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FIGURES

TABLES

SEISMICITY OF THE SOUTHEASTERN UNITED STATES DURING 1996 included 31 tectonic (not induced) earthquakes, 2 mining induced earthquakes, and 54 earthquakes associated with reservoirs. Felt reports were received for five of the tectonic earthquakes. The largest earthquake reported during the year was mb(Lg) = 2.8 occurring on July 5, 1996. The epicenter was in Cherokee County, North Carolina.

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 1996, covered by SEUSSN Bulletins 1 through 31.

SOUTHEASTERN U.S. EARTHQUAKES DURING 1996 lists hypocentral parameters, magnitudes, and arrival times for tectonic earthquakes and two mining induced earthquakes in the southeastern United States.

SOUTHEASTERN U.S. RESERVOIR ACTIVITY DURING 1996 lists hypocentral parameters, magnitudes, and arrival times for earthquakes near the Monticello and Jocassee Reservoirs in South Carolina.

SEISMIC STATION LISTING AND NETWORK MAPS contains a listing of seismic stations operating 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 5).

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).

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.

APPENDIX A includes abstracts of papers by Bulletin contributors presented at the 1996 Seismological Society of America Meeting (St. Louis, Missouri) and the Eastern Section, Seismological Society of America Meeting (Chapel Hill, North Carolina).

Acknowledgments

This report is the thirty-first SOUTHEASTERN UNITED STATES SEISMIC NETWORK BULLETIN and covers the period from January through December, 1996. 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 Department of Mines, Minerals, and Energy - Division of Mineral Resources, 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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SEUSSN EARTHQUAKE CATALOG STATISTICS

TABLE 1. SEUSSN Report Period/Cumulative Earthquake Catalog Statistics

Period: January through December 1996 (1 year)	Tectonic	Reservoir
Number of Earthquakes with M ≥ 0.0	29	54

Number of Earthquakes with M ≥ 2.0	14	1
Number of Earthquakes with M ≥ 3.0	0	0
Number of Earthquakes with M ≥ 4.0	0	0
Number of Felt Earthquakes	5	0
Number of Earthquakes with Known ERZ 5.0 km	10	47

Largest Earthquake: 5 July 1996; 21:37 - NC-TN border area, mb(Lg)= 2.8, felt

Period: July 1977 through December 1996 (19.5 years)	Tectonic	Reservoir
Number of Earthquakes with M ≥ 0.0	1484	791
Number of Earthquakes with M ≥ 2.0	556	201
Number of Earthquakes with M ≥ 3.0	93	9
Number of Earthquakes with M ≥ 4.0	7	0
Number of Felt Earthquakes	198	21
Number of Earthquakes with Known ERZ 5.0 km	1090	205

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

TABLE 2. Estimates of Completeness (Years) by Magnitude for the Southeastern United States and Subregions (Bollinger and Others, 1989)

MAGNITUDE	2.25	2.75	3.25	3.75	4.25	4.75	5.25	5.75	6.25	6.75
Southeastern US	6	10	15	85	145	145	215	215	215	215
Valley & Ridge and Blue Ridge	9	10	20	75	110	215	215	215	215	215
Piedmont	10	10	115	215	215	215	215	215	215	215
Coastal Plain	10	10	60	145	145	215	215	215	215	215
Giles County, VA	10	15	15	30	30	215	215	215	215	215
Central Virginia	15	60	215	215	215	215	215	215	215	215
Eastern Tennessee	5	10	10	85	115	115	215	215	215	215
Charleston, SC	10	70	70	70	130	215	215	215	215	215

SOUTHEASTERN U.S. EARTHQUAKES DURING 1996

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.

*****1996 JANUARY 13; 06:08 - CHARLESTON, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	960113	060815.9	32.750	80.229	9.8	4	11	325	1.1	D									0.5	

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	WAS	11.4	340	iPu	06:08:18.85 (0.06)	iSd	06:08:19.38 (-2.04X)
USC	RGR	17.7	11	iPd	:19.58 (-0.12)	iSu	:20.84 (-2.20X)
USC	HBF	23.9	336	iPd	:20.56 (-0.13)	iSu	:22.45 (-2.36X)
USC	SVS	24.2	356	iPd	:20.58 (19.83)	iSu	:22.42 (17.51X)

*****1996 FEBRUARY 25; 07:51 - CHARLESTON, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	960225	075107.0	32.763	80.057	5.0	7	17	297	4.5	D		3.7	360	3.7	5.2			0.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MGS	16.9	332	iPd	07:51:09.00 (-1.37)	iSu	07:51:09.61 (-3.80X)
USC	RGR	20.5	321	iPd	:08.92 (-2.06)	iSd	:09.62 (-4.89X)
USC	WAS	22.1	295	iPd	:10.47 (-0.80)	iSd	:12.99 (-2.03X)
USC	BCS	24.0	358	iPd	:09.69 (-1.91)	iSu	:11.63 (-3.98X)
USC	SVS	28.9	322	iPd	:09.46 (11.01)	iSd	:10.60 (7.48X)
USC	HBF	32.9	308	iPd	:10.60 (-2.53)	iSd	:12.48 (-5.86X)
USC	TWB	39.2	354	iPd	:11.88 (-2.35)	iSd	:13.68 (-6.61X)

*****1996 MARCH 4; 10:35 - SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
WSRC	960304	103512.9	32,	82.	1.3	5	17	353	0.4	D	D/D	20.5			14.4			2.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
WSRC	SRD	129.0	256	eP	08:24:52.30 (-0.04)	eS	08:25:001.10 (-0.07X)
WSRC	SRW	141.6					
WSRC	SRV	145.1					
WSRC	SRN	151.0					

*****1996 APRIL 19; 08:50 - TENNESSEE*****

NEIC Probable mine 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
NEIC	960419	085014.0	36.981	83.018	0.0F	26	161											3.9		

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

NEIC	TKL	161.2	205	Pg	08:50:41.80	(0.2)	Lg	08:51:03.90	(X)
							Rg	:17.10	(X)
NEIC	SADO	924.1	19	Pn	:52:17.70	(-1.0)	Sn	:53:48.50	(X)
				Pg	:42.80	( )	Lg	:54:39.60	(X)
NEIC	MIAR	991.9	257	Pn	:26.00	(-1.1)	Sn	:03.80	(X)
				Pg	:57.60	( )	Lg	:58.60	(X)
NEIC	RLO	1077.5	269	P	:36.90	(-0.9)	Lg	:55:24.20	(X)
NEIC	EEO	1122.0	16	Pn	:43.10	(-0.1)	Sn	:54:33.70	(X)
				Pg	:53:15.50	( )	Lg	:55:35.90	(X)
NEIC	TUL	1150.9	268	P	:52:45.50	(-1.4)	Lg	:55:38.30	(X)
							LR	:07:09.00	(X)
NEIC	GAC	1155.4	31	Pn	:47.30	(0.0)	Sn	:54:43.00	(X)
				Pg	:53:26.30	( )	Lg	:55:40.20	(X)
NEIC	VVO	1158.7	265	P	:52:48.20	(0.5)	Lg	:45.80	(X)
NEIC	SIO	1199.8	267	P	:51.20	(-1.7)	Lg	:56:00.20	(X)
NEIC	LBNH	1235.4	46	Pn	:55.50	(-1.8)	Sn	:54:59.80	(X)
				Pg	:53:35.60	( )	Lg	:56:07.50	(X)
NEIC	TBO	1396.7	340	Pn	:15.50	(-1.3)	Sn	:55:32.90	(X)
							Lg	:56:59.50	(X)
NEIC	LMQ	1570.1	38	Pn	:35.90	(-1.5)	Sn	:09.40	(X)
							Lg	:57:42.00	(X)
NEIC	ULM	1798.1	329	Pn	:54:03.10	(-1.0)	Sn	:56:58.30	(X)
							Lg	:58:44.90	(X)
NEIC	RSSD	1942.6	301	Pn	:23.40	(2.6)	Sn	:57:34.90	(X)
							Lg	:59:32.40	(X)
NEIC	TXAR	2098.3	252	Pn	:38.00	(-0.1)	Sn	:58:11.50	(X)
							Lg	:00:04.20	(X)
NEIC	ALQ	2121.7	271	Pn	:44.10	(3.4X)	Sn	:58:15.00	(X)
							Lg	:00:19.70	(X)
NEIC	SCHQ	2337.4	27	P	:55:02.80	(1.3)	S	:58:52.20	(X)
							Lg	:01:02.20	(X)
NEIC	PDAR	2349.6	294	P	:03.30	(0.3)	Lg	:27.10	(X)
NEIC	DRLN	2466.4	48	P	:14.10	(0.9)			
NEIC	FCC	2553.1	345	P	:22.90	(2.1)	S	:59:35.60	(X)
							Lg	:02:21.60	(X)
NEIC	TUC	2588.7	267	P	:26.10	(1.8)			
NEIC	DUG	2608.7	287	P	:29.40	(3.3X)			
NEIC	WALA	2826.7	308	P	:42.90	(-2.0)	Lg	:03:39.40	(X)
NEIC	EDM	2957.9	317	P	:59.60	(3.9X)	Lg	:04:22.90	(X)
NEIC	YKA	3568.4	333	P	:56:44.90	(0.3)	Lg	:07:08.10	(X)
				PcP	:59:34.20	( )			
NEIC	WHY	4460.2	323	P	:57:54.10	(1.2)			
NEIC	MBC	4738.2	348	P	:58:14.20	(1.1)			
				PcP	:00:07.80	( )			
NEIC	NPO	5136.3	328	P	:58:43.50	(1.5)			
NEIC	ZST	7722.8	45	eP	:01:36.80	(10.8X)			
NEIC	NRI	8198.7	3	P	:54.60	(3.5X)			
NEIC	PDY	9213.9	352	P	:02:43.80	(2.5X)			
NEIC	KBZ	9548.7	36	P	:59.10	(2.3X)			
NEIC	ZAL	9878.9	7	P	:59.10	(0.1)			
NEIC	WRA	15935.9	287	PKP	:09:51.80	(-0.6X)			
NEIC	ASAR	16200.6	282	PKP	:56.90	(0.5X)			

*****1996 MAY 6; 06:23 - CHARLESTON, SOUTH CAROLINA*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	960506	062311	9	33.028	80.239	12.6	7	7	111	0.0	B		0.9	360	0.9	1.9			0.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	SVS	6.7	187	iPd	06:23:14.57 (0.00)	iSu	06:23:16.36 (-0.66X)
USC	HBF	12.5	224	iPu	:15.16 (-0.01)	iSd	:17.28 (-0.81X)
USC	RGR	14.0	163	iPd	:15.35 (0.00)	iSu	:17.46 (-0.96X)
USC	TWB	15.9	53	iPd	:15.59 (-0.01)	iSu	:17.91 (-0.96X)
USC	DRC	16.5	302	iPu	:15.92 (0.24)	iSu	:18.55 (-0.47X)
USC	MGS	17.1	148	iPu	:15.78 (0.02)	iSu	:17.98 (-1.19X)
USC	WAS	20.3	189	iPu	:16.21 (-0.01)	iSd	:19.11 (-0.87X)

*****1996 JUNE 29; 19:30 - WEST VIRGINIA*****

NEIC Probable mine 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
NEIC	960629	193042	7	37.`76	81.950	1.0F	34	235											3.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
NEIC	TKL	235.7	224	Pn	19:31:21.30 (1.6)	Lg	19:31:50.40 (X)
						Rg	:32:00.60 (X)
NEIC	CEH	293.6	118	ePd	:28.65 (1.5)		
NEIC	MCWV	330.3	33	ePd	:33.36 (-0.9)		
NEIC	GOGA	441.5	199	eP	:46.38 (0.4)		
NEIC	SSPA	520.4	41	ePd	:56.34 (0.3)		
NEIC	YSNY	656.1	25	eP	:32:12.59 (-0.8)		
NEIC	BINY	756.2	41	eP	:24.89 (-1.1)		
NEIC	CCM	826.2	280	eP	:33.27 (-1.6)		
NEIC	MIAR	1089.8	258	eP	:33:04.66 (-3.1X)		
NEIC	LBNH	1152.0	44	Pn	:14.90 (-0.6)	Lg	:36:10.80 (X)
NEIC	TUL	1246.5	268	Pn	:24.80 (-2.3X)	Sn	:35:25.60 (X)
						Lg	:36:35.70 (X)
NEIC	WMOK	1540.1	265	eP	:58.64 (-3.9X)	eS	:29.48 (X)
NEIC	ULM	1829.2	327	Pn	:34:38.10 (1.9)	Sn	:37:38.50 (X)
						Lg	:39:16.50 (X)
NEIC	RSSD	2012.7	299	P	:58.60 (1.4)		
NEIC	TXAR	2196.2	253	P	:35:15.70 (-1.3)	Lg	:41:05.30 (X)
NEIC	ALQ	2216.2	271	P	:20.70 (1.7)	Sn	:58:15.00 (X)
NEIC	SCHQ	2275.1	26	P	:24.90 (0.7)	Lg	:41:39.50 (X)
NEIC	DRLN	2380.8	48	P	:35.30 (1.3)		
NEIC	PDAR	2427.5	293	P	:37.40 (-1.2)	Lg	:42:18.50 (X)
NEIC	FCC	2556.5	344	P	:48.90 (-0.7)		
NEIC	DUG	2693.2	287	P	:36:04.70 (2.8X)		
NEIC	LRM	2702.1	300	eP	:04.00 (1.2)		
NEIC	YKA	3591.7	332	P	:37:13.80 (-1.2)		
NEIC	WHY	4499.1	323	P	:38:23.20 (-1.1)		
NEIC	MBC	4736.0	348	P	:41.00 (-0.4)		
NEIC	NPO	5167.4	328	P	:39:12.00 (-0.7)		
NEIC	DAG	5342.0	16	ePd	:25.10 (0.2)		
NEIC	LPAZ	6089.3	164	P	:40:16.00 (-1.0)		

NEIC	LPB	6115.9	164	P	:16.50	(-2.0)
NEIC	SPITS	6181.6	14	P	:21.10	(-0.6)
NEIC	HFS	6805.4	35	P	:41:00.70	(-0.4)
NEIC	FINES	7323.6	30	P	:30.60	(-1.0)
NEIC	GEC2	7386.9	46	P	:35.60	(-0.1)
NEIC	GERES	7386.9	46	P	:35.40	(-0.3)
NEIC	NRI	8169.8	4	P	:42:19.80	(1.7)
NEIC	PDY	9203.9	353	P	:43:10.60	(1.3)
NEIC	CMAR	13861.0	359	PKP	:49:44.90	(-1.1)
NEIC	STKA	16010.4	265	PKP	:50:17.80	(-3.9X)
NEIC	WRA	16019.3	288	PKP	:19.40	(-2.7X)
NEIC	ASAR	16288.4	283	PKP	:26.70	(0.5)

*****1996 JULY 1; 01:38 - CHARLESTON, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	960701	013843.0	33.091	80.230	0.1	8		144	0.8	D		0.4	360	0.4	99.0			0.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	TWB	12.2	77	iPd	01:38:45.57 (-0.20)	iSd	01:38:47.43 (-1.34X)
USC	SVS	13.7	187	iPd	:45.06 (-0.98)	iSd	:46.21 (-3.04X)
USC	DRC	14.9	277	iPd	:46.48 (0.22)	iSu	:48.81 (-0.82X)
USC	HBF	18.5	211	iPd	:45.91 (-1.01)	iSd	:46.27 (-4.54X)
USC	BCS	19.7	129	iPd	:45.95 (-1.18)	iSd	:48.73 (-2.46X)
USC	RGR	20.6	171	iPd	:47.72 (0.44)	iSu	:48.62 (-2.83X)
USC	WAS	27.3	188	iPd	:49.95 (1.46)	iSu	:50.66 (-2.94X)
USC	SGS	28.4	294	iPu	:48.76 (0.08)	iSd	:51.88 (-2.06X)

*****1996 JULY 5; 21:37 - TENNESSEE*****

NEIC Felt in Cherokee County, 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	960629	193042.7	37.`76	81.950	1.0F	1	205											2.8		F

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
NEIC	GOGA	204.6	166	eP	21:37:42.05 (0.0)	eS	21:38:07.08 (X)

*****1996 JULY 25; 06:08 - WYTHEVILLE, 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	960725	060824.4	37.023	81.063	12.0	4	40	327	0.0	D	D/D	78.0	19	2.7	99.0	D		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
VTSO	NAV	40.3	36	iP	06:08:31.60 (-0.03)	S	06:08:36.60 (0.02)
VTSO	BLA	60.8	70	iP	:35.00 (0.03)	S	:42.24 (-0.03)

*****1996 AUGUST 7; 03:45 - 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	960807	034540.0	37.290	80.665	5.5F	4	12	188	0.3	D	D/D	79.9	19	0.9	5.2	D		1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
VTSO	NAV	11.7	284	P	03:45:42.00 (-0.33)	S	03:45:44.10 (0.27)
VTSO	BLA	23.4	112	P	:44.60 (0.31)	S	:46.80 (-0.24)

*****1996 AUGUST 11; 09:11 - 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	960811	091121.3	37.731	80.628	4.9	6	48	250	0.1	C	B/D	0.9	136	0.9	2.3	B		2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
VTSO	NAV	48.4	198	P	09:11:29.80 (0.04)	S	09:11:35.50 (0.02)
VTSO	BLA	60.6	162	P	:31.70 (-0.08)	S	:39.00 (0.02)
VTSO	GHV	222.3	87	P	:57.00 (-0.06)	S	:12:22.20 (0.11)

*****1996 SEPTEMBER 17; 06:07 - CHARLESTON, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	960917	060752.2	32.820	80.121	0.1	6	9	265	1.6	D		8.9	360	8.9	99.0			0.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MGS	8.8	348	iPu	06:07:55.05 (0.64)	iSu	06:07:55.69 (-1.28X)
USC	RGR	11.9	325	iPu	:54.82 (-0.14)	iSu	:55.40 (-2.54X)
USC	WAS	14.4	282	iPu	:56.34 (0.90)	iSu	:58.05 (-0.74X)
USC	BCS	18.4	16	iPd	:55.68 (-0.48)	iSu	:56.89 (-3.18X)
USC	SVS	20.3	324	iPu	:55.16 (16.67)	iSu	:56.14 (13.48X)
USC	HBF	24.3	305	iPd	:56.26 (-0.95)	iSu	:58.01 (-3.94X)

*****1996 SEPTEMBER 18; 02:16 - GEORGIA*****

NEIC Felt at Edgefield and McCormick, 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	960918	021627.7	33.738	82.099	5.0F	5												2.8		F

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
NEIC	JSC	97.9	52	eP	02:16:44.76 (-0.4)	eS	02:16:55.93 (X)
NEIC	GOGA	132.3	254	eP	:49.87 (-0.5)	eS	:17:06.24 (X)
NEIC	LHS	144.6	55	eP	:52.19 (-0.1)	eS	:09.18 (X)
NEIC	HBF	183.5	119	eP	:57.78 (-0.4)	eS	:18.30 (X)
NEIC	MYNC	238.0	309	ePn	:17:05.19 (0.5)	eS	:34.80 (X)

*****1996 SEPTEMBER 21; 01:24 - 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

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	960921	012400.0	35.700	84.000	5.0F	3													2.0	F
TVA	960921	012407.6	35.761	83.907	0.6	12	17	112	0.4	C	C/C	0.7	-25	0.5	1.3	A			2.3	

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
TVA	TKL	16.6	134			S-P	1.42 SEC (-0.74)
TVA	CRTN	49.0	7	eP+	01:24:16.52 (0.20)	eS	01:24:22.63 (-0.05)
TVA	SLTN	177.8	64	eP	:37.46 (0.42)	eS	:58.17 (-0.36)
TVA	PDTN	184.3	253	eP-	:37.94 (-0.02)	eS	:59.35 (-0.76)
TVA	FDKY	204.4	305	eP-	:40.78 (-0.25)	eS	:25:05.15 (-0.27)
TVA	MSAL	271.3	249	iPd	:50.55 (0.30)	eS	:22.42 (1.05)
TVA	LAL					eS	:38.39 (1.30)
TVA	MOTN	379.0	286	eP+	:25:08.19 (4.78X)		

*****1996 SEPTEMBER 23; 01:15 - 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
TVA	960923	011507.2	36.278	83.758	4.1	9	69	155	0.3	C	B/D	0.9	-15	0.4	2.3				2.5	

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
TVA	CRTN	14.7	234	iP	01:15:12.49 (2.59X)		
TVA	TKL	69.0	185			S-P	8.4 SEC (-0.29)
TVA	SLTN	143.7	82	eP-	:31.15 (0.10)	eS	0l:15:47.80 (-0.69)
TVA	OLT	172.7	224	iPd	:35.34 (-0.08)	iS	:56.35 (-0.29)
TVA	FDKY	195.3	288	eP+	:38.54 (-0.32)	eS	:16:02.12 (0.11)
TVA	PDTN	223.4	241	eP	:42.53 (-0.64)	eS	:09.56 (0.10)
TVA	MSAL	312.2	240	eP	:52.91 (-1.44X)	eS	:29.31 (0.51X)
TVA	MOTN	385.4	277	eP	:16:04.20 (0.91X)		
TVA	LAL	387.9	239	eP	:02.65 (-0.96X)	eS	:41.50 (-3.32X)

*****1996 OCTOBER 11; 06:27 - CHARLESTON, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961011	062744.9	32.916	80.165	7.3	6		117	0.0	C		5.8	360	5.8	3.0				0.6	

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	RGR	2.9	252	iPd	06:27:46.49 (0.00)		
USC	MGS	3.0	132	iPu	:46.50 (0.00)		
USC	SVS	9.8	307	iPu	:47.43 (0.14)		
USC	WAS	12.6	233	iPd	:48.13 (0.42)		
USC	HBF	16.1	283	iPu	:48.27 (0.00)		
USC	TWB	22.8	15	iPd	:49.10 (-0.28)		

*****1996 OCTOBER 17; 11:43 - VIRGINIA*****

NEIC Felt in Cecil and Hartford Counties, Maryland. Also felt in Chester County, Pennsylvania.

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	961017	114328.0		39742	76.054		5.4	5									2.3	2.2	F

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
NEIC	MVL	37.8	318	P	11:43:34.00 (-0.9)		
NEIC	BWD	41.1	81	P	:34.59 (-0.9)		
NEIC	BVD	47.8	85	P	:35.29 (-1.3)		
NEIC	CVL	285.8	228	(P)	:44:06.73 (-4.2)		
NEIC	YSNY	368.1	326	(P)	:23.12 (1.6)		

*****1996 OCTOBER 20; 15:22 - CHARLESTON, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961020	152227.7	32.901	80.159	1.0	6		141	0.0	C		2.8	360	2.8	15.7			0.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MGS	1.7	100	iPu	15:22:28.27 (0.00)		
USC	RGR	3.4	283	iPd	:28.57 (0.00)		
USC	SVS	11.2	312	iPu	:29.48 (-0.51)		
USC	WAS	12.1	241	iPd	:30.20 (0.05)		
USC	BCS	12.4	45	iPd	:30.22 (0.01)		
USC	TWB	24.3	12	iPu	:32.70 (0.35)		

*****1996 OCTOBER 21; 09:00 - CHARLESTON, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961021	090047.3	33.087	80.346	18.2	6	5	143	0.4	C		8.4	360	8.4	20.7			0.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	DRC	4.5	299	iPd	09:00:52.91 (2.27)	iSd	09:00:55.46 (1.85X)
USC	TWB	22.9	82	iPu	:52.08 (-0.31)	iSd	:53.95 (-2.78X)
USC	RGR	24.5	145	ePu	:51.86 (-0.73)	iSu	:53.20 (-3.89X)
USC	WAS	27.6	165	iPd	:52.86 (-0.15)	iSu	:55.40 (-2.44X)
USC	MGS	28.4	138	iPu	:52.10 (-1.03)	iSu	:53.75 (-4.31X)
USC	BCS	28.8	114	iPd	:53.61 (0.43)	iSu	:54.52 (-3.63X)

*****1996 OCTOBER 24; 06:44 -NEW JERSEY *****

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	961024	0644	33.082	80.340	15.8	3												0.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
DGS	NED			iP	06:44:36.6 ( )	iS	06:44:34.2 ( )
DGS	BWD			iP	:34.2 ( )	iS	:47.5 ( )
DGS	BVD			iP	:33.9 ( )	iS	45.9

*****1996 OCTOBER 25; 04:29 - 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
TVA	961025	042920.7	35.712	84.432	11.8	17	34	113	0.2	C	B/C	0.6	18	0.4	1.3	B		1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
TVA	TQTN	34.7	231	iP	04:29:26.52 (-0.08)	iS	04:29:31.01 (0.04)
TVA	ETT	42.9	183	iP+	:27.87 (-0.06)	iS	:33.31 (0.05)
TVA	TKL	59.8	96			S-P	7.48 SEC (0.27)
TVA	OLT	82.4	221	eP	:34.25 (0.14)	iS	:43.90 (-0.08)
TVA	PDTN	137.5	250	eP	:42.64 (-0.15)	iS	:59.43 (0.45)
TVA	ABTN	152.8	278	eP	:44.87 (-0.30)	eS	:30:03.31 (0.22)
TVA	FDKY	171.2	315	eP-	:48.08 (0.06)	eS	:08.59 (-0.57)
TVA	SLTN	223.4	68	eP	:55.78 (-0.37)	eS	:21.61 (-0.31)
TVA	MSAL	225.4	245	eP	:54.58 (-1.78)	eS	:21.91 (0.36)
TVA	MOTN					eS	:51.51 (5.82X)

*****1996 OCTOBER 28; 06:59 -*****

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	961028	0658	33.082	80.340	15.8	3												0.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
DGS	NED			iP	06:59:52.4 ( )	iS	07:00:01.3 ( )
DGS	BWD			iP	:51.7 ( )	iS	:00.7 ( )
DGS	BVD			iP	:52.5 ( )	iS	01.4

*****1996 OCTOBER 29; 09:56 - MADISONVILLE, 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
TVA	961029	095610.7	35.481	84.326	14.3	15	21	146	0.2	C	B/C	0.6	-39	0.6	0.8	A		2.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
TVA	ETT	20.8	214	iPd	09:56:14.80 (-0.01)	eS	09:56:18.00 (0.13)
TVA	TQTN	36.5	276	eP	:17.61 (0.58)	eS	:21.57 (-0.13)
TVA	TKL	53.7	68			S-P	6.60 SEC (0.05)
TVA	OLT	73.4	240	eP+	:22.46 (-0.26)	iS	:31.64 (0.07)
TVA	PDTN	140.4	261	iP+	:33.18 (0.03)	iS	:49.62 (0.01)
TVA	ABTN	167.6	286	iPd	:37.12 (-0.26)	eS	:56.84 (-0.04)
TVA	FDKY	196.4	318	eP+	:41.97 (0.14)	eS	:57:06.36 (1.88)
TVA	MSAL	225.2	252	eP	:45.46 (-0.60)	iS	:12.20 (0.43)

*****1996 NOVEMBER 2; 13:10 - CHARLESTON, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961102	131005.8	33.075	80.547	5.0	3	14	250	0.4	D								0.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	SGS	13.5	15	iPd	13:10:08.44 (-0.19)		

USC	HBF	24.5	125	iPd	:10.47	(-0.03)
USC	SVS	30.3	113	iPu	:10.10	(3.59)

*****1996 NOVEMBER 14; 12:35 - CHARLESTON, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961114	123535.8	32.949	80.156	5.6	6	6	98	0.0	C		2.1	360	2.1	2.2			0.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	RGR	5.8	218	iPd	12:35:37.42 (0.00)	iSd	12:35:38.66 (-0.45X)
USC	MGS	5.8	166	iPu	:37.48 (0.05)	iSd	:38.27 (-0.85X)
USC	BCS	9.1	68	iPd	:37.91 (0.00)	iSd	:38.95 (-1.03X)
USC	WAS	15.7	224	iPd	:38.97 (0.00)	iSu	:40.91 (-0.97X)
USC	TWB	19.0	15	iPd	:39.39 (-0.15)	iSd	:41.69 (-1.20X)
USC	DRC	28.0	309	iPu	:41.22 (0.15)	iSu	:45.41 (-0.21X)

*****1996 NOVEMBER 20; 22:46 - 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	961120	224631.1	37. 809	77.576	15.4	5	33	321	0.0	D	D/D	5.3	11	2.7	14.6	D		1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
VTSO	NA12	33.1	307	iP	22:46:37.10 (-0.01)	S	22:46:41.47 (0.00)
VTSO	GHV	46.8	268	iPc	:39.20 (0.01)	S	:45.06 (-0.01)
VTSO	CVL	80.2	284			S	:53.90 (0.01)

*****1996 NOVEMBER 26; 17:49 - 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
TVA	961126	174935.4	34.966	85.080	0.0	13	54	129	0.4	D	C/D	0.8	-5	0.3	1.2	A		2.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
TVA	CDG	54.3	136			S-P	6.1 SEC (-0.45)
TVA	PDTN	78.0	296	iPd	17:49:48.15 (-0.19)	iS	17:49:57.68 (-0.21)
TVA	ABTN	138.4	318	iP-	:58.04 (-0.06)	eS	:50:14.60 (-0.17)
TVA	TKL	141.4	57	iPd	:58.63 (0.06)	iS	:15.93 (0.34)
TVA	MSAL	146.3	265	eP-	:58.50 (-0.83)	iS-	:17.80 (0.89)
TVA	FDKY	212.4	343	eP	:50:09.46 (-0.26)	eS	:37.83 (3.01X)
TVA	TCT	252.3	298	eP-	:14.84 (-0.82)	eS	:45.06 (0.13)
TVA	MOTN	320.4	306	eP	:24.53 (0.48)	eS	:51:04.24 (4.80X)

*****1996 DECEMBER 2; 04:48- 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
TVA	961202	044850.8	36.318	83.480	0.4	9	78	284	0.3	D	D/D	2.6	-69	0.9	2.2	B		2.5		

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

TVA	TKL	77.8	200				S-P	9.33 SEC	(0.10)
TVA	ABTN	241.5	259	eP+	04:48:29.29	(-0.29)	iS-	04:48:57.48	(-0.35)
TVA	PDTN	243.5	242	eP	:29.79	(-0.09)	eS-	:59.03	(0.66)
TVA	MSAL	332.3	242	eP	:41.16	(0.31)	eS	:49:19.10	(1.82X)
TVA	TCT	368.1	266	eP	:46.71	(1.45)	eS	:24.87	(-0.05)
TVA	MOTN	405.3	276	eP	:52.92	(3.08X)	eS	:32.24	(-0.61)

*****1996 DECEMBER 13; 13:25- JASPER, 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
TVA	961213	132557.6	33.881	87.139	0.0	8	115	309	0.2	D	D/D	3.0	-76	1.7	5.5	D		1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
TVA	MSAL	115.3	22	eP	13:25:16.77	(0.21)	iS-	13:25:30.49	(-0.10)
TVA	PDTN	194.6	37	iP-	:28.95	(-0.15)	eS	:52.64	(0.44)
TVA	TCT	238.6	351	eP	:36.17	(0.22)	eS	:26:04.04	(0.15X)
TVA	ABTN	241.5	23	eP	:36.21	(-0.18)	eS	:05.11	(0.46)
TVA	MOTN	313.3	346	eP	:49.54	(4.20X)	eS-	:21.82	(1.74)

*****1996 DECEMBER 22; 05:56 - MARYLAND*****

NEIC Felt in the Columbia, Maryland, area.

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	961222	055617.3	39.200	76.900	5.0F	4												2.3		F

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
NEIC	MVL	100.1	38	P	05:56:35.00	(0.0)			
NEIC	CVL	192.4	226	(P)	:48.79	(0.7)			
NEIC	BLA	379.2	236	(P)	:57:19.10	(6.9)			
NEIC	NAV	400.3	240	(P)	:16.52	(1.7)			

SOUTHEASTERN U.S. RESERVOIR RELATED EARTHQUAKES DURING 1996

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.

*****1996 JANUARY 2; 03:33 - 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	960102	033353.8	34.300	81.310	0.2	10	4	180	0.1	B		0.3	360	0.3	0.8			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	MR01	3.8	21	iPd	03:33:54.48	(0.00)	iSd	03:33:55.00	(0.00)

USC	MR10	4.8	328	iPd	:54.59	(-0.05)	iSd	:55.26	(-0.03)
USC	JSC	5.1	116	iPd	:54.69	(-0.01)	iSd	:55.39	(0.00)
USC	MR07	8.0	350	iPu	:55.33	(0.17)	iSu	:56.21	(0.01)
USC	MR02	14.0	148	iPu	:56.24	(0.07)	iSu	:57.94	(-0.03)

*****1996 JANUARY 12; 09:54 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	960112	095454.9	34.351	81.339	3.0	5	2	323	0.1	D		5.7	360	5.7	2.8			0.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	1.6	174	iPu	09:54:55.29 (-0.18)	iSd	09:54:56.14 (0.23)
USC	JSC	10.7	137	iPd	:56.80 (0.08)	iSd	:58.07 (-0.03)
USC	MR02	20.1	150	iPu	:59.75 (1.50X)	iSd	:55:00.82 (0.03)

*****1996 JANUARY 26; 16:17 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	960126	161700.6	34.429	81.397	1.8	12	9	332	0.1	C		0.9	360	0.9	3.4			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR07	9.3	135	iPd	16:17:02.19 (0.01)	iSu	16:17:03.39 (0.03)
USC	MR10	11.7	152	iPu	:02.54 (-0.01)	iSu	:03.91 (-0.11)
USC	MR01	14.3	139	iPd	:02.88 (-0.08)	iSd	:04.80 (0.05)
USC	MR05	18.9	162	iPd	:03.79 (0.10)	iSd	:06.01 (-0.02)
USC	JSC	20.8	143	iPu	:04.00 (0.00)	iSu	:06.52 (-0.05)
USC	MR02	30.4	150	iPu	:05.60 (0.03)	iSd	:09.48 (0.15)

*****1996 FEBRUARY 2; 02:41 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	960202	024128.7	34.321	81.286	0.9	12	1	185	0.1	C		0.3	360	0.3	0.8			1.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.4	324	iPu	02:41:28.91 (-0.03)	iSd	02:41:29.20 (0.04)
USC	MR10	5.0	289	iPd	:29.52 (-0.01)	iSu	:30.09 (-0.12)
USC	JSC	5.2	152	iPu	:29.60 (0.00)	iSd	:30.28 (-0.05)
USC	MR07	6.5	327	iPd	:29.88 (0.11)	iSu	:30.60 (-0.03)
USC	MR05	7.4	216	iPu	:29.94 (0.03)	iSd	:30.95 (0.06)
USC	MR02	15.1	160	iPu	:31.28 (0.07)	iSu	:33.11 (-0.08)

*****1996 FEBRUARY 2; 02:59 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	960202	025927.6	34.314	81.297	3.0	7	2	166	0.2	C		3.1	360	3.1	4.4			0.7		

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

USC	MR01	2.0	4	iPu	02:59:28.00	(-0.20)	iSd	02:59:28.15	(-0.51)
USC	MR10	4.4	304	iPd	:28.10	(-0.38)	iSd	:29.29	(0.13)
USC	JSC	5.1	138	iPu	:28.69	(0.11)	iSd	:29.39	(0.07)
USC	MR07	6.7	338	iPd	:29.64	(0.83)	iSu	:30.07	(0.33)

*****1996 FEBRUARY 3; 10:21 - 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	960203	102145.4	34.324	81.286	0.2	12	1	189	0.1	C		0.2	360	0.2	0.7			0.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.3	314	iPd	10:21:45.71 (0.04)	iSu	10:21:45.81 (-0.04)
USC	MR10	5.0	286	iPu	:46.34 (0.02)	iSd	:47.02 (0.01)
USC	JSC	5.4	154	iPd	:46.43 (0.00)	iSu	:47.10 (-0.10)
USC	MR07	6.3	325	iPu	:46.56 (0.02)	iSd	:47.37 (-0.04)
USC	MR05	7.7	216	iPu	:46.84 (0.08)	iSu	:47.73 (-0.07)
USC	MR02	15.4	161	iPd	:48.12 (0.07)	iSu	:50.11 (0.01)

*****1996 FEBRUARY 4; 17:04 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	960204	170439.1	34.321	81.289	0.1	10	1	179	0.1	B		0.5	360	0.5	0.8			1.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.3	331	iPu	17:04:39.26 (-0.16)	iSd	17:04:39.62 (0.00)
USC	MR10	4.8	290	iPd	:39.99 (-0.01)	iSd	:40.66 (0.01)
USC	JSC	5.3	150	iPu	:40.09 (0.01)	iSd	:40.79 (0.00)
USC	MR07	6.4	328	iPd	:40.24 (-0.02)	iSu	:41.90 (0.78)
USC	MR02	15.2	159	iPu	:41.77 (0.05)	iSd	:43.74 (0.07)

*****1996 FEBRUARY 5; 08:08 - 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	960205	080825.0	34.323	81.286	0.4	10	1	188	0.1	C		0.7	360	0.7	0.9			0.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.4	318	iPu	08:08:25.24 (-0.06)	iSd	08:08:25.47 (-0.04)
USC	MR10	5.0	287	iPd	:25.84 (-0.06)	iSd	:26.56 (0.00)
USC	JSC	5.3	154	iPu	:25.93 (-0.02)	iSd	:26.65 (0.00)
USC	MR07	6.4	326	iPd	:26.02 (-0.11)	iSd	:27.17 (0.20)
USC	MR02	15.3	160	iPu	:27.61 (0.02)	iSu	:29.69 (0.15)

*****1996 MARCH 2; 12:23 - 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	960302	122343.6	34.294	81.155	1.0	10	10	273	0.2	D		1.9	360	1.9	54.0			0.8		

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

USC	JSC	9.8	261	iPu	12:23:45.19	(-0.02)	iSd	12:23:46.24	(-0.21)
USC	MR02	13.2	212	iPd	:45.89	(0.09)	iSu	:47.42	(-0.07)
USC	MR01	13.6	288	iPu	:45.06	(-0.75)	iSd	:47.37	(-0.14)
USC	MR05	16.8	260	iPd	:46.50	(0.19)	iSd	:49.33	(0.93)
USC	MR07	17.8	298	iPd	:46.80	(0.32)	iSd	:49.47	(0.79)

*****1996 MARCH 3; 20:20 - 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	960303	202021.5	34.306	81.306	0.1	10	3	169	0.3	C		1.7	360	1.7	3.4			0.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	3.0	19	iPd	20:20:21.53 (-0.49)	iSu	20:20:21.85 (-0.60)
USC	MR10	4.4	320	iPd	:22.15 (-0.11)	iSd	:22.85 (-0.02)
USC	JSC	5.1	124	iPd	:22.30 (-0.07)	iSd	:23.06 (-0.01)
USC	MR07	7.4	346	iPu	:23.15 (0.41)	iSu	:25.11 (1.39)
USC	MR02	14.3	151	iPd	:24.06 (0.16)	iSd	:26.15 (0.40)

*****1996 MARCH 12; 16:44 - JOCASSEE 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	960312	164442.7	34.746	83.012	8.6	9	10	296	0.1	C		2.1	360	2.1	2.6			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MMC	9.6	67	iPd	16:44:45.01 (0.25)	iSd	16:44:47.39 (0.98)
USC	SMT	20.8	10	iPu	:46.33 (-0.01)	iSu	:49.19 (-0.02)
USC	JVW	27.3	3	iPu	:47.23 (-0.10)	iSd	:50.99 (0.00)
USC	BG3	28.3	15	iPu	:47.47 (-0.02)	iSu	:51.23 (-0.03)
USC	CCK	30.7	3	iPd	:47.69 (-0.17)	iSd	:52.08 (0.15)

*****1996 MARCH 20; 00:00 - 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	960320	000007.9	34.415	81.435	0.7	8	13	343	0.1	D		37.2	360	37.2	142.5			0.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	12.5	134	iPu	00:00:09.97 (0.03)	iSd	00:00:11.29 (-0.23)
USC	MR01	15.8	126	iPd	:10.25 (-0.21)	iSd	:12.57 (0.14)
USC	JSC	22.0	133	iPu	:11.44 (-0.01)	iSd	:13.93 (-0.24)
USC	MR02	31.0	143	iPu	:13.06 (0.13)	iSd	:16.90 (0.12)

*****1996 MARCH 25; 00:16 - 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	960325	001606.0	34.346	81.332	0.9	10	1	168	0.0	B		0.1	360	0.1	0.2			1.3		

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

USC	MR10	1.2	205	iPd	00:16:06.29	(0.00)	iSu	00:16:06.50	(0.00)
USC	MR07	2.8	13	iPd	:06.55	(0.01)	iSd	:06.93	(-0.01)
USC	MR01	3.7	115	iPd	:06.69	(0.01)	iSu	:07.19	(0.52)
USC	MR05	8.7	181	iPu	:07.51	(0.03)	iSd	:08.65	(0.07)
USC	JSC	9.9	138	iPd	:07.65	(-0.01)	iSu	:08.90	(-0.01)

*****1996 APRIL 1; 18:35 - 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	960401	183553.9	34.195	81.232	3.0	9	0	188	1.7	D		23.2	360	23.2	8.7			0.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	MR02	0.2	140	iPd	18:35:52.85	(-1.61)	iSu	18:35:57.04	(2.15)
USC	JSC	9.8	345	iPd	:53.21	(-2.37)	iSd	:57.81	(0.95)
USC	MR01	16.3	339	iPd	:56.72	(0.13)	iSu	:58.95	(0.31)
USC	MR10	18.5	328	iPd	:58.74	(1.81)	iSd	:36:01.00	(1.76)
USC	MR07	21.3	336	iPu	:54.76	(-2.62)	iSd	:35:57.65	(-2.37)

*****1996 APRIL 3; 00:34 - JOCASSEE 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	960403	003458.6	34.961	82.969	1.5	8	3	141	0.1	B		0.2	360	0.2	1.5			0.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	SMT	3.3	184	iPu	00:34:59.26	(0.05)	iSd	00:34:59.71	(0.00)
USC	JVW	4.4	323	iPd	:59.39	(0.01)	iSd	:59.92	(-0.10)
USC	BG3	4.9	43	iPu	:59.57	(0.11)	iSd	:35:00.01	(-0.15)
USC	CCK	7.2	343	iPu	:59.94	(0.11)	iSu	:00.77	(-0.05)

*****1996 APRIL 14; 19:30 - 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	960414	193036.4	34.349	81.329	1.7	8	2	159	0.0	B		0.2	360	0.2	0.4			0.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)		PHASE	ARRIVAL TIME (RES)	
USC	MR10	1.6	209	iPu	19:30:36.80	(-0.06)	iSd	19:30:37.19	(0.02)
USC	MR07	2.4	8	iPd	:36.97	(0.02)	iSd	:37.32	(-0.02)
USC	MR01	3.6	122	iPd	:37.14	(0.02)	iSu	:37.64	(0.00)
USC	JSC	10.0	140	iPd	:38.13	(0.03)	iSu	:39.32	(-0.05)

*****1996 MAY 18; 13:26 - 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	960518	132610.0	34.321	81.356	2.1	8	2	270	0.0	C		0.4	360	0.4	0.5			0.8		

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

USC	MR10	2.4	44	iPd	13:26:10.41	(-0.09)	iSd	13:26:10.93 (0.02)
USC	MR01	5.6	78	iPd	:10.96	(-0.01)	iSd	:11.76 (0.03)
USC	MR07	6.2	27	iPu	:11.05	(0.00)	iSu	:11.87 (0.00)
USC	JSC	9.9	117	iPd	:11.66	(0.03)	iSu	:12.88 (-0.01)

*****1996 JULY 30; 18:36 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	960730	183626.1	34.433	81.386	2.5	8	9	344	0.1	C		1.9	360	1.9	2.7			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR07	8.9	141	iPu	18:36:27.48 (-0.12)	iSd	18:36:28.85 (0.09)
USC	MR10	11.6	157	iPd	:27.96 (-0.06)	iSd	:29.45 (-0.05)
USC	JSC	20.6	146	iPd	:29.49 (0.06)	iSd	:31.87 (-0.11)
USC	MR02	30.2	152	iPd	:31.09 (0.07)	iSd	:34.84 (0.07)

*****1996 AUGUST 4; 01:10 - 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
USC	960804	011052.4	34.369	81.305	1.5	10	2	241	0.2	C		1.9	360	1.9	2.9			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR07	1.9	277	iPd	01:10:52.81 (0.02)	iSd	01:10:53.00 (-0.12)
USC	MR01	4.2	169	iPd	:53.50 (0.38)	iSu	:53.84 (0.15)
USC	MR10	4.7	220	iPd	:53.25 (0.05)	iSd	:53.57 (-0.27)
USC	JSC	10.6	157	iPd	:54.31 (0.17)	iSd	:54.93 (-0.55)
USC	MR05	11.5	194	iPu	:54.91 (0.63)	iSd	:55.95 (0.22)

*****1996 AUGUST 4; 01:28 - 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	960804	012813.0	34.367	81.313	1.0	8	1	223	0.0	C		0.3	360	0.3	0.5			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR07	1.2	290	iPd	01:28:13.33 (0.01)	iSd	01:28:13.53 (-0.01)
USC	MR10	4.1	214	iPd	:13.76 (0.00)	iSd	:14.30 (-0.01)
USC	MR01	4.2	158	iPd	:13.83 (0.06)	iSd	:14.35 (0.02)
USC	JSC	10.8	153	iPu	:14.81 (-0.01)	iSu	:16.09 (-0.09)

*****1996 AUGUST 9; 15:58 - 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	960809	155806.2	34.424	81.383	3.4	12	8	332	0.1	C		1.0	360	1.0	1.7			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR07	8.0	138	iPd	15:58:07.55 (-0.03)	iSd	15:58:08.73 (0.07)
USC	MR10	10.6	157	iPu	:07.89 (-0.08)	iSu	:09.23 (-0.12)

USC	MR01	13.0	142	iPu	:08.47	(0.12)	iSu	:10.20	(0.19)
USC	MR05	17.9	165	iPu	:09.15	(0.04)	iSu	:11.46	(0.10)
USC	JSC	19.5	145	iPu	:09.35	(-0.02)	iSu	:11.76	(-0.05)
USC	MR02	29.2	151	iPu	:10.96	(0.02)	iSd	:14.60	(0.02)

*****1996 AUGUST 23; 02:29 - JOCASSEE 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	960823	022921.7	34.787	82.917	0.6	10	1	173	0.1	C		4.7	360	4.7	9.2			1.6		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MMC	0.8	169	iPu	02:29:21.78 (-0.14)	iSd	02:29:22.18 (1.01)
USC	SMT	16.7	343	iPd	:24.58 (0.01)	iSu	:26.85 (1.04)
USC	BG3	22.9	357	iPd	:25.51 (-0.06)	iSu	:28.52 (1.04)
USC	JVW	24.0	342	iPd	:25.86 (0.12)	iSu	:28.80 (1.03)
USC	CCK	27.1	345	iPu	:26.41 (0.17)	iSu	:29.64 (0.97)

*****1996 AUGUST 23; 11:18 - 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
CSU	Felt (II-III) . Magnitude 1.4																			
USC	960823	111857.6	34.266	82.138	1.6	8	74	213	0.3	D		6.2	360	6.2	424.7			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	74.1	84	iPu	11:19:10.09 (0.70)	iSd	11:19:18.11 (-0.28)
USC	JSC	80.9	89	iPd	:10.61 (0.15)	iSd	:17.99 (-2.28)
USC	MR02	84.1	96	iPd	:10.90 (-0.12)	iSu	:20.93 (-0.33)
USC	MMC	91.3	309	iPu	:12.07 (-0.05)	iSu	:22.94 (-0.26)
USC	SMT	106.2	314	iPd	:15.01 (0.53)	iSd	:24.27 (-3.08)

Additional Data

CSU	1.6	P	11:18:57.57

*****1996 AUGUST 27; 14:47 - JOCASSEE 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	960827	144747.9	34.756	83.052	7.1	10	13	292	0.1	C		1.6	360	1.6	3.1			2.1		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MMC	12.8	78	iPd	14:47:50.20 (-0.09)	iSu	14:47:52.28 (1.07)
USC	SMT	20.7	21	iPd	:51.48 (0.01)	iSd	:54.25 (1.07)
USC	JVW	26.7	11	iPu	:52.42 (0.03)	iSu	:55.92 (1.06)
USC	BG3	28.5	23	iPu	:52.74 (0.06)	iSd	:56.34 (1.04)
USC	CCK	30.1	11	iPd	:52.86 (-0.07)	iSd	:57.02 (0.51)

*****1996 SEPTEMBER 6; 19:27 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	960906	192708.1	34.299	81.339	3.0	12	4	190	0.4	D		2.1	360	2.1	3.5			0.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR05	3.5	172	iPd	19:27:09.21 (0.33)	iSu	19:27:09.67 (0.21)
USC	MR10	4.2	2	iPd	:08.95 (-0.02)	iSu	:09.28 (-0.35)
USC	MR01	5.5	47	iPd	:09.34 (0.20)	iSd	:09.51 (-0.42)
USC	JSC	7.6	106	iPd	:09.70 (0.25)	iSd	:10.83 (0.36)
USC	MR07	8.1	9	iPu	:09.88 (0.35)	iSu	:10.06 (-0.55)
USC	MR02	15.4	139	iPu	:10.38 (-0.33)	iSd	:11.86 (-0.83)

*****1996 SEPTEMBER 22; 05:54 - JOCASSEE 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	960922	055458.5	34.806	82.939	0.3	10	4	203	0.1	C		1.5	360	1.5	3.5			1.9		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MMC	3.6	143	iPu	05:54:59.08 (-0.03)	iSd	05:54:59.57 (1.18)
USC	SMM	12.7	76	iPu	:55:00.67 (0.02)	iSd	:55:02.40 (1.18)
USC	BG3	20.8	2	iPu	:02.06 (0.10)	iSd	:04.55 (1.18)
USC	JVW	21.4	345	iPd	:02.31 (0.25)	iSu	:04.93 (1.18)
USC	CCK	24.6	349	iPd	:02.76 (0.19)	iSu	:05.74 (1.18)

*****1996 OCTOBER 2; 05:15 - SOUTH CAROLINA *****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961002	051516.5	34.986	82.977	3.8	5	2	212	0.0	C		0.1	360	0.1	0.1			0.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	BG3			iPu	05:15:17.45 (0.02)	iSd	05:15:18.18 (0.02)
USC	CCK					iSu	:18.22 (0.02)
USC	JVW			iPu	:17.22 (0.02)	iSd	:17.79 (0.02)

*****1996 OCTOBER 4; 15:04 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961004	150443.7	34.328	81.326	0.7	10	1	128	0.1	B		1.1	360	1.1	2.8			1.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	1.4	312	iPu	15:04:44.01 (-0.01)	iSd	15:04:44.20 (-0.04)
USC	MR01	2.8	80	iPd	:44.27 (0.04)	iSu	:44.74 (0.11)
USC	MR05	6.7	187	iPd	:45.04 (0.18)	iSd	:45.77 (0.04)
USC	JSC	8.0	131	iPd	:45.04 (-0.03)	iSu	:46.02 (-0.08)
USC	MR02	17.3	149	ePu	:46.55 (-0.05)	iSu	:48.75 (-0.04)

*****1996 OCTOBER 7; 17:31 - 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

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	961007	173145.9	34.419	81.381	7.9	8	10	344	0.1	D		2.7	360	2.7	1.3			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	9.9	157	iPd	17:31:47.83 (-0.16)	iSd	17:31:49.70 (0.15)
USC	MR01	12.4	141	iPd	:48.27 (-0.04)	iSd	:50.08 (-0.03)
USC	JSC	19.0	144	iPd	:49.29 (0.05)	iSu	:51.68 (-0.07)
USC	MR02	28.6	151	iPd	:50.85 (0.10)	iSd	:54.37 (-0.03)

*****1996 OCTOBER 27; 15:22 - 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	961027	152250.0	34.338	81.328	2.8	8	1	205	0.1	C		0.6	360	0.6	0.5			0.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	0.9	258	iPu	15:22:50.40 (-0.09)	iSu	15:22:50.93 (0.06)
USC	MR01	3.0	103	iPd	:50.71 (0.02)	iSd	:51.21 (-0.01)
USC	JSC	9.0	136	iPu	:51.60 (0.06)	iSd	:52.66 (-0.05)
USC	MR02	18.4	151	iPu	:53.06 (-0.01)	iSd	:55.47 (0.07)

*****1996 OCTOBER 28; 01:03 - JOCASSEE 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	961028	010340.6	34.782	82.927	1.2	10	1	247	0.1	C		1.2	360	1.2	0.8			0.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MMC	1.1	100	iPd	01:03:40.74 (-0.14)	iSd	01:03:41.10 (1.07)
USC	SMM	12.6	63	iPu	:42.69 (-0.03)	iSu	:44.44 (1.07)
USC	SMT	17.0	346	iPd	:43.82 (0.38)	iSu	:45.65 (1.07)
USC	BG3	23.5	359	iPd	:44.55 (0.07)	iSu	:47.55 (1.07)
USC	CCK	27.4	348	iPd	:45.11 (0.00)	iSd	:48.51 (1.02)

*****1996 DECEMBER 15; 17:50 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961215	175057.7	34.329	81.301	1.7	12	1	87	0.1	A		0.4	360	0.4	0.5			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	0.6	59	iPd	17:50:57.97 (-0.01)	iSu	17:50:58.19 (-0.03)
USC	MR10	3.4	283	iPd	:58.16 (-0.15)	iSd	:59.07 (0.26)
USC	MR07	5.1	334	iPu	:58.56 (0.00)	iSu	:59.81 (0.56)
USC	JSC	6.6	145	iPu	:58.82 (0.02)	iSd	:59.76 (0.09)
USC	MR05	7.5	204	iPd	:58.85 (-0.08)	iSd	:59.89 (-0.01)
USC	MR02	16.4	157	iPu	:51:00.46 (0.06)	iSd	:51:02.51 (0.02)

*****1996 DECEMBER 17; 13:42 - 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	961217	134249.2	34.330	81.305	3.0	12	1	97	0.3	C		1.8	360	1.8	1.7			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	0.9	75	iPd	13:42:49.69 (-0.03)	iSd	13:42:49.95 (-0.18)
USC	MR10	3.1	284	ePu	:49.54 (-0.37)	iSd	:50.29 (-0.16)
USC	MR07	4.9	338	iPd	:50.00 (-0.14)	iSd	:51.64 (0.78)
USC	JSC	6.9	143	ePd	:50.56 (0.13)	iSd	:51.42 (0.04)
USC	MR05	7.4	201	iPd	:51.44 (0.94)	iSd	:51.84 (0.34)
USC	MR02	16.7	155	ePd	:52.14 (0.15)	iSu	:54.20 (0.09)

*****1996 DECEMBER 17; 15:11 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961217	151155.0	34.325	81.307	0.7	10	1	120	0.2	B		2.0	360	2.0	4.8			0.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.3	54	ePd	15:11:55.19 (-0.09)	iSu	15:11:55.47 (-0.01)
USC	MR10	3.1	294	iPd	:55.68 (0.11)	iSu	:55.85 (-0.15)
USC	JSC	6.6	139	ePd	:56.07 (-0.07)	iSu	:56.94 (-0.05)
USC	MR05	6.9	202	iPd	:56.61 (0.43)	iSd	:57.01 (-0.06)
USC	MR02	16.3	154	iPd	:58.73 (1.01)	iSu	:59.71 (-0.07)

*****1996 DECEMBER 17; 15:30 - 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	961217	153057.5	34.326	81.311	0.9	14	2	98	0.1	B		0.4	360	0.4	1.6			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.6	65	iPd	15:30:57.74 (-0.04)	iSu	15:30:58.01 (-0.03)
USC	MR10	2.7	296	iPd	:57.89 (-0.07)	iSu	:58.34 (0.00)
USC	MR07	5.1	346	iPu	:58.11 (-0.23)	iSu	:59.64 (0.63)
USC	MR05	6.8	198	iPu	:58.61 (0.00)	iSd	:59.61 (0.12)
USC	JSC	6.9	137	iPd	:58.60 (-0.03)	iSd	:59.45 (-0.07)
USC	MR02	16.5	153	iPd	:31:00.25 (0.05)	iSd	:31:02.30 (0.01)
USC	LHS	49.3	70	iPu	:05.57 (0.22)	iSd	:11.79 (0.44)

*****1996 DECEMBER 17; 15:40 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961217	154039.3	34.329	81.313	2.0	12	2	95	0.2	B		0.7	360	0.7	1.3			0.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.6	77	ePd	15:40:39.61 (-0.10)	iSu	15:40:39.91 (-0.14)
USC	MR10	2.4	291	iPd	:39.77 (-0.03)	iSd	:40.22 (0.00)
USC	MR07	4.8	346	iPu	:40.24 (0.11)	iSd	:41.61 (0.81)
USC	MR05	7.0	196	iPd	:40.23 (-0.25)	iSd	:41.55 (0.15)
USC	JSC	7.3	138	ePd	:40.50 (-0.01)	iSu	:41.41 (-0.05)
USC	MR02	16.8	153	iPd	:42.14 (0.07)	iSu	:44.31 (0.10)

*****1996 DECEMBER 17; 15:40 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961217	154057.2	34.343	81.297	2.7	8	1	255	0.1	C		0.8	360	0.8	0.5			0.5		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.2	173	iPd	15:40:57.80 (0.09)	iSu	15:40:58.06 (-0.03)
USC	MR10	3.8	259	iPd	:57.92 (-0.06)	iSu	:58.63 (0.06)
USC	JSC	7.8	154	ePu	:58.65 (0.09)	iSu	:59.55 (-0.05)
USC	MR02	17.7	160	iPu	:41:00.09 (-0.08)	iSu	:41:02.47 (0.05)

*****1996 DECEMBER 17; 15:41 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961217	154111.9	34.334	81.297	2.3	12	0	172	0.3	C		1.5	360	1.5	1.6			0.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	0.2	140	iPu	15:41:11.47 (-0.85)	iSu	15:41:12.65 (0.02)
USC	MR10	3.7	275	iPd	:12.70 (0.05)	iSu	:13.21 (0.00)
USC	MR07	4.8	328	iPu	:12.97 (0.16)	iSd	:14.36 (0.87)
USC	JSC	6.9	150	ePu	:12.99 (-0.12)	iSu	:14.12 (0.10)
USC	MR05	8.1	205	iPu	:13.13 (-0.17)	iSd	:14.28 (-0.07)
USC	MR02	16.8	158	iPd	:15.12 (0.41)	iSu	:17.05 (0.21)

*****1996 DECEMBER 17; 15:45 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961217	154559.2	34.334	81.297	3.0	14	0.2	102	1.6	C		6.1	360	6.1	7.3			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	0.2	140	iPd	15:45:59.55 (-0.12)	iSd	15:45:59.73 (-0.32)
USC	MR10	3.7	275	iPd	:59.70 (-0.25)	iSd	:46:01.34 (0.00)
USC	MR07	4.8	328	iPu	:46:00.10 (0.00)	iSd	:01.46 (0.64)
USC	JSC	6.9	150	iPu	:00.42 (0.03)	iSd	:01.29 (-0.04)
USC	MR05	8.1	205	iPd	:00.42 (-0.15)	iSd	:01.45 (-0.20)
USC	MR02	16.8	158	iPu	:02.01 (0.04)	iSu	:04.07 (-0.04)
USC	LHS	47.8	70	iPd	:07.41 (0.59)	iSu	:13.49 (0.84)

*****1996 DECEMBER 17; 15:56 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961217	155606.9	34.319	81.315	0.2	10	2	163	0.2	C		0.6	360	0.6	2.0			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.3	51	iPd	15:56:07.14 (-0.16)	iSd	15:56:07.42 (-0.21)
USC	MR10	2.9	314	iPd	:07.24 (-0.15)	iSd	:07.71 (-0.08)
USC	MR07	5.8	351	iPu	:07.77 (-0.12)	iSu	:09.05 (0.38)
USC	JSC	6.6	130	iPd	:08.09 (0.07)	iSu	:08.86 (-0.04)

USC	MR02	16.0	151	iPu	:09.83	(0.27)	iSd	:11.71 (0.11)

*****1996 DECEMBER 17; 15:57 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961217	155743.8	34.408	81.339	6.6	8	8	334	0.4	D		7.3	360	7.3	6.5			0.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR10	7.9	179	iPd	15:57:44.90 (-0.55)	iSu	15:57:47.35 (0.62)
USC	MR05	15.6	178	iPu	:46.27 (-0.24)	iSd	:48.68 (0.10)
USC	JSC	15.9	153	iPd	:46.05 (-0.51)	iSd	:48.56 (-0.12)
USC	MR02	25.8	157	iPd	:48.89 (0.77)	iSd	:51.37 (-0.04)

*****1996 DECEMBER 18; 08:47 - 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	961218	084754.9	34.362	81.297	3.0	10	3	287	1.0	D		8.5	360	8.5	8.0			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	3.3	177	iPd	08:47:55.69 (0.02)	iSd	08:47:55.93 (-0.31)
USC	MR10	4.7	232	iPd	:55.88 (0.04)	iSu	:56.34 (-0.20)
USC	JSC	9.7	159	iPd	:56.58 (0.00)	iSd	:57.44 (-0.41)
USC	MR05	11.0	198	iPu	:56.72 (-0.06)	iSd	:57.65 (-0.55)
USC	MR02	19.7	162	iPd	:58.82 (0.63)	iSu	:48:08.25 (7.56)

*****1996 DECEMBER 18; 10:37 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961218	103701.9	34.339	81.306	2.3	12	1	157	0.1	B		0.4	360	0.4	0.5			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.2	130	iPd	10:37:02.42 (0.09)	iSu	10:37:02.64 (-0.04)
USC	MR10	2.9	264	iPd	:02.59 (0.08)	iSd	:03.01 (0.01)
USC	MR07	3.9	333	iPu	:02.54 (-0.10)	iSu	:03.08 (-0.15)
USC	JSC	7.8	147	iPu	:03.30 (0.08)	iSd	:04.16 (-0.09)
USC	MR05	8.4	198	iPu	:03.34 (0.03)	iSd	:04.36 (-0.04)
USC	MR02	17.6	157	iPu	:04.91 (0.09)	iSu	:06.99 (-0.06)

*****1996 DECEMBER 18; 11:04 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961218	110414.7	34.334	81.310	1.8	14	1	90	0.1	A		0.5	360	0.5	0.7			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.3	98	iPd	11:04:15.10 (0.02)	iSd	11:04:15.37 (-0.01)
USC	MR10	2.6	277	iPd	:15.28 (0.04)	iSu	:15.76 (0.11)
USC	MR07	4.3	341	iPu	:15.35 (-0.14)	iSu	:15.74 (-0.35)

USC	JSC	7.5	142	iPu	:15.98	(0.01)	iSu	:16.84 (-0.10)
USC	MR05	7.7	197	iPd	:16.00	(0.00)	iSd	:17.04 (0.05)
USC	MR02	17.2	155	iPu	:17.59	(0.03)	iSu	:19.64 (-0.10)
USC	LHS	48.8	71	iPu	:22.91	(0.38)	iSu	:29.16 (0.67)

*****1996 DECEMBER 19; 00:13 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961219	001338.4	34.325	81.307	0.2	13	1	94	0.1	B		0. 3	360	0.3	1.1			1.2		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.3	52	iPd	00:13:38.59 (-0.07)	iSd	00:13:38.87 (0.01)
USC	MR10	3.1	295	iPd	:38.78 (-0.17)	iSd	:39.54 (0.16)
USC	MR07	5.4	342	iPu	:39.24 (-0.09)	iSu	:40.18 (0.13)
USC	JSC	6.6	139	ePd	:39.48 (-0.05)	iSu	:40.35 (-0.05)
USC	MR05	6.8	201	iPu	:39.55 (-0.02)	iSd	:40.57 (0.10)
USC	MR02	16.2	154	iPu	:41.11 (-0.01)	iSu	:43.26 (0.07)
USC	LHS	49.0	69	iPu	:46.40 (0.13)	iSu	:52.73 (0.48)

*****1996 DECEMBER 19; 01:42 - 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	961219	014252.5	34.319	81.312	0.6	14	2	110	0.1	B		0. 3	360	0.3	0.9			1.4		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.1	48	iPd	01:42:52.73 (-0.15)	iSu	01:42:52.95 (-0.23)
USC	MR10	3.0	309	iPd	:52.95 (-0.08)	iSu	:53.33 (-0.12)
USC	MR07	5.8	348	iPu	:53.56 (0.07)	iSd	:54.76 (0.51)
USC	MR05	6.1	199	iPd	:53.48 (-0.05)	iSd	:54.54 (0.21)
USC	JSC	6.5	132	ePd	:53.61 (0.01)	iSu	:54.46 (0.02)
USC	MR02	15.9	152	iPd	:55.25 (0.11)	iSd	:57.31 (0.14)
USC	LHS	49.6	69	iPd	:43:00.50 (0.06)	iSu	:43:06.85 (0.36)

*****1996 DECEMBER 19; 02:35 - 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	961219	023539.9	34.324	81.311	1.5	12	2	118	0.1	B		0. 5	360	0.5	1.1			1.3		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.7	58	iPd	02:35:40.12 (-0.19)	iSd	02:35:40.65 (0.04)
USC	MR10	2.8	300	iPd	:40.33 (-0.13)	iSd	:41.10 (0.22)
USC	MR05	6.6	199	iPd	:41.04 (0.00)	iSd	:42.09 (0.19)
USC	JSC	6.8	136	iPu	:40.99 (-0.07)	iSd	:41.87 (-0.07)
USC	MR02	16.3	153	iPu	:42.62 (0.00)	iSd	:44.70 (0.01)
USC	LHS	49.3	70	iPu	:47.97 (0.16)	iSd	:54.28 (0.46)

*****1996 DECEMBER 28; 13:34 - 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	961228	133406.4	34.334	81.310	1.3	10	1	181	0.0	C	0. 3		360	0.3	0.5				1.1	

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.3	98	iPu	13:34:06.80 (0.02)	iSu	13:34:07.05 (0.02)
USC	MR10	2.6	277	iPd	:06.94 (-0.01)	iSd	:07.29 (-0.04)
USC	JSC	7.5	142	iPu	:07.69 (-0.02)	iSu	:08.59 (-0.08)
USC	MR05	7.7	197	iPd	:07.71 (-0.02)	iSd	:08.77 (0.05)
USC	MR02	17.2	155	iPu	:09.33 (0.03)	iSd	:11.60 (0.12)

*****1996 DECEMBER 28; 14:24 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961228	142448.0	34.334	81.309	1.6	10	1	182	0.2	C		1.1	360	1.1	1.4				1.0	

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.2	99	iPu	14:24:48.31 (-0.04)	iSu	14:24:48.57 (-0.04)
USC	MR10	2.7	277	iPu	:48.47 (-0.06)	iSd	:48.80 (-0.14)
USC	JSC	7.4	143	ePd	:49.20 (-0.06)	iSu	:50.17 (-0.05)
USC	MR05	7.7	198	iPd	:49.98 (0.68)	iSd	:50.29 (0.00)
USC	MR02	17.2	155	iPd	:51.20 (0.35)	iSd	:52.97 (-0.05)

*****1996 DECEMBER 28; 15:28 - 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	961228	152840.9	34.334	81.312	1.2	10	2	180	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	1.5	97	iPu	15:28:41.29 (0.00)	iSu	15:28:41.55 (0.00)
USC	MR10	2.4	278	iPd	:41.42 (0.01)	iSd	:41.78 (0.00)
USC	JSC	7.6	141	ePd	:42.21 (-0.02)	iSu	:43.12 (-0.08)
USC	MR05	7.6	196	iPd	:42.20 (-0.03)	iSu	:43.19 (-0.01)
USC	MR02	17.3	154	iPd	:43.85 (0.03)	iSd	:46.11 (0.11)

*****1996 DECEMBER 28; 22:32 - 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	961228	223237.7	34.327	81.310	0.1	10	1	138	0.1	B		0.3	360	0.3	1.0				1.2	

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.4	70	iPd	22:32:38.00 (0.00)	iSu	22:32:38.22 (-0.01)
USC	MR10	2.7	292	iPd	:38.15 (-0.06)	iSu	:38.62 (0.02)
USC	MR05	7.0	198	iPd	:38.91 (-0.02)	iSd	:39.97 (0.11)
USC	JSC	7.0	139	ePu	:38.89 (-0.04)	iSu	:39.77 (-0.09)
USC	LHS	49.1	70	iPu	:45.84 (0.21)	iSu	:52.00 (0.36)

*****1996 DECEMBER 29; 00:08 - 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	961229	000832.5	34.330	81.310	1.0	10	1	158	0.1	B		0.6	360	0.6	1.4			0.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	1.3	83	iPd	00:08:32.77 (-0.02)	iSu	00:08:33.03 (0.01)
USC	MR10	2.7	284	iPd	:32.92 (-0.07)	iSu	:33.38 (0.01)
USC	JSC	7.2	141	ePu	:33.80 (0.09)	iSu	:34.57 (-0.07)
USC	MR05	7.3	198	iPd	:33.68 (-0.05)	iSd	:34.72 (0.05)
USC	MR02	16.9	154	iPu	:35.63 (0.33)	iSu	:37.34 (-0.09)

*****1996 DECEMBER 31; 00:57 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961231	005733.2	34.343	81.313	0.8	10	2	237	0.1	C		0.9	360	0.9	1.0			1.0		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	2.0	129	iPd	00:57:33.71 (0.10)	iSu	00:57:33.91 (0.00)
USC	MR10	2.4	251	iPd	:33.71 (0.04)	iSd	:33.91 (-0.10)
USC	JSC	8.5	145	ePu	:34.67 (0.02)	iSu	:35.58 (-0.16)
USC	MR05	8.6	193	iPd	:34.30 (-0.36)	iSd	:35.88 (0.12)
USC	MR02	18.3	155	iPu	:36.31 (0.06)	iSd	:38.55 (-0.01)

*****1996 DECEMBER 31; 01:49 - 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	961231	014951.3	34.359	81.288	0.9	10	3	283	0.2	D		1.4	360	1.4	17.9			0.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	3.1	194	iPd	01:49:52.02 (0.11)	iSu	01:49:52.22 (-0.12)
USC	MR10	5.3	241	iPd	:52.27 (0.03)	iSd	:52.69 (-0.24)
USC	JSC	9.2	164	ePu	:52.98 (0.12)	iSd	:53.89 (-0.13)
USC	MR05	11.1	203	iPd	:52.89 (-0.27)	iSu	:54.89 (0.34)
USC	MR02	19.2	164	iPd	:54.51 (0.01)	iSd	:56.87 (-0.04)

*****1996 DECEMBER 31; 03:36 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961231	033650.0	34.338	81.295	3.0	10	1	246	0.5	D		4.4	360	4.4	3.2			0.8		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	0.7	185	iPd	03:36:52.48 (1.92)	iSd	03:36:50.69 (-0.27)
USC	MR10	3.9	267	iPd	:50.14 (-0.72)	iSd	:51.32 (-0.17)
USC	JSC	7.2	153	iPu	:51.47 (0.15)	iSd	:52.36 (0.06)
USC	MR05	8.6	205	iPd	:51.94 (0.40)	iSd	:52.82 (0.14)
USC	MR02	17.2	160	iPu	:53.06 (0.15)	iSd	:54.83 (-0.27)

*****1996 DECEMBER 31; 11:05 - MONTICELLO RESERVOIR, SOUTH CAROLINA*****

SRCE	DATE	HRMN	SEC	LAT-N	LON-W	DPTH	PH	DMN	GAP	RMS	Q	SQD	ERH1	AZ	ERH2	ERZ	Q	MN	MD	MAGT	I
USC	961231	110551.0		34.339	81.300	2.4	10	1	246	0.3	C		2.2	360	2.2	1.9			0.7		

SRCE	STA	DIST (KM)	AZM	PHASE	ARRIVAL TIME (RES)	PHASE	ARRIVAL TIME (RES)
USC	MR01	0.9	154	iPu	11:05:51.50 (0.09)	iSu	11:05:51.68 (-0.07)
USC	MR10	3.5	264	iPd	:51.05 (-0.63)	iSd	:52.34 (0.12)
USC	JSC	7.5	151	iPd	:52.60 (0.32)	iSd	:53.29 (0.01)
USC	MR05	8.6	201	iPd	:52.04 (-0.40)	iSu	:53.70 (0.15)
USC	MR02	17.5	158	iPd	:54.23 (0.34)	iSd	:56.29 (0.19)

KEOWEE RESERVOIR, SOUTH CAROLINA *****
HARTWELL RESERVOIR, SOUTH CAROLINA *****

SEISMIC STATION LISTING AND NETWORK MAPS

Stations operating in the SEUSSN during the report period are listed below. Changes to the network (new stations, stations that have been closed, etc.) may be found at the end of this listing. 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
AMG	32-03.56	84-13.06	122	7309-	GSW	Americus, GA
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	Blacksburg, VA
BRBC	35-44.34	82-17.16	1976	8205	CERI	Mt. Mitchell, NC
BTR	36-10.56	78-45.78	122		UNC	Butner, NC
BVD	39-46.49	75-29.96	58	8502	DGS	Bellevue State Park, DE
BWD	39-47.96	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	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
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
ELK	33-20.88	81-20.83	88	9511-	WSRC	Elko, SC
ETT	35-19.56	84-27.30	588	8111-	CERI	Etowah, TN
EVE	25-23.24	80-40.97	2	8910-	UFL	Homestead, FL
FGTN	36-26.02	83-11.72	509	9112-	CERI	TN
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
GRB	36-04.02	79-44.70	236	-	UNC	Greensboro, NC
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
JSC	34-16.90	81-15.62	120	7405-	USC	Jenkinsville, SC
JVW	34-59.54	82-59.86	554	9111-	USC	Bad Creek Res., SC
LEX	37-47.36	79-26.50	311	7105-	WAL	Lexington, VA
LHS	34-28.57	80-48.37	120	7405-	USC	Liberty Hill, SC
MCWV	39-39.49	79-50.74	200	-	NEIC-WVGS	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
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
MTT	33-45.02	81-38.40	182	7608-	USC	Monetta, SC
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	75-42.49	47	7211-	DGS	Newark, DE
NPRS	33-15.42	81-38.28	79	91 -	WSRC	Savannah River Lab, SC
PBV	36-58.94	77-31.87	49	7811-9601	VTSO	Petersburg, VA
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	37-20.09	81-02.93	820	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
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 -TVA	Tuckaleechee Caverns, 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
WYC	31-12.32	82-23.39	43	9304-	UFL	Waycross, GA

Changes to the SEUSSN Station Listing

Station Code	Operator	Locality	Change
PBV	VTSO	Petersburg, VA	Closed January, 1996.

ACCESSING DIGITAL WAVEFORM DATA AND OTHER INFORMATION FROM THE VIRGINIA TECH SEISMOLOGICAL OBSERVATORY

OVERVIEW:

The Virginia Tech Seismological Observatory has established computer access to its catalog and digital waveform data via the worldwide web (http://www.geol.vt.edu/outreach/vtso.html) gopher, and anonymous ftp servers, also on node www.geol.vt.edu (128.173.184.38). Waveform data currently available include event data from the Virginia Regional Seismic Network and from the GSE (GSETT-2) short-period and broadband instruments located at Blacksburg, Virginia (co-sited with WWSSN station BLA). Network data files consist of 32 channels, digitized at 100 sps at the Blacksburg collection node, from ten sites in Virginia and West Virginia (currently). This acquisition system is being upgraded from its present 40 dB of dynamic range to a system with over 100 dB of dynamic range. The GSE data consist of six channels recorded with a 24 bit digitizer. The three short-period channels are sampled at 40 sps and the three broadband channels at 10 sps. Both the network and GSE stations are calibrated. A brief description of the available data is given below. For further information, help files are provided on the ftp and gopher servers. If one has problems or wants data in a format other than that provided, contact Martin Chapman (chapman@vtso.geol.vt.edu or 540-231-5036).

The BLA USNSN equipment officially went on-line in May 1995, but, as of this writing, has produced little data because of hardware problems. The borehole instruments are a three-component broadband

sensor package from Guralp. The waveform data are available from the U.S. Geological Survey in Golden via the AutoDRM retrieval system.

NEAR-REAL-TIME WAVEFORM DATA:

Every 20 minutes, triggered event waveform data files from the Virginia Regional Seismic Network are transferred from the digital acquisition system to the anonymous ftp account on www.geol.vt.edu. These data are raw triggers with no event information. The data are in demultiplexed UNIX_SUDS_1 format. The source code and an executable version of a program to convert from UNIX_SUDS_1 format to SAC format (called st2sac) is available on the directory where these data files are located.

SELECTED DIGITAL WAVEFORM DATA SETS:

For events of particular interest, processed waveform data sets from the network and/or the GSE are prepared and put in subdirectories accessible through ftp and/or gopher. Network waveform data will have the timing and digitizing rates double-checked against a satellite time code channel. The waveform data are in either the SAC or the Center for Seismic Studies (CSS) database structure binary formats.

OTHER INFORMATION AVAILABLE:

Other data and information available from the Virginia Tech Seismological Observatory (node: vtso.geol.vt.edu) include:

- Updated overview of available information by finger, telnet, or e-mail from quake@vtso.geol.vt.edu.
- Unprocessed data from the GSE station for selected events (in binary CSS format).
- Channel information such as station locations, instrument responses (in both pole-zero and frequency-amplitude-phase formats), station calibration histories, etc.
- Southeastern U. S. Seismic Network (SEUSSN) Bulletins.
- SEUSSN earthquake catalog (for July 1977 through the current Bulletin) and a catalog of historic and instrumentally located earthquakes for the southeastern United States (from the year 1698 through the current Bulletin).

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, TVA, 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, TVA 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, TVA, 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
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
TVA Tennessee Valley Authority, TN
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, Knoxville, TN
UTM University of Tennessee at Martin, TN
VDMR Virginia Division of Mineral Resources, VA
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

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Appendix A

Seismological Society of America Meeting

GEOPHYSICAL AND GEOLOGICAL RECONNAISSANCE OF SEISMICALLY-INDUCED SAND DIKES AND RELATED SAND BLOWS IN THE NEW MADRID SEISMIC ZONE

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The geometry of sand dikes and related sand blows induced by strong ground motion during prehistoric earthquakes was determined by shallow geophysical methods. We conducted electrical resistivity and conductivity surveys at two sites in the seismic zone. At one of the study sites, buried prehistoric sand dikes and sand blows had been exposed during an archeological survey and later examined as part of a paleoseismology study (Tuttle et al, this volume). At the other site, a possible sand blow was identified by interpretation of aerial photographs and surface reconnaissance, but was undisturbed at the time of the geophysical survey. Both liquefaction sites occur within the Holocene floodplain of the meandering Mississippi River. Here sand blows typically form elliptical patches of sandy soils in otherwise fine-grained soils. Following the geophysical survey at the second site, two trenches were excavated and logged. Samples from soil and Native American occupation horizons, liquefaction features, and sediment layers within the trenches were collected for sedimentological analyses. We also measured the distribution of cotton plant heights, which may reflect variations in shallow soil composition. This information will be used to correlate geophysical signatures with sedimentological and archeological features.

Preliminary results indicate that conventional resistivity methods (Wenner array) may be quite useful for identifying and mapping small (~50 cm wide) shallow sand dikes. Disruption of the regional sedimentological trends, both by an echelon arrangement of sand dikes and by the related sand blow, is clearly revealed in the combined geophysical and agricultural data. Dike signatures appear as small perturbations on longer wavelength signals that reflect the larger-scale environment of deposition (i.e., Mississippi River point bar and channel deposits). Electromagnetic methods (EM-31), while less sensitive to dike locations, may be useful for locating Native American occupation horizons. Identifying and mapping sand dikes with geophysical techniques is useful for siting trenches during paleoseismic investigations. Moreover, mapping buried sand dikes may help characterize ground motions during prehistoric earthquakes and determine the physical properties of sedimentary layers associated with ground failure.