

SEISMOLOGICAL BULLETIN

New Mexico Institute of Mining and Technology
Socorro, New Mexico



Introduction

For several years, NMIMT has been conducting research on micro-earthquakes originating near Socorro. Although the instrumentation in operation is designed primarily for recording small local shocks, clearly defined initial P arrivals are frequently recorded for atomic explosions, regional shocks, and teleseisms. The table below is a list of these events for the period July 1, 1962 to July 1, 1963.

Instrumentation

All events listed were recorded with a seismograph consisting of a vertical Willmore seismometer (natural frequency of about 1.1 cps), a high-gain transistorized amplifier, and a pen and ink helical recorder with a speed of 200 mm/min. This seismograph has a magnification of about 0.5 to 1.7 million for frequencies from 1 to 4 cps. The frequency of the initial motions for nearly all events in the table is within this range.

Location of Station

Geodetic Coordinates

34° 04.21' N
106° 56.61' W

Elevation

4955 feet

Errors in Arrival Times

Clock Errors. Minute timing marks on the records are controlled by a Nardin chronometer. WWV is recorded directly on the seismogram once each day. A statistical analysis of the irregularities in chronometer time indicates 95 percent of all minute marks are within 0.3 seconds of true time.

Measuring Errors. Time errors associated with measurements between a minute mark and the beginning of an event probably do not exceed 0.1 sec.

Allan R. Sanford

Date	Time-GCT	Amplitude on Record--mm	Quality of P Arrival
1962			
July 7	06:22:16.3	0.5	G
July 8	04:31:43.5	1.5	E
July 16	13:02:16.8	1.5	E
July 17	05:45:12.7	0.5	F
July 17	09:52:32.3	0.8	G
July 20	09:05:22.2	1.0	F
July 24	21:13:15.3	0.5	F
July 26	08:21:35.5	0.5	G
July 28	00:17:22.1	1.0	G
July 28	14:03:45.0	0.5	F
July 30	10:25:16.8	0.5	G
July 30	20:26:26.2	0.5	G
Aug. 3	09:07:06.8	0.8	G
Aug. 6	01:44:58.6	0.5	G
Aug. 7	22:34:04.5	0.6	E
Aug. 9	04:29:26.8	0.5	E
Aug. 10	21:13:06.5	1.0	G
Aug. 13	10:14:24.0	0.5	F
Aug. 15	11:35:52.5	1.0	F
Aug. 17	03:25:14.2	1.0	E
Aug. 18	16:51:30.0	0.5	G
Aug. 19	23:23:58.2	0.5	G
Aug. 20	10:45:01.5	0.5	G
Aug. 23	19:32:57.1	0.5	G
Aug. 24	01:29:06.6	0.5	G
Aug. 24	08:43:37.3	0.5	G
Aug. 24	15:02:30.6	1.5	G
Aug. 28	11:13:08.5	0.5	G
Aug. 30	13:37:32.8	0.5	G
Aug. 31	17:12:07.9	1.0	G
Sept. 1	03:55:29.8	0.5	G
Sept. 1	04:51:45.0	0.5	F
Sept. 1	05:08:58.2	0.5	F
Sept. 1	08:00:30.9	0.5	F
Sept. 5	16:06:26.7	0.5	G
Sept. 10	16:56:45.0	1.5	E
Sept. 14	17:12:28.9	1.0	F
Sept. 16	00:01:51.1	0.5	F
Sept. 16	05:38:31.2	0.5	E
Sept. 18	00:35:57.3	3.0	E
Sept. 20	17:00:05.5	2.0	E
Sept. 28	19:09:19.5	0.5	G



Date	Time-GCT	Amplitude on Record--mm	Quality of P Arrival	International Seismological Centre
1962				
Oct. 18	19:54:36.8	0.5	G	
Oct. 21	02:12:38.6	0.5	E	
Oct. 30	08:37:34.0	0.5	E	
Oct. 30	08:40:09.6	1.0	F	
Oct. 31	11:39:32.7	1.5	E	
Nov. 4	23:06:01.2	0.5	F	
Nov. 6	03:40:41.8	0.5	F	
Nov. 10	01:45:10.0	0.5	G	
Nov. 11	11:44:23.4	0.5	G	
Nov. 11	22:26:41.2	1.0	G	
Nov. 16	07:29:22.2	1.0	G	
Nov. 16	21:29:09.3	1.0	F	
Nov. 17	11:11:34.5	0.5	G	
Nov. 28	09:17:31.8	0.5	F	
Nov. 30	21:55:31.0	1.0	F	
Nov. 30	23:33:01.5	0.3	F	
Dec. 1	01:58:57.9	0.5	G	
Dec. 1	04:30:05.9	0.5	G	
Dec. 7	14:16:01.2	4.0	E	
Dec. 8	21:27:49.9	1.5	E	
Dec. 8	23:04:11.7	1.0	E	
Dec. 9	23:27:07.2	0.5	F	
Dec. 12	13:15:09.3	1.0	G	
Dec. 12	18:47:32.5	1.5	E	
Dec. 21	01:03:38.4	0.5	F	
Dec. 21	08:51:19.2	0.5	F	
Dec. 21	09:18:32.2	0.3	F	
Dec. 21	09:45:30.1	1.5	E	
Dec. 21	09:53:28.8	0.5	G	
Dec. 26	22:35:23.1	1.0	E	
Dec. 26	23:56:21.7	1.0	E	
1963				
Jan. 1	16:39:59.2	0.5	G	
Jan. 1	23:46:46.3	1.0	G	
Feb. 13	00:28:09.0	1.0	E	
Feb. 14	07:23:17.8	1.0	E	
Feb. 14	12:21:17.1	0.5	G	
Feb. 17	17:36:16.2	0.5	F	
Feb. 24	13:39:21.2	1.0	G	

Date	Time-GCT	Amplitude on Record--mm	Quality of P Arrival
1963			
March 7	05:32:16.5	1.0	G
March 7	23:57:30.6	0.5	G
March 24	02:29:46.9	1.0	G
March 24	21:44:37.5	6.5	E
March 26	13:38:11.5	0.5	G
April 2	16:27:28.8	1.0	E
April 13	02:29:37.5	2.0	E
April 17	02:24:19.3	0.5	G
May 12	19:58:06.5	2.0	E
May 13	12:49:05.6	0.5	G
May 20	11:51:13.5	0.5	F
May 23	03:45:15.4	1.0	G
May 23	06:38:21.0	0.5	F
May 23	09:07:51.7	0.5	F
May 27	04:09:20.4	1.5	E
June 2	22:27:20.4	2.0	G
June 3	11:39:52.0	0.5	F
June 10	13:34:06.0	1.5	E
June 24	04:34:00.2	0.5	F

International
Seismological
Centre

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Socorro, New Mexico



Period: July 1, 1963 through December 31, 1963

<u>Date</u>	<u>Time - GCT</u>	<u>Initial P Amplitude on Record(mm)</u>	<u>Quality of P Arrival</u>
July 2	08:04:44.0	1.0	G
July 4	11:10:57.2	1.0	G
July 5	05:57:31.6	1.0	E
July 14	05:50:15.2	1.0	G
July 26	13:42:13.5	1.0	G
Aug. 3	10:32:48.2	0.5	G
Aug. 8	02:25:03.3	0.5	G
Aug. 15	04:00:16.2	1.5	E
Aug. 17	11:38:45.6	1.0	E
Aug. 25	12:29:53.1	1.0	E
Sept. 8	20:02:33.2	0.5	G
Sept. 11	12:00:31.2	3.5	E
Sept. 13	10:53:11.4	0.5	G
Sept. 17	06:03:42.9	0.5	F
Sept. 29	22:49:15.1	1.0	G
Sept. 30	09:18:58.2	0.5	G
Oct. 12	11:38:42.5	0.5	F
Oct. 20	13:13:19.5	0.2	G
Oct. 20	13:31:24.7	0.5	F
Oct. 21	11:18:35.4	2.0	E
Oct. 26	12:45:54.0	---	E
Nov. 4	01:35:55.5	1.5	F
Nov. 9	21:24:03.7	0.5	E
Nov. 10	01:09:12.7	0.5	G
Nov. 13	20:04:51.9	1.5	G
Nov. 14	15:02:32.7	1.0	F
Nov. 18	14:40:12.6	---	F
Nov. 18	16:04:07.6	0.6	G
Nov. 18	19:09:41.5	1.0	E
Nov. 19	01:13:21.3	0.5	G
Nov. 19	08:24:49.3	0.3	G
Nov. 19	10:52:58.3	1.5	E
Nov. 19	20:05:12.2	0.5	G
Nov. 22	11:17:20.6	0.3	G
Nov. 23	07:52:32.3	4.0	E
Nov. 23	08:19:02.5	0.4	G
Nov. 23	08:34:17.9	0.5	G
Dec. 4	16:40:58.4	1.0	G
Dec. 4	23:14:34.2	1.0	G
Dec. 7	04:19:50.4	0.4	G
Dec. 18	00:42:51.7	0.5	G
Dec. 19	16:48:12.2	---	F