IONOSPHERIC DATA

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CENTRAL RADIO PROPAGATION LABORATORY
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CONTENTS

SYMBOLS AND TERMINOLOGY; CONVENTIONS FOR DETERMINING MEDIAN VALUES

Beginning with data reported for January 1949, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Fifth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Stockholm, 1948, and given in detail on pages 2 to 10 of the report CRPL-F53, "Ionospheric Data," issued January 1949.

For symbols and terminology used with data prior to January 1949, see report IRPL-C61, "Report of International Radio Propagation Conference, Washington, 17 April to 5 May, 1944," previous issues of the F series, in particular, IRPL-F5, CRPL-F24, F33, F50, and report CRPL-7-1, "Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records."

Following the recommendations of the Washington (1944) and Stockholm (1948) conferences, beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

In addition to the conventions for the determination of medians given in Appendix 5 of Document No. 293 E of the Stockholm conference, which are listed on pages 9 and 10 of CRPL-F53, the following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given on pages 2-9 of CRPL-F53 (Appendixes 1-4 of Document No. 293 E referred to above).

a. For all ionospheric characteristics:

Values missing because of A, B, C, F, L, M, N, Q, R, S, or T (see terminology referred to above) are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of foF2 (and foE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F2 (and h'E near sunrise and sunset) missing for this reason are counted as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count. See CRPL-F38, page 9.

Values missing because of D are counted as equal to or greater than the upper limit of the recorder.

Values missing because of G are counted:
1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

Values missing because of W are counted:
1. For foF2, as equal to or less than the median when it is apparent that h'F2 is unusually high; otherwise, values missing because of W are omitted from the median count.
2. For h'F2, as equal to or greater than the median.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of G (no Es reflections observed, the equipment functioning normally otherwise) are counted as equal to or less than the median foE, or equal to or less than the lower frequency count of the recorder.

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If only four values or less are available, the data are considered insufficient and no median value is computed.

2. For the F2 layer, if only five to nine values are available, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as there are at least five values, the median is not considered doubtful.

3. For all layers, if more than half of the values used to compute the median are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

MONTHLY AVERAGE AND MEDIAN VALUES OF WORLD-WIDE IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 35 and figures 1 to 70 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Commonwealth of Australia, Ionospheric Prediction Service of the Commonwealth Observatory:
- Brisbane, Australia
- Canberra, Australia
- Hobart, Tasmania

Australian Department of Supply and Shipping, Bureau of Mineral Resources, Geology and Physics:
- Watheroo, West Australia

Institute for Ionospheric Research, Lindau Uber Northeim, Hannover, Germany:
- Lindau/Harz, Germany

The Royal Netherlands Meteorological Institute:
- De Bilt, Holland

All India Radio (Government of India), New Delhi, India:
- Bombay, India
- Delhi, India
- Madras, India
- Tiruchy (Tiruchirapalli), India

Indian Council of Scientific and Industrial Research, Radio Committee:
- Calcutta, India

Norwegian Defence Research Establishment, Kjeller per Lillestrom, Norway:
- Oslo, Norway

South African Council for Scientific and Industrial Research:
- Capetown, Union of South Africa
- Johannesburg, Union of South Africa

United States Army Signal Corps:
- Okinawa I.

National Bureau of Standards (Central Radio Propagation Laboratory):
Baton Rouge, Louisiana (Louisiana State University)
Boston, Massachusetts (Harvard University)
Guam I.
Huancayo, Peru (Instituto Geofisico de Huancayo)
Maui, Hawaii
San Francisco, California (Stanfcrd University)
San Juan, Puerto Rico (University of Puerto Rico)
Washington, D. C.
White Sands, New Mexico

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice in the interpretation of records and scaling and manner of reporting of values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

a. Differences in scaling records when spread echoes are present.

b. Omission of values when foF2 is less than or equal to foF1, leading to erroneously high values of monthly averages or median values.

c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series report IRPL-F5.

Ordinarily a blank space in the fEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of foE. Blank spaces at the beginning and end of columns of h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.

b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.

c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot No.					
	1950	1949	1948	1947	1946	1945
December		108	114	126	85	38
November		112	115	124	83	36
October		114	116	119	81	23
September		115	117	121	79	22
August		111	123	122	77	20
July		108	125	116	73	
June		108	129	112	67	
May		108	130	109	67	
April		109	133	107	62	
March		111	133	105	51	
February	103	113	133	90	46	
January	105	112	130	88	42	

IONOSPHERIC DATA FOR EVERY DAY AND HOUR AT WASHINGTON, D. C.

The data given in tables 36 to 47 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols and Terminology; Conventions for Determining Median Values." Beginning with September 1949, the data are taken at a new location, Ft. Belvoir, Virginia.

IONOSPHERE DISTURBANCES

Table 48 presents ionosphere character figures for Washington, D. C., during February 1950, as determined by the criteria presented in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, geomagnetic K-figures, which are usually covariant with them.

Table 49 lists for the stations whose locations are given the sudden ionosphere disturbances observed on the continuous field intensity recordings made at Ft. Belvoir, Virginia, during February 1950.

Table 50 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Brentwood and Somerton, England, receiving stations of Cable and Wireless, Ltd., for January 20 and February 13, 1950.

Table 51 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Colombo, Ceylon, receiving station of Cable and Wireless, Ltd., for November 17 and 19, 1949.

Table 52 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Hong Kong, China, receiving station of Cable and Wireless, Ltd., for November 2, 1949.

Table 53 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Platanos, Argentina, receiving station of the International Telephone and Telegraph Corporation for January 20 and 22, 1950.

Table 54 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Point Reyes, California, receiving station of RCA Communications, Inc., for various days in February 1950.

Table 55 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Riverhead, New York, receiving station of RCA Communications, Inc., for February 13 and 20, 1950.

Table 56 lists for the stations whose locations are given the sudden ionosphere disturbances reported by the Institut für Ionosphärenforschung, as observed at Lindau, Harz, Germany, for various days in December 1949 and January 1950.

Table 57 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, January 1950, compared with the CRPL daily radio disturbance warnings, which are primarily for the North Atlantic paths, the CRPL weekly radio propagation forecasts of probable disturbed periods, and the half-day Cheltenham, Maryland, geomagnetic K-figures.

The radio propagation quality figures are prepared from radio traffic and ionospheric data reported to the CRPL, in a manner basically the same as that described in IRPL-R31, "North Atlantic Radio Propagation Disturbances, October 1943 through October 1945," issued February 1, 1946. The scale conversions for each report are revised for use with the data beginning January 1948, and statistical weighting replaces what was, in effect, subjective weighting. Separate master distribution curves of the type described in IRPL-R31 were derived for the part of 1946 covered by each report; data received only since 1946 are compared with the master curve for the period of the available data. A report whose distribution is the same as the master is thereby converted linearly to the Q-figure scale. Each report is given a statistical weight which is the reciprocal of the departure from linearity. The half-daily radio propagation quality figure, beginning January 1948, is the weighted mean of the reports received for that period.

These radio propagation quality figures give a consensus of opinion of actual radio propagation conditions as reported by the half day over the two general areas. It should be borne in mind, however, that though the quality may be disturbed according to the CRPL scale, the cause of the disturbance is not necessarily known. There are many variables that must be considered. In addition to ionospheric storminess itself as the cause, conditions may be reported as disturbed because of seasonal characteristics such as are particularly evident in the pronounced day and night contrast over North Pacific paths during the winter months, or because of improper frequency usage for the path and time of day in question. Insofar as possible, frequency usage is included in rating the reports. Where the actual frequency is not shown in the report to the CRPL, it has been assumed that the report is made on the use of optimum working frequencies for the path and time of day in question. Since there is a possibility that all the disturbance shown by the quality figures is not due to ionospheric storminess alone, care should be taken in using the quality figures in research correlations with solar, auroral, geomagnetic, or other data. Nevertheless, these quality figures do reflect a consensus of opinion of actual radio propagation conditions as found on any one half day in either of the two general areas.

SOLAR CORONAL INTENSITIES OBSERVED AT CLIMAX, COLORADO

In tables 58a and 58b are listed the intensities of the green (5303A) line of the emission spectrum of the solar corona as observed during February 1950 by the High Altitude Observatory of Harvard University and the University of Colorado at Climax, Colorado, for east and west limbs, respectively, at 5-degree intervals of position angle north and south of the solar equator at the limb. Beginning January 11, 1949, the actual measurements are on solar rotation coordinates rather than astronomical coordinates; thus values of the

correction P given in previous coronal tables are omitted. The time of observation is given to the nearest tenth of a day, GCT. The tables of coronal observations in CRPL-F29 to F41 listed the data on astronomical coordinates; the present format on solar rotation coordinates is in conformity with the tables of CRPL-1-4, "Observations of the Solar Corona at Climax, 1944-46."

Tables 59a and 59b give similarly the intensities of the first red (6374A) coronal line; tables 60a and 60b list the intensities of the second red (6704A) coronal line. The following symbols are used in tables 58, 59, and 60: a, observation of low weight; -, corona not visible; and X, position angle not included in plate estimates.

AMERICAN AND ZURICH PROVISIONAL RELATIVE SUNSPOT NUMBERS

Table 61 presents the daily American relative sunspot number, R_A, computed from observations communicated to CRPL by observers in America and abroad. Beginning with the observations for January 1948, a new method of reduction of observations is employed such that each observer is assigned a scale-determining "observatory coefficient," ultimately referred to Zürich observations in a standard period, December 1944 to September 1945, and a statistical weight, the reciprocal of the variance of the observatory coefficient. The daily numbers listed in the table are the weighted means of all observations received for each day. Details of the procedure are given in the Publication of the Astronomical Society of the Pacific, issued February 1949, in an article entitled "Reduction of Sunspot-Number Observations." The American relative sunspot number computed in this way is designated R_A. It is noted that a number of observatories abroad, including the Zürich observatory, are included in R_A. The scale of R_A was referred specifically to that of the Zürich relative sunspot numbers in the standard comparison period; since that time, R_A is influenced by the Zürich observations only in that Zürich proves to be a consistent observer and receives a high statistical weight. In addition, this table lists the daily provisional Zürich sunspot numbers, R_Z.

PRELIMINARY MEAN K-INDICES, PRELIMINARY INTERNATIONAL CHARACTER FIGURES, MAGNETICALLY SELECTED DAYS, PLANETARY INDICES

Table 62 gives preliminary mean K-indices, Kw, and international character figures, C, Kp, and also final magnetically selected days from magnetic observatories widely distributed over the Earth's surface. The selected days are preferentially derived using the four magnetic criteria: C-figures, sums of the eight daily mean K-indices, the greatest daily K-index, and the sums of the squares of the eight daily K-indices.

Table 63 gives geomagnetic planetary three-hour-range indices, Kp, for 1940 and 1949. It should be noted that Kp is without reduction because of the (rare) solar flare effects. Kp is designed to measure solar particle-radiation by its magnetic effects at eleven observatories between geomagnetic latitudes 47 and 63 degrees. Complete description of Kp has appeared in Bulletin 12b, "Geomagnetic Indices C and K, 1948" published in Washington, D. C., 1949, by the Association of Terrestrial Magnetism and Electricity, International Union of Geodesy and Geophysics. This bulletin has tables of Kp for 1945-48. Current tables of Kp appear in the Journal of Geophysical Research.

These tables have been furnished by the courtesy of the Committee on Characteristics of Magnetic Disturbance, ATME, IUGG. The majority of the world's magnetic observatories have cooperated in supplying the data. The Meteorological Office, De Bilt, Holland, has efficiently assembled and compiled the summary tables. The Chairman of the Committee has compiled Kp to supply the need of research workers in the ionospheric field for a specific index of solar particle-activity. Tables of Kp will ultimately be available from January 1, 1937, the beginning date for serious ionospheric records.

ERRATA

1. CRPL-F66, p. 10, Erratum 2: Item (a) should read "CRPL-F65, p. 7, par. 4." Item (b) should read "CRPL-F65."

2. CRPL-F66, p 15, table 26: Sweep for July 19 through 30 should read "1.5 Mc to 16.0 Mc in 1 minute 30 seconds."

3. CRPL-F66, p. 11, table 1: Sweep should carry the additional information that as of 1130, January 6, 1950, the time of sweep of the recorder was changed from 15 seconds to 30 seconds.

TABLES OF IONOSPHERIC DATA

Table 1

Washington, D. C. (38.7°N, 77.1°W) February 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	(4.3)						(2.9)
01	280	4.4						2.9
02	280	4.4						2.8
03	270	4.2						2.8
04	270	4.3						2.9
05	260	4.0						2.9
06	250	3.8						3.0
07	230	5.1			---	---		3.2
08	220	7.6			110	2.4		3.4
09	210	8.8	---	---	(100)	2.8		3.3
10	220	9.8	---	---	(100)	3.2		3.2
11	210	10.2	---	---	(100)	3.3		3.1
12	220	10.9	210	---	100	3.4		3.1
13	230	11.2	210	---	100	3.4		3.0
14	220	11.0	---	---	100	3.3		3.0
15	220	11.3	---	---	100	3.1		3.0
16	230	(11.2)	---	---	110	2.8		(3.1)
17	220	(10.4)			110	2.2		(3.1)
18	210	(9.4)						(3.1)
19	220	(7.8)						(3.1)
20	230	(6.6)						(3.0)
21	230	(5.6)						(3.0)
22	250	(5.0)						(2.9)
23	260	(4.4)						(2.9)

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 2

Oslo, Norway (60.0°N, 11.0°E) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(355)	2.0						(2.6)
01	350	2.0						(2.5)
02	350	1.9						(2.6)
03	350	1.8						(2.6)
04	320	2.0					1.6	(2.6)
05	320	2.1						(2.7)
06	295	2.0						(2.8)
07	290	2.2						(2.9)
08	260	(2.8)			---	---		(2.9)
09	230	5.3			---	1.8	2.8	3.1
10	225	7.9			125	2.2	3.5	3.3
11	225	9.2	---	---	130	2.2	2.0	(3.2)
12	220	(9.9)	---	---	120	2.3	2.3	(3.2)
13	225	10.5	---	---	120	2.4	2.3	3.2
14	225	10.2	---	---	130	2.2	2.4	3.2
15	220	9.5			130	2.0	2.1	3.3
16	215	8.4			155	1.7	1.6	3.2
17	215	7.0						(3.2)
18	220	(5.4)						(3.2)
19	240	4.0						(3.0)
20	255	3.0						(2.9)
21	280	(2.7)						(2.8)
22	(300)	(2.3)						(2.8)
23	(335)	(2.0)						(2.7)

Time: 15.0°E.
Sweep: 1.6 Mc to 10.0 Mc in 5 minutes, automatic operation; experimental recorder, 1.3 Mc to 14.0 Mc in 8 minutes.

Table 3

Boston, Massachusetts (42.4°N, 71.2°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	4.4						2.6
01	290	4.1						2.6
02	275	4.4						2.7
03	260	4.1						2.7
04	260	4.0						2.7
05	260	3.7						2.7
06	270	3.6						2.7
07	250	4.7						3.0
08	230	(7.2)			---	---		3.1
09	230	9.6			---	---		3.1
10	240	10.9			---	---		3.0
11	240	11.1			---	---		3.0
12	240	11.7			---	---		3.0
13	240	11.6			---	---		(3.0)
14	240	11.6			---	---		3.0
15	235	11.0			---	---		3.0
16	230	10.4			---	---		3.0
17	230	10.0						(2.9)
18	(240)	(8.6)						(3.0)
19	230	7.0						3.0
20	240	5.6						2.9
21	250	4.9						2.8
22	260	4.7						2.7
23	270	4.3						2.6

Time: 75.0°W.
Sweep: 0.8 Mc to 14.0 Mc in 1 minute.

Table 4

San Francisco, California (37.4°N, 122.2°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.0					2.8	2.8
01	280	2.9					2.8	2.8
02	300	2.8					2.8	2.8
03	300	2.8					2.8	2.8
04	300	2.9					2.4	2.7
05	300	2.8					2.8	2.7
06	300	3.0					2.8	2.8
07	280	3.9					2.9	3.0
08	230	7.2			120	2.2	2.9	3.4
09	230	9.0	---	---	120	2.8	4.0	3.4
10	240	10.4	220	---	120	3.1	3.8	3.3
11	240	11.0	220	---	120	3.4	4.0	3.3
12	240	11.0	220	---	120	3.5	4.2	3.2
13	(240)	10.9	220	---	120	3.5	4.0	3.1
14	240	10.6	230	---	120	3.5	3.9	3.2
15	240	10.5	---	---	120	2.9		3.2
16	230	10.0			120	2.6		3.2
17	230	8.6			140	1.9		3.3
18	220	7.3					2.4	3.2
19	230	5.4					2.7	3.2
20	240	3.7					2.5	3.2
21	250	2.8					2.8	3.0
22	290	2.8					2.7	2.8
23	300	2.9					2.7	2.7

Time: 120.0°W.
Sweep: 1.3 Mc to 18.0 Mc in 4 minutes.

Table 5

White Sands, New Mexico (32.3°N, 106.5°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.3					2.3	2.7
01	260	3.3					2.3	2.8
02	260	3.4					2.3	2.8
03	280	3.1					2.3	2.8
04	260	3.0					2.4	2.8
05	300	3.0					2.3	2.7
06	280	3.0					2.3	2.7
07	240	5.1			---	---	2.5	3.0
08	230	7.9			120	2.4		3.3
09	230	9.2	---	---	120	2.9	4.4	3.2
10	230	10.0	---	---	110	3.3	4.2	3.1
11	230	10.8	220	---	110	3.5	4.8	3.0
12	230	10.9	220	---	110	3.8	4.4	3.0
13	240	10.8	220	---	110	3.5	4.8	2.9
14	240	10.7	220	---	110	(3.4)	5.0	2.9
15	240	10.2	---	---	110	3.1	4.7	3.0
16	230	9.9	---	---	120	2.7	3.8	3.0
17	230	9.2			(120)	2.0	2.8	3.1
18	220	7.5					2.4	3.1
19	220	5.7					2.3	3.1
20	230	4.2					2.5	3.1
21	250	3.5					2.3	3.0
22	280	3.0					2.4	2.8
23	280	3.1					2.4	2.7

Time: 105.0°W.
Sweep: 0.8 Mc to 14.0 Mc in 2 minutes.

Table 6

Baton Rouge, Louisiana (30.5°N, 91.2°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	3.9						2.7
01	310	4.0						2.8
02	300	4.0						2.9
03	300	3.7						2.9
04	300	3.6						2.9
05	350	3.4						2.7
06	350	3.5						2.7
07	290	5.4						3.0
08	260	8.2	240	---	---	2.6		3.1
09	270	8.6	260	---	120	3.0		3.1
10	290	9.8	260	---	120	3.4		3.0
11	290	10.2	250	---	120	3.6		2.9
12	300	11.0	250	---	120	3.6		2.9
13	(300)	10.8	250	---	120	3.5		2.8
14	290	10.7	260	---	120	3.5		2.8
15	(290)	10.7	270	---	120	3.2		2.8
16	(280)	10.5	270	---	120	2.8		2.9
17	260	10.0	---	---	---	---		3.0
18	240	8.0						3.0
19	260	6.0						2.9
20	270	4.7						3.0
21	300	4.2						2.8
22	310	3.7						2.8
23	340	3.7						2.7

Time: 90.0°W.
Sweep: 2.12 Mc to 14.1 Mc in 5 minutes; automatic operation.

Table 7

Okinawa I. (26.3°N, 127.7°E) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	6.0						3.0
01	250	5.0						3.0
02	250	5.0						3.0
03	250	4.0						3.0
04	250	3.6						3.1
05	250	3.0						3.0
06	280	3.0						3.0
07	290	5.0		4.5				3.0
08	250	11.0		9.0		2.6		3.0
09	250	15.0		13.0		---		3.0
10	250	15.0		---		---		3.0
11	250	15.0		---		---		2.9
12	280	18.0		---		---		2.9
13	300	(16.0)		---		---		(2.9)
14	280	17.0		---		---		3.0
15	260	17.0		---		---		2.9
16	260	17.0		---		---		3.0
17	240	17.0		---		---		3.0
18	210	15.0		---		---		3.0
19	210	13.0						3.0
20	200	12.0						3.0
21	210	11.0						3.0
22	210	8.0						3.0
23	240	7.0						3.0

Time: 135.0°E.
Sweep: 1.0 Mc to 26.0 Mc in 1 minute.

Table 8

Maui, Hawaii (20.8°N, 156.5°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	4.7						2.6
01	280	5.2						2.8
02	260	4.9						3.0
03	240	4.1						3.1
04	280	2.6						2.8
05	320	(2.5)						(2.5)
06	330	(2.4)						2.5
07	300	4.9			160	1.8		2.7
08	270	9.0	270	---	130	2.6	2.8	3.1
09	280	11.7	260	---	120	3.0	4.7	3.1
10	280	12.4	240	(4.9)	120	3.4	4.6	3.0
11	300	12.5	230	(4.9)	120	3.5	4.6	3.8
12	340	12.9	220	(5.3)	120	3.7	4.4	2.7
13	340	14.0	230	(5.6)	120	3.7	4.6	2.7
14	320	14.3	250	(5.7)	120	3.6	4.6	2.8
15	300	14.0	250	5.7	120	3.4	4.6	2.8
16	280	12.7	260	---	120	3.0	4.8	2.8
17	260	12.4	---	---	120	2.6	4.8	3.0
18	240	10.8					4.8	3.1
19	230	7.8					4.7	3.0
20	240	6.6					4.3	2.9
21	250	7.0					2.5	3.0
22	250	7.0					2.2	2.9
23	250	5.4					1.9	2.9

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 9

San Juan, Puerto Rico (18.4°N, 66.1°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(280)	5.4						2.7
01	(260)	6.3						2.8
02	(250)	5.2						2.9
03	---	4.7						2.9
04	---	4.0						2.8
05	---	4.2						2.7
06	---	4.1						2.9
07	260	6.4		---				3.0
08	250	9.0		3.6		E		3.0
09	260	11.2		(5.2)		3.3		3.0
10	260	11.9		6.2		3.5		3.0
11	260	10.7		5.8		3.7		3.0
12	280	10.3		5.5		3.9	5.5	2.9
13	300	11.0		---		3.7	(5.6)	2.8
14	290	11.0		5.0		3.7		2.8
15	280	10.9		---		3.6		2.8
16	270	10.5		---		3.2		2.8
17	260	10.7				---		2.8
18	240	10.1						3.0
19	240	(8.2)						(2.9)
20	260	6.6						2.8
21	280	6.4						2.7
22	280	6.2						2.7
23	280	5.5						2.8

Time: 60.0°W.
Sweep: 2.9 Mc to 13.0 Mc in 9 minutes, automatic operation; supplemented by manual operation.

Table 10

Guam I. (13.6°N, 144.9°E) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	8.5					3.6	3.0
01	230	8.0					3.3	3.1
02	230	7.4						3.3
03	220	5.7						3.2
04	230	4.3					2.3	3.1
05	240	3.8					2.9	3.0
06	240	3.5			---	---	3.0	3.2
07	260	6.2			130	1.8	3.7	3.2
08	240	9.2			110	2.8	5.4	3.0
09	260	11.6	230	---	110	3.2	5.4	2.8
10	270	11.7	210	(4.8)	100	3.5	5.9	2.6
11	270	10.6	200	4.8	100	3.7	5.7	2.5
12	270	10.2	200	4.9	100	3.8	5.2	2.4
13	270	10.4	200	4.7	110	3.8	5.0	2.4
14	270	11.0	200	---	100	3.6	4.7	2.4
15	250	11.5	220	---	110	3.5	4.8	2.6
16	240	12.1	230	---	100	3.2	4.4	2.6
17	250	12.4			110	2.8	4.2	2.7
18	260	(12.7)			---	---	4.4	(2.8)
19	270	12.2					3.2	2.7
20	260	(11.4)					2.9	2.7
21	250	(11.3)					3.0	(2.8)
22	240	(10.0)					3.5	(3.0)
23	230	9.0					3.5	3.0

Time: 150.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 11

Huancayo, Peru (12.0°S, 75.3°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	9.4					5.0	2.8
01	280	8.0					4.8	2.9
02	260	7.0					5.2	3.0
03	250	6.2					6.2	3.0
04	240	5.4					4.5	3.1
05	250	4.6					3.6	3.1
06	260	7.2			100	2.0	4.8	3.0
07	240	10.0			100	2.8	5.2	3.0
08	230	11.7	220	(5.2)	100	3.3	6.8	2.9
09	300	12.2	220	5.3	100	3.7	11.4	2.8
10	300	12.4	210	5.4	100	4.0	12.6	2.4
11	310	12.3	210	5.4	100	4.2	12.8	2.2
12	310	11.8	200	5.4	100	4.2	12.8	2.2
13	300	11.3	200	5.3	100	4.1	12.6	2.2
14	300	11.3	200	5.1	100	3.9	12.6	2.2
15	210	11.5	200	(4.9)	100	3.6	11.9	2.3
16	220	11.5	---	---	100	3.2	10.9	2.3
17	250	11.9			100	2.9	8.4	2.2
18	290	11.7			100	2.0	3.6	2.3
19	320	11.5						2.2
20	390	10.8						2.1
21	380	10.4					2.7	2.2
22	340	(10.1)					2.8	2.4
23	320	(10.0)					3.3	2.7

Time: 75.0°W.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 12

Lindau/Harz, Germany (51.6°N, 10.1°E) December 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.2					2.2	
01	310	3.2						
02	310	3.2						
03	300	3.1						
04	290	3.1						
05	260	3.2					2.0	
06	240	2.8					2.0	
07	250	2.8					2.8	
08	220	5.7			---	E	2.8	
09	210	9.0			115	1.8	3.4	
10	210	11.2			110	2.4	3.6	
11	210	11.6			105	2.6	3.6	
12	210	12.1			110	2.7	3.5	
13	210	11.8			110	2.7	3.5	
14	210	11.6			110	2.4	3.4	
15	210	10.9			110	2.1	3.4	
16	210	9.9			---	E	3.2	
17	200	8.2					2.8	
18	210	6.0					2.8	
19	210	4.7					2.6	
20	240	4.0					2.6	
21	250	3.5					2.8	
22	290	3.2					2.5	
23	300	3.1					2.4	

Time: 15.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 8 minutes.

Table 13

Johannesburg, Union of S. Africa (26.2°S, 28.0°E) December 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	7.2					2.2	2.8
01	270	6.8					2.1	2.8
02	260	6.4					1.8	2.8
03	260	5.8					1.4	2.8
04	270	5.1						2.8
05	270	5.3			---	1.6		2.8
06	240	7.1	---	---	110	2.5		3.0
07	270	8.2	230	---	110	3.1	3.2	2.8
08	300	9.5	220	5.2	110	3.5		2.6
09	340	10.5	220	5.6	110	3.8	4.3	2.6
10	340	10.8	210	5.6	110	4.0	4.2	2.6
11	360	11.1	210	5.8	110	(4.1)	4.6	2.6
12	370	11.5	210	5.8	110	4.1	4.4	2.6
13	360	11.7	210	5.6	110	(4.1)	4.4	2.6
14	360	11.5	210	5.6	110	(4.0)	4.6	2.6
15	350	10.8	220	5.4	110	3.9	4.3	2.6
16	340	10.3	220	5.4	110	3.6	3.7	2.6
17	320	9.8	230	4.8	110	3.1	3.6	2.7
18	270	9.4	260	---	110	2.5	3.0	2.7
19	270	9.6			---	---	2.4	2.8
20	260	9.3					2.8	2.8
21	260	8.9					2.5	2.8
22	260	8.4					2.0	2.8
23	270	7.6					1.6	2.8

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 14

Watheroo, W. Australia (30.3°S, 115.9°E) December 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	7.2					3.8	2.8
01	300	6.8					5.4	2.6
02	300	6.6					4.8	2.6
03	290	6.5					3.6	2.7
04	270	5.7					3.0	2.7
05	270	5.7				1.7	3.2	2.8
06	240	6.8				2.5	3.2	3.0
07	260	7.6	230	5.0		3.0	3.3	2.9
08	240	8.2	230	5.2		3.3	4.3	2.7
09	350	8.6	230	5.3		3.8	5.2	2.7
10	370	9.2	220	5.5		3.8	4.8	2.7
11	370	9.2	220	5.5		3.8	5.2	2.7
12	370	9.5	220	5.6		3.8	5.2	2.6
13	350	9.6	220	5.6		3.9	5.1	2.7
14	360	9.6	230	5.6		3.9	5.4	2.7
15	360	9.1	230	5.5		3.7	5.5	2.7
16	350	8.6	240	5.4		3.5	5.3	2.6
17	330	8.4	240	5.0		3.1	4.3	2.7
18	300	8.3	260	4.6		2.6	3.4	2.7
19	270	8.2					3.2	2.7
20	270	8.3					3.6	2.7
21	290	8.1					3.4	2.7
22	290	7.9					3.7	2.7
23	290	7.5					3.5	2.8

Time: 120.0°E.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 15

Capetown, Union of S. Africa (34.2°S, 18.3°E) December 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	6.2					2.7	2.7
01	290	6.1					3.1	2.6
02	290	5.9					2.7	2.7
03	280	5.5					2.7	2.7
04	280	5.1					2.2	2.7
05	300	5.0					2.0	2.7
06	260	6.4			120	2.1	2.9	2.8
07	260	7.6	250	---	120	2.8	3.2	2.8
08	330	8.8	240	5.0	110	3.2	3.6	2.6
09	360	9.7	230	5.3	110	3.6	4.0	2.6
10	380	10.2	220	5.6	110	(3.8)	4.2	2.6
11	380	10.5	220	5.6	110	---	4.4	2.5
12	380	11.0	(210)	5.7	110	---	4.4	2.5
13	380	11.0	220	5.7	110	---	4.5	2.5
14	380	11.0	220	5.7	110	---	4.2	2.6
15	370	10.6	220	5.6	110	---	4.2	2.6
16	370	10.0	230	5.4	110	3.7	4.0	2.6
17	340	9.6	230	5.0	110	3.5	3.7	2.6
18	310	9.1	240	---	110	2.9	3.6	2.7
19	270	8.9	260	---	120	2.3	3.1	2.8
20	260	8.8			---	(1.6)	2.5	2.9
21	250	7.8					2.9	2.8
22	260	6.9					2.3	2.8
23	280	6.5					2.1	2.7

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 16

De Bilt, Holland (52.8°N, 6.7°E) November 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01	360	3.7					2.0	2.3
02								
03	320	3.3					2.2	(2.4)
04								
05	290	3.0					2.2	(2.7)
06								
07	240	6.3			180	1.9	1.9	2.9
08								
09	230	11.0	---	---	110	2.6	2.8	3.0
10								
11	240	12.8	230	3.8	120	3.0	2.8	2.9
12								
13	245	12.7	---	---	120	2.8	2.5	2.9
14								
15	240	11.5	---	---	130	2.1	2.7	(3.0)
16								
17	220	9.0					2.2	2.9
18								
19	240	5.4						2.8
20								
21	300	4.2						2.5
22								
23	320	4.0						2.4

Time: 0.0°.
Sweep: 1.4 Mc to 16.0 Mc in 7 minutes, automatic operation.

Table 17

Brisbane, Australia (27.5°S, 153.0°E) November 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	9.0					3.6	2.8
01	280	8.0					3.9	2.7
02	280	7.8					4.0	2.6
03	290	7.5					3.0	2.6
04	290	7.2					2.7	2.6
05	260	7.4	---	---	140	2.0	2.0	2.8
06	240	8.1	---	---	110	2.8		2.9
07	280	9.0	240	5.0	110	3.3		2.8
08	300	9.5	240	5.5	100	3.6		2.7
09	340	10.1	210	6.0	100	3.8		2.7
10	340	11.0	240	6.0	100	3.9	4.0	2.7
11	350	11.1	210	6.5	110	3.9	4.4	2.7
12	350	11.5	210	6.0	110	4.0		2.6
13	350	11.0	240	6.1	110	4.0		2.7
14	340	11.0	250	6.0	110	3.9		2.7
15	340	10.5	240	5.7	110	3.7		2.7
16	300	9.6	240	5.0	110	3.4		2.7
17	270	9.3	250	4.8	110	3.9		2.7
18	280	9.0			---	---	4.6	2.7
19	300	9.0					4.0	2.6
20	320	9.0					3.2	2.6
21	320	9.0					3.0	2.6
22	300	9.5					3.8	2.7
23	300	9.2					4.2	2.8

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 18

Watheroo, W. Australia (30.3°S, 115.9°E) November 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.0					3.6	2.6
01	290	6.7					3.7	2.8
02	290	8.2					3.3	2.8
03	300	5.9					3.1	2.5
04	300	5.8					3.0	2.6
05	300	6.0				1.6	2.3	2.6
06	280	7.0	260	4.0		2.4	2.9	2.8
07	290	7.4	260	4.8		3.0	3.4	2.7
08	320	8.4	240	4.9		3.4	4.0	2.7
09	300	9.1	250	5.0		3.7	4.5	2.8
10	310	10.2	240	5.2		3.9	4.6	2.6
11	310	10.5	230	5.3		3.9	4.8	2.6
12	320	10.6	230	5.4		4.0	4.6	2.6
13	300	10.6	240	5.1		3.9	4.5	2.6
14	320	10.7	240	5.1		3.9	4.3	2.6
15	320	10.4	240	4.9		3.6	4.3	2.6
16	300	9.7	250	4.8		3.3	4.0	2.8
17	300	9.3	260	4.6		2.9	3.4	2.8
18	280	9.3				2.1	2.8	2.7
19	270	9.2					2.4	2.7
20	270	8.3					2.8	2.8
21	300	7.9					3.0	2.6
22	300	7.8					3.3	2.6
23	300	7.5					3.3	2.5

Time: 120.0°E.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 19

Canberra, Australia (35.3°S, 149.0°E) November 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	8.4					3.1	2.7
01	260	7.7					3.1	2.6
02	270	7.0					3.4	2.6
03	280	5.7					2.5	2.5
04	280	5.2					2.5	2.6
05	270	6.5	---	---	100	1.8	2.6	2.7
06	250	7.1	240	4.2	100	2.5	3.5	2.9
07	300	7.5	230	4.8	100	3.2	4.0	2.8
08	340	7.9	235	5.4	100	3.5	5.0	2.7
09	350	8.5	(240)	5.5	100	3.8	5.8	2.7
10	350	9.2	230	5.9	100	3.9	5.0	2.6
11	360	9.5	220	5.9	100	3.9	4.8	2.8
12	360	9.7	210	5.0	100	3.9	4.3	2.8
13	360	9.9	220	5.9	100	3.9	4.8	2.8
14	355	9.9	230	5.9	100	3.9	4.2	2.8
15	340	9.5	230	5.6	100	3.7	4.0	2.6
16	320	9.2	230	5.3	100	3.5	3.0	2.7
17	300	9.0	240	4.5	100	3.0	3.4	2.7
18	260	8.5	255	(3.8)	110	2.3	3.8	2.7
19	260	8.5			---	1.5	3.4	2.6
20	290	8.5					3.5	2.5
21	300	8.5					4.0	2.8
22	300	8.5					3.9	2.6
23	295	8.5					3.8	2.6

Time: 150.0°E.
Sweep: 1.0 Mc to 18.0 Mc in 1 minute 55 seconds.

Table 20

Hobart, Tasmania (42.8°S, 147.4°E) November 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	5.8						2.5
01	290	6.3					3.0	2.8
02	290	5.6					2.5	2.5
03	300	5.4					2.8	2.5
04	300	5.0					3.5	2.6
05	270	5.3	---	---	---	E	2.5	2.7
06	250	6.0	250	3.8	100	2.6	3.6	2.9
07	300	5.5	240	4.5	100	3.1	3.8	2.8
08	380	7.0	240	5.0	95	3.3		2.7
09	400	7.3	230	5.4	100	3.6	3.4	2.7
10	420	7.5	225	5.5	100	3.8		2.5
11	410	7.5	220	5.5	100	3.8	3.5	2.8
12	430	7.8	220	5.5	100	3.9	3.8	2.8
13	400	8.0	210	5.8	100	3.8	3.8	2.6
14	390	8.0	220	5.5	100	3.8	3.2	2.6
15	380	8.1	220	5.5	100	3.6	3.8	2.8
16	360	8.0	230	5.3	100	3.4	3.8	2.6
17	300	8.0	240	4.6	100	3.0	3.0	2.7
18	250	8.2	---	---	100	2.4	2.1	2.7
19	280	8.4			---	E	3.0	2.8
20	260	8.0					3.3	2.7
21	270	7.7					3.5	2.8
22	280	7.5					3.0	2.8
23	290	7.4					2.2	2.6

Time: 150.0°E.
Sweep: 1.0 Mc to 18.0 Mc in 1 minute 55 seconds.

Table 21

Delhi, India (28.6°N, 77.1°E) October 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	360	7.6						2.9
01	360	7.0						
02	---	---						
03	---	---						
04	---	(5.2)						3.3
05	340	5.2						
06	300	7.2						
07	300	9.9						
08	280	11.8						3.1
09	310	12.8						
10	320	12.9						
11	380	13.7						
12	340	13.8						2.7
13	(360)	(14.0)						
14	(360)	(14.2)						
15	---	(14.2)						
15	(300)	(14.0)						2.9
17	(300)	(13.8)						
18	(310)	(13.0)						
19	(320)	(12.0)						
20	(330)	(11.4)						3.1
21	340	9.8						
22	320	9.0						3.0
23	340	8.2						

Time: Local.
Sweep: 1.8 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 22

Bombay, India (19.0°N, 73.0°E) October 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	360	7.9						
08	(480)	(10.3)						2.5
09	450	9.8						
10	480	10.8						
11	510	11.8						
12	540	(12.7)						2.4
13	---	---						
14	---	(13.7)						
15	---	(13.8)						
16	---	(13.5)						
17	---	(13.4)						
18	---	(12.9)						
19	510	12.6						
20	480	12.2						2.5
21	450	10.8						
22	430	9.6						2.8
23	360	9.3						

Time: Local.
Sweep: 1.8 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 23

Madras, India (13.0°N, 80.2°E) October 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								2.8
05								
08								
07	360	10.5						
08	420	11.8						2.6
09	420	13.0						
10	480	13.8						
11	540	13.8						
12	540	13.8						
13	600	13.8						
14	600	(13.9)						
15	600	(13.9)						
15	(570)	(14.0)						2.2
17	580	(13.9)						
18	570	13.8						
19	580	(13.6)						
20	(540)	(13.5)						2.1
21	(540)	(13.4)						
22	(540)	(13.2)						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 24

Tiruchy, India (10.8°N, 78.8°E) October 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	---	---						
07	360	10.1						
08	420	12.0						
09	440	12.4						
10	480	12.4						
11	540	12.2						
12	540	12.0						
13	540	12.2						
14	570	12.4						
15	(600)	(12.7)						
16	600	12.5						
17	540	12.8						
18	600	12.0						
19	600	11.3						
20	620	11.2						
21	520	11.1						
22	480	10.9						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 25

Brisbane, Australia (27.5°S, 153.0°E) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	8.0					3.2	2.7
01	270	8.0					2.6	2.7
02	270	7.5					2.4	2.6
03	300	7.0					2.0	2.6
04	300	6.6						2.6
05	290	7.1			160	1.4		2.7
06	250	8.6	---	---	110	2.5		3.0
07	250	10.5	240	4.5	110	3.0		3.0
08	250	11.1	230	4.7	110	3.5		3.0
09	260	11.0	220	5.0	100	3.7		3.8
10	280	11.5	220	5.5	100	3.8		2.8
11	300	12.0	200	5.9	100	3.9		2.8
12	300	11.9	220	5.5	110	4.0	3.6	2.8
13	320	11.6	220	6.0	110	4.0		2.7
14	300	11.0	230	5.6	110	3.8		2.7
15	300	11.0	230	5.0	110	3.6		2.7
16	250	10.5	240	5.0	110	3.2		2.8
17	250	10.0	---	---	120	2.6		2.8
18	260	10.0			---	E	3.4	2.8
19	270	9.4					3.0	2.7
20	300	9.0					2.6	2.7
21	300	9.0					3.0	2.7
22	290	9.0					3.2	2.8
23	290	8.6					2.6	2.7

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 26

Canberra, Australia (35.3°S, 149.0°E) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	7.5					2.3	2.6
01	270	7.0					2.0	2.6
02	260	6.5					2.3	2.6
03	280	6.3					2.0	2.5
04	280	6.0					2.0	2.5
05	280	5.9			130	1.3		2.7
06	250	7.0	250	(3.9)	110	2.3	3.2	3.0
07	250	7.9	230	4.5	100	2.9	3.5	3.0
08	255	8.8	220	4.7	100	3.3	3.5	3.0
09	290	9.9	210	5.0	100	3.5	4.0	2.9
10	290	10.5	205	5.2	100	3.7	3.9	2.9
11	310	10.8	210	5.5	100	3.8	3.5	2.8
12	330	10.6	200	5.4	100	3.8	4.0	2.7
13	320	10.5	210	5.6	100	3.9		2.7
14	300	10.4	215	5.5	100	3.8	3.2	2.7
15	290	10.0	225	5.0	100	3.5	3.1	2.8
16	280	9.8	225	4.7	100	3.2	3.1	2.8
17	250	9.5	250	(4.2)	100	2.8	2.8	2.8
18	250	9.5	---	---	125	2.0	2.6	2.8
19	250	9.0					2.8	2.7
20	260	8.5					2.8	2.7
21	275	8.4					2.7	2.7
22	280	8.0					2.6	2.6
23	290	7.9					2.6	2.6

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 27

Hobart, Tasmania (42.8°S, 147.4°E) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	6.4					2.2	2.6
01	280	6.0					2.4	2.6
02	270	5.6					2.3	2.6
03	280	5.1					3.0	2.6
04	290	4.7					2.4	2.6
05	290	4.8			---	E	2.2	2.8
06	250	5.7	---	---	110	2.3	2.7	2.9
07	250	6.5	240	4.2	100	2.8	3.2	3.0
08	280	7.1	230	4.6	100	3.2	4.0	3.0
09	320	7.7	220	5.0	100	3.4	3.6	2.8
10	300	8.4	220	5.0	100	3.7	3.9	2.9
11	300	8.8	220	5.1	---	3.8	3.9	2.8
12	330	8.6	210	5.2	100	3.8	3.8	2.8
13	320	9.2	210	5.4	100	3.8	3.8	2.7
14	320	9.0	220	5.4	100	3.6	3.5	2.7
15	300	8.9	220	5.0	100	3.4	3.5	2.8
16	250	9.0	230	4.5	95	3.2	3.0	2.8
17	250	8.9	250	4.0	100	2.7	2.5	2.8
18	250	9.0			120	2.1	2.1	2.8
19	250	9.0					1.5	2.8
20	250	8.3						2.7
21	250	7.7					2.0	2.6
22	270	6.7						2.6
23	280	6.6					1.4	2.5

Time: 150.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 28

Calcutta, India (22.6°N, 88.4°E) September 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(210)	8.2				---		3.1
01		(8.0)						
02		(7.8)						
03	(210)	(6.4)						(3.1)
04		(5.5)				---		
05		(6.0)				---		
06	(240)	(6.6)				1.8		(3.1)
07		(8.7)				2.4		
08		(10.0)				3.2		
09	270	10.5				3.4		2.8
10		11.2				3.9	(4.7)	
11		11.0				4.0		
12	---	---				---		---
13		(10.8)				---		
14		(11.0)				---		
15	---	(11.2)				---		(2.6)
16		10.2				3.8		
17		10.0				3.3	(5.0)	
18	240	10.0				3.0	(4.6)	2.8
19		(9.9)				2.0	(4.0)	
20		(9.8)				2.0		
21	(240)	(9.3)				---		(2.9)
22		8.9				1.7		
23		8.6				1.2		

Time: Local.

Table 29*

Hobart, Tasmania (42.8°S, 147.4°E) September 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	6.2					2.1	2.7
01	260	5.6					2.3	2.7
02	250	5.6					3.0	2.7
03	250	5.0					2.8	2.8
04	250	4.5					2.8	2.7
05	260	3.8					2.6	2.8
06	260	4.6			---	E	2.5	3.0
07	240	6.7			100	3.3	3.6	3.2
08	240	8.3	230	---	100	2.8	3.5	3.2
09	250	(9.0)	220	4.5	100	3.2	3.5	(3.1)
10	250	9.9	230	4.8	100	3.5	3.0	3.1
11	250	(10.1)	210	4.9	9.5	3.6		(3.0)
12	260	(10.5)	220	5.0	100	3.7		(3.0)
13	260	(10.8)	210	4.9	95	3.7		(3.0)
14	250	(10.6)	220	4.7	100	3.5	3.3	(2.9)
15	250	(10.3)	220	4.3	95	3.3	3.8	(2.9)
16	235	10.2	220	3.8	95	3.0	3.3	2.9
17	240	10.0			110	2.4	3.0	(3.0)
18	330	9.3			---	E	3.1	2.9
19	220	8.7					3.1	(2.9)
20	230	8.0					3.0	2.9
21	240	7.5					3.0	3.8
22	250	6.8					3.1	2.8
23	250	6.7					2.4	2.7

Time: 150.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.
*This table supersedes table 25, CRPL-F66.

Table 30

Calcutta, India (22.6°N, 88.4°E) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	9.6				1.0	(3.9)	3.0
01		(9.2)				1.0		
02		(8.8)				---		
03	(240)	(7.8)				---		(3.1)
04		(8.0)				---		
05		---				---		
06	(210)	(8.0)				2.0		(3.0)
07		(9.0)				2.8	(4.2)	
08		10.0				*	(4.7)	
09	270	10.5					(6.0)	2.8
10		11.0					(6.0)	
11		(11.0)					(7.1)	
12	---	---						---
13		---						
14		---						
15	---	---				*		---
16		(12.0)				4.2	(6.0)	
17		11.8				3.2	(5.5)	
18	270	12.5				2.8	(4.5)	2.8
19		(11.8)				2.0	(3.8)	
20		(10.8)				1.5	(4.1)	
21	270	10.2				1.6	(6.0)	3.0
22		(9.8)				1.5	(4.7)	
23		9.3				1.3	(4.5)	

Time: Local.
*No data received for hours 08 through 15.

Table 31

Calcutta, India (22.6°N, 88.4°E) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	8.1				1.1	(4.1)	3.0
01		(8.8)				---	(5.6)	
02		(8.4)				---		
03	(210)	(6.4)				1.0		(3.1)
04		(6.6)				1.0		
05		(7.1)				1.6	(5.0)	
06	(240)	(7.5)				2.0	(5.1)	(3.0)
07		9.2				3.0	(4.7)	
08		10.1				3.4	(5.6)	
09	270	10.8				3.6	5.0	2.7
10		11.0				3.9	(6.1)	
11		12.0				4.0	(8.0)	
12	---	(11.1)				---		(2.6)
13		(12.0)				---		
14		(12.4)				---		
15	(300)	(12.0)				---		(2.6)
16		12.5				3.8	(5.4)	
17		12.2				3.2	(4.7)	
18	270	12.4				2.5	(4.7)	2.7
19		(11.3)				2.1	(4.2)	
20		(10.9)				1.6	(4.8)	
21	270	10.2				1.4	(3.8)	2.8
22		9.8				1.2	(4.0)	
23		9.2				1.2	(3.6)	

Time: Local.

Table 32

Oslo, Norway (60.0°N, 11.0°E) April 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.8						
01	310	6.1						
02	310	5.5						
03	320	5.3						
04	305	5.2						
05	270	5.0			155	1.9		
06	250	6.4	---	---	125	2.3		
07	250	7.3	250	---	115	2.7		
08	250	8.0	235	---	110	2.9		
09	(240)	(8.9)	225	---	110	3.3		
10	(300)	(>9.0)	230	---	110	3.5		
11	---	D	220	---	110	3.6		
12	---	D	220	---	110	3.6		
13	---	D	220	---	110	3.6		
14	---	(>9.0)	220	---	110	3.5		
15	240	(>9.0)	230	---	110	3.3		
16	240	(>9.0)	240	---	110	3.1		
17	250	(>9.0)	250	---	110	2.8		
18	250	(>9.0)			120	2.4		
19	250	(>9.0)			140	2.0		
20	250	(8.2)						
21	260	(7.0)						
22	270	(7.3)						
23	300	(6.8)						

Time: 15.0°E.
Sweep: 1.6 Mc to 10.0 Mc in 5 minutes, automatic operation.

Table 33

Oslo, Norway (60.0°N, 11.0°E) March 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEe	(M3000)F2
00	295	(5.6)						
01	310	(5.0)						
02	310	(4.5)						
03	310	(4.5)						
04	300	4.1						
05	280	(3.9)						
06	260	4.8			220	---		
07	250	5.8			130	2.0		
08	245	7.5	---	---	120	2.4		
09	240	(8.0)	---	---	110	2.8		
10	230	(>9.0)	220	---	110	2.9		
11	225	(>9.0)	220	---	110	3.0		
12	230	(>9.0)	225	---	110	3.0		
13	225	(>9.0)	220	---	110	---		
14	225	(>9.0)	230	---	110	---		
15	230	(>9.0)	230	---	110	2.9		
16	240	(>9.0)	---	---	110	2.7		
17	240	(>9.0)			120	2.3		
18	240	(>9.0)			130	(2.0)		
19	240	(8.3)			---	---		
20	240	(6.6)						
21	240	(6.1)						
22	260	(6.5)						
23	300	(6.0)						

Time: 15.0°E.
Sweep: 1.6 Mc to 10.0 Mc in 5 minutes, automatic operation.

Table 34

Oslo, Norway (60.0°N, 11.0°E) February 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	2.9						
01	320	2.7						
02	310	3.0						
03	310	3.0						
04	300	3.1						
05	295	(2.7)						
06	275	3.1						
07	255	(4.2)						
08	240	5.9			160	1.9		
09	220	7.6	---	---	120	2.3	2.2	
10	225	(>9.0)	---	---	115	2.6		
11	230	(>9.0)	---	---	110	2.8		
12	225	(>9.0)	---	---	110	2.9		
13	225	(>9.0)	---	---	110	2.9		
14	225	(>9.0)	---	---	110	2.8		
15	230	(>9.0)	---	---	115	2.6		
16	225	(>9.0)			125	2.3	2.2	
17	220	---			140	1.9	1.7	
18	225	(6.8)						
19	225	---						
20	230	(4.6)						
21	250	(3.8)						
22	250	(4.9)						
23	280	4.4						

Time: 15.0°E.
Sweep: 1.6 Mc to 10.0 Mc in 5 minutes, automatic operation.

Table 35

Oslo, Norway (60.0°N, 11.0°E) January 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEe	(M3000)F2
00	360	2.4						
01	360	(2.3)						
02	360	(2.2)						
03.	380	2.1						
04	380	2.1						
05	340	2.3					2.4	
06	300	2.3						
07	310	2.4						
08	270	(3.2)						
09	235	8.2			---	---	2.4	
10	220	(8.0)			140	2.1	2.4	
11	220	(>9.0)			130	2.4	2.4	
12	220	(9.0)			110	2.4		
13	220	(>9.0)			120	2.4		
14	220	(>9.0)			130	2.4	2.4	
15	220	(>9.0)			145	2.1	2.4	
16	220	(8.9)			---		2.4	
17	215	(7.1)						
18	220	6.0						
19	230	4.2						
20	270	3.3						
21	295	2.9						
22	325	2.6						
23	360	2.4						

Time: 15.0°E.
Sweep: 1.6 Mc to 10.0 Mc in 5 minutes, automatic operation.

TABLE 36

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), February (Month), 1950

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D.

Calculated by: B.E.B., J.D., By. H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	310	290	260	270	240	270	240	230	230	220	280	200 H	230	230	220	240	220	210	220	210	220	270	270
2	300	280	270	270	290	300	[300] S	290	240	230	220	220 H	210	230	250	230	230	220	(250) A	220	230	(270) A	250	230
3	270	300	290	300	300	(270) S	[280] S	280	250	230	220	210	230	210	230	230	230	220	200	230	230	250	250	270
4	270	280	270	270	240	240	260	250	220	200 H	230	260	270	250	220	220	220	210	220	220	A	C	230	250
5	270	280	280	270	240	230	230	230	210	200	200	200	220	250	200 H	230	210	210	210	210	210	210	220	[260] C
6	290	290	300	300	300	290	250	230	210	210	210	200 H	200 H	200 H	210	210 H	220	210	210	220	220	230	260	300
7	320	300	300	270	270	240	250	230	220	200 H	210 H	200 H	210 H	200 H	220 H	200 H	220	210	220	200	210	220	280	300
8	A	A	300	300	270	230	210	230	210	[200] C	200	220	220	250	270	210	230	210	210	210	230	210	250	[260] C
9	260	270	270	270	280	250	220	210	210	200 H	200	200	270	(230) S	260	230 H	230 H	220	210	210	210	240	250	240
10	260	270	280	260	270	250	250	230	210	210	210	230	260	200 H	210	220	230	220	200	220	[220] C	230	260	300
11	[300] C	300	300	[280] C	C	240	[240] K	(230) H	210	210 H	200 H	200	220	250	210	210	220	220	210	[220] C	230	[230] C	230	230
12	250	260	270	280	C	C	270	[240] C	210	[210] C	[210] C	210 H	[220] C	[230] C	[210] C	C	C	220	210	210	230	[230] C	230	270
13	290	290	280	290	[280] C	260	240	230	220	(210) H	[230] C	250	260	270	230 H	250	230	220	200	220	250	250	240	290
14	290	290	290	270	250	250	260	220	210	210	230	210	220	(250) S	230	230	220 H	220	200	200	230	240	230	260
15	260	280	280	280	280	280	260	230	210	210	220	220 H	270	[240] H	210 H	220 H	230	220	210	200	220	220	230	250
16	270	(270) S	270	260	250	250	(250) S	230	210	210	220 H	210 H	200 H	210 H	200 H	220 H	230	220	200	220	220	230	240	260
17	280	270	280	270	270	240	230	230	220	220	220	210	200	220 H	200 H	210 H	230	220	210	220	220	230	[230] K	240
18	250	[260] C	[260] C	[260] C	270	270	[250] K	220	[220] C	210	210	[200] C	220	210 H	220	220 H	220	220	200	210	230	240	240	230
19	260	260	270	270	260	240	250	230	210	210	220	270	210	270	220	220	220	230	210	220	220	220	230	270
20	280	(300) S	290	270	280	270	270	230	230	220	[210] C	210	230 H	250 K	340 H K	300 K	300 K	[illegible]	230 K	400 K	(300) A K	400 K	320 K	400 K
21	330 K	340 K	330 K	280 K	310 K	290 K	300	270	250	220	260	210	270	260	260	210 H	230 H	220	260	230	240 K	260 K	300 K	(300) S K
22	S K	A K	(270) S K	(320) S K	(300) S K	(300) S K	[285] S K	250	210	210	270	250 H	200 H	210 H	[illegible]	230	220	210	220	200	240	250	260	260
23	240	260	270	280	270	270	220	250	230	220	200 H	210 H	230	220 H	[illegible]	230	230 K	260 K	290 K	300 K	[280] S K	280 K	[340] S K	(400) S K
24	360 K	300 K	390 K	(310) S K	S K	(320) S K	300 K	330	250	240	210	210 H	260	200 H	210	210 H	200 H	220	210	230	220	250	290	270
25	300	290	270	250	270	250	[260] S	240	230	210 H	200 H	300 H	300 H	230 H	[illegible]	230 H	240	220	210	210	220	230	250	240
26	250	270	270	270	250	260	270	230	210	210	210 H	200 H	200	250	220	230	230 H	230	220	220	220	240	240	240
27	250	270	270	260	250	250	250	220	220	230	270	200 H	200 H	260	[illegible]	230 H	230	220	210	220	230	240	250	270
28	260	270	280	290	300	310	300	250	240	270	280	240	220 H	270	[illegible]	230	220 H	220	210	210	230	220	270	270
29																								
30																								
31																								
Median	270	280	280	270	270	260	250	230	220	210	220	210	220	230	220	220	230	220	210	220	230	230	250	260
Count	26	26	28	28	26	27	28	28	28	28	28	28	28	28	29	27	27	28	28	28	27	27	28	28

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 37

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), February (Month), 1950

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W 75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D.

Calculated by: B.E.B., J.D., By. H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	4.4	4.4	4.6	4.7	(4.3)$^{S}_{S}$	(3.9)^{S}	3.7	4.7	8.0	9.8	10.3	11.7	11.5	11.4	11.2	11.4	11.3	(10.9)^{S}	(9.4)^{S}	(8.1)^{S}	(6.6)^{S}	4.4^{F}	(3.9)$^{J}_{S}$	3.8
2	(3.8)$^{J}_{S}$	(4.0)$^{J}_{S}$	(3.8)$^{J}_{S}$	3.3^{F}	2.8^{F}	2.5^{F}	2.5^{F}	3.6^{F}	6.6^{F}	7.2^{F}	8.3	9.1	10.0	(10.5)^{S}	10.7	10.4	(9.6)$^{S}_{P}$	(9.8)$^{S}_{P}$	9.2	(7.2)$^{S}_{S}$	6.6^{F}	(5.9)^{S}	5.0	(4.1)$^{J}_{S}$
3	3.5	3.5	3.3^{F}	3.1^{F}	3.1^{F}	3.0	2.7	(4.2)$^{S}_{F}$	(6.9)^{S}	9.2	9.4	10.0	11.0	11.6	(11.9)$^{J}_{S}$	(12.1)$^{J}_{S}$	(11.9)$^{J}_{S}$	11.1	(9.4)$^{J}_{S}$	7.8	(6.5)$^{S}_{P}$	5.5	5.0	(5.0)^{S}
4	5.0^{F}	4.4^{F}	4.4^{F}	4.3^{F}	(4.0)$^{J}_{F}$	3.5^{F}	3.2^{F}	4.2^{F}	7.0^{F}	8.0	10.0	10.4	11.6	12.0	11.3	11.5	11.4	(10.9)^{S}	(9.6)$^{J}_{S}$	(7.8)$^{J}_{F}$	7.6	(6.8)^{S}	4.9^{F}	4.2^{F}
5	4.3^{F}	4.8^{F}	4.8^{F}	5.0^{F}	(4.8)$^{S}_{F}$	4.4^{F}	4.2^{F}	4.8^{F}	6.8^{F}	8.6	9.0^{V}	10.0	10.7	10.5	10.0	10.3	(10.2)^{S}	(9.2)^{S}	(9.1)^{J}	7.9	7.1	5.3	(4.1)^{J}	(3.8)$^{J}_{S}$
6	(3.8)$^{S}_{S}$	(3.8)$^{F}_{S}$	3.7	3.8	3.6	3.4^{V}	3.7	(4.8)^{F}	7.2	8.0	9.5	10.3	10.9	10.8	10.8	10.4	10.5	9.6	(8.8)^{S}	6.9	6.1	(4.2)^{J}	3.5^{F}	(3.5)^{J}
7	3.6	3.7	(4.0)$^{J}_{V}$	(4.0)$^{S}_{V}$	3.8	3.7	3.2^{F}	4.2^{F}	7.0	7.9	9.3	10.0	10.5	(10.5)$^{J}_{S}$	(10.3)$^{S}_{S}$	(11.2)^{S}	11.2	9.3	9.0	6.9	5.5	5.0	3.7	(3.6)$^{J}_{S}$
8	(3.7)^{S}	(3.0)^{F}	(3.2)^{F}	(3.9)$^{S}_{F}$	(4.3)$^{S}_{F}$	4.7	(3.5)^{S}	(4.1)^{S}	(6.7)^{S}	[7.8]^{C}	9.0	(10.2)$^{J}_{P}$	(10.6)$^{S}_{P}$	10.7	11.2	(11.3)^{S}	(11.2)^{S}	(10.2)$^{J}_{S}$	(9.1)^{S}	[7.8]^{S}	(6.9)^{S}	(5.7)^{S}	[5.6]^{S}	[5.2]^{C}
9	(4.6)^{S}	(4.2)$^{S}_{P}$	(4.3)^{S}	(4.3)^{S}	(4.2)$^{J}_{S}$	(4.3)$^{S}_{S}$	(4.2)^{S}	(4.6)^{S}	(7.2)^{S}	8.0	(9.5)^{S}	8.5	10.3	(9.8)^{S}	10.1	10.7	10.8	(9.6)$^{J}_{S}$	9.0	(8.1)$^{S}_{J}$	(5.2)$^{S}_{P}$	4.8	(4.0)$^{S}_{J}$	(3.8)^{S}
10	(3.3)^{S}	(3.2)^{S}	3.0	3.2	3.1^{F}	3.2	3.2	4.7	7.4	8.0	8.5	9.1	10.8	10.5	(9.8)$^{S}_{P}$	(10.3)$^{S}_{P}$	(9.8)^{S}	(9.2)^{S}	7.5	(6.7)^{S}	[5.6]^{C}	4.2	3.3	(3.2)^{S}
11	[3.2]^{C}	(3.5)^{S}	3.5	[3.8]^{C}	C	3.5^{V}	[4.1]^{C}	4.7^{F}	6.8	7.6	9.0	10.0	10.0	(10.4)^{S}	9.8	9.3	9.3	(9.3)^{S}	8.0	[6.5]^{C}	(5.9)$^{F}_{S}$	[5.1]^{C}	(4.5)$^{S}_{F}$	(3.8)$^{S}_{F}$
12	(3.6)$^{S}_{F}$	(3.4)$^{S}_{F}$	(3.2)$^{S}_{F}$	(2.9)^{F}	C	C	(3.2)$^{S}_{F}$	[5.4]^{C}	7.3	[8.5]^{C}	[8.8]^{C}	9.9	[10.3]^{C}	[10.5]^{C}	[10.2]^{C}	C	C	(9.2)^{S}	(8.3)^{S}	5.7	(5.6)^{S}	[4.9]^{C}	(4.2)^{S}	(3.5)^{S}
13	3.4^{F}	3.7^{F}	(3.7)$^{J}_{V}$	3.8^{V}	[3.9]^{C}	(4.0)$^{S}_{F}$	3.8^{F}	5.0	7.2	(8.3)^{S}	9.6	9.9	(10.1)$^{J}_{S}$	10.3	9.9	9.7	10.1	(9.7)^{S}	(9.6)$^{S}_{P}$	(7.3)$^{S}_{P}$	(6.4)$^{J}_{P}$	(5.4)$^{J}_{P}$	(4.4)^{S}	(4.0)^{S}
14	(4.2)$^{J}_{S}$	4.4	4.5	4.2	4.2	3.8	3.8	5.3	7.9	8.9	9.3	9.2	10.0	9.9	10.1	(10.1)^{S}	(11.6)^{S}	(10.5)^{S}	(9.3)^{S}	(7.6)^{S}	(6.6)^{S}	(6.0)^{S}	(5.0)^{S}	(5.1)^{S}
15	4.9	4.8	4.7	4.6	4.3	4.2	(4.3)^{S}	(5.7)^{S}	(8.8)^{S}	(9.6)^{S}	(10.0)^{S}	10.4	11.1	[11.0]^{M}	11.0	(11.4)^{S}	(11.3)^{S}	(11.3)^{S}	(10.9)$^{J}_{S}$	8.7	(7.4)^{S}	6.3	5.4	4.5
16	4.5	(4.4)$^{S}_{J}$	4.5	4.6	4.4	4.1	(4.0)$^{S}_{J}$	(5.9)$^{S}_{J}$	8.7	10.0	10.7	10.7	10.8	11.3	10.6	11.0	10.9	(10.5)^{S}	(9.0)^{S}	8.1	(6.6)^{S}	5.7	5.2	4.8
17	4.7	4.7	4.7	4.5	4.5	4.5	4.2	6.2	9.1	(10.1)$^{S}_{J}$	11.5	11.8	11.2	11.6	11.1	11.5	11.4	11.0	(10.1)^{S}	(8.6)^{S}	7.6	(6.6)^{S}	[6.0]^{C}	(5.3)^{S}
18	5.0	[4.9]^{C}	[4.8]^{C}	4.8	4.7	4.4	[4.4]^{C}	5.7	[8.8]^{C}	10.0	11.1	[11.1]^{C}	(11.5)^{S}	11.4	11.5	(11.9)^{S}	(11.7)^{S}	(11.4)^{S}	(10.1)^{S}	(8.7)^{S}	(7.8)$^{S}_{P}$	(7.1)^{S}	6.5	(6.0)$^{S}_{P}$
19	(5.9)^{S}	5.6	(5.4)^{S}	5.3	5.1	4.9	4.8	6.6	8.5	9.8	11.3	11.9	11.5	12.1	(11.7)^{S}	(11.7)^{S}	(11.6)^{S}	(11.4)^{S}	(10.2)$^{S}_{J}$	(9.1)$^{S}_{P}$	8.0	(6.7)$^{S}_{P}$	(6.0)$^{S}_{J}$	5.7
20	5.5	(5.4)^{S}	5.5	5.4	5.3	(5.0)^{S}	(4.9)^{S}	(6.3)^{S}	(9.4)^{S}	[10.5]^{S}	[11.3]^{C}	11.3	11.7	12.3^{K}	10.7^{K}	(11.6)$^{S}_{K}$	(12.2)$^{S}_{J}$	(12.9)$^{F}_{K}$	(10.0)$^{S}_{F}$	[6.8]$^{S}_{F}$	^{K}(3.5)$^{S}_{F}$	(2.9)$^{F}_{K}$	(2.6)$^{F}_{K}$	(2.4)$^{F}_{K}$
21	^{K}(2.5)$^{S}_{F}$	2.7$^{F}_{K}$	3.0$^{F}_{K}$	3.3$^{F}_{K}$	3.3$^{F}_{K}$	(3.0)$^{F}_{K}$	(3.0)$^{F}_{S}$	5.3^{F}	(9.2)$^{S}_{F}$	10.7^{F}	10.7	(11.9)^{S}	12.3	12.6	(11.7)^{S}	(10.8)^{S}	(10.2)$^{S}_{J}$	(10.1)$^{S}_{P}$	(9.0)$^{S}_{J}$	(7.4)$^{S}_{F}$	^{K}(4.7)$^{S}_{F}$	^{K}(4.6)$^{S}_{F}$	^{K}(3.3)$^{S}_{F}$	^{K}(3.3)$^{S}_{F}$
22	(2.7)$^{F}_{K}$	^{K}(2.4)$^{S}_{F}$	^{K}(2.1)$^{S}_{F}$	2.1$^{F}_{K}$	2.3$^{F}_{K}$	2.3$^{F}_{K}$	2.5$^{F}_{K}$	5.0^{F}	8.4	(9.1)$^{S}_{F}$	10.4	11.5	11.6	11.9	12.4	12.7	(12.1)$^{S}_{J}$	(11.2)^{S}	(9.8)$^{S}_{J}$	(8.2)^{S}	(8.0)^{S}	(6.5)$^{S}_{J}$	(6.6)^{S}	(6.2)^{S}
23	5.9^{F}	(5.3)$^{S}_{F}$	(5.3)$^{S}_{F}$	5.0^{F}	5.0^{F}	4.7^{F}	(4.2)$^{S}_{F}$	4.8^{F}	6.9^{F}	7.8^{F}	(8.6)$^{J}_{F}$	9.6^{F}	11.3	11.8	11.6	(11.6)$^{S}_{P}$	11.7^{K}	(13.4)$^{S}_{K}$	^{K}(9.4)$^{S}_{F}$	^{K}(2.5)$^{S}_{F}$	^{K}(2.3)$^{S}_{F}$	^{K}(2.7)$^{S}_{F}$	(2.1)$^{F}_{K}$	(1.9)$^{F}_{K}$
24	^{K}(2.0)$^{S}_{F}$	(2.1)$^{F}_{K}$	[2.0]$^{F}_{K}$	(2.3)$^{F}_{K}$	F^{K}	F$^{S}_{K}$	F^{K}	(5.2)$^{S}_{F}$	9.3^{F}	10.8^{F}	(12.0)^{S}	(12.5)^{S}	(12.3)^{S}	12.5	(11.5)^{S}	11.4	(11.1)^{S}	(10.4)^{S}	(9.7)$^{S}_{P}$	(8.2)$^{J}_{S}$	(6.8)$^{J}_{S}$	(5.1)$^{S}_{P}$	(4.3)$^{S}_{F}$	(4.7)^{S}
25	(4.3)$^{J}_{F}$	4.3^{F}	(4.3)$^{S}_{F}$	(4.0)$^{S}_{F}$	(3.1)$^{J}_{F}$	2.5^{F}	(2.5)^{F}	(5.2)^{J}	8.0	9.4	10.0	11.1	11.0	11.4	11.5	(11.6)$^{J}_{S}$	(11.5)^{S}	11.0	(10.1)^{S}	(8.5)^{S}	(7.5)^{S}	(6.7)^{S}	(6.2)^{S}	(5.8)^{S}
26	(5.3)^{S}	5.1	4.9	4.7	4.4	(4.2)^{S}	(3.9)^{S}	(6.0)^{S}	8.0	(9.8)$^{V}_{S}$	10.5	10.4	10.4	11.3	(11.3)^{S}	11.2	11.4	(10.6)^{S}	(9.7)^{S}	(8.1)^{S}	(7.2)^{S}	(6.8)^{S}	6.4	(5.7)^{S}
27	5.3^{F}	5.0^{F}	4.7^{F}	(4.5)$^{F}_{F}$	4.3^{F}	3.9^{F}	3.5^{F}	(6.0)$^{J}_{S}$	7.8	9.1	10.6	10.2^{F}	10.9	11.1	10.7	11.3	11.2	(10.4)^{S}	(9.7)$^{J}_{S}$	(8.1)^{S}	[7.5]^{C}	6.9	(6.3)$^{J}_{S}$	(6.3)^{S}
28	(5.9)^{S}	(5.6)^{S}	(5.4)$^{S}_{F}$	(5.0)$^{S}_{S}$	4.5^{F}	(4.0)$^{S}_{F}$	(4.2)^{S}	5.3^{F}	6.5	7.1	7.9	(8.5)^{V}	10.0	10.6	(10.9)^{S}	(10.6)^{S}	(10.1)$^{J}_{S}$	(9.9)^{S}	(8.8)^{S}	(8.0)^{S}	(7.2)^{S}	(5.9)^{S}	(5.4)^{S}	5.1
29																								
30																								
31																								
Median	(4.3)	4.4	4.4	4.2	4.3	4.0	3.8	5.1	7.6	8.8	9.8	10.2	10.9	11.2	11.0	11.3	(11.2)	(10.4)	(9.4)	(7.8)	(6.6)	(5.6)	(5.0)	(4.4)
Count	28	28	28	28	25	26	27	28	28	28	28	28	28	28	28	27	27	28	28	28	28	28	28	28

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

U.S. GOVERNMENT PRINTING OFFICE 1948 O - 762519

TABLE 38

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), February (Month), 1950

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W — 75°W Mean Time

Scaled by: B.E.B., J.D.

Calculated by: B.E.B., J.D., By H.

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	4.3	4.6	4.8	4.6	4.1	3.8	3.8	(6.5)S	8.8	9.9	(10.8)P	11.0	11.5	11.4	11.2	11.2	11.0	(9.9)J S	(8.0)S	(7.8)J S	5.4	(4.0)J S	(3.9)P J S	3.7
2	(3.9)J S	(4.1)S	3.6	2.9F	2.6F	2.5F	2.4F	5.9F	7.7V	8.2	9.0	9.2	(10.0)S	10.6	10.9	(10.2)S	(9.8)J S	(9.6)P J	8.9	(7.4)J S	6.4	5.5	4.5	(3.8)J S
3	3.6	3.4	3.3F	3.1F	3.1	2.8	2.9	5.7	7.8	9.3	9.5	10.8	11.2	(12.1)S	(12.1)J S	(11.9)J S	(11.6)J S	(10.8)J S	8.4	(7.4)J S	6.0	5.3	5.0	(4.8)J F
4	4.5F	4.3F	4.3F	(4.0)J F	3.7F	3.4F	3.2F	5.8F	7.3F	9.1	9.5	10.3	12.0	(11.9)J S	11.4	(11.7)J S	11.1	(10.2)J S	(8.1)J S	(7.8)S	(6.9)S	(5.7)S	(4.7)S	(4.2)J F
5	(4.6)F	(4.7)F	(4.9)F	5.0F	4.0F	4.3F	(3.8)F	(6.3)F	7.9	(9.2)J	9.3	10.7	10.3	10.2	10.0	10.6	(9.8)S	(9.3)S	8.4	7.4	6.1	4.5	(3.3)J S	(3.7)J S
6	(3.8)S	3.8	[3.8]C	3.7	3.6	3.7	(3.8)S	6.6	(8.0)S	8.9	9.7	10.7	10.7	11.0	10.8	10.0	(10.3)J S	(9.5)S	(7.2)J	6.5	5.0	3.8	(3.5)S	3.6
7	3.7	(4.0)J S	4.1	3.9	3.7	3.3F	3.1F	5.6F	(7.0)J S	8.7	9.5	(10.4)S	(10.2)S	(10.7)S	(10.7)S	11.1	(10.1)P	(9.4)S	8.3	[6.2]C	5.6	4.2	(3.7)J S	3.7
8	[3.4]S	[3.1]C	3.4F	(4.0)S F	4.7F	(4.3)S	3.0	[5.4]C	C	7.9	(10.5)S	(10.2)S	(11.2)S	10.9	11.1	11.2	(10.7)J S	(10.0)S	(8.4)S	(7.1)S	6.5	(5.6)J S	(5.5)S	(4.9)S
9	(4.9)S P	(4.3)S	(4.2)S P	(4.2)S	(4.3)S P	(4.3)S	(3.6)S J	(5.8)S	(7.5)S	8.6	(8.8)S	9.9	(9.9)S	(10.2)J S	10.5	10.7	(10.1)J S	(9.6)S J	8.8	(6.7)S P	(4.9)S P	4.2	(3.9)S	(3.5)S
10	(3.2)S	2.9	3.1V	3.1F	(3.2)S	3.2	3.3	6.4	7.7	(9.1)S P	9.2	10.5	10.6	9.7	(10.2)S	10.3	9.0	(8.9)S	(7.0)S	6.3	(4.8)S	3.5	(3.2)S	3.2
11	3.3	(3.5)S	3.7	3.9	[3.6]C	C	3.7F	5.5	7.0	8.4	9.6	(10.1)S	11.0	9.8	9.2	(9.2)S	9.0	8.6	(7.0)S	(6.1)S	(5.5)S F	4.8F	(3.9)S F	(3.9)S F
12	3.6F	(3.4)F	(3.0)F	2.6F	2.8F	(3.2)S F	C	C	7.9	9.1	9.2H	10.0	10.6	[12.4]C	9.7	[9.8]C	(9.8)S	(8.8)S	(6.9)S	(5.7)S	(5.3)S F	(4.5)S	(4.0)S	(3.6)S
13	(3.5)S F	3.6V	3.8V	(3.9)S V	(3.9)S F	4.0F	3.8	6.6	7.6	8.6	9.7	10.0	10.0	10.2	9.6	10.0	(9.8)J S	[9.6]C	[8.4]C	(6.7)S J	(6.5)J S	(4.9)J S	(4.1)J S	4.2
14	4.4	(4.4)J	4.4	4.2	[4.0]C	3.8	(4.0)S J	(6.7)J F	8.6	8.8	9.4	9.7	10.1	(9.9)S	10.0	(10.5)S	(10.7)S	(10.1)S P	(8.8)S	6.9	(6.3)S	(5.9)S	(5.1)S	(4.9)S
15	4.7	4.7	4.7	(4.5)S	4.2	(4.2)S	(4.4)S	(7.3)S	(9.7)S	9.9	10.7	10.4	11.3	[11.3]M	11.3	10.9	(11.4)S	11.0	(9.9)J S	8.1	6.8	5.5	(4.9)S	(4.4)S
16	4.5	4.4	(4.4)J S	4.5F	4.4	(4.0)J S	(4.0)J S	7.7	(9.5)S	10.7	10.7	10.9	11.0	10.6	10.9	11.3	10.8	9.9	(8.3)S	(7.1)S	6.2	5.3	5.0	4.7
17	4.7	4.6	4.7	4.6	4.6	4.3	4.5	(7.3)S	9.2	10.4	10.6	(11.2)P	(10.6)J	11.3	11.0	(11.4)S	(11.1)S	(10.2)S	(9.0)S P	(7.9)S	(7.1)S	(6.2)S	5.6	5.1
18	4.9	4.9	4.9	4.7	(4.4)S	(4.3)S	4.7	(7.7)S	9.4	10.2	(9.9)J Z	(11.4)S	(11.6)S	11.5	(11.8)S	(11.9)S	(11.5)S	(10.9)S	(9.4)S	(8.1)S	(7.3)S	(6.8)S	6.4	(6.1)S
19	(5.7)S	(5.4)S J	5.4	5.2	5.0	4.8	5.2	8.0	9.5	10.2	11.2	11.3	(12.2)S J	(11.7)S	(11.7)S	(11.6)S	(11.4)S	(10.8)S	(9.5)S P	(8.2)S	7.4	6.4	(5.8)S	(5.7)S
20	5.6	5.5	(5.5)S J	(5.3)S	4.8	(4.9)S	(5.4)S	(7.8)S	(10.0)S J	11.2	11.5	11.7	11.9	10.6	K K (10.0)S J	(11.8)S K	11.0 K	(12.1)S F	[8.4]F K	(8.0)F K	(8.1)F K	(7.9)F K	(7.6)F K	(7.5)F K
21	[2.6]F K	K (3.0)S F	(1.9)F K	(3.3)F K	(3.3)F K	(3.1)F K	3.7F	(7.1)S F	(9.0)S F	(11.1)S	11.4	(12.3)S	12.3	12.2	11.3	(10.4)S	[10.2]C	(9.5)S	(7.8)J S	(6.1)S F	K (4.9)S F	K (3.7)S F	3.3F K	[3.0]F K
22	K (2.7)S F	2.3F K	2.0F K	2.3F K	2.3F K	2.3F K	3.3K	(6.2)S F	(9.0)S	9.4F	11.4	(11.6)F	11.8	11.9	12.5	12.6	(12.0)S J	(10.7)S	(9.6)S J	(7.6)S F	(7.3)S	(6.7)S	(6.3)S F	(6.1)S F
23	5.4F	(5.4)S F	(5.2)S F	5.0F	4.7F	(4.9)S F	4.2F	(6.0)S M	7.1F	7.8F	9.6F	10.3	11.6	11.5	11.4	(12.1)S	12.9K	K (11.1)S F	K (7.4)S F	K (2.5)S F	[2.5]F K	K (2.4)F K	[2.1]M K	[2.0]M K
24	(2.1)F K	2.1F K	(2.0)F K	[1.8]F K	(1.7)F K	[2.4]F K	3.2K	7.4F	(9.2)S F	(10.5)J S	(12.1)S	12.5	(11.8)S	(11.9)S	11.3	11.2	(10.6)J S	(10.2)J S	(8.8)S P	(7.9)J S	(5.4)S F	(4.7)S	(5.0)S	(4.4)S F
25	(4.3)S F	(4.3)S F	[4.2]S F	(3.7)S F	(2.9)J F	(2.5)S F	3.7F	6.9	8.8	9.8	10.5	11.1	11.0	11.4	(11.7)S	11.4	(11.4)S	(10.5)S	(9.3)S P	(7.9)J S	(7.1)S	(6.2)J S	(6.1)S	(5.6)S
26	5.3	5.0	4.8	4.6	(4.2)J S	(4.1)J S	(4.6)S	7.8	(8.7)S	(10.0)S	10.8	10.8	11.3	11.1	11.1	(11.0)S	11.2	(10.0)S	(8.6)S	(7.9)S	(7.2)S	(6.6)S	(6.1)S P	5.5F
27	5.1F	4.9F	4.9F	(4.5)S F	(4.0)J F	(3.7)S F	(4.1)J F	6.9	8.7	9.5	9.7F	(10.0)H	10.8	10.7	11.1	11.1	10.8	(10.0)S J	(8.9)S	C	C	[6.6]C	(6.3)J S	(6.2)S
28	(6.9)S	(5.5)S F	(5.2)S F	4.8F	F (4.2)J S	(4.3)S	4.5F	6.0	6.7	(7.4)S	[8.2]C	[9.2]C	10.0	(10.8)S	(10.7)S	(10.2)S	(10.2)S	(9.2)S	(8.5)S	(7.4)S	(6.5)S	5.6	(5.7)S	(5.5)S
29																								
30																								
31																								
Median	4.4	4.3	4.2	4.1	4.0	(3.8)	3.8	6.6	8.6	9.2	9.7	10.6	11.0	11.0	11.0	11.1	(10.8)	(10.0)	(8.4)	(7.4)	(6.2)	(5.3)	(4.8)	(4.3)
Count	28	28	28	28	28	27	27	27	27	28	28	28	28	28	28	28	28	28	28	27	27	28	28	28

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 39

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

IONOSPHERIC DATA

h'F1 (Characteristic), Km (Unit), February (Month), 1950

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D.

Calculated by: B.E.B., J.D., By.H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1									Q	Q	Q	220	Q	Q	Q	Q	Q	Q								
2									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q								
3									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q								
4									Q	Q	Q	210	210	200	Q	Q	Q	Q								
5									Q	Q	Q	Q	Q	220	Q	Q	Q	Q								
6									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q								
7									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q								
8									Q	C	Q	Q	Q	Q	230	Q	Q	Q								
9									Q	Q	Q	Q	220	Q	230	Q	Q	Q								
10									Q	Q	Q	Q	220	Q	Q	Q	Q	Q								
11									Q	Q	Q	Q	Q	210	Q	Q	Q	Q								
12									Q	C	C	Q	C	C	C	C	C	Q								
13									Q	Q	Q	220	220	210	Q	B	B	Q								
14									Q	Q	Q	Q	Q	B	Q	Q	Q	Q								
15									Q	Q	Q	Q	200	M	Q	Q	Q	Q								
16									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q								
17									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q								
18									C	Q	Q	C	Q	Q	Q	Q	Q	Q								
19									Q	Q	Q	210	Q	210	Q	Q	Q	Q								
20									Q	Q	C	Q	Q	230 K	Q K	260 K	260 K	Q K								
21									Q	Q	210	Q	210	220	Q	Q	Q	Q								
22									Q	Q	200	Q	Q	Q	Q	Q	Q	Q								
23									Q	Q	Q	Q	Q	Q	Q	Q	Q K	Q K								
24									Q	220	Q	Q	210	Q	Q	Q	Q	Q								
25									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q								
26									Q	Q	Q	Q	200	Q	Q	Q	Q	Q								
27									Q	Q	210	Q	Q	220	210	Q	Q	Q								
28									Q	220	200	Q	Q	210	Q	Q	Q	Q								
29																										
30																										
31																										
Median										—	—	—	210	210	—	—	—									
Count										2	4	4	8	9	3	1	1									

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 40

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

foF1 (Characteristic), Mc (Unit), February (Month), 1950

IONOSPHERIC DATA

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat. 38.7°N, Long 77.1°W

75°W Mean Time

Scaled by: B.E.B., J.D.

Calculated by: B.E.B., J.D., By. H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									Q	Q	Q	L	Q	Q	Q	Q	Q	Q						
2									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
3									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
4									Q	Q	Q	L	L	L	Q	Q	Q	Q						
5									Q	Q	Q	Q	Q	L	Q	Q	Q	Q						
6									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
7									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
8									Q	C	Q	Q	Q	Q	L	Q	Q	Q						
9									Q	Q	Q	Q	L	Q	L	Q	Q	Q						
10									Q	Q	Q	Q	L	Q	Q	Q	Q	Q						
11									Q	Q	Q	Q	Q	L	Q	Q	Q	Q						
12									Q	C	C	Q	C	C	C	C	C	Q						
13									Q	Q	Q	L	L	L	Q	B	B	Q						
14									Q	Q	Q	Q	Q	B	Q	Q	Q	Q						
15									Q	Q	Q	Q	L	M	Q	Q	Q	Q						
16									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
17									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
18									C	Q	Q	C	Q	Q	Q	Q	Q	Q						
19									Q	Q	Q	L	Q	L	Q	Q	Q	Q						
20									Q	Q	C	Q	Q	L K	Q K	L K	L K	Q K						
21									Q	Q	L	Q	L	L	Q	Q	Q	Q						
22									Q	Q	L	Q	Q	Q	Q	Q	Q	Q						
23									Q	Q	Q	Q	Q	Q	Q	Q	Q K	Q K						
24									Q	L	Q	Q	L	Q	Q	Q	Q	Q						
25									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
26									Q	Q	Q	Q	L	Q	Q	Q	Q	Q						
27									Q	Q	L	Q	Q	L	L	Q	Q	Q						
28									Q	L	L	Q	Q	L	Q	Q	Q	Q						
29																								
30																								
31																								
Median										—	—	—	—	—	—	—	—							
Count																								

Sweep 1.0 Mc to 25.0 Mc in 05 min

Manual ☐ Automatic ☒

TABLE 41

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

IONOSPHERIC DATA

h'E (Characteristic), Km (Unit), February (Month), 1950

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Scaled by: B.E.B., J.D.

Calculated by: B.E.B., J.D., By H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B	(110)^{B}	110	110	(100)^{B}	(110)^{B}	[110]^{B}	(110)^{B}	110	S						
2									110	110	100	100	100	(110)^{B}	120	[120]^{B}	110	(110)^{A}						
3									B	B	B	(110)^{B}	120	(100)^{S}	[100]^{B}	110	[110]^{B}	110						
4									130	120	100	110	100	100	110	100	100	120						
5									B	B	100	100	110	[100]^{A}	100	100	110	130						
6									120	(100)^{A}	(100)^{A}	(100)^{A}	100	100	100	100	100	130						
7									110	110	(100)^{A}	(100)^{A}	(100)^{A}	100	100	100	110	140						
8									(110)^{B}	[100]^{C}	(100)^{A}	(100)^{A}	(100)^{A}	(100)^{A}	110	110	[120]^{B}	120						
9									120	(100)^{A}	(100)^{A}	(100)^{A}	(110)^{B}	[110]^{S}	110	110	110	120						
10									110	100	100	100	100	100	110	100	(100)^{A}	120						
11									(100)^{A}	(100)^{A}	100	100	100	100	100	100	110	(110)^{A}						
12									120	C	[100]^{C}	(100)^{A}	[100]^{C}	[100]^{C}	[100]^{C}	C	C	110						
13									110	(100)^{A}	(100)^{A}	[100]^{C}	(100)^{A}	(100)^{A}	100	B	B	B						
14									100	100	100	100	100	[100]^{B}	100	100	100	110						
15									100	(100)^{A}	(100)^{A}	(100)^{A}	(100)^{A}	[100]^{M}	100	100	100	110						
16									(100)^{A}	(100)^{A}	(100)^{A}	(100)^{A}	(100)^{A}	100	100	100	100	110						
17									(100)^{A}	(100)^{A}	(100)^{A}	(100)^{A}	(110)^{B}	110	100	100	100	100	S					
18									[110]^{C}	(100)^{A}	(100)^{A}	[100]^{C}	100	100	100	100	100	110						
19									100	100	100	100	100	100	100	100	100	110						
20									100^{H}	100	[100]^{C}	100	100	100^{K}	100^{K}	100^{K}	100^{K}	130^{K}						
21									B	100	100	100	100	100	100	100	110	110						
22									(100)^{A}	(100)^{A}	(100)^{A}	(100)^{A}	[100]^{B}	(100)^{B}	(100)^{B}	100	100	100						
23									(100)^{A}	(100)^{A}	(100)^{A}	(100)^{A}	100	100	100	(100)^{B}	110^{K}	B^{K}						
24									B	(100)^{A}	(100)^{A}	(100)^{A}	100	[100]^{B}	100	100	110	120						
25									110	110	100	100^{H}	100	100	100	100	110	100						
26								S	100^{H}	100	100^{H}	100	100	100	100	[100]^{B}	110	110^{H}						
27									B	B	100	B	S	B	(110)^{B}	110	110	120						
28								S	(120)^{S}	B	B	100	B	B	(110)^{B}	(110)^{S}	120	B						
29																								
30																								
31																								
Median								–	110	(100)	(100)	(100)	100	100	100	100	110	110						
Count									22	23	26	27	21	26	28	26	26	24						

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 42

Central Radio Propogation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

foE (Characteristic), Mc (Unit), February (Month), 1950

IONOSPHERIC DATA

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Scaled by: B.E.B., J.D.

Calculated by: B.E.B., J.D., By. H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B	2.7	(3.1)^{P}	3.3	(3.4)^{P}	3.6	3.2	2.9	2.6	(1.9)^{S}						
2									2.1	2.7	3.0	3.3	(3.3)^{P}	(3.2)^{B}	3.2	[2.9]^{B}	2.6	1.9						
3									B	B	B	(3.2)^{B}	3.3	(3.4)^{P}	3.2	2.8	[2.4]^{B}	1.9						
4									(2.0)^{S}	2.7	3.0	3.2	3.3	3.3	3.1	2.9	(2.5)^{S}	1.8						
5									(2.1)^{B}	[2.4]^{B}	2.8	3.2	(3.3)^{P}	[3.2]^{A}	3.2	(3.0)^{P}	2.4	1.8						
6									2.1	[2.5]^{A}	2.9	3.2	3.2	(3.2)^{P}	3.1	3.0	2.5	1.9						
7									2.2	2.6	3.0	3.1	3.2	3.2	(3.0)^{S}	2.8	2.5	2.0						
8									B	C	3.0	3.1	3.2	3.2	3.1	(2.7)^{S}	(2.5)^{S}	(2.0)^{S}						
9									2.0	[2.4]^{S}	2.8	3.1	3.2	(3.2)^{S}	3.1	2.8	2.5	2.0						
10									2.2	2.3	2.8	3.0	3.2	3.1	2.9	2.9	2.5	1.9						
11									A	2.6	2.9	3.2	3.3	3.2	3.2	3.1	2.6	2.0						
12									3.2	C	[3.2]^{C}	3.4	[3.4]^{C}	[3.4]^{C}	[3.2]^{C}	C	C	(2.0)^{S}						
13									2.3	2.8	3.2	3.4	3.4	3.5^{K}	3.3^{K}	B^{K}	B^{K}	B^{K}						
14									2.4	2.9	3.0	(3.2)^{F}	3.4	[3.5]^{B}	3.6	3.2	2.7	2.2						
15									2.4	(2.8)^{A}	3.3	3.4	A	M	3.5	3.1	2.8	2.2						
16									2.5	[2.8]^{A}	3.2	3.4	3.4	(3.5)^{P}	3.4	3.2	2.8	2.2						
17									2.5	2.9	3.1	3.3	3.4	3.7	3.6	3.3	3.1	2.2	S					
18									[2.3]^{C}	[2.8]^{A}	(3.3)^{A}	[3.4]^{C}	3.5	3.6	3.6	3.2	2.9	2.2						
19									2.4	3.0	3.4	3.6	3.7	3.7	3.5	3.3	2.8	2.3						
20									2.5	(3.1)^{F}	[3.4]^{C}	(3.5)^{S}	3.6	3.6	3.5	3.3	2.8	2.3						
21									B	2.8	(2.9)^{P}	3.1	(3.2)^{P}	(3.2)^{P}	3.3	3.2	2.8	2.4						
22									2.5	3.0	3.3	3.5	3.6	3.5	(3.3)^{P}	3.3	2.9	2.3						
23									2.5	2.9	3.2	3.4	3.5	(3.3)^{P}	3.3	3.2	2.9^{K}	(2.3)$^{B K}$						
24									B	2.9	3.2	3.4	3.6	3.5	3.4	3.1	2.8	2.2						
25									2.5^{H}	3.1	3.3	3.4	3.4	3.4	3.3	3.2	2.8	2.4						
26								1.7	2.4	3.0	3.3	3.4	(3.6)^{S}	3.6	3.4	3.2	2.9	2.4						
27									B	2.9	3.2	B	S	3.5	3.5	3.4	2.9	2.4						
28								1.7	2.5	B	B	3.2	(3.4)^{B}	3.4	3.5	3.1	2.8	(2.3)^{B}						
29																								
30																								
31																								
Medion								—	2.4	2.8	3.2	3.3	3.4	3.4	3.3	3.1	2.8	2.2						
Count								2	21	24	26	27	26	27	28	26	26	27						

Sweep 1.0 Mc to 25.0 Mc In 0.5 min

Manual ☐ Automatic ☒

TABLE 43

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

IONOSPHERIC DATA

Es (Characteristic), Mc,Km (Unit), February (Month), 1950

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W — 75°W Mean Time

National Bureau of Standards (Institution)

Scaled by B.E.B., J.D.

Calculated by B.E.B., J.D., By H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
2	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	3.1/110	7.4/110	G	G	4.2/100	G	G
3	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	7.0/100	C	G	G
5	G	G	G	G	G	G	3.6Y/100	G	G	G	G	G	G	4.9/100	G	G	G	G	G	G	G	G	G	G
6	2.4/100	G	G	G	G	G	G	G	G	2.3/100	2.5/100	2.3/100	G	G	G	G	G	G	G	G	G	G	G	G
7	G	G	G	G	G	G	G	G	G	G	2.3/100	2.3/100	2.1/100	G	G	G	G	G	G	G	G	G	3.6Y/100	4.1/100
8	4.1Y/100	3.6Y/100	G	G	G	G	G	G	G	C	3.5/100	4.5/100	2.3/100	2.6/100	G	G	G	G	G	G	G	G	G	C
9	G	G	G	G	G	G	G	G	G	2.3/100	2.8Y/100	2.4/100	G	G	G	G	G	G	G	G	G	G	G	G
10	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	2.4/100	G	G	G	C	G	G	G
11	C	G	2.6Y/100	C	C	G	C	5.4/100	7.4/100	4.0/100	G	G	G	G	G	G	G	1.7/110	G	C	G	C	G	G
12	G	G	G	G	C	C	G	C	G	C	C	2.6/100	C	C	C	C	C	G	G	G	G	C	G	G
13	G	G	G	G	C	G	G	G	G	2.5/100	2.6/100	C	2.5/100	2.5Y/100	G	G	G	G	G	G	G	G	G	G
14	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
15	G	G	G	G	G	G	G	G	G	2.7/100	2.8/100	2.7/100	3.5/100	M	G	G	G	G	G	G	2.2/100	G	G	G
16	G	G	G	2.5Y/100	G	G	G	G	2.2/100	3.1/100	3.0/100	2.9/100	2.8/100	G	G	G	G	G	G	G	G	G	G	G
17	G	G	G	G	G	G	G	G	2.3/100	2.6/100	2.6/100	2.4Y/100	G	G	G	G	G	G	G	G	G	G	C	G
18	G	C	C	C	G	G	C	G	C	2.9/100	3.5/100	C	G	G	G	G	G	G	G	G	G	G	G	G
19	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
20	G	G	G	G	G	G	G	G	G	G	C	G	G	G	G	G	G	G	2.3/120	(2.9)5/130	3.6Y/120	1.7/130	G	G
21	G	G	5.5Y/110	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
22	3.3/120	6.3/110	3.0Y/130	G	G	G	G	G	2.2/100	2.4/100	2.5/100	3.3/100	G	G	G	G	G	G	G	G	G	G	G	G
23	G	G	G	G	G	G	G	G	1.8/100	2.8Y/100	2.3/100	2.3/100	G	G	G	G	G	G	G	G	G	G	G	G
24	G	G	G	G	G	G	G	G	G	2.0/100	2.5/100	2.5/100	G	G	G	G	G	G	G	G	G	G	G	G
25	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
29																								
30																								
31																								
Median	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Count	27	27	27	26	25	27	26	27	27	26	26	26	27	26	27	27	27	28	28	27	27	25	27	27

** MEDIAN fEs LESS THAN MEDIAN foE, OR LESS THAN LOWER FREQUENCY LIMIT OF RECORDER.

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 44

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

IONOSPHERIC DATA

(M1500)F2 (Characteristic), ____ (Unit), February (Month), 1950

Observed at Washington, D.C.

Lat. 38.7°N, Long. 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D.

Calculated by: B.E.B., J.D., By H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.8	1.7	1.8	1.9	(2.0)$^{J}_{S}$	(2.0)^{S}	1.9	2.1	2.2	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.0	(2.2)^{S}	(2.1)^{S}	(2.1)^{S}	(2.2)^{S}	2.0^{F}	(1.9)$^{J}_{S}$	1.8
2	(1.8)$^{J}_{S}$	(2.0)$^{J}_{S}$	(2.0)$^{J}_{S}$	1.8^{F}	1.9^{F}	1.8^{F}	1.8^{F}	2.0^{F}	2.3^{F}	2.2^{F}	2.1	2.0	1.8	(1.9)^{S}	1.9	2.0	(2.1)$^{S}_{P}$	(2.0)$^{S}_{P}$	2.1	(1.9)$^{J}_{S}$	2.0^{F}	(2.0)^{S}	2.0	(2.0)$^{J}_{S}$
3	1.8	1.9	1.9^{F}	1.8^{F}	1.9^{F}	1.7	1.8	(1.8)$^{S}_{P}$	(2.1)^{S}	2.2	2.1	2.0	2.0	1.9	(1.9)$^{J}_{S}$	(2.0)$^{J}_{S}$	(2.1)$^{S}_{J}$	2.1	(2.1)$^{S}_{J}$	2.1	(2.0)$^{S}_{P}$	1.9	2.0	(1.8)^{S}
4	1.9^{F}	1.8^{F}	1.9^{F}	1.9^{F}	(2.0)$^{J}_{F}$	2.0^{F}	2.1^{F}	2.1^{F}	2.5^{F}	2.2	2.2	2.2	2.0	2.0	2.0	2.0	2.0	(2.1)^{S}	(2.1)$^{S}_{J}$	(2.0)$^{F}_{J}$	2.1	(2.2)^{S}	2.1^{F}	1.9^{F}
5	1.9^{F}	1.7^{F}	1.8^{F}	2.0^{F}	(2.1)$^{S}_{F}$	2.1^{F}	2.1^{F}	2.2^{F}	2.4^{F}	2.3	2.2^{V}	2.3	2.2	2.1	2.1	2.1	(2.2)^{S}	(2.2)^{S}	(2.1)^{J}	2.2	2.2	2.2	(2.0)^{J}	(1.9)$^{J}_{S}$
6	(1.9)$^{J}_{S}$	(1.8)$^{F}_{S}$	1.9	1.8	1.8	1.9^{V}	1.9	(2.2)^{F}	2.4	2.5	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.3	(2.2)^{S}	2.1	2.2	(2.1)^{J}	1.8	(1.8)^{J}
7	1.8	1.7	(1.9)$^{J}_{S}$	(2.0)$^{S}_{V}$	1.9	2.1	2.1^{F}	2.1^{F}	2.5	2.4	2.2	2.1	2.1	(2.1)$^{J}_{S}$	(2.1)$^{J}_{S}$	(2.1)^{S}	2.1	2.1	2.1	2.2	2.0	2.0	1.9	(1.9)$^{J}_{S}$
8	(1.9)^{S}	(1.9)^{F}	(1.9)^{F}	(1.8)$^{S}_{F}$	(2.0)$^{S}_{F}$	2.2	(2.2)^{S}	(2.1)^{S}	(2.4)^{S}	C	2.1	(2.1)$^{S}_{P}$	(2.1)$^{S}_{P}$	2.1	2.1	(2.2)^{S}	(2.0)^{S}	(2.2)$^{J}_{S}$	(2.2)^{S}	S	(2.1)^{S}	(2.0)^{S}	S	C
9	(1.9)^{S}	(1.9)$^{S}_{P}$	(1.9)^{S}	(1.9)^{S}	(1.9)$^{J}_{S}$	(2.1)$^{J}_{S}$	(2.2)^{S}	(2.2)^{S}	(2.4)^{S}	2.3	(2.2)^{S}	2.2	2.2	(2.0)^{S}	2.1	2.1	2.1	(2.2)$^{S}_{J}$	2.1	(2.2)$^{J}_{S}$	(2.1)$^{S}_{P}$	2.0	(2.0)$^{J}_{S}$	(2.0)^{S}
10	(2.0)^{S}	(2.0)^{S}	2.0	2.1	2.0^{F}	2.0	2.0	2.2	2.4	2.4	2.3	2.1	2.2	2.2	(2.0)$^{S}_{P}$	(2.2)$^{S}_{P}$	(2.2)^{S}	(2.2)^{S}	2.2	(2.1)^{S}	C	2.2	2.0	(1.8)^{S}
11	C	(1.9)^{S}	1.9	C	C	2.1^{V}	C	2.2^{F}	2.5	2.3	2.2	2.2	2.0	(2.0)^{S}	2.1	2.1	2.1	(2.3)^{S}	2.2	C	(2.1)$^{S}_{F}$	C	(2.2)$^{S}_{F}$	(2.1)$^{S}_{F}$
12	(2.0)$^{S}_{F}$	(2.0)$^{S}_{F}$	(1.9)$^{S}_{F}$	(2.0)^{F}	C	C	(2.1)$^{S}_{F}$	C	2.4	C	C	2.2	C	C	C	C	C	(2.3)^{S}	(2.2)^{S}	2.0	(2.1)^{S}	C	(2.0)^{S}	(1.9)^{S}
13	2.0^{F}	2.0^{F}	(1.9)$^{J}_{V}$	1.8^{V}	C	(2.1)$^{S}_{F}$	2.1^{F}	2.2	2.4	(2.3)^{S}	2.1	2.2	(2.2)$^{J}_{S}$	2.2	2.2	2.1	2.2	(2.1)^{S}	(2.1)$^{S}_{P}$	(2.2)$^{S}_{P}$	(2.1)$^{J}_{P}$	(2.0)$^{J}_{P}$	(2.0)^{S}	(1.8)^{S}
14	(1.8)$^{J}_{S}$	1.8	1.8	1.9	2.1	2.0	2.0	2.3	2.4	2.2	2.3	2.2	2.2	2.1	2.0	(2.0)^{S}	(2.0)^{S}	(2.1)^{S}	(2.1)^{S}	(2.1)^{S}	(2.0)^{S}	(2.0)^{S}	(2.0)^{S}	(1.9)^{S}
15	1.9	1.9	1.9	1.8	1.9	1.8	(2.0)^{S}	(2.2)^{S}	(2.3)^{S}	(2.2)^{S}	(2.2)^{S}	2.2	2.1	M	2.0	(2.0)^{S}	(2.0)^{S}	(2.0)^{S}	(2.1)$^{J}_{S}$	2.0	(2.0)^{S}	2.1	1.9	1.9
16	1.8	(2.0)$^{J}_{S}$	1.9	2.0	2.0	2.0	(1.9)$^{J}_{S}$	(2.2)$^{J}_{S}$	2.3	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.1	(2.1)^{S}	(2.1)^{S}	2.1	(2.1)^{S}	2.0	2.0	1.9
17	1.8	1.9	1.9	1.8	2.0	2.0	2.0	2.3	2.4	(2.2)$^{J}_{S}$	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	(2.1)^{S}	(2.0)^{S}	2.0	(2.0)^{S}	C	(2.0)^{S}
18	1.9	C	C	1.9	1.8	1.9*	C	2.3	C	2.2	2.2	C	(2.0)^{S}	2.0	2.0	(2.0)^{S}	(2.0)^{S}	(2.0)^{S}	(2.1)^{S}	(2.0)^{S}	(2.0)$^{S}_{P}$	(2.0)^{S}	2.0	(1.9)$^{S}_{P}$
19	(1.9)^{S}	1.8	(1.9)^{S}	1.9	1.9	1.9	2.0	2.2	2.3	2.3	2.2	2.1	2.0	2.0	(1.9)^{S}	(1.9)^{S}	(2.0)^{S}	(2.1)^{S}	(2.1)$^{J}_{S}$	(2.1)$^{S}_{P}$	2.0	(1.9)$^{S}_{P}$	(1.9)$^{J}_{S}$	1.8
20	1.7	(1.7)^{S}	1.7	1.8	1.8	(1.8)^{S}	(1.8)^{S}	(2.0)^{S}	(2.2)^{S}	(2.1)^{S}	C	2.0	1.9	1.8^{K}	1.6^{K}	(1.6)$^{S}_{K}$	(1.6)^{K}	(1.7)$^{J}_{S}$	(1.7)$^{F}_{K}$	(2.0)$^{K}_{S}$	S$^{F}_{K}$	(1.6)$^{K}_{S}$	(1.6)^{K}	(1.5)$^{F}_{K}$	(1.6)$^{F}_{K}$
21	(1.6)$^{K}_{F}$	1.7$^{F}_{K}$	1.6$^{F}_{K}$	1.9$^{F}_{K}$	1.8$^{F}_{K}$	(1.8)$^{F}_{K}$	(1.8)$^{F}_{S}$	2.0^{F}	(2.3)^{F}	2.1^{F}	2.1	(1.9)^{S}	2.0	1.9	(1.9)^{S}	(2.0)^{S}	(2.0)$^{J}_{S}$	(2.0)$^{S}_{P}$	(1.9)$^{J}_{S}$	(1.9)$^{S}_{F}$	(1.9)$^{K}_{F}$	(1.9)$^{S}_{F}$	(1.7)$^{S}_{F}$	(1.8)$^{S}_{F}$
22	(1.8)$^{F}_{K}$	(1.8)$^{S}_{F}$	(1.7)$^{S}_{F}$	1.8$^{F}_{K}$	1.8$^{F}_{K}$	1.8$^{F}_{K}$	1.9$^{F}_{K}$	2.1^{F}	2.4	(2.1)$^{S}_{F}$	2.2	2.1	1.9	1.9	1.8	1.9	(1.9)$^{S}_{J}$	(2.0)^{S}	(2.0)$^{J}_{S}$	(2.1)^{S}	(2.0)^{S}	(1.9)$^{J}_{S}$	(1.8)^{S}	(1.9)^{S}
23	2.0^{F}	(2.0)$^{S}_{F}$	(1.8)$^{S}_{F}$	1.8^{F}	1.8^{F}	1.8^{F}	(2.0)$^{S}_{F}$	2.1^{F}	2.2^{F}	2.2^{F}	(2.0)$^{J}_{F}$	2.0^{F}	1.8	1.9	1.9	(1.8)$^{S}_{P}$	1.8^{K}	(1.9)$^{S}_{K}$	(1.8)$^{S}_{F}$	(1.9)$^{S}_{F}$	(1.7)$^{S}_{F}$	(2.1)$^{S}_{F}$	(1.7)$^{F}_{K}$	(1.4)$^{F}_{K}$
24	(1.8)$^{S}_{F}$	(1.8)$^{F}_{K}$	F^{K}	(1.7)$^{F}_{K}$	F^{K}	F$^{S}_{K}$	F^{K}	(2.1)$^{S}_{F}$	2.4^{F}	2.3^{F}	(2.1)^{S}	(2.0)^{S}	(2.0)^{S}	2.0	(2.0)^{S}	2.0	(2.0)^{S}	(2.1)^{S}	(2.1)$^{S}_{P}$	(2.0)$^{J}_{S}$	(2.1)$^{S}_{J}$	(2.0)$^{S}_{P}$	(1.8)$^{J}_{F}$	(1.7)^{S}
25	(1.7)$^{J}_{F}$	1.8^{F}	(1.9)$^{S}_{F}$	(2.0)$^{S}_{F}$	(2.0)$^{J}_{F}$	2.0^{F}	(1.8)^{F}	(2.1)^{J}	2.2	2.3	2.0	2.1	2.0	2.0	2.0	(2.0)$^{J}_{S}$	(2.0)^{S}	2.0	(2.0)^{S}	(2.0)^{S}	(2.0)^{S}	(1.9)^{S}	(1.9)^{S}	(1.9)^{S}
26	(1.9)^{S}	1.8	1.8	1.9	1.8	(1.9)^{S}	(2.1)^{S}	(2.3)^{S}	2.3	(2.2)$^{V}_{S}$	2.1	2.1	2.2	2.1	(1.9)^{S}	2.0	2.0	(2.1)^{S}	(2.1)^{S}	(2.0)^{S}	(1.9)^{S}	(2.1)^{S}	2.0	(2.0)^{S}
27	2.0^{F}	1.9^{F}	1.9^{F}	(1.9)$^{J}_{F}$	1.9^{F}	1.9^{F}	2.0^{F}	(2.4)$^{S}_{J}$	2.3	2.3	2.2	2.1^{F}	2.1	2.1	2.1	2.0	2.0	(2.1)^{S}	(2.1)$^{S}_{J}$	(2.0)^{S}	C	1.9	(1.9)$^{S}_{J}$	(1.9)^{S}
28	(1.9)^{S}	(1.8)^{S}	(1.9)$^{S}_{F}$	(1.8)$^{S}_{J}$	1.7^{F}	(1.7)$^{S}_{F}$	(1.7)^{S}	2.1^{F}	2.2	2.1	2.0	(2.1)^{P}	2.0	2.0	(2.0)^{S}	(2.1)^{S}	(2.1)$^{S}_{J}$	(2.1)^{S}	(2.0)^{S}	(1.9)^{S}	(1.9)^{S}	(2.0)^{S}	(1.8)^{S}	1.8
29																								
30																								
31																								
Median	(1.9)	1.8	1.9	1.9	1.9	2.0	2.0	2.2	2.4	2.2	2.2	2.1	2.0	2.0	2.0	2.0	(2.0)	(2.1)	(2.1)	(2.0)	(2.0)	(2.0)	(2.0)	(1.9)
Count	27	27	26	27	24	26	26	27	27	26	26	27	27	26	27	27	27	28	28	25	26	26	26	27

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 45

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

IONOSPHERIC DATA

(M3000)F2 (Characteristic), (Unit), February (Month), 1950

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 38.7°N, Lang 77.1°W

75°W Mean Time

Scaled by: B.E.B., J.D.

Calculated by: B.E.B., J.D., By. H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.7	2.5	2.6	3.0	(3.0)$^{J}_{S}$	(3.1)^{S}	2.9	3.1	3.3	3.4	3.2	3.2	3.1	3.0	3.0	3.0	3.1	(3.2)^{S}	(3.2)^{S}	(3.1)^{S}	(3.3)^{S}	3.1^{F}	(2.9)$^{J}_{S}$	2.8
2	(2.7)$^{J}_{S}$	(3.0)$^{J}_{S}$	(3.1)$^{J}_{S}$	2.8^{F}	2.8^{F}	2.8^{F}	2.6^{F}	3.0^{F}	3.4^{F}	3.2^{F}	3.1	3.0	2.8	(2.9)^{S}	2.8	3.0	(3.1)$^{S}_{F}$	(3.0)$^{S}_{F}$	3.2	(3.0)$^{J}_{S}$	2.9^{F}	(3.0)^{S}	3.0	(2.9)$^{J}_{S}$
3	2.8	2.9	2.9^{F}	2.8^{F}	2.9^{F}	2.6	2.7	(2.7)$^{S}_{F}$	(3.1)^{S}	3.3	3.2	3.0	3.0	2.9	(2.9)$^{J}_{S}$	(3.0)$^{J}_{S}$	(3.0)^{J}	3.1	(3.1)$^{J}_{S}$	3.1	(3.0)$^{S}_{F}$	2.9	3.0	(2.8)^{S}
4	2.9^{F}	2.7^{F}	2.9^{F}	2.9^{F}	(3.0)$^{J}_{F}$	3.0^{F}	3.1^{F}	3.1^{F}	3.6^{F}	3.3	3.3	3.2	3.0	3.0	3.1	3.0	3.1	(3.1)^{S}	(3.1)$^{J}_{S}$	(3.0)$^{J}_{F}$	3.1	(3.3)^{S}	3.1^{F}	2.9^{F}
5	2.9^{F}	2.6^{F}	2.8^{F}	3.0^{F}	(3.1)$^{S}_{S}$	3.2^{F}	3.1^{F}	3.3^{F}	3.5^{F}	3.5	3.4^{V}	3.3	3.3	3.1	3.1	3.1	(3.2)^{S}	(3.2)^{S}	(3.2)^{J}	3.2	3.2	3.2	(3.1)^{J}	(2.9)$^{J}_{S}$
6	(2.9)$^{J}_{S}$	(2.9)$^{S}_{S}$	2.8	2.7	2.8	2.9^{V}	2.9	(3.3)^{F}	3.5	3.6	3.3	3.2	3.2	3.1	3.1	3.1	3.2	3.3	(3.2)^{S}	3.1	3.3	(3.1)^{J}	2.9	(2.8)^{J}
7	2.7	2.7	(2.9)$^{J}_{S}$	(3.0)$^{S}_{S}$	2.9	3.0	3.1^{F}	3.2^{F}	3.6	3.4	3.2	3.1	3.2	(3.1)$^{J}_{S}$	(3.1)$^{J}_{S}$	(3.1)^{S}	3.1	3.2	3.2	3.3	2.9	3.0	2.9	(2.8)$^{J}_{S}$
8	(2.9)^{S}	(2.9)^{F}	(2.8)^{F}	(2.8)$^{S}_{F}$	(3.0)$^{S}_{F}$	3.3	(3.3)^{S}	(3.1)^{S}	(3.4)^{S}	C	3.1	(3.1)$^{S}_{P}$	(3.1)$^{S}_{P}$	3.1	3.1	(3.3)^{S}	(3.1)^{S}	(3.3)$^{S}_{S}$	(3.2)^{S}	S	(3.2)^{S}	(3.0)^{S}	S	C
9	(2.9)^{S}	(2.9)$^{S}_{P}$	(2.8)^{S}	(2.9)^{S}	(2.8)$^{J}_{S}$	(3.2)$^{J}_{S}$	(3.2)^{S}	(3.3)^{S}	(3.5)^{S}	3.4	(3.3)^{S}	3.2	3.3	(3.0)^{S}	3.1	3.0	3.1	(3.2)$^{J}_{S}$	3.2	(3.3)$^{J}_{S}$	(3.1)$^{S}_{P}$	3.0	(3.0)$^{J}_{S}$	(3.0)^{S}
10	(3.0)^{S}	(3.1)^{S}	3.0	3.1	3.0^{F}	3.1	3.1	3.2	3.5	3.6	3.3	3.1	3.2	3.3	(3.1)$^{S}_{P}$	(3.2)$^{S}_{P}$	(3.3)^{S}	(3.2)^{S}	3.2	(3.3)^{S}	C	3.3	3.1	(2.8)^{S}
11	C	(2.9)^{S}	2.9	C	C	3.1^{V}	C	3.3^{F}	3.5	3.3	3.3	3.2	3.0	(3.4)^{S}	3.2	3.2	3.2	(3.3)^{S}	3.2	C	(3.2)$^{S}_{F}$	C	(3.2)$^{S}_{F}$	(3.1)$^{S}_{F}$
12	(3.0)$^{S}_{F}$	(3.0)$^{S}_{F}$	(2.9)$^{S}_{F}$	(2.9)^{F}	C	C	(3.1)$^{S}_{F}$	C	3.4	C	C	3.3	C	C	C	C	C	(3.4)^{S}	(3.2)^{S}	3.0	(3.2)^{S}	C	(3.0)^{S}	(2.9)^{S}
13	3.0^{F}	3.0^{F}	(2.9)$^{J}_{V}$	2.8^{V}	C	(3.0)$^{S}_{F}$	3.0^{F}	3.2	3.5	(3.4)^{S}	3.1	3.3	(3.3)$^{J}_{S}$	3.2	3.2	3.1	3.1	(3.1)^{S}	(3.2)$^{S}_{P}$	(3.2)$^{S}_{P}$	(3.2)$^{J}_{P}$	(3.0)$^{J}_{P}$	(2.9)^{S}	(2.8)^{S}
14	(2.7)$^{J}_{S}$	2.7	2.8	2.9	3.1	3.0	3.0	3.3	3.5	3.4	3.3	3.2	3.2	3.2	3.0	(3.0)^{S}	(3.0)^{S}	(3.2)^{S}	(3.2)^{S}	(3.1)^{S}	(3.0)^{S}	(2.9)^{S}	(3.0)^{S}	(2.9)^{S}
15	2.9	2.9	2.8	2.8	2.8	2.7	(3.0)^{S}	(3.2)^{S}	(3.4)^{S}	(3.2)^{S}	(3.2)^{S}	3.2	3.2	M	3.1	(3.0)^{S}	(3.0)^{S}	(3.0)^{S}	(3.1)$^{J}_{S}$	3.1	(3.1)^{S}	3.0	2.9	2.9
16	2.7	(2.8)$^{J}_{S}$	2.9	3.0	3.0	2.9	(2.8)$^{J}_{S}$	(3.2)$^{J}_{S}$	3.4	3.4	3.3	3.2	3.2	3.1	2.9	3.0	3.1	(3.2)^{S}	(3.2)^{S}	3.1	(3.1)^{S}	3.0	3.0	2.9
17	2.8	2.9	2.9	2.8	3.0	2.9	3.0	3.4	3.4	(3.4)$^{J}_{S}$	3.2	3.2	3.0	3.0	3.0	3.0	3.0	3.1	(3.1)^{S}	(3.0)^{S}	3.0	(3.0)^{S}	C	(3.0)^{S}
18	2.9	C	C	2.8	2.8	2.8	C	3.3	C	3.2	3.2	C	(3.0)^{S}	2.9	3.0	(3.0)^{S}	(3.0)^{S}	(3.1)^{S}	(3.1)^{S}	(3.0)^{S}	(3.0)$^{S}_{F}$	(3.0)^{S}	2.9	(2.9)$^{S}_{F}$
19	(2.8)^{S}	2.8	(2.8)^{S}	2.8	2.9	2.9	2.9	3.2	3.4	3.3	3.1	3.0	3.0	2.9	(3.0)^{S}	(3.0)^{S}	(3.0)^{S}	(3.1)^{S}	(3.0)$^{J}_{S}$	(3.1)$^{S}_{F}$	3.0	(2.9)$^{S}_{F}$	(2.9)$^{S}_{F}$	2.7
20	2.6	(2.6)^{S}	2.6	2.7	2.7	(2.8)^{S}	(2.8)^{S}	(3.0)^{S}	(3.2)^{S}	(3.2)^{S}	C	2.9	2.9	2.8^{K}	2.4^{K}	(2.4)$^{S}_{K}$	^{K}(2.4)$^{J}_{S}$	(2.5)$^{F}_{K}$	^{K}(3.0)$^{S}_{F}$	S$^{F}_{K}$	^{K}(2.5)$^{S}_{F}$	(2.5)$^{F}_{K}$	(2.3)$^{F}_{K}$	(2.5)$^{F}_{K}$
21	^{K}(2.4)$^{S}_{F}$	2.6$^{F}_{K}$	2.3$^{F}_{K}$	2.8$^{F}_{K}$	2.7$^{F}_{K}$	(2.7)$^{F}_{K}$	(2.8)$^{S}_{F}$	3.0^{F}	(3.4)$^{S}_{F}$	3.2^{F}	3.1	(2.9)^{S}	2.9	2.9	(3.0)^{S}	(3.0)^{S}	(2.9)$^{J}_{F}$	(3.0)$^{S}_{F}$	(2.9)$^{S}_{J}$	(2.9)$^{S}_{F}$	^{K}(2.9)$^{S}_{F}$	^{K}(2.9)$^{S}_{F}$	^{K}(2.6)$^{S}_{F}$	^{K}(2.7)$^{S}_{F}$
22	(2.7)$^{F}_{K}$	^{K}(2.7)$^{S}_{F}$	^{K}(2.6)$^{S}_{F}$	2.8$^{F}_{K}$	2.7$^{F}_{K}$	2.8$^{F}_{K}$	2.8$^{F}_{K}$	3.2^{F}	3.5	(3.1)$^{S}_{F}$	3.2	3.1	2.9	2.8	2.8	2.8	(2.9)$^{S}_{S}$	(2.9)^{S}	(3.0)$^{S}_{S}$	(3.1)^{S}	(3.0)^{S}	(2.8)$^{S}_{S}$	(2.7)^{S}	(2.9)^{S}
23	3.0^{F}	(3.0)$^{S}_{F}$	(2.7)$^{S}_{F}$	2.8^{F}	2.8^{F}	2.7^{F}	(2.9)$^{S}_{F}$	3.1^{F}	3.2^{F}	3.2^{F}	(2.9)$^{J}_{F}$	3.0^{F}	2.7	2.9	2.8	(2.7)$^{S}_{P}$	2.7^{K}	(2.8)$^{S}_{K}$	^{K}(2.6)$^{S}_{F}$	^{K}(2.8)$^{S}_{F}$	^{K}(2.6)$^{S}_{F}$	^{K}(3.2)$^{S}_{F}$	(2.6)$^{F}_{K}$	(2.2)$^{F}_{K}$
24	^{K}(2.6)$^{S}_{F}$	(2.6)$^{F}_{K}$	F^{K}	(2.6)$^{F}_{K}$	F^{K}	F$^{S}_{K}$	F^{K}	(3.1)$^{S}_{F}$	3.4^{F}	3.4^{F}	(3.1)^{S}	(3.1)^{S}	(3.1)^{S}	3.0	(3.1)^{S}	3.0	(3.1)^{S}	(3.1)^{S}	(3.1)$^{S}_{P}$	(3.0)$^{S}_{S}$	(3.2)$^{J}_{S}$	(2.9)$^{S}_{P}$	(2.7)$^{S}_{F}$	(2.7)^{S}
25	(2.6)$^{J}_{F}$	2.8^{F}	(2.9)$^{S}_{F}$	(3.0)$^{S}_{F}$	(3.0)$^{J}_{F}$	2.9^{F}	(2.7)^{F}	(3.1)^{J}	3.2	3.3	3.0	3.2	3.0	3.0	3.0	(3.0)$^{J}_{S}$	(3.0)^{S}	3.0	(3.0)^{S}	(2.9)^{S}	(3.0)^{S}	(2.9)^{S}	(2.9)^{S}	(2.9)^{S}
26	(2.9)^{S}	2.8	2.8	2.8	2.7	(2.9)^{S}	(3.1)^{S}	(3.3)^{S}	3.5	(3.2)$^{V}_{S}$	3.2	3.1	3.2	3.1	(2.9)^{S}	3.0	3.1	(3.1)^{S}	(3.1)^{S}	(3.0)^{S}	(3.0)^{S}	(3.1)^{S}	3.0	(3.0)^{S}
27	3.0^{F}	2.9^{F}	3.0^{F}	(2.9)$^{F}_{J}$	3.0^{F}	2.8^{F}	3.0^{F}	(3.4)$^{S}_{J}$	3.3	3.3	3.3	3.1^{F}	3.1	3.1	3.0	2.9	3.1	(3.1)^{S}	(3.1)$^{J}_{S}$	(2.9)^{S}	C	2.9	(2.8)$^{J}_{S}$	(2.9)^{S}
28	(2.9)^{S}	(2.8)^{S}	(2.8)$^{S}_{F}$	(2.7)$^{J}_{S}$	2.5^{F}	(2.6)$^{S}_{F}$	(2.7)^{S}	3.2^{F}	3.3	3.2	3.0	(3.1)^{P}	3.0	2.9	(2.9)^{S}	(3.1)^{S}	(3.1)$^{J}_{S}$	(3.1)^{S}	(3.0)^{S}	(2.9)^{S}	(3.1)^{S}	(3.1)^{S}	(2.8)^{S}	2.7
29																								
30																								
31																								
Median	(2.9)	2.9	2.8	2.8	2.9	2.9	3.0	3.2	3.4	3.3	3.2	3.1	3.1	3.0	3.0	3.0	(3.1)	(3.1)	(3.1)	(3.1)	(3.0)	(3.0)	(2.9)	(2.9)
Count	27	27	26	27	24	26	25	27	27	26	26	27	27	26	27	27	27	28	28	25	26	26	26	27

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 46

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

IONOSPHERIC DATA

(M3000)F1 (Characteristic), ____ (Unit), February (Month), 1950

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by B.E.B., J.D., ____

Calculated by: B.E.B., J.D., By. H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									Q	Q	Q	L	Q	Q	Q	Q	Q	Q						
2									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
3									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
4									Q	Q	Q	L	L	L	Q	Q	Q	Q						
5									Q	Q	Q	Q	Q	L	Q	Q	Q	Q						
6									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
7									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
8									Q	C	Q	Q	Q	Q	L	Q	Q	Q						
9									Q	Q	Q	Q	L	Q	L	Q	Q	Q						
10									Q	Q	Q	Q	L	Q	Q	Q	Q	Q						
11									Q	Q	Q	Q	Q	L	Q	Q	Q	Q						
12									Q	C	C	Q	C	C	C	C	C	Q						
13									Q	Q	Q	L	L	L	Q	B	B	Q						
14									Q	Q	Q	Q	Q	B	Q	Q	Q	Q						
15									Q	Q	Q	Q	L	M	Q	Q	Q	Q						
16									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
17									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
18									C	Q	Q	C	Q	Q	Q	Q	Q	Q						
19									Q	Q	Q	L	Q	L	Q	Q	Q	Q						
20									Q	Q	C	Q	Q	L[K]	Q[K]	L[K]	L[K]	Q[K]						
21									Q	Q	L	Q	L	L	Q	Q	Q	Q						
22									Q	Q	L	Q	Q	Q	Q	Q	Q	Q						
23									Q	Q	Q	Q	Q	Q	Q	Q	Q[K]	Q[K]						
24									Q	L	Q	Q	L	Q	Q	Q	Q	Q						
25									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
26									Q	Q	Q	Q	L	Q	Q	Q	Q	Q						
27									Q	Q	L	Q	Q	L	L	Q	Q	Q						
28									Q	L	L	Q	Q	L	Q	Q	Q	Q						
29																								
30																								
31																								
Median										—	—	—	—	—	—	—	—							
Count																								

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 47

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

IONOSPHERIC DATA

(M1500)E (Characteristic), (Unit) February (Month), 1950

National Bureau of Standards (Institution)

Observed at Washington, D. C.

Scaled by: B.E.B., J.D.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Calculated by: B.E.B., J.D., By H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B	4.4	(4.5)^{D}	4.1	(4.2)^{D}	4.2	4.3	4.4	4.3	(4.1)^{S}						
2									4.2	4.1	4.3	4.1	(4.2)^{D}	(4.2)^{B}	4.2	B	4.2	4.4						
3									B	B	B	(4.2)^{B}	4.1	(4.3)^{D}	4.1	4.6	B	4.2						
4									(4.2)^{S}	4.3	4.1	4.1	4.2	4.2	4.3	4.2	(4.4)^{S}	4.3						
5									(3.6)^{B}	B	4.3	4.1	(4.2)^{D}	A	4.4	(4.3)^{D}	4.5	4.3						
6									4.1	A	4.1	4.1	4.3	(4.4)^{D}	4.4	4.3	4.3	3.8						
7									4.1	4.3	4.3	4.3	4.4	4.4	(4.6)^{S}	4.4	4.0	3.9						
8									B	C	4.2	3.9	3.9	4.1	4.1	(4.5)^{S}	(4.0)^{S}	(3.9)^{S}						
9									4.1	S	4.2	3.9	4.1	(4.1)^{S}	4.2	4.4	4.2	3.5						
10									4.3	4.6	4.5	4.3	4.4	4.4	4.5	4.5	4.3	4.2						
11									A	4.3	4.2	4.1	4.2	4.1	4.1	4.2	4.3	3.8						
12									4.3	C	C	4.2	C	C	C	C	C	(4.1)^{S}						
13									4.0	4.3	4.3	4.4	4.3	4.2	4.2	B	B	B						
14									4.0	4.2	4.5	(4.1)^{F}	4.1	B	4.2	4.2	4.4	4.0						
15									4.1	(4.3)^{A}	4.2	4.4	A	M	4.3	4.3	4.2	4.4						
16									3.9	A	4.3	4.3	4.4	(4.3)^{D}	4.4	4.2	4.4	4.1						
17									3.8	4.1	4.4	4.2	4.4	4.1	4.2	4.2	4.2	4.1	S					
18									C	A	(4.2)^{A}	C	4.1	4.1	4.2	4.4	4.2	4.0						
19									4.4	4.2	4.1	4.2	4.2	4.2	4.1	4.2	4.5	4.1						
20									4.2	(4.3)^{F}	C	(4.3)^{S}	4.3	4.3^{K}	4.2^{K}	4.2^{K}	4.3^{K}	3.5^{K}						
21									13	4.3	(4.3)^{D}	4.4	(4.4)^{F}	(4.2)^{D}	3.9	4.1	4.1	4.1						
22									4.3	4.2	4.2	4.3	4.2	4.2	(4.2)^{D}	4.1	4.1	4.0						
23									4.1	4.2	4.4	4.1	4.1	(4.2)^{D}	4.2	4.2	4.1^{K}	(3.6)$^{S}_{K}$						
24									B	4.3	4.3	4.1	4.1	4.1	4.1	4.3	4.1	4.1						
25									4.1^{H}	4.1	4.1	4.1	4.1	4.1	4.2	4.1	4.3	4.0						
26								3.5	4.3	4.0	4.0	4.0	(4.1)^{S}	4.1	4.1	4.1	4.1	3.8						
27									B	4.1	4.0	B	S	4.1	4.0	3.9	4.1	3.7						
28								4.1	4.0	B	B	4.5	(4.1)^{B}	4.3	4.0	4.1	4.2	(4.2)^{S}						
29																								
30																								
31																								
Median								—	4.1	4.3	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.1						
Count								2	29	19	24	26	25	24	27	25	25	27						

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

Table 48

Ionospheric Storminess at Washington, D. C.

February 1950

Day	Ionospheric character* 00-12 GCT	12-24 GCT	Principal storms Beginning GCT	End GCT	Geomagnetic character** 00-12 GCT	12-24 GCT
1	2	2			2	1
2	2	3			4	3
3	2	1			3	3
4	1	2			2	3
5	1	2			2	1
6	2	2			2	2
7	3	2			3	3
8	3	2			3	2
9	1	3			2	2
10	2	3			1	1
11	3	2			2	1
12	1	1			1	2
13	2	3			1	1
14	2	3			1	2
15	1	2			2	2
16	1	2			1	1
17	1	1			1	1
18	0	1			0	2
19	1	1			2	2
20	1	4	1800	----	2	5
21	4	1	----	1200	5	4
22	5	1	0100	1200	4	3
23	1	4	2100	----	3	5
24	6	1	----	1200	5	2
25	2	1			3	2
26	1	2			1	0
27	1	2			1	2
28	1	2			3	3

*Ionosphere character figure (I-figure) for ionospheric storminess at Washington, D. C., during 12-hour period, on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

**Average for 12 hours of Cheltenham, Maryland, geomagnetic K-figures on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

----Indicate continuing storm.

Table 49

Sudden Ionosphere Disturbances Observed at Washington, D. C.

February 1950

1950 Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
February					
13	1911	2105	Ohio, D. C., England	0.0	Terr.mag.pulse** 1915-1930 Solar flare*** 1910
14	1713	1905	Ohio, D. C., England	0.0	Solar flare*** 1715
17	2005	2050	Ohio, D. C., England	0.02	Solar flare*** 2004 Solar flare**** 2028
18	1357	1420	Ohio, D. C., England	0.3	
18	1513	1540	Ohio, D. C., England	0.2	Solar flare**** 1515
19	1355	1440	Ohio, D. C.	0.2	
19	1740	1755	Ohio	0.3	Solar flare*** 1736
19	1853	1910	Ohio, D. C.	0.1	Terr.mag.pulse** 1852-1905 Solar flare*** 1850
20	1254	1320	England	0.2	
20	1522	1620	Ohio, D. C., England, New Brunswick	0.0	

*Ratio of received field intensity during SID to average field intensity before and after, for station KQ2XAU (formerly W8XAL), 6080 kilocycles, 600 kilometers distant, for all SID except the following: Station GIH, 13525 kilocycles, received in New York, 5340 kilometers distant, was used for the SID on February 20 at 1254.

**As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

***Time of observation at High Altitude Observatory, Boulder, Colorado.

****Time of observation at McMath-Hulbert Observatory, Michigan.

Table 50

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief, Cable and Wireless, Ltd., as Observed in England

1950 Day	GCT Beginning	GCT End	Receiving station	Location of transmitters	Other phenomena
January					
20	1105	1130	Brentwood	Afghanistan, Bahrein I., Barbados, Belgian Congo, Bulgaria, Canary Is., Chile, Greece, Iran, Kenya, Malta, Southern Rhodesia, Spain, Switzerland, Syria, Trans-Jordan, Turkey, Yugoslavia, Zanzibar	
20	1110	1130	Somerton	Argentina, Brazil, Ceylon, Gold Coast, India, Union of S. Africa	
February					
13	1900	2015	Brentwood	Barbados, Chile, Colombia, Uruguay	
13	1916	2000	Somerton	Argentina, Brazil, Canada, New York	Terr.mag.pulse* 1915-1930 Solar flare** 1910

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

**Time of observation at the High Altitude Observatory, Boulder, Colorado.

Table 51

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief, Cable and Wireless, Ltd., as Observed at Colombo, Ceylon

1949 Day	GCT Beginning	GCT End	Location of transmitters
November			
17	0945	1005	England
19	1035	1105	China, England, India, Japan

Table 52

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief, Cable and Wireless, Ltd., as Observed at Hong Kong, China

1949 Day	GCT Beginning	GCT End	Location of transmitters
November 2	0325	0340	China, French Indo-China, Japan, Philippine Is., Thailand

Table 53

Sudden Ionosphere Disturbances Reported by International Telephone and Telegraph Corporation, as Observed at Platanos, Argentina

1950 Day	GCT Beginning	GCT End	Location of transmitters	Other phenomena
January 20	1100	1150	Belgium, Brazil, Denmark, Germany, Netherlands, New York	
20	1400	1525	Bolivia, Brazil, Chile, Cuba, Denmark, England, Germany, New York, Switzerland, Venezuela	
20	1635	1710	Belgium, Bolivia, Brazil, Chile, Colombia, Cuba, Denmark, Germany, Netherlands, New York, Spain, Venezuela	Terr.mag. pulse* 1630-1800
22	1455	1530	Bolivia, Brazil, Chile, Cuba, Denmark, England, France, Germany, New York, Peru, Switzerland, Venezuela	

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

Table 54

Sudden Ionosphere Disturbances Reported by RCA Communications, Inc.

as Observed at Point Reyes, California

1950 Day	GCT Beginning	GCT End	Location of transmitters	Other phenomena
February				
1-2	2210	0015	Australia, China, Hawaii, Japan, Java, Philippine Is.	
13	1914	2100	Australia, China, Hawaii, Japan, Philippine Is.	Terr.mag.pulse* 1915-1930 Solar flare** 1910
17	0125	0230	Australia, China, Chosen, Hawaii, Japan, Java, Philippine Is.	
21-22	2342	0100	Australia, China, Hawaii, Japan, New York, Philippine Is.	

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

**Time of observation at the High Altitude Observatory, Boulder, Colorado.

Table 55

Sudden Ionosphere Disturbances Reported by RCA Communications, Inc.

as Observed at Riverhead, New York

1950 Day	GCT Beginning	GCT End	Location of transmitters	Other phenomena
February				
13	1915	1945	Argentina, Canada, England, Italy, Morocco, Netherlands, Panama	Terr.mag.pulse* 1915-1930 Solar flare** 1910
20	1525	1550	Argentina, Canada, England, Italy, Morocco, Panama	

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

**Time of observation at the High Altitude Observatory, Boulder, Colorado.

Note: Observers are invited to send to the CRPL information on times of beginning and end of sudden ionosphere disturbances for publication as above. Address letters to the Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Table 56

Sudden Ionosphere Disturbances Reported by Institut für Ionosphärenforschung, as Observed at Lindau, Harz, Germany

Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
December 1949					
9	1025	1035	München	0.19	
10	0901	0915	München	0.18	
12	1253	1330	München	0.18	Terr.mag.pulse** 1252-1305
13	1005	1020	München	0.16	
20	0755	0805	München	0.3	
January 1950					
11	0910	0925	München***	0.26	
20	1103	1125	München, Berlin****	0.04	

*Ratio of received field intensity during SID to average field intensity before and after, for station Voice of America, 6078.9 kilocycles, 400 km distant.

**As observed at Wingst near Hamburg and at Lindau.

***Station Voice of America, 6078.9 kilocycles.

****Station DAB 3840 kilocycles, 200 km distant.

Table 57

Provisional Radio Propagation Quality Figures
(Including Comparisons with CRPL Warnings and Forecasts)
January 1950

Day	North Atlantic quality figure		CRPL* Warning		CRPL Forecast (J-reports)	North Pacific quality figure		Geomagnetic K_{Ch}	
	Half day GCT		Half day GCT			Half day GCT		Half day GCT	
	(1)	(2)	(1)	(2)		(1)	(2)	(1)	(2)
1	7	7				6	6	2	2
2	7	6				6	7	2	0
3	6	6				6	7	1	1
4	7	7				6	7	2	2
5	7	6				6	6	2	1
6	7	6				5	6	2	2
7	6	6				5	6	2	2
8	6	7				5	6	1	0
9	7	6				6	7	2	2
10	7	7				6	7	2	2
11	6	6				6	7	2	2
12	7	6				6	7	2	1
13	6	6				6	7	2	2
14	5	6				6	7	3	3
15	6	6				5	7	1	2
16	6	6				5	7	3	2
17	5	7				6	6	1	1
18	6	7				6	6	1	1
19	6	7				6	7	2	2
20	5	5	U	W		6	5	3	2
21	5	5	W		X	5	6	3	3
22	6	6				5	7	2	1
23	6	6				8	7	3	2
24	6	6	U	(W)		7	6	3	(4)
25	5	6	W	W		6	5	(4)	2
26	6	6	U			6	7	2	2
27	6	5				6	6	2	2
28	6	5				6	7	2	1
29	6	6				6	6	1	1
30	6	6	U			6	6	(4)	2
31	6	6				6	7	1	2

Score:	Warning		Forecast	
	N.A.	N.P.	N.A.	N.P.
H	1	0	0	0
(M)	0	0	0	0
M	0	0	0	0
G	53	53	60	60
O	8	9	2	2

*Broadcast on WWV, Washington, D.C. Times of warnings recorded to nearest half day as broadcast. ( ) broadcast for one-quarter day. Blanks signify N.

Scales:
Quality Figures
(1)- Useless
(2)- Very poor
(3)- Poor
(4)- Poor to fair
5 - Fair
6 - Fair to good
7 - Good
8 - Very good
9 - Excellent

Geomagnetic K_{Ch} - 0 to 9, 9 representing the greatest disturbance; $K_{Ch} \geq 4$ indicates significant disturbance, enclosed in ( ) for emphasis.

Symbols:
W Disturbed conditions expected

U Unstable conditions expected

N No disturbance expeoted

X Probable disturbed date

Scoring:
H Storm ($Q \leq 4$) hit

(M) Storm severer than predicted

M Storm missed

G Good day forecast

O Overwarning

Scoring by half day according to following table:

	Quality Figure ≤3	4	5	≥6
W	H	H	O	O
U	(M)	H	H	O
N	M	M	G	G
X	H	H	O	O

Table 58a

Coronal observations at Climax, Colorado (5303A), east limb

Date GCT	Degrees north of the solar equator																			0°	Degrees south of the solar equator																
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5			5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1950																																					
Feb. 1.7	-	2	-	-	-	-	-	-	-	-	-	4	11	11	15	19	17	14	16		17	15	13	13	11	6	4	2	2	-	-	-	-	-	-	-	-	-
2.7	1	-	-	-	-	-	-	-	-	-	5	12	15	15	17	24	26	21	20		20	16	13	13	11	9	6	4	3	2	2	3	1	1	2	1	-	-
3.8	1	-	-	-	-	-	-	-	-	-	2	9	13	16	26	21	22	21	19		15	12	11	11	10	9	5	3	1	1	-	-	-	-	-	-	-	3
8.8	-	-	-	-	-	2	1	3	8	9	8	11	11	11	12	17	17	15	13		13	18	14	13	10	8	6	4	4	3	3	2	3	3	2	2	1	-
9.8	-	-	-	3	2	2	3	5	7	9	13	9	8	11	20	30	20	16	19		19	21	30	16	11	7	9	9	9	9	9	6	8	8	8	8	4	1
10.7	-	1	1	2	2	4	4	5	9	11	9	6	11	13	26	33	28	18	19		16	20	35	22	9	5	8	9	5	6	4	7	9	9	9	4	2	2
*13.7	-	-	-	4	3	5	6	7	7	8	7	9	10	13	24	24	26	26	22		15	13	9	7	6	4	4	3	2	-	-	-	-	-	-	-	-	-
15.9a	X	X	X	-	-	-	-	-	-	-	-	-	3	7	10	10	11	7	6		4	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.8	-	-	-	-	-	-	-	-	-	-	-	2	8	9	12	13	12	7	5		3	3	2	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-
17.9a	X	X	-	-	-	-	-	-	-	3	4	5	7	15	26	20	15	14	15		14	12	8	9	9	7	6	4	3	3	-	-	X	X	X	X	X	X
18.8	-	-	1	3	4	5	4	5	8	9	11	14	20	33	37	24	17	20	18		16	14	11	12	11	9	9	7	5	5	3	1	1	1	1	-	-	-
19.7	-	-	2	3	4	3	4	5	5	11	14	14	15	20	20	15	13	15	14		11	12	11	9	12	9	5	4	7	3	4	-	-	-	-	-	-	-
25.7	-	-	-	3	2	-	-	-	-	4	6	6	10	14	17	17	22	13	13		10	14	14	13	7	6	4	2	-	-	-	-	-	-	-	-	-	-
26.8	2	-	-	-	-	-	-	-	-	3	4	8	9	10	13	18	15	14	11		9	11	14	14	11	7	5	-	-	-	-	-	-	-	-	-	-	-

Table 59a

Coronal observations at Climax, Colorado (6374A), east limb

Date GCT	Degrees north of the solar equator																			0°	Degrees south of the solar equator																
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5			5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1950																																					
Feb. 1.7	2	2	3	3	4	4	4	3	3	2	1	1	-	-	-	9	3	7	3		5	3	1	2	2	1	1	2	2	2	1	1	-	1	-	-	1	-
2.7	2	2	2	3	6	4	4	3	2	3	4	4	1	1	9	10	12	10	7		4	-	-	8	2	2	1	2	2	4	5	2	2	2	3	4	2	-
3.8	2	1	1	2	4	4	2	2	2	2	2	3	1	-	8	12	20	5	3		3	-	5	3	2	-	1	1	1	1	2	2	-	-	-	-	-	-
8.8	3	2	3	3	3	2	1	1	-	-	-	-	3	3	5	10	23	13	-		-	3	3	-	3	3	2	-	-	-	-	-	-	2	2	-	-
9.8	3	4	3	3	3	2	2	1	-	-	-	-	1	2	7	14	14	5	3		2	3	5	14	2	-	-	-	-	-	-	-	-	-	1	2	2
10.7	2	2	3	4	3	3	4	3	1	-	-	2	2	4	13	26	19	13	8		3	4	14	3	2	2	2	-	-	-	-	-	-	-	1	1	3	2
*13.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	19	16	11	10		6	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.9a	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	2	3	2	-	-	-	-	-	-	-	-	-	-	-	-
16.8	-	-	-	-	-	-	-	-	-	-	-	-	3	4	2	2	8	3	-		-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	-	-	-
17.9a	X	X	-	-	-	-	-	-	-	-	-	-	-	-	4	3	9	3	4		1	5	1	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X
18.8	1	1	2	2	2	2	-	-	-	-	-	3	2	3	19	9	5	10	12		5	-	-	-	-	-	-	-	3	3	1	1	1	-	-	-	-	1
19.7	1	1	-	-	-	-	-	-	-	-	-	-	-	3	4	9	8	12	13		3	4	1	1	-	-	-	-	-	-	-	1	1	1	2	2	2
25.7	1	2	2	3	-	-	-	-	-	-	-	-	-	-	2	2	7	-	-		-	11	-	4	9	3	4	2	2	2	1	1	1	1	1	2	2
26.8	-	-	-	2	2	3	2	1	1	-	-	-	-	-	-	-	-	2	-		1	-	2	14	9	6	2	1	2	2	2	1	3	1	2	-	-	-

Table 60a

Coronal observations at Climax, Colorado (6704A), east limb

Date GCT	Degrees north of the solar equator																			0°	Degrees south of the solar equator																
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5			5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1950																																					
Feb. 1.7	-	-	-	-	1	1	-	-	-	-	-	-	1	1	1	1	2	2	-		1	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	1	-	2		1	1	-	1	1	1	1	2	-	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	3	2	1	1		1	1	1	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-
8.8	-	-	-	-	-	-	-	-	-	1	1	1	1	X	2	2	-	1	1		2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	-	-	-
9.8	2	1	-	-	-	-	-	-	-	-	-	-	-	1	1	5	3	2	2		3	2	3	2	2	2	2	1	1	1	2	1	-	-	1	1	-	-
10.7	-	-	-	-	-	-	-	-	1	1	1	1	2	2	2	2	2	3	3		3	4	3	2	2	1	-	-	-	-	-	-	-	1	1	1	1	1
*13.7a	-	-	-	1	2	-	-	2	1	1	1	1	2	2	2	3	4	5	6		7	1	1	1	2	-	1	1	-	-	1	-	-	-	-	-	-	-
15.9a	X	X	X	1	2	1	1	2	2	2	2	2	3	3	2	3	2	2	2		-	-	-	-	-	-	-	-	-	-	-	-	2	3	2	1	2
16.8	-	-	-	1	-	1	1	1	1	1	1	1	2	2	3	3	2	1	2		1	1	2	1	1	1	-	1	1	-	-	-	1	1	1	1	1	1
17.9a	X	X	-	2	2	2	1	-	1	-	-	2	2	3	4	3	2	2	2		2	2	2	2	2	2	2	2	2	1	1	1	X	X	X	X	X	X
18.8	-	-	1	-	-	-	-	-	1	1	1	2	3	4	4	2	2	2	2		2	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-
19.7	-	1	1	-	-	-	-	-	1	1	3	3	4	4	3	3	3	2	2		2	2	1	1	2	1	1	2	-	-	-	-	-	1	1	1	1	-
25.7	1	1	1	1	1	1	1	1	1	-	-	-	1	2	4	2	4	2	2		1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	2	1	
26.8	-	1	1	2	-	-	-	-	-	-	-	-	1	2	3	3	3	2	2		1	1	4	2	2	2	2	1	1	1	2	1	1	1	1	1	2	2

*Intensity of yellow line (5694A) east limb:
Feb. 13.7 — 5 at N10°, 3 at N5°, 2 at 0°.

Table 58b

Coronal observations at Climax, Colorado (5303A), west limb

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1950																																					
Feb. 1.7	-	-	1	2	2	4	5	5	8	7	5	9	10	8	9	14	15	10	13	14	23	32	34	33	20	16	17	17	10	9	8	8	5	5	4	2	-
**2.7	-	-	-	2	4	4	3	6	8	9	7	9	11	10	11	16	17	20	18	21	35	38	33	22	24	22	16	14	12	11	10	9	8	8	7	3	1
**3.8	3	2	2	3	4	4	4	5	6	6	8	9	9	10	11	14	16	15	15	16	28	32	38	35	32	25	23	15	13	10	8	9	4	4	3	1	1
8.8	-	-	-	-	-	1	3	4	5	9	11	9	11	13	16	24	23	24	17	14	15	21	22	22	19	15	15	13	11	4	3	1	1	-	-	-	-
9.8	1	2	1	1	-	-	1	3	4	6	7	9	9	9	11	15	16	18	16	17	18	20	20	21	16	15	13	11	8	4	4	1	-	-	-	-	-
10.7	2	-	-	-	1	1	1	2	3	3	4	4	4	5	10	18	18	17	16	14	16	21	23	22	15	15	14	9	4	2	-	-	-	-	-	-	-
13.7a	-	-	-	-	-	-	-	-	-	-	-	-	2	3	7	7	9	8	8	11	13	12	11	8	6	6	4	1	-	-	-	-	-	-	-	-	-
15.9a	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	3	2	2	4	8	5	4	5	2	2	1	-	-	-	-	-	-	X	X	X	X
16.8	-	-	-	-	-	-	-	-	-	-	-	3	4	4	4	7	9	8	9	8	8	8	6	8	7	4	2	-	-	-	-	-	-	-	-	-	-
17.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18.8	-	-	-	-	-	-	-	1	2	4	5	6	10	13	16	17	19	18	15	15	16	20	23	20	12	9	4	2	-	-	-	-	-	-	-	-	-
19.7	-	-	-	-	-	-	-	-	-	-	3	4	9	10	14	14	15	14	12	12	13	16	16	16	11	9	5	2	2	2	2	2	2	2	-	-	
25.7	-	-	-	-	-	-	-	-	-	-	-	4	3	8	9	9	8	10	14	15	18	19	17	15	13	10	7	6	5	3	2	2	2	2	2	2	-
26.8	-	-	-	-	-	3	4	6	2	3	2	1	4	4	6	8	11	14	13	14	15	16	19	19	15	13	7	5	6	8	5	3	-	4	3	3	2

Table 59b

Coronal observations at Climax, Colorado (6374A), west limb

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1950																																					
Feb. 1.7	-	-	2	2	2	1	-	-	-	-	-	-	-	-	1	1	3	3	4	9	17	22	10	9	10	4	9	-	-	-	-	2	-	2	2	2	2
**2.7	-	2	2	2	3	3	-	-	-	-	-	1	3	2	2	3	2	3	1	-	16	18	15	21	9	4	1	2	-	1	-	-	-	2	4	3	2
**3.8	-	-	-	-	-	-	1	2	2	-	-	-	-	-	3	2	2	4	7	4	21	15	20	26	15	8	5	1	-	-	-	-	-	-	1	2	2
8.8	-	-	-	-	-	1	2	3	-	-	-	-	-	-	2	2	9	9	2	3	4	6	-	2	2	2	2	1	1	3	3	2	2	3	3	2	3
9.8	2	3	2	2	3	2	3	3	2	2	1	1	1	3	4	10	7	2	2	4	3	-	-	1	1	1	2	1	2	3	2	2	3	2	2	3	3
10.7	2	2	2	3	3	2	3	3	3	3	4	2	2	9	11	13	-	-	-	-	-	-	-	2	1	-	2	2	2	3	2	2	3	1	2	2	2
13.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.9a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X
16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	9	6	7	-	-	1	2	1	-	-	-	-	-	-	-	-	-
17.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18.8	1	1	1	1	2	2	2	2	-	-	-	-	-	-	4	7	5	3	4	5	4	19	8	4	3	1	1	1	1	1	1	1	1	1	1	1	1
19.7	2	2	2	2	1	1	-	-	-	-	-	-	-	-	-	5	5	4	2	2	1	4	4	5	3	2	2	1	1	1	1	3	2	2	2	2	1
25.7	2	1	1	1	1	2	2	-	-	-	-	-	-	5	10	5	-	5	-	4	8	10	10	8	4	5	2	-	1	1	-	-	2	1	2	2	1
26.8	-	-	-	-	1	1	1	1	-	-	-	1	3	2	-	2	2	-	1	3	20	10	11	4	3	1	1	-	-	-	-	-	-	-	-	-	-

Table 60b

Coronal observations at Climax, Colorado (6704A), west limb

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1950																																					
Feb. 1.7	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	3	2	3	1	3	5	5	3	2	2	1	1	2	1	1	1	1	1	1	-
**2.7	-	-	-	1	1	-	-	1	1	1	-	-	-	-	1	2	2	2	2	2	3	4	4	3	4	4	3	2	2	1	-	-	-	-	-	-	-
**3.8	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	1	1	2	2	1	-	3	7	8	9	4	3	2	1	1	1	2	-	-	-	-	-
8.8	-	-	-	-	-	-	-	1	1	-	-	-	1	1	2	2	1	1	2	2	2	3	2	3	3	3	2	1	2	1	1	1	1	2	1	1	-
9.8	-	-	-	-	-	-	1	1	-	-	-	-	-	1	2	2	2	3	3	2	2	3	2	2	2	2	1	1	1	-	-	-	-	-	-	1	2
10.7	1	1	1	1	1	-	-	-	-	-	-	-	-	-	2	2	2	2	2	3	2	4	3	4	2	1	1	-	-	-	-	-	-	-	-	-	-
13.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.9a	2	2	2	2	2	-	-	-	-	-	-	-	-	1	2	1	-	-	-	-	-	1	-	-	2	-	-	-	-	-	-	-	-	X	X	X	X
16.8	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	3	-	-	-	-	-	-	-	-	-	-	-	-
17.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18.8	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	1	1	-	-	1	-	-			
19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	2	2	1	-	-	1	2	2	2	1	1	1	-	-	-	-	-	-	-	-	-
25.7	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	1	1	3	4	3	2	-	3	1	2	2	2	2	2	1	1	1	-	1	2	1	1
26.8	2	2	2	3	2	2	2	1	-	-	-	1	1	1	2	2	2	2	2	3	3	3	4	4	3	3	3	1	-	-	-	1	1	2	-	1	-

**Intensity of yellow line (5694A) west limb:
Feb. 2.7 -- 3 at N15°, 4 at N20°, 2 at N25°, 1 at N30°
Feb. 2.9 -- 18 at N20°, 2 at N25°, 2 at N30°
Feb. 3.8 — 2 at N20°, 2 at N25°, 1 at N30°

Table 61

American and Zürich Provisional Relative Sunspot Numbers

February 1950

Date	R_A*	R_Z**	Date	R_A*	R_Z**
1	63	70	16	198	156
2	29	34	17	219	154
3	32	37	18	221	166
4	42	35	19	214	197
5	42	63	20	206	190
6	36	51	21	225	170
7	36	31	22	202	162
8	30	19	23	162	137
9	33	20	24	145	113
10	51	37	25	113	96
11	76	66	26	94	76
12	95	72	27	103	70
13	120	85	28	104	72
14	195	125			
15	202	144	Mean:	117.4	94.6

*Combination of reports from 44 observers; see page 9.

**Dependent on observations at Zürich Observatory and its stations at Locarno and Arosa.

Preliminary values of mean K-indices, Kw, from 34 Observatories;

Preliminary values of International Character-Figures, C;

Geomagnetic planetary three-hour-range indices, Kp;

Final magnetically selected days for January 1950

Gr. Day 1950	Values Kw	Sum	C	Values Kp	Sum	Final Sel. Days
1	2.6 1.6 2.0 1.3 1.2 2.6 2.1 1.8	15.2	0.6	3o 2o 2+ 1o 1o 2+ 2o 2-	15+	Five
2	2.8 2.8 2.1 1.3 0.5 0.7 0.9 0.9	12.0	0.4	3o 3+ 2+ 1+ 0+ 1- 1- 1-	12+	Quiet
3	1.5 1.0 0.9 1.9 2.3 0.7 0.9 2.8	12.0	0.5	2- 1+ 1o 2- 2+ 1- 1- 3-	12o	
4	1.8 1.0 2.2 1.9 1.9 2.5 3.3 2.6	17.2	0.8	2o 1o 3- 2o 2o 3- 3o 3-	18o	5
5	1.4 1.6 1.9 2.0 2.1 1.9 1.7 1.6	14.2	0.3	2- 2- 2o 2+ 2o 2o 1+ 1+	14+	8
						17
6	1.8 2.7 1.1 1.8 2.4 3.1 2.8 2.3	18.0	0.7	2o 4- 1+ 2o 3- 3o 3- 2+	20-	18
7	2.6 2.2 1.9 2.0 2.9 2.3 3.0 1.2	18.1	0.7	3o 3- 2o 3- 3o 2o 3- 1-	19-	29
8	0.9 0.9 0.4 0.7 0.6 0.5 0.8 1.4	6.2	0.0	1+ 1o 0+ 0+ 0+ 0+ 1- 1o	5+	
9	2.8 3.2 2.4 1.8 2.2 0.7 1.6 1.4	16.1	0.7	3+ 4o 3o 2- 2o 0+ 2- 2o	18o	
10	2.9 2.3 1.9 1.9 1.4 1.3 2.0 3.1	16.8	0.7	3+ 3- 2o 2- 1o 1+ 2- 3+	17o	
						Five
11	2.4 1.5 1.2 1.7 1.6 1.9 1.8 3.3	15.4	0.6	3- 2o 1+ 1- 1+ 2o 2- 4-	16+	Dist.
12	2.1 1.8 1.0 0.9 1.4 2.2 2.8 1.9	14.1	0.4	2+ 2o 1- 1o 1o 2o 3- 2-	13+	
13	2.4 1.6 1.4 1.6 2.5 3.0 2.6 2.1	17.2	0.7	3o 2o 2- 2- 2+ 3- 3- 2-	18-	14
14	2.4 3.7 2.8 3.7 3.3 3.1 4.3 2.8	26.1	1.2	3- 4+ 3+ 4- 3+ 3o 4+ 3o	28-	20
15	0.5 0.5 1.5 3.1 3.1 2.7 2.5 1.9	15.8	0.7	0+ 0+ 2- 4o 4- 3- 3- 2o	17+	21
						24
16	1.1 2.4 2.9 1.9 1.4 1.9 2.1 3.1	16.8	0.7	1o 3+ 4- 2+ 1+ 2- 2o 3o	18+	25
17	1.6 0.4 0.7 1.5 1.4 1.0 2.5 1.9	11.0	0.3	2- 0+ 0+ 2- 1+ 1+ 2+ 2o	11o	
18	1.7 2.6 1.5 1.2 1.0 0.2 0.9 2.4	11.5	0.3	2- 3+ 1+ 1o 1o 0o 1- 2+	11+	
19	1.1 1.7 2.5 2.9 2.4 2.2 3.3 3.4	19.5	0.9	1o 2- 3o 3+ 3- 2o 3o 3+	20o	
20	3.6 3.1 3.5 2.9 3.7 4.1 2.4 1.6	24.9	1.2	4o 4o 4+ 4- 4o 4o 2+ 1+	28-	
						Ten
21	2.8 2.5 2.5 3.5 3.1 3.8 3.6 2.4	24.2	1.1	3+ 3+ 3o 4+ 3+ 4- 3+ 2+	27-	Quiet
22	2.9 3.2 1.9 2.2 1.4 2.1 1.3 1.3	16.3	0.6	3+ 4o 2o 2+ 1+ 2o 1o 1o	17o	
23	1.5 0.9 2.5 1.6 1.2 1.0 1.8 2.5	13.0	0.4	2- 1o 3- 2- 1- 1o 2- 2o	12+	2
24	2.7 2.5 2.2 2.9 4.0 6.4 5.8 5.2	31.7	1.7	3- 3o 3- 3o 4o 7- 6o 6-	34-	3
25	3.6 3.6 3.9 3.6 3.2 3.4 2.5 3.3	27.1	1.3	4o 4o 5- 4+ 4- 3+ 2+ 4-	30o	5
						8
26	1.6 2.6 1.7 1.9 2.9 3.3 2.6 2.8	19.4	0.8	2o 3+ 2o 2o 3o 3o 3- 3-	21-	12
27	2.6 2.9 1.4 2.2 2.6 3.0 3.3 3.3	21.3	0.9	3o 3+ 1+ 3- 3o 3o 3o 4-	23o	17
28	3.2 2.3 2.0 2.4 2.3 3.5 2.2 1.3	19.2	0.8	4- 3- 2+ 3- 2+ 3+ 2o 1o	20o	18
29	2.1 1.6 1.1 0.8 0.8 1.7 2.0 2.0	12.1	0.2	2+ 3o 1+ 1- 1- 1+ 2- 2-	12-	23
30	2.9 2.5 3.2 2.6 0.9 3.1 4.1 2.5	21.8	1.0	3o 3+ 4+ 3- 1o 3o 4o 3-	24o	29
31	1.2 0.9 1.2 0.9 1.1 1.4 1.9 2.8	11.4	0.4	1o 1o 2- 1- 1- 1+ 2- 3-	11-	31
Mean	2.16 1.92 2.03 2.43 2.07 2.02 2.30 2.15	2.16	0.70			

Table 63.-- Geomagnetic planetary three-hour-range indices Kp

	January 1940									February 1940									March 1940								
E	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum
1	2+	2+	2-	2o	2+	2o	3-	3+	19-	5-	4o	5-	4+	5-	5o	5o	5-	37o	1o	3o	3-	2o	2o	1+	1o	0+	13+
2	4-	4o	3-	2+	3-	1+	1-	3+	21-	4o	3o	4o	3o	3o	3o	3+	3-	26o	1+	2-	1o	1+	1-	1+	1o	1+	10-
3	2o	4-	4-	3+	5+	8-	5o	4o	35-	3o	1+	2+	3-	3+	4+	3+	4-	24o	2-	2+	2o	2-	1o	2-	2-	3-	15-
4	3o	2+	2o	3+	4+	5o	4+	4+	29-	1-	1o	1o	1-	1-	4o	2+	3-	13o	0+	1-	0+	0+	2-	0+	1-	2+	7-
5	3-	5o	2-	1o	0+	1o	2o	3-	16+	3-	1o	1+	2+	3+	3o	2-	3+	19-	1+	2-	1+	1+	1e	0o	0+	0+	7+
6	3+	4-	3-	3+	3+	4o	4+	3o	28-	3o	2-	2+	3-	3o	2o	4-	4-	22o	0o	0+	0+	0+	0+	1o	1o	1+	5-
7	4-	2o	3-	2+	4o	3o	3o	5o	26-	4+	2+	2o	2o	3+	2+	2+	2o	21-	1+	2e	0+	1-	1+	0+	1o	1+	8+
8	3o	4+	3o	1-	2o	2o	2o	3-	20-	3o	3-	2+	3-	1+	2-	3o	3-	19+	2+	3-	2+	1+	1o	0+	3+	4+	18-
9	2o	1-	1+	2-	3-	3+	5-	2+	19-	3o	4-	2o	2-	1o	2-	0+	2+	16-	5+	6+	4-	2+	2o	2+	2+	2o	26+
10	2o	2+	1+	2+	6-	5+	5-	4o	28-	2o	2-	1o	1-	1-	2-	3-	3-	13o	2o	2o	2o	2-	1+	1o	1+	1o	12+
11	3o	4o	4-	4-	3-	3o	5-	4+	29o	2o	1-	1+	2+	2+	1+	3o	3+	16+	1o	1-	0+	0+	1-	1o	1-	0+	5o
12	3+	4+	5o	3o	4-	4-	4-	5-	31+	3+	4o	2+	2+	4-	4o	2+	2-	24-	0o	0+	0+	1-	1-	3+	4o	5o	14+
13	2+	3o	3-	2o	2-	1o	1o	0+	14o	3-	2o	2o	1+	3o	1+	3+	2+	18o	4-	3o	2+	2+	2-	2o	1-	2+	18o
14	0o	0o	0+	2-	1-	1-	1+	2-	6+	2o	2-	1o	3-	2o	0+	1-	1+	12-	2-	3o	3+	3o	1o	2-	2+	2o	18o
15	3+	3-	1-	1+	1+	1-	1-	1+	12o	3-	1o	2o	3o	3o	1o	2-	1o	15+	0+	0o	0o	1-	1-	0o	0o	0o	2-
16	2-	2o	3+	2+	3+	3o	3+	2+	21+	2o	2o	1+	2+	1+	3-	2+	2o	16o	1-	1-	2-	1e	1+	1-	3-	2o	11-
17	3+	3+	3+	2o	5o	4-	4-	3+	28-	0+	1o	2-	2+	2-	2o	1-	0+	10o	1+	0+	1-	1-	0o	0o	0o	0e	3o
18	3-	3-	3+	4-	5-	7-	6o	3-	32+	0o	1-	1-	0+	0o	1-	1o	0+	4-	0o	0+	0+	0o	0o	0o	0+	0+	1+
19	3o	1+	2-	2o	2o	2+	2o	2-	16o	0+	0+	0+	0o	1e	0+	1-	1-	1+	5-	2-	3-	3o	3-	3-	5-	4-	26-
20	1o	2o	2-	1+	2+	2+	3-	1+	15-	5o	4+	4-	2o	3-	3o	3+	3-	27-	5-	4+	4-	4o	4o	3+	4o	4o	32o
21	1-	0+	1-	1o	1o	1+	1-	0+	6o	4+	4o	3-	3o	4-	4-	2-	2-	25-	3+	4-	2o	1+	2o	2+	2o	2+	19o
22	0+	1o	1o	2o	1o	3+	3o	1+	13o	3+	3+	4o	2+	2+	2+	2-	2+	22-	3+	3-	2-	1+	1o	1o	3+	3o	17+
23	0+	0+	2o	2+	2o	1o	2+	2+	13-	2+	3o	2+	1+	2-	1o	3o	4-	18+	1o	3-	5o	6o	4o	4+	5o	7+	35+
24	3-	3+	2+	2+	3-	3o	4o	3o	23+	4+	3o	3o	3-	2+	3-	2-	4+	24o	6+	6o	5o	4+	8e	9o	9o	8+	56o
25	3+	4-	3+	2-	4o	3-	1+	2o	22o	4+	4+	5-	5-	5o	5o	5-	3-	35+	9-	8+	8+	8o	7o	5-	7-	8e	60-
26	0+	0o	0o	0+	0+	1-	1+	2-	5-	2o	1o	1o	1+	2-	2+	4-	2+	15+	7+	6o	5-	3-	2+	4-	6+	3-	36-
27	2-	2+	3-	1-	1-	1o	1-	1o	11-	2o	4-	2-	1+	2o	0+	1-	1-	12+	5+	5o	3+	4+	3-	4-	3+	4+	32o
28	1+	0+	1-	0o	0o	0+	1-	1+	5-	1o	2o	1o	2o	1+	1o	1+	3-	12+	5+	4o	3o	3o	3o	2+	3o	3o	27-
29	1+	1o	1-	1o	3-	4-	3+	3-	16+	2-	3-	3-	3-	3o	4-	2+	1+	20o	3-	2-	2+	5o	5o	8+	8o	8+	41+
30	4-	4-	3o	4-	3o	3+	3+	3o	27-										9-	8+	8+	8o	7+	8-	7o	6-	61o
31	3o	3+	4-	3+	5-	4+	5o	5-	32o										7o	5+	5-	8+	8o	8-	6o	6+	53+

	April 1940									May 1940									June 1940								
E	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum
1	7-	6+	6-	7-	4+	5o	5-	4-	43o	2o	1o	2-	1o	2o	2o	3o	2-	14+	1-	0+	1+	1-	1o	1-	1+	2-	8-
2	2+	2+	2o	2-	2o	3+	7o	6o	27-	2-	2+	1+	1-	1-	2-	1-	0+	9+	1+	3-	2o	1o	3-	3-	1+	2o	16-
3	8o	8o	7o	5-	5-	5o	6+	4-	47+	2-	1+	2+	1+	1+	1-	1-	1o	10+	1-	1-	1-	1o	3o	2o	2-	2o	12-
4	3+	2+	3o	4-	3-	3o	3o	3o	24o	2+	1o	2-	0+	0+	1-	0+	2-	8+	2o	1-	0+	0+	1o	1-	0+	1-	6o
5	3-	3+	2o	2o	1o	2+	2+	2o	18-	2-	1+	2-	2o	1+	1-	2-	1o	11+	1o	1o	3-	2o	2o	2-	2o	4o	16+
6	3+	3+	2+	1+	1-	0+	3-	1o	15o	0+	0+	0+	0+	0o	0+	0+	0o	2-	4+	5+	5o	5-	4+	4-	4-	4+	35+
7	1-	0o	0+	0+	1o	0+	2-	1-	5o	1o	2+	2+	1+	1o	1+	1+	1o	12-	5o	5+	4o	4+	4o	3-	3+	5-	33+
8	0+	0+	1o	1o	1-	2-	1-	0+	6o	2-	2o	0+	0+	1+	1-	1-	1o	8o	4+	3o	3o	3-	3-	3o	4+	4-	27-
9	1o	0+	0+	1-	0+	1-	0+	0+	4o	2+	4-	2-	2-	3o	3-	1+	1+	18-	2-	3o	3+	4-	2o	3o	4-	3o	23+
10	1-	0+	0+	0+	0+	0o	0+	0+	3-	1o	3-	3-	3-	3-	3o	4-	4-	22o	3o	2-	3-	1-	1-	0o	1-	2-	11o
11	0+	1-	1-	1+	2+	2+	1-	1-	9o	4-	4-	3o	2o	3-	2o	3o	2o	22o	2-	0+	1-	1o	1o	1+	0+	2-	8o
12	1-	1+	1o	1+	1o	1-	0+	1-	7o	3o	4-	4o	2+	3-	3-	3-	4-	25-	1o	0+	0+	1-	2-	1+	2o	2-	9o
13	2+	3-	2o	3o	3+	3+	2-	1+	20-	3o	2+	2-	2-	2+	2+	4-	3-	20-	0+	0+	0+	0+	1-	1o	1+	2+	7-
14	2-	3+	4-	3-	2o	3-	1+	2-	19o	3o	3+	3+	2+	3-	3-	2+	2o	22-	1o	2+	3+	3-	5-	6o	6-	6+	32o
15	2o	3-	3-	3o	4o	4+	3o	3o	25-	2-	3+	3-	2+	3-	3+	4-	3+	23o	5-	5o	4+	4o	4-	4-	3-	1+	29+
16	3+	4o	3o	2+	2-	2-	3o	3o	22o	3+	1-	0o	1-	1o	1o	1+	1+	9+	4-	2+	4-	3o	2o	2-	3o	3-	22o
17	3o	3+	3-	1o	1o	1+	1+	1-	14+	2o	2+	2o	3-	2-	2+	3+	2+	19-	3o	3+	3+	3o	3o	3+	3-	2o	24-
18	1+	1+	2-	1-	1o	0+	0+	1+	8o	4o	5-	6-	5-	6-	3o	3-	2o	32+	2o	4o	5o	3+	2o	1+	2+	2-	22-
19	2+	2o	1+	1-	2-	3-	1+	0+	12+	3+	2-	2+	2+	1o	2+	2-	3o	18-	2o	3o	3o	2+	3+	3o	1+	2-	20-
20	0+	2+	3+	2-	3-	2+	3-	2o	17+	2o	2+	1+	1+	3+	4-	2+	0+	17-	1o	1+	1-	1-	1o	1o	1o	1-	7+
21	4-	3o	3-	2+	2-	2-	2o	3+	20+	1+	4+	1o	0+	0+	1o	2o	2o	12+	1+	2o	1+	1o	1o	0+	1-	0+	8o
22	3o	4o	5-	3-	3o	4o	2o	1+	25-	4+	6-	6-	5-	3o	3-	2+	2-	30o	0+	1o	0+	3+	3+	2o	1+	2+	14o
23	3o	1o	1-	0+	3o	1o	2o	3-	14-	2-	2+	2-	2-	1-	5o	5+	3-	21o	4-	2-	1o	1o	1o	1o	2o	2o	15+
24	4-	1o	1-	2-	3o	2+	1o	1o	14+	3o	7o	6-	8-	6+	5-	6-	4+	44+	3+	3+	3+	2o	3o	2+	4-	4-	25-
25	5-	8o	4o	2-	2+	5o	7-	7-	39o	4o	3o	1o	1-	1+	3+	3o	2+	19-	5-	7o	5+	7+	8+	8-	7+	5+	53o
26	7o	5+	5-	3+	4-	4-	5-	3+	36-	3-	4o	3+	3-	2+	4o	4+	5+	29-	5-	3+	2+	2+	1o	6-	4+	3+	27o
27	4-	3-	2o	2-	2+	3-	2o	2-	19-	6-	4o	2+	3-	1+	2+	3-	4o	25o	3-	2+	2-	2+	2+	2+	1o	1-	15+
28	3-	1+	1+	2o	2+	3-	1+	3-	16+	3-	4+	3+	3+	3o	2+	2+	2+	24-	2+	1-	0+	1o	1-	3o	2+	1-	11o
29	4o	3+	2+	2-	2o	2-	1+	1-	17o	3o	2o	2-	1+	1+	2+	2+	1+	15+	0+	1+	1-	0+	1+	1o	3o	2-	10-
30	1-	2-	2-	3o	3o	3o	3+	3-	19o	0+	0o	0+	1-	1-	1-	1+	2-	6-	4+	4-	1-	1+	2o	3-	2+	2-	19-
31										1+	1-	1-	0+	1-	0+	0o	0+	4+									

Table 63.-- Geomagnetic planetary three-hour-range indices Kp (continued)

	July 1940									August 1940									September 1940								
E	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum
1	4-	2+	1o	1-	1+	1o	2+	0+	13-	4+	3-	1-	1+	1o	2-	2o	3o	17-	4o	4-	4-	4o	5o	4-	2-	1-	26+
2	1-	1-	1-	1-	1-	1o	1+	1o	7-	1o	1-	1+	2-	1+	2o	5+	2o	15+	0+	1+	2o	3-	3-	3o	3+	3-	18o
3	2-	2o	3-	2-	3-	2+	3+	5o	21+	2o	3+	4+	4+	6+	6-	4-	2+	32o	4o	4o	4-	3+	4-	4-	3+	4-	29+
4	5-	4-	4-	3o	2o	3-	3o	5o	28-	3+	2o	3o	2+	1-	1+	2o	1+	16o	4+	3-	3-	4-	2o	2+	2+	4-	24-
5	4o	2+	3o	2o	3+	2o	4-	4-	24o	2o	3-	1o	3o	3o	2+	2+	3+	20-	3+	3+	2+	3-	2o	2o	3-	1+	20-
6	3+	3o	3-	2o	3+	2+	3+	2+	22+	3o	3-	3+	3o	3-	3o	4-	4o	25+	2+	2+	2-	2+	2+	1+	1o	3o	16+
7	2-	1-	1+	1+	2+	2o	2+	1+	13o	2+	1+	2+	3+	3o	4o	4-	1o	21o	4+	5+	5-	4+	3+	4-	1+	4+	31+
8	1+	1o	0+	0+	1+	1o	1o	3+	10-	3o	2+	3+	3o	2+	1+	1-	2o	18o	3+	2+	2o	4o	4-	4-	2-	2o	23-
9	3-	3+	3-	2-	3o	3-	3+	3+	23-	2o	3o	4+	5+	5-	4+	6+	4o	34o	4-	4o	3-	3o	2+	3o	4-	3o	25+
10	4o	4+	5o	4+	4o	3+	3-	4o	32-	2o	1o	2+	3-	2+	3o	1+	1o	16-	2-	1+	1o	0o	0o	0o	0+	1-	5o
11	3o	4-	2+	2-	1+	1+	2-	2o	17o	3o	3-	3o	3+	3o	3+	4-	3+	25+	0+	0o	0+	1+	1+	2-	1o	1-	7-
12	2o	2+	1o	1o	1-	1-	2-	1-	10o	2+	3+	3o	2o	2o	3-	2-	2o	19o	1+	1-	1o	1o	1o	1-	1o	1-	7+
13	1+	2-	3-	7-	8-	6o	5-	4+	35o	3-	2+	2o	2-	1+	2-	1o	1+	14o	0+	0+	0+	0+	0+	1+	2o	1+	0+	6+
14	3+	5-	4o	4-	3o	3+	2+	3o	27+	1+	3-	3-	2+	2+	1o	1-	2-	15-	2o	3-	1o	1-	2o	3o	5-	3+	20o
15	3+	3+	2+	2o	3+	3o	3o	2+	23-	1+	0+	1o	0+	1-	0+	0+	0+	5-	1+	4-	3o	2+	3-	2+	3o	1+	20-
16	3-	2+	2o	2o	2-	2+	2-	2o	17-	0+	0+	2o	0+	0+	0+	1o	0+	5o	1o	2+	2o	1o	4o	4+	2o	1-	17+
17	2-	1+	1+	1-	1o	2-	0+	0+	8+	1-	0+	0+	0+	0+	1-	1o	1+	5o	0+	0+	0+	1o	0+	0+	1-	1+	5-
18	0+	1-	0o	1-	0+	0o	0+	1+	4-	1-	0+	1o	1+	2+	4o	4-	4-	17o	0+	0+	1o	1-	0+	1-	2-	1+	6+
19	1+	1o	0+	0+	1o	1o	2-	2+	9o	2-	0+	1o	1o	2+	3+	3o	3-	15+	1+	1-	1-	1-	1o	0+	0+	0+	5+
20	1o	1o	1o	0+	1-	1-	2-	2o	8+	3o	4-	3-	2+	2+	2+	2o	1o	19+	0+	1o	2-	2+	4-	3+	2+	2+	17o
21	2o	1o	2-	3o	2o	2+	2+	3-	17o	2o	2o	1-	2-	2+	1+	1+	2o	13+	2+	2+	3-	4o	4-	3o	1+	1+	21-
22	2-	3o	5-	3-	3o	3-	2+	2o	22o	2+	1o	1+	2-	2-	3+	3+	2-	16+	0+	0+	2-	3o	3o	2-	2+	1+	14-
23	2+	2-	1o	1o	2o	2-	1+	2+	13+	2+	2o	1+	1-	1o	1-	2o	1o	11o	1-	0o	0o	0+	1o	0+	0+	1-	3+
24	2o	3+	3-	3o	2-	2o	1+	3-	19-	0+	0o	0+	0+	0+	0+	0+	0o	2o	1-	1+	0o	0+	0o	0+	1o	3-	6+
25	3-	3-	3o	3-	1+	2o	1o	1+	17-	0o	0o	0o	0o	1-	1o	2+	3-	7-	3o	4o	4-	4-	3-	4o	4-	4o	29-
26	3-	2o	1+	1o	1o	1o	0+	0+	10-	2+	2+	1o	3-	3o	2+	4o	6-	23+	2-	0o	0+	1-	1-	7-	8-	5o	23-
27	1-	1-	1-	0+	1-	1o	1-	1-	5+	4-	4+	3-	2-	1+	3-	2-	3-	21-	7-	6-	3+	3o	3o	4+	5+	5o	36+
28	2-	1o	1+	3-	2-	1o	1-	1+	11+	3o	4-	3-	2o	2o	1+	2o	2o	19-	4+	6-	6-	5-	4-	5o	5o	3o	37o
29	1o	2o	1o	1o	1+	1+	4o	3+	15o	3+	2-	2o	2+	3+	1o	1o	1+	16o	3-	3-	2o	2+	3o	2o	3-	2-	19o
30	2+	3+	2+	3-	4-	4-	5-	3o	26-	1+	0+	0o	1-	1o	1o	2o	2o	8+	2-	1-	0+	0+	1o	1+	4o	3o	12+
31	4-	3+	3+	3+	3-	2+	3+	3-	25-	2o	1o	1o	1+	2-	1+	1+	4-	13+									

	October 1940									November 1940									December 1940								
E	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum
1	4+	4+	3o	3+	4+	5+	7o	2o	34-	1+	3o	4+	4-	3-	1+	2-	0o	18o	2+	4-	3-	3o	2+	2o	3o	3+	22+
2	2o	1+	3-	3-	3+	4o	3-	3-	21+	1-	2+	3+	2+	1o	0+	0o	1o	11o	4-	4-	3-	5o	3+	4o	3+	4+	30o
3	2-	3+	4o	3o	3o	3+	5-	3-	26-	3-	3+	3+	4-	3-	2-	2o	2o	21+	4-	2+	1+	4o	3+	4-	2+	4o	25-
4	4+	4o	1o	1-	1o	2o	1o	1-	15-	3-	4-	3+	2o	4+	5-	4+	4o	29o	2o	3o	3-	2+	3+	3+	3+	1+	21+
5	3-	3+	2-	1+	2+	2-	1-	0+	14o	4-	4+	4-	4-	3-	2-	3-	1o	23+	3-	3+	3-	2-	1+	1+	2o	2-	17-
6	1+	1+	1+	3-	3+	3+	2-	4o	19o	3-	3-	2+	2+	1+	1+	2o	1+	16o	2o	2o	1o	2-	0+	1o	2-	1o	11-
7	4o	4+	6-	5-	6-	5+	7o	6-	42+	2-	2+	3o	4-	3o	1-	1-	1o	16o	2-	1-	1-	1-	0o	0+	0o	0o	4o
8	5+	7-	6-	4o	3o	4o	5-	5o	38+	2-	1+	1+	1o	1o	1-	1-	1-	8+	0o	0o	0o	0o	0o	0+	1-	0o	1o
9	4o	2-	1+	2o	1o	1-	2-	1+	14-	1o	3o	3+	2+	4-	3o	2o	1+	20-	1+	3-	3+	3o	4-	2-	1+	2+	19+
10	0o	0+	1o	2+	2+	1o	3o	3-	13-	1o	1+	1-	1-	0o	0o	0+	0+	4+	2-	3+	2-	2+	1+	4-	3-	2o	19-
11	3-	3o	2-	1o	2+	1+	1-	3-	15+	0+	0o	1-	0o	0o	0+	0o	2o	3+	2-	2-	2-	2-	0+	2-	2-	4o	14+
12	3+	2+	1+	3-	2o	2o	1+	3o	18o	2+	0+	2+	5-	3+	3+	4o	5+	26-	3+	2o	3-	2o	2+	3+	2o	2o	20-
13	1+	1o	1o	0+	1o	0+	0+	0+	6-	7-	7-	6+	3+	4-	3+	2+	2o	34+	4o	3-	2+	3+	1+	2-	2+	2-	19+
14	0+	0o	0o	0+	1-	0+	1o	1-	3+	3+	3+	3-	3-	3+	2+	3-	4o	24+	3-	2-	2o	3o	4-	4+	4+	4-	25+
15	2-	3-	3o	4+	3-	3-	3-	2o	22-	3-	3+	3o	3-	1+	2o	2+	3o	20+	2+	2-	1o	1o	3+	3+	3+	4o	20o
16	1+	1-	3o	2o	1+	3-	4o	1o	16o	4o	3-	1-	1+	2-	4+	4-	3+	22-	3o	3-	2+	4-	2+	2+	2-	1+	19+
17	2o	2-	0+	0+	1+	1-	1o	3-	10o	2-	1o	0+	1-	2-	4o	5-	4o	18o	1+	1+	1-	1o	3o	2-	2+	3-	14o
18	3-	2+	4o	2o	2o	2-	3o	3-	20+	3-	1o	2o	2-	2-	0+	1-	2-	12-	3o	2o	1o	2o	2o	1+	1-	1-	13-
19	3-	3+	4-	4-	3+	2o	4-	3+	26-	2o	1o	2+	3-	2o	1o	1+	1+	14-	2o	1o	1-	1+	2-	0+	1o	2+	10+
20	3-	3-	2o	2o	1o	1-	2-	4-	16+	0+	0+	1+	1o	1+	2+	2o	4+	13o	3o	3+	4-	5+	6-	6o	5o	5o	37o
21	3-	2-	3o	4o	2+	3+	4-	4-	24+	5-	3+	5-	4o	3+	2-	2o	4+	28o	4o	6-	5-	4+	4o	4-	4o	3+	34-
22	2+	3+	5-	4-	4-	1o	2o	1o	22-	4-	5o	5+	5o	4o	2-	4+	5-	34-	4-	3o	4-	4-	5o	4o	2o	2+	27+
23	0+	0+	0+	0+	0o	0+	0+	0o	2o	3+	4+	5+	5o	4-	1+	3-	1+	27o	3o	1+	2o	3-	4-	4-	4+	4-	24+
24	0+	0+	0+	0+	0+	0+	0+	0o	2+	1-	1o	2+	0+	1o	1o	2-	3-	11-	3-	3-	2o	1+	2o	2-	3o	3o	18+
25	1-	0+	1-	2-	3-	3o	4o	5-	18-	2+	1+	3-	5o	6+	6-	4o	4o	31+	2-	3o	4+	3o	3-	3+	2+	5-	23o
26	3o	2+	3o	4o	5-	5+	5-	4o	31o	5o	5-	5o	4o	3+	3+	2o	1o	28+	1o	3+	2+	4-	2+	1o	3+	2+	19+
27	3+	3+	3o	3+	3+	3-	2+	2-	25-	2+	1o	2o	2-	3+	3o	2+	2+	18o	2+	3o	2o	2+	4+	3o	1+	2-	20o
28	3o	3+	2+	3-	2+	2o	4o	2-	21+	0+	1o	1o	1+	2-	1+	1o	3+	11o	2o	2+	2+	3-	2+	1o	4-	5-	21o
29	1-	4o	2-	1+	1+	1-	1-	0o	10+	3-	5o	5-	5-	5+	5-	4o	5o	36o	5-	4+	3o	3o	2-	3+	4-	3+	27o
30	3-	2+	1+	1-	1-	0+	1o	1+	10+	4o	3+	2+	3+	3o	3+	3-	3-	25-	2+	5-	6+	4o	4-	4o	4+	3+	33-
31	3-	2-	2o	2+	2-	2o	1+	0+	14o										5-	4-	4-	3-	4o	4o	3+	2-	28-

Table 63.--Geomagnetic planetary three-hour-range indices Kp (continued)

	January 1949			February 1949			March 1949		
E	1 2 3 4	5 6 7 8	Sum	1 2 3 4	5 6 7 8	Sum	1 2 3 4	5 6 7 8	Sum
1	2+3+3+2+	2o3-3-4o	23-	1-0+2-2-	1+0+0o0+	6+	2o2-2-4o	4o4-3+3+	24-
2	6-7-4+5+	5o3+4-2+	36+	1o0+1-2-	3-1o2-1-	10-	3o4+4o5-	3o3o4-4o	30-
3	2+2-1+0+	0+1-2o1+	10o	2o0+1+1+	2+2-4o5-	18-	4-3+3+4-	3+5o3+2+	28o
4	2o0+0+0+	2-1+1o1-	8-	6+6-5-4-	3+2-1o1o	27+	3-1+3-3o	2o2o2-2o	17+
5	1o2-0o0+	1-1-1-1+	6+	1+1-2o1+	3-3-2+2o	15o	3o4+3o2o	1-1-1+3-	18-
6	1-2o2+3-	1o2-1+4-	15+	2+1+2-4o	4o5-5-4o	27-	1o1-1o1+	1o1-1o0+	7o
7	3+5-4-2o	1-2-3-4+	23o	5o5+4o4o	2+1+1+1+	25-	2-0+1+2o	1+2+1+2-	12o
8	3o1-1+3-	2o3+3o2+	18+	1o0o0o4-	1o3-1o0+	10-	2-1+2-2o	2+3-2-3-	16o
9	3-3-3-3+	4-3o4-3o	25-	1-0o1+1+	1+1-1o0+	7-	3+4o2-2+	5-5+3o2+	27-
10	2+3-3+2+	3o3o2+5o	24o	2+1o1o1-	1o2o3-2-	12+	1o0+1-1-	0+1+2o1-	7o
11	1+3o3o3-	3-2-3+4+	22o	2+2+4o3+	4+2+3o4+	26o	1-0+1+1+	1+1+0+1-	7+
12	4-2+2+2o	2-4-4+4+	24+	3o4o3+3+	3+3-3-3-	25o	1+0+1+2+	2+3-2o4-	16o
13	5o3o4-3+	2+1o2+1o	22-	4o4o3-3+	3-2-2+4-	24+	4o4-3+4-	4-4-3+4+	30-
14	1-0+2o2+	2o1o2+3-	13+	4-3-3-2+	2o2-1+3+	20-	5+5o4o5o	4o4+5-4o	36+
15	1o0+1-2o	2+1+1o2+	11o	2o2+1+3-	3+4-3o3-	21o	5-2+2o5-	4o3+4-2+	27o
16	3-2o2-3o	3-2o2+2-	18o	3o2o3-2o	2o1o1+3o	17o	2o2-1+2o	2o7+6o4-	26o
17	3+1+1+2o	2-1+1-1o	13-	3+3o4-4o	5+5-3+4o	31+	4o4-3o4o	3o5-5o6+	34-
18	2o4o2o3+	3o4-4-5-	26+	4o4-4+3+	3+2+3+4-	28o	7-5-4+4-	3o4o5-3-	34-
19	4+4o3o3o	3o3-3-3-	25+	3-2+2+2+	1+2-1o1-	14+	2+2+2+2+	2-3o2o3+	19+
20	2o2-3-2+	3-2o1+1+	16o	0o0+1o2-	3-3+3o2+	14+	2-3+3o2+	2+3o3o3-	21+
21	2-3o3-2+	2o2o2o4o	20-	3+3-3-3-	3o5o4-4+	27+	303+2+2+	2+3-3o6+	25+
22	3o3+4+3o	3-2-1+1o	20+	6o6+5+5-	3+3+4+4o	37+	7o8-7-7-	5-6-6-3+	47+
23	0+1o1o2+	2+3o3+4-	17o	3-1o1+3o	4-3o2o2o	19-	4o7o6+5o	4o5-1+2-	34o
24	3+3o2o1+	3-3o7+6o	29-	5o4o4-4o	4o4-2-3o	29-	1-2o3+2+	2-1o3-1o	15-
25	9-8o7-4+	5o6o8+8+	55+	2-1-2-2-	2-1o1-1-	10-	0+4-2+3o	3-1+1o3+	18-
26	8+8o7o6-	5o5o5-4o	48-	1o2o2-2-	2-3o1o3-	15-	4-4-4+3o	3o3-1+1o	23-
27	4o5-3-2+	3o3o3+2o	25o	3-4-5+4o	2+2-1+2-	23-	0o0o1o1o	1+1-1o1o	6o
28	2o3-2+2-	2-2+2o1+	16o	0+1+3o1+	1-3o1-1o	11+	1+3+3-3-	3-3+4+4+	24o
29	2+1+2o2+	2o2o2o2-	16-				4+2-3o4-	3o3+2o2o	23o
30	1o1-1-0+	1-1-1-1-	5+				1+4o3-3o	2+2o1o1o	17+
31	0+1+2-1+	2-2+3-1o	12+				2o2o1o1o	0o1o0+0o	7+

	April 1949			May 1949			June 1949		
E	1 2 3 4	5 6 7 8	Sum	1 2 3 4	5 6 7 8	Sum	1 2 3 4	5 6 7 8	Sum
1	0o1-1o1+	1+2-2+3-	11o	0o0+1-1-	1-2+2o2o	9-	4-4o3o2+	2+1o1-3o	20o
2	3+1-1-1+	1o1+1+1o	11-	3-3-1o0+	2o4-3-2+	17+	2o1o4-3o	2+2+2-2o	18o
3	1+2-3o2+	3o3+1-1-	16o	3o3o2-2-	1-1-4o7o	22-	2o1o2o2+	1+1-1o5o	15+
4	1-2-2+2+	2-1o1o1o	12-	6o5+4o3+	4o4o2o1o	30-	6+4o5+2+	3+6o7-6-	40-
5	1-2-1o3-	2o1+1-2-	12-	1o1+2o3-	3+4-4o5o	23o	4-5+5o5-	6-6o6-6+	42+
6	2o2o1o2-	0+1-1-1o	9+	4+4o3o2o	2o3o3o3-	24o	5o5o2+2-	1+2o3-6o	26o
7	2o0+1o3-	2o3+5+7+	24o	3-3-2-1+	2-3-2+3o	18o	4-3+3+2+	2+1+2o2-	20o
8	7-6+6+7o	7-5+5+3-	46+	2+2+2o2-	2o1+3o4o	19-	2-2-2o2o	2-1+2-1+	13+
9	2o2+2o2+	2+2o1o3+	17+	3+2+4-2+	3-4+3o2-	23+	3-2-2+2o	1o1-3o2+	16-
10	4o4o4-3o	3+4+5+5+	33o	2o2-2o1+	3+3-3-3+	19o	1o1+1-2-	1o0+0+0+	7-
11	4+3-4o4-	5+5+3+3-	31+	5-4-3+3+	2-1+2+1+	22-	0+0+1-1-	2-2+2o2o	10o
12	1+2o4o4-	4+6o4-3o	28o	2o2o7+7+	8+9-8+7o	51o	4o3+3o4-	5o5o5o5o	34o
13	5-5+3+4o	4+3+3+3-	31o	8o7+3+2o	5+3+1o2+	33-	6o2+3o4o	3-2o2-2+	24o
14	3+4+4-3+	2+3-3-3+	26-	4-3o3+4-	3+3+3-3o	26o	1-1-1o2-	2+1-3-3-	12+
15	3+3-3o2o	2o2-2-3-	19o	3+3o2+2+	2o1o0+0+	15-	3-3o2+2+	3-3+4-2-	22-
16	2o2+2o4-	3+4o2o3o	22+	1+3+3+3-	3+3o2+4o	23+	2o2-2o2+	1+2+2o3-	16+
17	3+2+3-3-	3-2o2-3+	21-	4-3-2+1o	1o2-1o0+	14-	1+1o1o1-	2-1+3o4+	14+
18	3-3-1-1o	0+2-2+2o	13+	0+1-1-1o	1-1-1+1+	7-	4o2+3-3o	3-3o3-3-	23o
19	1+1+2+2-	1+1-1+2+	12+	1+1o0+0+	1o3o1+1o	9+	3o3o2-3-	2+2o1o1o	17-
20	1+1o2-1-	1-1-2o2-	10-	1+1+1-1-	1+1-1+1+	9-	1o2-2o2-	2+2-2-2-	14-
21	2o2o1-1-	1-1-1+2-	10-	1-1o2o3-	3o2o1+1+	14o	1o1-1+2o	2o1o1+1o	10+
22	1+1o1+1o	2+2o1o1-	11-	3o2+2-2+	2o2+1+2-	17-	0+1+1o3-	3+4-3o2-	17o
23	0+1+2o2o	2+2+2+1o	14-	2o2+2+1+	2+2-2+3o	17+	2-2-1o2+	1+1+0+0+	10o
24	3o2o2o2+	1+2+1o2+	16+	2+2+3o2-	1o1+1o1o	14-	0+1o1o2o	2+2o3o2+	14o
25	3-2o1+1o	2-1+1o2-	13-	1-0+1+4-	3+3o1+1-	14+	4-2+4-4o	3+2o2-1o	22-
26	3+3-1+1+	2-2o1o1+	15-	1o1o2-2o	2+3-1o1o	13-	1+2-1+2-	3o2+3-3o	17o
27	3+5-3+3+	2+1+1-1o	20o	0+1o1o3-	3-2-2-1+	12+	3o3-2o1+	1+2o2o2+	17-
28	1-2o2-2+	1o2+2+2o	14+	3o2o2o1+	1-1o1-0+	11o	1+1o2+3-	2-3o2+3+	18-
29	2o1o1o1o	1o5+4+3o	19-	0+1-1-1o	1o1-1-0+	5+	3-3+3-3+	2-3o4-3+	24-
30	3o1+1+1+	1+0+1-0o	9+	0+1o1o1o	4+5-6+7-	25+	2+2-2-2o	3-2o2-3-	17-
31				5-6o3+4-	4+3+4+4o	34-			

Table 63.--Geomagnetic planetary three-hour-range indices Kp (concluded)

	July 1949			August 1949			September 1949		
E	1 2 3 4	5 6 7 8	Sum	1 2 3 4	5 6 7 8	Sum	1 2 3 4	5 6 7 8	Sum
1	2-2o2-2o	1-1o1+1+	12-	0+1o2-2+	2o1-2o1+	11+	3-1o4-3o	3+4o4o4-	25+
2	1+1+1+0+	0+1-0+1o	7-	1o2-4o4+	5o4o2-2o	24-	3o5-4o2o	3o3+4o4-	28-
3	0+1-1-1-	1-1+2o1+	8-	5o5+7o7o	5-3+3+4-	39+	5-5+6o4o	5-4o4o2+	35o
4	1-1-1-0+	1-1o0+1-	5o	7-7-6+4-	5o4o6-4+	42+	3+3+3o3o	2o2-3+2+	22o
5	0+1o1o2-	1+0+0+1o	7o	4o3-2+3-	4-4-4o3+	26+	3o2o2o2+	2o3o3-2o	19o
6	1-1+1-0+	1+0+1+1o	7o	3-2-1-4-	2-1-3-2+	16o	2o2o3-4-	2+1+1+1o	16+
7	3o1o1+2-	4o4-1o1-	16+	1o1o1o1o	3+4+2+3+	17+	0+2-2+2o	2o2-2o2-	14-
8	1+1+2-2-	1+3o4-3-	17-	6o7-4-4-	4-1+1+1+	28-	2o1+3-4-	2o2+3o3+	20+
9	1o2-4-4o	2o1o0+1-	14+	2-1+1o2+	3o3o3+2o	18=	4-2-1+2+	1o1+1o1-	13o
10	1-1o1-1-	1o1o1+0+	7-	1+3-3-2o	2+4-1+3+	19+	0o0+1-1-	2-1+1+2+	8+
11	0o1+1-1o	1o1+1+2+	9o	0+1-1o1-	2-1+1-1+	8-	2o3o3o3o	2o2-2+2o	19o
12	1-1-1o1o	2-1+5o2+	14-	1+1-1o1o	1o1o1+1-	8o	3-3+5o4o	6-4o3+2+	30+
13	4-4+3+3-	2+3o1+1+	22o	1+1-2-2o	2+3-2-3o	15+	4o4o3o3-	2o2-1-3-	21-
14	1-2o2o1+	2+1o1o1+	12-	5+3+4-4+	5-3+4o5o	34-	2-2o2+3-	5+4+2o2o	22+
15	1-0+0+0+	1-1-0+0+	4-	5o5+4-3-	3-3-3o4o	29o	2+2o1+2+	3-3+3-2+	19o
16	0+1-1+2o	5-4-5o4-	21+	3o2+2o2+	1+1+1-1o	14o	4-3+2o2+	2o3-2o2+	20+
17	3-2-3+4-	4-3o1o1+	20+	2-3-2-2+	4o3+3o3o	22-	0+1o1o1+	2o2-3-3-	14-
18	2-1+1+3o	3-3+4-3o	20o	1-1+3-3o	3+3+3-3+	20+	2o1+1-2-	1+0+0+1-	8+
19	3+4o3+3o	3+3-2o2o	24-	3+2+1+3o	3-2+2-3o	20-	0+0+0+1-	0+1-0+0o	3o
20	4-1-1+2-	2-2-1o1-	12+	3-3+3-2-	3-1o2o2+	18+	0o0o0+1-	1-1-1-1-	4-
21	0+1o1o2o	2+2-1o2o	11+	1+2+1o2-	2-2-3-2+	15-	0o1-0o1-	1o1-0+2o	5+
22	1-1+2o2+	3-3-4o4-	19+	2+3-2o2o	2-1+1o1+	14+	2-2-2o3-	2-2o1-0+	13-
23	4+4-3-3-	4-2-2+3-	24-	1-1+2-1o	1-0+0+1-	7-	1o2o1+2o	2-1-1-1o	10+
24	3o2-2-0+	3-3-2+2-	16o	0+1+0+1o	1-0+0+0+	5-	1+2o2o2-	2+3-3-5+	20o
25	2o3-4-1o	2+2-2+3-	18+	0+0+1-0+	1-1-0+1-	4o	5-5-3-5-	4-4+5o4-	33+
26	2-1o3o1o	1-1-1o1o	10o	1o1-1+2o	1-1o1+1+	9+	4o4o4-3o	3-2+2-5-	26o
27	1+0+0+0+	0+1o1+1-	6-	2o3-3+2+	3-3o2o2o	20o	4+4-5-4o	5-3-2o3o	29o
28	0o0+0+1o	1o1-1+1+	6o	2+3o2-2o	2o2-1o1+	15o	4+3+4-2-	1o1o0+1-	16o
29	1-1o1+2-	2o2-1o1-	10o	0+1+3-2-	2-1+2+3+	15-	2+1o2+2-	2o1+2-1+	14-
30	1-1+2+2o	1+1o2+1o	12o	3o3o2+2o	2o2-1o1o	16o	1-2+4o4-	3o3-5-3-	24-
31	2-2+2o2-	1+2o2-1-	13+	2+2-2-1-	1+2-2+3-	14+			

	October 1949			November 1949			December 1949		
E	1 2 3 4	5 6 7 8	Sum	1 2 3 4	5 6 7 8	Sum	1 2 3 4	5 6 7 8	Sum
1	4-3-3-3-	2-1+0+2o	17o	2+1-2+4-	5+6o6-3+	29+	3o4o4o2+	0+1-1o0o	15+
2	2+4o3o1+	1o0+1o1o	14o	3o3+5-4+	5-4+4o6-	34o	0o2o3-2o	0+0+0+1o	9-
3	1-0+1-2-	1+1-1-2+	8+	5+5-3+1+	1+2o2+4+	25+	1+1o2-2o	4-3-2+3+	18o
4	4-3o3o4-	4+3o3o2+	26o	1+2+3o3-	2o3-2o1o	17o	3o3-3o3-	2+2o4-4o	23+
5	4o4o4o3o	2+3o2o3-	25o	3o4-4+3o	4-3+2o4o	27o	3o3-2+2+	2o3-2+2+	20-
6	1+2-3+4o	4-5-4o4o	27-	4o3-2-2o	2+2o1+1+	17+	3+2+3o3-	3-2o2+2-	20o
7	4-5o5-4+	5o6o7+6+	42+	1+1+1+1+	1o1o2-1o	10o	2o3-1o1-	1-1o0o0o	8o
8	7-4o3+3+	5o5+3+3-	34-	0+0o0o0+	1-1-0o1o	3o	0o0o1+1+	2+2-1+2o	10o
9	5o5-3o2+	3o3o2+2-	25o	1-2-3+2+	2-2-2+2-	15+	2-5-5+4+	3o3+2+3+	28o
10	1o0+1+4o	2+3o2o1+	15+	1+1+3+3o	3-4-2+4-	21+	1+1+2o1+	1-1+2o2-	12-
11	4-3-2+3-	4o4+3-4-	26o	4+5+4+3+	2+5-3-2-	29-	1+0o1o1o	0+1o1+0o	6o
12	3-2-2+3-	3-1-1+2-	16-	2-2+3-3+	3-3+4+4-	24o	0o1-0+1-	0+1-1-1-	4o
13	2o2-2o1-	2o4-5o3o	20o	4-3+2o2o	3-3o2-1-	19o	1o1+2-1-	1-1+0o0+	7o
14	4-4+5o6+	6-7+8-7o	47o	1o3+3+3o	3-3o2-3-	21-	2+3-3+3o	3+4-2+2+	23o
15	6o6o7+8o	7+7+8+8-	58o	3-2-2-2-	2-3+3-3-	18o	3o3-2-2o	1+1o1+2+	15+
16	6+7o5+6+	4+5o4-3o	41o	5o4-3-2-	1-1o1o1-	16+	4+2+1+1-	1o1o2+1+	14+
17	4o3-3+3-	2-3+4-3-	24o	0+0o0+0+	1-0+2-2-	5+	2o2+2-1o	0+0+1+1+	10+
18	2-1+2+3o	3-2o1+0+	15-	2+1o2-3-	3+2o2o3-	18-	2-1o1-1-	1-1-1+1o	8-
19	0+1o4o4o	4-4-2+3-	22-	3+2+3+3o	3+4+6o6+	32o	0+1+1+1-	2+2o1-2+	11o
20	3o2-1o2+	3+2o3-3+	19+	6o6-6o3o	5-4o3o2+	35-	3o2o2+3-	1o3-3-2+	19-
21	2o4-3-3o	3-3o1+0+	19-	3+2o2o2o	3o4-5o2o	23o	1o4o2+2-	2o2+2+2o	18-
22	2o1o2-2+	2o2-4-6-	20o	1+0+1-1+	1+2o2o2-	11-	3-3+1o1+	1+1-2o2-	14o
23	3o2-2+3o	3o3+5-3+	24+	2+3-2-1+	1-1+3o2+	15+	1o1+0+1+	2o3o4o2o	15o
24	5o5o3+3o	2-2o2-2-	23+	3-3+1+2o	1o1o0+0o	12-	4+3o4-4-	1+2+2o1-	21o
25	3-2o1o2+	2-1-1o0+	12-	0o0o1+2-	2o1o2o1+	9+	2+2o2o1+	3-3-1+1o	15+
26	2o1+1o1+	1o1o3o2-	12+	1-0o1o1o	1+1-1+2+	8+	2+2+2o1+	1o1o0+1o	11+
27	1+4+3+2+	5-4o6o6-	32-	3-2+3+3-	3-4-3-2o	22o	2o0+0+1+	2+2o2o2-	12o
28	6-6-5-4-	3o3+3o3-	32-	2o1+2o1+	1-1-0o2+	10+	2o1-2o3-	2-2o3o3-	17-
29	3-3-3-3o	3+3-2o3+	22+	5+5-4-4+	3+4o4+4-	33+	3+2+1+2-	2-1+2-2+	16-
30	1-2o3-2+	2+2o1+2o	15+	4o4o5-5+	5+5o4+3+	36o	2o2-1+1+	1o3-4o4o	18o
31	4o3+2+2o	1o2-2-1o	17o				2+2+4-4o	3+3-4o2+	25-

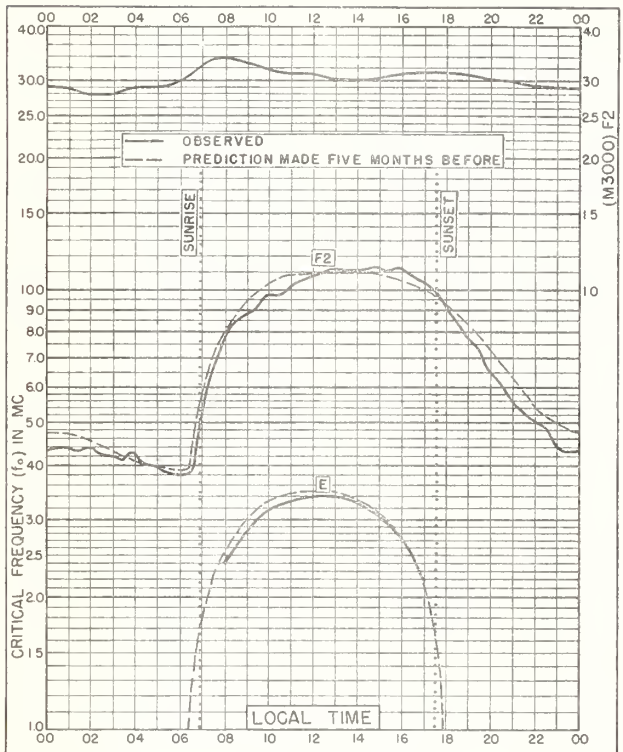


Fig. 1. WASHINGTON, D.C.
38.7°N, 77.1°W FEBRUARY 1950

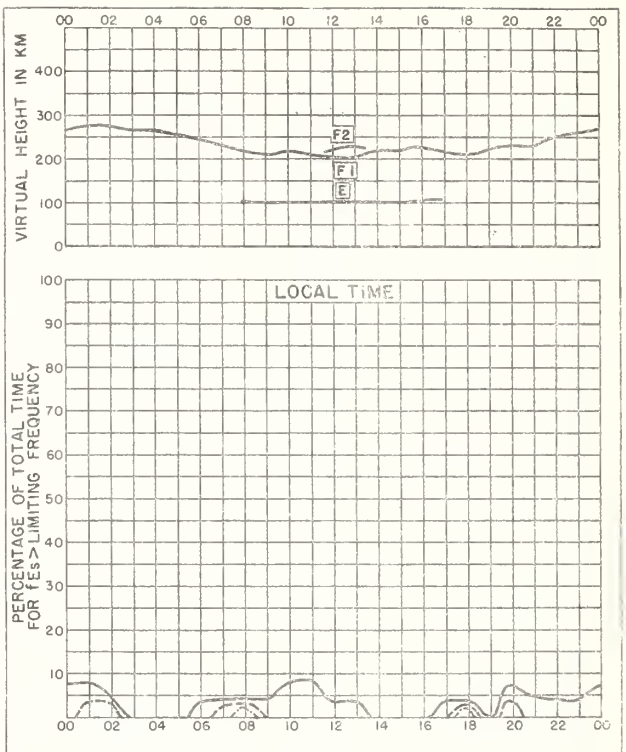


Fig. 2. WASHINGTON, D.C. FEBRUARY 1950

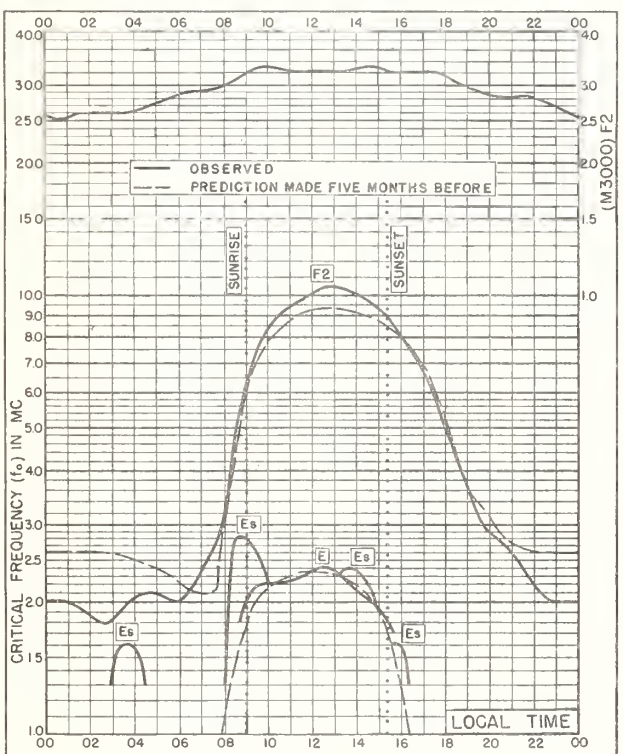


Fig. 3. OSLO, NORWAY
60.0°N, 11.0°E JANUARY 1950

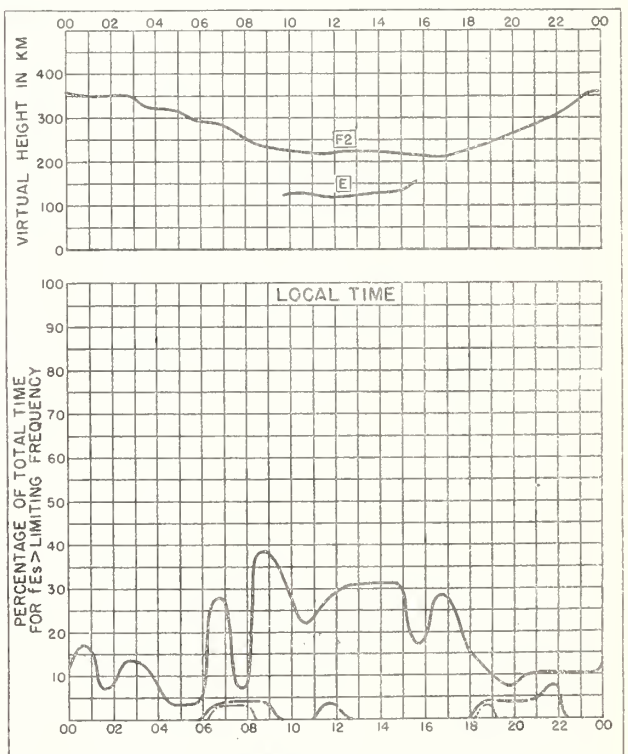


Fig. 4. OSLO, NORWAY JANUARY 1950

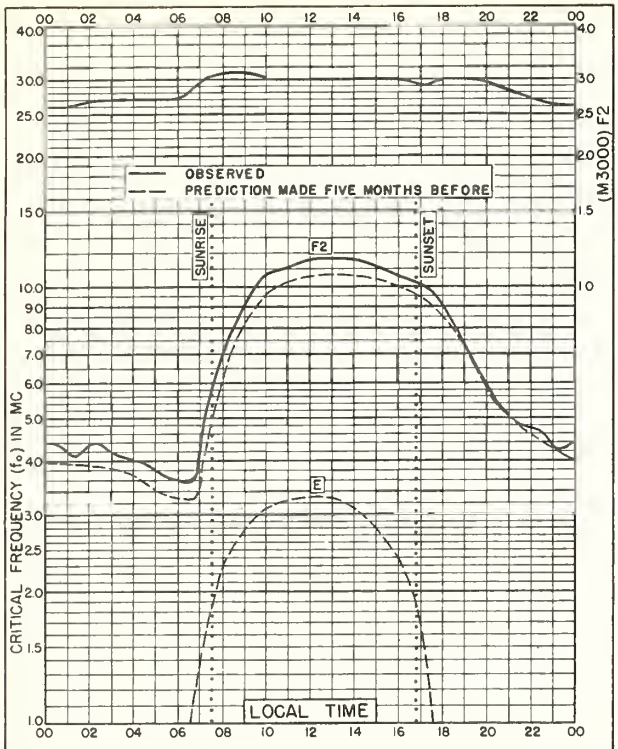


Fig. 5. BOSTON, MASSACHUSETTS
42.4°N, 71.2°W JANUARY 1950

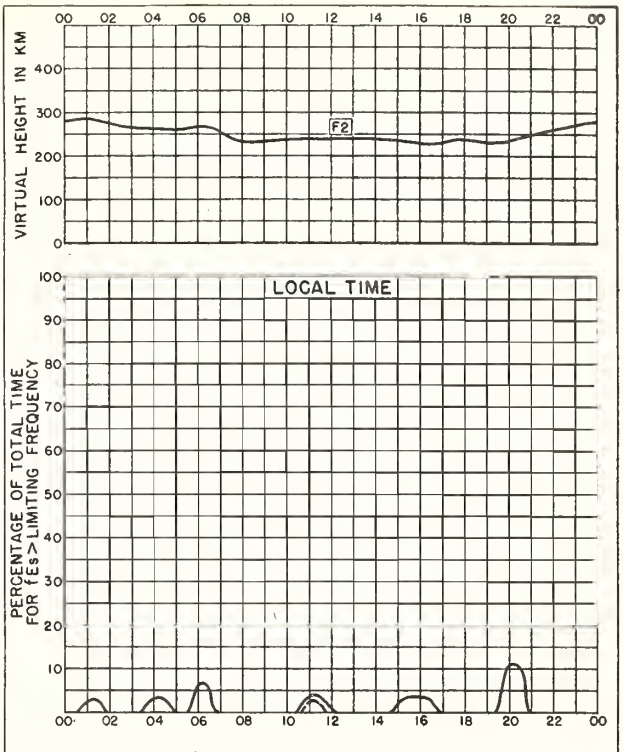


Fig. 6. BOSTON, MASSACHUSETTS JANUARY 1950

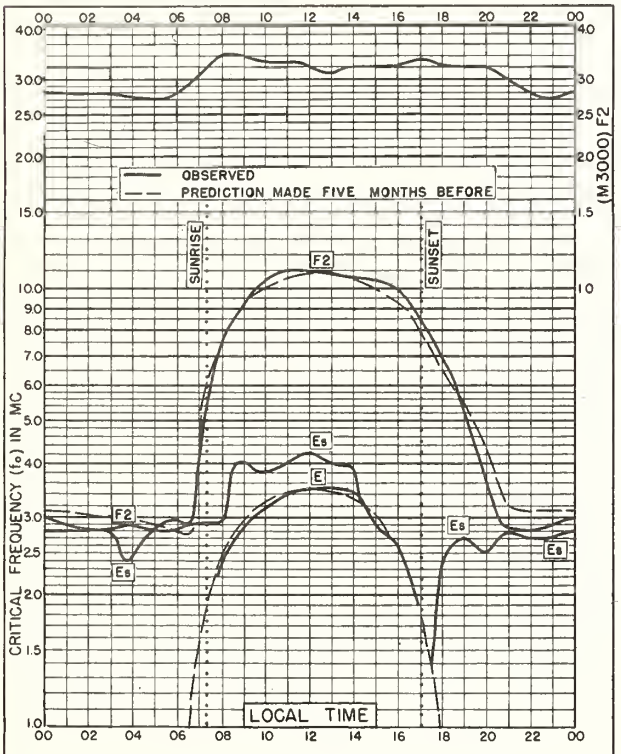


Fig. 7. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W JANUARY 1950

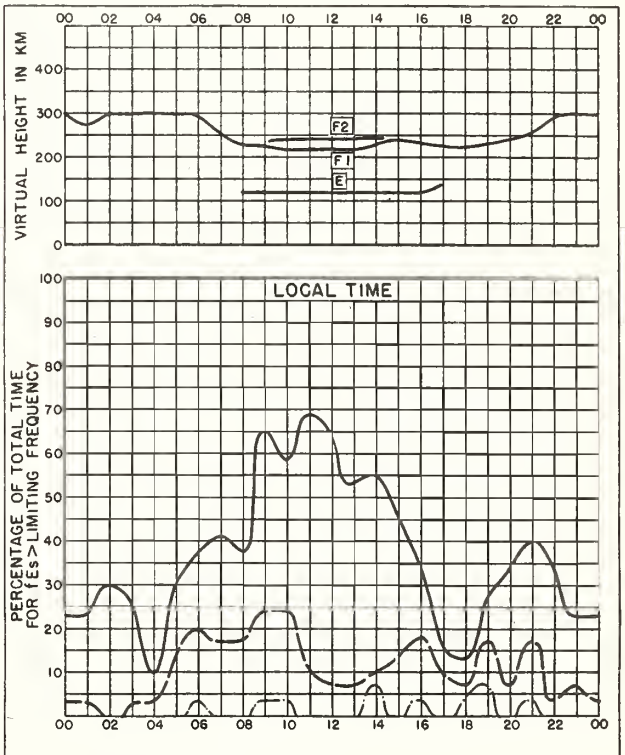


Fig. 8. SAN FRANCISCO, CALIFORNIA JANUARY 1950

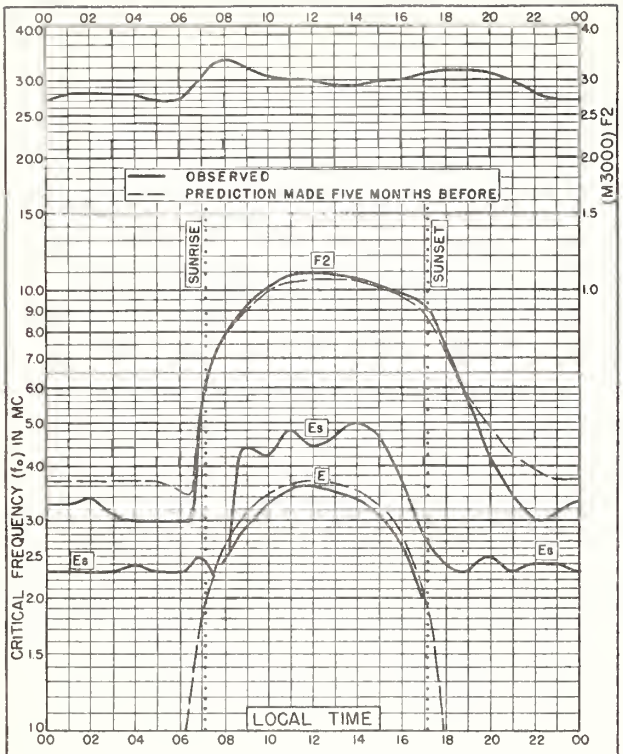


Fig. 9. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W JANUARY 1950

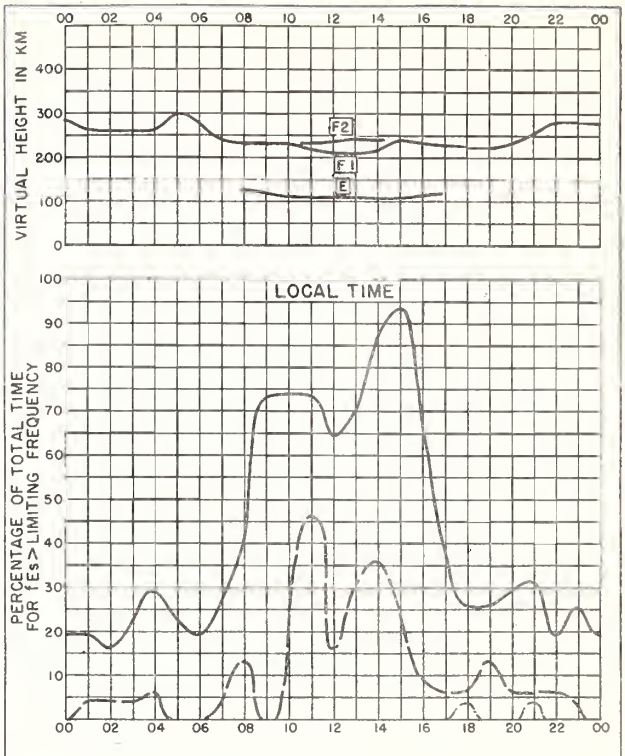


Fig. 10. WHITE SANDS, NEW MEXICO JANUARY 1950

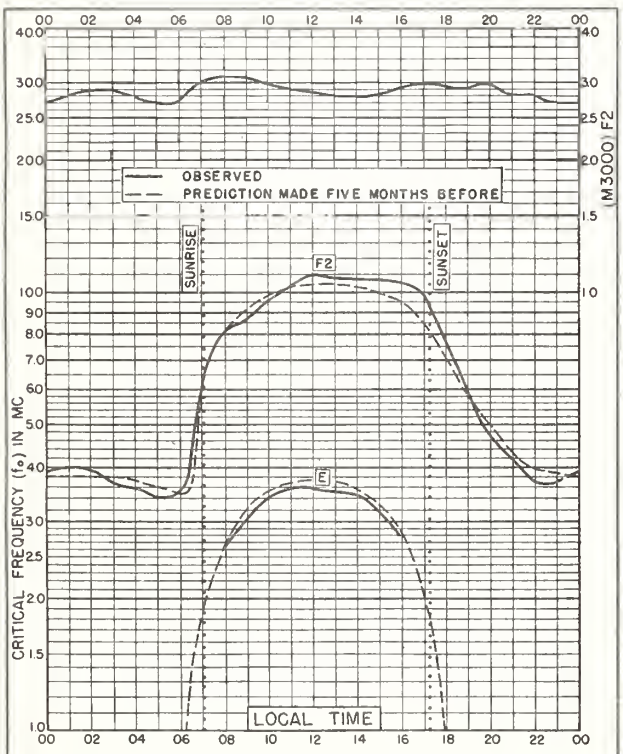


Fig. 11. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W JANUARY 1950

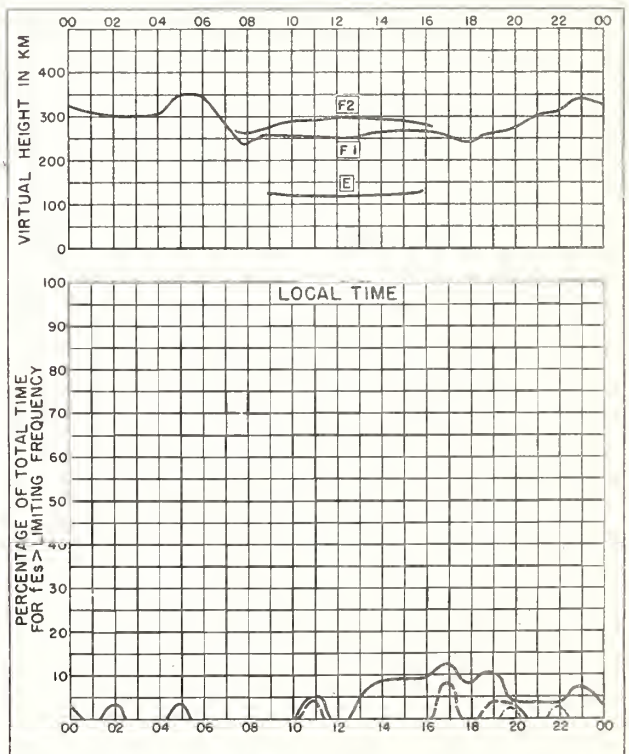


Fig. 12. BATON ROUGE, LOUISIANA JANUARY 1950

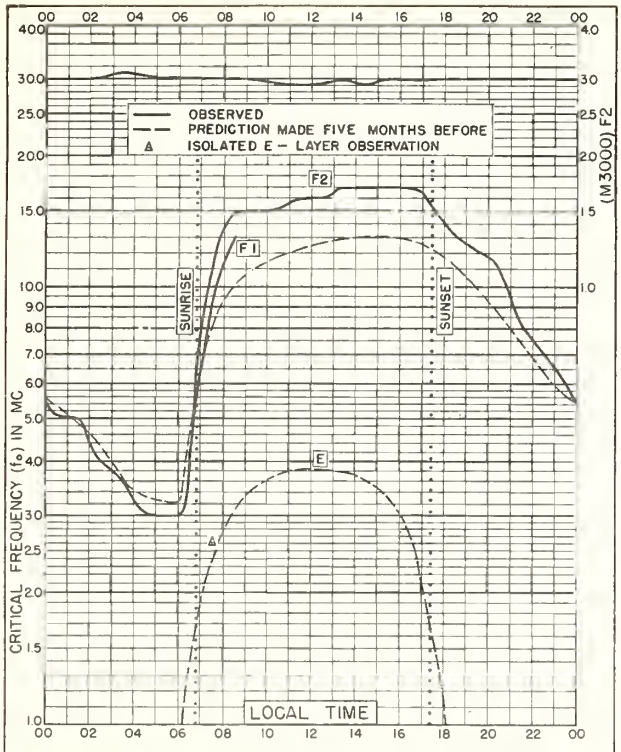


Fig. 13. OKINAWA I.
26.3°N, 127.7°E JANUARY 1950

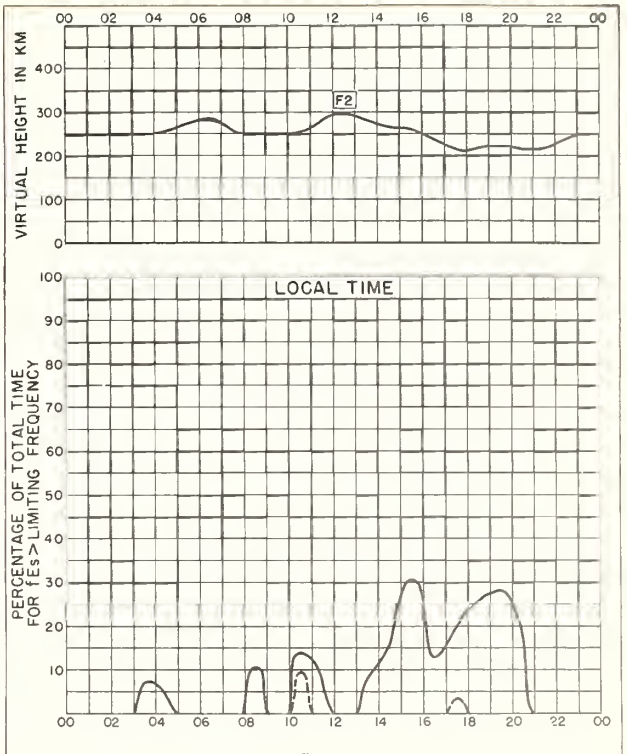


Fig. 14. OKINAWA I. JANUARY 1950

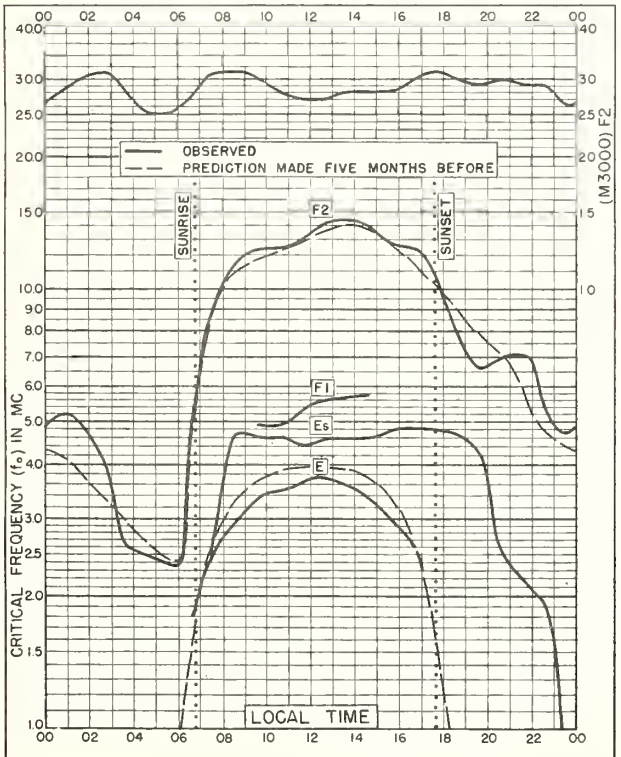


Fig. 15. MAUI, HAWAII
20.8°N, 156.5°W JANUARY 1950

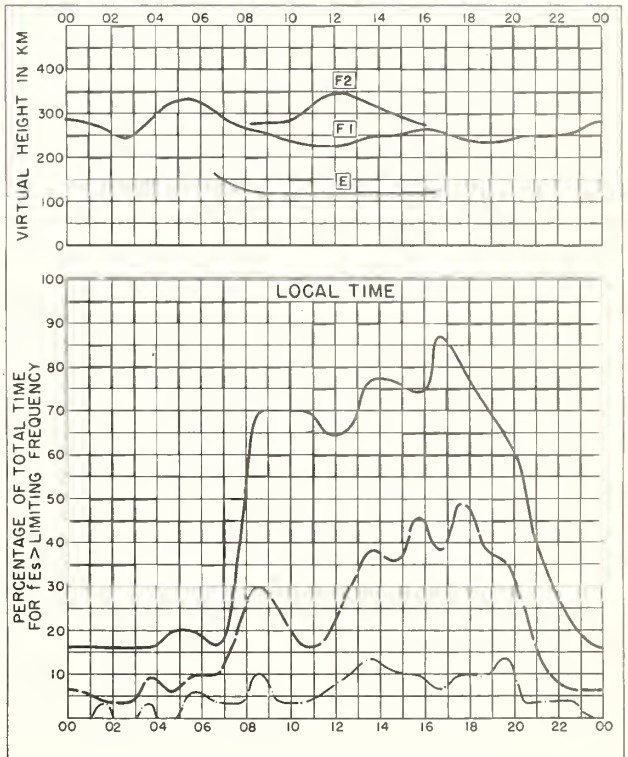


Fig. 16. MAUI, HAWAII JANUARY 1950

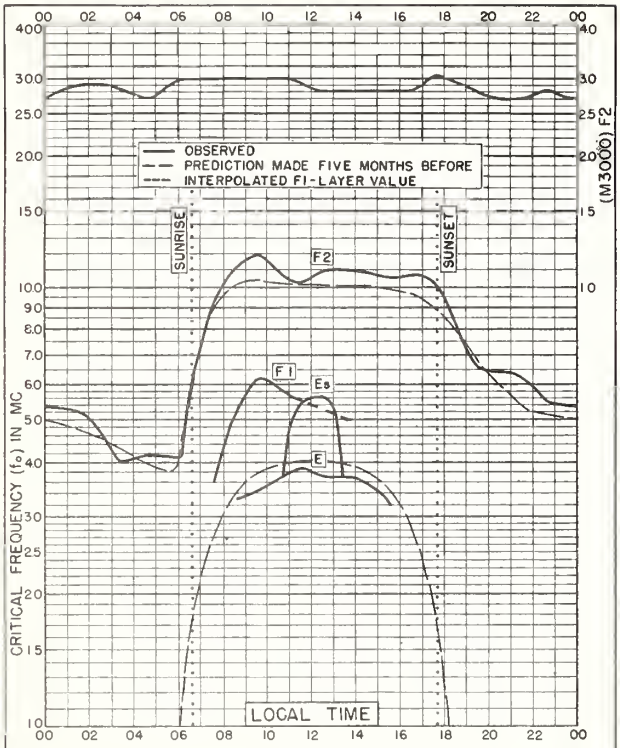


Fig. 17. SAN JUAN, PUERTO RICO
18.4°N, 66.1°W JANUARY 1950

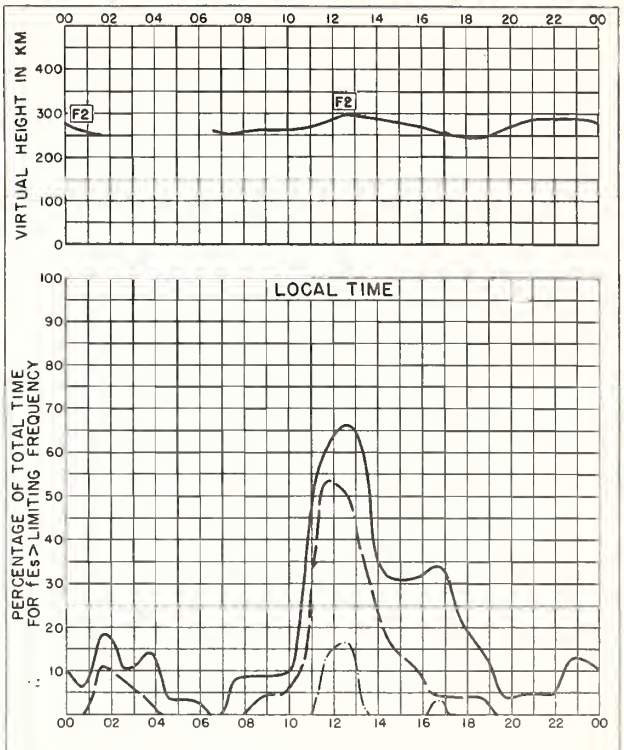


Fig. 18. SAN JUAN, PUERTO RICO JANUARY 1950

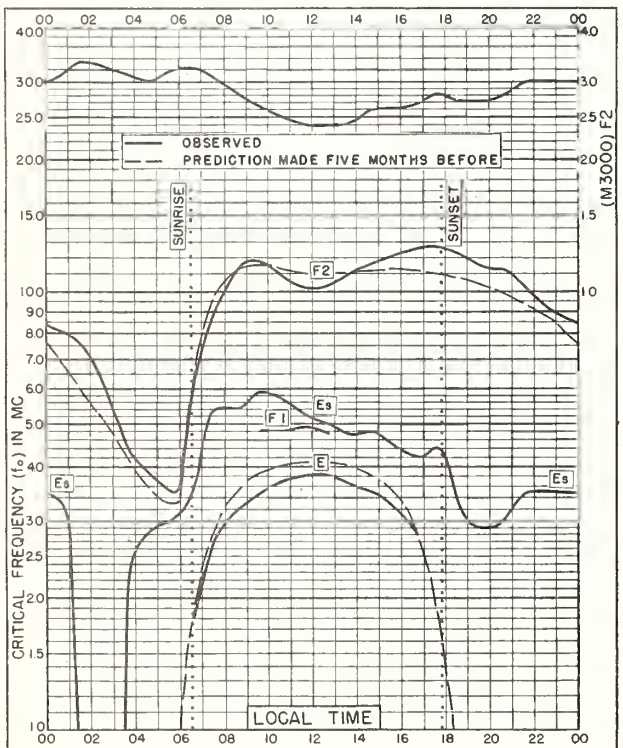


Fig. 19. GUAM I.
13.6°N, 144.9°E JANUARY 1950

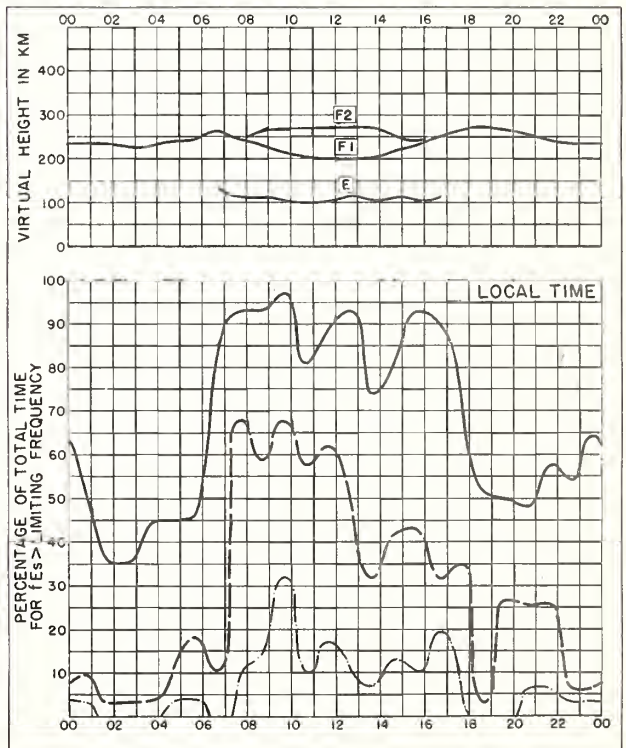


Fig. 20. GUAM I. JANUARY 1950

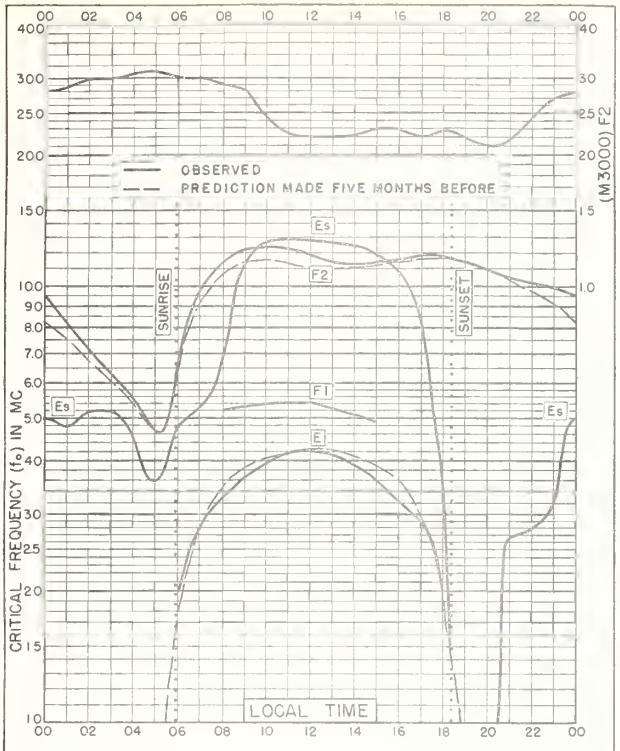


Fig. 21. HUANCAYO, PERU
12.0°S, 75.3°W JANUARY 1950

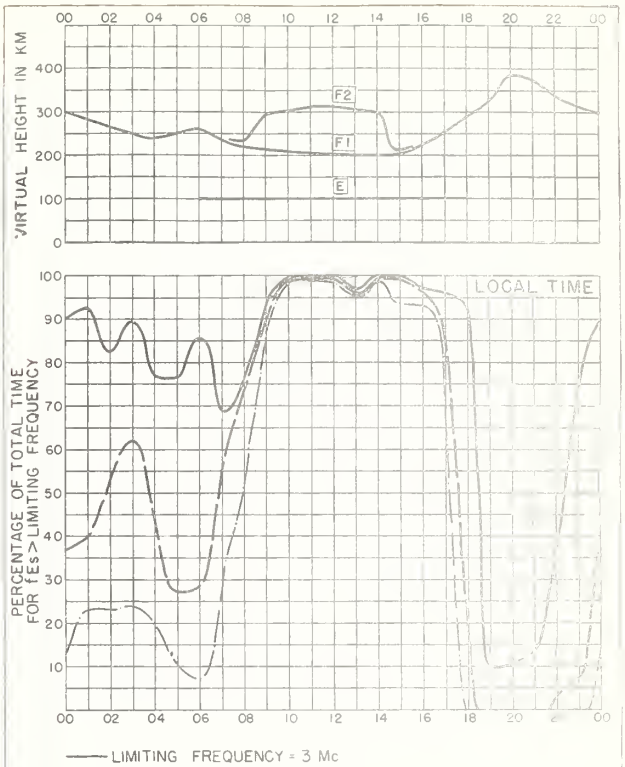


Fig. 22. HUANCAYO, PERU JANUARY 1950

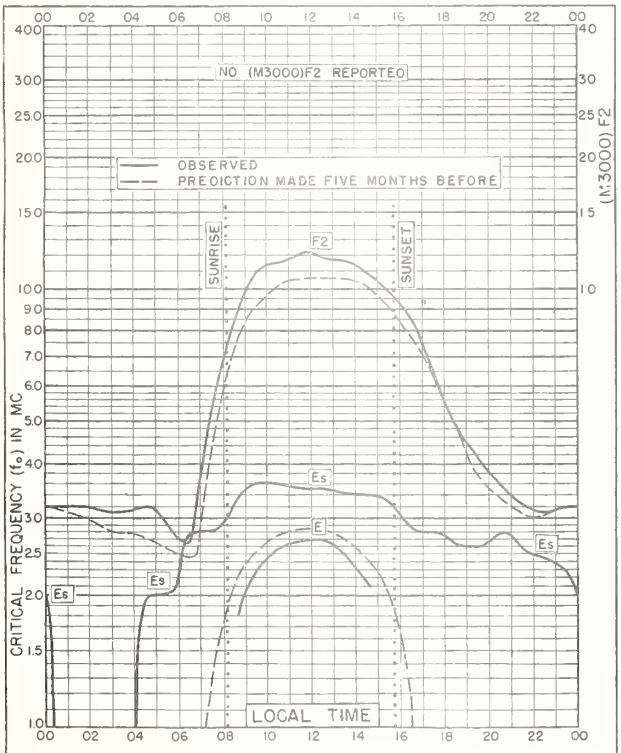


Fig. 23. LINDAU/HARZ, GERMANY
51.6°N, 10.1°E DECEMBER 1949

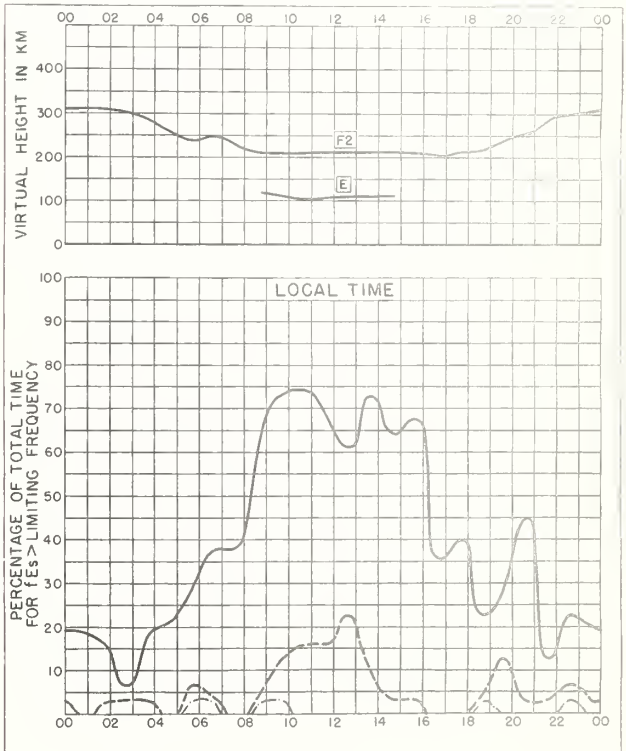


Fig. 24. LINDAU/HARZ, GERMANY DECEMBER 1949

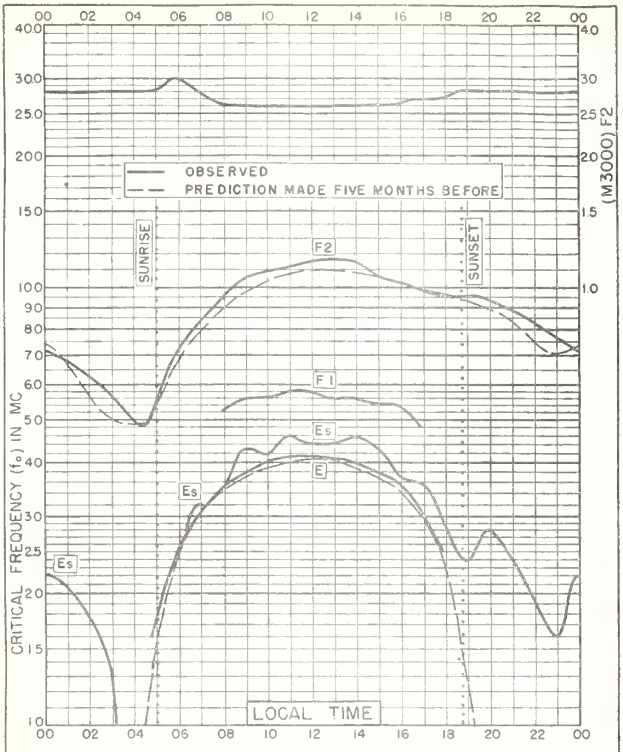


Fig. 25. JOHANNESBURG, U. OF S. AFRICA
26. 2°S, 28. 0°E DECEMBER 1949

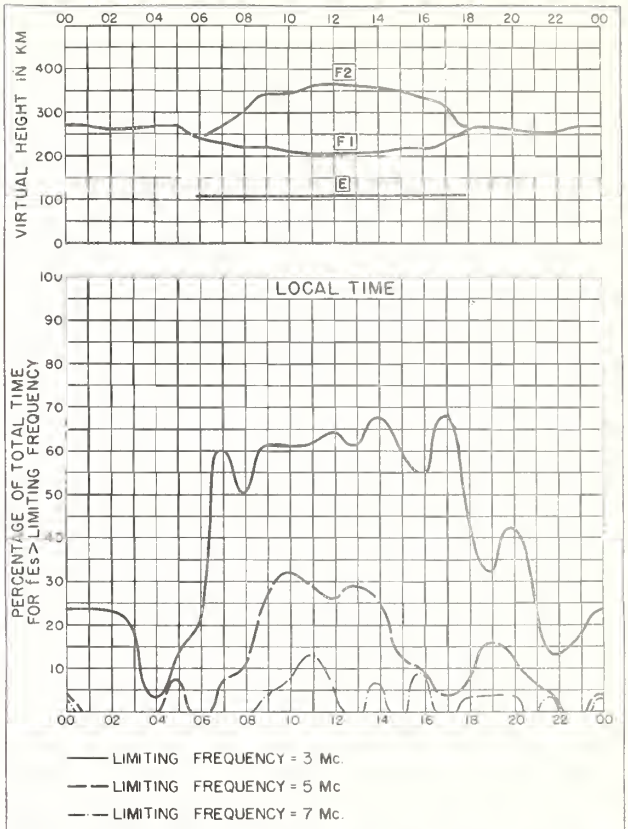


Fig. 26. JOHANNESBURG, U. OF S. AFRICA DECEMBER 1949

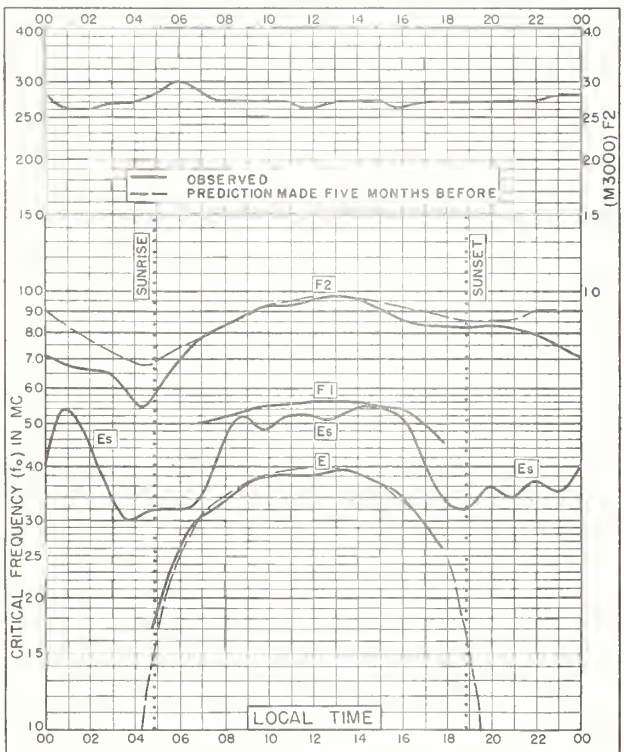


Fig. 27. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E DECEMBER 1949

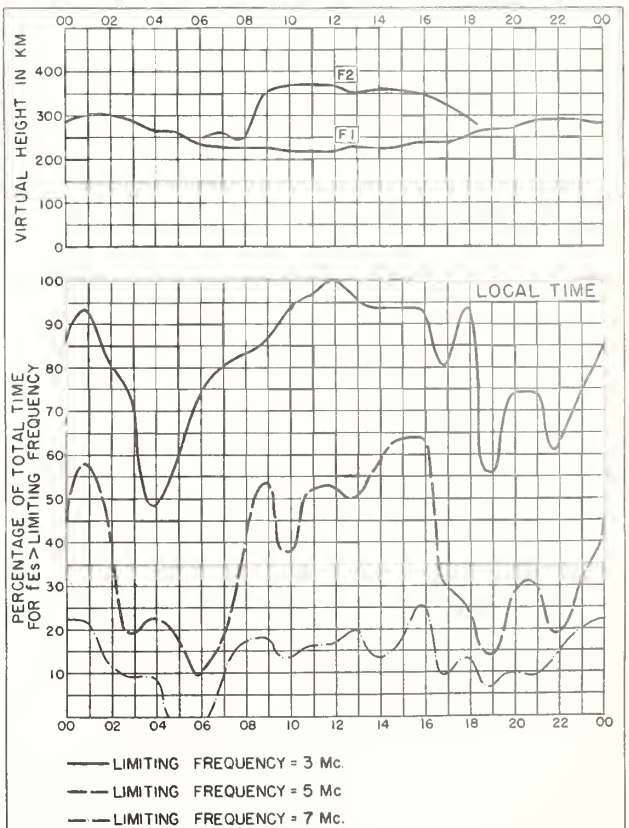


Fig. 28. WATHEROO, W. AUSTRALIA DECEMBER 1949

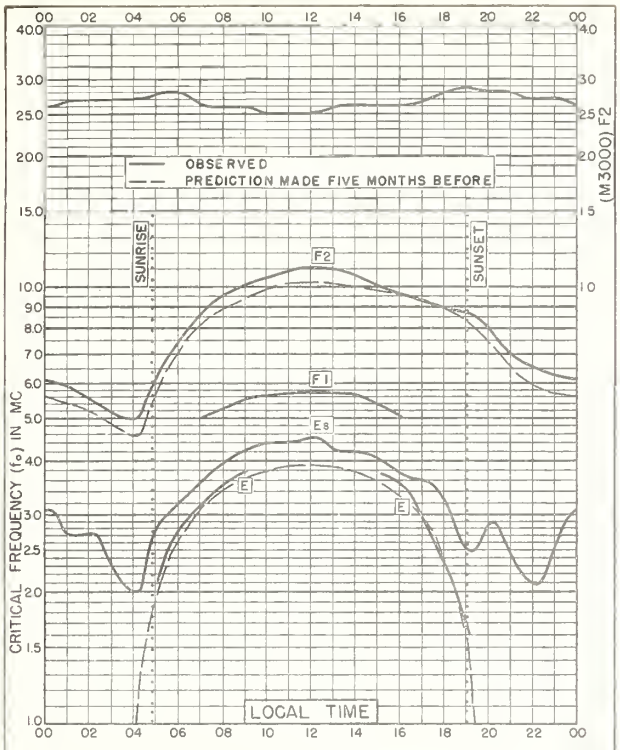


Fig. 29. CAPETOWN, U. OF S. AFRICA
34.2°S, 18.3°E DECEMBER 1949

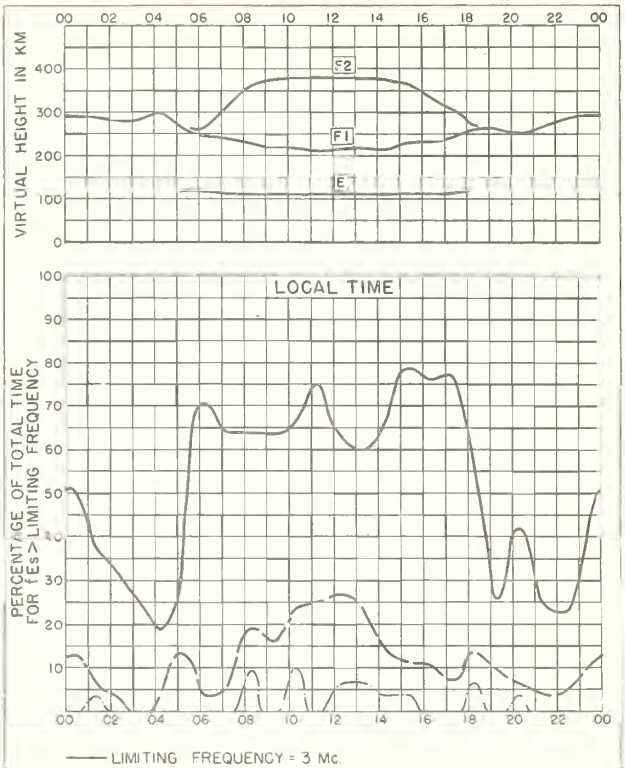


Fig. 30. CAPETOWN, U. OF S. AFRICA DECEMBER 1949

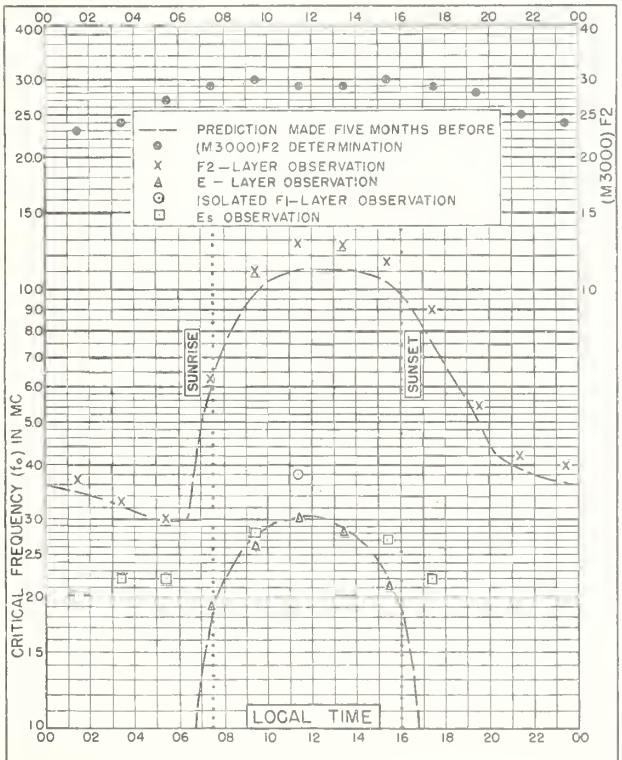


Fig. 31. DeBILT, HOLLAND
52.8°N, 6.7°E NOVEMBER 1949

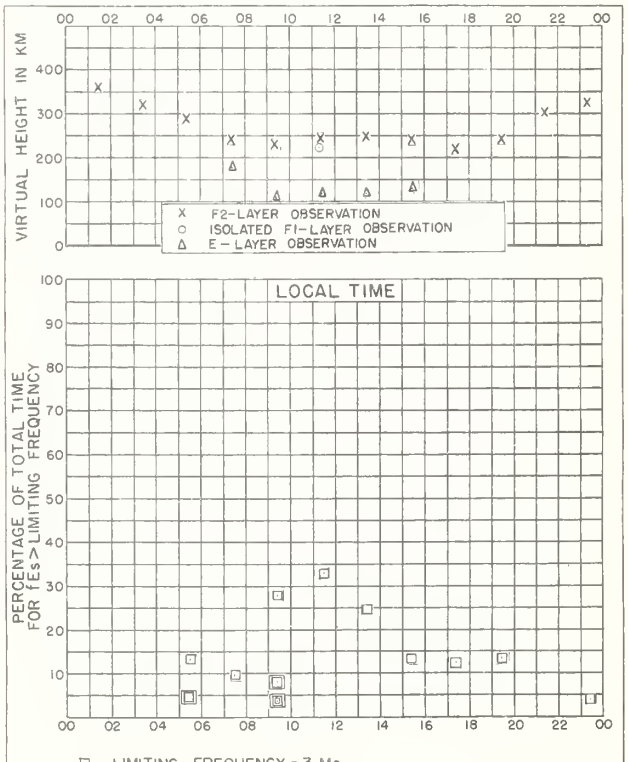


Fig. 32. DeBILT, HOLLAND NOVEMBER 1949

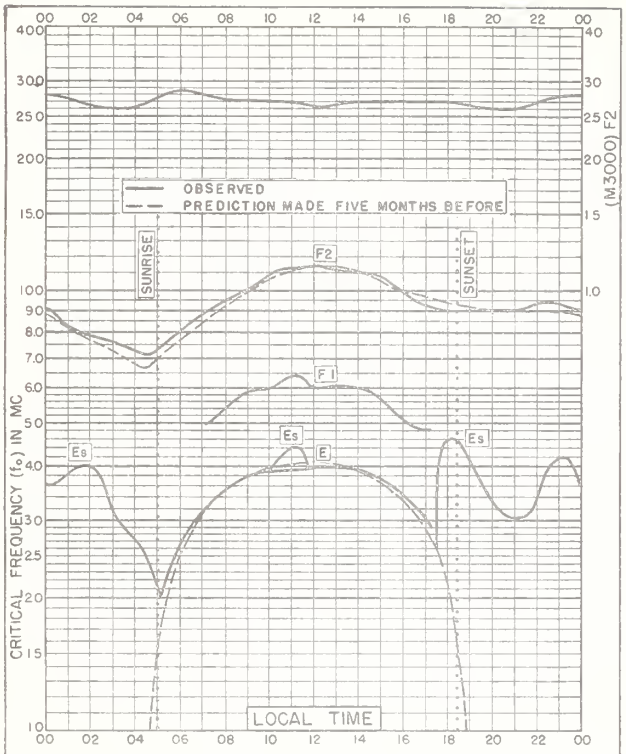


Fig. 33. BRISBANE, AUSTRALIA
27.5°S, 153.0°E NOVEMBER 1949

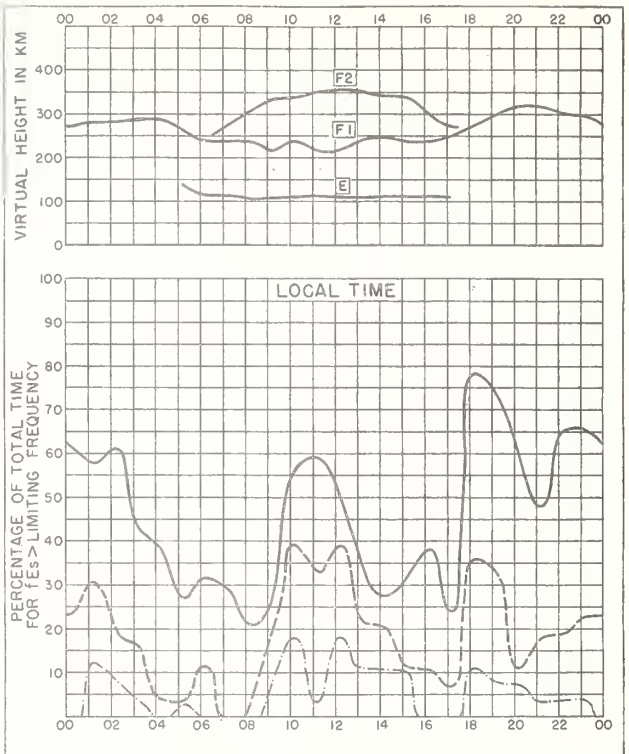


Fig. 34. BRISBANE, AUSTRALIA NOVEMBER 1949

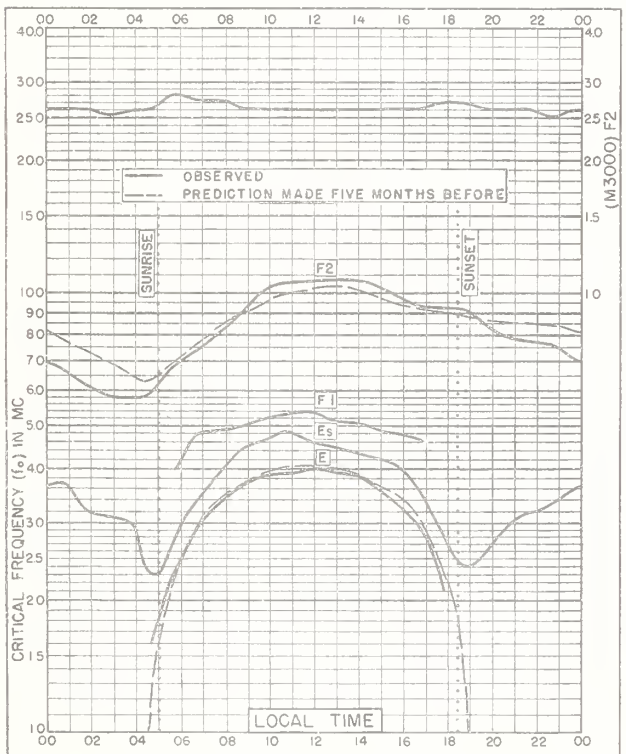


Fig. 35 WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E NOVEMBER 1949

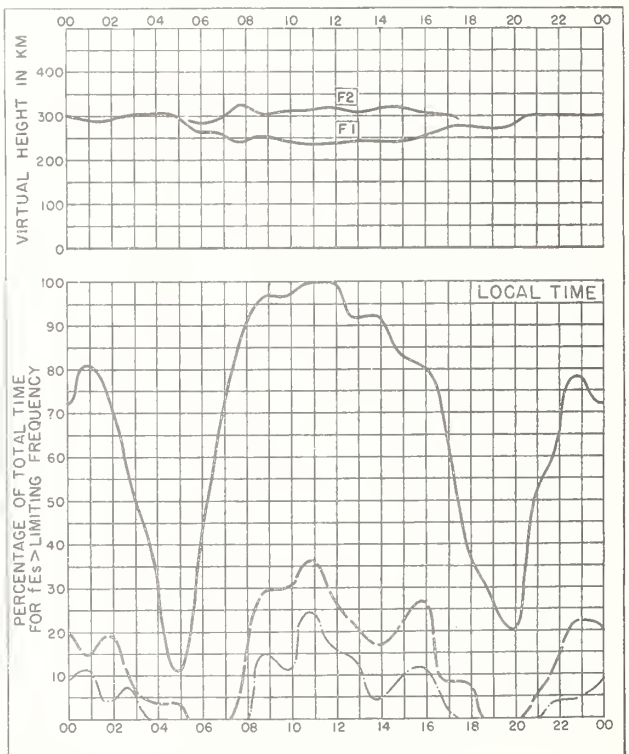


Fig. 36. WATHEROO, W. AUSTRALIA NOVEMBER 1949

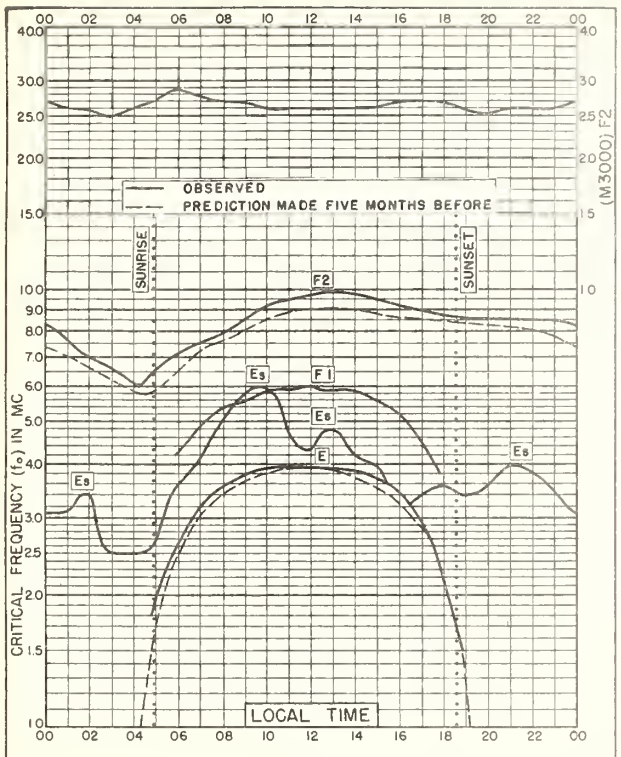


Fig. 37. CANBERRA, AUSTRALIA
35.3°S, 149.0°E NOVEMBER 1949

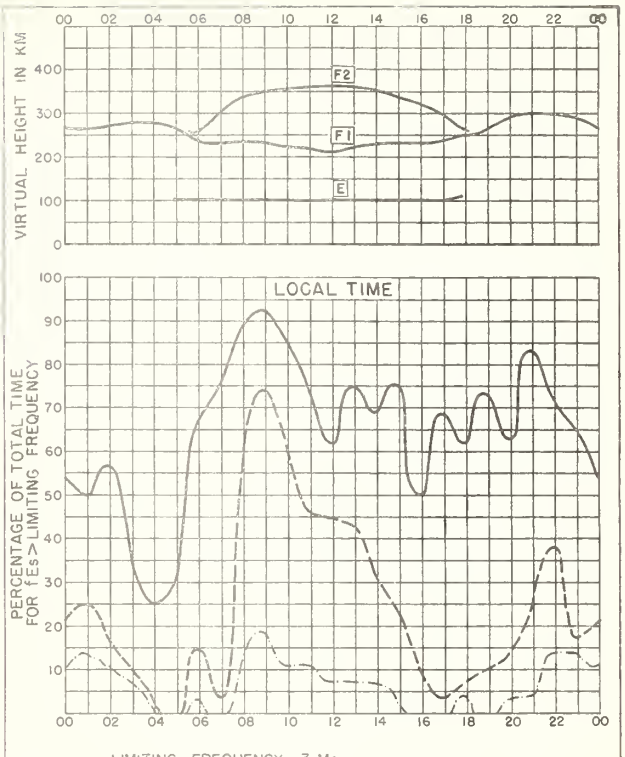


Fig. 38. CANBERRA, AUSTRALIA NOVEMBER 1949

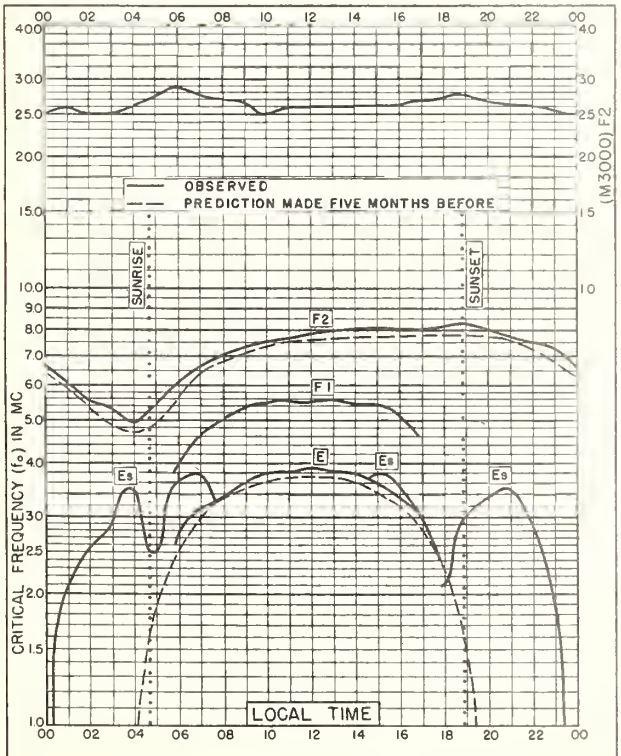


Fig. 39. HOBART, TASMANIA
42.8°S, 147.4°E NOVEMBER 1949

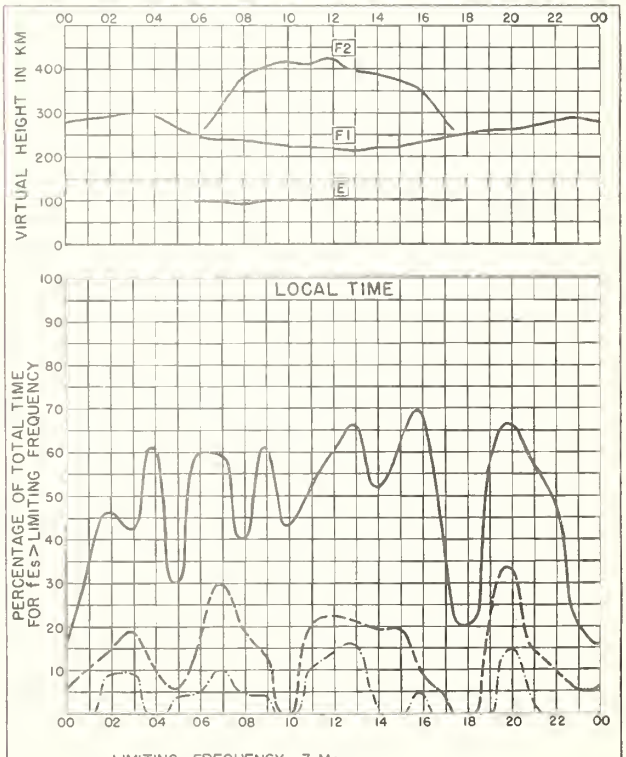


Fig. 40. HOBART, TASMANIA NOVEMBER 1949

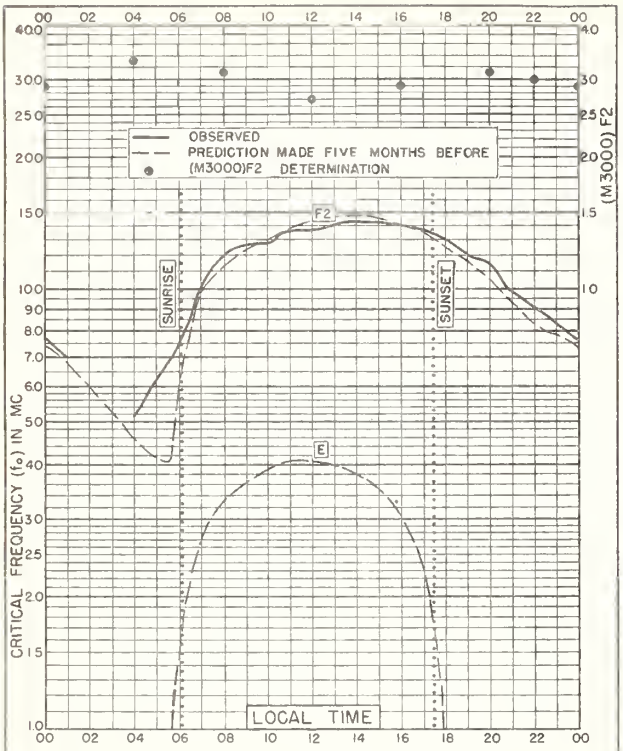


Fig 41. DELHI, INDIA
28.6°N, 77.1°E OCTOBER 1949

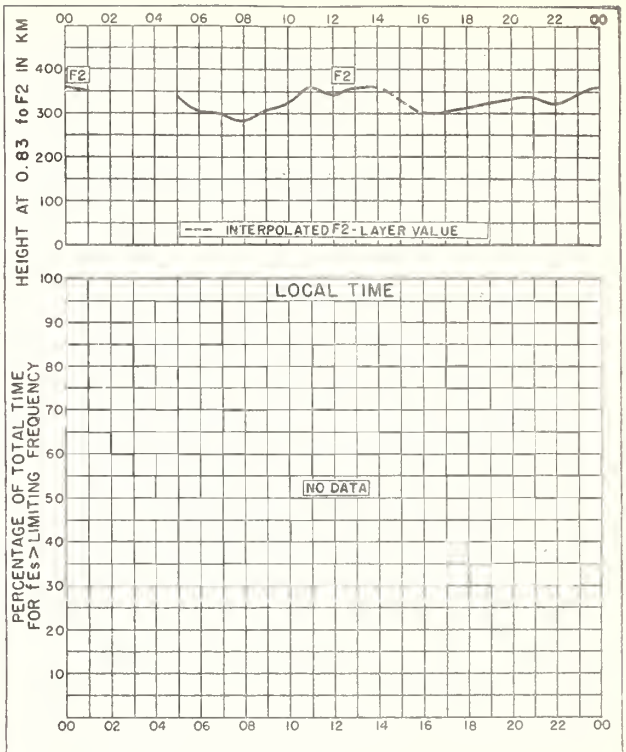


Fig. 42. DELHI, INDIA OCTOBER 1949

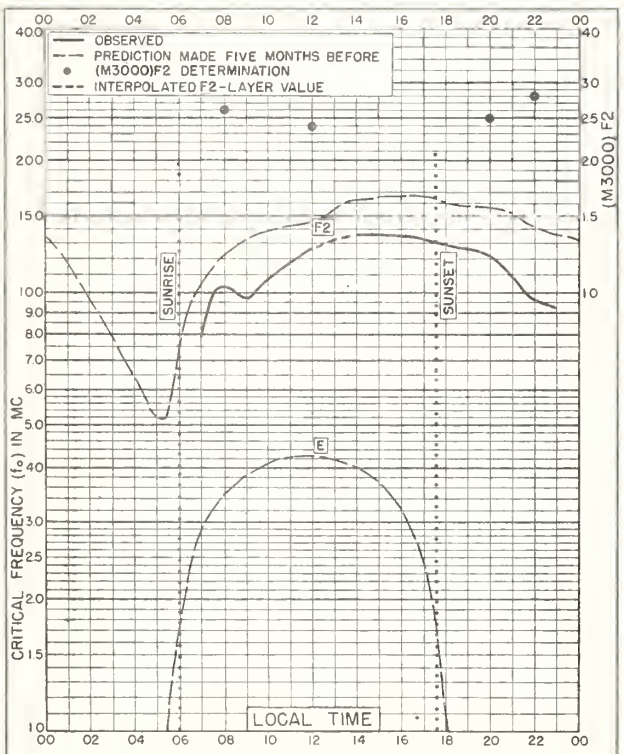


Fig. 43 BOMBAY, INDIA
19.0°N, 73.0°E OCTOBER 1949

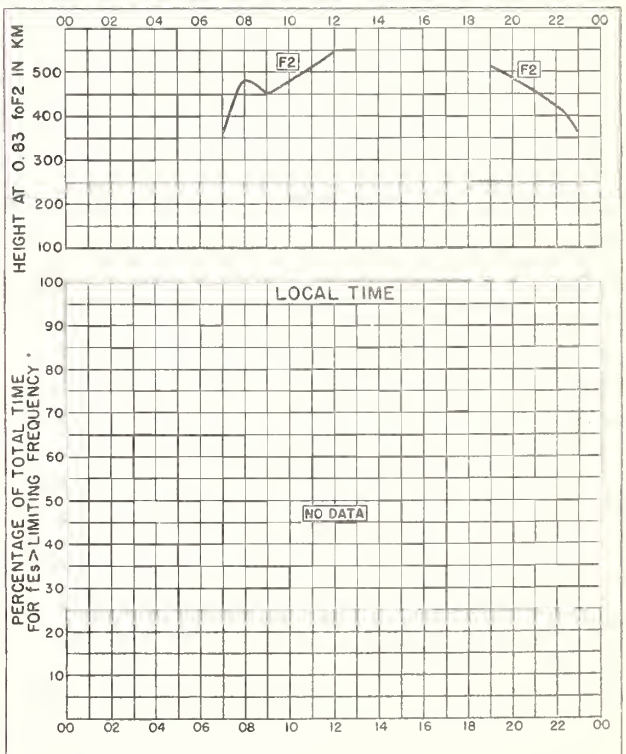


Fig. 44. BOMBAY, INDIA OCTOBER 1949

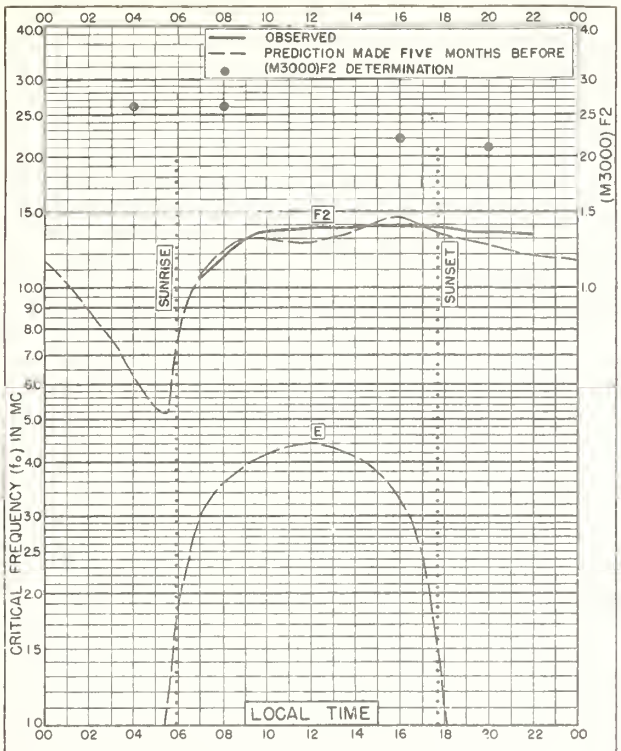


Fig. 45. MADRAS, INDIA
13.0°N, 80.2° E OCTOBER 1949

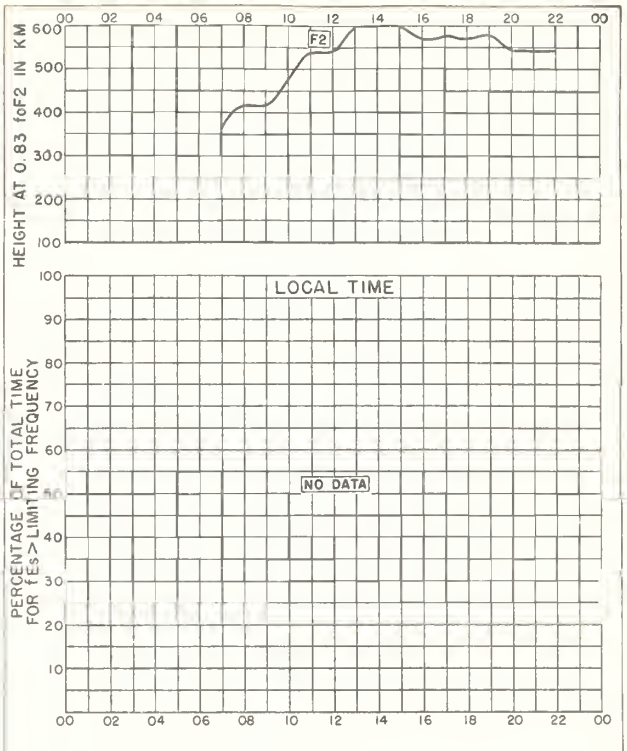


Fig. 46. MADRAS, INDIA OCTOBER 1949

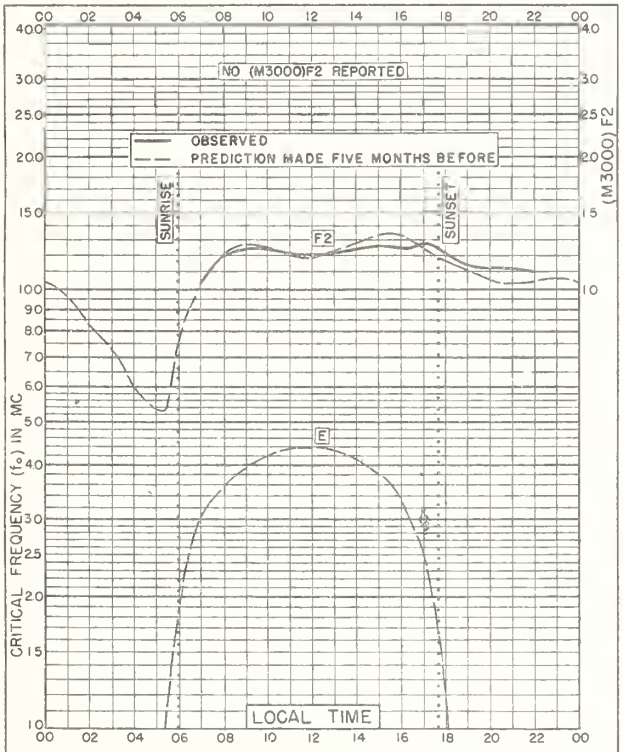


Fig. 47. TIRUCHY, INDIA
10.8°N, 78.8° E OCTOBER 1949

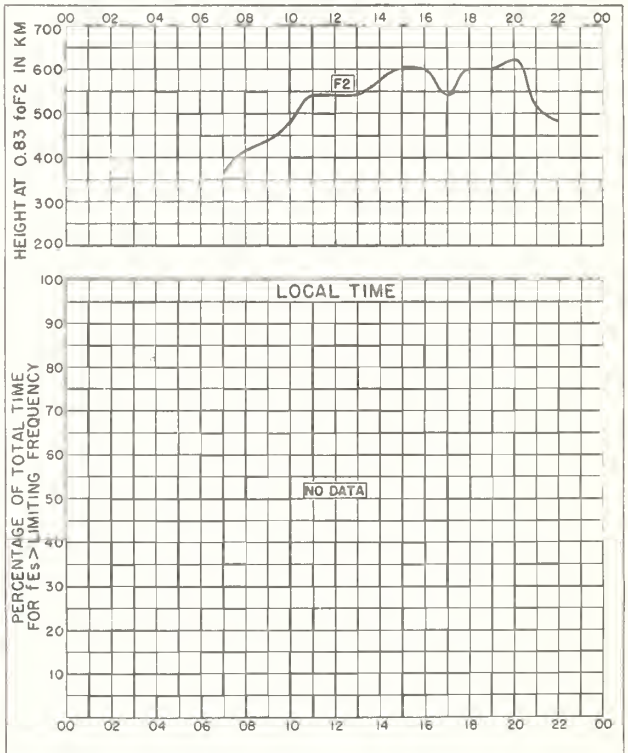


Fig. 48. TIRUCHY, INDIA OCTOBER 1949

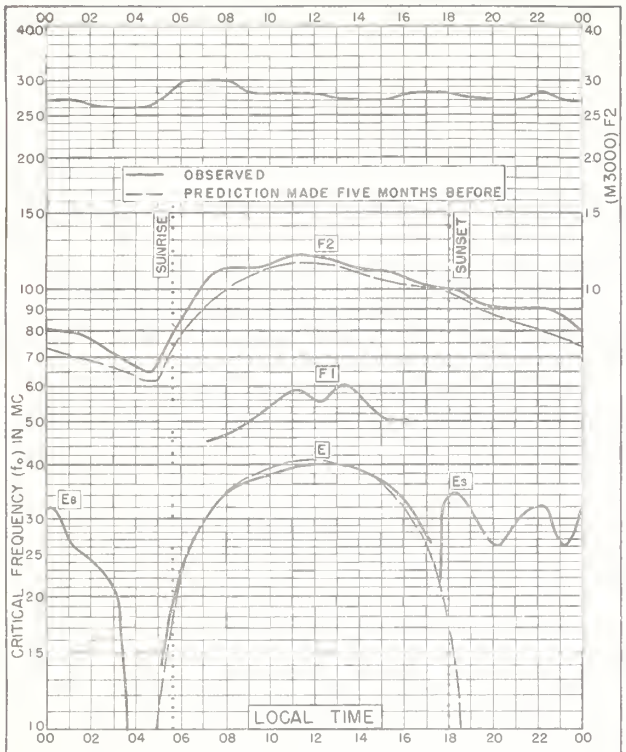


Fig. 49. BRISBANE, AUSTRALIA
27.5°S, 153.0°E OCTOBER 1949

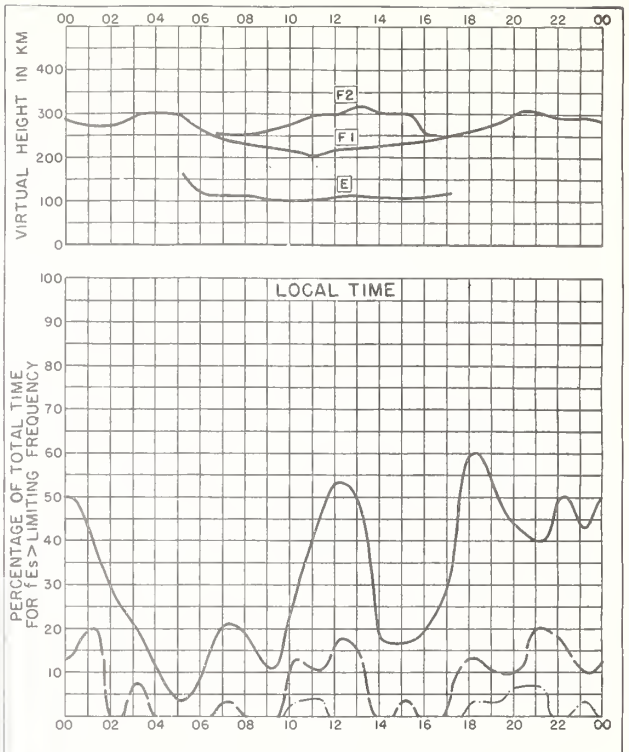


Fig. 50. BRISBANE, AUSTRALIA OCTOBER 1949

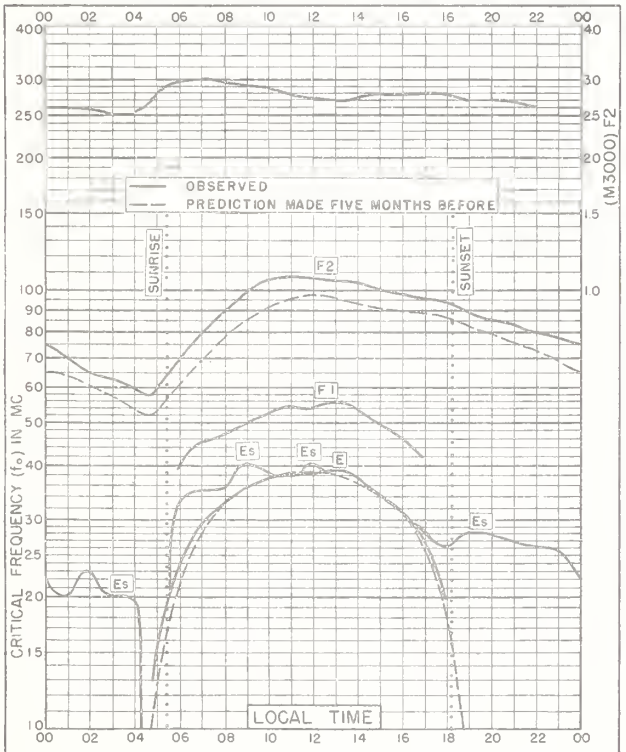


Fig. 51. CANBERRA, AUSTRALIA
35.3°S, 149.0°E OCTOBER 1949

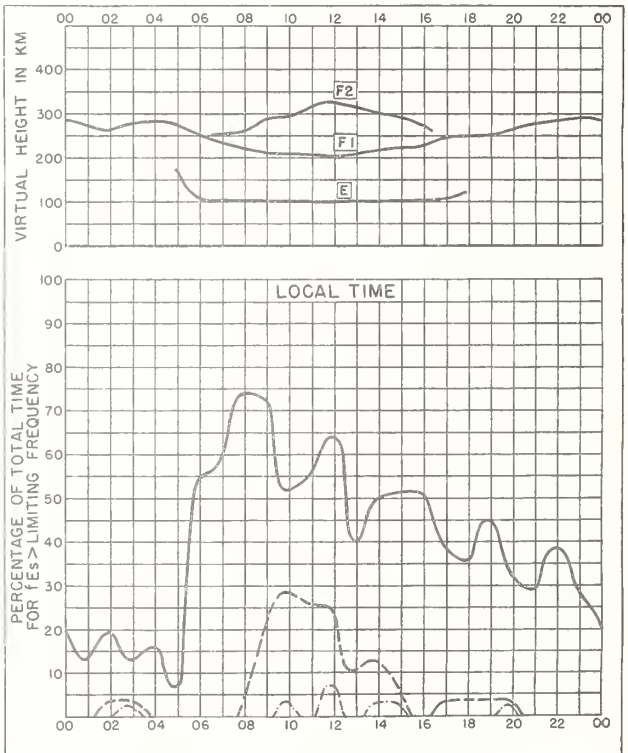


Fig. 52. CANBERRA, AUSTRALIA OCTOBER 1949

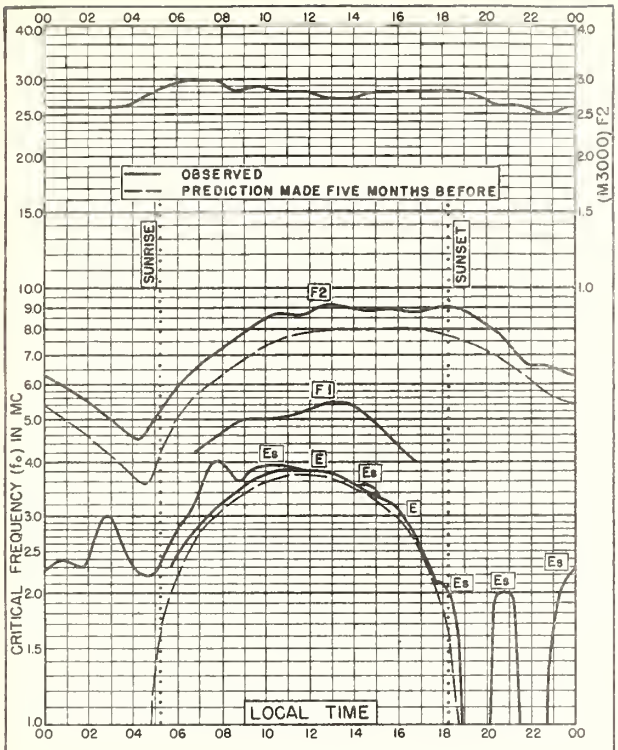


Fig. 53. HOBART, TASMANIA
42.8°S, 147.4°E OCTOBER 1949

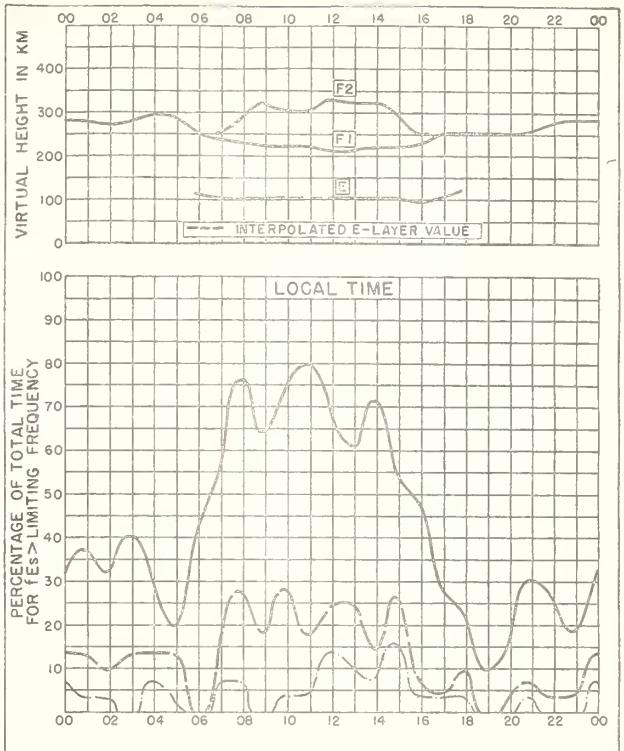


Fig. 54. HOBART, TASMANIA OCTOBER 1949

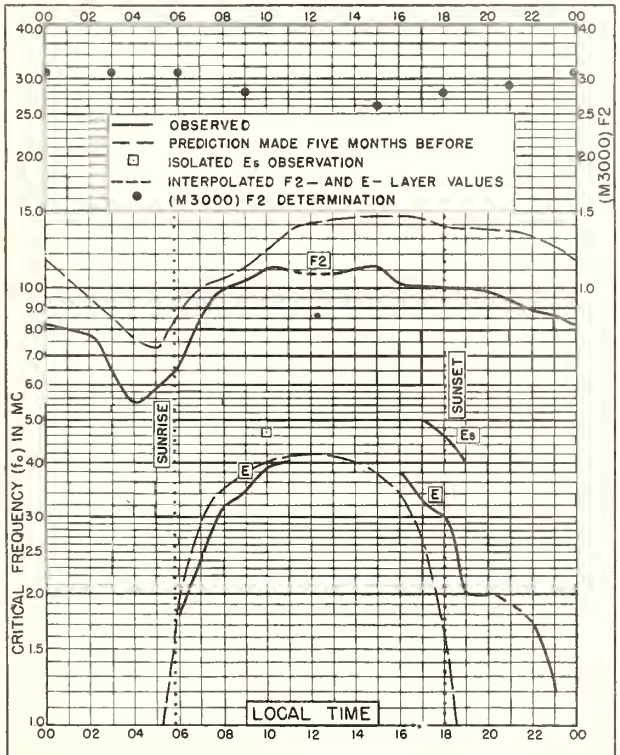


Fig. 55. CALCUTTA, INDIA
22.6°N, 88.4°E SEPTEMBER 1949

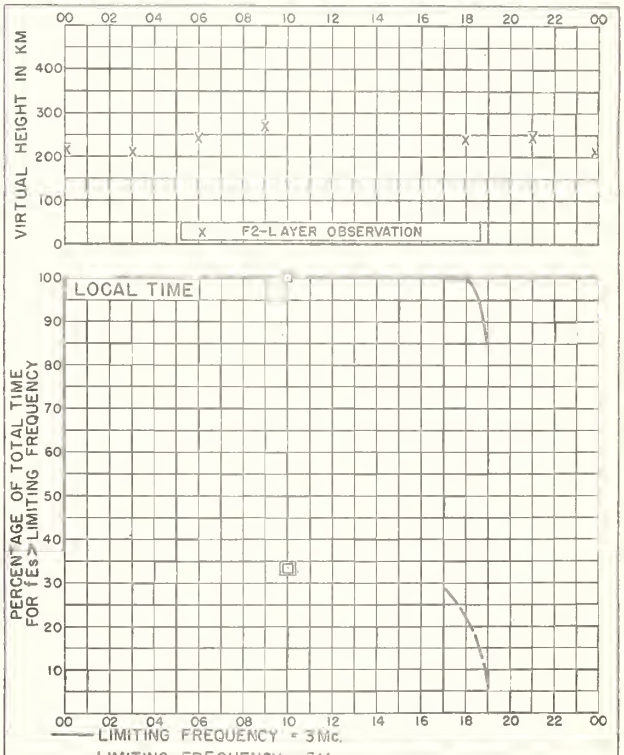
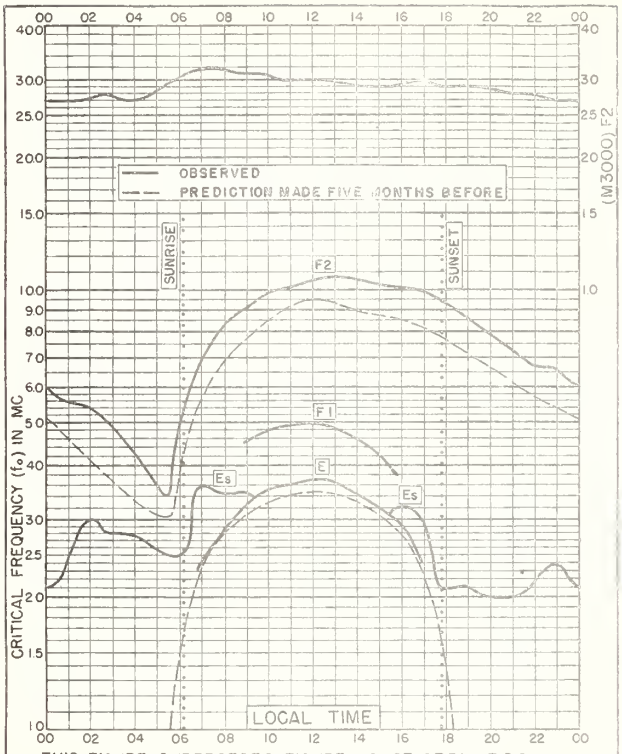
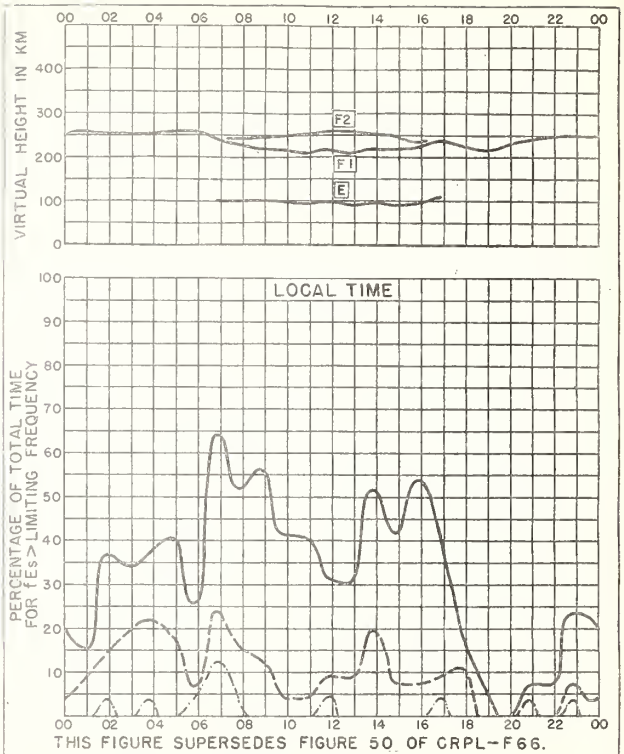


Fig. 56. CALCUTTA, INDIA SEPTEMBER 1949



THIS FIGURE SUPERSEDES FIGURE 49 OF CRPL-F66.

Fig. 57. HOBART, TASMANIA
42.8°S, 147.4°E SEPTEMBER 1949



THIS FIGURE SUPERSEDES FIGURE 50 OF CRPL-F66.

——— LIMITING FREQUENCY = 3 Mc.
— — — LIMITING FREQUENCY = 5 Mc.
—·—·— LIMITING FREQUENCY = 7 Mc.

Fig. 58. HOBART, TASMANIA SEPTEMBER 1949

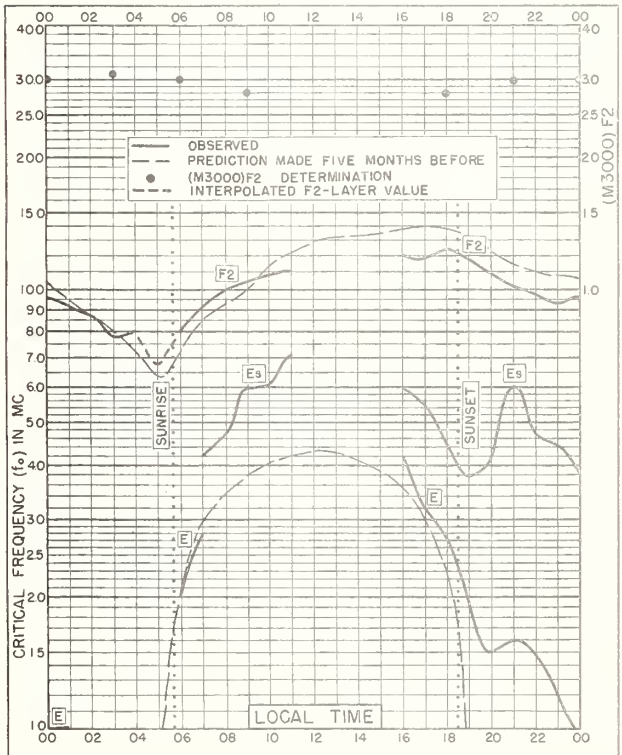
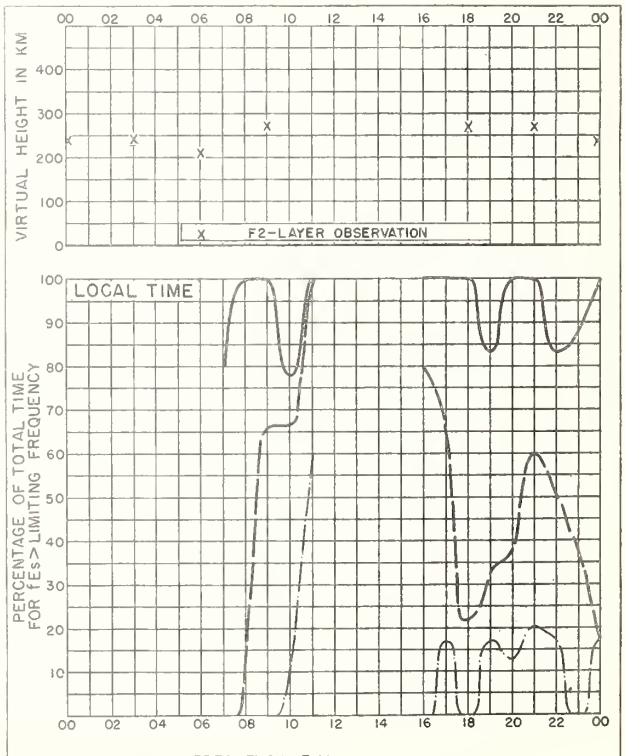


Fig. 59. CALCUTTA, INDIA
22.6°N, 88.4°E AUGUST 1949



——— LIMITING FREQUENCY = 3 Mc.
— — — LIMITING FREQUENCY = 5 Mc.
—·—·— LIMITING FREQUENCY = 7 Mc.

Fig. 60. CALCUTTA, INDIA AUGUST 1949

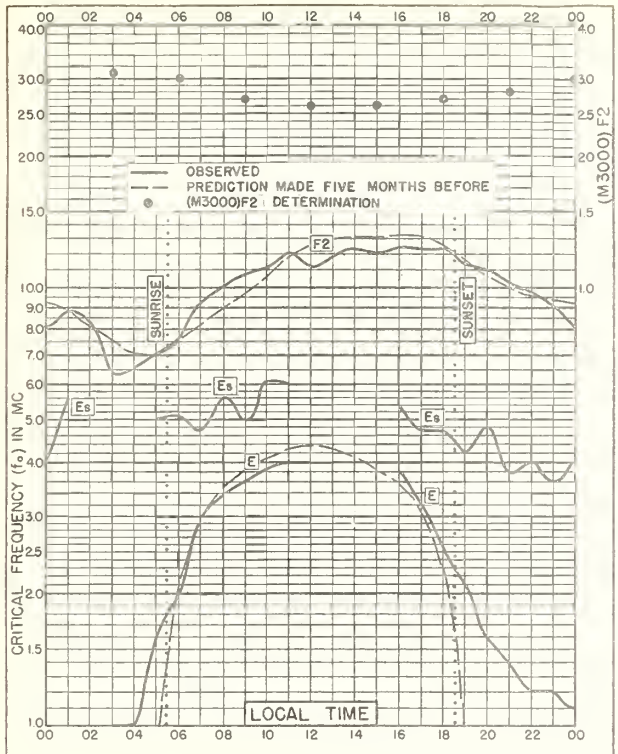


Fig. 61. CALCUTTA, INDIA
22.6°N, 88.4°E JULY 1949

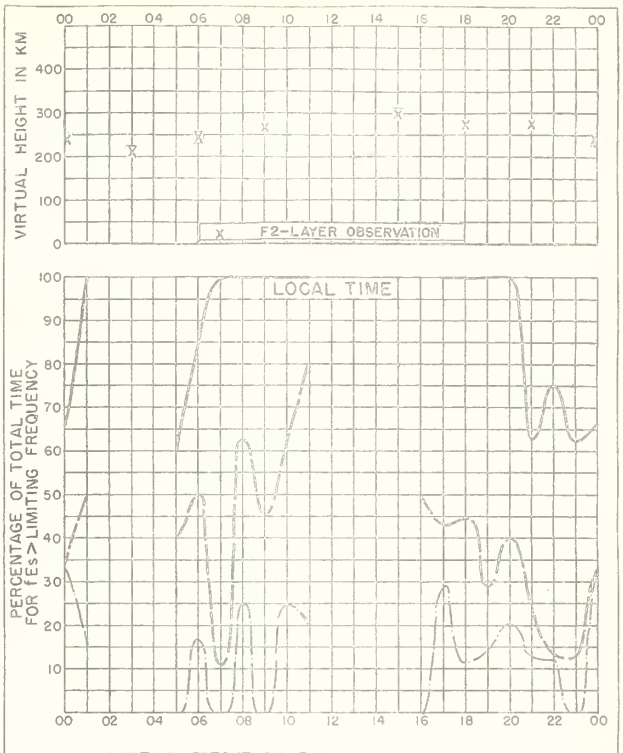


Fig. 62. CALCUTTA, INDIA JULY 1949

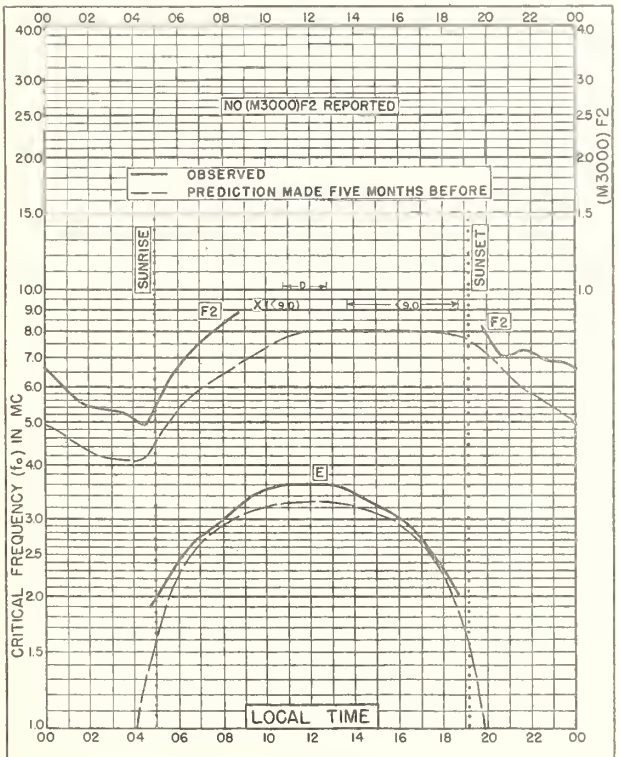


Fig. 63. OSLO, NORWAY
60.0°N, 11.0°E APRIL 1949

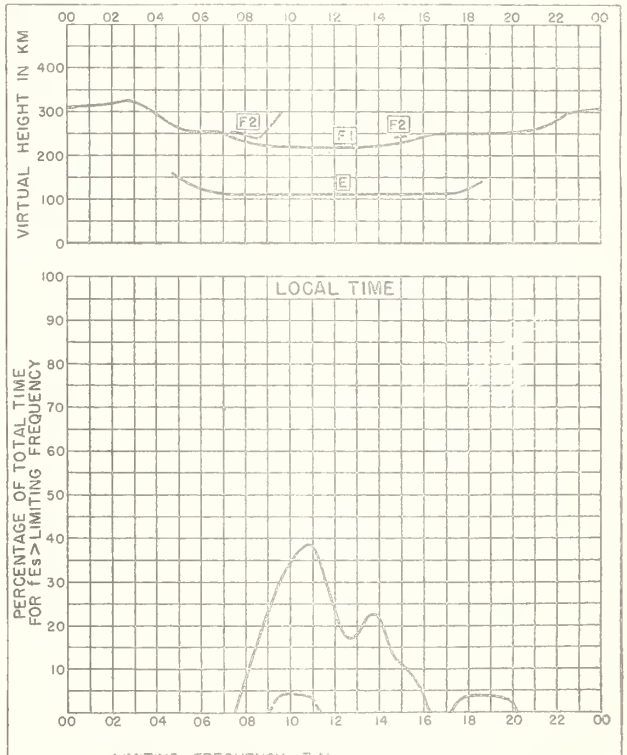


Fig. 64. OSLO, NORWAY APRIL 1949

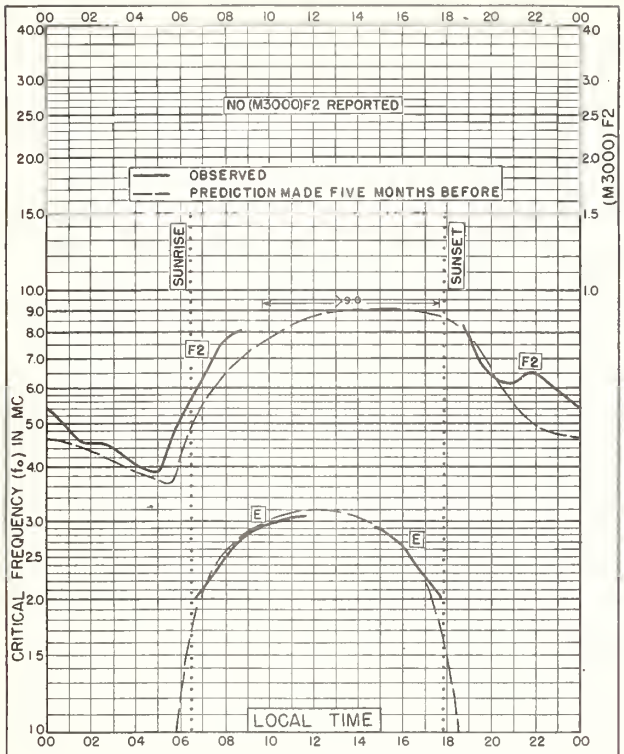


Fig. 65. OSLO, NORWAY
60.0°N, 11.0°E MARCH 1949

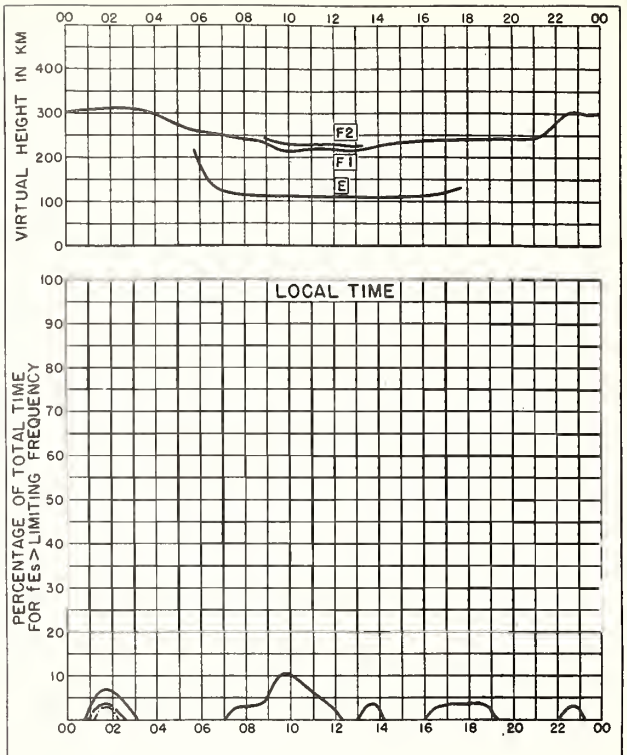


Fig. 66. OSLO, NORWAY MARCH 1949

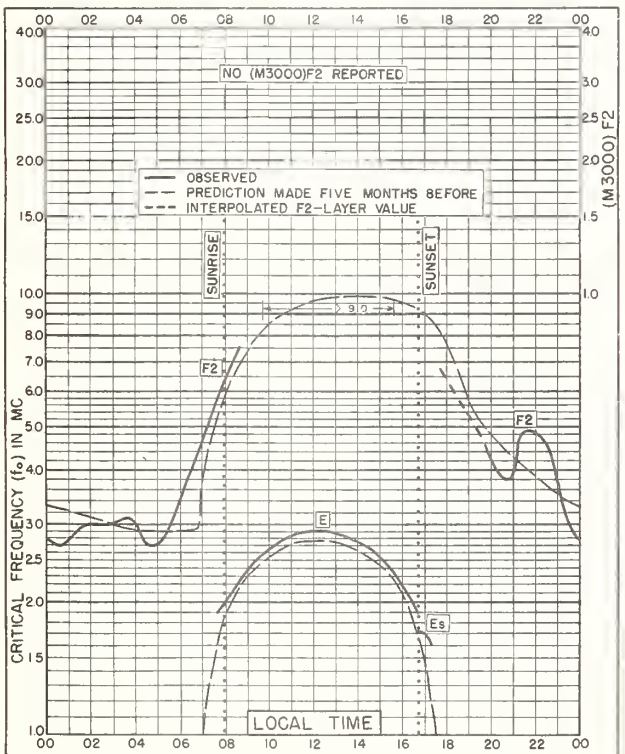


Fig. 67. OSLO, NORWAY
60.0°N, 11.0°E FEBRUARY 1949

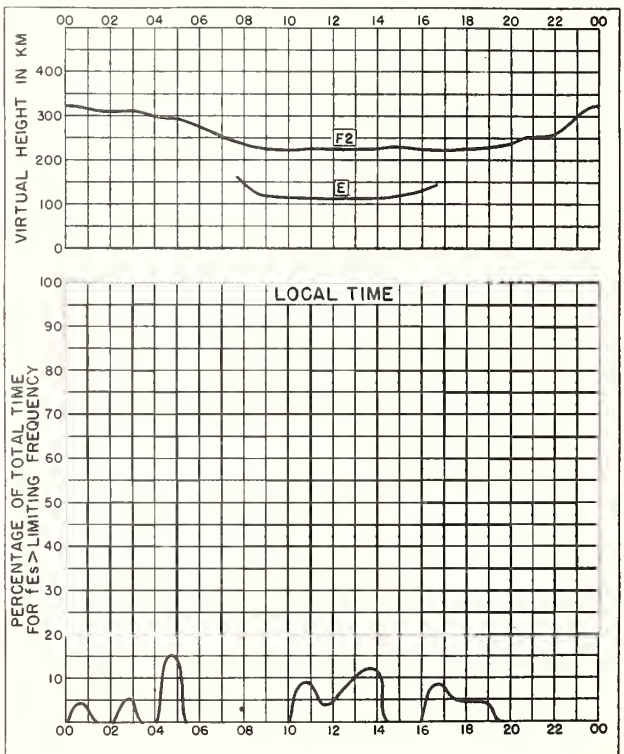


Fig. 68. OSLO, NORWAY FEBRUARY 1949

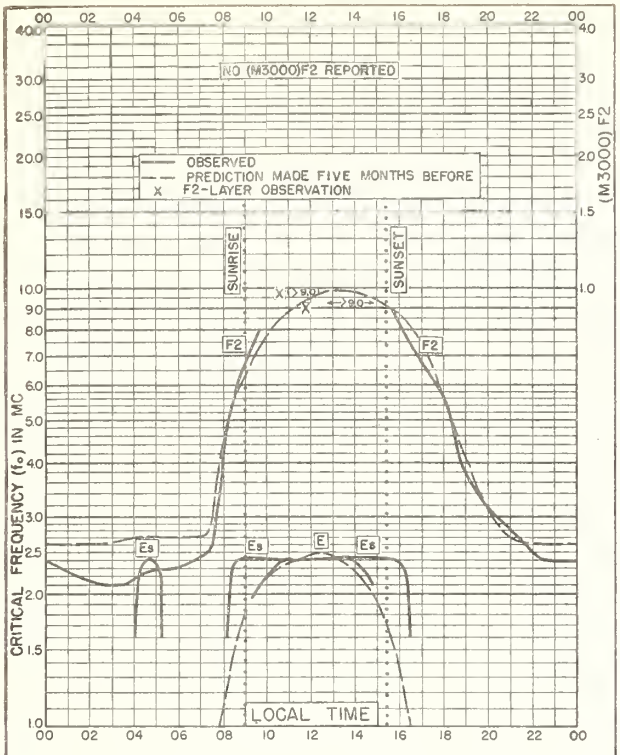


Fig. 69. OSLO, NORWAY
60.0°N, 11.0°E JANUARY 1949

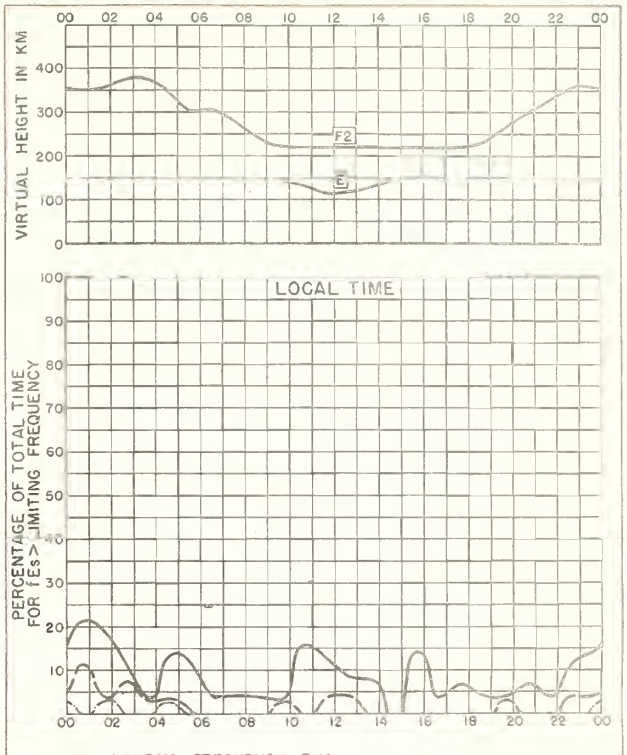


Fig. 70. OSLO, NORWAY JANUARY 1949

Index of Tables and Graphs of Ionospheric Data in CRPL-F67

Index (CRPL-F67, continued)

CRPL and IRPL Reports

[A list of CRPL Section Reports is available from the Central Radio Propagation Laboratory upon request]

Daily:

Radio disturbance warnings, every half hour from broadcast station WWV of the National Bureau of Standards. Telephoned and telegraphed reports of ionospheric, solar, geomagnetic, and radio propagation data.

Weekly:

CRPL–J. Radio Propagation Forecast (of days most likely to be disturbed during following month).

Semimonthly:

CRPL–Ja. Semimonthly Frequency Revision Factors for CRPL Basic Radio Propagation Prediction Reports.

Monthly:

CRPL–D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11–499–, monthly supplements to TM 11–499; Dept. of the Navy, DNC–13–1 ( ), monthly supplements to DNC–13–1.)

CRPL–F. Ionospheric Data.

Quarterly:

*IRPL–A. Recommended Frequency Bands for Ships and Aircraft in the Atlantic and Pacific.

*IRPL–H. Frequency Guide for Operating Personnel.

Circulars of the National Bureau of Standards:

NBS Circular 462. Ionospheric Radio Propagation.

NBS Circular 465. Instructions for the Use of Basic Radio Propagation Predictions.

Reports issued in past:

IRPL–C61. Report of the International Radio Propagation Conference, 17 April to 5 May 1944.

IRPL–G1 through G12. Correlation of D. F. Errors With Ionospheric Conditions.

IRPL–R. Nonscheduled reports:

- R4. Methods Used by IRPL for the Prediction of Ionosphere Characteristics and Maximum Usable Frequencies.
- R5. Criteria for Ionospheric Storminess.
- R6. Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
- R7. Second Report on Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
- R9. An Automatic Instantaneous Indicator of Skip Distance and MUF.
- R10. A Proposal for the Use of Rockets for the Study of the Ionosphere.
- R11. A Nomographic Method for Both Prediction and Observation Correlation of Ionosphere Characteristics.
- R12. Short Time Variations in Ionospheric Characteristics.
- R14. A Graphical Method for Calculating Ground Reflection Coefficients.
- R15. Predicted Limits for 2-Layer Radio Transmission Throughout the Solar Cycle.
- R17. Japanese Ionospheric Data—1943.
- R18. Comparison of Geomagnetic Records and North Atlantic Radio Propagation Quality Figures—October 1943 Through May 1945.
- R21. Notes on the Preparation of Skip-Distance and MUF Charts for Use by Direction-Finder Stations. (For distances out to 4000 km.)
- R23. Solar-Cycle Data for Correlation with Radio Propagation Phenomena.
- R24. Relations Between Band Width, Pulse Shape and Usefulness of Pulses in the Loran System.
- R25. The Prediction of Solar Activity as a Basis for the Prediction of Radio Propagation Phenomena.
- R26. The Ionosphere as a Measure of Solar Activity.
- R27. Relationships Between Radio Propagation Disturbance and Central Meridian Passage of Sunspots Grouped by Distance From Center of Disc.
- R30. Disturbance Rating in Values of IRPL Quality-Figure Scale from A. T. & T. Co. Transmission Disturbance Reports to Replace T. D. Figures as Reported.
- R31. North Atlantic Radio Propagation Disturbances, October 1943 Through October 1945.
- R33. Ionospheric Data on File at IRPL.
- R34. The Interpretation of Recorded Values of fEs.
- R35. Comparison of Percentage of Total Time of Second-Multiple Es Reflections and That of fEs in Excess of 3 Mc.

IRPL–T. Reports on tropospheric propagation:

- T1. Radar operation and weather. (Superseded by JANP 101.)
- T2. Radar coverage and weather. (Superseded by JANP 102.)

CRPL–T3. Tropospheric Propagation and Radio-Meteorology. (Reissue of Columbia Wave Propagation Group WPG–5.)

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