DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-2034
SHEET 2 OF 2

INTRODUCTION

This map is one of a series of seismicity maps produced by the U. S. Geological Survey that show earthquake data of individual states or groups of states at the scale of 1:1,000,000. This map shows only those earthquakes with epicenters located within the boundaries of Texas, even though earthquakes in nearby states or countries may have been felt or may have caused damage in Texas.

The data in table 1 were used to compile the seismicity map; these data are a corrected, expanded, and updated (through 1983) version of the data used by Algermissen (1969) for a study of seismic risk in the United States. The locations and intensities of some earthquakes were revised and intensities were assigned where none had been before. Many earthquakes were added to the original list from new data sources as well as from some old data sources that had not been previously used. The data in table 1 represent best estimates of the location of the epicenter, magnitude, and intensity of each earthquake on the basis of historical and current information. Some of the aftershocks from large earthquakes are listed, but not all, especially for earthquakes that occurred before seismic instruments were universally used.

The latitude and longitude coordinates of each epicenter were rounded to the nearest tenth of a degree and sorted so that all identical locations were grouped and counted. These locations are represented on the map by a triangle. The number of earthquakes at each location is shown on the map by the arabic number to the right of the triangle. A Roman numeral to the left of a triangle is the maximum Modified Mercalli intensity (Wood and Neumann, 1931) of all earthquakes at that geographic location. The absence of an intensity value indicates that no intensities have been assigned to earthquakes at that location. The year shown below each triangle is the latest year for which the maximum intensity was recorded.

EXPLANATION OF THE TABLES

The data in table 1 are listed chronologically in the following categories: date, origin time in Coordinated Universal Time (UTC), N. latitude, W. longitude, depth, hypocenter quality and reference, magnitude, intensity (Modified Mercalli), and intensity reference. The letter F is recorded in the intensity column if an earthquake was felt but not enough information was available to assign an intensity. Table 1 has some basic limitations in terms of the size (magnitude or intensity) of the earthquakes listed. All felt earthquakes or those with computed magnitudes greater than 2.5 are listed. If no magnitude was computed and the earthquake was felt or an epicenter published, it was included in the earthquake list. The low-magnitude events located in recent years with data from dense seismograph networks have not been included.

Listed below is an explanation of the symbols and codes used in table 1:

1. Leaders (...) indicate information not available.
2. Latitude and longitude are listed to a hundredth of a degree if they have been published with that degree of accuracy or greater; however, most historical events have assigned locations based on felt or damage information and are listed in table 1 only to the nearest degree or tenth of a degree. An asterisk (*) to the right of the longitude indicates that the latitude and longitude were not given in the source reference but were assigned by the compilers of the data file. An x to the right of the longitude indicates that the event is an explosion, a suspected explosion, a rockburst, or some other nontectonic event; these have not been plotted on the map. A question mark (?) to the right of the longitude indicates that published descriptions of the event are inconclusive and it may or may not be an earthquake.
3. The letter code in the HYPOCENTER, QUAL column is defined below:
   a. Determinations of instrumental hypocenters are estimated to be accurate within the ranges of latitude and longitude (in decimal degrees) listed below; each range is letter coded as indicated:

      A 0.0–0.1
      B 0.1–0.2
      C 0.2–0.5
      D 0.5–1.0
      E 1.0 or larger

   b. Determinations of noninstrumental epicenters from felt data are estimated to be accurate within the ranges of latitude and longitude (in decimal degrees) listed below; each range is letter coded as indicated:

      F 0.0–0.5
      G 0.5–1.0
      H 1.0–2.0
      I 2.0 or larger

4. The reference identification numbers in the HYPOCENTER, REF and INTENSITY, REF columns indicate the sources of the hypocenter and intensity data. They are listed in numerical order in the list of data sources.
5. The magnitudes listed under USGS are mb (modified from Gutenberg and Richter, 1956) or Ms (Bath, 1966) values published in the Preliminary Determination of Epicenters (PDE) by the National Earthquake Information Center, U. S. Geological Survey and predecessor organizations. Associated with the magnitude values listed under OTHER are the source code and type. Type is defined by mb (Gutenberg and Richter, 1956), MD (duration or coda length), Mfa (magnitude based on felt areas or attenuation), ML (Richter, 1958), Mn (Nuttli, 1973). Magnitudes computed solely from epicentral intensity have not been included. Moment magnitudes (Mw) are listed by value and source. The value was computed using the formula by Hanks and Kanamori (1979). The source codes are listed below:

   BAR – Barstow, N. L., Brill, K. G., Nuttli, O. W., and Pomeroy, P. W., 1981, An approach to seismic zonation for siting nuclear electric power generating for facilities in the eastern United States, NUREG/CR-1577, Washington, D. C.
   CAR – Carlson, S. M., 1984, Master of Arts thesis, The University of Texas at Austin, 197 p.
   DAV – Davis, S. D., 1985, Master of Arts Thesis, University of Texas at Austin, 230 p.
   DG – Dewey, J. W., and Gordon, D. W., 1984, U. S. Geological Survey, Miscellaneous Field Studies Map MF-1699 Pamphlet, 39 p.
   GOR – Gordon, G. W., 1983, Ph.D. dissertation, Saint Louis University, Mo., 197 p
   GS – National Earthquake Information Center (and predecessor organizations), U. S. Geological Survey, Golden, Colo.
   NMI – New Mexico Institute of Mining Technology, Socorro, N. Mex.
   SLM – St. Louis University, St. Louis, Mo.
   TEC – Tennessee Earthquake Information Center, Memphis State University, Memphis, Tenn.
   TUL – Oklahoma Geophysical Observatory, Oklahoma Geological Survey, Leonard, Okla.

6. An asterisk (*) in the INTENSITY, MM column indicates that the intensity was assigned by the compiler on the basis of the available data at the time the catalog was compiled.

List of data sources

4. Neumann, Frank, 1932, United States earthquakes 1931: U. S. Coast and Geodetic Survey, Serial 553, 26 p.
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9. Neumann, Frank, 1938, United States earthquakes 1936: U. S. Coast and Geodetic Survey, Serial 610, 45 p.
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46. Coffman, J. L., von Hake, C. A., Spence, W., Carver, D. L., Covington, P. A., Dunphy, G. J., Irby, W. L., Person, W. J., and Stover, C. W., 1975, United States earthquakes 1973: U. S. National Oceanic and Atmospheric Administration and U. S. Geological Survey, 112 p.
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Table 1.—Chronological listing of earthquakes for the State of Texas

DATE YEAR	MONTH	DAY	ORIGIN TIME H M S (UTC)	LAT.	LONG.	DEPTH (KM)	HYPOCENTER QUAL	HYPOCENTER REF	MAGNITUDE USGS (mb)	MAGNITUDE USGS (Ms)	MAGNITUDE OTHER	MOMENT (M)	INTENSITY MM	INTENSITY REF
1873	MAY	01	04 30 ..	30.2 N.	97.7 W.	..	G	105	..	..	3.6Mfa BAR	.. ...	IV*	342
1873	MAY	01	.. .. ..	30.2 N.	97.7 W.	..	G	105	..	..	... ...	.. ...	III*	105
1873	MAY	01	.. .. ..	30.2 N.	97.7 W.	..	G	105	..	..	... ...	.. ...	III*	105
1887	JAN	05	17 57 ..	30.15 N.	97.06 W.	..	G	342	..	..	3.6Mfa BAR	.. ...	V	342
1887	JAN	31	22 14 ..	30.53 N.	96.30 W.	..	G	342	..	..	... ...	.. ...	IV	342
1891	JAN	08	06 00 ..	31.7 N.	95.2 W. ?	..	F	342	..	..	... ...	.. ...	VI	342
	This event has been questioned as to a real earthquake or whether it was a tornado/violent thunderstorm. Carlsen (342) concludes that it was a very shallow-focus earthquake centered near Rusk, Texas, felt strongly at Rusk, but not felt in the nearby communities.													
1891	JAN	08	.. .. ..	31.7 N.	95.2 W. ?	..	F	342	..	..	... ...	.. ...	III*	38
1902	OCT	09	18 00 ..	30.10 N.	97.60 W.	..	G	342	..	..	3.6Mfa BAR	.. ...	IV*	342
1907	APR	..	.. .. ..	35.2 N.	101.8 W.	..	F	364	..	..	... ...	.. ...	V	364
1910	MAY	08	17 30 ..	30.1 N.	96.0 W.	..	G	105	..	..	3.6Mfa BAR	.. ...	IV	105
1914	DEC	30	01 00 ..	30.5 N.	95.9 W. x	..	G	105	..	..	... ...	.. ...	IV*	272
1917	MAR	28	19 56 ..	35.4 N.	101.3 W.	..	F	364	..	..	... ...	.. ...	VI	364
	Panhandle, Texas. A strong local shock caused considerable alarm and cracked plastered walls in several buildings. At Amarillo, Texas, cement walls of many buildings were cracked. Felt area was estimated at 2500 – 5000 sq km. The literature (Woollward;84, Udden;123) lists shocks that occurred Jan. 28 at 19:56 UTC and March 24 at 19:30 UTC near Panhandle, Texas. Davis (364) argues that the Jan. 28 and March 24 shocks are identical to this shock. These two shocks are removed from the catalogue.													
1917	MAR	28	23 38 ..	35.4 N.	101.3 W. *	..	F	364	..	..	... ...	.. ...	F	105
	Panhandle, Texas. Strong aftershock of the March 28 earthquake. Shock lasted 20 sec (Docekai;105). The earthquake was not felt at Pampa or at Amarillo, Texas. Nuttli (301) indicates the earthquake occurred on March 27 at 23:38 UTC.													
1923	MAR	07	05 03 ..	31.8 N.	106.5 W.	..	G	105	..	..	4.3Mfa BAR	.. ...	IV*	105
1923	MAR	07	.. .. ..	31.8 N.	106.5 W.	..	G	105	..	..	... ...	.. ...	IV*	105
1925	...	..	.. .. ..	29.6 N.	94.8 W. *	..	F	342	..	..	... ...	.. ...	IV*	342
	Several small earthquakes occurred near the Goose Creek oil field on San Jacinto Bay east of Houston, Texas in the mid 1920's. The events have been attributed to ground subsidence resulting from oil removal.													
1925	JUL	29	11 30 ..	34.5 N.	101.2 W. ?	..	G	364	..	..	... ...	.. ...	F	364
	Silverton, Texas. Possible bogus earthquake. The earthquake is based on a felt report. The felt report is possibly associated with the July 30 at 12:17 UTC event.													
1925	JUL	30	08	34.5 N.	100.3 W.	..	G	173	..	..	... ...	.. ...	V	173
1925	JUL	30	12 17 ..	35.4 N.	101.3 W.	..	F	364	..	..	4.9Mfa BAR	.. ...	VI	364
	Between White Deer and Cuyler, Texas. The felt area is roughly elliptical with a major axis (oriented NE-SW) of about 100 km and the minor axis of about 50 km – 700,000 sq km (Docekal;105). Intensity VI effects were felt over 6,000 sq km. At Plemons, Texas plaster fell and jars were displaced from shelves. At Cuyler, Texas milk crocks spilled their contents, and a damage track section of the Santa Fe Railroad had to be repaired as result of ground settling. At White Deer, Texas buildings rocked, sleepers were aroused from their beds, and the citizens were generally alarmed. The shock was described as severe.													
1925	JUL	31	18 00 ..	35.5 N.	101.1 W.	..	F	364	..	..	... ...	.. ...	III	364
1931	AUG	16	11 16 55	30.7 N.	104.6 W. *	..	F	124	..	..	... ...	.. ...	F	124
1931	AUG	16	11 40 22	30.69 N.	104.57 W.	..	C	364	..	..	6.4Ms GR	.. ...	VIII	4
	Near Valentine, Texas. At Valentine, Texas adobe buildings suffered the most, although cement and brick walls were in some cases badly cracked. In one case a section of a low wall of reinforced concrete was broken and thrown down. All but frame houses were badly damaged and all brick chimneys toppled over or were badly damaged. The schoolhouse, consisting of one section built of blocks and another of brick, was reported to require complete rebuiling. Small cracks appeared in the school yard. In other buildings adobe walls collapsed and in frame structures ceilings and partitions were damaged. Tombstones were rotated in both directions, in some instances as much as a quarter of a turn. The population was more or less panic stricken, but no fatalities, only a few injuries by falling adobe bricks (Davis;364). Total felt area was estimated at 1,000,000 sq km; in the United States 350,000 sq mi. JHD solution 30.502N, 104.575W (Dewey and Gordon;349).													
1931	AUG	16	19 33 ..	30.7 N.	104.6 W. *	..	F	4	..	..	... ...	.. ...	F	4
1931	AUG	18	09 42 ..	30.7 N.	104.6 W. *	..	F	4	..	..	... ...	.. ...	F	4
1931	AUG	18	20 36 ..	30.7 N.	104.6 W. *	..	F	4	..	..	... ...	.. ...	V	4
1931	AUG	19	01 36 ..	30.7 N.	104.6 W. *	..	F	4	..	..	... ...	.. ...	III*	4
1931	AUG	26	.. .. ..	30.7 N.	104.6 W. *	..	F	124	..	..	... ...	.. ...	III*	124
1931	OCT	02	.. .. ..	31.8 N.	106.5 W. *	..	G	4	..	..	... ...	.. ...	II*	4
1931	NOV	03	15 50 ..	30.7 N.	104.6 W. *	..	F	4	..	..	... ...	.. ...	III*	4
1932	APR	09	10 17 ..	31.7 N.	96.4 W.	..	F	342	..	..	3.9Mfa CAR	.. ...	VI	342
	Shock was felt in Limestone, Navarro, Hill, Freestone, and McLennan counties—over 8,000 sq km area. Chimney bricks, not well mortared, fell from at least four chimneys in the south and southwest parts of Wortham, Texas.													
1934	APR	12	01 40 ..	33.9 N.	95.5 W.	..	F	342	..	..	3.9Mfa BAR	.. ...	V	105
1934	APR	12	.. .. ..	33.9 N.	95.5 W. *	..	G	7	..	..	... ...	.. ...	III*	7
1936	JUN	19	21 00 ..	35.2 N.	100.7 W. ?	..	F	364	..	..	... ...	.. ...	III	364
1936	JUN	20	03 13 37	35.7 N.	101.4 W.	..	C	364	..	..	... ...	.. ...	F	364
1936	JUN	20	03 18 27	35.7 N.	101.4 W.	..	C	364	..	..	... ...	.. ...	IV*	364
1936	JUN	20	03 24 06	35.7 N.	101.4 W.	..	F	364	..	..	4.5Mfa DG	.. ...	VI	364
	Near Borger, Texas. The cornice of the Pampa, Texas City Hall was cracked. Houses were strongly jarred at Borger, Texas. One man was knocked off his feet at Whittenberg, Texas. At Clarendon, Texas the quake moved furniture and was described as more severe than the earthquake of 1925. JHD solution 35.310N, 100.773W (Dewey and Gordon;349). Felt area was estimated at 110,000 sq km (Docekal;105).													
1936	AUG	08	01 40 ..	31.8 N.	106.5 W. *	..	G	9	..	..	... ...	.. ...	II*	9
1936	OCT	15	17	31.8 N.	106.5 W. *	..	G	9	..	..	... ...	.. ...	F*	9
1937	MAR	31	23 45 ..	31.8 N.	106.5 W. *	..	G	10	..	..	... ...	.. ...	III*	10
1948	MAR	12	04 29 00	36.0 N.	102.5 W.	..	F	364	..	..	4.8Mfa DG	.. ...	VI	364
	Centered near Dalhart, Texas. Slight damage resulted in the epicentral area, consisting primarily of cracked plaster. Felt area was estimated at 50,000 sq mi. Felt in sections of Texas, Oklahoma, New Mexico, Colorado, and Kansas. Docekal (105) estimates the felt area at 115,000 sq mi. JHD solution 36.221N, 102.478W (Dewey and Gordon;349).													
1950	MAR	20	13 23 ..	33.3 N.	97.8 W.	..	G	342	..	..	... ...	.. ...	IV*	23
1951	JUN	20	18 37 11.1	35.218N.	103.035W.	001	C	349	..	..	4.4Mfa DG	.. ...	V	364
	Near Amarillo, Texas. Docekal (105) places the epicenter (based on felt data) at 35N, 102W which is located closer to Amarillo, Texas.													
1952	OCT	17	15 48 ..	30.1 N.	93.8 W.	..	F	342	..	..	... ...	.. ...	IV	25
1955	JAN	27	00 37 ..	30.6 N.	104.5 W. *	..	G	28	..	..	... ...	.. ...	IV	28
1956	JAN	07	23 30 ..	29.3 N.	94.8 W. ?	..	F	342	..	..	3.8Mfa BAR	.. ...	IV	29
	Texas Panhandle. Possible sonic boom (Davis;364).													
1957	MAR	19	16 37 39	32.6 N.	94.7 W.	..	F	342	..	..	4.3Mfa BAR	.. ...	V	30
	This series of four earthquakes rattled homes in northeast Texas, and portions of northwest Louisiana and southwest Arkansas. The total felt area for the first two shocks was nearly 50,000 sq km. It has been suggested that these earthquakes were the result of area subsidence due to fluid extraction in the East Texas oil field.													
1957	MAR	19	17 41 17	32.6 N.	94.7 W.	..	F	342	..	..	... ...	.. ...	III	342
1957	MAR	19	22 36 ..	32.6 N.	94.7 W.	..	F	342	..	..	... ...	.. ...	III	342
1957	MAR	19	22 45 ..	32.6 N.	94.7 W.	..	F	342	..	..	... ...	.. ...	III	342
1959	FEB	10	20 05 ..	35.5 N.	100.9 W. x	..	G	105	..	..	4.5Mfa BAR	.. ...	V	105
	Texas Panhandle. Felt over an area of 40,000 sq mi (Docekal;105). Sonic Boom (Davis;364).													
1964	APR	24	01 20 54.2	31.381N.	93.807W.	001	A	349	3.7	..	3.3Mn DG	.. ...	V	37
	Between April 24 and August 19, 1964, a series of small to moderate earthquakes shook the Hemphill–Pineland–Milam–Bronson area of Sabine county in East Texas. The only damage reported was associated with the April 28 at 21:18 U.T.C.													
1964	APR	24	03 36 18.0	31.3 N.	93.8 W.	..	C	178	..	..	2.6Mn SLM	.. ...	...	..
1964	APR	24	07 33 51.9	31.422N.	93.812W.	005	A	349	3.7	..	3.6Mn DG	.. ...	V	37
1964	APR	24	07 47 17.1	31.384N.	93.804W.	005	B	349	..	..	3.2Mn SLM	.. ...	...	..
1964	APR	24	07 50 56.0	31.3 N.	93.8 W.	..	C	178	..	..	2.6Mn SLM	.. ...	...	..
1964	APR	24	12 07 08.2	31.478N.	93.787W.	009	C	349	..	..	3.2Mn SLM	.. ...	IV	342
1964	APR	24	12 54 17.0	31.3 N.	93.8 W.	..	C	178	..	..	2.9Mn SLM	.. ...	...	..
1964	APR	24	17 22 13.0	31.3 N.	93.8 W.	..	C	178	..	..	2.8Mn SLM	.. ...	...	..
1964	APR	24	23 03 50.0	31.3 N.	93.8 W.	..	C	178	..	..	2.6Mn SLM	.. ...	...	..
1964	APR	25	03 23 08.0	31.3 N.	93.8 W.	..	C	178	..	..	2.6Mn SLM	.. ...	...	..
1964	APR	25	04 05 33.0	31.3 N.	93.8 W.	..	F	342	..	..	2.9Mn CAR	.. ...	...	..
1964	APR	25	06 02 33.0	31.3 N.	93.8 W.	..	C	178	..	..	2.9Mn SLM	.. ...	...	..
1964	APR	26	02 35 24.0	31.3 N.	93.8 W.	..	C	178	..	..	2.7Mn SLM	.. ...	...	..
1964	APR	26	03 24 50.2	31.546N.	93.784W.	005	C	349	..	..	3.3Mn SLM	.. ...	...	..
1964	APR	27	21 50 27.0	31.3 N.	93.8 W.	..	C	178	..	..	3.2Mn SLM	.. ...	IV	342
1964	APR	28	00 24 07.0	31.3 N.	93.8 W.	..	C	178	..	..	3.1Mn SLM	.. ...	...	..
1964	APR	28	00 30 45.7	31.401N.	93.818W.	006	A	349	3.4	..	3.3Mn DG	.. ...	V	37
1964	APR	30	20 30 ..	31.5 N.	93.8 W. *	..	F	37	..	..	... ...	.. ...	III*	37
1964	MAY	02	06 34 54.0	31.3 N.	93.8 W.	..	C	178	..	..	3.3Mn SLM	.. ...	...	..
1964	MAY	03	03 24 12.0	31.3 N.	93.8 W.	..	C	178	..	..	3.0Mn SLM	.. ...	...	..
1964	MAY	07	20 01 39.0	31.2 N.	94.0 W.	..	F	342	..	..	3.2Mn CAR	.. ...	...	..
1964	MAY	07	20 10 ..	31.5 N.	93.8 W. *	..	F	342	..	..	3.2Mn SLM	.. ...	III*	37
1964	JUN	02	23 00 ..	31.3 N.	94.0 W. *	..	F	342	..	..	... ...	.. ...	II*	37
1964	JUN	03	01 30 ..	31.3 N.	94.0 W. *	..	F	342	4.2	..	... ...	.. ...	IV*	37
1964	JUN	03	02 27 27.5	31.28 N.	93.83 W.	023	B	214	..	..	2.5Mn GOR	.. ...	IV	37
1964	JUN	03	09 37 00.0	31.0 N.	94.0 W.	..	F	342	..	..	3.6Mn CAR	.. ...	...	..
1964	AUG	16	11 35 31	31.4 N.	93.8 W.	..	F	342	..	..	2.9Mn SLM	.. ...	V	37
1964	AUG	19	23 58 55.0	31.3 N.	93.8 W.	..	C	178	..	..	2.7Mn SLM	.. ...	...	..
1964	NOV	08	09 26 00	31.9 N.	103.0 W.	..	B	169	..	..	2.7ML NMI	.. ...	...	..
1964	NOV	21	11 21 24	31.9 N.	103.0 W.	..	B	169	..	..	2.5ML NMI	.. ...	...	..
1965	FEB	03	19 59 32	31.9 N.	103.0 W.	..	B	169	..	..	3.0ML NMI	.. ...	...	..
1965	AUG	30	05 17 36.4	32.08 N.	102.42 W.	005	B	214	3.5	..	2.6Mn GOR	.. ...	IV	173
1966	MAR	24	23 45 ..	30.0 N.	94.0 W. x	..	G	105	..	..	... ...	.. ...	...	..
	Several tremors were felt on five separate days in January, February, and March 1966. The first of these tremors occurred January 15 and the last occurred in March 1966. These tremors were identified as sonic booms by Carlsen (342).													
1966	MAR	24	23 48 ..	30.0 N.	94.0 W. x	..	G	105	..	..	... ...	.. ...	...	..
1966	JUL	20	09 04 58.8	35.644N.	101.328W. ?	003	A	349	3.9	..	3.7Mn DG	.. ...	V	81
	Near Borger, Texas. Possible induced earthquake by the damming of Lake Meredith northwest of Borger.													
1966	AUG	14	15 25 53.7	32.115N.	102.339W.	003	C	349	3.4	..	3.2Mn DG	.. ...	VI	81
	Kermit, Texas. Several street signs were toppled, windows broken. Also felt at Wink, Texas and at Loco Hills, New Mexico.													
1966	NOV	26	20 05 41	30.9 N.	105.4 W.	..	B	169	..	..	2.6ML NMI	.. ...	...	..
1969	FEB	02	12 49 32.0	33.3 N.	95.8 W.	..	C	178	..	..	2.8Mn SLM	.. ...	...	..
1969	MAY	12	08 26 19.6	31.853N.	106.516W.	013	B	349	..	..	3.4ML GS	.. ...	V*	42
	El Paso, Texas. One home had hairline cracks in the ceiling and cracks in a cement driveway. The annual edition of "United States Earthquakes" assigned an intensity of VI to this shock.													
1969	MAY	12	10 39 ..	31.8 N.	106.4 W. *	..	G	42	..	..	... ...	.. ...	F	42
1971	JUL	30	01 45 51.4	31.644N.	103.173W.	005	B	349	3.0	..	3.6Mn DG	.. ...	III	173
1971	JUL	31	14 53 49.4	31.652N.	103.119W.	002	B	349	3.4	..	3.2Mn DG	.. ...	IV	173
1971	SEP	24	01 01 54	31.6 N.	103.2 W.	..	B	169	..	..	3.0ML NMI	.. ...	...	..
1972	DEC	09	05 58 44.3	31.8 N.	106.5 W. *	..	G	45	..	..	... ...	.. ...	III*	45
1973	DEC	25	02 46 ..	28.82 N.	98.20 W.	..	B	342	..	..	... ...	.. ...	IV	46
1974	FEB	15	13 33 49.2	36.399N.	100.688W.	000	A	349	4.5	..	4.5Mn DG	4.4 HRN	V	47
1974	DEC	30	08 05 27.1	30.92 N.	103.11 W.	005	B	111	..	..	3.7ML GS	.. ...	...	..
1975	AUG	01	07 27 43.8	30.567N.	104.489W.	001	C	349	4.8	..	3.2Mn DG	.. ...	II	48
1976	JAN	19	04 03 31.4	31.90 N.	103.09 W.	003	A	214	..	..	2.6Mn GOR	.. ...	IV	49
1976	JAN	22	07 21 57.0	31.90 N.	103.07 W.	001	B	49	..	..	2.8ML GS	.. ...	III	49
1976	JAN	25	04 48 28.5	31.900N.	100.087W.	004	A	349	..	..	3.3Mn DG	.. ...	V	49
1976	AUG	05	18 53 09	31.57 N.	103.02 W.	..	B	170	..	..	3.0ML NMI	.. ...	...	..
1977	APR	26	09 03 07.6	31.90 N.	103.08 W.	005	A	214	..	..	2.7Mn GOR	.. ...	IV	39
1977	JUN	07	23 01 25.0	33.133N.	100.938W.	012	C	349	..	..	3.4Mn DG	.. ...	...	..
1977	JUN	17	03 37 05.7	32.35 N.	100.40 W.	005	C	239	..	..	2.5Mn TUL	.. ...	...	..
	Davis (364) suggests that this earthquake is a typical Snyder, Texas earthquake. His location is at 33N and 101W.													
1977	NOV	28	01 40 52.0	32.960N.	100.880W.	001	A	349	..	..	3.0Mn DG	.. ...	...	..
1978	MAR	02	10 04 53.0	31.554N.	102.501W.	001	A	349	..	..	3.5ML GS	.. ...	III	240
1978	JUN	16	11 46 56.0	32.990N.	100.875W.	003	A	349	4.4	..	4.6Mn SLM	4.5 VOS	V	240
	Snyder, Texas. This earthquake resulted from the injection practices at the Cogdell oil field (Davis;364).													
1978	JUN	16	11 53 33.1	32.865N.	100.986W.	005	C	349	..	..	3.4Mn TUL	.. ...	...	..
1979	JUL	05	01 05 02.9	32.997N.	100.924W.	001	B	349	..	..	2.7Mn TUL	.. ...	...	..
	Near Snyder, Texas. This earthquake was heard, not felt at Snyder, Texas.													
1980	FEB	21	20 42 03.5	35.19 N.	101.01 W.	001	B	214	..	..	2.9Mn TUL	.. ...	...	..
1980	JUN	09	22 37 12.3	35.484N.	101.010W.	001	B	349	..	..	3.4Mn TUL	.. ...	V	300
1981	JUN	09	01 46 30.2	31.76 N.	94.28 W.	..	B	342	..	..	3.0Mn TUL	.. ...	IV	325
1981	NOV	06	12 36 41.0	31.924N.	95.198W.	003	B	342	..	..	3.2Mn TUL	.. ...	V	342
1981	NOV	06	12 39 33.0	31.92 N.	95.20 W. *	..	B	342	..	..	2.1MD CAR	.. ...	III*	342
1982	JAN	04	16 56 08.1	31.18 N.	102.49 W.	005	B	350	..	..	3.9Mn TUL	.. ...	III	350
1982	MAR	28	23 24 32.9	28.83 N.	98.19 W.	..	B	342	..	..	3.0Mn GS	.. ...	...	..
1982	APR	26	08 31 47.7	33.02 N.	100.84 W.	005	B	350	..	..	2.8Mn GS	.. ...	...	..
1982	OCT	14	12 52 46.3	36.10 N.	102.57 W.	005	B	350	..	..	3.9Mn GS	.. ...	IV	350
1982	NOV	28	02 36 48.5	33.00 N.	100.84 W.	005	B	350	..	..	3.3Mn TUL	.. ...	IV	350
1982	NOV	28	05 42 ..	33.0 N.	100.8 W. *	..	F	364	..	..	2.4MD DAV	.. ...	...	..
1983	APR	03	04 55 21.2	35.448N.	102.321W.	005	C	360	..	..	3.4Mn TUL	.. ...	...	..
1983	JUL	23	15 24 38.2	28.743N.	98.131W.	005	C	360	..	..	3.4ML TUL	.. ...	IV	360
1983	JUL	23	15 24 39.1	28.825N.	98.185W.	..	B	342	..	..	3.4Mn TUL	.. ...	V	342
1983	JUL	23	22 41 ..	28.83 N.	98.19 W. *	..	B	342	..	..	... ...	.. ...	III	342
1983	OCT	17	07 45 20.0	35.670N.	84.162W.	019	A	360	..	..	2.6MD TEC	.. ...	...	..

MODIFIED MERCALLI INTENSITY SCALE OF 1931
Adapted from Sieberg's Mercalli-Cancani scale, modified and condensed (Wood and Neumann, 1931)

I. Not felt – or, except rarely under especially favorable circumstances. Under certain conditions, at and outside the boundary of the area in which a great shock is felt: sometimes birds, animals, reported uneasy or disturbed; sometimes dizziness or nausea experienced; sometimes trees, structures, liquids, bodies of water, may sway—doors may swing, very slowly.

II. Felt indoors by few, especially on upper floors, or by sensitive or nervous persons. Also, as in grade I, but often more noticeably: sometimes hanging objects may swing, especially when delicately suspended; sometimes trees, structures, liquids, bodies of water, may sway, doors may swing, very slowly; sometimes birds, animals, reported uneasy or disturbed; sometimes dizziness or nausea experienced.

III. Felt indoors by several, motion usually rapid vibration. Sometimes not recognized to be an earthquake at first. Duration estimated in some cases. Vibration like that due to passing of light, or lightly loaded trucks, or heavy trucks some distance away. Hanging objects may swing slightly. Movements may be appreciable on upper levels of tall structures. Rocked standing motor cars slightly.

IV. Felt indoors by many, outdoors by few. Awakened few, especially light sleepers. Frightened no one, unless apprehensive from previous experiences. Vibration like that due to passing of heavy or heavily loaded trucks. Sensation like heavy body striking building or falling of heavy objects inside. Rattling of dishes, windows, doors; glassware and crockery clink and clash. Creaking of walls, frame, expecially in the upper range of this grade. Hanging objects swung, in numerous instances. Disturbed liquids in open vessels slightly. Rocked standing motor cars noticeably.

V. Felt indoors by practically all, outdoors by many or most: outdoors direction estimated. Awakened many, or most. Frightened few—slight excitement, a few ran outdoors. Buildings trembled throughout. Broke dishes, glassware to some extent. Cracked windows—in some cases, but not generally. Overturned vases, small or unstable objects, in many instances, with occasional fall. Hanging objects, doors, swing generally or considerably. Knocked pictures against walls, or swung them out of place. Opened, or closed, doors, shutters, abruptly. Pendulum clocks stopped, started, or ran fast or slow. Moved small objects, furnishings, the latter to slight extent. Spilled liquids in small amounts from well-filled open containers. Trees, bushes shaken slightly.

VI. Felt by all, indoors and outdoors. Frightened many, excitement general, some alarm, many ran outdoors. Awakened all. Persons made to move unsteadily. Trees, bushes, shaken slightly to moderately. Liquid set in strong motion. Small bells rang—church, chapel, school, etc. Damage slight in poorly built buildings. Fall of plaster in small amount. Cracked plaster somewhat, especially fine cracks, chimneys is some instances. Broke dishes, glassware, in considerable quantity, also some windows. Fall of knick-knacks, books, pictures. Overturned furniture in many instances. Moved furnishings of moderately heavy kind.

VII. Frightened all—general alarm, all ran outdoors. Some, or many, found it difficult to stand. Noticed by persons driving motor cars. Trees and bushes shaken moderately to strongly. Waves on ponds, lakes, and running water. Water turbid from mud stirred up. Incaving to some extent of sand or gravel stream banks. Rang large church bells, etc. Suspended objects made to quiver. Damage negligible in buildings of good design and construction, slight to moderate in well-built ordinary buildings, considerable in poorly built or badly designed buildings, adobe houses, old walls (especially where laid up without mortar), spires, etc. Cracked chimneys to considerable extent, walls to some extent. Fall of plaster in considerable to large amount, also some stucco. Broke numerous windows, furniture to some extent. Shook down loosened brickwork and tiles. Broke weak chimneys at the roof-line (sometimes damaging roofs). Fall of cornices from towers and high buildings. Dislodged bricks and stones. Overturned heavy furniture, with damage from breaking. Damage considerable to concrete irrigation ditches.

VIII. Fright general—alarm approaches panic. Disturbed persons driving motor cars. Trees shaken strongly—branches, trunks, broken off, especially palm trees. Ejected sand and mud in small amounts. Changes, temporary or permanent: in flow of springs and wells; dry wells renewed flow; in temperature of spring and well waters. Damage slight in structures (brick) built especially to withstand earthquakes. Considerable in ordinary substantial buildings, partial collapse: racked, tumbled down, wooden houses in some cases; threw out panel walls in frame structures, broke off decayed piling. Fall of walls. Cracked, broke, solid stone walls seriously. Wet ground to some extent, also ground on steep slopes. Twisting, fall, of chimneys, columns, monuments, also factory stacks, towers. Moved conspicuously, overturned, very heavy furniture.

IX. Panic general. Cracked ground conspicuously. Damage considerable in (masonry) structures built especially to withstand earthquakes: Threw out of plumb some wood-frame houses built especially to withstand earthquakes; great in substantial (masonry) buildings, some collapse in large part; or wholly shifted frame buildings off foundations, racked frames, serious to reservoirs; underground pipes sometime broken.

X. Cracked ground, especially when loose and wet, up to widths of several inches; fissures up to a yard in width ran parallel to canal and stream banks. Landslides considerable from river banks and steep coasts. Shifted sand and mud horizontally on beaches and flat land. Changed level of water in wells. Threw water on banks of canals, lakes, rivers, etc. Damage serious to dams, dikes, embankments. Severe to well-built wooden structures and bridges, some destroyed. Developed dangerous cracks in excellent brick walls. Destroyed most masonry and frame structures, also their foundations. Bent railroad rails slightly. Tore apart, or crushed endwise, pipe lines buried in earth. Open cracks and broad wavy folds in cement pavements and asphalt road surfaces.

XI. Disturbances in ground many and widespread, varying with ground material. Broad fissures, earth slumps, and land slips in soft, wet ground. Ejected water in large amounts charged with sand and mud. Caused sea-waves ("tidal" waves) of significant magnitude. Damage severe to wood-frame structures, especially near shock centers. Great to dams, dikes, embankments often for long distances. Few, if any (masonry) structures remained standing. Destroyed large well-built bridges by the wrecking of supporting piers, or pillars. Affected yielding wooden bridges less. Bent railroad rails greatly, and thrust them endwise. Put pipe lines buried in earth completely out of service.

XII. Damage total—practically all works of construction damaged greatly or destroyed. Disturbances in ground great and varied, numerous shearing cracks. Landslides, falls of rock of significant character, slumping of river banks, etc., numerous and extensive. Wrenched loose, tore off, large rock masses. Fault slips in firm rock, with notable horizontal and vertical offset displacements. Water channels, surface and underground, disturbed and modified greatly. Dammed lakes, produced waterfalls, deflected rivers, etc. Waves seen on ground surfaces (actually seen, probably, in some cases). Distorted lines of sight and level. Threw objects upward into the air.

SEISMICITY MAP OF THE STATE OF TEXAS

By
B.G. Reagor, C.W. Stover, and S.T. Algermissen

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