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Overall aims of this research are to develop a systematic way of assessing the adequacy and vulnerability of water/sewer distribution systems subjected to seismic loads and also to develop future design methodologies for water/sewer systems. As a first step in developing a systematic way of assessing the adequacy of the Latham Water Distribution System to seismic excitation, this report determines the seismic risk of the Albany area. Richter's relationship and the average occurrence rate for the Albany, New York area is established from available data of earthquakes in the Northeast. The coefficients for the attenuation relationship is estimated by a search of current literature. A standard deviation of the error term in the attenuation relationship is varied and the resulting return periods and annual risk is compared with results obtained using a deterministic attenuation relation. Finally, using these parameters, recommended return periods and seismic risk for the Albany area are presented.

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Seismic Vulnerability, Behavior and Design of Underground Piping Systems

Seismic Risk Analysis of Latham Water District, Albany, New York

by

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and

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Research Applied to National Needs (RANN)

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June 1977

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Acknowledgements

This is the third in a series of reports under the general title of "Seismic Vulnerability, Behavior and Design of Underground Piping Systems" (SVBDUPS). The research is being sponsored by the Earthquake Engineering Program of NSF-RANN under grant no. ENV76-14884. Dr. S.C. Liu is the program manager of this project, while Dr. Leon R.L. Wang is the principal investigator of the project. The overall aims of the research are to develop a systematic way of assessing the adequacy and vulnerability of water/sewer distribution systems subjected to seismic loads and also to develop future design methodologies for water/sewer systems.

Much of the information presented in this report comes from the Master's Project report prepared by Eric Solla under the supervision of Professor M. O'Rourke. Note, although this project is sponsored by the National Science Foundation, any opinions, findings, conclusions and/or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of NSF.

Abstract

As a first step in developing a systematic way of assessing the adequacy of the Latham Water Distribution System to seismic excitation, this report determines the seismic risk of the Albany area. First, Richter's relationship and the average occurrence rate for the Albany, N.Y. area will be established from available data of earthquakes in the Northeast. The coefficients for the attenuation relationship, will be estimated by a search of current literature. A standard deviation of the error term in the attenuation relationship will be varied and the resulting return periods and annual risk will be compared with results obtained using a deterministic attenuation relation. Finally, using these parameters, recommended return periods and seismic risk for the Albany area will be presented.

I. INTRODUCTION

The adequacy of any water/sewer system subject to earthquake excitation is a function of both the physicial properties of the soil pipeline system itself as well as the size of the earthquake. While the physical properties of the soil pipeline system (pipe thickness, joint fixity, soil density, soil shear wave velocity) may be viewed as relatively deterministic quantities, the size of the earthquake must be viewed in probabilistic terms. For instance, for a particular site a Richter magnitude 5.5 earthquake may occur on the average once every 25 years (annual risk of 0.04) while a Richter magnitude 6.5 earthquake may occur on the average once every 50 years (annual risk of 0.02).

In order to obtain these probabilities for a particular site, three elements are needed. First, the general siesmisity of the area around the site must be determined. Specifically, the rate at which earthquakes of engineering significance occur in the area as well as whether they are due to point source, line source, etc. must be established. Secondly, a magnitude frequency relationship for the area is required which gives the probability density function of earthquake magnitudes. This allows one to determine the probability that an earthquake is larger than a particular magnitude given the fact that the earthquake has occurred. Finally, an attenuation relationship is needed which specifies the decrease in earthquake parameters such as maximum ground acceleration, maximum ground velocity, etc. with increased distance between the site and the earthquake epicenter.

II. SOURCE CHARACTERISTICS OF LATHAM AREA

Point, line and area sources as well as microzonation are the four basic approaches to modeling earthquake sources. Line sources have been used (3,4,5) to represent an active fault while area sources (3,4,5) are most useful when the epicenters of the historical earthquake are fairly evenly distributed over the area of interest. For both the line and area source models, a uniform rate of occurence along the line or throughout the area is usually assumed. The fourth approach, microzonation, (9) divides a region into a group of area sources, each of which is modeled by a group of point sources within that region.

In order to determine the source characteristics as well as other parameters of the Latham New York area, a list of historic earthquakes which have occurred in the Northeast (6,11,18) was compiled and stored on disc. The data for each earthquake consists of location, magnitude and/or intensity and date of occurrence. A listing of this data is found in Appendix B. For many of the older earthquakes, the Modified Mercalli Intensity (MMI) is the only available measure of the earthquake. This is a subjective scale which measures the relative damage caused by the earthquake and hence, is a rough measure of the relative size of the earthquake. It generally is obtained through old newspaper reports. A typical newspaper report of the October 20, 1870 earthquake in the Albany, New York area is found in Appendix A. To convert from MMI to Richter magnitude, the general relationship shown below is used (5,6).

$$M = 1 + 2I/3 \qquad (1)$$

where M is the Richter Magnitude and I is the Modified Mercalli Intensity.

The location of the epicenters of the earthquakes used are shown in Fig. 1. The magnitude of the earthquake is proportional to the size of the asterisk and the radius of the circle is 160 kilometers with its center at Latham. The radius of the source area was determined using attenuation relationships. The source area radius was established such that an earthquake occurring outside the source area would create a maximum ground acceleration at the Latham site which is small enough to be of no engineering significance.

From the data base, the largest recorded earthquake within 322KM (200 miles) of Latham has a magnitude of 5.5 on the Richter scale. Using five attenuation relationships developed by other researchers and using 0.02g maximum ground acceleration as the cut-off point for earthquakes of engineering significance, Solla (13) has shown that the radius of the area source may be conservatively taken as 160 kilometers around Latham. Since the epicenters of the historic earthquakes within 160 kilometers of Latham had a relatively uniform distribution, and since there are no active faults in this region, a uniform source area of 160 kilometers was used in this study.

III. EARTHQUAKE OCCURRENCE RATE FOR LATHAM

The occurrence rate is a measure of seismic activity of a region. More specifically, it is the average number of earthquakes per unit time per unit source area with a magnitude of engineering significance. Using the data base of historic earthquakes, Solla (13) has determined the variation of the

occurrence rate, ν, with the radius of the source area and the variation of the occurrence rate with the time interval considered (i.e., considering earthquakes within the last 50 years, last 100 years, etc.). For a given time interval, the occurrence rate is relatively constant within 155 kilometers of Latham but increases with increasing radius beyond 155 kilometers. This is due to concentrations of earthquakes in the Boston, New York City and Canadian regions, see Figure 1. However, since these earthquakes are outside the source area the variation of the occurrence rate with distance from Latham was not considered.

For a given source radius, the occurrence rate decreases slightly as a time interval is increased. This is most likely due to incomplete reporting of past earthquakes. The occurrence rate, considering the last 100 years and an area source of 160 kilometer radius, was used in this study and has a value of 0.204×10^{-4} earthquakes per year per square kilometer. The lower bound for earthquakes of engineering significance is taken as 2.0 on the Richter scale.

Having determined the average occurrence rate, the Poisson model is the most commonly used model to establish a probability of having a specific number of earthquakes in a given number of years (12). For an area source, the probability that N, the number of earthquakes in the area source in t years, is equal to n is given by

$$P(N=n) = \frac{e^{-\hat{\nu}t}(\hat{\nu}t)^n}{n!} \qquad n = 0,1,2,... \qquad (2)$$

where $\hat{\nu}$ is the average occurrence rate for the area source multiplied by the area of the source.

Note that the Poisson model assumes that each occurrence is independent and not related to any previous occurrence and that the process is stationary in time. This ignores the fact that earthquakes tend to come in groups (12).

In general, earthquakes of engineering interest are those for which structural damage is possible. The occurrence of these earthquakes can be modelled using the Poisson process with an average occurrence rate of νp_y where p_y is the probability that the ground motion will exceed y at the site. The relationship then becomes

$$P(N=n) = \frac{e^{-p_y \nu t} (p_y \nu t)^n}{n!} \qquad n = 0,1,2,... \tag{3}$$

where N = the number of earthquakes which cause a ground motion greater than y in a time interval of t years. The relationship for probability p_y will be developed subsequently considering the attenuation relationship.

IV. MAGNITUDE FREQUENCY RELATIONSHIP

Richter's relation is most commonly used to determine the cumulative distribution function of earthquake magnitudes. That is, given the fact that an earthquake has occurred, Richter's relationship allows calculation of the distribution of the earthquake magnitudes. Richter's relationship is

$$\log_{10} N_m = a - bm \tag{4}$$

where N_m is the number of earthquakes whose magnitude is greater than or equal to m and a and b are empirical constants which vary from region to region.

In general, upper and lower bounds are imposed in Richter's relationship (2,3,4,5,10,12,14,15,16,17). The upper bound represents a magnitude which is improbable for a particular region while the lower bound represents the magnitude which is not of engineering significance. Using upper and lower bounds the modified version of Richter's relationship becomes

$$\log_{10} N_m = \begin{cases} 0 & m < m_o \\ a + b\ (m - m_o) & m_o \leq m \leq m_1 \\ 0 & m > m_1 \end{cases} \tag{5}$$

where m_o is the lower bound and m_1 is the upper bound on the magnitude. A lower and upper bound of 2.0 and 6.3 were used in this study.

The linear form of Richter's relationship is only an approximate fit to actual data. It has been suggested by Merz and Cornell (10) that a quadratic relationship be used. This results in:

$$\log_{10} N_M = \begin{cases} 0 & m < m_o \\ a + b\ (m-m_o) + c\ (m-m_o)^2 & m_o \leq m \leq m_1 \\ 0 & m > m_1 \end{cases} \tag{6}$$

where a, b , c are empirical constants. Due to the relative lack of data on earthquakes in the eastern U.S., the linear form of Richter's relation will be used in this report.

The cumulative distribution function of earthquake magnitudes may be derived from Richter's relationship and is presented below for the linear case where both an upper and lower bound on the magnitude is included.

$$F_M(m) = \begin{cases} 0 & m < m_o \\ K_{ml}[1-e^{-\beta(m-m_o)}] & m_o \leq m \leq m_1 \\ 1 & m > m_1 \end{cases} \quad (7)$$

where $K_{ml} = (1-\exp(-\beta(m_1-m_o)))^{-1}$ (8)

and $\beta = b \cdot \ell n 10$ (9)

Once the cumulative distribution function is obtained, the probability that the earthquake is of magnitude greater than m given the fact that an earthquake has occurred, is equal to $1 - F_M(m)$.

Presented in Fig. 2 is a plot of Richter magnitude, M, vs the cumulative number of earthquakes with a magnitude greater than M for the source area. The slope of this curve, b, is obtained using the method of least squares. Then the parameter β needed for the cumulative distribution may be calculated using eqn. (9).

For the Latham area magnitudes between 2.0 and 4.5 were used to determine the slope of the frequency magnitude relationship. Earthquakes with magnitudes of less than 2.0 are normally not felt and therefore, many of these were not reported. Earthquakes of magnitude greater than 4.5 are relatively rare for the source area and are also excluded for the calculations of β.

Solla (13) presents a plot of β vs time interval for a constant source radius of 160 km. The time interval is the number of previous years consi-

dered, i.e., a time interval of 100 years corresponds to using only the past 100 years of earthquake data. The values of β tend to decrease as the time interval increases. It seems reasonable that for the earlier years only the larger earthquakes were reported. This would cause the observed decrease in the slope of the frequency magnitude relation and a corresponding reduction in the value of β, see Fig. 2. The value for β for a 100 year interval with an area source radius of 160 kilometers is 1.5 and this is the value used in this report. It should be noted that the value for β suggested by the U.S.G.S. (1) ranges between 1.35 and 1.54 for the Northeastern U.S.

V. ATTENUATION RELATIONSHIP

For most engineering purposes the maximum ground acceleration, velocity, and/or displacement are important design parameters. An attenuation relationship relates the earthquake magnitude and the distance from the site to these design parameters. The most common relationship has the form:

$$Y = b_1 \exp(b_2 M) R^{-b_3} \tag{10}$$

where

Y = the maximum acceleration, velocity, or displacement at the site

M = the magnitude of the earthquake

R = distance from the epicenter of the earthquake to the site of interest

and b_1, b_2, b_3 are empirical constants.

When actual data is examined, the spread of data points around attenuation equations is generally quite large. For small distances, equation (7) yields a very large value for the ground motion which does not match the observed values. To account for this, some authors (7,8,12) suggest a modified form

of the equation:

$$Y = b_1 \exp(b_2 M)(R + 25)^{-b_3} \tag{11}$$

where in this case R is in kilometers.

Equation (11) provides a better fit to the actual data but there is still a large amount of scattering in the data. Some authors (18) have suggested attenuation relationships which account for site conditions as well. Other authors (2,10,17) have suggested the use of an error term. This changes the relationship to:

$$Y = b_1 \exp(b_2 M)\ R^{-b_3}\ \varepsilon \tag{12}$$

where the natural log of ε is normally distributed with a mean of zero and a standard deviation of σ. This error term accounts for the spread in the data due to varying site conditions and other variations in the data. Typical value for σ range from 0.5 to 1.0 (2,17).

VI. EVALUATION OF SEISMIC RISK - DETERMINISTIC ATTENUATION

Using the deterministic attenuation relationship:

$$A = b_1 \exp(b_2 M)\ R^{-b_3} \tag{10}$$

the probability that an earthquake will produce a maximum ground acceleration, A, greater than a at the site given that an earthquake has occurred at a distance R from the site is (17):

$$P[A \geq a \mid R] = 1 - K_{m1}[1 - CG_1(a/b_1)^{-\beta/b_2}] \tag{13}$$

where $C = \exp(\beta m_o)$

$G_1 = R^{-\beta b_3/b_2}$

Assuming the occurrence rate is uniform throughout the source area Equation (17) may be integrated over the source area yielding:

$$P_y = P[A \geq a]$$

$$P_y = (1 - K_{ml}) + \frac{2}{R_y^2 - D_o^2} K_{ml} Cb_1^{\beta/b_2} \cdot a^{-\beta/b_2} G_2 \qquad (14)$$

where

$$G_2 = \frac{D_o^{-\beta b_3/b_2+2} - R_y^{-\beta b_3/b_2+2}}{\beta b_3/b_2 - 2}$$

where a is a given acceleration, p_y is probability that a will be exceeded, D_o is focal depth of the earthquakes, R_y is radius of source area, m_1 and m_o are the upper and lower bounds on earthquake magnitude.

Assuming a Poisson process, the probability that the ground motion will exceed a level a in t years is:

$$P[A \geq a] = 1 - e^{-p_y * \nu * t} \qquad (15)$$

The annual risk is the probability that the ground motion will exceed a given acceleration Y in one year or:

$$\text{Annual risk} = 1 - e^{-p_y \nu} \qquad (16)$$

VII. EVALUATION OF SEISMIC RISK-PROBABILISTIC ATTENUATION

Using the probabilistic attenuation relationship:

$$A = b_1 \exp(b_2 M) R^{-b_3} \varepsilon \qquad (12)$$

causes an increase in the associated probabilities and annual risk. Using this relationship, the probability that an earthquake will produce a ground motion greater than a at this site, given that an earthquake has occurred a distance R from the site is (17)

$$P[A > a|R] = K_{m_1}\phi(z_2) + (1-K_{m_1})\phi(z_1) + K_{m1}[\phi(z_1 - \frac{\beta\sigma}{b_2}) - \phi(z_2 - \frac{\beta\sigma}{b_2})] \quad C \cdot G_1 \cdot (\frac{a}{b_1})^{-\beta/b_2} \exp(\beta^2\sigma^2/2b_2^2) \tag{17}$$

where

$$\phi(z) = \frac{1}{\sqrt{2\pi}} \int_z^\infty \exp(-\frac{x^2}{2})\, dx$$

$$z_1 = (\ln a - \ln(b_1 \exp(b_2 m_1)\, R^{-b_3}))/\sigma$$

$$z_2 = (\ln a - \ln(b_1 \exp(b_2 m_o)\, R^{-b_3}))/\sigma$$

Assuming a uniform occurrence rate throughout the source area then Equation (17) is integrated over the source area yielding:

$$P_y = P(A \geq a) = \int_{D_o}^{R_y} P[A > a|R] \cdot \frac{2R\, dR}{R_y^2 - D_o^2} \tag{18}$$

Equation (18) is then numerically integrated using Simpsons rule to obtain p_y. Assuming a Poisson process the probability that the ground motion will exceed a in t years is:

$$p[A \geq a] = 1 - e^{-p_y * \nu * t} \tag{19}$$

for low risk values:

$$p[A \geq a] \sim p_y * \nu * t \tag{20}$$

VIII. APPLICATION OF PROCEDURE TO LATHAM, NEW YORK

In this section, the procedures described previously will be used to determine the seismic risk of Latham, New York and the effect of various input parameters on the seismic risk. Solla (13) has shown that the seismic risk of Latham is relatively insensitive to changes in the values used for β for ν. From the data base of historical earthquakes, a range of possible values for both β and ν were established and it was shown that changes of these para-

meters within that range has a negligible effect upon the overall seismic risk. Unfortunately, seismic risk is greatly dependent upon the attenuation coefficients (b_1, b_2, b_3) and to a lesser extent upon whether the probabilistic error term is included in the attenuation relationship.

Little data is available on earthquake attenuation in the Eastern United States hence, the coefficiencts for the attenuation relationship, equation (10), were determined by a search of current literature. A summary of the possible attenuation parameters obtained through this search is presented in Table 1. Most of these relationships were derived for the West Coast (4,7,8,12) while only a few are applicable to the East Coast (7,15). Since the East Coast is thought to have a distance attenuation coefficient b_3 of approximately half that of the West Coast (1), only the relationship for the Eastern U.S. were examined in detail in this study. These relationships are

$$a = 1.183\, e^{1.15M}\, R^{-1.0} \tag{21}$$

$$a = 1100\, e^{0.5M}\, (R+25)^{-1.32} \tag{22}$$

where a is maximum ground acceleration in cm/sec^2, M is the Richter's magnitude and R is the distance in kilometers from the epicenter of the earthquake to the site.

Presented in Fig. 3 is the annual risk for Latham using the two deterministic attenuation relationships, equations (21) and (22). Note, there is an order of magnitude different depending upon which attenuation relationship is used. Since Donovan's relationship Eqn. (22) yields more conservative results, his values for b_1, b_2, b_3 will be used in this report. The effect of including the probabilistic log-normal error term in the attenuation relationship is shown in Fig. 4. This graph presents the annual risk for Latham for the deterministic attenuation relationship (no error term) and for the probabilistic attenuation relationship with the standard deviation of the

log-normal error term , σ, taking values of 0.5 and 1.0. Note that inclusion of the error term increases the associated annual risks. For this study, the standard deviation of the log-normal error term is taken as 0.75 which is the midpoint of the range of suggested vlaues for σ (2,16).

IX. RECOMMENDED SEISMIC RISK

The recommended seismic risk for Latham was calculated using the attenuation coefficients suggested by Donovan, a log-normal error term with mean value equal to zero and standard deviation equal to 0.75 and the values for β and ν previously determined ($\beta = 1.5$, $\nu = .204 \times 10^{-4}$). The recommended annual risk and return periods using the aforementioned seismic parameters is presented in graphical form in Fig. 5 and in tabular form in Table 2. The annual risk presented in Fig. 5 may be used to calculate the probability that a particular maximum ground acceleration will be exceeded in a given number of years. If the annual risk of a particular maximum acceleration, a, is q_a, the probability that the acceleration will not be exceeded in T years is given by

$$P(A \leq a) = (1 - q_a)^T \tag{23}$$

This information is presented in Figure 6 and in tabular form in Table 3. For example, a maximum ground acceleration of $228\,cm/sec^2$ has a 1 in 10 chance of being exceeded in 50 years, while a maximum ground acceleration of $205\,cm/sec^2$ has a 1 in 5 chance of being exceeded in 100 years.

X. SUMMARY AND CONCLUSIONS

The seismic risk of Latham New York is presented in terms of annual risk, average return periods and probabilities of exceedence. The average occurrance rate , ν , for the area as well as β, the parameter specify the magnitude frequency

relation were determined using a list of historic earthquakes for the area. A conservative attenuation relationship for the Eastern United States with a probabilistic error term were also used. It is felt that the seismic risk values recommended in this report are appropriate for structural engineering purposes.

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b_1	b_2	b_3	Reference
2000	0.8	2.0	2,3,4
1350	0.58	1.52	7*
1100	0.5	1.32	7**
1260	0.8	2.0	8
1230	0.8	2.0	12
1183	1.15	1.0	14

* For Western U.S.

** For Eastern U.S.

TABLE 1. ATTENUATION COEFFICIENTS

RETURN PERIOD (years)	MAXIMUM GROUND ACCL. (cm/sec^2)
10	40
25	65
50	90
100	125
200	160

TABLE 2. RECOMMENDED RETURN PERIOD FOR LATHAM

ECONOMIC LIFETIME T (years)	MAXIMUM GROUND ACCELERATION (in cm/sec^2) HAVING PROBABILITY p OF BEING EXCEEDED IN T YEARS		
	p = 0.005	p = 0.10	p = 0.20
25	225	180	152
50	270	228	178
100	330	265	205

TABLE 3. RECOMMENDED MAXIMUM GROUND ACCELERATION FOR SPECIFIC EXCEEDANCE PROBABILITIES AND ECONOMIC LIFETIMES

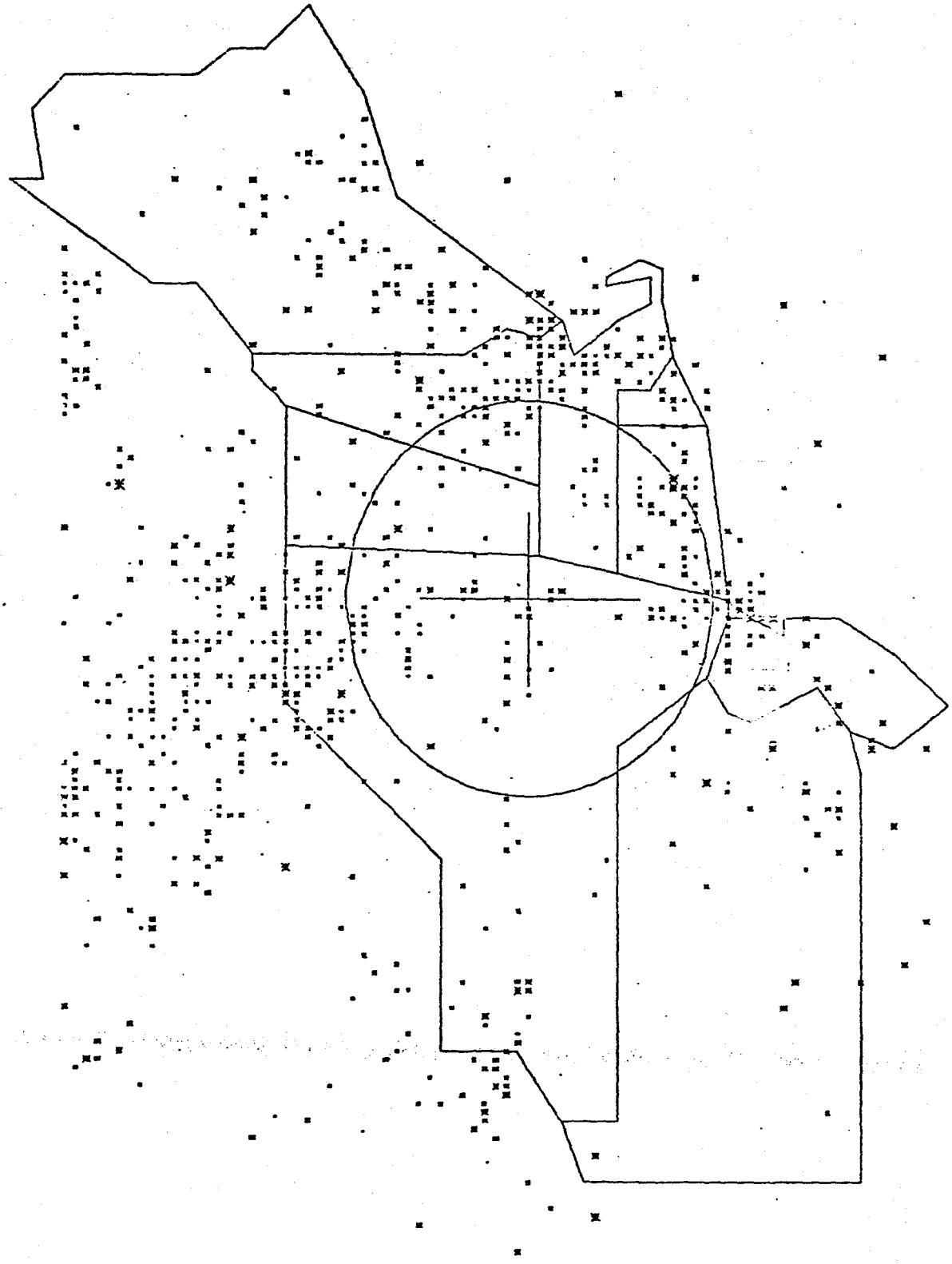

FIGURE 1. PLOT OF HISTORIC EARTHQUAKES - NORTHEASTERN U.S.

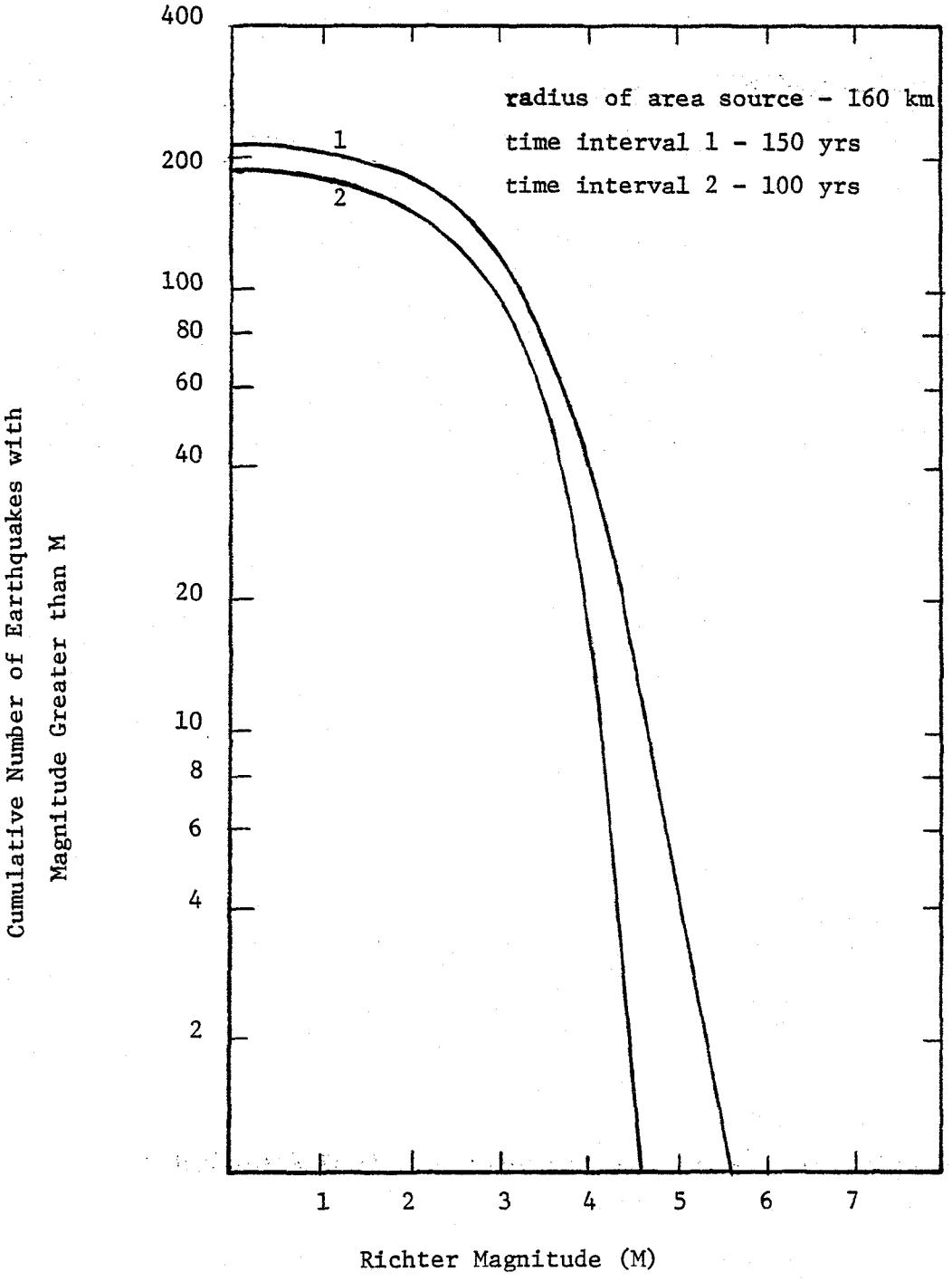

FIGURE 2. MAGNITUDE FREQUENCY RELATIONSHIP

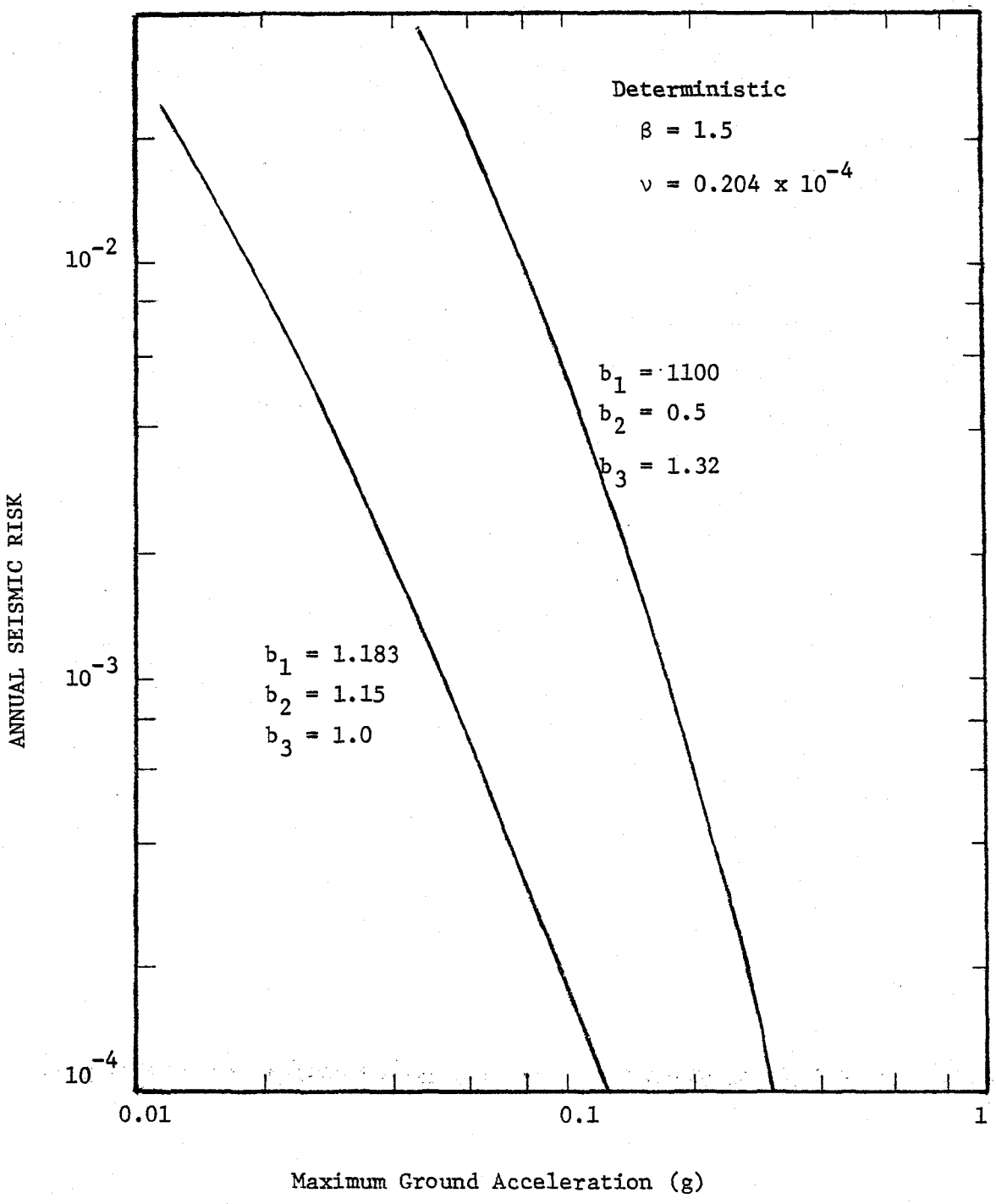

FIGURE 3. EFFECT OF DIFFERENT ATTENUATION RELATIONSHIPS UPON SEISMIC RISK

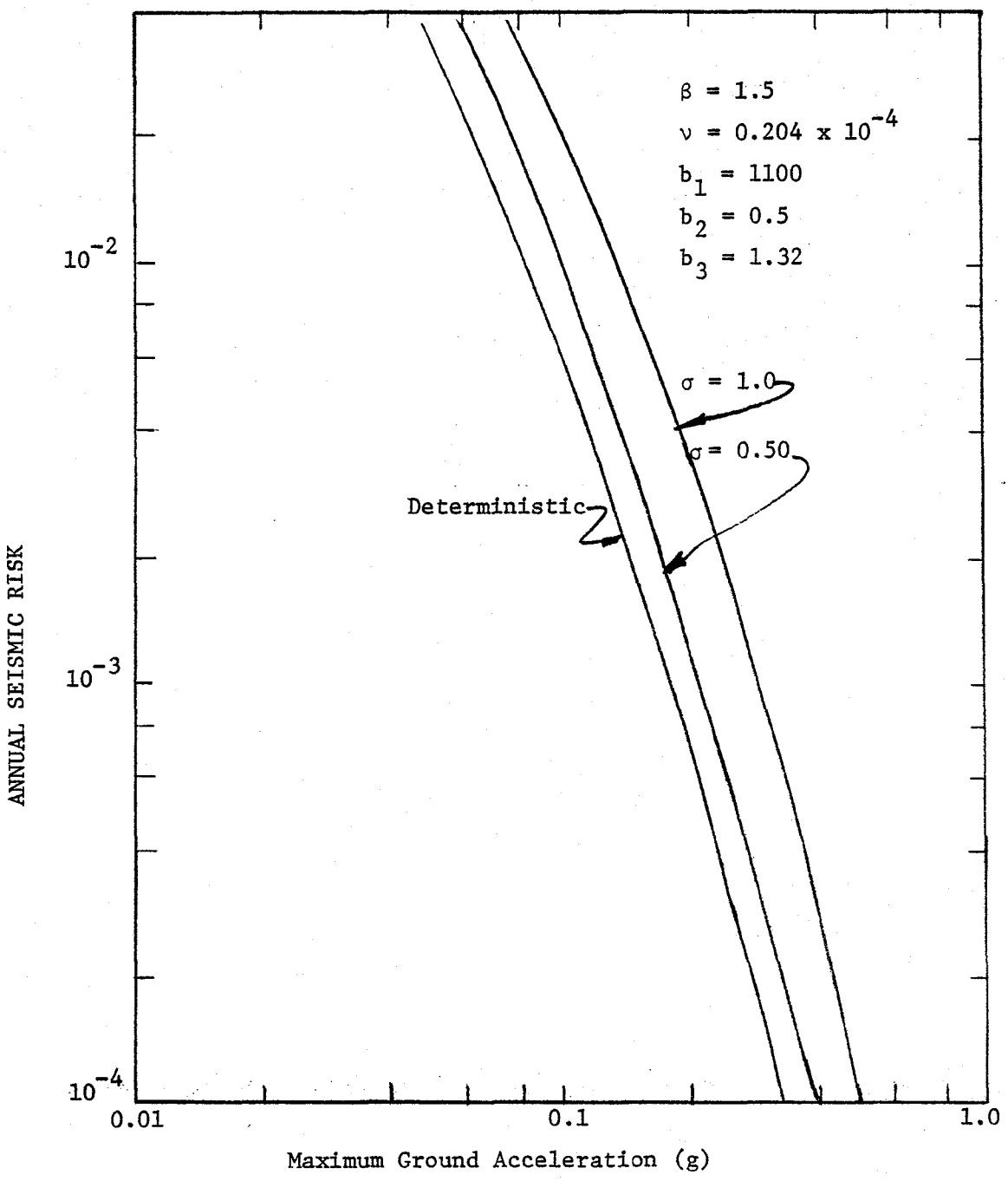

FIGURE 4. EFFECT OF PROBABILISTIC ERROR TERM UPON SEISMIC RISK

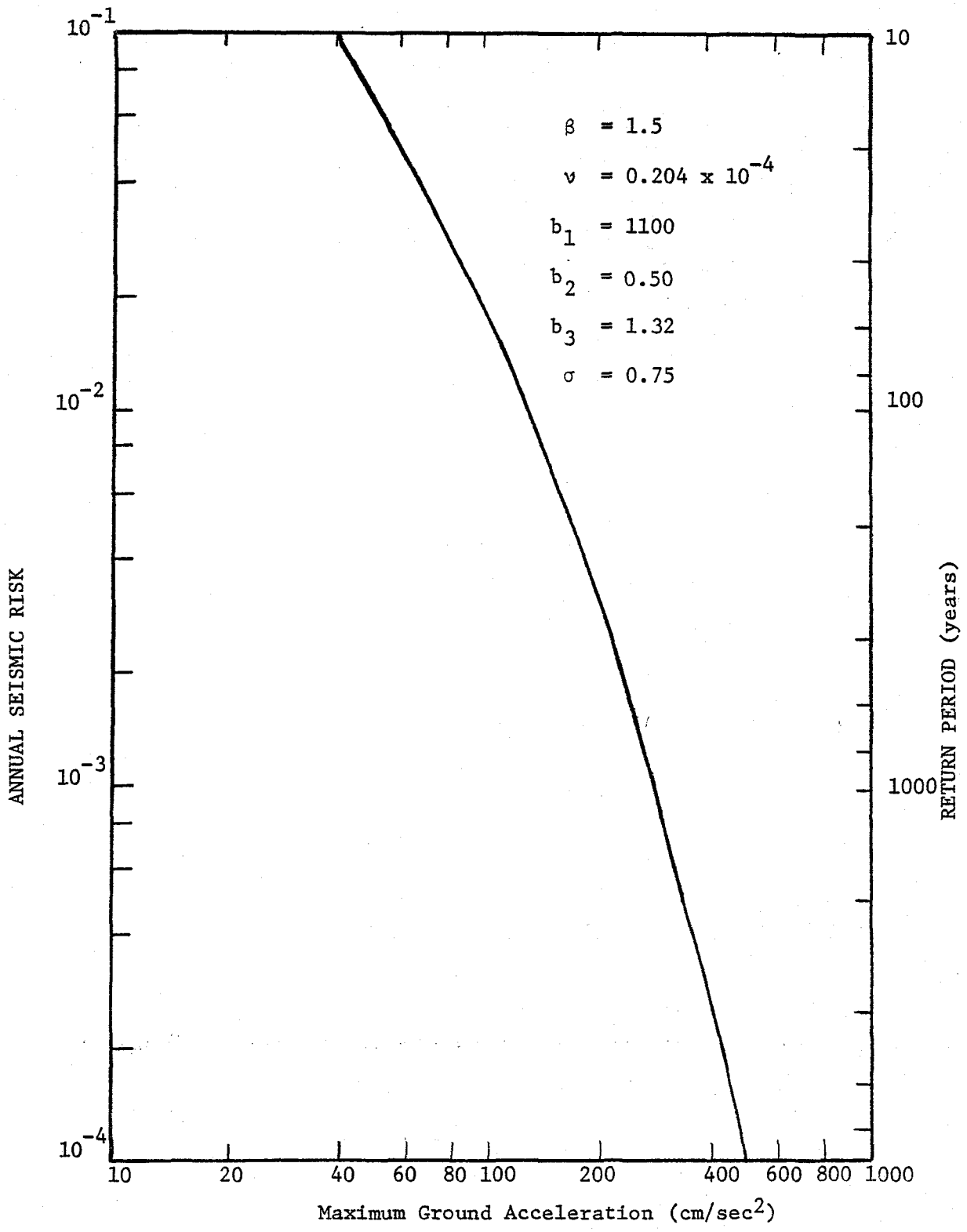

FIGURE 5. RECOMMENDED ANNUAL SEISMIC RISK AND RETURN PERIODS FOR LATHAM N.Y.

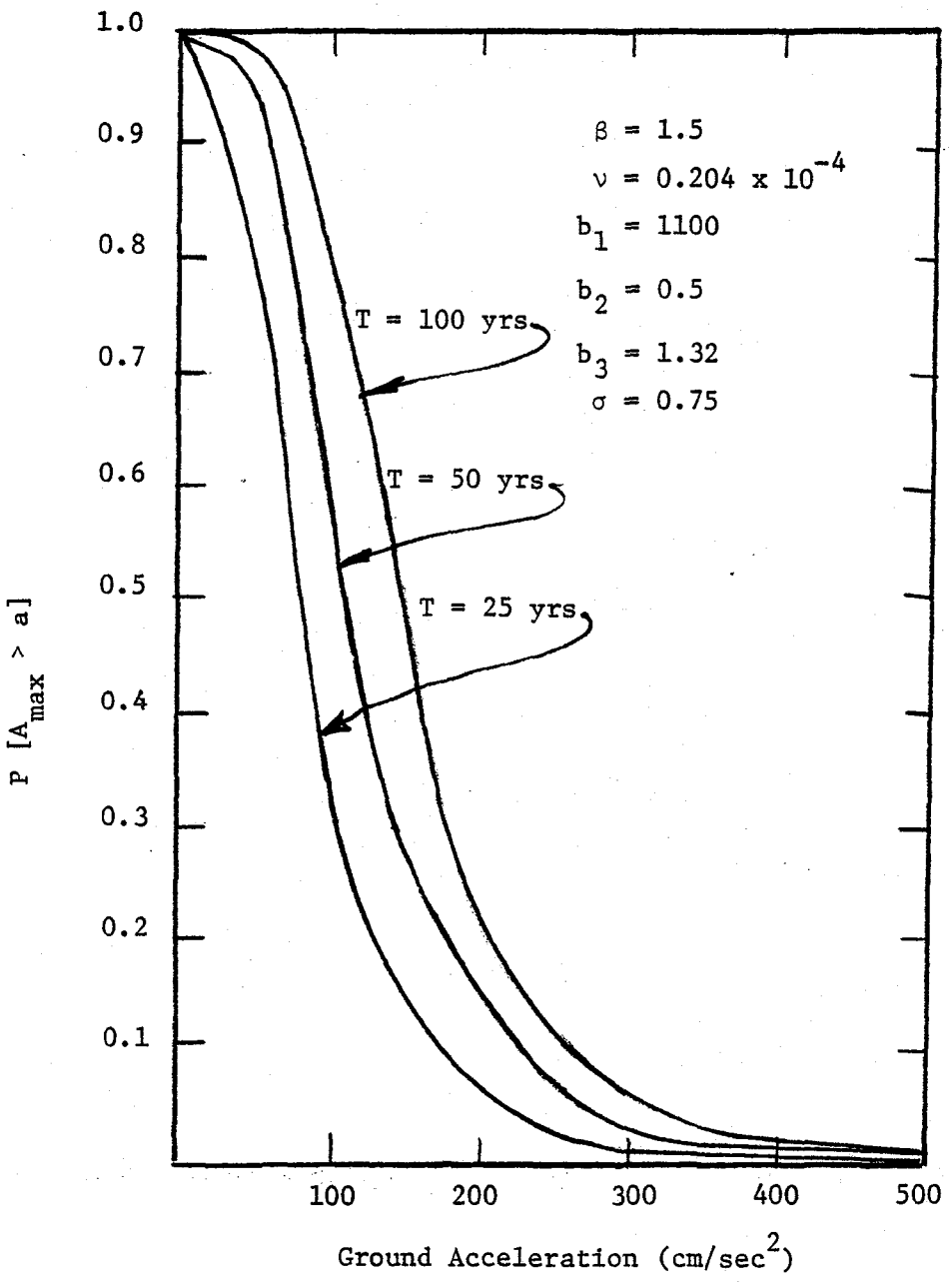

FIGURE 6. PROBABILITIES OF EXCEEDING PARTICULAR GROUND ACCELERATION IN T YEARS

APPENDIX A

Typical Report of an Earthquake

The following are typical newspaper reports from which the intensity of an earthquake is determined. This particular earthquake occurred on October 20, 1870 with an epicentral intensity of IX (MMI) [11].

"In the vicinity of the park on Washington avenue, and in a parallel line from there to the south part of the city, it was very palpable, shaking the buildings, and in the vicinity of where the old Lancaster pond stood, causing some people to leave their houses....The shock was very distinctly felt on Madison avenue hill and on Harbor Hill. People in houses on both these hills left them and ran into the street. Furniture was knocked down and upset, and in many instances crockery was broken. The shock is reported as having lasted one minute and a half, and occurred west of a line north and south of Eagle street."

"A severe shock of earthquake was felt in this city... The people were greatly excited, and rushed from their buildings to find chimneys falling and steeples tottering. The damage done was not great, but the excitement was intense."

"...a severe shock was felt in this city, which startled almost everyone who was situated so as to feel its effects. The most substantial buildings shook to their foundations, while in many dwellings dishes were thrown from the shelves and gas fixtures moved like pendulums. People rushed into the streets to ascertain the cause, and many enquiries were made. The most prevalent idea was that an explosion had taken place...."

"There was hardly a building but what, more or less, felt the shock, although on the south side of the city it was felt most severe. In the hotels the spring bells and even door bells were rung....In the upper stories of buildings the shock was most felt."

APPENDIX B

LIST OF EARTHQUAKES

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1804 MAY 18	FA NY	40.7	74.0	III	3.0
1840 JAN 16	NR UTICA	43.0	75.0	V-VI	4.7
1841 JAN 25	FELT FOR 15-20 SEC AT NYC	40.7	74.0	III	3.0
1845 OCT 26	HUDSON VL,FA NY CITY,WNEWENG	42.5	73.7	VI	5.0
1847 JAN 11	FA ALBANY	42.6	73.7	II	2.3
1847 JUL 9	FA GLEN FALLS	43.3	73.7	III	3.0
1848 SEP 8	NR NY CITY,FF RI TO PHILA	40.7	74.0	V	4.3
1852 DEC 15	FA CARLTON	43.4	78.2	III	3.0
1853 MAR 12	NR LOWVILLE	43.7	75.5	VI	5.0
1855 JAN 17	FA MT VERNON + FREEPORT	40.8	73.6	III	3.0
1855 FEB 6	HUDSON RIVER VALLEY	42.0	74.0	VI	5.0
1855 DEC 17	FA FRENCH MT	43.4	73.7	IV	3.7
1857 OCT 23	CNT NR BUFFALO	43.2	78.6	VI	5.0
1872 JUL 11	FI 10MI RADIUS-NEW ROCHELLE	40.9	73.8	IV	3.7
1873 MAR 18	FA CANTON	44.6	75.1	II	2.3
1873 APR 25	SEVERAL SH FI N NY	44.8	74.2	V	4.3
1874 JAN 5	FA OGDENSBURG	44.7	75.5	II	2.3
1874 DEC 10	FI A AR NY CITY	40.9	73.8	V	4.3
1876 JAN 8	1 SHOCK AT LOCKPORT	43.2	78.7	II	2.3
1877 MAY 14	SL SH FA SCHENECTADY	42.8	73.9	II	2.3
1877 NOV 4	NE NY	44.5	74.9	VII	5.7
1878 FEB 5	BROKE WINDOWS IN FLUSHING	40.8	73.9	V	4.3
1878 OCT 4	HUDSON RIVER VALLEY	41.5	74.0	V	4.3
1878 DEC 24	FA FLUSHING	40.8	73.8	II	2.3
1878 DEC 28	FA SCHOHARIE	42.7	74.3	III	3.0
1881 MAR 18	4 ST SH FA SCHENECTADY	42.8	73.9	III	3.0
1881 APR 21	FA PORT JEFFERSON	40.9	73.1	III	3.0
1881 SEP 25	ST SH FA ELMIRA	42.1	76.8	II	2.3
1882 APR 2	FA AMSTERDAM	43.0	74.3	II	2.3
1884 AUG 10	FA NY CITY	40.6	74.0	VII	5.7
1885 JAN 4	FA PEEKSKILL	41.3	73.9	III	3.0
1885 JAN 31	FA YORKTOWN	41.3	73.8	III	3.0
1893 MAR 9	CNT IN NY CITY	40.6	74.0	V	4.3
1897 MAY 27	NR LK CHAMPLAIN,FA VT,NH,MA	44.5	73.5	VI	5.0
1903 DEC 25	NR OGDENSBURG	44.7	73.5	V	4.3
1907 JAN 24	NR SCHENECTADY	42.8	74.0	IV	3.7
1910 MAR 3	LT SH FA SARANAC LK	44.3	74.2	III	3.0
1910 MAY 1	ST SH FI W LONG ISLAND	40.7	73.5	II	2.3
1911 JAN 29	ST SH FA OGDENSBURG	44.7	75.5	III	3.0
1913 AUG 10	NR LK PLACID	44.0	74.0	IV	3.7

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1915 FEB 21	LT SH FA BEEKMANTOWN	44.7	73.4	IV	3.7
1916 JAN 5	NR LK GEORGE	43.7	73.7	V	4.3
1916 FEB 2	MOHAWK VL	42.9	74.0	IV-V	4.0
1916 JUN 8	FA MANY PTS IN WESTCHESTER CO	41.0	73.8	IV	3.7
1916 NOV 1	NR GLEN FALLS	43.3	73.7	V	4.3
1917 OCT 1	FA GLEN FALLS	43.3	73.6	III	3.0
1921 JAN 19	NR GLEN FALLS	43.3	73.7	IV	3.7
1921 JAN 27	NR GLEN FALLS	43.3	73.7	IV	3.7
1922 DEC 8	FA CANTON	44.6	75.1	V	4.3
1925 APR 7	FA S SYRACUSE + ONANDAGA VL	43.0	76.1	III	3.0
1925 MAY 23	FA SODUS PT	43.4	77.1	III	3.0
1926 JAN 27	FA SARANAC LK + LK POWER	44.3	74.1	IV	3.7
1926 MAY 11	FA NEW ROCHELLE-MOST STRONG	40.9	73.9	V	4.3
1926 MAY 22	FA POUGHKEEPSIE	41.7	73.9	II	2.3
1927 MAR 12	FA CANTON BY MANY	44.6	75.2	IV	3.7
1927 MAR 14	FA CANTON A OGENSBURG	44.6	75.4	IV	3.7
1927 MAR 29	FA S SYRACUSE	43.0	76.1	III	3.0
1927 MAR 31	FA S SYRACUSE	43.0	76.1	III	3.0
1927 OCT 24	FA OANNEMORA BY MANY	44.7	73.7	IV	3.7
1928 MAR 18	SARANAC LK, NE NY	44.5	74.3	V-VI	4.1
1929 JUN 5	MALONE.LT SH.DR 30 SEC	44.8	74.3	III	3.0
1929 AUG 12	ATTICA	42.2	77.2	III	3.0
1929 AUG 12	ATTICA	42.9	78.3	VIII	5.8
1929 DEC 2	ATTICA	42.8	78.3	IV	3.7
1929 DEC 3	ATTICA	42.8	78.3	IV	3.7
1930 JAN 4	CLINTON	43.1	75.3	II	2.3
1930 JAN 17	ATTICA	42.8	78.3	I	1.7
1930 NOV 2	MALONE AND CHESTNUT FALLS	44.8	74.3	III	3.0
1931 APR 20	LK GEORGE (ISOSEISMAL MAP)	43.4	73.7	VII	5.0
1931 APR 22	STRONG EQ FA BUFFALO	42.9	78.9	IV	3.7
1931 MAY 4	FA MALONE BY VERY FEW	44.8	74.3	I	1.7
1931 JUL 7	ROCHESTER.FEEBLE,NO DAMAGE	43.2	77.6	II	2.3
1931 JUL 7	ROCHESTER. LT SH	43.2	77.6	I	1.7
1931 NOV 3	CANTON,DISHES RATTLED	44.6	75.2	II	2.3
1932 DEC 7	GABRIELS	44.4	74.1	IV	3.7
1932 DEC 7	GABRIELS	44.4	74.1	III	3.0
1932 DEC 28	WATERTOWN.(EXPLOSION?)	44.0	75.9	III	3.0
1933 MAY 20	LAWRENCEVILLE	44.8	74.7	III	3.0
1933 JUN 26	SCARSDALE	41.0	73.8	III	3.0
1933 OCT 29	ST JOHNSVILLE	43.0	74.7	IV	3.7

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1934 APR 15	ADIRO'K MT NR LK CHAMPLAIN	44.7	73.8	V-VI	4.5
1934 APR 15	MALONE,ST AS FA DANNEMORA	44.8	74.3	III	3.0
1934 JUN 5	MALONE	44.8	74.3	III	3.0
1935 JAN 28	MALONE	44.8	74.3	IV	3.7
1935 JAN 28	MALONE	45.0	74.3	III	3.2
1935 NOV 1	RICHMONDVIL;LE	42.6	74.6	II	2.3
1936 JUN 21	MOUNTAIN VIEW. 5 ML	44.7	74.2	III	3.0
1937 FEB 21	ELMIRA. SLIGHT NO DAMAGE.	42.1	76.8	II	2.3
1937 MAR 10	FA CANTON BY MANY	44.6	75.2	IV	3.7
1937 JUL 19	W LONG ISLAND	40.7	73.7	IV	3.7
1937 OCT 12	WESTCHESTER CO	41.2	73.8	II	2.3
1938 MAY 4	MODERATE SHOCK FA MALONE	44.9	74.9	I	1.7
1938 JUL 29	N MANHATTAN AND BRONX	41.0	73.7	III	3.0
1938 AUG 23	FA WESTCHESTER CO	41.2	73.7	III	3.0
1938 AUG 23	FA WESTCHESTER CO	41.2	73.7	III	3.0
1938 OCT 21	S DUTCHESS CO	41.2	73.7	II	2.3
1938 NOV 18	N NY AND ST LAWENCE RV	44.8	75.3	IV-V	4.0
1939 FEB 21	LOCAL SH FA ONLY MALONE	44.8	74.3	II	2.3
1939 FEB 24	NR ATTICA	42.9	78.3	III	3.0
1939 JUN 1	CANTON, ST LOCAL SH	44.6	75.2	III	3.0
1939 SEP 21	ORANGE CO	41.4	74.3	II	2.3
1939 SEP 22	PORT WASHINGTON SEISMIC?	40.8	73.7	I	1.7
1939 OCT 21	FA GLENS FALLS	43.3	73.3	II	2.3
1939 OCT 25	FA HUDSON	42.2	73.8	II	2.3
1940 APR 12	W CENTRAL NY	42.8	77.6	II	2.3
1940 APR 13	NR MESSENA	44.8	74.6		2.6
1940 MAY 20	W CANTON	44.6	75.2	II	2.3
1940 SEP 26	LK CHAMPLAIN AREA	44.7	73.5		2.9
1941 FEB 1	CANTON	44.6	75.2	II	2.3
1941 APR 3	FS OF APR 4	44.7	73.9		2.5
1941 APR 4	AB 20 MI SE OF MALONE	44.7	73.9		3.3
1941 JUL 28	FA MT KISCO + WHITE PLAINS	44.1	73.7	III	3.0
1941 OCT 9	WATERTOWN	44.0	75.9	II	2.3
1941 OCT 20	WATERTOWN	44.0	75.9	II	2.3
1941 OCT 21	FS OF OCT 21 W M 3.3	44.8	74.8		2.2
1941 OCT 21	AB 15 MI S OF MALONE	44.8	74.8		3.3
1941 DEC 12	AB 12 MI N OF DANNEMORA	44.9	73.7		2.7
1942 JAN 31	AB 10 MI SW OF DANNEMORA	44.7	73.9		2.7
1942 MAY 24	FS OF MAY 24 W M 3.9	44.7	73.8		2.9
1942 MAY 24	AB 10 MI SW OF DANNEMORA	44.7	73.8		3.9

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1942 OCT 1	S PART OF LK CHAMPLAIN	44.0	73.6		2.5
1942 OCT 2	A FEW MI S OF ALBANY	42.6	73.8		3.0
1943 MAY 9	NR DANNEMORA	44.8	73.8		3.2
1943 JUL 6	DANNEMORA,LK PLACID	44.5	74.5	I	1.7
1943 OCT 15	AB 20 MI NE OF TUPPER LK	44.4	74.2		2.5
1944 JAN 16	ROCHESTER	43.2	77.6	II	2.3
1944 FEB 26	BUFFALO	42.9	78.8	I	1.7
1944 SEP 5	CNT BT MASSENA + CORNWALL	45.0	74.9	VIII	5.9
1944 SEP 5	AS OF SEP 5 OF M 5.9	45.0	74.9		3.4
1944 SEP 5	AS OF SEP 5 OF M 5.9	45.0	74.9		4.6
1944 SEP 5	AS OF SEP 5 OF M 5.9	45.0	74.9		3.3
1944 SEP 9	AS OF SEP 5 OF M 5.9	45.0	74.9		4.1
1944 OCT 31	AS OF SEP 5 OF M 5.9	45.0	74.9		4.0
1945 APR 15	AUBURN-S SYRACUSE	43.0	76.4	III	3.0
1946 MAR 15	ST SH FA MASSENA	44.9	74.9	I	1.7
1946 MAR 20	ALEXANDRIA BAY	44.3	75.9	III	3.0
1946 JUN 20	GABNREILS, NY. LT TREMOR	44.4	74.2	II	2.3
1946 JUN 27	NR ST REGIS FALLS	44.6	74.5		3.0
1946 SEP 4	MASSENA	44.9	74.9	I	1.7
1946 NOV 10	AB 25 MI SSW OF ROCHESTER	42.9	77.4		3.1
1946 NOV 24	MASSENA	44.9	74.9	II	2.3
1946 NOV 28	SCHROON LK	43.8	73.7	III	3.0
1948 APR 4	AB 15 MI SE OF LK PLACID	44.2	73.8		2.5
1948 NOV 22	BT TUPCPER LK + MALONE	44.4	74.3		2.9
1949 FEB 7	MASSENA	44.9	74.9	III	3.0
1949 FEB 16	MASSENA	44.9	74.9	V	4.3
1950 AUG 4	MASSENA	45.0	74.9	I	1.7
1950 AUG 6	LT SH FA MASSENA	45.0	74.9	I	1.7
1951 SEP 3	ROCKLAND CO	41.3	74.3	V	4.4
1951 OCT 25	MASSENA 3 ML	44.9	74.9	III	3.0
1951 NOV 6	CLINTON CO	45.0	73.5	IV	3.7
1951 NOV 8	POUGHKEEPSIE, LT SH	41.7	73.9	II-III	2.7
1952 AUG 24	MOHAWK RV VL	43.0	74.5	V	4.3
1952 OCT 8	POUGHKEEPSIE	41.7	74.0	V	4.3
1952 NOV 20	AUBURN	42.9	76.6	III	3.0
1952 DEC 21	MASSENA	44.9	74.9	II	2.3
1953 APR 26	PLATTSBURG	44.7	73.4	IV	2.6
1954 FEB 1	CANADAIGUA	43.0	76.7	IV	3.3
1954 APR 21	PLATTSBURG	44.7	73.5	IV	3.7
1954 MAY 20	MALONE	45.0	74.2	IV	3.7

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1954 SEP 2	WATERTOWN	44.0	75.9	I	1.7
1954 DEC 13	SARANAC LK + VICINITY	44.6	74.6	IV	3.6
1954 DEC 15	LAWENCEVILLE	44.8	74.7	II	2.3
1955 JAN 21	MALTA 2 ML	43.0	73.8	V	4.3
1955 AUG 16	ATTICA	42.9	78.3	V	4.3
1956 JUL 27	AB 30 MI SSE OF MALONE	44.7	73.8		3.4
1956 AUG 3	AB 10 MI E OF MASSENA	44.9	74.7		2.3
1957 FEB 20	MASSENA	44.9	74.9	IV	3.7
1957 MAR 23	NR PA BORDER	41.6	74.8		3.5
1958 JAN 11	MASSENA	44.9	74.9	IV	3.7
1958 MAY 6	ALBANY	42.6	73.8	IV	3.7
1961 APR 20	MASSENA A CORNWALL	45.0	74.9	V	2.0
1961 SEP 29	FA MASSENA BY SEVERAL	44.9	74.9	IV	3.7
1962 OCT 2	N NY, MALONE	44.8	74.3	IV	3.7
1962 NOV 27	SOUTH POUGHKEEPSIE	41.6	73.9		1.7
1963 JAN 30	FO ALL WATERTOWN SHARPLY	44.0	75.9		3.0
1963 FEB 16	AB 15 MI SW OF ROUSES PT	44.9	73.7		2.6
1963 MAY 19	AB 20MI N-ROME,LYONS FALLS	44.5	75.2		3.5
1963 JUL 1	NR ALBANY	42.6	73.7		3.3
1963 AUG 15	BT MASSENA + LONG SAULT,ONT	45.0	74.9		2.0
1964 MAR 29	MASSENA 3 ML	44.9	74.9	V	4.3
1964 JUN 4	10 MI E OF OGDENSBURG	44.7	75.3		2.8
1964 JUN 16	MALONE	44.8	74.3	IV	3.7
1964 JUN 16	CA-US BORDER	45.0	74.2		2.7
1964 SEP 28	MT KISCO	41.2	73.7	II	2.3
1964 SEP 29	MT KISCO	41.2	73.7	II	2.3
1964 NOV 17	ARMONK,MTKISCO,POUND RIDGE	41.2	73.7	V	4.3
1964 NOV 30	NR CHERRY VL	42.8	74.9		2.6
1964 NOV 30	AB 5 KM S OF PEEKSKILL	41.3	73.9		1.0
1964 NOV 21	NR SOUTH MT,ONT	44.9	75.0		2.4
1965 JUL 16	ATTICA	42.9	78.2	IV	3.7
1965 AUG 27	ATTICA	42.9	78.2	IV	3.7
1965 SEP 29	GOSHEN-MIDDLETOWN	41.4	74.4	IV	3.7
1966 JAN 1	EAST OF ATTICA	42.8	78.2	VI	4.7
1966 MAY 21	5 KM N-SPRING VL,5-10 KM DH	41.2	74.0		1.3
1967 JUN 13	ATTICA	42.9	78.2	VI	3.9
1967 NOV 22	WESTCHESTER CPUNTY	41.2	73.8	V	4.3
1969 AUG 13	ATTICA	42.9	78.2	IV	2.5
1974 JUN 7	WAPPINGERS FALLS	41.6	73.9		3.3
1568 0	RI POSSIBLY ON RV VL	41.5	72.5	VII	5.7

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1574 0	RI POSSIBLY CN RV VL	41.5	72.5	VII	5.7
1584 0	RI POSSIBLY CN RV VL	41.5	72.5	VII	5.7
1592 0	RI POSSIBLY CN RV VL	41.5	72.5	VII	5.7
1661 FEB 19	PROBABLY IN ST LAWERENCE	45.5	73.0	VII	5.7
1698 0	FA DANBURY CN	41.4	73.5	IV	3.7
1702 0	FA DANBURY CN	41.4	73.5	IV	3.7
1711 0	FA DANBURY CN	41.4	73.5	IV	3.7
1729 AUG 6	FA DANBURY CN	41.4	73.5	IV	3.7
1732 SEP 16	FA MONTREAL,QUE	45.5	73.6	IX	7.0
1737 DEC 18	NR NY CITY,FO S NEW ENGLAND	40.8	74.0	VII	5.7
1766 AUG 25	FA NEWPORT, RI	41.5	71.2	V	4.3
1783 NOV 29	W OF NY CITY,FF NH TO PA	41.0	74.5	VI	5.0
1791 MAY 16	NR MOODUS,ON FO SW NEW ENG-	41.5	72.4	VIII	6.3
1791 MAY 18	NR MOODUS,CN FA MOODUS,CN	41.5	72.4	VIII	6.3
1792 AUG 28	FA E HADDAM,CN	41.5	72.5	IV	3.7
1792 OCT 24	FA E HADDAM,CN	41.5	72.5	IV	3.7
1793 JAN 11	FA E HADDAM,CN	41.5	72.5	IV	3.7
1793 JUL 6	FA E HADDAM,CN	41.5	72.5	IV	3.7
1794 MAY 9	FA E HADDAM,CN	41.5	72.5	IV	3.7
1800 DEC 25	FI E MA,FA NEWPORT,RI.	41.9	71.1	VI	5.0
1805 AUG 11	FI CN VL	41.5	72.4	IV	3.7
1805 DEC 30	FI CN VL	41.5	72.4	IV	3.7
1811 JUL 0	CN VL FA E HADDAM	41.5	72.4	III	3.0
1812 FEB 9	CN VL FA E HADDAM	41.5	72.4	III	3.0
1812 JUL 5	CN VL FA E HADDAM	41.5	72.4	III	3.0
1813 DEC 28	CN VL FA E HADDAM	41.5	72.4	IV	3.7
1816 SEP 0	NR MONTREAL,QUE FO NE N US	45.5	73.6	VII	5.7
1816 SEP 1	NR MONTREAL,QUE FO E CANADA	45.5	73.6	VI	5.0
1819 AUG 15	ST ANDREWS,QUE	45.6	74.3	III	3.0
1819 NOV 0	MONTREAL,QUE SL SH FI CITY	45.5	73.6	III	3.0
1827 AUG 23	NR NEW LONDON,CONN	41.4	72.1	IV	3.7
1837 APR 12	NR HARTFORD,CN	41.7	72.7	V	4.3
1840 AUG 9	NR HARTFORD,CN	41.5	72.9	V	4.3
1840 SEP 10	HAMILTON,ONT VIOLENT SH	43.3	79.9	V	4.3
1840 NOV 11	PHILADELPHIA,PA	40.0	76.2	V	4.3
1842 NOV 9	ST LAWERENCE VL,FA MONTREAL	46.0	73.2	VI	5.0
1843 MAR 14	VERMONT	44.4	72.5	IV	3.7
1844 JUN 0	FA E HADDAM,CN	41.5	72.4	III	3.0
1844 NOV 0	FA MONTREAL,QUE	45.5	73.6	IV	3.7
1845 JAN 1	FA E HADDAM, CN	41.5	72.4	III	3.0

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1845 NOV 0	FA LEBANON, NH	43.6	72.3	IV	3.7
1847 JAN 8	FA GRAFTON HABOUR, ONT	44.0	78.0	III	3.0
1847 JAN 14	FA RICE LK,ONT	44.2	78.1	III	3.0
1847 SEP 2	FF NEWPORT RI TO PHILIA,PA	40.2	72.0	V	4.3
1847 NOV 2	FA MONTREAL,QUE	45.5	73.6	III	3.0
1848 MAY 23	FA MONTREAL,QUE	45.5	73.6	III	3.0
1848 DEC 11	TREMOR AT MONTREAL,QUE	45.5	73.6	III	3.0
1849 FEB 4	FA NEWPORT,RI	41.5	71.6	III	3.0
1849 FEB 15	FA SPRINGFIELD,MASS	42.1	72.6	III	3.0
1851 JAN 30	FA ST ANDREWS,QUE LT SH	45.6	74.3	III	3.0
1851 DEC 25	FA BRIDGEPORT, VT	44.0	73.3	III	3.0
1852 JAN 10	OFF COAST OF RI	41.2	71.4	IV	3.7
1852 FEB 11	FA ST MARTIN, QUE -LT SH	45.6	73.7	III	3.0
1852 JUN 30	UPPER CN VL.FA CLAREMONT,NH	43.4	72.3	III	3.0
1852 AUG 1	FA GROTON, CN	41.4	72.1	III	3.0
1853 MAR 13	SH FELT NR ST CATHERINE,ONT	43.1	79.4	V	4.3
1853 MAY 24	FA OTTAWA,ONT	45.4	75.7	II	2.3
1854 JAN 24	FA PALMER,MA	42.2	72.3	III	3.0
1854 JAN 27	FA PALMER,MA	42.2	72.3	III	3.0
1854 OCT 24	FA KEENE,NH	42.9	72.3	IV	3.7
1854 DEC 4	FA HUNTINGTON,QUE	45.1	74.2	III	3.0
1855 JAN 13	FA STE MARTIN,QUE	45.6	73.7	III	3.0
1855 FEB 19	FA MONTREAL,QUE	45.5	73.6	II	2.3
1856 JAN 1	FA MONTREAL,QUE	45.5	73.6	III	3.0
1856 MAR 12	S CN RV VL	41.4	72.6	IV	3.7
1856 MAY 1	FA OTTAWA, ONT	45.4	75.7	II	2.3
1856 JUN 10	CENTRAL CN RV VL	41.3	72.5	II	2.3
1856 DEC 28	FA OTTAWA,ONT	45.4	75.7	II	2.3
1857 JUN 30	CONNECTICUT	41.5	72.5	III	3.0
1857 OCT 16	FA MONTRAL, QUE	45.5	73.6	III	3.0
1858 JAN 15	FA MONTRAL, QUE	45.5	73.6	II	2.3
1858 JAN 15	FA NIAGARA FALLS,ONT	43.1	79.1	II	2.3
1858 MAY 10	FA RICHMOND + MONTREAL,QUE	45.7	72.1	III	3.0
1858 MAY 17	FA RICHMOND,COMPTON,QUE	45.5	72.1	IV	3.7
1858 JUN 27	FA MONTREAL, QUE	45.5	73.6	II	2.3
1858 JUN 27	S CN RV VL NR NEW HAVEN	41.4	72.8	III	3.0
1858 JUN 30	S CN RV VL,FA DERBY	41.3	73.0	IV	3.7
1860 MAR 12	FA MOODUS,CN	41.5	72.5	III	3.0
1861 MAR 5	2 ML FA NEWARK,NJ	40.7	74.2	III	3.0
1861 JUL 12	FA MONTREAL + OTTAWA,ONT	45.4	75.4	VII	5.7

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1861 OCT 12	STRONG SH FA ILE JESUS,QUE	45.6	73.7	V	4.3
1862 FEB 2	CN RV VL	41.5	72.5	IV	3.7
1864 OCT 21	4 ML FA MONTREAL,QUE	45.5	73.6	IV	3.7
1867 DEC 18	NR NY-VT BORDER	44.0	73.0	VII	5.7
1869 APR 9	FA VIENNA,ONT	42.6	80.8	III	3.0
1870 MAR 4	FA MONTREAL, QUE	45.5	73.6	II	2.3
1871 JAN 3	FA HAWKESBURY,ONT	45.6	74.7	V	4.3
1873 MAR 21	FA MONTREAL,QUE	45.5	73.6	III	3.0
1873 APR 30	FACORNWALL,ONT	45.0	74.8	IV	3.7
1873 APR 30	FA HAMILTON,ONT	43.3	79.9	IV	3.7
1873 JUL 6	AB 15 MI W OF MELLAND,ONT	43.0	79.5	VI	5.0
1873 SEP 30	FGA ST HYACINTHE + MONTREAL	45.5	73.2	IV	3.7
1875 APR 30	FI DUNDEE TOWNSHIP,QUE	45.1	74.5	III	3.0
1875 JUL 28	FO NW CN	41.8	73.2	V	4.3
1875 SEP 25	FA STEPNY,CN	41.3	73.3	II	2.3
1875 DEC 1	FA KEENE,NH	42.9	72.3	III	3.0
1875 DEC 1	FA KEENE,NH	42.9	72.3	II	2.3
1876 SEP 21	SE MA.	41.8	71.0	V	4.3
1877 MAY 2	OSHAWA,ONT	43.9	78.8	III	3.0
1877 SEP 10	FELT ALL ALONG DELAWARE RV	40.1	74.8	IV	3.7
1877 NOV 14	FA CORNWALL,ONT	45.0	74.8	III	3.0
1877 DEC 18	FA BEACHBURG,ONT	45.6	76.8	III	3.0
1877 DEC 18	FA BEACHBURG,ONT	45.6	76.8	V	4.3
1879 JUN 11	FA MONTREAL, QUE	45.6	73.6	IV	3.7
1879 AUG 21	NR ST CATHERINES,ONT	43.2	79.2	IV	3.7
1879 OCT 24	FA NEW HAVEN, CN	41.3	72.9	II	2.3
1880 FEB 8	ST SH FA OTTAWA,ONT	45.4	75.7	II	2.3
1880 APR 3	FA OTTAWA,ONT	45.4	75.7	II	2.3
1880 MAY 31	LT SH FO S OTTAWA-STLAW'CE	45.2	75.3	IV	3.7
1880 JUL 22	FA OTTAWA,ONT	45.4	75.7	III	3.0
1880 SEP 6	FA HUNTINGDON-MONTREAL,QUE	45.2	73.8	IV	3.7
1880 SEP 6	FA CORNWALL, ONT	45.0	74.8	III	3.0
1880 SEP 23	FA CHARLOTTE, VT	44.3	73.3	II	2.3
1881 JUN 19	ST SH FA OTTAWA,ONT	45.4	75.7	II	2.3
1881 DEC 4	ST SH FA HUNTINGDON,QUE	45.1	75.2	III	3.0
1882 OCT 10	FA MONTREAL,QUE	45.5	73.6	II	2.3
1882 NOV 27	STONG SH FA WELLAND,ONT	43.0	79.4	IV	3.7
1882 DEC 4	FA WELLAND,ONT	43.0	79.4	II	2.3
1883 JAN 9	FA HUNTINGDON,QUE	45.1	74.2	II	2.3
1883 FEB 27	S RI	41.5	71.5	V	4.3

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1883 MAR 11	2 ML FA WATERLOO,QUE	45.4	72.5	III	3.0
1883 MAR 12	FI DUNDEE TOWNSHIP,QUE	45.1	74.5	IV	3.7
1883 MAR 23	FA HUNTINGDON,QUE	45.1	74.2	II	2.3
1883 APR 1	SMART SH FA HAMILTON,ONT	43.3	79.9	III	3.0
1884 MAY 31	NR ALLENTOWN,PA	40.6	75.5	V	4.3
1884 OCT 24	FA HUNTINGDON,QUE	45.1	74.2	III	3.0
1884 OCT 24	FA HUNTINGDON,QUE	45.1	74.2	III	3.0
1884 DEC 4	FA NORTHHAMPTON,MA	42.3	72.7	II	2.3
1885 FEB 3	FA HUNTINGDON,QUE	45.1	74.2	III	3.0
1885 FEB 25	FA HUNTINGDON,QUE	45.1	74.2	III	3.0
1885 MAR 11	FA WATERLOO,QUE (?)	45.4	72.5	III	3.0
1885 MAR 23	FA HUNTINGDON,QUE	45.1	74.2	III	3.0
1885 APR 28	FA GILFORD,CN	41.3	72.7	III	3.0
1885 SEP 4	FA CAMPBELLFORD, ONT	44.3	77.9	III	3.0
1886 FEB 13	FA PORT HOPE, ONT	43.9	78.3	II	2.3
1886 AUG 19	FA COOKSVILLE	43.6	79.6	III	3.0
1886 SEP 2	FA ST CATHERINES,ONT	43.2	79.2	II	2.3
1886 SEP 5	NR E HADDAM,CN	41.5	72.5	IV	3.7
1888 JAN 6	FA HUNTINGDON,QUE	45.1	74.2	II	2.3
1888 JAN 11	FA PEMBROKE, ONT	45.7	77.2	IV	3.7
1888 FEB 5	FA OTTAWA, ONT	45.4	75.7	II	2.3
1888 MAR 2	FA HUNTINGDON,QUE	45.1	74.2	III	3.0
1888 JUL 1	FA MONTREAL,QUE	45.5	73.6	II	2.3
1888 JUL 10	FA BRLLVILLE + KINGSTON,ONT	44.4	77.0	III	3.0
1889 MAR 8	YORK, PA	40.0	76.7	V	4.3
1890 SEP 26	ST SH FA MONTREAL, QUE	45.5	73.6	III	3.0
1890 OCT 29	FELT NR MEACH LK	45.6	75.9	III	3.0
1892 DEC 26	DUNDEE TOWNSHIP,QUE	45.1	74.3	III	3.0
1893 NOV 27	FO QUE,FI ST LAWENCE RV VL	45.5	73.3	VII	5.7
1894 FEB 23	FI E TORONTO,ONT	43.7	79.3	II	2.3
1894 APR 10	CN RV NR MOODUS,CN	41.6	72.5	IV	3.7
1894 APR 17	FA MONTREAL,QUE	45.6	73.3	IV	3.7
1894 APR 27	FA MONTREAL,QUE	45.6	73.3	III	3.0
1894 NOV 23	FA NEW LONDON,CN	41.4	72.1	III	3.0
1895 MAY 28	SE VT	43.0	72.5	III	3.0
1895 SEP 1	CNT NR HIGH BR.,NJ,FF VA-ME	40.7	74.8	VI	5.0
1895 DEC 9	FA MONTREAL,QUE	45.6	73.3	III	3.0
1897 MAR 7	FA THOROLD,ST CATHERINE,QUE	43.1	79.2	IV	3.7
1897 MAR 23	NR MONTREAL, QUE	45.5	73.6	VII	5.7
1897 MAR 26	NR MONTREAL, QUE	45.5	73.6	IV	3.7

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1897 MAR 27	NR MONTREAL, QUE	45.5	73.6	VII	5.7
1897 SEP 5	IN CN RV VL NR MOODUS	41.5	72.5	IV	3.7
1898 JAN 7	FI DUNDEE,QUE	45.1	74.3	IV	3.7
1899 MAY 16	IN CN RV VL	41.5	72.5	V	4.3
1905 OCT 22	FO LIMITED AREA IN N VT	44.9	72.2	IV-V	4.0
1906 MAY 8	IN CN VL NR HADDAM,CN	41.5	72.5	IV	3.7
1907 JAN 10	FA WILLIAMSPORT,PA	41.2	77.1	IV	3.7
1907 JAN 25	SV SH FS GOODWOOD,ONT	44.1	79.1	IV	3.7
1907 NOV 14	2 ML FA RENFREW, ONT	45.4	75.7	IV	3.7
1908 FEB 5	HOUSATONIC VL, CN	41.4	73.2	IV	3.7
1908 MAY 31	ALLENTOWN, PA	40.6	75.5	VI	5.0
1908 JUN 16	FA MONTREAL,QUE	45.1	74.8	V	4.3
1908 JUN 17	FA ARNPRIOR, ONT	45.4	76.3	IV	3.7
1908 AUG 16	FA MILTON,VT	44.6	73.1	III	3.0
1909 JAN 31	2 ML-MONTREAL,QUE	45.5	73.6	III	3.0
1909 FEB 1	FA MONTREAL,QUE	45.5	73.6	IV	3.7
1909 DEC 10	SH CNT E-OTTAWA	45.4	75.6	IV	3.7
1910 FEB 25	CNT NR HAMILTON,ONT	43.2	79.8	IV	3.7
1910 AUG 30	SE NH	43.4	72.1	III	3.0
1912 MAR 27	FA HAMILTON,ONT STRONGEST	43.2	79.7	V	4.3
1913 APR 28	NR IROQUOIS,ONT	44.9	75.3	V	4.4
1913 JUN 8	FA BROWNSBURG,QUE	45.7	74.4	IV	3.7
1913 NOV 3	RI,NARRAGNANSETT BAY REGION	41.6	71.4	V	4.3
1913 NOV 15	CN VL NR MOODUS,CN	41.5	72.5	III	3.0
1914 FEB 10	AB 25 MI W-LANARK, ONT	45.0	76.9	VIII	5.5
1916 DEC 2	FA MOODUS,CN	41.5	72.5	III	3.0
1917 FEB 16	FA MOODUS,CN	41.5	72.5	IV	3.7
1917 MAR 11	NR E HADDAM,CN	41.5	72.5	III	3.0
1917 MAR 22	FA OTTAWA, ONT	45.1	75.6	IV-V	4.0
1919 AUG 11	FA E HADDAM,CN	41.5	72.5	III	3.0
1921 JAN 26	FA RIVERTOWN + RIVERSIDE, NJ	40.0	75.0	V	4.3
1924 JUL 14	FEW MI N-STOWVILLE,QUE	45.7	76.5	V-VI	4.7
1924 NOV 14	IN OTTAWA VL	45.5	76.3	IV	3.7
1925 OCT 23	W CN AR SANDY HOOK + NEWTON	41.4	73.3	III	3.0
1925 OCT 29	FA MOODUS,CN	41.5	72.5	IV	3.7
1925 NOV 1	FA MOODUS,CN	41.5	72.5	II	2.3
1925 NOV 14	FA HARTFORD,CN MOSTSTRONGLY	41.5	72.5	V	4.3
1925 NOV 16	FA HARTFORD,CN	41.8	72.7	IV	3.7
1925 NOV 22	FA FALL RIVER,MA;WARREN,RI	41.8	71.3	III	3.0
1926 JAN 4	FA UNCASVILLLE,PLAINFIELD,CN	41.6	71.8	IV	3.7

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1926 JAN 26	W NJ	40.0	75.0	V	4.3
1926 MAR 18	S NH. FA MANCHESTER	43.2	72.0	VI	5.0
1926 JUL 4	FA SHERBROOKE, QUE BY A FEW	45.3	72.0	III	3.0
1926 AUG 23	FA PEMBROKE,ONT	45.7	77.2	IV	3.7
1927 FEB 16	FI HULL,QUE	45.4	75.7	II	2.3
1927 MAR 30	FA NEW BRITIAN, CN	41.7	72.8	IV	3.7
1927 JUN 1	FA NJ COAST	40.3	74.0	VI	5.0
1927 NOV 12	2 ML FA NIAGRA FALLS, ONT	43.1	79.1	IV	3.7
1928 JAN 13	BLOCK ISLAND, RI	41.2	71.6	IV-V	4.0
1928 APR 1	VANKLEEK HILL, ONT	45.5	74.7	II	2.3
1928 DEC 8	ELLINGTON,CN	41.8	72.5	II	2.3
1929 APR 30	FA OTTAWA,ONT	45.4	75.7	I	1.7
1929 AUG 12	FA PORT HOPE,ONT	44.0	78.3	III	3.0
1930 FEB 16	FI ONTARIO,SIMCOE	42.8	80.5	III	3.0
1930 FEB 19	FA W OTTAWA	45.4	75.8	II	2.3
1930 MAR 27	W SPRINGFIELD,MASS	42.1	72.7	III	3.0
1930 OCT 15	FA BRIDGENORTH,ONT	44.4	78.4	II	2.3
1931 APR 6	FA OTTAWA,ONT	45.4	75.7	I	1.7
1931 MAY 4	AMHERST,MASS	42.4	72.5	III	3.0
1931 JUL 1	NEW MILFORD,CN	41.6	73.4	IV	3.7
1932 JUL 20	LK GARFIELD,MASS	42.2	73.2	II	2.3
1932 OCT 16	KEENE,NH	42.9	72.3	II	2.3
1932 DEC 21	RUSSEL,ONT	45.4	75.7	I-II	2.0
1933 JAN 17	FALL RIVER + NEW BEDFORD,MA	41.7	71.0	III	3.0
1933 JAN 21	NR ALEXANDRIA,ONT	45.3	74.7		3.8
1933 JAN 25	TRENTON,NJ	40.2	74.7	V	4.3
1933 FEB 25	CORWALL,ONT	45.0	75.7	III	3.0
1933 JUL 14	NR OTTAWA,ONT	45.4	75.7		3.9
1934 JAN 30	S WINDSOR,CN	41.8	72.6	IV	3.7
1934 FEB 2	FA OTTAWA,ONT	45.4	75.7	II	2.3
1934 APR 11	RUTLAND + MONTPELIER,VT	44.0	72.7	III	3.0
1934 APR 11	RUTLAND + MONTPELIER,VT	44.0	72.7	III	3.0
1934 OCT 29	ERIE,PA	42.2	80.2	V	4.3
1935 JUL 13	BLAIR CO,PA	40.5	78.5	VI	5.0
1935 JUL 17	OTTAWA,ONT	45.4	75.7	II	2.3
1935 AUG 9	NEW LONDON,CN	41.4	72.1	II	2.3
1935 NOV 1	MONTPELIER,VT	44.3	72.6	II	2.3
1937 MAR 31	FI KEEPTVILLE + N GOWER,ONT	45.1	75.7		2.8
1937 JUL 14	NR PORION,QUE	45.4	74.0		2.8
1937 JUL 27	MANCHESTER,CN	41.8	72.4	II	2.3

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1937 SEP 24	FI SOME PARTS OF MONTREAL	45.5	73.6		2.5
1937 SEP 30	VERONA,NJ	40.8	74.3	III	3.0
1937 NOV 12	AB 18 MI NW ST JEROME,QUE	45.9	74.3		3.6
1937 NOV 12	AB 18 MI NW ST JEROME,QUE	45.9	74.3		3.7
1937 DEC 2	BURLINGTON,VT	44.5	73.2	II	2.3
1938 JAN 6	FA MORRISBURG,ONT	44.9	75.2		3.2
1938 JAN 24	FA AMPRIOR,ONT	45.6	76.3		3.0
1938 APR 13	MANCHESTER,VT	43.2	73.1	II	2.3
1938 MAY 5	NR GLEN ROBERTSON,ONT	45.4	74.5		3.0
1938 MAY 16	FT VERONA,NJ	40.8	74.3	II-III	2.7
1938 JUN 14	BETHEL,CN	41.4	73.4	II	2.3
1938 JUN 14	BETHEL,CN	41.4	73.4	I	1.7
1938 JUN 15	S BLAIR CO.,PA	40.4	78.2	V	4.3
1938 AUG 2	SW CN	41.1	73.7	III-IV	3.3
1938 AUG 23	NR TRENTON,NJ	40.3	74.3		4.6
1938 AUG 23	NR TRENTON,NJ	40.3	74.3	V	4.8
1938 AUG 23	NR TRENTON,NJ	40.3	74.3		4.6
1938 AUG 23	FI NJ	40.2	74.2	III	3.0
1938 AUG 27	FI TRENTON,NJ	40.2	74.2	III	3.0
1938 SEP 7	NEAR NAMUR, QUE	45.9	74.9		3.4
1938 SEP 20	CONN	41.4	72.2	III	3.0
1938 DEC 6	FA VERONA,NJ	40.8	74.3	III	3.0
1939 JAN 14	ST SH FA HAMILTON,ONT	43.3	79.9		3.3
1939 SEP 4	FA KAZABAZUA-POLTIMORE,QUE	46.0	76.0		2.7
1939 SEP 13	FA UNION CITY, NJ	40.8	74.0	II	2.3
1939 DEC 2	NR ST-ANDRE-AUELLIN,QUE	45.7	75.0		2.5
1940 JAN 3	BLOCK ISLAND, RI	41.2	71.6	II	2.3
1940 MAR 2	MOODUS,CN	41.5	72.5	III	3.0
1940 MAR 13	MOODUS,CN	41.5	72.5	III	3.0
1940 MAY 16	AB 8 MI W-L'ASSOMPTION,QUE	45.8	73.2		3.6
1940 AUG 7	AB 10 MI NE-MONTEBELLO,QUE	45.8	74.8		3.0
1941 MAY 19	NR NH-VT BORDER	43.8	72.3		2.0
1941 OCT 11	AB 3 MI N OF STURBRIDGE,MA	42.3	72.3		3.0
1941 OCT 24	FEW MI NE OF LACHUTE,QUE	45.7	74.3		3.6
1941 APR 29	AB 25 MI S OF LI,NY	40.5	72.5		2.5
1942 APR 23	FEW MI E OF NEW HAVEN,CN	41.3	72.8		2.0
1942 MAY 20	NR KILMAR,QUE	45.8	74.7		4.4
1942 OCT 24	STROUDSBURG,PA	41.0	75.3		3.4
1942 DEC 9	HARTFORD,CN	41.8	72.7	II	2.3
1943 FEB 16	AB 12 MI NNW-HAWKESBURY,ONT	45.8	74.7	III	3.0

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1943 MAR 9	LK ERIE	42.2	80.9		5.5
1943 MAR 31	NORTH HAMPTON	42.3	72.6	II	2.3
1943 JUL 6	FEW MI E OF SWANTON,VT	44.9	73.1		4.1
1943 JUL 24	OFF NJ COAST	40.0	72.7		2.5
1944 JAN 22	AB 26 MI NW-RENFREW,ONT	45.8	76.8		4.3
1944 FEB 5	NR SHENANDOAH,PA	40.8	76.2		3.7
1944 JUN 4	NORTHFIELD,VT	44.2	72.7	III	3.0
1944 DEC 14	BT NEWBRITIAN-WALINGFORD,CN	41.6	72.8	IV	3.7
1945 AUG 5	W WOODSTOCK,VT	43.6	72.5	III	3.0
1945 SEP 12	CA-US BORDER	45.0	74.4		2.8
1946 APR 21	AB 19 MI NE OF MONTREAL,QUE	45.7	73.4		3.6
1946 AUG 28	NR BEACHBURG,ONT	45.7	76.9		2.7
1946 OCT 28	AB 50 MI W-SCRANTON,PA	41.5	76.6		3.6
1947 JAN 4	GREENWICH,CONN	41.0	73.6	V	4.3
1947 APR 1	POMTON LK,NJ	41.0	74.3	III	3.0
1948 MAY 4	WESTERLY,RI	41.4	71.8	IV	3.7
1948 MAY 7	AB 25 MI NNE OF MONTREAL	45.8	73.6		4.0
1948 MAY 14	WESTERLY,RI	41.4	71.8	III	3.0
1948 JUN 4	WESTBROOK,CN	41.3	72.4	II	2.3
1948 JUN 9	AB 22 MI SSW-MONTREAL	45.2	73.9		3.7
1948 JUL 7	AB 22 MI SSW-MONTREAL	45.2	73.9		3.5
1948 SEP 10	GATINEAU PK	45.6	76.0		2.2
1949 FEB 3	NR ROCKCLIFFE,ONT	45.4	75.6		1.7
1949 APR 17	NR KINGSTON	41.6	71.5	IV	3.7
1949 OCT 16	FEW MI W-ALEXANDRIA,ONT	45.3	74.8	V	4.2
1950 MAR 20	NW OF SCRANTON,PA	41.5	75.8		3.3
1950 MAR 29	CONNECTICUT	41.0	73.6	IV	3.7
1950 AUG 4	AB 11 MI W OF LANCASTER,ONT	45.2	74.7		4.0
1950 AUG 5	AB 11 MI W OF LANCASTER,ONT	45.1	74.7		3.5
1950 OCT 29	FA PEMBROKE,ONT	45.8	77.1		3.0
1951 JAN 26	CN RV VL	41.5	72.5	III-IV	3.3
1951 MAR 31	S-CENTRAL MA	42.2	72.2	IV	3.7
1951 JUN 10	NR NARRAGANSETT BAY,RI	41.5	71.5		4.6
1951 AUG 8	NR ARUNDEL,QUE	45.9	74.7		3.3
1951 OCT 25	AB 10 MI SW OF ALEXANDRIA,ONT	45.3	74.7		3.8
1951 OCT 25	AB 10 MI SW OF ALEXANDRIA,ONT	45.1	74.8		2.8
1951 NOV 23	ALLENTOWN,PA	40.6	75.5	IV	3.7
1951 DEC 28	AB 10 MI SE OF ARUNDEL,QUE	45.8	74.5		2.7
1951 DEC 31	AB 10 MI SE OF ARUNDEL,QUE	45.8	74.5		2.9
1952 JAN 30	BURLINGTON,VT	44.5	73.2	VI	5.0

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1952 DEC 25	TORONTO,ONT	43.8	81.0		3.6
1953 MAR 27	STAMFORD,CN	41.1	73.5	V	4.3
1953 MAR 31	BRANDON,VT	43.7	73.0	III	3.0
1953 MAR 31	AB 30 MI S OF BURLINGTON,VT	44.1	73.1		4.0
1953 AUG 17	BERGEN CO, NJ	41.0	74.0	IV	3.7
1953 SEP 17	AB 15 MI NW-HARRISBURG,ONT	45.8	74.8		2.4
1953 NOV 28	IN ST MAURICE RV VL	45.9	73.1		2.7
1954 JAN 7	SINKING SPRINGS,PA	40.3	76.0	VI	5.0
1954 JAN 27	AB 67 MI-OTTAWA,(CORNWALL?)	45.0	74.9		2.4
1954 FEB 21	WILKES-BARRE,PA	41.2	75.9	VII	5.7
1954 FEB 24	WILKES-BARRE,PA	41.2	75.9	VI	5.0
1954 MAR 31	MONMOUTH CO SHORELINE,NJ	40.3	74.0	IV	3.7
1954 APR 27	A FEW MI N OF WELLAND,ONT	43.1	79.2		4.1
1955 FEB 3	N BURLINGTON,VT	44.5	73.2	V	4.3
1955 MAR 3	AB 25 MI SW-STE AGATHE,QUE	45.8	74.7		2.0
1955 APR 3	AB 25 MI SW-STE AGATHE,QUE	45.8	74.7		2.0
1955 JUN 29	AB 15 MI NW-TORONTO,ONT	43.8	79.6		3.0
1955 OCT 7	AB 24 MI SW-MONTREAL	45.2	73.9		3.5
1955 DEC 3	AB 20 MI NE-BUCKINGHAM,QUE	45.7	75.0		2.4
1956 JAN 10	AB 22 MI NE OF OTTAWA,ONT	45.7	75.5		3.3
1956 FEB 2	AB 10 MI N OF MAXVILLE.ONT	45.5	74.8		3.1
1956 FEB 16	5 MI SW OF NAMUR,QUE	45.9	75.0		2.0
1956 MAR 6	AB 4 MI N OF CARDINAL,ONT	44.8	75.4		3.1
1956 MAR 26	RECORDED AT MONTREAL,QUE	45.5	73.6		1.6
1956 AUG 22	5 MI E OF OTTAWA	45.4	75.6		2.4
1956 DEC 28	IN ST LAWERANCE RV	45.2	74.3		2.7
1957 MAR 23	W-CENTRAL NJ	40.6	74.8	VI	4.8
1957 APR 24	ST JOHNSBURG,VT	44.4	72.0	V	4.3
1957 MAY 25	AB 10 MI W OF STE-ADELE,QUE	46.0	74.3		2.8
1957 JUN 29	9 MI S-SE LONDON,ONT	42.9	81.3		4.2
1957 AUG 21	AB 10 MI SSW OF SMITH FALLS	44.8	76.2		3.0
1957 OCT 4	AB 25 MI E OF OTTAWA,ONT	45.3	75.2		2.1
1957 NOV 30	NR CORNWALL,ONT-MASSENA, NY	45.8	74.7	IV	3.7
1957 NOV 30	CORNWALL-MASSENA	45.0	74.8		2.5
1958 FEB 12	IROQUOIS,ONT	44.8	75.3		2.6
1958 JUL 22	AB 15 MI W OF WELLAND,ONT	43.0	79.5		4.3
1958 AUG 4	NR CALEDONIA,ONT	43.1	80.0		3.9
1958 AUG 22	ONT-ON NIAGARA PENNINSULA	43.0	79.0		3.6
1958 SEP 30	AB 10 MI SE OF BEAUHARNOIS	45.2	73.7		3.7
1958 OCT 22	AB 15 MI SW OF STE-AGATHE	45.9	74.5		2.4

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1959 APR 13	NR PINE MT,CN	41.9	73.3		3.4
1959 OCT 18	NR CHENEVILLE,QUE	45.9	75.1		2.6
1960 JAN 22	NORTH OF SCRANTON PA	41.5	75.5		3.4
1960 JUL 23	AB 15 MI N OF MONTREAL,QUE	45.7	73.7		2.9
1960 DEC 19	AB 10 MI W OF RIPON,QUE	45.8	75.2		2.9
1961 MAR 13	AB 17 MI SE OF OTTAWA	45.2	75.3		3.2
1961 SEP 12	AB 17 MI SE OF OTTAWA	45.2	75.3		2.8
1961 SEP 14	LEHIGH VL ALLENTOWN PA	40.6	75.4	V	4.3
1961 DEC 27	PA-NJ BORDER,BRISTOL,PHILY	40.1	74.8	V	4.3
1962 JAN 27	AB 12 MI WSW OF ARUNDEL,QUE	45.9	74.9		4.3
1962 APR 10	WEST VT	44.1	73.4	V	4.3
1962 MAR 27	NIAGARA FALLS	43.0	79.3	V	3.0
1962 JUN 6	NR HAZELTON,PA	41.0	75.9		1.6
1962 JUN 21	S QUEBEC	45.4	72.7	V	3.9
1962 OCT 13	NR POMPTON LK, NJ	41.0	74.3		1.0
1962 DEC 20	NR POMPTON LK, NJ	41.0	74.3		2.0
1962 DEC 29	MILFORD,NH FA NEWBURYPORT	42.8	71.7	V	4.3
1963 FEB 27	GRINSBY,ONT	43.2	79.6		3.0
1963 MAR 2	A FEW MI N OF SCRANTON,PA	41.5	75.8		3.4
1963 AUG 26	AB 3 MI E OF NAMOR,QUE	45.9	74.9		2.2
1963 AUG 26	AB 5 MI NE OF LERY,QUE	45.2	73.9		3.5
1964 FEB 13	PA	40.4	78.2		5.2
1964 FEB 13	PA BLAIR COUNTY	40.4	78.2	VI	4.6
1964 APR 5	20 MI NW OF MONTREAL,QUE	45.6	74.0		2.3
1964 MAY 12	SE PA	40.2	76.5	VI	4.5
1964 JUN 26	WARNER,NH	43.6	71.9		3.6
1964 SEP 9	NR CHENEVILLE,QUE	45.8	75.0		2.6
1964 OCT 3	10 MI SW OF ST REMI,QUE	45.3	73.8		2.3
1964 OCT 28	10 MI E OF KAZABAWA,QUE	46.0	75.7		2.5
1964 NOV 1	10 MI E OF SHAWVILLE,QUE	45.6	76.3		2.1
1965 JAN 3	LACONIA,NH	43.5	71.5	IV	3.7
1965 DEC 7	NARRAGANSETT BAY RI	41.5	71.5	V	4.3
1966 APR 28	BENTON,NH	44.1	71.9	IV	3.7
1966 OCT 23	MANCHESTER,NH AREA	43.0	71.8	V	4.3
1967 FEB 2	NARRAGANSETT BAY AREA	41.4	71.5	V	2.4
1968 OCT 19	S ONT	45.4	74.0	V	4.3
1968 NOV 3	S CN ALONG CN RIVER	41.4	72.5	V	4.3
1970 SEP 9	GREENFIELD,NH	43.0	71.9	IV	3.7
1972 DEC 7	LANCASTER CO,PA	40.0	76.0	IV	2.9
1973 FEB 28	PHIL PA	40.0	75.2	IV	4.0

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1974 JAN 9	SW QUEBEC	45.9	74.9		2.7
1974 JAN 25	N OF MONTREAL	45.9	73.6		2.7
1974 APR 29	SW QUEBEC	46.0	75.2		2.8
1974 AUG 8	NW OF OTTAWA	45.9	76.1		3.2
1974 AUG 12	SO MONTREAL	45.0	73.3		2.2
1974 OCT 1	RHODE ISLAND	41.6	71.5		2.2
1627 0	DAMES AND MOORE REPORT	42.4	70.5	VI	5.0
1638 JUN 11	DAMES AND MOORE REPORT	46.5	72.5	IX	7.0
1638 JUL 1	DAMES AND MOORE REPORT	42.5	70.9	III	3.0
1639 JAN 25	DAMES AND MOORE REPORT	42.5	70.9	III	3.0
1643 MAR 15	DAMES AND MOORE REPORT	42.6	71.0	V	4.4
1643 JUN 11	DAMES AND MOORE REPORT	42.8	70.9	IV	3.7
1653 NOV 8	DAMES AND MOORE REPORT	42.6	70.9	IV	3.7
1658 APR 14	DAMES AND MOORE REPORT	42.5	70.9	V	4.4
1665 OCT 15	DAMES AND MOORE REPORT	46.8	71.2	IV	3.7
1668 APR 3	DAMES AND MOORE REPORT	42.3	71.1	IV	3.7
1668 JUN 26	DAMES AND MOORE REPORT	42.3	71.1	II	2.4
1669 NOV 30	DAMES AND MOORE REPORT	42.3	71.1	II	2.4
1670 0	DAMES AND MOORE REPORT	42.3	71.1	II	2.4
1686 FEB 18	DAMES AND MOORE REPORT	42.6	70.9	IV	3.7
1701 FEB 10	DAMES AND MOORE REPORT	42.6	70.9	III	3.0
1701 MAR 8	DAMES AND MOORE REPORT	42.6	70.9	III	3.0
1706 0	DAMES AND MOORE REPORT	42.3	71.1	II	2.4
1721 JAN 19	DAMES AND MOORE REPORT	42.3	71.1	II	2.4
1727 NOV 10	DAMES AND MOORE REPORT	42.8	70.6	VII	5.7
1727 NOV 14	DAMES AND MOORE REPORT	42.8	70.6	V	4.3
1727 NOV 18	DAMES AND MOORE REPORT	42.8	70.8	V	4.4
1727 DEC 28	DAMES AND MOORE REPORT	42.8	70.8	VI	5.0
1728 JAN 4	DAMES AND MOORE REPORT	42.8	70.6	V	4.3
1728 JAN 12	DAMES AND MOORE REPORT	43.6	71.7	III	3.0
1729 DEC 8	DAMES AND MOORE REPORT	42.3	70.5	V	4.4
1730 APR 23	DAMES AND MOORE REPORT	42.5	70.9	III	3.0
1730 DEC 23	DAMES AND MOORE REPORT	42.8	70.9	V	4.4
1730 DEC 30	DAMES AND MOORE REPORT	42.8	70.6	V	4.3
1734 NOV 23	DAMES AND MOORE REPORT	42.8	70.6	V	4.3
1737 SEP 20	DAMES AND MOORE REPORT	42.8	70.9	V	4.4
1739 AUG 13	DAMES AND MOORE REPORT	42.8	70.6	V	4.3
1741 JUN 24	DAMES AND MOORE REPORT	42.2	71.2	V	4.3
1741 DEC 17	DAMES AND MOORE REPORT	42.3	71.1	IV	3.7
1744 MAY 27	DAMES AND MOORE REPORT	46.8	71.2	IV	3.7

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1744 JUN 14	DAMES AND MOORE REPORT	42.5	70.9	VI	5.0
1744 JUL 1	DAMES AND MOORE REPORT	42.5	70.9	V	4.4
1744 JUL 9	DAMES AND MOORE REPORT	42.5	70.9	III	3.0
1745 JAN 3	DAMES AND MOORE REPORT	42.8	70.9	III	3.0
1747 FEB 13	DAMES AND MOORE REPORT	42.3	71.0	III	3.0
1747 AUG 25	DAMES AND MOORE REPORT	43.2	70.9	III	3.0
1751 JUL 21	DAMES AND MOORE REPORT	43.2	70.9	III	3.0
1755 NOV 18	DAMES AND MOORE REPORT	42.7	70.3	VIII	6.3
1755 NOV 23	DAMES AND MOORE REPORT	42.7	70.3	V	4.3
1756 JAN 2	DAMES AND MOORE REPORT	42.3	71.1	III	3.0
1756 NOV 16	DAMES AND MOORE REPORT	42.3	71.1	III	3.0
1756 DEC 4	DAMES AND MOORE REPORT	42.3	71.1	III	3.0
1757 JUL 8	DAMES AND MOORE REPORT	42.3	71.1	III	3.0
1759 FEB 2	DAMES AND MOORE REPORT	42.3	71.1	IV	3.7
1760 FEB 3	DAMES AND MOORE REPORT	42.3	71.1	II	2.4
1761 MAR 12	DAMES AND MOORE REPORT	42.5	70.9	V	4.3
1761 MAR 16	DAMES AND MOORE REPORT	42.3	71.1	IV	3.7
1761 NOV 1	DAMES AND MOORE REPORT	43.1	71.5	V	4.4
1766 JAN 23	DAMES AND MOORE REPORT	43.7	70.3	V	4.4
1766 FEB 2	DAMES AND MOORE REPORT	42.0	68.0	VI	5.0
1766 JUN 14	DAMES AND MOORE REPORT	42.7	70.9	III	3.0
1766 DEC 17	DAMES AND MOORE REPORT	43.1	70.8	IV	3.7
1769 OCT 19	DAMES AND MOORE REPORT	43.7	70.3	IV	3.7
1780 NOV 29	DAMES AND MOORE REPORT	42.5	70.9	IV	3.7
1783 NOV 30	DAMES AND MOORE REPORT	41.0	74.5	VI	5.0
1784 JAN 2	DAMES AND MOORE REPORT	46.8	71.2	IV	3.7
1784 JAN 12	DAMES AND MOORE REPORT	46.8	71.2	IV	3.7
1786 NOV 29	DAMES AND MOORE REPORT	42.4	71.1	III	3.0
1787 FEB 25	DAMES AND MOORE REPORT	42.4	71.1	III	3.0
1794 MAR 9	DAMES AND MOORE REPORT	41.5	72.5	IV	3.7
1801 MAR 1	DAMES AND MOORE REPORT	42.5	70.9	IV	3.7
1803 JAN 18	DAMES AND MOORE REPORT	42.5	70.9	IV	3.7
1805 APR 6	DAMES AND MOORE REPORT	42.5	70.9	IV	3.7
1805 JUN 12	DAMES AND MOORE REPORT	44.5	69.0	IV	3.7
1807 FEB 22	DAMES AND MOORE REPORT	43.7	70.5	III	3.0
1808 FEB 26	DAMES AND MOORE REPORT	44.4	69.0	IV	3.7
1810 NOV 10	DAMES AND MOORE REPORT	43.1	70.7	VI	5.0
1814 NOV 28	DAMES AND MOORE REPORT	43.7	70.4	V	4.4
1817 MAY 22	DAMES AND MOORE REPORT	46.0	69.0	VI	5.0
1817 SEP 7	DAMES AND MOORE REPORT	42.5	70.9	III	3.0

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1817 OCT 5	DAMES AND MOORE REPORT	42.5	71.2	VII	5.7
1818 OCT 11	DAMES AND MOORE REPORT	46.9	71.2	IV	3.7
1821 FEB 11	DAMES AND MOORE REPORT	46.8	71.2	III	3.0
1821 MAY 10	DAMES AND MOORE REPORT	44.4	69.0	IV	3.7
1823 MAR 7	DAMES AND MOORE REPORT	43.9	70.0	IV	3.7
1823 JUN 10	DAMES AND MOORE REPORT	44.4	69.0	III	3.0
1823 JUL 23	DAMES AND MOORE REPORT	43.4	70.7	III	3.0
1828 JUL 25	DAMES AND MOORE REPORT	43.9	70.0	IV	3.7
1829 JAN 1	DAMES AND MOORE REPORT	43.1	70.8	IV	3.7
1829 AUG 26	DAMES AND MOORE REPORT	43.9	70.0	III	3.0
1829 AUG 27	DAMES AND MOORE REPORT	44.4	69.0	IV	3.7
1830 DEC 1	DAMES AND MOORE REPORT	42.5	70.9	III	3.0
1837 JAN 15	DAMES AND MOORE REPORT	42.5	70.9	IV	3.7
1846 MAY 30	DAMES AND MOORE REPORT	42.7	70.3	IV	3.7
1846 JUL 10	DAMES AND MOORE REPORT	43.1	71.3	III	3.0
1846 AUG 25	DAMES AND MOORE REPORT	42.8	70.3	V	4.3
1846 SEP 12	DAMES AND MOORE REPORT	43.1	71.3	III	3.0
1846 OCT 29	DAMES AND MOORE REPORT	43.1	71.3	III	3.0
1846 OCT 31	DAMES AND MOORE REPORT	43.1	71.3	III	3.0
1846 NOV 12	DAMES AND MOORE REPORT	43.1	71.3	III	3.0
1846 DEC 2	DAMES AND MOORE REPORT	43.1	71.3	III	3.0
1847 JAN 20	DAMES AND MOORE REPORT	44.3	68.3	IV	3.7
1847 FEB 2	DAMES AND MOORE REPORT	43.1	71.3	III	3.0
1847 FEB 2	DAMES AND MOORE REPORT	44.2	69.1	IV	3.7
1847 FEB 14	DAMES AND MOORE REPORT	43.1	71.3	III	3.0
1847 FEB 19	DAMES AND MOORE REPORT	44.4	69.0	III	3.0
1847 FEB 21	DAMES AND MOORE REPORT	43.1	71.3	III	3.0
1847 APR 1	DAMES AND MOORE REPORT	43.7	70.7	III	3.0
1847 AUG 8	DAMES AND MOORE REPORT	42.0	71.0	V	4.3
1847 SEP 29	DAMES AND MOORE REPORT	40.5	70.4	V	4.4
1849 OCT 8	DAMES AND MOORE REPORT	42.5	71.4	IV	3.7
1850 JUL 20	DAMES AND MOORE REPORT	43.7	70.3	III	3.0
1851 JAN 3	DAMES AND MOORE REPORT	44.5	69.7	III	3.0
1851 OCT 11	DAMES AND MOORE REPORT	43.1	71.3	III	3.0
1852 AUG 11	DAMES AND MOORE REPORT	43.1	71.3	III	3.0
1852 NOV 28	DAMES AND MOORE REPORT	42.8	70.6	V	4.3
1853 JUN 17	DAMES AND MOORE REPORT	43.7	70.3	III	3.0
1853 JUN 20	DAMES AND MOORE REPORT	43.7	70.3	III	3.0
1853 JUL 17	DAMES AND MOORE REPORT	43.2	70.0	IV	3.7
1853 JUL 20	DAMES AND MOORE REPORT	43.7	70.3	III	3.0

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1853 AUG 17	DAMES AND MOORE REPORT	41.6	70.9	III	3.0
1853 SEP 7	DAMES AND MOORE REPORT	41.6	70.9	III	3.0
1853 NOV 21	DAMES AND MOORE REPORT	43.0	71.9	III	3.0
1853 NOV 27	DAMES AND MOORE REPORT	43.0	69.0	IV	3.7
1853 NOV 28	DAMES AND MOORE REPORT	43.0	71.9	IV	3.7
1854 FEB 22	DAMES AND MOORE REPORT	42.5	71.1	III	3.0
1854 DEC 10	DAMES AND MOORE REPORT	42.8	70.6	V	4.3
1855 JAN 16	DAMES AND MOORE REPORT	44.0	71.0	IV	3.7
1855 JAN 16	DAMES AND MOORE REPORT	44.0	71.0	V	4.4
1855 JAN 19	DAMES AND MOORE REPORT	43.7	70.3	III	3.0
1855 JAN 20	DAMES AND MOORE REPORT	43.7	70.3	III	3.0
1855 JAN 23	DAMES AND MOORE REPORT	42.6	70.4	III	3.0
1855 FEB 2	DAMES AND MOORE REPORT	37.0	78.6	V	4.3
1855 FEB 23	DAMES AND MOORE REPORT	44.4	69.0	III	3.0
1855 MAY 29	DAMES AND MOORE REPORT	44.7	71.6	IV	3.7
1856 MAY 1	DAMES AND MOORE REPORT	44.0	79.0	II	2.3
1857 DEC 23	DAMES AND MOORE REPORT	44.1	70.2	VI	5.0
1857 DEC 28	DAMES AND MOORE REPORT	44.1	70.2	III	3.0
1860 MAR 16	DAMES AND MOORE REPORT	42.2	70.5	V	4.4
1861 MAR 1	DAMES AND MOORE REPORT	42.4	71.1	III	3.0
1862 FEB 4	DAMES AND MOORE REPORT	42.5	71.2	III	3.0
1864 APR 20	DAMES AND MOORE REPORT	46.9	68.4	III	3.0
1864 APR 20	DAMES AND MOORE REPORT	46.9	71.2	VI	5.0
1866 NOV 9	DAMES AND MOORE REPORT	46.8	71.2	IV	3.7
1868 MAR 1	DAMES AND MOORE REPORT	44.3	69.7	III	3.0
1870 FEB 8	DAMES AND MOORE REPORT	44.1	69.8	IV	3.7
1870 OCT 23	DAMES AND MOORE REPORT	42.1	72.6	III	3.0
1870 DEC 26	DAMES AND MOORE REPORT	46.8	71.2	IV	3.7
1871 MAY 20	DAMES AND MOORE REPORT	46.8	71.2	IV	3.7
1871 MAY 20	DAMES AND MOORE REPORT	46.8	71.2	III	3.0
1871 OCT 9	DAMES AND MOORE REPORT	39.7	75.5	VII	5.7
1871 OCT 9	DAMES AND MOORE REPORT	39.7	75.5	VII	5.7
1872 NOV 18	DAMES AND MOORE REPORT	43.2	71.6	V	4.3
1873 JAN 11	DAMES AND MOORE REPORT	43.9	70.0	III	3.0
1873 FEB 26	DAMES AND MOORE REPORT	46.9	71.2	II	2.4
1873 APR 17	DAMES AND MOORE REPORT	44.5	69.7	III	3.0
1873 JUL 16	DAMES AND MOORE REPORT	42.3	71.8	II	2.4
1873 SEP 30	DAMES AND MOORE REPORT	46.5	76.0	IV	3.7
1873 OCT 5	DAMES AND MOORE REPORT	42.9	71.3	III	3.0
1873 NOV 4	DAMES AND MOORE REPORT	44.5	73.2	III	3.0

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1873 NOV 13	DAMES AND MOORE REPORT	44.8	68.8	III	3.0
1874 JAN 6	DAMES AND MOORE REPORT	43.6	71.2	II	2.4
1874 JAN 25	DAMES AND MOORE REPORT	43.6	71.2	II	2.4
1874 JAN 26	DAMES AND MOORE REPORT	43.0	71.5	III	3.0
1874 JAN 26	DAMES AND MOORE REPORT	43.0	71.5	IV	3.7
1874 FEB 12	DAMES AND MOORE REPORT	43.5	70.5	II	2.4
1874 FEB 28	DAMES AND MOORE REPORT	44.8	68.7	V	4.3
1874 NOV 24	DAMES AND MOORE REPORT	42.7	70.9	IV	3.7
1875 FEB 9	DAMES AND MOORE REPORT	41.5	72.0	II	2.4
1875 MAY 6	DAMES AND MOORE REPORT	43.6	71.2	II	2.4
1875 MAY 15	DAMES AND MOORE REPORT	42.4	71.1	II	2.4
1875 OCT 31	DAMES AND MOORE REPORT	42.4	71.1	II	2.4
1875 DEC 23	DAMES AND MOORE REPORT	37.6	78.5	VI	5.0
1876 JAN 15	DAMES AND MOORE REPORT	44.5	69.5	III	3.0
1877 FEB 18	DAMES AND MOORE REPORT	43.7	70.3	III	3.0
1877 APR 23	DAMES AND MOORE REPORT	43.0	71.3	II	2.4
1877 SEP 10	DAMES AND MOORE REPORT	42.4	71.1	III	3.0
1878 MAR 12	DAMES AND MOORE REPORT	42.7	71.6	II	2.4
1879 MAR 25	DAMES AND MOORE REPORT	39.2	75.5	V	4.3
1879 OCT 25	DAMES AND MOORE REPORT	42.9	71.9	II	2.4
1879 NOV 3	DAMES AND MOORE REPORT	43.2	71.7	II	2.4
1880 MAR 29	DAMES AND MOORE REPORT	43.4	70.7	III	3.0
1880 MAY 12	DAMES AND MOORE REPORT	42.7	70.6	V	4.3
1880 JUL 12	DAMES AND MOORE REPORT	43.2	71.6	II	2.4
1880 JUL 20	DAMES AND MOORE REPORT	43.2	71.7	III	3.0
1880 AUG 9	DAMES AND MOORE REPORT	41.5	72.9	V	4.3
1880 AUG 21	DAMES AND MOORE REPORT	43.2	71.1	II	2.4
1880 NOV 24	DAMES AND MOORE REPORT	46.8	71.2	III	3.0
1881 JAN 21	DAMES AND MOORE REPORT	44.0	70.0	V	4.3
1881 FEB 2	DAMES AND MOORE REPORT	42.3	71.1	II	2.4
1881 FEB 3	DAMES AND MOORE REPORT	42.0	70.7	II	2.4
1881 FEB 4	DAMES AND MOORE REPORT	43.0	70.8	II	2.4
1881 FEB 12	DAMES AND MOORE REPORT	43.0	70.8	II	2.4
1881 FEB 26	DAMES AND MOORE REPORT	44.3	69.8	III	3.0
1881 APR 3	DAMES AND MOORE REPORT	43.0	71.9	III	3.0
1881 MAY 18	DAMES AND MOORE REPORT	43.2	71.7	III	3.0
1881 MAY 18	DAMES AND MOORE REPORT	43.2	71.7	III	3.0
1881 JUN 19	DAMES AND MOORE REPORT	42.8	70.9	III	3.0
1881 JUL 31	DAMES AND MOORE REPORT	44.8	68.8	III	3.0
1881 AUG 13	DAMES AND MOORE REPORT	43.2	71.7	III	3.0

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1881 OCT 6	DAMES AND MOORE REPORT	43.2	71.6	III	3.0
1881 OCT 31	DAMES AND MOORE REPORT	43.2	71.7	II	2.4
1881 DEC 16	DAMES AND MOORE REPORT	42.3	71.1	III	3.0
1882 APR 17	DAMES AND MOORE REPORT	42.3	71.7	IV	3.7
1882 MAY 8	DAMES AND MOORE REPORT	42.3	71.6	III	3.0
1882 DEC 19	DAMES AND MOORE REPORT	42.3	71.4	V	4.3
1883 FEB 4	DAMES AND MOORE REPORT	43.6	71.2	II	2.4
1883 MAR 11	DAMES AND MOORE REPORT	39.5	76.4	V	4.3
1883 MAR 12	DAMES AND MOORE REPORT	39.5	76.4	V	4.3
1883 MAR 23	DAMES AND MOORE REPORT	45.1	74.2	II	2.3
1884 JAN 18	DAMES AND MOORE REPORT	43.2	71.7	IV	3.7
1884 OCT 10	DAMES AND MOORE REPORT	42.3	71.1	II	2.4
1884 OCT 26	DAMES AND MOORE REPORT	42.8	71.4	II	2.4
1884 NOV 12	DAMES AND MOORE REPORT	43.2	71.6	II	2.4
1884 NOV 23	DAMES AND MOORE REPORT	43.2	71.7	V	4.3
1884 DEC 17	DAMES AND MOORE REPORT	43.7	71.5	III	3.0
1885 JAN 3	DAMES AND MOORE REPORT	43.5	71.5	II	2.4
1885 JAN 3	DAMES AND MOORE REPORT	39.2	77.5	V	4.3
1885 JAN 15	DAMES AND MOORE REPORT	40.3	76.3	III	3.0
1885 FEB 4	DAMES AND MOORE REPORT	45.1	74.2	III	3.0
1885 MAR 18	DAMES AND MOORE REPORT	43.2	71.7	II	2.4
1885 MAY 3	DAMES AND MOORE REPORT	45.2	69.2	III	3.0
1885 OCT 10	DAMES AND MOORE REPORT	37.7	78.8	VI	5.0
1887 FEB 19	DAMES AND MOORE REPORT	45.3	80.0	IV	3.7
1887 MAR 19	DAMES AND MOORE REPORT	45.3	80.0	II	2.4
1888 FEB 1	DAMES AND MOORE REPORT	44.7	70.1	IV	3.7
1891 MAY 1	DAMES AND MOORE REPORT	43.2	71.6	V	4.3
1891 MAY 29	DAMES AND MOORE REPORT	43.1	71.5	IV	3.7
1894 FEB 24	DAMES AND MOORE REPORT	43.7	79.3	II	2.3
1894 APR 27	DAMES AND MOORE REPORT	45.6	73.3	III	3.0
1894 DEC 9	DAMES AND MOORE REPORT	45.6	73.6	III	3.0
1897 JUL 1	DAMES AND MOORE REPORT	43.7	71.6	IV	3.7
1897 SEP 25	DAMES AND MOORE REPORT	44.2	68.8	IV	3.7
1897 DEC 18	DAMES AND MOORE REPORT	37.7	77.5	V	4.3
1898 SEP 17	DAMES AND MOORE REPORT	44.3	69.1	V	4.3
1902 FEB 3	DAMES AND MOORE REPORT	46.8	71.2	II	2.4
1903 JAN 21	DAMES AND MOORE REPORT	42.1	70.9	V	4.3
1903 JAN 21	DAMES AND MOORE REPORT	42.1	70.9	V	4.3
1903 JAN 22	DAMES AND MOORE REPORT	42.0	71.3	IV	3.7
1903 APR 24	DAMES AND MOORE REPORT	42.7	71.0	V	4.3

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1905 JUL 15	DAMES AND MOORE REPORT	44.3	69.8	V	4.3
1905 AUG 30	DAMES AND MOORE REPORT	43.0	71.0	V	4.3
1906 MAY 8	DAMES AND MOORE REPORT	38.7	75.7	V	4.3
1906 OCT 19	DAMES AND MOORE REPORT	43.8	68.8	III	3.0
1906 OCT 20	DAMES AND MOORE REPORT	43.8	68.8	V	4.4
1906 OCT 21	DAMES AND MOORE REPORT	43.7	70.3	III	3.0
1906 NOV 17	DAMES AND MOORE REPORT	45.6	75.4	IV	3.7
1907 JAN 10	DAMES AND MOORE REPORT	41.3	71.1	IV	3.7
1907 FEB 11	DAMES AND MOORE REPORT	37.7	78.4	VI	5.0
1907 OCT 16	DAMES AND MOORE REPORT	42.8	71.3	V	4.3
1908 FEB 5	DAMES AND MOORE REPORT	42.3	71.2	III	3.0
1908 AUG 23	DAMES AND MOORE REPORT	37.5	77.9	V	4.3
1909 FEB 1	DAMES AND MOORE REPORT	45.5	73.6	IV	3.7
1909 APR 2	DAMES AND MOORE REPORT	39.4	78.0	VI	5.0
1909 MAY 9	DAMES AND MOORE REPORT	46.0	74.3	IV	3.7
1909 JUN 8	DAMES AND MOORE REPORT	46.0	74.3	IV	3.7
1909 AUG 16	DAMES AND MOORE REPORT	42.3	71.2	III	3.0
1910 JAN 23	DAMES AND MOORE REPORT	43.8	70.4	V	4.3
1910 APR 23	DAMES AND MOORE REPORT	41.0	73.0	IV	3.7
1910 MAY 8	DAMES AND MOORE REPORT	37.7	78.4	V	4.3
1910 AUG 21	DAMES AND MOORE REPORT	42.7	71.1	IV	3.7
1910 OCT 20	DAMES AND MOORE REPORT	44.3	68.8	III	3.0
1911 FEB 6	DAMES AND MOORE REPORT	42.4	71.1	II	2.4
1912 DEC 11	DAMES AND MOORE REPORT	45.0	68.0	IV	3.7
1913 MAR 31	DAMES AND MOORE REPORT	42.3	71.8	II	2.4
1914 JAN 14	DAMES AND MOORE REPORT	42.3	71.2	III	3.0
1914 FEB 14	DAMES AND MOORE REPORT	46.4	73.6	V	4.3
1914 FEB 22	DAMES AND MOORE REPORT	45.0	70.5	V	4.3
1915 FEB 21	DAMES AND MOORE REPORT	44.7	73.4	IV	3.7
1915 AUG 6	DAMES AND MOORE REPORT	46.8	71.2	III	3.0
1916 FEB 29	DAMES AND MOORE REPORT	46.8	70.9	IV	3.7
1916 APR 24	DAMES AND MOORE REPORT	47.0	77.0	V	4.3
1917 JAN 26	DAMES AND MOORE REPORT	46.8	74.5	V	4.3
1917 MAY 22	DAMES AND MOORE REPORT	45.0	75.0	V	4.3
1918 APR 10	DAMES AND MOORE REPORT	38.7	78.4	VI	5.0
1918 JUL 23	DAMES AND MOORE REPORT	46.8	71.3	IV	3.7
1918 AUG 21	DAMES AND MOORE REPORT	44.2	70.5	VI	5.0
1918 DEC 12	DAMES AND MOORE REPORT	44.8	68.8	IV	3.7
1919 JUL 11	DAMES AND MOORE REPORT	43.9	70.0	IV	3.7
1919 JUL 23	DAMES AND MOORE REPORT	43.7	70.3	IV	3.7

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1919 SEP 6	DAMES AND MOORE REPORT	38.8	78.2	VI	5.0
1920 MAY 23	DAMES AND MOORE REPORT	43.1	71.5	IV	3.7
1920 JUN 7	DAMES AND MOORE REPORT	43.5	70.5	IV	3.7
1920 NOV 8	DAMES AND MOORE REPORT	46.0	73.4	V	4.0
1921 JUL 29	DAMES AND MOORE REPORT	42.2	71.1	IV	3.7
1921 AUG 7	DAMES AND MOORE REPORT	37.8	78.4	V	4.3
1921 AUG 27	DAMES AND MOORE REPORT	47.0	76.0	V	4.0
1922 MAY 7	DAMES AND MOORE REPORT	43.4	71.4	IV	3.7
1923 SEP 27	DAMES AND MOORE REPORT	46.8	71.2	II	2.4
1924 DEC 26	DAMES AND MOORE REPORT	37.3	79.9	V	4.3
1925 JAN 7	DAMES AND MOORE REPORT	42.6	70.6	V	4.3
1925 MAR 9	DAMES AND MOORE REPORT	42.9	71.5	IV	3.7
1925 APR 24	DAMES AND MOORE REPORT	41.8	70.8	V	4.3
1925 MAY 4	DAMES AND MOORE REPORT	42.5	70.9	IV	3.7
1925 MAY 6	DAMES AND MOORE REPORT	46.9	71.6	III	3.0
1925 JUL 12	DAMES AND MOORE REPORT	46.8	71.2	II	2.4
1925 JUL 12	DAMES AND MOORE REPORT	46.8	71.2	II	2.4
1925 JUL 20	DAMES AND MOORE REPORT	46.9	71.3	III	3.0
1925 OCT 1	DAMES AND MOORE REPORT	46.8	71.2	II	2.3
1925 OCT 9	DAMES AND MOORE REPORT	46.8	71.2	IV	3.7
1925 OCT 9	DAMES AND MOORE REPORT	43.7	70.9	VI	5.0
1925 OCT 18	DAMES AND MOORE REPORT	44.1	70.2	IV	3.7
1925 OCT 19	DAMES AND MOORE REPORT	47.0	73.0	V	4.3
1926 JAN 21	DAMES AND MOORE REPORT	42.4	71.1	III	3.0
1926 MAR 1	DAMES AND MOORE REPORT	46.8	71.2	III	3.0
1926 MAR 4	DAMES AND MOORE REPORT	42.5	70.9	II	2.4
1926 MAR 15	DAMES AND MOORE REPORT	46.8	71.2	III	3.0
1926 MAY 15	DAMES AND MOORE REPORT	43.7	70.2	III	3.0
1926 MAY 25	DAMES AND MOORE REPORT	44.9	68.7	III	3.0
1926 JUL 18	DAMES AND MOORE REPORT	47.0	71.5	IV	3.7
1926 AUG 28	DAMES AND MOORE REPORT	44.7	70.0	V	4.4
1926 OCT 25	DAMES AND MOORE REPORT	42.1	71.0	III	3.0
1926 OCT 27	DAMES AND MOORE REPORT	46.8	71.2	II	2.4
1926 DEC 8	DAMES AND MOORE REPORT	46.8	71.2	II	2.4
1926 DEC 20	DAMES AND MOORE REPORT	46.8	71.2	II	2.4
1926 DEC 28	DAMES AND MOORE REPORT	46.8	71.2	III	3.0
1927 JAN 9	DAMES AND MOORE REPORT	46.8	71.2	II	2.4
1927 FEB 5	DAMES AND MOORE REPORT	46.8	71.2	II	2.4
1927 FEB 6	DAMES AND MOORE REPORT	46.8	71.2	II	2.4
1927 FEB 10	DAMES AND MOORE REPORT	46.8	71.2	II	2.4

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1927 FEB 24	DAMES AND MOORE REPORT	46.8	71.2	II	2.4
1927 MAR 9	DAMES AND MOORE REPORT	43.3	71.4	V	4.3
1927 MAY 23	DAMES AND MOORE REPORT	46.8	71.2	II	2.4
1927 JUN 10	DAMES AND MOORE REPORT	38.0	79.0	V	4.3
1927 AUG 17	DAMES AND MOORE REPORT	46.8	71.2	III	3.0
1927 AUG 20	DAMES AND MOORE REPORT	42.3	71.0	IV	3.7
1928 JAN 21	DAMES AND MOORE REPORT	45.3	69.0	IV	3.7
1928 FEB 8	DAMES AND MOORE REPORT	45.3	69.0	VI	5.0
1928 FEB 9	DAMES AND MOORE REPORT	45.3	69.0	IV	3.7
1928 FEB 17	DAMES AND MOORE REPORT	45.3	69.0	III	3.0
1928 MAR 19	DAMES AND MOORE REPORT	46.6	72.5	II	2.3
1928 MAR 22	DAMES AND MOORE REPORT	45.3	69.0	IV	3.7
1928 MAR 28	DAMES AND MOORE REPORT	45.3	69.0	IV	3.6
1928 MAR 29	DAMES AND MOORE REPORT	45.3	69.0	III	3.0
1928 APR 25	DAMES AND MOORE REPORT	44.5	71.2	V	4.3
1928 APR 28	DAMES AND MOORE REPORT	43.2	71.5	IV	3.6
1928 MAY 22	DAMES AND MOORE REPORT	43.2	71.5	II	2.4
1928 MAY 26	DAMES AND MOORE REPORT	43.2	71.7	II	2.4
1928 AUG 30	DAMES AND MOORE REPORT	44.3	68.6	II	2.4
1928 OCT 15	DAMES AND MOORE REPORT	45.1	71.4	II	2.4
1928 OCT 17	DAMES AND MOORE REPORT	42.8	71.6	III	3.0
1928 NOV 5	DAMES AND MOORE REPORT	43.3	71.0	II	2.4
1928 DEC 1	DAMES AND MOORE REPORT	43.3	71.0	II	2.4
1928 DEC 12	DAMES AND MOORE REPORT	44.6	69.6	II	2.4
1929 JAN 13	DAMES AND MOORE REPORT	43.3	71.0	II	2.4
1929 JAN 15	DAMES AND MOORE REPORT	43.3	71.0	III	3.0
1929 FEB 5	DAMES AND MOORE REPORT	43.3	71.7	II	2.4
1929 FEB 5	DAMES AND MOORE REPORT	44.0	70.3	V	4.0
1929 MAY 11	DAMES AND MOORE REPORT	45.4	71.9	IV	3.6
1929 AUG 12	DAMES AND MOORE REPORT	42.2	77.2	III	3.0
1929 SEP 9	DAMES AND MOORE REPORT	46.4	76.0	II	2.4
1929 SEP 9	DAMES AND MOORE REPORT	46.2	76.0	II	2.0
1929 SEP 17	DAMES AND MOORE REPORT	42.2	71.0	II	2.4
1929 OCT 8	DAMES AND MOORE REPORT	44.0	70.2	III	3.0
1929 OCT 9	DAMES AND MOORE REPORT	44.5	69.5	III	3.0
1929 DEC 5	DAMES AND MOORE REPORT	44.8	69.7	II	2.4
1929 DEC 5	DAMES AND MOORE REPORT	45.4	71.9	II	2.4
1929 DEC 27	DAMES AND MOORE REPORT	38.1	78.5	VI	5.0
1930 FEB 14	DAMES AND MOORE REPORT	43.4	71.7	IV	3.4
1930 MAR 11	DAMES AND MOORE REPORT	44.0	70.0	II	2.4

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1930 MAR 19	DAMES AND MOORE REPORT	43.3	71.6	IV	3.7
1930 JUN 19	DAMES AND MOORE REPORT	45.7	71.2	IV	3.6
1930 AUG 1	DAMES AND MOORE REPORT	41.5	70.8	III	3.0
1930 NOV 13	DAMES AND MOORE REPORT	45.0	69.2	I	1.7
1931 JAN 7	DAMES AND MOORE REPORT	45.4	75.7	II	2.0
1931 SEP 23	DAMES AND MOORE REPORT	47.0	76.1	V	4.5
1932 MAR 9	DAMES AND MOORE REPORT	46.5	74.7	IV	3.8
1932 OCT 15	DAMES AND MOORE REPORT	43.6	71.5	III	3.0
1932 NOV 4	DAMES AND MOORE REPORT	43.2	71.5	II	2.4
1934 AUG 2	DAMES AND MOORE REPORT	42.6	70.7	IV	3.6
1934 AUG 2	DAMES AND MOORE REPORT	43.7	70.3	IV	3.6
1934 AUG 2	DAMES AND MOORE REPORT	43.7	70.3	III	3.0
1934 AUG 3	DAMES AND MOORE REPORT	43.7	70.3	IV	3.6
1935 JAN 15	DAMES AND MOORE REPORT	44.1	70.2	II	2.4
1935 JAN 30	DAMES AND MOORE REPORT	42.6	71.3	II	2.4
1935 APR 25	DAMES AND MOORE REPORT	42.2	70.2	IV	3.7
1935 SEP 13	DAMES AND MOORE REPORT	43.2	71.5	II	2.4
1935 NOV 1	DAMES AND MOORE REPORT	46.8	79.1	VII	6.3
1935 NOV 1	DAMES AND MOORE REPORT	46.8	79.1	V	4.3
1935 NOV 1	DAMES AND MOORE REPORT	46.8	79.1	V	4.6
1935 NOV 2	DAMES AND MOORE REPORT	46.8	79.1	VI	4.7
1935 NOV 2	DAMES AND MOORE REPORT	46.8	79.1	III	3.0
1935 NOV 2	DAMES AND MOORE REPORT	46.8	79.1	III	2.7
1935 NOV 5	DAMES AND MOORE REPORT	46.8	79.1	V	4.5
1935 NOV 7	DAMES AND MOORE REPORT	46.8	79.1	II	2.4
1935 NOV 15	DAMES AND MOORE REPORT	46.8	79.1	III	3.0
1935 NOV 25	DAMES AND MOORE REPORT	46.8	79.1	VI	4.7
1935 NOV 27	DAMES AND MOORE REPORT	46.5	79.0	V	4.6
1935 DEC 15	DAMES AND MOORE REPORT	46.5	79.0	III	3.0
1936 JAN 20	DAMES AND MOORE REPORT	46.8	79.1	V	4.5
1936 MAR 25	DAMES AND MOORE REPORT	46.8	79.1	V	4.6
1936 JUN 14	DAMES AND MOORE REPORT	43.5	71.5	III	3.0
1936 JUN 15	DAMES AND MOORE REPORT	43.8	71.4	III	3.0
1936 NOV 10	DAMES AND MOORE REPORT	43.5	71.4	IV	3.6
1936 NOV 10	DAMES AND MOORE REPORT	44.7	71.7	IV	3.6
1936 DEC 14	DAMES AND MOORE REPORT	46.3	79.4	II	2.4
1937 JUN 9	DAMES AND MOORE REPORT	40.3	75.9	II	2.4
1937 JUL 28	DAMES AND MOORE REPORT	46.7	79.1	III	2.7
1937 OCT 1	DAMES AND MOORE REPORT	40.8	74.2	III	3.0
1937 OCT 12	DAMES AND MOORE REPORT	43.3	70.5	II	2.4

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1937 NOV 6	DAMES AND MOORE REPORT	46.7	75.7	V	4.0
1938 FEB 23	DAMES AND MOORE REPORT	46.4	75.4	III	3.2
1938 APR 1	DAMES AND MOORE REPORT	43.3	71.0	III	3.0
1938 APR 3	DAMES AND MOORE REPORT	43.3	71.0	II	2.4
1938 APR 12	DAMES AND MOORE REPORT	46.7	79.1	III	3.2
1938 JUN 23	DAMES AND MOORE REPORT	42.6	71.4	IV	3.7
1938 AUG 22	DAMES AND MOORE REPORT	44.7	68.8	V	4.1
1939 JAN 15	DAMES AND MOORE REPORT	46.4	75.2	III	2.7
1939 FEB 1	DAMES AND MOORE REPORT	42.6	71.4	II	2.3
1939 FEB 9	DAMES AND MOORE REPORT	46.3	74.6	III	2.8
1939 MAR 16	DAMES AND MOORE REPORT	46.4	77.4	IV	3.6
1939 APR 2	DAMES AND MOORE REPORT	40.0	76.3	II	2.3
1939 OCT 10	DAMES AND MOORE REPORT	43.4	71.6	III	2.7
1939 OCT 11	DAMES AND MOORE REPORT	42.9	71.4	III	2.7
1939 NOV 15	DAMES AND MOORE REPORT	39.6	75.2	V	4.3
1940 JAN 2	DAMES AND MOORE REPORT	42.5	71.5	III	3.0
1940 JAN 5	DAMES AND MOORE REPORT	46.7	79.1	III	3.0
1940 JAN 28	DAMES AND MOORE REPORT	41.6	70.8	V	4.3
1940 FEB 10	DAMES AND MOORE REPORT	46.5	76.8	V	4.0
1940 MAR 28	DAMES AND MOORE REPORT	44.7	69.9	IV	3.8
1940 MAY 28	DAMES AND MOORE REPORT	40.3	76.9	II	2.3
1940 AUG 4	DAMES AND MOORE REPORT	46.2	74.5	III	3.1
1940 SEP 11	DAMES AND MOORE REPORT	47.0	71.1	IV	3.5
1940 DEC 20	DAMES AND MOORE REPORT	43.8	71.3	VII	5.6
1940 DEC 24	DAMES AND MOORE REPORT	43.8	71.3	VII	5.6
1940 DEC 25	DAMES AND MOORE REPORT	43.8	71.3	V	4.0
1940 DEC 27	DAMES AND MOORE REPORT	43.8	71.3	IV	3.9
1941 JAN 21	DAMES AND MOORE REPORT	43.8	71.3	IV	3.6
1941 MAR 4	DAMES AND MOORE REPORT	46.1	76.2	III	2.8
1941 MAR 5	DAMES AND MOORE REPORT	46.3	75.5	III	3.0
1941 JUL 1	DAMES AND MOORE REPORT	43.3	70.2	II	2.0
1942 FEB 18	DAMES AND MOORE REPORT	46.8	74.8	III	3.1
1942 MAR 8	DAMES AND MOORE REPORT	44.2	70.3	IV	3.7
1942 AUG 26	DAMES AND MOORE REPORT	46.7	77.5	V	4.1
1942 SEP 5	DAMES AND MOORE REPORT	47.0	71.5	III	3.1
1942 SEP 15	DAMES AND MOORE REPORT	46.8	76.0	III	3.3
1942 NOV 16	DAMES AND MOORE REPORT	46.4	75.1	IV	3.6
1942 DEC 5	DAMES AND MOORE REPORT	47.0	76.1	V	4.2
1943 JAN 14	DAMES AND MOORE REPORT	45.3	69.6	V	4.3
1943 FEB 10	DAMES AND MOORE REPORT	43.7	70.2	III	3.0

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1943 FEB 28	DAMES AND MOORE REPORT	46.5	75.8	IV	3.7
1943 MAR 14	DAMES AND MOORE REPORT	43.7	71.6	IV	3.9
1943 JUN 12	DAMES AND MOORE REPORT	44.5	68.5	II	2.3
1943 DEC 19	DAMES AND MOORE REPORT	44.6	69.6	III	3.3
1944 MAR 6	DAMES AND MOORE REPORT	43.2	71.6	II	2.4
1944 MAR 8	DAMES AND MOORE REPORT	46.7	78.9	V	4.1
1944 APR 11	DAMES AND MOORE REPORT	44.0	71.7	III	3.0
1944 JUN 24	DAMES AND MOORE REPORT	46.0	74.2	IV	3.7
1944 SEP 5	DAMES AND MOORE REPORT	45.0	74.9	III	2.8
1944 SEP 7	DAMES AND MOORE REPORT	45.0	74.9	II	2.5
1944 SEP 8	DAMES AND MOORE REPORT	45.0	74.9	II	2.5
1944 SEP 8	DAMES AND MOORE REPORT	45.0	74.9	III	2.8
1944 SEP 13	DAMES AND MOORE REPORT	45.0	74.9	III	2.7
1944 SEP 24	DAMES AND MOORE REPORT	45.0	74.9	II	2.0
1944 OCT 4	DAMES AND MOORE REPORT	45.0	74.9	II	2.3
1944 OCT 9	DAMES AND MOORE REPORT	45.0	74.9	II	2.3
1944 OCT 13	DAMES AND MOORE REPORT	45.0	74.9	III	2.7
1945 MAR 22	DAMES AND MOORE REPORT	43.2	71.6	III	3.0
1945 OCT 23	DAMES AND MOORE REPORT	44.1	70.2	II	2.3
1945 DEC 28	DAMES AND MOORE REPORT	44.0	71.2	II	2.3
1946 SEP 26	DAMES AND MOORE REPORT	46.4	72.2	IV	3.4
1946 DEC 25	DAMES AND MOORE REPORT	44.9	74.9	III	3.3
1947 JAN 19	DAMES AND MOORE REPORT	46.8	76.7	IV	3.9
1947 MAR 26	DAMES AND MOORE REPORT	46.2	75.0	II	2.5
1947 SEP 1	DAMES AND MOORE REPORT	46.8	77.8	III	2.8
1947 DEC 28	DAMES AND MOORE REPORT	45.2	69.2	V	4.3
1948 JAN 6	DAMES AND MOORE REPORT	45.4	69.3	V	4.0
1948 NOV 13	DAMES AND MOORE REPORT	46.7	70.3	IV	3.5
1948 NOV 29	DAMES AND MOORE REPORT	45.2	69.2	IV	3.6
1949 SEP 2	DAMES AND MOORE REPORT	43.8	71.8	III	3.0
1949 OCT 5	DAMES AND MOORE REPORT	44.8	70.5	V	4.3
1949 OCT 30	DAMES AND MOORE REPORT	46.5	72.1	IV	3.4
1950 JAN 6	DAMES AND MOORE REPORT	46.3	77.6	II	2.3
1950 FEB 24	DAMES AND MOORE REPORT	43.0	71.5	III	3.0
1950 MAR 6	DAMES AND MOORE REPORT	46.0	74.5	V	4.0
1951 SEP 21	DAMES AND MOORE REPORT	41.3	70.1	III	2.7
1952 JAN 24	DAMES AND MOORE REPORT	47.0	77.0	III	2.8
1952 FEB 2	DAMES AND MOORE REPORT	46.9	70.4	II	2.5
1952 FEB 2	DAMES AND MOORE REPORT	46.9	70.4	II	2.5
1952 FEB 2	DAMES AND MOORE REPORT	46.9	70.4	II	2.3

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1952 FEB 3	DAMES AND MOORE REPORT	46.9	70.4	III	2.8
1952 FEB 18	DAMES AND MOORE REPORT	46.3	69.4	III	3.3
1952 FEB 26	DAMES AND MOORE REPORT	46.8	70.2	IV	3.7
1952 APR 26	DAMES AND MOORE REPORT	47.0	78.5	IV	3.7
1952 JUL 19	DAMES AND MOORE REPORT	46.9	75.8	V	4.3
1952 OCT 26	DAMES AND MOORE REPORT	43.6	71.2	II	2.3
1953 MAY 11	DAMES AND MOORE REPORT	44.0	71.1	IV	3.7
1954 JAN 24	DAMES AND MOORE REPORT	40.3	76.0	III	3.0
1954 APR 12	DAMES AND MOORE REPORT	46.9	76.1	V	4.3
1954 JUN 26	DAMES AND MOORE REPORT	46.7	75.0	II	2.4
1954 JUN 30	DAMES AND MOORE REPORT	47.0	70.1	IV	3.7
1954 JUL 29	DAMES AND MOORE REPORT	42.7	70.7	V	4.0
1954 AUG 11	DAMES AND MOORE REPORT	40.3	76.0	IV	3.6
1954 SEP 24	DAMES AND MOORE REPORT	40.3	76.0	II	2.3
1954 OCT 7	DAMES AND MOORE REPORT	42.7	71.3	III	3.0
1955 JAN 20	DAMES AND MOORE REPORT	40.3	76.0	IV	3.6
1955 NOV 1	DAMES AND MOORE REPORT	46.5	75.9	IV	3.5
1955 NOV 26	DAMES AND MOORE REPORT	46.3	73.4	II	2.0
1956 FEB 11	DAMES AND MOORE REPORT	46.0	75.3	II	2.0
1956 MAY 26	DAMES AND MOORE REPORT	45.5	73.6	I	1.6
1956 SEP 21	DAMES AND MOORE REPORT	41.7	71.2	II	2.3
1956 NOV 4	DAMES AND MOORE REPORT	46.2	75.7	V	4.0
1956 NOV 16	DAMES AND MOORE REPORT	46.2	74.8	III	2.9
1957 APR 24	DAMES AND MOORE REPORT	44.4	72.0	V	4.3
1957 APR 26	DAMES AND MOORE REPORT	43.6	69.8	VI	5.0
1957 MAY 13	DAMES AND MOORE REPORT	46.6	74.1	III	2.8
1957 AUG 17	DAMES AND MOORE REPORT	46.7	70.1	III	3.3
1957 OCT 27	DAMES AND MOORE REPORT	46.4	78.7	III	3.2
1957 NOV 2	DAMES AND MOORE REPORT	46.2	74.9	II	2.6
1958 FEB 2	DAMES AND MOORE REPORT	46.6	75.4	III	2.8
1958 MAR 1	DAMES AND MOORE REPORT	46.9	76.0	IV	3.9
1958 MAR 19	DAMES AND MOORE REPORT	46.0	77.1	III	3.1
1958 PR 19	DAMES AND MOORE REPORT	46.2	75.2	III	2.7
1958 MAY 14	DAMES AND MOORE REPORT	47.0	76.6	VII	5.4
1958 JUL 13	DAMES AND MOORE REPORT	46.2	76.4	II	2.4
1958 JUL 18	DAMES AND MOORE REPORT	46.7	71.4	III	3.2
1958 JUL 25	DAMES AND MOORE REPORT	46.6	75.8	IV	3.8
1958 SEP 19	DAMES AND MOORE REPORT	43.5	70.2	V	4.3
1958 NOV 21	DAMES AND MOORE REPORT	44.0	71.7	IV	3.6
1958 DEC 23	DAMES AND MOORE REPORT	47.0	69.8	IV	3.7

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1959 MAY 14	DAMES AND MOORE REPORT	47.0	70.3	II	2.5
1959 MAY 21	DAMES AND MOORE REPORT	46.5	76.4	IV	3.9
1959 MAY 29	DAMES AND MOORE REPORT	46.5	76.7	III	3.0
1959 AUG 22	DAMES AND MOORE REPORT	47.0	70.8	III	3.2
1960 JAN 20	DAMES AND MOORE REPORT	47.0	75.7	IV	3.7
1960 APR 1	DAMES AND MOORE REPORT	46.9	75.6	II	2.5
1960 JUL 9	DAMES AND MOORE REPORT	46.3	73.0	II	2.6
1961 MAR 22	DAMES AND MOORE REPORT	45.8	77.1	II	2.2
1961 NOV 1	DAMES AND MOORE REPORT	46.9	79.2	III	2.9
1962 AUG 19	DAMES AND MOORE REPORT	46.2	77.8	II	2.3
1962 DEC 1	DAMES AND MOORE REPORT	45.6	69.1	III	3.0
1962 DEC 6	DAMES AND MOORE REPORT	46.1	75.6	II	2.3
1963 FEB 16	DAMES AND MOORE REPORT	44.9	73.7	II	2.6
1963 FEB 27	DAMES AND MOORE REPORT	43.2	79.6	III	3.0
1963 MAY 20	DAMES AND MOORE REPORT	43.2	75.2	IV	3.5
1963 OCT 10	DAMES AND MOORE REPORT	39.8	78.2	IV	3.6
1963 OCT 15	DAMES AND MOORE REPORT	46.2	77.6	III	3.0
1963 OCT 15	DAMES AND MOORE REPORT	46.2	77.6	V	4.4
1963 OCT 15	DAMES AND MOORE REPORT	46.2	77.6	V	4.5
1963 OCT 16	DAMES AND MOORE REPORT	42.5	70.8	V	4.5
1963 OCT 17	DAMES AND MOORE REPORT	46.2	77.6	III	3.0
1963 OCT 30	DAMES AND MOORE REPORT	42.7	70.8	V	4.3
1963 DEC 4	DAMES AND MOORE REPORT	43.6	71.5	V	3.7
1964 JAN 8	DAMES AND MOORE REPORT	46.2	77.5	III	3.3
1964 JAN 8	DAMES AND MOORE REPORT	46.2	77.5	IV	3.9
1964 JAN 8	DAMES AND MOORE REPORT	46.2	77.5	IV	3.8
1964 JAN 20	DAMES AND MOORE REPORT	46.8	71.3	V	4.0
1964 APR 1	DAMES AND MOORE REPORT	43.6	71.5	IV	1.8
1964 JUL 12	DAMES AND MOORE REPORT	46.7	71.4	IV	3.4
1964 JUL 24	DAMES AND MOORE REPORT	46.7	76.3	III	3.3
1964 AUG 4	DAMES AND MOORE REPORT	46.3	75.1	II	2.3
1964 AUG 25	DAMES AND MOORE REPORT	46.3	75.1	II	2.5
1964 NOV 28	DAMES AND MOORE REPORT	44.9	75.1	II	2.4
1964 DEC 4	DAMES AND MOORE REPORT	46.5	74.0	II	2.6
1965 JAN 1	DAMES AND MOORE REPORT	44.5	77.6	III	2.9
1965 JAN 11	DAMES AND MOORE REPORT	45.6	73.9	I	1.8
1965 FEB 3	DAMES AND MOORE REPORT	46.0	76.8	III	2.8
1965 FEB 19	DAMES AND MOORE REPORT	44.6	79.4	II	2.0
1965 MAR 4	DAMES AND MOORE REPORT	46.9	73.8	II	2.6
1965 JUL 15	DAMES AND MOORE REPORT	37.3	74.4	VI	5.1

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1965 AUG 27	DAMES AND MOORE REPORT	44.8	79.8	III	3.3
1965 SEP 15	DAMES AND MOORE REPORT	46.7	79.1	IV	3.8
1965 SEP 16	DAMES AND MOORE REPORT	37.3	74.4	VI	5.1
1965 OCT 8	DAMES AND MOORE REPORT	40.1	79.7	III	3.3
1965 OCT 24	DAMES AND MOORE REPORT	41.3	70.1	V	4.3
1965 NOV 14	DAMES AND MOORE REPORT	47.0	74.1	II	2.4
1965 NOV 24	DAMES AND MOORE REPORT	46.9	76.3	IV	3.7
1966 JAN 1	DAMES AND MOORE REPORT	42.8	78.3	III	3.0
1966 MAR 19	DAMES AND MOORE REPORT	46.6	74.8	III	2.7
1966 MAR 20	DAMES AND MOORE REPORT	46.5	76.2	III	3.2
1966 MAY 31	DAMES AND MOORE REPORT	37.6	78.0	V	3.1
1966 JUN 19	DAMES AND MOORE REPORT	47.0	70.2	II	2.5
1966 JUN 25	DAMES AND MOORE REPORT	45.2	73.8	IV	3.4
1966 JUL 29	DAMES AND MOORE REPORT	36.6	74.1	VI	4.7
1966 SEP 11	DAMES AND MOORE REPORT	46.5	77.0	II	2.4
1966 SEP 23	DAMES AND MOORE REPORT	46.0	75.2	II	2.3
1966 OCT 2	DAMES AND MOORE REPORT	46.9	70.4	II	2.0
1966 NOV 13	DAMES AND MOORE REPORT	47.0	76.3	IV	3.6
1967 JAN 11	DAMES AND MOORE REPORT	44.7	72.6	I	1.9
1967 JAN 26	DAMES AND MOORE REPORT	44.6	70.9	II	2.1
1967 APR 8	DAMES AND MOORE REPORT	45.8	73.8	I	1.7
1967 MAY 14	DAMES AND MOORE REPORT	44.9	73.9	II	2.3
1967 MAY 15	DAMES AND MOORE REPORT	42.3	69.9	III	3.2
1967 JUN 11	DAMES AND MOORE REPORT	46.6	75.0	IV	3.7
1967 JUL 1	DAMES AND MOORE REPORT	44.9	69.9	V	3.2
1967 JUL 1	DAMES AND MOORE REPORT	44.4	69.9	V	3.3
1967 JUL 1	DAMES AND MOORE REPORT	44.4	69.9	IV	3.8
1967 JUL 8	DAMES AND MOORE REPORT	47.0	76.1	II	2.5
1967 JUL 9	DAMES AND MOORE REPORT	46.2	74.7	II	2.2
1967 JUL 9	DAMES AND MOORE REPORT	46.9	76.0	II	2.4
1967 JUL 12	DAMES AND MOORE REPORT	46.2	75.4	II	2.5
1967 AUG 7	DAMES AND MOORE REPORT	46.1	75.4	II	2.2
1967 AUG 8	DAMES AND MOORE REPORT	46.9	70.6	I	1.8
1967 AUG 10	DAMES AND MOORE REPORT	46.0	74.7	II	2.2
1967 AUG 13	DAMES AND MOORE REPORT	46.9	70.2	II	2.4
1967 SEP 23	DAMES AND MOORE REPORT	46.9	70.7	IV	3.4
1968 MAY 20	DAMES AND MOORE REPORT	46.2	75.0	I	1.7
1968 SEP 23	DAMES AND MOORE REPORT	45.2	69.4	III	3.3
1968 NOV 3	DAMES AND MOORE REPORT	41.4	72.5	V	4.3
1968 NOV 7	DAMES AND MOORE REPORT	47.0	71.6	I	1.9

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1968 DEC 10	DAMES AND MOORE REPORT	39.7	74.6	V	2.6
1969 MAR 19	DAMES AND MOORE REPORT	45.6	76.2	III	2.8
1969 JUN 12	DAMES AND MOORE REPORT	46.9	75.9	III	2.9
1969 AUG 6	DAMES AND MOORE REPORT	43.8	71.4	V	4.3
1969 AUG 7	DAMES AND MOORE REPORT	46.4	75.1	III	2.7
1969 OCT 6	DAMES AND MOORE REPORT	41.0	74.6	IV	3.7
1969 OCT 10	DAMES AND MOORE REPORT	46.2	75.1	V	4.3
1969 OCT 10	DAMES AND MOORE REPORT	46.4	75.1	III	2.8
1969 NOV 3	DAMES AND MOORE REPORT	45.8	74.3	II	2.3
1969 DEC 11	DAMES AND MOORE REPORT	37.8	77.4	V	4.3
1969 DEC 15	DAMES AND MOORE REPORT	46.5	76.0	II	2.3
1970 FEB 23	DAMES AND MOORE REPORT	46.5	72.3	II	2.6
1970 APR 6	DAMES AND MOORE REPORT	46.2	74.8	III	2.8
1970 APR 9	DAMES AND MOORE REPORT	45.8	74.2	II	2.3
1970 MAY 12	DAMES AND MOORE REPORT	46.9	76.6	II	2.0
1970 MAY 26	DAMES AND MOORE REPORT	47.0	71.7	II	2.0
1970 JUN 14	DAMES AND MOORE REPORT	45.3	74.3	II	2.2
1970 JUN 25	DAMES AND MOORE REPORT	39.6	71.0	VI	4.7
1970 AUG 20	DAMES AND MOORE REPORT	38.9	72.4	V	4.2
1970 SEP 7	DAMES AND MOORE REPORT	45.7	76.6	II	2.4
1970 OCT 3	DAMES AND MOORE REPORT	46.9	76.0	II	2.5
1970 OCT 23	DAMES AND MOORE REPORT	45.6	74.2	II	2.3
1970 OCT 28	DAMES AND MOORE REPORT	46.9	76.0	II	2.2
1970 NOV 24	DAMES AND MOORE REPORT	47.0	76.2	III	2.7
1970 DEC 13	DAMES AND MOORE REPORT	46.0	74.7	II	2.1
1971 MAY 23	DAMES AND MOORE REPORT	43.9	74.5	V	3.6
1971 MAY 23	DAMES AND MOORE REPORT	43.9	74.5	IV	3.4
1971 JUN 21	DAMES AND MOORE REPORT	43.9	74.5	IV	3.1
1971 JUL 10	DAMES AND MOORE REPORT	43.9	74.5	V	3.3
1971 SEP 12	DAMES AND MOORE REPORT	38.1	77.4	V	4.3
1971 OCT 20	DAMES AND MOORE REPORT	42.7	71.2	V	4.3
1971 NOV 12	DAMES AND MOORE REPORT	43.9	74.5	II	2.2
1971 DEC 18	DAMES AND MOORE REPORT	46.0	74.7	IV	3.7
1971 DEC 20	DAMES AND MOORE REPORT	43.9	74.6	II	2.0
1972 FEB 13	DAMES AND MOORE REPORT	44.3	74.4	II	2.2
1972 FEB 15	DAMES AND MOORE REPORT	41.3	73.6	II	2.6
1972 MAR 15	DAMES AND MOORE REPORT	43.7	74.7	II	2.6
1972 JUN 16	DAMES AND MOORE REPORT	42.8	73.9	II	2.0
1972 NOV 2	DAMES AND MOORE REPORT	44.8	74.6	III	3.0
1972 DEC 8	DAMES AND MOORE REPORT	40.1	76.2	IV	3.7

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1972 DEC 16	DAMES AND MOORE REPORT	45.8	75.3	V	4.4
1972 DEC 29	DAMES AND MOORE REPORT	41.0	74.2	III	3.0
1973 JAN 10	DAMES AND MOORE REPORT	41.4	74.0	I	1.5
1973 FEB 5	DAMES AND MOORE REPORT	41.0	74.1	II	2.3
1973 FEB 28	DAMES AND MOORE REPORT	39.7	75.4	VI	3.9
1973 MAR 30	DAMES AND MOORE REPORT	44.7	73.8	I	1.7
1973 MAY 31	DAMES AND MOORE REPORT	45.0	74.6	II	2.2
1973 JUN 15	DAMES AND MOORE REPORT	45.3	70.9	V	5.3
1973 JUL 15	DAMES AND MOORE REPORT	43.9	74.4	IV	3.4
1974 JAN 15	DAMES AND MOORE REPORT	44.8	73.9	II	2.0
1974 JAN 19	DAMES AND MOORE REPORT	44.8	73.9	I	1.6
1974 JAN 20	DAMES AND MOORE REPORT	44.7	73.9	II	2.2
1974 FEB 14	DAMES AND MOORE REPORT	44.7	73.9	I	1.9
1974 FEB 17	DAMES AND MOORE REPORT	44.7	73.9	II	2.1
1974 MAR 18	DAMES AND MOORE REPORT	44.5	74.9	III	2.7
1974 MAR 19	DAMES AND MOORE REPORT	44.4	75.1	II	2.1
1974 MAR 22	DAMES AND MOORE REPORT	44.4	75.1	II	2.0
1974 MAR 23	DAMES AND MOORE REPORT	38.9	77.8	II	2.5
1974 MAR 27	DAMES AND MOORE REPORT	44.4	75.1	II	2.0
1974 APR 7	DAMES AND MOORE REPORT	44.4	75.1	II	2.4
1974 APR 7	DAMES AND MOORE REPORT	44.4	75.1	I	1.7
1974 APR 8	DAMES AND MOORE REPORT	44.4	75.1	I	1.6
1974 APR 8	DAMES AND MOORE REPORT	41.2	74.0	II	2.1
1974 APR 9	DAMES AND MOORE REPORT	44.4	75.1	I	1.7
1974 APR 9	DAMES AND MOORE REPORT	44.4	75.1	I	1.4
1974 APR 27	DAMES AND MOORE REPORT	41.0	76.0	III	3.0
1974 MAY 30	DAMES AND MOORE REPORT	44.7	73.9	II	2.1
1974 JUN 2	DAMES AND MOORE REPORT	44.7	74.6	II	2.5
1974 JUN 3	DAMES AND MOORE REPORT	44.4	74.0	I	1.9
1974 JUN 4	DAMES AND MOORE REPORT	44.7	74.7	II	2.1
1974 JUN 26	DAMES AND MOORE REPORT	45.0	73.8	II	2.1
1974 JUL 26	DAMES AND MOORE REPORT	44.5	74.4	II	2.2
1974 SEP 11	DAMES AND MOORE REPORT	43.8	74.2	II	2.2
1974 SEP 15	DAMES AND MOORE REPORT	43.9	73.9	I	1.7
1974 SEP 18	DAMES AND MOORE REPORT	43.4	73.8	II	2.5
1974 OCT 8	DAMES AND MOORE REPORT	44.7	73.9	I	1.9
1974 NOV 4	DAMES AND MOORE REPORT	44.5	73.9	II	2.1
1974 NOV 19	DAMES AND MOORE REPORT	43.5	74.0	II	2.3
1974 NOV 22	DAMES AND MOORE REPORT	44.3	74.0	II	2.4
1974 NOV 23	DAMES AND MOORE REPORT	44.6	73.7	I	1.6

DATE	COMMENTARY	LAT NORTH	LONG WEST	INTEN (MMI)	MAG
1974 NOV 27	DAMES AND MOORE REPORT	43.3	79.1	III	3.3
1975 JAN 15	DAMES AND MOORE REPORT	44.9	74.6	II	2.5
1975 MAR 7	DAMES AND MOORE REPORT	44.9	74.4	II	2.2
1975 MAR 30	DAMES AND MOORE REPORT	44.0	74.2	II	2.0
1975 APR 3	DAMES AND MOORE REPORT	45.5	74.2	III	3.2
1975 APR 29	DAMES AND MOORE REPORT	41.6	73.9	II	2.3
1975 JUN 9	DAMES AND MOORE REPORT	44.9	73.6	V	4.2
1975 JUN 15	DAMES AND MOORE REPORT	41.6	73.9	II	2.0
1975 JUN 23	DAMES AND MOORE REPORT	44.7	73.9	II	2.3
1975 JUN 30	DAMES AND MOORE REPORT	43.4	79.5	III	3.2
1975 JUL 1	DAMES AND MOORE REPORT	42.8	78.6	II	2.4
1975 JUL 11	DAMES AND MOORE REPORT	44.3	73.9	III	2.8
1975 JUL 11	DAMES AND MOORE REPORT	44.7	73.9	II	2.3
1975 JUL 12	DAMES AND MOORE REPORT	44.7	73.9	II	2.2
1975 JUL 19	DAMES AND MOORE REPORT	41.4	73.8	II	2.3
1975 JUL 29	DAMES AND MOORE REPORT	44.9	75.0	II	2.1
1975 AUG 4	DAMES AND MOORE REPORT	43.8	74.1	II	2.1
1975 AUG 9	DAMES AND MOORE REPORT	44.5	75.1	I	1.8
1975 AUG 22	DAMES AND MOORE REPORT	41.1	73.9	II	2.3
1975 SEP 11	DAMES AND MOORE REPORT	43.9	74.7	I	1.6
1975 SEP 23	DAMES AND MOORE REPORT	43.9	74.6	I	1.6
1975 OCT 8	DAMES AND MOORE REPORT	43.5	78.5	II	2.6
1975 OCT 24	DAMES AND MOORE REPORT	41.6	74.0	II	2.0
1975 OCT 24	DAMES AND MOORE REPORT	41.6	73.9	II	2.2
1975 NOV 3	DAMES AND MOORE REPORT	43.9	74.6	IV	3.9
1975 NOV 14	DAMES AND MOORE REPORT	44.5	74.5	II	2.1
1975 NOV 20	DAMES AND MOORE REPORT	42.8	78.2	I	1.5
1975 DEC 3	DAMES AND MOORE REPORT	45.1	74.2	II	2.0

ABBREVIATIONS USED IN DESCRIPTIONS

A	AND
AB	ABOUT OR APPROXIMATE
AR	AROUND
AS	AFTERSHOCK
BT	BETWEEN
CA	CANADA
CO	COUNTRY
CN	CONNECTICUT
CNT	CENTER OR CENTERED
DH	DEPTH
DR	DURATION
E	EAST OR EASTERN
EQ	EARTHQUAKE
FA	FELT AT
FF	FELT FROM
FI	FELT ON
FO	FELT OVER
FS	FORESHOCK
I	INTENSITY (MM)
IS	ISLAND
LDGO	LAMOUNT GEOLIGICAL OBSERVATORY
LK	LAKE
LT	LIGHT
M	MAGNITUDE
MA	MASSACHUSETTS
MI	MILE(S)
ML	MULTIPLE
MT	MOUNTAIN
N	NORTH OR NORTHERN
NA	NOT AVAILABLE
NG	NOT GIVEN
NH	NEW HAMPSHIRE
NR	NEAR
NY	NEW YORK
ONT	ONTARIO
PA	PENNSYLVANIA
PK	PARK
PML	POSSIBLY MULTIPLE
PT	POINT
QUE	QUEBEC
RV	RIVER
S	SOUTH
SH	SHOCK
ST	SLIGHT
SV	SEVERE
VL	VALLEY
VT	VERMONT
W	WEST, WESTERN, WITH