IONOSPHERIC DATA

ISSUED
MARCH 1948

PREPARED BY CENTRAL RADIO PROPAGATION LABORATORY
National Bureau of Standards
Washington, D.C.

CRPL-F 43 CENTRAL RADIO PROPAGATION LABORATORY
NATIONAL BUREAU OF STANDARDS
WASHINGTON, D.C.
Issued
22 Mar. 1948

IONOSPHERIC DATA

CONTENTS

TERMINOLOGY AND SCALING PRACTICES

The symbols and terminology used in this report are those adopted by the International Radio Propagation Conference, and given in detail on pages 24 to 26 of the report IRPL-C61, "Report of International Radio Propagation Conference," and in the section on "Terminology" in report IRPL-F5.

Beginning with IRPL-F14 the symbol L, defined as follows, is used in detailed tabulations of hourly values of ionosphere characteristics observed at Washington:

> L or 1 = critical frequency, muf, or muf factor for F1 layer omitted because no definite and abrupt change in slope of the h'f curve occurs either for the first reflection or for any of the multiples.

In the past, ionospheric conditions were summarized on a monthly basis by using average or mean values for each hour of the day for each month. However, following the recommendations of the International Radio Propagation Conference, held in Washington April 17 to May 5, 1944, beginning with data for January 1, 1945, median values were used by IRPL wherever possible. Thus, median values are given for Washington, for all stations reporting directly to the CRPL, for the Canadian stations, and for all others sending to the CRPL detailed tabulations from which medians can be computed.

Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

The monthly median values used here are the values equaled or exceeded on half the days of the month at the given hour. 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 in the report referred to above, IRPL-C61.

a. For all ionospheric characteristics:
   Values missing because of A, B, C, or F (see terminology referred to above) are omitted from the median count.

b. For critical frequencies and virtual heights:
   Values of $f^{o}F2$ (and $f^{o}E$ near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F2 (and h'E near sunrise and sunset) missing for this reason are counted as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count. See CRPL-F38, page 9.
   Values missing because of D are counted as equal to or greater than the upper limit of the recorder.
   Values missing because of G are counted:
   1. For $f^{o}F2$, as equal to or less than $f^{o}F1$.
   2. For h'F2, as equal to or greater than the median.
   Values missing for any other reason are omitted from the median count.

c. For muf factors (M-factors):

Values missing because of G 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 no Es reflections appeared, the equipment functioning normally otherwise, are counted as equal to or less than the median $f^{o}E$, or equal to or less than the lower frequency count of the recorder.

Values of fEs missing for any other reason, and values of hEs 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.

Beginning with CRPL-F33, an additional group of symbols is used in recording the Washington, D.C. data. The list of additional symbols and their meanings follows:

N - unable to make logical interpretation.
P - trace extrapolated to a critical frequency.
Q - the F1 layer not present as a distinct layer.
R - curve becomes incoherent near the F2 critical frequency.
S - no observation obtainable because of interference.
V - forked record (previously denoted by U. This change should also be made in CRPL-7-1).
Z - triple split near critical frequency.

For a more detailed explanation of the meaning and use of these symbols, see the report CRPL-7-1, "Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records."

MONTHLY AVERAGE AND MEDIAN VALUES OF WORLD-WIDE IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 71 and figures 1 to 120 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL predictions of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data:

Australian Council for Scientific and Industrial Research,
Radio Research Board:
- Brisbane, Australia
- Canberra, Australia
- Hobart, Tasmania
- Townsville, Australia

Australian Department of Supply and Shipping, Bureau of Mineral Resources, Geophysical Section:
- Watheroo, W. Australia

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

Canadian Radio Wave Propagation Committee:
- Churchill, Canada
- Clyde, Baffin I.
- Ottawa, Canada
- Portage la Prairie, Canada
- Prince Rupert, Canada
- St. John's, Newfoundland

New Zealand Radio Research Committee:
- Campbell I.
- Christchurch, New Zealand (Canterbury University College Observatory)
- Fiji Is.
- Rarotonga I.

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

Scientific Research Institute of Terrestrial Magnetism, Moscow, U.S.S.R.:
- Alma Ata, U.S.S.R.
- Bay Tiksey, U.S.S.R.
- Bukhta Tikhaya, U.S.S.R.
- Chita, U.S.S.R.
- Leningrad, U.S.S.R.
- Moscow, U.S.S.R.
- Sverdlovsk, U.S.S.R.
- Tomsk, U.S.S.R.

Japanese Physical Institute for Radio Waves (under supervision of Supreme Commander, Allied Powers):
Fukaura, Japan
Shibata, Japan
Tokyo (Kokobunji), Japan
Wakkanai, Japan
Yamakawa, Japan

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

National Bureau of Standards (Central Radio Propagation Laboratory):
Baton Rouge, Louisiana (Louisiana State University)
Boston, Massachusetts (Harvard University)
Fairbanks, Alaska (University of Alaska, College, Alaska)
Guam I.
Huancayo, Peru (Instituto Geofisico de Huancayo)
Maui, Hawaii
Palmyra I.
San Francisco, California (Stanford University)
San Juan, Puerto Rico (University of Puerto Rico)
Trinidad, British West Indies
Washington, D. C.
White Sands, New Mexico
Wuchang, China (National Wuhan University)

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

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

Radio Wave Research Laboratory, Central Broadcasting Administration:
Chungking, China
Lanchow, China
Nanking, China
Peiping, China

French Ministry of Naval Armaments (Section for Scientific Research):
Fribourg, Germany

National Laboratory of Radio-Electricity (French Ionospheric Bureau):
Bagneux, France

Philippine Republic, Radio Control Division, Department of Commerce and Industry:
Leyte, Philippine Is.

Norwegian Defense Research Establishment, Florida, Bergen, Norway:
Tromso, Norway

Beginning with CRPL-F26, publication of tables of so-called "provisional data" reported to the CRPL by telephone or telegraph was discontinued. The reason for this change in policy is that users of the data hitherto published in this form receive them through established channels sooner than through the F-series. Furthermore, having two sets of data, "provisional" and "final," for the same station for the same month leads to confusion.

It must be emphasized that no change has been made in the methods used for rapid reporting and exchange of data. The change has to do only with the printing of provisional data in the F-series.

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 these errors are due to:

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

b. Omission of values when $f^{o}F2$ is less than or equal to $f^{o}F1$, 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.

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. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. The following predicted smoothed 12-month running-average Zurich sunspot numbers were used in constructing the contour charts.

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

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

The data given in tables 72 to 83 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 "Terminology and Scaling Practices."

IONOSPHERE DISTURBANCES

Table 84 presents ionosphere character figures for Washington, D.C., during February 1948, as determined by the criteria presented in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, geomagnetic K-figures, which are usually covariant with them.

Table 85 lists for the stations whose locations are given the sudden ionosphere disturbances observed on the continuous field intensity recordings made at the Sterling Radio Propagation Laboratory during February 1948.

Table 86 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Platanos, Argentina, receiving station of the International Telephone and Telegraph Corporation on January 3 and 19, 1948.

Table 87 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, January 1948, 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 distur

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

AMERICAN AND ZURICH PROVISIONAL RELATIVE SUNSPOT NUMBERS

Table 88 presents the daily American relative sunspot number, R_A, computed from observations communicated to CRPL by observers in America and abroad. Beginning with the observations for February 1948, a new method of reduction of observations is employed such that each observer is assigned a scale-determining "observatory coefficient," ultimately referred to Zürich observations in a standard period, December 1944 to September 1945, and a statistical weight, the reciprocal of the variance of the observatory coefficient. The daily numbers listed in the table are the weighted means of all observations received for each day. Details of the procedure will be published shortly. The American relative sunspot number computed in this way is designated R_A. It is noted that a number of observatories abroad, including the Zürich observatory, are included in R_A. The scale of R_A was referred specifically to that of the Zürich relative sunspot numbers in the standard comparison period; since that time, R_A is influenced by the Zürich observations only in that Zürich proves to be a consistent observer and receives a high statistical weight. In addition, this table lists the daily provisional Zürich sunspot numbers, R_Z.

SOLAR CORONAL INTENSITIES OBSERVED AT CLIMAX, COLORADO

In tables 89a and 89b are listed the intensities of the green (5303A) line of the emission spectrum of the solar corona as observed during February 1948 by the High Altitude Observatory of Harvard University and the University of Colorado at Climax, Colorado, for east and west limbs, respectively, at 5° intervals of position angle north and south of the solar equator at the limb computed to the nearest 5°. A correction, I, as listed, has been applied to the position angles of the actual observations which were on astronomical coordinates. The time of observation is given to the

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

Tables 90a and 90b give similarly the intensities of the first red (6374A) coronal line; tables 91a and 91b list the intensities of the second red (6704A) coronal line. The following symbols are used in tables 89, 90, and 91: a, observation of low weight; -, corona not visible; and x, position-angle not included in plate estimates.

ERRATA

CRPL-F41, pages 38 and 39, tables 69 and 70, revised values of coronal intensities are as follows:

Table number	Date	Line	Position angle (degrees)	Coronal intensity
69	Nov. 2	6374A	135	7
	2	6374A	140	4
	2	6374A	145	1
	2	6374A	150	-
	13	5303A	135	20
	13	5303A	185	7
	13	6374A	300	2
70	Dec. 2	5303A	90	40
	2	5303A	95	40
	2	5303A	180	7
	5	5303A	180	6
	10	6374A	85	1
	27	6374A	80	1
	27	6374A	250	1
	27	6704A	225	1
	28	5303A	0	2
	29	5303A	110	13
	31	6704A	65	1
	31	6374A	275	1
	31	6374A	295	15
	31	6374A	300	2
	31	6374A	305	1
	31	6374A	320	-
	31	6704A	295	-

TABLES OF IONOSPHERIC DATA

Table 1

Washington, D. C. (39.0°N, 77.5°W) February 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	4.6						2.9
01	255	4.6						2.9
02	255	4.6						2.9
03	250	4.4						2.9
04	250	4.2						3.0
05	250	3.9						3.0
06	250	3.6						3.0
07	240	5.0						3.2
08	230	7.7			110	2.2		3.5
09	220	9.0	210		100	2.9		3.3
10	230	9.8	210		100	3.2		3.3
11	240	10.4	200		100	3.4		3.2
12	240	11.2	200		100	3.5		3.1
13	240	11.4	210		100	3.5		3.1
14	240	10.9	210		100	3.3		3.1
15	240	10.6	220		100	3.1		3.1
16	230	(10.3)	220		100	2.8		(3.2)
17	230	(9.5)			110	2.1		(3.2)
18	220	9.3						3.2
19	220	8.7						3.1
20	210	7.0						3.1
21	230	5.9						3.0
22	240	5.4						3.0
23	250	4.9						3.0

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

Table 2

Clyde, Baffin I. (70.5°N, 68.6°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	4.6						
01	300	4.6						
02	300	4.3						
03	290	4.2						
04	320	4.2						
05	320	4.2						
06	340	4.3						
07	340	4.2						
08	300	4.8						
09	280	7.4						
10	265	7.2						
11	260	8.0						
12	260	8.2						
13	260	8.2						
14	260	8.0						
15	270	7.7						
16	260	6.3						
17	270	5.8						
18	300	5.8						
19	280	5.7						
20	280	5.2						
21	290	5.2						
22	270	4.9						
23	300	4.5						

Time: 75.0°W.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute: 1.9 Mc to 13.0 Mc, manual operation.

Table 3

Fairbanks, Alaska (64.9°N, 147.8°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	315	3.1					5.5	2.8
01	320	(3.6)					5.6	2.8
02	369	3.6					5.5	(2.6)
03	(375)	3.7					5.5	2.6
04	365	3.8					5.3	2.6
05	330	4.0					5.4	2.6
06	318	4.0					4.8	2.7
07	292	3.8					3.3	2.8
08	260	4.3					3.0	2.8
09	250	5.5				1.8	3.0	3.0
10	240	7.2				2.0	2.9	3.1
11	240	8.5				2.2	2.8	3.0
12	240	9.3				2.2	2.9	3.0
13	240	10.0				2.2	2.8	3.0
[illegible]	230	10.3				1.9	2.8	3.0
[illegible]	230	9.4				1.6	1.6	3.0
16	230	8.9				1.2	1.6	3.1
[illegible]	220	7.2					2.9	3.1
18	230	5.0					2.9	3.0
19	260	3.2					2.9	3.0
20	290	2.6					3.0	3.0
21	290	2.7					3.2	2.9
[illegible]	298	2.5					3.6	2.9
[illegible]	300	2.6					5.6	2.9

[illegible] 150.[illegible]°W.
16.[illegible] Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 4

Churchill, Canada (58.8°N, 94.2°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	310	4.8		3.2			5.4	(2.9)
01	(300)	4.5		3.0			4.8	(2.8)
02	(300)	4.2					5.9	(2.8)
03	(300)	4.4	(230)	3.2			4.0	(3.1)
04	(300)	4.2		3.2			3.8	(2.7)
05	345	4.6	260	3.1			3.8	2.8
06	305	4.3					4.2	(2.9)
07	(320)	4.4					4.0	
08	320	4.7		3.0			4.4	3.0
09	280	6.0		3.2			3.8	3.0
10	260	8.0	260	5.3	100	3.1	3.5	3.0
11	260	9.4	250	4.6	120	2.8	3.2	3.1
12	260	10.4	240	4.4	120	2.8		3.1
13	260	11.4	250	5.5	120	2.6		3.0
14	250	12.2	240	5.4	130	2.8	2.6	3.0
15	250	11.5	230	5.8		2.4	2.8	3.0
16	260	10.7	240	4.8		2.4	2.8	3.0
17	250	9.3	220	4.5			3.0	3.0
18	290	5.8	240	4.2			3.6	2.9
19	300	5.4	245	4.0			3.7	(3.0)
20	290	4.8		3.1			3.9	2.9
21	300	4.7		3.2			4.2	2.8
22	290	4.6	(290)	2.9			6.8	(3.0)
23	295	4.6					8.0	(3.0)

Time: 90.0°W.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.

Table 5

Adak, Alaska (51.9°N, 176.6°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	280	2.6						2.9
01	300	2.5						2.8
02	315	2.6						2.8
03	300	2.7						2.8
04	300	2.8						2.8
05	280	2.8						2.9
06	250	2.8						3.1
07	220	3.5						2.8
08	200	6.6			120	2.0	1.7	3.5
09	190	9.2			100	2.5		3.6
10	200	10.5			80	2.8		3.6
11	190	11.6			90	2.8		3.5
12	190	11.2			80	3.0		3.4
13	190	11.0			80	3.0		3.4
14	200	11.2			90	2.8		3.4
15	190	10.0			100	2.5		3.6
16	180	8.6			100	2.1		3.6
17	180	7.4						3.5
18	180	5.8						3.7
19	190	3.5						3.7
20	235	2.5						3.4
21	250	2.3						3.2
22	275	2.4						3.0
23	290	2.5						2.9

Time: 180.0°W.
Sweep: 1.2 Mc to 15.5 Mc in 12 minutes, manual operation.

Table 6

Portage la Prairie, Canada (49.9°N, 98.3°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	3.3						(2.7)
01	280	3.3					1.8	(2.7)
02	290	3.3					3.0	(2.7)
03	300	3.3					2.8	(2.7)
04	280	3.0					2.6	(2.6)
05	290	3.2					2.4	(2.6)
06	270	2.8					2.3	(2.7)
07	270	3.3					2.5	(2.7)
08	260	4.1				E	1.9	(2.8)
09	240	6.8			140	2.1	2.0	3.1
10	230	8.9			120	2.5		3.1
11	230	10.4			120	2.8		3.1
12	230	10.7			115	2.9		3.0
13	230	11.6			120	2.9		3.0
14	230	11.9			120	2.8		2.9
15	240	12.0			120	2.6		2.9
16	230	11.7			130	2.2		3.0
17	230	10.9			150	(1.8)		3.0
18	230	9.6				E		2.9
19	230	8.4						3.0
20	230	6.2						(3.0)
21	240	5.2						(3.0)
22	250	4.3						(2.8)
23	260	3.5						(2.8)

Time: 90.0°W.
Sweep: 1.0 Mc to 16.0 Mc in 2 minutes and 30 seconds.

Table 7

St. Johns, Newfoundland (47.6°N, 52.7°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	320	3.4						3.0
01	320	3.0						3.0
02	320	3.0						3.0
03	310	3.0						3.0
04	300	3.0						3.0
05	300	3.0						3.0
06	300	2.8						3.1
07	270	3.2						3.1
08	250	6.0					1.8	3.1
09	240	9.4			120	2.6	3.1	3.1
10	250	11.3			120	2.8	3.4	3.0
11	255	12.4	230	4.8	120	3.1	3.1	3.0
12	250	12.0	220	3.7	120	3.2		3.0
13	250	12.3	219	4.1	120	3.2	3.1	2.9
14	250	11.9			120	3.0	2.9	3.0
15	250	11.6			125	2.6	2.5	3.0
16	250	11.0			120	2.4	2.2	3.0
17	230	10.4						3.0
18	230	9.4						2.9
19	240	7.4						2.9
20	250	6.0						2.9
21	270	5.4						2.9
22	300	5.0						2.9
23	310	3.6						3.0

Time: 52.5°W.
Sweep: 1.2 Mc to 20.0 Mc, manual operation.

Table 8

Ottawa, Canada (45.5°N, 75.8°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	3.9						2.8
01	310	3.4						2.7
02	320	3.4						2.8
03	310	3.6						2.8
04	310	3.4						2.8
05	310	3.5						2.9
06	300	3.1						2.8
07	300	3.7						2.8
08	260	6.2				2.0		2.9
09	250	9.2			130	2.5		2.9
10	250	10.8			130	2.8		2.8
11	240	11.6			130	3.0		2.8
12	250	12.0			130	3.0		2.8
13	250	11.8			130	3.1		2.8
14	260	11.8			130	3.0		2.7
15	260	11.7			135	2.6		2.7
16	260	11.3			135	2.2		2.8
17	250	11.2						2.7
18	250	9.2						2.8
19	250	8.4						2.7
20	260	6.9						2.7
21	265	5.8						2.7
22	300	5.1						2.8
23	300	4.3						2.8

Time: 75.0°W.
Sweep: 1.7 Mc to 18.0 Mc, manual operation.

Table 9

Boston, Massachusetts (42.4°N, 71.2°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	295	5.0						2.7
01	300	4.8						2.7
02	280	4.8					1.9	2.7
03	265	4.5					2.8	2.8
04	265	4.4					2.5	2.7
05	265	4.2					1.8	2.8
06	275	4.1						2.8
07	260	5.2						3.0
08	245	8.6						3.1
09	240	10.0						3.1
10	245	11.5						3.0
11	250	12.6						2.9
12	250	12.7						2.9
13	250	12.2						2.9
14	250	12.0						2.9
15	250	11.9						2.9
16	240	11.4						3.0
17	250	10.2						2.9
18	250	9.4						3.0
19	250	8.4						3.0
20	255	6.8						2.9
21	260	6.1						2.9
22	280	5.5						2.8
23	275	5.0						2.8

Time: 75.0°W.
Sweep: 0.5 Mc to 14.0 Mc in 1 minute.

Table 10

San Francisco, California (37.4°N, 122.2°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	3.0						2.7
01	280	3.1					2.4	2.7
02	280	3.2						2.7
03	280	3.2						2.7
04	280	3.2						2.7
05	280	3.1						2.7
06	300	3.2						2.7
07	260	4.3						2.7
08	230	7.8			135	2.3		3.2
09	230	9.6			120	2.8		3.1
10	230	11.0			110	3.2		3.0
11	230	12.1	220		110	3.3		3.0
12	230	12.0	210	4.6	110	3.4		2.9
13	240	11.8	220		110	3.4		2.9
14	230	11.5	220		110	3.3		2.8
15	230	11.0			120	3.1		2.8
16	240	11.0			120	2.7		2.9
17	220	10.0			140	2.1		3.0
18	220	8.1						3.0
19	220	7.4						3.0
20	220	5.2						3.1
21	240	3.2						3.1
22	280	2.9						2.8
23	300	2.9						2.8

Time: 120.0°W.
Sweep: 1.3 Mc to 18.5 Mc in 4 minutes 30 seconds.

Table 11

Wuchang, China (30.6°N, 114.4°E) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	4.4						2.8
01	270	4.2						2.9
02	240	3.8						3.0
03	250	3.6						3.0
04	245	3.4						3.0
05	265	2.9						2.9
06	270	2.9						2.9
07	240	5.2			140	1.8		3.1
08	220	9.3			110	2.2		3.5
09	215	11.5			100	2.8		3.4
10	220	12.6	205	5.0	98	3.2		3.2
11	230	12.8	210	5.0	90	3.4		3.1
12	230	13.5	210	5.5	90	3.5		3.0
13	230	13.4	205	5.6	90	3.5		3.0
14	240	13.1	205	5.0	95	3.4		3.1
15	220	12.8	210	5.7	90	3.2		3.0
16	220	13.4	215	5.1	90	2.9		3.1
17	220	12.9			90	2.4		3.3
18	200	10.5			90		2.7	3.3
19	200	8.6					2.4	3.2
20	215	8.8					1.7	3.2
21	200	8.0					2.0	3.3
22	200	6.0						3.1
23	240	4.6						2.8

Time: 120.0°E.
Sweep: 1.2 Mc to 19.2 Mc, manual operation.

Table 12

Baton Rouge, Louisiana (30.5°N, 91.2°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	4.0						3.0
01	290	3.9						3.0
02	290	4.0						3.0
03	300	4.0						3.1
04	290	3.8						2.9
05	300	3.7						2.9
06	300	4.1						3.0
07	280	7.1						3.1
08	270	9.1	230		120	2.6		3.3
09	280	10.2	230		120	3.1		3.2
10	280	11.1	220		120	3.4		3.2
11	290	11.9	220		120	3.6		3.1
12	290	12.0	220		120	3.6		3.1
13	290	11.9	220		120	3.6		3.1
14	295	11.3	230		120	3.5		3.0
15	290	11.1	230		120	3.2		3.0
16	290	11.0	240		120	2.6		3.0
17	270	10.1						3.1
18	230	7.9						3.1
19	235	6.6						3.0
20	240	6.0						3.2
21	245	5.0						3.2
22	270	4.2						3.1
23	290	4.0						3.1

Time: 90.0°W.
Sweep: 2.15 Mc to 18.5 Mc in 5 minutes, automatic operation.

Table 13

Maui, Hawaii (20.8°N, 156.5°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	5.6						2.6
01	260	4.9						2.7
02	250	4.8						3.0
03	240	4.0						3.1
04	260	3.2						2.9
05	310	2.8						2.6
06	310	2.8						2.8
07	275	5.4						2.7
08	250	9.2			130	2.6		3.0
09	250	11.2	230		120	3.2		3.1
10	250	13.0	210	5.8	110	3.5		3.1
11	265	12.8	220	6.0	120	3.8		2.8
12	290	13.8	210	6.0	120	3.9		2.7
13	300	14.8	220	6.0	110	3.8	4.6	2.7
14	300	15.2	230	6.0	115	3.7		2.8
15	300	15.5	230	5.8	120	3.6	4.2	2.8
16	250	15.6	230	5.8	110	3.2	3.9	2.8
17	250	14.8			130	2.6	3.3	2.9
18	225	14.1						3.0
19	220	12.0						3.0
20	220	10.1						2.9
21	230	10.1						2.9
22	225	8.8						3.0
23	220	6.7						2.8

Time: 150.0°W.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute; above 16.0 Mc, manual operation.

Table 14

San Juan, Puerto Rico (18.4°N, 66.1°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.6						2.8
01		5.2						2.9
02		5.0						2.9
03		4.6						2.8
04		4.2						2.7
05		4.4						2.7
06		4.5						2.8
07	270	6.7						2.9
08	280	10.0		3.5		E		3.0
09	280	12.0		4.0		3.2		2.9
10	280	12.0				3.4		2.9
11	290	11.0				3.7	4.4	2.8
12	300	10.8		6.3		3.7		2.7
13	325	11.1		6.2		3.7		2.6
14	330	11.1		6.1		3.7		2.6
15	320	11.0		5.5		3.4		2.6
16	300	10.5				3.1		2.7
17	300	10.8						2.7
18	290	10.5						2.8
19	280	9.5						2.8
20		7.3						2.8
21		6.9						2.7
22		6.7						2.8
23		6.0						2.8

Time: 60.0°W.
Sweep: 2.8 Mc to 13.0 Mc in 8 minutes, aupplemented by manual operation.

Table 15

Guam 1. (13.6°N, 144.9°E) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	230	9.4					4.4	3.0
01	230	8.7					4.6	3.1
02	230	7.7					3.8	3.2
03	230	5.9					3.0	3.1
04	240	5.5					3.0	3.0
05	240	4.9					2.8	3.1
06	240	4.4					2.6	3.1
07	270	6.9					4.0	3.0
08	240	10.8					5.2	3.0
09	230	12.9					6.5	3.0
10	220	13.7					7.2	2.8
11	210	13.5					6.1	2.4
12	200	12.8					6.0	2.2
13	200	12.1					5.7	2.2
14	200	11.8					5.5	2.3
15	220	12.4					5.8	2.3
16	240	12.8					5.0	2.4
17	250	13.3					5.1	2.5
18	270	13.2					5.0	2.6
19	285	12.6					4.8	2.5
20	295	12.0					3.5	2.4
21	285	12.2					2.6	2.6
22	250	11.2					4.2	2.8
23	240	10.3					4.5	2.8

Time: 150.0°E.
Sweep: 1.25 Mc to 19.0 Mc in 12 minutes, manual operation.

Table 16

Trinidad, British West Indies (10.6°N, 61.2°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	6.8					2.2	3.1
01	240	5.2						3.0
02	250	4.4						3.1
03	260	3.6						3.0
04	280	3.4					2.0	2.8
05	270	3.6						2.8
06	270	4.4					2.4	2.9
07	250	8.0			110		2.6	3.1
08	240	10.9			120	2.9	3.4	3.1
09	260	13.0	220	4.8	120	3.4	4.2	3.1
10	270	12.7	220	5.1	120	3.6	4.4	3.0
11	280	12.3	220	5.4	120	3.9	4.6	2.8
12	280	12.2	220	5.4	110	3.9	4.7	2.8
13	305	12.2	220	5.8	115	4.0	4.9	2.7
14	315	11.8	230	5.7	120	3.8	4.8	2.7
15	315	11.8	230	5.7	120	3.6	4.7	2.6
16	300	11.7	240	5.3	120	3.3	4.4	2.7
17	260	11.6			120	2.8	4.0	2.8
18	260	11.7					3.0	2.8
19	240	10.8					3.2	2.9
20	240	9.5					2.8	2.8
21	250	8.6					2.8	2.8
22	260	8.6					2.3	2.8
23	250	7.5					2.0	2.9

Time: 60.0°W.
Sweep: 1.2 Mc to 18.0 Mc, manual operation.

Table 17

Palmyra I. (5.9°N, 162.1°W) January 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	9.2					3.0	2.8
01	250	(8.4)					3.0	(2.9)
02	250	7.4					2.1	3.0
03	250	6.4					1.8	3.0
04	250	5.7					1.7	2.9
05	250	5.2					1.7	2.9
06	250	4.7					1.8	2.9
07	280	8.1			140	2.2	2.4	2.9
08	250	11.0			120	3.0	3.8	2.8
09	240	12.8	230		110	3.5	4.1	2.7
10	300	13.2	220		110	3.8		2.4
11	310	12.2	220	5.3	110	4.0		2.3
12	300	11.5	210	5.6	110	4.1		2.2
13	350	11.6	210	5.6	110	4.0		2.2
14	400	12.0	210	5.3	110	3.9		2.2
15	310	12.7	200	4.6	110	3.7		2.3
16	250	12.8	230		110	3.3		2.4
17	250	13.1			120	2.9	3.5	2.5
18	280	13.1			150	2.2	3.4	2.5
19	300	12.8					2.6	2.5
20	300	12.6					2.0	2.4
21	285	12.5					2.1	(2.4)
22	285	(11.3)					2.6	(2.6)
23	265	(10.7)					3.4	(2.7)

Time: 157.5°W.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 36 seconds, automatic; 13.0 Mc to 18.5 Mc, manual operation.

Table 18

Prince Rupert, Canada (54.3°N, 130.3°W) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	310	2.7						2.8
01	300	2.7					2.7	2.8
02	310	2.8						2.7
03	350	2.8					3.4	2.7
04	350	2.6					3.6	2.6
05	340	2.7					3.8	2.6
06	330	2.8					3.6	2.6
07	310	2.8					2.8	2.7
08	280	3.3				E		2.7
09	240	6.6			120	(1.9)		3.0
10	240	9.3			120	2.2		3.1
11	240	11.2			120	2.5		3.1
12	240	12.2			120	2.6		3.0
13	240	12.8			120	2.6		3.0
14	240	13.4			120	2.5		3.0
15	230	13.1			120	2.3		3.0
16	230	12.0				1.8		3.0
17	230	10.8				E		3.0
18	230	9.0						3.1
19	230	7.5						3.1
20	230	4.7						3.2
21	240	3.6						3.1
22	260	3.1						3.0
23	270	2.8						2.9

Time: 120.0°W.
Sweep: 1.6 Mc to 13.5 Mc, manual operation.

Table 19

Wakkanai, Japan (45.4°N, 141.7°E) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	320	3.1						2.6
01	300	3.2						2.6
02	300	3.4						2.7
03	300	3.3						2.7
04	300	3.4						2.7
05	285	3.4						2.8
06	250	3.4						3.0
07	235	5.9					2.4	3.1
08	220	(8.7)	200		100	1.9	2.3	
09	220				100	2.5	2.8	
10	210						3.0	
11	220		215				3.2	
12	210				100		3.0	
13	230		220				3.1	
14	230		215			2.6	2.6	
15	230		210				2.3	
16	220	8.2					2.8	3.2
17	210	6.4					2.6	3.3
18	220	5.3						3 1
19	220	4.6					1.3	3.2
20	230	3.6					2.7	3.2
21	280	3.0						2.7
22	310	3.0						2.7
23	310	3.2						2.7

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

Table 20

Shibata, Japan (37.9°N, 139.3°E) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	330	3.4					2.8	2.6
01	320	3.4					2.3	2.6
02	310	3.5					1.6	2.8
03	310	3.5					2.1	2.7
04	295	3.4					2.0	2.6
05	320	3.5					1.3	2.7
06	250	3.8					2.0	2.9
07	240	6.6				1.8	2.5	(3.1)
08	230	9.1			120	2.3	2.8	(3.2)
09	235	11.2			110	3.0	2.9	(3.1)
10	235	12.4			110	3.2	3.6	3.2
11	230	12.2			110	3.4	3.7	3.2
12	230	12.3			110	3.5	3.8	3.1
13	255	11.5			120	3.4	3.6	2.9
14	250	10.8			115	3.2	3.7	3.0
15	230	10.4			110	2.9	2.6	(3.0)
16	225	9.1			120	2.3	2.2	3.2
17	220	8.2					2.6	3.0
18	230	6.3					2.7	3.2
19	230	5.2					2.6	3.1
20	240	4.1					2.4	3.1
21	260	3.5					2.6	2.9
22	315	3.4					2.3	2.7
23	330	3.4					2.6	2.7

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

Table 21

Tokyo, Japan (35.7°N, 139.5°E) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	360	3.4					2.2	2.4
01	370	3.5					2.1	2.3
02	375	3.5					1.8	2.4
03	350	3.6					1.8	2.5
04	350	3.2					1.8	2.4
05	370	3.4					1.8	2.4
06	300	3.8					1.8	2.6
07	270	7.3				1.9	2.0	3.0
08	250	9.2			120	2.5	2.8	3.1
09	250	11.0	250		110	3.0	3.1	3.0
10	270	12.2	250		110	3.4	4.0	2.9
11	265	12.5	250		110	3.4	4.2	2.9
12	270	12.1	250		110	3.5	4.2	2.8
13	285	11.8	260		110	3.4	4.0	2.9
14	270	11.6	250		115	3.2	3.6	2.9
15	260	10.7	270		110	2.8	3.2	3.0
16	250	9.7			105	2.3	2.7	2.9
17	240	8.4					2.7	3.0
18	250	6.7					2.2	3.0
19	260	5.8					2.4	2.9
20	250	4.8					2.5	2.9
21	280	3.9					2.2	2.7
22	335	3.6					2.4	2.4
23	360	3.6					2.0	2.4

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

Table 22

Yamakawa, Japan (31.2°N, 130.6°E) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	4.3						2.6
01	300	3.9						2.7
02	300	4.0						2.6
03	300	3.9						2.7
04	300	3.6						2.6
05	310	3.4						2.5
06	300	3.5						2.6
07	290	5.7				1.6		2.8
08	250	10.3			120	2.4		3.2
09	250	11.4	220		110	2.9		3.2
10	260	12.2	230		110	3.5	3.8	3.1
11	280	12.5	230		110	3.6	4.1	3.0
12	280	12.5	220		110	3.6	4.4	2.9
13	290	12.7	220		110	3.6	4.4	2.9
14	280	12.6	230		110	3.4	4.2	2.8
15	270	12.2	230		110	3.2	4.2	2.9
16	250	11.8	230		110	2.8	3.2	3.0
17	240	10.9			110	2.3	2.5	3.0
18	220	9.3					2.2	3.0
19	220	8.0					2.2	3.1
20	230	7.1						2.9
21	220	6.5						3.0
22	250	5.2						2.9
23	290	4.7						2.7

Time: 135.0°E.
Sweep: 0.6 Mc to 18.5 Mc in 15 minutes, manual operation.

Table 23

Leyte, Philippine Is. (11.0°N, 125.0°E) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		8.9					2.5	3.0
01		8.4						3.1
02		7.4						3.1
03		6.3						3.0
04		5.8						3.0
05		5.4						3.0
06		7.6				2.4	2.4	2.8
07		10.9				3.5	3.7	2.8
08		13.3				3.9	4.1	2.7
09		13.4				4.2	5.0	2.6
10		12.8				(4.4)	5.0	2.4
11		12.3				(4.5)	5.4	2.3
12		12.4				(4.5)	5.2	2.2
13		12.6				(4.4)	5.0	2.3
14		12.6				4.1	5.0	2.2
15		12.3				(3.7)	4.9	2.2
16		12.2				(2.9)	4.2	2.3
17		12.0				2.2	3.4	2.3
18		11.3					2.7	2.3
19		10.9						2.2
20		10.2						2.2
21		10.0					3.0	2.4
22		9.5					3.0	2.6
23		9.6					2.8	2.9

Time: 120.0°E.
Sweep: 1.6 Mc to 16.0 Mc, manual operation.

Table 24

Wakkanai, Japan (45.4°N, 141.7°E) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	4.3						2.7
01	295	4.6					1.9	2.7
02	300	4.7						2.6
03	300	4.6					2.4	2.5
04	300	4.6						2.6
05	300	4.6						2.6
06	255	4.7						2.7
07	250	(7.6)	220				2.0	(3.1)
08	235				110	2.6	3.2	
09	230		225		100	2.9	2.8	
10	250		225		100	3.1	3.6	
11	250		220		100		3.3	
12	250		235		100		3.0	
13	255		220				3.5	
14	270		230				3.4	
15	260		240		100	2.4	2.6	
16	240	(9.0)	220				3.2	
17	255	(8.0)	205				3.6	
18	250	7.2					2.2	(2.9)
19	245	6.3					2.0	(3.0)
20	240	5.0					2.6	2.9
21	260	4.6					2.2	2.8
22	290	4.7					2.0	2.7
23	290	4.7					2.0	2.7

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

Table 25

Fukaura, Japan (40.6°N, 139.9°E) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	320	5.2					3.0	2.5
01	320	5.5					2.6	2.5
02	330	5.0					2.6	2.6
03	310	4.9					2.2	2.6
04	300	4.8					2.4	2.6
05	310	4.6					2.1	2.6
06	280	5.5					2.0	2.8
07	250	9.6				2.1	2.5	3.0
08	250	11.0			120	2.6	2.8	(3.1)
09								
10								
11								
12								
13								
14								
15								
16								
17	260	9.7					2.8	2.8
18	250	8.8					2.9	3.0
19	250	7.1					2.6	2.9
20	255	6.1					2.4	2.9
21	280	5.3					2.2	2.7
22	300	5.2					2.8	2.6
23	310	5.2					2.8	2.6

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

Table 26

Shibata, Japan (37.9°N, 139.3°E) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	330	5.1					2.5	2.6
01	315	5.0					2.4	2.6
02	320	4.8					2.2	2.6
03	330	4.7					2.2	2.6
04	300	4.4					1.6	2.6
05	300	4.5					1.5	2.6
06	255	5.6						3.0
07	250	10.0			130	2.2	2.4	3.1
08	240	12.0			120	2.8	2.3	3.2
09	240	13.1			120	3.2	3.4	3.0
10	250	13.5	210		110	3.5	3.5	2.9
11	250	13.9			110	3.6	3.6	2.9
12	250	13.8			110	3.6	3.6	2.9
13	260	13.6	240		115	3.5		2.8
14	260	13.2			110	3.3	3.4	2.8
15	250	12.6			115	2.9	3.2	2.9
16	250	11.7			130	2.3	2.6	2.9
17	240	10.2	215				3.2	2.9
18	250	8.9					2.5	2.9
19	250	7.8					2.1	3.1
20	240	6.7					2.4	3.0
21	260	5.9						2.9
22	290	5.3					2.3	2.8
23	300	5.4					2.2	2.7

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

Table 27

Tokyo, Japan (35.6°N, 139.6°E) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	5.4					2.4	2.5
01	310	5.2					2.8	2.6
02	320	4.6					2.6	2.5
03	320	4.5					2.6	2.5
04	310	4.4					2.3	2.5
05	330	4.2					2.4	2.4
06	280	5.6					2.2	2.7
07	250	10.0			100	2.2	2.6	3.1
08	240	12.4			100	2.8	3.2	3.0
09	245	13.4	225		100	3.2	3.4	3.0
10	250	14.0	230		100	3.4	4.1	2.9
11	260	14.3	230		110	3.5	4.1	2.8
12	270	14.4	240		110	3.6	3.6	2.7
13	280	14.2	250		110	3.6		2.7
14	270	13.6	245		100	3.4		2.7
15	250	13.0	260		100	3.0		2.7
16	250	11.6	250		110	2.3	3.0	2.7
17	250	10.8					2.8	2.8
18	250	9.2					2.8	2.8
19	250	7.8					2.7	2.8
20	265	7.0					2.4	2.8
21	260	6.1					2.2	2.7
22	295	5.5					2.4	2.5
23	310	5.6					2.4	2.6

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

Table 28

Yamakawa, Japan (31.2°N, 130.6°E) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	6.5						2.7
01	280	5.9						2.7
02	280	5.8						2.8
03	280	5.2						2.8
04	275	4.6						2.8
05	295	3.8						2.6
06	300	4.1						2.7
07	280	7.8	250			1.9		3.0
08	250	11.7	230		110	2.6	2.6	3.1
09	255	13.6	220		110	3.0	3.6	3.1
10	260	14.2	230		110	3.6	4.4	3.0
11	265	14.2	220		110	3.8	4.4	2.8
12	290	14.6	225		110	3.8	4.4	2.8
13	290	14.8	230		115	3.6	4.4	2.8
14	290	14.6	230		110	3.7	4.2	2.8
15	270	14.4	230		110	3.3	4.0	2.8
16	270	13.8	225		110	2.9	3.4	2.8
17	250	13.2	230		120	2.3	2.2	2.8
18	240	11.6	220				2.6	2.9
19	240	10.6					2.4	2.8
20	230	10.4						2.8
21	230	9.2						2.9
22	250	8.0						2.9
23	250	7.2						2.7

Time: 135.0°E.
Sweep: 0.6 Mc to 18.5 Mc in 15 minutes, manual operation .

Table 29

Watheroo, W.Australia (30.3°S, 115.9°E) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	298	7.4					3.9	2.5
01	280	7.0					3.7	2.5
02	285	6.7					2.9	2.5
03	290	6.5					2.9	2.5
04	300	6.2					2.8	2.5
05	295	6.4				1.3	2.8	2.6
06	260	7.5	268	4.1		2.3	2.9	2.8
07	300	8.0	245	4.8		3.0	3.8	2.7
08	435	8.4	245	5.2		3.5	4.0	2.5
09	430	9.2	235	5.6		3.7	4.5	2.5
10	428	9.7	230	6.0		3.9	4.4	2.5
11	430	9.8	220	6.0		3.9	4.4	2.4
12	415	10.6	230	6.2		3.9	4.5	2.5
13	405	10.7	242	6.2		4.0	4.6	2.5
14	420	10.4	245	6.0		3.9	4.5	2.5
15	412	10.4	240	5.9		3.8	4.2	2.5
16	400	10.0	245	5.7		3.5	3.8	2.5
17	298	9.6	250	5.0		3.0	3.7	2.6
18	270	9.6				2.1	2.8	2.7
19	260	9.2				1.1	2.8	2.7
20	275	8.5					2.7	2.6
21	285	8.3					2.8	2.5
22	300	7.7					3.0	2.6
23	295	7.7					4.1	2.5

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

Table 30

Christchurch, New Zealand (43.5°S, 172.7°E) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	8.0					2.5	2.4
01	300	7.6					2.6	2.4
02	295	6.8					2.6	2.4
03	300	6.4					2.6	2.5
04	310	6.2				1.1	2.6	2.5
05	270	6.8				1.9	2.8	2.6
06	260	7.2				2.6		2.7
07	250	7.9	240	5.2		3.1		2.6
08	330	8.4	240	5.4		3.5		2.6
09	360	8.9	230	5.6		3.6	4.1	2.6
10	380	9.3	230	5.7		3.7	3.8	2.6
11	400	9.6	230	6.0		3.8	4.0	2.5
12	400	9.8	230	6.1		3.8		2.6
13	420	9.6	240	6.2		3.8		2.6
14	410	9.4	240	6.2		3.8		2.5
15	390	9.0	240	6.0		3.6		2.5
16	270	9.2	240	5.5		3.4		2.5
17	260	9.1				3.0		2.6
18	270	9.3				2.4	2.8	2.6
19	280	9.4				1.5	3.8	2.5
20	295	9.2					4.0	2.5
21	300	9.2					2.9	2.4
22	300	9.0					3.0	2.4
23	310	8.4					2.6	2.4

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc.

Table 31*

Slough, England (51.5°N, 0.6°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	319	5.4						2.3
01	322	5.2						
02	324	4.6					0.8	2.3
03	319	4.5					0.9	
04	299	4.3					1.3	2.3
05	289	4.0						2.3
06	293	4.6			135	1.7	3.3	2.4
07	287	7.2	298	4.1	129	2.1	3.4	
08	296	8.7	265	4.6	115	2.6	3.3	2.6
09	293	10.2	246	4.9	109	2.9		
10	282	11.4	248	4.8	109	3.2	3.5	2.5
11	282	11.8	236	5.3	108	3.3		
12	279	12.8	242	5.2	109	3.4		2.6
13	260	12.4	243	5.2	108	3.4		
14	263	12.4	243	5.3	108	3.2		2.5
15	259	12.2	249	5.1	110	2.8		
16	249	11.7	240#	5.0	112	2.4	3.3	2.6
17	248	11.0			134	1.9	3.4	
18	252	9.5					2.3	2.6
19	251	8.2					3.0	
20	264	6.7						2.4
21	288	6.2						
22	308	5.8						2.3
23	315	6.0						

Time: Local.
Sweep: 0.5 Mc to 14.0 Mc in 6 minutes; 14.0 Mc to 25.0 Mc, manual operation.
*Average values except for f°F2 and fEs, which are median values.
#Less than 3 observations.

Table 32

Brisbane, Australia (27.5°S, 153.0°E) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	280	8.6					2.7	2.6
01	280	8.0					2.6	2.5
02	290	8.0					2.5	2.5
03	300	7.8					2.3	2.5
04	300	7.5					1.4	2.6
05	300	7.8				1.3	1.2	2.6
06	250	9.5			110	2.5		3.0
07	240	11.0			110	3.1		2.9
08	230	11.5			110	3.6		2.8
09	270	11.5	220	5.6	110	3.9		2.7
10	280	11.9	220	5.6	110	4.0		2.6
11	340	12.1	220	5.9	110	4.0	3.6	2.6
12	360	12.0	230	6.9	110	4.0		2.6
13	370	11.7	230	6.8	110	4.0		2.5
14	370	11.4	230	6.5	110	3.9		2.5
15	350	11.0	240	6.3	110	3.6		2.5
16	250	10.6	250		110	3.2		2.6
17	260	10.2			120	2.6		2.6
18	270	10.0					2.2	2.6
19	280	9.3					1.8	2.6
20	300	9.5					2.6	2.6
21	300	9.5					2.1	2.6
22	300	9.1					2.1	2.6
23	290	9.0					2.0	2.6

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

Table 33*

Falkland Is. (51.7°S, 57.8°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	348	8.8						
01	339	8.6						
02	334	8.4						
03	345	8.1						
04	361	8.0						
05	275	8.7				(2.2)		
06	249	10.2				2.6		2.5
07	240	11.3			118	3.1		2.6
08	248	12.6	245#	9.0#	115	3.4		2.5
09	248	13.2	240#	7.5#	114	3.6		2.6
10	246	13.9	245#	8.7#	111	3.6		2.6
11	255	14.0	234	7.8	112	3.8		2.6
12	263	14.4	241	7.9	110	3.8	4.2	2.6
13	272	14.0	240	8.1	112	3.7		2.6
14	265	13.4	245	8.1	112	3.6	3.6	2.6
15	257	12.6	248	6.7	111	3.4		2.5
16	248	11.8			115	3.0		2.6
17	251	11.4			(115)	2.6		2.7
18	261	11.0				(2.1)		2.8
19	270	10.4						2.6
20	281	9.6						2.6
21	300	9.0						
22	320	9.0						
23	353	8.9						

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

Table 34*

Falkland Is. (51.7°S, 57.8°W) September 1947

Time	h'F2 **	f°F2 **	h'F1 **	f°F1 **	h'E **	f°E **	fEs	F2-M3000
00	349	7.0						2.5
01	362	6.8						2.5
02	361	6.5						2.5
03	369	6.2						2.5
04	360	6.0						2.5
05	341	6.0	250	3.1				2.5
06	272	7.3	248	3.1	135	2.2		2.8
07	241	9.5			127	2.6		3.0
08	261	(10.5)	250	9.0	117	3.1		3.0
09	270	13.7	250	6.0	117	3.4		2.9
10	267	13.6	235	11.0	114	3.6		2.8
11	241	(14.3)			114	3.6		2.9
12	249	(14.2)	230	5.7	114	3.7	3.9	2.8
13	249	13.6	235	7.3	113	3.6		2.7
14	248	12.5	238	4.8	117	3.5		2.9
15	244	11.4			119	3.1		2.8
16	250	11.3			122	2.7		3.0
17	249	10.4				2.5		3.0
18	248	10.0				1.9		3.0
19	256	7.6		4.7				2.8
20	260	7.2						2.7
21	294	6.8						2.3
22	249	6.9						2.5
23	337	6.8						2.5

Time: Local.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.
*Average values except f°F2 and fEs, which are median values.
**Height measurements were not possible between September 1st and 18th, inclusive.

Table 35

Fribourg, Germany (48.1°N, 7.8°E) April 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	280	(7.3)						
01	300	(7.0)						
02	290	(6.5)						
03	280	(6.2)						
04	280	(5.8)						
05	270	5.9				1.6		
06	235	(6.6)			110	2.2	3.0	
07	220	7.9			100	2.7	3.7	
08	215	8.6	200		100	(3.2)	4.0	
09	210	9.8	210		100	3.6	4.7	
10	228	10.4	200		100	3.8	4.4	
11	235	11.0	210		100	3.8	4.4	
12	260	(11.2)	200		100	(3.9)	4.8	
13	250	11.2	210	(5.6)	100	3.9	4.2	
14	240	11.2	205	6.0	100	3.9	4.1	
15	230	11.0	220		100	3.7	4.0	
16	230	10.8	220		100	3.4	4.1	
17	230	(10.8)			100	2.9	3.7	
18	235	(10.7)			110	2.2	3.0	
19	230	10.5					2.1	
20	230	9.0						
21	245	8.4						
22	260	7.8						
23	280	7.7						

Time: Local.
Sweep: 1.4 Mc to 16.6 Mc in 10 minutes, automatic operation.

Table 36

Fribourg, Germany (48.1°N, 7.8°E) March 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	6.3						
01	280	(6.2)					1.8	
02	290	(5.9)					2.0	
03	290	(5.6)					1.8	
04	290	5.2						
05	255	4.8						
06	240	5.6				E	2.6	
07	225	7.8			110	2.2	2.9	
08	220	10.1			100	2.8	3.6	
09	215	11.0			100	3.2	4.0	
10	205	11.5			100	3.4	4.5	
11	205	(12.1)			100	3.6	4.5	
12	210	(12.5)			100	3.7	4.5	
13	210	(12.5)			100	3.8		
14	210	(12.2)			100	3.6	4.2	
15	220	(11.7)			100	3.4	3.9	
16	220	(11.4)			100	3.0		
17	220	(11.2)			100	2.4		
18	220	10.9			110	2.0	2.6	
19	210	9.6						
20	220	8.6						
21	225	7.4						
22	250	6.6						
23	270	6.4						

Time: Local.
Sweep: 1.4 Mc to 16.6 Mc in 10 minutes, automatic operation.

Table 37

Fribourg, Germany (48.1°N, 7.8°E) February 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	(5.2)						
01	270	5.1						
02	265	5.0						
03	270	4.9						
04	265	4.8						
05	240	4.5						
06	240	4.2						
07	220	5.9						
08	210	9.3			110	2.1		
09	210	11.4			100	2.8		
10	210	(12.3)			100	3.1	4.0	
11	210	(13.0)			100	3.4	4.1	
12	210	(12.8)			100	3.5	4.2	
13	210	12.3			100	3.5	4.0	
14	210	(11.8)			100	3.3		
15	215	(11.9)			100	3.0	3.6	
16	215	(11.7)			100	2.5		
17	210	(10.8)			110	2.0		
18	200	9.6					2.5	
19	205	(8.0)					2.2	
20	210	(6.6)						
21	230	6.0						
22	240	(5.5)						
23	255	5.4						

Time: Local.
Sweep: 1.4 Mc to 16.6 Mc in 10 minutes, automatic operation.

Table 38*

Burghead, Scotland (57.7°N, 3.5°W) December 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		2.7						
01		2.7						
02		2.5						
03		2.6						
04		2.4						
05		2.6						
06		2.7						
07		3.0						
08		2.8						
09		4.1						
10		4.9						
11		5.5						
12		5.7						
13		5.8						
14		5.6						
15		5.3						
16		4.6						
17		3.9						
18		3.2						
19		2.6						
20		2.1						
21		2.4						
22		2.2						
23		2.5						

Time: 0.0°.
*Average valuee.

Table 39*

Great Baddow, England (51.7°N, 0.5°E) December 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		2.7						
01		2.8						
02		2.9						
03		2.7						
04		2.5						
05		2.3						
06		2.1						
07		2.2						
08		3.9				1.7		
09		5.2				2.0		
10		5.9				2.2		
11		6.3				2.4		
12		6.3				2.4		
13		6.1				2.3		
14		6.1				2.1		
15		5.7				1.8		
16		5.0				1.7		
17		3.9						
18		3.1						
19		2.6						
20		2.4						
21		2.4						
22		2.6						
23		2.7						

Time: 0.0°.
*Average values.

Table 40*

Burghead, Scotland (57.7°N, 3.5°W) November 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		2.7						
01		2.7						
02		2.7						
03		2.7						
04		2.5						
05		2.5						
06		2.1						
07		2.6						
08		3.7						
09		4.8						
10		5.5						
11		5.9						
12		6.2						
13		6.1						
14		6.0						
15		5.5						
16		5.0						
17		4.6						
18		3.9						
19		3.2						
20		2.7						
21		2.6						
22		2.4						
23		2.5						

Time: 0.0°.
*Average values.

Table 41*

Great Beddow, England (51.7°N, 0.5°E) November 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		2.7						
01		2.8						
02		2.6						
03		2.6						
04		2.3						
05		2.1						
06		2.0						
07		3.0				1.6#		
08		4.8				1.9		
09		5.7				2.2		
10		6.3				2.4		
11		6.9				2.6		
12		6.6				2.6		
13		6.5				2.5		
14		6.3				2.3		
15		6.1				2.1		
16		5.6				1.7		
17		4.9						
18		4.2						
19		3.2						
20		2.8						
21		2.6						
22		2.6						
23		2.7						

Time: 0.0°.
*Average values.
#Two values only.

Table 42*

Burghead, Scotland (57.7°N, 3.3°W) October 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		2.9						
01		2.6						
02		2.5						
03		2.6						
04		2.6						
05		2.6						
06		2.6						
07		3.3						
08		4.0						
09		4.5						
10		5.0						
11		5.4						
12		5.4						
13		5.6						
14		5.6						
15		5.3						
16		5.0						
17		5.0						
18		4.9						
19		4.5						
20		3.5						
21		3.2						
22		2.9						
23		2.9						

Time: 0.0°.
*Average values.

Table 43*

Great Beddow, England (51.7°N, 0.5°E) October 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		2.9						
01		2.9						
02		2.9						
03		2.8						
04		2.5						
05		2.2						
06		2.7						
07		3.8				1.8		
08		4.7		3.2		2.2		
09		5.2		3.6		2.4		
10		5.6		3.9		2.6		
11		6.0		4.0		2.6		
12		6.0		4.0		2.7		
13		5.9		3.9		2.7		
14		6.1		3.9		2.5		
15		6.0		3.3		2.3		
16		5.6				2.1		
17		5.6				1.8		
18		5.3						
19		4.9						
20		3.9						
21		3.2						
22		2.9						
23		2.9						

Time: 0.0°.
*Average values.

Table 44*

Burghead, Scotland (57.7°N, 3.3°W) September 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		2.8						
01		2.7						
02		2.4						
03		2.5						
04		2.4						
05		2.5						
06		2.9						
07		3.8						
08		4.2						
09		4.6						
10		4.9						
11		5.0						
12		5.1						
13		5.1						
14		5.2						
15		5.2						
16		5.4						
17		5.3						
18		5.4						
19		5.0						
20		4.6						
21		3.9						
22		3.6						
23		3.0						

Time: 0.0°.
*Average values.

Table 45*

Great Baddow, England (51.7°N, 0.5°E) September 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.0						
01		2.9						
02		2.8						
03		2.7						
04		2.6						
05		2.5						
06		3.6				1.7		
07		4.3		3.4		2.1		
08		4.7		3.7		2.4		
09		5.1		4.0		2.7		
10		5.4		4.1		2.8		
11		5.4		4.2		2.9		
12		5.5		4.2		2.9		
13		5.5		4.1		2.9		
14		5.4		4.1		2.8		
15		5.6		4.0		2.6		
16		5.7		3.9		2.4		
17		5.7		3.4		2.0		
18		5.8				1.7		
19		5.9						
20		5.1						
21		4.1						
22		3.5						
23		3.2						

Time: 0.0°.
*Average values.

Table 46*

Burghead, Scotland (57.7°N, 3.5°W) August 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.7						
01		3.4						
02		3.1						
03		2.9						
04		2.9						
05		3.3						
06		3.7						
07		4.2						
08		4.3						
09		4.6						
10		4.6						
11		4.8						
12		4.7						
13		4.7						
14		4.7						
15		4.8						
16		4.8						
17		5.0						
18		5.1						
19		5.2						
20		5.4						
21		5.1						
22		4.6						
23		4.1						

Time: 0.0°.
*Average values.

Table 47*

Great Baddow, England (51.7°N, 0.5°E) August 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	319	3.5						
01	336	3.3						
02	350	3.0						
03	336	2.8						
04	319	2.8						
05	305	3.0						
06	289	4.0				2.0		
07	299	4.4				2.4		
08	274	4.7		3.9		2.6		
09	300	5.0		4.0		2.8		
10	269	5.2		4.2		3.0		
11	310	5.0		4.2		3.1		
12	290	5.0		4.3		3.1		
13	307	5.0		4.3		3.1		
14	283	4.9		4.3		3.0		
15	315	5.0		4.2		2.9		
16	317	5.0		4.0		2.7		
17	297	5.1		3.8		2.4		
18	297	5.4				2.0		
19	278	5.7						
20	282	6.0						
21	297	5.2						
22	294	4.4						
23	320	3.8						

Time: 0.0°.
*Average values.

Table 48*

Burghead, Scotland (57.7°N, 3.5°W) July 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		4.3						
01		4.0						
02		3.9						
03		3.5						
04		3.4						
05		3.7						
06		4.0						
07		4.3						
08		4.4						
09		4.6						
10		4.7						
11		4.8						
12		4.8						
13		4.7						
14		4.6						
15		4.6						
16		4.6						
17		4.8						
18		5.0						
19		4.9						
20		4.9						
21		4.9						
22		4.9						
23		4.6						

Time: 0.0°.
*Average values.

Table 49*

Greet Beddow, England (51.7°N, 0.5°E) July 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		4.1						
01		3.6						
02		3.3						
03		3.2						
04		3.2						
05		3.8		3.2		1.8		
06		4.2		3.5		2.2		
07		4.6		3.8		2.6		
08		4.7		4.0		2.8		
09		5.0		4.2		2.9		
10		5.1		4.2		3.0		
11		5.1		4.3		3.1		
12		5.1		4.3		3.2		
13		5.0		4.4		3.2		
14		4.9		4.3		3.1		
15		4.9		4.2		3.0		
16		5.0		4.0		2.9		
17		5.0		3.9		2.6		
18		5.2		3.7		2.2		
19		5.3				1.8		
20		5.6						
21		5.6						
22		5.0						
23		4.5						

Time: 0.0°.
*Average values.

Table 50*

Burgheed, Scotland (57.7°N, 3.5°W) June 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.2						
01		4.9						
02		4.6						
03		4.4						
04		4.3						
05		4.4						
06		4.6						
07		4.8						
08		4.9						
09		5.2						
10		5.2						
11		5.3						
12		5.3						
13		5.2						
14		5.0						
15		5.0						
16		5.2						
17		5.2						
18		5.2						
19		5.4						
20		5.4						
21		5.6						
22		5.6						
23		5.4						

Time: 0.0°.
*Average values.

Table 51*

Greet Baddow, England (51.7°N, 0.5°E) June 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		4.7						
01		4.4						
02		4.0						
03		3.9						
04		4.0						
05		4.4				2.0		
06		4.9		3.6		2.3		
07		5.2		4.0		2.6		
08		5.3		4.2		2.8		
09		5.4		4.2		3.0		
10		5.6		4.4		3.2		
11		5.6		4.4		3.2		
12		5.5		4.4		3.2		
13		5.3		4.4		3.2		
14		5.2		4.3		3.1		
15		5.2		4.2		3.0		
16		5.4		4.1		2.8		
17		5.4		3.9		2.6		
18		5.6		3.6		2.2		
19		6.0				1.8		
20		6.3						
21		6.3						
22		5.9						
23		5.1						

Time: 0.0°.
*Average values.

Table 52*

Burghead, Scotland (57.7°N, 3.5°W) May 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.0						
01		4.7						
02		4.4						
03		3.9						
04		3.9						
05		4.2						
06		4.5						
07		4.9						
08		5.3						
09		5.5						
10		5.7						
11		5.5						
12		5.8						
13		5.8						
14		5.9						
15		5.9						
16		5.8						
17		5.9						
18		5.8						
19		5.9						
20		5.9						
21		6.0						
22		5.7						
23		5.7						

Time: 0.0°.
*Average values.

Table 53*

Great Baddow, England (51.7°N, 0.5°E) May 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.3						
01		4.9						
02		4.7						
03		4.3						
04		4.2						
05		4.6				1.9		
06		5.1				2.3		
07		5.6		4.0		2.6		
08		5.9		4.2		2.9		
09		6.1		4.4		3.1		
10		6.2		4.6		3.2		
11		6.2		4.6		3.3		
12		6.2		4.7		3.4		
13		6.1		4.7		3.3		
14		6.3		4.6		3.2		
15		6.3		4.5		3.1		
16		6.4		4.4		2.8		
17		6.6		4.0		2.5		
18		6.9				2.2		
19		7.1				1.7		
20		7.2						
21		6.7						
22		6.0						
23		5.6						

Time: 0.0°.
*Average values.

Table 54*

Burghead, Scotland (57.7°N, 3.5°W.) April 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.8						
01		3.6						
02		3.2						
03		3.0						
04		2.9						
05		3.2						
06		3.8						
07		4.4						
08		4.9						
09		5.2						
10		5.4						
11		5.6						
12		5.7						
13		6.0						
14		5.7						
15		6.0						
16		6.0						
17		6.2						
18		6.1						
19		5.5						
20		5.7						
21		5.3						
22		4.7						
23		4.2						

Time: 0.0°.
*Average values.

Table 55*

Great Baddow, England (51.7°N, 0.5°E) April 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		4.0						
01		3.9						
02		3.6						
03		3.5						
04		3.3						
05		3.5				1.8 (0530)		
06		4.3				2.0		
07		4.9				2.5		
08		5.4		4.1		2.8		
09		5.6		4.3		3.0		
10		6.0		4.4		3.2		
11		6.4		4.5		3.2		
12		6.5		4.5		3.2		
13		6.5		4.5		3.2		
14		6.6		4.4		3.2		
15		6.6		4.3		3.0		
16		6.7		4.0		2.7		
17		6.7				2.4		
18		6.8				2.0		
19		6.8						
20		6.4						
21		5.5						
22		4.8						
23		4.3						

Time: 0.0°.
*Average values.

Table 56*

Burghead, Scotland (57.7°N, 3.5°W.) March 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.1						
01		3.0						
02		2.9						
03		3.0						
04		3.1						
05		2.8						
06		2.9						
07		3.6						
08		4.4						
09		5.1						
10		5.7						
11		6.1						
12		6.4						
13		6.5						
14		6.5						
15		6.5						
16		6.4						
17		6.4						
18		6.2						
19		6.2						
20		5.7						
21		4.9						
22		4.1						
23		3.3						

Time: 0.0°.
*Average values.

Table 57*

Great Baddow, England (51.7°N, 0.5°E) March 1942

Time	h'F2	f°F2	h'F1	f°F1 **	h'E	f°E **	fEs	F2-M3000
0030		3.3						
0130		3.3						
0230		3.2						
0330		3.1						
0430		2.6						
0530		2.6						
0630		4.1						
0730		5.2				2.0		
0830		5.8				2.4		
0930		6.2		4.0		2.7		
1030		6.7		4.1		2.8		
1130		7.0		4.2		3.0		
1230		7.3		4.2		3.0		
1330		7.2		4.0		3.0		
1430		7.0		4.0		2.8		
1530		6.9				2.6		
1630		6.8				2.4		
1730		6.9				2.0		
1830		6.7						
1930		6.0						
2030		5.0						
2130		3.9						
2230		3.6						
2330		3.5						

Time: 0.0°.
*Average values.
**These readings were taken on the hour.

Table 58*

Great Baddow, England (51.7°N, 0.5°E) January 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
0045		3.1						
0145		3.1						
0245		3.3						
0345		3.1						
0445		2.7						
0545		2.4						
0645		2.2						
0745		4.0						
0845		5.7				1.8 (0830)		
0945		6.5				2.0 (0900)		
1045		6.8				2.3 (1000)		
1145		7.2				2.5 (1100)		
1245		7.0				2.6 (1200)		
1345		6.9				2.6 (1300)		
1445		6.7				2.4 (1400)		
1545		6.5				2.1 (1500)		
1645		5.5				1.9 (1530)		
1745		4.6						
1845		3.8						
1945		3.1						
2045		2.8						
2145		2.8						
2245		3.2						
2345		3.0						

Time: 0.0°.
*Average values.

Table 59*

Great Baddow, England (51.7°N, 0.5°E) February 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E **	fEs	F2-M3000
0030		3.1						
0130		3.0						
0230		3.1						
0330		2.8						
0430		2.6						
0530		2.3						
0630		2.8						
0730		4.7						
0830		5.8				1.9		
0930		6.4				2.3		
1030		6.9				2.6		
1130		7.0				2.7		
1230		7.0				2.8		
1330		7.0				2.8		
1430		6.8				2.6		
1530		6.6				2.3		
1630		6.2				2.0		
1730		5.7						
1830		5.1						
1930		4.5						
2030		3.6						
2130		3.4						
2230		3.1						
2330		3.1						

Time: 0.0°.
*Average values.
**These readings were taken on the hour.

Table 60*

Canberra, Australia (35.3°S, 149.0°E) December 1940

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs **	F2-M3000
00	278	7.3					4.2	
01	268	7.1					4.0	
02	271	6.4					4.3	
03	283	5.5					4.0	
04	277	5.1					3.8	
05	256	5.0					4.0	
06	263	5.6	234	3.7	100#	3.4	3.8	
07	265	6.0	228	4.4	100	3.9	4.6	
08	305	6.8	224	4.8	100	3.2	5.5	
09	333	7.3	212	4.9	100	3.4	6.4	
10	342	7.5	204	5.0	100	3.5	6.4	
11	331	7.9	210	5.0	100	3.6	5.9	
12	348	8.0	225	5.1	100	3.5	6.1	
13	342	8.0	212	5.1	100	3.5	5.6	
14	327	8.0	223	5.0	100	3.5	5.6	
15	320	8.0	199	4.9	100	3.5	5.1	
16	307	7.9	224	4.8	100	3.4	5.7	
17	292	7.8	233	4.5	101	3.0	6.2	
18	276	8.2	234	3.8	100#	2.4	5.2	
19	274	8.0					5.0	
20	269	7.8					4.9	
21	284	7.7					4.1	
22	286	7.7					4.1	
23	279	7.7					4.2	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in 2 minutes.
*Average values.
**Reported as "Abnormal E."
#One or two values only.

Table 61*

Canberra, Australia (35.3°S, 149.0°E) November 1940

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	280	7.5					4.8	
01	261	6.8					4.4	
02	267	6.1					4.6	
03	274	5.4					3.9	
04	284	4.9					3.7	
05	259	5.1					3.5	
06	254	5.9	244	3.9		2.4	3.8	
07	272	6.6	224	4.5	102	2.9	4.6	
08	282	7.5	212	4.8	100	3.2	5.4	
09	284	8.1	212	4.9	100	3.5	5.1	
10	288	8.7	211	5.0	100	3.5	5.4	
11	299	9.0	204	5.0	100	3.5	5.6	
12	296	8.9	206	5.0	100	3.5	5.6	
13	292	9.0	202	4.9	100	3.5	5.6	
14	294	8.7	206	4.9	100	3.5	5.9	
15	287	8.6	210	4.8	101	3.4	4.9	
16	278	8.3	216	4.5	101	3.2	4.5	
17	270	8.4	234	4.1	103	2.8	4.4	
18	260	8.4	245	3.6		2.1	4.6	
19	266	8.6					4.5	
20	269	8.0					4.3	
21	276	7.8					4.3	
22	277	7.8					4.3	
23	280	7.7					5.3	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in two minutes.
*Average values.
**Reported as "Abnormal E."

Table 62*

Canberra, Australia (35.3°S, 149.0°E) October 1940

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	277	6.4					3.9	
01	273	6.0					3.6	
02	272	5.4					3.4	
03	282	4.8					3.3	
04	300	4.5					3.2	
05	294	4.4				2.4#	3.2	
06	259	5.5	270#	3.6#	100#	2.2	3.4	
07	262	6.6	236	4.0	104	2.6	3.9	
08	299	7.4	225	4.6	100	3.1	4.2	
09	305	7.8	216	4.8	100	3.4	4.4	
10	303	8.4	212	5.0	100	3.5	4.6	
11	303	8.7	201	5.0	100	3.6	5.0	
12	300	8.7	197	5.0	100	3.6	4.4	
13	305	8.7	201	5.0	100	3.6	4.5	
14	299	8.7	211	4.9	101	3.6	4.3	
15	285	8.5	215	4.7	100	3.4	4.2	
16	270	8.2	223	4.4	100	3.0	4.2	
17	255	8.0	244	4.0	103	2.6	3.9	
18	253	8.0			100#	2.4#	3.8	
19	255	7.8					3.8	
20	266	7.4					4.1	
21	272	7.2					3.7	
22	275	6.9					3.8	
23	281	6.8					3.9	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in 2 minutes.
*Average values.
**Reported as "Abnormal E."
#One or two values only.

Table 63*

Canberra, Australia (35.3°S, 149.0°E) September 1940

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	277	5.7					3.2	
01	276	5.3					3.3	
02	274	5.0					3.1	
03	277	4.7					3.0	
04	290	4.4					3.1	
05	310	4.1					3.2	
06	268	4.7					3.1	
07	236	6.7	230#	3.6#		2.4	3.5	
08	246	7.8	222	4.1	101	2.9	3.8	
09	266	8.5	213	4.7	100	3.3	4.3	
10	268	8.8	206	4.9	100	3.4	4.3	
11	272	9.3	203	5.0	100	3.5	4.6	
12	275	9.6	199	4.9	100	3.6	4.4	
13	279	9.6	200	4.9	100	3.6	4.2	
14	270	9.2	199	4.8	100	3.5	4.4	
15	260	8.7	202	4.6	100	3.3	3.9	
16	247	8.4	210	3.9	101	2.9	3.8	
17	237	8.2	220#	3.4#		2.4	4.0	
18	229	7.7					3.4	
19	245	7.4					3.7	
20	258	7.0					3.5	
21	263	6.6					3.3	
22	271	6.1					3.3	
23	275	5.8					3.3	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in 2 minutes.
*Average values.
**Reported as "Abnormal E."
#One or two values only.

Table 64*

Canberra, Australia (35.3°S, 149.0°E) August 1940

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	286	4.1					3.3	
01	283	4.0					3.4	
02	279	4.0					3.8	
03	269	4.0					3.6	
04	267	3.8					3.5	
05	261	3.6					3.4	
06	265	3.4					3.5	
07	226	5.6				2.0	3.5	
08	223	7.1	205	3.3	110	2.6	4.0	
09	233	7.5	211	4.1	103	3.0	4.1	
10	249	8.0	204	4.5	100	3.3	4.3	
11	255	8.3	201	4.8	100	3.5	4.2	
12	260	8.6	198	4.8	100	3.6	4.2	
13	250	8.4	200	4.7	100	3.5	4.2	
14	250	8.4	199	4.5	100	3.4	4.0	
15	237	7.8	198	4.2	102	3.1	4.1	
16	225	7.7	200	3.7	103	2.8	4.2	
17	216	7.5			100	2.2	4.0	
18	218	6.8					3.8	
19	224	6.1					3.8	
20	245	5.4					3.3	
21	253	5.0					3.3	
22	268	4.5					3.3	
23	277	4.3					3.2	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in 2 minutes.
*Average values.
**Reported as "Abnormal E."

Table 65*

Canberra, Australia (35.3°S, 149.0°E) July 1940

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	292	3.7					3.2	
01	297	3.5					3.4	
02	297	3.7					3.3	
03	289	3.8					3.7	
04	263	4.0					3.5	
05	247	3.8					3.3	
06	266	3.2					3.5	
07	233	4.2					3.5	
08	215	6.3		3.2		2.3	4.0	
09	218	7.2		3.9		2.7	4.2	
10	228	7.5		4.1		3.0	4.4	
11	237	7.8		4.4		3.2	4.4	
12	233	7.8		4.4		3.2	4.8	
13	243	8.2		4.3		3.2	5.0	
14	233	8.1		4.2		3.0	5.2	
15	229	8.1		4.0		2.8	4.8	
16	218	7.5		3.2		2.4	5.1	
17	218	6.8		4.2#			4.6	
18	224	5.8					4.3	
19	232	4.7					4.0	
20	250	4.1					3.6	
21	264	3.8					3.2	
22	272	3.5					3.2	
23	284	3.4					3.0	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in 2 minutes.
*Average values.
**Reported as "Abnormal E."
#One or two values only.

Table 66*

Canberra, Australia (35.3°S, 149.0°E) June 1940

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	283	3.5					3.4	
01	283	3.5					3.5	
02	296	3.6					3.5	
03	285	3.8					3.7	
04	260	3.9					4.0	
05	234	3.6					3.8	
06	265	3.2					3.5	
07	230	4.0					3.8	
08	202	6.2				2.3	3.9	
09	211	7.2				2.7	4.3	
10	218	7.5				3.0	4.6	
11	228	7.8				3.2	4.8	
12	224	7.7				3.2	5.0	
13	235	7.8				3.1	5.3	
14	226	8.0				3.0	5.2	
15	223	8.1				2.7	4.9	
16	211	7.8				2.3	4.6	
17	206	6.8					5.0	
18	214	5.3					4.9	
19	236	4.3					5.0	
20	248	3.7					4.0	
21	256	3.4					3.8	
22	282	3.3					3.5	
23	284	3.4					3.4	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in 2 minutes.
*Average values.
**Reported as "Abnormal E."

Table 67*

Canberra, Australia (35.3°S, 149.0°E) May 1940

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	292	3.5					3.3	
01	291	3.5					4.0	
02	286	3.7					3.6	
03	278	3.8					3.2	
04	251	4.0					3.6	
05	231	3.3					3.1	
06	247	2.9					3.7	
07	215	4.6					3.8	
08	210	6.9				2.4	4.5	
09	221	7.6				2.8	3.9	
10	222	8.0				3.1	4.3	
11	224	8.2				3.2	5.4	
12	233	8.3				3.3	5.2	
13	229	8.7				3.2	5.1	
14	228	9.0				3.0	4.6	
15	223	9.0				2.8	4.3	
16	211	8.4				2.4	4.4	
17	205	7.8					4.4	
18	209	6.5					3.8	
19	214	5.0					3.6	
20	228	4.0					3.4	
21	252	3.7					2.9	
22	271	3.5					3.4	
23	280	3.5					3.1	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in 2 minutes.
*Average values.
** Reported as "Abnormal E."

Table 68*

Canberra, Australia (35.3°S, 149.0°E) April 1940

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	294	5.2					4.3	
01	295	5.1					4.1	
02	286	5.0					3.8	
03	279	4.8					3.4	
04	270	4.6					3.5	
05	262	4.2					3.1	
06	263	4.0					3.2	
07	236	6.7				2.2	3.4	
08	226	8.4				2.8	3.8	
09	242	9.5				3.1	4.2	
10	245	10.1				3.3	4.4	
11	253	10.6				3.5	4.8	
12	261	10.6				3.6	4.7	
13	258	10.9				3.5	4.7	
14	264	10.8				3.3	4.8	
15	259	11.1				3.1	4.5	
16	245	10.7				2.7	4.3	
17	240	10.0				2.4	3.8	
18	245	8.6					4.0	
19	246	7.2					3.5	
20	271	6.4					4.4	
21	268	6.0					4.6	
22	277	5.6					4.5	
23	294	5.4					4.9	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in 2 minutes.
*Average values.
**Reported as "Abnormal E."

Table 69*

Canberra, Australia (35.3°S, 149.0°E) March 1940

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	281	6.0					3.9	
01	272	5.8					3.8	
02	261	5.7					3.6	
03	256	5.4					3.4	
04	259	4.9					3.4	
05	264	4.7					3.9	
06	242	5.0					3.4	
07	239	6.3	220	3.5		2.4	3.8	
08	237	7.2	206	4.0		2.9	4.5	
09	250	8.0	201	4.6		3.3	5.0	
10	263	8.5	204	4.8		3.5	4.5	
11	263	8.8	197	4.8		3.6	5.2	
12	268	8.9	197	4.9		3.6	5.0	
13	268	9.1	197	4.8		3.6	5.1	
14	271	9.0	194	4.8		3.6	4.9	
15	264	9.0	208	4.6		3.4	4.4	
16	259	8.9	211	4.3		3.1	4.8	
17	248	8.8	226	3.7		2.6#	4.5	
18	244	8.6				2.2#	3.9	
19	236	8.2					4.1	
20	249	7.4					3.7	
21	256	6.9					3.5	
22	276	6.6					4.2	
23	282	6.4					5.0	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in 2 minutes.
*Average values.
**Reported as "Abnormal E."
#One or two values only.

Table 70*

Canberra, Australia (35.3°S, 149.0°E) February 1940

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	284	6.3					4.3	
01	270	6.0					4.4	
02	254	5.5					3.7	
03	260	4.9					3.6	
04	260	4.3					3.2	
05	252	4.1					3.5	
06	226	5.0		3.9#		2.6#	3.8	
07	216	5.9		4.0#		2.7	4.1	
08	237	6.9		4.5		3.0	4.6	
09	256	7.3		4.7		3.4	4.8	
10	249	7.9		4.9		3.5	5.5	
11	263	8.1		5.0		3.6	5.1	
12	259	8.3		5.0		3.6	4.7	
13	273	8.4		5.0		3.6	5.0	
14	269	8.3		5.0		3.7	5.2	
15	277	8.2		4.8		3.5	4.9	
16	262	8.0		4.6		3.2	5.0	
17	256	8.0		4.0		2.9	4.3	
18	237	7.9				2.3	4.3	
19	229	7.9					3.6	
20	239	7.3					3.6	
21	261	6.8					3.8	
22	281	6.5					3.6	
23	294	6.5					4.0	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in 2 minutes.
*Average values.
**Reported as "Abnormal E."
#One or two values only.

Table 71*

Canberra, Australia (35.3°S, 149.0°E) January 1940

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	274	6.5					3.8	
01	283	6.1					3.8	
02	277	5.4					3.8	
03	264	4.5					3.8	
04	260	4.0					3.4	
05	252	4.0					3.4	
06	258	5.0		3.4		2.5	4.2	
07	262	5.8		4.2		2.9	4.2	
08	278	6.7		4.5		3.2	4.6	
09	292	7.1		4.7		3.5	4.6	
10	280	7.7		4.8		3.7	4.7	
11	275	7.6		5.0		3.7	4.6	
12	291	7.4		5.0		3.7	5.1	
13	296	7.4		4.9		3.8	5.3	
14	298	7.4		4.8		3.7	4.6	
15	287	7.6		4.8		3.6	4.5	
16	284	7.4		4.7		3.4	4.3	
17	268	7.2		4.3		3.0	4.4	
18	256	7.1		4.0#		2.5	4.5	
19	245	6.8					4.8	
20	265	7.0					4.1	
21	270	7.1					3.7	
22	295	7.0					3.7	
23	288	6.9					4.2	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in 2 minutes.
*Average values.
**Reported as "Abnormal E."
#One or two values only.

TABLE 72

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

Form adopted June 1946

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), February (Month) 1948

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

Scaled by J.M.C. J.W.P., E.J.W. J.J.S.

Calculated by: N.M., K.L.W.

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	240	260	240	220	240	240	240	210	200	200	240	220	240	240	220	220	230	200	210	200	210	230	250	240
2	260	300	280	300	280	260	260	260	230	230	230	250	230	200	250	240	240	230	210	210	200	250	230	250
3	270	270	290	260	300	N F	N F	310	250	220	270	250	200	250	250	240	230	240	220	210	210	240	240	260
4	C	C	C	C	C	C	C	C	C	C	250	240	250	240	230	200	240	240	221	220	210	210	240	250
5	260	250	250	250	220	250	260	250	230	230	200	220	240	250	250	240	230	230	200	220	200	230	220	250
6	250	230	250	250	250	250	250	250	230	220	250	230	C	C	C	C	C	230	230	220	200	220	240	240
7	250	270	280	250	250	250	240	250	230	200	220	240	230	280	220	230	230	220	220	230	210	220	240	250
8	260	250	250	230	230	240	250	250	230	220	240	C	C	C	250	240	230	220	240	(250)	230	240	280	240
9	240	250	270	C	C	C	C	C	210	220	220	240	240	230	240	240	240	220	210	230	220	230	250	250
10	250	250	280	[260] A	250	230	250	280	210	230	210	250	240	[240] C	240	220	230	230	220	200	230	230	240	230
11	250	250	250	240	230	240	250	240	220	220	280	220	240	230	250	240	240	280	230	210	200	210	230	230
12	260	280	270	250	240	230	250	240	220	210	220	240	240	230	250	230	230	230	210	210	220	210	260	280
13	240	260	250	250	240	230	250	240	210	230	220	[220] C	240	240	[240] C	[240] C	240	230	(230) C	220	220	240	240	240
14	250	240	260	(270) C	[240] C	220	250	(250) C	220	240	250	270	260	250	250	240	240	230	220	210	230	240	230	240
15	260	270	250	220	220	230	280	230	280	240	280	220	210	280	280	250	240	250	220	220	200 K	250 K	260 K	260 K
16	250 K	280 K	250 K	270 K	280 K	300 K	S K	240	220	230	220	230	220	240	220	240	220	230	220	210	210	240	250	250
17	270	270	270	260	230	230	250	250	230	230	210	240	220	220	250	240	230	220	220	250	260	240	250	270
18	260	240	250	270	250	250	260	250	220	220	240	240	240	240	240	250	240	230	220	200	200	230	230	240
19	260	270	250	260	280	250	240	230	230	220	230	240	230	240	230	230	220	230	220	200	200	220	240	240
20	260	270	290	270	250	240	220	220	220	220	210	240	240	250	230	[240] C	240	230	220	220	210	220	240	250
21	240	250	260	250	250	260	230	230	220	220	240	230	240	230	240	230	230	230	220	210	200	240	250	260
22	270	270	250	C	C	C	C	C	C	C	C	C	250	[240] C	240	250	230	240	220	220	220	240	250	290
23	300	290	270	250	240	250	290	280	250 K	230 K	220 K	230 K	320 K	300 K	300 K	280 K	270 K	250 K	240 K	240	230	250	240	250
24	260	260	260	270	(290) A	280	260	240	220	220	240	240	[240] C	[250] C	250	C	C	C	C	C	C	230	230	230
25	250	260	250	240	240	250	270	240	220	220	240	230	250	230	250	240	230	230	200	220	210	220	240	250
26	250	250	250	250	250	240	240	230	230	210	230	240	240	260	240	240	230	230	220	200	220	240	250	270
27	270	260	250	240	240	270	270	250	240	230	220	220	250	270	250	240	230	240	230	230	250	240	(270) S	270
28	(270) S	(240) S	260	(270) S	250	(270) S	(260)	260 K	(230) S K	250 K	300 K	300 K	290 K	300 K	280 K	260 K	280 K	230 K	280 K	280 K	C	C	C	(240) S
29	(280) S	(270) S	(270) C	(270) C	(270) C	[260] C	250	240	240	240	250	280	280	270	270	250	240	230	230	240	(250) C	(250) S	(270) S	(270) S
30																								
31																								
Median	260	256	255	250	250	250	250	240	230	220	220	240	240	240	240	240	230	230	220	220	210	230	240	250
Count	28	28	28	26	26	25	25	26	27	27	28	27	27	27	28	27	27	28	28	28	27	28	28	29

Sweep 1.0 Mc to 25.0 Mc in .025 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 703519

TABLE 73

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

Form adopted June 1946

IONOSPHERIC DATA

f°F2 (Characteristic), Mc (Unit), February (Month), 1948

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W — 75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.M.C. J.W.P., E.J.W. J.J.S.

Calculated by: K.L.W., M.C.E.

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
	4.2	4.2 F	4.0	3.9 F	3.6 F	3.6 F	3.8 F	4.7	7.5	8.6	10.6	10.2	11.5	10.9	10.5	10.7	10.6	9.6	9.2	7.8	6.0	5.4	5.0	(4.6) J
2	4.5	4.4 F	4.7 F	4.5 F	4.8	4.5 F	4.2 F	4.6 F	7.8	9.5	10.4	11.0	11.4	11.5	11.5	(11.5) S	(9.9)	9.6	9.1	7.5	(6.6) S	5.5	4.5	(4.0) J
3	(3.7) J	3.0 F	3.0 F	2.8 F	2.4 F	N F	N F	3.1 F	(5.7) S	(6.6) J	7.8	10.0	9.5	10.0	10.6	(10.8) C	(10.6) S	(9.4) P	9.0	(7.2) C	6.1	5.2	5.0	5.2
4	C	C	C	C	C	C	C	C	C	C	9.8	10.8	10.7	11.0	10.9	10.7 S	10.2 S	(10.3) S	9.7	9.8	7.8	6.6	5.2	(4.4) J
5	4.6	4.6	4.8	4.5	(4.0) J S	3.4 F	3.2	4.3	7.4	(9.7)	10.0	11.4	(11.4)	(11.4) C	(11.2) C	11.5	(10.4)	(10.0) S	(10.0) S	8.9	(7.0) J	6.0	5.5	4.7
6	4.0	4.0	3.9	3.8	3.9	3.3	2.9	4.4	7.8	8.4	9.5	11.9	C	C	C	C	C	10.5	(10.0)	9.2	7.6	(7.0) J	(6.2) J	(5.6) J
7	4.0	4.1	4.1	4.1	4.6	4.5	4.2	5.2	8.3	(8.2)	10.6	[10.9] C	11.2	10.7	11.0	11.0	10.6	10.0	9.5	9.4	7.3	6.2	5.4	5.0
8	4.7	4.9	5.2	4.8	4.2	3.9	3.8 F	5.1	8.2	(10.6) J C	11.0	C	C	C	11.0	(10.0)	(10.0)	9.5	9.5	(8.4) J	7.6	(6.8) J	6.1	5.5
9	3.9	4.0	4.0	C	C	C	C	C	7.2	9.0	10.4	(10.8)	11.0	(11.8)	[10.7] J	(9.7)	(9.8)	9.4	8.8	8.4	(6.6) J	5.3	5.1	4.5
10	4.2	4.0	4.0	4.2	4.3	4.1	3.6 F	4.9	8.0	9.4	9.8	10.4	10.8	[11.1] C	(11.4)	9.7	(9.7) S	9.5	9.2	7.3	7.0	5.5	5.6	4.9
11	4.5	4.5	4.3	4.4	4.1	3.4	3.5	4.8	7.5	9.2	(9.8)	10.4	10.5	11.6	10.8	(9.5)	[9.4] C	(9.3)	9.0	8.7	7.4	6.8	5.1	4.4
12	4.0	4.2	4.2	4.4	4.3	3.9	3.5	5.3	8.0	9.0	10.4	10.4	11.4	11.5	11.2	9.5	10.4	(9.4)	9.4	8.0	7.4	5.9	(5.4)	5.4
13	4.8	4.8 F	4.4	4.3 F	4.2 F	3.8	3.5	5.0	7.6	9.0	10.0	[10.8] C	11.6	11.6	C	C	(9.3) P	(9.3) S	[9.0] C	(8.8) S	7.0	5.9	(5.7) J	4.9
14	4.9	(4.5) C	(4.2) J	(4.4) C	[4.2] C	4.1	3.3 F	(4.9) C	7.8	9.2	[9.3] C	9.5	(10.6) C	(10.4) C	11.4	11.2	(10.3) C	(9.3) J	(9.6) J	9.2	(7.9) P	6.9	(5.6) P	(4.9) J
15	5.0 V	5.3 V	(5.0) J	5.2	4.4	3.9	3.9	5.2	7.6	8.8	10.5	11.4	11.6	11.8	(10.6) S	11.2	10.5	(10.7) J	S C	(9.4) P	(6.4) F K	(4.8) F K	(3.9) F K	(4.2) F K
16	(5.6) F K	F K	F K	F K	F K	(1.9) F K	(1.9) F K	4.2 F	(7.9) J	(10.0) J	10.7	11.2	11.9	11.6	11.5	11.7	11.2	[10.4] C	(9.6)	8.2	5.8	5.7	4.9	(4.6) J
17	4.3	(4.1) S	(4.1) S	(4.3) S	4.1	3.3 F	3.1	4.4	7.9	9.8	10.2	11.5	12.0	11.7	11.5	11.4	(11.2)	(10.5) P	(9.8) P	8.7	7.0	(5.6) P	5.4	5.2
18	5.6	5.6	4.8	4.1	4.1	3.8	3.6	5.2	7.7	8.6	9.6	10.0	11.2	11.6	11.4	(10.4) P	10.3	[9.8] S C	(9.3) P	8.6	6.9	5.9	(5.4) F	5.0
19	4.7	(4.8) P	(4.8) J F	(4.5) J F	(4.2) F	(3.7) F	(3.7) F	5.2 F	8.2	9.4	9.4	(10.4)	11.3	11.6	11.4	11.3	(10.4) S	(9.4) S	(9.3)	8.8	7.1	(6.0) J	5.1	4.3 S
20	(4.3) J F	3.7 F	3.7 F	(3.9) J F	3.8 F	3.9 F	3.7 F	5.2	8.1	9.3	(10.1)	(10.1)	11.2	(11.5)	11.0	[10.6] S	(10.2) S	(9.2) S	(9.5) S	8.8	(7.2)	5.7	5.2	5.2 F
21	(4.4)	4.5	(4.3) J F	4.3 F	(4.3) J F	(3.9) J	3.9 F	5.7	8.6	(9.5)	9.8	(10.5)	(11.0)	11.6	10.8	10.6	(10.3)	(9.4)	(9.4) S	8.8	7.0	5.7	5.0	5.0
22	4.8	5.1	4.9	C	C	C	C	C	C	C	C	C	(11.6)	[11.4] C	11.2	(11.0)	10.4	(10.3)	(10.2)	(8.2)	7.2	(5.7)	5.2	4.9
23	5.0	5.2	5.1	4.9	4.2	3.9	3.3	4.5	6.9 K	6.8 K	6.9 K	7.9 K	8.4 K	8.2 K	7.8 K	7.9 K	(7.8) P K	8.2 K	7.6 K	7.8	(6.7) J	5.6	(4.9) F	4.2 V
24	(3.9) F	F	(4.6) J	(4.5) J	(3.8) J S	(3.1) F	(3.2) F	5.4	7.5	9.1	(9.5)	10.4	C	C	10.5	C	C	C	C	C	C	(6.7) J V	(5.8) J	5.1
25	4.5 F	(4.7) F	4.8	(4.1) J F	3.9 F	3.4	3.4 F	5.5	8.6	9.6	(9.7) J	(11.0)	11.3	10.7	(10.6) J	11.0	(10.6)	9.9	9.0	(8.2)	7.1	6.1	5.5	5.3
26	(4.9) J S	4.9 F	4.6	4.5	4.4	4.1	3.9	5.8	7.7	9.0	(10.1) J	10.3	11.2	(10.5) P	10.5	10.6	(9.2) J	S C	S C	8.7	7.2	7.8	5.9	5.7
27	(6.0) J	5.6	5.6	5.2	4.8	4.3	4.0	5.1	7.0	8.6	9.0	9.7	(10.0)	(10.6)	10.4	(10.3) J	(10.3) J	(8.9) S	(9.2) P	8.7	7.4	(7.3) S	(6.5) S	(6.2) J S
28	(6.7) J	(6.0) J	(5.4) F	5.0	4.8	4.3	3.7	4.5 K	5.8 K	6.8 K	6.8 K	7.4 K	7.8 K	7.9 K	8.0 K	8.0 K	8.0 K	7.7 K	7.4 K	(6.8) J K	C	C	C	(4.8) J
29	(5.4) B	5.0 V	5.0	4.8	(4.8) C	[4.5] C	4.2	5.4	(6.8) P	7.8	8.7	9.1	10.2	10.3	9.8	10.0	9.4	9.3	8.5	(7.7) J	(7.0) J	6.2	(5.8) J	(5.2) J
30																								
31																								
Median	4.6	4.6	4.6	4.4	4.2	3.9	3.6	5.0	7.7	9.0	9.8	10.4	11.2	11.4	10.9	10.6	(10.3)	(9.5)	9.3	8.7	7.0	5.9	5.4	4.9
Count	28	26	27	25	25	25	25	26	27	27	28	27	26	26	27	26	27	27	26	28	27	28	28	29

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 74

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

Form adopted June 1946

IONOSPHERIC DATA

f°F2 (Characteristic), Mc (Unit), February (Month), 1948

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat. 39.0°N, Long. 77.5°W — 75°W Mean Time

Scaled by J.M.C. J.W.P., E.J.W. J.I.S.

Calculated by N.M., K.L.W.

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	4.2	(4.2)^{J}	4.0	3.8	3.7^{F}	3.4	4.0	6.0	8.6	9.8	10.6	(11.4)	11.0	10.0	(11.8)^{J}	(10.8)	(10.5)	9.2	8.8	6.8	5.7	5.4	5.0	4.4
2	4.3	4.5	4.6	4.7	4.6^{F}	4.5	4.2	6.6	8.4	9.7	10.7	[11.3]^{C}	12.0	11.6	11.4	10.4	(9.7)^{S}	(9.6)^{S}	8.4	7.4	(5.8)^{J}	5.0	4.3	(3.7)^{S}
3	3.6^{F}	2.9^{F}	3.0^{F}	2.7^{F}	2.4^{F}	N^{F}	N^{F}	4.6^{F}	6.0	6.4	8.0	9.3^{F}	10.0	10.8	[10.9]^{C}	[10.4]^{C}	(9.8)^{P}	(9.4)^{C}	(8.1)$^{J}_{E}$	6.8	5.6	5.4	4.9	C
4	C	C	C	C	C	C	C	C	C	C	10.5	11.7	10.5	11.1	10.4	10.0	S	S^{C}	9.5	8.2	7.3	5.9	4.9	4.8
5	4.7	4.7	4.6	4.4	3.8^{F}	3.4^{F}	3.2^{F}	(6.4)	8.4	(9.8)	11.0	11.5	(12.3)	(11.4)	[11.0]^{C}	[10.8]$^{S}_{E}$	(10.5)	[10.0]$^{S}_{E}$	[9.0]^{C}	8.0	6.2	(5.8)^{S}	5.2	(4.1)^{S}
6	3.9	3.8	3.8	3.8	3.4	3.0^{F}	3.0^{F}	[5.8]$^{S}_{E}$	8.6	9.4	(11.0)	C	C	C	C	C	C	(10.0)	9.5	8.6	(7.0)^{J}	6.3	(5.7)	4.4
7	(3.8)	3.7	4.0	4.3	4.5	4.4	4.0	7.0	8.0	8.8	11.0	11.2	11.0	(10.8)	(10.0)	(10.6)	(10.2)	9.6	9.7	(8.4)^{J}	7.0	6.0	5.1	4.7
8	4.9	5.2	5.2	4.4	4.0	3.6^{F}	3.8^{F}	6.6	(9.0)	10.2	C	C	C	(9.2)	11.0	(10.8)	(10.2)	9.3	9.2	8.2	7.2	6.5	5.5	4.9
9	4.2	[4.2]^{C}	4.3	C	C	C	C	(6.0)	[7.6]^{C}	(9.2)	[10.1]^{F}	(11.0)^{J}	(12.0)^{J}	(10.7)^{J}	(9.7)	(9.6)	[9.5]^{C}	9.4	8.2	7.4	5.9	5.1	4.7	4.3
10	4.3	4.0	4.0	4.2	[4.3]^{C}	[3.9]^{C}	(3.6)	6.7	8.2	9.7	[10.5]^{C}	[11.6]^{C}	12.0	(12.0)	[9.8]^{C}	[9.7]^{C}	(9.6)	[9.3]^{C}	8.0	[7.2]^{C}	[6.2]^{C}	[5.4]^{C}	[5.2]^{C}	[4.8]^{C}
11	[4.2]^{A}	[4.4]^{C}	[4.3]^{C}	[4.3]^{C}	(3.7)	[3.5]^{C}	[3.8]^{C}	[6.5]^{C}	[8.2]^{C}	[9.5]^{C}	[9.5]^{C}	(10.4)	11.5	11.0	(9.6)	9.8	9.4	9.0	9.0	8.0	6.8	5.5	4.7	4.2
12	3.9	4.2	4.3	4.4	4.2	3.7	3.8	6.6	9.2	(9.7)	10.5	11.0	11.6	11.3	[10.2]^{C}	10.6	(9.6)	9.5	9.0	7.8	6.8	(5.6)	5.7	5.2
13	4.8	4.5^{F}	4.2^{F}	4.4	3.9	3.8	3.5	6.5	8.4	9.0	10.6	[11.0]^{C}	11.4	11.0	[10.7]^{C}	[10.2]^{S}	(9.7)^{P}	[9.2]^{C}	[8.3]^{C}	(7.6)^{P}	[6.7]^{C}	5.7	5.2	5.2
14	4.8^{V}	[4.5]^{C}	(4.2)^{S}	(4.4)$^{P}_{C}$	(4.4)^{J}	[4.2]^{C}	[4.0]^{C}	6.6	8.4	[8.9]^{C}	(9.4)	10.8	(10.4)^{F}	11.3	(11.1)^{C}	(11.1)^{C}	[10.5]^{C}	[10.0]^{C}	(9.3)^{C}	8.6	(6.7)^{J}	(6.6)^{J}	(5.3)^{C}	4.9
15	(5.4)^{P}	5.8^{V}	(5.0)^{J}	4.8	4.2	3.9	(4.4)^{V}	7.2	9.3	10.5	(11.2)^{C}	(11.3)^{C}	12.0	10.9	10.4	(10.8)	(10.5)^{P}	[10.0]^{C}	(9.5)^{S}	(9.3)^{P}	5.6$^{V}_{K}$	4.3$^{F}_{K}$	4.2$^{F}_{K}$	(4.8)$^{F}_{K}$
16	F^{K}	F^{K}	F^{K}	F^{K}	F^{K}	(1.9)$^{F}_{K}$	F^{K}	6.8	8.6	(9.7)^{S}	11.2	11.4	12.1	11.5	[11.6]^{C}	11.7	(11.0)	9.8	9.5	7.0	6.3	5.5	4.7	4.4
17	4.2	(4.1)^{S}	(4.0)	(4.2)^{S}	3.8	3.0^{F}	3.3	6.6	8.9	10.0	10.4	11.7	12.0	11.5	11.3	11.3	(10.5)^{S}	[9.9]^{S}	(9.3)^{F}	8.0	(6.6)^{C}	5.4	5.1	5.4
18	5.5	5.1	4.3	4.2	3.9	3.6	3.8	6.8	8.2	9.0	9.8	10.3	11.4	11.6	(11.0)^{S}	10.4	[10.0]^{S}	[9.7]^{S}	(9.3)^{P}	(8.3)^{J}	(5.8)^{S}	(5.8)^{P}	5.2	4.8
19	(4.6)^{J}	(4.9)^{J}	(4.4)$^{J}_{E}$	(4.4)$^{J}_{E}$	4.0^{F}	3.8^{F}	3.8^{F}	(1.0)$^{F}_{S}$	9.1	9.2	9.6	11.0	11.4	11.4	11.6	11.2	9.5	(9.4)	(9.3)	(8.2)	(8.6)	(5.4)	5.1	(4.3)^{F}
20	(4.2)$^{J}_{E}$	3.7^{F}	3.7^{F}	3.8^{F}	(3.8)	3.8^{F}	3.7^{F}	6.9	8.7	9.9	(10.3)	(10.6)	11.6	10.8	10.8	(10.8)	(10.2)	(9.8)^{S}	9.3	(8.0)^{S}	6.6	5.3	5.3	4.9^{F}
21	4.5	4.0^{F}	(4.1)$^{J}_{E}$	(4.1)$^{J}_{E}$	4.1^{F}	4.1^{F}	4.5	7.8	9.2	(9.5)	10.2	10.8	11.6	10.7	10.7	10.5	10.3	(9.4)	9.3	7.4	6.4	5.3	5.0	4.9
22	4.9	4.9	4.9^{F}	C	C	C	C	C	C	C	C	C	C	C	C	C	10.3	[9.5]^{C}	8.7	7.8	(6.4)	5.4	5.2	4.9
23	5.3	5.2	5.1	4.7	4.1	3.4	3.7	5.3	6.5^{K}	7.0^{K}	7.7^{K}	8.3^{K}	8.5^{K}	8.1^{K}	7.7^{K}	8.0^{K}	8.0^{K}	(7.8)$^{F}_{K}$	7.6^{K}	7.0	(4.8)^{J}	5.2	(4.7)$^{P}_{V}$	(4.0)^{F}
24	(4.1)$^{J}_{E}$	(4.4)$^{J}_{E}$	(4.2)$^{J}_{E}$	(4.2)^{J}	(3.2)^{F}	(3.2)^{F}	(3.8)^{F}	(7.2)^{P}	8.2	(9.5)	9.7	11.0	C	C	10.3	C	C	C	C	C	C	(6.6)^{J}	5.6^{P}	4.8^{F}
25	(4.7)$^{J}_{E}$	4.5^{F}	(4.4)^{A}	(4.1)^{F}	3.7	3.3	3.8	7.6	9.4	(9.7)^{C}	(9.7)^{A}	(11.2)	(11.0)	(11.0)	(10.6)^{J}	(10.3)^{S}	(10.3)	(9.1)^{S}	8.7	8.7	(7.1)	5.7	5.3	4.9
26	5.1	4.8	4.5	4.5	4.3	4.1	4.5	6.8	8.9	9.5	9.9	10.7	11.0	10.5	(10.7)^{P}	[10.0]$^{S}_{E}$	(9.2)^{J}	[9.2]$^{S}_{E}$	(9.3)^{P}	7.8	7.0	(6.5)^{J}	5.8	5.9
27	5.8	(4.8)^{S}	5.5	5.0	4.4	4.1	(4.1)^{S}	(6.2)^{S}	(7.4)^{P}	8.7	9.2	(10.4)	(10.5)	10.4	10.2	(10.1)^{S}	[9.8]^{C}	(9.5)^{P}	(8.9)^{P}	(7.8)^{J}	(7.7)^{J}	(6.8)^{J}	(6.4)$^{J}_{S}$	[6.4]^{S}
28	(6.4)^{J}	5.8	5.0	4.9	4.2	4.0	(4.0)^{J}	5.4^{K}	6.7^{K}	[6.7]$^{K}_{R}$	7.1^{K}	7.8^{K}	7.6^{K}	8.2^{K}	8.0^{K}	8.0^{K}	^{K}(7.8)$^{S}_{S}$	(7.3)$^{K}_{K}$	7.2^{K}	^{K}(7.4)$^{S}_{C}$	[6.6]^{C}	(5.7)$^{J}_{S}$	[5.5]^{C}	[5.3]^{C}
29	(5.1)$^{J}_{V}$	(5.0)$^{J}_{J}$	(4.9)^{C}	4.8^{V}	4.8	(4.1)^{F}	[4.0]^{C}	[6.0]^{C}	7.5	8.4	8.8	9.8	10.2	9.7	10.3	9.6	9.4	8.7	8.1	(7.4)^{J}	(6.9)^{J}	5.7	(5.5)^{P}	C
30																								
31																								
Median	4.6	4.5	4.3	4.4	4.0	3.8	3.8	6.6	8.4	9.5	10.2	11.0	11.4	11.0	10.5	(10.4)	(9.9)	(9.4)	9.0	7.8	6.6	5.6	5.2	4.8
Count	27	27	27	25	25	25	24	27	27	27	27	26	25	26	27	26	26	27	25	28	28	29	29	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1948 O 702519

TABLE 75

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

Form adopted June 1946

IONOSPHERIC DATA

h'F1 (Characteristic), Km (Unit), February (Month), 1948

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.M.C. J.W.P., E.J.W. J.J.S.

Calculated by: K.L.W., M.C.E.

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

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U.S. GOVERNMENT PRINTING OFFICE 1948 O 703519

TABLE 76

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

Form adopted June 1946

IONOSPHERIC DATA

f° F1 (Characteristic), Mc (Unit), February (Month), 1948

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.M.C. J.W.P., E.J.W. J.J.S.

Calculated by: K.L.W., M.C.E.

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	L	L	L	L									
2												L			L	L	L							
3											L	L		L	L	L								
4									C	C	L	L	L	L	L									
5										L			L	L		L								
6											L		C	C	C	C	C							
7												L	L	L		L								
8											L	C	C	C	L	L								
9														L	L	L	L							
10												L	L	C	L	L	L							
11											L		L	L	L	L	L							
12											L	L	L		L	L								
13													L	L	C	C	L							
14											L	(4.4)	[4.6]L	(4.8)	L	L								
15															L	L	L							
16										L		L		L		L								
17										L			L		L	L	L							
18											L	L	L	L	L	L	L							
19											L	L		L	L									
20												L	L	L	L	C	L							
21											L	L	L	L	L	L								
22									C	C	C	C	L	C	L	L								
23													(4.9)K	(4.9)K	L K	L K	L K							
24											L	L	C	C	L	C								
25											L		L	L	L	L								
26											L	L	L	L	L	L								
27											L	L	C	L	L	L	L							
28										L K	(4.3)K	L K	(4.7)K	(4.7)K	L K	L K								
29									L	L	L	L	L	L	L	L	L							
30																								
31																								
Median																								
Count																								

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 748518

TABLE 77

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

Form adopted June 1946

IONOSPHERIC DATA

h' E (Characteristic), Km (Unit), February (Month), 1948

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W — 75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: J.M.C J.W.P, E.J.W J.J.S

Calculated by: K.L.W., M.C.E.

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

Sweep 1.0 Mc to 25.0 Mc in 0.75 min

Manual ☐ Automatic ☒

U.S. GOVERNMENT PRINTING OFFICE: 1948 O - 783519

TABLE 78

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

Form adopted June 1946

IONOSPHERIC DATA

f°E (Characteristic), Mc (Unit), February (Month) 1948

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat. 39.0°N, Long 77.5°W — 75°W Mean Time

Scaled by: J.M.C. J.W.P., E.J.W. J.J.S.

Calculated by: K.L.W., M.C.E.

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	2.8	3.1	3.3	3.5	3.5	3.3	3.2	2.8	2.1						
2									2.0	3.2	3.4	3.4	3.4	3.3	3.3	3.1	2.7	2.2						
3									2.2	2.5 K	3.0	[3.3] A	3.5	3.4	[3.3] B	3.2	2.8	C						
4									C	C	3.1	3.4	3.5	(3.5)	(3.4)	3.1	(2.6) S	2.1 H						
5									2.4	3.0	3.2	3.4	3.5	3.4	3.4	3.1	(2.8) S	1.9 H						
6									2.1 H	2.9	3.2	3.4	C	C	C	C	C	2.1 H						
7									(2.1) H	2.9	3.2	3.2	3.4	3.6	3.5	[3.1] A	2.9							
8									2.2	2.7	3.1 H	C	C	C	3.3	3.0	2.8	2.2 H						
9									2.2	2.7 H	3.1	3.3	3.5	3.4	2.9	3.2	2.8	2.3						
10									2.1 H	2.9	3.1	3.3 H	3.3	[3.3] C	3.3	[3.0] A	2.8	2.3						
11									2.1 H	3.0	3.2	3.4	3.5	3.5	3.4	3.2	2.8	A						
12									A	2.9	3.2	3.4	3.4	3.6	3.4	3.1	2.7 H	2.0 H						
13									2.3 H	2.9	3.2	[3.4] C	3.6	3.6	C	C	2.8	2.0	C					
14									(2.5) S	2.9	(3.2)	(3.4) F	3.2	3.2 H	(3.3) A	3.0	[2.5] A	(2.0)						
15									2.1 H	2.8	3.2	3.5	(3.5)	3.3	3.3	3.1	2.7	2.1						
16									(1.9) H	2.8	3.1	3.4	(3.2) H	3.4	3.3	3.1	2.7	2.0						
17									(2.2)	[2.6] A	3.0	3.4 H	3.5	3.4	3.3	2.8 H	2.6	1.9						
18									(2.1) H	(2.4) A	3.2	3.3	3.5	3.4	3.2	(3.1) F	(2.7)	A						
19									(2.5)	2.9	3.2	3.3	3.2 H	3.3	3.3	3.1	2.7	2.1 H						
20									2.3	2.9	3.2	3.5	3.6	3.7	3.4	[3.1] C	2.8	(2.3)						
21									2.3	2.9	3.3	3.5	3.6	3.7	3.5	3.3	2.9	2.1						
22									C	C	C	C	3.7	[3.6] C	3.4	3.1	2.9	2.4						
23									2.5 K	3.0 K	3.2 K	3.3 K	[3.3] B K	3.3 K	3.3 K	(2.9) H K	2.8 K	A K						
24									A	(2.4)	(2.8)	3.3 H	3.4	C	C	3.3	C	C						
25									2.3	2.9	3.2	3.3	3.5	3.5	3.5	3.2	2.9	2.4						
26									2.5	2.9	3.3	3.5	3.5	3.5	3.4	3.1	(2.5) H	(1.9) H						
27									A	2.9	3.2	3.3	3.5	3.6	3.5	3.2	2.9	(2.2) S						
28								S K	(2.1) H K	(2.7) H K	A K	A K	A K	(3.5) S K	3.3 K	3.1 K	2.8 K	2.3 K						
29								S	(2.4) C	2.9	A	A	(3.6)	[3.5] A	3.4	3.2	2.9	(2.1) S	S					
30																								
31																								
Median									2.2	2.9	3.2	3.4	3.5	3.5	3.3	3.1	2.8	2.1						
Count									24	29	26	25	26	26	26	27	27	23						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1948 O - 782518

TABLE 79

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

Form adopted June 1946

IONOSPHERIC DATA

Es (Characteristic), Mc,Km (Unit) February (Month), 1948

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75° W Mean Time

Notional Bureau of Standards (Institution)

Scaled by J.M.C. J.W.P., E.J.W. J.J.S.

Calculated by: J.T.D., F.H.L.

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												40/130												
2											32/110					34/140								
3	38/100											34/110						21/130						
4	C	C	C	C	C	C	C	C	C	C						33/130								
5																								
6									19/100				C	C	C	C	C							
7																								
8												C	C	C				29/100						
9				C	C	C	C	C				52/120	55/110	58/110										
10				53/120	34/100									C		36/100		18/100						
11					13/100				18/100	22/100								22/100			19/100			
12									36/100	34/100														
13												C			C	C	36/120							
14					C								34/120	35/130	34/120	33/120	34/110	22/120						
15																		18/100						
16				32/120	55/100					21/100	34/100		32/100	36/120	36/120			23/100						
17									20/100	32/100	28/100					33/120	28/130	23/120						
18																32/120	29/120	22/110						
19					30/110			17/120	44/110											20/100				
20																C	29/140	30/130	17/110					
21									30/130								35/120	22/130						
22				C	C	C	C	C	C	C	C	C		C										
23												34/130		34/130				26/120	19/130		37/100			
24				34/140	19/130			29/110					C	C		C	C	C	C	C	C			
25																								
26									32/130	37/110	39/110													
27									32/130															
28									(33)/140		38/120	33/110	33/100								C	C	C	
29						C					31/110	36/110		36/110										
30																								
31																								
Median	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Count	28	28	28	26	25	25	26	26	27	27	28	26	26	24	27	25	27	28	28	28	27	28	28	29

** MEDIAN f_{E_s} LESS THAN MEDIAN $f^{\circ}E$, OR LESS THAN LOWER FREQUENCY LIMIT OF RECORDER

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

F2-MI500 (Characteristic), ____ (Unit), February (Month), 1948

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: J.M.C. J.W.P., E.J.W. J.J.S.

Lat 39.0°N, Long 77.5°W — 75°W Mean Time

Calculated by: J.L.K., N.M.

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	2.1	2.0 F	2.0	2.1 F	1.9 F	1.9 F	1.9 F	2.1	2.4	2.3	2.4	2.1	2.2	2.1	2.1	2.1	2.2	2.1	2.0	2.0	2.1	2.0	2.0	(2.0) J
2	1.8	1.7 F	1.7 F	1.7 F	1.8	1.8 F	1.8 F	2.0 F	2.3	2.2	2.1	3.0	2.1	2.0	2.1	(2.0) S	(2.2)	2.1	2.0	2.0	(2.0) S	2.0	2.0	(2.0) J
3	(1.9) S	2.1 F	1.9 F	2.0 F	1.8 F	N F	N F	1.8 F	(2.1) S	(2.3) J	2.2	2.2	2.0	2.2	2.2	(2.1) C	(2.1) S	(2.1) P	2.2	(2.1) C	2.1	2.0	2.0	1.8
4	C	C	C	C	C	C	C	C	C	C	2.3	2.1	2.2	2.1	2.1	2.0 S	2.0 S	(2.1) S	2.2	2.1	2.1	2.0	2.0	(1.9) J
5	2.0	1.9	1.9	2.2	(2.0) J S	2.0 F	2.0	2.1	2.3	(2.4)	2.0	2.0	(2.0)	(2.1) C	(2.1) C	2.0	(2.2)	(2.2) S	(2.1) S	2.1	(2.1) J	2.1	2.0	2.1
6	1.9	1.9	1.9	2.0	1.9	2.0	2.0	2.0	2.4	2.2	2.1	2.0	C	C	C	C	C	2.3	(2.2)	2.1	2.2	(2.0) J	(2.1)	(2.1) J
7	2.0	1.8	1.9	2.0	2.0	2.0	2.2	2.1	2.3	(2.3) J	2.1	C	2.1	2.1	2.0	2.0	2.1	2.2	2.1	2.1	2.1	2.2	2.0	2.5
8	2.0	2.0	2.1	2.1	2.1	2.0	1.9 F	2.1	2.3	(2.5) C	2.4	C	C	C	2.0	(2.1)	(2.3)	2.2	1.9	(2.0) J	2.3	(2.3) J	2.2	2.1
9	2.3	1.9	1.9	C	C	C	C	C	2.4	2.3	2.3	(2.2)	2.1	(1.9)	S C	(2.3)	(2.3)	2.1	2.0	2.1	(2.2) J	2.0	2.0	2.0
10	1.9	2.0	1.8	1.8	2.0	2.1	2.0 F	2.0	2.5	2.3	2.2	2.3	2.1	C	(2.2)	2.3	(2.3) S	2.1	2.2	2.2	2.0	2.1	2.1	2.0
11	2.0	2.0	2.0	2.1	2.2	2.0	2.0	2.2	2.4	2.4	(2.5)	2.1	2.1	2.1	2.1	(2.3)	C	(2.3)	2.1	2.0	2.2	1.9	2.2	2.1
12	1.8	1.8	1.9	2.0	2.1	2.1	1.9	2.1	2.5	2.3	2.3	2.2	2.1	2.2	2.0	2.0	2.2	(2.3)	2.2	2.1	2.2	1.9	(1.9)	2.0
13	2.1	2.0 F	2.0	2.0 F	2.1 F	2.1	2.0	2.2	2.3	2.4	2.2	C	2.0	2.0	C	C	(2.3) P	(2.2) S	C	(2.1) S	2.1	2.0	(2.1) J	2.1
14	2.1	(2.0) C	(1.9) J	(2.0) C	C	2.3	2.1 F	(2.1) C	2.4	2.4	C	(2.5)	(2.2) C	(2.2) C	2.0	2.1	(2.2) C	(2.3) J	(2.3) J	2.4	(2.2) P	2.0	(2.2) P	(1.9) J
15	2.0 V	1.9 V	(2.0) J	2.1	2.2	2.0	2.0	2.1	2.3	2.2	2.2	2.1	2.2	2.1	(2.3) S	2.0	2.1	(2.2) J	S C	(3.1) F	(2.0) P K	(2.0) J F	(1.9) F K	(1.9) F K
16	(1.8) F K	F K	F K	F K	F K	(2.1) F K	(1.9) S F	2.2 F	(2.6) J	(2.3) J	2.3	2.2	2.1	2.1	2.2	2.1	2.1	C	(2.3)	2.1	(2.1)	1.9	2.0	(2.0) J
17	1.9	(1.9) S	(1.9) S	(1.9) S	2.2	2.3 F	2.2	2.1	2.3	2.3	2.0	2.1	2.1	1.9	2.0	2.1	(2.1)	(2.3) P	(2.3) P	2.1	2.2	(2.1) P	2.0	1.8
18	1.9	2.1	1.9	1.8	2.0	1.9	1.9	2.2	2.3	2.2	2.2	2.1	2.1	2.2	2.1	(2.3) P	2.2	S C	(2.4) P	2.1	2.1	2.0	(2.0) P	2.0
19	1.9	(2.0) P	(1.7) J F	(1.9) J F	(1.9) F	(2.2) P	(2.2) F	2.2 F	2.3	2.3	2.3	(2.4)	2.1	2.1	2.4	2.0	(2.3) S	(2.4) S	(2.4) S	2.1	2.1	(2.1) J	2.1	2.1 S
20	(2.2) J F	2.0 F	1.8 F	(2.0) J F	2.1 F	2.1 F	2.1 F	2.4	2.5	2.4	(2.3)	(2.2)	2.1	(2.0)	2.1	C	(2.2) S	(2.2) S	(2.1) S	2.0	(2.3)	2.1	2.1	2.0 F
21	(2.1)	2.0	(2.0) J F	1.9 F	(2.3) J F	(2.3) J	2.3 F	2.4	2.6	(2.4)	(2.3)	(2.1)	(2.1)	2.1	2.1	2.1	(2.2)	(2.3)	(2.3) S	2.1	(2.2)	2.2	2.0	1.8
22	1.9	1.9	1.9	C	C	C	C	C	C	C	C	C	(2.0)	C	2.1	(2.2)	2.2	(2.3)	(2.2)	(2.1)	2.2	(2.1)	2.0	1.9
23	1.8	1.9	1.8	2.0	2.0	2.0	1.9	2.0	2.3 K	2.1 K	2.0 K	1.9 K	1.9 K	1.9 K	1.8 K	1.9 K	(2.1) P K	2.1 K	2.0 K	2.2	(2.0) J	2.1	(2.1) F	2.1 V
24	(2.0) F	F	(1.9) J F	(1.9) J S	(1.8) J S	(1.8) F	(2.0) F	2.2	2.3	2.5	(2.2)	2.3	C	C	2.1	C	C	C	C	C	C	(2.1) J V	(2.1) J	2.0
25	2.0 F	(1.9) F	1.7	(2.0) J F	2.0 P	1.9	1.9 F	2.1	2.3	2.3	(2.3) J	(2.1)	2.1	2.2	(2.0) J	2.1	(2.2)	(2.3)	2.4	(2.1)	2.1	2.1	2.2	2.0
26	(2.1) J S	2.0 F	2.0	2.0	2.0	2.0	2.2	2.4	2.3	2.3	(2.3) J	2.3	2.2	(2.2) P	(2.2)	2.1	(2.3) J	S C	S C	2.1	1.9	1.7	1.9	1.8
27	(1.8) J	1.9	2.1	2.0	1.9	1.9	1.7	2.2	2.2	2.2	2.2	2.2	(2.3)	(2.1)	2.1	(2.2) J	(2.2) J	(2.3) S	(2.1) F	2.0	1.9	(2.0) S	(1.9) S	(1.8) J
28	(2.0) J	(1.9) J	(2.0) F	1.9	1.9	1.9	2.0	2.2 K	2.2 K	2.0 K	2.1 K	2.1 K	2.1 K	2.0 K	2.1 K	2.2 K	2.2 K	2.2 K	2.1 K	(2.1) J K	C	C	C	(2.0) J
29	(1.8) B	1.9 V	1.8	1.9	(1.9) C	C	2.0	2.3	(2.3) P	2.2	2.2	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	1.9 J	(2.1) J	2.0	(1.9) J	(2.0) J
30																								
31																								
Median	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.1	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.1	(2.2)	(2.2)	2.2	2.1	2.1	2.0	2.0	2.0
Count	28	26	27	25	24	24	25	26	27	27	27	25	26	24	26	25	26	25	25	28	27	28	28	29

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U.S. GOVERNMENT PRINTING OFFICE: 1946 O - 703310

TABLE 81

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

Form adopted June 1946

IONOSPHERIC DATA

F2 – M3000 (Characteristic) (Unit) February (Month), 1948

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat. 39.0°N, Long. 77.5°W 75°W Mean Time

Scaled by: J.M.C. J.W.P, E.J.W. J.J.S.

Calculated by: J.L.K., N.M.

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	3.1	2.9^{F}	3.0	2.8^{F}	2.9^{F}	2.9^{F}	2.8^{F}	3.1	3.5	3.5	3.3	3.0	3.2	3.2	3.1	3.2	3.3	3.1	2.9	3.1	3.0	2.8	3.0	(2.9)^{J}
2	2.7	2.6^{F}	2.6^{F}	2.5^{F}	2.7	2.7^{F}	2.7^{F}	2.9^{F}	3.2	3.2	3.1	3.2	3.1	3.1	3.0	(2.9)^{S}	(3.2)	3.1	3.0	3.0	(3.0)^{S}	3.1	3.0	(3.0)^{J}
3	(2.7)^{S}	3.1^{F}	2.8^{F}	3.0^{F}	2.6^{F}	N^{F}	N^{F}	2.6^{F}	(3.2)^{S}	(3.3)^{J}	3.2	3.3	3.1	3.2	3.3	(3.2)^{C}	(3.2)^{S}	(3.0)^{P}	3.1	(3.1)^{C}	3.1	2.9	3.0	2.7
4	C	C	C	C	C	C	C	C	C	C	3.2	3.2	3.2	3.1	3.1	3.1^{S}	3.0^{S}	(3.0)^{S}	3.1	3.0	3.1	3.0	2.9	(2.7)^{J}
5	2.9	2.9	2.9	3.1	(3.0)$^{J}_{S}$	2.9^{F}	3.1	3.2	3.3	(3.2)	3.0	3.1	(2.9)	(3.2)^{C}	(3.0)^{C}	3.1	(3.3)	(3.2)^{S}	(3.0)^{S}	3.1	(3.1)^{J}	3.2	3.1	3.1
6	2.9	2.8	2.8	2.9	2.8	3.0	2.9	3.0	3.5	3.3	3.1	2.9	C	C	C	C	C	3.1	(3.3)	3.1	3.2	(2.9)^{J}	(3.1)	(3.1)^{J}
7	3.0	2.8	2.8	3.0	2.9	2.9	3.3	3.1	3.2	(3.3)	3.2	C	3.1	3.1	3.0	3.1	3.0	3.3	3.2	3.2	3.1	3.1	3.1	3.0
8	2.8	3.1	3.2	3.2	3.0	2.9	2.9^{F}	3.1	3.4	(3.5)$^{J}_{C}$	3.4	C	C	C	3.0	(3.0)	(3.4)	3.3	2.9	(3.0)^{J}	3.1	(3.4)^{J}	3.3	3.1
9	3.2	2.8	2.8	C	C	C	C	C	3.5	3.3	3.4	(3.3)	3.2	(3.0)	S^{C}	(3.4)	(3.4)	3.2	3.1	3.2	(3.2)^{J}	2.8	3.0	3.1
10	2.9	3.0	2.8	2.7	3.0	3.0	3.0^{F}	3.1	3.6	3.4	3.3	3.3	3.2	C	(3.1)	3.3	(3.4)^{S}	3.2	3.2	3.3	3.1	3.1	3.2	3.0
11	2.9	2.9	2.9	2.8	3.2	3.0	3.0	3.2	3.5	3.4	(3.4)	3.1	3.2	3.0	3.1	(3.3)	C	(3.4)	3.1	2.9	3.1	2.8	3.1	3.2
12	2.8	2.7	2.9	3.0	3.0	3.1	3.1	3.0	3.5	3.3	3.4	3.2	3.1	3.1	2.9	3.1	3.2	(3.4)	3.3	3.1	3.2	2.8	(2.7)	3.0
13	3.1	3.0^{F}	3.0	3.0^{F}	3.0^{F}	3.0	3.0	3.2	3.4	3.5	3.2	C	3.0	3.1	C	C	(3.5)^{P}	(3.2)^{S}	C	(3.2)^{S}	3.1	3.1	(3.2)^{J}	3.1
14	3.1	(3.1)^{C}	(2.8)^{J}	(2.8)^{C}	C	3.4	3.0^{F}	(3.2)^{C}	3.5	3.5	C	(3.5)	(3.2)^{C}	(3.2)^{C}	3.1	3.1	(3.2)^{C}	(3.2)^{J}	(3.2)^{J}	3.3	(3.1)^{P}	3.0	(3.1)^{P}	(2.8)^{J}
15	2.9^{V}	2.7^{V}	(3.0)^{J}	3.1	3.2	2.9	2.9	3.1	3.4	3.2	3.3	3.1	3.2	3.0	(3.1)^{S}	2.9	2.9	(3.2)^{J}	S^{C}	(3.2)^{P}	(3.0)$^{P}_{K}$	(2.9)$^{J}_{F}$	(2.6)$^{F}_{K}$	(2.7)$^{F}_{K}$
16	(3.0)$^{F}_{K}$	F^{K}	F^{K}	F^{K}	F^{K}	(3.2)$^{F}_{K}$	(3.1)$^{S}_{F}$	3.5^{F}	(3.5)^{J}	(3.4)^{J}	3.3	3.2	3.2	3.0	3.1	3.1	3.1	C	(3.4)	3.0	(3.2)	3.0	3.2	(3.1)^{J}
17	2.7	(2.8)^{S}	(2.8)^{S}	(2.8)^{S}	3.2	3.2^{F}	3.2	3.2	3.4	3.4	3.0	3.0	3.1	2.8	3.0	3.1	(3.3)	(3.3)^{P}	(3.4)^{P}	3.0	3.2	(3.1)^{P}	3.0	2.7
18	2.9	3.1	2.9	2.7	2.9	2.8	2.8	3.5	3.3	3.3	3.2	3.1	3.1	3.1	3.1	(3.3)^{P}	3.2	S^{C}	(3.3)^{P}	3.0	3.1	3.0	(3.0)^{P}	3.0
19	2.8	(3.0)^{P}	(2.7)$^{J}_{F}$	(2.8)$^{J}_{F}$	(2.9)^{F}	(3.2)^{F}	(3.2)^{F}	3.3^{F}	3.5	3.3	3.3	(3.3)	3.1	3.0	3.5	3.1	(3.4)^{S}	(3.5)^{S}	(3.6)	3.1	3.2	(3.1)^{J}	3.1	3.2^{S}
20	(3.3)$^{J}_{F}$	2.9^{F}	2.7^{F}	(2.9)$^{J}_{F}$	3.1^{F}	3.1^{F}	3.2^{F}	3.5	3.5	3.5	(3.4)	(3.4)	3.1	(3.0)	3.1	C	(3.2)^{S}	(3.3)^{S}	(3.2)^{S}	3.1	(3.3)	3.2	3.1	3.0^{F}
21	(3.2)	3.0	(2.9)$^{J}_{F}$	2.8^{F}	(3.1)$^{J}_{F}$	(3.1)^{J}	3.3^{F}	3.5	3.5	(3.5)	(3.5)	(3.2)	(3.1)	3.1	3.2	3.1	(3.3)	(3.5)	(3.5)^{S}	3.2	3.2	3.3	3.0	2.8
22	2.8	2.9	2.8	C	C	C	C	C	C	C	C	C	(3.0)	C	3.1	(3.2)	3.3	(3.4)	(3.2)	(3.2)	3.3	(3.2)	3.0	2.8
23	2.7	2.8	2.7	3.0	3.0	3.1	2.8	3.0	3.5^{K}	3.1^{K}	3.0^{K}	2.9^{K}	2.9^{K}	2.9^{K}	2.7^{K}	2.9^{K}	(3.1)$^{P}_{K}$	3.0^{K}	3.0^{K}	3.1	(3.2)^{J}	3.0	(3.1)^{F}	3.1^{V}
24	(2.9)^{F}	F	(2.9)^{J}	(2.8)^{J}	(2.8)$^{J}_{S}$	(2.7)^{F}	(3.0)^{F}	3.2	3.5	3.3	(3.2)	3.1	C	C	3.1	C	C	C	C	C	C	(3.2)$^{J}_{V}$	(3.0)^{J}	2.9
25	2.9^{F}	(2.8)^{F}	2.9	(3.0)$^{J}_{F}$	2.9^{F}	2.8	2.8^{F}	3.1	3.4	3.3	(3.3)^{J}	(3.2)	3.1	3.2	(3.1)^{J}	3.2	(3.2)	(3.4)	3.4	(3.2)	3.3	3.1	3.3	3.0
26	(3.2)$^{J}_{S}$	3.0^{F}	3.0	3.0	3.0	3.0	3.3	3.5	3.5	3.3	(3.4)^{J}	3.3	3.2	(3.1)^{P}	(3.2)	3.3	(3.5)^{J}	S^{C}	S^{C}	3.1	2.8	2.6	2.9	2.8
27	(2.8)^{J}	3.0	3.0	3.0	2.9	2.8	3.0	3.3	3.4	3.2	3.3	3.2	(3.4)	(3.1)	3.2	(2.9)^{J}	(3.0)^{J}	(3.4)^{S}	(3.1)^{P}	3.0	2.8	(3.0)$^{\Phi}$	(2.9)^{S}	(2.8)$^{J}_{S}$
28	(3.0)^{J}	(2.8)^{J}	(3.0)$^{P}_{F}$	2.8	2.8	2.8	2.9	3.1^{K}	3.3^{K}	3.1^{K}	3.1^{K}	3.2^{K}	3.1^{K}	3.0^{K}	3.1^{K}	3.1^{K}	3.2^{K}	3.3^{K}	3.2^{K}	(3.2)$^{J}_{K}$	C	C	C	(2.9)^{J}
29	(2.8)$^{\Theta}$	2.8^{V}	2.8	2.8	(2.9)^{C}	C	2.9	3.3	(3.5)^{P}	3.2	3.3	3.1	2.9	3.1	3.1	3.0	3.2	3.0	3.1	(3.0)^{J}	(3.1)^{J}	3.1	(2.9)^{J}	(3.0)^{J}
30																								
31																								
Medion	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.2	3.5	3.3	3.3	3.2	3.1	3.1	3.1	3.1	(3.2)	(3.2)	3.2	3.1	3.1	3.0	3.0	3.0
Count	28	26	27	25	24	24	25	26	27	27	27	25	26	24	26	25	26	25	25	28	27	28	28	29

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U.S. GOVERNMENT PRINTING OFFICE 1948 O 703518

TABLE 82

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

Form adopted June 1946

IONOSPHERIC DATA

F1- A3000 , ____ , February , 1948
(Characteristic) (Unit) (Month)

National Bureau of Standards
(Institution)

Observed at Washington, D.C.

Scaled by: J.M.C. J.W.P. , E.J.W. J.J.S.

Lat 39.0°N , Long 77.5°W 75°W Mean Time

Calculated by: J.L.K. , M.C.E

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	L	L	L	L											
2												L			L		L									
3											L	L		L	L											
4											L	L	L	L												
5										L			L	L		L										
6											L		C	C	C	C	C									
7												L	L	L		L										
8											L	C	C	C	L	L										
9														L	L	L	L									
10												L	L	C	L	L	L									
11											L		L	L	L	L	L									
12											L	L	L		L	L										
13													L	L	C	C	L									
14											L	(42)	L	39	L	L										
15															L	L	L									
16										L		L		L		L										
17										L			L		L	L	L									
18											L	L	L	L	L	L	L									
19											L	L		L	L											
20												L	L	L	L	C	L									
21											L	L	L	L	L	L										
22									C	C	C	C	L	C	L											
23													(3.5)^	(3.5)^K	L^K	L^K	L^K									
24											L	L	C	C	L	L										
25											L		L	L	L	L										
26											L	L	L	L	L	L										
27											L	L	C	L	L	L	L									
28											(40)^K	L^K	(3.7)^K	(3.8)^K	L^K	L^K										
29									L	L	L	L	L	L	L	L	L									
30																										
31																										
Median																										
Count																										

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O 702519

TABLE 83

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

Form adopted June 1946

IONOSPHERIC DATA

E-M1500 (Characteristic), _____ (Unit), February (Month), 1948

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W — 75° W Mean Time

Scaled by: J.M.C. J.W.P., E.J.W. J.J.S.

Calculated by: J.L.K., N.M.

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											45	45	43	3.9	4.2	4.1	4.3	B						
2									44	34	40	44	4.3	45	42	4.3	42	41						
3									5.9	47^{H}	49	A	44	47	B	4.3	41	C						
4									C	C	42	43	4.3	(43)	(44)	45	$(45)^{S}$	39^{H}						
5									4.2	39	4.1	41	4.3	45	44	4.3	$(44)^{S}$	44^{H}						
6									$(44)^{H}_{A}$	41	44	46	C	C	C	C	C	43						
7									$(41)^{H}$	40	45	47	44	4.3	43	A	3.2							
8									41	46	45^{H}	C	C	C	45	47	44	40						
9									39	40^{H}	40	42	40	41	5.2	40	46	43						
10									43^{H}	41	(45)	42^{H}	44	C	45	A	42	39						
11									33^{H}	39	43	42	4.2	42	44	43	43	A						
12									A	41	44	44	44	4.2	44	4.2	44^{H}	4.5^{H}						
13									41^{H}	41	41	C	4.2	42	C	C	46	45	C					
14									$(3.8)^{S}$	41	(44)	$(44)^{F}$	47	47^{H}	$(46)^{A}$	4.7	A	(46)						
15									44^{H}	42	41	40	(43)	45	44	45	4.4	4.2						
16									$(46)^{H}$	39	3.7	41	$(44)^{H}$	43	45	44	44	4.6						
17									A	A	A	42^{H}_{B}	41	41	42	45^{H}	44	44						
18									$(43)^{H}$	$(47)^{A}$	44	45	43	45	46	$(43)^{F}$	(42)	A						
19									(44)	45	48	46	47^{H}	4.5	46	45	44	43^{H}						
20									42	41	4.7	4.0	42	42	45	C	42	(45)						
21									43	41	42	43	43	41	43	42	41	43						
22									C	C	C	C	41	C	44	45	40	39						
23									41^{K}	40^{K}	4.1^{K}	42^{K}	B^{K}	43^{K}	43^{K}	$(46)^{H}_{K}$	$(46)^{B}_{K}$	A^{K}						
24									A	(42)	(43)	4.1^{H}	41	C	C	44	C	C						
25									44	42	41	39	43	43	43	45	43	41						
26									40	44	44	4.3	43	43	43	44	$(45)^{H}$	$(4.6)^{H}$						
27									A	41	43	43	41	41	41	44	45	$(44)^{S}$						
28								S ^{K}	$(47)^{H}_{K}$	$(47)^{H}_{K}$	A^{K}	A^{K}	A^{K}	$(43)^{S}_{K}$	45^{K}	45^{K}	44^{K}	40^{K}						
29								S	$(42)^{C}$	43	A	A	(42)	A	44	44	4.2	$(45)^{S}$	S					
30																								
31																								
Median									4.2	41	43	43	43	4.3	4.4	44	44	4.3						
Count									22	25	25	23	25	23	25	24	26	22						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Table 84

Ionospheric Storminess at Washington, D.C.

February 1948

Day	Ionospheric character* 00-12 GCT	12-24 GCT	Principal storms Beginning GCT	End GCT	Geomagnetic character** 00-12 GCT	12-24 GCT
1	1	2			1	0
2	3	2			2	3
3	3	3			4	4
4	***	2			3	3
5	1	2			3	2
6	2	***			2	2
7	2	2			2	2
8	1	2			2	2
9	1	2			1	1
10	2	2			2	1
11	1	2			1	1
12	1	2			1	2
13	1	1			2	2
14	1	2			2	2
15	1	1			3	4
16	4	0	0100	1200	3	2
17	2	0			3	2
18	2	1			3	3
19	1	1			3	2
20	2	1			2	1
21	1	1			0	0
22	2	1			2	0
23	2	5	1300	2400	3	3
24	2	2			3	3
25	1	1			1	2
26	1	2			0	2
27	2	2			2	3
28	1	5	1200	---/	4	2
29	2	3	---/	0100	2	3

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

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

***No readable record. Refer to table 73 for detailed explanation.

/Dashes indicate continuing storm.

Table 85

Sudden Ionosphere Disturbances Observed at Washington, D.C.

February 1948

Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
22	2004	2035	Ohio, D.C.	0.05	
23	1646	1720	Ohio, D.C.	0.1	Terr.mag.pulse** 1645-1730

*Ratio of received field intensity during SID to average field intensity before and after, for station WFXAL, 6080 kilocycles, 600 kilometers distant.

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

Table 86

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

1948 Day	GCT Beginning	GCT End	Receiving station	Location of transmitters
January 3	1420	1440	Platanos	Bolivia, Brazil, Chile, Germany, New York, Venezuela
19	1326	1355	Platanos	Bolivia, Brazil, Chile, Colombia, England, New York, Peru, Switzerland, Venezuela

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

Table 87

Provisional Radio Propagation Quality Figures
(Including Comparisons with CRPL Warnings and CRPL Probable Disturbed Period Forecasts)
January 1948

Day	North Atlantic						North Pacific					
	Quality figure		CRPL* Warning		CRPL Forecast of probable disturbed periods	Geomagnetic K_{Ch}	Quality figure		CRPL* Warning		CRPL Forecast of probable disturbed periods	Geomagnetic K_{Ch}
	01-12 GCT	13-24 GCT	01-12 GCT	13-24 GCT		01-12 GCT / 13-24 GCT	01-12 GCT	13-24 GCT	01-12 GCT	13-24 GCT		01-12 GCT / 13-24 GCT
1	7	6				2 2	6	6				2 2
2	6	7				2 2	5	7				2 2
3	5	6		X		3 3	5	6		X		3 3
4	6	7	X			0 1	6	6	X			0 1
5	6	6				2 1	5	6				2 1
6	6	6				3 2	5	6				3 2
7	6	7				2 3	5	5				2 3
8	6	6				3 4	6	5				3 4
9	5	6				3 2	6	6				3 2
10	5	5				2 2	5	5				2 2
11	6	5				3 2	6	6				3 2
12	6	6				2 2	6	5				2 2
13	6	6				1 2	5	5				1 2
14	7	6				0 1	5	5				0 1
15	7	6				1 1	5	5				1 1
16	7	6				2 1	(4)	6				2 1
17	7	6				2 4	5	6				2 4
18	6	7				3 2	6	6				3 2
19	6	6				2 2	6	6				2 2
20	7	7				2 3	5	6				2 3
21	6	5				2 3	5	6				2 3
22	6	5		X		2 2	6	5		X		2 2
23	7	6				2 2	6	5				2 2
24	6	6				1 1	5	6				1 1
25	7	6				2 1	5	6				2 1
26	6	6				1 0	6	6				1 0
27	6	6				2 1	7	7				2 1
28	7	7				2 2	6	6				2 2
29	7	6				2 3	5	5				2 3
30	6	6				3 3	5	5				3 3
31	6	6				2 1	5	6				2 1
Score:												
H			0		0				0		0	
M			0		0				1		1	
G			28		31				27		30	
(S)			1		0				1		0	
S			2		0				2		0	

Quality Figure Scale:
1 - Useless
2 - Very poor
3 - Poor
4 - Poor to fair
5 - Fair
6 - Fair to good
7 - Good
8 - Very good
9 - Excellent

Symbols:
X Warning given or probable disturbed date
H Quality 4 or worse on day or half day of warning
M Quality 4 or worse on day or half day of no warning
G Quality 5 or better on day of no warning
(S) Quality 5 on day of warning
S Quality 6 or better on day of warning
( ) Quality 4 or worse (disturbed)

Geomagnetic K_{Ch} on the standard scale of 0 to 9, 9 representing the greatest disturbance.

*Broadcast on WWV, Washington, D.C. Times of warnings recorded to nearest half day as broadcast.

Table 88

American and Zürich Provisional Relative Sunspot Numbers

February 1948

Date	R_A*	R_Z**	Date	R_A*	R_Z**
1	78	97	16	87	67
2	96	76	17	115	96
3	90	79	18	132	96
4	107	90	19	131	103
5	116	107	20	153	121
6	143	100	21	140	106
7	145	116	22	124	89
8	137	101	23	109	88
9	118	77	24	83	71
10	126	98	25	105	65
11	101	102	26	99	76
12	78	90	27	75	64
13	53	65	28	128	70
14	47	50	29	120	108
15	75	63			
			Mean:	107.3	87.3

*Combination of 43 observers; see page 8.

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

Table 89a

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

Date GCT	Degrees north of the solar equator 90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0°	Degrees south of the solar equator 5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	P
1948																																					
Feb. 5.8	-	-	-	-	-	-	-	-	-	-	-	-	2	3	4	6	9	15	17	17	16	15	10	2	-	2	11	13	11	9	6	4	3	3	5	5	4	-15
8.8	-	-	-	-	-	3	3	5	6	7	7	6	7	11	14	12	11	11	8	10	12	15	14	15	19	16	11	9	3	-	-	-	1	1	1	-	2	-15
15.8	-	-	-	-	-	2	2	2	-	-	-	10	11	13	12	11	11	11	11	15	31	30	20	17	10	9	10	11	12	-	-	-	-	1	2	2	3	-15
17.8	-	-	-	-	-	-	-	-	-	-	-	2	3	9	5	3	-	-	5	10	13	14	13	13	12	12	11	14	14	8	7	8	8	5	7	6	5	-20

Table 90a

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

Date GCT	Degrees north of the solar equator 90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0°	Degrees south of the solar equator 5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	P
1948																																					
Feb. 5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	x	-15
8.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1	-	-	-	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-15
15.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	7	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-15
17.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-20

Table 91a

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

Date GCT	Degrees north of the solar equator 90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0°	Degrees south of the solar equator 5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	P
1948																																					
Feb. 5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	-15
8.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-15
15.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-15
17.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-20

Table 89b

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

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																P
	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	
1948																																					
Feb. 5.8	4	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	-15
8.8	2	2	2	2	2	2	10	8	9	8	8	7	1	1	9	13	11	11	11	12	13	12	13	14	14	10	9	6	3	1	-	-	-	-	-	-	-	-15
15.8	3	3	3	3	3	2	2	2	-	-	-	2	3	5	17	17	22	18	14	11	12	11	10	9	7	4	5	5	5	3	-	-	2	2	2	1	-	-15
17.8	5	5	6	6	4	2	2	2	3	2	-	-	5	10	14	13	12	10	9	-	4	6	8	10	10	9	7	4	2	-	-	-	-	-	-	-	-	-20

Table 90b

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

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																P
	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	
1948																																					
Feb. 5.8	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	-15
8.8	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	2	3	3	2	1	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-15
15.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-15
17.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	10	2	2	2	1	6	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-20

Table 91b

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

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																P
	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	
1948																																					
Feb. 5.8	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	-15
8.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-15
15.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-15
17.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-20

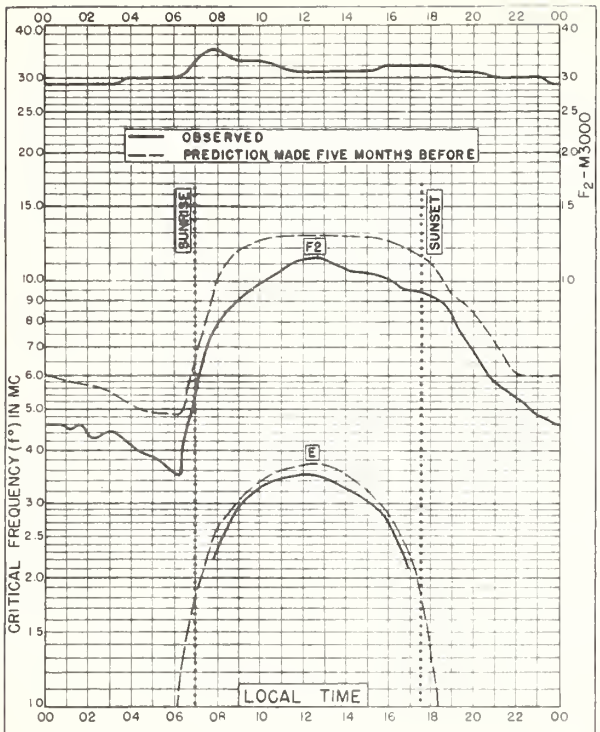

Fig. 1. WASHINGTON, D C.
39.0°N, 77.5°W
FEBRUARY 1948

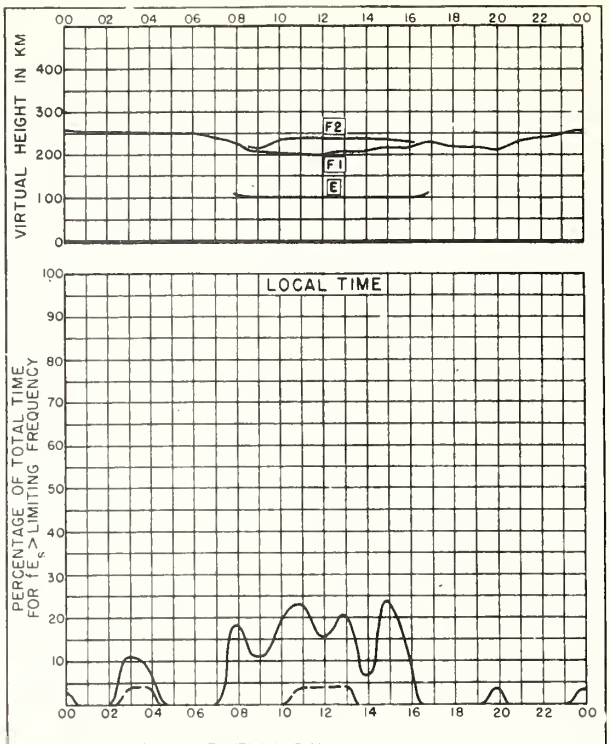

Fig 2 WASHINGTON, D. C. FEBRUARY 1948

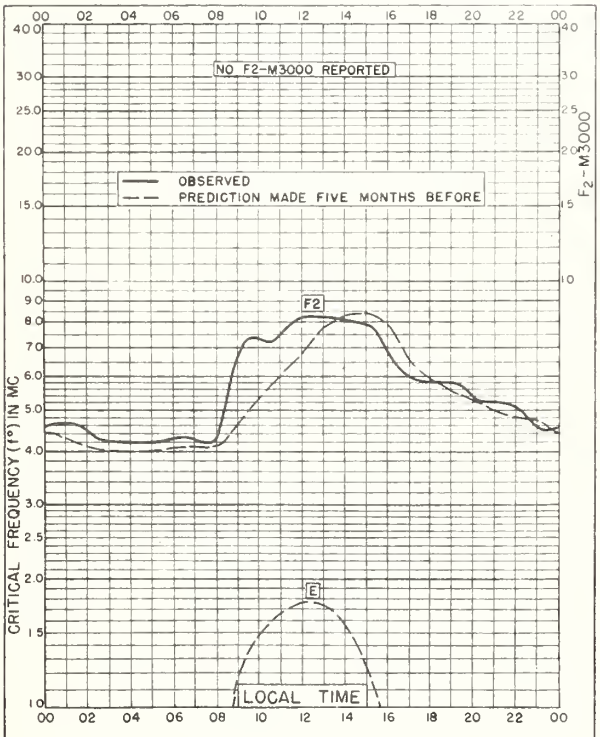

Fig. 3. CLYDE, BAFFIN I.
70.5°N, 68.6°W
JANUARY 1948

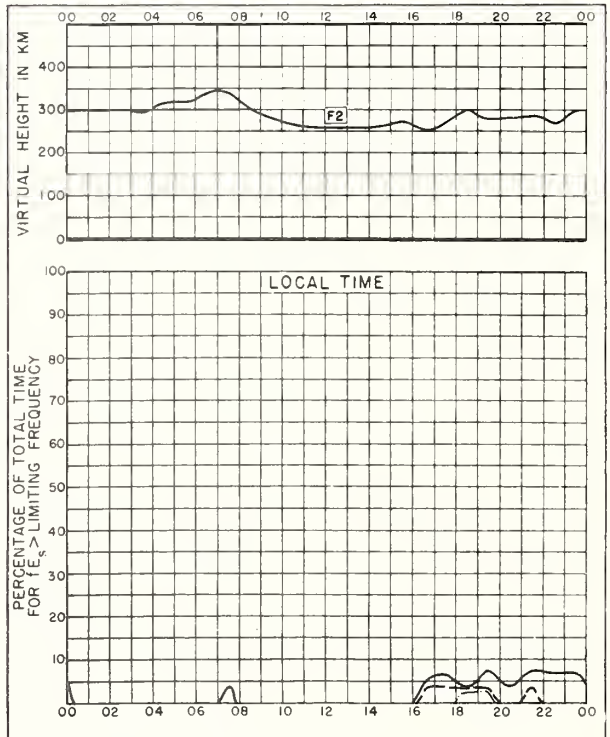

Fig. 4. CLYDE, BAFFIN I. JANUARY 1948

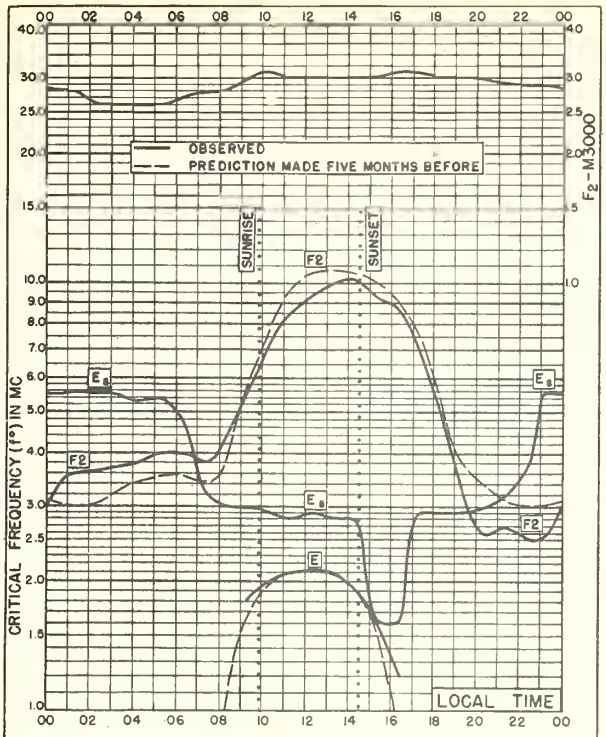

Fig. 5. FAIRBANKS, ALASKA
64.9°N, 147.8°W JANUARY 1948

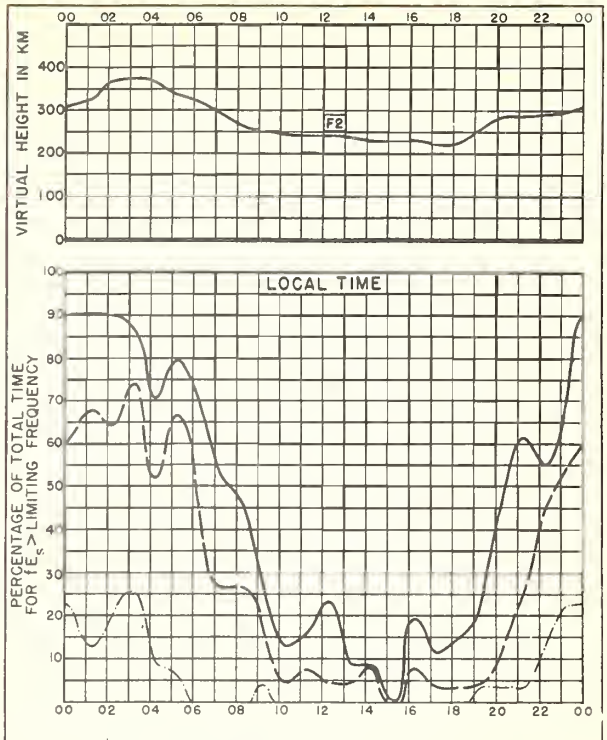

Fig. 6. FAIRBANKS, ALASKA JANUARY 1948

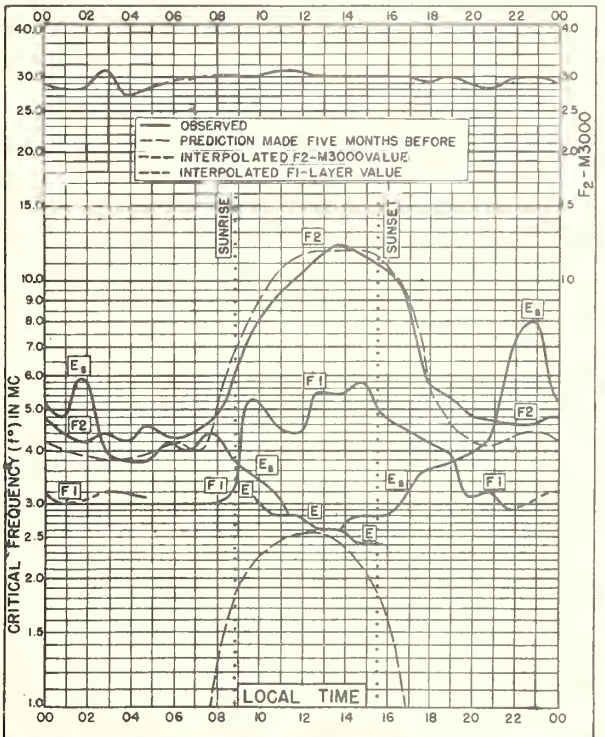

Fig. 7. CHURCHILL, CANADA
58.8°N, 94.2°W JANUARY 1948

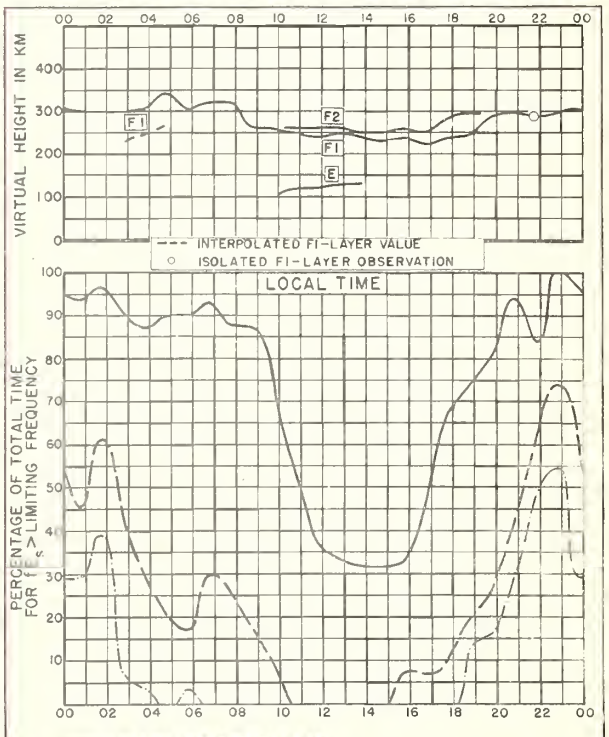

Fig. 8. CHURCHILL, CANADA JANUARY 1948

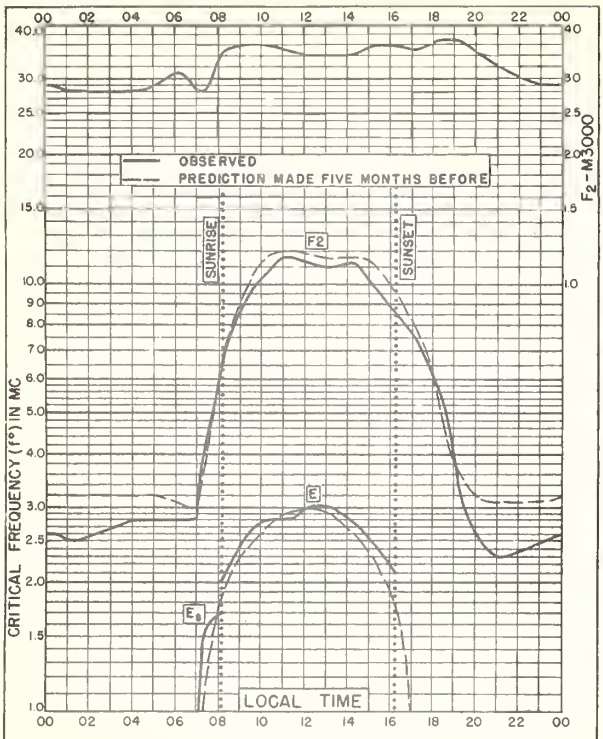

Fig. 9. ADAK, ALASKA
51.9°N, 176.6°W JANUARY 1948

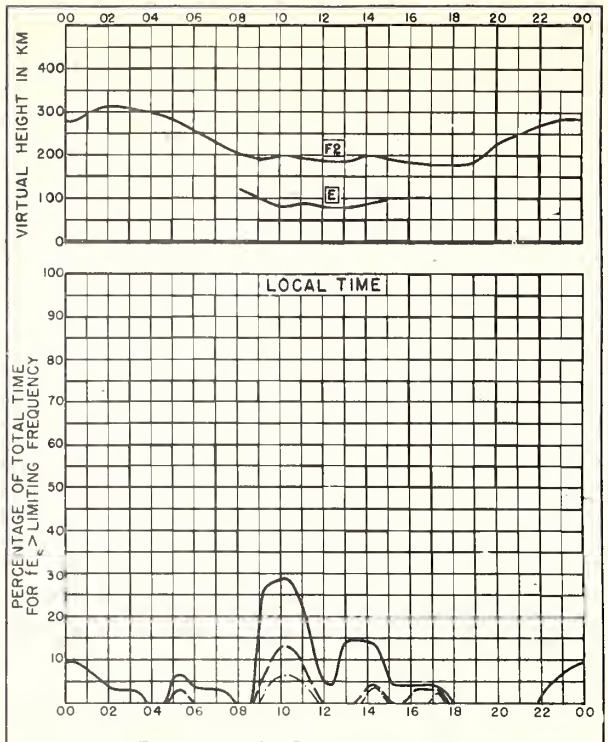

Fig 10. ADAK, ALASKA JANUARY 1948

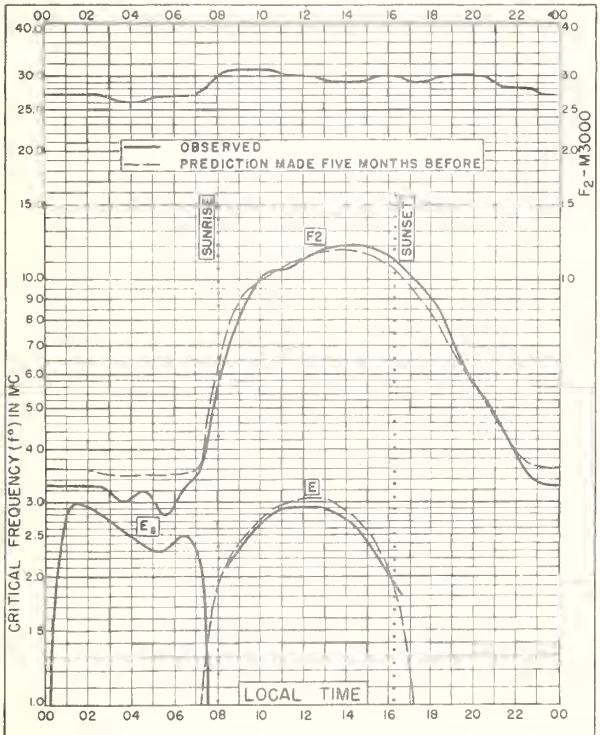

Fig. 11. PORTAGE la PRAIRIE, CANADA
49.9°N, 98.3°W JANUARY 1948

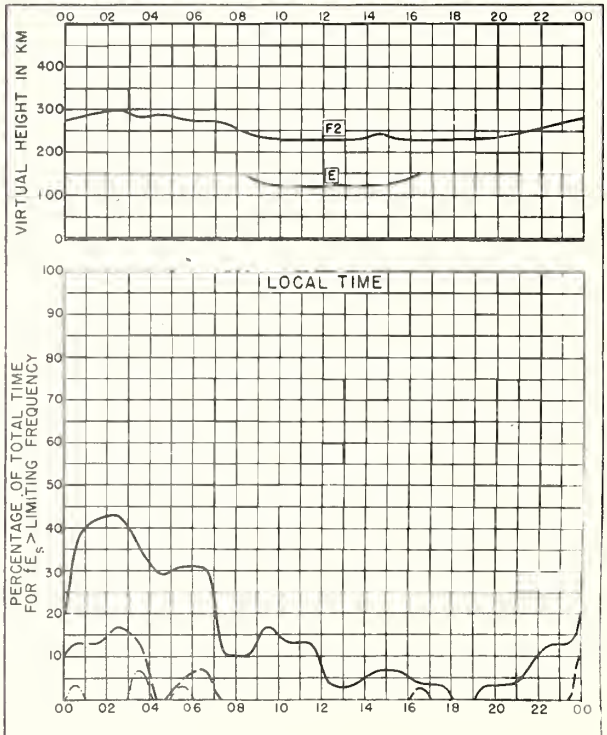

Fig. 12. PORTAGE la PRAIRIE, CANADA JANUARY 1948

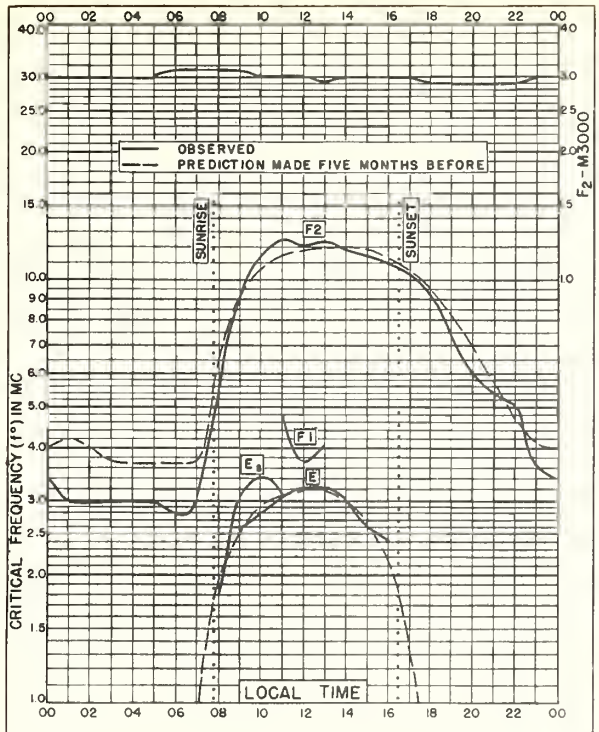

Fig. 13. ST. JOHN'S, NEWFOUNDLAND
47.6°N, 52.7°W JANUARY 1948

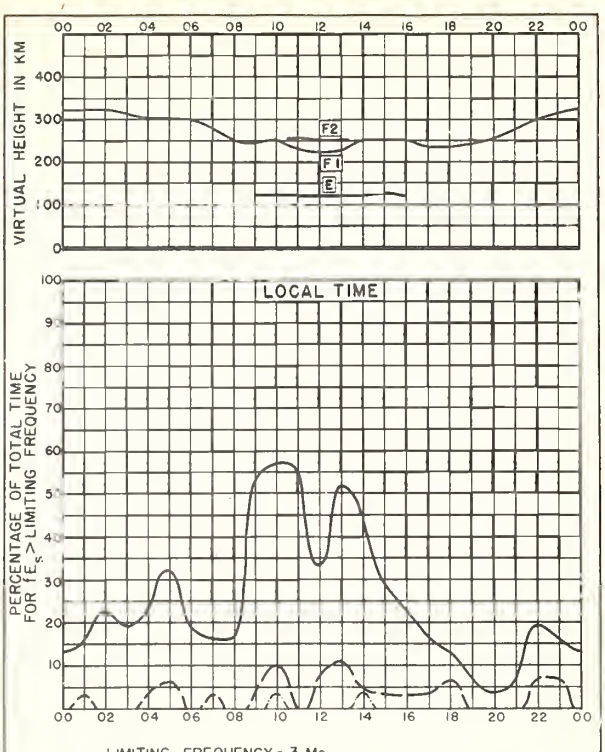

Fig 14. ST. JOHN'S, NEWFOUNDLAND JANUARY 1948

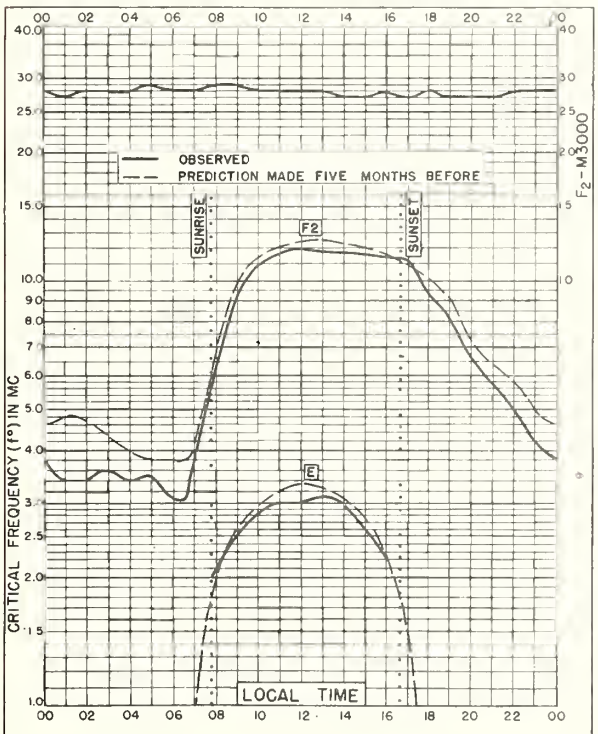

Fig. 15. OTTAWA, CANADA
45.5°N, 75.8°W JANUARY 1948

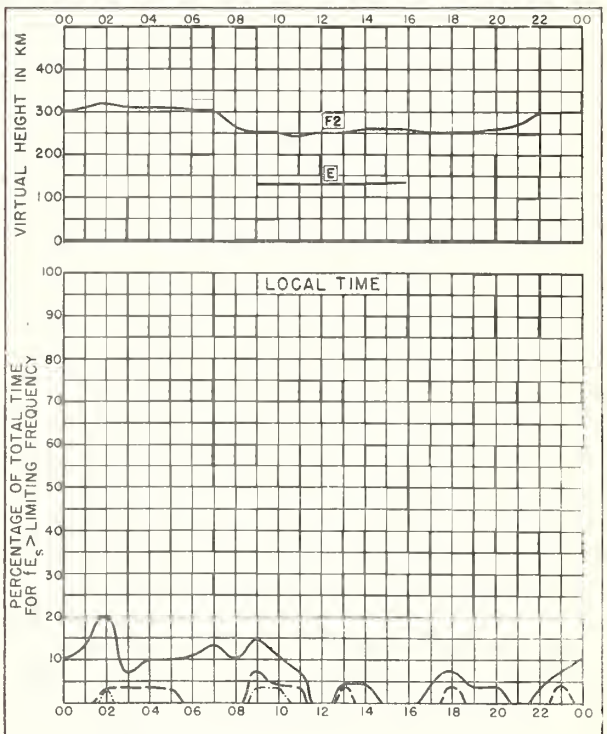

Fig. 16. OTTAWA, CANADA JANUARY 1948

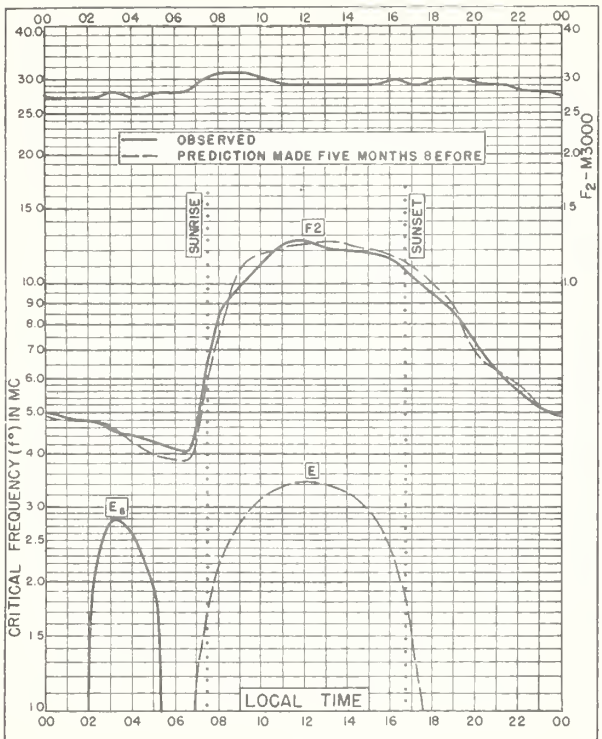

Fig. 17. BOSTON, MASSACHUSETTS
42.4°N, 71.2°W JANUARY 1948

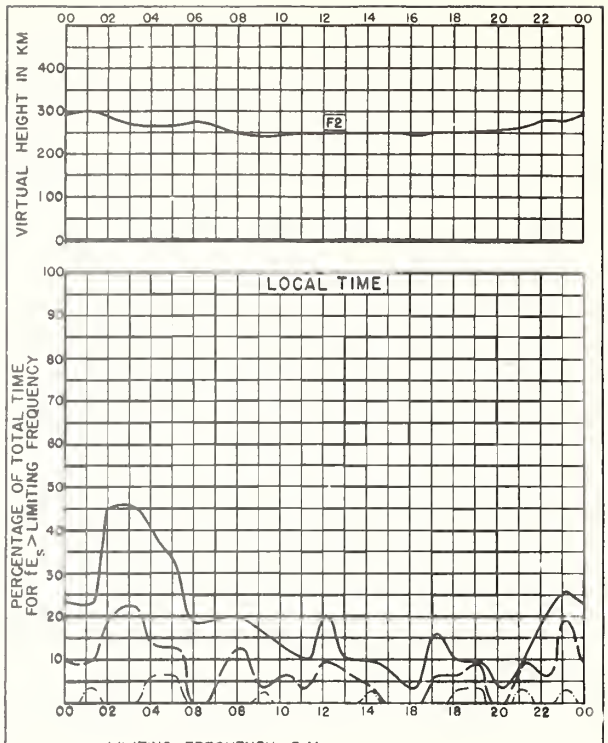

Fig. 18. BOSTON, MASSACHUSETTS JANUARY 1948

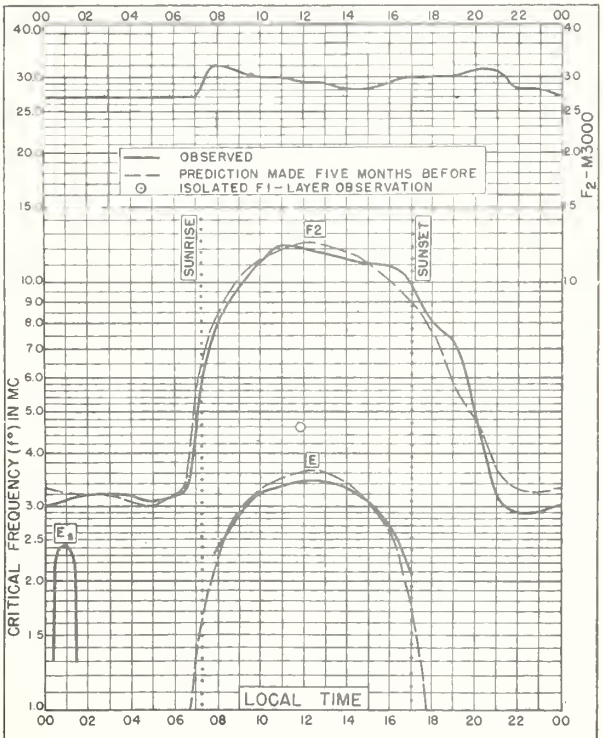

Fig. 19. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W JANUARY 1948

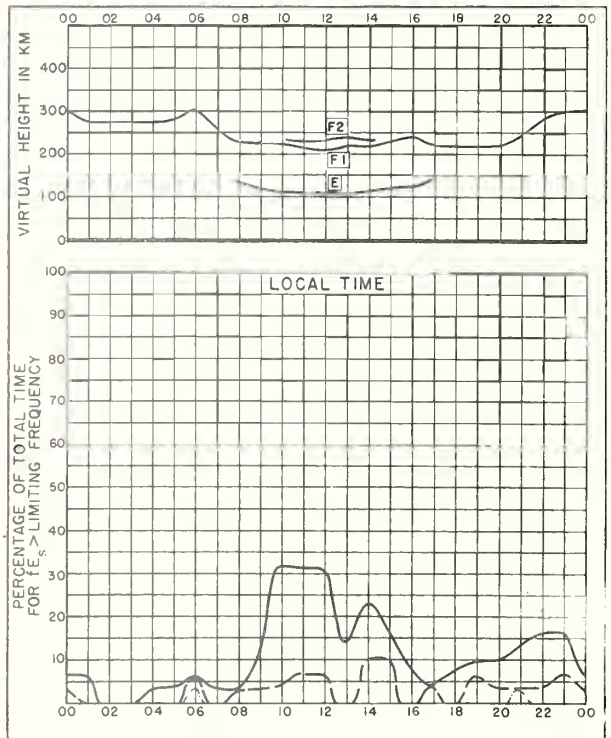

Fig. 20. SAN FRANCISCO, CALIFORNIA JANUARY 1948

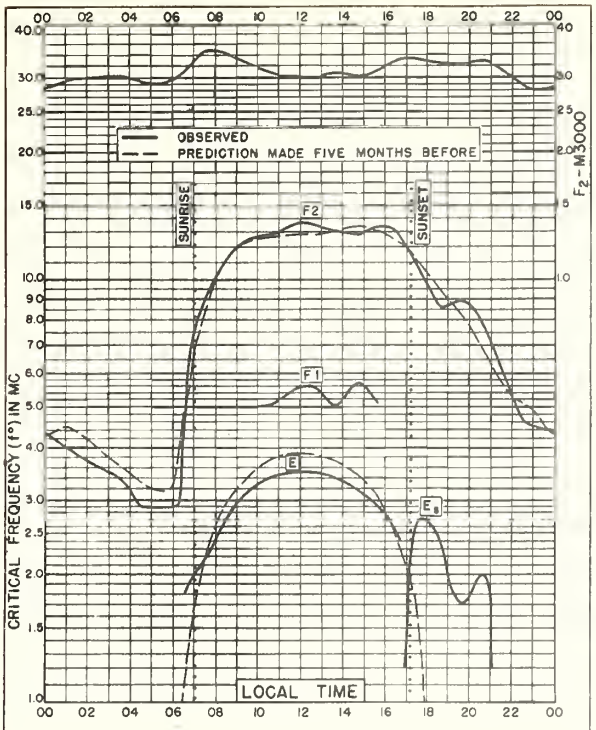

Fig. 21. WUCHANG, CHINA
30.6°N, 114.4°E JANUARY 1948

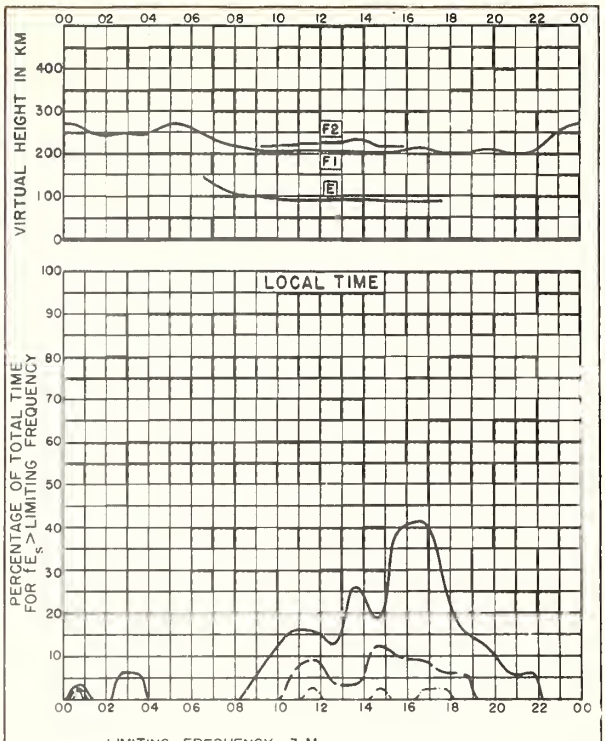

Fig 22. WUCHANG, CHINA JANUARY 1948

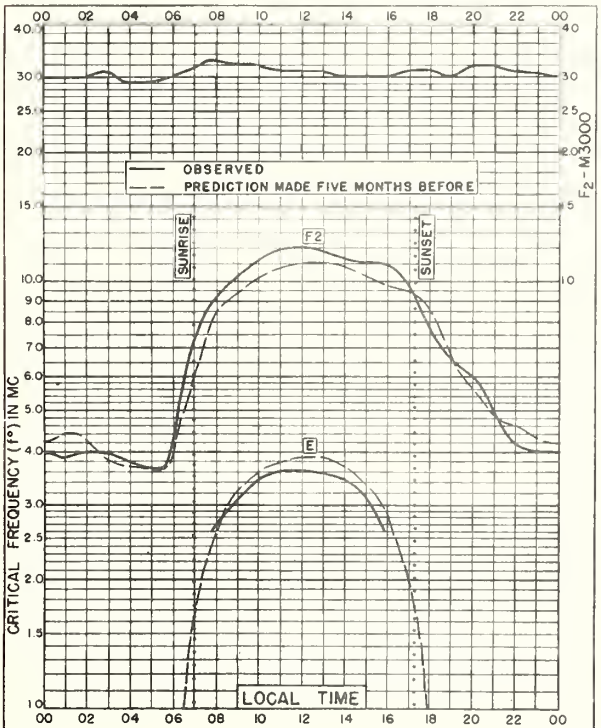

Fig. 23. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W JANUARY 1948

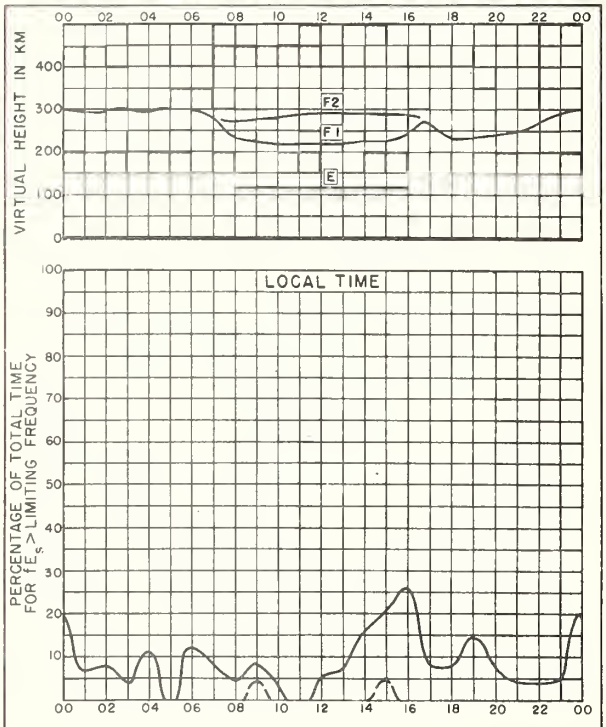

Fig. 24. BATON ROUGE, LOUISIANA JANUARY 1948

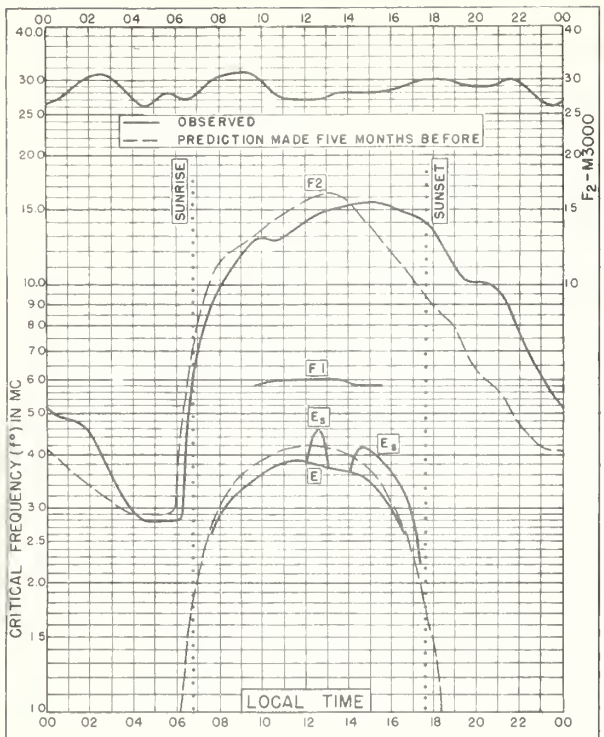

Fig. 25. MAUI, HAWAII
20.8°N, 156.5°W JANUARY 1948

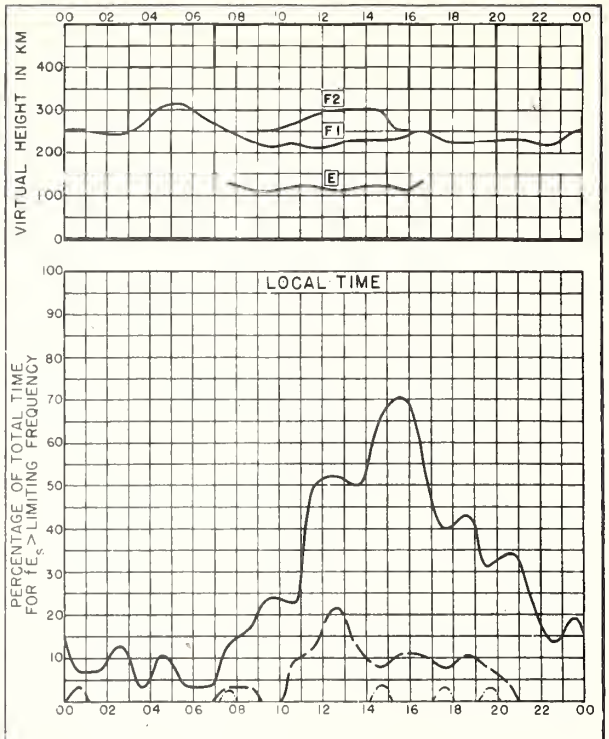

Fig. 26. MAUI, HAWAII JANUARY 1948

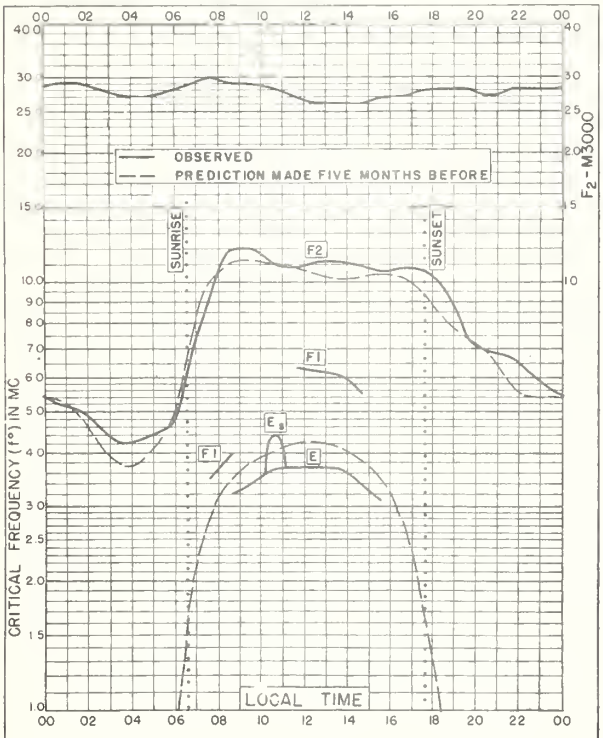

Fig. 27. SAN JUAN, PUERTO RICO
18.4°N, 66.1°W JANUARY 1948

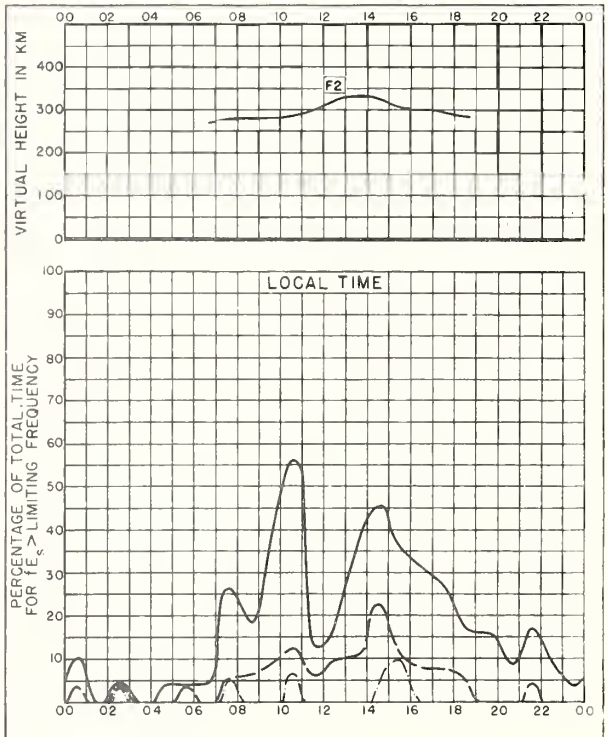

Fig. 28. SAN JUAN, PUERTO RICO JANUARY 1948

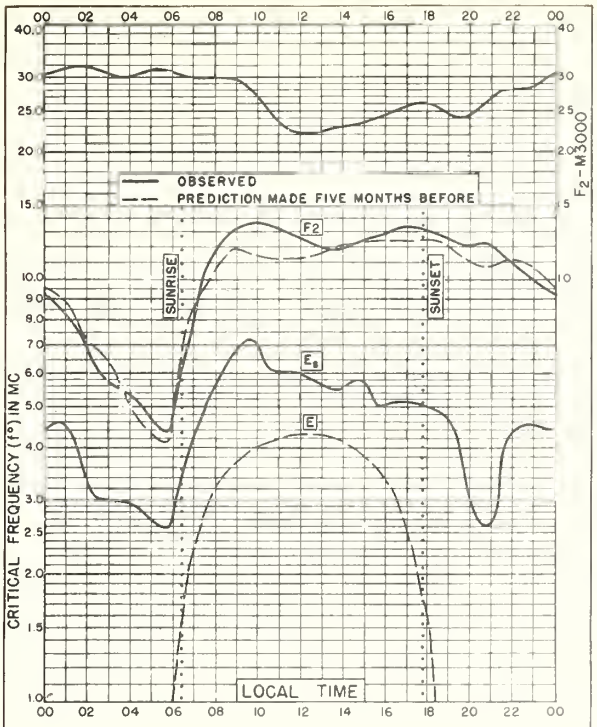

Fig. 29. GUAM I.
13.6°N, 144.9°E JANUARY 1948

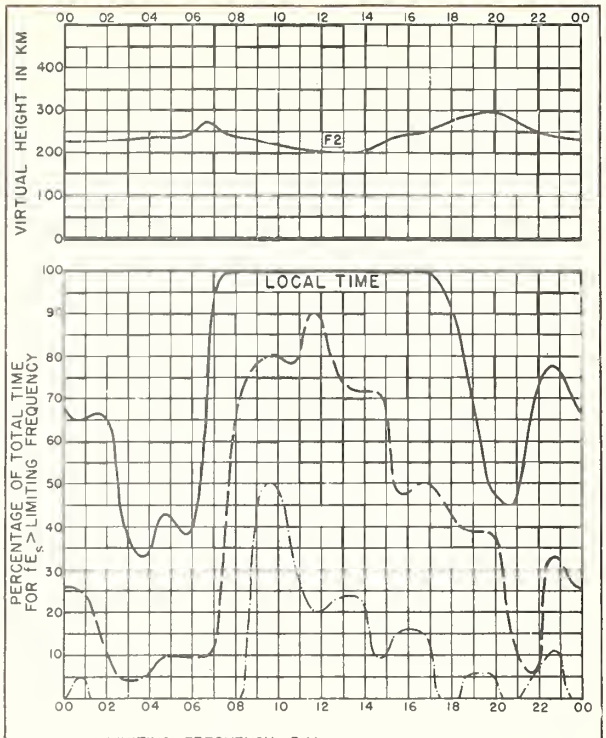

Fig. 30. GUAM I. JANUARY 1948

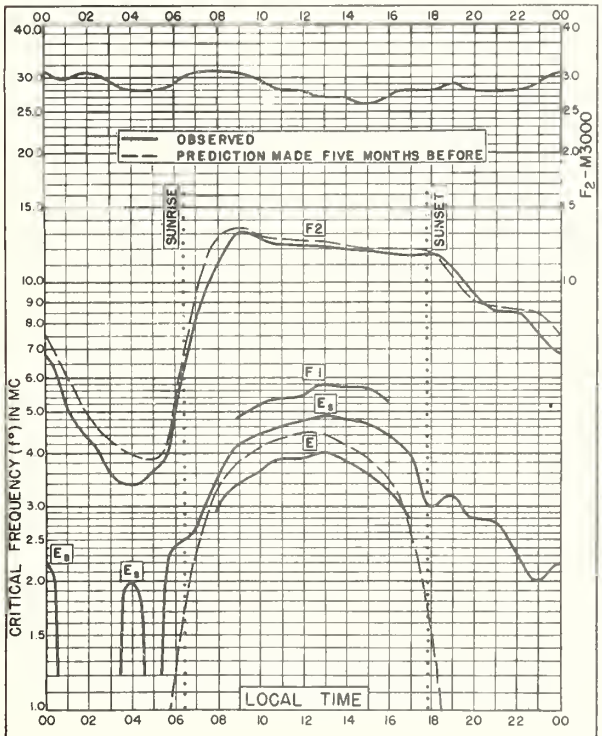

Fig. 31. TRINIDAD, BRIT. WEST INDIES
10.6°N, 61.2°W JANUARY 1948

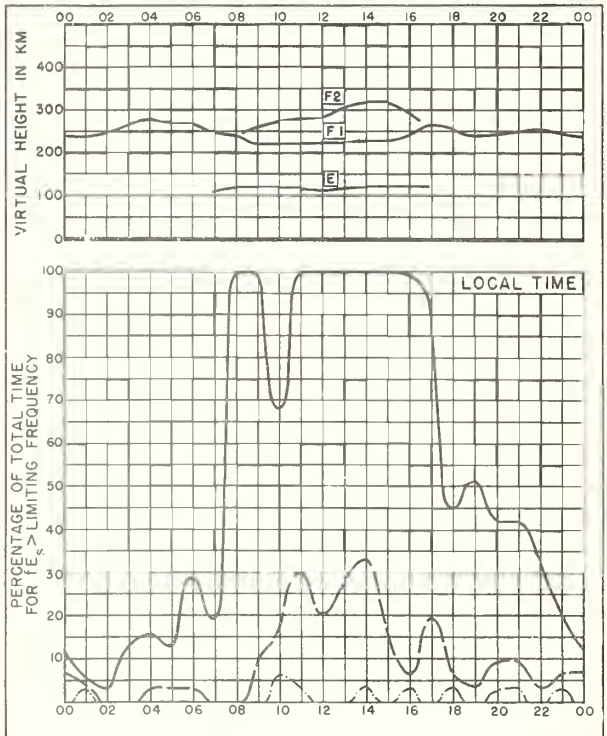

Fig. 32. TRINIDAD, BRIT. WEST INDIES JANUARY 1948

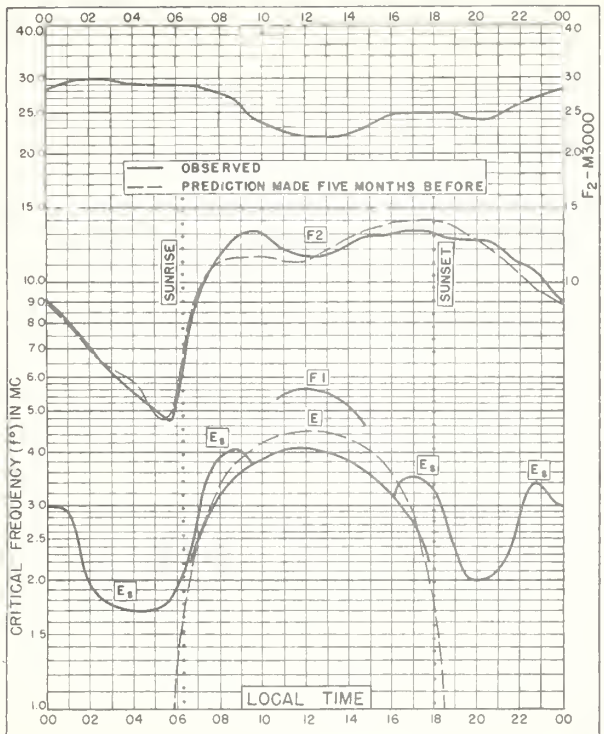

Fig. 33. PALMYRA I.
5.9°N, 162.1°W JANUARY 1948

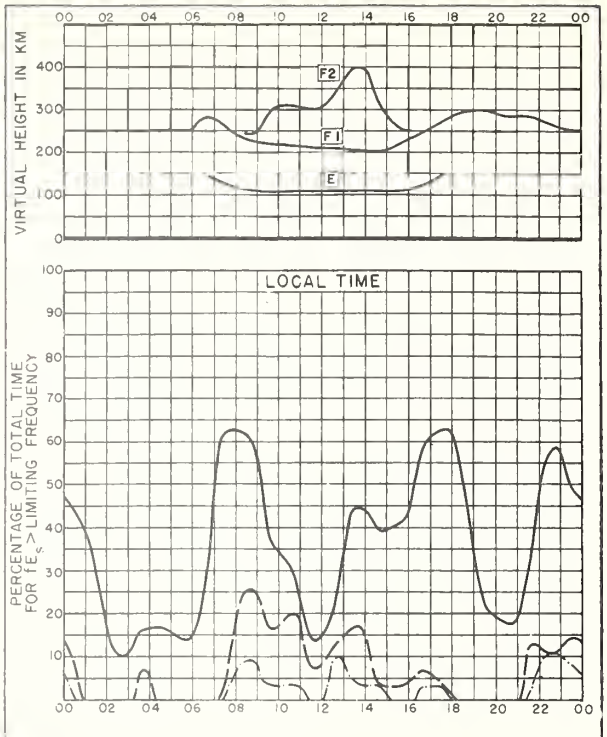

Fig. 34. PALMYRA I. JANUARY 1948

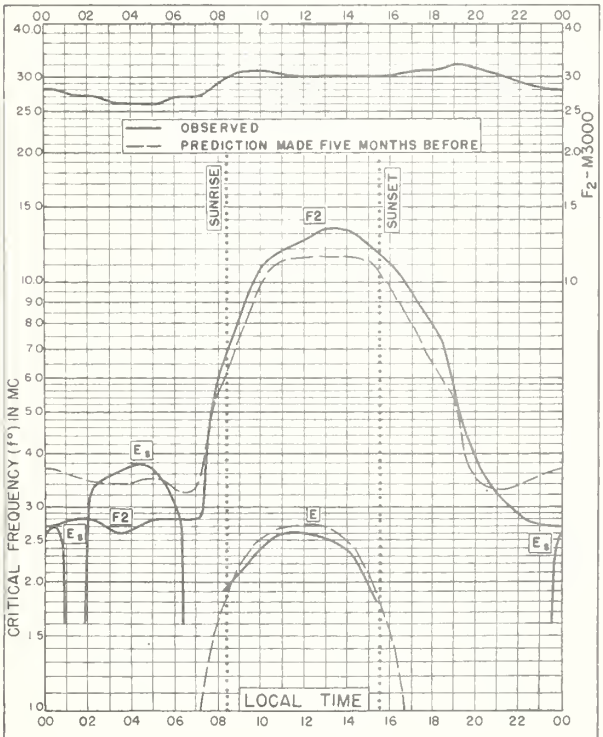

Fig. 35 PRINCE RUPERT, CANADA
54.3°N, 130.3°W DECEMBER 1947

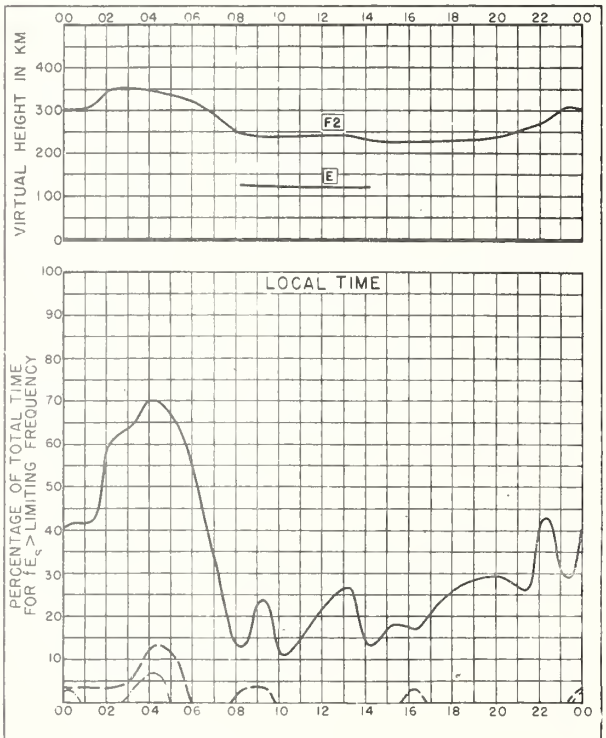

Fig. 36. PRINCE RUPERT, CANADA DECEMBER 1947

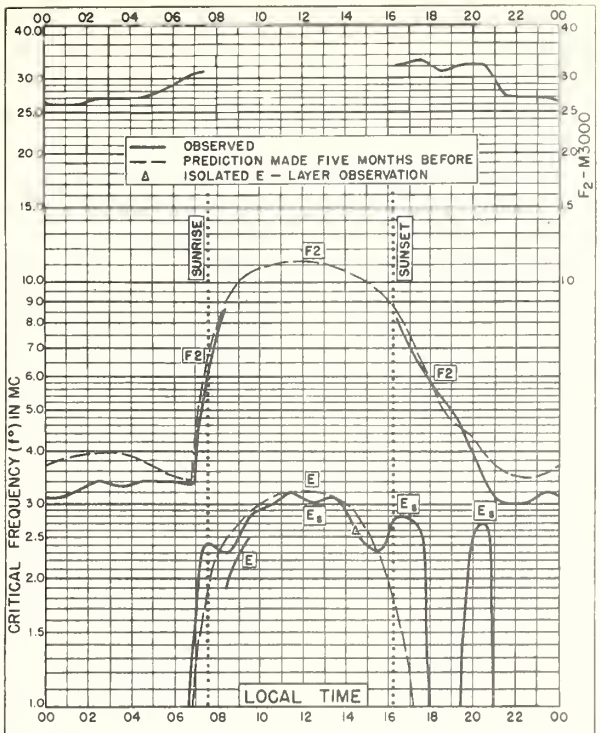

Fig. 37. WAKKANAI, JAPAN
45.4°N, 141.7°E DECEMBER 1947

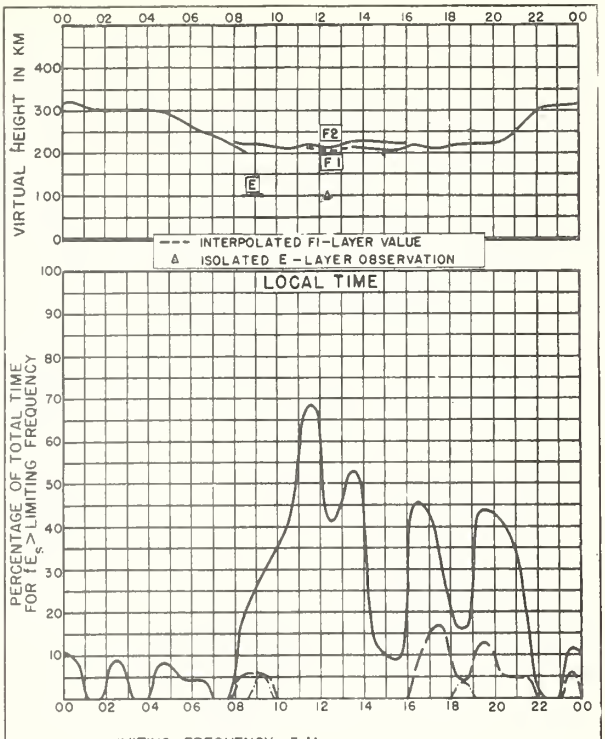

Fig. 38. WAKKANAI, JAPAN DECEMBER 1947

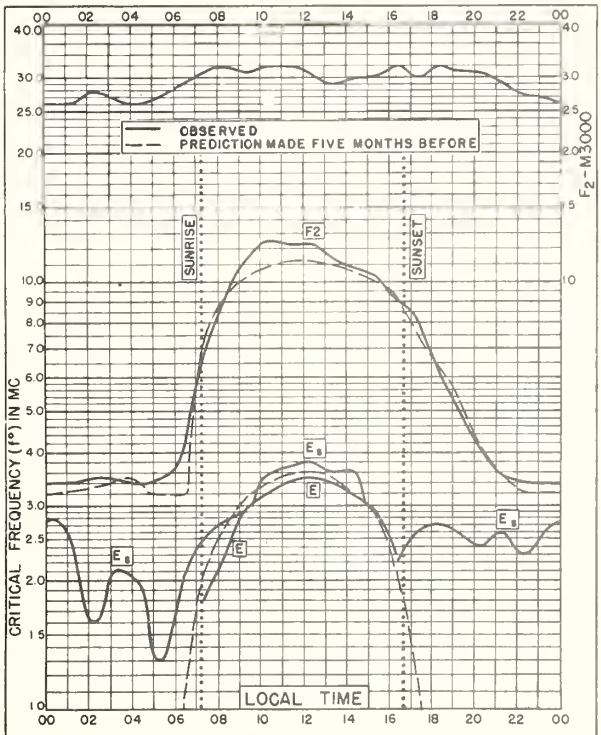

Fig. 39. SHIBATA, JAPAN
37.9°N, 139.3°E DECEMBER 1947

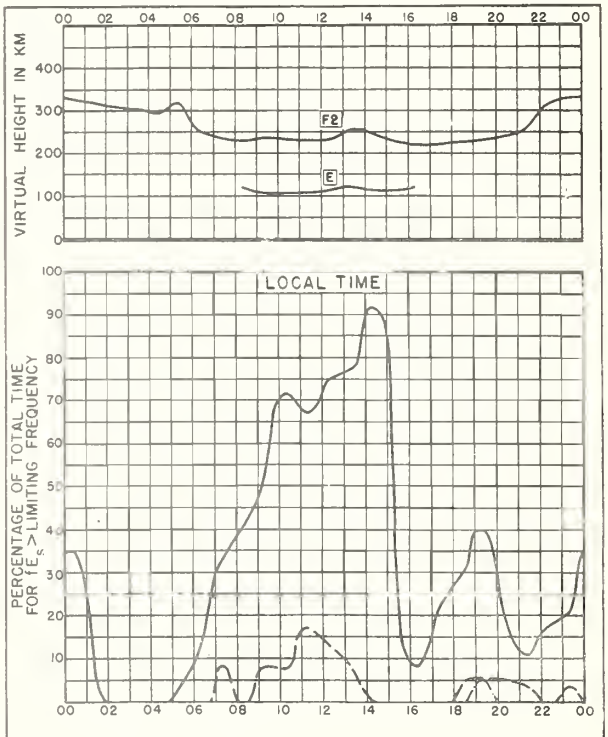

Fig. 40. SHIBATA, JAPAN DECEMBER 1947

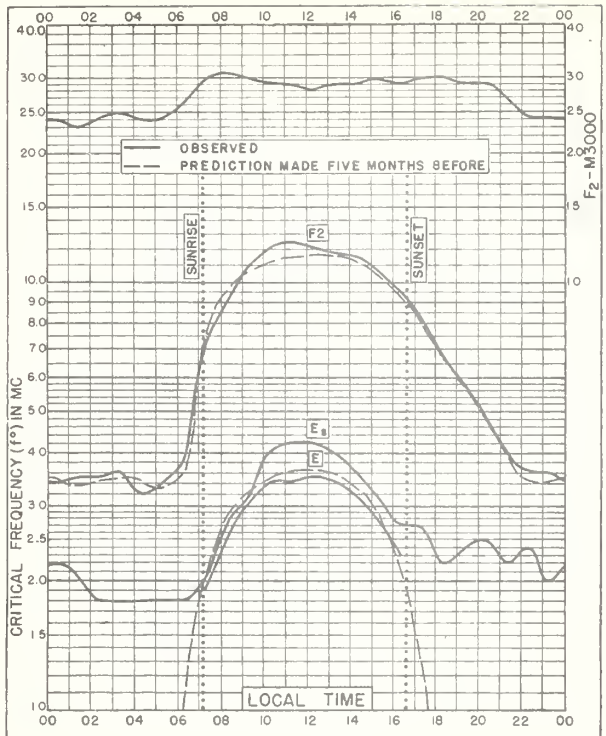

Fig. 41. TOKYO, JAPAN
35.7°N, 139.5°E DECEMBER 1947

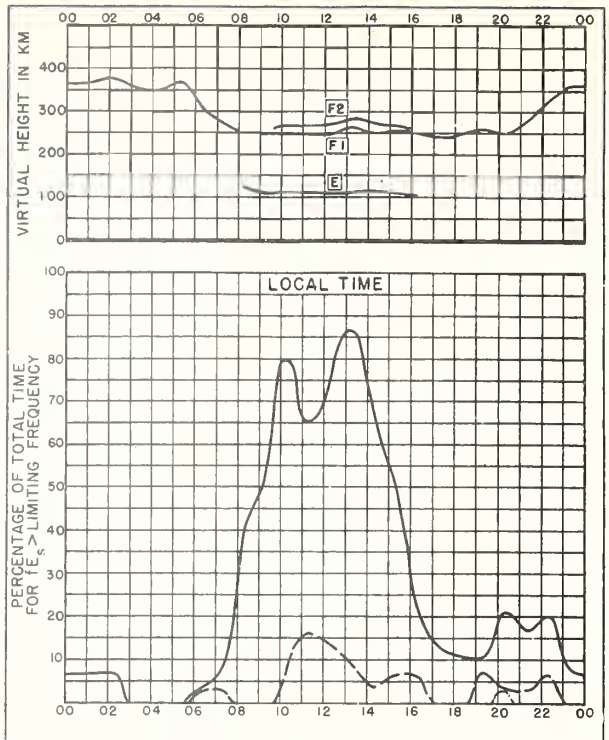

Fig. 42. TOKYO, JAPAN DECEMBER 1947

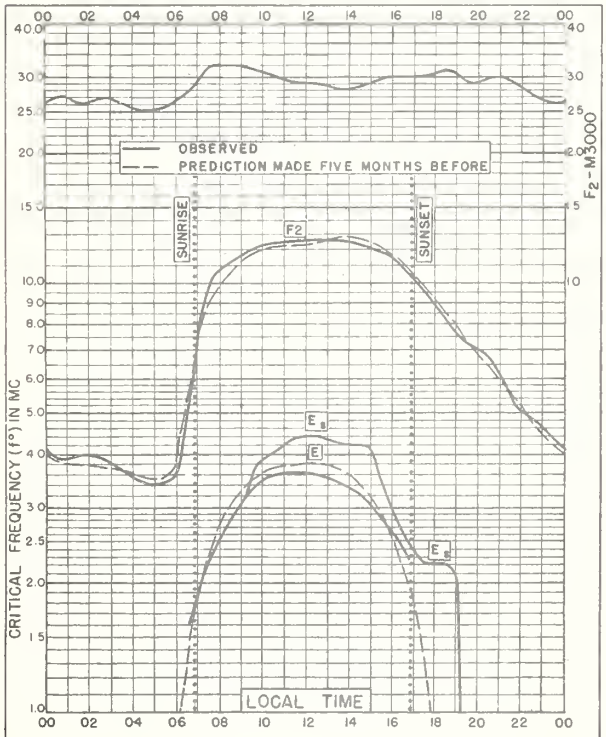

Fig. 43. YAMAKAWA, JAPAN
31.2°N, 130.6°E DECEMBER 1947

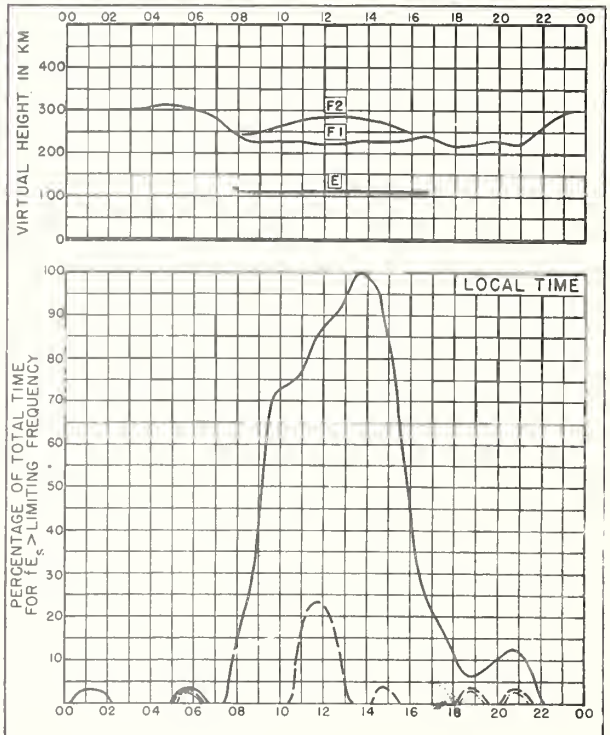

Fig. 44. YAMAKAWA, JAPAN DECEMBER 1947

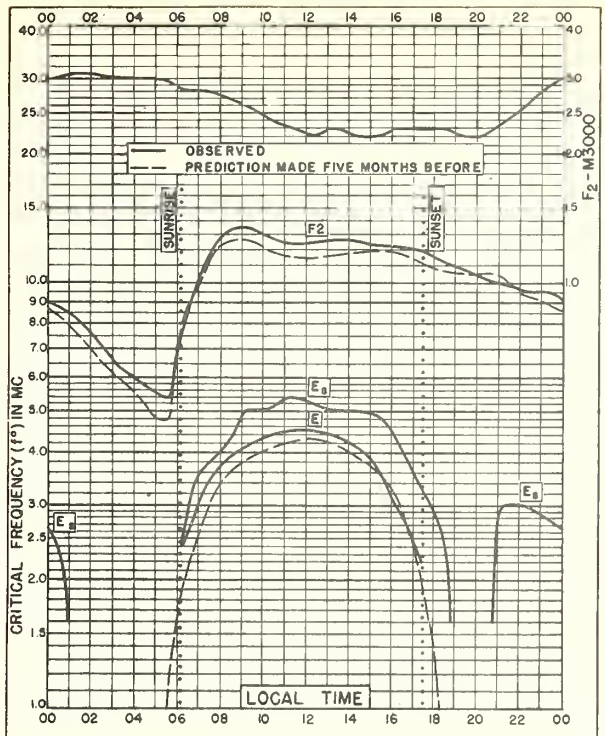

Fig. 45. LEYTE, PHILIPPINE IS.
11.0°N, 125.0°E DECEMBER 1947

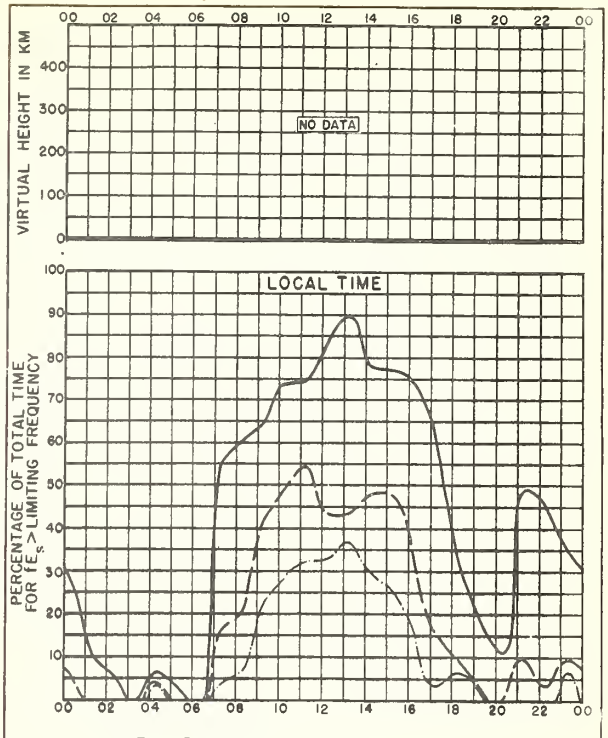

Fig. 46. LEYTE, PHILIPPINE IS. DECEMBER 1947

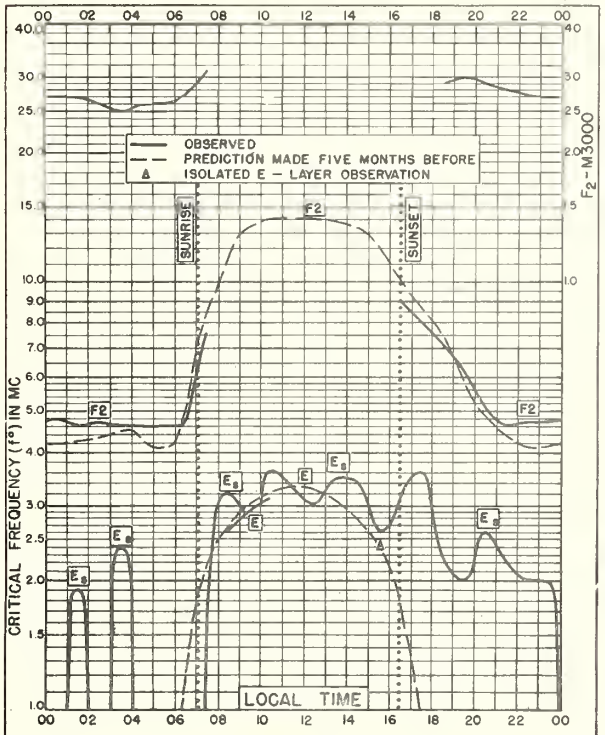

Fig. 47. WAKKANAI, JAPAN
45.4°N, 141.7°E NOVEMBER 1947

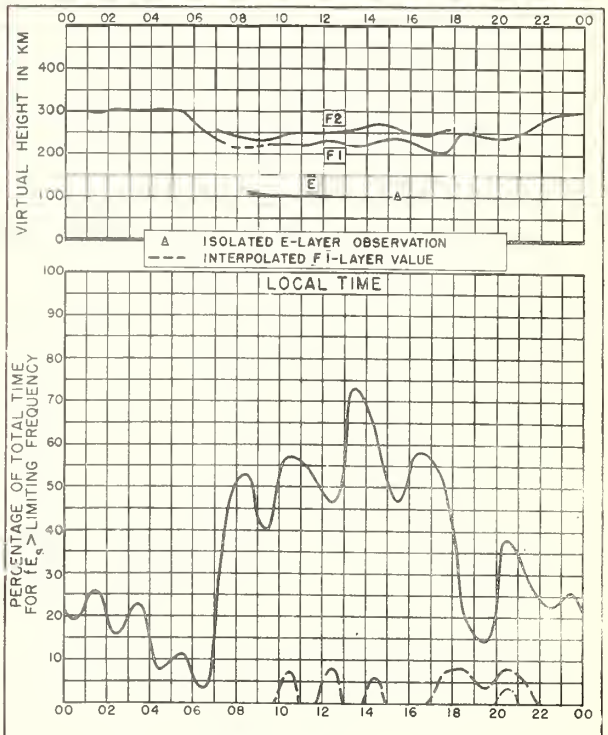

Fig. 48. WAKKANAI, JAPAN NOVEMBER 1947

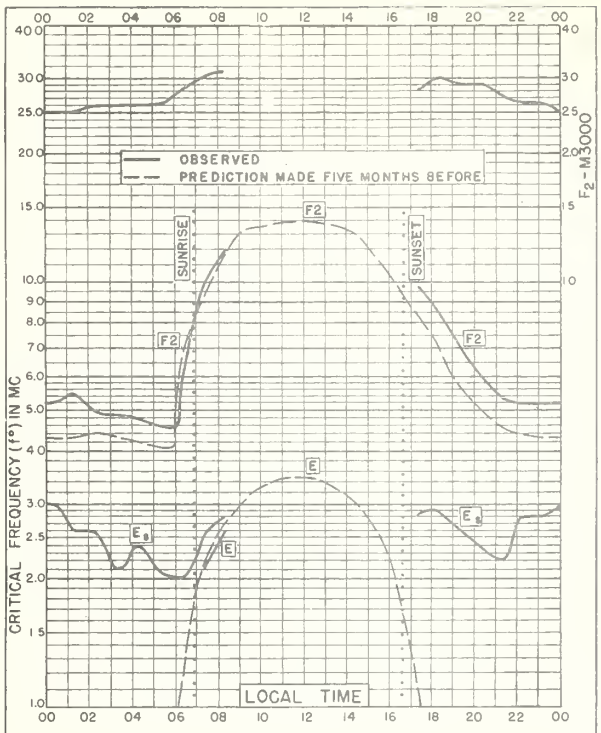

Fig. 49. FUKAURA JAPAN
40.6°N, 139.9°E NOVEMBER 1947

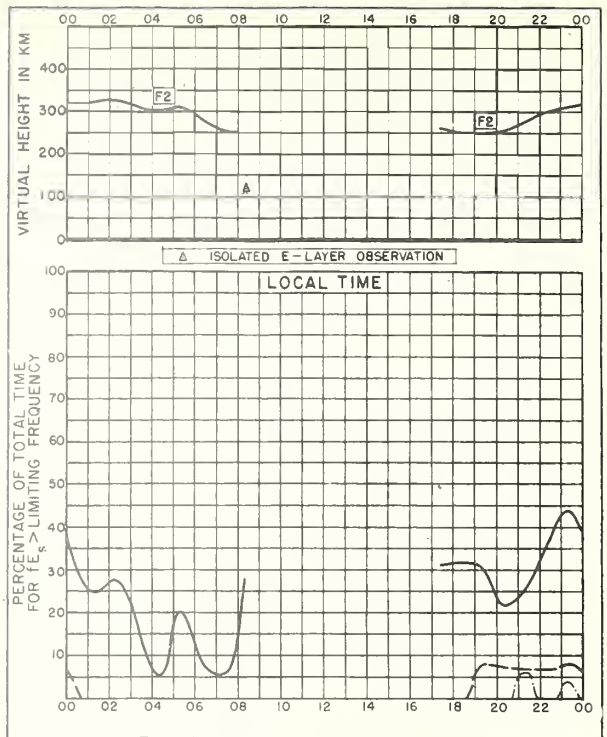

Fig. 50. FUKAURA, JAPAN NOVEMBER 1947

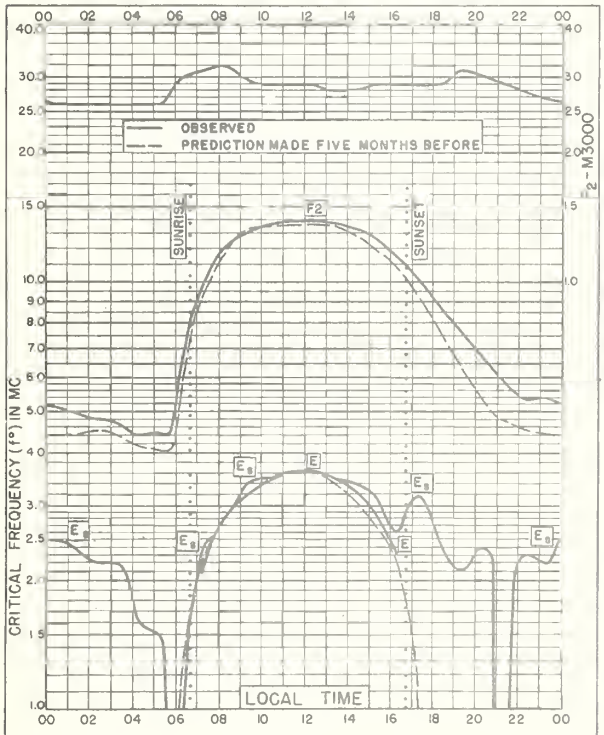

Fig. 51. SHIBATA, JAPAN
37.9°N, 139.3°E NOVEMBER 1947

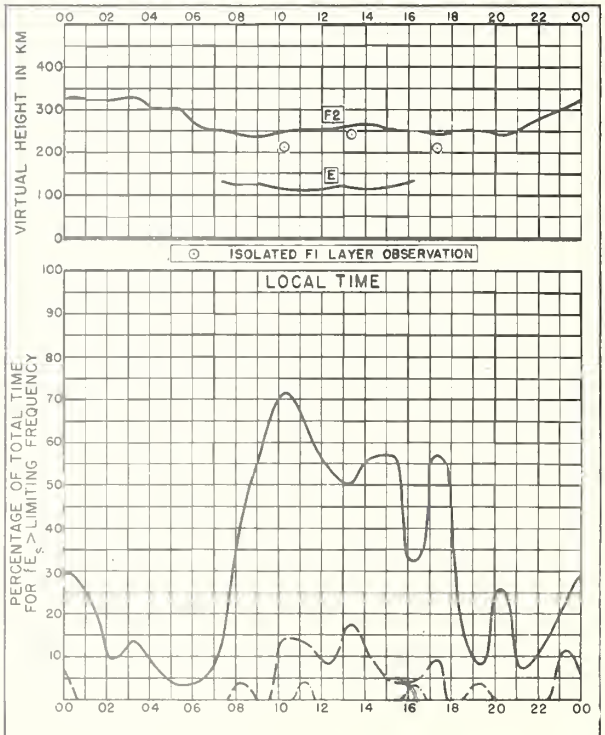

Fig. 52. SHIBATA, JAPAN NOVEMBER 1947

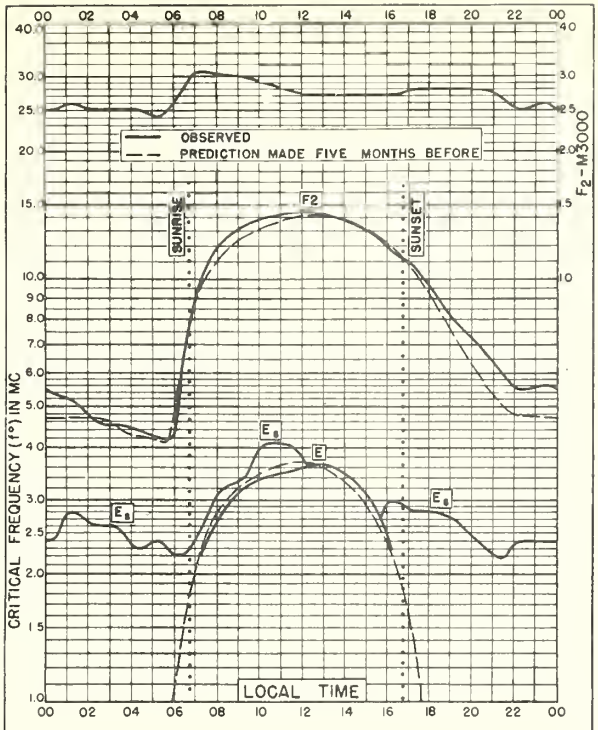

Fig. 53. TOKYO, JAPAN
35.7°N, 139.5°E NOVEMBER 1947

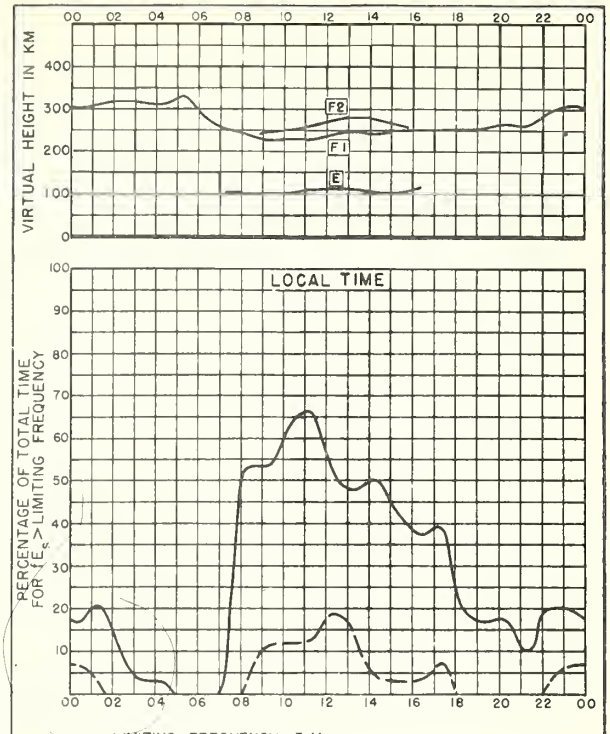

Fig. 54. TOKYO, JAPAN NOVEMBER 1947

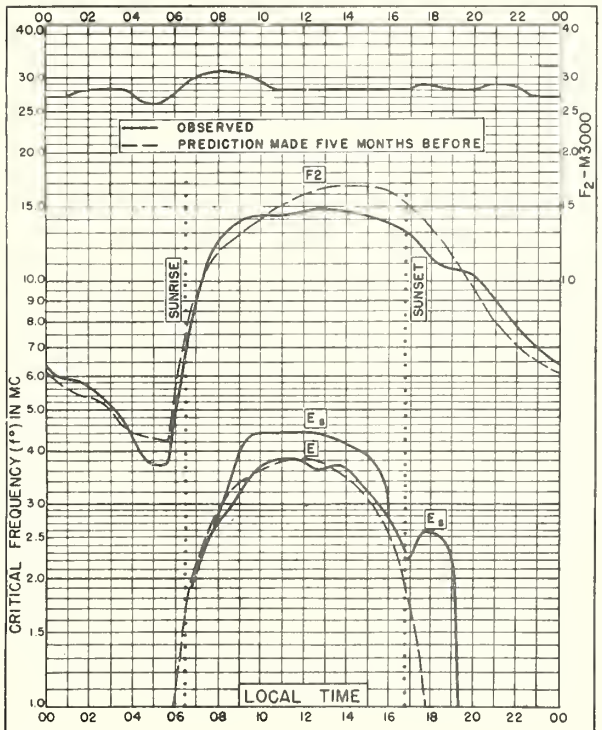

Fig. 55. YAMAKAWA, JAPAN
31.2°N, 130.6°E NOVEMBER 1947

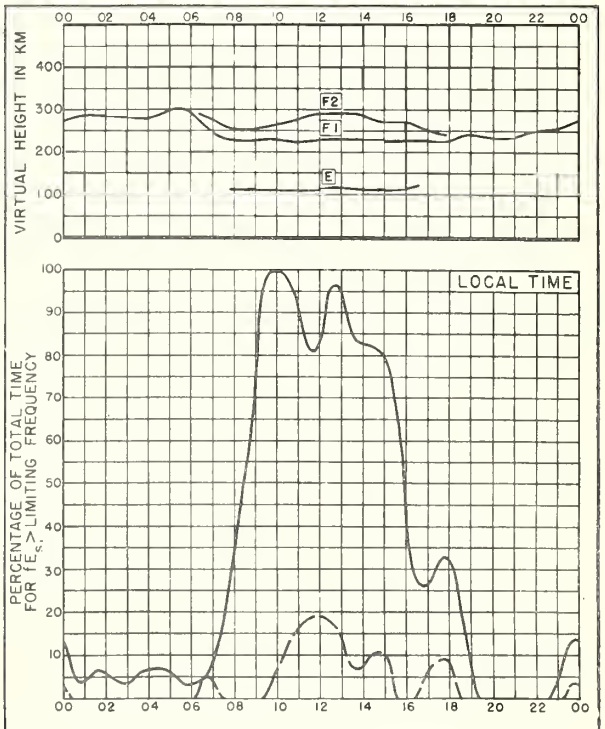

Fig. 56. YAMAKAWA, JAPAN NOVEMBER 1947

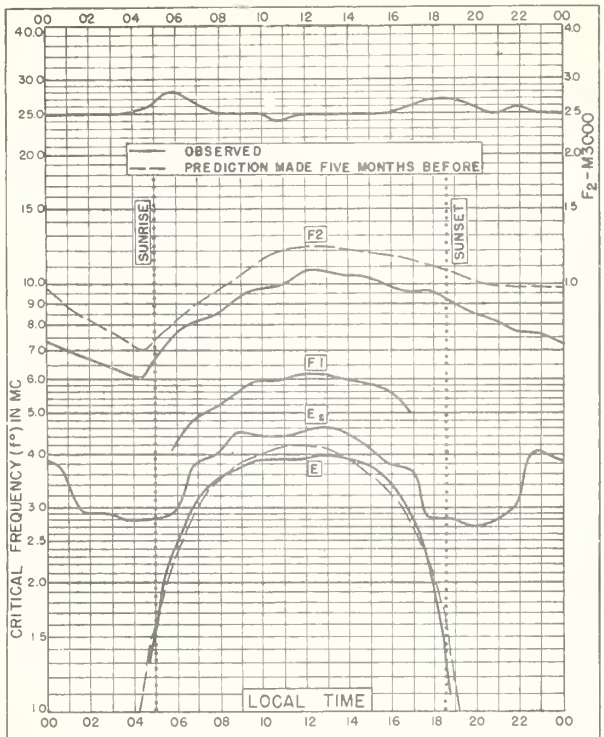

Fig. 57. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E NOVEMBER 1947

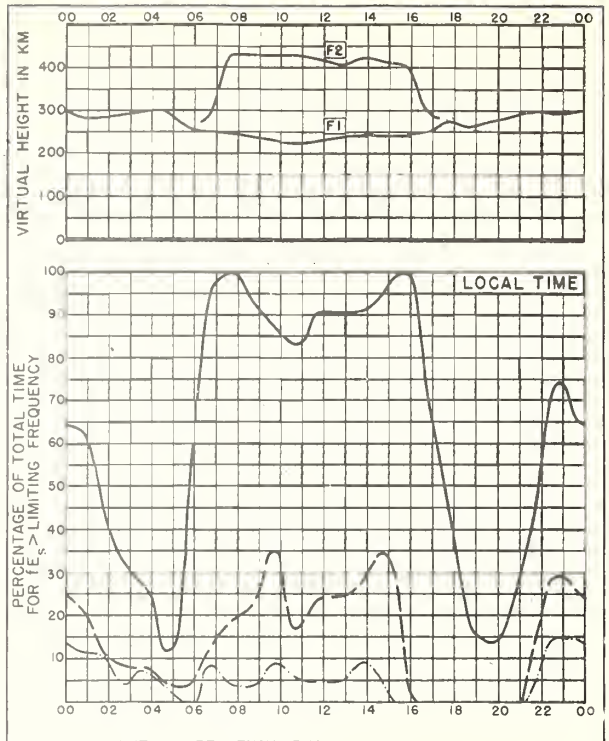

Fig. 58. WATHEROO, W. AUSTRALIA NOVEMBER 1947

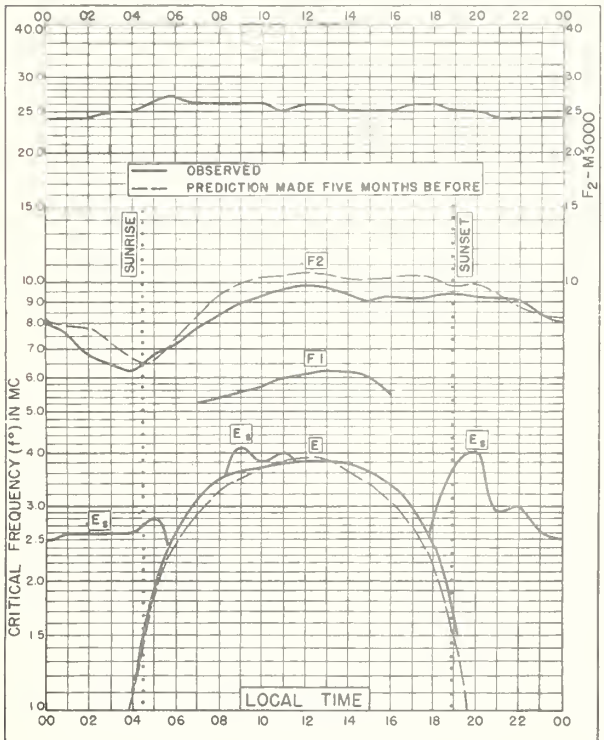

Fig. 59. CHRISTCHURCH, N.Z.
43.5°S, 172.7°E NOVEMBER 1947

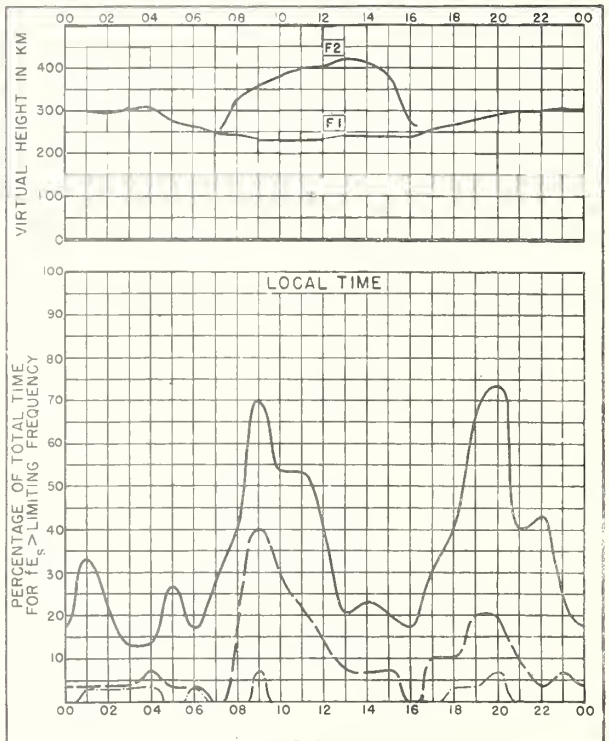

Fig. 60. CHRISTCHURCH, N.Z. NOVEMBER 1947

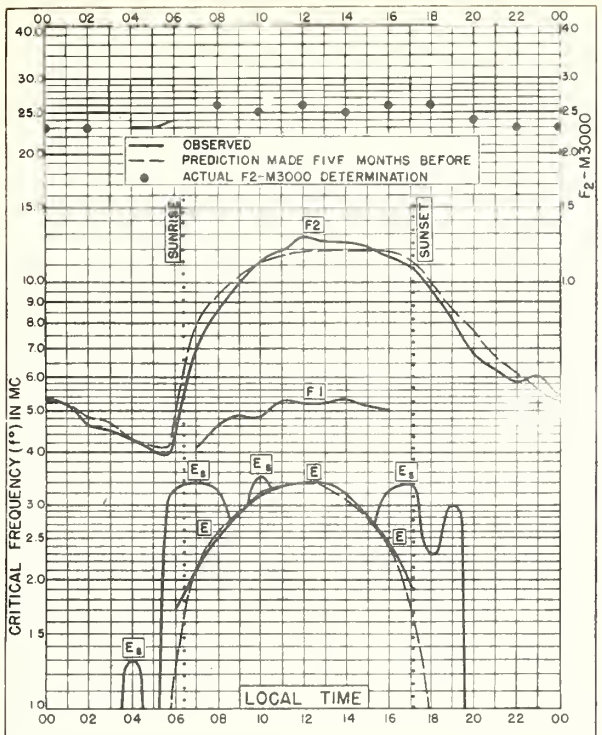

Fig. 61. SLOUGH, ENGLAND
51.5°N, 0.6°W OCTOBER 1947

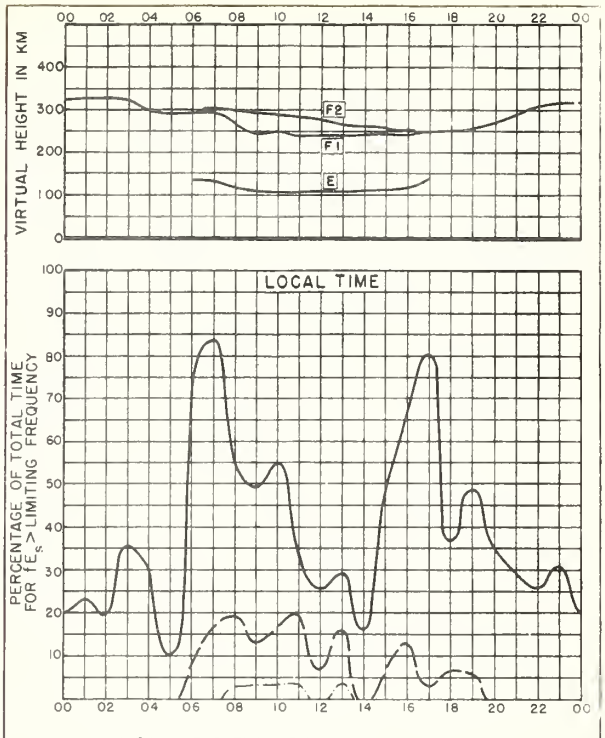

Fig. 62. SLOUGH, ENGLAND OCTOBER 1947

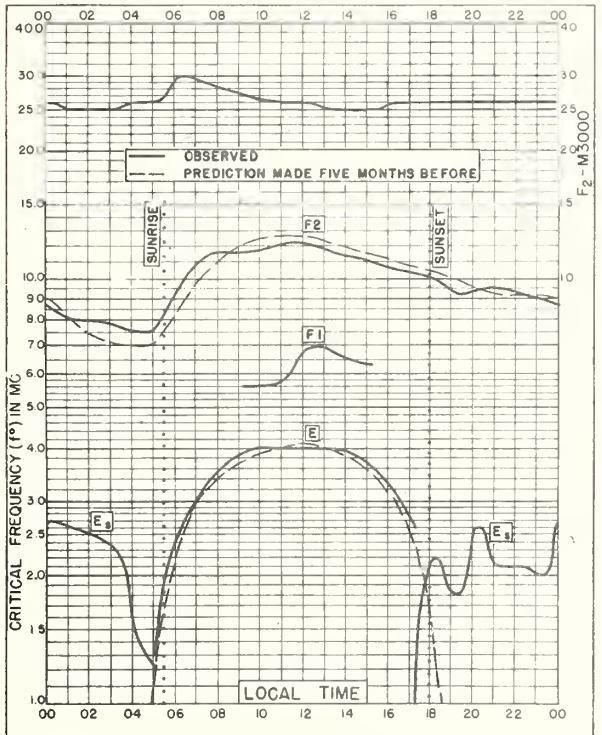

Fig. 63. BRISBANE, AUSTRALIA
27.5°S, 153.0°E OCTOBER 1947

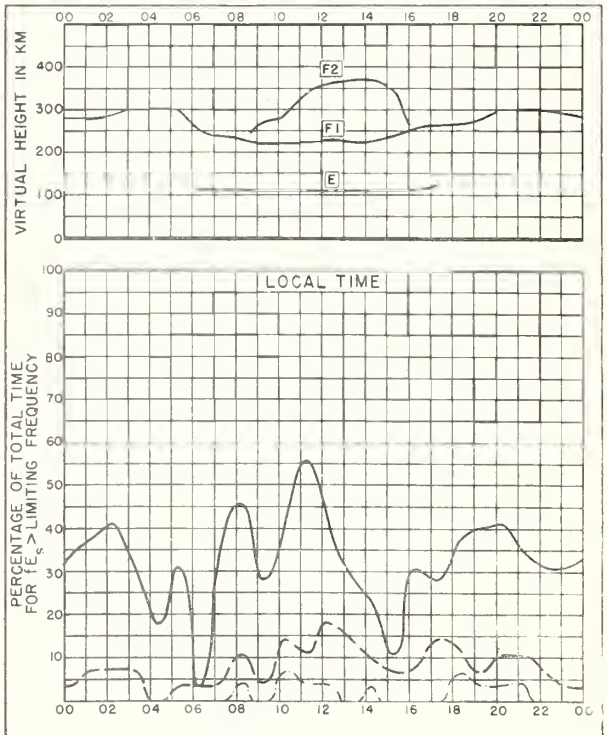

Fig. 64. BRISBANE, AUSTRALIA OCTOBER 1947

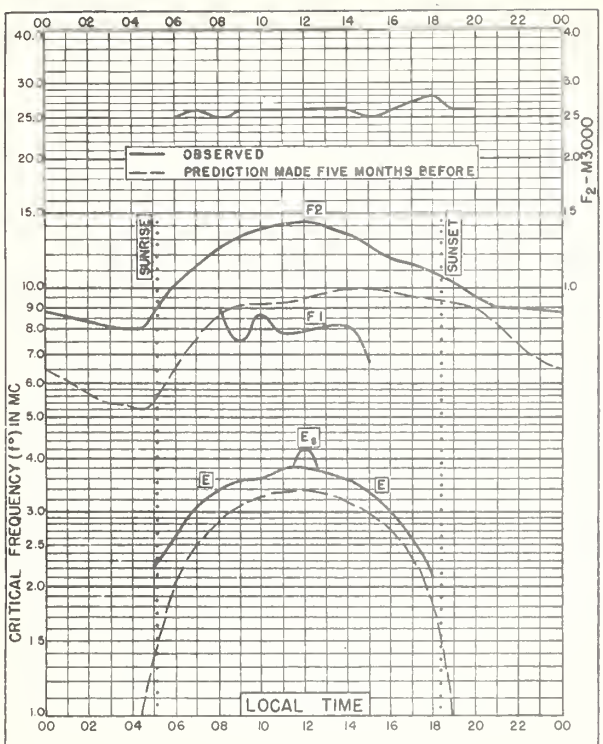

Fig. 65. FALKLAND IS.
51.7°S, 57.7°W OCTOBER 1947

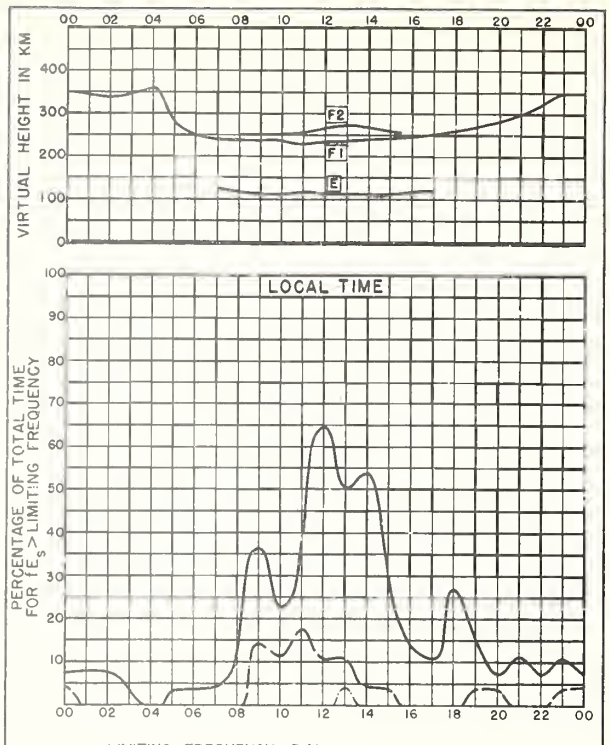

Fig. 66. FALKLAND IS. OCTOBER 1947

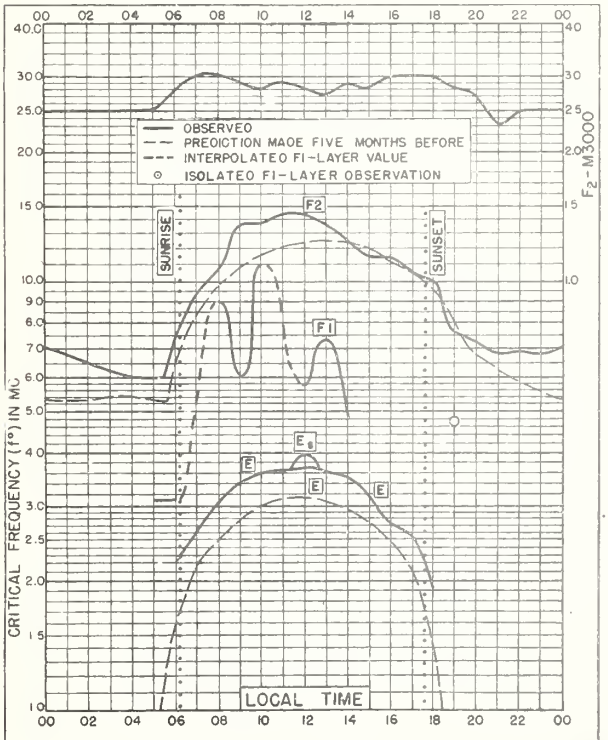

Fig. 67. FALKLAND IS.
51.7°S, 57.7°W SEPTEMBER 1947

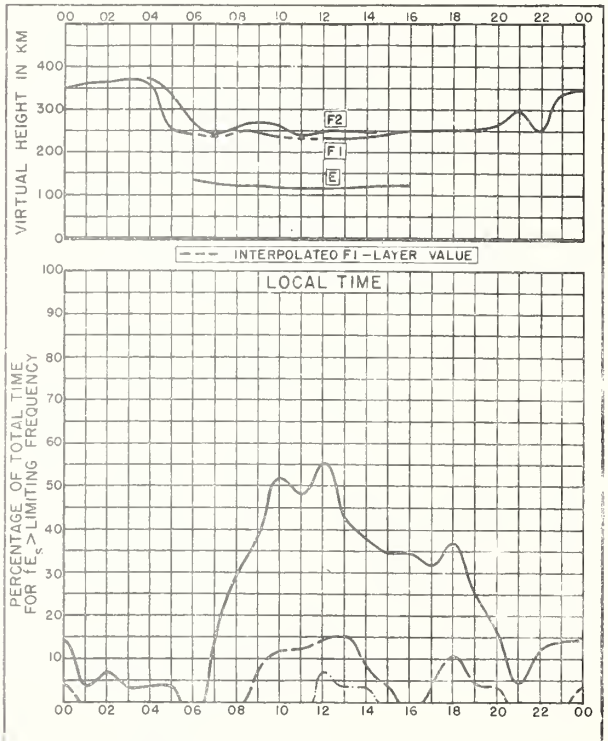

Fig. 68. FALKLAND IS. SEPTEMBER 1947

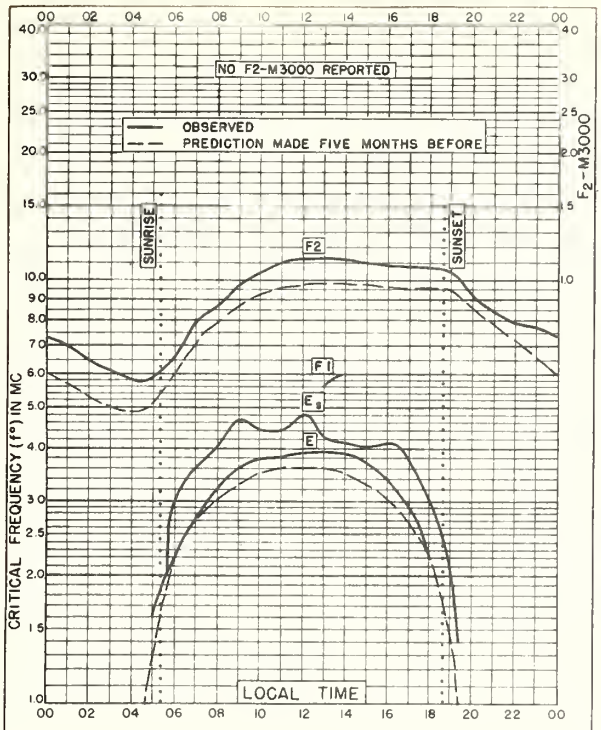

Fig. 69. FRIBOURG, GERMANY
48.1°N, 7.8°E APRIL 1947

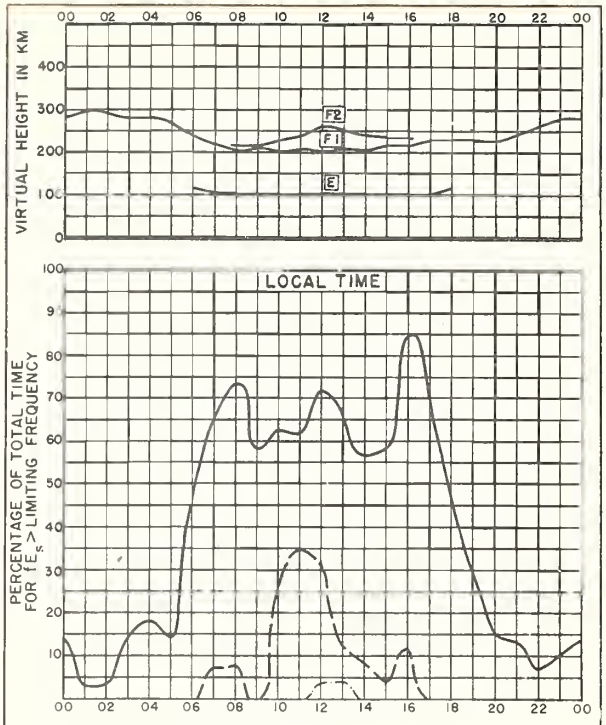

Fig. 70. FRIBOURG, GERMANY APRIL 1947

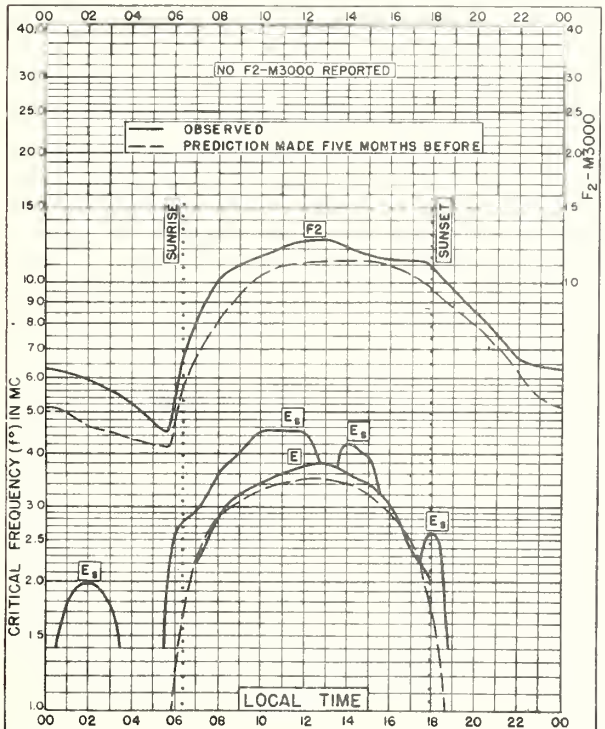

Fig. 71. FRIBOURG, GERMANY
48.1°N, 7.8°E MARCH 1947

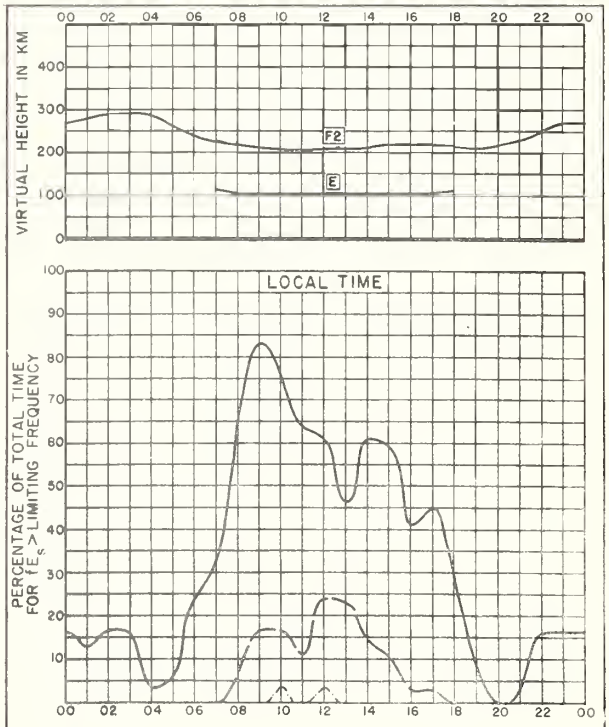

Fig. 72. FRIBOURG, GERMANY MARCH 1947

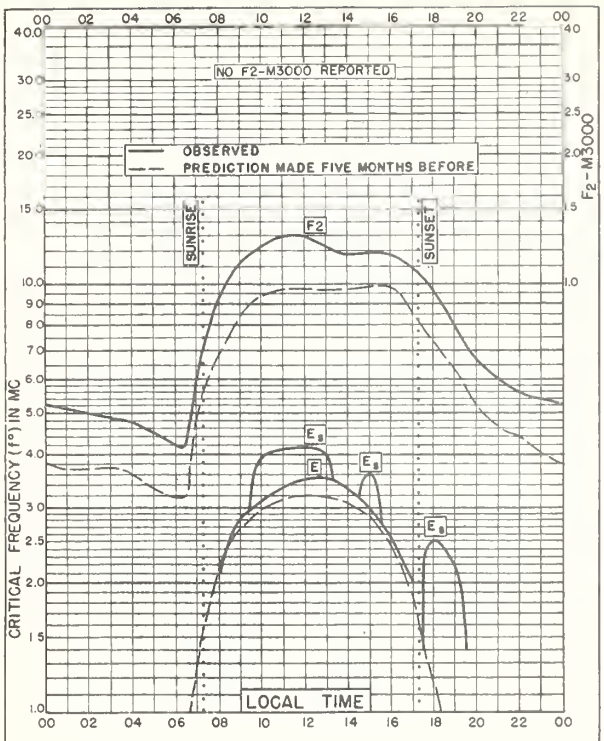

Fig. 73. FRIBOURG, GERMANY
48.1°N, 7.8°E FEBRUARY 1947

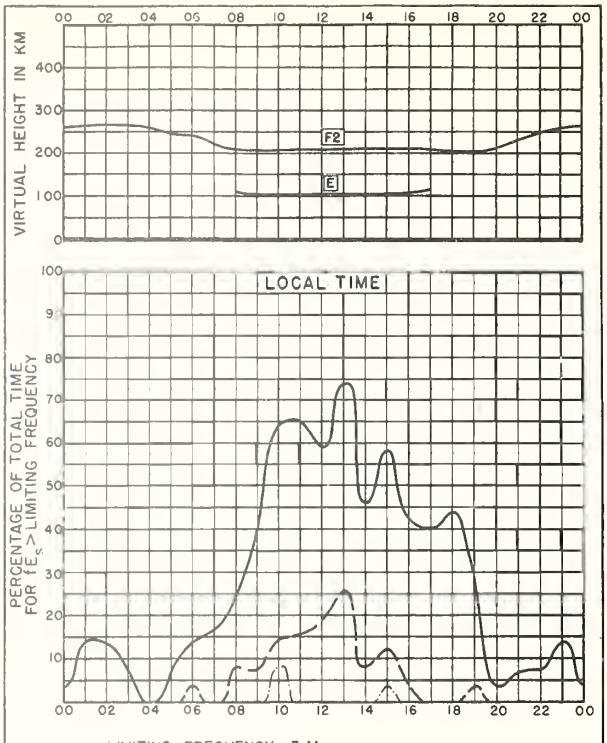

Fig. 74. FRIBOURG, GERMANY FEBRUARY 1947

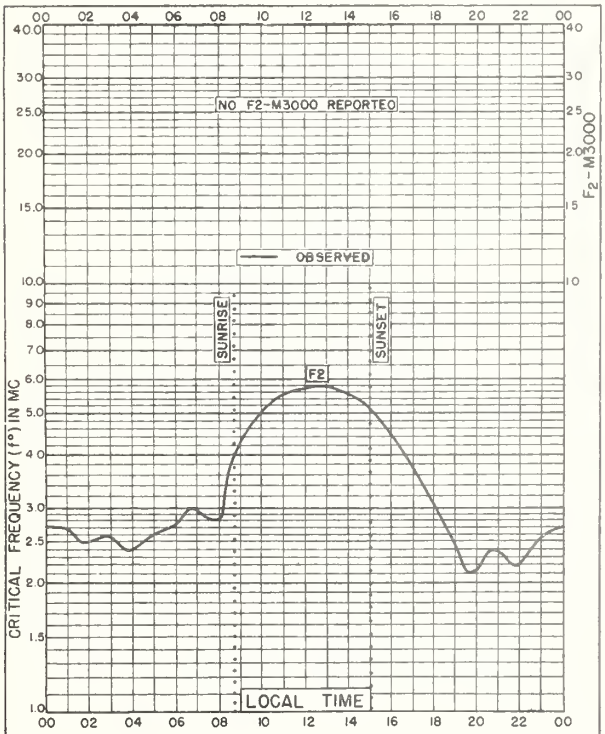

Fig. 75. BURGHEAD, SCOTLAND
57.7°N, 3.5°W DECEMBER 1942

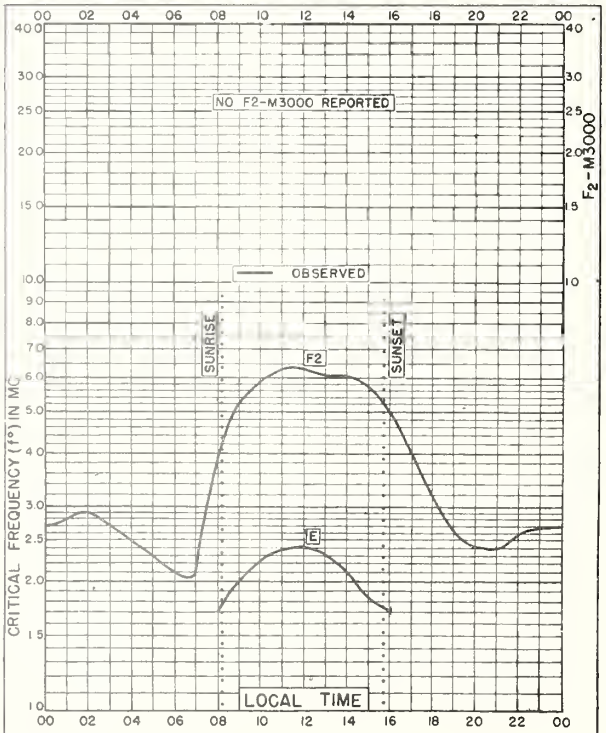

Fig. 76. GREAT BADDOW, ENGLAND
51.7°N, 0.5°E DECEMBER 1942

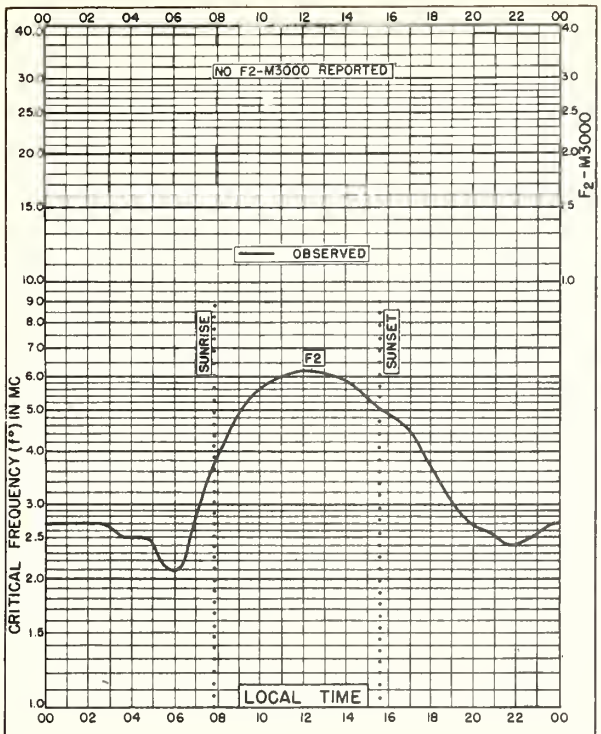

Fig. 77. BURGHEAD, SCOTLAND
57.7°N, 3.5°W NOVEMBER 1942

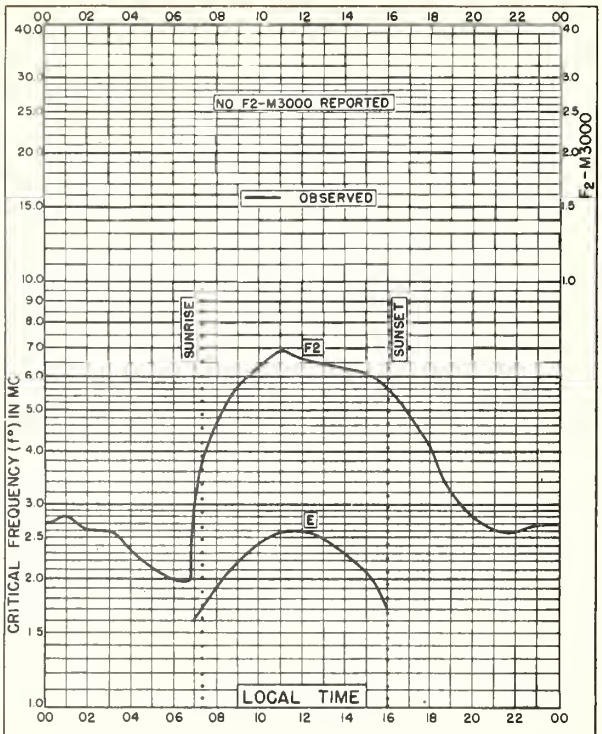

Fig. 78. GREAT BADDOW, ENGLAND
51.7°N, 0.5°E NOVEMBER 1942

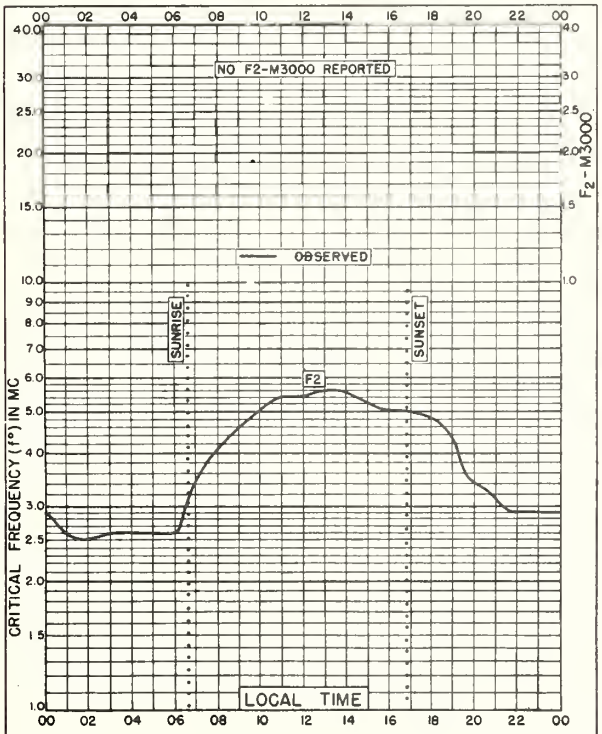

Fig. 79. BURGHEAD, SCOTLAND
57.7°N, 3.5°W OCTOBER 1942

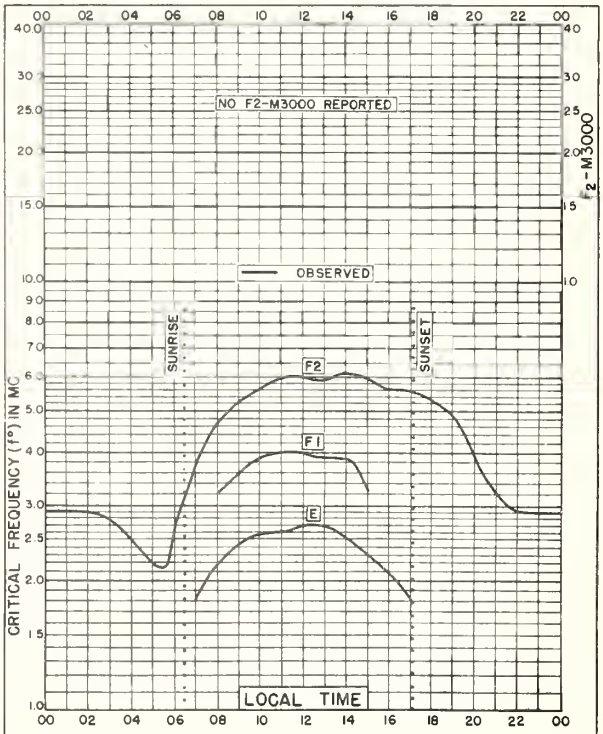

Fig. 80. GREAT BADDOW, ENGLAND
51.7°N, 0.5°E OCTOBER 1942

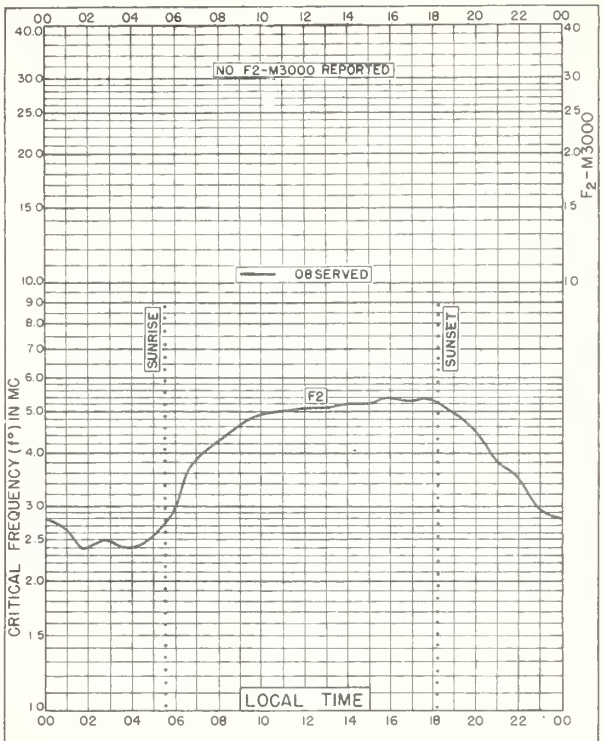

Fig 81. BURGHEAD, SCOTLAND
57.7°N, 3.5°W SEPTEMBER 1942

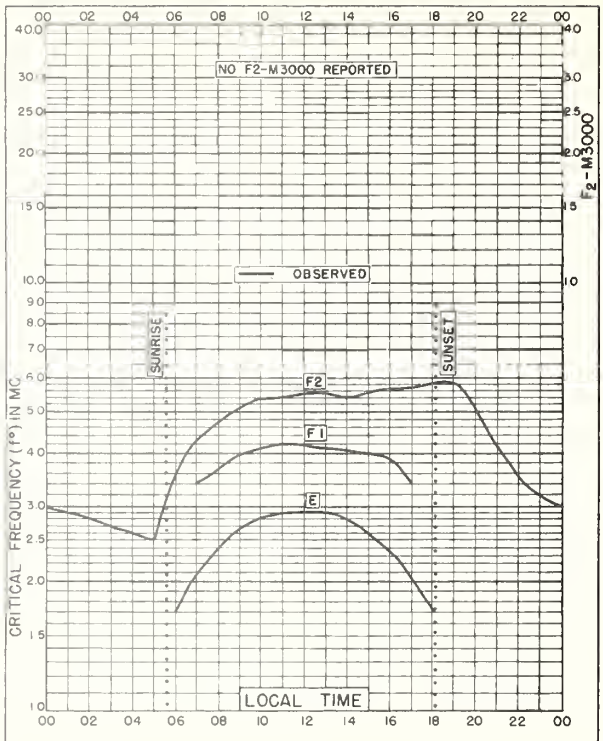

Fig. 82. GREAT BADDOW, ENGLAND
51.7°N, 0.5°E SEPTEMBER 1942

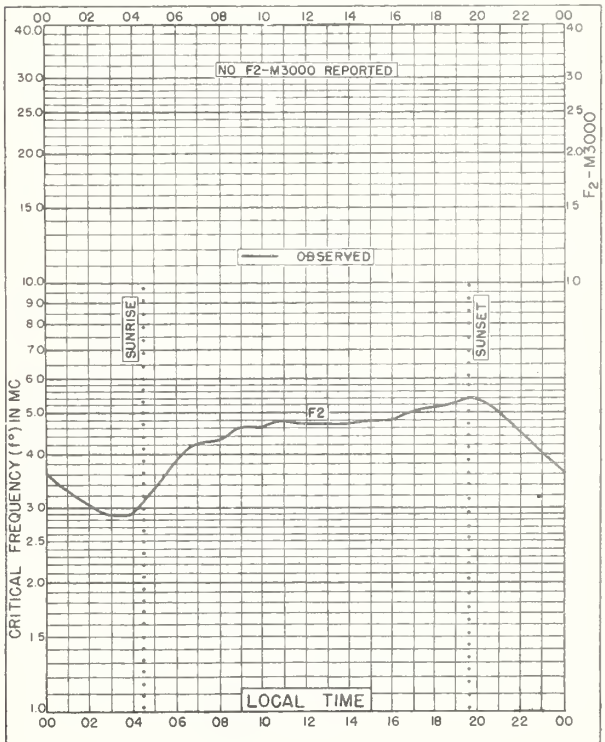

Fig. 83. BURGHEAD, SCOTLAND
57.7°N, 3.5°W AUGUST 1942

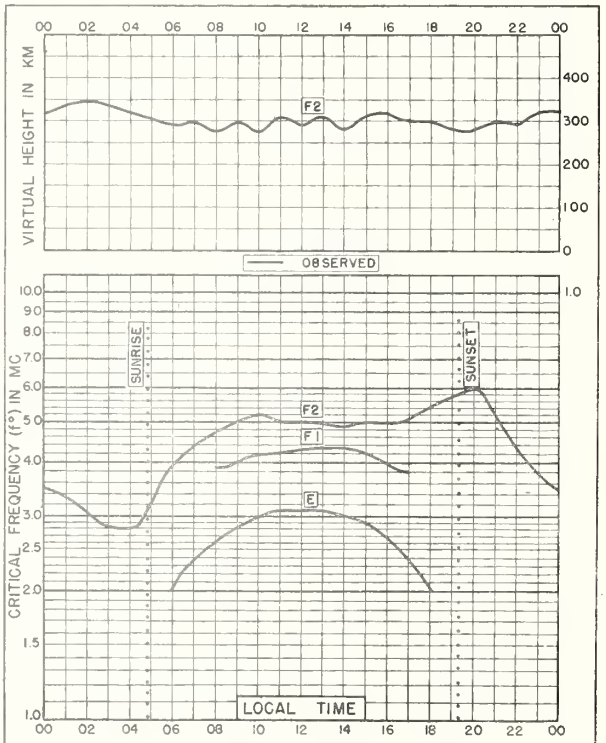

Fig. 84. GREAT BADDOW, ENGLAND
51.7°N, 0.5°E AUGUST 1942

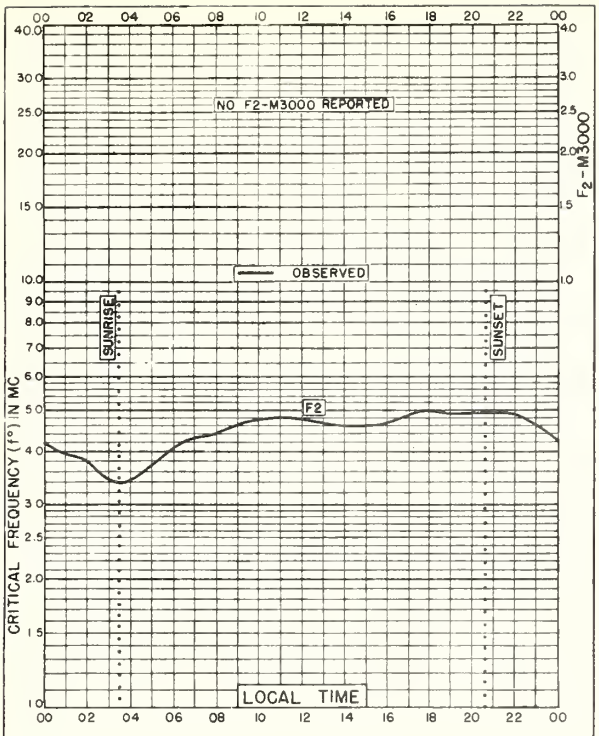

Fig 85 BURGHEAD, SCOTLAND
57 7°N, 3.5°W JULY 1942

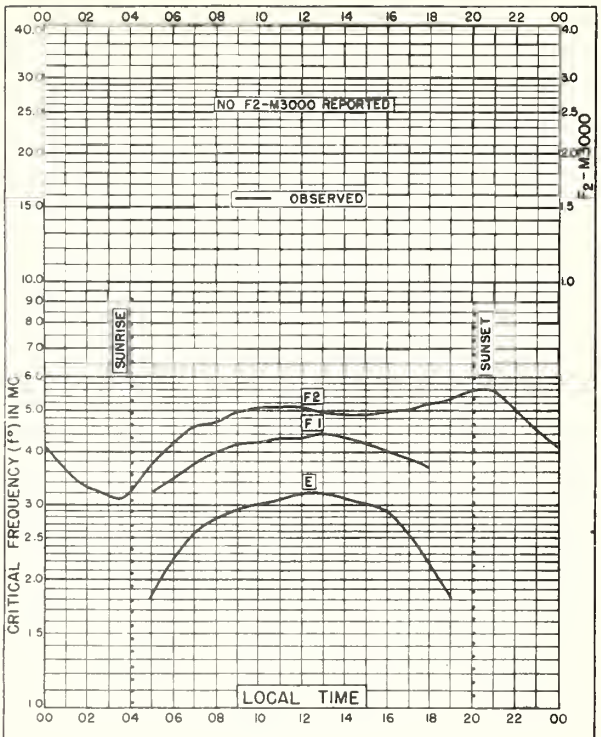

Fig. 86. GREAT BADDOW, ENGLAND
51.7°N, 0.5°E JULY 1942

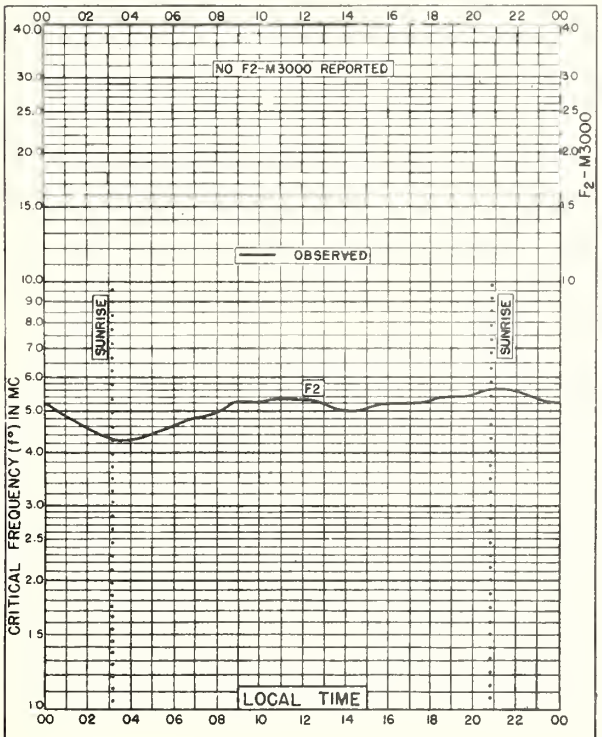

Fig. 87. BURGHEAD, SCOTLAND
57. 7°N, 3. 5°W JUNE 1942

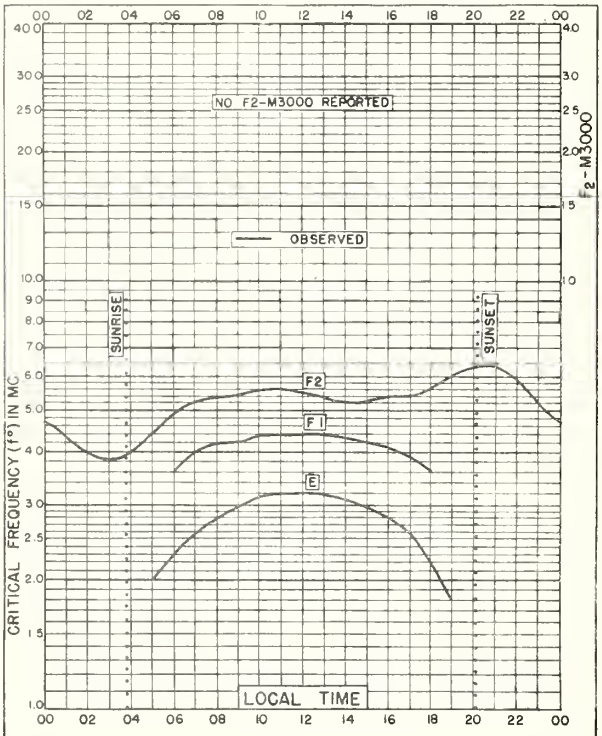

Fig. 88. GREAT BADDOW, ENGLAND
51.7°N, 0.5°E JUNE 1942

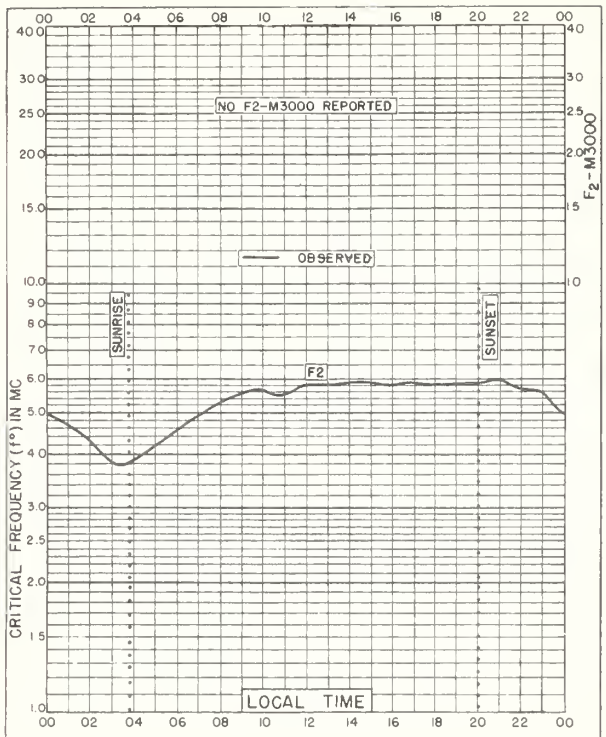

Fig. 89. BURGHEAD, SCOTLAND
57.7°N, 3.5°W MAY 1942

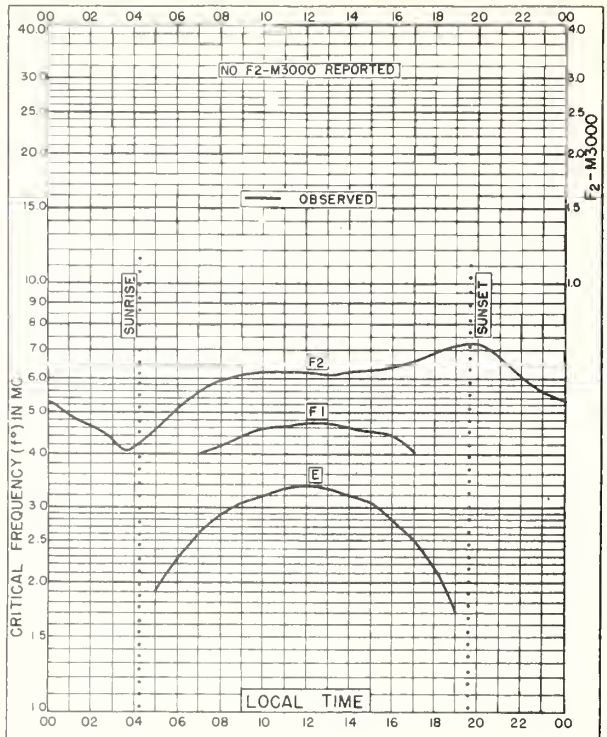

Fig 90 GREAT BADDOW, ENGLAND
51.7°N, 0.5°E MAY 1942

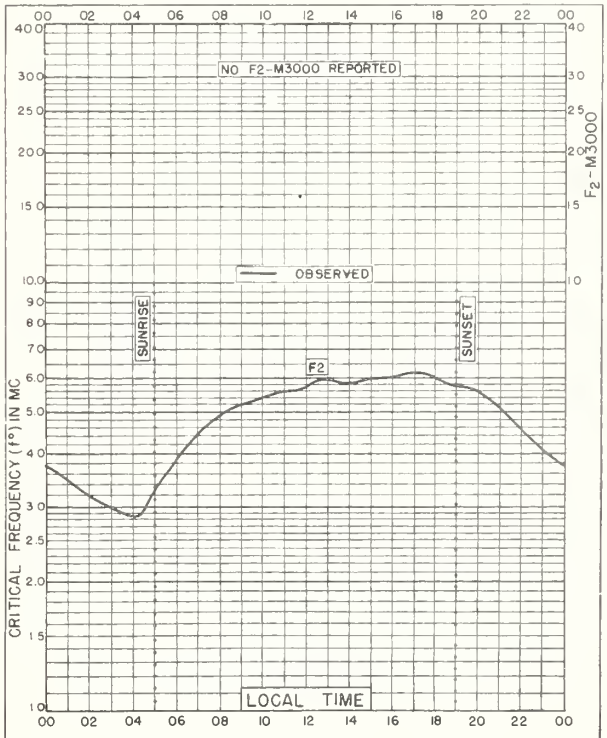

Fig. 91. BURGHEAD, SCOTLAND
57.7°N, 3.5°W APRIL 1942

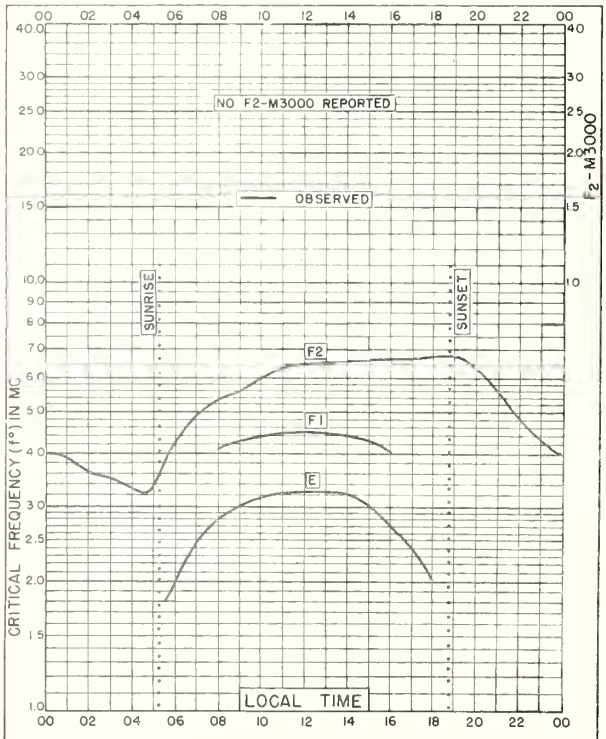

Fig. 92. GREAT BADDOW, ENGLAND
51.7°N, 0.5°E APRIL 1942

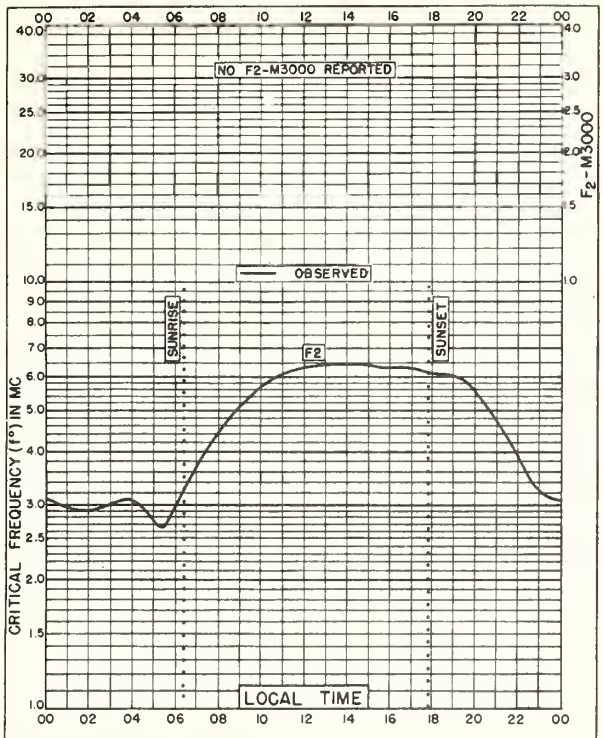

Fig. 93. BURGHEAD, SCOTLAND
57.7°N, 3.5°W MARCH 1942

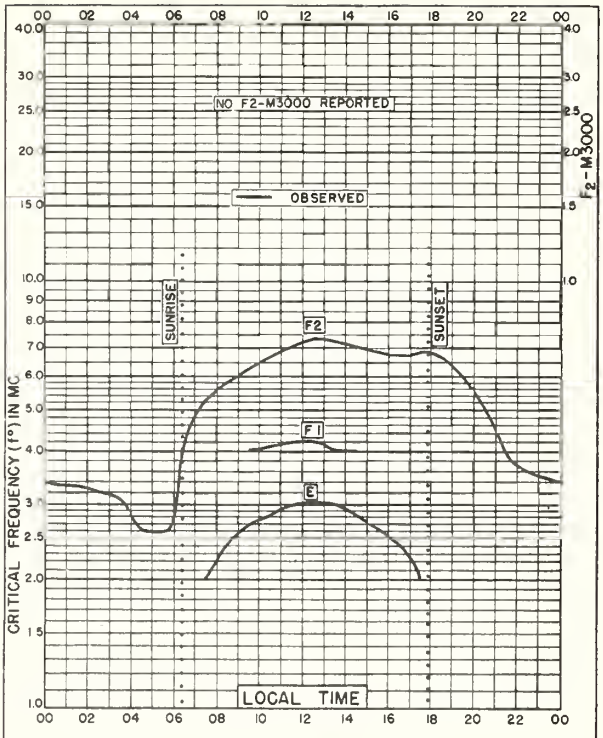

Fig. 94. GREAT BADDOW, ENGLAND
51.7°N, 0.5°E MARCH 1942

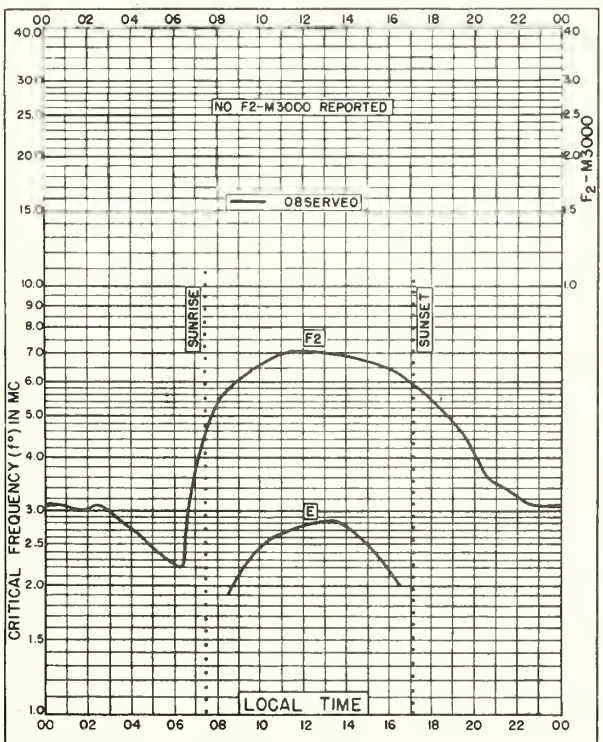

Fig. 95. GREAT BADDOW, ENGLAND
51.7°N, 0.5°E FEBRUARY 1942

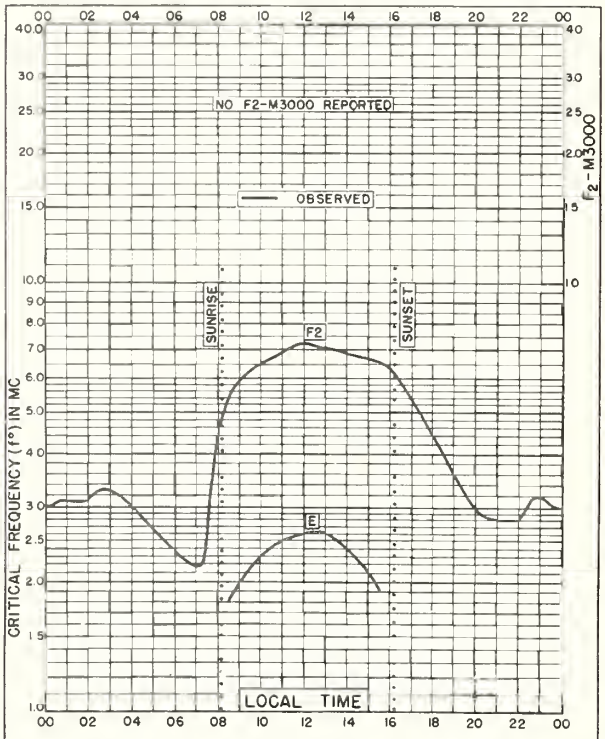

Fig. 96. GREAT BADDOW, ENGLAND
51.7°N, 0.5°E JANUARY 1942

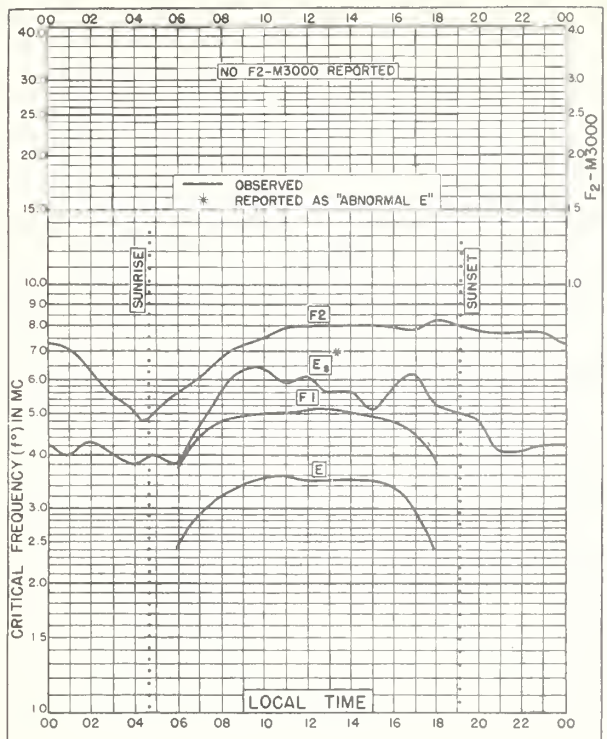

Fig. 97. CANBERRA, AUSTRALIA
35.3°S, 149.0°E DECEMBER 1940

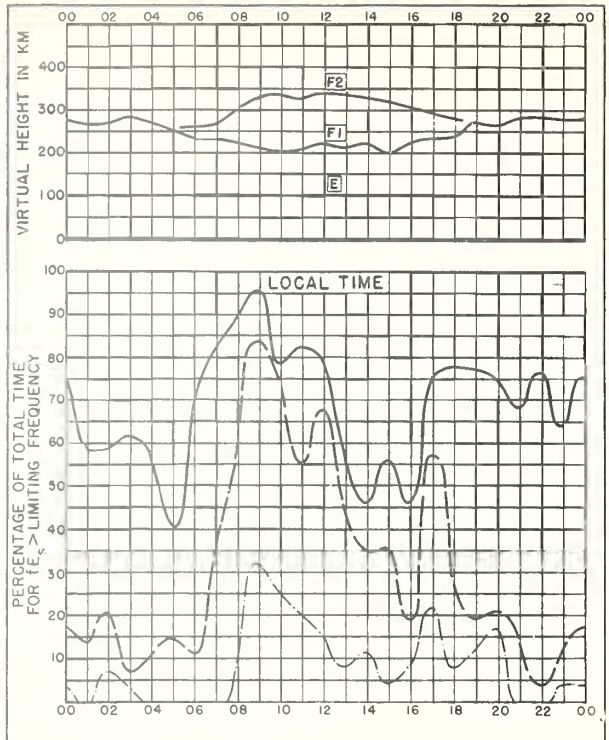

Fig. 98. CANBERRA, AUSTRALIA DECEMBER 1940

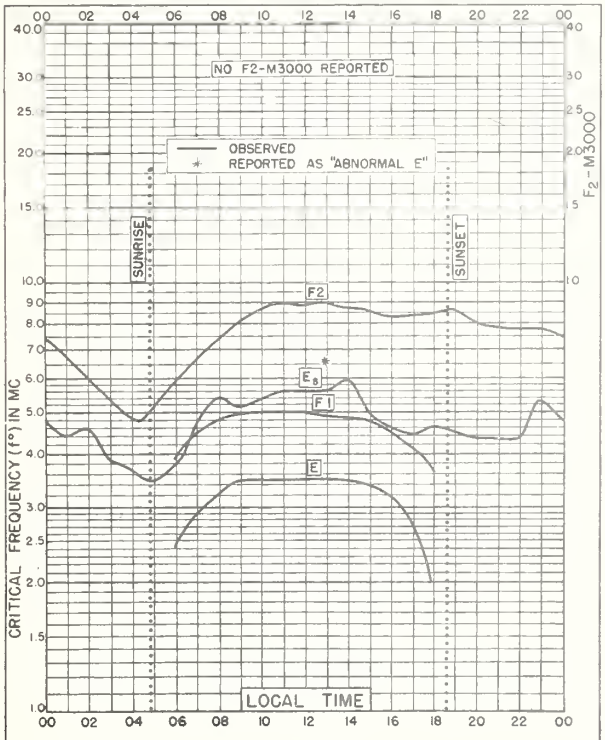

Fig. 99. CANBERRA, AUSTRALIA
35.3°S, 149.0°E NOVEMBER 1940

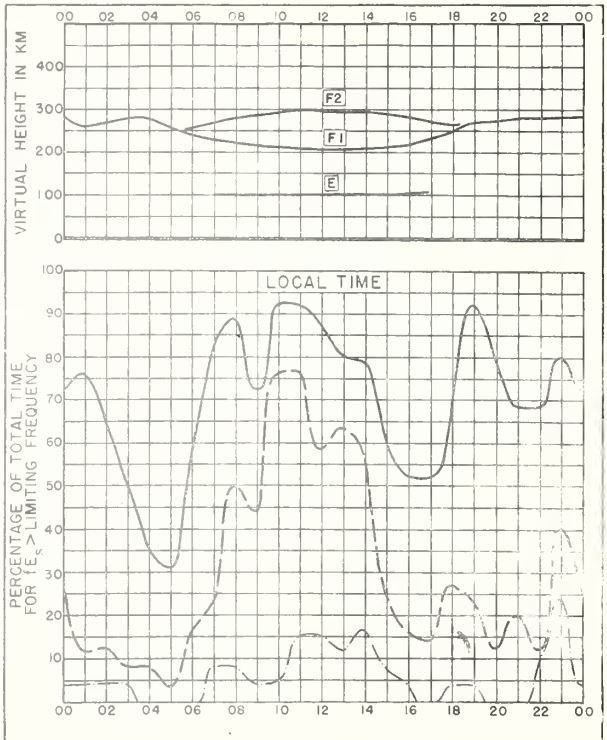

Fig. 100. CANBERRA, AUSTRALIA NOVEMBER 1940

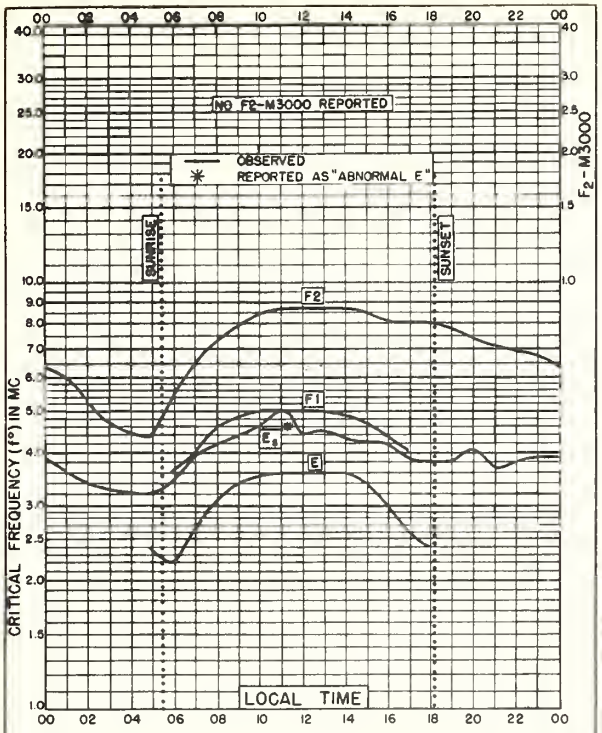

Fig. 101. CANBERRA, AUSTRALIA
35.3°S, 149.0°E OCTOBER 1940

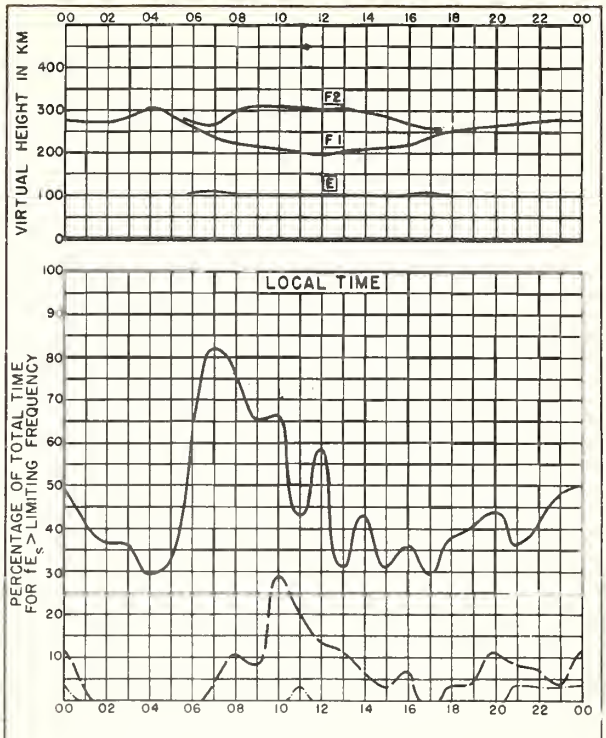

Fig. 102. CANBERRA, AUSTRALIA OCTOBER 1940

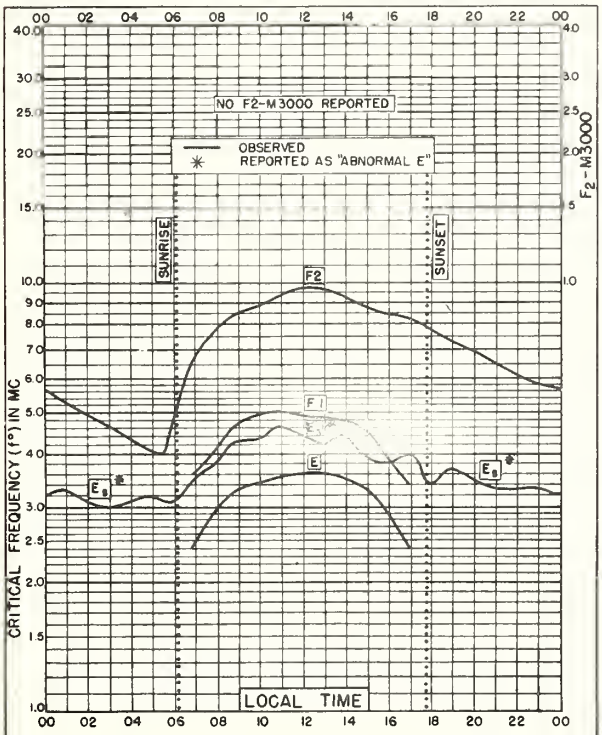

Fig. 103. CANBERRA, AUSTRALIA
35.3°S, 149.0°E SEPTEMBER 1940

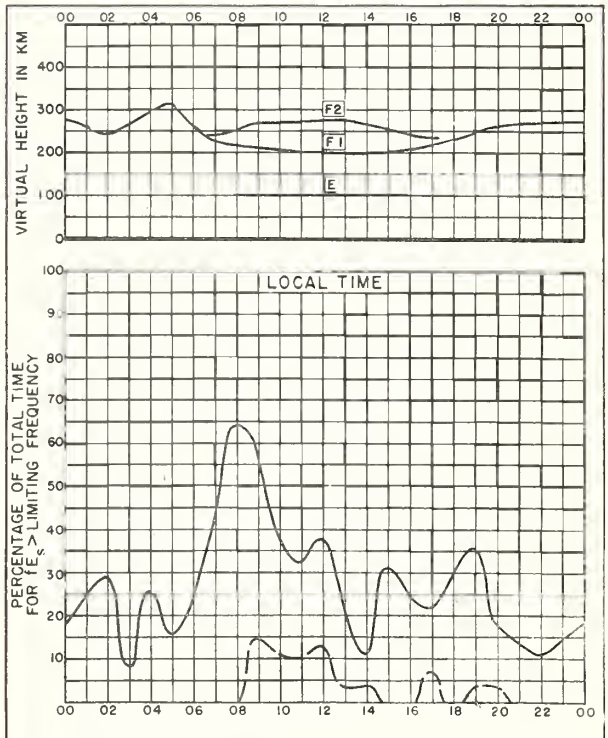

Fig. 104. CANBERRA, AUSTRALIA SEPTEMBER 1940

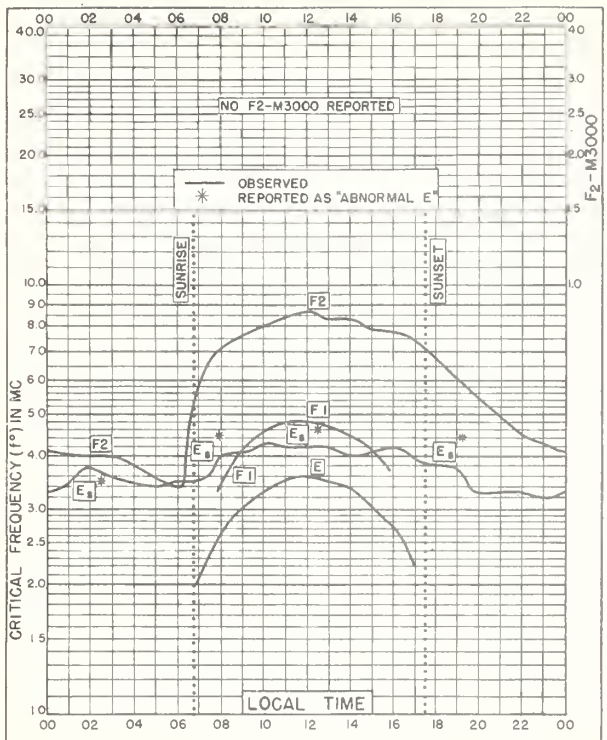

Fig. 105. CANBERRA, AUSTRALIA
35.3°S, 149.0°E AUGUST 1940

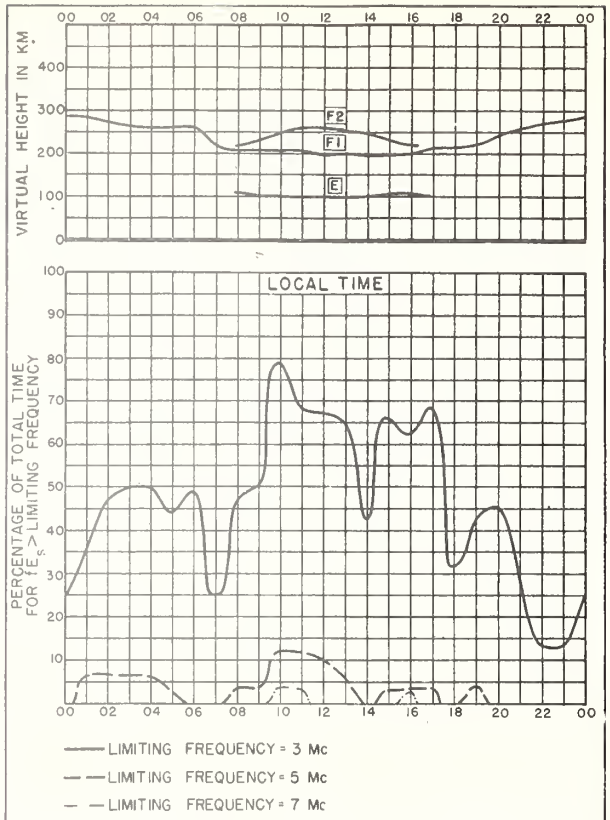

Fig. 106. CANBERRA, AUSTRALIA AUGUST 1940

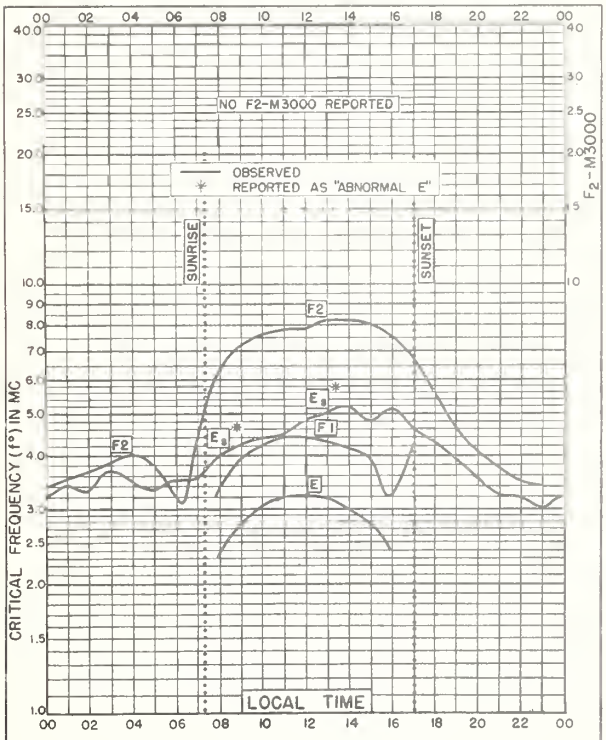

Fig. 107. CANBERRA, AUSTRALIA
35.3°S, 149.0°E JULY 1940

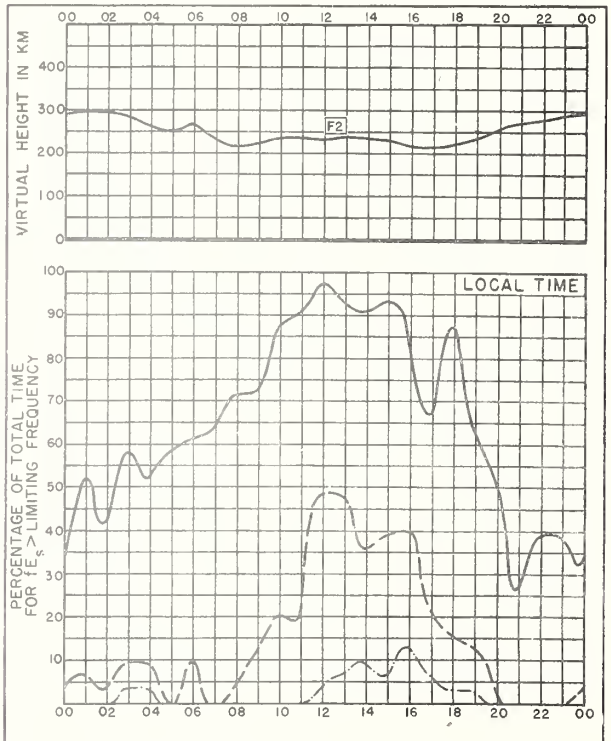

Fig. 108. CANBERRA, AUSTRALIA JULY 1940

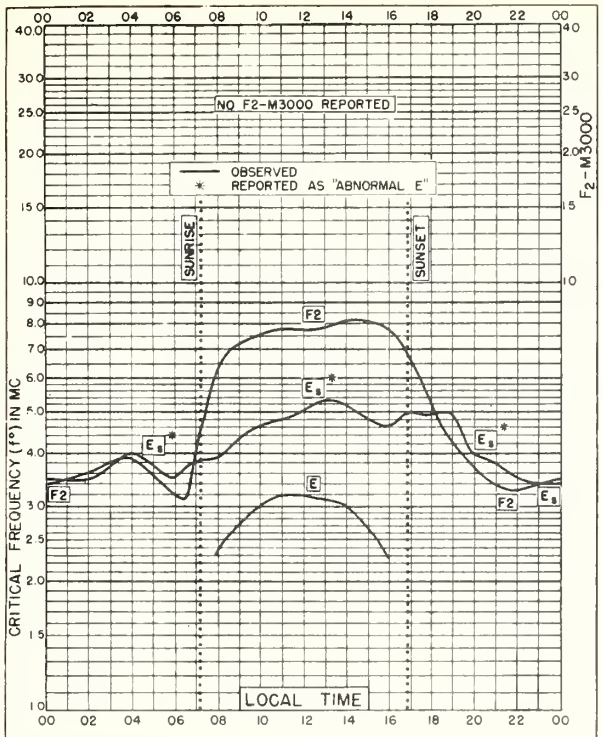

Fig. 109 CANBERRA, AUSTRALIA
35.3°S, 149.0°E JUNE 1940

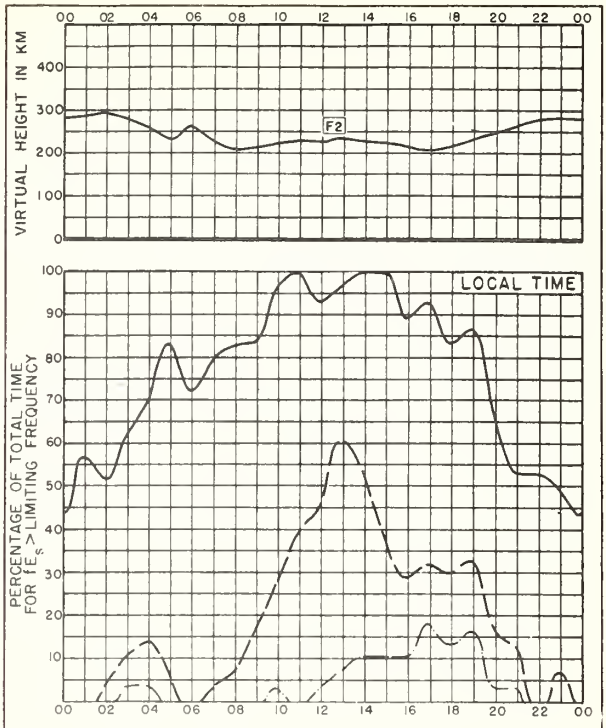

Fig. 110 CANBERRA, AUSTRALIA JUNE 1940

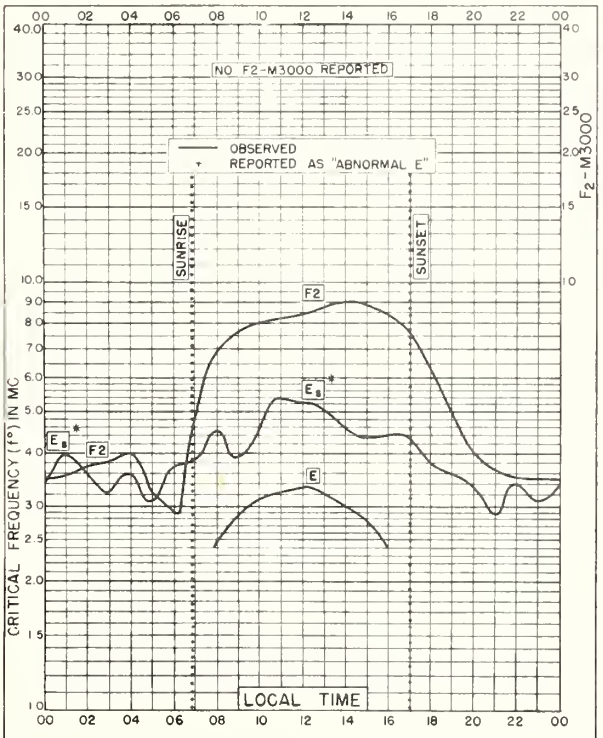

Fig. 111 CANBERRA, AUSTRALIA
35.3°S, 149.0°E MAY 1940

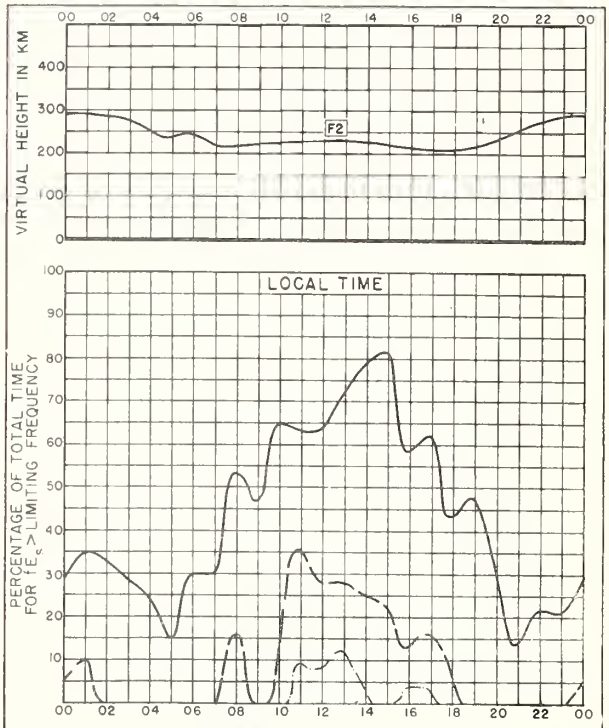

Fig. 112 CANBERRA, AUSTRALIA MAY 1940

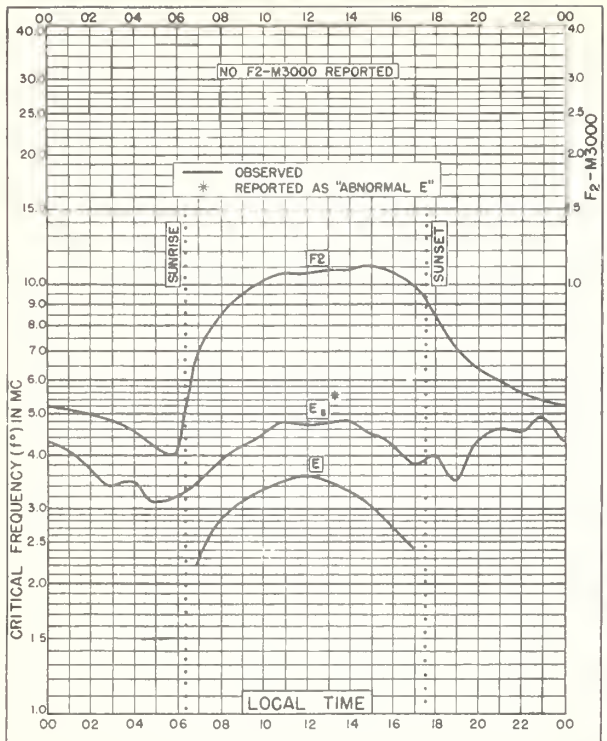

Fig. 113. CANBERRA, AUSTRALIA
35.3°S, 149.0°E APRIL 1940

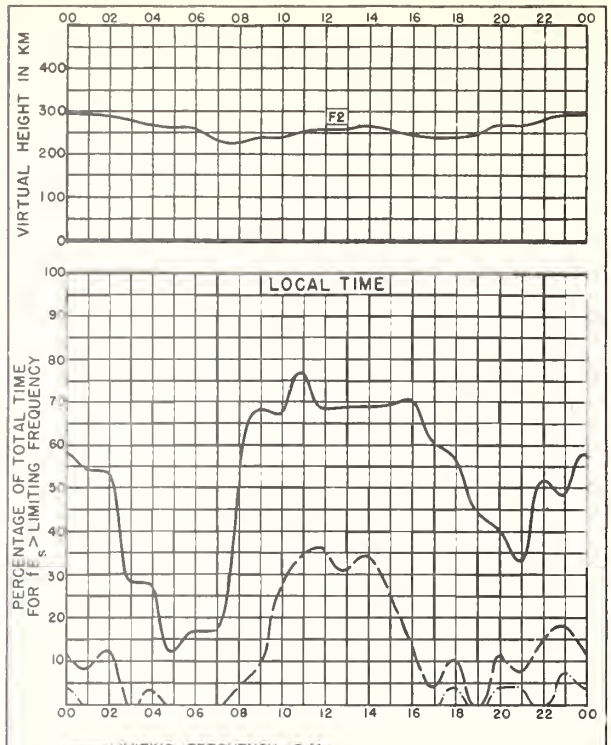

Fig. 114. CANBERRA, AUSTRALIA APRIL 1940

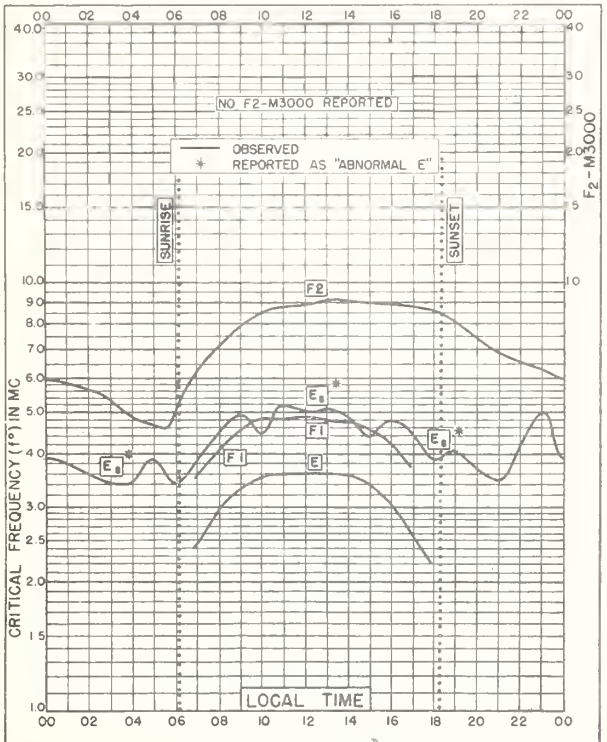

Fig. 115. CANBERRA, AUSTRALIA
35.3°S, 149.0°E MARCH 1940

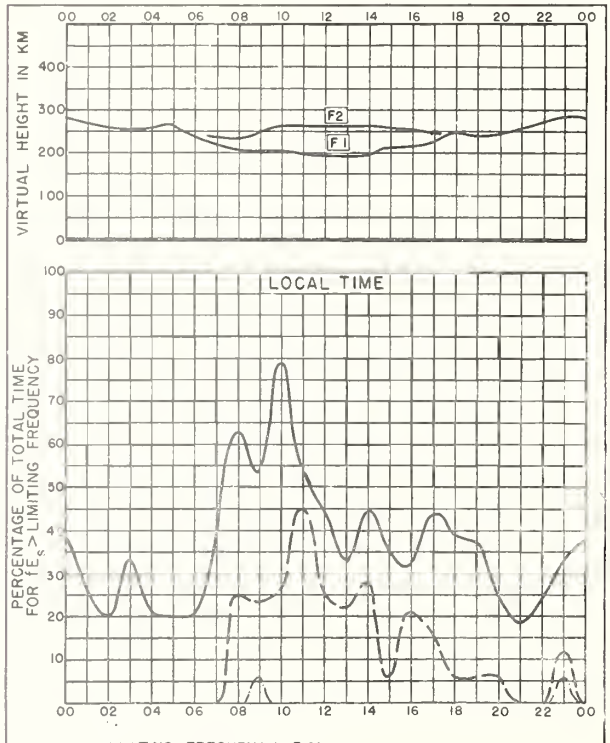

Fig. 116. CANBERRA, AUSTRALIA MARCH 1940

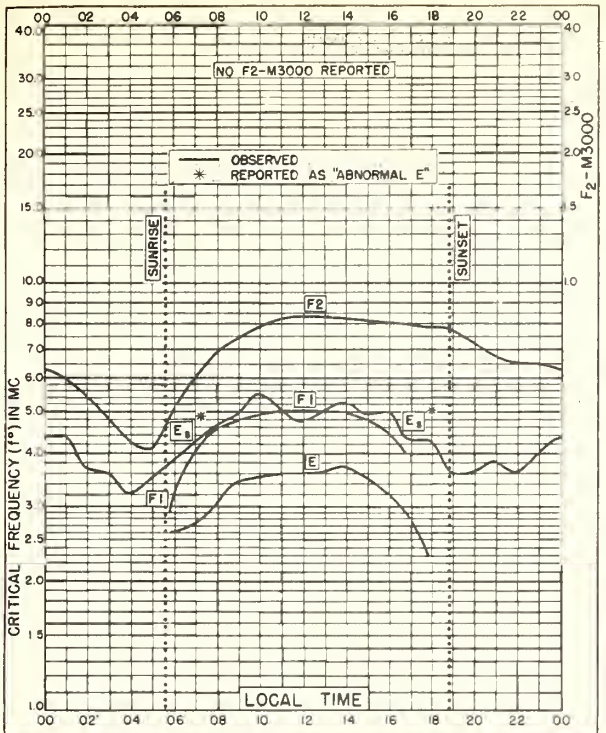

Fig. 117. CANBERRA, AUSTRALIA
35.3°S, 149.0°E FEBRUARY 1940

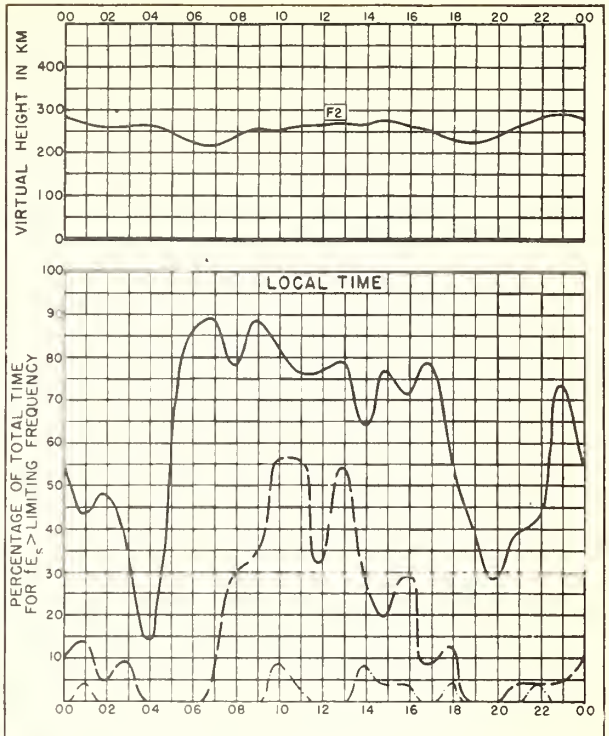

Fig. 118. CANBERRA, AUSTRALIA FEBRUARY 1940

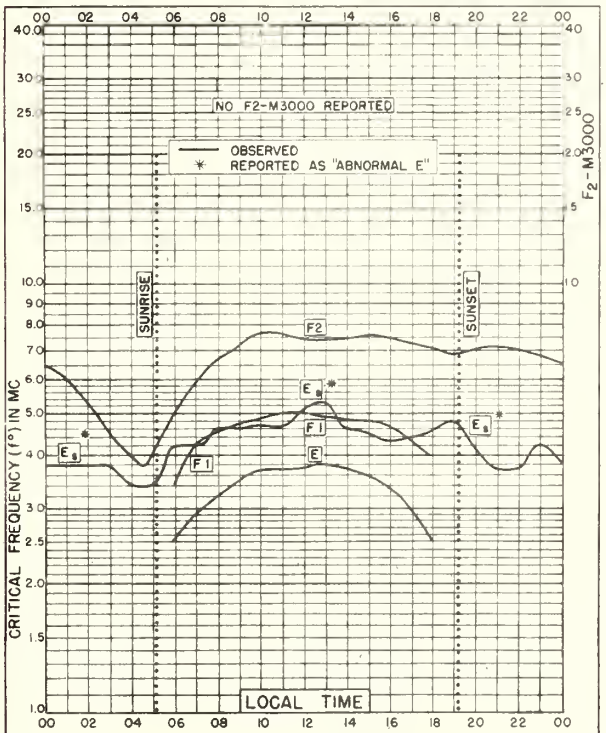

Fig. 119. CANBERRA, AUSTRALIA
35.3°S, 149.0°E JANUARY 1940

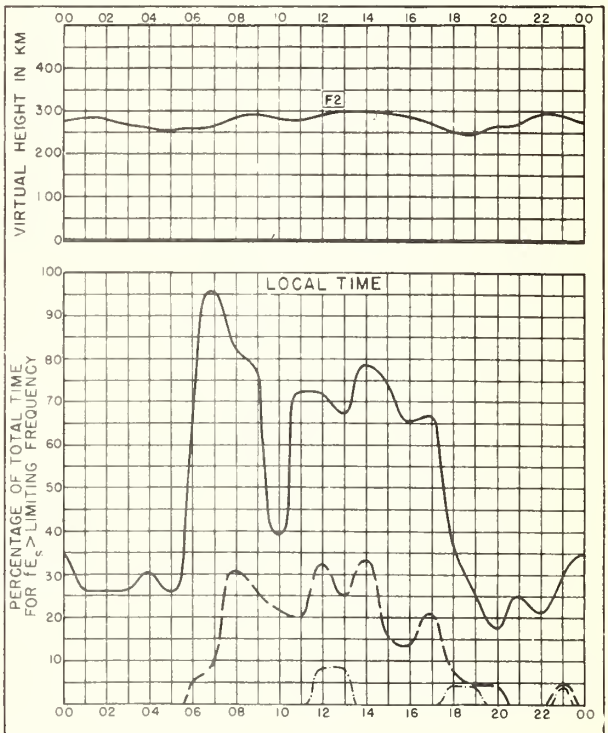

Fig. 120. CANBERRA, AUSTRALIA JANUARY 1940

Index of Tables and Graphs of Ionospheric Data

in CRPL-F43

Index (Continued)

Index (Continued)

CRPL and IRPL Reports

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. (War Dept. TB 11–499–, monthly supplements to TM 11–499; Navy Dept. DNC–13–1 ( ), monthly supplements to DNC–13–1.)
CRPL–F. Ionospheric Data.

Quarterly:
*IRPL–A. Recommended Frequency Bands for Ships and Aircraft in the Atlantic and Pacific.
*IRPL–H. Frequency Guide for Operating Personnel.

Nonscheduled reports:
CRPL–1–1. Prediction of Annual Sunspot Numbers.
CRPL–1–3. Some Methods for General Prediction of Sudden Ionospheric Disturbances.
CRPL–7–1. Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records.
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 *F*2-layer Radio Transmission Throughout the Solar Cycle.
- R16. Predicted *F*2-layer Frequencies Throughout the Solar Cycle, for Summer, Winter, and Equinox Season.
- R17. Japanese Ionospheric Data—1943.
- R18. Comparison of Geomagnetic Records and North Atlantic Radio Propagation Quality Figures—October 1943 Through May 1945.
- R19. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for June.
- R20. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for September.
- R21. Notes on the Preparation of Skip-Distance and MUF Charts for Use by Direction-Finder Stations. (For distances out to 4000 km.)
- R22. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for December.
- 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 Predictions 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.
- R28. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for January.
- 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.
- R32. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for February.
- R33. Ionospheric Data on File at IRPL.
- R34. The Interpretation of Recorded Values of *fEs*.
- R35. Comparison of Percentage of Total Time of Second-Multiple *Es* Reflections and That of *fEs* in Excess of 3 Mc.

IRPL–T. Reports on tropospheric propagation:
- T1. Radar operation and weather. (Superseded by JANP 101.)
- T2. Radar coverage and weather. (Superseded by JANP 102.)

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

---

*Items bearing this symbol are distributed only by U. S. Navy. They are issued under one cover as the DNC–14 series.