IONOSPHERIC DATA

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WASHINGTON, D. C.

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CONTENTS

SYMBOLS, TERMINOLOGY, CONVENTIONS

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.

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.

The symbol W is included in the median count only when it replaces a height characteristic. This practice represents a change from that listed in issues previous to CRPL-F78.

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 E or G (and B when applied to the E region only) 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.

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 presen

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 necessa to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of eac 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 Number						
	1951	1950	1949	1948	1947	1946	1945
December		86	108	114	126	85	38
November		87	112	115	124	83	36
October	52	90	114	116	119	81	23
September	54	91	115	117	121	79	22
August	57	96	111	123	122	77	20
July	60	101	108	125	116	73	
June	63	103	108	129	112	67	
May	68	102	108	130	109	67	
April	74	101	109	133	107	62	
March	78	103	111	133	105	51	
February	82	103	113	133	90	46	
January	85	105	112	130	88	42	

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 72 and figures 1 to 144 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 Geophysics:
- Watheroo, Western Australia

British Department of Scientific and Industrial Research, Radio Research Board:
- Falkland Is.
- Fraserburgh, Scotland
- Singapore, British Malaya
- Slough, England

Defence Research Board, Canada:
- Baker Lake, Canada
- Fort Chimo, Canada
- Resolute Bay, Canada
- St. John's, Newfoundland

Radio Wave Research Laboratories, National Taiman University, Taipeh, Formosa China:
- Formosa, China

National Laboratory of Radio-Electricity (French Ionospheric Bureau):
- Domont, France
- Poitiers, France
- Terre Adelie

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

The Royal Netherlands Meteorological Institute:
- De Bilt, Holland

Icelandic Post and Telegraph Administration:
- Reykjavik, Iceland

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

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

National Institute of Geophysics, City University, Rome, Italy:
- Rome, Italy

Radio Regulatory Commission, Tokyo, Japan:
- Akita, Japan
- Tokyo (Kokubunji), Japan
- Wakkanai, Japan
- Yamagawa, Japan

Christchurch Geophysical Observatory, New Zealand Department of Scientific and Industrial Research:
- Christchurch, New Zealand
- Rarotonga, Cook Is.

Norwegian Defense Research Establishment, Kjeller per Lillestrom, Norway:
- Oslo, Norway
- Tromso, Norway

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

Research Laboratory of Electronics, Chalmers University of Technology, Gothenburg, Sweden:
- Kiruna, Sweden

Post, Telephone and Telegraph Administration, Berne, Switzerland:
- Berne, Switzerland
- Schwarzenburg, Switzerland

United States Army Signal Corps:
- Adak, Alaska
- Okinawa I.

National Bureau of Standards (Central Radio Propagation Laboratory):
- Anchorage, Alaska
- Fairbanks, Alaska
- Guam I.
- Huancayo, Peru (Instituto Geofisico de Huancayo)
- Maui, Hawaii
- Narsarssuak, Greenland
- Panama Canal Zone
- Point Barrow, Alaska
- Puerto Rico, West Indies
- San Francisco, California (Stanford University)
- Washington, D. C.
- White Sands, New Mexico

HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 73 to 84 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, Terminology, Conventions." Beginning with September 1949, the data are taken at Ft. Belvoir, Virginia.

IONOSPHERIC STORMINESS AT WASHINGTON, D.C.

Table 85 presents ionosphere character figures for Washington, D. C., during October 1951, as determined by the criteria given in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, geomagnetic K-figures, which are usually covariant with them.

RADIO PROPAGATION QUALITY FIGURES

Table 86 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, September 1951, 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 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.

Note. The North Pacific quality figures have been marked "low weight" beginning with August 1951. This is not because of any discontinuity in the accuracy of the individual reports on which the figures are based nor in the method of derivation of the indexes. However, since the number of suitable reports available for this work has decreased appreciably during 1950 and 1951, it seems appropriate to emphasize now that the North Pacific quality figures do not have as firm a basis as the North Atlantic quality figures.

OBSERVATIONS OF THE SOLAR CORONA

Tables 87 through 89 give the observations of the solar corona during October 1951 obtained at Climax, Colorado, by the High Altitude Observatory of Harvard University and the University of Colorado. Tables 90 through 92 list the coronal observations obtained at Sacramento Peak, New Mexico, during October 1951, derived by the High Altitude Observatory from spectrograms taken by Harvard University as a part of its performance of an Air Materiel Command Research and Development Contract administered by the Air Force Cambridge Research Laboratories. The data are listed separatedly for east and west limbs at 5-degree intervals of position angle north and south of the Solar Equator at the limb. The time of observation is given to the nearest tenth of a day, GCT.

Table 87 gives the intensities of the green (5303A) line of the emission spectrum of the solar corona; table 88 gives similarly the intensities of the first red (6374A) coronal line; and table 89, the intensities of the second red (6702A) coronal line; all observed at Climax in October 1951.

Table 90 gives the intensities of the green (5303A) coronal line; table 91, the intensities of the first red (6374A) coronal line; and table 92, the intensities of the second red (6702A) coronal line; all observed at Sacramento Peak in October 1951.

The following symbols are used in tables 87 through 92: a, observation of low weight; -, corona not visible; and X, position angle not included in plate estimates.

RELATIVE SUNSPOT NUMBERS

Table 93 lists the daily provisional Zürich relative sunspot number, R_Z, as communicated by the Swiss Federal Observatory. Table 94 gives the new series of American relative sunspot numbers, $R_{A'}$, for January through September 1951. Beginning with 1951, the observations collected by the Solar Division, AAVSO, have been reduced according to a new procedure, such that only high quality observations of experienced observers are combined into $R_{A'}$. Observatory coefficients for each of the 22 selected observers were recomputed on data for 1948-1950, years when there was a wide range of solar activity. Otherwise, the procedure is that outlined in Publication of the Astronomical Society of the Pacific, 61, 13, 1949. The scale of the American numbers in 1951 will differ from that of the reports for earlier years because of these changes, and the new series is designated $R_{A'}$ rather than R_A. The American relative sunspot number will appear monthly in these pages, as communicated by the Solar Division.

OBSERVATIONS OF SOLAR FLARES

Table 95 gives the preliminary record of solar flares reported to the CRPL. These reports are communicated on a rapid schedule at the sacrifice of detailed accuracy. Definitive and complete records are published later in the Quarterly Bulletin of Solar Activity, I.A.U., in various observatory publications, and elsewhere. The present listing serves to identify and roughly describe the phenomena observed. Details should be sought from the reporting observatory.

Reporting directly to the CRPL are the following observatories: Mt. Wilson, McMath-Hulbert, U. S. Naval, Wendelstein, Kanzel and High Altitude at Sacramento Peak, New Mexico. The remainder report to Meudon (Paris), and the data are taken from the Paris-URSIgram broadcast, monitored fairly regularly by the CRPL. The data on solar flares reported from Sacramento Peak, New Mexico, communicated by the High Altitude Observatory at Boulder, Colorado, are provided by Harvard University as the result of work undertaken on an Air Materiel Command Research and Development Contract administered by the Air Force Cambridge Research Laboratories.

The table lists for each flare the reporting observatory, date, times of beginning and ending of observation, duration (when known), total area (corrected for foreshortening), and heliographic coordinates. For the maximum phase of the flare is given the time, intensity, area relative to the total area, and the importance. The column "SID observed" is to indicate when a sudden ionosphere disturbance, noted elsewhere in these reports, occurred at the time of a flare. Times are in Universal Time (GCT).

INDICES OF GEOMAGNETIC ACTIVITY

Table 96 lists various indices of geomagnetic activity based on data from magnetic observatories widely distributed throughout the world. The indices are: (1) preliminary mean 3-hourly K-indices, Kw; (2) preliminary international character-figures, C; (3) geomagnetic planetary three-hour-range indices, Kp; (4) magnetically selected quiet and disturbed days.

Kw is the arithmetic mean of the K-indices from all reporting observatories for each three hours of the Greenwich day, on a scale 0 (very quiet) to 9 (extremely disturbed). The C-figure is the arithmetic mean of the subjective classification by all observatories of each day's magnetic activity on a scale of 0 (quiet) to 2 (storm). The magnetically quiet and disturbed days are selected by the international scheme outlined on pages 219-227 in the December 1943 issue of Terrestrial Magnetism and Atmospheric Electricity.

Kp is the mean standardized K-index from 11 observatories between geomagnetic latitudes 47 and 63 degrees. The scale is 0 to 9, expressed in thirds of a unit, e.g., 5- is 4 2/3, 5o is 5 0/3, and 5 + is 5 1/3. This planetary index is designed to measure solar particle-radiation by its magnetic effects, specifically to meet the needs of research workers in the ionospheric field. A 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. Tables of Kp for 1945-48 are in Bulletin 12b; for 1940-44 and 1949, in these CRPL-F reports, F65-67; for 1950, monthly in F68 and following issues. Current tables are also published quarterly in the Journal of Geophysical Research along with data on sudden commencements (sc) and solar flare effects (sfe).

The Committee on Characterization of Magnetic Disturbance, ATME, IUGG, has kindly supplied this table. The Meteorological Office, De Bilt, Holland, collects the data and compiles Kw, C and selected days. The Chairman of the Committee computes the planetary index.

SUDDEN IONOSPHERE DISTURBANCES

Tables 97 through 101 list respectively the sudden ionosphere disturbances observed at Ft. Belvoir, Virginia, October 1951; in England, September 1951; at Lindau/Harz, Germany, September 1951; at Riverhead, New York, October 1951; and at Platanos, Argentina, September 1951.

TABLES OF IONOSPHERIC DATA

Table 1

Washington, D. C. (38.7°N, 77.1°W) October 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.9						2.9
01	(280)	3.6						2.9
02	280	3.4						2.9
03	280	3.3						2.9
04	270	3.0						3.0
05	270	2.8					1.5	3.0
06	260	3.2						3.0
07	240	5.6			120	2.1		3.3
08	240	6.6	220	—	110	2.5		3.3
09	260	7.6	210	4.1	110	2.9		3.2
10	260	8.2	200	4.2	110	3.1		3.2
11	270	8.6	200	4.4	110	3.2		3.1
12	270	8.6	210	(4.4)	110	3.3		3.1
13	270	9.0	210	4.4	110	3.2		3.1
14	270	8.8	220	4.2	110	3.1		3.1
15	260	9.0	230	—	110	2.9		3.1
16	250	8.8	240	—	110	2.5		3.2
17	230	8.4			120	2.1		3.2
18	220	7.6					1.7	3.2
19	230	6.2						3.1
20	250	5.2						3.0
21	260	4.5						3.0
22	270	4.3						2.9
23	280	4.1						2.9

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 2

Point Barrow, Alaska (71.3°N, 156.8°W) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	(3.9)					4.4	(2.9)
01	300	(3.5)					5.0	(2.7)
02	300	(3.4)					4.7	(2.8)
03	300	(3.4)					3.9	(2.8)
04	320	(3.5)					4.4	(2.8)
05	290	(4.0)					4.2	(3.0)
06	320	(4.0)	---	---	---	---	3.2	(2.8)
07	340	4.4	---	---	---	---	4.0	3.0
08	350	4.5	260	---	---	---	4.3	3.0
09	350	4.4	230	3.7	110	2.4	4.5	2.9
10	(500)	4.3	250	3.8	110	2.6	4.0	2.6
11	380	4.8	250	4.0	110	2.8	4.2	2.9
12	420	4.8	240	4.0	120	2.6	3.4	2.8
13	400	4.8	240	4.0	110	2.6		2.8
14	360	5.0	250	3.9	110	2.6		2.8
15	360	5.2	260	3.8	120	2.5		2.8
16	320	5.2	260	3.7	120	2.3		2.9
17	300	4.9	260	---	120	2.0		3.0
18	290	4.2	---	---	---	---	2.9	3.0
19	300	(3.9)			---	---	4.1	2.9
20	300	(3.7)					5.4	(3.0)
21	300	(3.4)					4.6	(2.9)
22	300	(3.6)					5.2	(2.9)
23	290	(3.8)					6.1	(3.0)

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

Table 3

Tromso, Norway (69.7°N, 19.0°E) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(360)	(4.7)					5.6	---
01	(370)	(4.9)					5.1	---
02	(355)	(4.0)					5.6	(2.5)
03	(330)	(4.4)			---	---	5.4	(2.8)
04	(290)	3.9			---	---	5.1	3.0
05	280	3.8	---	---	---	1.8	4.2	3.0
06	(280)	4.3	240	---	110	(2.1)	3.2	3.0
07	(320)	4.7	245	3.6	110	2.4	3.2	3.0
08	395	5.0	245	3.8	110	(2.6)	3.2	2.9
09	320	5.2	230	4.0	110	2.7	3.2	3.0
10	320	5.4	230	4.1	110	2.8	3.1	2.9
11	315	5.6	230	4.2	110	2.8		3.0
12	320	5.3	230	4.2	110	2.8	2.4	3.0
13	305	5.4	230	4.0	115	2.7	2.7	3.0
14	270	5.2	230	3.9	110	2.6	3.0	3.1
15	(285)	5.0	230	(3.8)	110	2.5	3.1	3.1
16	260	4.7	240	---	115	2.4	3.2	3.1
17	280	4.7	---	---	115	2.2	3.3	3.2
18	285	4.6	---	---	---	---	4.6	3.1
19	320	4.4			---	---	5.0	3.0
20	325	(4.5)					5.2	2.8
21	345	(4.4)					5.8	2.8
22	345	(4.3)					5.0	2.7
23	(345)	(4.6)					5.3	2.8

Time: 15.0°E.
Sweep: 0.6 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 4

Anchorage, Alaska (61.2°N, 149.9°W) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	2.9						2.8
01	310	3.2						2.6
02	<380	2.7						2.5
03	370	2.7						2.6
04	380	2.8						2.6
05	300	3.2						2.8
06	280	3.9	—	—				(2.8)
07	300	4.4	230	—	—	—		(3.0)
08	390	4.8	230	4.0	—	—		2.8
09	380	5.4	240	4.2	—	—		2.8
10	360	5.6	220	4.3	—	—		2.9
11	380	5.5	250	4.2	—	—		2.8
12	370	5.8	240	4.2	100	3.0		2.8
13	360	5.9	230	4.4	—	—		2.8
14	340	6.0	240	4.2	—	—		2.8
15	320	6.0	250	4.0	—	—		2.9
16	300	6.0	260	3.7	—	—		3.0
17	300	5.7	250	—				3.0
18	280	5.1						3.0
19	260	5.0						3.0
20	270	4.7						2.9
21	270	4.4						2.8
22	300	3.5						2.8
23	300	3.0						2.7

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

Table 5

Narsarssuak, Greenland (61.2°N, 45.4°W) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(360)	(3.2)					4.4	(2.5)
01	(420)	(3.2)					4.0	(2.5)
02	---	---					4.2	---
03	---	---					4.6	---
04	---	---					4.4	---
05	(340)	(3.6)			---	---	3.6	(2.8)
06	(330)	(4.4)	---	---	(150)	---	3.6	(2.8)
07	(330)	4.8	---	---	---	---		2.9
08	350	5.2	280	4.0	---	---		2.8
09	370	5.4	280	4.0	(140)	---		2.8
10	420	5.4	260	(4.1)	(140)	(3.0)		2.7
11	400	5.4	260	4.0	(140)	3.1		2.7
12	410	5.6	(270)	4.1	(140)	(3.1)		2.6
13	380	5.6	270	4.2	(140)	(3.1)		2.6
14	420	5.4	280	(4.0)	(140)	(3.0)		2.6
15	400	5.3	(290)	(4.0)	(140)	3.0		2.6
16	380	(5.0)	(320)	4.0	(140)	(2.8)		2.6
17	340	(5.0)	290	---	(140)	2.5	4.0	2.8
18	350	(4.8)	---	---	---	---	4.4	(2.7)
19	370	(4.4)			---	---	5.2	2.8
20	320	(4.1)					6.7	(2.7)
21	(340)	(3.9)					5.0	(2.7)
22	(360)	(4.0)					4.4	(2.6)
23	(340)	(4.0)					4.8	(2.7)

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 6

Oslo, Norway (60.0°N, 11.0°E) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	325	(3.0)						(2.8)
01	325	2.9						2.7
02	325	(2.8)						(2.7)
03	325	(2.3)						(2.7)
04	315	2.1						2.7
05	300	2.4			---	---		2.9
06	270	3.2	---	---	125	1.6		3.1
07	250	4.0	235	---	125	1.9	2.1	3.1
08	(315)	4.4	230	3.5	120	2.3	2.5	3.1
09	330	5.0	220	3.8	120	2.6	2.8	3.0
10	315	5.1	215	4.0	115	2.7	3.0	2.9
11	315	5.4	210	4.1	115	2.8	3.3	3.0
12	340	5.3	215	4.1	110	2.9	2.9	3.0
13	320	5.8	210	4.1	110	2.8		3.0
14	300	5.6	220	4.0	110	2.8		3.1
15	320	5.5	220	4.0	110	2.7		3.1
16	295	5.4	235	3.8	115	2.4		3.1
17	260	5.5	245	3.3	125	2.2		3.1
18	250	5.3	250	---	140	1.7	1.8	3.1
19	255	5.0	260	---	---	E		3.0
20	250	4.4						3.0
21	255	3.2						(3.0)
22	275	3.2						(2.9)
23	300	(3.1)						(2.8)

Time: 15.0°E.
Sweep: 1.3 Mc to 14.0 Mc in 8 minutes, automatic operation.

Table 7

San Francisco, California (37.4°N, 122.2°W) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(290)	(3.8)						(2.7)
01	300	(3.8)						(2.8)
02	290	(3.7)						(2.8)
03	280	(3.7)						(2.8)
04	(280)	(3.5)						(2.8)
05	(280)	(3.3)						(2.8)
06	270	(3.9)	---	---	---	---		(3.1)
07	310	5.0	240	3.7	110	(2.4)	2.4	3.1
08	350	5.7	230	4.1	120	(2.9)	2.8	3.0
09	350	5.6	210	4.3	110	(3.1)		2.8
10	340	6.6	210	4.6	110	(3.3)		2.9
11	350	6.9	210	4.7	110	3.4		2.9
12	340	7.2	210	4.8	110	3.5		2.9
13	330	7.5	220	4.8	110	3.5		3.0
14	310	7.2	230	4.8	110	3.3		3.0
15	300	6.9	230	4.6	110	3.2		3.0
16	280	6.8	230	4.3	110	2.9		3.1
17	260	6.7	240	3.7	120	(2.5)	2.4	3.2
18	240	6.6			---	---		3.2
19	230	6.1						3.2
20	240	5.4						3.0
21	(260)	4.5					2.5	2.9
22	(270)	4.0					2.4	2.8
23	(280)	(3.9)						(2.8)

Time: 120.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 8

White Sands, New Mexico (32.3°N, 106.5°W) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	4.0						2.8
01	290	4.0						2.8
02	270	3.8						2.8
03	280	4.0					2.0	2.9
04	270	3.6					1.9	3.0
05	280	3.3					2.4	2.8
06	260	4.4	270	---	110	(1.7)	2.6	3.2
07	260	5.9	230	3.7	110	(2.3)	3.2	3.2
08	280	6.6	220	4.3	100	2.8	3.5	3.2
09	290	6.8	210	4.6	100	3.1	3.5	3.0
10	320	7.2	200	4.8	100	3.3	3.4	3.0
11	320	8.1	200	4.9	100	3.5		3.0
12	310	8.3	200	4.9	100	3.6		3.0
13	300	8.7	200	4.9	100	3.5		3.0
14	290	8.7	210	4.8	100	3.4		3.0
15	280	8.1	220	4.6	100	3.2		3.1
16	280	7.8	230	4.4	100	2.8		3.2
17	250	7.5	230	---	110	2.4	3.0	3.3
18	230	7.0			---	---	2.8	3.3
19	220	6.0					2.2	3.2
20	230	5.2						3.1
21	260	4.6						3.0
22	270	4.2						2.9
23	300	4.2						2.8

Time: 105.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 9

Maui, Hawaii (20.8°N, 156.5°W) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	5.2					1.7	2.8
01	270	4.8					1.9	2.8
02	240	4.6						3.2
03	230	3.6						3.2
04	240	3.3					1.3	3.0
05	270	2.6					1.4	2.9
06	290	3.4			130	(1.3)	2.2	2.8
07	240	6.1	240	---	110	2.2	3.7	3.2
08	260	6.9	220	---	100	2.8	4.6	3.2
09	280	7.6	200	4.4	100	3.2	5.5	2.8
10	320	8.5	200	4.9	100	3.4	5.7	2.7
11	340	9.5	210	5.1	110	3.6	4.5	2.6
12	340	10.2	200	5.1	110	3.6	4.6	2.8
13	320	11.4	210	5.1	110	3.7	4.6	2.9
14	310	11.4	220	5.0	100	3.6	4.3	3.0
15	300	12.0	220	4.9	110	3.4	4.4	3.0
16	270	12.4	230	4.5	100	3.1	4.4	3.2
17	250	12.0	230	---	110	2.5	4.4	3.3
18	230	10.8			120	1.8	4.0	3.4
19	220	8.0					3.8	3.2
20	230	6.8					3.7	2.9
21	260	6.2					3.9	2.7
22	290	6.3					3.6	2.7
23	260	6.2					2.9	2.8

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

Table 10

Puerto Rico, W.I. (18.5°N, 67.2°W) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	5.4						2.8
01	270	5.4						2.9
02	260	5.4						3.0
03	240	5.0						3.0
04	240	4.6						3.0
05	250	4.1						3.0
06	250	4.2						3.0
07	220	6.2	230	---	110	(2.1)		3.5
08	230	6.6	210	---	100	(2.7)	4.0	3.3
09	280	7.4	200	4.6	100	(3.1)		3.2
10	290	8.0	200	4.7	100	3.4		3.0
11	320	9.0	200	5.1	100	3.6		2.9
12	320	9.8	210	5.1	100	3.7		2.8
13	320	10.8	220	5.1	110	3.7		2.9
14	310	11.0	220	5.1	110	3.6		2.9
15	290	11.4	220	4.8	100	3.4		3.0
16	280	11.4	220	4.6	110	3.1		3.1
17	260	10.6	230	---	110	2.7	3.8	3.2
18	230	9.8	250	---	---	---	3.4	3.2
19	220	7.9					2.7	3.2
20	220	6.2					2.4	2.8
21	260	6.0						2.8
22	280	5.6						2.8
23	290	5.6						2.8

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 11

Guam I. (13.6°N, 144.9°E) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	10.0					2.0	3.1
01	240	8.5						3.2
02	240	7.2						3.2
03	240	6.0						3.1
04	255	5.1						3.1
05	240	4.5						3.3
06	260	4.4						3.1
07	240	7.4			120	2.3		3.2
08	260	9.6	220	---	110	2.8		3.1
09	(280)	10.2	210	---	100	---		2.9
10	(300)	10.6	200	5.2	---	---	4.1	2.7
11	310	10.4	200	(5.0)	---	---		2.5
12	320	10.7	200	5.0	---	---	4.4	2.5
13	330	11.2	200	5.1	(110)	---	4.0	2.6
14	330	12.2	210	5.0	120	(3.6)		2.7
15	310	12.8	220	4.9	(120)	3.4		2.9
16	300	13.0	220	---	110	3.1	5.4	(3.0)
17	290	(13.2)	240	---	120	2.6	4.8	(3.0)
18	260	(12.6)			---	---	4.5	(2.9)
19	280	12.1					4.4	2.7
20	280	11.6					2.3	(2.7)
21	250	11.2						2.9
22	240	10.6						3.1
23	250	10.4						3.0

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

Table 12

Panama Canal Zone (9.4°N, 79.9°W) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	6.8						3.0
01	240	6.6						3.1
02	230	5.2						3.0
03	230	4.4						3.1
04	240	3.8						3.1
05	260	2.8						3.0
06	260	3.5					2.1	2.8
07	240	6.0	220	---	120	2.2	3.1	3.2
08	(260)	7.2	220	---	110	2.9	3.4	3.0
09	320	8.3	210	5.0	110	3.3	4.1	2.7
10	350	9.5	220	5.2	110	3.5	4.7	2.6
11	350	10.5	210	5.3	110	3.7	4.6	2.6
12	360	11.6	210	5.2	110	3.8	4.6	2.7
13	350	12.6	<230	5.2	110	3.8	4.2	2.8
14	320	(13.6)	230	5.1	100	3.7	4.8	(2.9)
15	300	(13.5)	230	5.0	100	3.4	4.6	(3.0)
16	280	(13.6)	220	4.6	110	3.2	4.3	(3.0)
17	250	(12.6)	230	---	110	2.6	4.5	(3.1)
18	230	(11.3)			---	---	3.4	3.0
19	230	9.4					3.0	3.0
20	230	8.6					2.7	2.8
21	240	(7.5)					2.1	(2.8)
22	280	(7.1)						(2.7)
23	280	(6.4)						(2.8)

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 13

Huancayo, Peru (12.0°S, 75.3°W) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	7.4						3.2
01	240	6.9						3.2
02	250	6.2						3.1
03	260	5.3						3.1
04	280	5.0						3.0
05	300	4.5						3.1
06	280	5.0			100	1.9	3.1	3.1
07	240	8.0	---	---	100	2.6	3.2	3.2
08	240	9.4	220	---	100	3.0	5.0	2.9
09	300	10.2	210	4.7	100	---	5.4	2.7
10	310	9.9	210	4.9	100	---	8.0	2.6
11	320	9.4	200	5.0	100	---	8.0	2.5
12	320	9.3	200	5.0	100	---	8.0	2.5
13	320	9.4	200	4.9	100	---	8.0	2.5
14	300	9.2	200	4.8	100	---	8.0	2.4
15	260	9.0	210	4.4	100	3.1	5.5	2.5
16	210	9.5	---	---	110	2.8	4.8	2.4
17	270	9.1			100	2.3	4.0	2.5
18	300	8.6			110	---		2.5
19	320	8.5						2.5
20	310	8.6						2.6
21	260	8.9						2.8
22	220	8.6						3.0
23	220	8.2						3.2

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

Table 14

Point Barrow, Alaska (71.3°N, 156.8°W) August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	(4.3)					5.4	(3.0)
01	270	(4.4)					6.4	(3.1)
02	280	(4.5)					7.8	(3.0)
03	300	(4.0)	---	---			5.4	(3.0)
04	310	(4.4)	---	---	110	---	4.3	(2.9)
05	320	(4.4)	270	3.6	110	2.3	4.1	(2.9)
06	360	(4.4)	270	3.7	120	2.4	3.5	(2.8)
07	430	(4.7)	240	3.8	120	---	4.5	(2.6)
08	460	4.8	230	3.8	110	---	4.2	2.6
09	470	4.6	210	4.0	110	---	4.3	2.6
10	510	4.7	220	4.1	---	---	4.0	2.6
11	500	4.7	220	4.2	100	3.1	3.1	2.6
12	550	4.7	<230	4.1	110	---		2.4
13	480	4.8	230	4.1	---	---		2.6
14	430	5.0	230	4.1	110	3.0		2.7
15	400	5.2	230	4.2	100	2.8		2.8
16	360	5.1	230	4.1	100	2.8		2.8
17	350	5.0	230	4.0	110	2.6		3.0
18	320	5.0	240	---	110	2.3	3.0	3.0
19	300	4.7	240	---	130	2.2	4.0	3.0
20	<300	4.4	260	---	---	---	4.2	3.0
21	310	4.4	---	---			6.2	3.0
22	300	(4.6)					7.0	3.0
23	310	(4.5)					6.2	3.0

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

Table 15

Fairbanks, Alaska (64.9°N, 147.8°W) August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---					5.0	---
01	---	(3.4)					5.2	(2.3)
02	(420)	(3.7)					5.2	(2.4)
03	(420)	(3.9)					4.8	(2.4)
04	(430)	(4.0)					4.4	---
05	(480)	(4.2)	---	3.6				(2.5)
06	520	(4.4)	300	(3.6)				(2.4)
07	560	(4.7)	280	(3.8)				(2.3)
08	(580)	(5.1)	280	(4.0)				(2.3)
09	550	(5.0)	270	4.1				(2.3)
10	560	(5.1)	(270)	4.2				2.3
11	560	(5.2)	(280)	(4.3)				(2.4)
12	570	(5.2)	270	(4.3)	---	---		2.3
13	540	(5.2)	(280)	4.3				(2.3)
14	520	5.4	280	(4.2)	---	---		2.4
15	500	(5.1)	300	(4.1)				(2.4)
16	480	(5.1)	310	4.0				(2.5)
17	440	(5.0)	320	4.0				(2.6)
18	390	(5.0)	---	---				(2.6)
19	360	4.8						(2.7)
20	350	(4.7)						(2.6)
21	(340)	(4.5)						(2.6)
22	(340)	(4.3)					4.2	(2.6)
23	(360)	---					4.5	---

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

Table 16

Narsarssuak, Greenland (61.2°N, 45.4°W) August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(380)	(4.0)					4.8	(2.6)
01	(420)	(3.4)					4.1	(2.6)
02	(450)	(3.6)					4.6	(2.4)
03	(410)	(3.7)			---	---	4.2	(2.4)
04	(360)	(3.6)			---	---	4.4	---
05	360	4.2	---	---	---	---	4.3	(2.8)
06	320	4.3	---	---	---	---	4.4	2.8
07	380	4.8	280	3.8	130	(2.8)		2.7
08	400	5.2	270	4.1	140	(2.8)		2.8
09	400	5.0	260	4.1	130	(3.0)		2.7
10	400	5.2	260	4.2	(130)	(3.2)		2.7
11	430	5.2	260	4.3	(130)	(3.2)		2.6
12	460	5.1	260	4.3	(130)	(3.2)		2.6
13	480	5.4	260	4.3	140	(3.2)		2.5
14	490	5.4	(260)	4.2	(130)	3.2		2.5
15	480	5.2	280	4.2	(130)	(3.2)		2.6
16	440	(5.1)	290	4.1	(130)	(3.2)		2.6
17	410	5.2	310	4.0	130	(2.9)	3.4	2.7
18	370	5.0	300	3.8	(140)	(2.4)	4.3	2.7
19	340	(4.7)	300	---	(140)	(2.2)	5.6	(2.7)
20	360	(4.3)			---	---	4.1	(2.7)
21	380	(3.9)			---	---	4.5	(2.6)
22	(380)	(4.0)					5.5	(2.5)
23	(380)	(3.9)					4.9	(2.6)

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 17

De Bilt, Holland (52.1°N, 5.2°E) August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	295	4.2					2.4	2.7
01	295	4.0					2.8	2.7
02	300	3.4					2.7	2.7
03	300	3.2			---	E	3.6	2.7
04	290	3.2			---	E	3.3	2.8
05	280	4.2	260	---	---	1.8	3.9	3.0
06	340	4.7	220	3.8	100	2.3	4.0	3.0
07	310	5.0	215	4.1	100	2.7	4.2	3.1
08	330	5.6	210	4.3	100	3.0	4.6	3.1
09	320	5.9	205	4.5	100	3.2	4.5	2.9
10	350	6.2	205	4.5	100	3.3	4.8	3.0
11	320	5.9	200	4.6	100	3.4	4.4	3.1
12	350	5.9	200	4.6	100	3.4	4.6	3.0
13	330	5.9	205	4.6	100	3.5	4.5	3.0
14	340	5.9	205	4.5	100	3.3	4.0	3.0
15	310	5.9	210	4.5	100	3.2	4.0	3.0
16	305	6.0	220	4.2	100	2.9	4.0	3.0
17	300	6.1	225	3.8	100	2.5	4.0	3.0
18	(290)	6.2	260	---	105	2.1	3.6	3.0
19	275	6.6			---	E	3.8	3.0
20	260	6.0			---	E	3.0	2.9
21	240	5.6					3.0	2.9
22	275	5.2					2.1	2.8
23	295	4.4						2.7

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

Table 18

Adak, Alaska (51.9°N, 176.6°W) August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	(3.8)					2.3	(2.8)
01	300	(3.6)						(2.7)
02	300	(3.3)					1.9	(2.7)
03	310	(2.8)					2.1	(2.7)
04	310	3.0	---	---	---	---	2.2	(2.7)
05	290	3.6	260	2.9	120	---	2.7	2.8
06	420	4.4	250	3.3	110	2.3	3.4	2.6
07	410	5.0	240	3.7	110	2.6	3.8	2.6
08	420	5.2	220	4.0	110	2.8	4.4	2.7
09	400	5.4	210	4.2	110	3.0	4.3	2.8
10	400	5.5	210	4.3	110	3.4	4.0	2.7
11	420	5.4	210	4.4	110	---	4.5	2.7
12	400	5.2	210	4.5	110	---	4.0	2.8
13	430	5.0	210	4.4	110	(3.2)	3.7	2.8
14	440	5.2	210	4.4	110	---	3.7	2.8
15	420	5.1	220	4.2	110	---	3.6	2.9
16	360	5.2	220	4.2	110	2.8	3.0	2.8
17	320	5.4	240	3.8	110	2.4	3.6	3.0
18	280	5.4	250	---	120	2.0	3.4	3.0
19	270	5.4	---	---	---	---	3.6	3.0
20	260	6.0					3.2	2.9
21	260	6.0					3.6	2.9
22	250	5.0					2.9	2.9
23	260	(4.5)					2.3	(2.8)

Time: 180.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 19

Schwarzenburg, Switzerland (46.8°N, 7.3°E) August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	4.8						
01	300	4.6						
02	300	4.2						
03	300	4.0						
04	300	3.8						
05	300	3.S			---	---		
06	250	4.6			116	2.0		
07	250	S.1	---	---	100	2.4	4.0	
08	300	5.5	220	4.0	100	2.7	4.5	
09	300	5.8	220	4.4	100	3.0	4.8	
10	300	6.0	210	4.4	100	3.2	4.4	
11	310	6.2	200	4.6	100	3.4	4.1	
12	330	6.0	200	4.6	100	3.4	4.9	
13	330	6.1	210	4.8	100	3.4	S.1	
14	330	6.4	210	4.8	100	3.3	4.6	
1S	310	6.2	210	4.6	100	3.3		
16	310	6.2	215	4.5	100	3.0		
17	300	6.2	210	4.3	100	2.8	4.2	
18	270	6.1	---	---	100	2.5	4.0	
19	260	6.4			105	2.2	4.0	
20	260	7.0			---	---	4.2	
21	250	6.8			---	---	4.2	
22	245	6.0					3.8	
23	290	5.0					2.9	

Time: 15.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 20

Okinawa I. (26.3°N, 127.8°E) August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.8					2.5	2.7
01	290	6.8					3.2	2.8
02	280	6.0					3.2	2.9
03	260	5.7					2.4	3.0
04	270	4.9					2.0	2.9
05	260	4.5						2.9
06	250	5.8	---	---	130	---	3.0	3.2
07	250	6.8	220	---	110	(2.5)	3.8	3.4
08	(270)	6.4	210	---	(110)	3.1	4.4	3.2
09	310	7.0	(230)	---	110	3.2	6.0	3.0
10	340	7.6	210	4.9	110	3.3	5.6	2.9
11	350	8.5	220	(5.1)	(110)	(3.5)	4.8	2.8
12	340	9.4	230	(5.0)	110	(3.6)	5.0	2.8
13	330	10.0	230	5.0	(110)	(3.5)	4.5	2.8
14	330	10.4	(230)	(4.9)	110	3.4	5.0	2.8
15	310	10.7	230	(4.7)	110	(3.4)	4.8	3.0
16	300	10.4	230	---	110	3.2	5.1	3.0
17	280	10.4	230	---	110	2.6	4.3	3.0
18	260	10.5	260	---	(120)	---	3.8	3.1
19	240	9.7					3.6	3.1
20	240	7.4					3.5	2.8
21	270	>6.3					3.0	2.7
22	310	5.9					3.2	2.6
23	310	6.3					3.2	2.7

Time: 127.5°E.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 21

Panama Canal Zone (9.4°N, 79.9°W) August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	6.5						2.8
01	250	6.6						3.0
02	250	5.8						3.0
03	250	5.3					2.1	3.0
04	250	(4.9)					2.0	(3.1)
05	250	(4.0)						(3.0)
06	270	3.6	---	---			3.2	3.0
07	240	5.5	240	---	120	2.3	3.0	3.2
08	(280)	6.4	220	(4.6)	110	2.9	3.3	3.0
09	370	6.6	210	5.2	110	3.3	3.8	2.8
10	420	7.3	220	5.0	110	3.6		2.5
11	430	8.7	220	5.1	110	3.7	4.3	2.5
12	410	9.6	220	5.0	110	3.8	4.5	2.5
13	390	10.3	220	5.0	110	3.8	4.6	2.6
14	380	11.0	220	4.9	110	3.7	4.5	2.6
15	350	11.7	220	4.8	110	3.5	4.8	2.8
16	320	11.8	230	4.6	110	3.2	4.2	2.9
17	290	(11.4)	230	4.3	110	2.7	3.9	(3.0)
18	(250)	(10.4)	240	---	---	---	3.3	(3.0)
19	230	(8.8)					2.8	(3.0)
20	250	(7.4)					2.4	(2.8)
21	280	(7.1)					2.D	(2.8)
22	280	7.0						2.8
23	280	6.9						2.8

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 22

Baker Lake, Canada (64.3°N, 96.0°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.0					3.7	2.8
01	320	5.0					4.0	2.8
02	310	4.8	---	---			2.0	2.8
03	320	4.6	310	---	---	---	1.9	2.8
04	330	4.5	300	---	160	2.0		2.8
05	380	4.8	290	3.4	130	2.4		2.8
06	460	4.7	280	3.8	120	2.8		2.8
07	510	4.8	280	3.8	120	2.8		2.7
08	600	4.8	260	4.0	120	3.0		2.4
09	600	5.2	250	4.0	110	3.3		2.4
10	550	5.5	280	4.2	110	3.3		2.5
11	520	5.2	280	4.3	110	3.5		2.6
12	540	5.3	280	4.4	110	3.4		2.6
13	550	5.3	260	4.2	110	3.3		2.6
14	500	5.5	260	4.3	110	3.3		2.6
15	500	5.5	270	4.3	110	3.3		2.6
16	480	5.9	260	4.2	110	3.2		2.8
17	450	5.3	260	4.1	120	3.0	8.0	2.7
18	430	5.6	260	4.0	120	2.9	7.0	2.8
19	380	5.6	280	3.8	140	2.8	6.0	2.8
20	340	5.1	300	---	160	2.6	7.0	2.8
21	320	5.0	---	---	---	2.1	6.2	2.8
22	340	5.0	---	---	---	---	7.0	2.8
23	320	4.9				___	3.2	2.8

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 23

Fort Chimo, Canada (58.1°N, 68.3°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	3.2					5.5	---
01	280	3.2			---	---	5.0	---
02	270	3.2			---	---	5.0	---
03	300	3.3			100	2.8	5.0	(2.9)
04	280	3.8	---	---	100	2.8	5.0	(3.0)
05	270	4.0	---	---	100	3.2	5.0	(2.9)
06	370	4.3	240	4.0	100	3.5	4.4	(2.6)
07	370	5.0	220	4.2	100	3.6	3.6	2.8
08	400	5.0	210	4.5	90	3.6	3.0	2.8
09	380	5.0	200	4.3	90	3.5		2.9
10	410	5.0	200	4.5	90	3.5		2.8
11	410	5.2	200	4.5	90	3.4		2.8
12	410	5.4	200	4.5	90	3.5		2.7
13	400	5.5	200	4.5	90	3.5		2.7
14	390	5.7	200	4.5	90	3.5		2.7
15	400	5.4	210	4.3	100	3.3		2.7
16	400	5.3	210	4.2	90	3.2		2.7
17	340	5.2	200	4.0	100	3.0		2.8
18	300	5.0	220	3.9	100	2.6	5.0	(2.8)
19	290	4.9	---	---	100	2.1	6.7	(2.8)
20	280	4.3	---	---	100	2.2	5.3	---
21	300	3.8			---	---	6.4	---
22	270	3.2			---	---	7.0	---
23	280	3.4					5.2	---

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 24

St. John's, Newfoundland (47.6°N, 52.7°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	4.4					3.0	2.7
01	300	4.0					3.0	2.8
02	280	3.5					3.1	2.7
03	290	3.4					3.2	2.8
04	270	3.2	---	---	110	1.7	2.0	3.0
05	250	3.9	240	3.6	110	2.2	2.9	3.0
06	360	4.4	230	3.9	100	2.6		3.0
07	360	4.6	220	4.2	100	3.0	3.2	2.9
08	390	5.2	200	4.3	100	3.2	3.4	2.9
09	400	5.4	200	4.5	100	3.4	4.0	2.9
10	400	5.4	200	4.5	100	3.4	4.0	2.8
11	400	5.4	200	4.6	100	3.5	3.6	2.8
12	400	5.7	200	4.6	100	3.5	3.8	2.8
13	400	5.6	200	4.6	100	3.5	4.0	2.8
14	400	5.6	210	4.6	100	3.4		2.8
15	370	6.1	210	4.4	100	3.2		2.8
16	360	6.0	220	4.3	100	3.0		2.8
17	330	6.0	230	4.0	100	2.7		2.8
18	290	6.6	240	3.4	110	2.3	2.5	2.9
19	270	6.5			120	2.0	3.0	2.9
20	260	6.3			---	---	2.3	2.9
21	250	6.0					2.5	2.8
22	270	5.4					3.1	2.8
23	280	5.0					2.4	2.8

Time: 60.0°W.
Sweep: 0.6 Mc to 20.0 Mc, automatic operation.

Table 25

Wakkanai, Japan (45.4°N, 141.7°E) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.1					3.2	2.7
01	300	5.6					3.0	2.7
02	300	5.6					2.8	2.7
03	300	5.4					2.8	2.8
04	300	4.8					2.8	2.8
05	310	5.4	260	3.7	110	2.2	2.6	2.8
06	330	6.4	280	4.2	110	2.6	4.7	2.8
07	320	6.5	---	4.1	110	3.0	5.8	2.9
08	380	6.1	240	4.4	110	3.1	6.4	2.8
09	360	6.5	220	4.8	110	3.2	6.7	2.9
10	370	6.3	220	4.7	100	3.3	7.2	2.9
11	420	5.9	250	4.7	120	3.2	6.2	2.8
12	410	6.0	250	4.8	110	---	5.9	2.7
13	400	5.7	250	4.8	110	3.4	4.8	2.8
14	420	5.9	260	4.7	110	3.2	5.1	2.7
15	410	5.9	260	4.5	110	3.4	4.4	2.7
16	360	6.2	260	4.4	110	3.0	4.7	2.8
17	350	6.3	280	4.2	110	2.8	5.0	2.8
18	300	6.2	240	3.6	110	2.4	5.0	2.9
19	300	6.4					4.9	2.9
20	290	7.1					4.5	2.8
21	300	6.6					4.0	2.7
22	300	6.8					4.1	2.8
23	300	6.3					4.0	2.8

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 26

Akita, Japan (39.7°N, 140.1°E) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.4					5.2	2.8
01	290	6.1					4.4	2.8
02	280	5.8					4.4	2.9
03	280	5.7					3.6	3.0
04	280	4.9					3.4	2.9
05	280	5.4	260	3.1	120	1.9	3.6	3.0
06	300	6.4	230	3.9	110	2.5	4.4	3.0
07	300	6.8	240	4.2	110	2.8	5.6	3.0
08	320	6.8	---	---	110	3.2	6.6	3.0
09	320	6.5	---	---	110	3.4	8.0	3.0
10	(330)	(7.2)	---	---	110	3.3	7.7	(2.9)
11	(320)	(6.3)	220	5.0	110	---	7.0	(3.0)
12	410	6.2	---	4.8	110	---	6.2	2.8
13	360	6.7	230	4.7	110	---	6.2	2.9
14	330	6.9	230	4.6	110	3.3	6.0	2.9
15	340	6.8	230	4.6	110	3.2	5.6	2.9
16	320	6.7	220	4.4	110	3.0	4.8	3.0
17	310	6.7	260	4.2	110	2.7	6.4	3.0
18	300	6.2	240	---	110	2.2	5.4	3.0
19	260	6.5					4.9	3.0
20	270	6.6					4.6	3.0
21	290	6.5					5.0	2.9
22	300	6.5					4.8	2.8
23	300	6.4					5.0	2.8

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 27

Tokyo, Japan (35.7°N, 139.5°E) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.5					4.2	2.8
01	280	6.6					4.1	2.9
02	260	6.2					4.2	3.0
03	260	5.2					3.8	2.9
04	270	5.4					3.5	2.9
05	270	5.6	250	---	120	1.7	2.8	3.0
06	280	6.7	240	---	100	2.3	4.0	3.0
07	280	7.2	230	---	100	2.8	5.4	3.1
08	300	7.0	220	---	100	3.1	6.4	3.1
09	310	6.6	---	---	100	3.4	7.0	3.0
10	(350)	(7.0)	---	---	100	3.5	7.2	(2.9)
11	360	6.4	---	---	100	3.5	7.2	(2.8)
12	360	6.9	---	---	100	---	7.2	2.8
13	350	7.3	---	---	100	3.6	6.9	2.9
14	340	7.6	---	---	100	3.6	5.9	2.9
15	330	7.6	---	---	100	3.3	6.4	3.0
16	320	7.4	220	---	100	3.0	5.9	3.0
17	300	7.4	240	---	100	2.7	5.8	3.0
18	290	7.2	250	---	100	2.2	5.7	3.0
19	260	6.8					4.6	3.0
20	270	6.9					4.1	2.9
21	300	6.7					4.2	2.8
22	290	6.9					3.8	2.8
23	280	6.8					5.4	2.9

Time: 135.0°E.
Sweep: 1.0 Mc to 17.2 Mc in 2 minutes.

Table 28

Yamagawa, Japan (31.2°N, 130.6°E) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.7					4.2	2.8
01	300	6.8					4.3	2.9
02	300	6.0					3.8	2.9
03	290	5.2					3.8	3.0
04	290	5.0					3.0	3.0
05	280	4.9					3.0	2.9
06	270	5.7	260	---	120	1.9	3.1	3.1
07	270	7.0	260	---	100	2.4	4.9	3.2
08	290	7.3	240	---	100	3.0	5.8	3.2
09	300	6.7	250	---	100	3.4	6.7	3.1
10	330	6.2	250	4.7	100	3.4	6.4	3.0
11	360	6.8	---	---	100	3.6	9.8	2.8
12	380	7.4	---	---	100	---	8.8	2.8
13	370	7.9	---	4.8	100	3.4	9.4	2.8
14	360	7.8	240	5.0	100	3.7	7.4	2.9
15	350	8.2	240	4.6	100	3.4	6.8	2.9
16	330	8.5	250	4.6	100	3.0	5.3	2.9
17	300	8.8	230	4.6	100	3.0	5.2	3.0
18	300	8.7	250	---	100	2.5	4.8	3.1
19	280	7.6					4.6	3.1
20	260	7.4					4.4	3.0
21	290	7.0					4.5	2.8
22	300	6.6					3.8	2.9
23	300	7.0					4.0	2.8

Time: 135.0°E.
Sweep: 1.0 Mc to 18.5 Mc in 15 minutes, manual operation.

Table 29

Formosa, China (25.0°N, 121.0°E) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	7.4					4.4	2.8
01	300	7.6					4.4	3.0
02	280	7.0					4.6	3.0
03	300	6.6					4.4	3.0
04	300	6.0					3.6	3.0
05	300	5.6			---	---	3.4	2.9
06	300	6.4	260	4.3	130	2.8	4.0	3.4
07	290	7.2	250	4.3	130	3.0	5.6	3.4
08	290	7.0	240	4.5	120	3.2	6.2	3.2
09	350	7.2	260	5.0	120	3.5	6.6	3.1
10	390	7.8	220	5.1	120	3.8	6.8	3.0
11	370	8.4	220	5.2	120	4.1	8.1	2.9
12	430	9.3	---	5.2	120	3.7	6.8	2.6
13	370	10.4	---	5.2	120	3.9	6.2	2.8
14	360	11.3	---	---	120	4.3	7.3	3.0
15	340	11.5	220	5.0	120	4.0	5.8	3.0
16	340	11.7	240	4.7	120	3.8	5.6	3.0
17	320	11.7	240	4.6	110	3.4	6.3	3.1
18	280	10.[illegible]	240	4.6	110	3.0	5.2	3.2
19	270	9.4	---	---	110	---	5.2	3.2
20	280	8.4	---	---			5.4	3.1
21	320	7.6					4.4	3.0
22	320	7.3					4.9	2.8
23	320	7.4					5.4	2.8

Time: 120.0°E.
Sweep: 2.3 Mc to 14.5 Mc in 15 minutes, manual operation.

Table 30

Johannesburg, Union of S. Africa (26.2°S, 28.1°E) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	2.7						3.0
01	270	2.6					1.5	2.9
02	270	2.7						3.0
03	250	2.8						3.1
04	250	2.6					3.2	3.1
05	260	2.5					2.6	3.0
06	260	2.4					3.4	3.1
07	230	4.7	---	---	---	1.7		3.4
08	230	6.4	230	---	110	2.4		3.5
09	240	7.1	220	4.0	110	2.9		3.4
10	260	7.5	220	4.4	110	3.2		3.3
11	260	7.6	210	4.6	110	3.4		3.3
12	270	7.8	210	4.6	110	3.4		3.2
13	270	8.1	210	4.5	110	3.4	3.8	3.2
14	260	7.9	210	4.5	110	3.2	3.8	3.2
15	260	7.8	210	4.3	110	3.0	3.7	3.2
16	240	7.8	230	---	110	2.7	3.3	3.2
17	230	7.3	---	---	110	2.1	2.4	3.4
18	210	6.0	---	---	---	---	1.8	3.4
19	220	3.5					2.2	3.3
20	240	2.9					1.8	3.1
21	240	2.9					1.9	3.2
22	250	3.1						3.2
23	250	2.9						3.2

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

Table 31

Watheroo, W. Australia (30.3°S, 115.9°E) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.4					2.9	2.9
01	260	3.2					2.9	2.9
02	260	3.5					2.9	2.9
03	260	3.6					2.8	2.9
04	250	3.7					2.8	3.0
05	240	3.6					2.9	3.2
06	230	3.0				---	3.0	3.1
07	230	4.3	---	---		1.7	2.5	3.3
08	230	6.4	220	2.8		2.4	3.1	3.5
09	240	7.0	230	3.9		2.9	3.3	3.4
10	255	7.6	220	4.3		3.0	3.2	3.3
11	260	7.6	230	4.4		3.1	3.3	3.4
12	280	8.0	220	4.6		3.2	3.3	3.3
13	270	7.8	220	4.5		3.2	3.8	3.2
14	280	8.0	220	4.5		3.1	3.8	3.2
15	260	8.4	230	4.1		2.9	4.1	3.3
16	240	8.2	230	3.4		2.5	3.7	3.3
17	230	6.9				2.0	3.2	3.4
18	220	5.5					3.2	3.3
19	230	4.3					3.0	3.2
20	240	3.4					3.0	3.2
21	260	3.2					2.7	3.0
22	260	3.3					2.8	3.0
23	260	3.2					2.8	2.9

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

Table 32

Capetown, Union of S. Africa (34.2°S, 18.3°E) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	2.5						2.9
01	280	2.6						2.9
02	280	2.7						2.9
03	270	2.7						3.0
04	260	2.7						2.9
05	250	2.6					1.5	3.1
06	250	2.4					3.0	3.0
07	240	2.4	---	---	---	E	1.6	3.1
08	230	4.6	---	---	---	1.9		3.3
09	230	6.2	230	---	120	2.4		3.4
10	250	6.8	230	3.6	120	2.8		3.3
11	260	7.0	230	4.1	110	3.1		3.2
12	270	7.5	220	4.4	110	3.2		3.2
13	270	8.0	220	4.5	110	3.2		3.2
14	270	7.8	220	4.4	110	3.1	3.4	3.1
15	270	8.2	240	4.2	110	3.0	3.9	3.2
16	250	7.9	230	3.8	120	2.7	3.6	3.2
17	240	7.3	---	---	110	2.3	2.7	3.3
18	220	6.3	---	---	---	---	1.7	3.3
19	230	3.9						3.3
20	240	2.7						3.2
21	240	2.5						3.2
22	250	2.4						3.2
23	250	2.4						3.0

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

Table 33

Resolute Bay, Canada (74.7°N, 94.9°W) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	5.0	240	---				3.1
01	290	5.1	230	(3.4)				3.0
02	280	5.0	240	---				3.0
03	300	4.8	240	(3.4)				3.1
04	320	4.8	220	3.5				3.0
05	330	4.9	220	3.6				3.1
06	350	5.0	220	3.8				3.0
07	390	5.0	200	3.8				3.0
08	(360)	5.0	200	3.9				3.0
09	400	5.1	220	3.9				3.0
10	380	5.2	200	4.0				2.8
11	390	5.3	200	4.0				(2.8)
12	(400)	5.4	200	4.0	---	---		(2.8)
13	(420)	---	200	4.0	---	---		---
14	370	5.8	210	4.0	---	---		(3.0)
15	380	5.3	220	4.0	---	---		(3.0)
16	390	5.3	210	3.9				2.9
17	360	5.1	220	4.0				3.0
18	360	5.0	210	3.9				3.0
19	350	5.2	220	3.8				2.9
20	320	5.2	220	3.6				3.0
21	320	5.0	230	3.4				3.0
22	300	5.2	230	---				3.1
23	280	5.0	240	---				3.1

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 34

Baker Lake, Canada (64.3°N, 96.0°W) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	5.0					2.9	2.8
01	320	5.0	---	---			2.7	2.8
02	320	4.8	---	---			3.0	2.8
03	320	4.9	---	---	160	---	3.0	2.8
04	320	4.8	300	3.2	160	2.0		2.8
05	400	4.8	280	3.6	130	2.2	3.0	2.8
06	440	4.8	270	3.8	120	2.4	3.0	2.8
07	530	4.9	250	4.0	120	2.9		2.7
08	510	4.9	240	4.0	120	3.0	3.0	(2.6)
09	500	5.2	260	4.2	110	3.2	3.1	(2.6)
10	510	5.2	260	4.2	110	3.3	3.4	(2.6)
11	500	5.2	280	4.2	110	3.4		2.7
12	530	5.2	280	4.3	110	3.5		2.7
13	500	5.2	260	4.3	110	3.3		2.6
14	490	5.5	260	4.3	110	3.4		2.7
15	490	5.6	260	4.2	110	3.3	1.9	2.7
16	490	5.7	260	4.2	110	3.0	1.9	2.7
17	470	5.8	260	4.2	120	3.0	4.0	2.7
18	430	5.8	280	3.9	120	2.7	6.0	2.7
19	350	5.4	280	3.8	130	2.4	4.5	2.8
20	360	5.4	300	---	140	2.2	6.8	2.8
21	340	5.2	---	---	160	---	7.5	2.8
22	320	5.2					6.0	2.8
23	310	5.0					3.3	2.8

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 35*

Fraserburgh, Scotland (57.6°N, 2.1°W) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	6.6					2.4	2.7
01	280	6.0			(160)#	(0.9)#	2.6	2.7
02	295	4.6			160	1.2	2.7	2.7
03	300	4.6			140	1.4	2.7	2.7
04	320	4.6	260	(2.9)	140	1.8	3.0	2.7
05	335	4.9	245	3.5	120	2.2	3.1	2.7
06	385	5.0	235	3.8	115	2.6	3.1	2.6
07	380	6.4	235	4.1	110	2.9	3.2	2.8
08	370	6.7	230	4.4	110	3.1	3.2	2.8
09	360	6.0	225	4.4	110	3.2	3.4	2.9
10	375	6.1	220	4.6	105	3.3	3.8	2.9
11	390	6.0	220	4.7	105	3.4	3.8	2.8
12	385	6.1	220	4.7	105	3.5	2.7	2.9
13	400	6.0	225	4.7	105	3.4	3.3	2.8
14	400	6.0	220	4.7	105	3.4	2.8	2.8
15	390	6.0	226	4.6	110	3.3	2.9	2.8
16	360	6.2	230	4.5	110	3.1	3.0	2.8
17	340	6.2	236	4.3	110	3.0	3.1	2.9
18	320	6.3	240	4.1	115	2.7	3.2	2.9
19	290	6.3	246	3.6	120	2.4	3.2	3.0
20	270	6.3	280#		140	2.0	3.0	2.9
21	266	6.2			(170)	1.7		2.9
22	270	6.2					2.0	2.8
23	275	6.0					2.2	2.7

Time: 0.0°.
Sweep: 0.67 Mc to 15.0 Mc in 4 minutes.
***Average values except foF2 and fEs, which are median values.**

Table 36

Lindau/Harz, Germany (51.6°N, 10.1°E) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	5.8					2.3	2.7
01	270	5.4					2.4	2.7
02	280	5.0					2.6	2.7
03	270	4.7					2.6	2.7
04	280	4.8	270	---	100	1.2	2.8	2.8
05	300	5.2	250	3.2	100	2.0	3.2	2.8
06	310	5.8	240	3.8	100	2.5	4.5	2.8
07	320	6.0	230	4.2	100	2.9	5.6	2.9
08	340	6.4	230	4.4	100	3.2	5.6	2.8
09	320	6.6	220	4.5	100	3.4	5.5	2.9
10	320	6.8	220	4.6	100	3.5	5.8	2.9
11	335	6.6	220	4.8	100	3.5	5.5	2.9
12	360	6.6	210	4.8	100	3.4	5.6	2.9
13	370	6.4	200	4.7	100	3.5	5.8	2.8
14	350	6.5	210	4.8	100	3.5	5.6	2.8
15	360	6.4	210	4.7	100	3.3	5.5	2.9
16	320	6.4	220	4.6	100	3.2	5.2	2.9
17	310	6.5	230	4.3	100	3.0	5.0	2.9
18	300	6.5	230	4.0	100	2.7	4.8	2.9
19	280	6.6	250	---	100	2.3	4.4	3.0
20	260	6.7			110	1.7	4.7	3.0
21	260	7.0					3.6	2.9
22	250	6.6					3.2	2.9
23	260	6.4					2.6	2.7

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

Table 37*

Slough, England (51.5°N, 0.6°W) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	5.8					2.6	2.6
01	290	5.5					2.9	2.6
02	290	5.0					3.0	2.6
03	285	4.7					3.3	2.7
04	305	4.6	280	3.1	120	1.4	3.9	2.7
05	330	5.3	255	3.5	120	2.0	4.7	2.8
06	380	5.7	255	4.0	115	2.6	4.8	2.8
07	370	6.2	240	4.3	115	2.9	4.9	2.8
08	355	6.5	240	4.5	115	3.2	4.9	2.9
09	370	6.4	235	4.7	115	3.4	5.0	2.9
10	350	6.6	225	4.8	110	3.5	5.1	3.0
11	370	6.4	230	4.9	110	3.5	5.3	2.8
12	380	6.4	230	4.9	115	3.6	5.8	2.8
13	410	6.6	235	4.9	115	3.6	5.8	2.8
14	380	6.4	225	4.8	115	3.5	4.9	2.8
[illegible]	365	6.7	235	4.8	115	3.4	4.6	2.8
16	350	6.7	235	4.6	115	3.3	4.9	2.8
17	325	6.7	240	4.3	115	3.0	4.6	2.8
18	300	6.7	255	4.0	120	2.7	4.7	3.0
19	290	6.6	255	3.5	125	2.2	5.0	2.9
20	275	7.0			145	1.7	3.8	2.9
21	270	7.1					3.3	2.8
22	270	6.9					2.6	2.8
23	270	6.5					2.2	2.7

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes, **automatic operation.**
*Average values except foF2 and fEs, which are median values.

Table 38*

Singapore, British Malaya (1.3°N, 103.8°E) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	5.6					3.7	3.0
01	245	5.3					3.2	3.1
02	250	3.9					2.8	3.1
03	255	3.5					2.6	2.9
04	245	3.1					3.0	3.1
05	270	2.8					2.5	3.0
06	275	4.3					2.6	2.9
07	245	7.3			125	2.6	3.6	3.0
08	240	9.6	235#		120#	3.1	4.1	2.8
09	305	10.7	225	(4.8)#	115#	3.2	4.5	2.7
10	315	11.0	210	(4.9)#			4.6	2.6
11	335	10.6	210	(4.9)	110#	3.8#	4.6	2.5
12	340	10.3	210	(4.9)			4.6	2.5
13	330	10.1	210	(4.9)			4.4	2.4
14	325	10.9	205	(4.8)#			4.3	2.7
15	305	10.8	205				4.4	2.6
16	280	11.1	225		105#	3.1#	4.1	2.7
17	250	10.8			125	2.6	4.0	2.8
18	250	10.7					3.2	2.9
19	245	10.2					3.8	2.9
20	230	9.4					4.4	3.2
21	220	9.0					4.8	3.1
22	225	6.5					4.0	3.1
23	240	6.1					3.6	3.0

Time: 105.0°E.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.
*Average values except foF2 and fEs, which are median values.
#One or two observations only.

Table 39

Rarotonga I. (21.3°S, 157.5°W) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.8						2.8
01	300	3.8						2.7
02	300	4.1						2.7
03	300	4.0						2.7
04	300	3.8						2.8
05	280	3.7						2.8
06	280	3.6						2.9
07	260	6.1			---	1.8		3.1
08	250	8.1	230	3.2	120	2.4	3.3	3.2
09	250	8.8	240	4.1	110	2.9	3.8	3.2
10	260	9.7	230	4.5	110	3.2	3.8	3.2
11	260	8.9	220	4.6	110	3.4		3.2
12	270	8.4	220	4.7	110	3.4	4.2	3.1
13	270	8.7	230	4.8	110	3.4	4.1	3.1
14	280	8.6	230	4.8	110	3.3	4.2	3.1
15	270	8.4	230	4.6	110	3.1	4.0	3.1
16	260	8.0	250	4.4	120	2.8	3.8	3.0
17	250	8.6	250	---	---	2.2	3.8	3.1
18	240	8.6					3.9	3.1
19	230	6.7					3.4	3.2
20	240	5.0					3.1	2.8
21	260	4.5					3.0	2.6
22	280	4.0					2.6	2.9
23	300	3.7					2.2	2.9

Time: 157.5°W.
Sweep: **2.0 Mc to 16.0 Mc, manual operation.**

Table 40

Watheroo, W. Australia (30.3°S, 115.9°E) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	3.6					2.8	3.0
01	260	3.6					2.9	3.0
02	250	3.7					2.9	3.0
03	250	3.6					2.9	3.0
04	230	3.6					2.9	3.1
05	240	3.1					2.9	3.0
06	240	2.8					3.0	3.1
07	230	4.4				1.4	2.8	3.4
08	230	6.4				2.2	3.1	3.6
09	240	7.2	230	3.7		2.8	3.2	3.5
10	250	8.1	230	4.2		3.1		3.4
11	250	8.2	230	4.3		3.2	3.3	3.4
12	260	8.2	230	4.5		3.3	3.4	3.3
13	260	8.3	230	4.4		3.2	3.4	3.3
14	260	8.4	230	4.3		3.0	3.8	3.3
15	250	8.4	240	4.0		2.8	3.4	3.3
16	240	8.1	240	3.4		2.3	3.3	3.5
17	220	7.2					3.2	3.4
18	200	5.2					3.1	3.4
19	220	3.7					2.9	3.2
20	240	3.0					2.8	3.1
21	260	3.0					2.4	3.0
22	260	3.2					2.5	2.8
23	260	3.5					2.4	2.9

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

Table 41

Christchurch, New Zealand (43.6°S, 172.7°E) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	2.9					3.4	2.9
01	300	2.7					3.2	2.9
02	300	2.7					3.2	2.9
03	280	3.2					3.0	2.9
04	270	2.8					3.4	3.0
05	250	2.7					3.4	3.1
06	250	2.2				---	3.5	3.1
07	260	2.8				---	3.8	3.1
08	240	5.2				1.6	3.5	3.4
09	240	6.3	240	3.3		2.3	4.4	3.4
10	250	6.8	240	3.7		2.7	4.4	3.4
11	250	7.0	240	3.9		2.8	4.6	3.4
12	250	7.4	230	4.1		2.9	4.5	3.3
13	250	7.6	240	4.0		2.8	4.5	3.3
14	250	7.6	240	3.8		2.6	4.4	3.4
15	240	7.2	240	3.3		2.3	4.4	3.4
16	240	6.8	---	---		1.6	3.5	3.4
17	230	5.7				---	3.4	3.1
18	240	5.0					3.0	3.0
19	250	4.4					2.9	3.2
20	250	3.7					3.0	3.1
21	250	3.4					2.8	3.0
22	270	3.2					3.0	3.0
23	280	3.0					3.0	2.9

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 42

Reykjavik, Iceland (64.1°N, 21.8°W) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	360	4.8					4.4	(2.5)
01	(360)	(4.1)					4.7	(2.4)
02	(375)	(4.1)					4.3	(2.6)
03	(390)	(3.6)	---	---			4.6	(2.6)
04	(310)	(4.1)	---	---			4.4	(2.7)
05	(320)	4.4	250	---	---	---		2.8
06	325	4.6	240	3.6	100	---		2.8
07	380	4.6	250	3.8	100	---		2.8
08	410	4.9	230	4.2	100	---		2.6
09	370	5.3	230	4.3	100	---		2.8
10	400	5.3	220	4.4	100	---		2.7
11	400	5.4	220	4.4	100	3.1		2.7
12	390	5.6	220	4.5	100	---		2.8
13	410	5.5	220	4.4	100	---		2.6
14	390	5.4	230	4.4	100	3.2		2.7
15	400	5.5	230	4.3	100	---		2.7
16	385	5.4	240	4.3	100	3.1		2.7
17	360	5.4	240	4.1	100	2.8		2.8
18	350	5.4	260	3.9	100	---	3.8	2.8
19	310	5.3	270	---	100	---	3.1	2.8
20	330	5.2	---	---	---	---	3.8	2.8
21	320	4.6					4.4	2.7
22	330	5.0					5.0	2.7
23	350	(4.4)					4.4	(2.6)

Time: 15.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 43

Narsarssuak, Greenland (61.2°N, 45.4°W) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<360	(3.8)					3.9	(2.6)
01	<360	4.1					3.6	(2.6)
02	360	3.8					4.0	(2.6)
03	(380)	(3.6)					3.7	(2.6)
04	---	(4.2)			---	---	4.2	---
05	(350)	(4.7)	---	---	---	---	4.0	(2.8)
06	(350)	4.8	290	3.9	---	---	4.3	(2.9)
07	380	4.6	270	(4.1)	120	---	3.9	2.8
08	360	5.1	240	4.2	110	3.1		2.7
09	380	(5.1)	240	4.2	120	---		(2.7)
10	420	5.4	230	4.3	(120)	3.2		2.7
11	410	5.7	<240	4.4	120	---		2.6
12	430	5.5	240	4.4	120	---		2.6
13	430	5.8	240	(4.4)	110	---		2.6
14	420	5.5	240	(4.4)	110	(3.2)		2.6
15	420	(5.5)	<250	4.2	110	3.1		2.6
16	400	5.5	250	4.1	110	(2.9)		2.7
17	380	(5.3)	250	(4.1)	110	(2.9)		2.7
18	360	(5.2)	260	3.7	120	(2.5)	3.9	(2.7)
19	340	(5.1)	270	---	120	1.9	3.4	(2.8)
20	320	(4.9)	---	---	---	---	4.0	(2.8)
21	310	(5.0)					5.8	(2.7)
22	320	(4.5)					5.8	(2.7)
23	(310)	(4.6)					4.0	(2.7)

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 44

Fraserburgh, Scotland (57.6°N, 2.1°W) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	295	5.1						2.6
01	300	5.0					2.5	2.6
02	305	4.8					2.4	2.6
03	305	4.1			(210)#	(1.3)	2.6	2.6
04	305	4.0	295	2.7	135	1.6	2.3	2.7
05	285	4.4	250	3.2	120	2.1	2.6	2.8
06	335	4.8	245	3.7	110	2.4		2.8
07	400	5.1	235	4.0	110	2.8		2.9
08	410	5.4	230	4.3	110	3.0		2.8
09	400	5.7	230	4.5	105	3.2		2.8
10	410	5.9	230	4.6	105	3.3		2.7
11	400	6.1	225	4.6	105	3.3		2.9
12	400	6.1	225	4.8	105	3.4		2.[illegible]
13	390	6.0	225	4.7	110	3.4		2.8
14	380	6.0	230	4.7	110	3.3		2.8
15	360	6.1	235	4.6	110	3.2		2.8
16	345	6.3	235	4.4	110	3.0		2.9
17	315	6.4	240	4.2	110	2.8		2.9
18	300	6.3	250	3.7	120	2.5		2.9
19	270	6.2	260	3.0#	135	2.1		2.9
20	265	6.3			140	1.8		2.9
21	275	6.1					2.0	2.8
22	285	5.9						2.7
23	295	5.4						2.6

Time: 0.0°.
Sweep: 0.67 Mc to 15.0 Mc in 4 minutes.
*Average values except foF2 and foE, which are median values.
#One or two observations only.

Table 45

Slough, England (51.5°N, 0.6°W) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	5.3					2.4	2.6
01	295	5.0					2.6	2.6
02	300	4.8					2.8	2.6
03	290	4.5					2.9	2.6
04	300	4.2	300#	2.5#	135	1.4	3.8	2.8
05	310	4.6	260	3.4	125	2.0	4.0	2.9
06	320	4.9	250	3.9	120	2.4	4.3	3.0
07	345	5.5	240	4.3	115	2.8	4.6	2.9
08	365	5.8	240	4.5	115	3.1	4.6	2.9
09	370	6.2	235	4.7	115	3.3	4.6	2.8
10	380	6.5	225	4.8	115	3.4	4.6	2.8
11	390	6.5	230	4.9	115	3.5	4.8	2.8
12	370	6.6	230	4.9	115	3.5	4.8	2.8
13	375	6.5	235	4.9	115	3.6	4.7	2.8
14	355	6.3	230	4.8	115	3.5	4.6	2.8
15	355	6.8	240	4.8	115	3.4	4.5	2.8
16	330	6.8	240	4.6	115	3.1	4.5	2.9
17	305	7.0	245	4.3	120	2.9	3.9	3.0
18	285	7.1	255	3.9	120	2.4	3.5	3.0
19	270	7.1	265	3.4	135	1.9	2.6	2.9
20	260	7.1			---	1.8#	2.6	2.9
21	260	6.7						2.8
22	280	6.3					2.4	2.7
23	285	5.6					2.2	2.6

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes, automatic operation.
*Average values except foF2 and fEs, which are median values.
#One or two observations only.

Table 46

Rome, Italy (41.9°N, 12.5°E) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	6.2						
01	290	6.0						
02	300	5.6	---	---				
03	280	5.5	---	---				
04	280	5.2	---	---				
05	270	5.0	---	---				
06	250	5.6	---	3.8				
07	270	6.0	---	4.5				
08	270	7.0	210	4.5				
09	280	7.2	---	4.9				
10	280	7.4	200	5.0				
11	320	8.0	200	5.2				
12	300	7.9	200	5.0				
13	300	8.1	200	5.0				
14	290	8.5	210	5.0				
15	280	8.0	230	4.9				
16	280	7.8	---	4.8				
17	280	8.0	---	4.3				
18	260	8.2	---	---				
19	250	8.5	---	---				
20	245	8.0	---	---				
21	250	7.6						
22	260	7.0						
23	280	6.8						

Time: 15.0°E.
Sweep: 0.9 Mc to 14.0 Mc in 40 seconds.

Table 47

Delhi, India (28.6°N, 77.1°E) May 1951

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	4.8						
01	---	---						
02	---	---						
03	---	---						
04	290	5.1						3.4
05	290	5.7						
06	280	6.6						
07	280	7.8						
08	290	8.4						3.4
09	300	9.2						
10	320	9.9						
11	320	10.7						
12	320	11.7						3.0
13	320	12.4						
14	320	12.7						
15	320	12.2						
16	320	11.8						3.4
17	310	10.8						
18	300	10.2						
19	310	9.5						
20	300	8.4						3.0
21	320	7.2						
22	320	6.0						
23	320	5.5						

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 48

Calcutta, India (23.6°N, 88.4°E) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	7.8						3.1
01	240	7.4						
02	(240)	(5.8)						
03	(210)	(5.2)						3.2
04	(210)	(5.3)						
05	---	---						
06	---	7.4				2.5	2.8	---
07	(210)	8.7				2.8	4.0	
08	(210)	(9.5)				3.2	4.0	
09	(240)	(9.5)				3.4		---
10	(240)	(9.5)				3.4		
11	(240)	(9.5)				---		
12	---	---				---		---
13	---	---				---		
14	---	---				---		
15	---	---				---		---
16	---	---				---		
17	(270)	(8.8)				3.0	3.3	
18	240	(9.5)				2.8	3.6	3.0
19	240	(9.2)				2.5		
20	240	(9.4)				---		
21	(240)	(9.4)				---		2.9
22	240	9.0						
23	240	8.4						

Time: Local.

Table 49

Bombay, India (1[illegible], 73.0°E) May 1951

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2**
00								
01								
02								
03								
04								
05								
06								
07	3[illegible]0	7.5						
08	360	9.0						3.0
09	390	9.8						
10	390	10.5						
11	420	11.5						
12	450	12.5						2.5
13	470	13.2						
14	480	14.0						
15	(450)	(14.0)						
16	390	(14.0)						2.7
17	390	(13.9)						
18	390	13.3						
19	390	12.3						
20	360	10.4						2.9
21	360	8.9						
22	360	8.0						3.0
23	340	7.4						

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 50

Madras, India (13.0[illegible], [illegible]E) May 1951

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2**
00								
01								
02								
03								
04								
05								
06								
07	360	7.8						
08	390	9.0						2.9
09	420	9.6						
10	420	10.0						
11	450	10.0						
12	470	10.1						2.6
13	460	10.6						
14	480	11.2						
15	480	11.5						
16	480	11.9						2.9
17	480	12.2						
18	450	12.0						
19	450	11.[illegible]						
20	420	(10.1)						2.3
21	---	(9.8)						
22		(9.5)						
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 51

Tiruchy, India (10.8°N, 78.8°E) May 1951

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2**
00								
01								
02								
03								
04								
05								
06	360	6.4						
07	390	8.5						
08	450	9.7						2.7
09	510	10.1						
10	520	10.5						
11	540	10.2						
12	540	9.9						2.3
13	540	10.1						
14	540	10.2						
15	(540)	(11.0)						
16	540	11.4						2.6
17	480	11.4						
18	480	11.3						
19	480	11.2						
20	480	11.0						2.6
21	480	10.6						
22	480	9.2						2.6
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 52

Singapore, British Malaya (1.3°N, 103.8°E) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	9.2					3.4	3.0
01	225	7.6					3.1	3.2
02	230	5.6					2.5	3.1
03	245	4.8					2.6	3.1
04	240	3.8					3.0	3.1
05	240	3.2						3.1
06	270	4.8					2.8	3.0
07	240	8.5			115	2.5	3.7	3.0
08	230	10.4	230#		115	3.0	4.2	2.9
09	245	10.9	215		105	3.1	4.5	2.6
10	270	(11.1)	205	(4.7)#	115	3.5	4.4	2.6
11	295	(10.9)	200	4.8	110#	3.5	4.4	2.5#
12	310	(10.5)	200	4.9	110#	(3.6)#	4.4	(2.5)
13	300	(10.6)	200	4.8	125#	3.1#	4.7	2.7
14	285	11.2	200	(4.6)#	105#	3.3#	4.4	2.4
15	250	(11.1)	205		105#	(3.3)	4.2	2.5
16	220	(11.1)			110	3.0	3.7	2.6
17	240	(11.4)			115	2.6	3.3	2.6
18	250	(11.4)						3.1#
19	250	11.1						3.1#
20	240	11.1						(3.0)#
21	225	(10.9)					2.8	3.3
22	225	(10.2)					4.1	3.1
23	230	(9.5)					4.0	3.0

Time: 105.0°E.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.
* Average values except to F_2 and fEs, which are median values.
# One or two observations only.

Table 53

Rarotonga I. (21.3°S, 159.8°W) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	4.7						2.8
01	280	4.2						2.8
02	300	4.2						2.9
03	270	4.3						3.0
04	280	3.8						2.9
05	300	3.6						2.9
06	300	3.8						2.7
07	250	7.1	---	---	---	2.0	2.9	3.0
08	250	9.5	230	---	115	2.6	3.5	3.2
09	250	10.4	240	4.3	110	3.0	4.0	3.2
10	250	10.3	230	4.6	110	3.3	4.0	3.2
11	260	9.9	240	4.8	110	3.5	4.0	3.2
12	290	10.5	220	5.0	110	3.5	4.3	3.1
13	270	10.7	240	4.8	110	3.5	4.0	3.1
14	260	10.2	240	4.9	110	3.4	4.3	3.1
15	290	9.9	240	4.8	110	3.1	4.1	3.0
16	260	10.8	250	4.4	110	2.9	3.8	3.0
17	250	10.9	---	---	---	2.3	4.1	3.0
18	250	10.3			---	---	4.2	3.2
19	230	8.5					3.8	3.0
20	240	7.0					3.5	2.9
21	250	6.2					3.1	2.8
22	260	5.2					3.0	2.9
23	260	4.9					2.4	2.9

Time: 157.5°W.
Sweep: 2.0 Mc to 16.0 Mc, manual operation.

Table 54

Brisbane, Australia (27.5°S, 153.0°E) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.8						2.9
01	270	4.0						2.9
02	270	4.0						2.9
03	270	4.2						3.0
04	240	4.0						3.0
05	250	3.5						3.0
06	250	3.8						3.1
07	220	6.6			130	2.3		3.4
08	230	8.0	230	4.2	110	2.7		3.4
09	250	8.6	230	4.5	110	3.0		3.3
10	250	9.5	220	4.7	105	3.3		3.3
11	250	[illegible]	220	4.7	105	3.5		3.3
12	250	9.0	220	4.7	100	3.4	3.0	3.3
13	[illegible]	[illegible]	220	4.7	100	3.5		3.1
14	[illegible]	[illegible]	210	4.5	110	3.3	3.2	3.1
15	240	[illegible]	230	4.3	110	3.0	3.8	3.2
16	230	[illegible]	---	---	110	2.6	3.0	3.3
17	220	7.7			180	1.8	2.5	3.2
18	220	6.0					2.0	3.1
19	230	5.3					2.0	3.0
20	240	4.9						3.0
21	250	4.5						3.0
22	250	4.3						3.0
23	250	4.[illegible]						2.9

Time: 150.0°E.
Sweep: 1.[illegible] Mc to 1[illegible] Mc in 1 minute 55 seconds.

Table 55

Canberra, Australia (35.3°S, 149.0°E) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.8					2.5	2.9
01	260	4.0					2.5	2.9
02	260	4.0					2.5	2.9
03	260	4.0					2.2	3.0
04	250	4.0					2.4	3.1
05	220	3.6					2.0	3.2
06	(240)	3.1						3.0
07	230	4.9			(130)	1.8		3.4
08	220	6.9	---	---	110	2.3		3.5
09	220	7.6	220	(4.0)	100	2.9		3.5
10	240	8.0	220	(4.5)	100	3.2		3.5
11	240	8.0	210	(4.5)	100	3.3		3.5
12	240	8.0	200	(4.4)	100	3.3		3.5
13	250	8.0	210	(4.2)	100	3.3		3.4
14	240	8.5	220	(4.2)	100	3.1		3.4
15	230	8.3	220	(3.8)	100	2.9	3.0	3.4
16	220	8.0	---	---	110	2.4	2.6	3.5
17	210	7.3			---	<1.6	3.0	3.4
18	210	6.0					2.6	3.2
19	220	5.2					2.4	3.2
20	230	4.5					2.5	3.2
21	240	4.3					2.4	3.0
22	245	4.0						2.9
23	250	4.0					2.4	3.0

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

Table 56

Hobart, Tasmania (42.8°S, 147.4°E) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.0					2.1	2.9
01	280	2.8					2.5	2.9
02	275	2.6					2.3	2.8
03	260	2.5					2.7	2.8
04	260	2.5					2.6	2.9
05	240	2.5					2.6	3.0
06	245	2.2					2.7	3.0
07	250	3.5			---	E	2.5	3.0
08	220	5.6			110	2.1	2.7	3.3
09	220	7.0			100	2.6	2.6	3.3
10	230	7.5	200	4.2	100	3.0	2.7	3.2
11	240	8.0	200	4.4	100	3.1	2.6	3.2
12	250	8.3	200	4.4	100	3.3	2.7	3.2
13	240	8.5	200	4.4	100	3.3	2.9	3.1
14	240	8.5	210	4.4	100	3.0	2.5	3.1
15	230	8.0	210	3.5	100	2.8	2.8	3.2
16	220	8.5			110	2.2	2.7	3.2
17	200	7.5			---	1.5	2.7	3.2
18	210	6.4					2.8	3.0
19	220	5.3					2.5	3.1
20	220	4.3						2.9
21	245	3.7						2.9
22	250	3.5						2.9
23	250	3.2						2.8

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

Table 57

Christchurch, New Zealand (43.6°S, 172.7°E) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	3.3					3.0	2.9
01	290	3.4					2.8	2.9
02	300	3.3					3.0	2.8
03	280	3.3					3.2	2.9
04	280	3.3					3.2	3.0
05	260	2.8					3.0	3.1
06	250	2.4					3.3	3.0
07	250	3.8				1.3	2.7	3.2
08	240	6.0	260	3.1		1.8	3.6	3.4
09	240	7.0	240	3.6		2.5	4.4	3.4
10	250	7.3	240	4.0		2.7	3.5	3.3
11	250	7.6	230	4.2		2.9	4.2	3.3
12	260	8.1	240	4.3		3.0	4.4	3.3
13	260	8.2	240	4.2		3.0	4.4	3.2
14	260	8.0	250	4.0		2.8	4.4	3.3
15	250	8.3	250	3.6		2.4	3.8	3.3
16	240	7.8	250	3.0		2.0	3.2	3.3
17	240	6.6				1.4	3.2	3.2
18	250	5.7					2.8	3.0
19	250	5.3					2.9	3.0
20	250	4.6					2.7	3.0
21	260	4.2					2.7	2.9
22	270	4.0					3.0	2.8
23	280	3.5					2.8	2.9

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 58*

Falkland Is. (51.7°S, 57.8°W) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	380	3.0						2.5
01	370	3.0					2.8	2.6
02	360	3.0					2.8	2.6
03	360	2.9					2.8	2.6
04	340	3.0						2.7
05	300	3.1						2.8
06	270	2.8						3.0
07	270	3.7						2.9
08	230	6.0			---	2.1		3.3
09	230	7.6			140	2.4		3.3
10	230	7.8	230#	4.6#	130	2.6	3.0	3.3
11	240	8.4	220#	5.5#	130	2.8	3.8	3.3
12	240	8.9			130	2.8		3.4
13	230	8.0			130	2.8	2.8	3.5
14	230	7.4			140	2.5		3.4
15	230	7.0			160#	2.3		3.4
16	230	6.4					2.8	3.4
17	240	4.7						3.3
18	250	4.0					2.7	3.3
19	270	2.9						3.2
20	300	2.6						2.9
21	340	2.8						2.7
22	360	2.8						2.6
23	370	2.9						2.5

Time: 60.0°W.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.
*Average values except foF2 and fEs, which are median values.
#One or two observations only.

Table 59

Kiruna, Sweden (67.8°N, 20.5°E) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(340)	(4.3)					3.4	
01	(330)	---					3.9	
02	360	(3.5)					3.9	
03	(335)	(3.7)					3.0	
04	(330)	3.9	---	---	---	---	2.0	
05	(330)	4.0	240	---	110	1.8	2.0	
06	(340)	4.5	255	---	110	2.2		
07	345	4.9	240	3.8	105	2.4		
08	345	5.1	230	4.0	105	2.6		
09	365	5.2	230	4.0	105	2.8		
10	350	5.4	220	4.2	105	2.8		
11	350	5.4	215	4.1	100	2.9		
12	340	5.6	220	4.2	100	2.9		
13	340	5.6	225	4.1	105	2.8		
14	320	5.4	230	4.0	105	2.8		
15	335	5.6	235	3.7	105	2.5		
16	300	5.3	245	3.7	110	2.4	2.2	
17	(305)	5.1	250	---	110	2.1	2.4	
18	(320)	5.1	255	---	110	1.2	3.2	
19	(260)	5.0	250	---	110	1.2	2,2	
20	300	4.6	---	---	105	---	2.9	
21	300	4.5					3.2	
22	305	4.1					3.6	
23	(310)	(4.0)					4.0	

Time: 15.0°E.
Sweep: 0.8 Mc to 15.0 Mc in 30 seconds.

Table 60

Reykjavik, Iceland (64.1°N, 21.8°W) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(400)	(3.4)					4.6	---
01	380	3.4					4.0	(2.6)
02	(370)	(3.2)					4.8	(2.6)
03	(370)	(3.1)					4.3	(2.5)
04	(330)	(3.2)					4.6	(2.7)
05	(285)	(3.5)	---	---	---	---	4.2	(2.8)
06	320	4.1	---	---	100	---		2.8
07	360	4.5	260	---	100	(2.4)		2.9
08	400	4.8	250	3.8	100	(2.6)		2.7
09	380	5.0	250	4.0	100	2.8		2.8
10	420	5.0	230	4.1	100	---		2.7
11	410	5.1	230	4.2	100	---		2.8
12	430	5.2	230	4.2	100	(3.0)		2.7
13	400	5.4	230	4.2	100	(3.2)		2.7
14	390	5.5	230	4.3	100	(3.1)		2.8
15	370	5.2	220	4.1	100	(3.0)		2.8
16	350	5.4	240	4.1	100	2.8		2.8
17	350	5.2	250	3.9	100	2.6	3.2	2.8
18	300	5.0	260	---	100	2.4	3.8	2.9
19	300	5.0	270	---	100	2.0	3.8	2.9
20	300	4.6			---	---	4.0	2.9
21	340	4.0					4.4	2.9
22	350	3.6					4.6	2.6
23	350	3.8					4.3	2.5

Time: 15.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 18 seconds.

Table 61

Fraserburgh, Scotland (57.6°N, 2.1°W) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	335	3.9						2.5
01	335	(3.6)					1.5	2.5
02	330	(3.4					2.2	2.4
03	325	(3.0)					2.1	2.5
04	310	(3.1)	350#		150#	(1.2)#		(2.5)
05	305	3.5	275#	2.8#	135	1.6		2.8
06	280	4.1	255	(3.4)	130	2.1		2.9
07	300	4.5	245	3.6	120	2.4		3.0
08	385	4.8	235	4.0	120	2.7		2.9
09	380	5.2	235	4.2	115	3.0		2.9
10	375	5.6	230	4.4	115	3.2		2.8
11	380	5.7	235	4.5	115	3.3		2.8
12	365	6.0	230	4.6	115	3.3		2.8
13	360	6.1	230	4.6	115	3.2		2.8
14	340	6.4	235	4.5	115	3.2		2.9
15	320	6.4	235	4.4	120	3.0		2.9
16	310	6.6	240	4.2	120	2.8		2.9
17	305	6.4	250	3.9	120	2.5		2.9
18	275	6.1	260	(3.5)	130	2.2		2.9
19	260	5.9			150	2.0		3.0
20	280	6.4			150#	1.7#		2.9
21	285	6.0						2.9
22	300	5.1						2.8
23	325	4.5						2.6

Time: 0.0°.
Sweep: 0.67 Mc to 15.0 Mc in 4 minutes.
*Average values except foF2 and fEs, which are median values.
#One or two observations only.

Table 62

Slough, England (51.5°N, 0.6°W) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	4.0					2.2	2.6
01	315	3.8					2.6	2.6
02	315	3.6					2.6	2.5
03	310	3.4					2.6	2.6
04	300	3.1					3.0	2.6
05	290	3.3	300#	2.7#	150	1.6	3.8	2.8
06	275	4.3	255	3.5	125	2.1	4.0	3.1
07	315	5.0	245	3.8	120	2.5	4.0	3.1
08	340	5.3	230	4.3	120	2.9	4.1	3.1
09	365	5.6	225	4.5	115	3.1	4.3	2.9
10	350	6.2	225	4.6	115	3.3	4.0	2.8
11	345	6.6	225	4.7	115	3.4	4.1	2.9
12	345	6.7	220	4.8	115	3.4	4.2	2.8
13	335	6.8	230	4.8	115	3.4	4.6	2.8
14	320	6.9	230	4.7	120	3.3	4.0	2.9
15	310	7.2	235	4.5	120	3.2	4.2	2.9
16	290	7.1	235	4.4	120	2.9	3.8	3.0
17	285	7.3	245	4.0	120	2.6	3.5	3.0
18	265	7.4	255	3.6	130	2.1	2.6	3.0
19	250	7.2			145	1.8	2.3	3.0
20	255	6.6					2.2	2.9
21	260	5.8						2.8
22	275	4.8						2.6
23	300	4.4						2.6

Time: 0.0°.
Sweep: 0.55 Mc to 16.5 Mc in 5 minutes, automatic operation.
*Average values except foF2 and fEs, which are median values.
#One or two observations only.

Table 63

Rome, Italy (41.9° N, 12.5°E) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	>5.0						---
01	300	4.8						---
02	300	>4.6						---
03	280	4.2						---
04	300	4.2						(3.2)
05	(290)	4.4	---	---				(3.1)
06	250	5.0	---	---				---
07	235	5.8	---	3.0	---	---		(3.8)
08	(255)	6.1	---	4.1	---	---		---
09	(270)	(7.2)	---	4.1	---	---		---
10	(255)	(7.4)	---	4.0	---	---		---
11	(270)	8.4	---	4.0	---	---		---
12	280	8.2	---	4.1	---	---		(3.6)
13	270	8.5	---	4.0	---	---		(3.6)
14	270	>8.4	---	4.6	---	---		(3.6)
15	260	8.4	---	4.5	---	---		(3.6)
16	260	8.3	---	3.5	---	---		(3.6)
17	250	8.5	230	3.3	---	---		(3.7)
18	240	8.5	---	---				(3.8)
19	220	8.4	---	---				(3.8)
20	220	6.8	---	---				---
21	245	5.3	---	---				---
22	280	5.2	---	---				(3.1)
23	310	5.2						---

Time: 15.0°E.
Sweep: 0.9 Mc to 14.0 Mc in 40 seconds.

Table 64

Singapore, British Malaya (1.3°N, 103.8°E) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	225	10.7						3.2
01	210	9.6						3.2
02	230	6.4						3.0
03	245	6.0						3.0
04	245	6.5					2.6	3.2
05	260	4.1						3.1
06	265	5.0					2.5	3.0
07	240	8.8			130#	2.6	3.2	3.0
08	225	10.9			130#	3.1	4.1	3.0
09	230	(11.5)	200#		110#	3.5#	4.4	3.0#
10	240	(11.0	210				4.4	2.6#
11	315	(10.4)	205		100#	3.1#	4.4	2.4
12	275	10.8	205	4.8			(4.2)	2.3
13	290	(10.9)	200	4.8			(3.9)	2.2#
14	275	(11.0)	200	(4.9)#			4.4	(2.4)#
15	245	(11.4)	(200)#				4.2	(2.5)
16	245	(11.4)	200#		120	3.1	3.8	
17	250	(11.6)			120#	2.6	3.8	
18	256	(11.4)					3.5	
19	265	---						
20	266	(11.5)						
21	225	(11.6)						(2.9)#
22	200	(11.2)						(3.2)#
23	205	(10.8)						2.9

Time: 105.0°E.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.
*Average values except foF2 and fEs, which are median values.
#One or two observations only.

Table 65

Falkland Is. (51.7°S, 57.8°W) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	360	3.8						2.5
01	360	3.6						2.5
02	350	3.7						2.5
03	340	3.7						2.6
04	310	3.8						2.7
05	290	3.6						2.7
06	290	3.4						2.8
07	240	5.9			160#	2.2		3.1
08	230	7.6			140	2.4		3.3
09	240	8.5			140	2.6	3.8	3.3
10	240	9.8	---	4.5#	130	2.8	4.5	3.3
11	240	10.6	220	4.4	130	2.8	4.3	3.3
12	240	10.2	230	4.1	120	2.9	4.6	3.4
13	230	9.2	220	4.0	120	3.0	4.0	3.4
14	240	8.4	230#	3.9#	120	2.9	3.2	3.3
16	240	8.0	220#	3.2#	130	2.6	2.8	3.3
16	240	7.6			160	2.4	2.8	3.3
17	240	7.0					2.8	3.3
18	240	6.6					2.8	3.3
19	250	5.4						3.1
20	270	4.6						3.0
21	300	4.1						2.7
22	340	3.8						2.6
23	360	3.8						2.5

Time: 60.0°W.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.
*Average values except foF2 and fEs, which are median values.
#One or two observations only.

Table 66

Rome, Italy (41.9°N, 12.5°E) March 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(280)	4.2						(3.1)
01	290	4.2						(3.2)
02	280	4.0						(3.2)
03	280	4.0						(3.2)
04	270	3.8						(3.3)
05	265	3.8						(3.3)
06	240	4.2		---				(3.5)
07	230	5.8		---				3.7
08	230	6.0		---				(3.8)
09	(245)	(8.0)		---				(3.7)
10	250	>8.0		---				(3.6)
11	260	(8.4)		3.7				(3.5)
12	260	>8.4		3.8				(3.5)
13	260	>8.4		---				(3.6)
14	250	>8.3		3.7				(3.6)
15	240	8.4		3.4				(3.6)
16	240	>8.4		3.3				(3.7)
17	230	>8.0		---				(3.8)
18	220	>7.4		---				(3.7)
19	220	>6.4						(3.6)
20	235	>5.6						(3.4)
21	260	5.3						(3.4)
22	(240)	5.0						(3.4)
23	275	4.4						(3.1)

Time: 15.0°E.
Sweep: 0.9 Mc to 14.0 Mc in 40 seconds.

Table 67

Falkland Is. (51.7°S, 57.8°W) March 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	340	5.0						2.6
01	340	4.8						2.6
02	330	4.8						2.6
03	330	4.7						2.6
04	320	4.6						2.6
05	330	4.2						2.6
06	270	4.9	300#	3.4#	150#	2.3		2.9
07	250	6.2	270#	3.6#	160	2.4		3.1
08	260	6.5	250#	4.1	140	2.6	4.0	3.2
09	270	7.2	230	4.5	120	2.9	4.4	3.0
10	280	8.0	240	4.8	120	3.0	4.8	3.0
11	270	8.8	230	4.5	120	3.1	4.8	3.0
12	270	9.8	230	4.5	120	3.1	4.8	3.1
13	270	9.2	220	4.6	120	3.1	4.0	3.2
14	260	8.0	230	4.4	120	3.1	4.0	3.3
15	250	7.4	230	4.2	120	2.9	3.5	3.3
16	250	7.0	230	3.8	130	2.6	3.0	3.3
17	250	6.8			130#	2.3#	2.9	3.3
18	250	6.4					2.5	3.2
19	260	6.6					2.6	3.0
20	270	6.4					2.7	2.9
21	280	5.8						2.8
22	300	5.4					2.6	2.7
23	320	5.2					2.5	2.6

Time: 60.0°W.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.
*Average values except to F2 and fEs, which are median values.
#One or two observations only.

Table 68

Domont, France (49.0°N, 2.3°E) February 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	265	3.0						2.9
01	250	3.0						2.9
02	260	3.0						2.9
03	250	2.7						2.9
04	260	2.3						3.0
05	240	2.1					2.1	3.0
08	245	2.2						3.1
07	220	3.8	200	---	100	1.7	2.2	3.4
08	220	5.8	200	---	100	2.0		3.7
09	220	6.3	200	---	100	2.4		3.6
10	220	7.2	200	3.8	100	2.6		3.5
11	220	7.4	190	3.8	100	2.7		3.5
12	220	7.2	190	3.8	100	2.8		3.8
13	230	7.4	200	---	100	2.8		3.6
14	230	7.4	200	---	100	2.6		3.5
15	220	7.4	200	---	100	2.8		3.6
16	220	7.1	200	---	100	2.1		3.6
17	210	8.0	190	---	100	1.7		3.6
18	215	5.5	200	---				3.5
19	220	4.7						3.4
20	230	3.8						3.1
21	240	3.2						3.0
22	255	3.1						3.0
23	270	3.0						3.0

Time: 0.0°.
Sweep: 1.5 Mc to 16.0 Mc in 1 minute 30 seconds.

Table 69

Poitiers, France (46.6°N, 0.3°E) February 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<330	3.6						---
01	<350	3.4						---
02	<380	3.4						---
03	---	3.2						---
04	---	2.9						---
05	---	---						---
06	---	---						---
07	245	4.0						(3.1)
08	230	5.8	225	---				(3.5)
09	240	6.6	225	---				3.4
10	240	7.2	230	3.8				3.5
11	245	7.4	220	4.0				3.4
12	250	7.4	220	3.9				3.4
13	250	7.5	225	4.0				3.5
14	250	7.6	225	4.0				3.4
15	240	7.8	230	---				3.5
16	240	7.2	225	---				3.5
17	230	6.9	220	---				(3.4)
18	230	5.8						(3.2)
19	250	5.1						(3.2)
20	275	4.4						---
21	280	3.8						---
22	<310	3.6						---
23	(320)	3.6						---

Time: 0.0°.
Sweep: 3.1 Mc to 11.8 Mc in 1 minute 15 seconds.

Table 70

Rome, Italy (41.9°N, 12.5°E) February 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	4.0						---
01	280	4.0						(3.2)
02	270	3.9						(3.4)
03	270	3.8						3.3
04	255	3.8						3.4
05	250	3.4						3.4
06	(250)	3.2						---
07	250	4.3	---	---				3.7
08	210	>6.0	---	---				---
09	220	(8.0)	---	---				---
10	220	>8.6	---	---				---
11	230	>8.4	---	---				---
12	230	>8.3	---	---				(3.8)
13	230	8.3	200	---				3.8
14	230	>8.4	200	3.5	---	---		3.8
15	220	8.2	200	3.1	---	---		3.9
16	220	8.0	---	---	---	---		3.8
17	210	>6.4	200	---				---
18	(205)	>6.0						---
19	(220)	>5.4						---
20	(230)	5.3						---
21	(230)	(4.4)						---
22	---	(4.2)						---
23	(270)	(4.2)						---

Time: 15.0°E.
Sweep: 0.9 Mc to 14.0 Mc in 40 seconds.

Table 71*

Terre Adelie (66.8°S, 141.4°E) February 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	(5.4)	200	4.0	110	2.9	1.5	
01	(350)	---	245		110	2.8	1.5	
02	(320)	---	215	4.0	110	2.7	1.5	
03	(350)	(5.8)	220		110	3.0	1.5	
04	(350)	(5.8)	220	4.0	110	3.0	1.5	
05	(350)	(5.2)	220	3.6	110	2.7	1.5	
06	340	(5.3)	230	3.7	110	1.9	1.5	
07	350	5.5	220	3.5	120	1.8	1.5	
08	300	5.5	230	3.4	140	1.5	2.5	
09	300	5.8	250				2.4	
10	300	5.4	250				1.5	
11	325	5.2	250				1.5	
12	270	(5.3)					1.5	
13	270	(4.8)					1.5	
14	275	(4.8)					1.5	
15	270	(3.6)					1.5	
16	300	(3.2)					1.5	
17	300	(2.6)					1.5	
18	300	(3.5)					1.5	
19	330	(3.6)	250				1.5	
20	310	(4.2)	250			1.5	1.5	
21	300	4.6	250	3.4		1.5	1.5	
22	350	(4.8)	250	3.7	125	2.5	1.5	
23	(325)	(5.7)	230	3.9	120	2.6	1.5	

Time: 0.0°.
Sweep: 1.5 Mc to 16.3 Mc in 1 minute.
* Data observed from 14th through 28th, only.

Table 72

Rome, Italy (41.9°N, 12.5°E) January 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(285)	3.4						---
01	(250)	3.8						(3.4)
02	(270)	3.6						(3.4)
03	250	3.8						(3.5)
04	230	3.7						3.5
05	230	3.6						3.7
06	---	(3.2)						---
07	(230)	3.4						(3.7)
08	210	5.8						(4.0)
09	210	6.6						(4.0)
10	200	7.6						(4.0)
11	220	8.0						(3.9)
12	220	7.6						4.0
13	220	7.2						3.9
14	220	7.0						3.8
15	220	6.5						3.8
16	210	6.2						3.9
17	200	6.0						3.8
18	220	4.9						3.8
19	---	4.6						---
20	---	---						---
21	---	---						---
22	---	4.2						---
23	---	---						---

Time: 15.0°E.
Sweep: 0.9 Mc to 14.0 Mc in 40 seconds.

Form adopted June 1946

TABLE 73

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

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), October (Month), 1951

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: Mc C., E. J. W.

Calculated by: Mc C.

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	260	250	240	250	250	(260)S	230	210H	(250)L	280	220	220	280	300	290	290	270	250	230	240	250	250	270	(270)S
2	(280)S	240S	220	260	320	290S	260	240	270	250	220	(280)L	(290)L	280	270	270	250	250	230	230	230	260	280	270
3	270	290	280	260	260	260	240	230	260	260	270	220	280	300	280	270	270	250	220	230	(270)A	[260]A	(250)S	300
4	280	280	270	270	250	250	250	240H	260H	260	280	270	270	260	(260)L	290	260	230	210	300	240	250	250	260
5	270	270	260	280	280	(270)S	260	240	250	250	270	260	280H	280	270	260	250	220	210	200	230	260	250	250
6	260	(280)S	250	240	230	250	240	210	220	240	250	250	260	260	250	250	250	220	210	210	230	240	(270)S	270
7	280	290	280	260S	260	280	230	240	280	280	260	330	310	320	(300)L	310	250	230	240	230	210H	240	(280)S	300
8	(300)S	230	250	[250]B	250	(280)S	230	240	230	230	240	270	260	260	220	250	240	220	220	230	260	280	270	280
9	260	270	300	(330)F	F	S	290	240	240	280	260	300	300	270	290	270	240	240	220	220	230	230	(250)S	260
10	270	280	300	280	240	240	250	220	230	280	260	270	280	280	270	260	260	230	220	230	240	250	290	280
11	260	220	250	280	270	260	240	220	220	260	260	260	270	280	270	260	250	220	(220)A	220	(260)A	(250)S	(270)S	(270)S
12	[280]A	(300)A	(290)A	[280]A	280	(280)F	250	240	240	240	250	250	260	270	260	260	250	230	220	220	220	250	260	270
13	300	(290)S	280	280	220	(280)S	280	250	300	290H	290	290	220	(270)L	260	270	260	260	250	260	250	260	230	260
14	250	250	(270)S	(290)S	320F	(320)F	(280)S	240	240	260	260	280	270	310	280	260	240	230	220	230	250	(290)S	270	300
15	300	290	270	250	260	260	280	240	230	250	260	260	270	270	260	250	250	230	220	240	280	260	300	290
16	280	270	290S	290S	280S	260	280	240	250	260	260	280	270	270	270	250	250	230	240	240	270	280	280	(300)S
17	310	(330)S	320	(310)F	(300)S	(350)S	310K	270K	260K	400K	400K	450K	370K	370K	330K	290K	280K	280K	240K	240K	270K	260K	(270)KS	(320)KS
18	(430)KS	[390]KF	(350)KF	(250)KS	(320)KS	(360)KF	300F	250	240	240	270H	220	220	260	250	250	240	230	230	(260)A	(280)S	(310)S	(230)S	(340)F
19	(300)S	[320]S	(350)F	(260)S	(380)F	(340)S	(280)S	250	240H	250	[260]C	280	270	290	280	260	240	230	220	(260)S	(300)F	(350)F	(330)S	300F
20	(310)S	(270)S	(290)S	(330)S	(340)S	300F	220	240	240	260	240H	280	270	280	260	260	240	230	220	210	(240)S	280	(290)A	(330)A
21	330	(310)S	(320)S	250	240	260	(300)S	230	210	C	C	C	C	280	250	250	230	220	220	240	230	280	280	300
22	300	280	270	260	240	240	(280)S	240	250	260	260	280	280	260	260	250	240	220	280	230	240	250	250	280
23	(320)A	(280)A	280	(300)A	270	250	250	230	230	250H	260	270	280	260	260	250	230	230	240	230	240	(280)A	A	A
24	(310)A	(280)S	280	(300)A	(310)A	(270)S	250	240	(240)A	270H	250	(260)A	260	280	250	260	240	220	(250)A	(250)A	240	280	(270)A	(290)A
25	(310)A	(280)A	280	(280)A	(290)A	(300)A	(250)S	240	230H	260	(250)A	280	270	260	260	240	230	220	(220)S	A	A	A	A	(300)A
26	(300)S	(280)A	(310)A	(290)S	260	(270)S	(300)S	240	240	250	270	250H	260	280	260	260	240	230	230	220	260	250	240	(270)S
27	(300)S	(300)S	(280)S	250	240	280	(260)S	240	250	260	280	260	270	270	270	260	240	220	230	250	[260]A	260	(280)S	(280)A
28	300	(320)S	330	(300)A	270	240	(250)S	230	240	260	(220)KL	580K	360K	310K	280K	(330)KH	(270)KB	250K	(310)KB	(310)KF	EK	AK	AK	(310)KS
29	EK	AK	AK	EK	EK	AK	AK	(260)A	270	280	270	260	260	260	260	260	230	230	230	(250)S	[250]A	(260)A	[270]A	280
30	(300)S	(290)S	[290]A	(290)S	(260)S	270	(300)S	250	260	250	(240)L	270	270	270	270	250	250	230	230	230	260	270	260	(250)S
31	270	(280)S	270	270	270	270	260	230	230	260	270	270	260	270	250	250	240	220	(220)S	(240)S	260	250	260	250
Median	300	(280)	280	280	270	270	260	240	240	260	260	270	270	270	270	260	250	230	220	230	250	260	270	280
Count	31	30	30	31	30	29	30	31	31	30	30	30	30	31	31	31	31	31	31	30	30	29	28	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 74

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

Form adopted June 1946

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), October (Month), 1951

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: McC., E.J.W.

Lat 38.7° N, Long 77.1° W

75° W Mean Time

Calculated by: McC.

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	3.9JS	(3.6)FS	(3.4)F	3.1FJ	3.0SF	2.5F	4.2	5.4H	6.0	6.6	7.2	7.4	7.6	7.6	8.2	8.6	8.8	9.0	7.8	6.8	5.8	5.6	(4.6)SF	4.5F
2	4.6S	(4.4)S	3.8S	3.3	(2.8)SF	2.7S	3.5	5.6	6.5	7.6	7.8	7.6	7.7	8.6	8.8	8.8	8.3	8.4	8.4	7.0	5.5	4.7	4.4	4.2
3	4.0	3.7	3.7	3.4	2.9	2.7F	3.7	5.6	7.0	7.6	8.2	7.8	7.6	8.2	8.6	8.0	8.2	8.6	8.0	6.8	6.0	4.9	(4.1)F	3.8SF
4	(3.8)SF	(3.7)SF	3.5F	3.5F	(3.2)SF	(3.0)JF	3.8F	6.2H	(7.4)ZH	7.2	8.4	8.8	8.7	8.2	8.0	8.4	8.8	8.6	7.6S	(6.6)S	5.8FS	5.0	4.8	4.5
5	(4.2)SF	3.8F	(3.7)JF	(3.0)F	(2.9)FS	(2.8)FS	3.8F	7.0	8.2	8.0	8.1	8.1	8.4H	8.8	8.6	9.0	9.2S	9.0	8.0	6.0	4.9	4.5	4.3	4.2
6	3.9JS	3.7	3.6	3.3	3.1	2.9	3.9	6.2	7.6	8.2	8.3	8.2	7.8	8.6	8.8	8.2	8.4	8.6	8.0	6.3S	5.0	4.5	4.2	4.2
7	4.0	3.8	3.9	3.8	3.5	3.3	3.5S	5.4	6.1	6.4F	7.4	7.8	8.4	9.0	8.4	9.2	10.4	10.2	(9.8)S	8.2	7.6H	5.7	5.7	5.7
8	5.6	5.3P	4.2	[3.6]BF	3.0SH	(2.5)F	(3.1)F	6.0S	8.0	11.0	8.5	9.8	10.6	10.0	10.0	10.2	9.7	9.1PS	8.2PS	(7.2)PS	5.9	4.6F	(4.5)JS	4.1PS
9	3.8F	(3.5)P	2.7F	F	F	S	2.8F	5.7	6.3JF	6.8	6.6F	7.4	8.0	8.4	7.8	7.6	7.8	7.2	8.0	6.8	6.0	5.3S	4.7	4.2
10	4.2	(3.8)FS	(3.7)F	3.5F	(3.4)F	(2.9)JF	2.9	5.2S	6.4	8.0	8.5	8.5	8.6	8.7	9.0	8.8	8.6	8.5	7.8S	7.1	5.6F	4.5	4.5	4.6
11	4.0JS	3.8	3.4	3.0J	(2.9)S	2.8S	3.5S	5.9J	7.3	8.4	9.0	9.3	9.6	10.0	9.3	9.4	8.8	8.2PS	7.6	6.5F	4.9F	4.2P	4.2	3.8
12	3.7	3.5	3.5	3.3	2.9JS	2.7PS	3.2JF	6.0JF	6.7F	8.4	8.4	9.0	8.6	9.2P	8.7	8.6	8.6	8.5	8.6PS	(7.0)PS	5.3FS	(4.6)FJ	4.5FS	4.2FJ
13	(4.3)FJ	(4.4)FP	4.4FJ	(4.4)FP	(3.6)FP	2.6FP	3.0F	4.7	5.7V	6.6H	6.6F	7.2	7.8	7.5	7.6	7.7	8.1J	7.9J	7.7	6.8	6.4	6.1PS	5.3PS	5.0PS
14	4.5JS	4.4JS	2.9P	2.5J	(2.3)F	(2.1)PF	3.2	6.3	6.6	7.8	7.9	8.2	8.7	8.6	10.1	10.0	10.0	8.8	7.4	5.6	4.1F	3.5F	3.7JF	3.6F
15	(3.3)F	(3.4)F	3.5F	(3.3)JF	3.0	(2.7)FS	3.2SF	6.0	7.4	7.2	8.4	9.0	8.4	8.5	9.6	9.0	8.6	8.3	6.6JS	5.6S	5.2	(4.3)S	4.3	4.5F
16	4.9S	4.2JS	4.2JS	3.8F	3.7JS	(3.3)FS	3.0F	5.2S	6.8S	7.6	8.5	9.8	10.0	10.0	9.8	10.0	9.4	9.3	7.6J	7.2	6.6	5.8	5.8	5.0
17	4.6F	(3.2)FJ	(3.0)JF	(2.5)F	(2.5)F	(2.8)FF	(2.8)FK	3.8K	4.2K	5.2K	5.4K	5.6K	6.0K	6.0FK	6.3K	6.6K	7.2K	7.4K	K6.0JS	K(5.3)FS	4.5K	K4.2PS	3.2FK	3.0FK
18	F K	F K	K1.6FJ	[1.6]FK	K(1.6)FJ	K[2.1]FS	2.6FP	5.4	6.6	7.8PS	9.2H	9.6	10.8	10.4J	10.9	10.3	9.0	7.9JF	7.2JS	5.8JF	4.8	3.8JF	3.5V	(2.7)PF
19	2.7JF	[2.8]F	(2.8)JF	F	F	(2.0)F	(2.5)F	(5.2)PS	6.2VH	7.4F	[8.6]C	9.7	9.8	[9.5]C	11.0	11.6	10.4	9.9JS	8.3PS	(5.1)PS	(3.6)JF	(3.0)JF	(2.8)F	(3.5)JF
20	3.3FP	(3.3)FP	(2.8)FJ	(2.6)FS	(2.6)FP	(2.7)FP	3.3F	5.8	7.4	8.4	(7.2)HV	8.8	9.0	10.0	10.0	9.3	9.0	8.4	(6.6)S	(5.3)PS	3.6SF	3.5FS	3.5FS	3.0
21	2.9F	2.9	3.0	3.1	2.4FS	2.1	(2.6)FS	5.8	6.6	C	C	C	C	9.2	9.8	9.3	9.2	8.8	7.2JS	6.2	4.8	3.9JS	4.1	4.2JF
22	4.2F	3.9F	3.8FP	4.0FS	(3.8)JS	3.0JF	(2.9)S	5.8	7.6	7.9	8.2	9.6	10.3	10.4	10.0	9.8	8.8	8.0	7.6	7.2	6.0F	5.6	4.7	4.1
23	(4.0)JS	3.5	3.4	3.5	3.3F	3.0F	3.2F	5.2	6.4	7.2	7.6	9.0	9.6	9.3	9.2	10.0	9.2	(8.5)S	(7.0)JS	6.5	5.2F	4.0JS	A	A
24	3.5	3.4V	3.1	3.2	3.1F	3.1F	3.4F	5.7	6.9	(8.4)H	7.6	8.2	8.4	8.4	8.4	8.8	9.2	7.3	6.8	6.0	4.6	4.5	4.3	(3.8)S
25	3.5	3.4	3.2	3.1	3.0F	3.0F	3.2	5.7	6.8H	8.0	8.0	9.0	9.5	9.2	8.7	8.6	8.4	7.4	5.6F	5.3	A	A	4.0S	4.1PS
26	4.0JS	(3.4)JF	(3.4)PF	3.3PF	3.2F	3.1JF	(3.2)PF	(5.8)FS	6.6	7.9	9.1	9.2H	9.2	9.4	9.0	9.2	8.8	8.2	7.3	6.2	5.3	5.0	4.4	3.8
27	3.9JS	4.2	4.3	4.4	3.5	2.9F	2.8	5.6	6.8	8.0	9.2	9.4	10.0	9.2	9.3	9.0	9.2	8.0	5.8	5.4	4.3	4.0JS	3.7S	3.5
28	3.3	3.3	3.5	3.7	3.7	3.7	2.7	5.1	6.5	7.4	7.0K	8.2JK	10.4K	(11.6)SK	12.4K	12.2HK	12.8K	7.0K	5.0FK	3.3FK	E K	A K	A K	K(2.0)JF
29	E K	A K	A K	E K	E K	A K	A K	5.2S	6.9F	7.7HJ	8.2	8.4	8.4	8.6	8.4	9.0	8.2	7.5	6.7	5.8	4.7A	4.5	(3.9)JA	3.3
30	3.0	2.8	2.6	2.6F	2.6F	2.3F	2.5F	5.2	6.2S	7.2F	7.4	7.8	8.6	8.3	8.4	8.2	8.1	7.2	6.0S	5.2	4.5F	4.1F	4.0S	3.6S
31	3.2F	3.0F	2.8F	2.5F	2.4F	2.3F	2.6F	5.4F	6.4S	7.6	8.3	8.8	9.1	9.0	8.6	8.4	8.4S	7.3JS	5.8JF	(5.7)PJ	5.1PS	4.6F	4.3	3.8FS
Median	3.9	3.6	3.4	3.3	3.0	2.8	3.2	5.6	6.6	7.6	8.2	8.6	8.6	9.0	8.8	9.0	8.8	8.4	7.6	6.2	5.2	4.5	4.3	4.1
Count	30	29	30	29	29	29	30	31	31	30	30	30	30	31	31	31	31	31	31	31	30	29	29	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 75

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

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), October (Month), 1951

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: McC., E.J.W.

Calculated by: McC.

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	3.8	3.4	3.1F	3.2F	3.0F	3.0F	5.0	5.8	6.0	6.8	7.5	7.4	7.8	8.1	8.2	8.8	9.0	8.8	7.3	6.4	5.6	4.9	4.4F	4.3S
2	4.8	4.0	3.4	3.4	2.7	2.8	4.5	6.0	7.0	7.6	7.5	7.4	8.5	9.0	8.6	8.7	8.2	8.4	7.5	6.4	5.0	4.5	4.3	4.0
3	3.9	3.7	3.5	3.1	2.9	2.7	4.8	6.4	7.2	7.8	8.0	8.0	8.0	8.4	8.2	8.4	8.4	8.6	6.8	6.4	(5.0)A	(4.6)SA	4.0S	3.7F
4	3.7	3.6JF	3.4JF	3.4JF	(3.2)JF	3.1JF	5.2	6.6	7.2F	7.8	8.6	8.8	8.4	8.2	8.1	8.6	8.8S	8.5	7.0	6.2	5.4	5.0	4.6	(4.2)JF
5	(4.2)JS	3.8	3.2F	3.0F	(2.8)FS	(2.8)FS	6.8	7.4	8.0	8.2	8.0	8.4	8.4	8.8	9.0	9.0	9.2	8.2	7.4	5.7	4.6	4.5	4.2	4.0
6	3.8	3.7	3.4	3.2	2.9	2.9	5.6	7.2	7.8	8.4	8.0	8.0	8.4	9.0	8.4	8.2	8.7	8.4	7.0	5.5	4.1	4.2	4.2	4.1
7	4.0	3.9	3.8	3.6	3.2	3.2	4.5	6.0	6.4	7.2	7.2	8.2	8.6	9.1	8.8	10.2	10.6	9.6	10.0	8.0	6.2	5.6	6.2	5.4H
8	5.7	(3.5)J	(3.3)J	[3.7]B	F(4.2)JS	2.4F	4.5F	7.6V	9.3	8.6	8.8	10.2	10.2	9.8	10.5	10.3	9.3J	8.5	7.3	(6.5)PJ	(5.2)PS	4.6F	(4.4)PF	4.3J
9	3.6F	3.0F	(2.2)FP	F	FS	F	4.7PS	6.2	6.3	6.4	7.4	7.6	8.6F	7.8	7.8	8.0	7.4	7.6	7.2	6.4	5.6	4.8	4.5	3.8S
10	4.0	3.8	3.7JF	3.5	3.4PF	(2.3)PF	4.4	6.0	7.2	8.6	8.3	8.4	8.8	9.0	9.0	8.2	8.6	8.1	8.0	6.2J	5.0	4.3	4.6	4.2
11	3.9JS	3.6	3.2	3.0	2.9	3.0	4.9	6.6	7.8	8.9J	9.0	9.8	9.8	10.2	10.0	9.0	8.7	8.0	7.3	5.4F	4.4	4.2P	4.1J	3.7
12	3.7	3.5	3.4	3.1	3.0	2.4F	4.7PF	7.0FS	7.9	8.4	8.8	8.6	9.0	8.9	8.6	8.6	8.6	8.5PS	7.5J	6.0F	5.2FJ	(5.0)PF	(4.5)PJ	(4.5)FJ
13	(4.5)FJ	(4.5)FP	4.2F	3.8F	2.9F	(2.5)FP	3.8F	5.4	6.2	6.2F	6.6F	7.5	7.7	7.7	7.5	7.7	7.8	7.9	7.4	7.7V	6.0JS	6.2PS	5.2JS	5.1PS
14	4.5PS	3.5JP	2.9PS	(2.2)PF	2.2FJ	2.2F	4.9H	7.0	6.9	8.0	7.4	8.8	8.4	9.5	9.8	9.9	9.1	8.0	6.3	4.7F	3.9	3.7JS	3.7JS	3.3F
15	3.6F	3.7JF	(3.3)F	3.2JF	2.9JF	2.5F	4.6	6.4	7.2	7.9	9.3	8.8	8.4	9.1	9.4	8.8	8.8	7.8JS	(6.2)S	4.8F	4.8S	4.2	4.5F	4.4F
16	4.6S	4.1F	4.1F	3.7SF	(2.7)JF	(3.0)FS	4.4JF	6.0S	6.8F	8.0	9.0	10.1	10.0	10.0	10.0	9.4	9.5	8.6	7.6	6.4	6.2	5.6	5.2	5.0
17	(4.2)F	(3.1)JF	(2.8)F	(3.2)JF	(2.5)F	2.5F	3.3FK	3.9JK	4.7K	5.4K	5.4K	6.0K	6.0K	6.0FK	6.6K	6.8VK	7.0K	7.3K	6.0FK	4.6FK	4.4A	K(4.4)PS	2.9FK	FBA
18	FK	FK	(1.6)FK	(2.0)FK	(2.4)FK	K[2.4]FS	(4.2)FS	6.0	7.2F	8.1P	9.5H	10.4	11.0	10.8	10.8	10.1PF	8.3	8.2	6.2	5.1	4.1	(3.9)FS	(2.8)JF	(2.8)PF
19	(2.7)PF	[2.6]F	(2.6)JF	[2.3]F	(2.0)FP	(2.0)FP	(4.1)PS	6.4	6.9	[8.2]C	8.8	10.0	9.2	10.5	11.6	11.0	10.5	9.0	6.6	4.0JS	3.0F	(2.7)F	(3.3)FF	(3.3)FJ
20	3.4JF	(3.4)FP	(2.8)FP	2.3F	(2.6)FP	3.0F	4.5PS	6.2	8.0	8.1	8.3	9.1	9.6	9.8	9.7	9.0	8.8	7.4	6.4S	4.3F	3.5F	3.3	3.1	3.0
21	3.0	2.9JS	3.0	3.0	(2.1)JS	1.7F	4.5	6.8	C	C	C	C	C	10.0	9.4	9.4	9.0	8.0	7.0	5.6	4.8JS	4.3	3.7JS	4.1JS
22	4.2	4.0JF	3.7F	4.0FS	3.3JS	2.5JS	4.4	6.7	7.6	8.1	8.6	10.2	11.0	10.0	10.0	9.2	8.6	7.8	7.6	6.8	5.6	5.2	4.1JS	4.1JS
23	4.0	3.4	3.5	3.5	3.2	3.0F	4.2JS	6.2	6.8	7.6	8.2	8.6J	9.8	9.4	9.6	9.6	9.0	7.2JS	(6.5)S	5.8F	4.3	4.0JS	[3.8]	3.5
24	3.5	3.1F	3.0	(3.2)A	3.1F	3.1	4.3	6.0	6.5H	8.2	8.4	8.5	8.0	8.6H	8.6	9.2	8.3	6.7	6.6	5.4	4.5	4.4	3.9	3.7
25	3.4	3.3	3.2	3.0	3.0	3.0F	4.2	7.0	7.3	8.0V	8.0	9.0	9.2	9.1	8.5S	8.4	8.2	6.4PS	5.6	4.6	A	A	4.1PS	4.0
26	3.7F	3.2F	3.0FP	3.4FP	3.0F	(3.2)JF	(4.2)F	6.3JS	7.2	8.3	9.2	9.2	9.4	9.6F	9.0	9.0	8.5	7.6	7.0	5.8	5.1	4.9	4.0	3.9JS
27	4.2JS	4.2	4.5	4.1	2.8F	2.8	4.2	6.2	6.7	8.2	9.2	10.0	9.8	9.3	9.0	9.0	8.4	6.6	5.3	4.7	4.2	3.7	3.7	(3.4)A
28	3.3	3.4	3.5	3.7	3.7JS	3.0	4.0	6.0	6.8	6.5	7.6HK	9.8K	11.0K	12.8K	12.1K	12.5PK	K12.0JS	K7.1ZF	3.3FK	AK	EK	(2.4)JK	FK	FK
29	AK	AK	AK	EK	EK	AK	3.7SK	5.8S	6.6F	8.0	8.2	8.8	9.0	8.0	8.9	8.6	8.1	7.2	6.4	5.3	4.5	4.2	3.7SJ	3.2
30	3.0	2.8	2.5F	2.6F	2.4F	2.3F	3.7S	6.2	6.9	7.3	7.6	8.4	8.6	8.3	8.5	8.0	7.4	6.6	5.6	4.8	4.3F	4.0S	3.8SF	3.3FS
31	3.0F	2.9F	2.6F	2.5F	2.4F	2.4F	3.8FS	6.0H	7.2	7.6	8.4	9.2	9.0	8.8F	8.6-	8.4	7.8	6.6JS	5.8FP	5.3JS	5.1PS	4.6JS	4.0JF	3.7PS
Median	3.8	3.5	3.2	3.2	2.9	2.8	4.4	6.2	7.1	8.0	8.2	8.8	8.9	9.1	9.0	9.0	8.6	8.0	7.0	5.6	4.8	4.4	4.1	4.0
Count	29	29	30	30	30	29	31	31	30	30	30	30	30	31	31	31	31	31	31	30	30	30	30	29

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 76

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

Form adopted June 1946

IONOSPHERIC DATA

h'F1 (Characteristic), Km (Unit), October (Month), 1951

Observed at Washington, D.C.

Lat. 38.7°N, Long. 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: Mc C., E. J. W.

Calculated by: Mc C.,

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									200	200	200	200	200	200	220	230	250									
2									230	220 H	210	200 H	200 H	200 H	230	230	230									
3									230	210	210	200	200	200 H	210 H	240	250									
4									220	210	220	220	(200) A	A	A	A	(240) A									
5									230	220	200	200 H	200 H	190 H	220	210 H	230									
6									Q	210	200	190	220	210	240	210	210									
7									230	210	210	200	[200] B	210	220	250	Q									
8									220	210	200	200	210	200	220	220	220									
9									230	200	200 A	200 H	200 H	200 H	220	210	210									
10									Q	220	200	190 H	200	200	230	240	240									
11									Q	220	240	200	220	230	230	230	240									
12									210	200	200 H	240	210	220	220	230	240									
13									240	210	210	200	200 H	210	220	240	240									
14									230	210	200	190	190 H	230	220 H	220 H	Q									
15									210 H	210	200	220	210	210	220	[220] A	230									
16									210	210	190	(200) H	230	220	230	240	Q									
17									Q K	250 K	240 K	230 K	250K H	240 K	250K H	240 K	250 K									
18									220	230	210 H	210	200	210 H	240	220	Q									
19									Q	210 H	[210] C	210	230	230	240 H	250	A									
20									210 H	210 H	210	220 H	210 H	210	240	220	Q									
21									Q	C	C	C	C	210 H	220	220 H	Q									
22									240	200 H	200	190 H	220 H	230	220 H	230	Q									
23									210 H	[200] A	200 H	(180) H	230	220 H	220 H	230	Q									
24									A	(250) A	A	A	A	210	210	240	Q									
25									Q	A	A	230	210	230	220	Q	Q									
26									Q	220	220	190 H	220	230	250	240	Q									
27									230	220	200	200 H	210 H	200 H	210	240 H	220									
28									Q	230	230 K	210K H	(230)K H	260 K	260 K	B K	B K									
29									A	A	A	210 H	220	220	240	240	Q									
30									240	230	200	200	230	220	220	230	Q									
31									210 H	230	210	200	220	210	220	230	Q									
Median									220	210	200	200	210	210	220	230	240									
Count									20	28	27	29	29	30	30	28	16									

Sweep 1.0 Mc to 25.0 Mc In 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 77

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

IONOSPHERIC DATA

foFl (Characteristic), Mc (Unit), October (Month), 1951

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: McC., E.J.W.

Calculated by: McC.

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									L	4.2	4.4	4.5	L	L	L	L	L							
2									L	L	4.3	L	L	(4.3)H	L	L	L							
3									L	L	4.3	(4.3)L	4.5	[4.5]L	(4.4)P	L	L							
4									L	L	L	4.5	L	L	L	L	L							
5									L	L	4.2	L	L	L	L	3.7H	L							
6									Q	L	L	(4.3)L	(4.6)L	L	L	L	L							
7									L	4.0	4.3	4.4	(4.4)B	4.7	L	L	Q							
8									L	L	L	L	L	4.2	[4.0]L	(3.8)P	L							
9									L	4.2	[4.3]A	4.4H	(4.6)H	(4.5)H	L	L	L							
10									Q	L	4.3P	(4.6)H	4.6P	4.5	L	L	L							
11									Q	L	L	4.6P	L	L	L	L	L							
12									L	L	3.8H	4.0L	(4.3)L	L	L	L	L							
13									(3.7)L	[4.1]L	4.5P	4.5P	(4.6)P	(4.3)P	L	L	L							
14									L	L	4.2P	(4.4)P	[4.7]L	(4.9)L	L	L	Q							
15									(3.3)H	(3.9)L	4.1	L	L	L	4.1	L	L							
16									L	3.8	4.0	L	L	L	L	L	Q							
17									QK	4.1K	4.2K	4.3K	4.3HK	4.3K	4.3HK	(3.9)LK	LK							
18									L	L	4.3H	4.3P	(4.4)P	L	L	L	Q							
19									Q	(3.8)P	[4.1]C	4.4	(4.4)L	4.4	L	L	L							
20									L	L	L	L	4.3H	L	L	L	Q							
21									Q	C	C	C	C	4.4H	4.0	L	Q							
22									L	L	L	L	4.4P	L	L	L	Q							
23									3.2H	[3.6]A	4.0H	L	L	L	L	L	Q							
24									L	(4.3)L	L	A	L	L	4.0	L	Q							
25									Q	A	A	L	L	L	4.3P	Q	Q							
26									Q	L	L	3.9H	4.0	L	L	L	Q							
27									L	L	L	L	L	L	(4.2)P	[3.3]L	2.9							
28									Q	L	LK	5.4HK	(4.8)HK	4.5K	LK	BK	BK							
29									L	4.2	L	L	L	L	L	L	Q							
30									L	L	L	4.2	L	L	L	L	Q							
31									L	L	L	L	L	L	L	L	Q							
Median									—	4.1	4.2	4.4	(4.4)	4.4	4.2	—	—							
Count									9	11	16	17	15	12	8	4	1							

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 78

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

Form adopted June 1946

IONOSPHERIC DATA

h'E (Characteristic), Km (Unit), October (Month), 1951

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: McC., E.J.W.

Lat. 38.7°N, Long. 77.1°W

75° W Mean Time

Calculated by: McC.

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								100	100	100	100	100	110	110	110	110	120	120						
2								120	120	110	110	110	110	110	100	110	110	120						
3								(110)A	110	110	120	120	110	110	110	110	110	130						
4								130	120	110	110	110	110	(100)A	(100)A	(100)A	A	A						
5									110	110	110	110	110	110	100	100	100	(120)A						
6								110	100	100	100	100	100	100	100	100	100	100H						
7								110	100	100	100	100	[100]B	100	110	100	110	110						
8								110	110	100	100	100	100	100	100	110	B	A						
9								130H	110	100	110	110	110	110	110	110	100	120H						
10								(130)A	100	100	A	A	A	100	100	100	110	110						
11								A	110	A	A	(100)H	(120)A	100H	(100)S	110	110	120H						
12								A	A	110	110	(110)A	110	100H	100	100	110	(130)S						
13								(120)S	110	110	110H	100H	100H	100	100	100	(120)A	A						
14								120	110	110H	110	110H	110H	110	110	110	120H	130						
15								(120)A	110	100	100	110	110	100	100	(110)A	A	A						
16								120	110	110	100	100	100	(100)A	(100)A	100	100	A						
17								120K	110K	110K	110K	110K	110K	(120)BK	120A	120K	(130)BK	BK						
18								(130)S	110H	(130)A	(100)A	110	110	110	110H	110	130	S						
19								(140)S	110H	120H	[120]C	110	110	(120)B	110	(110)S	120	A						
20								110H	110H	110	110	110	110	120	120	120	120	120S						
21								A	A	C	C	C	C	(120)A	(120)A	(120)A	110							
22								A	100H	100H	100H	(100)A	(100)A	(100)A	110H	120	120							
23									110H	[110]A	110H	110	110	[110]A	(110)A	110	A							
24									A	A	A	A	A	A	110H	(110)A	110							
25								130H	A	A	A	A	A	A	A	A	100H							
26									(130)B	(110)A	110	110	120	130	120H	120	120							
27								(130)S	110	110	110	110	110	110	100	110H	(110)A							
28								S	110H	110	110K	110K	120K	120K	110K	BK	BK							
29									120	A	A	A	A	A	110	120	120							
30									120	110	110	(100)A	(100)A	(120)A	(100)A	A	A							
31									110H	(120)A	110	100	(100)A	(100)A	120	110	100H							
Median								120	110	110	110	110	110	110	110	110	110	120						
Count								19	27	26	25	26	26	28	30	28	25	12						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 79

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

Form adopted June 1946

IONOSPHERIC DATA

foE (Characteristic), Mc (Unit), October (Month), 1951

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: McC., E.J.W.

Lat. 38.7°N, Long. 77.1°W

75° W Mean Time

Calculated by: McC.

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								2.2	2.7	A	A	A	A	A	3.1	3.0	2.6	2.1						
2								2.0	2.5	3.0	3.1	3.2	3.3	3.2	3.1	3.0	2.5	2.0						
3								A	2.6	3.0	B	B	B	(3.3)P	3.2P	2.9	2.7	2.1						
4								2.1	2.8	A	B	A	A	A	A	A	A	A						
5									2.7	3.0	3.1	3.3	3.3P	[3.3]B	3.2	3.0	2.7	A						
6								2.2	2.6	3.0	3.2P	3.3P	[3.3]B	3.3	3.2	3.0	2.6	(2.1)H						
7								2.1	2.5	3.0	3.1	3.2	[3.2]B	3.2P	3.1	2.9	2.5	2.1						
8								2.1	2.6	2.7	3.0	3.2P	3.3	[3.2]A	3.1	2.8	B	A						
9								2.1H	(2.7)P	2.8	3.0	3.2P	(3.2)B	3.2	3.0	2.9	2.5	2.0H						
10								A	2.5	2.6P	A	A	A	B	3.0P	2.8	2.5	2.1						
11								A	2.5	A	A	(3.2)H	3.4P	3.3H	3.2	3.0P	2.6	2.1H						
12								A	A	3.0	3.2	[3.3]A	3.3	3.4H	3.2	3.0	2.6P	1.8H						
13								2.1H	(2.3)A	2.5	3.1H	3.2H	3.4H	3.3	3.2P	3.0	2.4P	A						
14								2.1P	2.6P	2.9H	(3.2)P	3.2H	3.2H	(3.3)P	3.1	2.8	2.6H	1.8						
15								2.0P	2.6P	3.0	3.2P	3.2	3.3	3.2	3.2	3.0	A	A						
16								2.4	(2.5)A	2.9P	3.1	3.3	3.3	3.3	3.1	3.0	2.5	A						
17								2.0K	(2.5)AK	(2.9)PK	3.0K	3.1K	3.2K	3.1K	3.1K	2.9PK	2.3K	BK						
18								2.1H	(2.3)P	(2.9)A	3.1P	3.3	(3.2)P	(3.2)P	2.9H	3.0P	2.4	S						
19								2.1P	2.6H	3.0H	[3.2]C	3.3	3.3	3.3	3.3P	3.0	2.4	A						
20								(1.9)H	2.6H	2.9P	3.1	3.1P	3.2P	3.2	3.1	2.8	2.5	B						
21								A	A	C	C	C	C	3.1	3.1P	2.8	2.4							
22								A	2.5H	2.8H	(3.0)H	A	A	A	3.1H	2.8	2.4P							
23									2.4H	[2.7]A	3.0H	B	A	A	A	A	A							
24									A	A	A	A	A	A	3.0H	A	A							
25								(2.0)H	A	A	A	A	A	A	A	A	(2.6)H							
26									B	A	3.1	3.2	3.3P	3.1	2.9H	2.7	2.3							
27								1.9P	2.4P	2.9P	[3.0]A	3.1	3.2	3.1	3.0	2.7H	A							
28								S	2.6H	2.8	3.1K	3.2K	3.2K	3.2K	3.1K	BK	BK							
29									(2.2)A	A	A	A	A	A	3.1	2.9P	2.4P							
30									2.4P	2.7	3.0	3.2	3.2	3.2	A	A	A							
31									2.4H	2.9H	3.1	3.2	(3.3)A	[3.2]A	3.1	2.8	2.5H							
Median								2.1	2.5	2.9	3.1	3.2	3.3	3.2	3.1	2.9	2.5	2.1						
Count								17	26	23	22	21	21	23	27	25	23	10						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 80

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

Form adopted June 1946

IONOSPHERIC DATA

Es (Characteristic), Mc, Km (Unit), October (Month), 1951

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Scaled by: Mc C., E. J. W.

Calculated by: Mc C.

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	E	E	E	E	E	E	E	23 110	G	4.2Y 110	96 110	43Y 110	43Y 110	4.1Y 110	G	G	G	G	E	E	E	E	E	E
2	E	E	E	E	E	33Y 110	22 110	G	G	G	64Y 110	G	G	G	G	G	G	G	20 100	E	E	E	E	E
3	E	E	E	E	E	E	E	23 110	G	G	G	G	G	G	G	58Y 130	G	G	E	E	60 110	78 110	3.1 110	37 110
4	E	E	E	E	E	E	E	G	G	58Y 120	G	44Y 110	90Y 110	56 100	50 100	56 100	50 100	3.7 100	36Y 100	E	E	E	E	E
5	E	E	E	E	4.5 110	3.1 110	33 110	32 110	3.5 110	G	G	G	G	G	G	G	G	30 120	E	E	E	E	E	E
6	26Y 100	3.0Y 100	E	E	2.5 100	E	E	G	G	G	64Y 120	G	G	G	G	G	G	G	29Y 100	35Y 100	E	E	E	E
7	E	E	2.7 100	33 100	1.7 100	1.5 100	E	G	G	G	4.7Y 110	G	B	G	G	G	G	G	E	3.1 130	E	29 120	E	E
8	E	E	E	B	E	46 120	E	G	G	G	G	G	G	98Y 110	G	G	2.7 120	2.2 120	E	E	E	E	E	E
9	E	E	E	E	E	E	E	G	G	42Y 110	4.7 110	G	G	G	G	G	G	G	1.8 110	E	E	E	E	E
10	E	E	30 100	28Y 100	E	16.6Y 120	E	24Y 130	G	2.9 120	4.2Y 100	4.4Y 100	52Y 100	G	G	G	G	G	E	E	E	E	E	E
11	E	E	E	E	4.3Y 130	E	3.8Y 110	3.3 110	G	2.9 110	8.9Y 100	G	30 100	G	6.9Y 110	G	G	G	2.3 100	2.9 100	63 110	E	E	31Y 110
12	40 110	32 110	6.5 110	43 100	31 110	43 100	E	3.5Y 110	3.6 110	G	4.2Y 110	3.4 110	G	6.4Y 110	G	G	G	G	3.0Y 100	E	E	E	E	E
13	E	E	E	E	E	E	E	G	27 120	84Y 110	G	G	G	G	G	G	25 100	3.0Y 100	3.0Y 100	E	E	E	E	E
14	E	E	E	E	E	E	E	2.7Y 110	G	G	G	G	G	G	G	G	G	G	E	E	1.8 120	E	28Y 110	3.2Y 110
15	26Y 110	E	E	E	54Y 110	3.9Y 110	E	2.3Y 120	3.4Y 110	G	G	G	G	G	G	4.0 100	42Y 100	3.7 100	4.8Y 100	3.2 100	30 130	E	E	E
16	E	26 110	E	E	E	66 130	3.8Y 130	G	7.8Y 110	G	G	7.4Y 100	4.5Y 110	55Y 100	54Y 100	G	G	2.9 100	32 100	E	E	E	E	E
17	E	E	E	E	E	7.5Y 140	E	G	88 110	G	G	G	G	G	G	G	25 130	2.5 120	E	E	E	E	E	E
18	E	E	E	E	E	3.3 120	E	G	G	3.2H 100H	4.4Y 120	G	7.0Y 110	G	3.1 120	G	68 130	46 120	58 120	4.6H 120H	E	E	E	E
19	33Y 110	E	E	E	E	E	E	11.1Y 120	8.6Y 120	G	C	G	G	G	G	63Y 130	3.7Y 120	3.2 110	E	E	E	E	E	E
20	E	E	E	E	3.2Y 100	E	3.8Y 120	6.4Y 120	G	G	G	G	G	G	G	G	G	G	E	2.1Y 120	E	E	50Y 110	4.6Y 110
21	2.6Y 110	E	E	E	E	E	E	1.8 110	32Y 90	C	C	C	C	3.2 100	3.2 100	3.5Y 100	G	2.3Y 120	3.3 100	1.9 110	E	E	E	E
22	E	E	2.3Y 110	E	E	6.4Y 140	E	1.8 100	G	G	G	3.2Y 100	100YH 100H	(6.8)Y 100	G	G	G	E	E	E	3.5 120	E	E	E
23	38 110	2.9Y 120	E	33 110	2.4Y 120	6.4Y 140	E	E	G	4.7 110	G	G	3.6 120	5.6 110	4.6Y 110	3.0 110	30Y 110	2.4Y 110	3.4Y 110	1.8 100	2.8 120	22 120	64 110	7.6 110
24	3.5 120	E	E	3.0Y 110	4.8 110	3.0Y 110	3.3H 110H	3.0H 110H	5.4 110	6.0 100	54 100	68 100	58 100	58 100	G	4.3 110	3.0 110	3.1 110	56H 110H	86Y 110	1.7 100	E	38 120	50Y 110
25	36 110	25 120	3.4 120	3.6H 110H	4.2H 110H	4.0 110	26Y 110	G	3.7 120	86S 110	78 100	60Y 100	40 110	4.1 110	3.4 100	29 100	G	2.1 100	E	54H 110H	6.3 120	59 120	455 120	35 120
26	3.1Y 120	3.4 120	3.1Y 120	E	E	E	E	E	G	33 110	G	G	3.9Y 120	G	G	G	26 140	E	E	32Y 110	23 110	E	1.7 110	E
27	2.7Y 110	E	E	E	E	E	E	G	G	G	70Y 100	G	7.6Y 130	G	74Y 100	G	2.4 110	3.6Y 110	2.1 110	3.4Y 110	4.0 110	1.8 110	E	28Y 110
28	3.1 110	2.7Y 110	29Y 110	28Y 110	3.0Y 110	24Y 110	2.4Y 110	G	G	G	G	G	G	G	G	B	B	B	B	52 130	6.0B 120	5.2 120	(62)H 110H	E
29	25 110	66 100	28 110	1.6Y 120	98Y 110	4.7 130	8.0H 120H	3.8 120	6.9 120	76 110	72 110	76H 120H	39Y 120	3.5 120	3.5 130	G	G	E	1.7 120	6.4Y 110	90Y 110	66 110	6.8Y 110	1.7Y 110
30	E	26Y 110	2.7Y 100	E	E	E	E	2.5Y 130	G	G	G	50Y 100	6.4Y 100	35Y 100	5.6 100	4.0Y 100	3.8 100	3.3H 100H	2.1 100	E	E	E	E	E
31	E	E	E	E	E	E	E	E	G	70Y 140	G	5.0Y 100	3.6 100	G	G	G	2.3Y 100	E	E	E	E	E	E	E
Median	**	**	**	**	**	1.5	**	**	**	**	**	**	**	**	**	**	**	**	1.7	**	**	**	**	**
Count	31	31	31	30	31	31	31	31	31	30	29	30	30	31	31	31	31	31	31	31	31	31	31	31

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

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 81

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

IONOSPHERIC DATA

(M1500) F2 (Characteristic) ______ (Unit) October (Month), 1951

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: McC., EJW.

Lat 38.7°N, Long 77.1°W

75° W Mean Time

Calculated by: McC.

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	(2.0)JS	(1.9)SF	(1.9)F	(1.9)FJ	1.9SF	2.0F	2.2	2.4H	2.3	2.2	2.2	2.3	2.1	2.0	2.0	2.0	2.1	2.2	2.2	2.1	2.1	2.0	(1.9)SF	1.8F
2	1.9S	(2.0)S	2.0S	2.0	(1.8)SF	1.9S	2.1	2.3	2.3	2.2	2.3	2.0	1.9	2.0	2.1	2.0	2.1	2.1	2.2	2.2	2.1	1.9	1.9	1.9
3	1.9	1.9	1.9	2.1	2.0	2.0F	2.1	2.3	2.3	2.3	2.2	2.1	2.1	2.0	2.1	2.1	2.2	2.2	2.3	2.1	2.1	2.1	(2.0)F	1.9SF
4	(1.9)SF	(1.9)SF	2.0F	1.9F	(2.1)SF	(2.0)JF	2.1F	2.4H	(2.4)ZH	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.0	2.1	2.3S	(2.0)S	2.0FS	2.0	2.0	1.9
5	(1.9)SF	2.1F	(1.9)JF	(1.9)F	(1.9)FS	(1.9)FS	2.0F	2.4	2.4	2.4	2.3	2.1	2.0H	2.1	2.0	2.1	2.2S	2.3	2.3	2.3	2.1	1.9	1.9	2.0
6	(2.0)JS	2.0	2.0	2.1	2.0	2.0	2.0	2.3	2.4	2.2	2.4	2.3	2.0	2.0	2.2	2.1	2.2	2.3	2.4	2.2S	2.2	2.0	1.9	1.9
7	1.9	1.9	1.9	2.0	2.0	1.9	2.1S	2.2	2.0	2.1F	2.2	1.8	1.9	2.0	1.9	1.8	2.0	2.1	(1.9)S	2.0	1.8H	1.7	1.7	1.8
8	1.7	2.2P	1.9	BF	2.1SH	(2.1)F	(2.2)F	2.1S	2.1	2.4	2.1	2.1	2.0	2.1	2.0	2.1	2.2	2.2PS	2.2PS	(2.0)PS	2.0	2.0F	(1.9)JS	1.9PS
9	1.9F	(1.9)P	1.9F	F	F	S	2.0F	2.3	(2.0)JF	2.3	2.1F	2.1	2.0	2.2	2.1	2.2	2.3	2.1	2.2	2.1	2.0	2.1S	2.0	1.9
10	1.9	(1.9)FS	(1.9)F	1.9F	(2.1)F	(2.0)JF	2.0	(2.3)S	2.3	2.2	2.3	2.2	2.1	2.0	2.1	2.2	2.1	2.1	2.1S	2.1	2.0F	2.0	1.9	1.9
11	(2.0)JS	2.0	2.0	(1.9)J	(1.9)S	2.0S	2.2S	(2.3)J	2.3	2.2	2.2	2.1	2.0	2.0	2.1	2.2	2.2	2.2PS	2.2	2.3F	2.2F	1.9P	1.9	2.0
12	1.9	1.9	2.0	1.9	(1.9)JS	2.0PS	(2.1)JF	(2.3)JF	2.3F	2.3	2.2	2.2	2.1	2.2P	2.2	2.1	2.1	2.2	2.3PS	(2.1)PS	2.2FS	(2.0)FJ	2.1PF	(1.9)FJ
13	(1.9)FJ	(1.9)FP	(1.9)FJ	(2.0)FP	(2.1)FP	2.0FP	2.0F	2.1	1.9Y	2.0H	2.1F	2.2	2.2	2.1	2.2	2.1	(2.1)J	(2.1)J	2.0	1.8	2.0	1.9PS	2.1PS	1.9PS
14	(2.0)JS	(2.1)JS	1.9P	(1.9)J	(1.9)F	(1.9)PF	1.9	2.3	2.3	2.2	2.3	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.0F	1.8F	(1.9)JF	1.9F
15	(2.2)F	(2.0)F	2.0F	(2.0)JF	1.9	(2.0)FS	2.0SF	2.3	2.4	2.3	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.3	(2.2)JS	2.1S	1.9	(1.9)S	1.8	1.9F
16	1.9S	(1.9)JS	(1.8)JS	1.8F	(1.8)JS	(2.0)FS	1.9F	2.2S	2.3S	2.3	2.2	2.0	2.1	2.0	2.1	2.1	2.0	2.1	(1.9)J	1.9	1.9	1.9	1.8	1.7
17	1.7F	(1.8)JF	(1.6)JF	(1.8)F	(1.6)F	(1.6)SF	(1.8)FK	2.0K	1.9K	1.8K	1.8K	1.7K	1.8K	1.9FK	2.0K	2.1K	2.0K	2.0K	J(2.1)SK	F(2.0)SK	2.0K	P(2.0)SK	1.9FK	1.8FK
18	FK	FK	F(1.8)JK	FK	F(2.0)JK	FSK	2.1FP	2.4	2.2	2.3PS	2.1H	2.0	2.1	(2.0)J	2.1	2.2	2.2	(2.0)JF	(2.1)JS	(2.1)JF	1.9	(1.8)JF	1.7V	(1.9)PF
19	(1.9)JF	F	(1.8)JF	F	F	(2.0)F	(2.0)FP	(2.2)PS	2.2YH	2.3F	C	2.1	2.1	C	2.0	2.1	2.0	(2.2)JS	2.2PS	(1.9)PS	(1.9)JF	(1.7)JF	(1.9)F	(1.8)JF
20	1.8FP	(1.9)FP	(2.0)FJ	(1.7)FS	(1.7)FP	(1.9)FP	2.0F	2.3	2.3	2.4	(2.0)HY	2.1	2.1	2.1	2.1	2.1	2.2	2.3	(2.1)S	(2.1)PS	1.9SF	1.9FS	1.9FS	1.8
21	1.8F	1.8	1.9	2.1	2.2FS	2.2	(1.9)FS	2.3	2.3	C	C	C	C	2.1	2.2	2.2	2.3	2.4	(2.2)JS	2.1	2.0	(1.9)JS	1.9	(1.8)JF
22	1.9F	1.9F	1.9FP	1.9FS	(2.1)JP	(2.2)JF	(1.9)S	2.2	2.4	2.3	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.0	2.0	2.0F	2.0	2.0	1.9
23	(1.9)JS	2.0	2.0	1.9	2.0F	2.0F	2.1F	2.3	2.3	2.2	2.2	2.2	2.2	2.0	2.0	2.1	2.2	(2.1)S	(2.1)JS	2.1	2.1F	(2.0)JS	A	A
24	2.0	1.9V	1.9	1.9	2.0F	2.0F	2.2F	2.3	2.4	(2.2)H	2.2	2.2	2.2	2.1	2.2	2.2	2.3	2.3	2.1	2.2	2.0	2.0	2.1	(2.0)S
25	2.0	2.0	2.0	2.0	2.0F	2.0F	1.9	2.2	2.2H	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.1F	2.2	A	A	1.9S	2.0PS
26	(2.0)JS	(2.0)JF	(1.9)PF	2.0PF	2.0F	(2.1)JF	(2.0)PF	(2.3)FS	2.3	2.1	2.2	2.1H	2.0	2.1	2.1	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	1.9
27	(1.8)JS	1.8	1.8	2.0	2.1	2.1F	2.1	2.2	2.3	2.2	2.2	2.0	2.2	2.1	2.3	2.3	2.3	2.3	2.1	2.0	2.0	(2.1)JS	2.0S	1.9
28	1.9	1.8	1.8	1.9	2.0	2.2	2.0	2.3	2.2	2.2	2.0K	(1.4)JK	1.6K	(1.7)SK	1.9K	1.6HK	1.9K	2.2K	2.0FK	2.0FK	EK	AK	AK	J(2.1)FK
29	EK	AK	AK	EK	EK	AK	AK	2.3S	2.2F	(2.2)HJ	2.3	2.1	2.0	2.3	2.1	2.2	2.2	2.3	2.1	2.1	2.0A	2.0	(2.1)JH	1.9
30	1.9	1.9	1.9	2.0F	2.0F	1.9F	1.9F	2.3	2.3S	2.2F	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2S	2.1	2.0F	1.9F	2.0S	2.1S
31	2.1F	1.9F	2.0F	2.0F	2.0F	2.0F	2.0F	2.4F	2.4S	2.3	2.3	2.2	2.2	2.2	2.2	2.1	2.3S	(2.3)JS	(2.2)JF	(2.0)PJ	2.0PS	2.2F	2.0	2.2FS
Median	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.0	2.0	1.9	1.9
Count	29	28	30	26	28	28	30	31	31	30	29	30	30	30	31	31	31	31	31	31	30	29	29	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 82

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

IONOSPHERIC DATA

Form adopted June 1946

(M3000)F2 (Characteristic), ______ (Unit), October (Month), 1951

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: McC., EJW

Lat 38.7° N, Long 77.1° W

75° W Mean Time

Calculated by: McC.

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	(3.0)JS	(2.9)SF	(2.9)F	(2.9)FJ	2.9SF	3.0F	3.2	3.4H	3.3	3.2	3.2	3.3	3.1	3.0	3.0	3.0	3.1	3.2	3.2	3.1	3.1	3.0	(2.9)SF	2.7F
2	2.8S	(3.0)S	3.0S	2.9	(2.7)SF	2.8S	3.1	3.3	3.3	3.2	3.3	3.0	2.9	3.0	3.1	3.0	3.1	3.1	3.2	3.2	3.1	2.9	2.8	2.9
3	2.9	2.9	2.9	3.1	3.0	3.0F	3.1	3.3	3.4	3.3	3.2	3.1	3.1	3.0	3.1	3.1	3.2	3.2	3.3	3.1	3.1	3.1	(3.0)F	2.8FS
4	(2.9)SF	(2.9)SF	3.0F	2.9F	(3.1)SF	(2.9)JF	3.1F	3.5H	(3.5)ZH	3.2	3.2	3.2	3.1	3.3	3.1	3.1	3.0	3.1	3.3S	(3.0)S	3.0FS	3.0	2.9	2.9
5	(2.9)SF	3.1F	(2.9)JF	(2.9)F	(2.9)FS	(2.9)FS	2.9F	3.4	3.5	3.4	3.3	3.1	3.0H	3.1	3.0	3.1	3.2S	3.3	3.3	3.3	3.1	2.9	2.9	3.0
6	(3.0)JS	3.0	3.0	3.1	3.0	3.0	3.1	3.3	3.5	3.2	3.5	3.4	3.0	3.0	3.2	3.1	3.2	3.4	3.4	3.2S	3.2	3.0	2.9	2.9
7	2.9	2.9	2.9	3.0	2.9	2.9	3.1S	3.2	3.0	3.1F	3.2	2.7	2.9	3.0	2.8	2.7	3.0	3.0	(2.9)S	3.0	2.7H	2.6	2.6	2.7
8	2.6	3.2P	2.9	BF	3.1SH	(3.1)F	(3.2)F	3.1S	3.1	3.4	3.1	3.0	3.0	3.1	3.0	3.1	3.2	3.2PS	3.2PS	(3.0)PS	2.9	3.0F	(2.8)JS	2.9PS
9	2.9F	(2.8)P	2.8F	F	F	S	3.0F	3.4	(3.0)JF	3.3	3.0F	3.0	3.0	3.2	3.1	3.2	3.4	3.1	3.2	3.1	3.0	3.1S	3.0	2.9
10	2.8	(2.8)FS	(2.8)F	2.8F	(3.1)F	(3.0)JF	3.0	(3.3)S	3.3	3.2	3.3	3.3	3.1	3.0	3.1	3.2	3.1	3.1	3.1S	3.1	3.0F	3.0	2.8	2.9
11	(2.9)JS	3.0	3.0	(2.8)J	(2.8)S	3.0S	3.2S	(3.4)J	3.4	3.2	3.3	3.1	3.0	3.0	3.1	3.2	3.2	3.3PS	3.3	3.4F	3.2F	2.9P	2.9	2.9
12	2.8	2.9	2.9	2.8	(2.8)JS	2.9PS	(3.1)JF	(3.3)JF	3.3F	3.4	3.2	3.2	3.1	3.2P	3.2	3.2	3.1	3.2	(3.3)PS	(3.1)PS	3.2FS	(3.0)FJ	3.1PF	(2.9)FJ
13	(2.8)FJ	(2.9)FP	(2.8)FJ	(3.0)FP	(3.1)FP	3.0FP	3.0F	3.1	2.8V	2.9H	3.1F	3.2	3.2	3.1	3.2	3.1	(3.1)J	(3.1)J	3.0	2.7	3.0	2.8PS	3.1PS	2.9PS
14	(2.9)JS	(3.1)JS	2.9P	(2.8)J	(2.9)F	(2.8)PF	2.8	3.3	3.3	3.2	3.3	3.1	3.1	3.0	3.0	3.0	3.1	3.1	3.2	3.1	2.9F	2.8F	(2.9)JF	2.9F
15	(3.2)F	(3.0)F	3.0F	(2.9)JF	2.9	(3.0)FS	3.0SF	3.4	3.5	3.3	3.1	3.1	3.1	2.9	3.0	3.0	3.1	3.3	(3.2)JS	3.1S	2.8	(2.9)S	2.7	2.9F
16	2.9S	(2.8)JS	(2.7)JS	2.7F	(2.7)JS	(3.0)FS	2.8F	3.2S	3.4S	3.3	3.2	3.0	3.1	3.0	3.1	3.1	3.0	3.1	(2.9)J	2.9	2.9	2.8	2.8	2.6
17	2.6F	(2.7)FJ	(2.5)JF	(2.7)F	(2.4)F	(2.4)FS	(2.7)FK	3.0K	2.8K	2.7K	2.7K	2.5K	2.8K	2.9FK	3.0K	3.1K	3.0K	2.9K	K(3.1)JS	K(3.0)FS	3.0K	K3.0PS	2.9FK	2.8FK
18	FK	FK	K(2.9)FJ	FK	K(3.0)FJ	FSK	3.1FP	3.4	3.2	3.3PS	3.1H	3.0	3.1	(3.0)J	3.1	3.2	3.2	(3.0)JF	(3.2)JS	(3.1)JF	2.8	(2.7)JF	2.5V	(2.8)PF
19	(2.9)JF	F	(2.7)JF	F	F	(3.0)F	(3.0)FP	(3.2)PS	3.2YH	3.3F	C	3.1	3.1	C	3.0	3.1	3.0	(3.2)JS	3.2PS	(2.8)PS	(2.8)JF	(2.6)JF	(2.8)F	(2.6)JF
20	2.7PF	(2.8)FP	(3.0)FJ	(2.6)FS	(2.5)FP	(2.9)FP	3.0F	3.3	3.4	3.4	(3.0)YH	3.1	3.0	3.1	3.1	3.1	3.2	3.3	(3.2)S	(3.1)PS	2.9FS	2.9FS	2.8FS	2.7
21	2.7F	2.7	2.8	3.1	3.2FS	3.2	(2.8)FS	3.3	3.3	C	C	C	C	3.1	3.2	3.2	3.3	3.4	(3.2)JS	3.1	3.0	(2.8)JS	2.8	(2.7)JF
22	2.8F	2.9F	2.8FP	2.9FS	(3.1)JP	(3.2)JF	(2.8)S	3.2	3.4	3.3	3.1	3.1	3.1	3.2	3.1	3.2	3.2	3.1	3.0	3.0	3.0F	3.0	3.0	2.8
23	(2.9)JS	3.0	3.0	2.9	3.0F	3.0F	3.1F	3.4	3.4	3.2	3.2	3.2	3.2	3.0	3.0	3.1	3.3	(3.1)S	(3.1)JS	3.1	3.1F	(3.0)JS	A	A
24	3.0	2.9V	2.9	2.8	2.9F	3.0F	3.2F	3.4	3.5	(3.2)H	3.2	3.2	3.2	3.1	3.2	3.2	3.4	3.4	3.1	3.2	3.0	3.0	3.1	(3.0)S
25	3.0	3.0	3.0	3.0	3.0F	3.0F	2.9	3.2	3.2H	3.3	3.1	3.2	3.2	3.2	3.2	3.2	3.3	3.4	3.1F	3.2	A	A	2.9S	3.0PS
26	(3.0)JS	(3.0)JF	(2.9)PF	3.0PF	3.0F	(3.1)JF	(3.0)PF	(3.3)FS	3.3	3.1	3.2	3.1H	3.0	3.1	3.1	3.1	3.2	3.1	3.0	3.0	3.0	3.0	3.0	2.8
27	(2.7)JS	2.7	2.7	3.0	3.1	3.1F	3.1	3.3	3.3	3.2	3.2	3.0	3.2	3.1	3.3	3.3	3.3	3.4	3.1	3.0	3.0	(3.1)JS	3.0S	2.9
28	2.9	2.7	2.7	2.8	3.0	3.2	3.0	3.3	3.2	3.2	3.0K	(2.1)JK	2.4K	(2.5)SK	2.8K	2.3HK	2.9K	3.2K	3.0FK	3.0FK	EK	AK	AK	K(3.1)JF
29	EK	AK	AK	EK	EK	AK	AK	3.3S	3.2F	(3.2)HJ	3.3	3.1	3.0	3.3	3.1	3.2	3.2	3.3	3.1	3.1	3.0A	3.0	(3.1)JA	2.9
30	2.8	2.9	2.8	2.9F	3.0F	2.8F	2.9F	3.3	3.3S	3.2F	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.2S	3.1	3.0F	2.9F	3.0S	3.1S
31	3.1F	2.9F	3.0F	3.0F	3.0F	3.0F	3.0F	3.5F	3.5S	3.4	3.3	3.3	3.2	3.2	3.3	3.1	3.3S	(3.3)J	(3.2)JF	(3.0)PJ	3.0PS	3.2F	3.0	3.2FS
Median	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.3	3.3	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.2	3.1	3.0	3.0	2.9	2.9
Count	29	28	30	26	28	28	30	31	31	30	29	30	30	30	31	31	31	31	31	31	29	29	29	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 83

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

Form adopted June 1946

IONOSPHERIC DATA

(M 3000)F1, ______ (Unit), October (Month), 1951 — (Characteristic)

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: McC., E.J.W.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Calculated by: McC.

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									L	3.7	3.7	3.8	L	L	L	L	L							
2									L	L	3.8	L	L	(3.6)^{H}	L	L	L							
3									L	L	3.8	(3.8)^{L}	3.7	L	(3.8)^{P}	L	L							
4									L	L	L	3.9	L	L	L	L	L							
5									L	L	3.9	L	L	L	L	4.0^{H}	L							
6									Q	L	L	(3.8)^{L}	(3.9)^{L}	L	L	L	L							
7									L	3.7	3.6	3.8	(3.4)^{B}	3.4	L	L	Q							
8									L	L	L	L	L	3.8	L	(3.9)^{P}	L							
9									L	3.8	A	3.8^{H}	(3.6)^{H}	(3.7)^{H}	L	L	L							
10									Q	L	3.8^{P}	(3.8)^{H}	3.8^{P}	3.7	L	L	L							
11									Q	L	L	3.8^{P}	L	L	L	L	L							
12									L	L	4.1^{H}	3.8^{L}	(3.9)^{L}	L	L	L	L							
13									(3.5)^{L}	L	3.8^{P}	3.8^{P}	(3.8)^{P}	(4.0)^{P}	L	L	L							
14									L	L	3.8^{P}	(3.9)^{P}	L	(3.6)^{L}	L	L	Q							
15									(4.0)^{H}	(4.0)^{L}	3.9	L	L	L	3.8	L	L							
16									L	4.0	4.1	L	L	L	L	L	Q							
17									Q^{K}	3.3^{K}	3.3^{K}	3.3^{K}	3.2^{HK}	3.5^{K}	3.4^{HK}	(3.5)^{LK}	L^{K}							
18									L	L	3.7^{H}	3.9^{P}	(3.8)^{P}	L	L	L	Q							
19									Q	(3.8)^{P}	C	3.7	(3.8)^{L}	3.7	L	L	L							
20									L	L	L	L	3.8^{H}	L	L	L	Q							
21									Q	C	C	C	C	3.8^{H}	3.9	L	Q							
22									L	L	L	L	3.7^{P}	L	L	L	Q							
23									4.0^{H}	A	4.0^{H}	L	L	L	L	L	Q							
24									L	(3.7)^{L}	L	A	L	L	3.8	L	Q							
25									Q	A	A	L	L	L	3.7^{P}	Q	Q							
26									Q	L	L	4.1^{H}	4.0	L	L	L	Q							
27									L	L	L	L	L	L	(3.8)^{P}	L	3.9							
28									Q	L	L^{K}	2.8^{HK}	(3.1)^{HK}	3.3^{K}	L^{K}	B^{K}	B^{K}							
29									L	3.6	L	L	L	L	L	L	Q							
30									L	L	L	3.8	L	L	L	L	Q							
31									L	L	L	L	L	L	L	L	Q							
Median									–	3.7	3.8	3.8	(3.8)	3.7	3.8	–	–							
Count									3	9	14	17	14	11	7	3	1							

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 84

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

IONOSPHERIC DATA

(M 1500)E (Characteristic), ____ (Unit), October (Month), 1951

Observed at Washington, D.C.

Lat. 38.7°N, Long. 77.1°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: McC., E.J.W.

Calculated by: McC.

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								4.2	4.3	A	A	A	A	A	4.2	4.2	4.2	4.0						
2								4.0	4.2	4.0	4.3	4.2	4.2	4.0	4.1	4.1	4.1	4.1						
3								A	4.2	4.1	B	B	B	(4.2)P	4.1P	4.1	4.2	4.0						
4								4.0	4.0	A	B	A	A	A	A	A	A	A						
5									4.1	4.2	4.2	4.3	4.1P	B	4.2	4.1	4.2	A						
6								4.1	4.0	4.2	4.3P	4.2P	B	4.1	4.1	4.1	4.0	(4.1)H						
7								4.1	4.3	4.3	4.1	4.3	B	4.3P	4.2	4.1	4.2	4.3						
8								4.2	4.1	4.3	4.3	4.3P	4.2	A	4.2	4.3	B	A						
9								4.1H	(4.1)P	4.2	4.3	4.2P	(4.2)B	4.3	4.2	4.2	4.2	4.2H						
10								A	4.2	4.4P	A	A	A	B	4.2P	4.2	4.2	4.4						
11								A	4.4	A	A	(4.2)H	4.1P	4.2H	4.2	4.1P	4.2	4.2H						
12								A	A	4.3	4.2	A	4.1	4.1H	4.2	4.2	4.4P	4.1H						
13								4.1H	(4.7)A	4.6	4.1H	4.1H	4.1H	4.2	4.2P	4.1	4.2P	A						
14								4.2P	4.1P	4.1H	(4.1)P	4.1H	4.0H	(4.1)P	4.2	4.1	4.1H	4.2						
15								4.1P	4.1P	4.1	4.2P	4.0	4.0	4.2	4.1	4.1	A	A						
16								4.0	(4.1)A	4.1P	4.3	4.0	4.0	4.0	4.0	4.0	4.1	A						
17								4.0K	(4.1)AK	(4.0)PK	4.0K	4.0K	3.8K	4.1K	4.1K	4.1PK	4.2K	BK						
18								4.0H	(4.0)P	(4.1)A	4.2P	4.1	(4.1)P	(4.1)P	4.4H	4.1P	4.1	S						
19								4.0P	4.0H	3.8H	C	3.9	4.1	4.1	4.2P	4.2	4.3	A						
20								(4.1)H	3.9H	4.4P	3.9	3.9P	4.1P	4.1	4.0	4.0	4.1	B						
21								A	A	C	C	C	C	4.1	4.2P	4.2	4.3							
22								A	3.7H	3.7H	(4.2)H	A	A	A	4.0H	4.0	4.1P							
23									4.1H	A	3.9H	B	A	A	A	A	A							
24									A	A	A	A	A	A	4.0H	A	A							
25								(3.5)H	A	A	A	A	A	A	A	A	(4.2)H							
26									B	A	4.0	4.0	4.0P	4.1	4.1H	4.2	4.0							
27								4.0P	4.0P	4.1P	A	4.0	4.1	4.2	4.1	4.3H	A							
28								S	3.7H	4.0	4.1K	4.0K	4.1K	4.2K	4.2K	BK	BK							
29									(4.4)A	A	A	A	A	A	4.2	2.9P	2.4P							
30									4.2P	4.2	4.2	3.9	3.8	4.0	A	A	A							
31									4.1H	3.8H	3.9	3.9	(3.9)A	A	4.2	4.2	3.9H							
Median								4.1	4.1	4.1	4.2	4.0	4.1	4.1	4.2	4.1	4.2	4.2						
Count								17	26	22	20	20	19	20	27	25	23	10						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Table 85

Ionospheric Storminess at Washington, D. C.

October 1951

Day	Ionospheric character* 00-12 GCT	Ionospheric character* 12-24 GCT	Principal storms Beginning GCT	Principal storms End GCT	Geomagnetic character** 00-12 GCT	Geomagnetic character** 12-24 GCT
1	1	2			2	2
2	0	1			3	2
3	1	2			1	2
4	1	1			0	1
5	1	1			1	1
6	0	2			0	0
7	1	2			2	4
8	3	3			5	4
9	2	2			4	3
10	1	1			5	4
11	1	0			4	2
12	2	2			3	2
13	2	3			4	3
14	1	1			3	3
15	2	1			3	2
16	2	0			3	3
17	3	6	1100	----	5	5
18	5	2	----	1100	5	4
19	3	2			4	4
20	2	1			4	2
21	3	2			4	2
22	1	1			3	3
23	2	1			3	2
24	2	2			2	1
25	2	2			1	1
26	2	2			2	3
27	1	2			2	1
28	3	6	1500	----	3	6
29	#	2	----	1200	2	2
30	3	2			3	1
31	2	2			0	1

*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.

----Dashes indicate continuing storm.

#No I-figure owing to insufficient data; conditions probably severely disturbed.

Table 86

Provisional Radio Propagation Quality Figures
(Including Comparisons with CRPL Warnings and Forecasts)
September 1951

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

Score:	Warning N.A.	Warning N.P.	Forecast N.A.	Forecast N.P.
H	32	30	23	22
(M)	0	0	0	0
M	1	0	9	7
G	20	21	19	21
O	7	9	9	10

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

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 expected
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 87a

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
1951																																					
Oct. 7.7	-	-	-	-	-	-	-	-	-	-	-	3	3	3	5	8	12	15	12	15	20	20	25	12	10	8	5	3	3	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	-	3	3	3	3	5	12	10	13	12	12	15	15	17	15	15	12	5	3	2	3	3	3	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	3	5	8	8	5	8	12	12	15	15	15	18	15	14	14	12	8	5	3	2	2	3	3	3	-	-	-	-	-
10.6	-	-	-	-	-	-	-	2	2	3	3	5	8	10	10	12	14	13	14	12	10	8	5	3	3	2	3	3	3	3	-	-	-	-	-	-	-
11.9	-	-	-	-	-	-	-	-	3	3	3	3	8	10	15	15	15	15	12	8	10	8	5	3	3	3	-	-	-	-	-	-	-	-	-	-	-
12.6	-	-	-	-	-	-	-	-	3	3	3	5	5	5	12	12	12	17	10	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.0	-	-	-	-	-	-	-	-	3	3	3	3	5	5	8	12	12	14	8	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.9	-	-	-	-	-	-	3	3	3	3	3	3	3	8	13	12	12	14	8	5	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.7	-	-	3	3	3	3	3	3	3	5	3	3	5	8	13	10	12	12	12	12	5	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
20.8	X	X	-	-	-	-	-	-	-	-	3	5	3	8	8	8	8	8	5	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X
23.6	-	-	2	3	3	3	3	3	2	2	3	4	5	8	10	10	10	8	5	5	8	5	4	3	3	3	3	3	3	3	3	3	3	3	-	-	-
24.6	-	-	-	-	-	-	-	-	3	3	3	3	3	3	3	3	5	3	2	3	10	8	5	3	2	2	2	3	3	-	-	-	-	-	-	-	-
25.7	-	-	-	-	-	-	-	-	-	3	3	5	3	3	5	5	8	5	5	5	8	8	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-
28.8a	-	-	-	-	-	-	-	-	-	3	3	3	3	3	5	[illegible]	5	5	3	5	5	3	5	3	3	3	3	3	-	-	-	-	-	-	-	-	-
29.8	-	-	-	-	-	-	-	-	3	3	3	3	3	3	5	10	12	8	3	3	3	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	-	-	-	-	-	-	-	3	3	3	3	3	3	5	10	12	13	8	5	5	4	3	3	3	3	3	2	2	2	2	2	-	-	-	-	-
31.7a	-	-	-	-	-	-	-	-	-	3	3	3	3	5	[illegible]	10	15	2	15	12	12	8	5	3	3	3	3	3	3	3	3	3	-	-	-	-	-

Table 88a

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
1951																																					
Oct 7.7	-	-	-	-	-	-	-	2	3	3	3	3	3	5	8	8	20	12	10	13	12	3	10	4	5	3	3	3	10	5	5	3	3	3	3	3	3
8.6	2	2	2	-	-	-	-	-	-	2	2	2	2	2	3	3	12	20	3	15	8	10	3	5	5	3	3	3	3	5	3	3	3	3	3	3	3
9.6	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	15	14	12	8	12	8	4	12	8	12	3	8	8	5	8	5	2	2	2	2	2
10.6	3	3	3	2	3	3	3	2	2	2	2	2	2	3	2	2	8	3	10	3	8	5	3	3	8	5	3	3	3	3	2	2	2	2	2	2	2
11.9	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	15	12	3	3	5	3	3	4	4	3	4	3	3	2	3	2	2	2	2	3
12.6	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	8	15	12	5	2	2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2
14.0	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	3	-	8	15	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.9	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	3	3	8	2	-	-	-	-	2	2	2	2	2	2	2	2	2	-	-	-	-	-
15.7	2	2	3	2	2	2	-	-	-	-	-	-	-	-	2	5	2	2	2	3	2	2	2	2	2	3	4	3	3	3	3	3	2	2	2	2	2
20.8	X	X	-	-	-	-	-	-	-	-	-	2	3	3	3	2	2	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X
23.6	-	-	-	-	-	-	-	-	-	-	-	2	3	2	2	2	3	3	2	2	3	8	2	3	2	2	2	3	2	2	2	2	2	2	2	2	2
24.6	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	3	3	3	3	10	2	-	-	2	2	3	3	2	2	2	2	2	2	2	2
25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	14	10	10	10	12	5	3	2	2	2	2	3	2	-	-	-	-	-	-	
28.8a	2	2	2	3	3	2	2	3	3	3	3	2	2	2	2	2	2	3	3	3	3	3	3	3	2	2	2	3	3	5	3	3	3	3	3	3	3
29.8	2	2	2	2	2	2	2	2	2	2	2	2	-	3	3	3	5	3	2	2	3	3	3	3	2	2	2	2	2	2	2	2	-	-	-	-	-
30.7	2	2	2	2	2	3	3	3	2	2	2	2	-	-	2	2	4	3	3	3	3	4	3	3	4	2	2	2	2	2	2	2	2	2	2	2	2
31.7	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	2	3	2	2	2	3	2	3	3	2	2	2	2	2	2	2	2	2	-	-	-

Table 87b

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

Date	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
GCT	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
1951																																					
Oct. 7.7	–	3	3	3	3	3	3	3	3	3	3	3	3	5	5	5	8	8	10	12	20	25	15	15	12	12	10	8	3	3	5	8	8	5	3	3	–
8.6	–	3	3	3	3	3	3	3	5	5	5	5	5	5	8	5	13	12	13	13	15	25	15	20	15	15	8	10	5	3	5	5	5	5	3	–	–
9.6	–	–	–	–	–	3	3	3	3	3	3	3	3	5	5	8	10	12	12	12	15	15	12	15	12	15	10	8	8	5	3	3	3	3	3	–	–
10.6	–	–	2	2	2	3	3	3	3	3	3	5	8	10	10	12	14	12	12	12	14	15	12	10	10	12	10	8	5	5	3	3	3	3	2	–	–
11.9	–	–	–	–	–	3	3	3	3	3	3	3	3	5	5	5	5	3	3	3	3	5	5	5	3	3	3	3	3	3	3	3	–	–	–	–	–
12.6	–	–	–	–	–	–	3	3	3	3	3	3	5	5	8	5	5	8	10	8	8	8	8	5	3	5	2	3	3	3	3	3	–	–	–	–	–
14.0	–	–	–	–	–	–	–	–	3	3	3	3	3	5	5	8	5	8	10	5	3	3	3	3	3	3	3	3	2	–	–	–	–	–	–	–	–
14.9a	–	–	–	–	–	3	3	3	3	3	3	3	3	3	3	3	3	8	12	8	8	8	8	5	8	5	5	3	3	–	–	–	–	–	–	–	–
15.7	–	–	–	2	2	2	2	2	2	2	3	3	3	3	2	3	5	8	12	12	12	10	12	5	3	3	5	5	3	2	–	–	–	–	–	–	–
20.8	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
23.6	–	–	–	–	–	–	–	–	–	–	–	–	3	3	5	8	10	12	15	12	15	12	10	8	5	4	4	3	3	3	–	–	–	–	–	–	–
24.6	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3	3	3	8	5	12	14	12	8	5	3	3	3	3	2	2	–	–	–	–	–	–	–
25.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3	3	5	12	17	12	10	10	5	3	3	3	3	3	–	–	–	–	–	–	–
28.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3	3	3	8	8	8	10	10	10	8	5	5	3	3	3	3	3	3	3	–	–	–
29.8a	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3	3	3	3	5	5	5	5	3	3	3	3	3	3	3	3	2	2	–	–	–
30.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3	3	5	8	8	5	5	3	3	3	5	5	8	8	5	3	–	–	–
31.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	2	2	8	8	10	5	8	8	5	3	3	3	3	3	5	5	5	3	–	–	–

Table 88b

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

Date	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
GCT	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
1951																																					
Oct 7.7	3	2	2	2	2	2	2	2	2	5	3	5	3	3	3	3	8	5	3	3	15	8	–	–	2	3	2	–	–	–	–	–	–	–	–	–	–
8.6	3	3	2	2	2	2	2	2	2	2	3	3	3	3	3	5	8	2	–	–	18	8	2	3	–	–	–	–	–	–	–	–	–	2	2	2	2
9.6	2	2	2	2	–	–	–	–	–	2	3	3	3	2	3	2	12	3	2	2	3	3	2	3	2	–	–	–	–	–	–	–	–	2	2	2	2
10.6	2	2	–	–	–	–	–	–	–	–	2	3	3	2	2	–	2	8	2	2	2	2	3	2	2	2	–	–	–	–	–	2	2	2	3	3	3
11.9	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12.6	2	2	2	3	3	3	3	2	2	–	–	–	–	–	–	–	2	3	2	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
14.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	2	2	2	2	2	–	–	–	–	–	–	–	–	–	–	–
14.9a	–	–	–	–	–	–	–	–	–	–	2	2	2	2	2	2	3	3	3	2	–	2	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–
15.7	2	3	2	3	2	3	2	2	2	2	2	2	3	3	3	3	3	5	3	3	2	2	2	2	2	2	3	3	3	3	3	3	3	2	2	2	2
20.8	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
23.6	2	2	2	2	2	2	2	2	3	3	2	5	5	3	4	3	3	3	3	2	2	5	3	3	3	3	3	3	3	2	–	–	–	–	–	–	–
24.6	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	5	3	8	10	3	2	–	–	–	–	–	–	–	–	–	–	–	–	–
25.7	–	–	–	–	–	–	2	2	2	2	2	2	2	2	2	2	3	3	–	12	10	5	2	2	2	2	2	2	2	2	2	2	–	–	–	–	–
28.8	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	2	2	2	3	3	3	2	2	2	2	2	2	2	2	2
29.8a	–	–	–	–	–	–	2	2	2	2	2	2	2	2	2	2	3	3	2	3	5	3	–	–	–	–	–	–	–	–	–	–	2	2	2	2	2
30.7	2	2	2	2	2	2	2	2	5	5	5	5	5	5	3	3	3	8	5	8	12	8	5	3	–	–	–	–	–	–	–	3	2	2	3	3	2
31.7	–	–	–	–	–	–	–	–	–	3	3	5	5	3	3	5	5	3	8	12	8	3	3	2	2	2	–	–	–	–	–	–	2	2	2	2	2

Table 89a

Coronal observations at Climax, Colorado (6702A), 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
1951																																					
Oct. 7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	3	3	5	5	3	2	2	2	2	-	-	-	-	-	-	-	-	-
8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	3	3	3	5	5	5	3	3	2	2	2	2	2	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	3	3	3	3	3	4	4	3	2	2	-	-	-	-	-	-	-	-	-	-
10.6	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	3	3	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11.9	-	-	-	-	-	-	-	2	2	2	2	2	2	2	3	3	3	2	2	2	2	2	2	2	2	2	-	-	-	-	X	X	X	X	X	X	X
12.6	-	-	-	-	-	-	-	-	-	-	2	2	2	2	3	3	3	3	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
14.0	-	-	-	-	-	-	-	-	2	2	2	2	2	3	3	3	3	3	3	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-
14.9	-	-	-	-	-	-	-	-	2	2	2	2	2	2	3	3	3	3	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.7	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20.8	X	X	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X
23.6	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-
28.8a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	3	4	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	3	3	3	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-

Table 89b

Coronal observations at Climax, Colorado (6702A), west limb

Date GCT	Degrees south of the solar equator																		0°
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	
1951																			
Oct. 7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2
8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	3
9.6	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2
10.6	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2
11.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2
14.0	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2
14.9a	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2
15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2
20.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
23.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2
24.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2
25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
28.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2
29.8 a	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2
30.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2

Date GCT	Degrees north of the solar equator																	
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1951																		
Oct. 7.7	3	3	3	3	3	3	3	3	2	2	2	-	-	-	-	-	-	-
8.6	3	3	3	5	3	3	3	2	2	2	2	-	-	-	-	-	-	-
9.6	3	3	3	3	3	3	3	3	2	2	2	-	-	-	-	-	-	-
10.6	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-
11.9	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-
12.6	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.0	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.9a	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.7	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
20.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
23.6	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
24.6	3	3	3	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-
25.7	2	2	3	3	3	2	2	2	2	-	-	-	-	-	-	-	-	-
28.8	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-
29.8 a	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-
31.7	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-

Tables 90a, 91a, and 92a

Observations at Sacramento Peak, New Mexico, for October 1951, east limb

Data not received in time for publication in this issue.

Tables 90b, 91b, and 92b

Coronal Observations at Sacramento Peak, New Mexico, for October 1951, west limb

Data not received in time for publication in this issue.

Table 93

Zürich Provisional Relative Sunspot Numbers

October 1951

Date	R_Z*	Date	R_Z*
1	41	17	56
2	44	18	58
3	43	19	81
4	38	20	78
5	31	21	43
6	19	22	32
7	16	23	20
8	25	24	10
9	54	25	21
10	71	26	41
11	81	27	55
12	95	28	71
13	72	29	73
14	52	30	72
15	63	31	70
16	67	Mean:	51.4

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

Table 94

American Relative Sunspot Numbers - R_A'*
(New Series)

January - September 1951

1951	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	94	62	36	63	38	17	55	43
2	18	70	48	33	55	38	27	51	45
3	38	52	47	14	42	30	38	49	53
4	26	63	43	28	37	28	44	64	57
5	43	48	33	58	24	67	42	74	64
6	44	31	56	65	19	92	70	87	78
7	43	34	43	79	27	107	85	95	65
8	39	41	21	81	16	118	89	99	98
9	53	62	22	77	29	135	90	113	114
10	39	84	27	92	67	111	95	112	113
11	53	80	35	91	87	114	87	101	117
12	29	78	41	85	121	123	69	98	109
13	16	52	38	82	134	120	77	74	121
14	18	63	33	92	137	117	71	70	115
15	14	69	34	98	153	108	71	67	111
16	19	52	33	101	161	125	47	61	102
17	30	40	35	114	179	129	43	45	97
18	42	33	31	120	185	125	34	54	115
19	54	32	37	111	178	124	32	61	116
20	50	35	39	114	157	99	31	49	90
21	43	45	43	145	156	109	19	45	107
22	52	41	57	140	139	108	36	47	125
23	72	48	71	130	113	80	72	40	112
24	68	53	105	119	101	68	74	28	95
25	73	56	96	98	95	60	67	8	77
26	104	53	83	103	95	54	66	12	62
27	129	48	93	117	85	45	67	0	62
28	101	54	71	104	74	44	81	9	42
29	95		59	80	36	29	47	11	20
30	119		49	80	40	18	56	16	30
31	121		34		37		62	30	
Mean	53.8	54.0	49.0	89.6	91.7	85.4	58.3	55.6	85.2

*Combination of reports from 23 observers; see page 9.

Table 95

Solar Flares, September 1951

Observatory	Date 1951	Time Observed: Beginning (GCT)	Time Observed: Ending (GCT)	Duration (Min)	Area (Mill) (of) (Visible) (Hemisph)	Position: Latitude (Deg)	Position: Longitude (Deg)	Time of Maximum (GCT)	Int. of Maximum	Relative Area of Maximum (Tenths)	Importance	SID Observed
Sac.Peak	Sep. 1	1410	1500	50	200	N12	E71	1417	14	2	1	
McMath	" 3	1320				N09	E37	--			2	Yes
Sac.Peak	" 3	1330B	1600	App.150	349	N11	E32	1339	18	1	2	"
"	" 3	2330	2408A	" 40	174	N11	E32	2408Q	15	7	1	
Schauins.	" 4	0650Q	0710	20	--	N10	E10	0700			-	
McMath	" 5	1255				N09	E09	--			1	
Sac.Peak	" 5	1710	1740	30	175	N01	E05	1720	15	5	1	Yes
McMath	" 5	1715				N09	E09	--			1	"
Sac.Peak	" 5	2255	2310	15	93	N05	W02	2300	11	4	1 -	
Wendelst.	" 6	1043B	1051A	App. 20	242	N11	W02	1045			1	
McMath	" 6	2009				N10	W15	--			1 -	
"	" 6	2040				N11	W05	--			2	
Sac.Peak	" 9	1630B	1653	App. 25	70	N16	E71	1635	9	4	1 -	
"	" 9	1634	1654	20	35	N16	E71	1646	10	3	1 -	
"	" 9	2002B	2053	App. 55	174	N12	E71	2005	15	5	1	Yes
Sac.Peak	" 12	1840	1940	60	20	S02	E31	1850	8	2	1 -	
Kanzel.	" 13	0550	0610	20	--	S13	E43	--			1	
Sac.Peak	" 14	1330	1510	100	197	S14	E25	1356	20	7	1	Yes
McMath	" 14	1345				S18	E13	--			1 +	"
"	" 14	1400				S15	E25	--			2	"
Sac.Peak	" 14	1625B	1634A	--	23	N03	E14	1634A	8	1	1 -	
Schauins.	" 15	0650				N10	E70	--			-	
Sac.Peak	" 15	1500	1535	35	219	N06	W03	1510	14	1	1	Yes
McMath	" 15	1510				N06	W10	--			2	"
Sac.Peak	" 15	1720	1810A	App. 55	163	N07	W15	1738	10	3	1	
Sac.Peak	" 16	2035	2103	28	46	N09	W32	2045	9	6	1 -	
"	" 16	2135	2230	55	116	N05	W22	2155	8	3	1	
"	" 16	2315	2400	45	151	N06	W22	2326	13	4	1	
"	" 17	1545	1605	20	58	N06	W32	1550	8	3	1 -	
"	" 17	2015	2050	35	52	N06	W32	2029	8	4	1 -	
Sac.Peak	" 17	2050	2150	60	219	N06	W32	2103	15	3	1	Yes
McMath	" 17	2100				N08	W35	--			2	"
Sac.Peak	" 18	1635	1805	90	23	N07	E76	1733	11	8	1 -	
"	" 18	1810	1849	39	58	N05	W49	1833	10	6	1 -	
McMath	" 18	1815				N07	W51	--			1	
Sac.Peak	" 18	2045	2112	27	20	N05	W49	2055	9	4	1 -	
"	" 18	2305	2330A	App. 30	140	N12	E71	2317	12	5	1	
"	" 19	1505	1540	35	40	N08	W58	1513	11	2	1 -	Yes
"	" 19	1625	1650	25	57	N08	E03	1637	8	3	1 -	
"	" 19	2155	2250	55	69	N08	E58	2205	9	3	1 -	
Sac.Peak	" 20	1425	1515	50	52	N14	E32	1437	7	8	1 -	
"	" 20	1525	1605	40	69	N09	W03	1542	9	2	1 -	Yes
McMath	" 20	1540				N11	W04	--			1	"
Schauins.	" 21	0630				N10	E20	--			-	
"	" 21	0640				N10	W80	--			-	
Sac.Peak	" 21	1455	1514	19	15	N16	W21	1500	8	6	1 -	
"	" 22	1340	1405	25	52	N10	E01	1349	8	2	1 -	
"	" 22	1425	1505	40	57	N11	W32	1435	9	2	1 -	
"	" 22	1630	1710	40	34	S05	W56	1646	8	6	1 -	
"	" 22	1955	2005	10	46	N11	W32	2001	7	1	1 -	
McMath	" 23	1635				N08	E02	--			1	
Sac.Peak	" 23	1850	1910	20	140	N08	W03	1901	9	2	1	
McMath	" 23	1852				N08	E02	--			1	
Sac.Peak	" 23	1930	2140	130	29	S08	W74	2104	8	3	1 -	
"	" 23	2045	2155	70	128	N12	W49	2125	17	8	1	
McMath	" 23	2045				N12	W45	--			2	
Sac.Peak	" 25	1735	1759	24	46	N06	W22	1746	8	4	1 -	
"	" 27	1805	1830	25	35	N02	W70	1817	9	9	1 -	
"	" 28	1655	1735	40	46	N07	W70	1704	9	6	1 -	

Sac.Peak = Sacramento Peak
Schauins.= Schauinsland
Wendelst = Wendelstein
Kanzel. = Kanzelhohe

B Flare started before given time
A " ended after " "
Q Time reported as questionable

Table 96

Indices of Geomagnetic Activity for September 1951

Preliminary values of mean K-indices, Kw, from 38 observatories;
Preliminary values of international character-figures, C;
Geomagnetic planetary three-hour-range indices, Kp;
Magnetically selected quiet and disturbed days

Gr. Day 1951	Values Kw	Sum	C	Values Kp	Sum	Final Sel. Days
1	2.1 1.6 1.3 1.2 1.9 1.4 0.9 2.6	13.0	0.3	3-2-1+1+ 2o1+1-3-	14-	Five
2	2.2 1.4 1.1 1.1 1.2 1.4 1.0 1.6	11.0	0.1	2+2-1o1+ 1+1+1o1+	11+	Quiet
3	2.2 1.6 1.9 2.4 2.5 1.2 1.2 2.8	15.8	0.3	3-2o3-3- 3-1o1+3o	18o	
4	2.1 2.7 1.4 1.1 2.1 1.9 2.0 2.2	15.5	0.3	2o3o2o1+ 2+2-2-2+	16+	1
5	2.4 1.3 1.7 2.3 1.8 1.7 3.7 3.9	18.8	0.8	3-1+2o3- 2-1+5-4+	21-	2
						3
6	3.8 1.9 3.7 3.4 2.4 2.0 3.7 3.1	24.0	1.0	4+2o4o4- 3-2o4+3o	26o	4
7	2.7 1.0 1.1 2.4 2.0 2.3 3.3 2.1	16.9	0.8	3-1o1o3- 2o2+3+2o	17o	30
8	1.4 1.9 2.1 1.5 2.6 3.0 2.6 2.2	17.3	0.6	1+3-3-2- 3-3o2+2o	18+	
9	2.7 2.6 1.6 3.0 3.8 3.2 2.9 3.0	22.8	0.9	3+3o2o3+ 4+4-3o4-	26+	
10	4.1 3.8 4.4 4.2 4.3 3.2 2.9 1.6	28.5	1.2	5-4+5+5o 5o4-3o1+	32+	
11	3.4 2.1 3.0 2.6 3.5 3.5 4.7 5.4	28.2	1.4	4-3-4+3- 4o4+5o7o	34-	Five
12	3.8 3.5 3.5 3.5 4.1 3.8 3.3 4.8	30.3	1.3	5-4o4+4o 5-4+3+5+	35-	Dist.
13	4.8 4.2 3.6 2.6 4.1 4.2 4.2 4.9	32.6	1.4	6o5o4+3- 4+5-5-6+	38o	
14	4.3 4.0 3.7 2.9 3.5 2.3 2.8 2.7	26.2	1.1	5o5o5-4- 4o2+3o3-	30+	16
15	3.7 3.4 4.5 3.5 4.6 4.2 3.3 3.3	30.5	1.3	4+4+6o4+ 5+5o4-4-	37-	20
						21
16	3.9 5.2 4.5 5.3 5.2 5.2 5.0 5.8	40.1	1.7	5-6+6-6+ 6+6+6-7-	48o	22
17	4.8 3.8 3.8 4.1 4.4 4.3 2.8 5.1	33.1	1.5	6-5o5o5o 5o5o3+6-	40-	25
18	4.1 3.8 2.6 3.3 2.3 4.3 4.0 2.8	27.2	1.1	5-5-3o4- 2+5o5-3o	31o	
19	2.2 1.5 3.2 3.1 4.6 6.6 5.6 4.3	31.1	1.7	3o2+4-4- 5+8-7o5-	37+	
20	4.0 4.8 5.4 5.6 5.3 5.2 5.6 5.2	41.1	1.7	5o6o7+7+ 6+6+7o6+	52-	Ten
						Quiet
21	5.2 5.0 4.9 5.5 4.7 4.5 4.6 4.9	39.3	1.7	6+6+6+7o 6o6-6-6o	49+	
22	4.8 5.2 4.7 4.9 4.7 4.2 5.6 5.1	39.2	1.6	6-7o6o6+ 6-5o7-6o	48+	1
23	4.7 5.0 4.2 3.5 4.0 3.8 4.6 4.2	34.0	1.5	6o6o5+4+ 4+4+5+5-	40+	2
24	4.4 4.3 3.8 4.2 4.5 3.1 3.6 3.1	31.0	1.3	5o6-5o5o 5+4-4o3+	37o	3
25	3.1 3.5 3.6 4.5 5.8 6.5 6.9 7.1	41.0	1.8	4-5-5-5+ 7+8-8o8+	50-	4
						5
26	6.8 6.2 3.4 3.1 2.3 2.9 2.1 2.5	29.3	1.6	9-8-4+4- 3-3+2+3-	35+	7
27	5.0 5.1 5.3 4.9 4.1 2.8 2.9 3.3	33.4	1.6	6-6+6o5+ 4+3+3+3+	38-	8
28	4.6 1.7 1.4 1.0 1.4 1.1 0.7 2.4	14.3	0.6	6-2+2-1+ 1+1o1-3-	17-	9
29	3.0 1.6 2.1 1.6 3.9 5.2 4.0 3.2	24.6	1.1	4-2+3-1+ 4o5+4o3+	27-	28
30	3.1 2.7 2.6 2.0 2.0 1.0 1.0 1.0	15.4	0.4	4-3+3o2+ 2o1o1o1-	17o	30
Mean	3.65 3.14 3.45 3.38	3.36	1.12			
	3.21 3.14 3.33 3.54					

Table 97

Sudden Ionosphere Disturbances Observed at Washington, D. C.

October 1951

1951 Day	GCT		Location of transmitters	Relative intensity at minimum*
	Beginning	End		
October 19	1732	1820	Ohio, D. C., Colombia, Mexico	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.

Table 98

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

1951 Day	GCT Beginning	GCT End	Receiving station	Location of transmitters
September 29	1710	1750	Somerton	Canada, New York

Table 99

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

1951 Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
September					
3	1224	1400	München**, Lindau***, Wiesbaden#	0.1	
7	1052	1200	München**, Lindau***, Wiesbaden#	0.0	
9	0645	0655	München**, Wiesbaden#	0.1	
15	1505	1525	München**, Lindau***, Wiesbaden#	0.1	Terr.mag.pulse 1505-1545

*Ratio of received field intensity during SID to average field intensity before and after, for station München, 6160 kilocycles, 400 kilometers distant.

**Station München, 6160 kilocycles.

***Station Lindau, 1850 kilocycles, pulse, transmitter and receiver at Lindau.

#Station Wiesbaden, 2985 kilocycles.

Table 100

Sudden Ionosphere Disturbances Reported by RCA Communications, Inc., as Observed at Riverhead, New York

1951 Day	GCT		Location of transmitters
	Beginning	End	
October 28	1720	1815	Argentina, England, Italy, Panama, Tangier

Table 101

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

1951 Day	GCT		Location of transmitters	Other phenomena
	Beginning	End		
September 15	1510	1545	Bolivia, Brazil, Chile, Cuba, Denmark, France, Germany, New York, Peru, Portugal, Switzerland, Venezuela	Terr.mag.puls 1510-1530 Solar flare** 1500 Solar flare** 1510

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

**Time of observation at Sacramento Peak, New Mexico.

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

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.

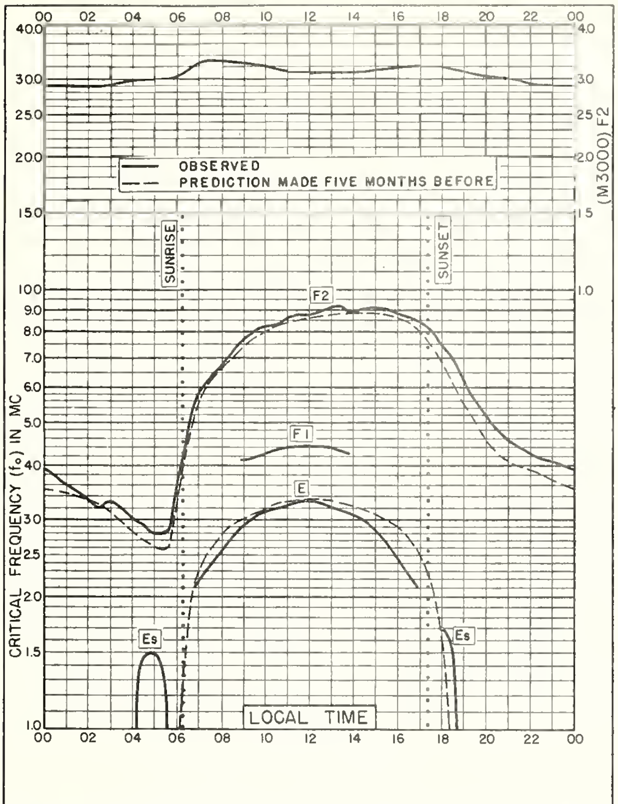

Fig. I. WASHINGTON, D.C.
38.7°N, 77.1°W OCTOBER 1951

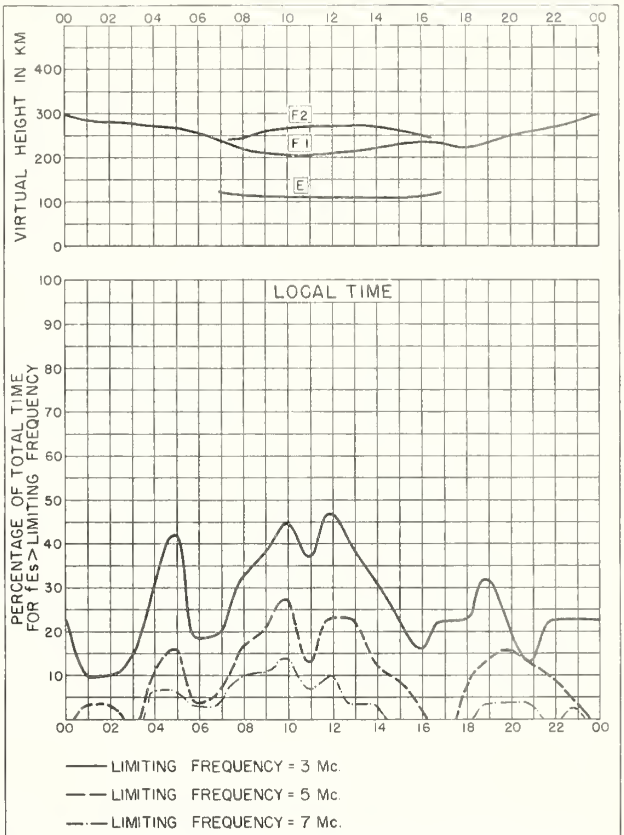

Fig. 2. WASHINGTON, D.C. OCTOBER 1951

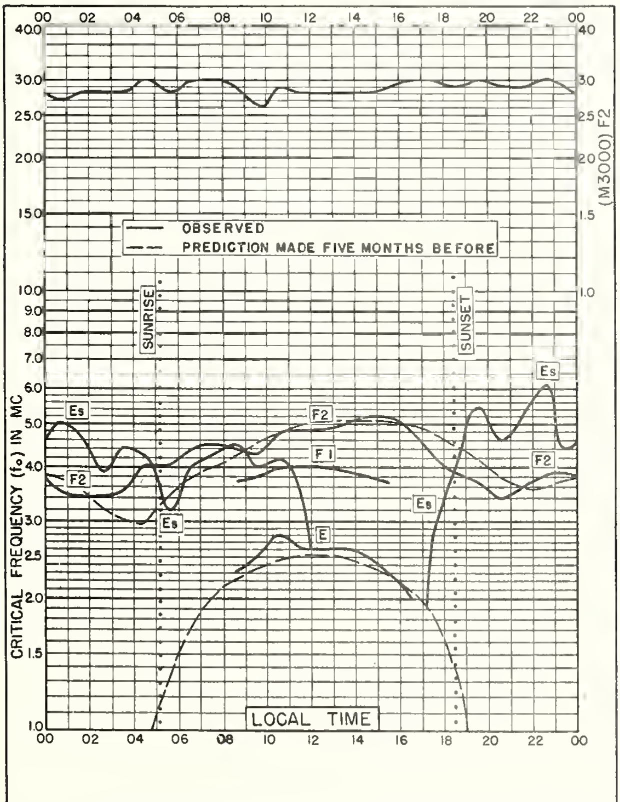

Fig. 3. POINT BARROW, ALASKA
71.3°N, 156.8°W SEPTEMBER 1951

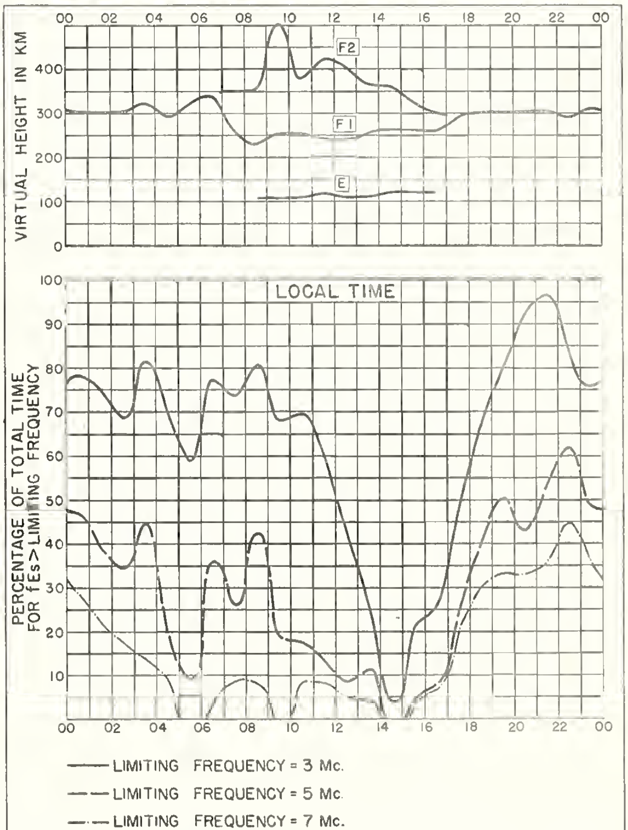

Fig. 4. POINT BARROW, ALASKA SEPTEMBER 1951

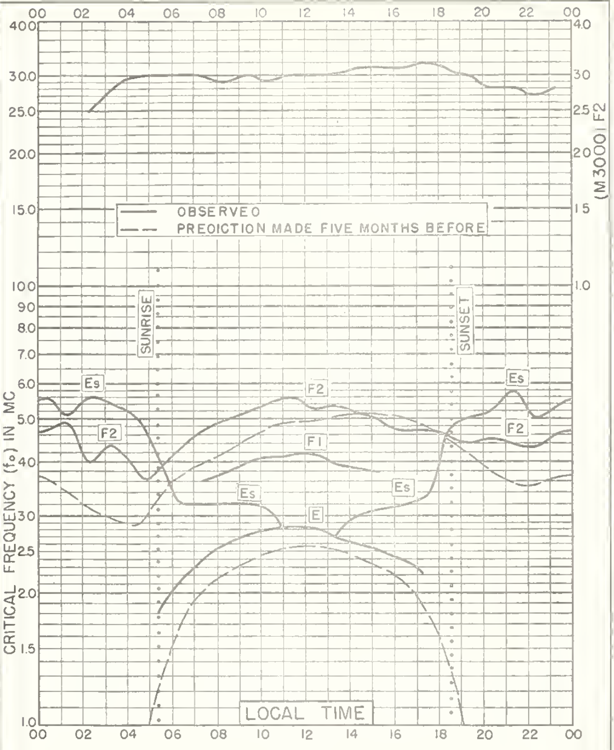

Fig. 5 TROMSO, NORWAY
69.7° N, 19.0° E SEPTEMBER 1951

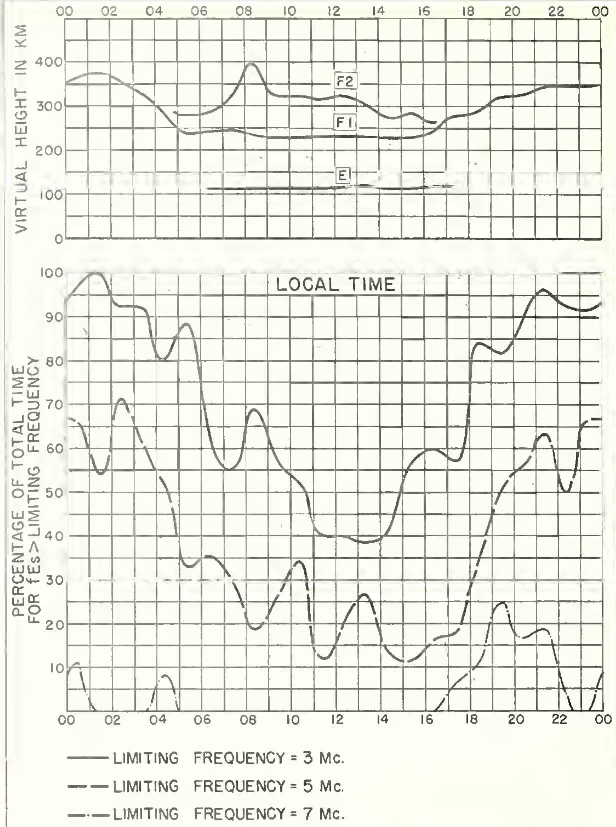

Fig. 6 TROMSO, NORWAY SEPTEMBER 1951

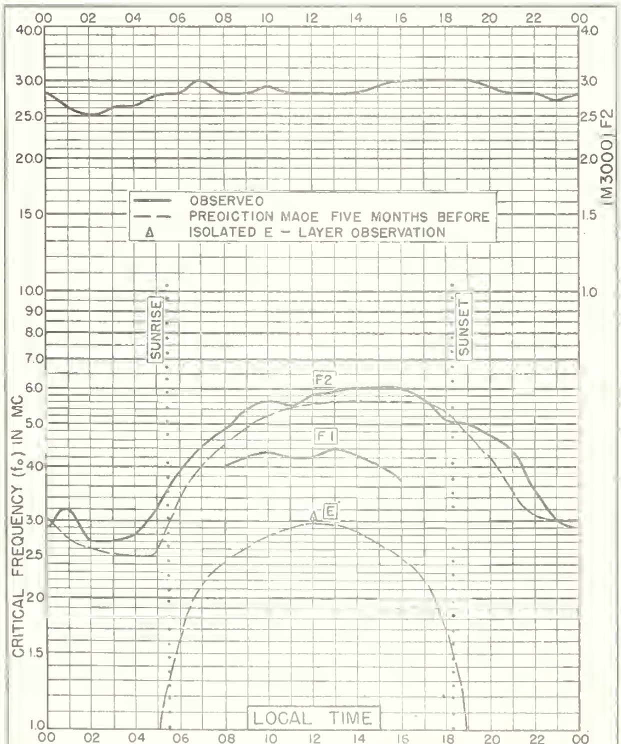

Fig. 7 ANCHORAGE, ALASKA
61.2°N, 149.9°W SEPTEMBER 1951

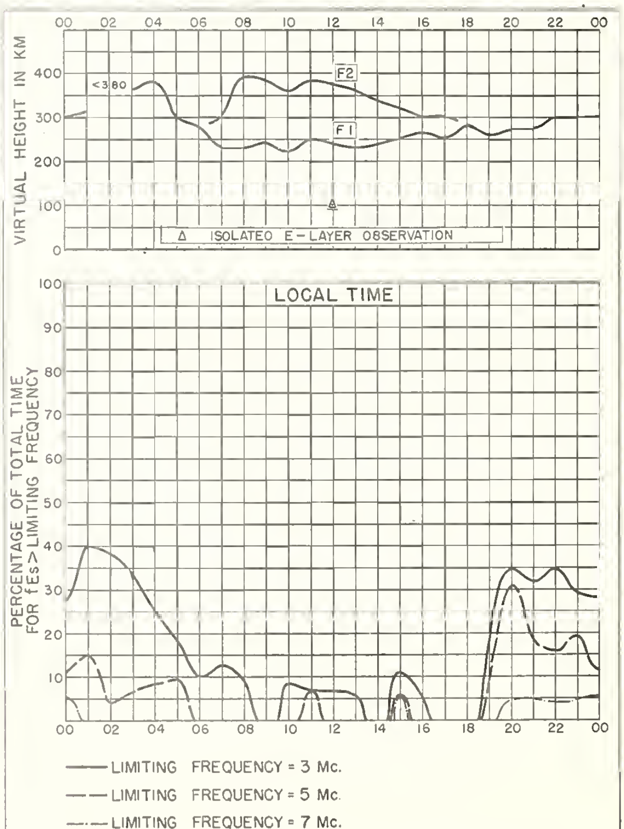

Fig. 8 ANCHORAGE, ALASKA SEPTEMBER 1951

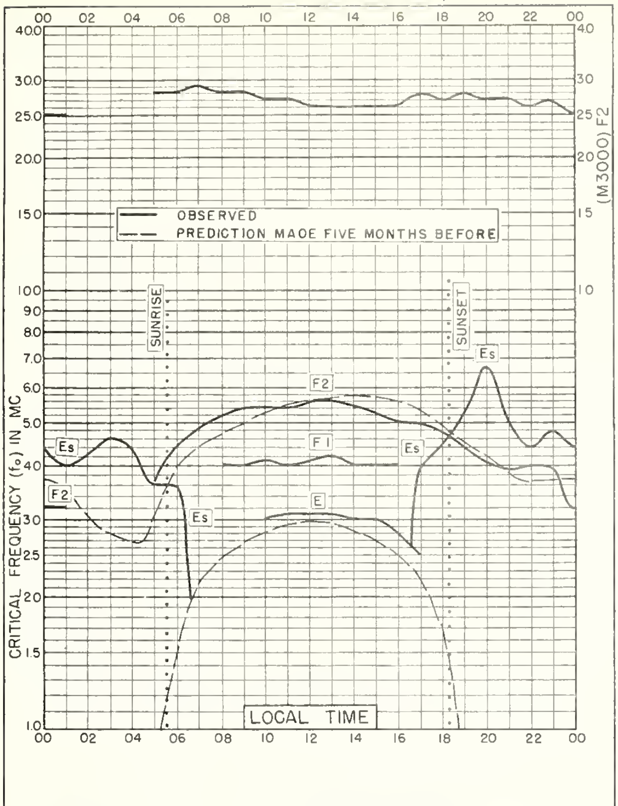

Fig 9. NARSARSSUAK, GREENLAND
61.2° N, 45.4° W SEPTEMBER 1951

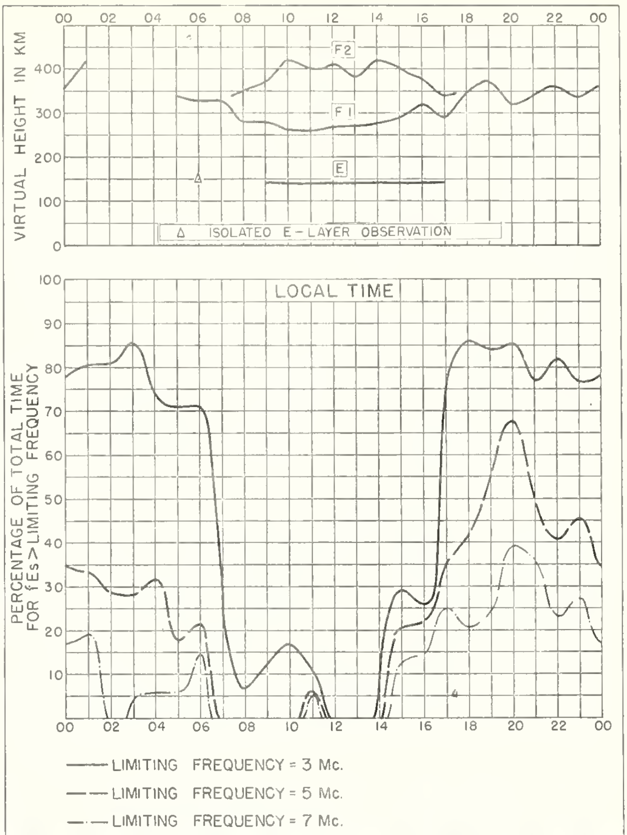

Fig. 10. NARSARSSUAK, GREENLAND SEPTEMBER 1951

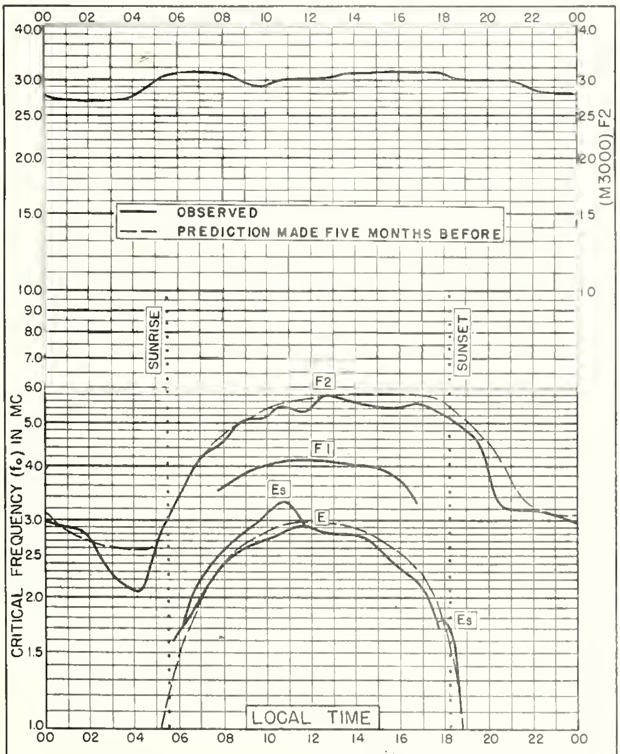

Fig. 11. OSLO, NORWAY
60.0°N, 11.0°E SEPTEMBER 1951

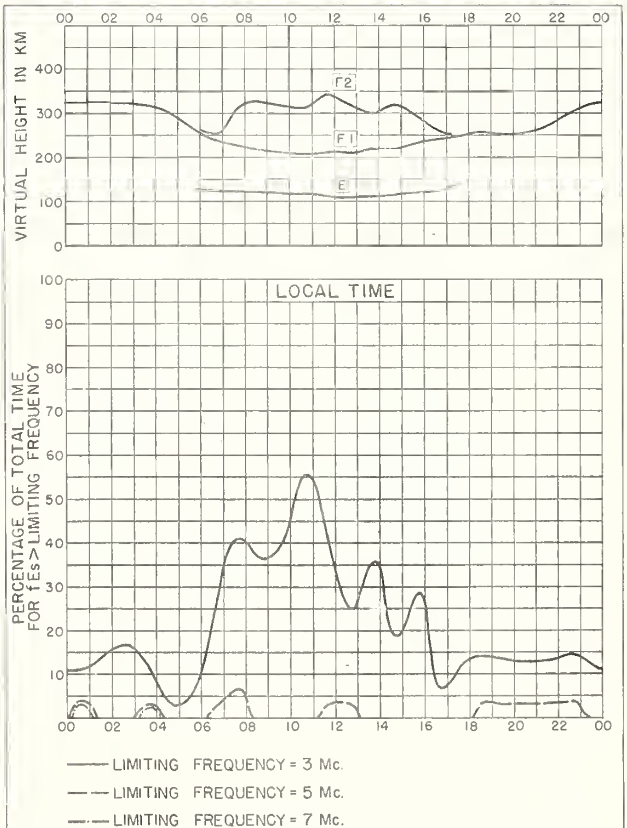

Fig. 12. OSLO, NORWAY SEPTEMBER 1951

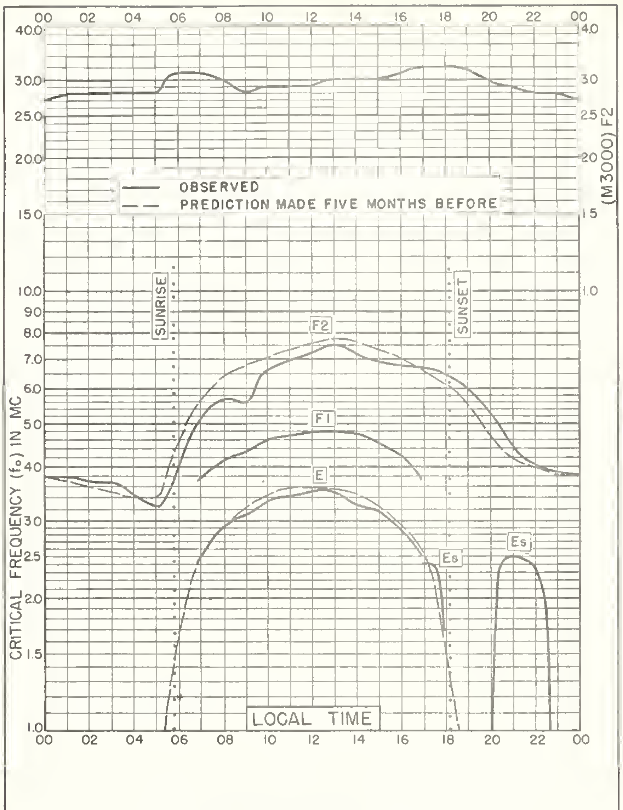

Fig. 13. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W SEPTEMBER 1951

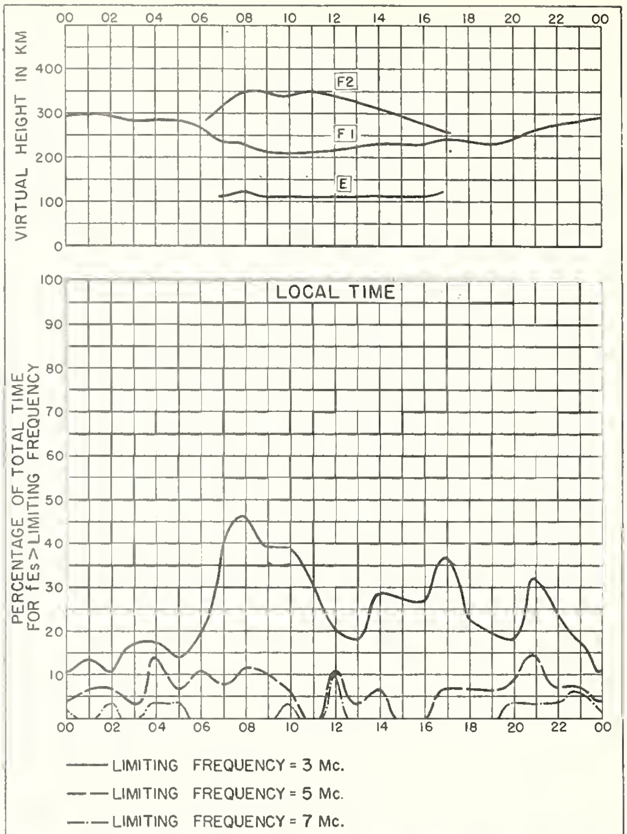

Fig. 14. SAN FRANCISCO, CALIFORNIA SEPTEMBER 1951

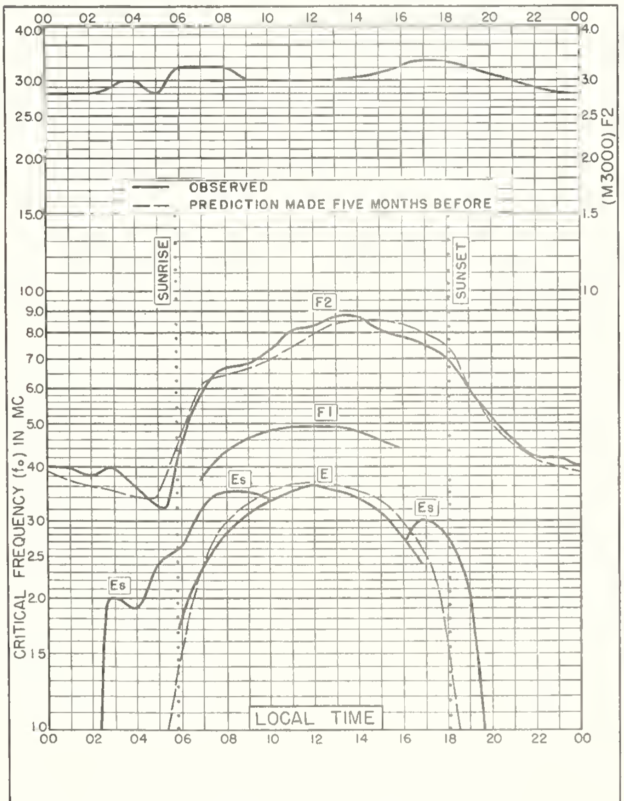

Fig. 15. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W SEPTEMBER 1951

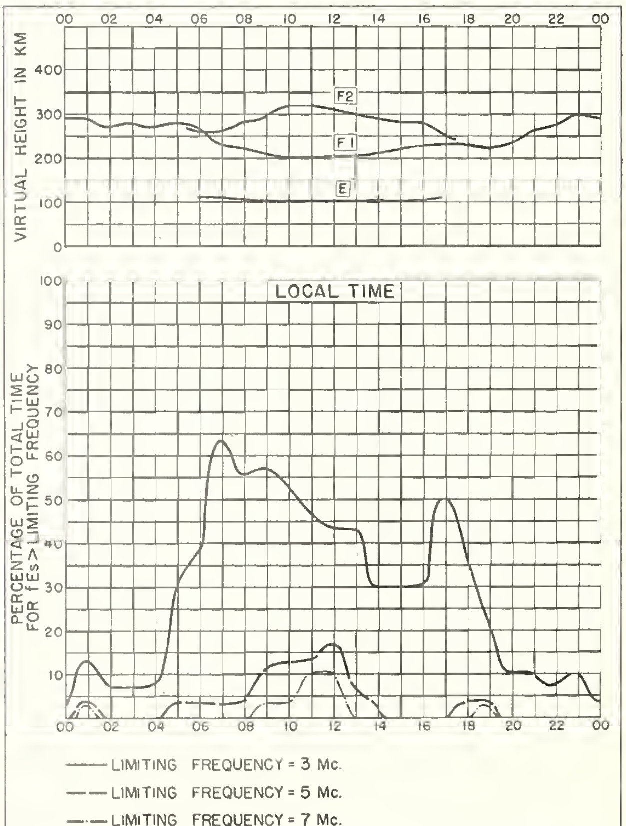

Fig. 16. WHITE SANDS, NEW MEXICO SEPTEMBER 1951

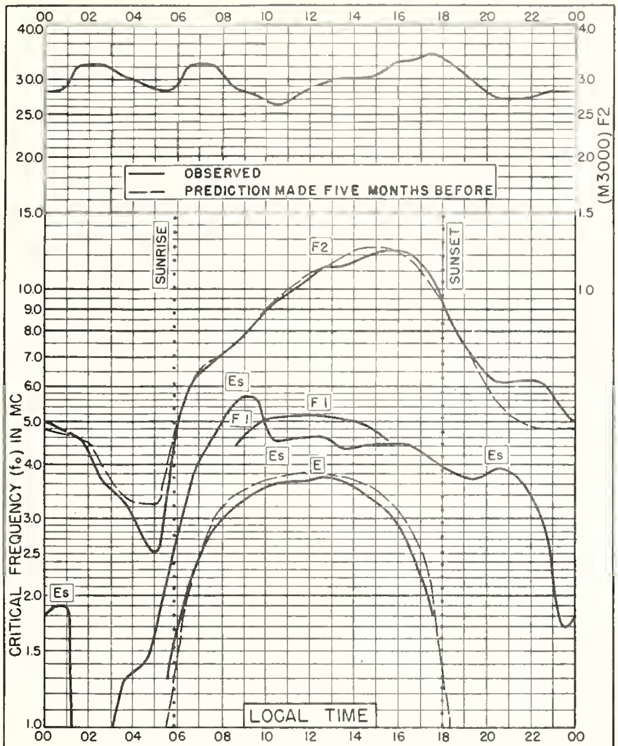

Fig. 17. MAUI, HAWAII
20.8°N, 156.5°W SEPTEMBER 1951

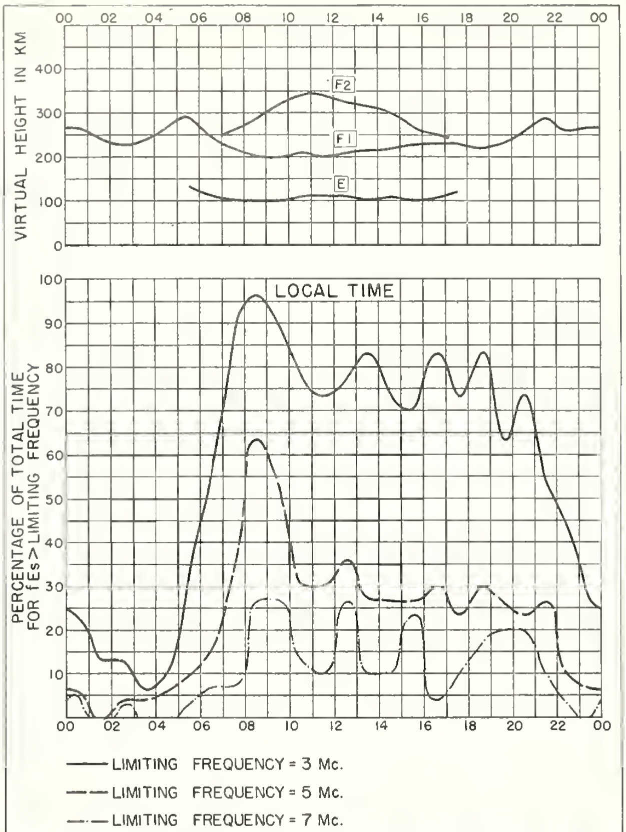

Fig. 18. MAUI, HAWAII SEPTEMBER 1951

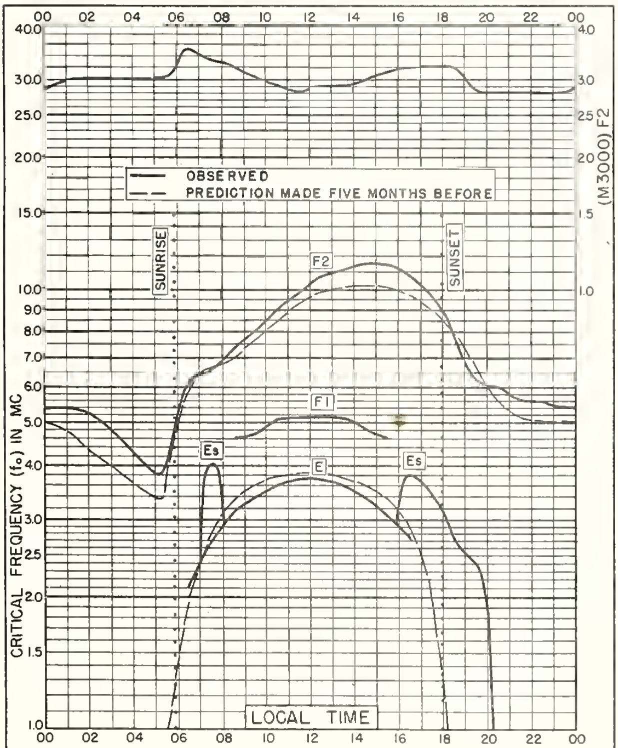

Fig. 19. PUERTO RICO, W.I.
18.5°N, 67.2°W SEPTEMBER 1951

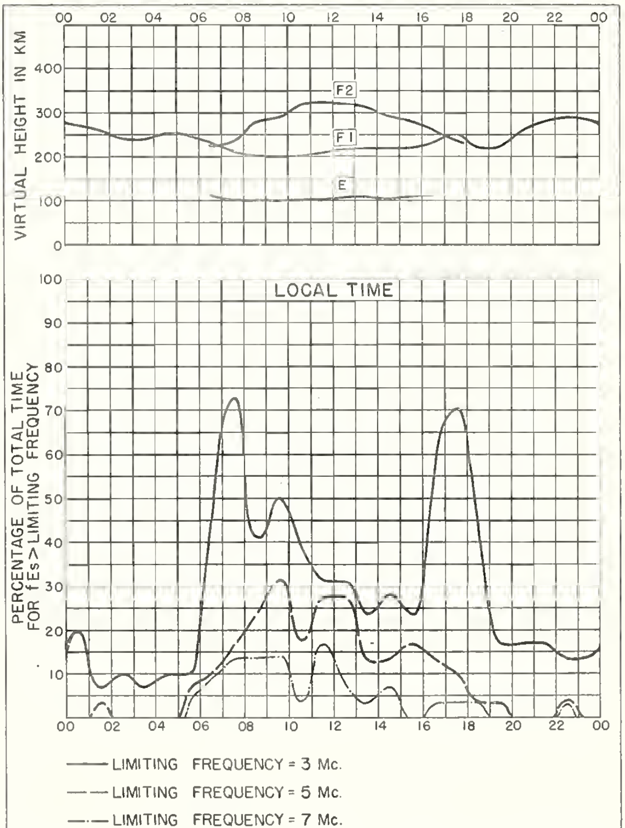

Fig. 20. PUERTO RICO, W.I. SEPTEMBER 1951

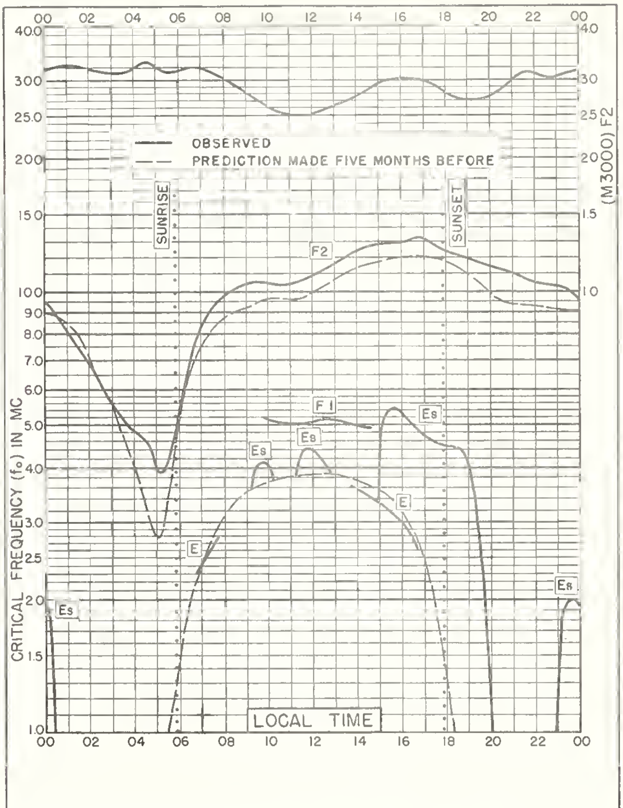

Fig. 21. GUAM I.
13.6°N 144.9°E SEPTEMBER 1951

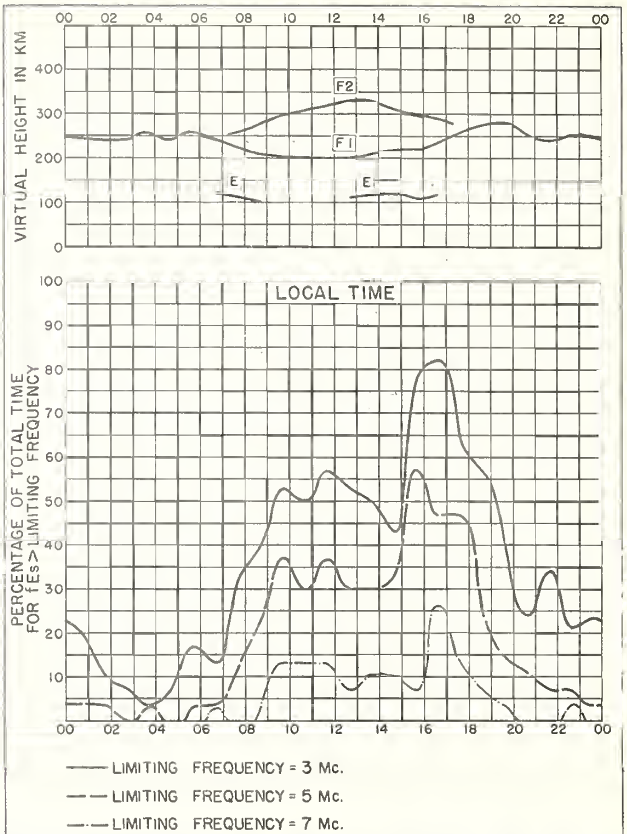

Fig. 22. GUAM I. SEPTEMBER 1951

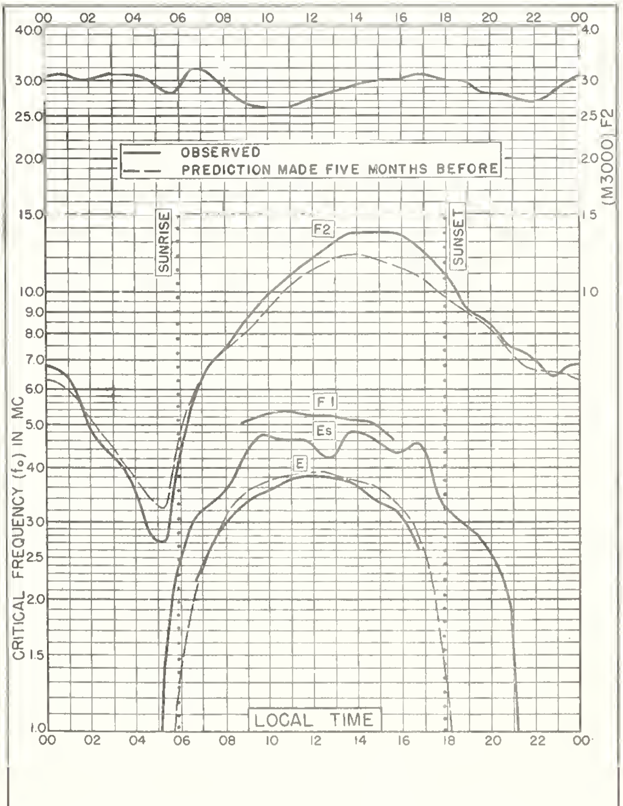

Fig. 23. PANAMA CANAL ZONE
9.4°N, 79.9°W SEPTEMBER 1951

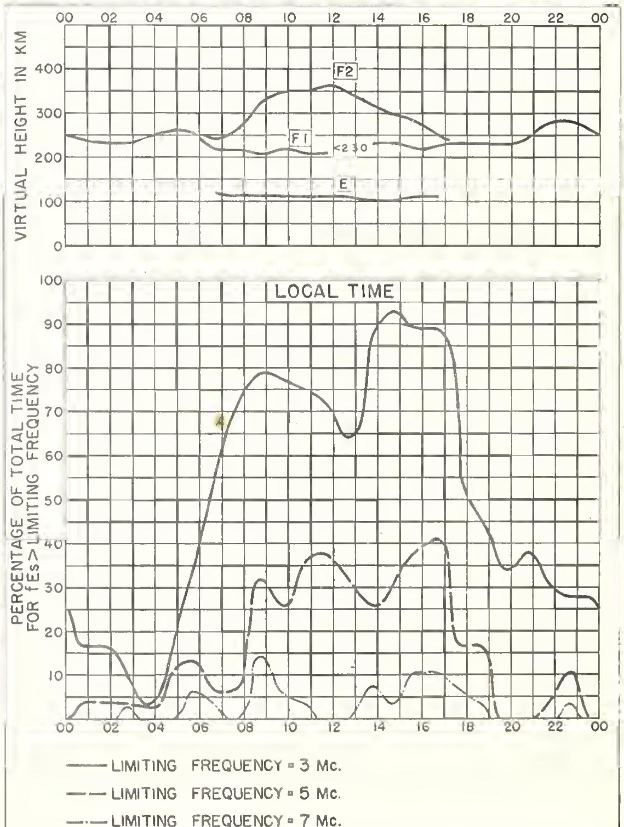

Fig. 24. PANAMA CANAL ZONE SEPTEMBER 1951

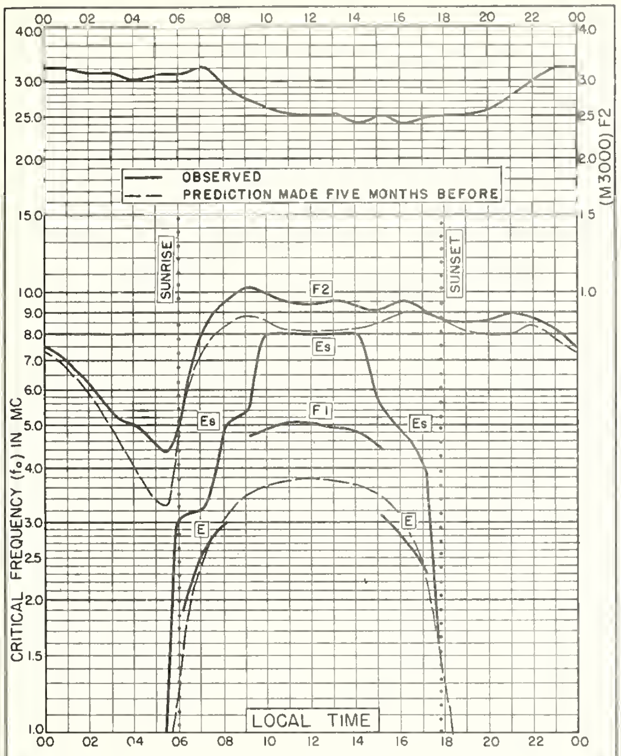

Fig. 25. HUANCAYO, PERU
12.0° S, 75.3° W SEPTEMBER 1951

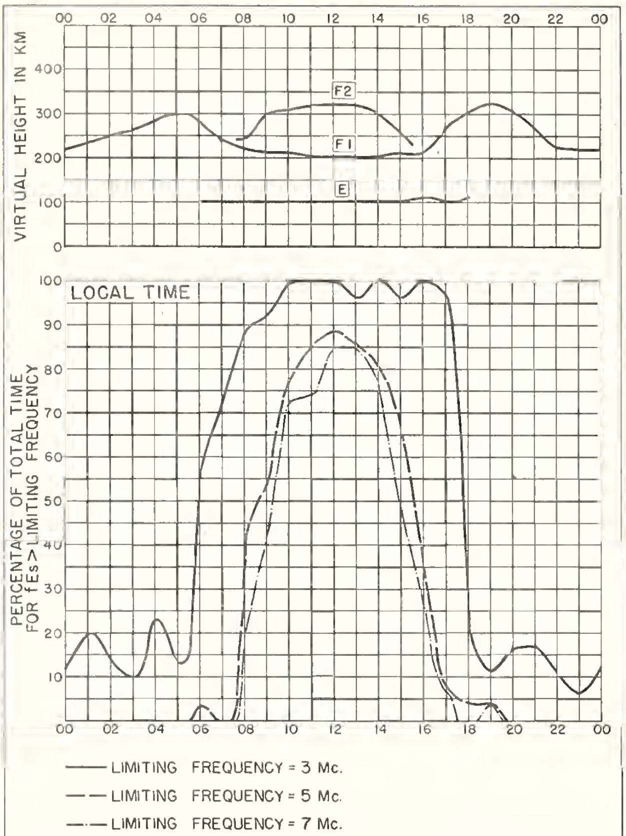

Fig. 26 HUANCAYO, PERU SEPTEMBER 1951

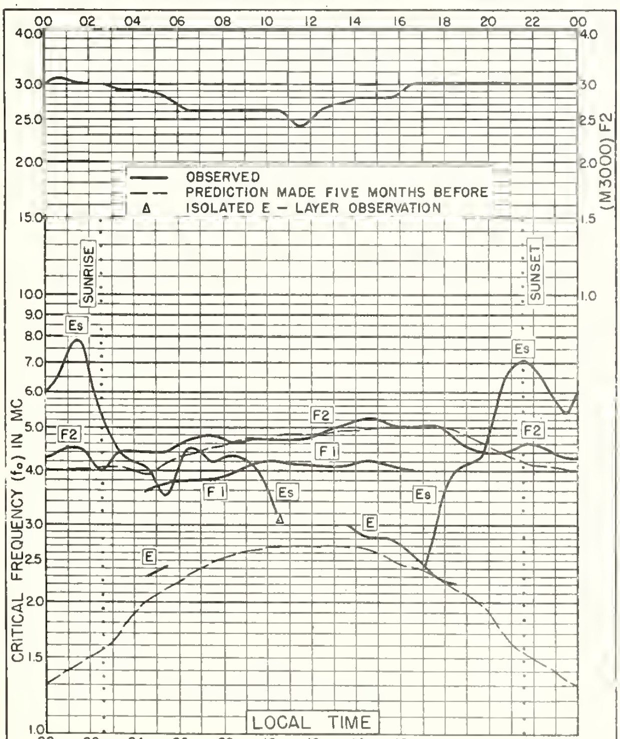

Fig. 27. POINT BARROW, ALASKA
71.3°N, 156.8°W AUGUST 1951

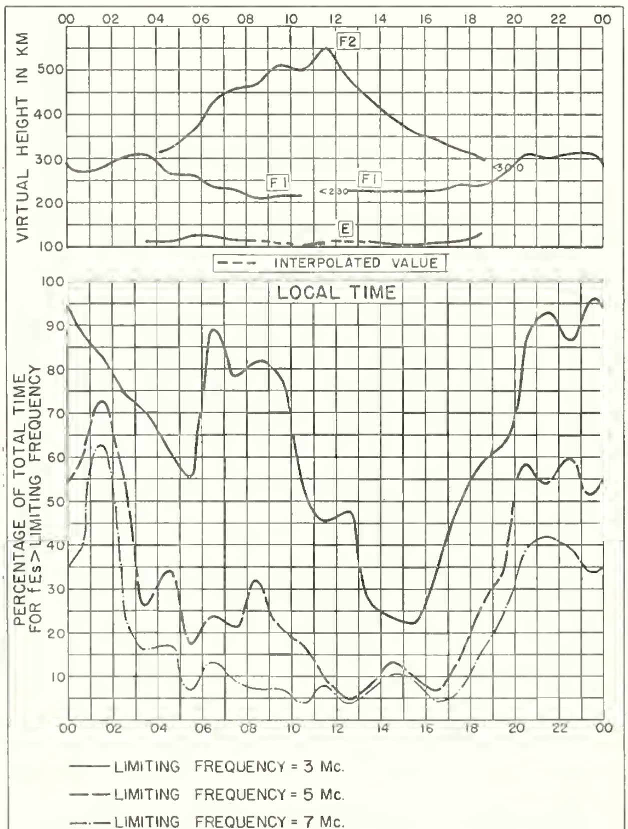

Fig. 28. POINT BARROW, ALASKA AUGUST 1951

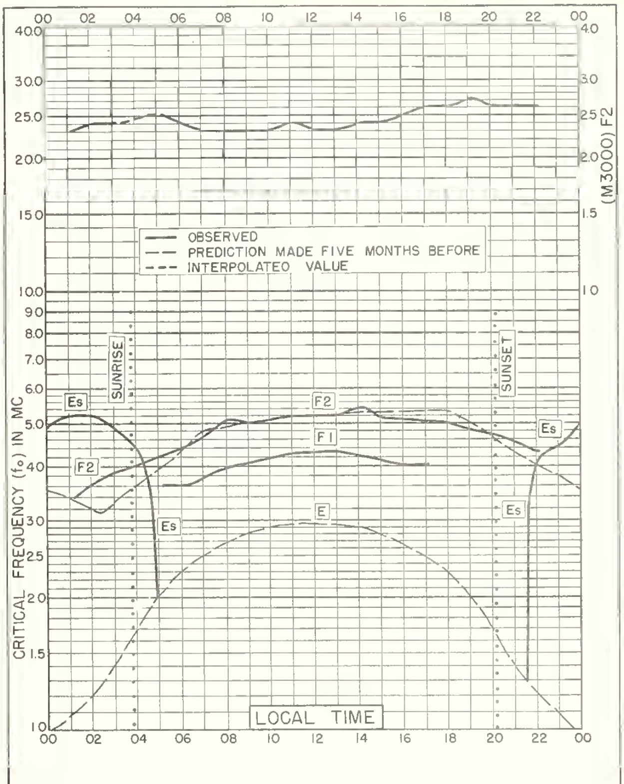

Fig. 29. FAIRBANKS, ALASKA
64.9°N, 147.8°W AUGUST 1951

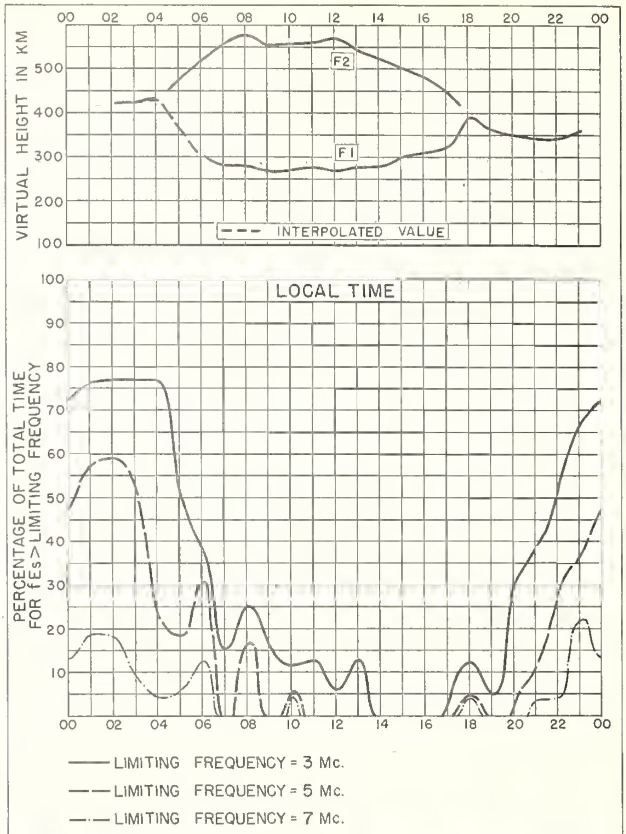

Fig. 30. FAIRBANKS, ALASKA AUGUST 1951

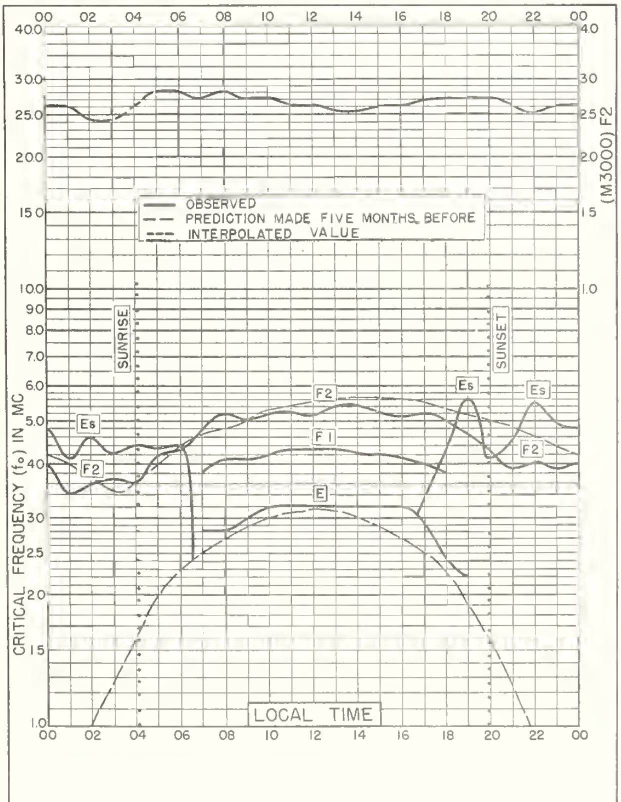

Fig. 31. NARSARSSUAK, GREENLAND
61.2°N, 45.4°W AUGUST 1951

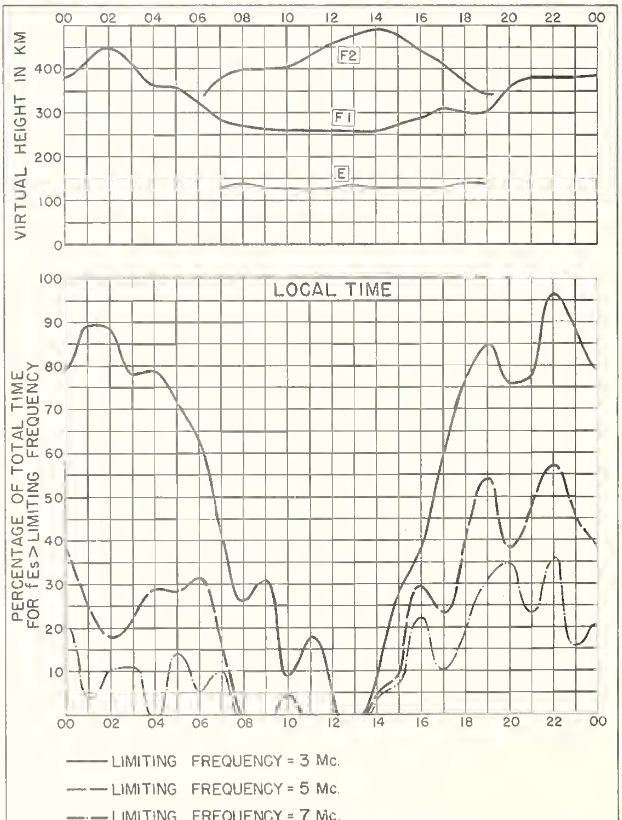

Fig. 32. NARSARSSUAK, GREENLAND AUGUST 1951

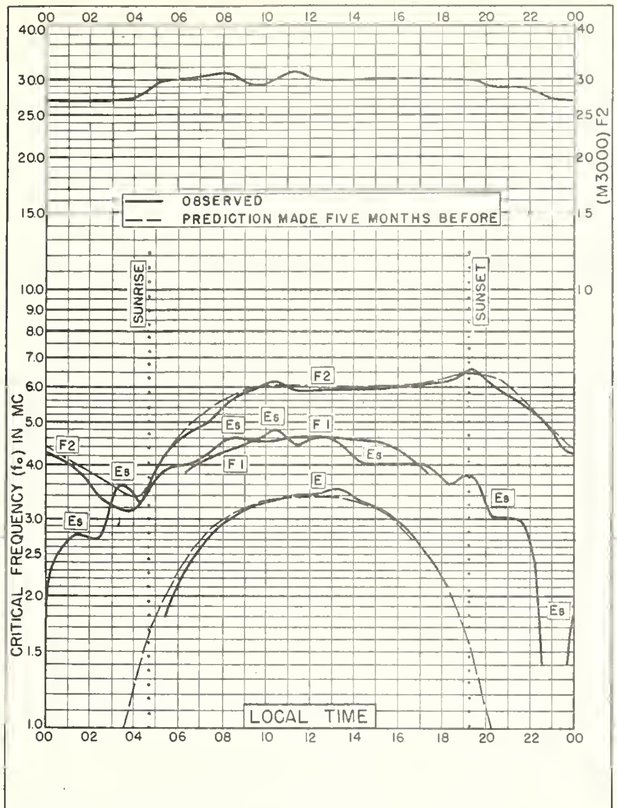

Fig. 33. De BILT, HOLLAND
52.1°N, 5.2°E AUGUST 1951

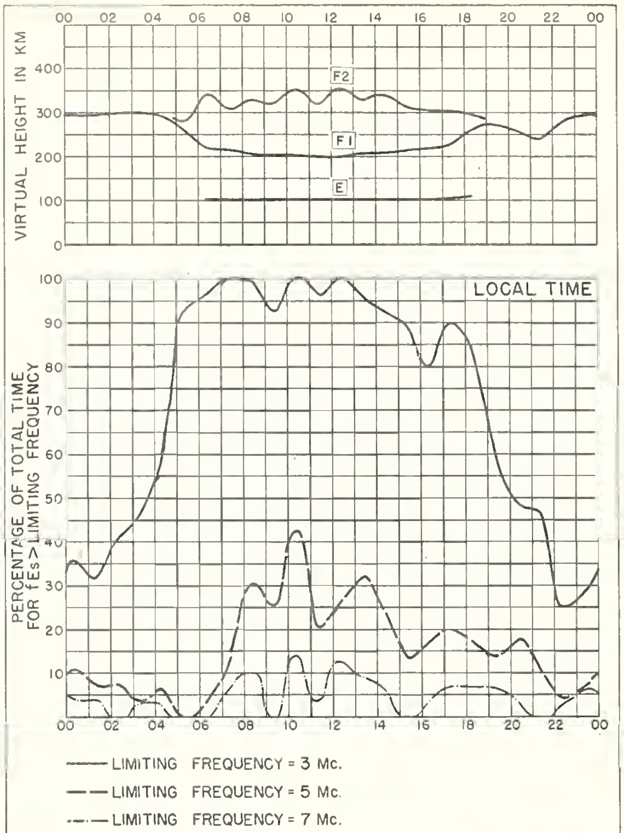

Fig. 34. De BILT, HOLLAND AUGUST 1951

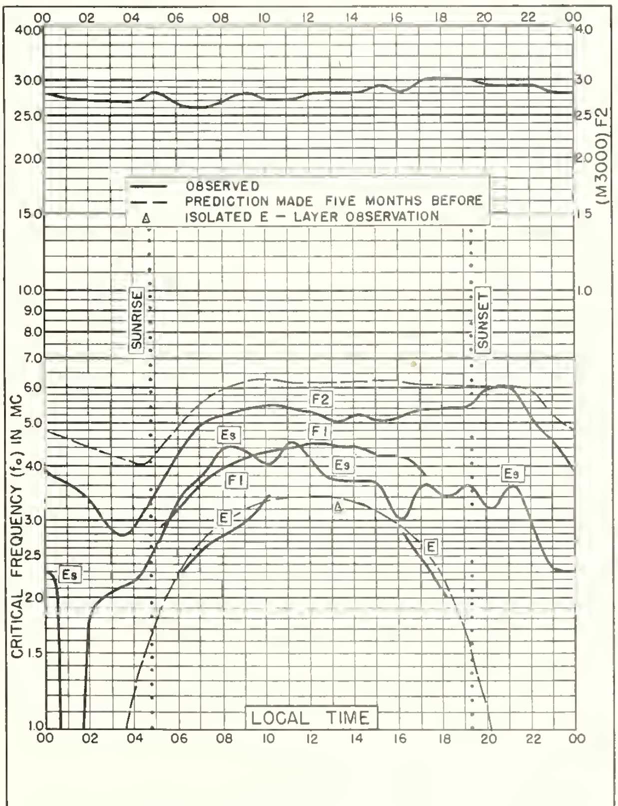

Fig. 35. ADAK, ALASKA
51.9°N, 176.6°W AUGUST 1951

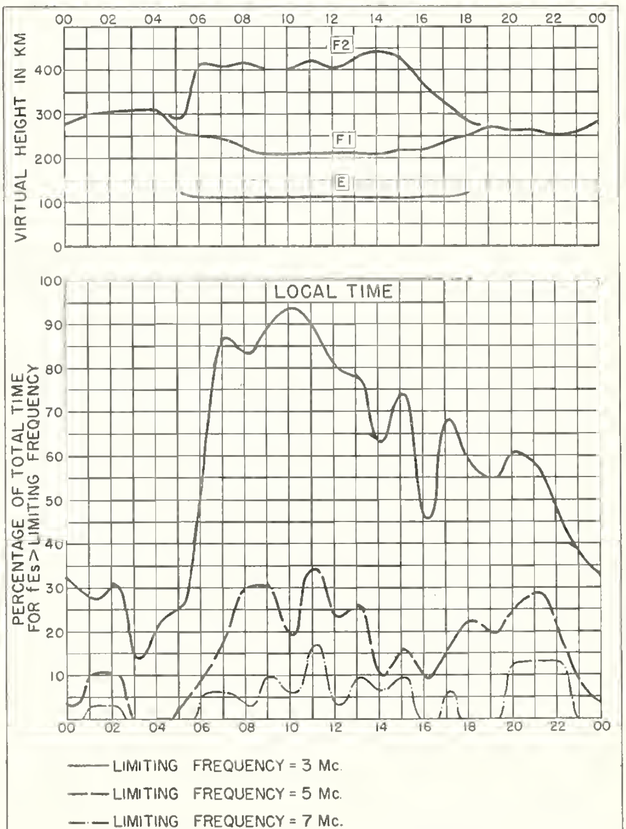

Fig. 36. ADAK, ALASKA AUGUST 1951

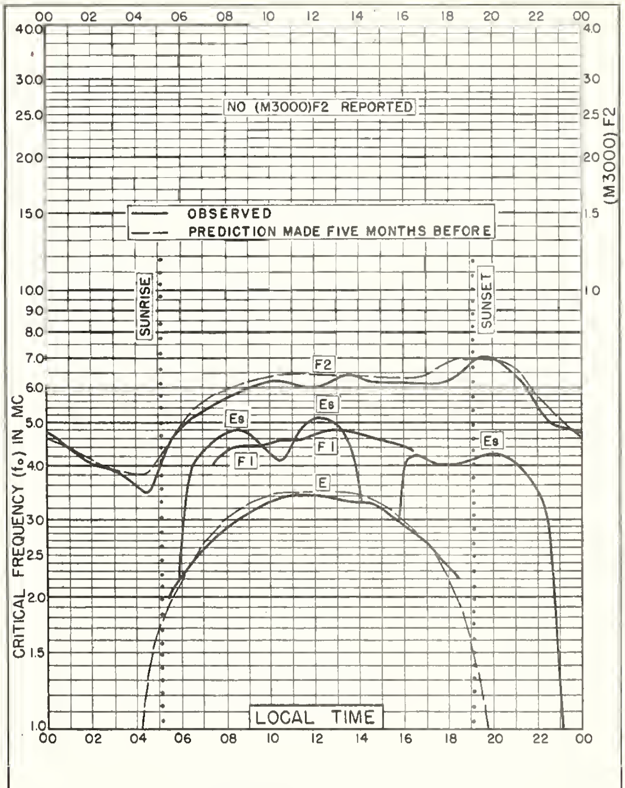

Fig. 37. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E AUGUST 1951

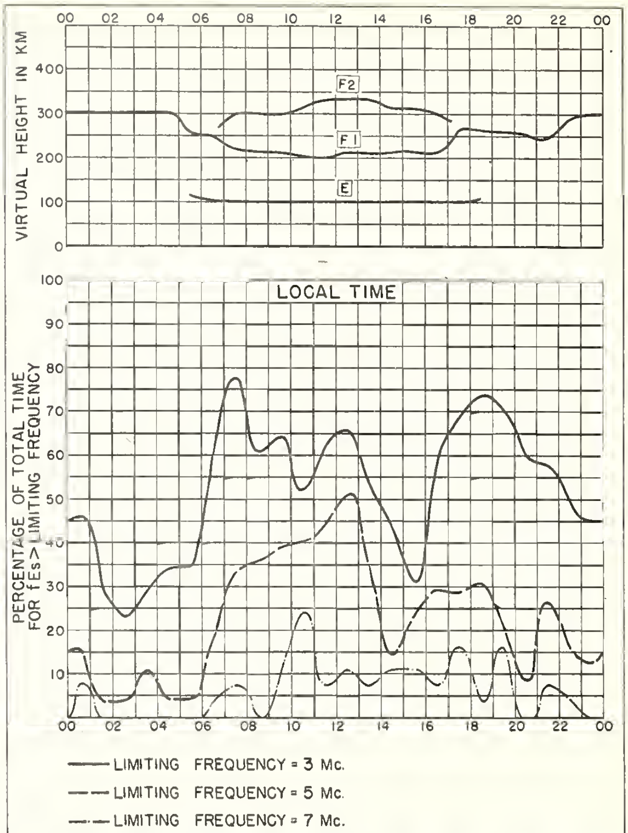

Fig. 38. SCHWARZENBURG, SWITZERLAND AUGUST 1951

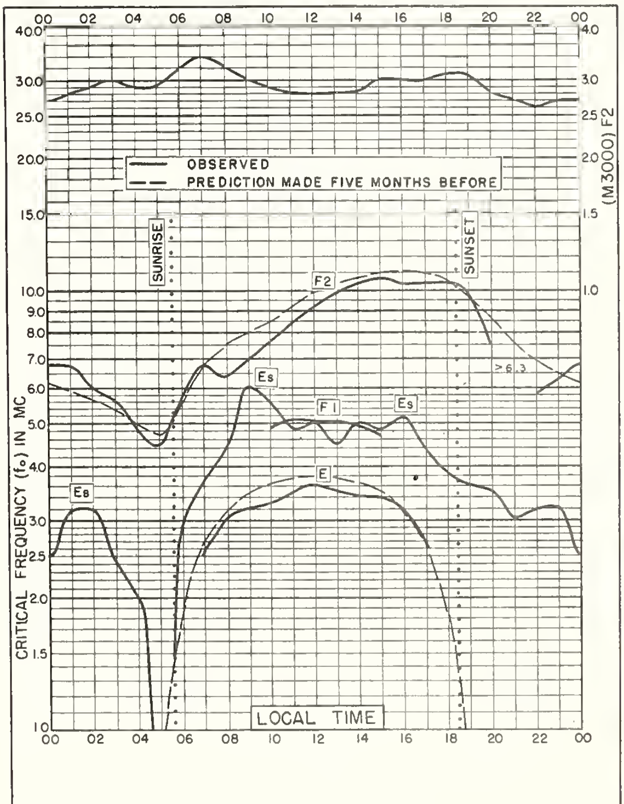

Fig. 39. OKINAWA I.
26.3°N, 127.8°E AUGUST 1951

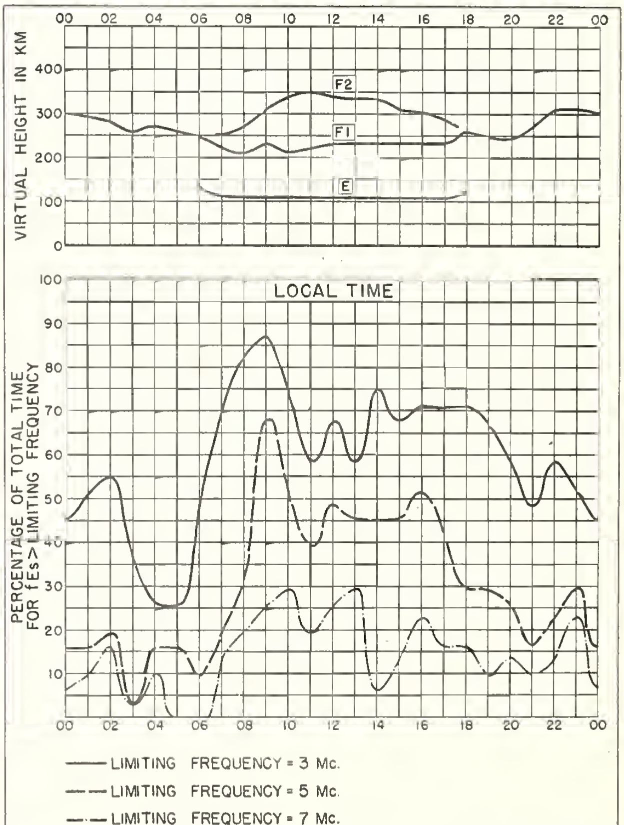

Fig. 40. OKINAWA I. AUGUST 1951

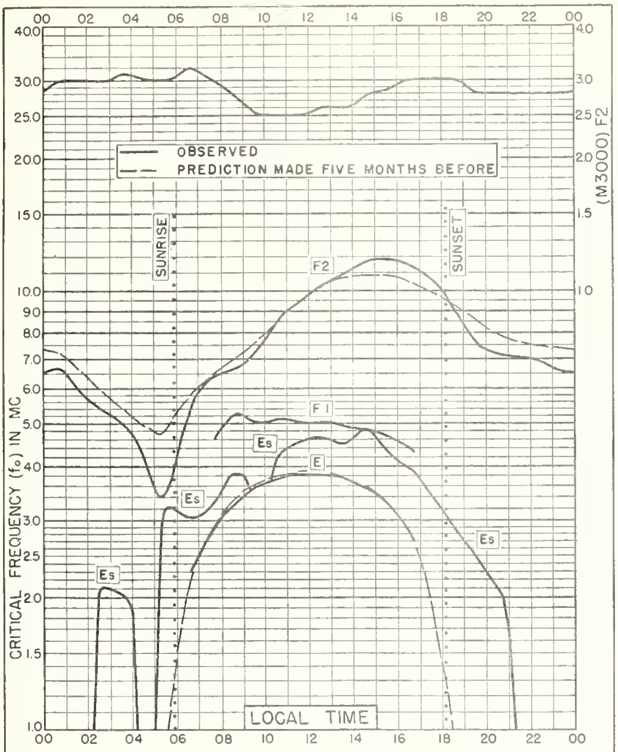

Fig. 41. PANAMA CANAL ZONE
9.4° N, 79.9° W AUGUST 1951

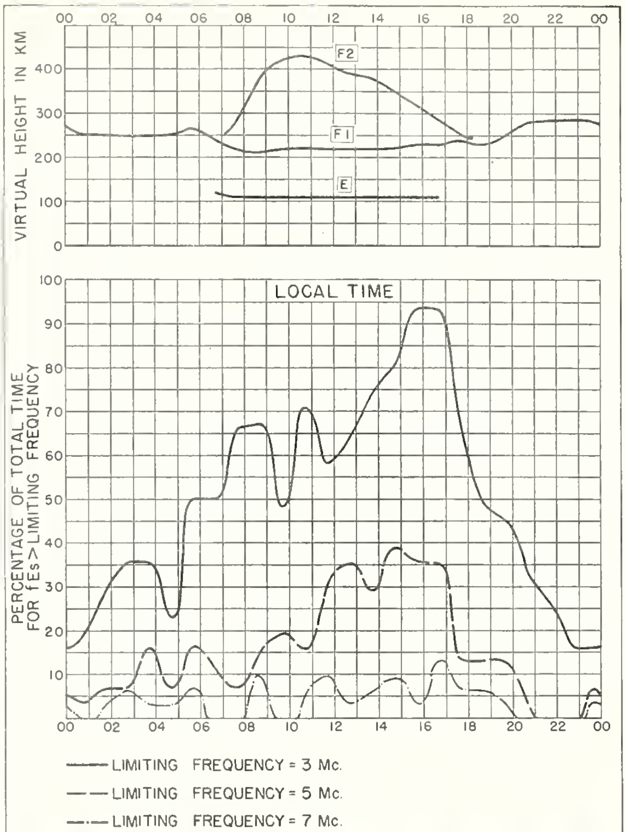

Fig. 42. PANAMA CANAL ZONE AUGUST 1951

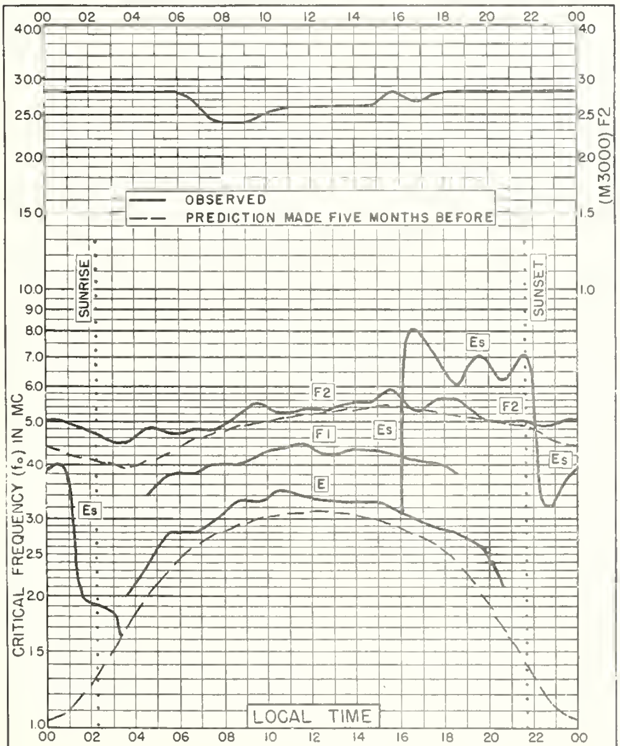

Fig. 43. BAKER LAKE, CANADA
64.3° N, 96.0° W JULY 1951

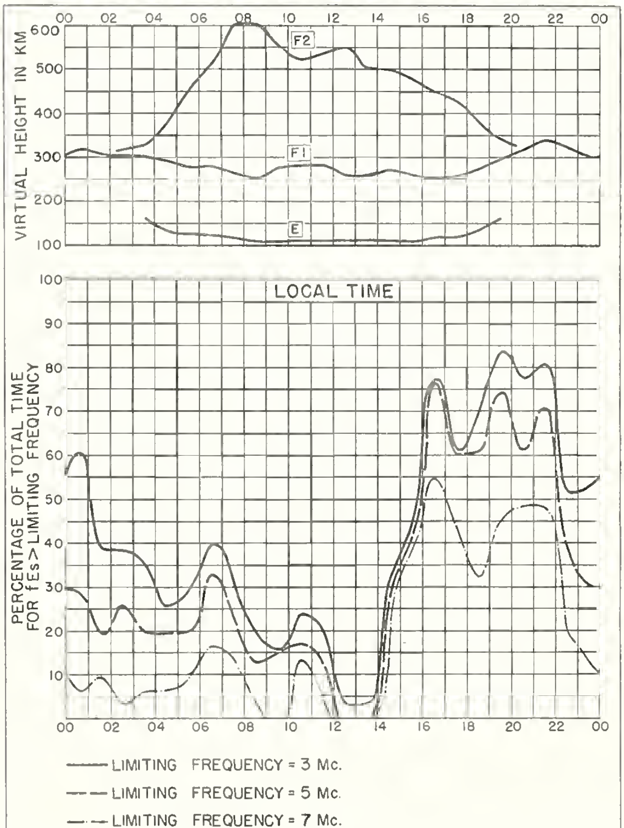

Fig. 44 BAKER LAKE, CANADA JULY 1951

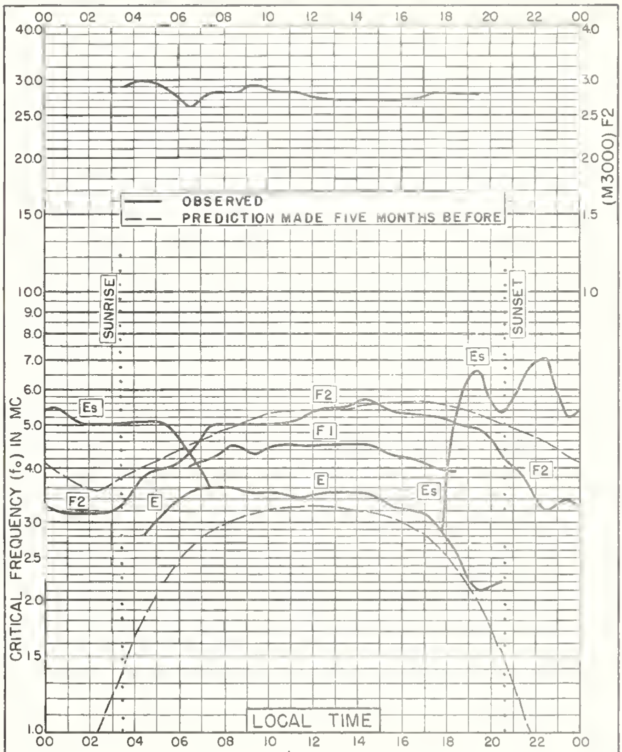

Fig. 45. FORT CHIMO, CANADA
58.1°N, 68.3°W JULY 1951

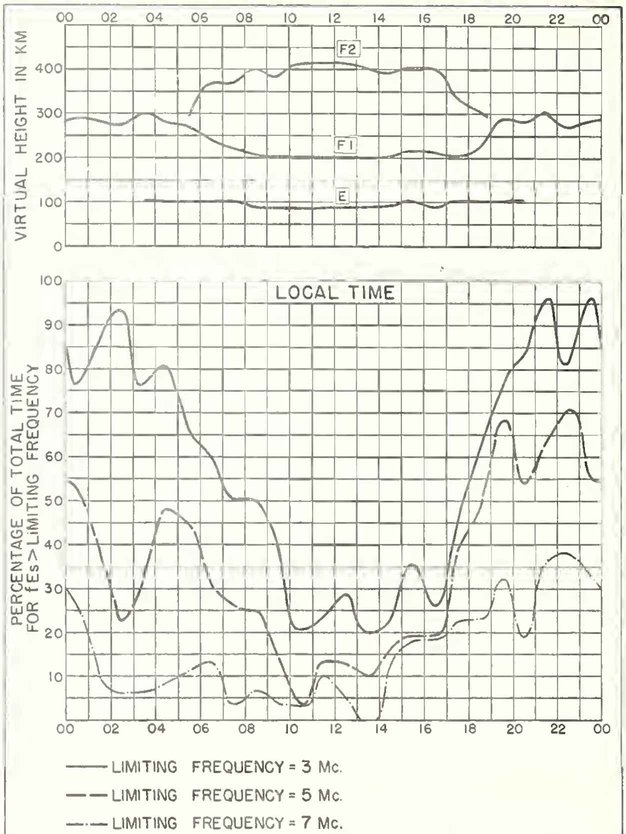

Fig. 46. FORT CHIMO, CANADA JULY 1951

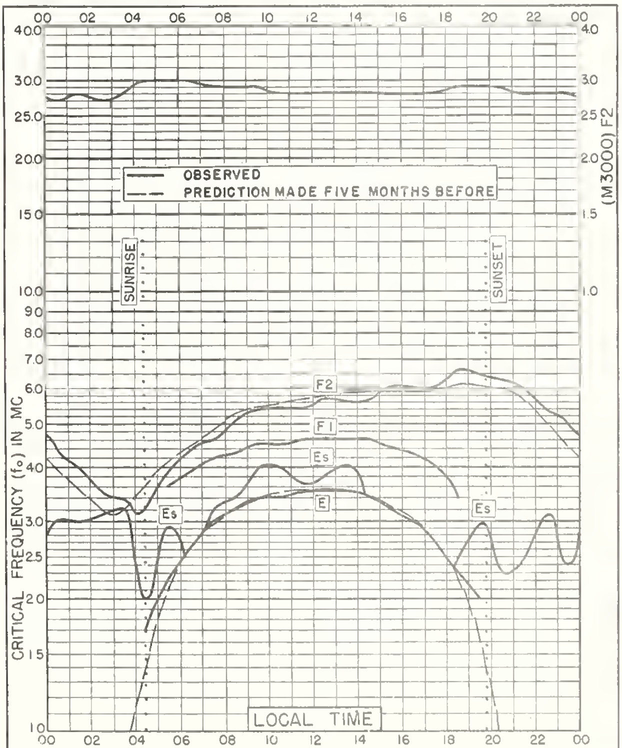

Fig. 47 ST. JOHN'S, NEWFOUNDLAND
47.6°N, 52.7°W JULY 1951

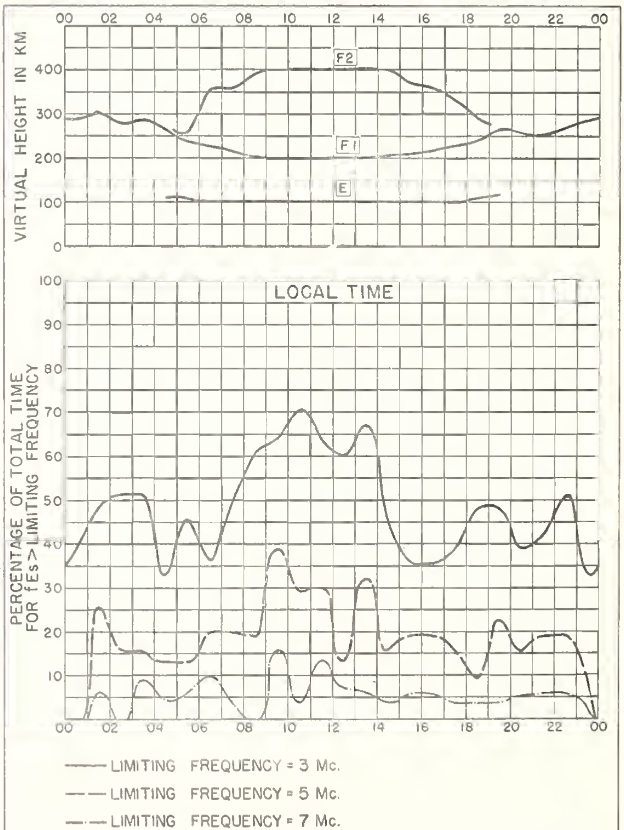

Fig. 48. ST. JOHN'S, NEWFOUNDLAND JULY 1951

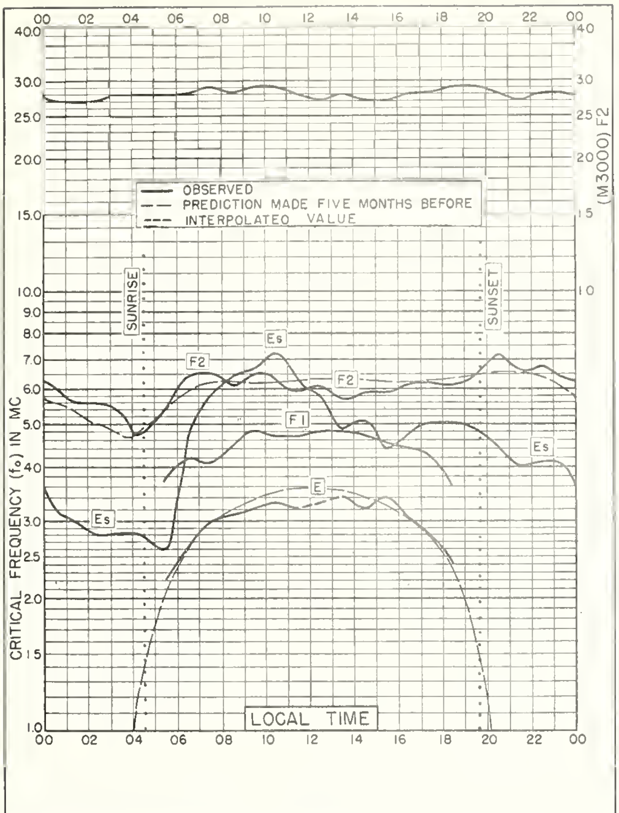

Fig. 49. WAKKANAI, JAPAN
45. 4°N, 141. 7°E
JULY 1951

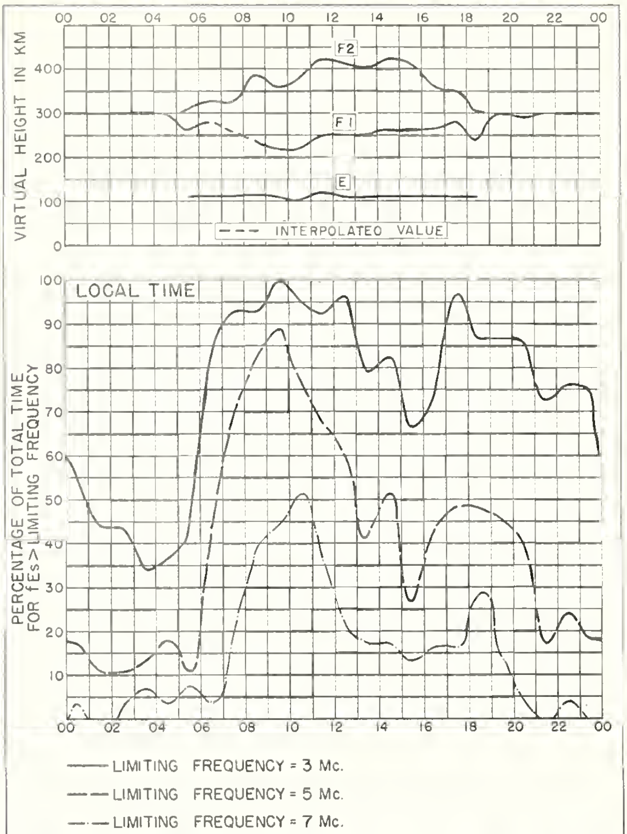

Fig. 50. WAKKANAI, JAPAN
JULY 1951

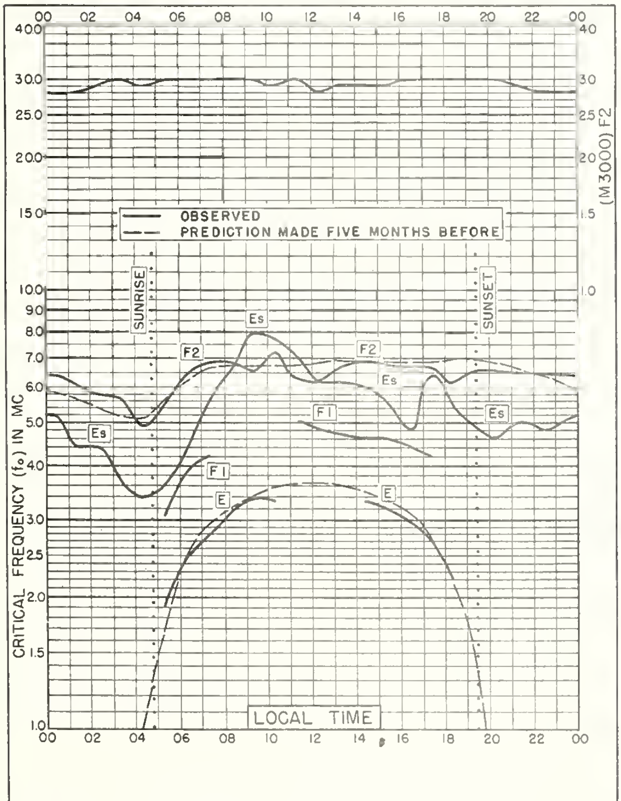

Fig. 51. AKITA, JAPAN
39. 7°N, 140. 1°E
JULY 1951

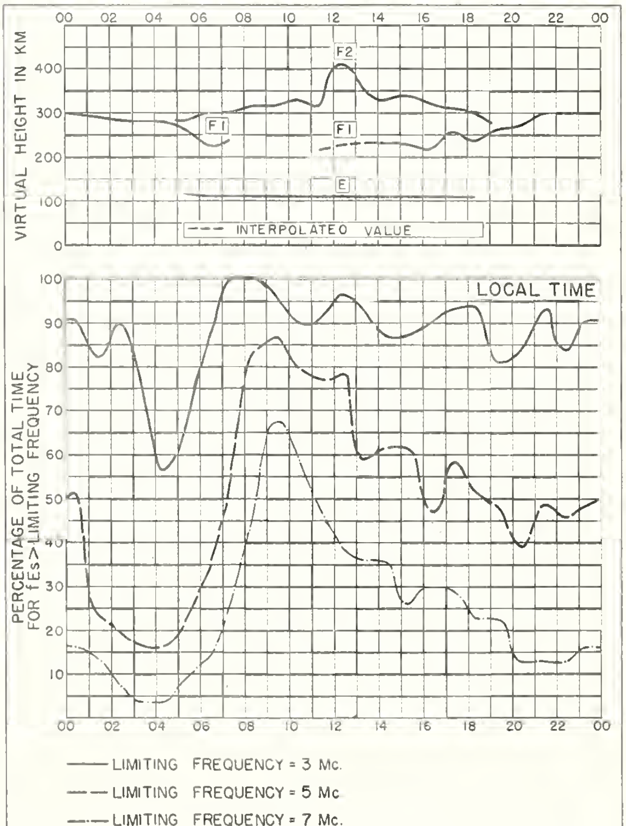

Fig. 52. AKITA, JAPAN
JULY 1951

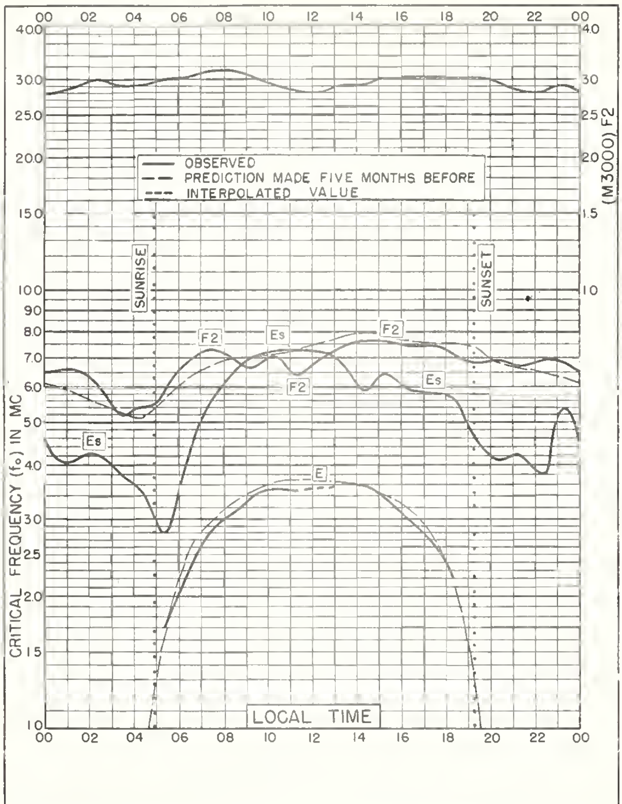

Fig. 53. TOKYO, JAPAN
35.7°N, 139.5°E JULY 1951

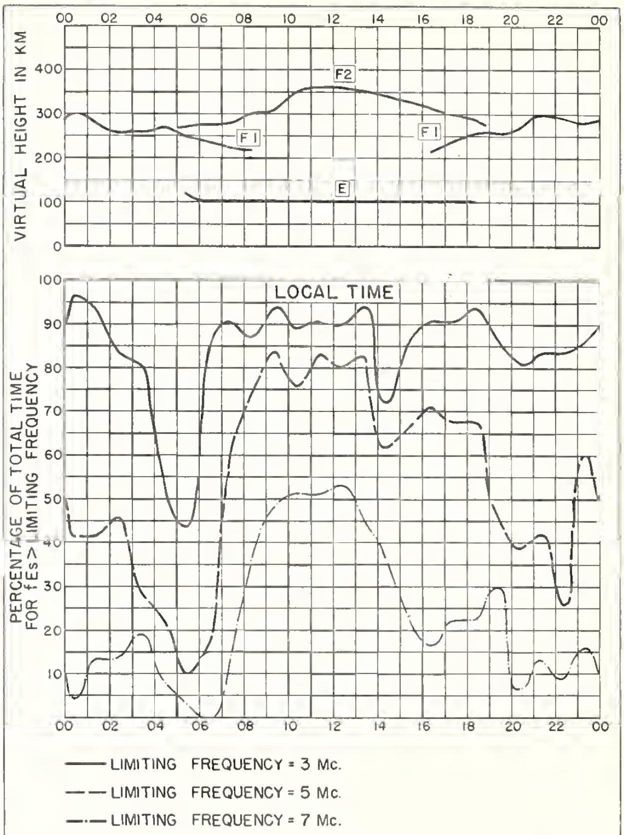

Fig. 54. TOKYO, JAPAN JULY 1951

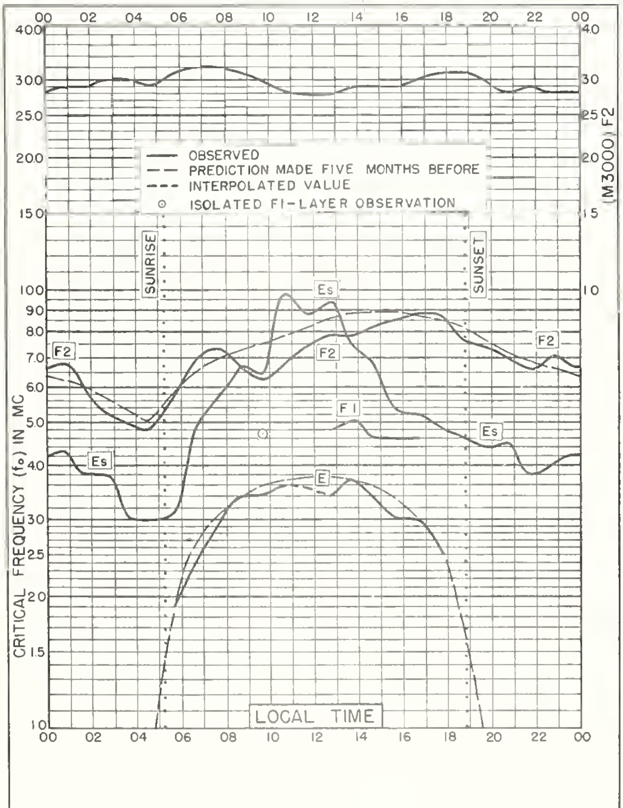

Fig. 55. YAMAGAWA, JAPAN
31.2°N, 130.6°E JULY 1951

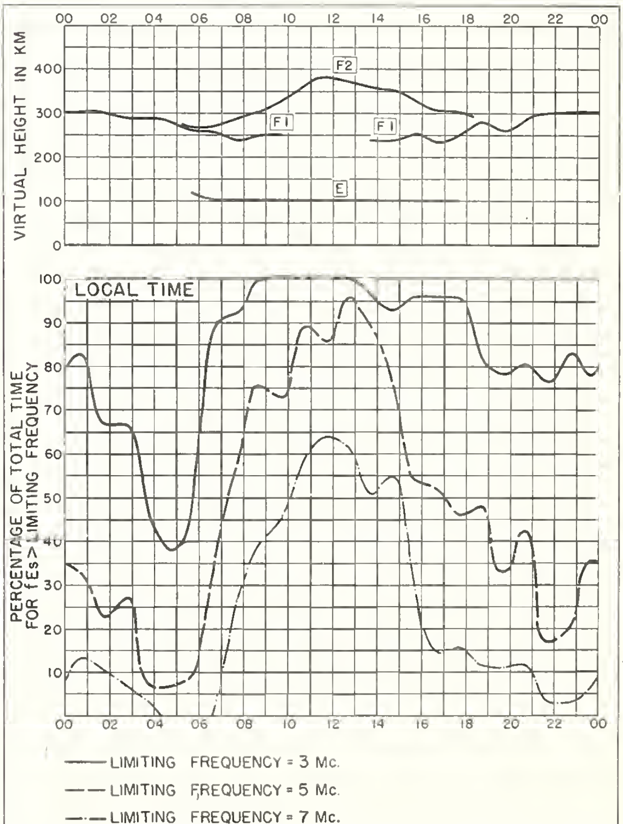

Fig. 56. YAMAGAWA, JAPAN JULY 1951

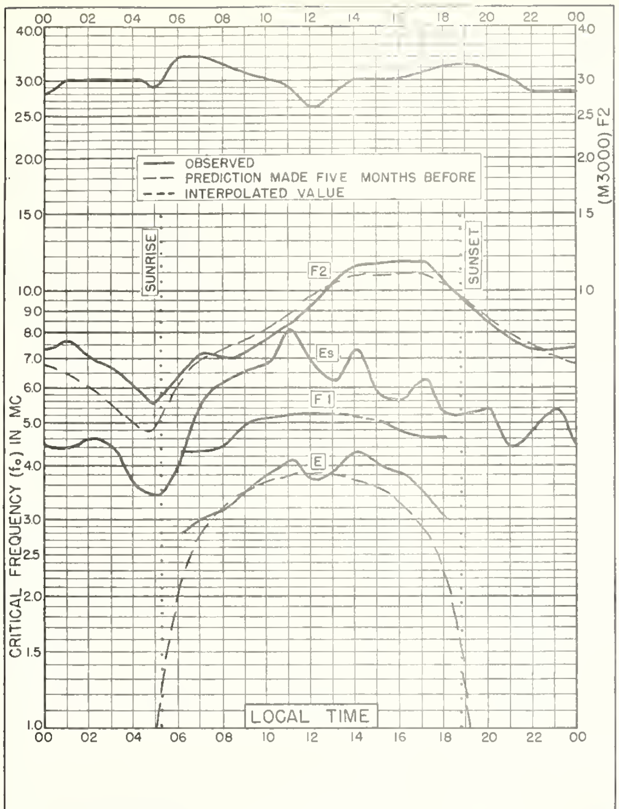

Fig. 57. FORMOSA, CHINA
25.0° N, 121.0° E JULY 1951

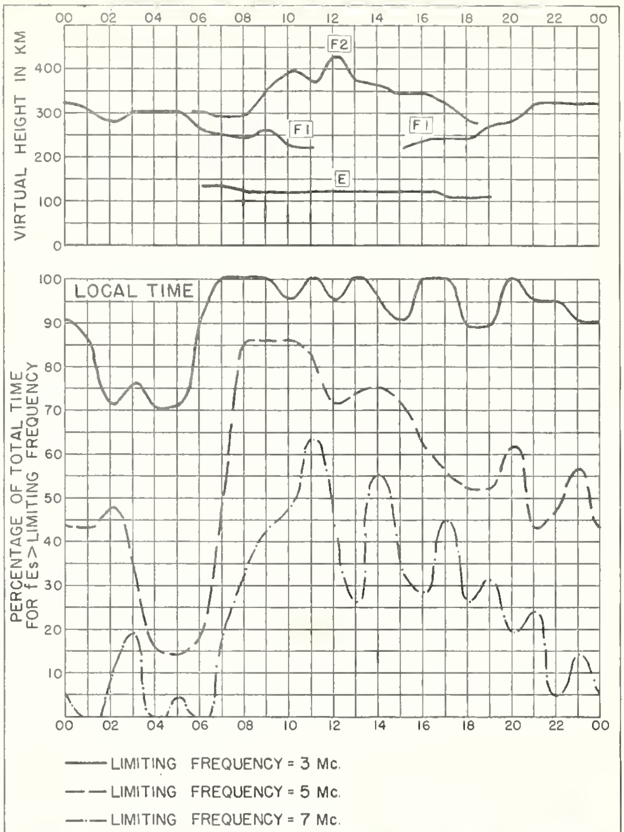

Fig. 58. FORMOSA, CHINA JULY 1951

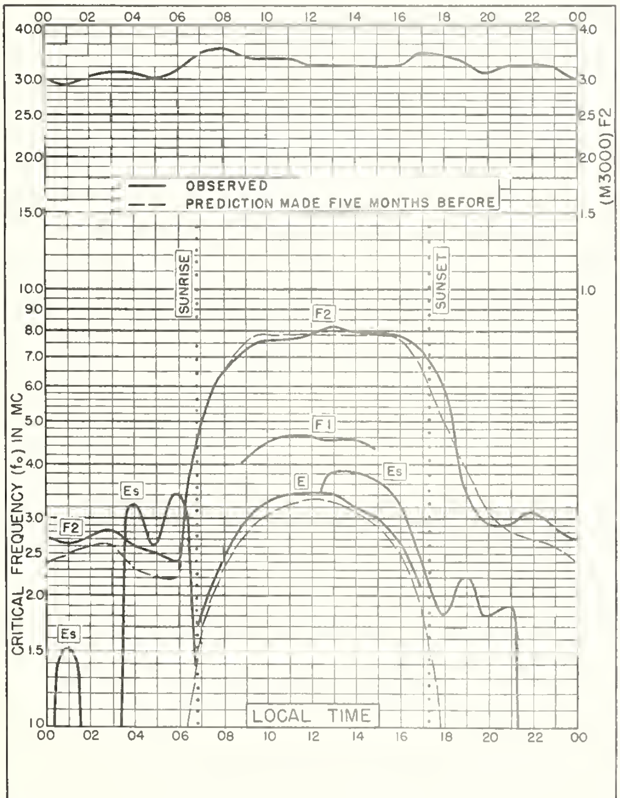

Fig. 59. JOHANNESBURG, U. OF S. AFRICA
26.2°S, 28.1°E JULY 1951

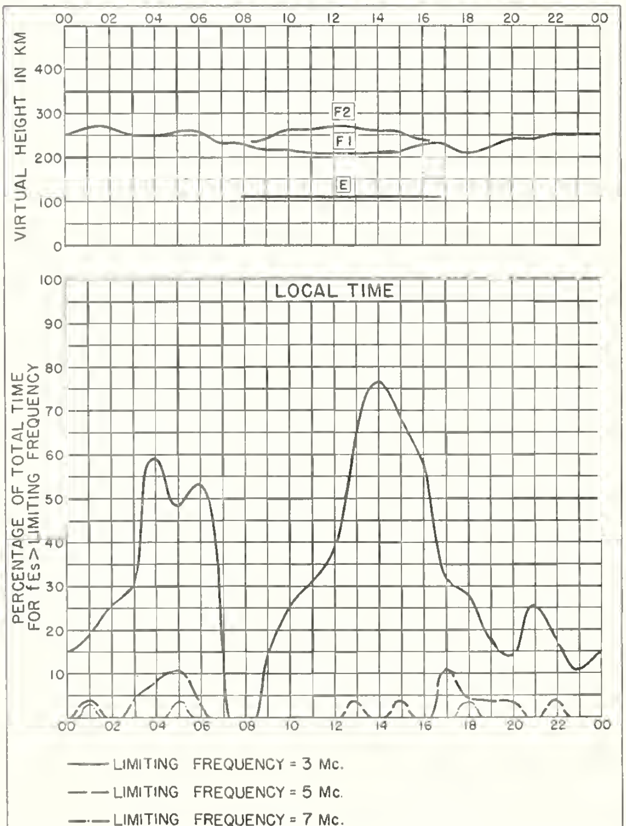

Fig. 60. JOHANNESBURG, U. OF S. AFRICA JULY 1951

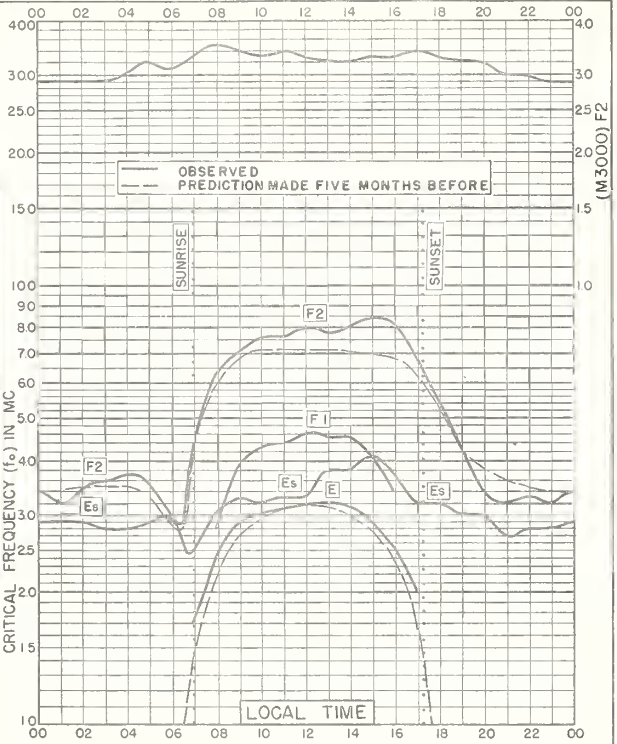

Fig. 61. WATHEROO, W. AUSTRALIA 30.3°S, 115.9°E JULY 1951

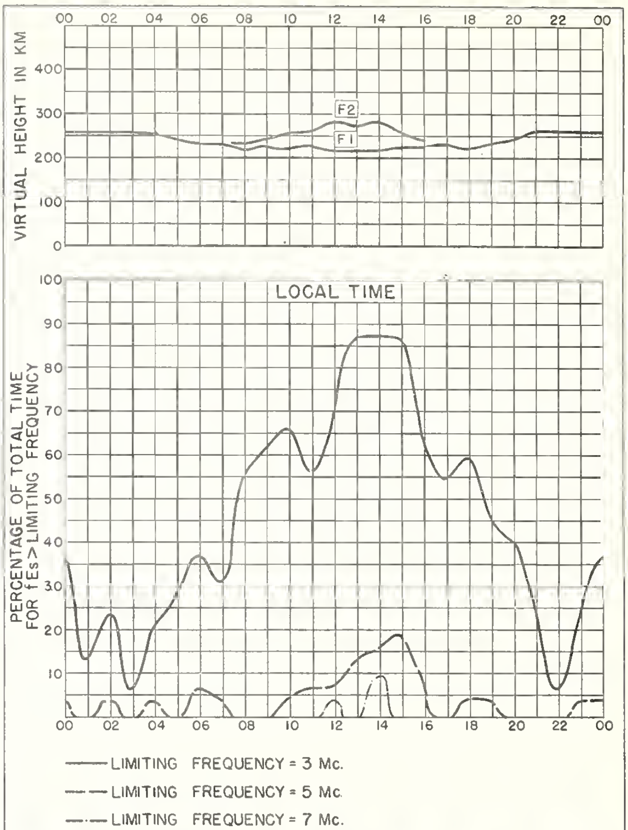

Fig. 62. WATHEROO, W. AUSTRALIA JULY 1951

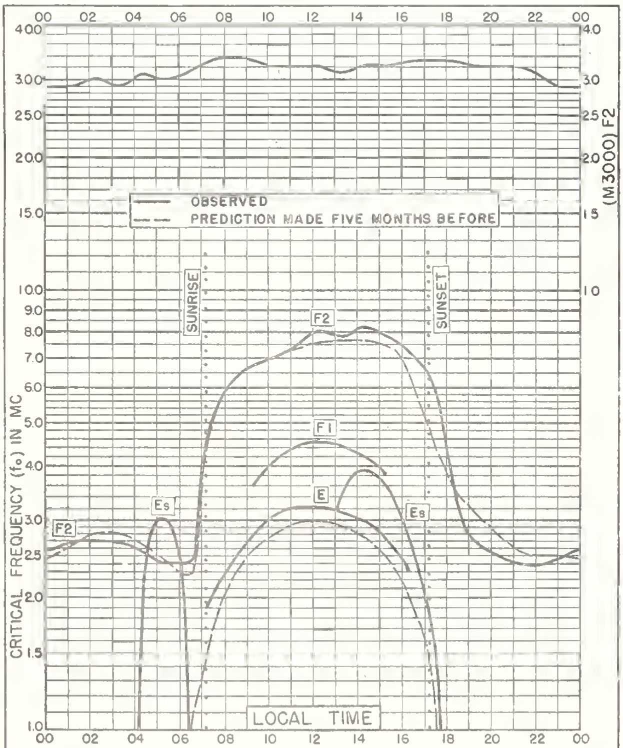

Fig. 63. CAPETOWN, U. OF S. AFRICA 34.2°S, 18.3°E JULY 1951

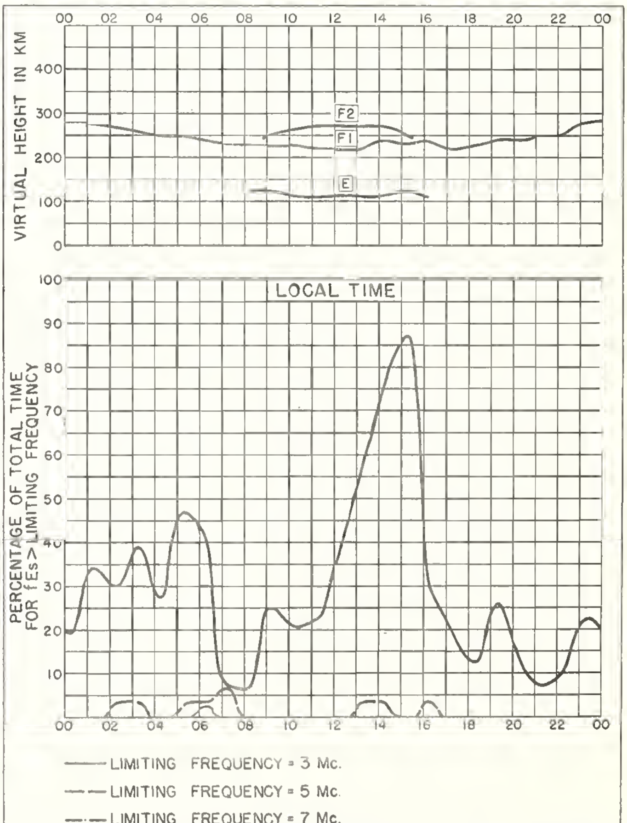

Fig. 64. CAPETOWN, U. OF S. AFRICA JULY 1951

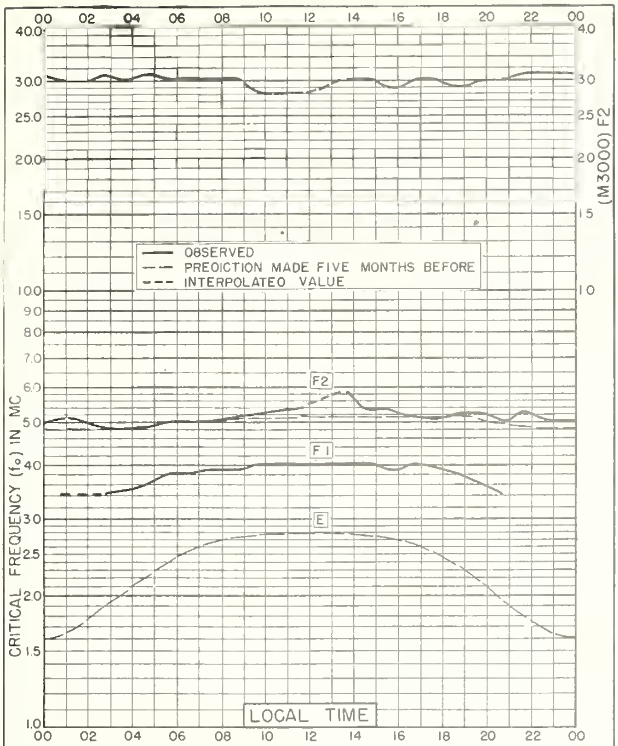

Fig. 65. RESOLUTE BAY, CANADA
74.7°N, 94.9°W JUNE 1951

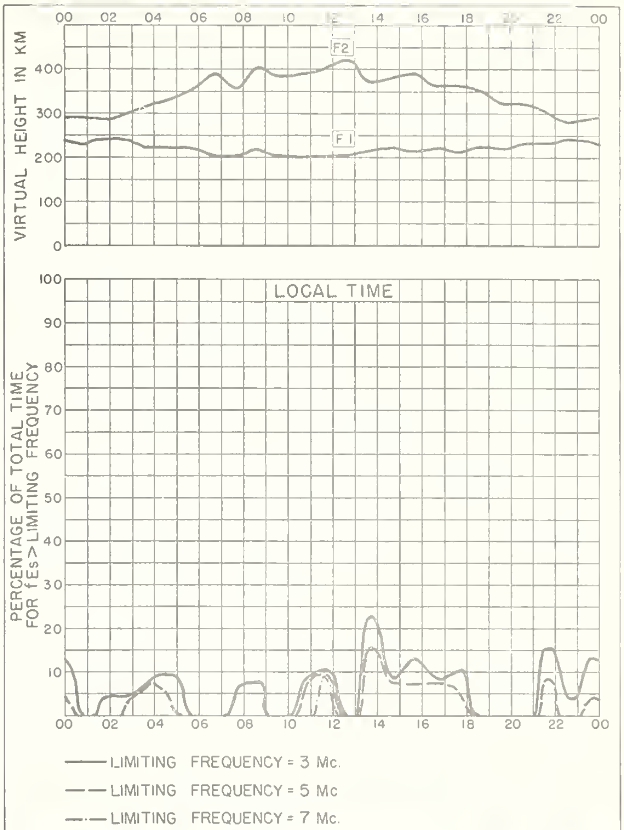

Fig. 66. RESOLUTE BAY, CANADA JUNE 1951

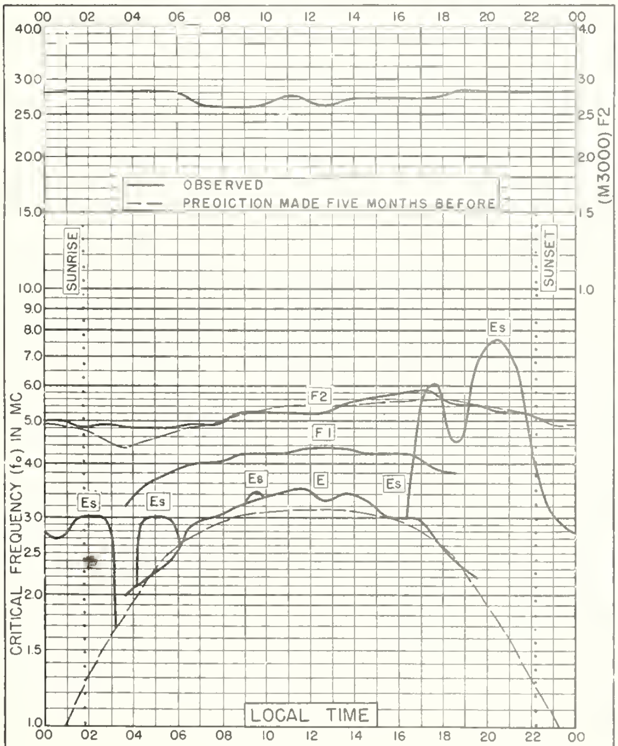

Fig. 67. BAKER LAKE, CANADA
64.3°N, 96.0°W JUNE 1951

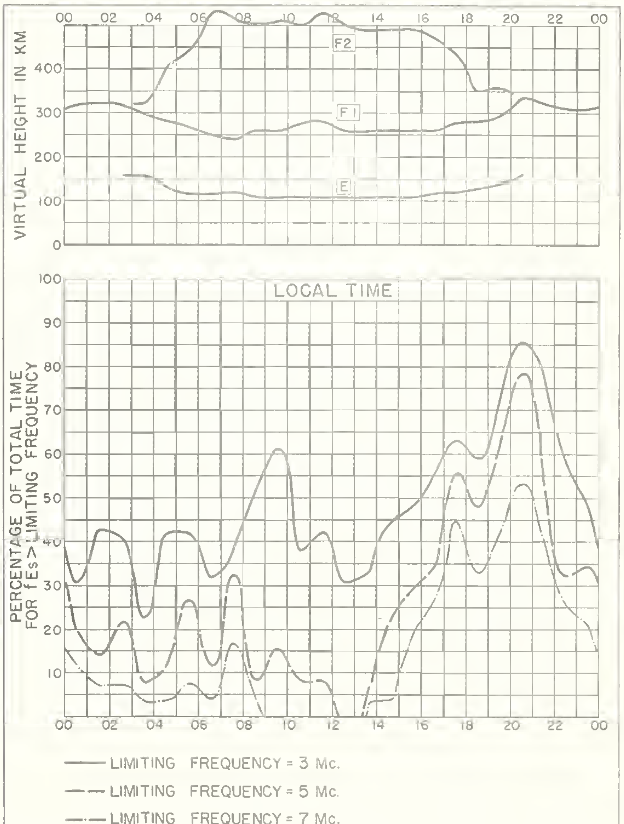

Fig. 68. BAKER LAKE, CANADA JUNE 1951

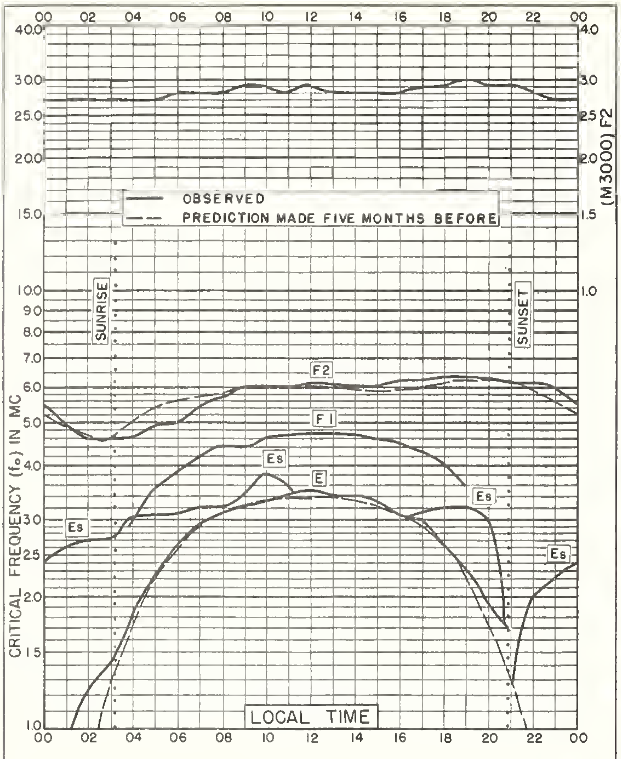

Fig. 69. FRASERBURGH, SCOTLAND
57.6°N, 2.1°W JUNE 1951

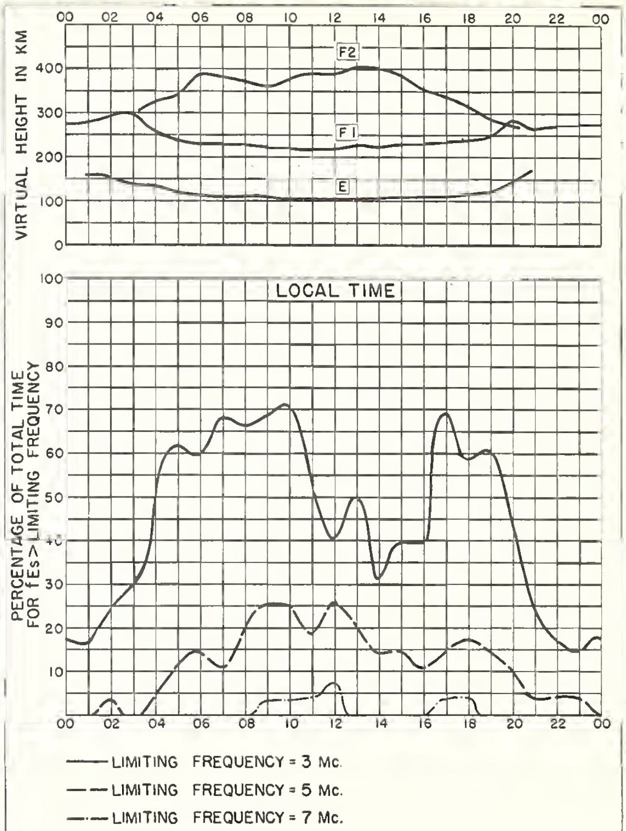

Fig. 70. FRASERBURGH, SCOTLAND JUNE 1951

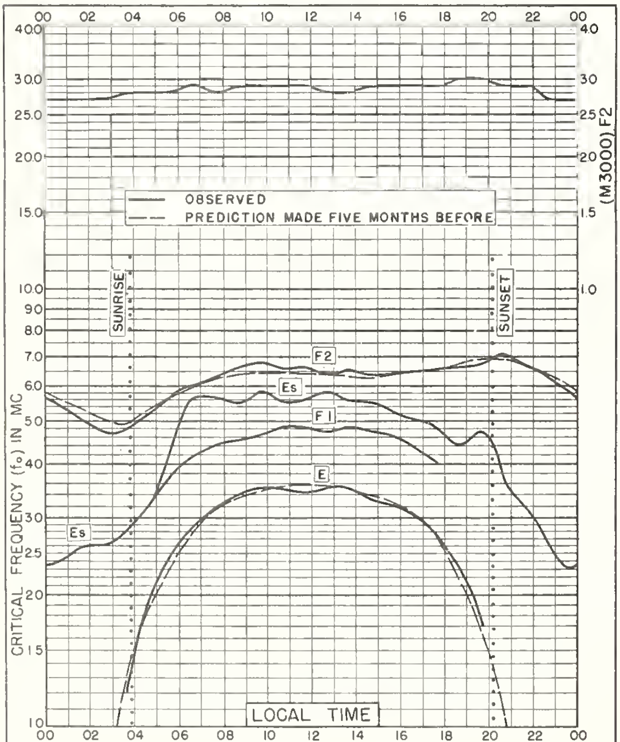

Fig. 71. LINDAU/HARZ, GERMANY
51.6°N, 10.1°E JUNE 1951

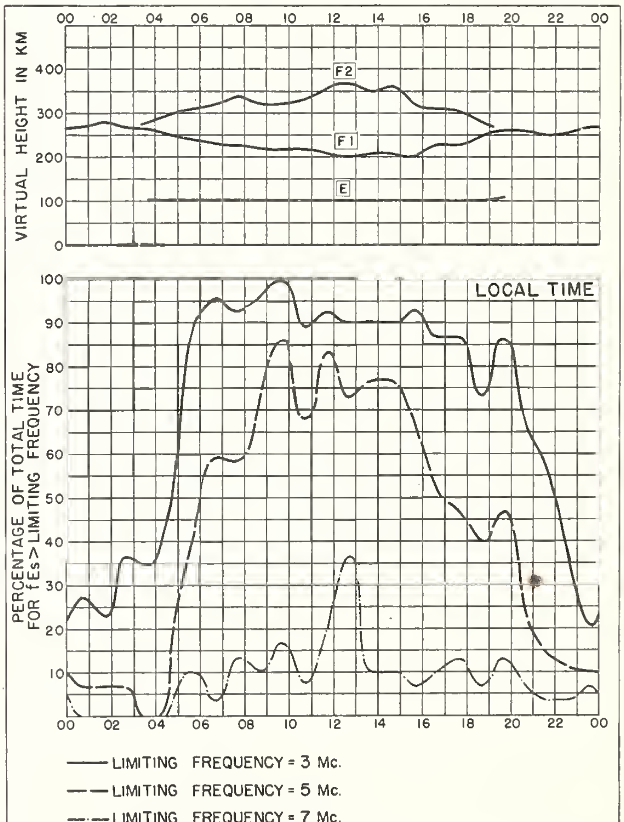

Fig. 72. LINDAU/HARZ, GERMANY JUNE 1951

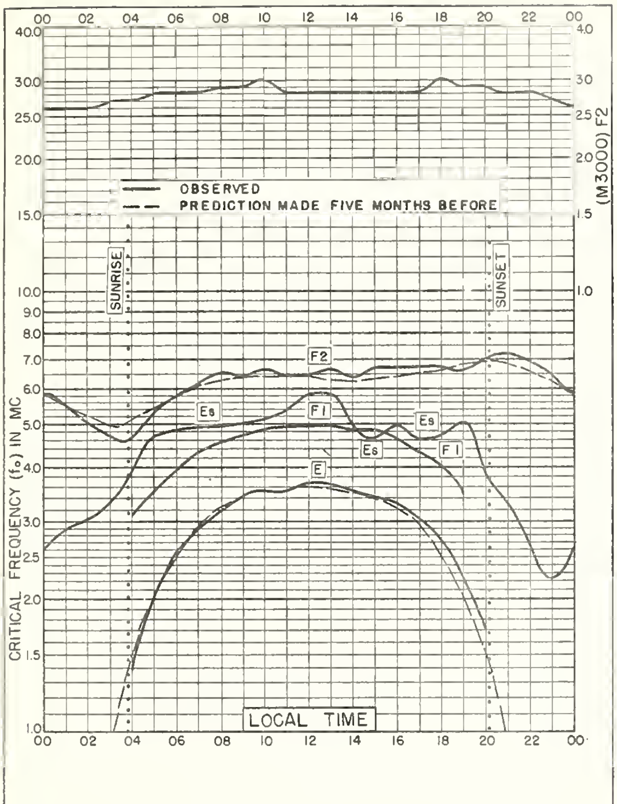

Fig. 73. SLOUGH, ENGLAND
51.5°N, 0.6°W JUNE 1951

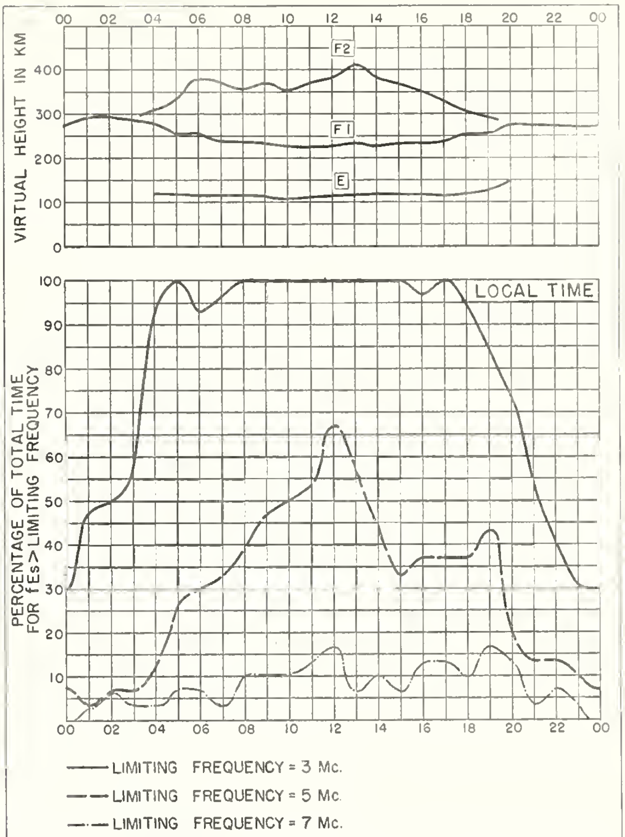

Fig. 74. SLOUGH, ENGLAND JUNE 1951

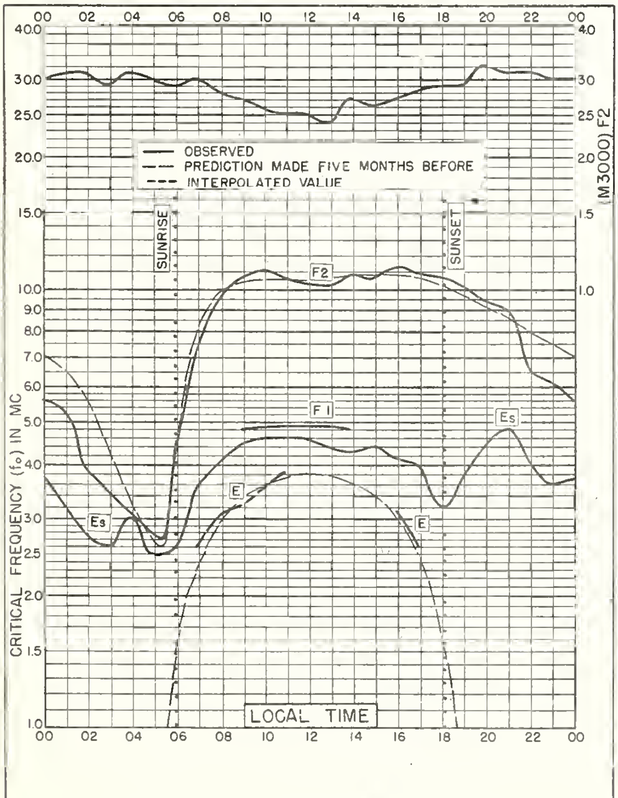

Fig. 75. SINGAPORE, BRIT. MALAYA
1.3°N, 103.8°E JUNE 1951

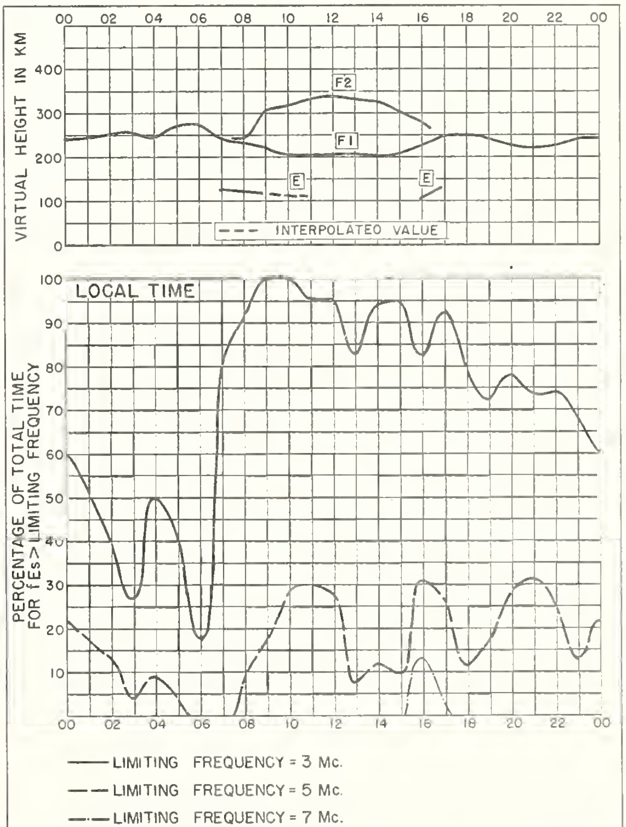

Fig. 76. SINGAPORE, BRIT. MALAYA JUNE 1951

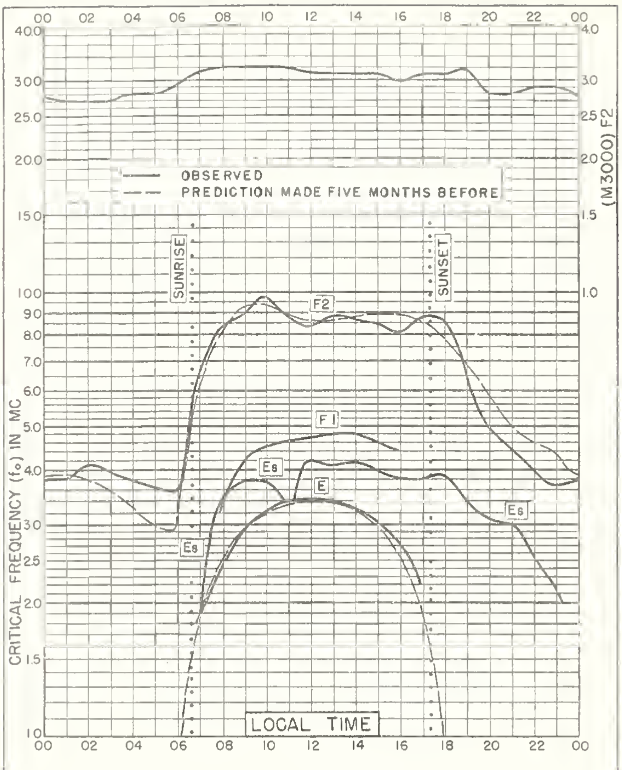

Fig. 77. RAROTONGA I.
21.3°S, 159.8°W JUNE 1951

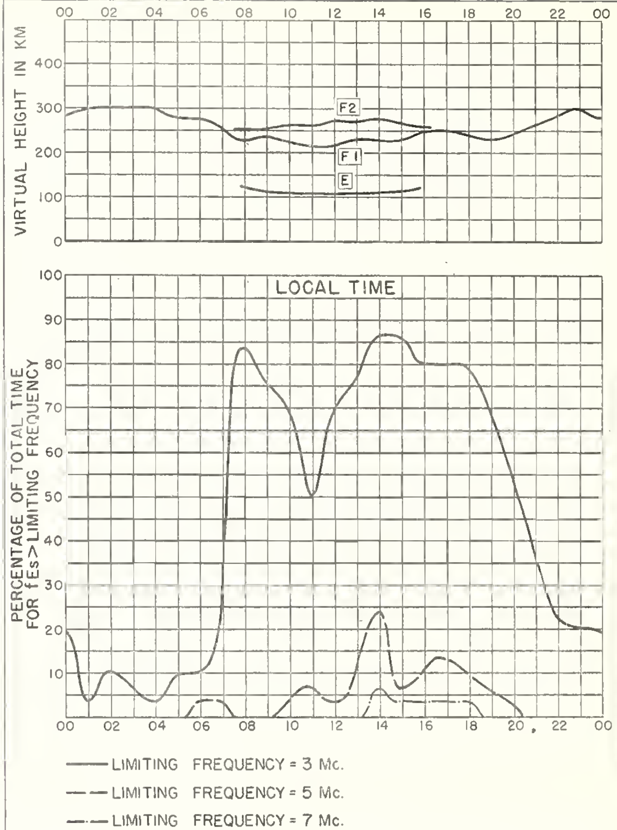

Fig. 78. RAROTONGA I. JUNE 1951

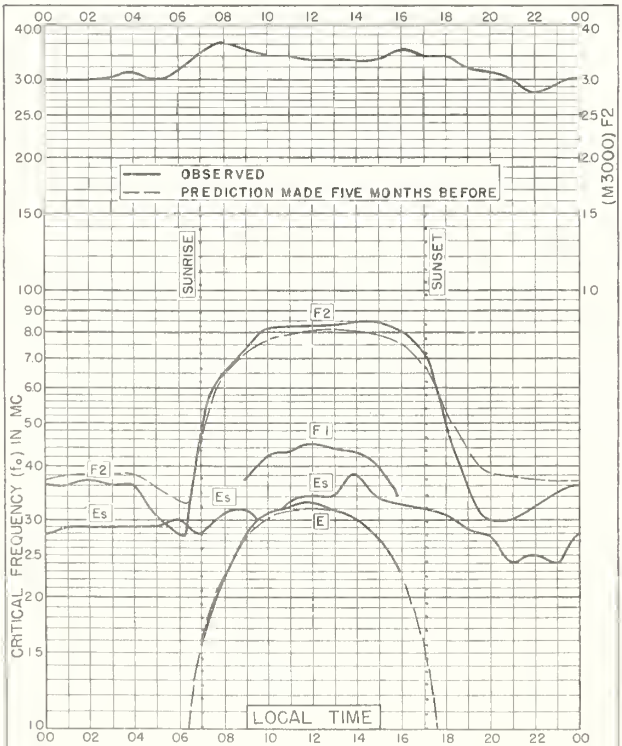

Fig. 79. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E JUNE 1951

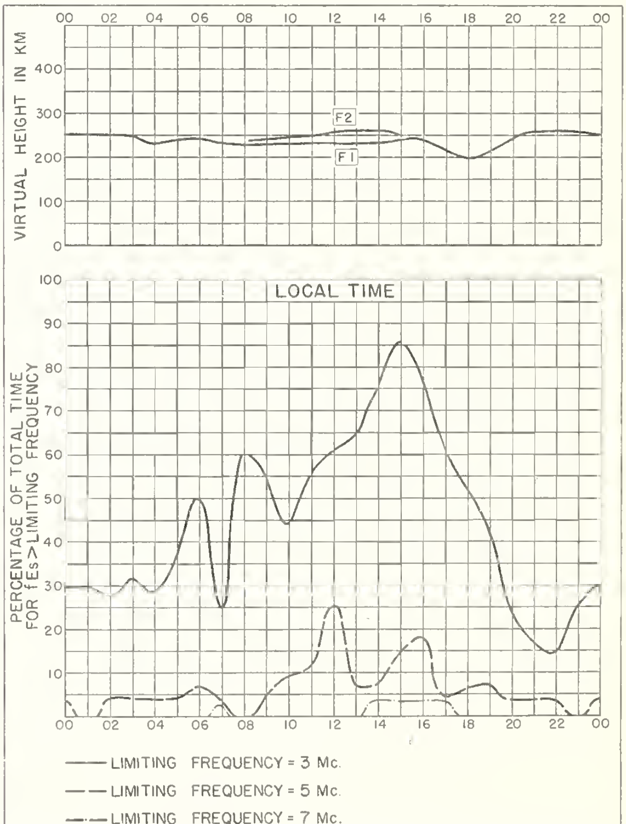

Fig. 80. WATHEROO, W. AUSTRALIA JUNE 1951

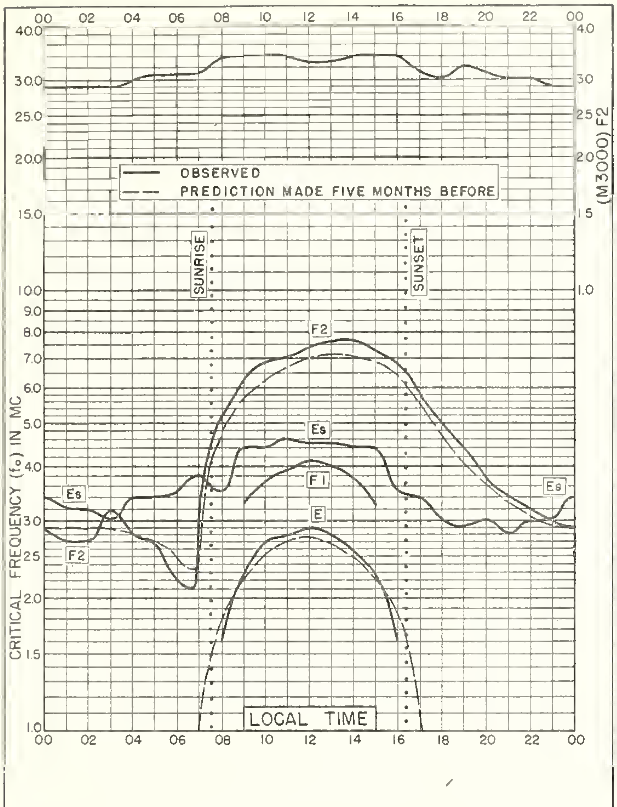

Fig. 81. CHRISTCHURCH, N. Z.
43.6°S, 172.7°E JUNE 1951

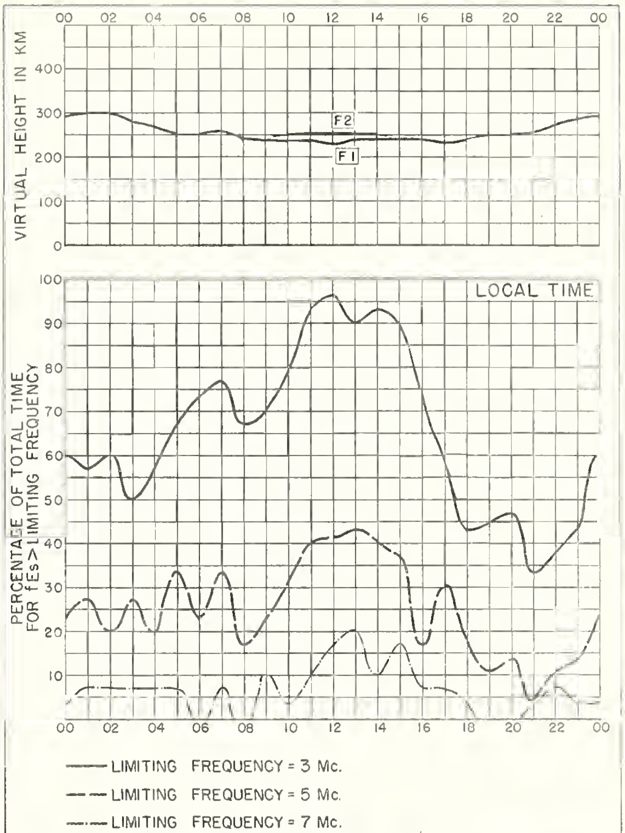

Fig. 82. CHRISTCHURCH, N. Z. JUNE 1951

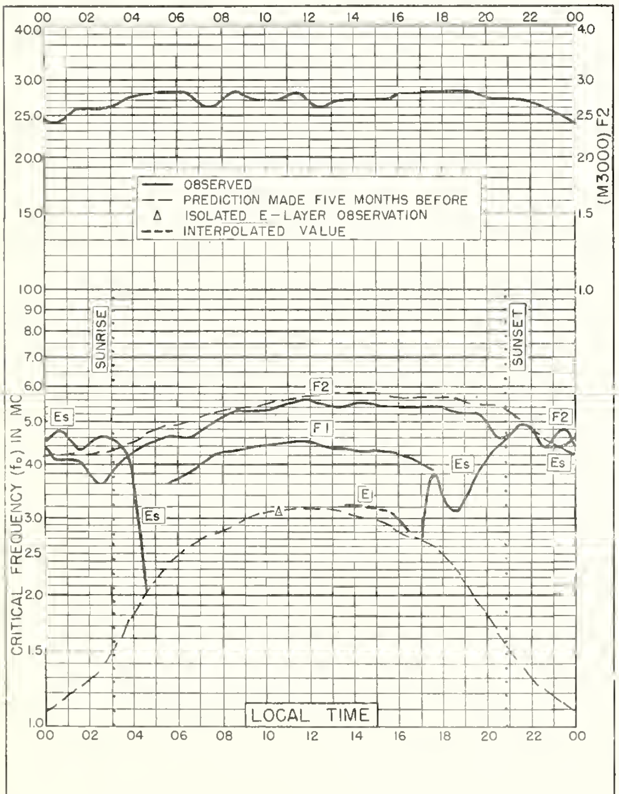

Fig. 83. REYKJAVIK, ICELAND
64.1°N, 21.8°W MAY 1951

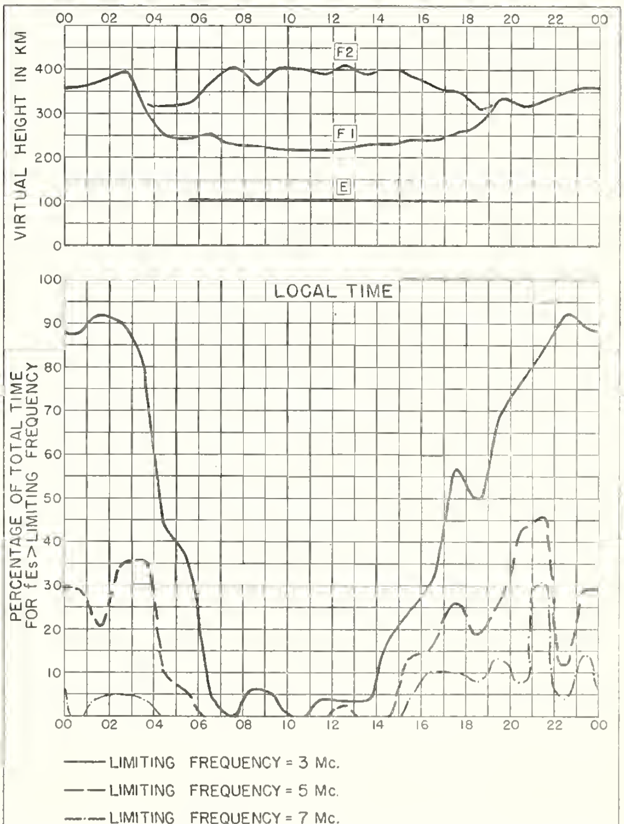

Fig. 84. REYKJAVIK, ICELAND MAY 1951

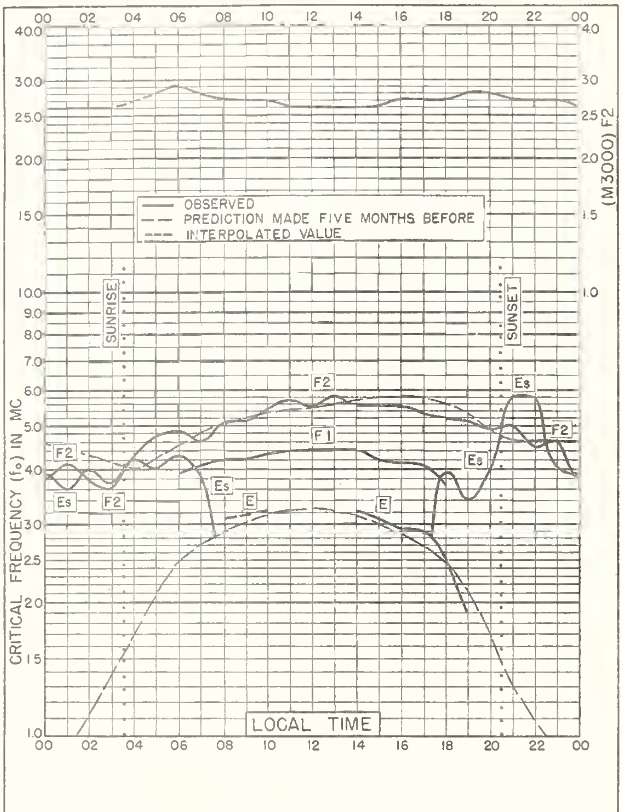

Fig. 85. NARSARSSUAK, GREENLAND
61.2°N, 45.4°W MAY 1951

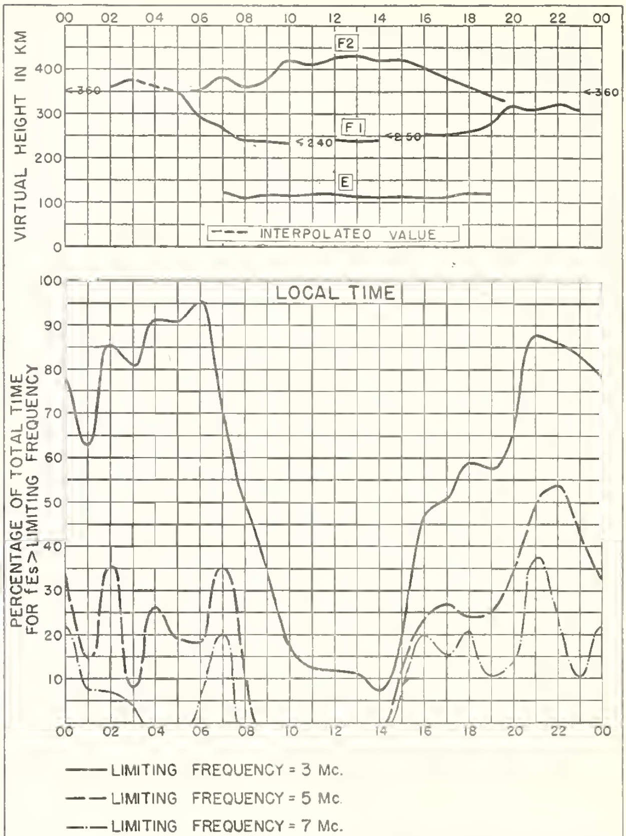

Fig. 86. NARSARSSUAK, GREENLAND MAY 1951

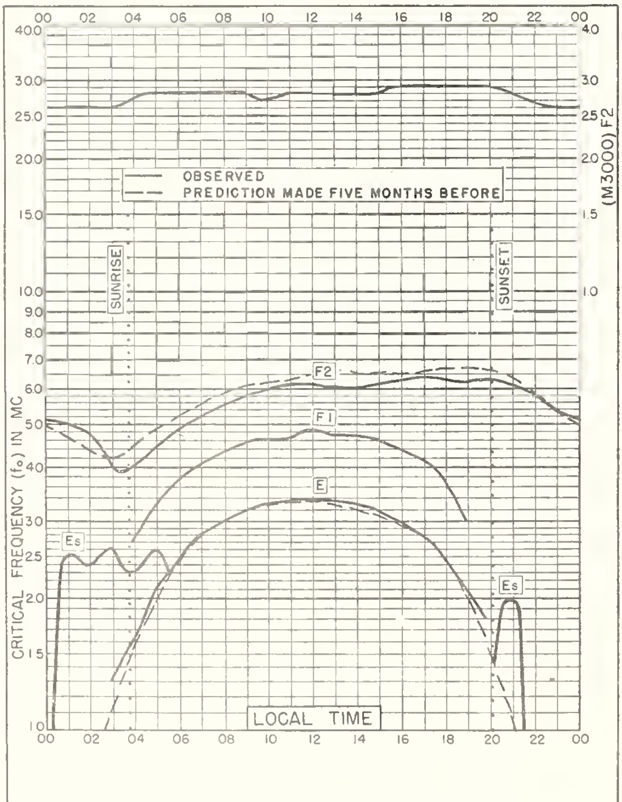

Fig. 87. FRASERBURGH, SCOTLAND
57.6°N, 2.1°W MAY 1951

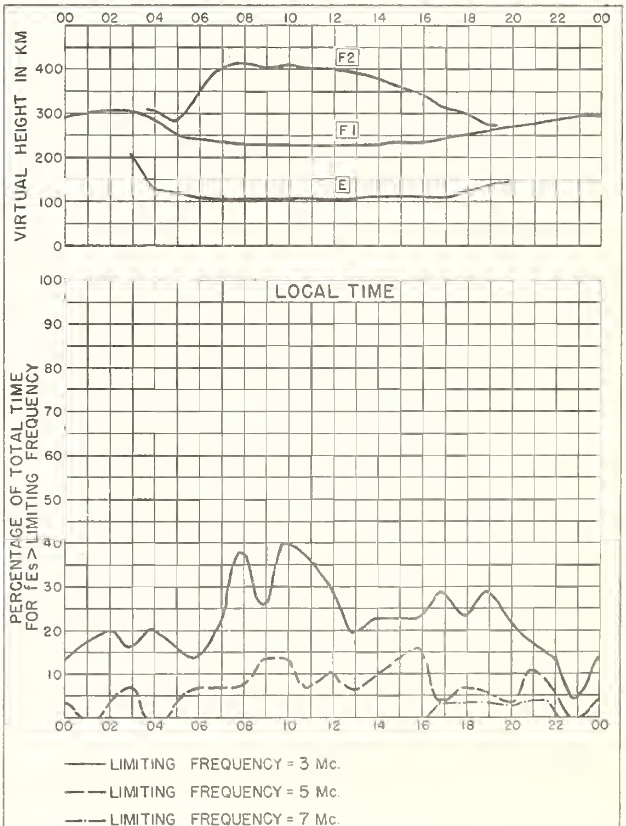

Fig. 88. FRASERBURGH, SCOTLAND MAY 1951

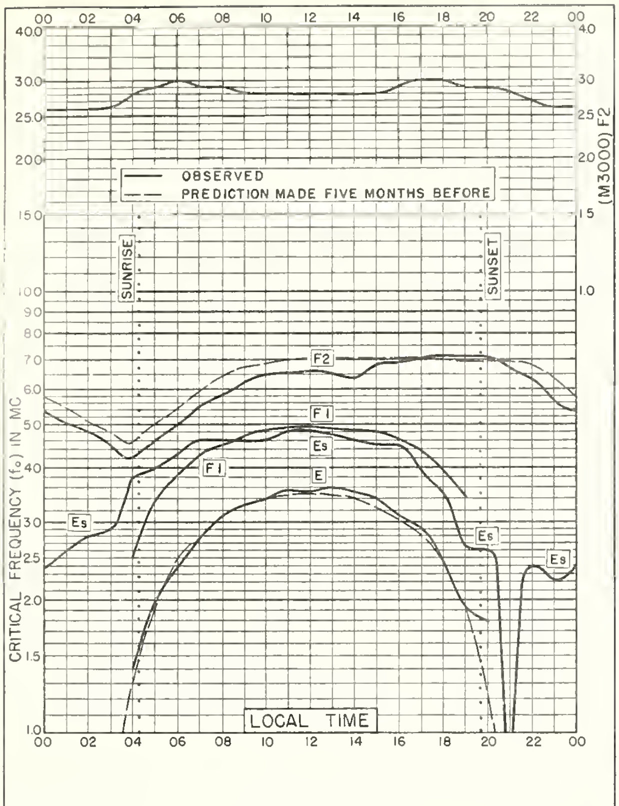

Fig. 89. SLOUGH, ENGLAND
51.5°N, 0.6°W
MAY 1951

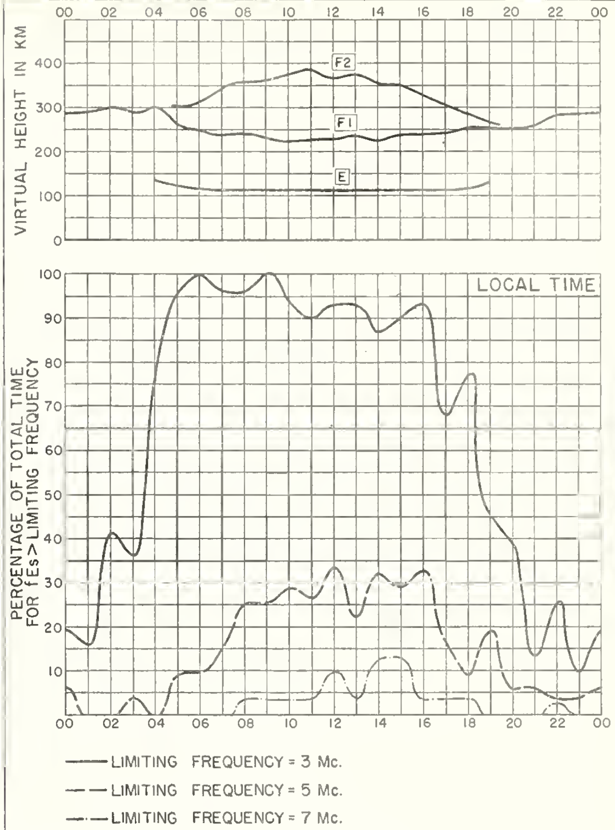

Fig. 90. SLOUGH, ENGLAND
MAY 1951

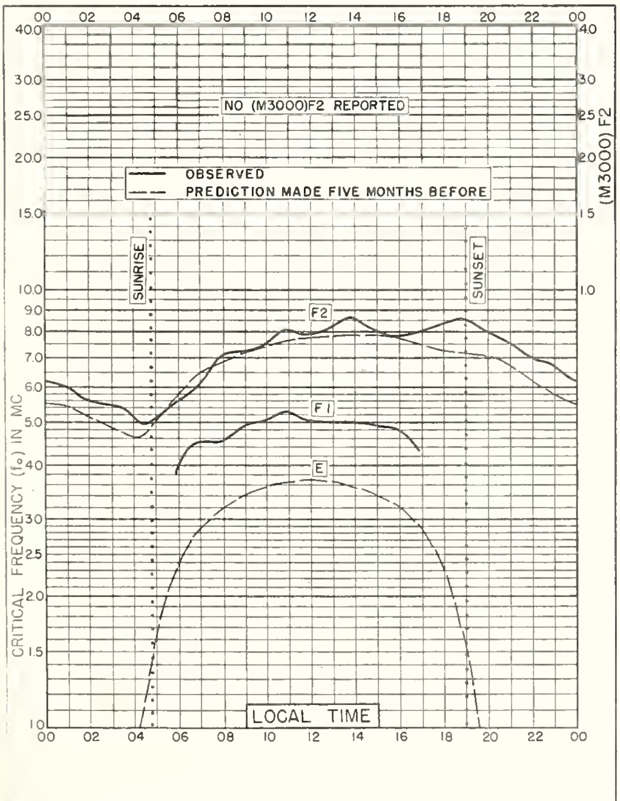

Fig. 91. ROME, ITALY
41.9°N, 12.5°E
MAY 1951

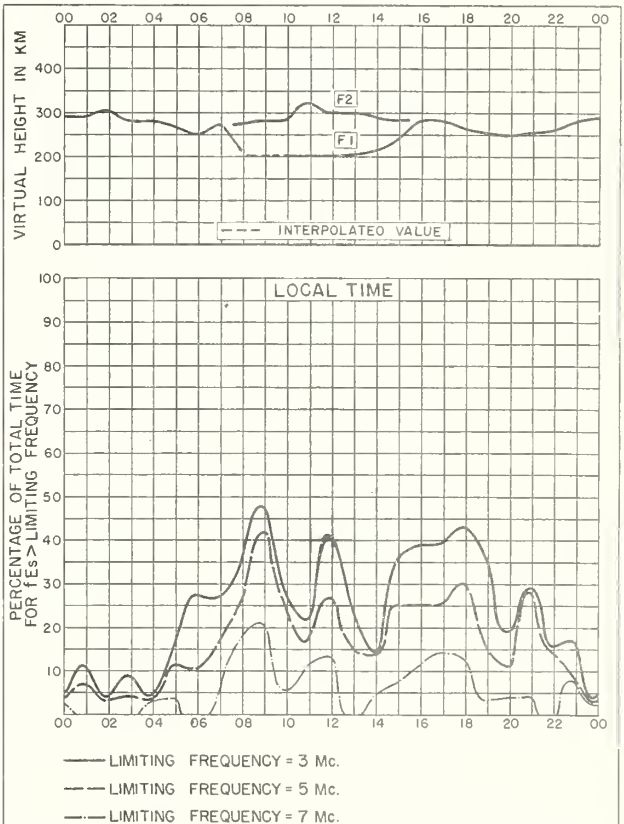

Fig. 92. ROME, ITALY
MAY 1951

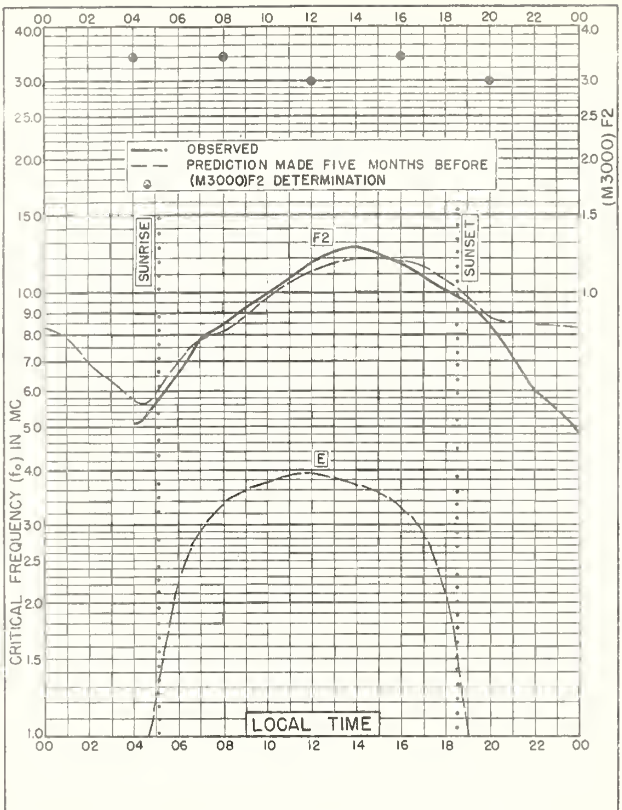

Fig. 93. DELHI, INDIA
28.6°N, 77.1°E MAY 1951

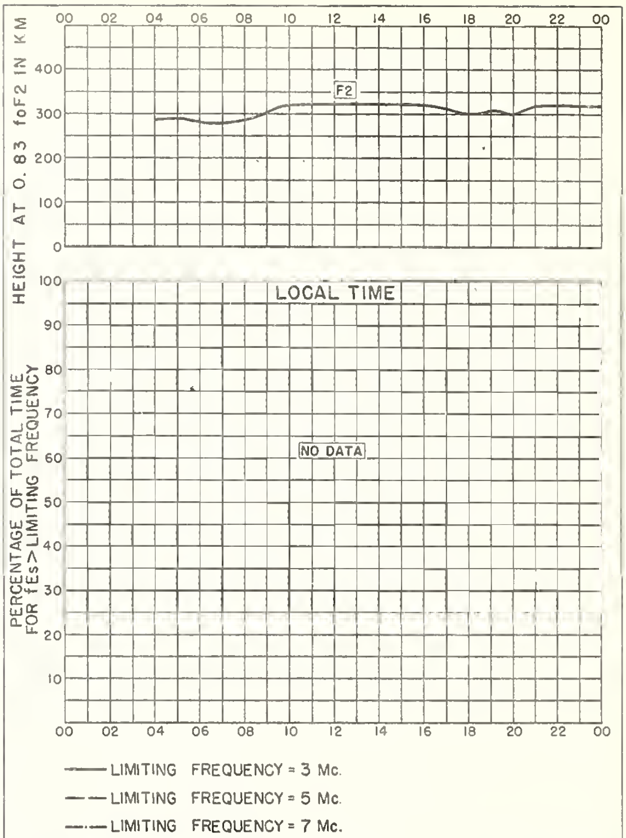

Fig. 94. DELHI, INDIA MAY 1951

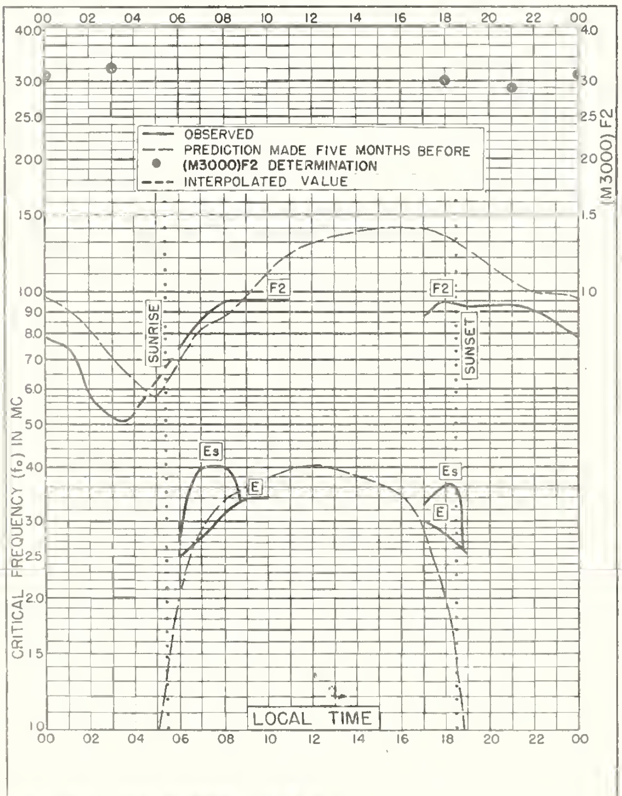

Fig. 95 CALCUTTA, INDIA
22.6°N, 88.4°E MAY 1951

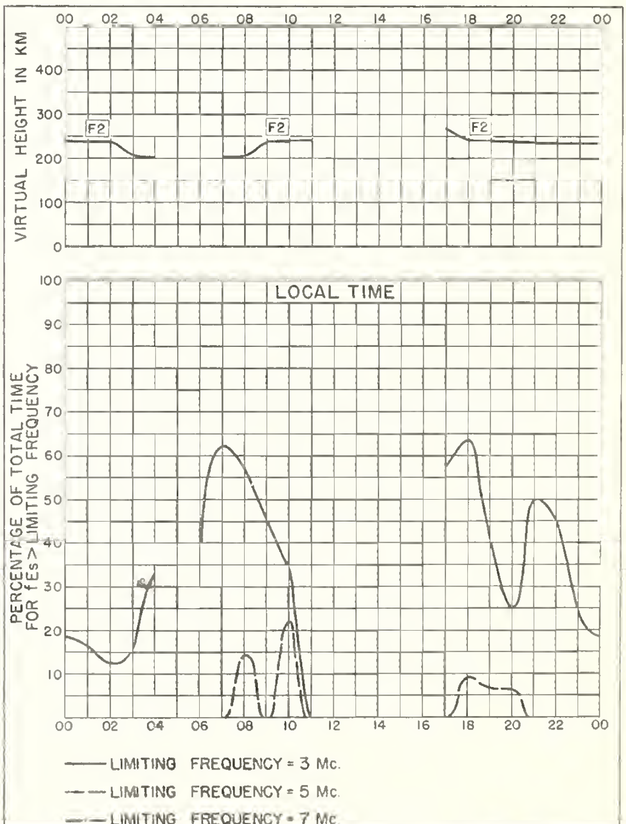

Fig. 96. CALCUTTA, INDIA MAY 1951

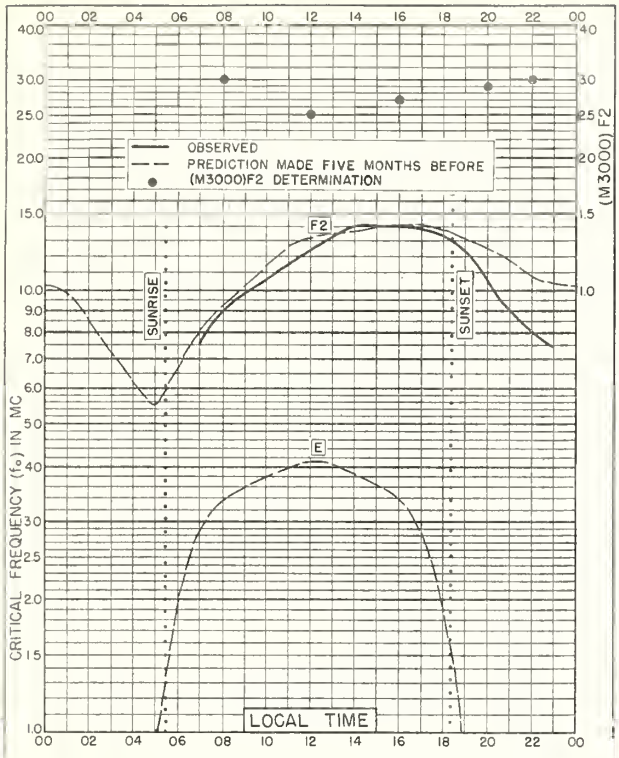

Fig. 97 BOMBAY, INDIA
19.0°N, 73.0°E MAY 1951

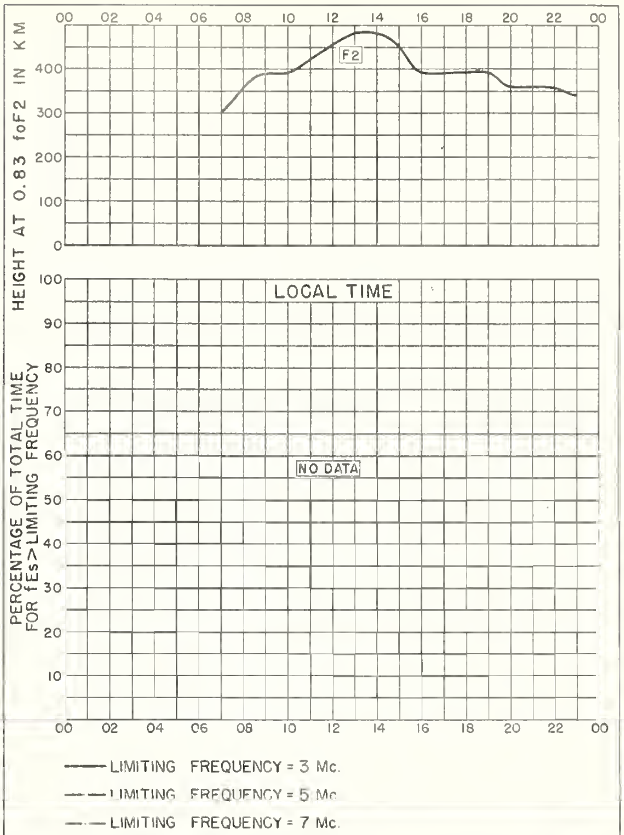

Fig. 98 BOMBAY, INDIA MAY 1951

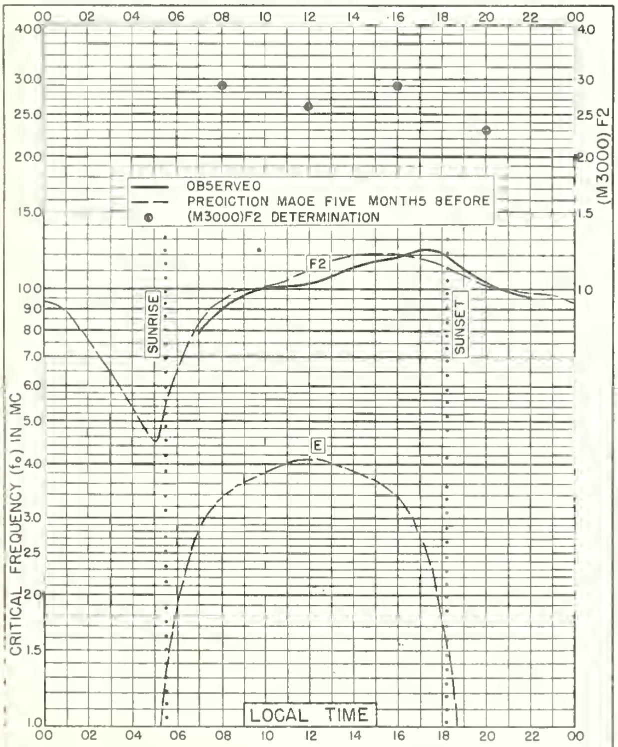

Fig. 99 MADRAS, INDIA
13.0°N, 80.2°E MAY 1951

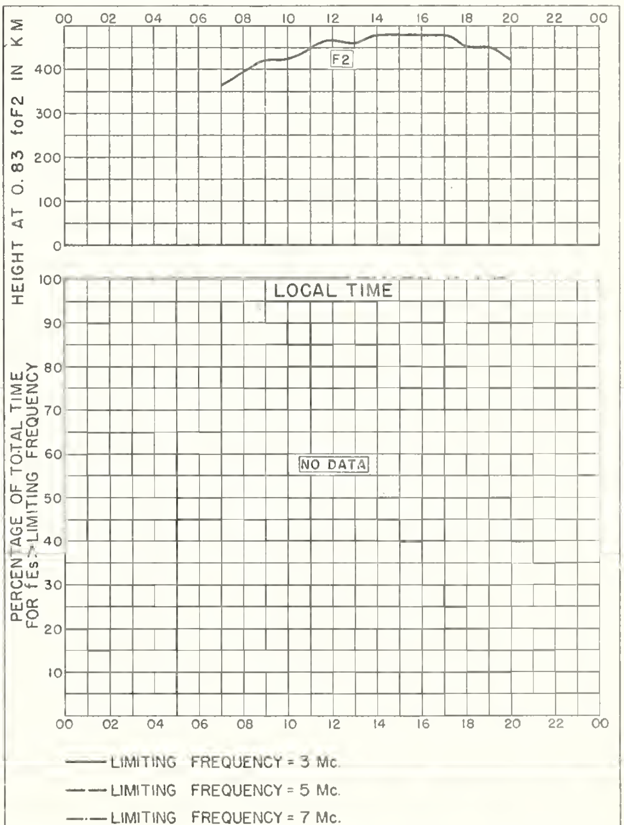

Fig. 100. MADRAS, INDIA MAY 1951

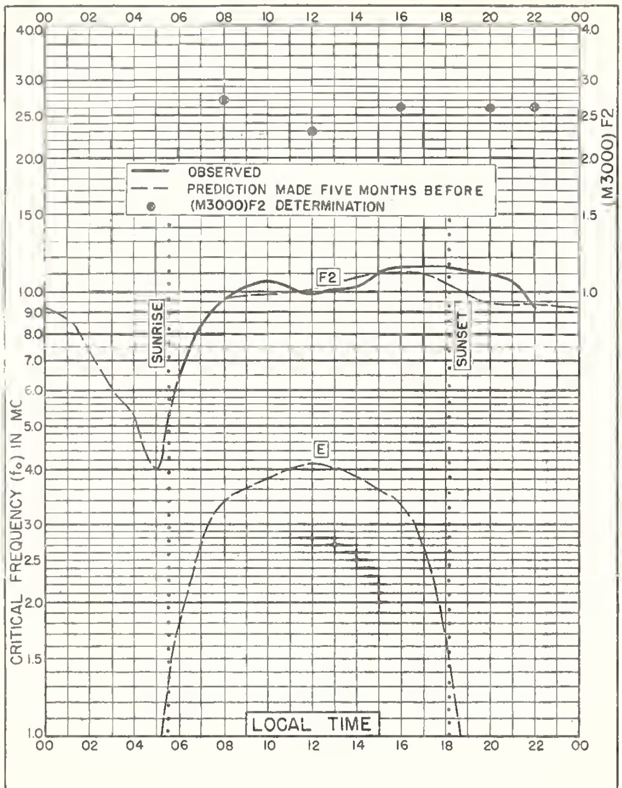

Fig. 101. TIRUCHY, INDIA
10.8°N, 78.8°E MAY 1951

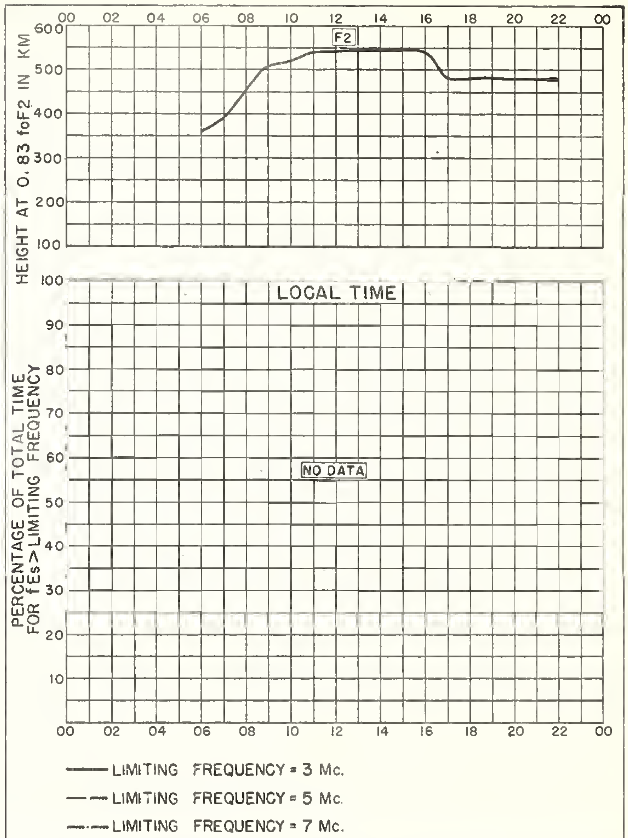

Fig. 102. TIRUCHY, INDIA MAY 1951

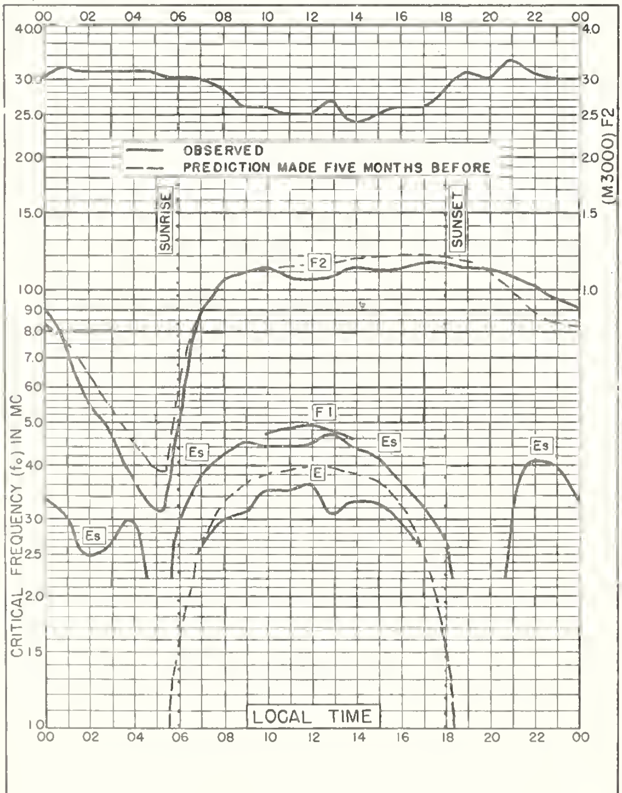

Fig. 103. SINGAPORE, BRIT. MALAYA
1.3°N, 103.8°E MAY 1951

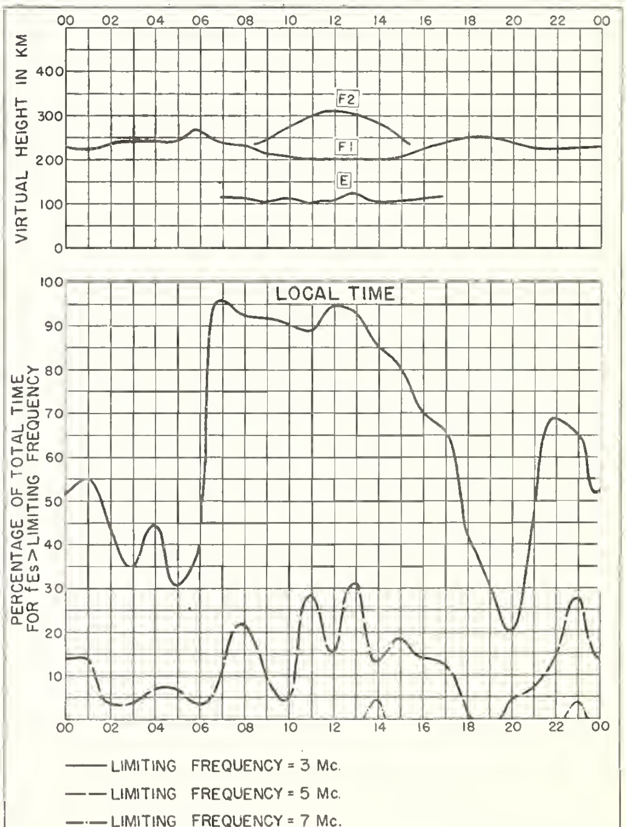

Fig. 104. SINGAPORE, BRIT. MALAYA MAY 1951

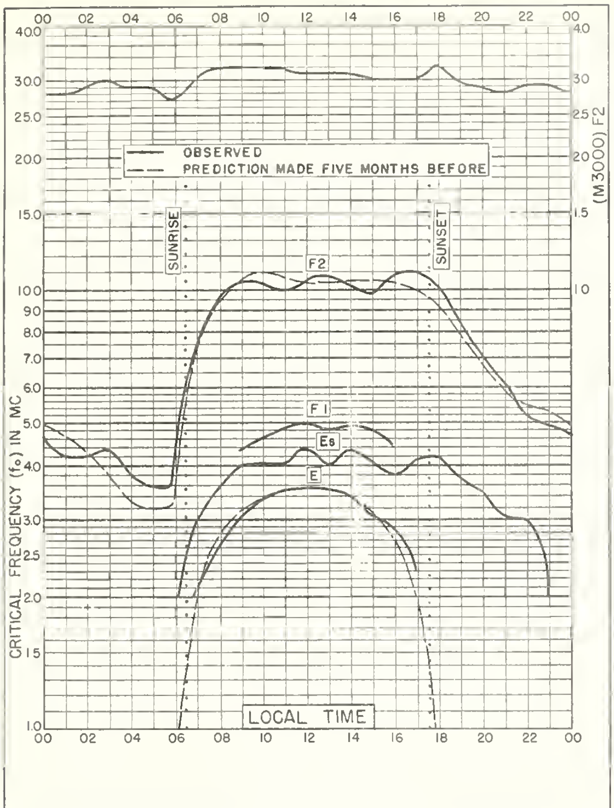

Fig. 105. RAROTONGA I.
21.3° S, 159.8° W MAY 1951

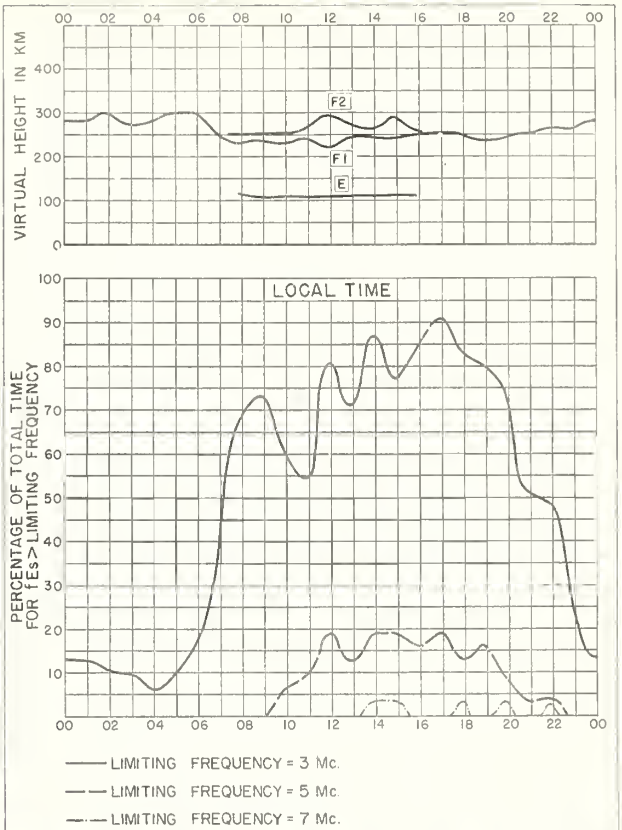

Fig. 106. RAROTONGA I. MAY 1951

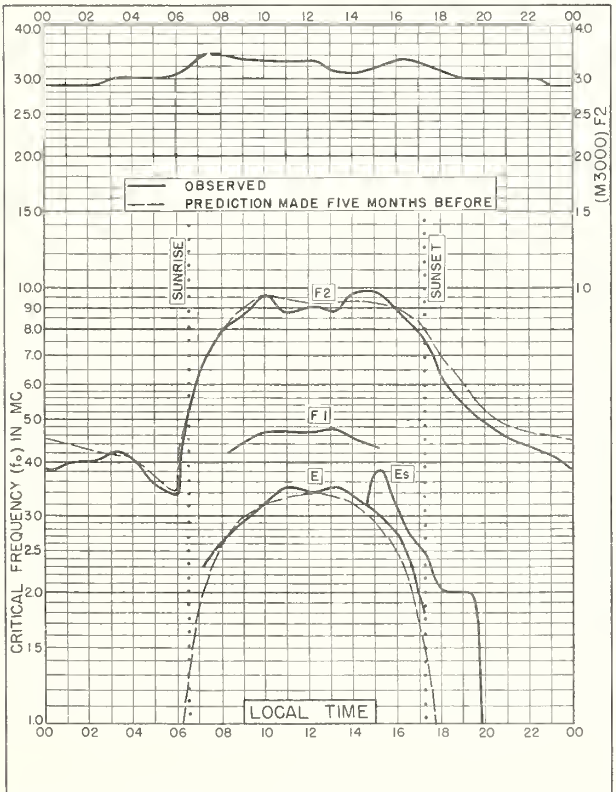

Fig. 107 BRISBANE, AUSTRALIA
27.5° S, 153.0° E MAY 1951

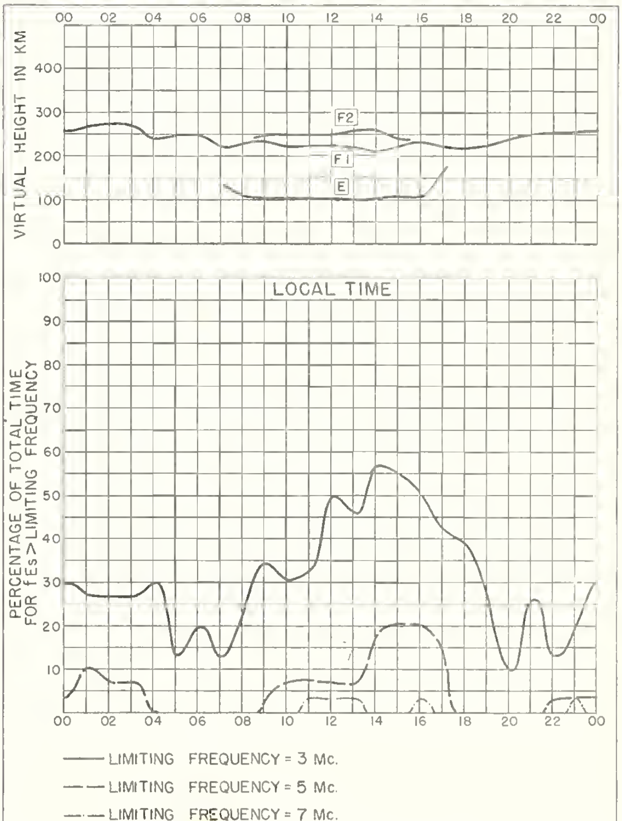

Fig 108. BRISBANE, AUSTRALIA MAY 1951

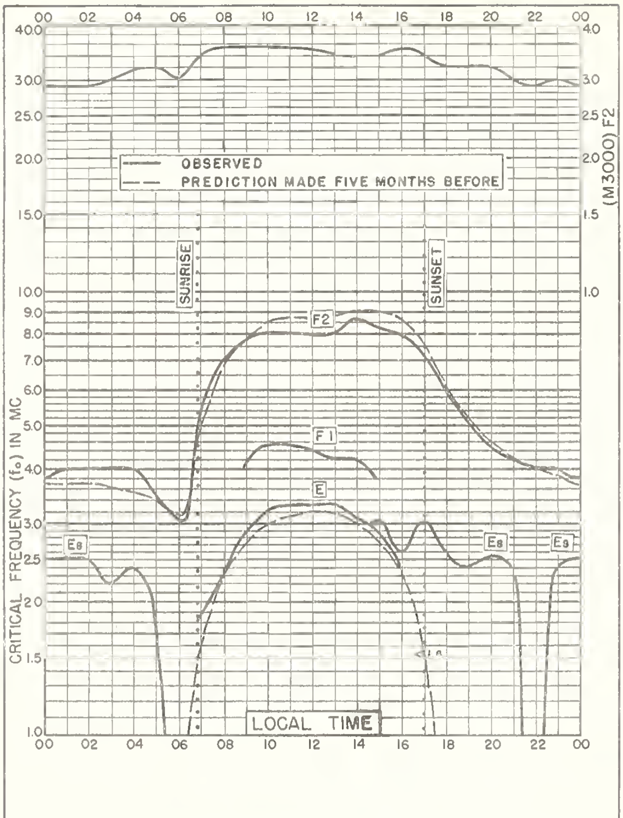

Fig. 109. CANBERRA, AUSTRALIA
35.3° S, 149.0° E MAY 1951

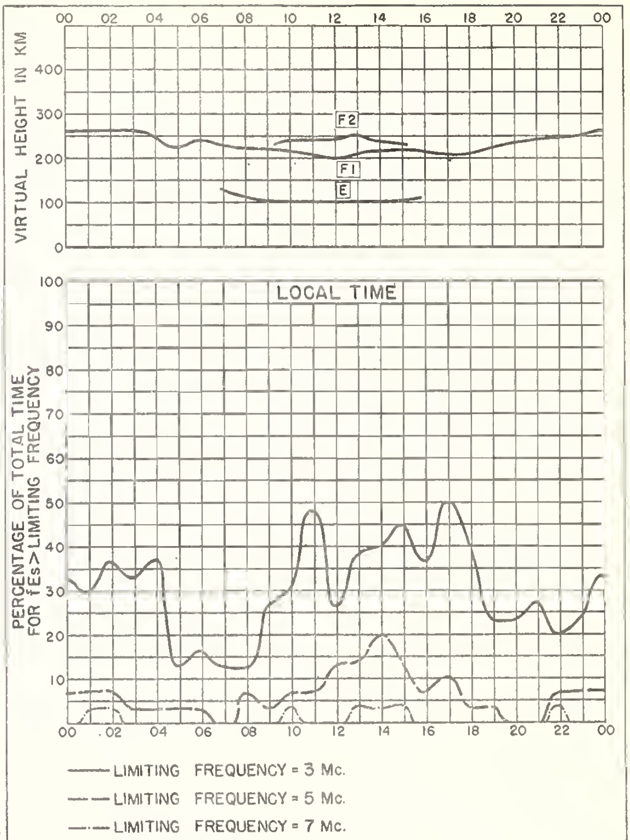

Fig. 110. CANBERRA, AUSTRALIA MAY 1951

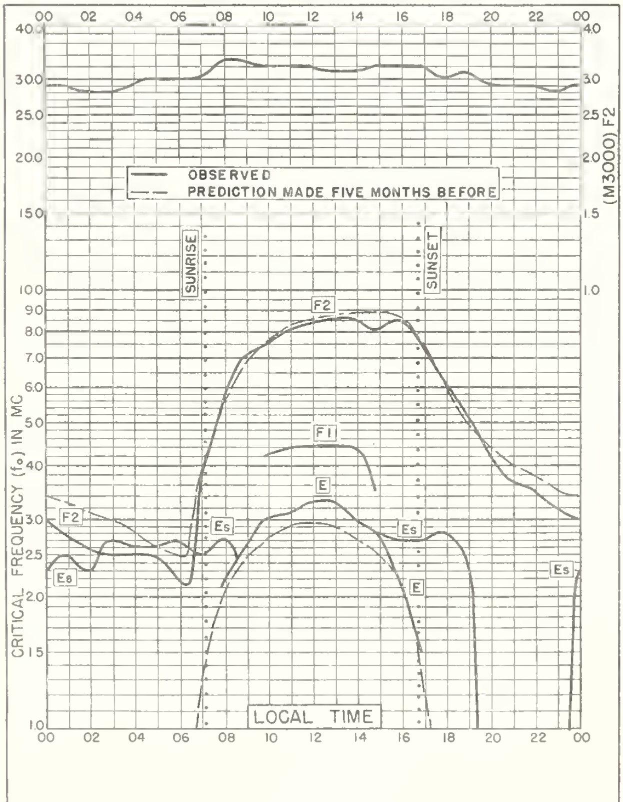

Fig. 111. HOBART, TASMANIA
42.8° S, 147.4° E MAY 1951

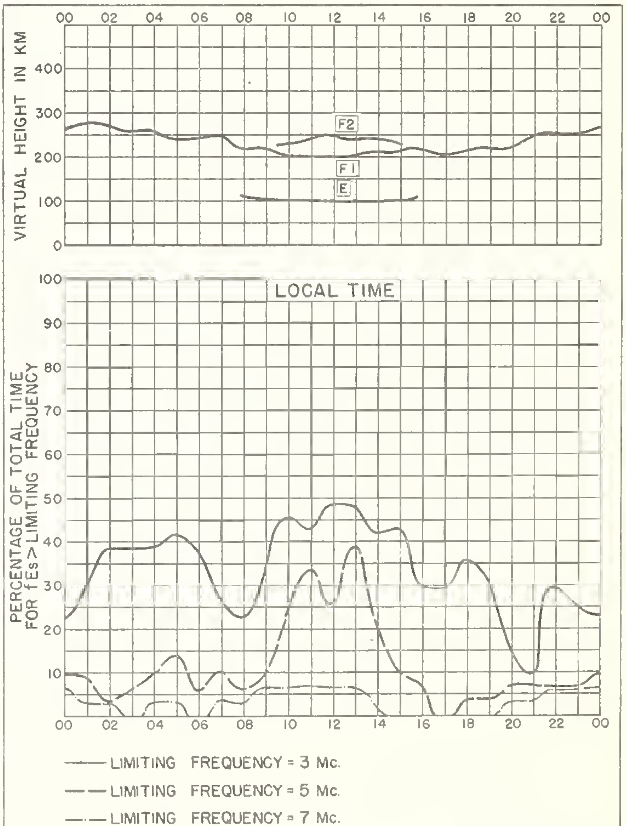

Fig. 112. HOBART, TASMANIA MAY 1951

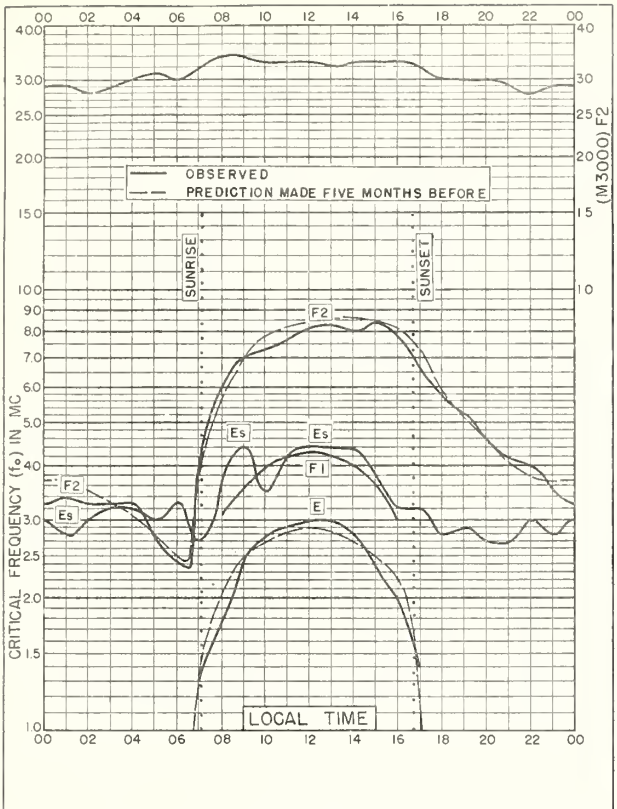

Fig. 113. CHRISTCHURCH, N. Z.
43.6°S, 172.7°E MAY 1951

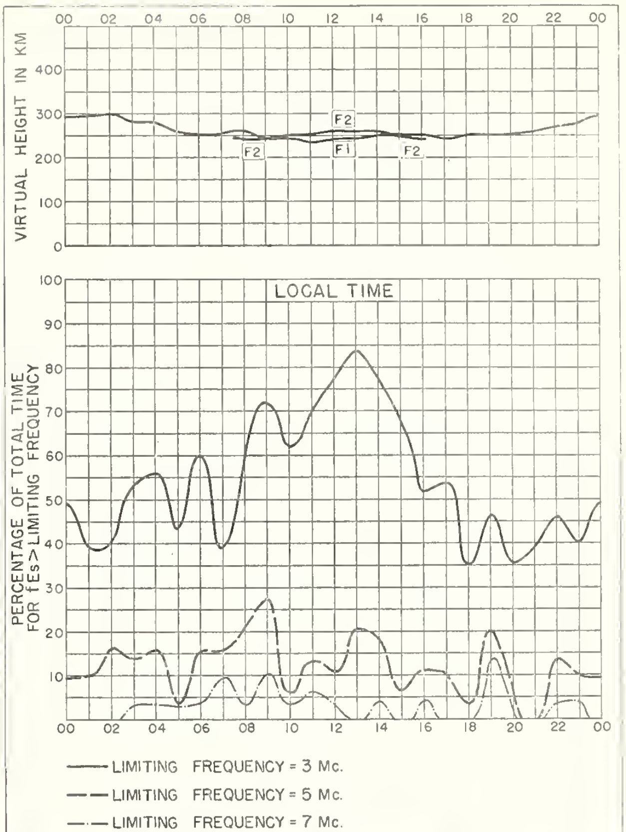

Fig.114. CHRISTCHURCH, N. Z. MAY 1951

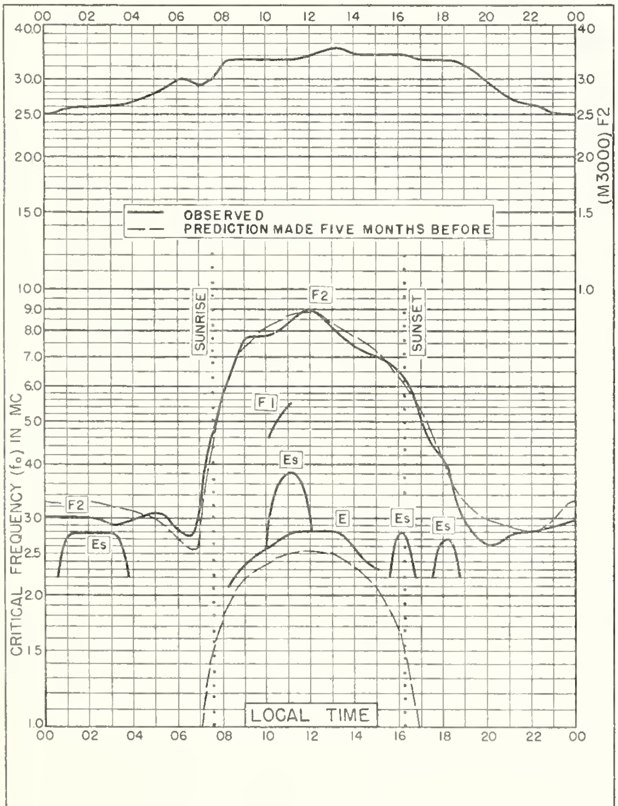

Fig. 115. FALKLAND IS.
51.7° S, 57.8° W MAY 1951

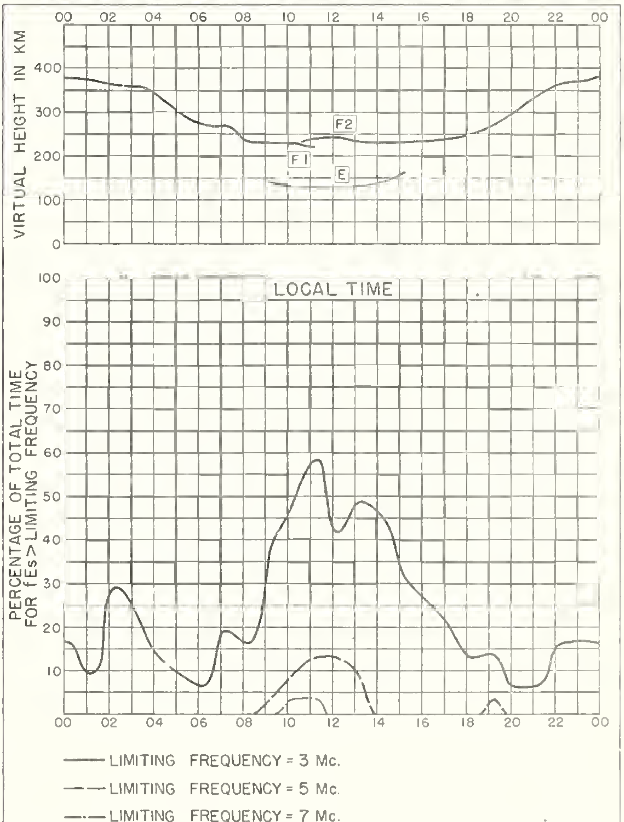

Fig.116. FALKLAND IS. MAY 1951

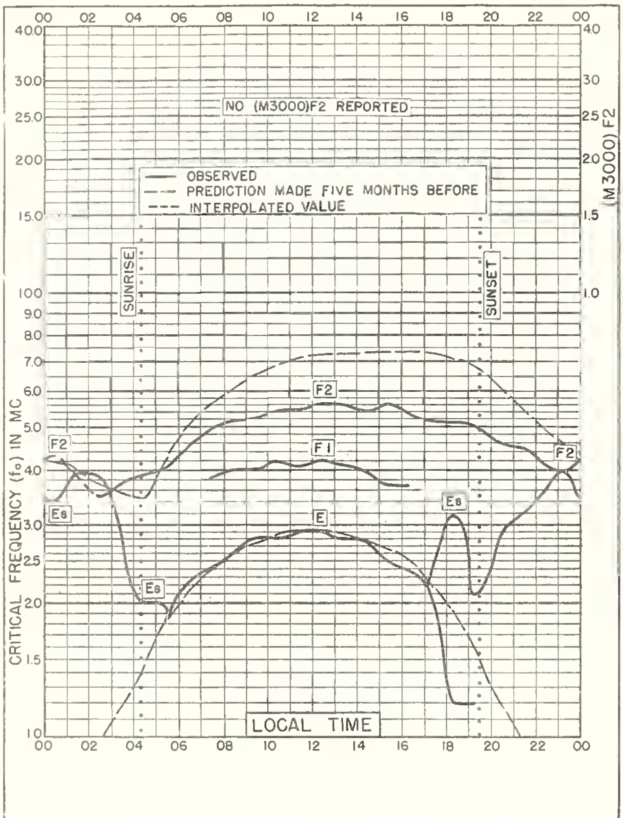

Fig. 117. KIRUNA, SWEDEN
67.8°N, 20.5°E APRIL 1951

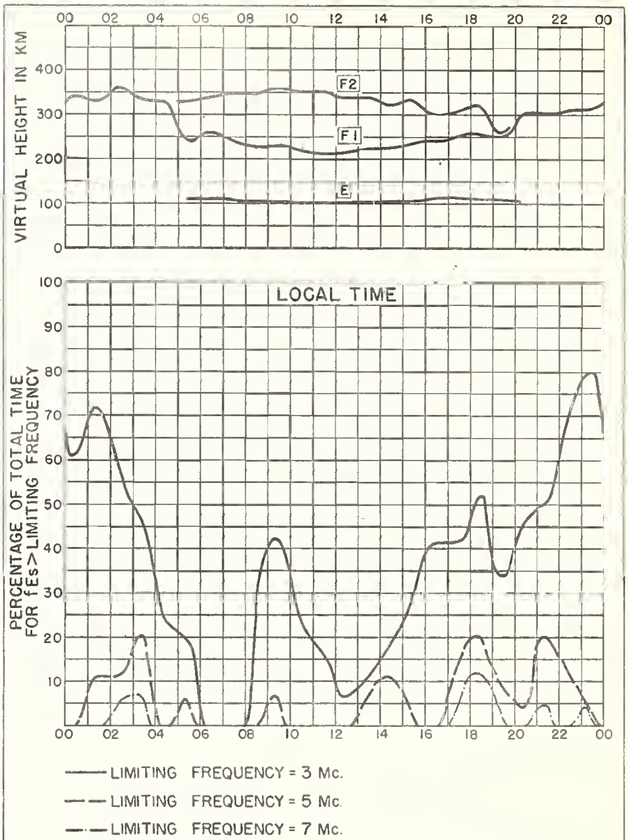

Fig. 118. KIRUNA, SWEDEN APRIL 1951

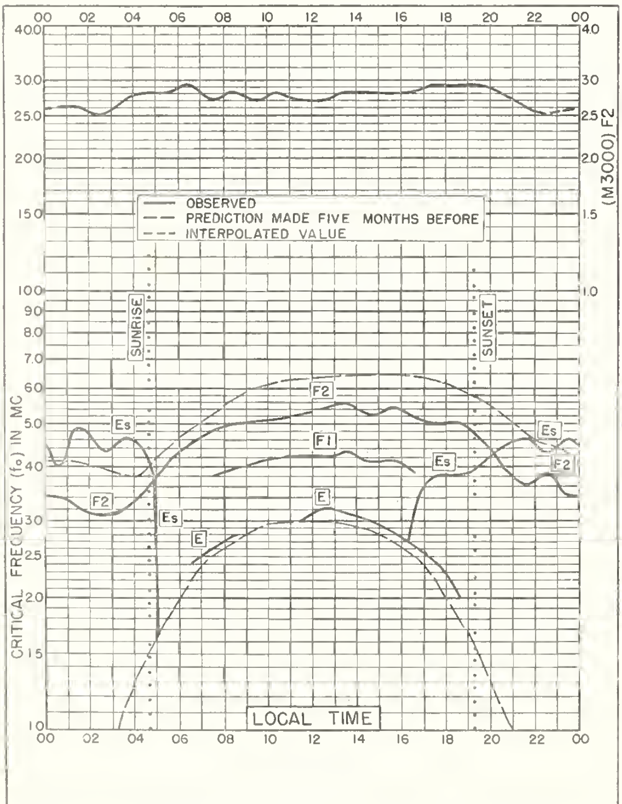

Fig. 119. REYKJAVIK, ICELAND
64.1°N, 21.8°W APRIL 1951

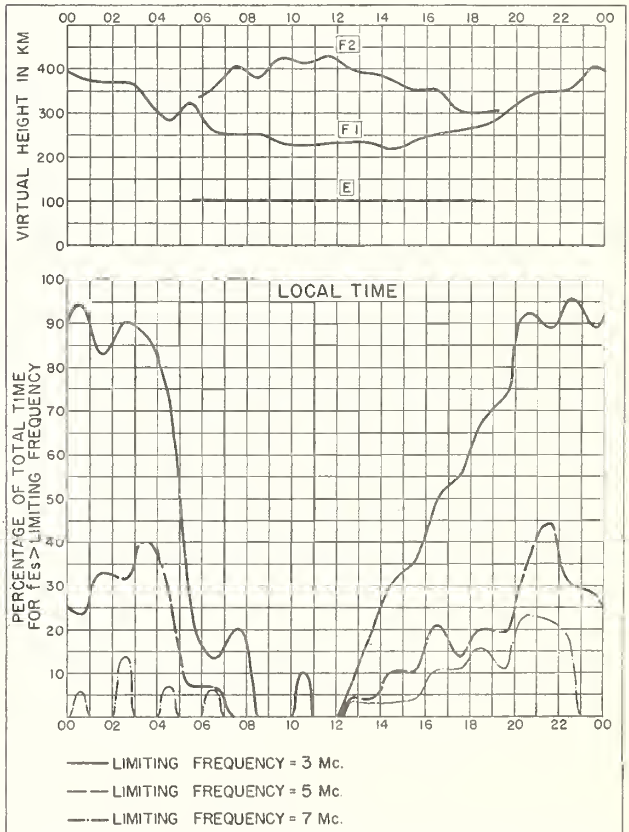

Fig. 120. REYKJAVIK, ICELAND APRIL 1951

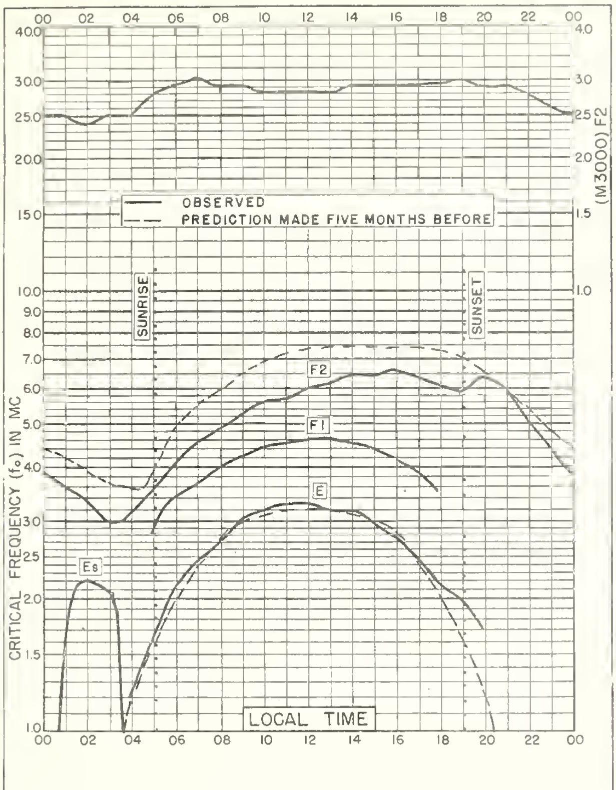

Fig. 121. FRASERBURGH, SCOTLAND
57.6° N, 2.1° W APRIL 1951

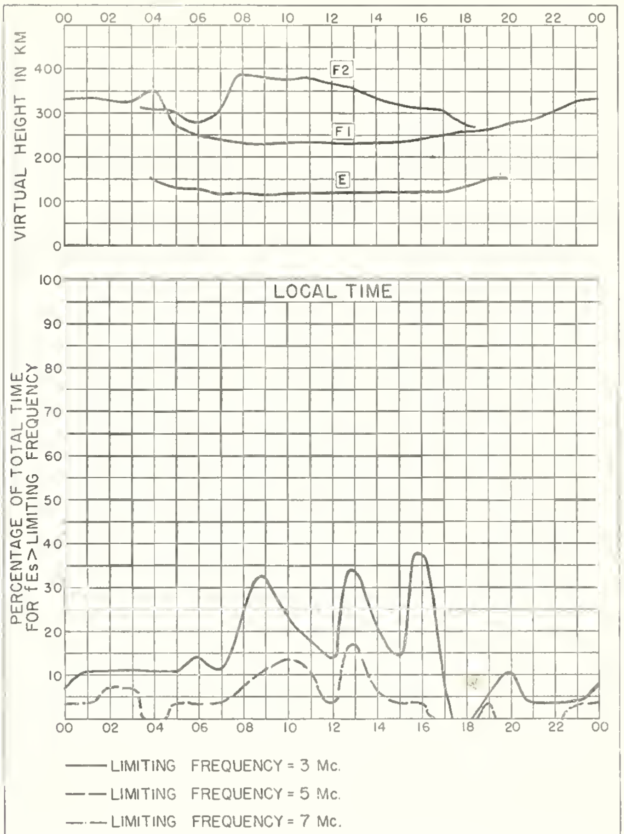

Fig. 122. FRASERBURGH, SCOTLAND APRIL 1951

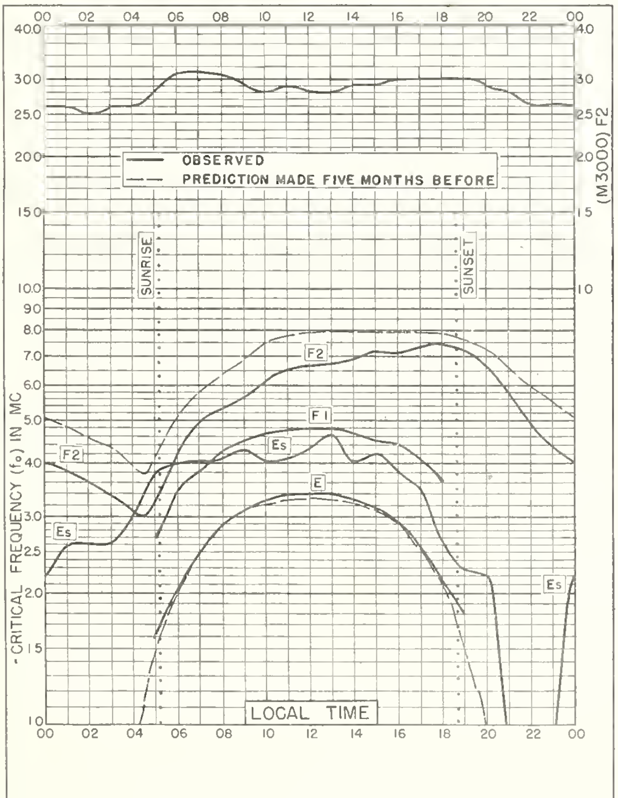

Fig. 123. SLOUGH, ENGLAND
51.5°N, 0.6° W APRIL 1951

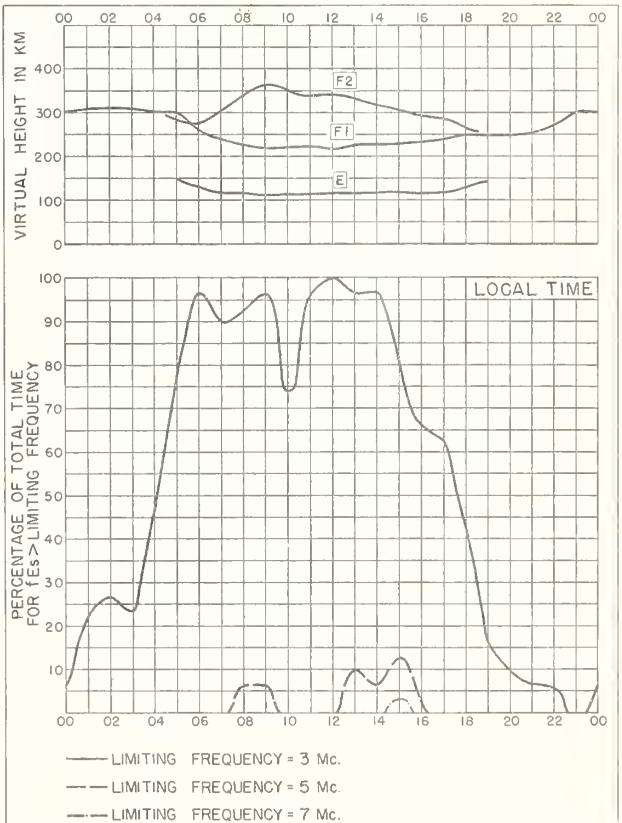

Fig. 124. SLOUGH, ENGLAND APRIL 1951

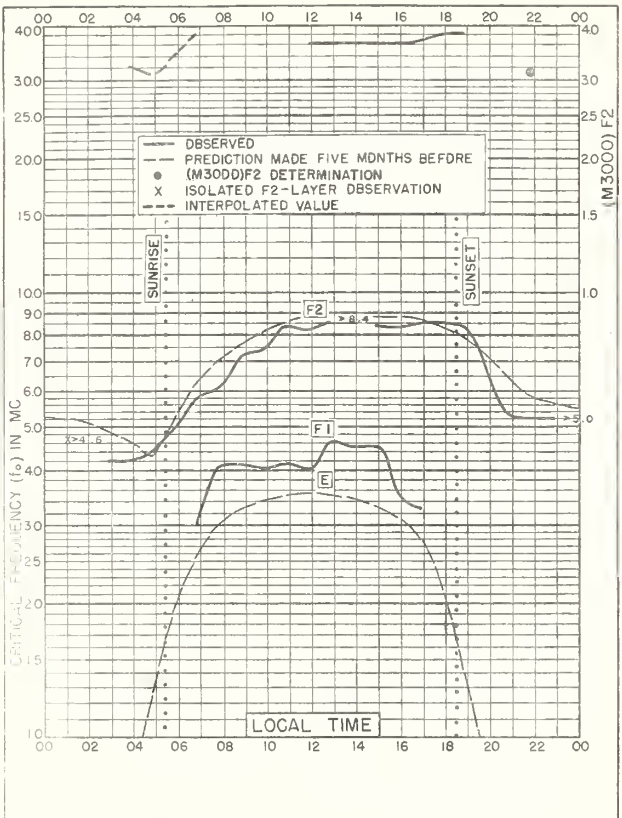

Fig. 125. ROME, ITALY
41.9°N, 12.5°E APRIL 1951

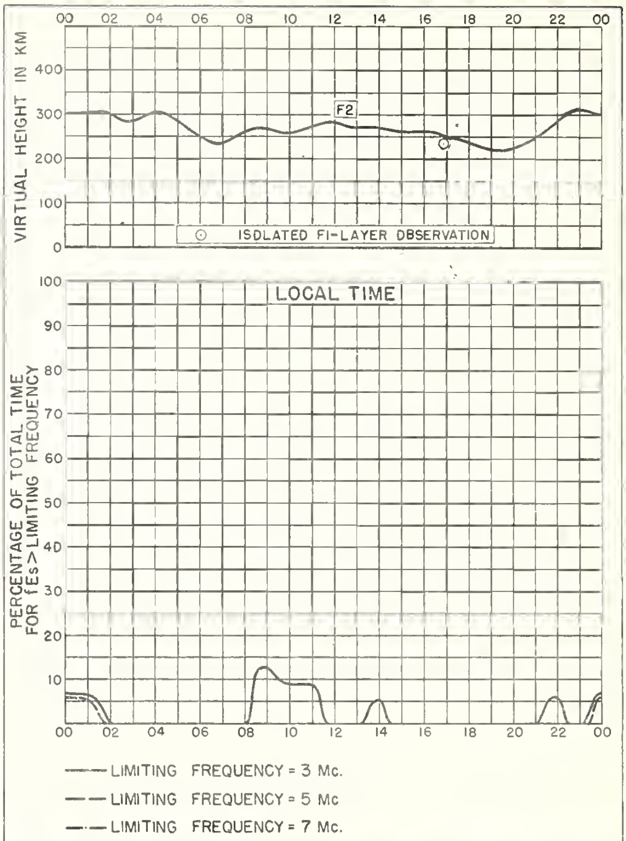

Fig. 126 ROME, ITALY APRIL 1951

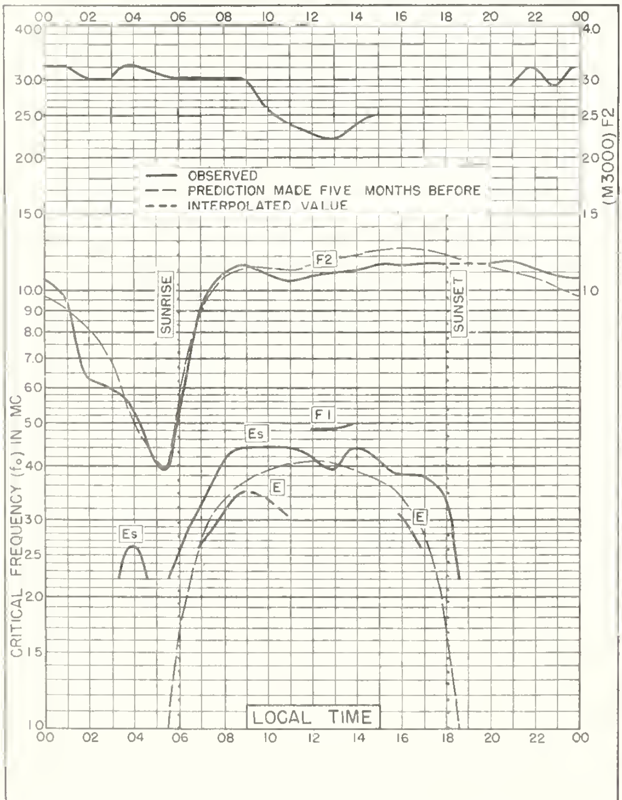

Fig. 127. SINGAPORE, BRIT. MALAYA
1.3°N, 103.8°E APRIL 1951

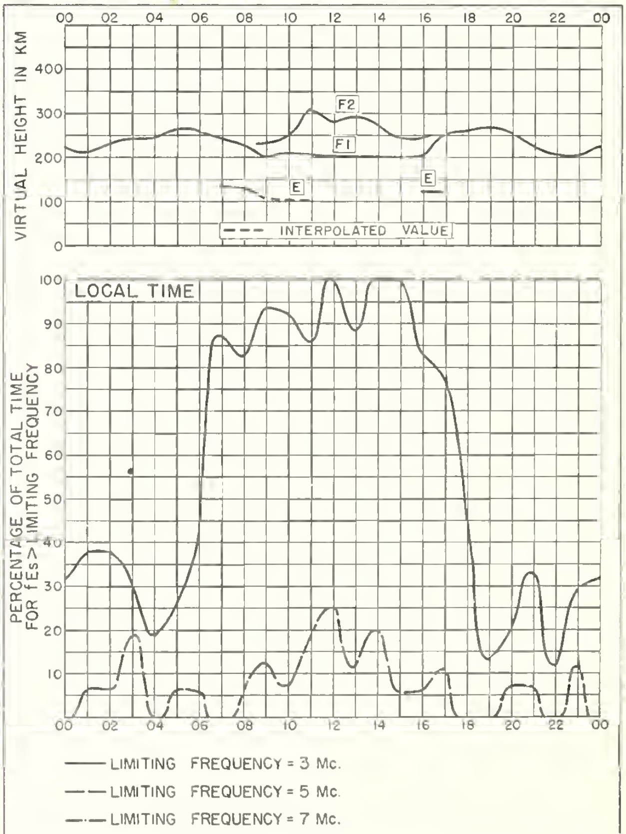

Fig. 128. SINGAPORE, BRIT. MALAYA APRIL 1951

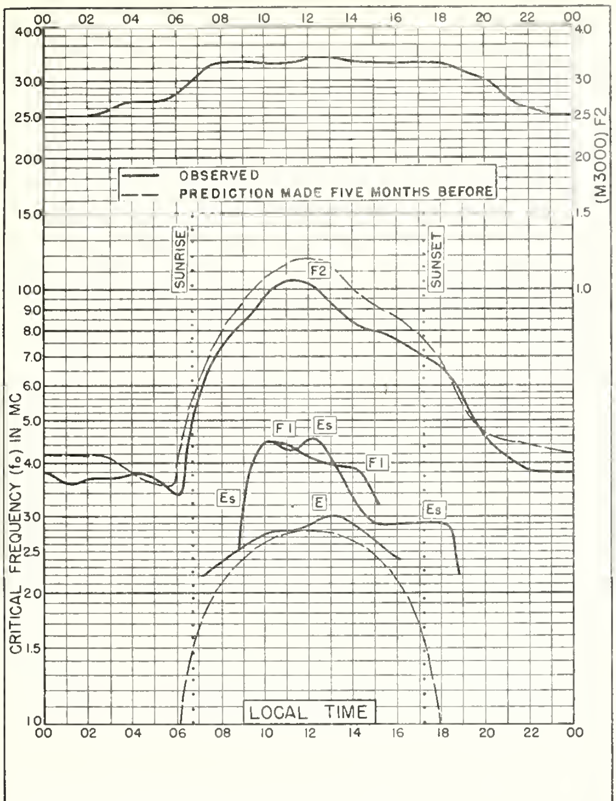

Fig.129. FALKLAND IS.
51.7°S, 57.8°W APRIL 1951

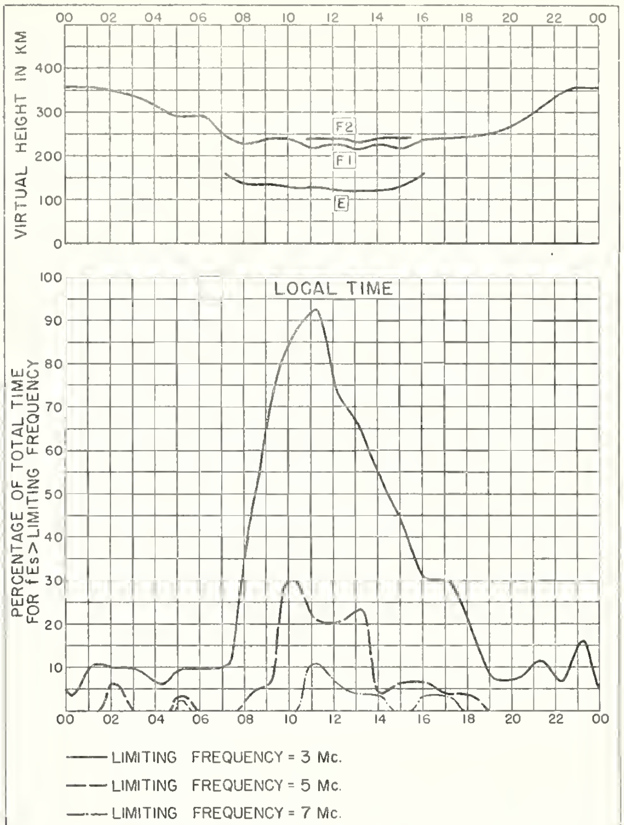

Fig.130. FALKLAND IS. APRIL 1951

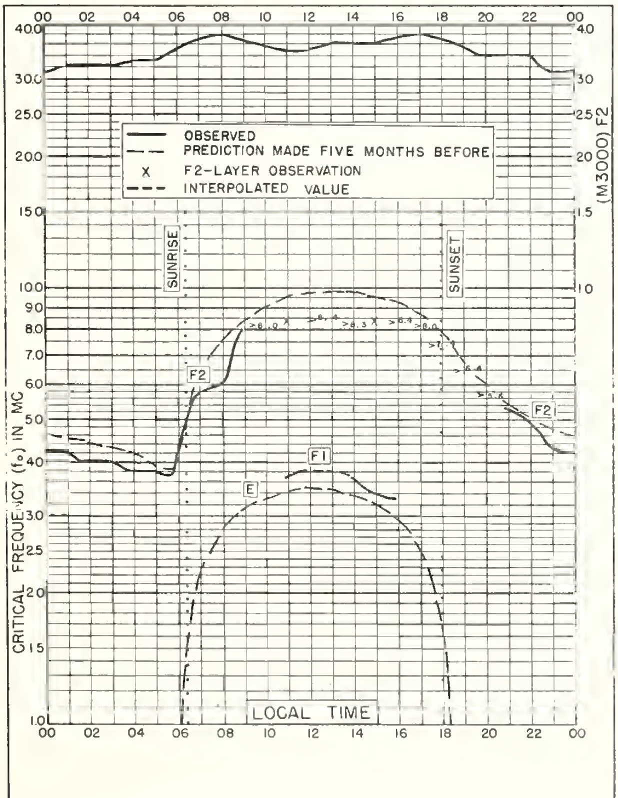

Fig 131. ROME, ITALY
41.9°N, 12.5°E MARCH 1951

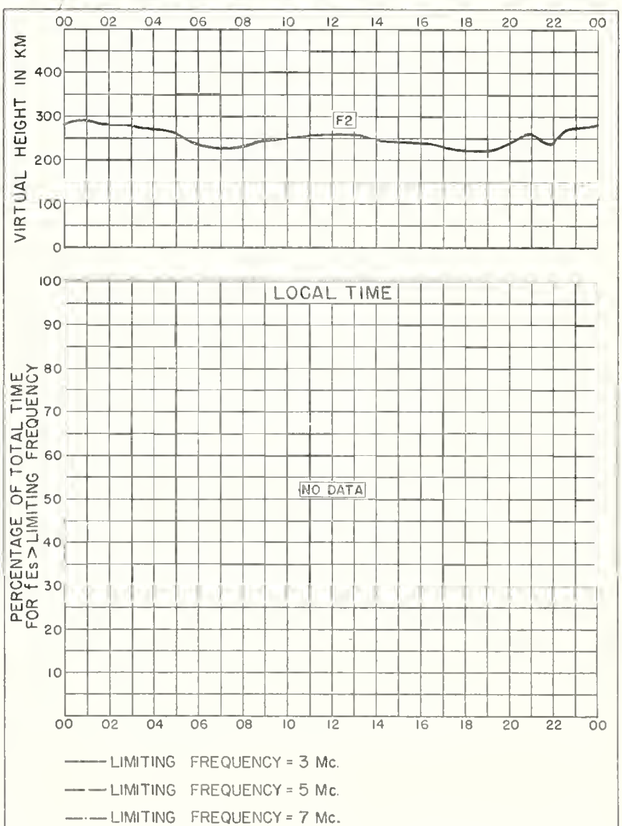

Fig. 132. ROME, ITALY MARCH 1951

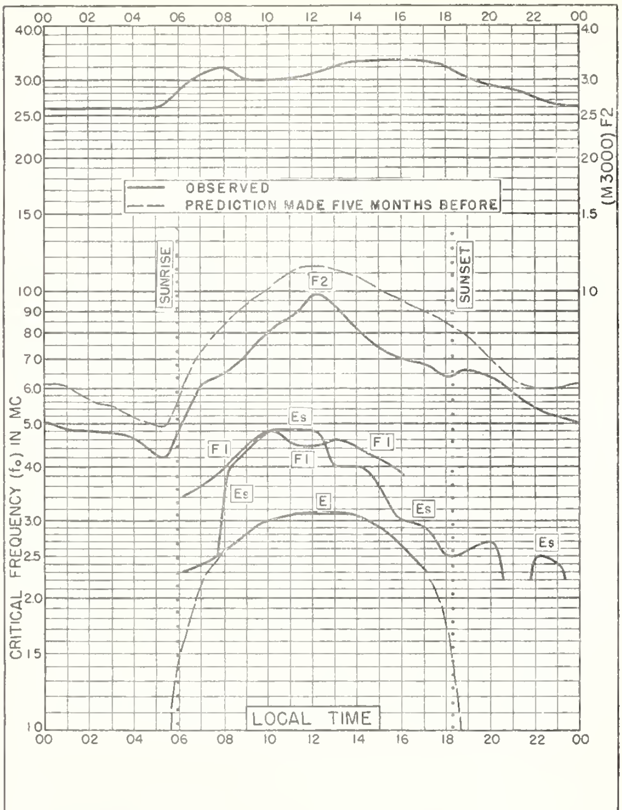

Fig. 133 FALKLAND IS.
51.7°S, 57.8°W MARCH 1951

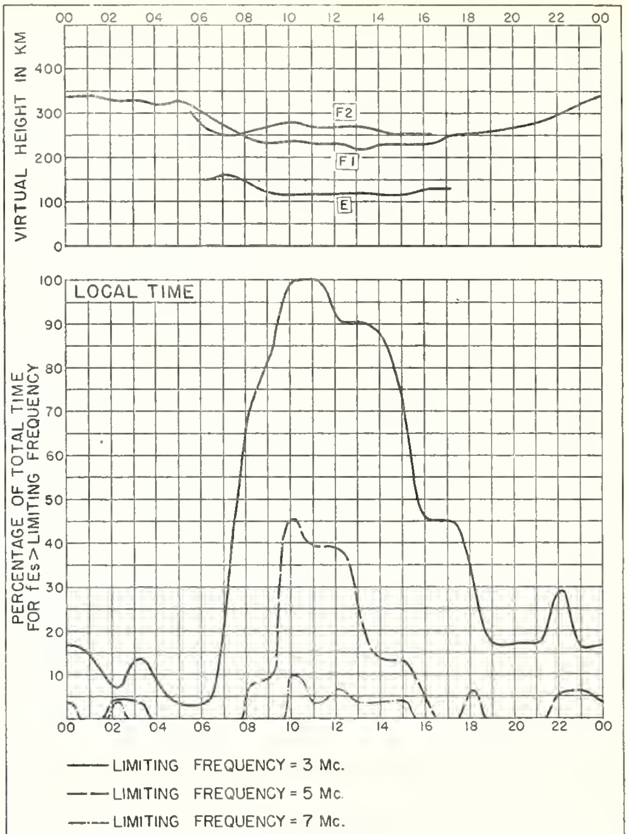

Fig. 134 FALKLAND IS. MARCH 1951

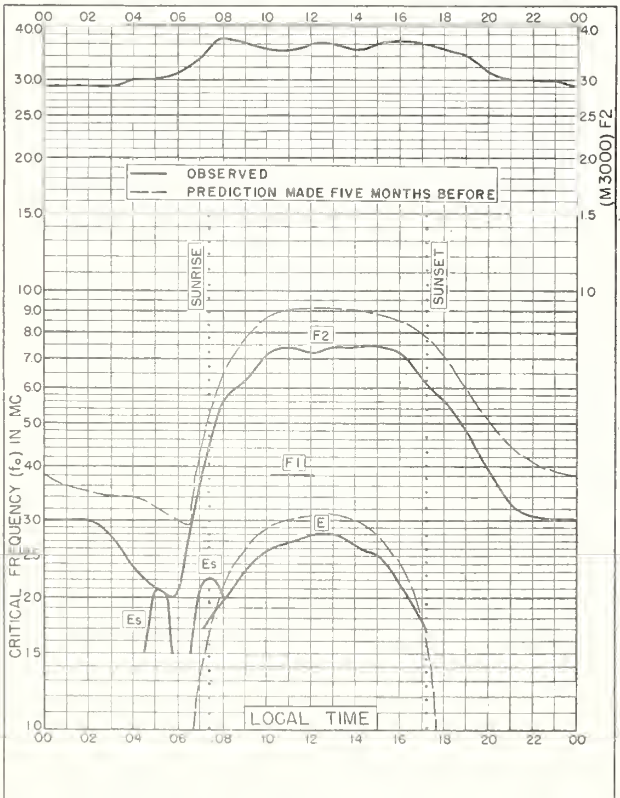

Fig. 135. DOMONT, FRANCE
49.0°N, 2.3°E FEBRUARY 1951

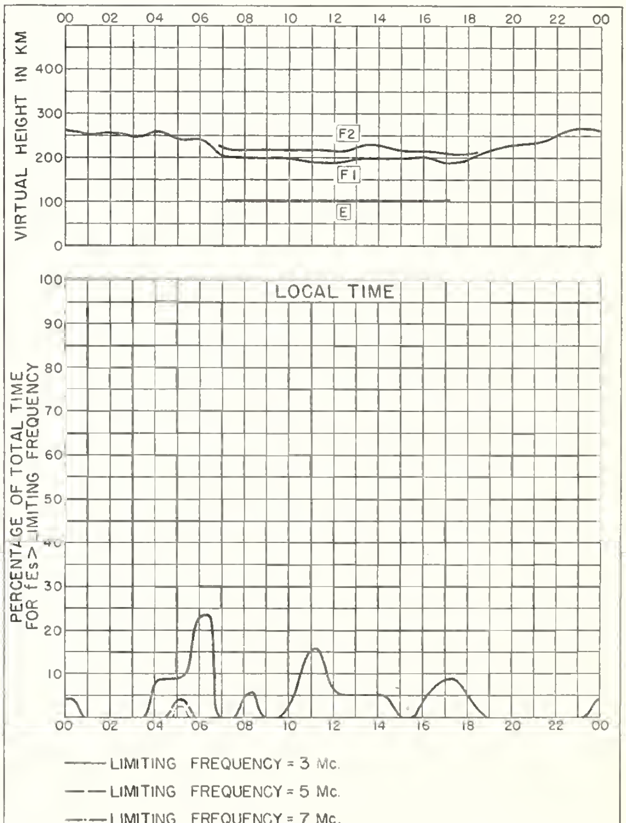

Fig. 136. DOMONT, FRANCE FEBRUARY 1951

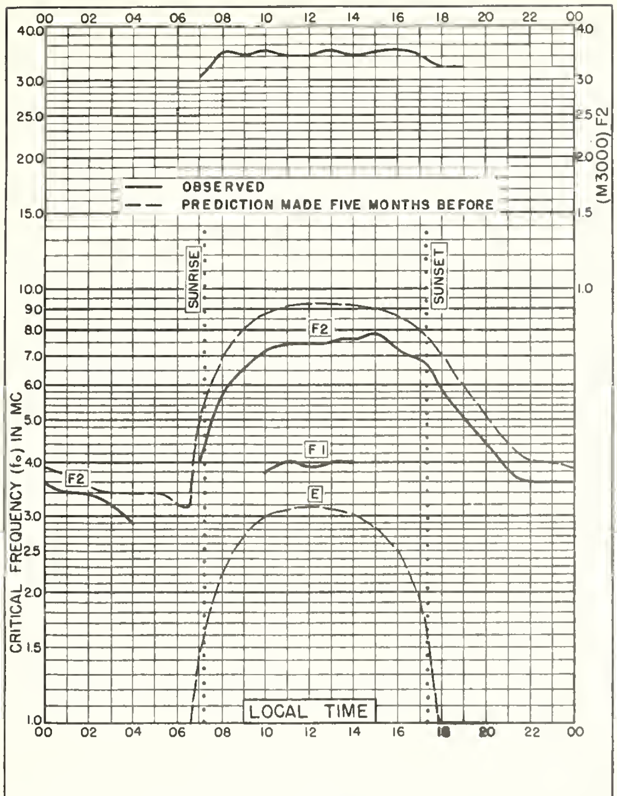

Fig. 137. POITIERS, FRANCE
46.6° N, 0.3° E FEBRUARY 1951

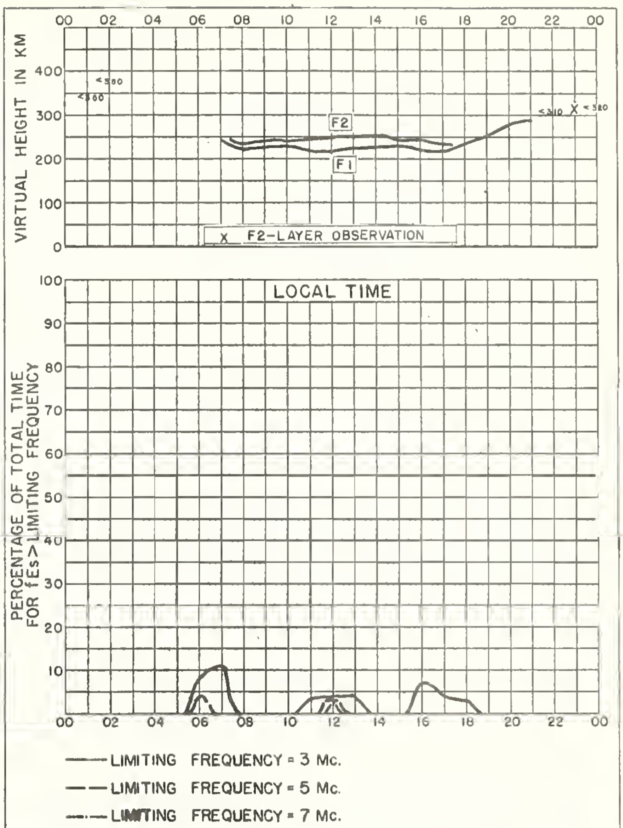

Fig. 138. POITIERS, FRANCE FEBRUARY 1951

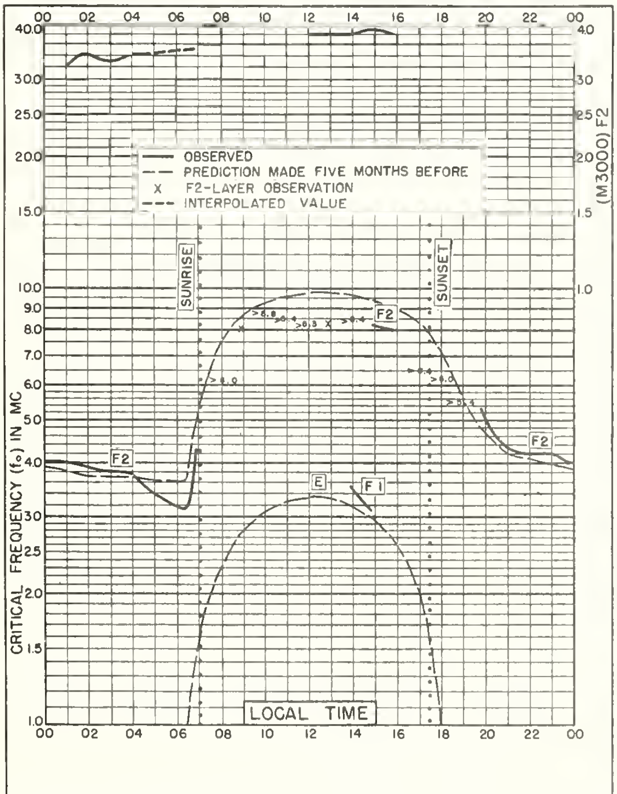

Fig. 139. ROME, ITALY
41.9° N, 12.5° E FEBRUARY 1951

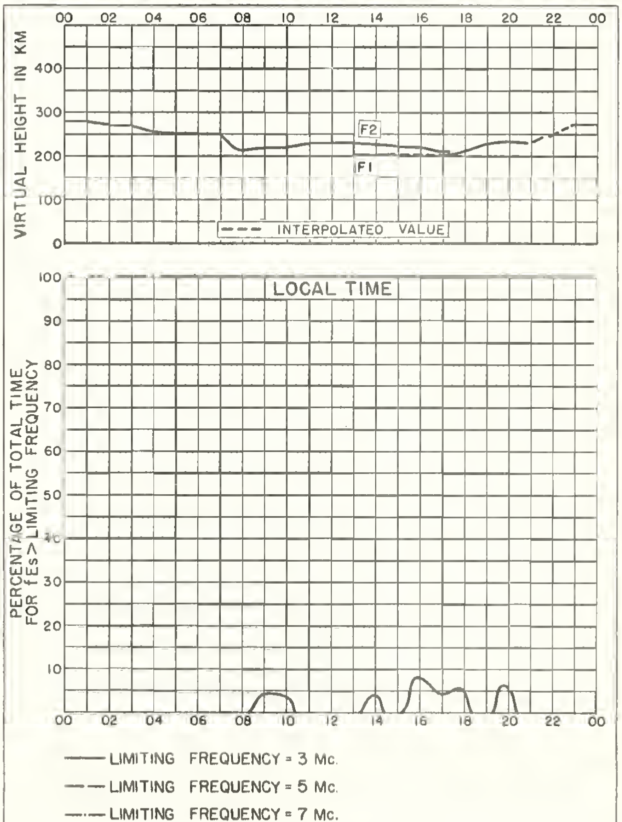

Fig. 140. ROME, ITALY FEBRUARY 1951

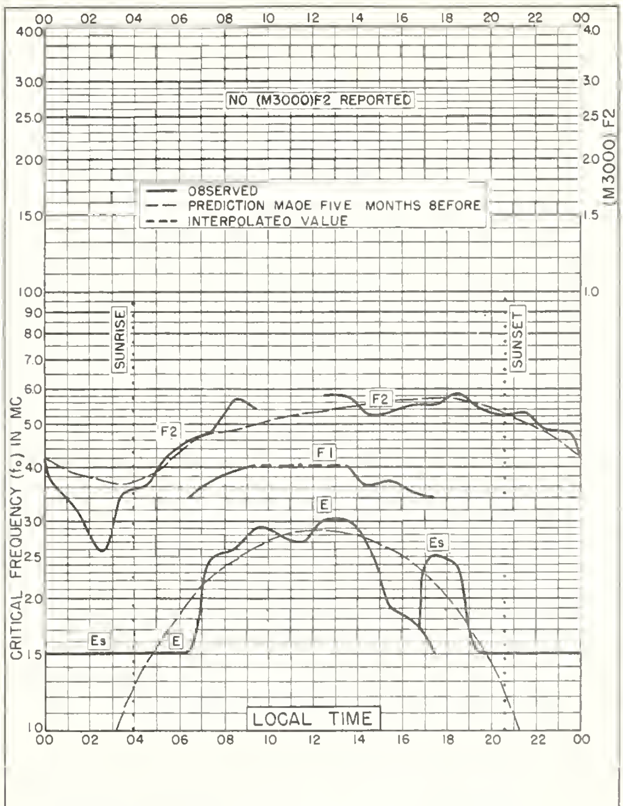

Fig. 141. TERRE ADELIE
66.8°S, 141.4°E FEBRUARY 1951

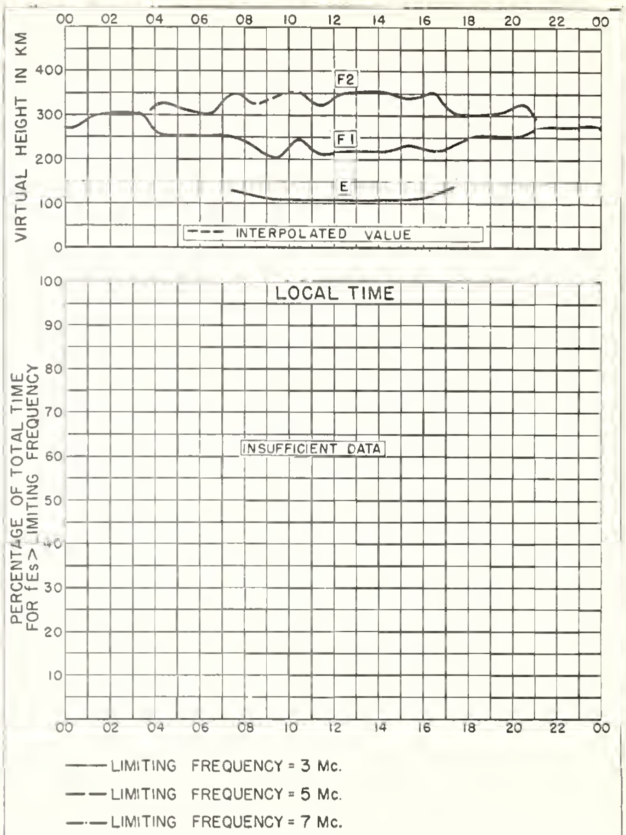

Fig. 142. TERRE ADELIE FEBRUARY 1951

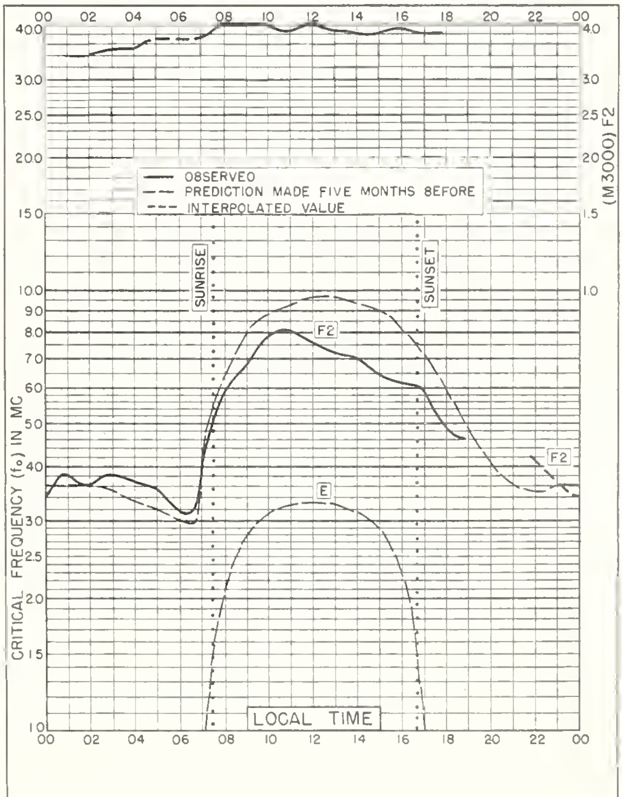

Fig. 143. ROME, ITALY
41.9°N, 12.5°E JANUARY 1951

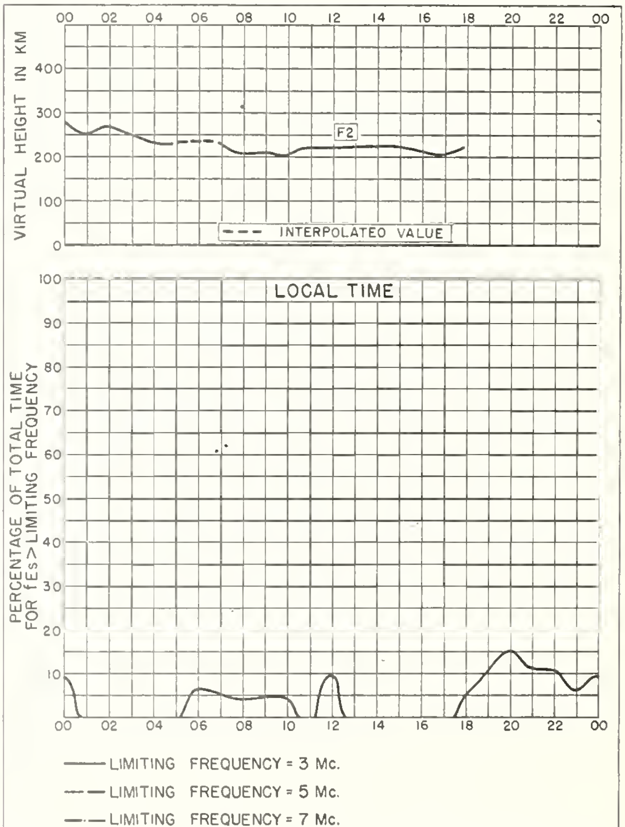

Fig. 144. ROME, ITALY JANUARY 1951

Index of Tables and Graphs of Ionospheric Data

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Index (CRPL-F87, concluded)

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 ( ) series; Dept. of the Air Force, TO 16-1B-2 series.)
CRPL—F. Ionospheric Data.
*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 F2-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.

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- T1. Radar operation and weather. (Superseded by JANP 101.)
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CRPL—T3. Tropospheric Propagation and Radio-Meteorology. (Reissue of Columbia Wave Propagation Group WPG—5.)

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