	31.5	20	iPd	09:10:25.05 (-0.45)	iSd	09:10:29.30 (-0.32)
USC	SMM	44.4	245	iPu	:27.42 (-0.11)	iSu	:32.82 (-0.40)
USC	BG3	51.9	269	iPu	:28.60 (-0.14)	iSu	:34.73 (-0.65)
USC	SMT	56.1	262	iPu	:29.30 (-0.11)	iSu	:37.66 (1.08)
USC	JVW	58.0	269	iPu	:30.04 (0.32)	iSu	:37.43 (0.30)
USC	RBNC	69.2	305	iPu	:31.65 (0.07)	iSu	:40.64 (0.19)
USC	SMNC	92.6	45	iPu	:34.47 (-0.85)	iSu	:46.82 (-0.28)
USC	PKNC	159.5	43	iPu	:45.80 (-0.32)	iSu	:11:07.99 (1.66)

*****1999 OCTOBER 31; 06:06 - MAGGIE VALLEY, NORTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991031	060619.8	35.534	83.071	11.3	6	46	284	0.3	D	C/D	2.6	350	0.9	19.2	D		1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	EGT	45.6	333	iPu	06:06:27.54 (0.07)	eS	06:06:32.96 (-0.17)
UTK	TKL	65.2	282	eP+	:30.20 (-0.30)	iS	:38.43 (0.04)
UTK	ORT	119.2	291	eP	:42.00 (2.98)	eS	:59.44 (6.32X)
UTK	OLT	182.6	257	eP	:53.71 (4.68X)	eS	:07:11.82 (1.45)

*****1999 NOVEMBER 01; 03:02 - CHARLESTON, SOUTH CAROLINA*****

CSU Between Middleton Place and Summerville, SC. Few felt reports. Magnitude 2.389.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991101	030252.0	32.953	80.199	10.1	16	5	72	0.1	A	A/A	0.5	360	0.5	0.9			2.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	SVS	5.0	291	iPu	03:02:54.39 (0.01)	iSd	03:02:55.49 (0.02)
USC	RGR	5.0	175	iPu	:54.34 (-0.02)	iSu	:55.16 (-0.17)
USC	MGS	8.1	138	iPd	:54.65 (-0.05)	iSu	:55.78 (-0.25)
USC	CSU	12.5	73	iPd	:55.16 (0.11)	iSu	:57.55 (-0.26)
USC	HBF	12.6	268	iPd	:55.25 (0.04)	iSd	:57.02 (0.28)
USC	WAS	13.6	210	iPu	:55.45 (0.03)	iSd	:57.33 (-0.30)
USC	TWB	20.1	26	iPd	:56.34 (-0.05)	iSu	:58.80 (0.12)
USC	DRC	24.7	314	iPd	:57.27 (-0.04)	iSd	:03:00.54 (-0.29)

Additional Data

CSU	RGR		P	03:02:52.01
	CSU		P	:55
	TWB		P	:56
	DRC		P	:57

*****1999 NOVEMBER 10; 18:25 - DALTON, GEORGIA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991110	182558.1	34.682	85.035	0.0	16	91	207	0.5	D	C/D	0.6	326	0.3	1.4	B		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	DATN	90.8	357				eS	18:26:24.19	(-0.06)
UTK	TQTN	96.7	17				eS	:25.49	(-0.42)
UTK	SHAL	146.4	260	eP	18:26:22.38	(0.33)	eS	:40.07	(0.43)
UTK	MSAL	151.1	277	eP+	:22.72	(-0.06)	eS	:40.96	(0.05)
UTK	ORT	151.5	26	iP-	:22.79	(-0.06)	eS	:40.49	(-0.54)
UTK	TKL	157.8	46				S-P	19.5 SEC	(0.72)
UTK	ANTN	166.2	354	eP	:25.28	(0.10)	iS	:45.23	(0.17)
UTK	CRTN	200.3	32	eP-	:30.02	(-0.53)	eS	:54.94	(0.59)
UTK	EGT	207.9	49	eP	:31.29	(-0.50)	eS	:57.63	(1.13)
UTK	SLTN	328.6	53	eP	:46.83	(-1.08)	eS	:27:29.01	(4.86X)

*****1999 NOVEMBER 12; 03:06 - CHICKAMAUGA, GEORGIA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991112	030633.3	34.849	85.341	12.1	24	44	116	0.5	C	C/C	0.5	332	0.2	0.6	A		2.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	OLT	44.2	41	iPd	03:06:40.77	(0.00)	eS	03:06:46.52	(0.28)
UTK	DATN	75.9	18	ePu	:45.58	(-0.16)	eS	:54.00	(-0.87)
UTK	TQTN	92.8	37	iP+	:48.67	(0.28)	eS	:07:00.00	(0.55)
UTK	MSAL	121.9	270	eP	:52.71	(-0.26)	iS	:07.32	(-0.05)
UTK	SHAL	124.5	249	eP	:53.45	(0.07)	eS	:08.52	(0.44)
UTK	ANTN	147.1	4	eP	:57.43	(0.47)	eS	:13.21	(-1.09)
UTK	ORT	150.7	38	iPd	:57.98	(0.46)	eS	:16.84	(1.58X)
UTK	TKL	168.5	57				S-P	19.83 SEC	(0.13)
UTK	CRTN	202.5	42	eP+	:07:05.61	(-0.01)	eS	:29.72	(0.64)
UTK	EGT	219.3	57	eP	:08.16	(-0.08)	eS	:33.77	(0.18)
UTK	GOGA	235.2	132	iP-	:09.45	(-0.74)	eS	:36.82	(-0.16)
UTK	PLAL	250.3	274	eP-	:10.75	(-1.31)	iS	:40.50	(0.28)
UTK	WVT	266.9	303	eP+	:12.70	(-1.40)	iS	:44.90	(1.16)

*****1999 NOVEMBER 17; 03:31 - ATHENS, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991117	033122.4	35.418	84.634	12.2	19	14	76	0.5	C	C/B	0.4	336	0.3	0.8	A		1.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	TQTN	13.7	323	iPu	03:31:25.58	(0.19)	iS	03:31:27.47	(-0.13)
UTK	DATN	42.0	283	iP-	:29.40	(-0.10)	eS	:34.16	(-0.59)
UTK	OLT	46.3	230	eP	:30.48	(0.33)	eS	:35.85	(-0.02)
UTK	MYNC	59.9	129	eP	:32.25	(-0.03)	eS	:39.95	(0.39)
UTK	ORT	62.2	29	eP	:33.40	(0.77)	eS	:41.43	(1.26)
UTK	TKL	82.4	71	eP	:35.75	(-0.07)	iS	:45.38	(-0.31)
UTK	ANTN	99.5	327	iP	:38.26	(-0.26)	eS	:47.74	(-2.63X)
UTK	CRTN	112.6	39	eP	:41.47	(0.90)	eS	:56.53	(2.62X)
UTK	EGT	132.3	66	iP	:41.72	(-1.99)	eS	:58.73	(-0.63)
UTK	MSAL	196.4	252	eP-	:53.33	(-0.40)	eS	:32:16.02	(-0.48)
UTK	GOGA	247.1	154	eP	:52.10	(-8.61X)	eS	:27.52	(-1.05)

*****1999 NOVEMBER 20; 00:07 - TELLICO PLAINS, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991120	000729.9	35.453	84.424	0.1	16	63	90	0.5	D	D/D	0.5	1	0.3	1.3	A		2.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	TKL	63.1	69	iPd	00:07:40.20 (-0.15)	iS	00:07:48.18 (0.10)
UTK	CRTN	98.2	32	eP+	:46.43 (0.30)	eS	:58.29 (0.16)
UTK	ANTN	108.1	318	eP	:47.34 (-0.39)	eS	:08:01.04 (0.14)
UTK	MSAL	215.8	252	iPd	:08:04.59 (-0.18)	iS	:30.44 (0.09)
UTK	SHAL	228.9	241	eP	:06.16 (-0.69)	eS	:35.40 (1.58)
UTK	SLTN	235.0	61	eP-	:07.67 (-0.19)	eS	:35.13 (-0.41)
UTK	GOGA	243.0	159	eP	:06.65 (-2.36)	eS	:37.55 (0.09)
UTK	WVT	317.0	285	eP	:16.28 (-1.85)	eS	:50.30 (-2.94)

*****1999 NOVEMBER 22; 00:31 - DRAPER MOUNTAIN, VIRGINIA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
VTSO	991122	003115.6	36. 976	80.909	5.4	15	16	116	0.4	C	C/C	2.1	206	2.6	3.3	A		1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
VTSO	WMV	15.7	339	iP	00:31:18.20 (-0.37)	iS	00:31:20.69 (0.19)
VTSO	ELN	36.5	22	eP	:21.40 (-0.64)	eS	:27.05 (0.70)
VTSO	BLA	50.7	59	eP	:24.28 (-0.09)	eS	:30.43 (0.04)
VTSO	FWV	67.7	7	eP	:27.30 (0.11)	eS	:35.20 (-0.03)
VTSO	SLTN	123.4	242	eP	:36.94 (0.70)	eS	:50.68 (-0.02)
VTSO	CEH	202.5	126	eP	:48.37 (0.12)	eS	:32:11.39 (0.25)
VTSO	EGT	245.2	242	eP	:55.60 (0.72)	eS	:20.70 (-1.69X)
VTSO	CRTN	276.2	253	eP	:58.87 (0.06)	eS	:29.97 (0.71)
VTSO	TKL	296.0	241	eP	:59.75 (-1.46X)	eS	:32.78 (-0.59X)
VTSO	ORT	326.7	250	eP	:32:02.89 (-2.08X)	eS	:35.90 (-3.89X)

*****1999 NOVEMBER 22; 03:46 - SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991122	034645.9	34.890	82.375	2.5	10	40	336	0.5	D	C/D	4.0	360	4.0	99.0			2.0		
UTK	991122	034649.3	34.899	82.562	7.4	10	130	238	0.7	D	D/D	7.0	264	0.8	16.3	D		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	SMM	39.8	261	iPu	03:46:52.77 (0.43)	iSu	03:46:58.43 (1.04)
USC	BG3	52.2	283	iPu	:53.99 (-0.33)	iSu	:47:00.14 (-0.78)
USC	SMT	54.7	275	iPu	:54.67 (-0.06)	iSu	:02.88 (1.22)
USC	JVW	58.0	281	iPu	:55.11 (-0.17)	iSu	:02.40 (-0.22)
USC	CCK	58.2	285	iPu	:55.60 (0.28)	iSu	:02.54 (-0.16)
UTK	EGT	129.8	329	eP	03:47:09.54 (-0.73)	eS	03:47:24.93 (-0.76)
UTK	TKL	138.8	308	eP	:11.30 (-0.36)	eS	:27.25 (-0.84)
UTK	GOGA	184.9	207	eP	:18.01 (-0.90)	eS	:41.16 (0.52)
UTK	CRTN	185.2	322	eP-	:19.55 (0.57)	eS	:41.19 (0.43)
UTK	ORT	194.0	306	eP	:21.20 (0.83)	eS	:43.34 (0.17)

*****1999 NOVEMBER 26; 08:58 - CLEMSON, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991126	085817.4	34.736	82.745	8.1	9	139	226	0.7	D	D/D	10.2	269	0.8	22.3	D		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	EGT	138.9	339	eP	08:58:40.50 (0.69)	eS	08:58:54.72 (-1.49)
UTK	TKL	139.1	318			S-P	16.26 SEC (-0.05)

UTK	GOGA	161.5	205	eP	:42.16	(-1.18)	eS	:59:02.61 (0.30)
UTK	CRTN	190.7	329	eP	:48.17	(0.20)	eS	:09.31 (-0.92)
UTK	ORT	192.9	313	eP	:48.56	(0.25)	eS	:11.01 (0.22)

*******1999 NOVEMBER 28; 09:30 - MARYVILLE, TENNESSEE*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991128	093031.2	35.620	84.110	2.7	9	31	135	0.3	C	B/C	0.8	20	0.3	1.4	B		1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	TKL	30.7	82	eP	09:30:35.70 (-0.56)	iS	09:30:39.95 (-0.09)
UTK	ORT	36.7	331	iPd	:37.57 (0.32)	iS	:41.49 (-0.27)
UTK	CRTN	68.8	21	iPd	:42.98 (0.41)	eS	:50.70 (-0.30)
UTK	EGT	79.8	67	eP	:43.61 (-0.74X)	eS	:55.02 (0.92X)
UTK	ANTN	118.4	301	iP-	:50.35 (-0.17)	eS	:31:04.44 (-0.37)
UTK	GOGA	252.0	166	eP	:31:22.03 (10.95X)	eS	:40.85 (0.73)

*******1999 NOVEMBER 28; 11:00 - ALABAMA*******

NEIC Probable mine collapse. m_b= 3.5 (based on two teleseismic stations); standard deviation 1.1 on 20 of 29 observations.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
NEIC	991128	110009.3	33.416	87.253	1.0F	20	234					9.6		5.1				3.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
NEIC	OXF	233.5	302	eP	11:00:47.34 (1.3)		
NEIC	WVT	305.8	350	eP	:55.88 (0.5)		
NEIC	SFTN	333.6	311	eP	:59.47 (0.7)		
NEIC	GOGA	352.5	89	eP	:01:03.60 (2.4)	eS	11:01:41.29 (X)
NEIC	UTMT	356.9	336	eP	:01.50 (-0.3)		
NEIC	UALR	493.7	289	eP	:19.44 (0.1)		
NEIC	SIUC	509.3	340	eP	:20.30 (-1.0)		
NEIC	JSC	562.7	79	eP	:27.55 (-0.6)		
NEIC	MIAR	597.1	284	eP	:31.28 (-1.3)		
NEIC	LHS	607.1	77	eP	:33.79 (0.0)		
NEIC	COW	609.4	89	eP	:33.94 (-0.2)		
NEIC	SLM	638.3	336	qP	:36.11 (-1.7X)		
NEIC	BLA	750.6	54	qP	:50.80 (-1.2X)		
NEIC	DWPF	809.5	135	qP	:02:02.52 (3.1X)		
NEIC	LTX	1623.5	258	eP	:03:36.65 (-2.4X)		
NEIC	ANMO	1775.8	281	qP	:53.37 (-3.7X)		
NEIC	ISCO	1784.7	299	eP	:56.16 (-2.0X)		
NEIC	ULM	1999.4	342	P	:04:21.65 (-0.4)		
NEIC	PDAR	2206.2	305	P	:43.80 (-0.9)		
NEIC	LCCM	2508.6	311	qP	:05:10.79 (1.6X)		
NEIC	MCMT	2535.3	308	eP	:16.07 (1.2)		
NEIC	ELK	2605.4	296	qP	:23.70 (2.7X)		
NEIC	PFO	2704.4	279	P	:31.29 (1.7)		
NEIC	NVAR	2843.4	290	P	:41.25 (-0.4)		
NEIC	SCHQ	2865.6	28	P	:42.80 (-0.3)		
NEIC	LPAZ	5859.1	157	P	:09:27.15 (-1.3)		
NEIC	FINES	7921.8	28	P	:11:30.52 (-1.3)		
NEIC	GERES	8023.0	43	P	:37.62 (0.0)		
NEIC	ASAR	15875.9	274	PKP	:19:41.90 (-4.7X)		

*******1999 NOVEMBER 30; 01:27 - MAYNARDVILLE, TENNESSEE *******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991130	012723.6	36.361	83.910	3.4	15	19	226	0.3	C	B/D	0.6	33	0.4	1.2	A		2.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)

UTK	CRTN	18.9	161	iPu	01:27:26.99	(0.21)	iS	01:27:28.75	(-0.39)
UTK	ORT	61.4	215	iPu	:33.87	(0.10)	eS	:41.48	(0.18)
UTK	EGT	75.1	133	iP+	:35.93	(-0.06)	eS	:44.15	(-1.02X)
UTK	TKL	78.9	171				S-P	9.32 SEC	(-0.16)
UTK	ANTN	120.6	260	eP-	:43.01	(-0.25)	eS	:58.28	(0.51)
UTK	MSAL	301.5	237	eP	:28:10.36	(0.82)	eS	:45.29	(2.31X)
UTK	SHAL	324.8	230	eP	:13.84	(1.42)	eS	:46.98	(-0.99)
UTK	GOGA	329.7	173	eP	:14.18	(1.18)	eS	:50.08	(1.11)
UTK	WVT	353.2	267	eP	:15.00	(-0.91)	eS	:52.32	(-1.68)

*****1999 DECEMBER 08; 21:18 - CLEVELAND, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991208	211841.6	35.009	84.855	8.9	22	95	105	0.3	D	C/D	0.4	343	0.3	1.4	B		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	PDTN	95.3	288	iP-	21:18:57.23 (0.16)	iS	21:19:08.20 (-0.25)
UTK	ORT	111.7	26	eP-	:59.89 (0.23)	iS	:13.06 (0.12)
UTK	TKL	121.8	53			S-P	14.53 SEC (0.17)
UTK	ANTN	133.5	345	eP	:19:03.03 (-0.08)	eS	:17.97 (-0.93)
UTK	ABTN	149.8	311	ePd	:05.67 (0.00)	iS	:23.12 (-0.20)
UTK	CRTN	161.0	35	eP	:08.04 (0.60)		
UTK	MSAL	167.2	264	eP-	:08.47 (0.07)	eS	:28.37 (0.32)
UTK	SHAL	172.3	249	eP	:09.63 (0.42)	eS	:30.05 (0.59)
UTK	EGT	172.5	55	eP	:09.58 (0.29)	eS	:29.27 (-0.33)
UTK	GOGA	218.5	144	eP	:15.45 (-1.00)	eS	:41.72 (-0.07)
UTK	PLAL	294.1	270	eP	:25.19 (-0.84)	eS	:59.39 (1.03)
UTK	WVT	297.0	296	eP	:26.00 (-0.39)	iS	:58.58 (-0.41)

*****1999 DECEMBER 11; 20:09 - SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991211	200958.6	35.005	82.336	0.4	19	30	104	0.1	C	B/C	0.4	360	0.4	2.4			1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	TRYN	30.2	16	iPd	20:10:03.60 (0.00)		
USC	SMM	46.9	246	iPd	:06.34 (0.10)	iSn	20:10:12.06 (-0.11)
USC	BG3	54.4	269	iPd	:07.39 (-0.05)	iSd	:14.27 (-0.05)
USC	SMT	58.6	262	iPd	:08.07 (-0.05)	iSd	:15.58 (0.05)
USC	CCK	59.8	272	iPd	:08.38 (0.03)	iSd	:15.99 (0.05)
USC	JSC	127.2	129	iPd	:19.18 (0.01)	iSd	:35.01 (-0.18)
USC	MR02	135.7	131	iPd	:20.56 (0.02)	iSu	:37.14 (-0.50)
USC	LHS	151.9	112	iPd	:23.14 (-0.02)	iSu	:42.88 (0.59)
USC	PKNC	157.4	42	iPu	:24.45 (0.35)	iSn	:43.25 (-0.71)
USC	GOGA	205.2	211	ePd	:31.19 (0.89)	iSn	:55.14 (0.13)

*****1999 DECEMBER 17; 20:09 - SNEEDVILLE, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991217	200929.2	36.588	83.103	14.5	7	79	316	0.2	D	C/D	1.4	311	1.1	5.9	D		1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	79.0	237	eP-	20:09:42.29 (0.14)	iS	20:09:51.59 (-0.05)
UTK	TKL	119.6	211	eP	:47.85 (-0.68)	eS	:10:02.88 (0.19)
UTK	ORT	131.7	235	eP	:50.43 (-0.01)	eS	:05.91 (-0.08)
UTK	ANTN	196.5	257	eP	:58.19 (-2.34X)	eS	:20.40 (-2.86X)
UTK	ABTN	281.2	255	eP	:10:20.11 (8.55X)	eS	:43.35 (1.00)

*****1999 DECEMBER 19; 21:11 - MAYNARDVILLE, TENNESSEE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991219	211113.2	36.375	83.912	0.0	19	20	166	0.4	C	C/C	0.6	3	0.4	1.0	A		2.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	20.4	162	iPu	21:11:16.77 (0.16)	eS	21:11:18.63 (-0.48)
UTK	ORT	62.6	215	iPu	:23.59 (0.02)	iS	:31.25 (0.02)
UTK	EGT	76.3	133	eP	:25.62 (-0.22)	eS	:34.94 (-0.23)
UTK	TKL	80.5	171			S-P	9.36 SEC (-0.35)
UTK	ABTN	205.1	255	eP	:46.30 (-0.10)	eS	:12:10.87 (0.12)
UTK	PDTN	213.5	236	eP-	:47.18 (-0.55)	eS	:13.97 (0.92)
UTK	MSAL	302.2	237	eP	:59.48 (-0.16)	eS	:35.04 (1.62)
UTK	BLA	325.1	72			eS	:39.15 (0.78)
UTK	SHAL	325.7	229	eP	:12:02.22 (-0.32)	eS	:43.11 (4.66X)
UTK	GOGA	331.3	173			iS	:40.77 (1.17)
UTK	WVT	353.2	267	eP	:04.78 (-1.13)	eS	:43.03 (-1.24)
UTK	PLAL	407.3	249	eP	:17.04 (4.46X)	iS	:56.14 (0.32)

*******1999 DECEMBER 21; 03:04 - MAGGIE VALLEY, NORTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991221	030419.5	35.676	83.097	36.5	12	61	170	0.7	D	D/D	4.0	336	1.4	3.3	C		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	TKL	61.3	268			S-P	8.07 SEC (-0.14)
UTK	CRTN	88.8	311	eP-	03:04:32.50 (-2.06X)	eS	03:04:45.76 (0.21)
UTK	ORT	112.2	284	eP	:36.92 (-1.06)	eS	:52.41 (0.97)
UTK	PDTN	253.8	261	eP	:55.50 (-0.84)	eS	:05:25.34 (2.14)
UTK	BLA	294.2	54			eS	:32.27 (0.38)
UTK	MSAL	338.2	255	eP	:05:08.34 (1.60)	eS	:47.56 (6.37X)
UTK	CEH	362.8	85	eP	:10.39 (0.63)	eS	:51.81 (5.40X)
UTK	WVT	430.2	278	eP	:15.88 (-2.20)	eS	:06:00.98 (0.18)
UTK	PLAL	459.1	262			eS	:06.63 (-0.33)

*******1999 DECEMBER 26; 02:06 - GATE CITY, VIRGINIA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
UTK	991226	020609.4	36.783	82.660	3.1	9	113	183	0.4	D	D/D	4.3	334	1.0	5.0	C		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	EGT	113.3	211	eP	02:06:27.31 (-0.62)	eS	02:06:38.16 (-3.51X)
UTK	CRTN	124.0	239	eP	:29.85 (0.24)	eS	:43.69 (-0.82)
UTK	TKL	160.0	219			S-P	19.26 SEC (0.35)
UTK	ORT	176.6	237	eP	:37.99 (0.08)	eS	:59.08 (0.23)
UTK	BLA	204.9	76	eP	:43.17 (0.77)	eS	:07:06.30 (-0.31)
UTK	ABTN	325.2	253	eP	:07:04.86 (6.55X)	eS	:33.71 (-0.21)

SOUTHEASTERN U.S. RESERVOIR ACTIVITY DURING 1999

Events are listed chronologically (this also applies to multiple hypocenter locations for the same event). All times are Universal Coordinated Time. Most entries in the listing are self-explanatory. Items that might require further explanation are defined in the section entitled DEFINITIONS AND NETWORK OPERATOR CODES.

*******1999 JANUARY 22; 01:08 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990122	010809.5	34.306	81.329	0.6	12	3	203	0.0	C		0.1	360	0.1	0.3			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	3.4	347	iPd	01:08:10.09 (0.01)	iSu	01:08:10.53 (-0.02)
USC	MR01	4.2	47	iPd	:10.19 (-0.02)	iSd	:10.77 (0.00)
USC	JSC	7.0	115	iPd	:10.65 (-0.01)	iSd	:11.56 (-0.01)
USC	MR07	7.1	3	iPd	:10.69 (0.01)	iSu	:11.60 (-0.01)
USC	MR02	15.5	144	iPu	:12.10 (0.03)	iSd	:14.03 (-0.01)
USC	LHS	51.6	68	iPu	:17.82 (0.08)	iSu	:24.03 (0.00)

*******1999 FEBRUARY 13; 23:54 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990213	235423.8	34.289	81.178	0.7	14	8	146	0.0	B		0.1	360	0.1	0.7			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	JSC	7.6	263	iPd	23:54:25.02 (-0.02)	iSu	23:54:25.98 (-0.04)
USC	MR02	11.7	204	iPu	:25.70 (-0.03)	iSu	:27.25 (0.01)
USC	MR01	11.8	294	iPd	:25.72 (0.01)	iSd	:27.12 (-0.07)
USC	MR05	14.6	261	iPd	:26.19 (0.05)	iSu	:28.02 (0.06)
USC	MR10	15.6	290	iPd	:26.35 (0.05)	iSd	:28.25 (0.00)
USC	MR07	16.3	304	iPd	:26.45 (0.04)	iSd	:28.38 (-0.06)
USC	LHS	40.0	58	iPu	:30.19 (0.01)	iSu	:35.12 (0.05)

*******1999 FEBRUARY 20; 07:54 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990220	075455.9	34.338	81.314	0.5	13	2	88	0.1	A		0.3	360	0.3	1.1			1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.8	113	iPd	07:54:56.18 (-0.06)	iSd	07:54:56.53 (0.02)
USC	MR10	2.2	264	iPd	:56.31 (0.01)	iSu	:56.74 (0.12)
USC	MR07	3.7	344	iPd	:56.49 (-0.06)	iSu	:57.02 (-0.03)
USC	MR05	8.1	193	iPd	:57.28 (0.03)	iSu	:58.32 (0.03)
USC	JSC	8.1	143	iPd	:57.19 (-0.07)	iSu	:58.23 (-0.08)
USC	MR02	17.9	154	iPd	:58.84 (-0.01)	iSu	:55:00.53 (-0.58X)
USC	LHS	49.0	71	iPd	:55:04.17 (0.42)	iSu	:09.88 (0.15)

*******1999 FEBRUARY 20; 08:27 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990220	082728.3	34.340	81.312	2.8	12	2	140	0.1	B		0.4	360	0.4	0.4			1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.8	121	iPd	08:27:28.73 (-0.15)	iSd	08:27:29.37 (0.07)
USC	MR10	2.4	260	iPd	:28.87 (-0.07)	iSd	:29.38 (-0.03)
USC	MR07	3.6	341	iPd	:29.08 (0.00)	iSu	:29.79 (0.13)
USC	JSC	8.2	144	iPd	:29.74 (-0.01)	iSd	:30.82 (-0.02)
USC	MR05	8.3	194	iPu	:29.81 (0.04)	iSd	:30.88 (0.02)
USC	MR02	18.0	155	iPd	:31.39 (0.07)	iSd	:33.61 (0.01)

*******1999 FEBRUARY 27; 04:48 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990227	044825.0	34.340	81.313	1.1	12	2	135	0.1	B		0.2	360	0.2	0.5			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.8	118	iPd	04:48:25.36 (-0.03)	iSu	04:48:25.71 (0.02)
USC	MR10	2.3	261	iPd	:25.41 (-0.05)	iSu	:25.77 (-0.03)
USC	MR07	3.6	342	iPd	:25.63 (-0.03)	iSu	:26.27 (0.11)
USC	MR05	8.2	194	iPu	:26.45 (0.06)	iSu	:27.54 (0.10)

USC	JSC	8.2	143	iPd	:26.35	(-0.04)	iSu	:27.36	(-0.08)
USC	MR02	18.0	155	iPd	:28.00	(0.01)	iSu	:30.38	(0.12)

*******1999 MARCH 06; 19:36 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990306	193611.4	34.338	81.314	0.2	11	2	87	0.0	A		0.1	360	0.1	0.5			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.8	113	iPd	19:36:11.75 (0.02)	iSu	19:36:11.98 (-0.02)
USC	MR10	2.2	264	iPd	:11.79 (-0.01)	iSu	:12.12 (0.01)
USC	MR07	3.7	344	iPd	:12.04 (-0.01)	iSu	:12.58 (0.02)
USC	MR05	8.1	193	iPd	:12.78 (0.01)	iSu	:13.83 (0.00)
USC	JSC	8.2	143	iPd	:12.76 (-0.02)	iSu	:13.79 (-0.06)
USC	LHS	49.0	71	iPu	:19.48 (0.21)	iSu	:25.40 (0.13X)

*******1999 MARCH 22; 04:17 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990322	041736.7	34.339	81.319	1.3	12	2	106	0.1	B		0.4	360	0.4	0.9			1.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	1.7	259	iPu	04:17:37.13 (0.04)	iSu	04:17:37.46 (0.07)
USC	MR01	2.3	111	iPu	:37.12 (-0.05)	iSu	:37.48 (-0.05)
USC	MR07	3.5	351	iPd	:37.33 (-0.02)	iSu	:37.71 (-0.13)
USC	JSC	8.5	140	iPd	:38.12 (-0.02)	iSu	:39.13 (-0.10)
USC	MR02	18.2	153	iPd	:39.75 (0.03)	iSu	:42.00 (-0.01)
USC	LHS	49.5	72	iPu	:44.92 (0.29)	iSu	:50.72 (0.06)

*******1999 MARCH 25; 20:08 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990325	200819.7	34.342	81.314	0.7	14	2	90	0.1	A		0.2	360	0.2	0.6			1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.1	124	iPu	20:08:20.09 (-0.03)	iSu	20:08:20.42 (-0.01)
USC	MR10	2.2	253	iPd	:20.16 (0.01)	iSu	:20.47 (0.00)
USC	MR07	3.3	342	iPd	:20.32 (0.00)	iSu	:20.73 (-0.04)
USC	MR05	8.5	192	iPd	:21.16 (0.01)	iSu	:22.26 (0.02)
USC	JSC	8.5	144	iPu	:21.10 (-0.06)	iSu	:22.13 (-0.11)
USC	MR02	18.3	155	iPd	:22.72 (-0.03)	iSd	:24.98 (-0.08)
USC	LHS	48.9	72	iPu	:27.73 (0.16)	iSu	:33.42 (-0.11)

*******1999 MARCH 29; 18:11 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990329	181130.5	34.342	81.315	0.9	14	2	90	0.1	A		0.2	360	0.2	1.2			1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.1	121	iPu	18:11:30.89 (-0.05)	iSu	18:11:31.22 (-0.03)
USC	MR10	2.1	254	iPu	:30.92 (-0.03)	iSd	:31.29 (0.02)
USC	MR07	3.3	344	iPd	:31.09 (-0.05)	iSu	:31.62 (0.02)
USC	MR05	8.4	192	iPd	:31.94 (0.00)	iSu	:33.19 (0.18)
USC	JSC	8.5	143	iPd	:31.89 (-0.07)	iSu	:32.93 (-0.11)
USC	MR02	18.2	155	iPd	:33.54 (-0.01)	iSu	:35.82 (-0.03)
USC	LHS	49.0	72	iPu	:38.49 (0.10)	iSu	:44.46 (0.10)

*******1999 MARCH 29; 18:12 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I

USC	990329	181234.4	34.339	81.317	1.0	14	2	85	0.1	A	0.3	360	0.3	0.9	2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	2.0	262	iPd	18:12:34.90 (0.06)	iSu	18:12:35.14 (0.00)
USC	MR01	2.1	112	iPu	:34.87 (0.01)	iSu	:35.12 (-0.05)
USC	MR07	3.6	347	iPd	:35.08 (-0.02)	iSu	:35.47 (-0.12)
USC	MR05	8.1	192	iPd	:35.92 (0.12)	iSu	:36.72 (-0.11)
USC	JSC	8.3	141	iPd	:35.90 (0.06)	iSu	:36.88 (-0.03)
USC	MR02	18.0	154	iPd	:37.52 (0.09)	iSu	:39.53 (-0.17)
USC	LHS	49.2	72	iPu	:42.51 (0.17)	iSu	:48.30 (-0.04)

*******1999 MARCH 30; 00:40 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990330	004020.9	34.343	81.314	0.8	14	2	91	0.0	B		0.1	360	0.1	0.3			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.1	127	iPu	00:40:21.34 (0.01)	iSu	00:40:21.65 (0.01)
USC	MR10	2.3	251	iPu	:21.38 (0.01)	iSu	:21.70 (-0.01)
USC	MR07	3.2	341	iPd	:21.53 (0.01)	iSu	:21.93 (-0.03)
USC	JSC	8.6	145	iPd	:22.35 (-0.01)	iSu	:23.39 (-0.07)
USC	MR05	8.6	193	iPd	:22.41 (0.04)	iSu	:23.47 (0.01)
USC	MR02	18.3	155	iPd	:23.99 (0.02)	iSu	:26.20 (-0.07)
USC	LHS	48.9	72	iPu	:28.81 (0.05)	iSu	:34.77 (0.06)

*******1999 MARCH 30; 07:43 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990330	074303.5	34.341	81.315	0.2	14	2	89	0.1	A		0.2	360	0.2	0.5			1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.1	120	iPu	07:43:03.88 (-0.04)	iSu	07:43:04.18 (-0.04)
USC	MR10	2.1	256	iPd	:03.96 (0.03)	iSu	:04.25 (0.01)
USC	MR07	3.4	344	iPd	:04.14 (0.00)	iSu	:04.54 (-0.07)
USC	MR05	8.4	192	iPd	:04.99 (0.03)	iSu	:06.10 (0.05)
USC	JSC	8.5	143	iPd	:04.96 (-0.02)	iSu	:05.99 (-0.09)
USC	MR02	18.2	155	iPu	:06.58 (0.01)	iSu	:08.89 (0.01)
USC	LHS	49.0	72	iPu	:11.58 (0.16)	iSu	:17.58 (0.16)

*******1999 MARCH 30; 07:46 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990330	074655.2	34.342	81.316	1.5	14	2	93	0.0	B		0.1	360	0.1	0.3			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	2.1	252	iPd	07:46:55.61 (0.00)	iSd	07:46:55.97 (0.02)
USC	MR01	2.2	122	iPu	:55.57 (-0.05)	iSd	:55.99 (0.02)
USC	MR07	3.2	345	iPd	:55.78 (0.01)	iSu	:56.19 (-0.05)
USC	MR05	8.5	191	iPd	:56.62 (0.04)	iSu	:57.68 (0.01)
USC	JSC	8.6	143	iPd	:56.60 (-0.01)	iSu	:57.62 (-0.09)
USC	MR02	18.3	155	iPu	:58.17 (-0.03)	iSu	:47:00.52 (0.01)
USC	LHS	49.1	72	iPu	:47:03.02 (0.00)	iSu	:09.07 (0.07)

*******1999 MARCH 30; 08:57 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990330	085703.8	34.341	81.318	1.1	14	2	93	0.1	B		0.2	360	0.2	0.5			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	1.9	256	iPd	08:57:04.17 (-0.03)	iSu	08:57:04.49 (0.00)

USC	MR01	2.2	116	iPu	:04.23	(-0.02)	iSu	:04.61	(0.02)
USC	MR07	3.4	348	iPd	:04.37	(-0.05)	iSu	:04.93	(0.04)
USC	MR05	8.2	191	iPd	:05.27	(0.08)	iSu	:06.31	(0.07)
USC	JSC	8.6	142	iPu	:05.18	(-0.06)	iSu	:06.26	(-0.07)
USC	MR02	18.2	154	iPd	:06.85	(0.02)	iSu	:09.14	(0.01)
USC	LHS	49.3	72	iPu	:11.76	(0.06)	iSu	:17.84	(0.14)

*******1999 MARCH 30; 08:57 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990330	085714.3	34.342	81.316	0.7	14	2	94	0.0	B		0.1	360	0.1	0.3			1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	2.1	252	iPd	08:57:14.65 (0.00)	iSu	08:57:14.94 (-0.01)
USC	MR01	2.2	121	iPd	:14.71 (0.04)	iSu	:15.03 (0.03)
USC	MR07	3.2	346	iPd	:14.86 (0.02)	iSu	:15.26 (-0.03)
USC	MR05	8.4	191	iPd	:15.70 (0.03)	iSd	:16.79 (0.05)
USC	JSC	8.6	143	iPd	:15.70 (0.00)	iSu	:16.73 (-0.07)
USC	MR02	18.3	154	iPd	:17.38 (0.09)	iSu	:19.54 (-0.06)
USC	LHS	49.1	72	iPu	:22.14 (0.02)	iSu	:28.06 (-0.05)

*******1999 MARCH 30; 09:53 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990330	095323.8	34.343	81.315	1.2	14	2	94	0.0	B		0.1	360	0.1	0.3			1.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.2	126	iPd	09:53:24.28 (0.03)	iSu	09:53:24.60 (0.01)
USC	MR10	2.2	249	iPd	:24.25 (0.00)	iSu	:24.57 (-0.02)
USC	MR07	3.1	343	iPd	:24.42 (0.03)	iSu	:24.83 (-0.01)
USC	MR05	8.6	192	iPu	:25.29 (0.04)	iSd	:26.36 (0.01)
USC	JSC	8.7	144	iPd	:25.28 (0.02)	iSu	:26.31 (-0.06)
USC	MR02	18.4	155	iPu	:26.90 (0.03)	iSu	:29.12 (-0.07)
USC	LHS	49.0	72	iPu	:31.62 (-0.04)	iSu	:37.66 (0.04)

*******1999 APRIL 02; 11:55 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990402	115547.6	34.343	81.317	0.8	14	2	99	0.1	B		0.2	360	0.2	0.4			1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	2.0	248	iPd	11:55:48.06 (0.04)	iSu	11:55:48.31 (-0.01)
USC	MR01	2.3	122	iPu	:48.04 (-0.03)	iSu	:48.28 (-0.13)
USC	MR07	3.1	347	iPd	:48.17 (-0.03)	iSu	:48.57 (-0.06)
USC	MR05	8.5	191	iPd	:49.10 (0.05)	iSu	:50.23 (0.09)
USC	JSC	8.8	143	iPd	:49.04 (-0.05)	iSu	:50.11 (-0.09)
USC	MR02	18.5	154	iPd	:50.68 (0.00)	iSu	:52.92 (-0.09)
USC	LHS	49.2	72	iPd	:55.61 (0.11)	iSu	:56:01.55 (0.06)

*******1999 APRIL 02; 13:02 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990402	130221.0	34.342	81.317	0.3	14	2	97	0.1	B		0.3	360	0.3	0.8			1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	2.0	251	iPd	13:02:21.35 (0.02)	iSu	13:02:21.65 (0.04)
USC	MR01	2.3	120	iPu	:21.34 (-0.04)	iSu	:21.61 (-0.10)
USC	MR07	3.2	347	iPd	:21.49 (-0.05)	iSu	:21.90 (-0.09)
USC	MR05	8.4	191	iPd	:22.39 (0.00)	iSd	:23.50 (0.02)
USC	JSC	8.7	143	iPu	:22.36 (-0.07)	iSu	:23.41 (-0.15)

USC	MR02	18.4	154	iPd	:24.04	(0.02)	iSu	:26.33	(-0.02)
USC	LHS	49.2	72	iPu	:28.98	(0.12)	iSd	:35.02	(0.14)

*******1999 APRIL 04; 17:52 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990404	175216.9	34.344	81.318	0.4	14	2	105	0.1	B		0.2	360	0.2	0.6			1.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	2.0	243	iPd	17:52:17.34 (0.02)	iSu	17:52:17.64 (0.04)
USC	MR01	2.5	124	iPd	:17.39 (-0.02)	iSd	:17.70 (-0.06)
USC	MR07	3.0	348	iPd	:17.46 (-0.02)	iSu	:17.85 (-0.04)
USC	MR05	8.7	190	iPd	:18.40 (-0.01)	iSd	:19.52 (0.00)
USC	JSC	8.9	143	iPu	:18.38 (-0.07)	iSu	:19.45 (-0.15)
USC	MR02	18.7	154	iPu	:20.10 (0.06)	iSu	:22.32 (-0.08)
USC	LHS	49.2	72	iPu	:24.99 (0.14)	iSu	:31.13 (0.27)

*******1999 APRIL 04; 22:13 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990404	221321.0	34.345	81.318	0.4	7	2	103	0.0	B		0.3	360	0.3	0.8			1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	2.1	243	iPd	22:13:21.38 (0.01)	iSu	22:13:21.70 (0.03X)
USC	MR01	2.5	125	iPu	:21.42 (-0.02)	iSu	:21.76 (-0.03X)
USC	MR07	2.9	346	iPu	:21.50 (-0.02)	iSu	:22.02 (0.09X)
USC	MR05	8.7	190	iPd	:22.48 (0.03)	iSu	:23.58 (0.01X)
USC	JSC	8.9	144	iPu	:22.44 (-0.05)	iSd	:23.52 (-0.12X)
USC	MR02	18.7	154	iPu	:24.08 (0.00)	iSu	:26.50 (0.06X)
USC	LHS	49.1	72	iPu	:28.92 (0.05)	iSd	:35.05 (0.18X)

*******1999 APRIL 05; 12:56 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990405	125623.0	34.344	81.320	0.3	14	2	108	0.0	B		0.2	360	0.2	0.4			2.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	1.8	243	iPd	12:56:23.33 (0.01)	iSu	12:56:23.59 (0.01)
USC	MR01	2.6	120	iPu	:23.44 (-0.01)	iSu	:23.82 (0.00)
USC	MR07	3.0	351	iPd	:23.50 (-0.02)	iSd	:23.91 (-0.03)
USC	MR05	8.5	189	iPd	:24.44 (0.02)	iSu	:25.55 (0.02)
USC	JSC	9.0	142	iPu	:24.42 (-0.07)	iSu	:25.52 (-0.13)
USC	MR02	18.7	154	iPd	:26.08 (0.00)	iSu	:28.35 (-0.09)
USC	LHS	49.4	72	iPd	:30.98 (0.07)	iSu	:36.97 (0.03)

*******1999 APRIL 05; 12:56 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990405	125641.1	34.344	81.317	0.3	6	2	138	0.0	B		0.1	360	0.1	1.5			1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	2.1	246	iPd	12:56:41.48 (0.00)	iSu	12:56:41.78 (0.00)
USC	MR01	2.4	124	iPd	:41.55 (0.01)	iSu	:41.86 (-0.01)
USC	MR07	3.0	346	iPd	:41.67 (0.02)	iSu	:42.05 (-0.02)

*******1999 APRIL 05; 12:56 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990405	125646.7	34.345	81.314	1.1	10	2	149	0.0	B		0.1	360	0.1	0.4			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.2	130	iPd	12:56:47.12 (0.02)	iSd	12:56:47.42 (-0.02)
USC	MR10	2.3	247	iPd	:47.14 (0.02)	iSd	:47.45 (-0.01)
USC	MR07	3.0	341	iPu	:47.21 (-0.01)	iSu	:47.65 (0.00)
USC	JSC	8.7	145	iPu	:48.14 (0.02)	iSu	:49.15 (-0.09)
USC	MR05	8.8	192	iPd	:48.17 (0.05)	iSu	:49.25 (0.01)

*******1999 APRIL 05; 14:52 - SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990405	145239.6	34.119	81.109	0.1	13	14	271	0.1	C		1.4	360	1.4	2.0			1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR02	13.9	306	iPu	14:52:41.77 (-0.15)	iSu	14:52:43.70 (-0.02X)
USC	JSC	22.6	322	iPu	:43.25 (-0.01)	iSd	:46.01 (-0.07)
USC	MR05	26.5	308	iPd	:43.90 (0.02)	iSu	:47.15 (-0.01)
USC	MR01	29.2	324	iPu	:44.32 (0.01)	iSu	:47.88 (-0.03)
USC	MR10	32.0	319	iPu	:44.81 (0.06)	iSu	:48.74 (0.04)
USC	MR07	34.3	324	iPu	:45.18 (0.07)	iSu	:49.34 (0.01)
USC	LHS	48.6	35	iPu	:47.39 (0.01)	iSu	:53.33 (0.00)

*******1999 APRIL 20; 17:29 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990420	172937.1	34.342	81.316	0.6	14	2	92	0.0	B		0.2	360	0.2	0.5			1.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	2.1	252	iPd	17:29:37.48 (0.02)	iSu	17:29:37.78 (0.01)
USC	MR01	2.2	122	iPu	:37.46 (-0.01)	iSu	:37.76 (-0.02)
USC	MR07	3.2	344	iPd	:37.64 (0.00)	iSu	:38.04 (-0.05)
USC	MR05	8.5	192	iPd	:38.48 (0.00)	iSu	:39.54 (-0.02)
USC	JSC	8.6	144	iPd	:38.45 (-0.05)	iSu	:39.52 (-0.08)
USC	MR02	18.3	155	iPd	:40.05 (-0.04)	iSu	:42.40 (0.00)
USC	LHS	49.0	72	iPu	:45.05 (0.13)	iSu	:50.93 (0.03)

*******1999 APRIL 27; 14:07 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990427	140758.1	34.342	81.319	0.6	14	2	99	0.0	B		0.1	360	0.1	0.4			1.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	1.8	251	iPd	14:07:58.38 (-0.02)	iSu	14:07:58.70 (0.03)
USC	MR01	2.4	116	iPd	:58.51 (0.00)	iSu	:58.84 (-0.01)
USC	MR07	3.3	351	iPd	:58.64 (0.00)	iSu	:59.07 (-0.02)
USC	MR05	8.3	190	iPd	:59.46 (0.00)	iSu	:08:00.58 (0.05)
USC	JSC	8.7	141	iPu	:59.50 (-0.02)	iSd	:00.56 (-0.08)
USC	MR02	18.4	154	iPu	:08:01.13 (0.02)	iSu	:03.44 (0.01)
USC	LHS	49.4	72	iPu	:06.07 (0.09)	iSu	:12.12 (0.12)

*******1999 MAY 02; 02:36 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990502	023613.9	34.341	81.318	0.2	10	2	158	0.0	B		0.1	360	0.1	0.3			1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.3	116	iPd	02:36:14.31 (-0.02)	iSu	02:36:14.61 (-0.04)
USC	MR07	3.4	349	iPd	:14.54 (0.02)	iSu	:14.95 (-0.04)
USC	MR05	8.3	191	iPd	:15.34 (0.02)	iSu	:16.40 (0.00)
USC	MR02	18.2	154	iPd	:16.94 (-0.02)	iSu	:19.20 (-0.08)

USC	LHS	49.3	72	iPd	:21.90	(0.06)	iSu	:27.89	(0.03)

*******1999 MAY 02; 02:37 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990502	023733.3	34.339	81.315	0.2	10	2	153	0.0	B		0.1	360	0.1	0.4			1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.0	113	iPu	02:37:33.66 (-0.03)	iSu	02:37:33.89 (-0.09)
USC	MR07	3.6	346	iPd	:33.93 (-0.04)	iSu	:34.51 (0.04)
USC	MR05	8.1	192	iPd	:34.71 (0.00)	iSu	:35.79 (0.02)
USC	MR02	18.0	154	iPd	:36.31 (-0.02)	iSu	:38.64 (0.02)
USC	LHS	49.1	72	iPu	:41.28 (0.05)	iSu	:47.26 (0.02)

*******1999 MAY 07; 22:59 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990507	225951.1	34.344	81.314	1.1	13	2	92	0.0	B		0.1	360	0.1	0.3			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.1	128	iPu	22:59:51.49 (0.01)	iSd	22:59:51.81 (0.01)
USC	MR10	2.3	250	iPd	:51.53 (0.01)	iSu	:51.85 (-0.02)
USC	MR07	3.2	341	iPd	:51.64 (0.00)	iSu	:52.08 (0.00)
USC	JSC	8.6	145	iPu	:52.51 (0.01)	iSu	:53.54 (-0.06)
USC	MR05	8.7	193	iPd	:52.55 (0.04)	iSu	:53.62 (0.01)
USC	MR02	18.4	155	iPd	:54.12 (0.02)	iSd	:56.39 (-0.02)
USC	LHS	48.8	72	iPu	:59.52 (0.64)	iSu	23:00:05.51 (0.68X)

*******1999 MAY 22; 13:05 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990522	130559.7	34.344	81.311	0.2	14	2	95	0.0	B		0.1	360	0.1	0.2			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.9	133	iPu	13:06:00.07 (-0.02)	iSu	13:06:00.36 (-0.01)
USC	MR10	2.6	251	iPd	:00.17 (-0.02)	iSd	:00.57 (0.02)
USC	MR07	3.2	337	iPd	:00.28 (-0.02)	iSu	:00.76 (0.01)
USC	JSC	8.5	146	iPd	:01.16 (-0.01)	iSu	:02.24 (-0.04)
USC	MR05	8.7	194	iPd	:01.21 (0.00)	iSu	:02.35 (0.01)
USC	MR02	18.3	156	iPu	:02.82 (0.04)	iSu	:05.11 (0.00)
USC	LHS	48.6	72	iPu	:07.59 (0.05)	iSu	:13.56 (0.07)

*******1999 MAY 27; 19:28 - SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990527	192803.7	34.746	82.065	3.0	14	68	175	0.2	C	B/D	2.3	360	2.3	2.1			2.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	SMM	68.3	278	iPu	19:28:14.93 (0.06)	iSu	19:28:23.61 (0.06)
USC	BG3	83.9	289	iPu	:17.15 (-0.22)	iSu	:28.36 (0.34)
USC	SMT	85.4	284	iPd	:17.53 (-0.09)	iSd	:28.45 (-0.01)
USC	JSCV	90.0	125	ePd	:18.39 (0.02)	iSd	:29.78 (-0.02)
USC	CCK	90.1	290	iPu	:18.11 (-0.28)	eSd	:29.96 (0.14)
USC	LHS	119.3	105	iPu	:24.13 (1.06)	iSd	:38.19 (0.04)
USC	MYNC	192.0	281	eP	:34.50 (0.31)	eS	:57.60 (-0.35)

*******1999 MAY 28; 02:45 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990528	024548.1	34.345	81.319	1.0	14	3	160	0.1	B		0.2	360	0.2	0.9			2.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.6	124	iPu	02:45:48.50 (-0.06)	iSu	02:45:48.77 (-0.17)
USC	MR07	2.9	349	iPd	:48.59 (0.00)	iSu	:48.89 (-0.11)
USC	MR05	8.7	189	iPd	:49.58 (0.06)	iSu	:50.64 (0.01)
USC	JSC	9.1	143	iPu	:49.54 (-0.03)	iSu	:50.60 (-0.12)
USC	MR02	18.8	154	iPd	:51.18 (0.02)	iSu	:53.59 (0.07)
USC	LHS	49.3	72	iPd	:56.07 (0.12)	iSu	:46:01.93 (-0.03)
USC	COW	121.0	152	iPu	:46:08.53 (1.19)	iSu	:22.95 (0.96)

*******1999 MAY 28; 02:46 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990528	0246	01.5	34.350	81.314	2.3	9	3	163	0.1	B		0.6	360	0.6	0.7			2.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR07	2.5	336	iPd	02:46:02.06 (-0.03)	iSu	02:46:02.53 (0.00)
USC	MR01	2.6	140	iPu	:02.14 (0.05)	iSd	:02.49 (-0.05)
USC	JSC	9.2	147	iPd	:03.11 (0.05)	iSu	:04.21 (-0.03)
USC	MR05	9.3	192	iPu	:03.11 (0.03)	iSu	:04.25 (-0.02)
USC	MR02	19.0	156	iPd	:05.57 (0.91)	iSu	:08.24 (1.18X)

*******1999 MAY 28; 06:50 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990528	0650	18.8	34.342	81.320	0.1	12	3	162	0.1	B		0.3	360	0.3	0.7			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.5	118	iPu	06:50:19.21 (-0.05)	iSu	06:50:19.57 (-0.05)
USC	MR07	3.2	351	iPd	:19.35 (-0.02)	iSd	:19.76 (-0.06)
USC	MR05	8.4	189	iPd	:20.26 (0.02)	iSd	:21.36 (0.02)
USC	JSC	8.8	142	iPu	:20.22 (-0.08)	iSu	:21.29 (-0.17)
USC	MR02	18.5	154	iPu	:22.01 (0.12)	iSu	:24.15 (-0.10)
USC	LHS	49.4	72	iPd	:26.82 (0.07)	iSd	:32.90 (0.10)

*******1999 MAY 29; 14:09 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990529	1409	58.3	34.343	81.317	0.0	14	2	156	0.1	B		0.2	360	0.2	0.6			2.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.3	121	iPu	14:09:58.71 (-0.02)	iSu	14:09:59.02 (-0.04)
USC	MR07	3.2	347	iPd	:58.87 (-0.01)	iSu	:59.28 (-0.04)
USC	MR05	8.5	191	iPd	:59.76 (0.01)	iSu	:10:00.89 (0.02)
USC	JSC	8.7	143	iPu	:59.71 (-0.08)	iSu	:00.76 (-0.17)
USC	MR02	18.4	154	iPd	:10:01.36 (-0.02)	iSu	:03.76 (0.03)
USC	LHS	49.2	72	iPd	:06.27 (0.06)	iSu	:12.35 (0.12)
USC	COW	120.6	152	iPu	:18.85 (1.30)	iSu	:33.17 (0.97)
USC	BG3	164.6	296	iPu	:26.28 (1.75X)	iSu	:46.26 (1.78X)

*******1999 JUNE 06; 06:41 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990606	0641	16.9	34.347	81.311	2.0	8	3	173	0.0	B		0.2	360	0.2	0.5			1.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR07	2.9	334	iPd	06:41:17.46 (-0.03)	iSu	06:41:17.96 (0.01)
USC	JSC	8.8	148	iPu	:18.40 (0.03)	iSu	:19.48 (-0.02)
USC	MR05	9.0	194	iPd	:18.43 (0.01)	iSu	:19.57 (0.00)

USC	MR02	18.6	156	iPd	:20.00	(0.02)	iSu	:22.34	(0.02)

*******1999 JUNE 14; 17:24 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990614	172421.3	34.306	81.266	0.7	4	3	256	0.2	C								1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	JSC	2.9	170	iPu	17:24:22.02 (0.16)	iSu	17:24:22.11 (-0.16)
USC	LHS	46.2	65	iPd	:28.77 (0.02)	iSu	:34.39 (0.00)

*******1999 JUNE 26; 06:12 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990626	061249.9	34.326	81.315	0.3	14	2	102	0.1	B		0.2	360	0.2	0.5			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.8	70	iPd	06:12:50.20 (-0.01)	iSu	06:12:50.41 (-0.07)
USC	MR10	2.4	298	iPd	:50.35 (0.05)	iSu	:50.59 (-0.06)
USC	MR07	5.0	349	iPd	:50.76 (0.02)	iSu	:51.37 (-0.04)
USC	MR05	6.8	196	iPd	:51.03 (0.01)	iSd	:51.92 (0.01)
USC	JSC	7.2	136	iPu	:51.05 (-0.04)	iSd	:51.92 (-0.11)
USC	MR02	16.7	152	iPu	:52.65 (0.00)	iSu	:54.77 (-0.01)
USC	LHS	49.5	70	iPd	:57.97 (0.15)	iSu	:13:04.04 (0.17)

*******1999 JULY 06; 03:41 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990706	034120.4	34.326	81.313	0.2	14	2	101	0.1	B		0.2	360	0.2	0.7			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.7	67	iPd	03:41:20.64 (-0.05)	iSu	03:41:20.89 (-0.05)
USC	MR10	2.6	298	iPd	:20.81 (-0.02)	iSu	:21.23 (0.04)
USC	MR07	5.1	347	iPu	:21.25 (0.00)	iSd	:21.88 (-0.06)
USC	MR05	6.7	197	iPd	:21.54 (0.02)	iSu	:22.44 (0.03)
USC	JSC	7.0	136	iPu	:21.51 (-0.06)	iSd	:22.39 (-0.11)
USC	MR02	16.6	153	iPd	:23.34 (0.20)	iSu	:25.21 (-0.04)
USC	LHS	49.4	70	iPu	:28.44 (0.14)	iSu	:34.66 (0.31)

*******1999 JULY 06; 04:09 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990706	040909.7	34.327	81.309	0.7	14	1	93	0.1	B		0.3	360	0.3	0.5			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.4	65	iPd	04:09:09.98 (0.01)	iSu	04:09:10.23 (0.04)
USC	MR10	2.8	292	iPd	:10.14 (-0.07)	iSu	:10.63 (0.02)
USC	MR07	5.1	343	iPu	:10.59 (0.01)	iSd	:11.22 (-0.03)
USC	JSC	6.9	139	iPu	:10.86 (0.00)	iSd	:11.71 (-0.04)
USC	MR05	7.0	199	iPd	:10.87 (-0.01)	iSu	:11.83 (0.05)
USC	MR02	16.5	154	iPu	:12.25 (-0.19)	iSu	:14.56 (0.03)
USC	LHS	49.0	70	iPu	:17.71 (0.16)	iSu	:24.10 (0.57)

*******1999 JULY 15; 11:08 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990715	110819.0	34.328	81.339	1.2	12	1	224	0.1	C		0.4	360	0.4	0.5			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)

USC	MR10	0.9	10	iPu	11:08:19.20	(-0.04)	iSu	11:08:19.55	(0.10)
USC	MR01	4.0	84	iPu	:19.64	(-0.05)	iSu	:20.24	(0.01)
USC	MR07	4.9	16	iPu	:19.77	(-0.05)	iSu	:20.39	(-0.08)
USC	JSC	9.0	126	iPd	:20.51	(0.03)	iSd	:21.61	(-0.02)
USC	MR02	18.0	146	iPd	:22.07	(0.11)	iSu	:24.18	(-0.06)
USC	LHS	51.6	71	iPu	:27.35	(0.12)	iSu	:33.57	(0.06)

*******1999 AUGUST 02; 21:40 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990802	214006.9	34.336	81.312	1.4	12	2	127	0.0	B		0.2	360	0.2	0.3			1.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	MR01	1.5	109	iPd	21:40:07.28	(-0.03)	iSu	21:40:07.59	(0.00)
USC	MR10	2.4	270	iPd	:07.36	(-0.06)	iSu	:07.81	(0.02)
USC	MR07	4.0	342	iPd	:07.63	(-0.03)	iSu	:08.28	(0.07)
USC	JSC	7.8	143	iPd	:08.27	(0.00)	iSu	:09.26	(-0.01)
USC	MR05	7.9	195	iPd	:08.32	(0.04)	iSd	:09.37	(0.08)
USC	MR02	17.6	155	iPd	:09.90	(0.04)	iSu	:12.15	(0.07)

*******1999 AUGUST 13; 10:24 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990813	102412.5	34.335	81.315	1.3	12	2	115	0.0	B		0.1	360	0.1	0.2			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	MR01	1.8	102	iPd	10:24:12.85	(-0.02)	iSu	10:24:13.18	(0.01)
USC	MR10	2.1	274	iPd	:12.87	(-0.03)	iSu	:13.22	(-0.01)
USC	MR07	4.0	347	iPd	:13.19	(-0.01)	iSu	:13.80	(0.05)
USC	MR05	7.7	193	iPd	:13.81	(0.04)	iSu	:14.83	(0.07)
USC	JSC	7.9	140	iPu	:13.82	(0.01)	iSu	:14.81	(-0.02)
USC	MR02	17.6	154	iPu	:15.40	(0.01)	iSu	:17.55	(-0.06)

*******1999 AUGUST 15; 20:04 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990815	200411.9	34.339	81.312	1.3	12	2	109	0.1	B		0.2	360	0.2	0.4			1.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	MR01	1.7	117	iPu	20:04:12.24	(-0.04)	iSu	20:04:12.57	(0.01)
USC	MR10	2.4	264	iPd	:12.40	(0.02)	iSu	:12.78	(0.04)
USC	MR07	3.8	341	iPd	:12.57	(-0.02)	iSu	:13.07	(-0.04)
USC	JSC	8.1	144	iPd	:13.24	(-0.02)	iSd	:14.24	(-0.05)
USC	MR02	17.8	155	iPd	:14.90	(0.04)	iSu	:17.09	(-0.02)
USC	LHS	48.8	71	iPu	:20.05	(0.32)	iSu	:25.66	(-0.02)

*******1999 SEPTEMBER 22; 20:14 - SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990922	201403.8	35.024	82.352	2.2	15	47	196	0.5	D		3.1	360	3.1	69.4			2.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	SMM	46.5	243	iPu	20:14:11.51	(0.13)	S	20:14:17.00	(-0.32)
USC	BG3	53.1	266	iPu	:12.87	(0.44)	S	:19.04	(-0.15)
USC	SMT	57.5	260	iPu	:13.56	(0.41)	S	:20.04	(-0.42)
USC	MMC	58.2	242	iPu	:13.43	(0.17)	S	:20.15	(-0.51)
USC	CCK	58.4	270	iPu	:13.86	(0.56)	S	:20.71	(0.02)
USC	RBN	68.6	303	iPu	:14.05	(-1.29)	S	:22.36	(-2.00)
USC	BRB	79.6	4	iPu	:16.73	(-0.41)	S	:26.60	(-0.96)
USC	SMN	90.0	46	iPu	:16.80	(-1.75)	S	:27.01	(-3.08X)

USC	MR05	125.5	132	iPu	:24.22	(0.10X)	S	:39.12	(-0.87X)
USC	JSC	129.7	130	iPd	:24.83	(0.04X)	S	:41.26	(0.08X)
USC	MR02	138.1	132	iPu	:27.00	(0.80X)	S	:43.05	(-0.65X)

*******1999 SEPTEMBER 24; 06:15 - SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990924	061543.3	35.012	82.399	2.0	11	49	253	0.1	D		1.0	360	1.0	116.6			2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	BG3	48.6	268	iPd	06:15:51.28 (0.07)	S	06:15:57.39 (-0.02)
USC	SMT	52.9	260	iPu	:51.90 (-0.01)	S	:58.55 (-0.10)
USC	CCK	54.1	271	iPu	:52.16 (0.07)	S	:59.16 (0.19)
USC	JVW	54.7	268	iPu	:52.18 (0.00)	S	:59.08 (-0.06)
USC	RBN	65.7	306	iPu	:54.55 (0.18)	S	:16:03.13 (0.10)
USC	BRB	81.3	7	iPu	:56.47 (-0.45)	S	:06.69 (-0.88X)
USC	SMN	94.1	48	iPu	:57.09 (-1.62X)	S	:07.36 (-3.40X)
USC	MR02	140.5	130	iPu	:16:04.19 (-1.90X)	S	:20.82 (-3.07X)
USC	LHS	157.3	112	iPu	:07.12 (-1.62X)	S	:27.21 (-1.40X)

*******1999 SEPTEMBER 30; 04:37 - SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	990930	043721.2	35.000	82.332	0.9	14	55	117	0.2	D	C/D	0.5	360	0.5	99.0			2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	BG3	54.7	269	iPd	04:37:29.98 (-0.03)	iSd	04:37:36.15 (-0.78)
USC	MMC	58.6	246	iPd	:30.53 (-0.11)	iSu	:37.21 (-0.83)
USC	SMT	58.8	263	iPd	:30.63 (-0.05)	iSu	:37.24 (-0.88)
USC	CCK	60.2	273	iPd	:31.15 (0.22)	iSu	:38.56 (-0.01)
USC	RBNC	71.5	304	iPu	:32.97 (0.18)	iSu	:41.28 (-0.58)
USC	SMNC	90.6	44	iPd	:35.62 (-0.21)	iSd	:47.84 (0.56)
USC	JSC	126.5	129	iPd	:41.67 (0.09)	iSd	:57.85 (0.33)

*******1999 OCTOBER 04; 13:12 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991004	131217.5	34.342	81.319	0.3	14	2	103	0.1	B		0.1	360	0.1	0.4			2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	1.8	248	iPd	13:12:17.85 (0.02)	iSu	13:12:18.05 (-0.05)
USC	MR01	2.5	118	iPd	:17.95 (0.00)	iSu	:18.23 (-0.07)
USC	MR07	3.2	351	iPu	:18.02 (-0.04)	iSu	:18.50 (0.00)
USC	MR05	8.4	189	iPu	:18.95 (0.03)	iSu	:20.06 (0.05)
USC	JSC	8.8	142	iPu	:18.97 (-0.02)	iSu	:20.08 (-0.04)
USC	MR02	18.5	154	iPu	:20.59 (0.02)	iSu	:22.95 (0.03)
USC	LHS	49.4	72	iPd	:25.55 (0.13)	iSu	:31.51 (0.05)

*******1999 OCTOBER 25; 11:31 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991025	113114.5	34.383	81.311	1.5	12	2	213	0.1	C		0.3	360	0.3	0.7			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR07	1.9	224	iPd	11:31:14.82 (-0.13)	iSu	11:31:15.31 (0.04)
USC	MR10	5.7	205	iPd	:15.56 (0.05)	iSd	:16.33 (0.07)
USC	MR01	5.8	166	iPd	:15.50 (-0.03)	iSd	:16.29 (-0.01)
USC	JSC	12.3	158	iPu	:16.50 (-0.05)	iSd	:18.06 (-0.04)
USC	MR02	22.3	161	iPu	:18.19 (0.00)	iSu	:21.05 (0.07)
USC	LHS	47.4	77	iPu	:22.13 (0.01)	iSu	:27.93 (0.03)

*******1999 OCTOBER 25; 12:13 - MONTICELLO RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991025	121333.9	34.382	81.311	1.2	12	2	212	0.0	C		0.3	360	0.3	0.7			1.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR07	1.8	225	iPd	12:13:34.21 (-0.06)	iSu	12:13:34.59 (0.03)
USC	MR10	5.6	206	iPd	:34.85 (0.00)	iSu	:35.66 (0.07)
USC	MR01	5.7	166	iPd	:34.82 (-0.05)	iSu	:35.68 (0.05)
USC	JSC	12.3	157	iPu	:35.83 (-0.07)	iSu	:37.42 (-0.02)
USC	MR02	22.2	160	iPu	:37.64 (0.10)	iSu	:40.32 (0.00)
USC	LHS	47.5	77	iPd	:41.55 (0.06)	iSu	:47.27 (0.00)

*******1999 OCTOBER 30; 08:57 - SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991030	085726.8	35.033	82.376	2.0	16	29	193	0.2	D		0.8	360	0.8	32.2			2.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	TRY	28.6	25	iPd	08:57:31.78 (0.04)	S	08:57:35.39 (-0.19)
USC	SMM	45.0	240	iPu	:34.21 (0.03)	S	:39.62 (-0.31)
USC	BG3	50.9	265	iPu	:35.24 (0.10)	S	:41.60 (-0.03)
USC	SMT	55.5	258	iPu	:36.12 (0.25)	S	:42.94 (0.00)
USC	CCK	56.2	269	iPu	:36.04 (0.05)	S	:42.92 (-0.22)
USC	MMC	56.7	240	iPu	:36.23 (0.16)	S	:43.46 (0.17)
USC	RBN	66.2	303	iPu	:37.99 (-0.01)	S	:46.62 (-0.10)
USC	SMN	90.9	48	iPu	:41.25 (-0.50)	S	:53.51 (0.12)
USC	JSC	132.0	129	iPd	47.51 (-0.70X)	S	:58:05.10 (0.20X)
USC	LHS	156.0	113	iPd	:52.31 (0.22X)	S	:12.00 (0.20X)

*******1999 OCTOBER 30; 09:10 - SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991030	091020.2	34.000	82.363	0.8	16	32	200	0.6	D	D/D	0.5	360	0.5	0.5			1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	TRYN	31.5	20	iPd	09:10:25.05 (-0.45)	iSd	09:10:29.30 (-0.32)
USC	SMM	44.4	245	iPu	:27.42 (-0.11)	iSu	:32.82 (-0.40)
USC	BG3	51.9	269	iPu	:28.60 (-0.14)	iSu	:34.73 (-0.65)
USC	SMT	56.1	262	iPu	:29.30 (-0.11)	iSu	:37.66 (1.08)
USC	JVW	58.0	269	iPu	:30.04 (0.32)	iSu	:37.43 (0.30)
USC	RBNC	69.2	305	iPu	:31.65 (0.07)	iSu	:40.64 (0.19)
USC	SMNC	92.6	45	iPu	:34.47 (-0.85)	iSu	:46.82 (-0.28)
USC	PKNC	159.5	43	iPu	:45.80 (-0.32)	iSu	:11:07.99 (1.66)

*******1999 NOVEMBER 22; 03:46- SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991122	034645.9	34.890	82.375	2.5	12	40	336	0.5	D	C/D	4.0	360	4.0	99.0			2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	SMM	39.8	261	iPu	03:46:52.77 (0.43)	iSu	03:46:58.43 (1.04)
USC	BG3	52.2	283	iPu	:53.99 (-0.33)	iSu	:47:00.14 (-0.78)
USC	SMT	54.7	275	iPu	:54.67 (-0.06)	iSu	:02.88 (1.22)
USC	JVW	58.0	281	iPu	:55.11 (-0.17)	iSu	:02.40 (-0.22)
USC	CCK	58.2	285	iPu	:55.60 (0.28)	iSu	:02.54 (-0.16)

*******1999 DECEMBER 09; 20:39 - JOCASSE RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991209	203942.0	34.961	82.887	-0.9	6	5	295	0.0	D	C/D	3.8	360	3.8	3.8			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	BG3	5.4	311	iPu	20:39:42.98 (-0.01)	iSu	20:39:43.70 (-0.05)
USC	SMT	8.4	246	iPd	:43.47 (-0.05)	iSd	:44.70 (0.02)
USC	CCK	11.7	306	iPu	:44.15 (0.06)	iSu	:45.73 (0.02)

*******1999 DECEMBER 11; 20:09- SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991211	200958.6	35.005	82.336	0.4	19	30	104	0.1	C	B/C	0.4	360	0.4	2.4			1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	TRYN	30.2	16	iPd	20:10:03.60 (0.00)		
USC	SMM	46.9	246	iPd	:06.34 (0.10)	iSn	20:10:12.06 (-0.11)
USC	BG3	54.4	269	iPd	:07.39 (-0.05)	iSd	:14.27 (-0.05)
USC	SMT	58.6	262	iPd	:08.07 (-0.05)	iSd	:15.58 (0.05)
USC	CCK	59.8	272	iPd	:08.38 (0.03)	iSd	:15.99 (0.05)
USC	JSC	127.2	129	iPd	:19.18 (0.01)	iSd	:35.01 (-0.18)
USC	MR02	135.7	131	iPd	:20.56 (0.02)	iSu	:37.14 (-0.50)
USC	LHS	151.9	112	iPd	:23.14 (-0.02)	iSu	:42.88 (0.59)
USC	PKNC	157.4	42	iPu	:24.45 (0.35)	iSn	:43.25 (-0.71)
USC	GOGA	205.2	211	ePd	:31.19 (0.89)	iSn	:55.14 (0.13)

*******1999 DECEMBER 28; 13:39 - JOCASSE RESERVOIR, SOUTH CAROLINA*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	991228	133915.7	34.953	82.954	1.1	8	3	188	0.0	C	B/D	0.4	360	0.4	1.9			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	SMT	2.9	213	iPu	13:39:16.23 (0.02)	iSu	13:39:16.61 (-0.02)
USC	BG3	4.9	24	iPu	:16.44 (-0.05)	iSu	:17.18 (0.04)
USC	JVW	5.9	317	iPu	:16.72 (0.04)	iSu	:17.50 (0.03)
USC	CCK	8.5	336	ePu	:17.17 (0.07)	iSu	:18.16 (-0.06)

SEISMIC STATION LISTING AND NETWORK MAPS

Stations potentially operational in the SEUSSN during the report period are listed below. A list of operator code definitions may be found in the section entitled DEFINITIONS AND NETWORK OPERATOR CODES. After the station listing is a plot of all the stations, followed by maps of individual networks (with station identification codes) operated by major member agencies or groups of the SEUSSN.

Sta. Code	Lat. N (Dg-Min)	Lon. W (Dg-Min)	Elev. (M)	Dates Open-Close	Current Operator	Locality
ABTN	35-53.13	86-06.54	363	8409-	TVA/UTK	Auburntown, TN
AMG	32-03.56	84-13.06	106	7309-	GSW	Americus, GA
ANTN	36-10.30	85-13.88	612	8305	TVA/UTK	Anderson, TN
ASB	35-37.74	79-46.38	227	-	UNC	Asheboro, NC
ATL	33-26.00	84-20.25	272	6306-	GIT	Atlanta, GA
BCRT	35-45.95	84-34.58	409	9806-	CERI	Bacon Ridge, TN
BG3	34-59.58	82-55.90	366	86 -	DPC	Lake Jocassee, SC
BHT	35-51.78	84-56.39	732	8110-	CERI	Blowhole, TN
BLA	37-12.68	80-25.21	634	6209-	VTSO/NEIC	Blacksburg, VA

BRBC	35-44.30	82-17.15	1976	8205-	CERI	Mt. Mitchell, NC
BTR	36-10.56	78-45.78	122	-	UNC	Butner, NC
BVD	39-46.49	75-29.96	58	8502-	DGS	Bellevue State Park, DE
BWD	39-47.97	75-34.60	63	8502-	DGS	Brandywine Creek St Park, DE
CBN	38-12.30	77-22.40	70	71 -	USGS	Corbin, VA
CCK	35-01.37	82-59.49	701	9201-	USC	Bad Creek Res., SC
CDG	34-36.65	84-40.00	332	-	GIT	Carters Dam, GA
CEH	35-53.46	79-05.58	152	7508-	UNC/USGS	Chapel Hill, NC
COR	35-33.30	78-59.34	91	-	UNC	Corinth, NC
COW	33-22.90	80-41.96	60	7710-	USC	Cow Castle Creek, SC
CRTN	36-11.99	83-50.44	488	8403-	TVA/UTK	Comb Ridge, TN
CSB	32-59.22	80-04.31	83	9705-	CSU-USGS	Charleston Southern Univ., SC
CSU	32-59.22	80-04.31	7	9705-	CSU-USGS	Charleston Southern Univ., SC
DALG	34-46.43	85-00.47	329	9103-	GIT	Dalton, GA
DATN	35-30.00	85-05.17	636	9903-	UTK	Dayton, TN
DEMA	39-19.12	75-36.59	12	9910-	DGS	DE Emergency Mgmt Agny, DE
DRC	33-06.45	80-23.30	20	8303-	CSU-USGS	Dorchester, SC
DYTN	35-29.47	85-05.54	580	0005-	CERI	Dayton, TN
EGT	35-54.05	83-17.88	1103	9406	TVA/UTK	English Mountain, TN
ELK	33-20.88	81-20.83	88	9511--	WSRC	Elko, SC
ELN	37-13.70	80-45.10	634	9612 -	VTSO	Prospectdale, VA
ETT	35-19.56	84-27.30	588	8111-	CERI	Etowah, TN
FDKY	36-47.40	85-47.65	306	8703 -	TVA/UTK	Freedom, KY
FWV	37-34.90	80.48.70	756	9612-	VTSO	Forrest Hill, WV
GAI	29-39.02	82-20.01	51	7711-	UFL	Gainesville, FL
GFM	36-06.66	81-48.42	1726	8205-	CERI	Grandfather Mtn., NC
GLT	36-21.72	86-29.88	159	8111-	CERI-VCSS	Gallatin, TN
GMG	34-51.76	84-40.22	1097	8509-	CERI	Grassy Mtn., GA
GOGA	33-24.67	83-28.00	150	94 -	USGS	Godfrey, GA
GRB	36-04.02	79-44.70	236	-	UNC	Greensboro, NC
GRBT	35-40.45	84-11.82	329	0007-	CERI	Greenback, TN
GWDE	38-49.54	75-37.03	19	9508-	USGS/DGS	Greenwood, DE**
HAKY	37-06.34	86-35.10	169	8706 -	TVA/UTK	Hadley, KY
HBF	32-56.85	80-19.96	-89	7303-	USC	Harts Bluff, SC
HPKT	35-55.56	83-63.75	305	8003 -	TVA/RAH	Knoxville, TN*
JSC	34-16.90	81-15.62	120	7405-	USC	Jenkinsville, SC
JVW	34-59.54	82-59.86	554	9111-	USC	Bad Creek Res., SC
LEX	37-47.36	79-26.50	311	7105-	WAL	Lexington, VA
LHS	34-28.57	80-48.37	120	7405-	USC	Liberty Hill, SC
MCWV	39-39.49	79-50.74	280	94 -	USGS	Mont Chateau, WV
MGS	32-53.87	80-08.46	9	7603-	CSU -USC	Middleton Gardens, SC
MMC	34-46.79	82-54.91	280	8707-	DPC	Morgan Memorial Church, SC
MOB	33-11.60	81-48.89	67	9510-	WSRC	Waynsboro, GA
MOTN	36-37.08	87-59.20	177	8308-	TVA/UTK	Model, TN
MRG	39-37.98	79-57.26	281	7511-	WVU	Morgantown, WV
MR01	34-19.91	81-17.74	131	7711-	USC -SCEG	Monticello Res., SC
MR02	34-11.58	81-13.81	84	7711-	USC -SCEG	Monticello Res., SC
MR05	34-16.05	81-20.05	103	7807-	USC -SCEG	Monticello Res., SC
MR07	34-22.32	81-19.50	134	7807-	USC -SCEG	Monticello Res., SC
MR10	34-20.18	81-20.25	137	7807-	USC -SCEG	Monticello Res., SC

MSAL	34-50.80	86-40.41	260	8307	TVA/UTK	Monte Sano, AL
MVL	39-59.52	76-21.04	91	7410-	MVU	Millersville, PA
MYNC	35-04.43	89-07.67	550	94 -	USGS	Murphy, NC
NED	39-42.25	75-42.29	47	7211-	DGS	Newark, DE
NPRS	33-15.42	81-38.28	79	91 -	WSRC	Savannah River Lab, SC
OLT	35-09.00	85-01.44	445	9308 -	TVA/UTK	Ooltewah, TN
ORT	35-54.57	84-18.29	370	8307 -	TVA/UTK	Oak Ridge, TN
PDTN	35-16.40	85-50.97	335	8509 -	TVA/UTK	Piedmont, TN
PKNC	36-02.77	81-09.45	785	8211-	CERI	Pores Knob, NC
PLVA	36-39.96	81-09.60	1353	8211-	CERI	Point Lookout, VA
PWLA	34-58.80	88-03.84	204	8005-	CERI	Pickwick Lake, AL
RBNC	35-21.42	82-59.16	1829	8205-	CERI	Richland Balsam, NC
RCGA	34-58.57	85-20.90	460	8110-	CERI	Rock City, GA
RGR	32-54.45	80-11.65	-52	8606-	CSU-USGS	(Roger Stewart) SC
RICH	35-55.14	82-49.14	968	8306-	CERI	Rich Mtn., NC
SCOM	38-44.48	75-24.86	12	9910-	DGS	Sussex Co Emerg. Op Ctr, DE
SHAL	34-25.97	86-36.10	328	9803-	UTK	AL
SLTN	36-26.59	82-07.23	1280	8401 -	TVA/UTK	Elizabethton, TN
SMM	34-49.95	82-48.25	468	9608	DPC	Six Mile Mountain, SC
SMNC	35-35.01	81-38.16	722	0007-	CERI	South Mountain State Park, TN
SMT	34-55.85	82-58.26	498	7704-	USC	Smeltzer Mtn. (Jocassee), SC
SRAV	33-19.50	81-40.80	91	-	WSRC	Savannah River Lab, SC
SRPD	33-09.30	81-42.75	31	7608-	WSRC	Savannah River Lab, SC
SRPN	33-19.74	81-35.33	95	7608-	WSRC	Savannah River Lab, SC
SRPW	33-12.14	81-34.69	77	7608-	WSRC	Savannah River Lab, SC
SVS	32-58.10	80-14.89	3	7603-	USC	Slandsville, SC
SWET	35-12.98	85-55.92	581	0005-	CERI	Sewanee, TN
TCT	36-00.32	87-33.17	245	8803-	TVA/UTK	Tennessee City, TN
TKL	35-39.48	83-46.44	350	78 -	UTK	Tuckaleechee Caverns, TN
TQTN	35-30.96	84-43.55	260	8607 -	TVA/UTK	Tranquillity, TN
TRYN	35-16.02	82-14.76	915	8303-	CERI	Tryon Peak, NC
TWB	33-06.88	80-06.18	9	8803-	CSU -USC	Tillman's/White's Bay, SC
VBV	36-47.12	76-06.48	5	7705-	TCC	Virginia Beach, VA
WAS	32-50.81	80-16.30	9	8303-	CSU-USGS	West Ashley, SC
WMV	37-06.51	80-58.23	1157	8210-	VTSO	Walker Mtn., VA
WSSR	35-16.68	83-34.68	1340	8510-	CERI	Wesser Bald, NC
WVT	36-07.8	87-49.80	153	94	NEIC	Waverly, TN

*Operated by Rich Hopkins.
**Operated by US Geological Survey and maintained by DGS.

INTERNET ACCESS TO SOUTHEASTERN U.S. EARTHQUAKE CATALOG INFORMATION AND ELECTRONIC VERSIONS OF THE BULLETIN

Southeastern U. S. Seismic Network Bulletins

Text files of SEUSSN Bulletins No. 1 through 34, are accessible at

http://www.geol.vt.edu/outreach/vtso/.

Catalog of Southeastern United States Earthquakes

A catalog of pre-instrumental and instrumentally located earthquakes in the southeastern U.S. region is available at **http://www.geol.vt.edu/outreach/vtso**. The catalog is a synthesis of information contained in the U.S. Geological Survey State Seismicity Map Series (Stover, C. W., B. G. Reagor, and S. T. Algermissen, 1984, "United States Earthquake Data File," U.S. Geological Survey Open File Report 84-225) and earthquake hypocenter parameters and magnitudes determined by regional seismic network operators in the region. For the period subsequent to July, 1977, the catalog is composed of data appearing in the SEUSSN Bulletins. An important aspect of the Southeastern U.S. Catalog is the estimation of magnitude for a large number of pre-instrumental shocks in the region. These estimates were derived using the region specific relationships between felt area, maximum intensity, and mb(Lg) magnitude developed by Sibol et al. (Bull. Seism. Soc. Am., 77, 1987, pp. 1635-1654).

The Southeastern U.S. Catalog of earthquakes subsequent to July, 1977, is incorporated into the CNSS Composite Catalog, accessible at **http://quake.geo.berkeley.edu/cnss/.**

DEFINITIONS AND NETWORK OPERATOR CODES

Below are some entries in this Bulletin that might require definition. Also given is a detailed listing of agencies or groups (and their letter codes) that supply information to this Bulletin.

AZM: Azimuthal angle from epicenter to station as measured from north (in deg),

DEP: Focal depth estimate (in km); FXD indicates that the depth was held fixed during the epicentral determination,

DIST (KM) Epicentral distance (in km) between the epicenter and a station,

ERROR ELLIPSE: Semi-axes, expressed as lengths (km) and azimuths (deg), of the vertical projection of the error ellipsoid (Lahr, 1980). Horizontal axes are expressed as the semi-major axis (ERHMAX), it's azimuth (AZ), and the semi-minor axis (ERHMIN). The vertical axis (ERZ) is the largest vertical deviation of the error ellipsoid from the hypocenter. A quality measure (Q) for the ellipsoid based on the length of the largest semi-axis (ERHMAX, ERHMIN, or ERZ) may also be supplied. For this Bulletin the following statistics apply for error estimates:
CERI, UTK, and VTSO: Error ellipse projected semi-axes from HYPOELLIPSE corresponding to a chi-square statistic (68%) with one degree of freedom,
GIT: Error ellipse projected semi-axes from LOCA, and
USC: Standard error estimates from HYPO71.
NEIC and USGS: Unknown,

GAP: The largest azimuthal separation (in deg) between recording stations,

HYPOELLIPSE: Computer hypocenter location program (Lahr, 1980),

HYPO71: Computer hypocenter location program (Lee and Lahr, 1974),

LOCA: Computer hypocenter location program developed at the Georgia Institute of Technology,

MBN or mb(Lg): Body wave magnitude determination using Nuttli's formulas for the Lg phase (Nuttli, 1973),

MDB, MDL, MD: Duration/coda length magnitude that approximates either the mb, ML, or an unknown magnitude scale, respectively. As of June 1986 (SEUSSN Bulletin 17), those using a duration magnitude approximating mb(Lg) are CERI, DGS, GIT, UTK and VTSO. Specifically:
CERI: MDB = -2.36 + 2.23 Log(D) + 0.12 Log(K) (MDB > 2.6)
MDB = -3.38 + 2.74 Log(D) (MDB < 2.7)
VTSO, UTK, and GIT: MDB = -3.45 + 2.85 Log(D) where D is signal duration measured from the P-wave arrival time to the time when the signal returns to background noise, and K is the epicentral distance in kilometers. Those using a duration magnitude approximating ML are USC and USGS.
Specifically:
USGS: MDL = -0.87 + 2.0 Log(D) + 0.0035 X where D is signal duration measured from the P-wave arrival time to the time when the signal returns to twice background noise, and X is the epicentral distance in kilometers. For more information please see SEUSSN Bulletin 17 (page 1) or contact the agency making the estimate for details on their specific procedure,

ML: Local magnitude; contact the agency or group making the estimate for details on their specific procedure,

NO: Number of P, S, and S-P readings used in locating the event,

PHASE: Phase descriptions for either P or S waves, or S-P times. Included under this heading may also be the descriptors; 'i' for an impulsive arrival or 'e' for an emergent arrival. Preliminary first motions may also be given for P wave polarities. These include; 'u', 'c', or '+' for a compressional first arrival, and 'd' or '-' for a dilatational first arrival. '?' indicates that the arrival time is questionable.

Q: Solution quality of the hypocenter (the average of the SQD quality measures, see below; Lee and Lahr, 1974),

RES: Arrival time residual (the difference between the observed and the calculated arrival time, in seconds). An "X" following the value of the arrival time residual means that the arrival time was not used to compute the location of that event,

RMS: Root-mean-square of the weighted arrival time residuals (in sec),

S-P: Difference between the S and P wave arrival times (in sec),

SQD: Measures of the statistical quality of the solution (S), and of the distribution of stations (D) around the hypocenter (Lee and Lahr, 1974),

*XXXX: Code indicating the agency or group that made the hypocentral/magnitude determination; a listing of agencies and groups that operate seismographs in the SEUSSN and/or who supply information to this BULLETIN follows.

Operator Codes

AUAL - Auburn University, AL

CERI - Center for Earthquake Research and Information, TN (formerly Tennessee Earthquake Information Center, TEIC, changed 7/1/87)
CPL - Carolina Power and Light Company, NC
CSU - Charleston Southern University, SC (formerly BCC, Baptist College at Charleston-changed 1991)
DGS - Delaware Geological Survey, DE
DPC - Duke Power Company, SC
GIT - Georgia Institute of Technology, GA
GSA - Geological Survey of Alabama, AL
GSW - Georgia Southwestern College, GA
MGS - Maryland Geological Survey, MD
MVU - Millersville University, PA
NASA - National Aeronautics and Space Administration/Goddard Space Flight Center, WV
NEIC - National Earthquake Information Center, USGS, CO
SCEG - South Carolina Electric and Gas Company, SC
SLU - St. Louis University, MO
TCC - Tidewater Community College, VA
UFL - University of Florida, FL
USC - University of South Carolina, SC
USGS - United States Geological Survey, CO
UTK - University of Tennessee/Tennessee Valley Authority- Joint Institute for Energy and Environment
UTM - University of Tennessee at Martin, TN
VP - Virginia Power, VA
VTSO - Virginia Tech Seismological Observatory, VA
VSCC - Volunteer State Community College, TN
WAL - Washington and Lee University, VA
WSRC - Westinghouse Savannah River Company, SC
WVGS - West Virginia Geological and Economic Survey, WV
WVU - West Virginia University, WV