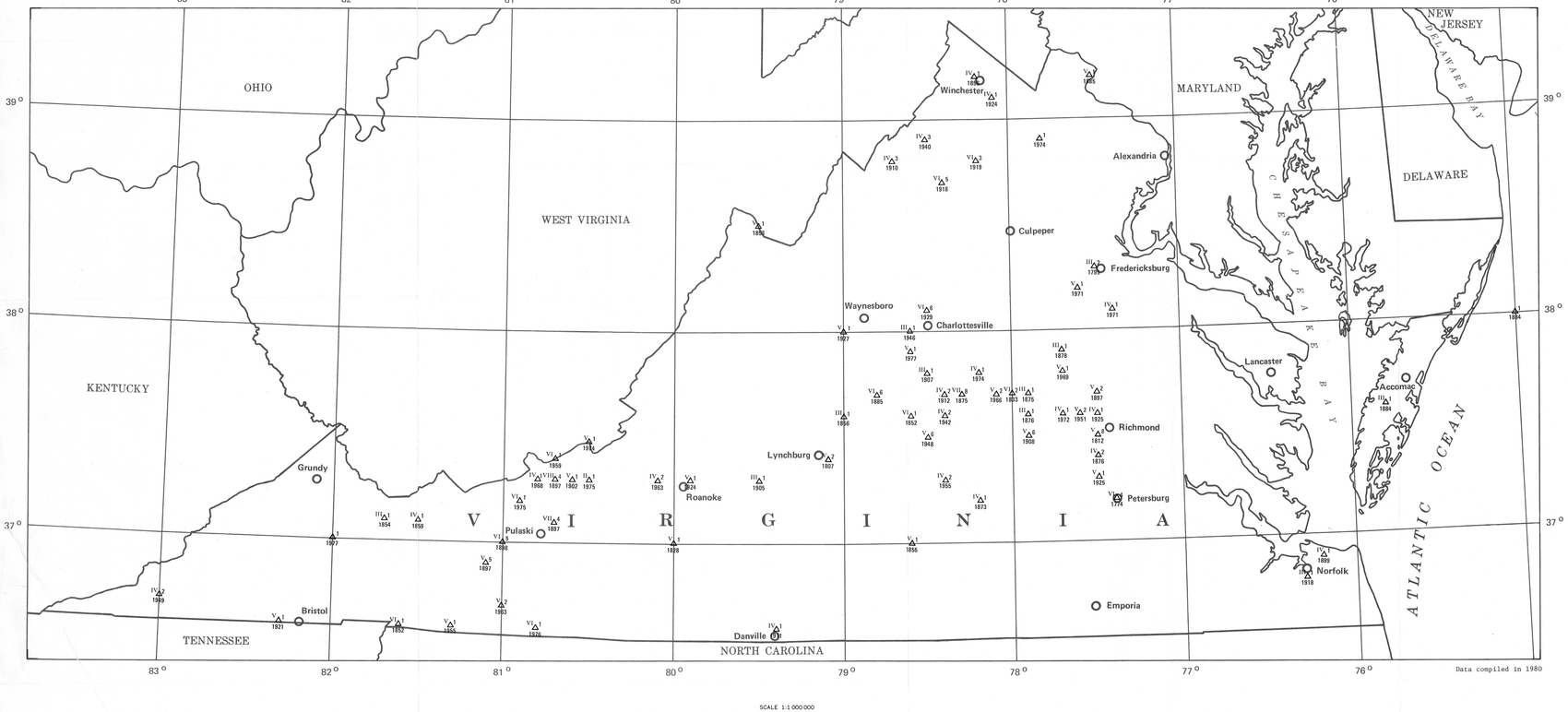
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1257
SEISMICITY, VIRGINIA



Data compiled in 1980

SCALE 1:1 000 000

25 0 25 50 MILES

25 0 25 50 KILOMETERS

SEISMICITY MAP OF THE STATE OF VIRGINIA

By

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1980

INTRODUCTION

The earthquake data shown on this map and listed in table 1 are a list of earthquakes that were originally used in preparation the Seismic Risk Studies in the United States (Algermissen, 1969) which have been recomputed and updated through 1977. These data have been reexamined which resulted in changes in epicenters, magnitudes, intensities, and in some instances, additional events were added that previously had never assigned. Intensity values were updated from new and additional data sources that were not available at the time of original compilation. Some epicenters were relocated on the basis of new information. The data shown in table 1 are estimates of the most accurate epicenter, magnitude, and intensity of each earthquake, on the basis of historical and current knowledge. Many of the earthquakes have been recomputed using modern methods and computer techniques, especially for ones that occurred before seismic instruments were in universal usage.

The data in table 1 were used to compile the seismicity map. The latitude and longitude were rounded to the nearest tenth of a degree and scored so that all identical locations were grouped together and counted. A triangle represents the epicenter plotted to a tenth of a degree. The number of earthquakes at each location is shown on the map by the number to the right of the triangle. A Roman numeral to the left of a triangle is the maximum Modified Mercalli intensity felt at that location. If no Roman numeral is shown, no intensity has been assigned to the location. If an intensity also follows a triangle in the latest year for which the maximum intensity was recorded.

EXPLANATION OF THE TABLES

The data are listed chronologically in table 1 in the following categories: date, origin time, N. latitude, longitude, depth, hypocenter quality and referenced data sources, magnitude, and intensity (Modified Mercalli) and intensity source references. Table 1 has some basic limitations in terms of the magnitude or intensity of the earthquakes listed. Prior to 1963 all recorded felt earthquakes are listed, after 1963 only felt earthquakes or those with magnitudes above the 4.0 level are listed because of the increased capability of the seismic recording network. If no magnitude was computed and the earthquake was felt it was included in the earthquake list. The low magnitude events located in recent years with dense seismograph networks have not been included.

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

1. Leaders (..) indicate information not available.
2. Latitude and longitude are listed to a hundredth of a degree if they have been published with the source. Many epicenters computed by modern methods and sources have been published only to the nearest degree or tenth of a degree and are therefore listed at this accuracy in table 1. An asterisk (*) to the right of the longitude indicates that the latitude and longitude are listed to a tenth of a degree because only the latitude was published in the data file. An (S) to the right of the longitude indicates that the event is questionable, a suspected explosion, rockburst, or a nontectonic event; these have not been plotted on the map.
3. The letter code in the HYPOCENTRE, QUALcolumn is defined below:
   a. Determination of instrumental hypocenters are estimated to be accurate within the ranges of latitude and longitude listed below; each range is letter coded as indicated:
      A 0.0°-0.2°
      B 0.2°-0.5°
      C 0.5°-1.0°
      D 1.0°-2.0°
      E 2.0°-5.0°
      F 5.0° or larger
   b. Determination of noninstrumental epicenters from felt data are estimated to be accurate within the ranges of latitude and longitude listed below; each range is letter coded as indicated:
      A 0.0°-0.2°
      B 0.2°-0.5°
      C 0.5°-1.0°
      D 1.0° or larger
4. The reference identification numbers in the HYPOCENTRE, REF and INTENSITY, REF columns indicate the sources of the hypocenter and intensity. They are listed in numerical order in table 2.
5. The magnitudes listed under "MAGS" are on values (Gutenberg and Richter, 1956) published in the Bulletin of the Seismological Society of America, the Bulletin International Seismological Centre, U. S. Geological Survey and predecessor organizations. Associated with the magnitude values listed under "COMMS" are the source code and type. Type is defined by 1 = MS (Richter, 1958); 2 = mbLg (Nuttli, 1973); 3 = ML (Bath, 1966); 4 = mb (Gutenberg and Richter, 1956); and 5 = mbLg modified. The source codes are listed below:
   ISC = International Seismological Centre Data University, Blacksburg, Va.
   GR = Gutenberg, B., 1958, Seismological Society of America Bulletin, v. 49, no. 1, p. 85-93.
   GUT = Gutenberg, B., and Richter, C. F., 1956, Seismicity of the Earth: Princeton, N. J., Princeton University Press, p. 135-143.
   ISM = St. Louis University, St. Louis, Mo.
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.

REFERENCES

Algermissen, S. T., 1969, Seismic risk studies in the United States: Fourth World Conference on Earthquake Engineering, Santiago, Chile, January 13-18, 1969, Proceedings, v. 1, p.1-27.

Bath, Markus, 1966, Earthquake energy and magnitude, in v. 5 of Physics and chemistry of the Earth: Oxford and New York, Pergamon Press, p. 115-165.

Gutenberg, B., and Richter, C. F., 1956, Magnitude and energy of earthquakes: Annali di Geofisica, v. 9, no. 1, p. 1-15.

Nuttli, O. W., 1973, Seismic wave attenuation and magnitude relations for eastern North America: Journal of Geophysical Research, v. 78, no. 5, p. 876-885.

Richter, C. F., 1958, Elementary Seismology: San Francisco, Calif., W. H. Freeman and Co., Inc., 768 p.

Wood, H. O., and Neumann, F., 1931, Modified Mercalli Intensity Scale of 1931: Seismological Society of America Bulletin, v. 21, no. 4, p. 277-283.

MODIFIED MERCALLI INTENSITY SCALE OF 1931

I. Not felt - except rarely under especially favorable circumstances. Under certain conditions of wind and outside the boundary of one area in a great stock in bells sometimes birds, animals, reported uneasy or disturbed; sometimes dizziness or nausea experienced; sometimes trees, structures, liquids, bodies of water, may sway-very slowly, very slowly.

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

III. Felt indoors by several, motion usually rapid vibration. Sensitiveness 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 few slightly. Dishes, windows, doors disturbed; walls make creaking sound. Sensation like heavy truck striking building to passing of heavy or very heavy loaded trucks. Sensation like heavy body striking building or passing of heavy or very heavy objects inside. Rattling of dishes, windows, doors; glassware and crockery clink and clank. Creaking of walls, frame, especially in the upper range of this grade. Hanging objects swing, 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 seek outdoors. Buildings trembled throughout. Broke dishes, glassware, windows, doors; cracked plaster in weak walls and ceilings; knocked over vases, small or unstable objects, in many instances, with occasional fall. Hanging objects, doors, swung generally or considerably. Knocked pictures against walls, or swung them out of place, in many instances. Stopped pendulum clocks in many instances 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 noticeably. Liquid set in strong motion. Small bells ring-church, school. Pendulum clocks stopped, started, or ran fast, or slow. Moved small objects, scared planter somewhat, especially line cracks showing in 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 noticeably, or strongly. Liquids set in strong motion. Small bells ring-church, school. Pendulum clocks stopped, started or ran fast, or slow. 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, structures. Broke some weak chimneys. Fall of masonry, in considerable quantity. 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 limestone, weak chimneys at the roof-line (sometimes damaging roofs). Fall of masonry from towers and high buildings, in considerable quantity. Broke hanging chandeliers, 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, 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. Damage considerable in other substantial buildings, partial collapse. Some collapsed. Damage great, wooden houses in some cases; throw out panel walls in frame structures. Broke off decayed piles. Fall of walls, towers, twelve, solid stone walls seriously. Weakened walls, also ground on steep slopes. Twisting, falling 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. Some collapse in masonry structures. Throw 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, cracked frames; serious to reservoirs; underground pipes sometimes 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. Partially carried away or crack and spread, sometimes with great to them, dikes, embankments often from long distances. Destroy to most of structures remained standing. Destroyed large well-built bridges by wrecking of structure supporting piers. Destroy most masonry, and frame structures, first, and railroad rails greatly, and thrown them endwise. Put pipe lines buried in earth completely out of service.

XI. 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, and steep coasts, numerous cracks of significant character, slumping of river banks, and steep coasts, with notable horizontal throw, here off, large rock masses. Fault displacements with throws up to several feet observed and recorded. Underground pipelines out of service and underground, destroyed and notified usually. Damaged lines, knocked waterfalls, deflected rivers, etc. Waves seen on ground surfaces (actually seen, probably, in some cases). Distorted lines of sight and level. Three objects upward into the air.

XII. Damage total-everything is destroyed. Disturbances in ground great and varied, to include shearing, twisting, falls of rock of significant character, slumping of river banks, and steep coasts, such as to completely change the topography of the landscape. Large rock masses displaced. Lines of sight and level destroyed. Objects thrown into the air.

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Table 1.--Chronological listing of Earthquakes for the State of Virginia

DATE YEAR	MONTH	DAY	ORIGIN TIME HR	MIN	SEC	LAT. (N.L)	LONG. (DEG)	DEPTH MIN	HYPOCENTER QUAL	REF	MAGNITUDE MAG	COMM	INTENSITY MM	REF
1774	FEB	11	19	..	..	37.2	77.4 *	..	G	55	..	..	VI*	55
1774	FEB	22	..	..	..	37.2	77.4 *	..	G	55	..	..	IV	86
1774	NOV	26	19	15	..	37.7	78.0	..	B	147	..	..	IV	147
1775	MAR	17	00	15	..	37.7	78.0	..	B	147	..	..	IV*	147
1776	NOV	11	..	..	..	37.2	77.4 *	..	G	55	..	..	IV*	55
1780	NOV	19	11	..	..	36.7	75.7	..	G	86	..	..	IV	86
1781	JAN	15	09	..	..	37.7	78.0	..	B	86	..	..	IV	147
1782	JAN	01	00	..	..	37.2	77.4 *	..	G	55	..	..	IV*	55
1786	FEB	12	02	..	..	36.7	77.5	..	G	55	..	..	III*	55
1801	FEB	11	02	..	..	37.4	79.2 *	..	I	86	..	..	III*	55
1801	FEB	11	02	..	..	37.4	79.2 *	..	G	55	..	..	V	147
1807	NOV	01	09	..	..	37.4	79.2 *	..	G	55	..	..	V	147
1812	DEC	16	15	45	..	36.6	81.5	..	G	86	..	..	V	86
1824	APR	01	00	..	..	37.5	77.5 *	..	G	55	..	..	III*	55
1824	AUG	10	02	..	..	37.5	77.5 *	..	G	55	..	..	II*	55
1826	NOV	07	11	..	..	37.5	77.5 *	..	G	55	..	..	II*	55
1828	AUG	12	03	..	..	37.0	80.0	..	G	55	..	..	IV	55
1831	AUG	07	11	..	..	37.7	78.0	..	B	179	..	..	VI	179
1852	OCT	31	22	..	..	37.7	78.0	..	B	147	..	..	IV*	147
1852	APR	29	18	..	..	36.6	81.6	..	G	86	..	..	VI	55
1852	JUN	26	21	30	..	37.2	77.4 *	..	G	55	..	..	III*	55
1852	JAN	28	..	..	..	38.5	78.5	..	B	147	..	..	V	147
1852	NOV	02	14	20	..	38.5	78.5 *	..	B	147	..	..	V	38
1853	NOV	02	..	..	..	37.2	77.4 *	..	G	55	..	..	III	147
1855	FEB	02	08	..	..	37.0	78.5 *	..	G	38	..	..	V	38
1855	FEB	02	08	..	..	37.0	78.5 *	..	G	55	..	..	IV*	55
1858	MAR	14	00	..	..	37.4	79.2 *	..	G	55	..	..	IV*	55
1858	MAR	14	..	..	..	37.1	81.9 *	..	G	55	..	..	IV*	55
1859	FEB	22	12	15	..	36.9	81.1	..	G	86	..	..	IV	86
1861	JAN	01	05	..	..	37.7	78.0	..	G	55	..	..	IV*	55
1872	OCT	03	12	45	..	37.2	78.0	..	G	86	..	..	IV	147
1875	MAR	20	17	00	..	37.7	77.5	..	G	55	..	..	III*	55
1875	DEC	23	04	45	..	37.3	80.7	..	G	55	..	..	VII*	55
1877	JAN	01	..	..	..	37.3	80.7	..	G	55	..	..	VII*	55
1877	DEC	26	17	..	..	37.3	80.7	..	G	55	..	..	III*	55
1878	JAN	03	03	30	..	37.4	77.9	..	G	86	..	..	III	147
1879	JUN	01	12	00	..	37.4	77.9	..	G	86	..	..	IV	86
1879	DEC	18	00	..	..	37.4	77.5	..	G	55	..	..	IV*	55
1879	DEC	19	08	..	..	37.4	77.5 *	..	G	55	..	..	IV*	55
1880	JAN	03	00	..	..	37.8	77.5	..	G	55	..	..	III*	55
1879	SEP	01	12	..	..	36.9	81.1 *	..	B	147	..	..	IV*	147
1884	JAN	05	00	..	..	37.4	79.2 *	..	G	55	..	..	IV*	55
1884	MAR	15	..	..	..	37.0	80.0 *	..	G	55	..	..	V	55
1884	AUG	31	12	15	..	38.0	75.0	..	B	86	..	..	..	..
1885	JAN	02	12	00	..	36.5	81.1	..	B	86	..	..	IV	86
1886	FEB	03	12	15	..	36.9	81.1	..	B	86	..	..	IV	86
1886	OCT	20	04	55	..	37.7	78.0	..	G	55	..	..	VI	38
1887	OCT	29	12	00	..	37.7	77.5	..	G	55	..	..	III*	55
1897	NOV	03	17	18	..	37.1	80.7	..	G	55	..	..	VII*	55
1897	NOV	13	21	00	..	37.3	80.7	..	G	55	..	..	III*	55
1897	NOV	03	21	10	..	37.3	80.7	..	G	55	..	..	III*	55
1897	NOV	13	23	..	..	37.1	80.7 *	..	G	55	..	..	III*	55
1897	DEC	04	21	00	..	37.3	80.7	..	G	55	..	..	VII*	55
1897	DEC	05	00	..	..	37.3	80.7	..	G	55	..	..	III*	55
1897	DEC	04	11	..	..	36.9	81.1	..	G	86	..	..	III*	55
1897	DEC	05	21	..	..	36.9	81.1	..	G	86	..	..	III*	55
1897	NOV	27	20	56	..	37.7	77.5	..	G	86	..	..	IV*	147
1898	FEB	22	00	00	..	37.0	81.0	..	G	55	..	..	V	38
1898	FEB	22	..	..	..	37.0	81.0 *	..	G	55	..	..	V	55
1898	FEB	06	02	..	..	37.0	81.0 *	..	G	55	..	..	IV*	55
1898	FEB	13	09	30	..	37.0	81.0	..	G	55	..	..	V	55
1898	FEB	13	..	..	..	37.0	81.0 *	..	G	55	..	..	IV*	55
1898	MAR	04	00	..	..	37.1	80.6 *	..	G	55	..	..	V	55
1903	APR	29	..	..	..	37.3	79.5 *	..	G	55	..	..	III	86
1906	JAN	01	00	..	..	37.3	79.5 *	..	G	55	..	..	III*	55
1907	FEB	11	13	22	..	37.7	78.5	..	G	55	..	..	VI	55
1907	FEB	11	13	45	..	37.3	78.5 *	..	G	55	..	..	III*	55
1907	FEB	11	14	00	..	37.3	78.5 *	..	G	55	..	..	III*	55
1909	AUG	03	09	30	..	37.5	77.5 *	..	G	55	..	..	III*	55
1909	AUG	03	10	00	..	37.5	77.5 *	..	G	55	..	..	III*	55
1909	AUG	03	11	00	..	37.5	77.5 *	..	G	55	..	..	III*	55
1909	AUG	24	01	..	..	37.5	77.5 *	..	G	55	..	..	III*	55
1909	AUG	24	04	..	..	37.5	77.5 *	..	G	55	..	..	III*	55
1909	AUG	24	05	30	..	37.5	77.5 *	..	G	55	..	..	III*	55
1909	AUG	24	06	00	..	37.5	77.5 *	..	G	55	..	..	III*	55
1909	AUG	24	07	14	..	37.5	77.5 *	..	G	55	..	..	III*	55
1910	JAN	01	11	45	..	37.5	77.5	..	G	55	..	..	III*	55
1910	JAN	07	02	56	..	37.5	77.5 *	..	G	55	..	..	III*	55
1910	DEC	26	05	..	..	36.1	78.5 *	..	G	149	..	..	III*	149
1911	JUN	13	03	..	..	37.3	79.5 *	..	G	55	..	..	III*	55
1911	JUL	12	15	..	..	37.3	78.5 *	..	G	86	..	..	III*	55
1914	APR	02	05	..	..	37.2	77.4 *	..	G	55	..	..	III*	55
1915	FEB	10	23	45	..	37.2	77.4 *	..	G	55	..	..	II*	55
1916	FEB	03	07	30	..	37.4	79.2 *	..	G	55	..	..	III*	55
1917	FEB	22	07	15	..	36.1	78.5 *	..	G	149	..	..	IV*	149
1943	MAR	06	02	00	..	38.9	78.5 *	..	G	13	..	..	III*	13
1943	MAR	06	02	00	..	38.9	78.5 *	..	G	13	..	..	III*	13
1944	MAR	26	05	21	..	38.9	78.5 *	..	G	13	..	..	III*	13
1961	JAN	03	07	30	..	37.4	79.1 *	..	G	15	..	..	III*	15
1961	OCT	27	02	15	..	37.4	79.1 *	..	G	15	..	..	IV*	15
1963	OCT	10	19	43	..	37.7	78.3 *	..	G	19	..	..	III*	19
1963	OCT	10	19	43	..	37.7	78.3 *	..	G	19	..	..	III*	19
1963	OCT	28	07	41.5	..	36.4	81.4	..	G	19	..	..	III*	19
1964	MAY	19	19	40	..	38.0	78.6 *	..	G	19	..	..	III*	19
1964	JUN	05	09	00	..	37.5	78.5 *	..	G	22	..	..	III*	22
1964	JUN	05	03	20	..	37.5	78.5 *	..	G	22	..	..	III*	22
1964	JUN	05	04	00	..	37.5	78.5 *	..	G	22	..	..	III*	22
1964	JUN	05	06	00	..	37.5	78.5 *	..	G	22	..	..	III*	22
1964	JUN	08	23	48	..	38.1	78.5	..	G	86	..	..	III*	25
1964	JUN	09	00	00	..	38.1	78.5 *	..	G	86	..	..	III*	25
1964	JUN	21	05	30	..	36.7	83.0 *	..	G	22	..	..	IV*	22
1964	SEP	17	09	30	..	36.7	83.0 *	..	G	22	..	..	IV*	22
1965	JUN	05	07	45	..	37.6	78.3 *	..	G	24	..	..	V	24
1965	MAY	07	07	45	..	37.6	78.3 *	..	G	24	..	..	IV*	24
1965	JUN	05	07	45	..	37.6	78.3 *	..	G	24	..	..	IV*	24
1965	SEP	27	07	05	..	37.7	78.1 *	..	G	36	..	..	IV	36
1966	JUN	05	07	45	..	37.6	78.3 *	..	G	24	..	..	IV*	24
1968	JUL	20	02	41.5	..	36.4	81.4	..	G	19	..	..	III*	19
1969	APR	20	20	58	40.2	37.40	80.68	005	A	201	..	..	VII	125
1969	JUN	21	23	17	..	37.3	80.7 *	..	G	199	..	..	IV	32
1969	AUG	11	17	07	..	37.3	80.7 *	..	G	199	..	..	IV	32
1969	AUG	11	20	20	..	37.3	80.7 *	..	G	199	..	..	IV	32
1969	AUG	11	23	25	..	37.3	80.7 *	..	G	199	..	..	IV	32
1969	OCT	28	22	38	35	36.7	81.0	033	B	26	..	..	VI*	55
1969	NOV	12	00	00	..	37.3	80.7 *	..	G	199	..	..	IV	32
1966	NOV	11	06	15	55.5	37.60	78.13	002	A	201	..	..	3.5 LKM	5
1968	NOV	08	05	16	15.7	37.38	80.77	008	A	201	3.2	4.2MLA	2	IV
1969	DEC	22	04	47	24	37.64	77.67	001	A	201	..	3.5MLA	2	V
1970	JUL	30	08	48	53.0	37.00	82.16	007	A	201	3.2	3.5LMP	1	..
1970	JUL	30	09	00	00.0	37.00	82.00	000	A	201	3.2	3.5LMP	1	..
1970	JUL	22	00	08	27.6	38.15	77.38	005	A	201	..	3.8MLA	2	V
1971	SEP	12	00	09	22.4	38.1	77.4	..	B	201	..	3.2MLA	2	IV
1972	JUN	14	20	00	56.9	37.48	82.28	001	A	201	..	..	..	..
1972	JUN	29	15	01	17	37.5	77.5 *	..	B	191	..	3.3MLA	2	IV
1973	JUL	28	23	02	57	37.5	77.5 *	..	B	191	..	..	IV	86
1974	MAY	27	09	46	31.8	38.92	77.78	002	A	197	..	2.8MLA	..	..
1974	MAY	20	23	28	35.3	37.48	80.54	005	A	201	..	3.4MLA	2	V
1975	JUN	07	20	13	13.7	37.42	80.48	005	A	201	..	3.3MLA	2	IV
1975	AUG	17	12	45	13.5	37.22	80.48	005	A	201	..	3.0MLA	2	III
1976	NOV	1	08	10	17.6	37.22	80.89	001	A	201	..	3.3ECM	2	VI
1976	JAN	12	18	54	49.1	38.42	78.37	000	A	201	..	3.0MLA	2	..
1976	SEP	3	18	54	38.0	36.62	80.77	009	A	201	..	3.8MLA	2	VI
1977	JUN	17	00	51	42.3	37.97	82.04	000	A	201	..	3.0MLA	2	..
1977	OCT	20	07	51	42.3	36.97	82.04	005	A	201	..	2.8MLA	..	..

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