Southeastern United States Seismic Network Bulletin

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BULLETIN NUMBER 33

TABLE OF CONTENTS

FIGURES

TABLES

SEISMICITY OF THE SOUTHEASTERN UNITED STATES DURING 1998 included 107 tectonic (not induced) earthquakes with magnitudes exceeding 2.5 and 15 earthquakes associated with reservoirs. The largest earthquake reported during the year was mb(Lg) = 3.9 occurring on April 13, 1998. The epicenter was in Kershaw County, South Carolina, near McBee.

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 1998, covered by SEUSSN Bulletins 1 through 33.

SOUTHEASTERN U.S. EARTHQUAKES DURING 1998 lists hypocentral parameters, magnitudes, and arrival times for tectonic earthquakes in the southeastern United States.

SOUTHEASTERN U.S. RESERVOIR ACTIVITY DURING 1998 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 33 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.

Acknowledgments

This report is the thirty-third SOUTHEASTERN UNITED STATES SEISMIC NETWORK BULLETIN and covers the period from January through December, 1998. 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 North Carolina, 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).

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FIGURE 1. Epicenters of earthquakes (M ≥ 0.0) in the southeastern United States for this report period.

FIGURE 3. Epicenters of earthquakes (M ≥ 3.0) in the southeastern United States from July 1977 through this report period.

SEUSSN EARTHQUAKE CATALOG STATISTICS

TABLE 1. SEUSSN Report Period Earthquake Catalog Statistics

Period: January through December 1998 (1 year)	Tectonic
Number of Earthquakes with M ≥ 0.0	107
Number of Earthquakes with M ≥ 2.0	50
Number of Earthquakes with M ≥ 3.0	5
Number of Earthquakes with M ≥ 4.0	0
Number of Felt Earthquakes	7
Number of Earthquakes with Known ERZ ≤ 5.0 km	90

Largest Earthquake: 13 April 1998; 09:56 - northeastern SC, mb(Lg)= 3.9, V MM

Period: July 1977 through December 1998 (21.5 years)	Tectonic
Number of Earthquakes with M ≥ 0.0	1691
Number of Earthquakes with M ≥ 2.0	646
Number of Earthquakes with M ≥ 3.0	105
Number of Earthquakes with M ≥ 4.0	8
Number of Felt Earthquakes	215
Number of Earthquakes with Known ERZ ≤ 5.0 km	1262

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

SOUTHEASTERN U.S. EARTHQUAKES DURING 1998

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.

*****1998 JANUARY 08; 10:38 - 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
WSRC	980108	103806.2	33.147	82.135	21.3	8	30	182	0.1	D	D/D	3.0			4.4			2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
WSRC	MBY	30.3	80	iP	10:38:12.16 (0.01)		
WSRC	SRPD	39.4	89	iP	:13.51 (0.06)		
WSRC	SRAV	46.8	65	iP	:14.22 (-0.16)		
WSRC	NPRS	48.0	75	iP	:15.40 (0.75)		
WSRC	DXN	49.0	102	iP	:15.01 (-0.16)		
WSRC	SRPW	52.3	83	iP	:15.49 (0.23)		
WSRC	SRPN	54.8	68	iP	:15.49 (-0.03)		
WSRC	GOGA	127.4	284	iP	:26.45 (0.01)		

*****1998 JANUARY 14; 03:01 - 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	980114	030125.3	35.851	84.028	23.0	10	26	152	0.1	B	A/C	0.4	21	0.3	0.9	A		1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	ORT	25.8	285	iPu	03:01:30.84 (-0.05)	iS	03:01:35.00 (0.04)
UTK	TKL	31.4	133	eP	:31.48 (-0.11)	iS	:36.18 (0.02)
UTK	CRTN	42.2	24	iPd	:32.87 (-0.18)	iS	:38.71 (0.02)
UTK	EGT	66.2	85	iP	:36.66 (0.09)	iS	:45.05 (0.27)
UTK	ANTN	114.2	289	eP	:43.62 (-0.19)	iS	:57.60 (0.31)

*****1998 JANUARY 24; 15:15 - 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	980124	151518.6	36.088	83.791	14.9	8	13	198	0.1	C	B/D	0.7	43	0.5	1.6	B		1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	13.2	340	iPu	15:15:21.94 (0.06)	iS	15:15:24.25 (-0.04)
UTK	TKL	47.7	178	iP	:26.63 (-0.04)	iS	:32.65 (0.04)
UTK	ORT	50.4	247	eP	:27.06 (-0.02)	iS	:33.34 (0.01)
UTK	ANTN	130.0	275	eP	:39.10 (-0.47)	eS	:55.08 (0.15)

*****1998 JANUARY 28; 16:44 - 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	980128	164421.4	34.425	85.554	0.0	21	98	175	0.4	D	C/D	0.5	23	0.3	1.8	B		2.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	PDTN	97.9	344	iPu	16:44:37.45 (-0.06)	eS	16:44:49.36 (-0.11)
UTK	MSAL	112.8	295	iPu	:40.00 (0.11)	iS	:53.51 (-0.11)

UTK	MYNC						eS	:45:03.85 (0.24)
UTK	ABTN	169.7	343	eP	:48.44	(-0.50)	iS	:09.19 (-0.03)
UTK	ANTN	196.0	9	eP	:52.92	(-0.17)	eS	:16.40 (-0.00)
UTK	ORT	200.2	34	iP-	:54.08	(0.34)	eS	:19.09 (1.56)
UTK	TKL	212.3	49	ePu	:55.20	(-0.46)	eS	:20.32 (-0.52)
UTK	GOGA	223.4	120	iP+	:57.55	(0.15)	eS	:22.78 (-1.00)
UTK	CRTN	251.1	38	eP	:45:01.30	(-0.18)	eS	:30.34 (-0.34)
UTK	WVT	280.4	313	iPu	:05.85	(0.79)	eS	:37.45 (0.57)
UTK	HAKY	311.7	343	eP	:09.31	(0.40)	eS	:43.72 (0.17)
UTK	SLTN	383.8	53	eP	:22.09	(4.16X)	eS	:46:08.77 (9.62X)

*****1998 FEBRUARY 02; 06:15 - 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	980202	061502.8	36.416	83.723	5.0	10	26	247	0.8	D	D/D	0.8	24	0.6	1.1	A		1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	CRTN	26.2	204	iPu	06:15:06.88	(-0.35)	iS	06:15:10.85	(0.35)
UTK	EGT	68.8	146	eP	:13.80	(-0.33)	eS	:22.59	(0.08)
UTK	ORT	76.8	223	iP+	:14.15	(-1.23)	eS	:24.26	(-0.43)
UTK	TKL	84.3	183	iP	:13.98	(-2.59X)	iS	:26.90	(0.13)
UTK	ANTN	138.2	259	iP	:28.11	(2.93)	eS	:38.84	(-2.79)
UTK	ABTN	222.6	255	eP	:47.11	(8.62X)	eS	:16:02.66	(-1.81)
UTK	PDTN	230.2	237	eP	:48.20	(8.55X)	eS	:02.85	(3.61X)

*****1998 FEBRUARY 02; 07:05 - 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	980202	070533.1	35.123	85.754	6.7	16	19	230	0.4	D	C/D	0.9	14	0.6	1.3	A		1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	PDTN	18.8	333	iPu	07:05:36.36	(-0.05)	iS	07:05:39.04	(0.19)
UTK	ABTN	90.5	339	iPd	:47.65	(-0.30)	eS	:58.75	(-0.03)
UTK	ANTN	125.6	22	eP	:53.08	(-0.38)	eS	:06:08.07	(-0.33)
UTK	ORT	157.8	56	eP	:56.05	(-2.47X)	eS	:18.52	(1.35)
UTK	TKL	189.4	71	eP	:06:03.80	(0.28)	iS	:25.90	(0.10)
UTK	CRTN	210.5	55	eP	:07.98	(1.14)	eS	:32.12	(0.69)
UTK	WVT	218.7	301	eP	:08.91	(0.79)	iS	:34.58	(1.01)
UTK	HAKY	232.4	341	eP	:07.31	(-2.87X)	eS	:37.75	(0.63)
UTK	EGT	238.9	68	eP	:10.27	(-0.82)	eS	:37.22	(-1.49)

*****1998 FEBRUARY 03; 06:47 - GILES COUNTY, 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	980203	064724.3	37.310	80.502	30.5	6	13	188	0.0	C	B/D	1.8	59	1.0	2.6	A		0.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
VTSO	BLA	13.1	146	iPc	06:47:28.45	(0.03)	iS	06:47:31.32	(-0.03)
VTSO	ELN	23.9	248	eP	:29.11	(0.02)	iS	:32.47	(-0.02)
VTSO	FWV	40.7	318	ePc	:30.50	(-0.06)	iS	:35.05	(0.04)

*****1998 FEBRUARY 03; 22:18 - 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	980203	221841.6	34.424	85.564	0.0	9	98	282	0.2	D	C/D	1.8	28	0.4	3.2	C		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	PDTN	97.7	345	iPu	22:18:57.67	(-0.02)	iS	22:19:09.68	(0.05)

UTK	MYNC	150.0	61	eP	:19:06.03	(-0.01)	iS	:24.06	(0.01)
UTK	ABTN	169.5	343	eP+	:08.73	(-0.39)	iS	:29.39	(0.02)
UTK	ANTN	196.2	9	eP	:15.65	(2.31X)	eS	:36.68	(0.01)
UTK	CRTN	251.7	38	eP	:22.47	(0.71)	eS	:51.95	(0.93)

*****1998 FEBRUARY 06; 01:09 - 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	980206	010947.7	32.925	80.167	5.6	16	3	88	0.1	A		0.4	360	0.4	0.5			0.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	RGR	3.2	233	iPu	01:09:49.20 (-0.02)	iSd	01:09:49.60 (0.05)
USC	MGS	3.8	141	iPu	:49.33 (0.01)	iSd	:49.77 (-0.06)
USC	SVS	9.0	303	iPu	:49.98 (-0.04)	iSu	:51.05 (-0.02)
USC	CSB	11.3	53	iPd	:50.34 (0.18)	iSu	:51.72 (-0.74)
USC	BCS	11.3	57	iPd	:50.41 (-0.07)	iSn	:51.96 (0.07)
USC	WAS	13.1	229	iPd	:50.71 (0.02)	iSd	:52.35 (-0.25)
USC	HBF	15.7	279	iPu	:51.00 (-0.07)	iSu	:52.80 (0.06)
USC	TWB	21.9	16	iPu	:51.94 (-0.25)	iSn	:54.08 (-0.47)

*****1998 FEBRUARY 12; 07:28 - 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	980212	072802.8	35.496	85.012	2.1	8	79	172	0.2	D	C/D	1.7	338	0.4	5.3	C		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	ORT	78.8	54	eP	07:28:15.65 (-0.16)	iS	07:28:25.62 (0.18)
UTK	PDTN	80.0	252	iP-	:16.04 (0.03)	eS	:25.79 (0.01)
UTK	TKL	113.7	81	eP	:21.93 (0.52)	iS	:35.17 (-0.00)
UTK	CRTN	131.4	54	eP	:23.80 (-0.47)	eS	:39.73 (-0.34)

*****1998 FEBRUARY 14; 12:01 - 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	980214	120102.5	35.300	83.328	1.2	11	57	249	0.3	C	B/D	0.7	292	0.5	2.4	B		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	TKL	56.7	315	iP-	12:01:11.85 (-0.04)	iS	12:01:18.77 (-0.05)
UTK	EGT	66.7	2	iP-	:13.59 (0.05)	eS	:22.27 (0.56)
UTK	MYNC	77.0	251	eP	:15.02 (-0.23)	eS	:25.47 (0.80)
UTK	CRTN	110.1	335	eP+	:20.65 (0.07)		
UTK	ORT	111.4	308	eP	:21.33 (0.54)	eS	:33.30 (-1.01)
UTK	PDTN	229.4	270	eP	:39.21 (-0.25)	eS	:02:05.88 (-0.52)

*****1998 MARCH 03; 12:16 - 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	980303	121643.2	35.755	84.035	6.8	17	26	74	0.2	C	B/C	0.3	30	0.2	1.4	B		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	TKL	25.9	114	iPu	12:16:47.58 (0.02)	iS	12:16:51.03 (0.20)
UTK	ORT	29.8	305	eP+	:48.17 (-0.01)	iS	:52.00 (0.08)
UTK	CRTN	52.4	19	iPu	:51.60 (-0.19)	iS	:58.02 (-0.16)
UTK	EGT	68.5	76	eP	:53.68 (-0.72)	iS	:17:02.92 (0.20)
UTK	MYNC	76.1	186	iP-	:55.40 (-0.18)	eS	:04.10 (-0.69)
UTK	ANTN	117.4	294	eP	:17:01.25 (-0.95X)	eS	:16.27 (0.07)
UTK	PDTN	173.1	253	iP-	:10.85 (-0.11)	iS	:31.80 (0.44)
UTK	ABTN	188.0	275	eP	:12.85 (-0.47)	iS	:35.67 (0.23)

UTK	MSAL	260.3	248	eP	:23.33	(-0.32)	eS	:54.18 (1.07)

*******1998 MARCH 12; 10:45 - 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	980312	104524.6	35.465	85.179	29.7	16	65	130	0.3	C	B/D	0.5	353	0.2	1.5	B		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	PDTN	64.5	251	iPd	10:45:35.67 (-0.20)	iS	10:45:44.09 (0.02)
UTK	ORT	93.3	58	eP	:39.78 (-0.30)	eS	:51.67 (0.33)
UTK	ABTN	96.3	299	eP	:40.86 (0.32)	iS	:52.15 (0.03)
UTK	MYNC	105.0	114	eP	:42.54 (0.68)	eS	:54.41 (0.02)
UTK	TKL	129.2	80	iPu	:45.33 (-0.16)	iS	:46:00.67 (0.01)
UTK	CRTN	145.9	56	eP	:48.36 (0.32)	eS	:06.62 (1.57)
UTK	MSAL	152.5	244	iP-	:48.51 (-0.52)	iS	:07.09 (0.33)
UTK	EGT	177.0	74	iP	:51.38 (-1.39X)	eS	:13.21 (-0.01)
UTK	LAL	227.7	241	eP	:53.44 (-5.50X)	eS	:13.57 (-10.32X)
UTK	MOTN	283.6	298	eP	:46:06.88 (1.08)	eS	:39.21 (3.44X)

*******1998 MARCH 15; 19:25 - WILMINGTON, DELAWARE*******

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
DGS	980315	192552.4	39.738	75.540	5.8	6	6		0.4									1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
DGS	BVD	5.6	46	iPu	19:25:53.68	S	19:25:54.30
DGS	BWD	6.8	336	iPu	:53.94	S	:54.66
DGS	NED	14.9	256	iPu	:55.33	S	:57.06

*******1998 MARCH 18; 20:22 - TENNESSEE*******

NEIC Felt at Unaka, 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	980318	202207.4	35.280	84.232	19.9	21	25	107	0.2	B	B/B	0.3	301	0.2	0.5	A		2.6		
NEIC	980318	202208.2	35.200	84.200	5.0F	4	16											3.1		F

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)	
UTK	MYNC	24.7	157	iP	20:22:12.78 (0.24)	iS	20:22:16.28 (-0.04)	
UTK	TKL	59.1	45	iPd	:17.33 (-0.08)	iS	:24.65 (-0.11)	
UTK	ORT	70.2	355	iPd	:19.23 (0.13)	iS	:27.92 (0.23)	
UTK	CRTN	108.1	19	eP-	:24.96 (0.03)	iS	:37.84 (0.13)	
UTK	EGT	109.2	51	eP+	:25.06 (-0.07)	eS	:39.46 (1.39X)	
UTK	ANTN	134.1	318	iP+	:28.76 (-0.16)	eS	:44.19 (-0.39)	
UTK	PDTN	147.2	270	eP+	:30.84 (-0.07)	iS	:47.99 (-0.02)	
UTK	ABTN	182.9	292	eP+	:36.30 (-0.10)	iS	:57.59 (0.15)	
UTK	GOGA	218.9	161	eP	:40.79 (-0.69)	eS	:23:07.09 (0.85)	
UTK	MSAL	227.8	259	eP-	:42.36 (-0.24)	eS	:09.38 (1.20)	
UTK	LAL	298.9	253	iP-	:43.37 (-8.00X)			
UTK	WVT	339.0	287	P?	:23:01.68 (5.39X)			
UTK	MOTN	369.9	295	eP	:07.15 (7.05X)	eS	:41.58 (3.12X)	
UTK	CEH					eS	:24:15.92 (15.97X)	
UTK	OXF	480.7	261	iP	:12.92 (-0.85)	eS	:25:01.32 (-0.78)	
NEIC	MYNC	15.6	155	eP	20:22:12.5 (1.4)	eS	20:22:16.30 (X)	
NEIC	GOGA	209.1	161	ePn	:40.79 (-0.5)	eS	23:07.09 (X)	
NEIC	WVT	344.7	289	(Pn)	:23:01.68 (3.0)			NEIC
PWLA	353.6	267	(Pn)	:22:58.90	(-0.9)			

Additional Data:

GIT ATL S 20:23:03.8

*****1998 MARCH 19; 05:37 - WILMINGTON, DELAWARE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
DGS	980319	053726.3	39.737	75.537	5.9	6	6		0.4									1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
DGS	BVD	5.5	43	iPu	05:37:27.61	S	05:37:28.21
DGS	BWD	7.0	335	iPu	:27.85	S	:28.67
DGS	NED	15.1	257	iPu	:29.28	S	:31.02

*****1998 MARCH 20; 15:00 - 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	980320	150006.1	35.554	84.491	13.7	8	43	217	0.1	D	C/D	2.2	333	0.6	5.5	D		1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	ORT	42.9	23	iPd	15:00:13.28	(-0.06)	iS	15:00:18.76	(0.04)
UTK	CRTN	92.7	39	eP	:21.66	(0.54)	eS	:32.17	(-0.02)
UTK	EGT	114.6	70	iP	:26.61	(2.01X)	eS	:43.08	(4.87X)
UTK	PDTN	127.3	256	eP	:27.40	(0.84)	iS	:41.65	(0.05)
UTK	ABTN	151.0	285	eP	:30.04	(-0.26)	eS	:48.17	(0.11)

*****1998 MARCH 26; 15:15 - 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	980326	151518.8	37.222	83.782	0.0	11	114	288	0.5	D	C/D	2.0	244	1.4	4.0	C		1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	CRTN	113.5	183	iP-	15:15:37.04	(-0.40)	iS	15:15:51.60	(0.35)
UTK	EGT	152.8	163	iP-	:44.95	(1.22)	eS	:16:04.15	(2.06X)
UTK	ORT	152.9	198	eP	:43.73	(0.02)	eS	:02.22	(0.16)
UTK	TKL	173.5	180	eP	:46.93	(-0.02)	iS	:07.18	(-0.48)
UTK	ANTN	174.2	228	iP	:47.61	(0.53)	iS	:08.21	(0.32)
UTK	ABTN						eS	:28.41	(-0.65)
UTK	PDTN	285.1	221	eP	:16:15.20	(12.13X)	eS	:36.88	(1.56)

*****1998 MARCH 29; 20:36 - 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	980329	203652.0	32.940	80.149	9.4	16	5	111	0.2	B		0.8	360	0.8	1.1			1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	MGS	4.7	171	iPd	20:36:54.14	(-0.07)	iSd	20:36:54.81	(-0.39)
USC	RGR	5.6	230	iPu	:54.17	(-0.08)	iSd	:55.05	(-0.13)
USC	CSB	8.9	55	iPd	:54.47	(0.05)	iSu	:55.55	(-1.17)
USC	BCS	9.0	60	iPd	:54.54	(-0.21)	iSu	:56.37	(0.20)
USC	SVS	9.8	289	iPu	:54.66	(-0.10)	iSd	:55.88	(-0.30)
USC	WAS	15.5	228	iPd	:55.76	(0.18)	iSd	:57.73	(-0.24)
USC	HBF	17.2	273	iPu	:55.80	(0.02)	iSd	:57.83	(0.01)
USC	TWB	19.8	12	iPd	:56.17	(-0.10)	iSd	:58.38	(-0.11)

*****1998 APRIL 03; 01:25 - 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	980403	012535.5	35.247	86.190	6.3		18	31	108	0.2	C	B/C	0.4	326	0.3	1.4	B	1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	PDTN	31.1	84	iP	01:25:40.64 (-0.06)	iS	01:25:44.61 (0.02)
UTK	MSAL	62.6	225	iPd	:45.68 (-0.07)	eS	:53.39 (0.03)
UTK	ABTN	71.2	6	iP+	:47.18 (0.04)	eS	:55.78 (0.01)
UTK	SHAL	97.9	203	eP	:51.40 (-0.01)	iS	:26:03.39 (0.20)
UTK	ANTN	134.4	40	eP	:57.01 (-0.20)	iS	:16.04 (2.86X)
UTK	ORT	186.0	66	iP-	:26:05.13 (-0.22)		
UTK	MYNC	188.8	95	eP	:06.36 (0.56)	eS	:27.54 (-0.50)
UTK	MOTN					eS	:36.80 (-0.13)
UTK	TKL					eS	:37.65 (0.26)
UTK	CRTN	237.4	63	eP	:12.77 (-0.47)	eS	:42.49 (1.79)
UTK	EGT	272.0	74	eP	:17.45 (-0.12)	eS	:46.45 (-1.75)

*******1998 APRIL 09; 23:18 - 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	980409	231822.2	35.063	87.027	16.8	15	40	178	0.4	C	C/C	0.6	317	0.4	1.9	B		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	MSAL	40.2	126	iPu	23:18:29.24 (0.02)	iS	23:18:34.60 (0.20)
UTK	SHAL	80.0	151	iP-	:34.97 (-0.36)	eS	:45.21 (0.24)
UTK	PDTN	109.8	77	eP-	:39.65 (-0.34)	iS	:53.24 (0.20)
UTK	ABTN	123.6	42	eP-	:41.74 (-0.42)	eS	:55.81 (-0.98)
UTK	WVT	139.0	329	eP	:45.19 (0.63)	iS	:19:01.16 (0.31)
UTK	MOTN	193.1	334	eP+	:51.85 (-1.02)	eS	:14.07 (-1.06)
UTK	ANTN	204.0	52	eP	:55.18 (0.62)	eS	:18.85 (0.80)
UTK	CRTN	315.0	65	eP	:19:11.05 (2.57)	eS	:46.28 (4.13X)

*******1998 APRIL 11; 02:57 - 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	980411	025749.2	33.042	80.259	9.7	18	9	119	0.0	B		0.5	360	0.5	0.9			1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	SVS	9.0	174	iPd	02:57:51.92 (-0.02)	iSd	02:57:53.34 (0.02)
USC	HBF	13.2	212	iPd	:52.45 (-0.01)	iSd	:54.15 (0.11)
USC	DRC	13.7	298	iPu	:52.85 (0.05)	iSd	:54.96 (-0.04)
USC	TWB	16.3	63	iPd	:52.99 (0.01)	iSd	:54.58 (-0.20)
USC	RGR	16.8	159	iPu	:53.00 (0.00)	iSd	:54.97 (-0.15)
USC	CSU	18.9	112	iPu	:53.13 (-0.02)	iSn	:56.29 (-0.36)
USC	MGS	20.0	147	iPu	:53.49 (-0.04)	iSd	:55.89 (-0.29)
USC	WAS	22.4	183	iPd	:53.81 (-0.14)	iSu	:57.28 (0.07)
USC	SGS	28.3	304	ePd	:54.92 (-0.14)	iSu	:58.72 (-0.21)

*******1998 APRIL 13; 09:56 - SOUTH CAROLINA*******

NEIC Felt (V) at Hartsville, Kershaw, Liberty Hill and Westville, (IV) at Cassatt, Elgin, Florence, Heath Springs, Jefferson, Lancaster, Lugoff, Mount Croghan, Newberry, Pageland, Ruby and York, (III) at McBee and (II) at Chester, Laurens and Marion. Also felt (IV) at Monroe and Wingate, (III) at Marshville and (I) at Albemarle, 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
NEIC	980413	095611.3	34.610	80.466	5.0F	24	35										3.9	3.5		V
USC	980413	095615.6	34.471	80.603	6.6	11	19	248	0.1	C		1.9	360	1.9	0.9			4.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
NEIC	LHS	34.5	245	iPd	09:56:18.77	(1.2)			
NEIC	SGS	156.8	182	eP	:37.00	(-0.7)			
NEIC	HBF	185.7	178	eP	:40.79	(-0.6)			
NEIC	CEH	189.0	41	eP	:42.35	(0.6)			
NEIC	BLA	289.1	1	eP	:55.68	(1.0)			
NEIC	GOGA	306.9	245	eP	:56.87	(-0.2)			
NEIC	TKL	323.6	292	Pn	:59.70	(0.6)	Sn	09:57:35.80	(X)
NEIC	MYNC	339.2	280	eP	:57:02.22	(1.1)			
NEIC	GHV	412.5	30	eP	:10.01	(-0.4)			
NEIC	CVL	414.8	25	eP	:10.52	(-0.3)			
NEIC	MCWV	562.7	5	eP	:26.63	(-3.1X)			
NEIC	WCI	659.4	309	eP	:41.11	(-0.8)			
NEIC	WVT	689.4	286	eP	:45.52	(-0.3)			
NEIC	PWLA	696.1	276	eP	:45.74	(-0.9)			
NEIC	SSPA	706.1	18	eP	:46.92	(-1.0)			
NEIC	OXF	820.6	272	eP	:59.75	(-2.6X)			
NEIC	YSNY	889.6	10	eP	:58:08.76	(-2.2X)			
NEIC	AAM	898.5	343	(P)	:09.38	(-2.7X)			
NEIC	MIAR	1202.1	273	eP	:46.38	(-3.4X)			
NEIC	ULM	2142.8	329	P	10:00:38.40	(-1.0)			
NEIC	TXAR	2264.0	261	P	:50.50	(-1.0)			
NEIC	ALQ	2373.0	278	P	01:04.00	(2.3)			
NEIC	BW06	2673.2	299	eP	:28.00	(-0.3)			
NEIC	PDAR	2673.2	299	P	:28.10	(-0.2)			
NEIC	YKA	3907.5	333	eP	:03:05.06	(-2.0)			
NEIC	ILAR	5481.0	329	P	:05:02.20	(-0.5)			
NEIC	ARCES	7037.8	22	P	:06:44.40	(1.4)			
NEIC	FINES	7503.7	30	P	:07:12.40	(2.4)			
NEIC	WRA	16232.8	286	PKP	:15:53.30	(-0.1)			
NEIC	ASAR	16479.7	281	PKP	:59.40	(2.5X)			
USC	LHS	18.9	273	iPd	09:56:18.79	(-0.02)	iSu	09:56:21.61	(0.34X)
USC	JSC	64.1	251	iPd	:26.01	(0.14)	iSu	:33.37	(-0.32X)
USC	MR02	65.5	242	iPd	:26.10	(-0.05)			
USC	MR07	67.4	260	ePd	:26.28	(-0.11)			
USC	MR10	69.2	257	ePd	:26.80	(0.11X)			
USC	COW	120.9	184	iPd	:34.91	(0.03)	iSd	:50.38	(0.83X)
USC	SGS	142.1	177	eP+	:37.72	(-0.51X)	iSd	:57.31	(-1.86X)
USC	SRPN	156.1	216	iP	:40.06	(-0.17)			
USC	SRAV	161.6	218	iP	:41.09	(0.19)			
USC	SVS	169.9	169	eP-	:42.34	(0.41X)	iSd	:57:03.06	(1.11X)
USC	HBF	171.9	173	iPu	:42.45	(0.07)	iSu	:03.73	(0.99X)
USC	SRPD	178.6	215	iP	:42.88	(-0.12)			
USC	MMC	214.9	279	eP+	:47.30	(-0.18)	iSd	:14.65	(2.92X)
USC	BG3	221.1	285	iPu	:48.13	(-0.12)	iSd	:16.14	(3.06X)

Additional Data:

WSRC	SRPN	ePd	09:56:40.06
WSRC	SRPD	iPu	:42.88
WSRC	SRAV	eP+	:41.09
WSRC	DXN	ePd	:43.67
WSRC	MBY	iPu	:43.09
GIT	ATL	P	09:57:12.1
GIT	CDG	P	:15.5

S	09:57:51.1		

*****1998 APRIL 14; 08:39 - 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	980414	0839	13.6	34.940	84.915	3.5	23	73	109	0.3	C	B/D	0.4	349	0.2	1.4	B		2.0		

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

UTK	MYNC	73.4	78	eP	08:39:25.82	(0.17)	iS	08:39:34.39	(-0.22)
UTK	PDTN	92.9	294	iP-	:28.67	(-0.11)	eS	:39.61	(-0.43)
UTK	ORT	121.0	27	eP	:33.73	(0.45)	eS	:48.38	(0.56)
UTK	TKL	130.8	52	iPu	:34.67	(-0.17)	iS	:50.33	(-0.17)
UTK	ANTN	139.6	348	eP	:36.30	(0.05)	eS	:52.58	(-0.35)
UTK	ABTN	150.9	314	eP	:38.04	(0.03)	eS	:56.38	(0.40)
UTK	MSAL						iS	:58.57	(-0.18)
UTK	CRTN	170.4	35	eP	:40.94	(-0.15)	eS	:40:02.77	(1.47)
UTK	EGT	181.5	54	eP	:45.23	(2.36X)	iS	:04.66	(0.27)
UTK	GOGA	215.8	141	eP	:48.24	(0.00)	eS	:13.64	(0.05)
UTK	WVT	295.5	297	eP-	:40:00.23	(1.48)			
UTK	SLTN	303.0	56	eP	:02.19	(2.40X)	eS	:33.34	(-0.10)
UTK	MOTN	334.4	305	eP	:06.19	(2.65X)	eS	:39.06	(-0.87)

*******1998 APRIL 15; 00:20 - TENNESSEE *******

UTK Possible karst collapse.

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	980415	002018	5	35.844	86.604	0.0	15	45	128	0.5	C	C/C	0.9	31	0.4	3.6	C		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	ABTN	45.0	84	eP+	00:20:25.56	(-0.36)	iS	00:20:31.54	(0.12)
UTK	PDTN	93.2	133	eP	:34.60	(0.69)	eS	:45.24	(-0.08)
UTK	MSAL	110.9	183	eP-	:37.01	(0.28)	eS	:49.47	(-0.75)
UTK	WVT	115.0	286	eP	:38.61	(1.22)	eS	:51.83	(0.46)
UTK	ANTN	129.0	73	iP	:40.07	(0.42)	eS	:51.84	(-3.43X)
UTK	MOTN	151.1	305	eP	:42.50	(-0.63)	eS	:21:00.18	(-1.07)
UTK	SHAL	156.6	180	eP	:45.38	(1.37)	eS	:02.75	(-0.03)
UTK	ORT	207.8	87	eP	:55.24	(3.16X)	eS	:11.98	(-4.77X)
UTK	MYNC	240.5	110	eP	:21:08.77	(11.52X)	eS	:26.24	(0.77)
UTK	CRTN	252.2	80	eP	:20:58.24	(-0.52)	eS	:22:19.70	(-8.36X)
UTK	TKL	256.8	94	iP	:53.60	(-5.71X)	eS	:22.45	(-6.57X)

*******1998 APRIL 16; 18:21 - 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	980416	182128	0	36.042	83.736	6.1	18	20	101	0.2	C	B/C	0.3	228	0.2	1.3	A		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	CRTN	19.9	332	iPu	18:21:31.33	(0.14)	eS	18:21:34.05	(0.02)
UTK	EGT	42.5	111	eP	:35.14	(0.04)	iS	:40.79	(0.44)
UTK	TKL	42.7	185	iPd	:35.00	(-0.10)	iS	:40.42	(0.07)
UTK	ORT	53.3	254	iPd	:36.94	(0.13)	iS	:43.52	(0.21)
UTK	MYNC	113.1	198	eP	:46.22	(-0.18)	iS	:59.57	(-0.34)
UTK	ANTN	135.4	277	eP	:49.64	(-0.28)	iS	:22:05.92	(-0.08)
UTK	SLTN	151.9	72	eP	:52.47	(-0.09)	eS	:11.53	(0.95)
UTK	PDTN	209.5	247	eP	:22:01.44	(-0.15)	eS	:27.68	(1.58)
UTK	ABTN	214.7	266	eP	:02.45	(0.03)	eS	:27.86	(0.37)

*******1998 APRIL 21; 23:28 – CENTRAL VIRGINIA*******

NEIC Felt in Albemarle County including Charlottesville, 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
NEIC	980421	232826	2	38.172	78.566	7.6	8	23										2.5	2.6		F
VTSO	980421	232826	6	38.171	78.569	2.0	8	23	231	0.2	D	C/D	3.4	11	1.7	8.7	A	2.8	2.6		

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

NEIC	CVL	23.4	156	iP	23:28:30.38	(-0.2)			
NEIC	GHV	57.8	136	eP	:35.97	(-0.8)			
NEIC	NA12	63.4	109	ePd	:37.22	(-0.5)	eS	23:28:44.90	(X)
NEIC	BLA	195.7	238	eP	:56.64	(-0.6)	eS	:29:18.86	(X)
NEIC	MCWV	199.0	327	eP	:56.98	(-0.6)	eS	:19.03	(X)
NEIC	CEH	258.0	191	eP	:29:04.16	(-1.1)			
NEIC	SSPA	280.2	12	eP	:09.23	(1.2)	eS	:39.68	(X)
NEIC	BINY	498.2	25	(P)	:32.32	(-3.7)			
VTSO	CVL	23.1	156	iPd	23:28:30.30	(-0.11)	iS	23:28:33.45	(0.27)
VTSO	GHV	58.3	136	iPc	:36.00	(-0.17)	iS	:42.98	(-0.18)
VTSO	NA12	64.0	108	ePd	:37.20	(0.08)	eS	:44.90	(0.10)
VTSO	BLA	194.9	237	ePn	:57.70	(0.21)	eSn	:29:19.80	(-0.14)

*****1998 APRIL 22; 02:58 - 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	980422	025845.5	35.989	83.479	5.4	18	19	121	0.2	C	B/C	0.6	256	0.3	1.7	B		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	EGT	19.1	121	ePu	02:58:49.04	(0.27)	iS	02:58:50.84	(-0.39)
UTK	CRTN	40.1	306	eP+	:52.06	(-0.07)	iS	:57.03	(-0.05)
UTK	TKL	45.4	216	iP+	:53.17	(0.20)	iS	:58.58	(0.04)
UTK	ORT	75.0	263	eP	:58.14	(0.42)	iS	:59:06.66	(-0.15)
UTK	MYNC	117.3	210	iPd	:59:04.56	(0.05)	iS	:18.18	(-0.37)
UTK	SLTN	132.2	67	eP	:07.17	(0.27)	eS	:21.97	(-0.70)
UTK	ANTN	159.1	278	eP	:11.44	(0.33)	eS	:29.86	(-0.09)
UTK	PDTN	228.9	250	eP	:21.77	(-0.31)	eS	:50.03	(1.30)
UTK	ABTN	237.6	268	eP	:22.84	(-0.46)	eS	:51.51	(0.68)

*****1998 APRIL 24; 20:33- 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	980424	203338.7	35.519	82.074	1.6	22	103	171	0.6	D	D/D	0.7	333	0.4	1.0	A		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	SLTN	102.7	358	eP	20:33:55.49	(-0.14)	eS	20:34:11.10	(2.96X)
UTK	EGT	118.6	291	eP	:58.16	(-0.02)	eS	:12.40	(-0.18)
UTK	TKL	154.9	276	eP-	:34:03.35	(-0.55)	iS	:21.73	(-0.68)
UTK	CRTN	176.6	296	eP	:08.17	(0.83)	eS	:29.15	(0.81)
UTK	MYNC	193.2	256	eP	:09.98	(0.01)	eS	:34.88	(1.99)
UTK	ORT	206.5	283	eP	:12.16	(0.11)	eS	:35.72	(-0.77)
UTK	BLA	239.3	38	eP-	:16.97	(-0.24)	eS	:45.77	(0.49)
UTK	GOGA	266.5	209	eP	:19.96	(-0.59)	eS	:50.94	(-0.04)
UTK	ANTN	294.3	285	eP	:23.33	(-0.70)	eS	:56.85	(-0.15)
UTK	PDTN	344.1	267	iP-	:29.90	(-0.24)	eS	:35:07.30	(-0.27)
UTK	ABTN	367.4	278	eP	:32.21	(-0.81)	eS	:12.62	(0.06)
UTK	WVT	524.5	279	eP	:53.64	(1.28)	eS	:22.59	(-23.43X)

*****1998 APRIL 26; 06:02- 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	980426	060227.4	35.552	85.219	3.1	25	65	108	0.4	D	C/D	0.3	344	0.2	1.4	B		2.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	PDTN	65.1	242	iPu	06:02:38.35	(0.18)	iS	06:02:46.30	(0.15)
UTK	ANTN	68.8	359	eP	:38.70	(-0.07)	iS	:47.04	(-0.15)
UTK	ABTN	88.6	295	eP	:41.98	(0.03)	eS	:52.72	(0.00)
UTK	ORT	91.7	64	eP	:42.60	(0.16)	eS	:54.12	(0.54)

UTK	MYNC	112.5	118	ePu	:45.88	(0.10)	iS	:59.43	(0.04)
UTK	TKL	131.5	84	eP	:49.03	(0.23)	iS	:03:04.20	(-0.34)
UTK	CRTN	143.7	60	eP	:50.57	(-0.17)	eS	:08.80	(0.90)
UTK	MSAL	153.9	240	eP	:51.48	(-0.85)	iS	:10.40	(-0.25)
UTK	SHAL	177.1	226	iP+	:55.10	(-0.89)	iS	:17.61	(0.62)
UTK	EGT	178.0	77	iP-	:56.31	(0.13)	eS	:18.68	(1.35)
UTK	WVT	244.5	286	eP+	03:06.81	(0.48)	eS	:35.68	(1.02)
UTK	MOTN	275.9	296	eP+	:11.87	(1.66)	eS	:41.66	(0.29)
UTK	SLTN	296.3	70	eP	:16.39	(3.54X)	eS	:47.26	(1.32)

*****1998 APRIL 26; 06:38 - CENTRAL 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	980426	063828.2	37.678	78.027	15.0	6	15	291	0.1	D	D/D	5.5	346	2.5	4.0	A		1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
VTSO	GHV	14.7	331	iPd	06:38:31.50 (-0.16)	iS	06:38:34.31 (0.12)
VTSO	NA12	36.9	21	eP	:34.80 (0.06)	eS	:39.47 (-0.04)
VTSO	CVL	50.9	312	eP	:37.00 (0.10)	eS	:43.15 (-0.09)

*****1998 APRIL 29; 02:20- 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	980429	022059.6	35.687	84.209	0.0	12	26	104	0.9	D	D/C	0.6	245	0.4	4.3	C		1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	ORT	26.2	341	eP	02:21:02.33 (-1.64)	eS	02:21:06.47 (-0.70)
UTK	TKL	39.5	95	eP	:05.30 (-0.87)	iS	:10.97 (-0.03)
UTK	CRTN	65.9	30	eP	:09.83 (-0.70)	eS	:20.29 (1.69)
UTK	MYNC	68.4	174	eP	:10.49 (-0.46)	eS	:19.39 (0.07)
UTK	EGT	85.7	74	eP	:14.95 (1.14X)	eS	:24.93 (0.64)
UTK	ANTN	106.8	301	eP	:22.24 (5.00X)	iS	:32.49 (2.22)
UTK	ABTN	173.2	278	eP	:27.38 (-0.40)	eS	:49.38 (0.92)
UTK	SLTN	206.0	65	eP	:44.04 (11.04X)	eS	:54.87 (-2.63X)

*****1998 APRIL 30; 04:00- 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	980430	040009.2	35.987	83.815	10.1	15	24	77	0.2	C	B/C	0.4	235	0.3	2.1	B		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	23.8	354	eP+	04:00:13.34 (-0.13)	eS	04:00:16.51 (-0.09)
UTK	TKL	36.7	174	iPu	:15.43 (-0.00)	iS	:20.15 (0.12)
UTK	ORT	45.0	259	eP-	:16.92 (0.17)	iS	:22.35 (0.04)
UTK	EGT	47.6	101	eP	:17.34 (0.15)	eS	:21.85 (-1.22)
UTK	MYNC	105.2	196	iP-	:26.22 (-0.03)	eS	:38.32 (-0.43)
UTK	ANTN	129.2	280	eP	:30.19 (0.14)	iS	:45.40 (0.09)
UTK	SLTN	160.6	71	eP	:35.43 (0.41)	eS	:55.24 (1.32)
UTK	ABTN	207.3	268	eP	:43.80 (1.47X)	eS	:01:06.52 (0.13)

*****1998 MAY 02; 03:37- 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	980502	033715.2	37.254	87.264	8.9	24	96	174	0.7	D	D/D	1.6	310	0.2	1.5	B		2.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	MOTN	95.5	223	iP+	03:37:30.34 (-0.58)	iS	03:37:42.43 (-0.12)
UTK	WCI	132.7	37	iPu	:37.09 (0.14)	iS	:53.34 (0.27)

UTK	WVT	134.6	202	iPu	:37.96	(0.71)	iS	:54.14	(0.57)
UTK	ABTN	183.7	145	ePd	:43.31	(-1.19)	eS	:38:05.04	(-0.83)
UTK	ANTN	217.7	123	eP	:48.27	(-0.42)	eS	:13.88	(0.76)
UTK	MSAL	272.3	169	eP	:54.66	(-0.66)	iS	:25.37	(0.78)
UTK	ORT	303.9	119	iP	:38:02.45	(3.25X)	eS	:32.15	(0.85)
UTK	SHAL	318.6	169	eP	:00.03	(-0.96)	eS	:34.60	(0.20)
UTK	CRTN	327.4	110	iPu	:01.53	(-0.55)	iS	:38.19	(1.90)
UTK	TKL	359.4	118	iP	:04.78	(-1.20)	eS	:41.63	(-1.41)
UTK	OXF	360.6	213	eP	:04.16	(-1.93)	eS	:43.19	(-0.04)
UTK	MYNC	371.6	130	eP	:06.58	(-0.92)	eS	:45.71	(0.06)
UTK	EGT	385.4	112	eP	:14.02	(4.77X)	eS	:49.12	(0.43)

*****1998 MAY 4; 21:44 - 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	980504	214408	.6	32.932	80.173	10.5	20	3	84	0.1	B		0.6	360	0.6	1.0			2.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	RGR	3.4	215	iPu	21:44:10.90 (-0.03)	iSd	21:44:12.04 (0.19)
USC	MGS	4.9	142	iPd	:11.00 (-0.06)	iSd	:12.18 (-0.01)
USC	SVS	8.1	300	iPu	:11.35 (0.00)	iSd	:12.83 (0.12)
USC	CSB	11.3	58	iPd	:11.57 (0.05)	iSu	:13.78 (-0.36)
USC	CSU	11.3	58	iPd	:11.62 (0.08)	iSd	:13.94 (-0.26)
USC	WAS	13.2	224	iPd	:12.03 (0.00)	iSd	:13.98 (-0.24)
USC	HBF	15.0	276	iPu	:12.28 (0.08)	iSd	:14.21 (0.19)
USC	TWB	21.3	18	iPd	:13.15 (-0.06)	iSu	:15.73 (0.09)
USC	DRC	27.9	314	iPu	:14.41 (-0.03)	iSd	:18.03 (-0.33)
USC	SGS	42.6	313	iPu	:16.67 (-0.02)	iSu	:21.92 (-0.36)

*****1998 MAY 05; 07:46- 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	980505	074604	.6	37.337	87.287	10.0F	7	101	266	0.6	D	D/D	1.5	344	0.7	33.3	D		1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	MOTN	101.2	218	eP	07:46:21.08 (-0.19)	iS	07:46:33.09 (-0.51)
UTK	WVT	142.4	200	iPd	:28.56 (0.68)	iS	:45.51 (0.64)
UTK	ABTN	192.4	146	iP-	:33.94 (-0.93)	iS	:56.25 (-0.68)
UTK	ANTN	224.5	125	eP	:45.86 (7.04X)	eS	:47:05.41 (1.64)

*****1998 MAY 07; 12:24- 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	980507	122441	.6	32.380	88.109	10.0F	21	266	259	0.8	D	D/D	1.8	11	1.2	33.3	D		2.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	OXF	265.6	333	iP-	12:25:22.35 (-0.05)	eS	12:25:52.10 (0.03)
UTK	SHAL	267.4	31	iP	:19.09 (-3.56X)	eS	:52.88 (0.37)
UTK	MSAL	304.3	26	iP+	:26.16 (-1.04)	eS	:59.24 (-1.13)
UTK	WVT	416.8	3	eP	:43.16 (2.10)	iS	:26:24.79 (0.44)
UTK	ABTN	430.4	25	eP	:42.28 (-0.48)	eS	:27.14 (-0.15)
UTK	GOGA	449.2	74	eP	:45.55 (0.51)	eS	:34.03 (2.78)
UTK	MOTN	470.3	1	eP	:49.69 (2.03)	eS	:35.26 (-0.51)
UTK	ANTN	497.1	31	eP	:50.00 (-1.01)	eS	:41.90 (0.33)
UTK	ORT	525.7	41	eP	:56.43 (1.93)	eS	:47.10 (-0.51)
UTK	TKL	540.8	47	eP	:56.28 (-0.09)	eS	:51.05 (0.21)
UTK	CRTN	577.9	42	eP	:26:00.06 (-0.89)	eS	:27:00.38 (1.62)

*****1998 MAY 11; 01:30- 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	980511	013055	.2	33.933	85.919	1.5	24	84	179	0.5	D	C/D	0.9	27	0.4	1.4	B		2.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	SHAL	83.9	312	eP-	01:31:09.34 (0.28)	eS	01:31:19.49 (0.17)
UTK	MSAL	122.9	326	iPu	:15.34 (0.03)	iS	:29.94 (-0.21)
UTK	MYNC	207.6	52	eP	:28.72 (0.01)	eS	:53.45 (0.16)
UTK	ABTN	217.3	355	eP	:29.45 (-0.79)	eS	:56.27 (0.38)
UTK	GOGA	234.7	104	iP-	:33.05 (0.10)	eS	:32:00.10 (-0.34)
UTK	ANTN	256.2	14	eP-	:35.71 (-0.11)	eS	:05.73 (0.36)
UTK	ORT	264.3	33	eP	:37.74 (0.95)	eS	:08.16 (1.11)
UTK	TKL	274.2	45	eP	:38.38 (0.38)	eS	:09.00 (-0.15)
UTK	WVT	299.7	325	eP	:43.34 (2.21)	eS	:16.04 (1.48)
UTK	CRTN	315.0	36	eP	:43.67 (0.62)	eS	:18.41 (0.53)
UTK	OXF	327.9	282	eP	:44.10 (-0.50)	eS	:18.93 (-1.64)
UTK	MOTN	352.3	328	eP	:47.78 (0.16)	eS	:23.70 (-2.09)

*******1998 MAY 15; 09:06- 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	980515	090624	.1	35.220	84.634	11.8	16	82	187	0.3	D	C/D	0.7	344	0.3	8.0	D		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	ORT	82.1	21	iPd	09:06:37.68 (0.20)	iS	09:06:46.95 (-0.36)
UTK	TKL	91.9	58	eP	:38.75 (-0.28)	eS	:49.78 (-0.21)
UTK	PDTN	110.8	273	iPd	:42.23 (0.23)	iS	:54.95 (-0.20)
UTK	ANTN	118.6	333	iP-	:43.17 (-0.08)	eS	:57.69 (0.38)
UTK	CRTN	130.3	33	iPu	:44.96 (-0.11)	eS	:07:00.75 (0.28)
UTK	EGT	142.7	58	eP	:47.59 (0.51)	eS	:05.20 (1.27)
UTK	ABTN	152.8	299	eP	:49.91 (1.28)	eS	:06.50 (-0.10)
UTK	SHAL					eS	:20.22 (0.97)
UTK	MOTN	340.0	298	iP	:07:12.46 (-1.47)		

*******1998 MAY 17; 15:12- 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	980517	151228	.7	36.137	86.009	10.6	10	29	159	0.2	C	C/C	1.0	317	0.5	2.7	C		1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	ABTN	29.3	198	eP	15:12:33.78 (0.01)	iS	15:12:37.55 (0.01)
UTK	ANTN	70.1	87	eP	:40.15 (-0.02)	iS	:48.62 (-0.01)
UTK	PDTN	96.9	171	iP-	:44.42 (0.04)	iS	:55.83 (-0.08)
UTK	MOTN	185.3	287	iP	:57.65 (-0.67)	eS	:13:20.90 (0.92)
UTK	CRTN	195.2	87	eP	:13:01.87 (1.96)	eS	:23.67 (1.03)

*******1998 MAY 20; 01:53 – LURAY, VIRGINIA*******

NEIC/VTSO Felt in Page County, 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
NEIC	980520	015328	.0	38.758	78.423	3.2	8	87										2.2	2.4		F
VTSO	980520	015328	.0	38.758	78.423	3.2	6	86	328	0.1	D	D/D	4.9	75	4.2	99.0	D		2.4		F

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
NEIC	CVL	86.7	182	eP	01:53:42.17 (-1.4)		
NEIC	NA12	97.9	151	eP	:44.27 (-1.3)	eS	01:53:55.65 (X)
NEIC	GHV	110.1	165	eP	:46.15 (-1.3)		
NEIC	MCWV	157.9	310	eP	:54.36 (-0.4)		

NEIC	SSPA	213.5	12	eP	:54:01.01	(-0.9)	eS	:54:25.83	(	X)
NEIC	BLA	245.7	226	(P)	:05.50	(-0.6)				
NEIC	CEH	323.6	191	(P)	:15.36	(-0.7)				
NEIC	BINY	434.8	28	(P)	:28.91	(-1.3)				
VTSO	CVL	86.3	182	eP	01:53:42.10	(-0.10)	eS	01:53:52.53	(-0.02)	
VTSO	NA12	97.9	151	eP	:44.20	(0.09)	eS	:55.66	(-0.19)	
VTSO	GHV	110.5	165	eP	:46.20	(0.02)	eS	:59.62	(0.19)	

*****1998 MAY 21; 09:07- 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	980521	090710.1	34.114	87.386	11.7	15	80	214	0.4	D	D/D	2.6	347	0.4	2.2	B		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	SHAL	80.4	64	iPu	09:07:23.29	(0.07)	eS	09:07:32.58	(-0.27)
UTK	MSAL	104.3	39	eP	:26.90	(-0.09)			
UTK	PDTN	190.6	47	iP-	:41.11	(0.49)	iS	:08:02.51	(-0.27)
UTK	OXF	191.4	284	iP+	:40.65	(-0.06)	eS	:02.69	(-0.26)
UTK	WVT	227.3	350	eP	:46.11	(0.05)	eS	:13.24	(1.07)
UTK	ABTN	228.5	30	eP	:46.15	(-0.08)	eS	:11.70	(-0.76)
UTK	MOTN	283.1	349	eP	:53.15	(0.20)	eS	:23.50	(-0.58)
UTK	MYNC	317.3	69	eP	:59.13	(1.93)	eS	:30.88	(-0.56)

*****1998 MAY 25; 03:58- 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	980525	035832.8	33.872	87.212	5.0F	20	84	193	0.5	D	D/D	0.6	351	0.3	33.3	D		2.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	SHAL						eS	03:58:56.24	(-0.42)
UTK	MSAL	118.9	24	ePd	03:58:52.08	(-0.04)	iS	:59:05.80	(-0.54)
UTK	PDTN	199.5	38	iP	:59:04.38	(-0.46)	iS	:29.31	(0.98)
UTK	OXF	214.6	290	eP+	:06.87	(-0.34)	eS	:32.77	(0.44)
UTK	ABTN	245.0	24	eP-	:11.62	(-0.01)	eS	:40.29	(0.43)
UTK	WVT	256.8	347	iP+	:13.38	(0.33)	iS	:42.66	(0.34)
UTK	MOTN	312.7	347	eP	:19.56	(-0.39)	eS	:53.32	(-0.94)
UTK	MYNC	313.1	64	eP	:20.11	(0.07)	eS	:55.23	(0.81)
UTK	ORT						eS	04:00:01.53	(-0.47)
UTK	GOGA						eS	:03.00	(0.54)
UTK	TKL	371.9	57	eP	:27.23	(-0.03)			
UTK	CRTN	401.6	49	eP	:32.05	(1.11)	eS	:13.34	(0.06)

*****1998 MAY 25; 10:46- 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	980525	104658.0	35.653	84.020	17.9	15	22	100	0.2	B	B/B	0.3	244	0.3	0.7	A		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	TKL	22.3	88	iP-	10:47:02.75	(0.12)	iS	10:47:06.30	(0.27)
UTK	ORT	38.4	318	ePu	:04.75	(-0.08)	iS	:09.77	(-0.08)
UTK	CRTN	62.8	15	eP-	:08.40	(-0.11)	iS	:16.12	(-0.10)
UTK	MYNC	65.0	189	eP	:08.76	(-0.09)	eS	:16.48	(-0.33)
UTK	EGT	70.8	67	iPu	:09.53	(-0.25)	eS	:18.65	(0.22)
UTK	PDTN	171.3	256	eP	:24.98	(-0.32)	iS	:45.29	(0.16)
UTK	ABTN	190.7	278	eP	:29.24	(0.97)	iS	:50.76	(0.53)
UTK	WVT						eS	:48:25.73	(0.98)

*****1998 MAY 31; 10:43- 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	980531	104319.9	36.006	86.625	1.9	13	48	98	0.3	C	C/C	1.2	28	0.6	3.4	C		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	ABTN	48.4	106	eP	10:43:27.72	(-0.20)	eS	10:43:33.86	(0.01)
UTK	PDTN	107.4	139	eP	:37.67	(0.15)	eS	:50.67	(0.12)
UTK	WVT	109.5	278	eP	:38.11	(0.26)	iS	:51.24	(0.12)
UTK	MOTN	139.9	299	eP	:43.19	(0.48)	iS	:59.15	(-0.32)
UTK	SHAL	174.5	179	eP	:48.17	(0.00)	eS	:44:07.63	(-1.29)
UTK	WCI	245.8	5	eP	:44:01.70	(2.56)	eS	:30.23	(2.55)
UTK	TKL						eS	:45:31.98	(1.13)

*******1998 MAY 31; 11:03- 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	980531	110355.3	34.998	84.842	3.5	20	66	105	0.4	D	C/D	0.4	3	0.2	1.4	B		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	MYNC	65.7	82	iPu	11:04:06.50	(0.32)	iS	11:04:14.15	(-0.07)
UTK	PDTN	96.8	289	eP+	:11.14	(-0.03)	iS	:22.53	(-0.37)
UTK	ORT	112.3	26	eP	:14.12	(0.47)	eS	:27.38	(0.17)
UTK	TKL	121.6	53	iPu	:14.95	(-0.19)	iS	:29.50	(-0.25)
UTK	ABTN	151.5	311	eP+	:19.81	(-0.05)	eS	:38.18	(0.28)
UTK	EGT	172.3	54	eP	:22.32	(-0.86)	eS	:43.67	(0.03)
UTK	SHAL	173.0	249	eP	:24.30	(1.05)	eS	:44.80	(1.04)
UTK	GOGA	216.8	144	eP	:29.90	(-0.26)	eS	:55.18	(-0.43)
UTK	SLTN	293.8	56	eP	:41.34	(0.92)	eS	:05:12.16	(-1.09)
UTK	WVT	298.6	296	eP	:43.11	(2.22X)	iS	:15.29	(1.24)
UTK	MOTN	336.3	303	eP	:46.58	(1.04)	eS	:23.69	(1.59X)

*******1998 JUNE 5; 02:31 - NORTH CAROLINA*******

NEIC Felt at Charlotte, Cornelius, Davidson, Denver, Huntersville and Mooresville.

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	980605	023101.9	35.479	80.821	5.0F	16	111											3.2		F
UTK	980605	023103.9	35.554	80.785	9.4	44	119	129	0.6	D	D/D	0.6	283	0.2	0.7	A		3.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
NEIC	LHS	111.2	179	eP	02:31:21.20	(-0.1)			
NEIC	JSC	139.0	197	eP	:25.89	(0.3)	eS	02:31:43.09	(X)
NEIC	WMV	181.3	356	iPnd	:31.39	(-0.1)	eSn	:52.00	(X)
							eLg	:55.90	(X)
NEIC	ELN	194.6	2	ePn	:34.29	(1.2)	eLg	:58.59	(X)
NEIC	BLA	195.7	11	ePc	:33.65	(0.4)	eS	:54.96	(X)
NEIC	FWV	233.5	0	ePn	:39.59	(1.4)	eLg	:32:06.69	(X)
NEIC	SGS	255.8	174	(P)	:41.25	(0.2)			
NEIC	HBF	285.8	172	(P)	:44.63	(-0.2)			
NEIC	GOGA	334.7	227	eP	:51.81	(0.7)			
NEIC	CVL	349.2	37	ePn	:51.97	(-0.9)			
				ePg	:56.06	(X)			
NEIC	GHV	353.6	43	eP	:53.39	(-0.1)			
NEIC	NA12	382.5	43	eP	:57.59	(0.3)	eLg	:45.59	(X)
NEIC	MCWV	471.5	10	(P)	:32:06.90	(-1.8)			
NEIC	WCI	576.0	304	(P)	:22.34	(0.4)			
NEIC	WVT	637.2	279	eP	:29.61	(-0.2)			
NEIC	PWLA	661.6	267	(P)	:31.41	(-1.4)			
NEIC	ATPA	728.4	38	iP	:38.40	(-2.9X)			
NEIC	GMTN	835.1	42	eP	:49.30	(-5.4X)			

UTK	LHS	119.3	181	iPu	02:31:23.34	(0.29)	S	02:31:36.95	(0.31)
UTK	MR07	140.2	201	iPd	:26.49	(0.09)			
UTK	MR01	143.4	199	iPu	:26.52	(-0.38)	S	:43.89	(0.67)
UTK	MR10	144.2	201	iPu	:26.67	(-0.36)	S	:43.92	(0.47)
UTK	JSC	147.9	197	iPu	:27.18	(-0.44)	S	:44.66	(0.21)
UTK	MR05	151.3	200	iPu	:28.21	(0.05)	S	:45.98	(0.60)
UTK	MR02	156.3	195	iPu	:28.64	(-0.33)			
UTK	WMV	173.3	355	iPd	:31.40	(-0.29)	eS	:52.00	(0.58)
UTK	ELN	185.8	1	eP	:34.30	(0.61)			
UTK	BLA	186.8	10	ePd	:33.60	(-0.24)	eS	:55.20	(0.11)
UTK	BG3	205.0	253	iPd	:36.37	(0.16)	S	:32:01.19	(1.17)
UTK	CCK	209.2	254	iPu	:37.15	(0.38)			
UTK	FWV	225.0	359	eP	:39.60	(0.87)			
UTK	EGT	230.6	280	ePu	:39.03	(-0.42)	iS	:06.99	(1.26)
UTK	SGS	263.1	174	P	:41.25	(-2.09)			
UTK	TKL	271.1	273	eP	:43.53	(-0.83)	eS	:14.60	(0.16)
UTK	CRTN	285.1	285	eP-	:45.54	(-0.56)	eS	:16.86	(-0.66)
UTK	HBF	293.1	173	P	:45.02	(-2.02)			
UTK	ORT	320.8	278	eP	:49.95	(-0.55)	eS	:25.27	(-0.04)
UTK	CVL	340.0	37	eP	:55.60	(2.75X)	eS	:30.20	(0.73)
UTK	GOGA	342.2	227	eP	:51.81	(-1.31)			
UTK	GHV	345.1	43	eP	:53.30	(-0.17)			
UTK	NA12	374.1	43	eP	:57.60	(0.55)			
UTK	ANTN	407.4	281	eP	:32:01.61	(0.41)	eS	:43.40	(-0.83)
UTK	PDTN	461.0	268	iPd	:06.81	(-0.97)	iS	:54.48	(-1.41)
UTK	ABTN	483.1	276	eP+	:09.91	(-0.59)	eS	:33:00.82	(0.11)
UTK	SHAL	545.3	258	eP	:17.42	(-0.75)	eS	:14.15	(-0.14)
UTK	MOTN	659.1	282	eP-	:31.76	(-0.44)			

Additional Data:

GIT	ATL	P	02:31:07.1	S	02:31:47.2

*****1998 JUNE 11; 05:21- 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	980611	052117.5	34.899	84.166	0.0	12	20	251	1.1	D	D/D	1.4	312	0.8	2.4	B		1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	MYNC	19.7	10	iPd	05:21:20.47	(-0.33)	iS	05:21:22.52	(-0.69)
UTK	TKL	91.4	23	eP-	:32.23	(-0.42)	iS	:43.67	(-0.17)
UTK	EGT	136.3	35	eP	:41.59	(1.71)	eS	:58.32	(1.97)
UTK	CRTN	147.3	11	eP-	:43.84	(2.24)	eS	:22:03.38	(4.07)
UTK	PDTN	159.1	286	eP	:43.86	(0.41)	eS	:03.08	(0.58)
UTK	ABTN	207.7	302	eP	:51.32	(0.19)	iS	:16.28	(0.50)

*****1998 JUNE 14; 12:34 - CENTRAL 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	980614	123441.6	37.688	77.846	18.9	5	26	302	0.0	D	D/D	5.6	334	2.9	8.2	B		1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
VTSO	GHV	25.9	297	iPc	12:34:46.80	(-0.04)	iS	12:34:50.65	(0.03)
VTSO	NA12	33.4	355	iPc	:47.90	(0.04)	iS	:52.36	(-0.03)
VTSO	CVL	63.2	301				eS	:35:00.00	(0.00)

*****1998 JUNE 17; 04:01- 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	980617	040102.1	36.117	83.738	15.1	12	13	229	0.3	C	B/D	0.9	247	0.4	0.9	A		1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	CRTN	13.0	315	iPu	04:01:05.36	(0.02)	eS	04:01:07.75	(-0.00)
UTK	TKL	51.0	184	iPu	:10.60	(-0.04)	iS	:17.25	(0.29)
UTK	ORT	56.1	246	iP	:11.27	(-0.14)	eS	:18.30	(-0.01)
UTK	MYNC	121.0	197	eP	:21.35	(-0.24)	eS	:35.38	(-0.55)
UTK	ANTN	134.6	273	eP	:22.94	(-0.80)	eS	:39.37	(-0.26)
UTK	ABTN	215.3	264	eP	:36.18	(-0.02)	iS	:02:02.06	(1.05)

*******1998 JUNE 17; 08:00 - TENNESSEE*******

NEIC Felt (V) at Coalfield, Lenoir City, Oliver Springs and Petros; (IV) at Harriman, Kingston, Knoxville, Oak Ridge and Rockwood; (III) at Clinton, Friendsville, Powell and Robbins; (II) at Elgin, Tellico Plains and Washburn. Felt in Anderson, Blount, Knox, Loudon, Morgan and Roane Counties.

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	980617	080023.4	35.926	84.405	10.0F	19	9										3.6	3.3		5
UTK	980617	080023.9	35.944	84.392	11.3	41	9	94	0.5	C	C/B	0.2	343	0.2	0.3	A		3.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
NEIC	ORT	8.9	102	iP	08:00:26.29	(0.3)	iS	08:00:28.36	(X)
NEIC	CRTN	58.9	59	ePd	:32.97	(-1.2)			
NEIC	ANTN	79.0	290	ePc	:36.56	(-1.0)			
NEIC	MYNC	97.9	165	ePc	:39.93	(-0.4)	eS	:51.19	(X)
NEIC	PDTN	150.1	242	ePd	:47.75	(-0.5)			
NEIC	ABTN	153.5	269	ePc	:48.38	(-0.4)			
NEIC	GOGA	292.5	163	ePn	:01:06.94	(0.4)	eS	:01:42.30	(X)
				ePg	:10.21	(X)			
NEIC	WCI	305.8	327	eP	:10.29	(1.9)			
NEIC	WVT	309.1	275	ePn	:09.50	(0.6)	eS	:46.58	(X)
				eP	:11.86	(X)			
NEIC	MOTN	331.4	285	ePc	:12.52	(1.0)			
NEIC	JSC	340.3	122	ePn	:13.97	(1.3)	eSn	:56.90	(X)
							eSg	:02:05.14	(X)
NEIC	LHS	364.7	115	eP	:15.53	(-0.3)	eS	:04.24	(X)
NEIC	BLA	383.6	67	eP	:19.05	(0.7)	eS	:10.40	(X)
NEIC	SGS	468.1	129	(Pn)	:29.10	(0.0)	eLg	:32.42	(X)
NEIC	CEH	479.3	89	ePn	:30.18	(-0.4)	eS	:32.75	(X)
NEIC	OXF	481.5	252	eP	:30.56	(-0.3)	eS	:19.77	(X)
NEIC	CVL	576.0	65	(Pn)	:42.84	(0.0)	eSg	:58.47	(X)
				ePg	:53.49	(X)			
NEIC	MCWV	577.1	43	ePn	:42.48	(-0.4)	eSg	:03:01.55	(X)
NEIC	GHV	598.3	68	(P)	:46.93	(1.2X)			
NEIC	AAM	710.6	5	(Pn)	:57.78	(-2.1X)	eLg	:38.96	(X)
NEIC	SSPA	772.8	46	eP	:02:05.80	(-2.0X)			
NEIC	MIAR	848.4	262	eP	:14.73	(-2.6X)	eS	:40.29	(X)
NEIC	WMOK	1312.1	268	eP	:03:11.33	(-3.5X)			
NEIC	LTX	1944.9	253	eP	:04:27.49	(-1.6X)			
NEIC	BW06	2287.4	297	eP	:05:03.92	(-1.3)			
UTK	ORT	8.7	116	iP	08:00:26.29	(0.05)	iS	08:00:28.36	(0.36)
UTK	BCRT	25.9	220	iPd	:28.52	(0.04)	eS	:32.20	(0.31)
UTK	GBT	34.9	151	ePu	:29.84	(0.02)	eS	:34.64	(0.40)
UTK	CRTN	57.2	60	ePd	:32.98	(-0.34)	eS	:40.53	(0.23)
UTK	TKL	64.2	119	iPc	:34.36	(-0.06)	iS	:42.28	(0.08)
UTK	ETT	68.8	185	ePu	:34.98	(-0.17)	eS	:43.56	(0.09)
UTK	ANTN	79.7	289	ePu	:36.56	(-0.33)			
UTK	EGT	98.8	92	iP+	:39.65	(-0.27)	iS	:52.24	(0.53)
UTK	MYNC	99.5	166	iPu	:39.90	(-0.09)	eS	:51.53	(-0.30)
UTK	GMG	122.6	192	eP	:43.49	(-0.18)	eS	:57.84	(-0.35)
UTK	RCGA	138.1	219	eP	:46.02	(-0.06)	eS	:01:02.52	(0.17)
UTK	PDTN	151.6	241	ePd	:47.76	(-0.44)	iS	:06.52	(0.49)

UTK	ABTN	151.1	268	ePu	:48.39	(-0.37)	eS	:06.00 (-1.00)
UTK	SHAL	261.9	231	eP-	:01:03.40	(-0.73)	eS	:34.90 (1.51)
UTK	GOGA	293.5	163	eP-	:06.77	(-1.22)	eS	:40.99 (0.90)
UTK	WCI	306.4	326	eP	:11.51	(1.92)		
UTK	WVT	310.5	275	eP	:12.00	(1.90)		
UTK	MOTN	331.5	284	ePu	:12.53	(-0.16)		
UTK	WMV	332.5	66	eP	:12.30	(-0.62)		
UTK	ELN	355.6	65	eP	:15.94	(0.24)		
UTK	BLA	382.2	67	eP	:19.86	(0.87)		
UTK	CEH	478.2	89	eP	:29.23	(-1.55)		
UTK	OXF	483.5	252	iPd	:31.04	(-0.38)	eS	:02:20.74 (0.12)
UTK	CCM						eS	59.99 (3.19)
UTK	MIAR	849.5	262	iP	:02:15.63	(-0.94)	eS	:03:40.53 (1.81)

Additional Data:

GIT	ATL	P	08:01:07.1	S	08:01:38.3

*****1998 JUNE 17; 18:07- 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	980617	180746.1	35.940	84.400	9.5	12	9	131	0.2	B	B/B	0.6	14	0.3	0.5	A		1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	ORT	9.3	112	iPd	18:07:48.52 (0.23)	iS	18:07:49.80 (-0.13)
UTK	CRTN	58.1	60	iPu	:55.64 (-0.02)	eS	:08:02.91 (0.15)
UTK	TKL	64.7	119	iP+	:56.55 (-0.16)	iS	:04.57 (0.02)
UTK	ANTN	79.2	289	iP+	:58.86 (-0.15)	eS	:08.45 (-0.08)
UTK	PDTN	150.7	241	eP-	:08:10.36 (0.08)	eS	:28.53 (0.50)
UTK	ABTN	154.4	268	eP	:10.45 (-0.41)	eS	:29.68 (0.66)

*****1998 JUNE 18; 05:09- 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	980618	050959.5	34.714	85.194	3.2	24	86	125	0.3	D	C/D	0.3	2	0.2	1.2	A		2.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	PDTN	86.2	316	iPu	05:10:13.46 (-0.16)	eS	05:10:24.55 (0.45)
UTK	MYNC	105.3	67	iPd	:17.03 (0.35)	iS	:29.20 (-0.23)
UTK	SHAL	132.9	257	iPu	:21.10 (0.01)	iS	:36.67 (-0.33)
UTK	ABTN	154.3	328	eP	:24.18 (-0.29)	eS	:43.11 (0.27)
UTK	ORT	155.3	31	eP	:24.64 (0.02)	eS	:44.14 (1.04)
UTK	ANTN	161.7	359	eP	:25.82 (0.17)	eS	:44.88 (-0.00)
UTK	TKL	166.4	51	iPu	:26.15 (-0.22)	eS	:46.23 (0.10)
UTK	CRTN	205.5	36	eP-	:32.44 (-0.11)	eS	:56.35 (-0.48)
UTK	GOGA	215.2	132	iP	:34.52 (0.46)	iS	:59.14 (-0.22)
UTK	EGT	216.9	52	eP	:33.73 (-0.64)	eS	:59.66 (-0.26)
UTK	MOTN	329.5	311	ePd	:48.72 (-0.15)	eS	:11:25.72 (0.87)
UTK	OXF	387.3	268	eP	:57.84 (1.85)	eS	:36.04 (-1.12)

*****1998 JUNE 19; 01:02- 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	980619	010258.6	35.180	85.320	14.9	11	49	186	0.1	D	C/D	1.3	21	0.3	3.9	C		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	PDTN	49.3	282	iPu	01:03:06.93 (0.01)	iS	01:03:13.11 (0.07)
UTK	ABTN	106.1	318	eP-	:15.70 (-0.08)	eS	:28.30 (-0.10)
UTK	MYNC	109.3	96	iP	:16.43 (0.12)	iS	:29.25 (-0.06)
UTK	ANTN					eS	:30.33 (0.74)

UTK	ORT	122.6	48	eP	:18.82	(0.42)				
UTK	TKL	150.1	69	eP	:22.88	(0.15)	eS	:40.55	(0.19)	
UTK	CRTN						eS	:47.06	(0.03)	

*****1998 JUNE 24; 15:20 - 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
NEIC	980624	152001.4	32.502	87.954	5.0F	7	260										3.4			
UTK	980624	152004.7	32.760	87.759	2.7	27	214	244	0.6	D	D/D	1.6	351	0.8	1.6	B	3.2			

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
NEIC	OXF	260.2	329	ePn	15:20:42.50 (1.3)	eS	15:21:11.90 (X)
				ePg	:44.53 (X)		
NEIC	PWLA	274.7	358	eP	:43.64 (0.6)	eS	:10.80 (X)
NEIC	TWAR	398.1	324	(P)	:21:03.44 (4.7X)		
NEIC	WVT	402.5	2	eP	:20:59.47 (0.2)		
				eP	:25:26.84 (X)		
NEIC	CWPT	418.1	339	P	:21:54.30 (53.0X)		
NEIC	GOGA	431.5	75	ePn	:03.92 (0.9)	eS	:47.77 (X)
				ePg	:10.77 (X)		
NEIC	GLST	435.9	344	(P)	:02.36 (-1.1)		
NEIC	MYNC	454.8	50	eP	:04.62 (-1.4)		
NEIC	MIAR	569.3	295	(Pn)	:19.98 (-0.6)		
UTK	SHAL	214.4	30	eP+	15:20:39.25 (0.09)	eS	15:21:04.95 (0.54)
UTK	OXF	247.4	322	eP	:44.57 (0.58)	eS	:12.54 (-0.07)
UTK	MSAL	252.3	23	eP	:43.86 (-0.76)	eS	:13.51 (-0.18)
UTK	PDTN	329.9	32	ePd	:53.24 (-0.95)	eS	:29.37 (-0.88)
UTK	WVT	373.9	359	iP+	:21:00.30 (0.70)	eS	:39.68 (0.07)
UTK	ABTN	378.5	23	iPd	:00.47 (0.28)	eS	:40.82 (0.19)
UTK	GOGA	407.2	79	eP	:04.77 (1.07)	eS	:49.15 (2.45)
UTK	MYNC	422.6	52	eP	:06.13 (0.49)	eS	:50.80 (0.73)
UTK	MOTN	428.5	357	eP	:05.48 (-0.86)	eS	:49.77 (-1.50)
UTK	ANTN	444.0	31	eP	:08.37 (0.08)	eS	:55.86 (1.21)
UTK	ORT	472.3	41	eP	:12.09 (0.34)	eS	:58.67 (-1.96)
UTK	TKL	488.0	48	eP	:15.35 (1.66)	eS	:22:04.18 (0.20)
UTK	CRTN	524.5	42	ePd	:17.52 (-0.68)	eS	:10.98 (-0.81)
UTK	EGT	538.3	48	eP	:19.84 (-0.14)		

Additional Data:

GIT	ATL	P	15:20:56.7	S	15:21:34.2

*****1998 JUNE 30; 10:10- 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	980630	101033.6	35.270	83.452	0.0	12	52	169	0.6	D	D/D	2.3	246	0.9	3.6	C	1.9			

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	TKL	52.1	326	iPd	10:10:41.92 (-0.24)	iS	10:10:48.43 (-0.10)
UTK	EGT	71.4	11	eP	:44.83 (-0.53)	eS	11:04.07 (0.42)
UTK	CRTN	109.0	341	eP	:52.69 (1.18)	eS	:06.48 (1.69)
UTK	ANTN	189.6	302	eP	:11:03.72 (-0.57)	eS	:27.62 (0.75)
UTK	GOGA	206.1	180	eP	:05.31 (-1.57)	eS	:32.13 (0.78)
UTK	ABTN	250.3	287	eP	:14.56 (0.98)	eS	:42.39 (-0.32)

*****1998 JULY 03; 13:06- 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	980703	130649.5	35.565	85.100	12.1	11	68	123	0.2	D	C/D	0.6	3	0.4	23.4	D	1.6			

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	ANTN	68.4	350	eP	13:06:59.94	(-0.79)	eS	13:07:09.03	(0.03)
UTK	PDTN	75.3	245	eP	:07:02.17	(0.36)	eS	:10.92	(0.06)
UTK	ORT	81.5	62	eP	:03.57	(0.79)	eS	:13.18	(0.64)
UTK	ABTN	98.0	292	eP	:05.79	(0.41)	eS	:16.92	(-0.11)
UTK	MYNC						eS	:18.62	(-0.03)
UTK	TKL						iS	:23.05	(-0.15)
UTK	EGT						eS	:35.48	(-0.53)

*****1998 JULY 04; 11:24- 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	980704	1124	18.7	35.533	84.532	10.0	14	47	113	0.2	C	B/C	0.4	13	0.2	1.8	B		1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	ORT	46.5	26	eP	11:24:26.38	(-0.06)	eS	11:24:32.26	(0.07)
UTK	MYNC	62.8	144	eP	:29.47	(0.44)	iS	:36.55	(-0.10)
UTK	TKL	70.1	78	eP	30.75	(0.59)	iS	:38.58	(-0.03)
UTK	ANTN	94.9	318	eP	33.83	(-0.27)	eS	:45.04	(-0.37)
UTK	CRTN	96.8	40	eP	34.47	(0.09)	eS	:46.40	(0.49)
UTK	PDTN	123.1	257	eP	:38.47	(-0.06)	eS	:53.24	(0.16)
UTK	ABTN	148.0	286	eP	:42.45	(0.00)	eS	:59.87	(0.00)

*****1998 JULY 12; 22:06- 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	980712	2206	41.7	35.163	85.795	5.0	7	13	276	0.1	D	C/D	1.6	34	0.9	1.0	B		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	PDTN	13.2	338	eP	22:06:43.97	(-0.11)	iS	22:06:45.84	(0.02)
UTK	ABTN	85.1	341	eP	:55.49	(-0.15)	eS	:07:05.97	(0.04)
UTK	ANTN	123.0	24	eP	:07:01.88	(0.15)	eS	:16.24	(-0.20)
UTK	MYNC	152.3	93	eP	:16.20	(9.86X)	eS	:25.70	(1.28X)
UTK	ORT	158.5	58	eP	:20.46	(13.15X)	eS	:28.89	(2.79X)
UTK	TKL	191.6	73	eP	:15.58	(3.05X)	eS	:25.15	(-9.98X)
UTK	WVT	213.3	301				eS	:40.95	(0.04)

*****1998 JULY 19; 15:02 - 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	980719	1502	46.6	32.995	80.231	11.7	15	3	92	0.0	B		0.8	360	0.8	1.7			1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
USC	SVS	3.4	209	iPu	15:02:49.07	(-0.01)	iSu	15:02:50.30	(0.03)
USC	RGR	10.3	161	iPu	:49.66	(0.00)	iSu	:51.28	(0.09)
USC	HBF	10.9	241	iPu	:49.72	(0.01)	iSu	:51.43	(0.25)
USC	MGS	13.6	142	iPu	:50.15	(0.04)	iSu	:51.96	(-0.13)
USC	CSB	15.0	94	iPd	:50.21	(0.16)			
USC	WAS	16.9	193	iPu	:50.54	(-0.03)	iSd	:52.93	(-0.29)
USC	TWB	17.9	42	iPd	:50.70	(-0.01)	iSu	:52.91	(0.13)
USC	SGS	34.0	310	iPu	:53.19	(-0.13)	iSd	:57.45	(-0.43)

*****1998 JULY 23; 20:29- 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	980723	2029	14.2	35.141	88.003	6.9	20	24	121	0.4	C	C/C	0.3	30	0.3	1.3	A		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	PWD	23.9	245	ePc	20:29:18.14	(-0.16)	iS	20:29:21.15	(-0.17)

UTK	WVT	110.8	8	eP+	:33.20	(1.01)	iS	:45.40	(-0.01)
UTK	MSAL	125.7	105	iP-	:34.87	(0.32)	iS	:49.22	(-0.26)
UTK	OXF	146.4	242	eP	:37.65	(-0.14)	iS	:55.33	(0.23)
UTK	SHAL	150.4	121	eP	:39.14	(0.69)	eS	:56.60	(0.37)
UTK	MOTN	163.9	1	eP	:39.84	(-0.72)	eS	:59.60	(-0.29)
UTK	ABTN	190.6	64	eP	:44.51	(-0.28)	eS	:30:06.91	(-0.30)
UTK	PDTN	196.6	85	iP+	:45.86	(0.12)	eS	:08.63	(-0.22)
UTK	ANTN	275.8	65	eP	:57.33	(0.67)	eS	:25.93	(-1.61)
UTK	TKL	388.4	80	iPu	:30:09.13	(-1.39)	eS	:51.55	(0.04)

*****1998 JULY 23; 23:11- 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	980723	231141.9	34.857	84.947	7.0	22	79	114	0.3	C	B/D	0.3	355	0.2	1.2	A		2.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	MYNC	78.6	72	iP	23:11:55.05	(0.35)	iS	23:12:04.15	(-0.06)
UTK	PDTN	94.4	300	iPd	:57.16	(-0.07)	iS	:07.95	(-0.65)
UTK	ORT	130.6	26	iPu	:12:02.90	(-0.06)	eS	:18.53	(0.07)
UTK	TKL	138.9	50	eP	:04.20	(-0.08)	iS	:20.70	(-0.04)
UTK	ANTN	148.2	350	eP-	:05.44	(-0.31)	eS	:23.31	(0.02)
UTK	ABTN	155.5	318	ePu	:06.78	(-0.12)	iS	:26.00	(0.73)
UTK	SHAL	158.8	253	eP	:07.31	(-0.11)	iS	:26.29	(0.12)
UTK	CRTN	179.7	34	eP+	:10.42	(-0.29)	eS	:32.37	(0.50)
UTK	EGT	189.4	52	eP	:11.95	(-0.33)	eS	:35.14	(0.56)
UTK	GOGA	210.6	139	iPd	:15.81	(0.24)	eS	:40.08	(-0.06)
UTK	MOTN	337.4	306	eP	:31.33	(-0.51)	eS	:13:08.04	(-0.17)

*****1998 JULY 24; 13:56- 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	980724	135626.6	37.245	87.219	9.7	17	98	170	0.7	D	D/D	0.5	305	0.3	1.6	B		2.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	MOTN	97.5	225	eP+	13:56:42.07	(-0.38)	eS	13:56:53.64	(-0.41)
UTK	WCI	131.2	35	eP	:47.69	(-0.07)	iS	:57:03.71	(0.46)
UTK	WVT						eS	:06.13	(1.80)
UTK	ABTN	180.6	146	iPd	:55.25	(-0.31)	eS	:17.42	(0.68)
UTK	ANTN	213.8	123	iP-	:57:00.42	(-0.36)	eS	:25.73	(0.15)
UTK	PDTN	251.0	150	eP-	:04.30	(-1.41)	eS	:34.47	(0.36)
UTK	MSAL	270.5	169	eP	:06.65	(-1.47)			
UTK	ORT	299.9	119	eP	:11.37	(-0.38)	eS	:44.01	(-0.56)
UTK	CRTN	323.3	110	eP	:13.33	(-1.32)	eS	:48.51	(-1.06)
UTK	TKL						eS	:55.63	(-0.78)

*****1998 JULY 30; 10:28- 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	980730	102834.7	34.658	86.161	0.0	16	48	120	0.4	C	C/C	0.6	314	0.4	1.5	B		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	SHAL	47.6	238	iP+	10:28:42.40	(-0.15)	iS	10:28:48.41	(0.04)
UTK	PDTN	73.9	23	iPd	:46.74	(-0.16)	eS	:56.15	(0.21)
UTK	ABTN	136.2	2	eP	:57.27	(0.28)	eS	:29:13.15	(-0.26)
UTK	ANTN	187.9	26	eP	:29:04.48	(-0.68)	iS	:27.74	(0.20)
UTK	MYNC	191.6	76	eP	:05.78	(0.05)	eS	:28.93	(0.40)
UTK	WVT	222.8	318	eP	:09.70	(-0.94)	eS	:38.28	(1.33)
UTK	TKL						eS	:42.30	(-0.21)
UTK	CRTN	271.4	50	iP-	:17.47	(0.15)	eS	:48.59	(0.24)
UTK	GOGA						eS	:49.51	(-1.62)

*******1998 AUGUST 08; 06:54- 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	980808	065434.1	35.784	84.219	5.2	13	16	76	0.4	C	C/C	0.4	3	0.3	1.2	A		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	ORT	15.9	331	iPu	06:54:36.82	(-0.08)	eS	06:54:39.37	(0.41)
UTK	TKL						iS	:46.68	(0.21)
UTK	CRTN	57.4	36	eP	:43.59	(0.01)	eS	:50.15	(-0.43)
UTK	MYNC	79.3	174	eP	:47.28	(0.19)	iS	:56.36	(-0.33)
UTK	EGT	84.2	81	eP	:48.13	(0.23)	eS	:58.58	(0.47)
UTK	ANTN	100.9	296	eP	:49.93	(-0.63)			
UTK	PDTN						iS	:55:20.65	(2.24)
UTK	ABTN	171.1	274	iPu	:55:01.58	(-0.09)	iS	:22.59	(0.70)

*******1998 AUGUST 08; 07:53- 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	980808	075352.3	35.783	84.215	4.9	16	16	75	0.5	C	C/C	0.3	33	0.2	0.8	A		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	ORT	16.2	330	iPu	07:53:54.86	(-0.27)	eS	07:53:57.19	(-0.03)
UTK	TKL	42.3	109	iPd	:54:00.22	(0.87)	iS	:54:04.74	(0.18)
UTK	CRTN	57.3	36	iP-	:01.91	(0.14)	eS	:08.36	(-0.42)
UTK	MYNC	79.0	174	iP-	:05.16	(-0.10)	iS	:14.35	(-0.49)
UTK	EGT	83.9	81	eP+	:05.84	(-0.22)	eS	:16.57	(0.33)
UTK	ANTN	101.3	296	iP-	:08.52	(-0.31)			
UTK	PDTN	158.6	250	eP	:18.01	(0.10)	eS	:38.60	(1.89)
UTK	ABTN	171.5	274	iPd	:19.67	(-0.27)	iS	:40.62	(0.40)
UTK	WVT						eS	:55:15.33	(-1.78)

*******1998 AUGUST 09; 01:03- 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	980809	010325.7	35.111	84.517	0.4	14	36	182	0.2	D	C/D	1.7	350	0.5	6.1	D		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	MYNC	35.7	96	eP	01:03:32.01	(0.44)	iS	01:03:35.88	(-0.06)
UTK	ORT						eS	:51.52	(-0.23)
UTK	TKL	90.8	48	eP	:40.68	(0.01)	eS	:51.97	(0.19)
UTK	PDTN	122.7	279	eP	:46.26	(0.49)	eS	:04:00.39	(-0.26)
UTK	ANTN	134.3	331	eP	:47.62	(-0.03)	eS	:04.00	(0.14)
UTK	CRTN	135.5	27	eP	:47.63	(-0.21)	eS	:03.08	(-1.09)
UTK	EGT						eS	:06.72	(0.96)
UTK	ABTN	168.1	301	eP	:53.03	(0.06)	eS	:13.06	(0.02)

*******1998 AUGUST 12; 02:04- 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	980812	020429.9	35.495	84.975	2.1	20	76	83	0.2	C	B/D	0.3	359	0.2	1.7	B		2.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	ORT	76.1	53	eP	02:04:42.57	(0.04)	eS	02:04:52.24	(0.39)
UTK	ANTN	78.6	343	iPd	:42.84	(-0.10)	eS	:52.55	(-0.00)
UTK	PDTN	83.2	253	eP-	:43.48	(-0.19)	iS	:53:95	(0.13)
UTK	MYNC	90.1	121	iPu	:45.04	(0.25)	eS	:55.66	(-0.11)
UTK	TKL	110.4	80	eP-	:47.85	(-0.17)	eS	:05:01.15	(-0.25)

UTK	ABTN	111.4	293	iPd	:48.24	(0.05)	eS	:01.67	(-0.03)
UTK	CRTN	128.9	52	eP-	:50.72	(-0.28)	eS	:06.00	(-0.50)
UTK	EGT	158.3	73	eP	:55.03	(-0.64)	eS	:15.28	(0.69)
UTK	SHAL						eS	:22.08	(-0.98)
UTK	WVT						eS	:43.40	(1.09)
UTK	GOGA	269.5	149	iP	:05:11.78	(-0.30)	eS	:42.78	(0.03)

*****1998 AUGUST 17; 07:47- 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	980817	074714.0	35.628	87.914	29.8	7	56	140	0.4	D	C/D	3.3	12	0.5	5.1	C		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	WVT	56.2	8	iP	07:47:24.50 (0.46)	iS	07:47:31.25 (-0.13)
UTK	ABTN	165.7	80	eP	:39.60 (-0.82)	iS	:59.87 (0.25)
UTK	SHAL					eS	:48:02.93 (0.16)
UTK	OXF	184.2	228	eP	:41.65 (-1.24)	eS	:04.25 (0.35)

*****1998 AUGUST 28; 21:50 - 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	980828	215007.0	32.984	80.161	7.3	8	8	254	0.0	C		0.9	360	0.9	1.1			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	SVS	8.3	258	iPu	21:50:09.39 (-0.01)	iSn	21:50:10.49 (0.00)
USC	RGR	9.0	200	iPd	:09.50 (0.04)	iSn	:10.50 (-0.02)
USC	HBF	16.5	256	iPu	:10.57 (-0.04)	iSn	:12.48 (0.03)
USC	SGS	39.9	306	iPd	:14.92 (0.14)	iSn	:20.37 (0.20)

*****1998 AUGUST 29; 03:47- 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	980829	034716.5	34.996	86.262	6.2	10	41	122	0.1	C	C/C	1.1	327	0.3	3.6	C		1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	MSAL	41.1	246	iPd	03:47:23.35 (0.08)	eS	03:47:28.20 (-0.12)
UTK	PDTN	48.6	51	iPu	:24.48 (0.00)	iS	:30.40 (-0.02)
UTK	SHAL	69.8	207	eP	:28.03 (0.16)	eS	:36.70 (0.37)
UTK	ABTN	99.7	8	eP	:33.05 (0.38)	eS	:44.69 (0.02)
UTK	ANTN					eS	:48:01.72 (0.45)
UTK	MYNC					eS	:10.45 (-0.22)

*****1998 SEPTEMBER 01; 09:15- 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	980901	091538.9	34.801	85.044	0.0	21	89	118	0.3	D	C/D	0.5	352	0.2	1.2	A		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	MYNC	89.1	70	eP	09:15:53.94 (0.29)	iS	09:16:04.24 (-0.30)
UTK	PDTN	90.3	306	ePd	:53.94 (0.09)	eS	:05.04 (0.15)
UTK	ORT	140.2	28	ePu	:16:01.91 (0.05)	iS	:19.03 (0.29)
UTK	SHAL	148.5	254	eP	:03.45 (0.27)	eS	:20.86 (-0.16)
UTK	TKL	149.7	50	eP+	:03.48 (0.11)	iS	:21.33 (-0.02)
UTK	ANTN	153.1	354	eP-	:04.22 (0.32)	eS	:21.54 (-0.74)
UTK	ABTN	154.5	322	eP	:04.08 (-0.03)	iS	:22.64 (0.01)
UTK	CRTN	189.8	35	eP	:10.20 (0.51)	eS	:33.45 (1.16)
UTK	EGT	200.2	52	eP	:10.81 (-0.56)	eS	:36.43 (1.23)
UTK	GOGA	212.0	136	eP+	:13.12 (-0.06)	eS	:37.84 (-0.48)

UTK	WVT	292.7	301	eP	:25.05 (0.90)

*******1998 SEPTEMBER 01; 09:32- 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	980901	093232.0	36.728	83.633	9.3	13	62	274	0.3	D	C/D	1.9	230	1.1	2.9	C		1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	CRTN	61.5	198	eP	09:32:42.22 (0.14)	iS	09:32:49.61 (0.03)
UTK	EGT	96.5	162	eP	:47.71 (0.05)	eS	:59.82 (0.62)
UTK	ORT	109.0	214	eP	:49.15 (-0.44)	eS	:33:03.21 (0.67)
UTK	TKL	119.4	186	eP	:53.13 (1.91X)	iS	:05.28 (-0.09)
UTK	ANTN	156.0	247	eP	:56.01 (-1.01)	eS	:15.32 (-0.08)
UTK	MYNC	188.9	194	eP	:33:03.42 (1.22)	eS	:24.14 (-0.20)
UTK	ABTN	241.2	248	eP	:09.44 (-0.42)	eS	:37.91 (0.49)

*******1998 SEPTEMBER 03; 07:33- 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	980903	073306.3	35.012	87.450	1.6	20	73	124	0.4	D	C/D	0.5	16	0.3	1.3	A		2.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	MSAL	73.2	104	eP	07:33:18.69 (0.30)	iS	07:33:27.19 (-0.17)
UTK	SHAL	100.8	129	eP+	:23.08 (0.24)	eS	:35.19 (0.09)
UTK	PDTN	148.7	78	iPu	:30.31 (-0.17)	iS	:48.28 (0.01)
UTK	ABTN	155.6	51	eP	:31.42 (-0.15)	eS	:49.08 (-1.08)
UTK	MOTN	184.7	345	eP	:36.37 (0.21)	iS	: 58.33 (0.24)
UTK	OXF	187.7	253	iP	:37.02 (0.39)	eS	:57.82 (-1.08)
UTK	ANTN	238.7	57	eP	:43.84 (-0.83)	iS	:34:13.32 (0.70)
UTK	ORT	302.4	70	eP	:52.99 (0.44)	eS	:27.76 (1.54X)
UTK	MYNC	303.2	88	eP	:52.71 (0.05)		
UTK	TKL	341.8	77	eP	:58.50 (1.10)		
UTK	CRTN	352.6	67	eP	:58.36 (-0.39)	eS	:38.47 (1.51)
UTK	GOGA					eS	:48.34 (-0.31)

*******1998 SEPTEMBER 05; 07:16- 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	980905	071634.6	34.865	85.195	4.4	24	75	115	0.3	C	B/D	0.4	351	0.2	1.8	B		2.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	PDTN	75.0	307	eP+	07:16:46.97 (0.08)	iS	07:16:55.86 (-0.13)
UTK	MSAL	135.2	270	eP	:56.25 (-0.26)	eS	:17:12.58 (-0.05)
UTK	SHAL	137.6	250	iPd	:56.98 (0.09)	eS	:13.94 (0.66)
UTK	ABTN	140.4	324	eP	:57.30 (-0.03)	eS	:14.51 (0.45)
UTK	ORT	141.3	35	eP	:57.82 (0.35)	eS	:14.98 (0.68)
UTK	ANTN	145.0	359	iP-	:57.99 (-0.08)	eS	:15.17 (-0.16)
UTK	TKL	156.4	55	iP	:59.90 (0.05)	eS	:18.40 (-0.01)
UTK	CRTN	192.4	39	ePu	:17:05.28 (-0.26)	eS	:27.85 (-0.40)
UTK	EGT	207.1	56	eP	:08.16 (0.27)	eS	:31.31 (-1.01)
UTK	GOGA	226.7	135	eP	:11.14 (0.21)	eS	:36.79 (-0.59)
UTK	MOTN	318.8	308	eP	:21.50 (-1.03)	eS	:58.07 (0.64)
UTK	SLTN					eS	:59.79 (-0.02)
UTK	OXF					eS	:18:11.24 (-0.98)

*******1998 SEPTEMBER 06; 05:08- 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	980906	050823.9	36.747	83.593	0.7	14	65	216	0.3	C	B/D	0.7	346	0.6	1.2	A		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	CRTN	64.6	200	iPd	05:08:34.49	(-0.07)	eS	05:08:42.70	(0.23)
UTK	EGT	97.5	164	eP	:39.61	(-0.37)			
UTK	ORT	112.8	215	iP	:42.32	(-0.07)	eS	:56.51	(0.41)
UTK	TKL	121.9	188	eP	:44.40	(0.54)	iS	:58.42	(-0.21)
UTK	SLTN						eS	:09:02.80	(0.24)
UTK	ANTN	160.1	247	eP	:49.62	(-0.32)	eS	:10.21	(1.12)
UTK	ABTN	245.3	248	eP	:09:03.07	(-0.14)	eS	:32.73	(0.90)
UTK	PDTN	216.0	232	eP	:05.01	(-0.12)	eS	:35.63	(0.47)

*******1998 SEPTEMBER 11; 03:52 - 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	980911	035257.4	33.094	80.156	9.9	18	5	151	0.0	C		0.8	360	0.8	0.8			2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
USC	TWB	5.4	65	iPd	03:52:59.83	(-0.02)	iSd	03:53:00.88	(0.30)
USC	CSU	14.4	146	iPd	:53:00.87	(0.15)	iSd	:03.41	(-0.28)
USC	CSB	14.4	146	iPd	:00.86	(0.15)	iSd	:03.22	(-0.42)
USC	SVS	16.4	212	iPu	:01.23	(0.01)	iSd	:03.40	(-0.02)
USC	RGR	21.0	190	iPu	:01.90	(-0.01)	iSd	:04.38	(-0.17)
USC	DRC	21.7	274	iPd	:02.25	(-0.02)	iSd	:05.30	(-0.14)
USC	MGS	21.8	176	iPd	:02.10	(0.02)	iSd	:04.75	(-0.19)
USC	HBF	23.2	225	iPd	:02.26	(0.02)	iSd	:05.08	(0.05)
USC	WAS	29.5	202	iPu	:03.27	(-0.02)	iSd	:07.54	(0.12)

*******1998 SEPTEMBER 11; 06:52 - 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	980911	065236.8	32.943	80.164	6.9	14	5	96	0.1	B		0.5	360	0.5	0.7			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
USC	RGR	4.9	216	ePd	06:52:38.65	(0.00)	iSd	06:52:39.28	(0.02)
USC	MGS	5.5	157	iPd	:38.74	(0.00)	iSu	:39.50	(-0.03)
USC	SVS	8.4	289	iPd	:39.04	(-0.07)	iSd	:40.15	(-0.03)
USC	CSU	9.9	61	iPd	:39.19	(0.07)	iSd	:41.30	(-0.08)
USC	WAS	14.7	223	iPd	:40.17	(0.06)	iSu	:42.09	(-0.19)
USC	HBF	15.8	272	iPd	:40.15	(-0.07)	iSd	:42.07	(0.12)
USC	TWB	19.8	17	iPd	:40.80	(-0.16)	iSd	:43.02	(-0.07)

*******1998 SEPTEMBER 12; 04:29 - 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	980912	042953.6	32.950	80.213	11.0	18	4	72	0.1	B		0.8	360	0.8	1.4			1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
USC	SVS	3.9	302	iPu	04:29:56.03	(-0.03)	iSd	04:29:57.35	(0.16)
USC	RGR	5.0	159	iPu	:56.13	(0.01)	iSd	:57.55	(0.36)
USC	MGS	8.9	131	iPd	:56.49	(-0.03)	iSd	:57.95	(-0.05)
USC	HBF	11.2	269	iPd	:56.73	(0.01)	iSd	:58.48	(0.30)
USC	WAS	12.7	206	iPd	:56.98	(-0.02)	iSd	:58.99	(-0.17)
USC	CSB	13.9	73	iPu	:56.92	(0.02)	iSd	:59.34	(-0.51)
USC	CSU	13.9	73	iPu	:56.97	(0.05)	iSu	:59.63	(-0.28)
USC	TWB	21.0	29	iPu	:57.99	(-0.20)	iSd	:30:00.67	(0.09)
USC	DRC	23.9	317	iPd	:58.67	(-0.16)	iSn	:02.49	(0.21)

*******1998 SEPTEMBER 13; 07:23- 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	980913	072321	.7	33.298	87.649	16.1	20	159	223	0.5	D	D/D	1.2	359	0.5	1.4	B		2.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	SHAL	158.9	37	eP-	07:23:47.27	(0.15)	eS	07:24:05.59	(-0.04)
UTK	OXF	211.3	310	ePd	:55.04	(-0.10)	iS	:19.46	(0.04)
UTK	PDTN	274.7	37	eP	:24:02.37	(-0.66)	eS	:32.26	(-0.85)
UTK	ABTN	320.0	26	eP	:08.48	(-0.13)	iS	:43.75	(0.99)
UTK	MOTN	369.7	355	eP	:14.78	(0.06)			
UTK	MYNC	379.7	58	eP	:16.46	(0.46)	eS	:56.08	(0.54)
UTK	ANTN	388.2	34	eP	:16.49	(-0.56)	eS	:56.80	(-0.56)
UTK	GOGA	389.5	87	iPu	:18.04	(0.88)			
UTK	ORT	421.9	46	eP	:20.76	(-0.42)	eS	:25:04.61	(0.10)
UTK	TKL	441.9	53	iP	:22.83	(-0.81)	eS	:06.83	(-1.93)
UTK	EGT	492.6	53	eP	:29.36	(-0.62)	eS	:18.23	(-1.50)

*****1998 SEPTEMBER 13; 11:22- 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	980913	112243	.2	35.227	84.298	8.3	13	23	114	0.3	C	C/C	0.7	311	0.3	2.2	B		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	MYNC	23.0	138	iP	11:22:47.33	(0.11)	eS	11:22:50.28	(0.07)
UTK	TKL	67.5	45	eP	:54.20	(-0.05)	iS	:23:02.13	(-0.32)
UTK	ORT						iS	:05.37	(0.62)
UTK	CRTN	115.6	21	eP+	:23:02.16	(0.26)	eS	:15.86	(0.22)
UTK	ANTN	134.6	321	eP	:04.37	(-0.53)			
UTK	PDTN						eS	:21.60	(-1.03)
UTK	ABTN	179.7	295	ePu	:12.01	(0.01)	iS	:33.49	(0.37)
UTK	GOGA	215.5	159	eP	:17.94	(0.33)	eS	:42.46	(-0.18)

*****1998 SEPTEMBER 13; 15:47- 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	980913	154708	.5	36.120	83.679	7.3	17	17	134	0.2	C	B/C	0.4	37	0.3	0.9	A		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	CRTN	17.0	301	iPu	15:47:11.54	(-0.05)	iS	15:47:13.82	(-0.05)
UTK	EGT	42.1	125	eP+	:15.72	(0.15)			
UTK	TKL	52.0	190	ePd	:17.08	(-0.04)	iS	:23.58	(0.11)
UTK	ORT	61.1	248	iPu	:18.56	(-0.01)	iS	:26.18	(0.19)
UTK	MYNC	123.0	199	eP	:28.21	(-0.23)	eS	:42.58	(-0.49)
UTK	ANTN	139.8	273	eP	:30.66	(-0.43)	iS	:47.68	(0.02)
UTK	SLTN	144.5	75	eP	:31.73	(-0.14)	eS	:49.16	(0.15)
UTK	PDTN	217.8	245	eP	:43.17	(-0.19)	eS	:48:09.76	(1.07)
UTK	ABTN	220.6	264	eP	:43.69	(-0.11)	iS	:09.85	(0.40)

*****1998 SEPTEMBER 13; 18:11- 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	980913	181104	.4	36.387	83.555	7.6	12	33	190	0.3	C	B/D	1.1	326	0.7	1.7	B		1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	CRTN	33.0	231	iPd	18:11:10.00	(-0.00)	iS	18:11:14.06	(-0.06)
UTK	TKL	83.2	194	eP	:18.65	(0.62)	eS	:28.25	(0.17)
UTK	ORT	85.7	232	eP	:18.37	(-0.07)	eS	:28.81	(0.03)
UTK	SLTN	128.8	87	eP	:26.60	(1.30)	eS	:39.16	(-1.46)
UTK	MYNC	154.6	200	eP	:29.61	(0.29)	eS	:47.31	(-0.27)

UTK	ABTN	236.5	257	eP	:42.96	(1.02)	eS	:12:09.74	(0.54)

*****1998 SEPTEMBER 20; 03:24- 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	980920	0324	24.0	35.331	82.509	0.0	15	95	187	0.4	D	C/D	1.4	317	0.6	2.7	B		1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	EGT	95.4	312	eP	03:24:39.70	(-0.05)			
UTK	TKL	120.4	288	eP	:43.47	(-0.25)	eS	03:24:57.78	(-0.57)
UTK	SLTN	128.3	16	eP	:44.83	(-0.19)	eS	:25:00.56	(-0.04)
UTK	MYNC	150.2	259	eP	:49.48	(1.01)	eS	:06.63	(0.12)
UTK	CRTN	154.2	309	iP-	:49.45	(0.34)	eS	:07.24	(-0.37)
UTK	ORT	174.9	292	eP	:53.18	(0.82)	eS	:13.69	(0.45)
UTK	GOGA						eS	:26.89	(-1.36)
UTK	ANTN	263.3	292	eP	:25:06.21	(0.61)	eS	:38.20	(2.29)
UTK	ABTN						eS	:48.23	(-2.28)

*****1998 SEPTEMBER 22; 18:44- 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	980922	1844	44.5	35.265	84.662	10.6	12	53	157	0.3	D	C/D	1.2	344	0.4	99.0	D		1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	MYNC	53.1	113	eP	18:44:53.96	(0.69)	iS	18:44:59.63	(-0.13)
UTK	ORT	78.5	24	eP	:57.41	(0.15)	eS	:45:06.37	(-0.31)
UTK	TKL	91.7	61	iP-	:59.47	(0.13)	iS	:10.18	(-0.09)
UTK	PDTN	108.0	271	eP	:02.08	(0.17)	iS	:14.46	(-0.26)
UTK	ANTN	113.0	333	eP	:02.80	(0.08)	eS	:15.89	(-0.23)
UTK	ABTN	148.1	298	eP-	:08.25	(0.01)	eS	:26.30	(0.63)

*****1998 SEPTEMBER 27; 18:58 - 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	980927	1858	55.0	32.929	80.207	8.0	8	3	193	0.0	C		1.0	360	1.0	0.8			0.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	RGR	2.6	152	iPu	18:58:56.91	(0.03)	iSd	08:58:58.37	(-0.02)
USC	SVS	5.9	319	iPu	:57.17	(-0.01)	iSd	:58.12	(0.01)
USC	WAS	10.9	214	iPd	:57.87	(0.01)	iSd	:59.61	(-0.02)
USC	HBF	11.9	280	iPu	:57.92	(-0.02)	iSu	:59.45	(0.19)

*****1998 SEPTEMBER 27; 18:58 - 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	980927	1858	59.8	32.919	80.207	8.8	8	2	171	0.1	C		1.3	360	1.3	2.2			0.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	RGR	1.7	136	iPu	18:59:01.77	(0.06)	iSu	18:59:03.25	(-0.04)
USC	SVS	6.7	325	iPu	:02.04	(-0.08)	iSd	:02.99	(-0.21)
USC	WAS	10.0	217	iPd	:02.49	(-0.06)	iSu	:04.26	(-0.01)
USC	HBF	12.2	285	iPu	:02.86	(0.08)	iSu	:04.34	(0.16)

*****1998 OCTOBER 02; 10:01 – KANAWA COUNTY, WEST 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	981002	1001	06.5	38.116	81.554	0.1	14	291	247	0.7	D	D/D	7.6	1	1.0	7.2	D		2.5		

VTSO 981002 100106.9 38.068 81.466 0.1 18 108 257 0.8 D D/D 5.9 287 13.3 17.8 D 2.6

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	EGT	290.7	213		10:01:54.78 (3.20X)	eS	10:02:26.26 (1.86)
UTK	CRTN	294.0	224	eP	:51.68 (-0.25)	eS	:24.88 (-0.12)
UTK	CEH	330.0	138	eP	:56.79 (0.47)	eS	:32.39 (-0.21)
UTK	TKL	337.0	217	eP	:57.13 (-0.07)	iS	:33.38 (-0.74)
UTK	ANTN	391.5	238	eP	:02:03.80 (-0.16)	eS	:48.18 (2.38)
UTK	MYNC					eS	:51.33 (1.89)
UTK	ABTN	474.9	240	eP	:14.68 (0.46)	eS	:03:04.06 (0.50)
UTK	WVT	599.5	250	eP	:31.20 (1.64)	eS	:32.28 (2.18)
VTSO	ELN	107.7	144	iPd	10:01:25.50 (0.00)	eS	10:01:38.00 (-0.30)
VTSO	WMV	115.1	158	iPd	:26.80 (0.05)	eS	:40.50 (0.07)
VTSO	BLA	132.5	136	iP	:29.40 (0.00)	eS	:44.75 (-0.28)
VTSO	EGT	290.5	215	eP	:54.70 (2.02)	eS	:02:26.26 (1.45)
VTSO	CRTN	295.8	226	eP	:51.60 (-1.64)	eS	:24.88 (-0.90)
VTSO	CEH	320.9	138	eP	:56.70 (0.43)	eS	:32.39 (1.43)
VTSO	TKL	337.4	218	eP	:57.10 (-1.21)	eS	:33.38 (-1.07)
VTSO	ORT	348.1	227	eP	:02:02.99 (3.36X)	eS	:39.99 (63.29X)
VTSO	ANTN	395.2	239	eP	:03.80 (-1.61)	eS	:48.18 (1.58)
VTSO	MYNC	408.7	216	eP	:06.52 (-0.54)	eS	:51.33 (1.92)
VTSO	ABTN	479.0	241	eP	:14.70 (-0.92X)	eS	:03:04.10 (0.04X)

*****1998 OCTOBER 16; 23:42- 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 981016 234235.7 33.567 85.979 0.2 23 112 196 0.5 D C/D 1.1 33 0.5 1.3 A 2.3

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	SHAL	111.9	329	eP	23:42:54.56 (0.43)	eS	23:43:07.46 (-0.28)
UTK	PDTN	189.6	4	iPd	:43:06.16 (-0.29)	iS	:28.86 (-0.15)
UTK	GOGA	234.1	94	eP	:12.47 (-0.99)	eS	:40.74 (-0.22)
UTK	MYNC	238.6	45	eP	:14.85 (0.66)	eS	:42.50 (0.31)
UTK	ABTN	257.4	357	eP-	:16.15 (-0.45)	eS	:45.96 (-0.39)
UTK	ANTN	296.9	13	iP	:21.48 (-0.02)	eS	:55.31 (0.49)
UTK	ORT	301.7	30	eP	:25.66 (3.60X)	eS	:56.65 (0.86)
UTK	TKL	307.7	40	eP	:25.15 (2.35)	eS	:57.95 (0.88)
UTK	WVT	330.9	330	eP	:26.45 (0.81)	eS	:44:03.95 (1.97)
UTK	OXF					eS	:01.85 (-0.70)
UTK	CRTN	351.4	33	eP	:29.12 (0.92)	eS	:06.89 (0.47)
UTK	EGT	356.8	43	eP	:30.02 (1.09)	eS	:08.90 (1.22)
UTK	MOTN					eS	:15.50 (2.02)

*****1998 OCTOBER 19; 10:46- 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 981019 104621.5 36.303 83.673 19.9 13 56 238 0.2 C B/D 0.6 44 0.5 1.0 A 2.1

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
UTK	EGT	55.9	143	iP+	10:46:31.11 (0.01)	eS	10:46:38.88 (0.74)
UTK	ORT	71.7	233	ePd	:33.42 (-0.03)	eS	:42.84 (0.63)
UTK	TKL	72.1	187	iPu	:33.40 (-0.11)	iS	:42.22 (-0.09)
UTK	ANTN	140.9	265	iPd	:44.05 (-0.03)	eS	:59.92 (-0.57)
UTK	MYNC	142.4	197	eP	:44.63 (0.32)	iS	:47:00.85 (-0.04)
UTK	ABTN	224.2	259	eP	:56.23 (-0.05)	eS	:23.06 (1.52)
UTK	PDTN	227.5	241	eP	:57.33 (0.65)		

*****1998 OCTOBER 20; 16:30- 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	981020	163010.6		35.396	84.336	6.7	13	40	105	0.3	C	B/C	0.4	327	0.3	1.9	B	2.0			

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	MYNC	40.4	152	iP	16:30:17.54	(0.20)	eS	16:30:22.07	(-0.25)
UTK	ORT						eS	:26.83	(-0.12)
UTK	TKL	58.7	60	iP+	:20.30	(0.04)	iS	:27.40	(-0.00)
UTK	EGT	109.5	59	eP	:28.48	(0.06)	eS	:41.52	(-0.01)
UTK	ANTN	118.2	317	eP	:28.50	(-1.27)			
UTK	PDTN	138.2	265	eP	:33.40	(0.48)	eS	:49.04	(-0.27)
UTK	ABTN	169.5	289	iPc	:37.97	(0.11)	iS	:58.21	(0.37)

*****1998 OCTOBER 21; 05:55 - FARMVILLE, VIRGINIA*****

NEIC Felt in parts of Amelia, Appomattox, Buckingham, Charlotte, Chesterfield, Cumberland, Goochland, Nottoway, Powhatan and Prince Edward Counties. Also felt at Richmond.

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
DGS	981021	055532.4	35.999	78.004	9.4	6	459		1.0									3.2		
VTSO	981021	055646.9	37.422	78.439	12.6	9	177	142	0.9	D	D/D	8.6	312	5.9	20.2	D	3.8	3.4		F
NEIC	981021	055647.2	37.381	78.367	13.4	14	178										3.8	3.3		F

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
DGS	NED	458.6	26	ePd	05:57:34.94		S	05:58:25.18	
DGS	BWD	472.8	26	ePd	:39.81		S	:29.22	
DGS	BVD	473.9	27	ePd	:36.85		S	:27.99	
VTSO	BLA	177.2	263	iPd	05:57:13.46	(-1.03)	S	05:57:33.99	(-0.52)
VTSO	CEH	179.6	199	eP	:14.24	(-0.50)	eS	:36.11	(1.18)
VTSO	MCWV	276.9	334	eP	:27.83	(1.19)	eS	:55.88	(0.35)
VTSO	GWDE	292.4	57	ePn	:29.43	(0.93)	eS	:57.74	(-1.01)
VTSO	MVL	338.9	32	ePn	:33.60	(-0.59)			
NEIC	CEH	177.9	202	ePn	05:57:14.08	(-1.0)	eS	05:57:37.04	(X)
NEIC	BLA	183.5	265	ePn	:14.24	(-1.7)	eS	:35.54	(X)
NEIC	MCWV	283.6	333	ePn	:28.62	(-0.3)	eS	:59.51	(X)
NEIC	GWDE	289.1	56	(Pn)	:30.15	(0.5)			
NEIC	SSPA	363.6	6	ePn	:37.65	(-1.4)	eS	:58:21.39	(X)
NEIC	LHS	390.3	215	ePn	:40.23	(-2.2)			
NEIC	ATPA	429.2	33	iP	:45.20	(-2.2)			
NEIC	JSC	432.6	218	(Pn)	:40.97	(-6.8)			
NEIC	GMTN	530.4	42	iP	:58:37.80	(37.4)			
NEIC	MYNC	577.1	245	ePn	:05.58	(-0.8)			
NEIC	GOGA	639.4	228	(Pn)	:12.59	(-1.6)			
NEIC	WVT	856.2	264	(Pn)	:35.96	(-5.6)			
NEIC	PWLA	911.8	256	(Pn)	:46.16	(-2.4)			
NEIC	OXF	1045.3	256	(Pn)	:59:00.48	(-4.7)			

*****1998 OCTOBER 22; 06:52- 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	981022	065240.4	34.627	86.095	0.0	14	51	127	0.3	C	B/D	0.6	318	0.3	1.8	B		1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	SHAL	51.3	245	eP	06:52:48.77	(-0.08)	eS	06:52:55.15	(0.02)
UTK	MSAL	58.3	295	eP	:50.37	(0.35)	iS	:56.89	(-0.27)
UTK	PDTN	75.2	17	iPu	:52.74	(-0.07)	eS	:53:01.96	(-0.04)
UTK	ABTN	139.7	359	eP	:53:03.05	(-0.18)	eS	:20.02	(-0.03)
UTK	MYNC						eS	:32.62	(-0.26)

UTK	ANTN					iS	:34.43 (1.03)
UTK	ORT	216.3	48	eP	:16.05 (0.73)		
UTK	TKL					eS	:47.00 (-0.33)
UTK	GOGA					eS	:55.45 (0.13)
UTK	MOTN	279.6	323	eP	:24.49 (0.50)		

*****1998 OCTOBER 27; 06:41 - WILMINGTON, DELAWARE*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
DGS	981027	064117.7	39.788	75.588	2.6	6	13		0.0									1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
DGS	BWD	1.4	65	iPd	06:41:18.13	S	06:42:18.59
DGS	BVD	8.3	102	iPu	:19.23	S	:20.39
DGS	NED	13.9	229	iPu	:20.19	S	:22.13

*****1998 OCTOBER 31; 01:12 - TENNESSEE*****

NEIC Felt in parts of Knox and Grainger Counties.

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	981031	011224.4	36.120	83.700	9.0	7	122											2.6		F

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
NEIC	MYNC	122.3	199	ePc	01:12:43.92 (-1.3)	eS	01:12:56.64 (X)
NEIC	GOGA	301.3	176	eP	:13:08.56 (-0.3)		
NEIC	JSC	302.5	132	(P)	:09.62 (0.7)		
NEIC	LHS	320.3	124	(P)	:12.55 (1.3)		
NEIC	WCI	328.0	316	(P)	:10.14 (-2.2)		
NEIC	PWLA	415.9	254	eP	:21.77 (-1.7)		
NEIC	CEH	415.9	92	(P)	:24.78 (1.2)		

Additional Data:

GIT	CDG	S	01:13:21.1
GIT	ATL	S	:50.0

*****1998 OCTOBER 31; 01:24 - 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	981031	012429.7	33.050	80.194	8.7	18	10	120	0.1	B		0.9	360	0.9	1.8			1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	SVS	10.3	210	iPd	01:24:32.50 (-0.01)	iSd	01:24:34.00 (0.06)
USC	TWB	11.1	50	iPd	:32.47 (-0.17)	iSd	:34.58 (0.78)
USC	CSB	13.5	121	iPu	:32.77 (0.03)	iSd	:35.02 (-0.47)
USC	CSU	13.5	121	iPu	:32.80 (0.04)	iSd	:35.17 (-0.37)
USC	RGR	15.8	180	ePu	:33.31 (0.03)	iSd	:35.37 (0.15)
USC	HBF	17.2	229	iPd	:33.50 (0.00)	iSd	:35.77 (0.27)
USC	MGS	17.5	164	iPd	:33.56 (-0.04)	iSn	:35.87 (0.00)
USC	DRC	19.3	290	iPd	:34.14 (0.05)	iSd	:36.62 (-0.28)
USC	WAS	23.6	198	iPd	:34.58 (-0.02)	iSd	:38.30 (0.32)

*****1998 NOVEMBER 05; 19:47 - 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	981105	194745.4	32.934	80.155	5.7	18	4	108	0.1	B		0.6	360	0.6	1.3			1.5		

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

USC	MGS	4.2	162	iPd	19:47:47.05	(-0.05)	iSd	19:47:47.48 (-0.17)
USC	RGR	4.7	231	iPd	:47.16	(0.04)	iSd	:47.94 (0.35)
USC	SVS	9.5	294	iPd	:47.79	(-0.03)	iSd	:49.04 (0.10)
USC	CSU	9.8	54	iPu	:47.71	(0.05)	iSu	:49.43 (-0.39)
USC	CSB	9.8	54	iPd	:47.64	(-0.01)	iSu	:49.37 (-0.40)
USC	WAS	14.6	228	iPd	:48.72	(0.04)	iSd	:50.60 (-0.18)
USC	HBF	16.7	275	iPd	:48.91	(-0.05)	iSd	:50.94 (0.18)
USC	TWB	20.6	14	iPd	:50.60	(0.91)	iSn	:51.84 (-0.04)
USC	DRC	29.1	311	iPd	:51.33	(-0.01)	iSu	:55.61 (0.25)

*****1998 NOVEMBER 11; 07:42 - 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	981111	074235.6	32.982	80.176	7.3	8	9	237	0.1	C		1.0	360	1.0	1.5			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
USC	RGR	8.5	192	iPu	07:42:37.89	(-0.08)	iSd	07:42:39.02	(0.04)
USC	CSU	9.8	88	iPd	:38.17	(0.18)	iSu	:40.17	(-0.09)
USC	MGS	9.9	161	iPu	:38.11	(-0.11)	iSd	:39.55	(0.05)
USC	WAS	17.5	211	ePu	:39.60	(0.18)	iSd	:42.08	(0.11)

*****1998 NOVEMBER 12; 11:03- 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	981112	110352.4	34.881	84.668	8.0	15	44	124	0.2	C	B/C	0.9	4	0.3	1.5	B		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	OLT	44.0	313	eP+	11:03:59.65	(-0.06)	eS	11:04:05.24	(0.11)
UTK	MYNC	53.8	66	iP	:04:01.38	(0.11)	iS	:07.63	(-0.22)
UTK	PDTN	116.2	292	eP	:11.58	(0.38)	iS	:24.77	(-0.24)
UTK	TKL	118.5	43	eP	:11.25	(-0.32)	eS	:25.78	(0.13)
UTK	EGT	168.2	47	eP	:19.70	(0.26)	eS	:39.25	(-0.02)
UTK	ABTN	171.9	311	iP	:20.20	(0.21)	eS	:40.81	(0.60)
UTK	MSAL						eS	:43.26	(-0.08)
UTK	GOGA	197.2	145	eP	:23.54	(-0.42)	eS	:47.52	(0.47)

*****1998 NOVEMBER 13; 02:14 - 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	981113	021459.1	32.988	80.224	12.5	16	3	88	0.1	A		0.4	360	0.4	0.6			2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
USC	SVS	3.2	226	iPu	02:15:01.62	(-0.11)	iSd	02:15:02.94	(-0.05)
USC	RGR	9.4	163	iPu	:02.12	(-0.07)	iSd	:03.81	(0.10)
USC	HBF	11.1	246	iPu	:02.36	(0.00)	iSd	:04.03	(0.11)
USC	MGS	12.7	142	iPd	:02.55	(-0.04)	iSu	:04.22	(-0.31)
USC	CSU	14.3	91	iPu	:02.76	(0.17)	iSu	:04.62	(-1.07)
USC	WAS	16.3	196	iPu	:03.05	(-0.03)	iSu	:05.30	(-0.43)
USC	TWB	18.0	39	iPd	:03.31	(-0.01)	iSd	:05.78	(0.33)
USC	DRC	20.3	311	iPu	:03.77	(-0.06)	iSd	:06.07	(-0.83)

*****1998 NOVEMBER 13; 22:28- 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	981113	222848.6	35.400	85.211	14.0	19	33	110	0.3	C	B/C	0.5	6	0.2	1.7	B		1.7		

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

UTK	OLT	32.5	148	iPu	22:28:54.40	(0.04)	iS	22:28:58.77	(0.16)
UTK	PDTN	59.7	257	eP	:58.53	(0.01)	iS	:29:05.81	(0.01)
UTK	ABTN	97.6	304	iPd	:29:04.51	(0.05)	iS	:16.05	(-0.04)
UTK	ORT	99.7	55	eP	:04.61	(-0.18)	eS	:16.44	(-0.22)
UTK	MYNC	105.0	110	eP	:05.55	(-0.09)	eS	:17.68	(-0.45)
UTK	TKL	133.4	77	eP	:09.60	(-0.51)	eS	:25.35	(-0.51)
UTK	MSAL	146.7	246	eP	:11.97	(-0.23)	iS	:29.46	(-0.02)
UTK	CRTN	152.4	54	eP	:13.12	(0.02)	eS	:32.66	(1.61)
UTK	EGT	181.9	72	eP	:17.79	(0.05)	eS	:38.98	(0.07)
UTK	GOGA	272.7	143	eP	:31.12	(1.19)			

*****1998 NOVEMBER 15; 18:48 - 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	981115	184806	4.0	33.047	80.154	9.1	17	9	105	0.1	B		0.5	360	0.5	1.1			2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
USC	TWB	8.9	32	iPd	18:48:08.87	(-0.16)	iSd	18:48:10.03	(0.06)
USC	CSU	10.3	131	iPd	:09.09	(0.10)	iSd	:11.38	(-0.06)
USC	CSB	10.3	131	iPd	:09.05	(0.08)	iSu	:11.32	(-0.07)
USC	SVS	12.4	225	iPu	:09.43	(-0.05)	iSd	:11.01	(-0.16)
USC	RGR	16.0	194	iPd	:09.97	(-0.01)	iSd	:11.93	(-0.02)
USC	MGS	16.6	176	iPu	:10.10	(-0.01)	iSu	:12.98	(0.68X)
USC	HBF	20.0	237	iPd	:10.60	(-0.01)	iSd	:12.77	(-0.20)
USC	DRC	22.9	287	iPu	:11.39	(0.06)	iSd	:14.55	(-0.06)
USC	WAS	24.8	206	iPu	:11.44	(-0.01)	iSu	:15.06	(0.08)

*****1998 NOVEMBER 26; 03:41 - 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	981126	034155	4.0	32.936	80.174	6.4	8	4	151	0.1	C		0.6	360	0.6	1.0			1.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
USC	RGR	3.6	211	iPd	03:41:57.10	(-0.01)	iSd	03:41:57.60	(0.04)
USC	SVS	7.8	298	iPd	:57.55	(-0.08)	iSd	:58.61	(0.00)
USC	CSU	11.2	60	iPu	:58.00	(0.06)	iSd	:59.30	(-1.01)
USC	HBF	14.9	275	iPd	:58.64	(-0.05)	iSd	:42:00.39	(0.09)

*****1998 NOVEMBER 28; 19:51- 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	981128	195153	1.0	37.315	87.265	0.0	27	65	161	0.7	D	D/D	0.7	315	0.3	0.9	A		2.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME	(RES)	PHASE	ARRIVAL TIME	(RES)
UTK	HAKY						eS	19:52:11.55	(0.48)
UTK	MOTN	100.6	220	iPu	19:52:09.09	(-0.35)	eS	:21.22	(0.18)
UTK	WCI	127.4	38	eP+	:13.14	(-0.66)	iS	:28.89	(0.38)
UTK	ABTN	189.4	147	eP-	:22.49	(-1.07)	iS	:45.46	(0.27)
UTK	GLST						S	:51.80	(1.37)
UTK	ANTN	221.5	124	eP	:27.51	(-0.01)	eS	:53.97	(2.01)
UTK	PDTN	259.8	150	eP+	:31.73	(-0.43)	eS	:53:01.49	(1.59)
UTK	MSAL	279.0	169	eP	:34.30	(-0.20)	eS	:06.02	(2.11)
UTK	DATN	280.6	135	eP	:35.13	(0.39)	eS	:05.03	(0.71)
UTK	ORT	307.3	120	eP	:38.20	(0.22)			
UTK	OLT	313.5	139	eP	:39.69	(0.95)	eS	:13.55	(2.39)
UTK	SHAL	325.3	169	eP	:40.29	(0.11)	eS	:15.53	(1.92)
UTK	CRTN	329.8	111	eP+	:40.53	(-0.21)			
UTK	TKL						eS	:21.55	(0.10)
UTK	OXF	366.3	213	eP	:43.99	(-1.17)	eS	:21.79	(-0.34)
UTK	MYNC	376.0	130	iPu	:45.83	(-0.57)	eS	:25.73	(1.48)

*****1998 NOVEMBER 30; 16:33- 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	981130	1633	00.5	36.904	82.861	0.0	19	117	144	0.5	D	C/D	1.0	329	0.4	1.6	B		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	CRTN	117.4	229	ePu	16:33:19.32	(-0.51)	iS	16:33:33.87	(-0.24)
UTK	TKL	160.7	211	eP	:26.73	(0.03)	iS	:45.88	(-0.06)
UTK	ORT	170.1	230	eP	:28.42	(0.23)	eS	:49.22	(0.71)
UTK	BLA	219.7	80	eP	:35.23	(-0.80)	eS	:34:02.93	(0.88)
UTK	ANTN	227.2	250	eP	:36.68	(-0.53)	eS	:04.29	(0.27)
UTK	MYNC	232.9	210	eP	:37.69	(-0.42)	iS	:05.77	(0.25)
UTK	DATN	253.5	233	eP	:41.20	(0.22)	eS	:11.21	(0.79)
UTK	OLT	275.4	226	eP	:42.99	(-0.67)	eS	:16.55	(1.50)
UTK	ABTN	312.5	250	eP	:49.56	(1.34)			
UTK	PDTN	324.2	237	eP	:51.24	(1.57)			
UTK	WCI						eS	:29.31	(0.23)

*****1998 DECEMBER 05; 05:14 - 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	981205	0514	59.4	32.994	80.171	6.5	12	8	153	0.2	C		0.8	360	0.8	1.1			1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	SVS	7.8	249	iPu	05:15:01.46	(-0.14)	iSd	05:15:02.58	(0.00)
USC	CSU	9.4	95	iPd	:01.70	(0.08)	iSd	:02.60	(-1.19)
USC	RGR	9.8	193	iPd	:02.00	(0.13)	iSd	:03.00	(0.03)
USC	HBF	16.0	251	iPd	:02.69	(-0.14)	iSd	:04.71	(0.12)
USC	WAS	18.8	210	iPu	:03.40	(0.02)	iSu	:05.00	(-1.07)
USC	DRC	24.0	302	iPu	:04.60	(0.16)	iSd	:08.60	(0.81)

*****1998 DECEMBER 05; 05:46- 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	981205	0546	58.5	34.590	85.452	2.8	24	73	136	0.3	D	C/D	0.4	359	0.2	1.7	B		2.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
UTK	OLT	73.4	32	iPu	05:47:10.83	(0.22)			
UTK	PDTN	84.1	335	iPu	:12.30	(-0.01)	eS	05:47:22.49	(-0.06)
UTK	DATN						eS	:28.11	(-0.66)
UTK	SHAL						eS	:28.15	(-0.79)
UTK	MSAL	115.5	285	iPd	:17.37	(0.03)	iS	:31.56	(0.28)
UTK	MYNC	132.5	66	eP	:20.22	(0.15)	eS	:35.70	(-0.25)
UTK	ABTN	155.7	338	iPd	:23.35	(-0.37)	eS	:41.41	(-0.85)
UTK	ANTN	176.6	6	eP	:27.38	(0.34)	iS	:48.32	(0.32)
UTK	ORT	179.8	35	eP	:28.09	(0.57)	eS	:49.01	(0.16)
UTK	TKL	193.5	52	eP+	:29.27	(-0.41)	eS	:52.45	(-0.13)
UTK	GOGA	225.2	125	iPu	:34.96	(0.28)	eS	:48:00.73	(-0.34)
UTK	CRTN	230.9	39	eP	:35.69	(0.10)	eS	:02.94	(0.33)
UTK	EGT	244.1	53	eP	:38.58	(1.08)			
UTK	MOTN	321.5	315	eP	:46.73	(-0.22)	eS	:21.19	(-1.04)

*****1998 DECEMBER 21; 03:30- 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	981221	0330	55.5	36.161	83.716	4.9	9	12	196	0.1	C	B/D	0.8	12	0.6	1.6	B		1.7		

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

UTK	CRTN	12.0	291	iPu	03:30:57.59	(-0.12)	iS	03:30:59.40	(0.08)
UTK	EGT	47.4	127	eP	:31:03.50	(0.06)			
UTK	TKL	56.0	185	eP	:04.92	(0.14)	iS	:31:11.60	(-0.03)
UTK	ANTN						eS	:33.21	(-0.66)
UTK	ABTN	217.8	263	eP	:30.27	(-0.20)	eS	:56.36	(0.41)
UTK	GOGA	305.8	176	eP	:41.41	(-0.43)			

SOUTHEASTERN U.S. RESERVOIR ACTIVITY DURING 1998

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.

*****1998 MARCH 23; 06:02 - 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	980323	060217.8	34.288	81.187	4.0	14	7	142	0.1	B		0.4	360	0.4	1.4			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	JSC	6.8	262	iPd	06:02:19.07	(-0.05)	iSd	06:02:20.08	(-0.02)
USC	MR01	11.2	296	iPu	:19.63	(-0.12)	iSd	:21.22	(0.00)
USC	MR02	11.3	201	iPu	:19.80	(-0.02)	iSu	:21.35	(0.01)
USC	MR05	13.8	260	iPu	:20.23	(0.08)	iSd	:22.13	(0.21)
USC	MR10	14.9	291	iPu	:20.38	(0.06)	iSd	:22.33	(0.11)
USC	MR07	15.7	306	iPd	:20.37	(-0.08)	iSu	:22.44	(0.00)
USC	LHS	40.7	59	iPd	:24.31	(-0.07)	iSu	:29.64	(0.27)

*****1998 MARCH 23; 10:53 - 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	980323	105323.0	34.286	81.187	3.9	14	7	143	0.1	B		0.4	360	0.4	1.8			1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	JSC	6.8	264	iPd	10:53:24.12	(-0.14)	iSu	10:53:25.15	(-0.09)
USC	MR02	11.1	201	iPu	:24.94	(0.00)	iSd	:26.46	(0.03)
USC	MR01	11.3	297	iPd	:24.86	(-0.05)	iSu	:26.40	(0.01)
USC	MR05	13.7	261	iPd	:25.35	(0.06)	iSu	:27.29	(0.23)
USC	MR10	15.0	292	iPd	:25.54	(0.06)	iSu	:27.49	(0.10)
USC	MR07	15.8	306	iPu	:25.53	(-0.08)	iSu	:27.57	(-0.05)
USC	LHS	40.8	58	iPd	:29.41	(-0.14)	iSu	:34.73	(0.18)

*****1998 JULY 18; 06:31 - 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	980718	063158.5	34.331	81.309	1.3	8	0.2	225	0.1	C		0.2	360	0.2	0.3			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	MR01	0.2	140	iPu	06:31:58.72	(0.10)	iSu	06:31:58.88	(0.11X)
USC	MR10	3.7	275	iPd	:58.98	(-0.11)	iSu	:59.58	(-0.02X)
USC	JSC	6.9	150	iPd	:59.64	(0.05)	iSu	:32:00.57	(0.09)
USC	MR05	8.1	205	iPd	:59.66	(-0.12)	iSd	:00.65	(-0.16)
USC	MR02	16.8	158	iPd	:32:01.28	(0.07)	iSd	:03.43	(0.10)

*****1998 SEPTEMBER 04; 23:38 - 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

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	980904	233824.7	34.286	81.176	1.9	11	8	148	0.0	B		0.1	360	0.1	0.4			1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	JSC	7.7	265	iPd	23:38:26.19 (0.02)	iSd	23:38:27.14 (-0.14)
USC	MR02	11.4	206	iPu	:26.82 (0.01)	iSu	:28.40 (-0.01)
USC	MR01	12.1	295	iPd	:26.91 (0.03)	iSu	:28.49 (-0.04)
USC	MR05	14.7	262	iPu	:27.34 (0.05)	iSd	:29.26 (0.01)
USC	MR10	15.9	291	iPu	:27.55 (0.07)	iSd	:29.56 (-0.03)
USC	LHS	40.1	58	iPd	:31.35 (-0.01)	iSd	:36.13 (-0.28X)

*******1998 NOVEMBER 07; 09:12 - 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	981107	091216.9	34.330	81.313	0.4	10	2	153	0.1	B		0.3	360	0.3	0.6			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.6	81	iPd	09:12:17.22 (0.03)	iSu	09:12:17.41 (-0.03)
USC	MR10	2.4	288	iPd	:17.36 (0.04)	iSu	:17.58 (-0.07)
USC	MR05	7.2	196	iPu	:18.16 (0.06)	iSd	:19.04 (0.01)
USC	JSC	7.4	138	iPu	:18.12 (-0.01)	iSd	:18.99 (-0.10)
USC	MR02	17.0	153	iPu	:19.72 (0.01)	iSu	:21.82 (-0.04)

*******1998 NOVEMBER 23; 02:07 - 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	981123	020742.2	34.335	81.310	1.5	12	1	123	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	1.3	103	iPu	02:07:42.53 (-0.01)	iSu	02:07:42.81 (0.00)
USC	MR10	2.6	274	iPd	:42.71 (0.01)	iSu	:43.06 (-0.03)
USC	MR07	4.2	340	iPd	:42.92 (-0.02)	iSd	:43.56 (0.03)
USC	JSC	7.6	143	iPu	:43.45 (-0.02)	iSd	:44.38 (-0.06)
USC	MR05	7.8	197	iPd	:43.51 (0.01)	iSu	:44.56 (0.06)
USC	MR02	17.3	155	iPu	:45.11 (0.05)	iSd	:47.26 (0.01)

*******1998 NOVEMBER 27; 09:26 - 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	981127	092641.8	34.332	81.313	0.6	10	2	128	0.0	B		0.2	360	0.2	0.4			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.6	90	iPu	09:26:42.06 (-0.01)	iSu	09:26:42.29 (-0.03)
USC	MR10	2.3	282	iPu	:42.20 (0.01)	iSd	:42.51 (-0.01)
USC	MR07	4.4	345	iPd	:42.52 (-0.01)	iSu	:43.17 (0.05)
USC	JSC	7.5	140	iPu	:43.02 (-0.01)	iSu	:43.95 (-0.05)
USC	MR02	17.2	154	iPd	:44.68 (0.07)	iSu	:46.86 (0.07)

*******1998 NOVEMBER 28; 11:25 - 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	981128	112536.7	34.328	81.315	1.6	12	2	140	0.1	B		0.2	360	0.2	0.4			2.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.8	78	iPu	11:25:37.10 (-0.05)	iSu	11:25:37.50 (0.03)
USC	MR10	2.3	293	iPu	:37.19 (-0.01)	iSu	:37.53 (-0.04)
USC	MR07	4.8	349	iPd	:37.52 (-0.05)	iSd	:38.31 (0.09)
USC	JSC	7.4	137	iPu	:38.00 (0.02)	iSd	:38.93 (0.00)

USC	MR02	16.9	153	iPd	:39.60	(0.06)	iSd	:41.67	(-0.01)
USC	LHS	49.5	70	iPd	:44.70	(0.04)	iSd	:50.64	(-0.04)

*******1998 NOVEMBER 28; 11:30 - 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	981128	113025.4	34.334	81.312	0.8	10	2	123	0.0	B		0.2	360	0.2	0.2			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	MR01	1.5	97	iPd	11:30:25.71	(-0.01)	iSu	11:30:25.95	(-0.01)
USC	MR10	2.4	278	iPd	:25.86	(-0.01)	iSu	:26.20	(-0.02)
USC	MR07	4.3	343	iPd	:26.17	(0.00)	iSd	:26.81	(0.06)
USC	JSC	7.6	141	iPu	:26.67	(-0.03)	iSu	:27.59	(-0.08)
USC	MR02	17.3	154	iPu	:28.37	(0.08)	iSd	:30.56	(0.09)

*******1998 DECEMBER 01; 02:31 - 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	981201	023131.2	34.331	81.310	0.1	14	1	87	0.1	A		0.2	360	0.2	0.6			1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	MR01	1.4	85	iPd	02:31:31.40	(-0.03)	iSu	02:31:31.67	(0.03)
USC	MR10	2.6	284	iPu	:31.58	(-0.05)	iSu	:32.04	(0.04)
USC	MR07	4.6	343	iPd	:31.90	(-0.08)	iSu	:32.67	(0.07)
USC	JSC	7.3	140	iPu	:32.18	(-0.24)	iSu	:33.39	(0.01)
USC	MR05	7.3	197	iPd	:32.42	(-0.01)	iSu	:33.73	(0.33)
USC	MR02	17.0	154	iPd	:34.01	(0.00)	iSu	:36.26	(0.08)
USC	LHS	49.0	70	iPd	:39.19	(0.15)	iSu	:45.22	(0.18)

*******1998 DECEMBER 01; 18:53 - 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	981201	185326.8	34.332	81.312	0.1	13	2	87	0.1	A		0.2	360	0.2	0.6			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	MR01	1.5	88	iPd	18:53:27.12	(-0.03)	iSu	18:53:27.33	(-0.05)
USC	MR10	2.4	283	iPu	:27.29	(-0.01)	iSu	:27.61	(-0.03)
USC	MR07	4.5	345	iPd	:27.63	(-0.02)	iSd	:28.32	(0.05)
USC	MR05	7.4	196	iPd	:28.13	(0.00)	iSu	:29.20	(0.09)
USC	JSC	7.5	140	iPd	:28.11	(-0.03)	iSu	:29.00	(-0.13)
USC	MR02	17.1	154	iPd	:29.74	(0.02)	iSu	:31.40	(-0.52X)
USC	LHS	49.1	71	iPu	:34.95	(0.19)	iSd	:40.80	(0.03)

*******1998 DECEMBER 01; 23:08 - 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	981201	230808.9	34.331	81.313	0.8	10	2	131	0.0	B		0.1	360	0.1	0.1			0.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	MR01	1.6	87	iPu	23:08:09.22	(-0.01)	iSd	23:08:09.48	(0.00)
USC	MR10	2.3	285	iPu	:09.33	(-0.01)	iSu	:09.69	(0.01)
USC	MR07	4.5	346	iPd	:09.66	(-0.03)	iSd	:10.31	(0.02)
USC	JSC	7.5	139	iPd	:10.16	(0.00)	iSu	:11.06	(-0.05)
USC	MR02	17.1	154	iPd	:11.77	(0.04)	iSu	:13.94	(0.05)

*******1998 DECEMBER 03; 03:10 - 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

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	981203	031058	2.2	34.330	81.310	0.2	13	1	88	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	1.3	80	iPd	03:10:58.52 (0.02)	iSu	03:10:58.67 (-0.03)
USC	MR10	2.7	286	iPu	:58.72 (-0.01)	iSd	:59.03 (-0.08)
USC	MR07	4.7	343	iPd	:59.06 (-0.02)	iSu	:59.79 (0.07)
USC	JSC	7.2	140	iPd	:59.47 (-0.01)	iSu	:11:00.33 (-0.09)
USC	MR05	7.3	198	iPd	:59.52 (0.02)	iSu	:00.54 (0.09)
USC	MR02	16.8	154	iPd	:11:01.10 (0.03)	iSd	:03.18 (-0.04)
USC	LHS	49.0	70	iPu	:06.42 (0.30)	iSu	:11.12 (-0.99X)

*******1998 DECEMBER 03; 06:16 - 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	981203	061602	2.2	34.329	81.309	0.4	14	1	89	0.1	A		0.2	360	0.2	0.5			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.2	73	iPu	06:16:02.47 (-0.01)	iSu	06:16:02.79 (0.11)
USC	MR10	2.8	288	iPu	:02.68 (-0.06)	iSu	:03.15 (0.02)
USC	MR07	4.9	342	iPd	:03.02 (-0.06)	iSd	:03.78 (0.05)
USC	JSC	7.0	140	iPd	:03.40 (-0.03)	iSu	:04.28 (-0.07)
USC	MR05	7.2	199	iPd	:03.45 (-0.01)	iSu	:04.48 (0.09)
USC	MR02	16.7	154	iPd	:05.03 (0.01)	iSu	:07.17 (0.03)
USC	LHS	48.9	70	iPu	:10.25 (0.16)	iSu	:16.23 (0.17)

*******1998 DECEMBER 07; 23:06 - 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	981207	230611	8.8	34.330	81.313	0.2	12	2	135	0.0	B		0.1	360	0.1	0.4			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.6	82	iPd	23:06:12.15 (0.01)	iSd	23:06:12.37 (-0.01)
USC	MR10	2.4	288	iPu	:12.25 (-0.01)	iSu	:12.66 (0.06)
USC	MR07	4.7	347	iPd	:12.62 (-0.03)	iSd	:13.28 (0.00)
USC	JSC	7.4	138	iPu	:13.07 (-0.03)	iSu	:14.04 (-0.03)
USC	MR02	17.0	153	iPu	:14.69 (0.01)	iSd	:16.84 (0.00)
USC	LHS	49.3	70	iPu	:19.76 (0.00)	iSd	:25.90 (0.12)

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	9608 -	UTK	Auburntown, TN
AMG	32-03.56	84-13.06	122	7309-	GSW	Americus, GA
ANTN	36-10.30	85-13.88	612	96	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
BAV	37-13.32	80-25.50	622	7309-	VTSO	Blacksburg, VA
BBG	34-52.44	83-48.66	1355	8201-	CERI	Brasstown Bald, GA

BC	35-01.06	83-01.88	860	8701-	DPC	Bad Creek Res., SC
BCS	32-58.78	80-03.92	9	8701-	CSU-USGS	Charleston Southern Univ., SC
BENN	35-33.90	81-39.66	878	8201-	CERI	Benn Knob, NC
BG3	34-59.58	82-55.90	366	86 -	DPC	Lake Jocassee, SC
BHT	35-50.82	84-56.70	826	8110-	CERI	Blowhole, TN
BLA	37-12.68	80-25.21	634	6209-	VTSO/NEIC	Blacksburg, VA
BRBC	35-44.34	82-17.16	1976	8205-	CERI	Mt. Mitchell, NC
BRTN	36-21.40	82-52.07	630	9608 -	UTK	Brown Mt., TN
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 State 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
CCVA	36-36.18	83-40.02	571	8211-	CERI	Cudjo Cave, VA
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	9608 -	UTK	Comb Ridge, TN
CVL	37-58.88	78-27.65	167	7807-	VTSO	Charlottesville, VA
CVV	37-58.88	78-27.65	167	7404-	VDMR	Charlottesville, VA
DALG	34-46.43	85-00.47	329	9103-	GIT	Dalton, GA
DRC	33-06.45	80-23.30	20	8303-	CSU-USGS	Dorchester, SC
EGT	35-54.05	83-17.88	1103		UTK	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
EVE	25-23.24	80-40.97	2	8910-	UFL	Homestead, FL
FDKY	36-47.40	85-47.65	306	9608 -	UTK	Freedom, KY
FGTN	36-26.02	83-11.72	509	9112-	CERI	TN
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
GBTN	35-39.96	84-12.66	326	8303-	CERI	Greenback, TN
GFM	36-06.66	81-48.42	1726	8205-	CERI	Grandfather Mtn., NC
GHV	37-47.65	78-06.44	107	7810-	VTSO	Goochland, VA
GLT	36-21.72	86-29.88	159	8111-	CERI-VCSS	Gallatin, TN
GMG	34-50.16	84-40.20	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
HAKY	37-06.34	86-35.10	169	9608 -	UTK	Hadley, KY
HBF	32-56.85	80-19.96	10	7303-	USC	Harts Bluff, SC
HWD	32-44.33	80-17.01	9	8303-	CSU-USGS	Hollywood, SC
HPKT	35-55.56	83-63.75	305	9608 -	UTK	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
LAL	34-26.20	87-20.23	320	9608 -	UTK	Leola, AL
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	9608-	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	9608-	UTK	Monte Sano, AL
MTT	33-45.02	81-38.40	182	7608-	USC	Monetta, SC
MVL	39.9992	76.3506	91		MVU	Millersville, PA
MYNC	35-04.43	89-07.67	550	94 -	USGS	Murphy, NC
NAV	37-18.94	80-47.61	610	7710-	VTSO	Narrows, VA
NA12	37-59.29	77-52.62	134	7808-	VTSO	North Anna, VA
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	9608 -	UTK	Ooltewah, TN
ORT	35-54.57	84-18.29	370	9608 -	UTK	Oak Ridge, TN
PDTN	35-16.40	85-50.97	335	9608 -	UTK	Piedmont, TN
PKNC	36-02.76	81-09.48	785	8211-	CERI	Pores Knob, NC
PLVA	36-39.98	81-09.63	1353	8211-	CERI	Point Lookout, VA
PRM	34-04.98	82-21.78	254	7507-	USC	Parsons Mtn., SC
PWLA	34-58.80	88-03.84	204	8005-	CERI- SLU	Pickwick Lake, AL
PWV	37-20.16	81-02.86	829	7803-	VTSO	Princeton, WV
RBNC	35-21.42	82-59.16	1829	8205-	CERI	Richland Balsam, NC
RCG	34-58.50	85-20.88	468	8110-	CERI	Rock City, GA
RGR	32-54.45	80-11.65	-52	8606-	CSU-USGS	(Roger Stewart) SC
RICH	35-55.20	82-49.20	967	8306-	CERI	Rich Mtn., NC
SAR	27-10.53	82-27.94	4	8910-	UFL	Osprey, FL
SGS	33-11.55	80-30.57	25	7303-	USC	St. George, SC
SLTN	36-26.59	82-07.23	1280	9608 -	UTK	Sullivan, 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
TKL	35-39.48	83-46.44	350	78 -	UTK	Tuckaleechee Caverns, TN
TCT	36-00.32	87-33.17	245	9608	UTK	Tennessee City, TN
TQTN	35-30.96	84-43.55	260	9608 -	UTK	Tranquillity, TN
TRYN	35-14.76	82-16.02	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
VWV	37-27.96	80-23.50	963	8207-	VTSO	VA-WV Border
WAK	30-14.83	84-17.90	5	9302-	UFL	Wakulla, FL
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

WYC 31-12.32 82-23.39 43 9304- UFL Waycross, GA

FIGURE 4. Seismic stations (triangles) in the SEUSSN. Solid triangles indicate stations operating during the report period. Open triangles indicate inactive stations. The SEUSSN monitoring area is outlined.

FIGURE 5. South Carolina Seismic Network.

FIGURE 6. University of Memphis, Center for Earthquake Research and Information - Southern Appalachian Regional Seismic Network.

FIGURE 7. University of Tennessee/TVA JIEE Seismic Network.

FIGURE 8. University of Florida Seismic Network.

FIGURE 9. Georgia Tech - Geological Survey Of Alabama Seismic Network.

FIGURE 10. Virginia Tech Seismic Network.

FIGURE 11. University of North Carolina-Chapel Hill Seismic Network.

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 33, 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
UNC - University of North Carolina, NC
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