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IONOSPHERIC DATA

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CENTRAL RADIO PROPAGATION LABORATORY
NATIONAL BUREAU OF STANDARDS
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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 l = 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^oF2 (and f^oE 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^oF2, as equal to or less than f^oF1.
   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^oE, 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 67 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.

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.
- Kermadec 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 (Geophysical Institute of 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^oF2 is less than or equal to f^oF1, 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 Zürich sunspot numbers were used in constructing the contour charts.

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

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

The data given in tables 68 to 79 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 80 presents ionosphere character figures for Washington, D.C., during January 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 81 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 January 1948.

Table 82 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Brentwood and Somerton, England, receiving stations of Cable and Wireless Ltd. on January 19, 1948.

Table 83 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, December 1947, 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 for the North Atlantic are prepared from radio traffic and ionospheric data reported to the CRPL, in the manner described in detail in report IRPL-R31, "North Atlantic Radio Propagation Disturbances, October 1943 through October 1945," issued February 1, 1946.

The radio propagation quality figures for the North Pacific are prepared from radio traffic and ionospheric data reported to the CRPL, in a manner similar to that of IRPL-R31. The master scale of IRPL-R31 was used to formulate conversion scales for the North Pacific reports. Beginning with CRPL-F23, issued July 1946, the North Pacific radio propagation quality figures reported are prepared from these revised conversion scales.

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

SOLAR CORONAL INTENSITIES OBSERVED AT CLIMAX, COLORADO

In tables 84a and 84b are listed the intensities of the green (5303A) line of the emission spectrum of the solar corona as observed during January 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, P, 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 85a and 85b give similarly the intensities of the first red (6374A) coronal line; tables 86a and 86b list the intensities of the second red (6704A) coronal line. The following symbols are used in tables 84, 85, and 86: a, observation of low weight; -, corona not visible; and x, position-angle not included in plate estimates.

Table 87 gives details of the Climax observations from December 1946 through December 1947. The first column lists the Greenwich date of observation; the next six columns give the threshold or lowest observable intensity of 5303A for each spectrum plate centered at astronomical position angles 45°, 90°, 135°, 225°, 270°, and 315° respectively; the last two columns indicate the observer and the person responsible for the intensity estimates of the observation. This table is a continuation of table 1 of CRPL-1-4; a similar table will appear henceforth at intervals of six months.

AMERICAN AND ZÜRICH 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 January 1948, a new method of reduction of observations is employed such that each observer is assigned a scale-determining "observatory coefficient," ultimately referred to Zürich observations in a standard period, December 1944 to September 1945, and a statistical weight, the reciprocal of the variance of the observatory coefficient. The daily numbers listed in the table are the weighted means of all observations received for each day. Details of the procedure 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.

ERRATA

1. CRPL-F41, page 12, table 14: Sweep should read "2.8 Mc to 13.0 Mc in 8 minutes, supplemented by manual operation."

2. CRPL-F41, page 11, table 11: Change latitude to 32.3°N.

Table 1

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	4.4						2.9
01	275	4.4						2.8
02	265	4.4						2.9
03	250	4.4						2.9
04	250	4.2						2.9
05	250	3.9						2.9
06	250	3.8						2.9
07	240	4.2						3.0
08	230	7.8			120	2.1		3.4
09	230	9.8			110	2.7		3.4
10	220	10.8	205		110	3.1	3.3	3.2
11	230	12.4	210		100	3.3		3.2
12	230	12.3	200		105	3.5		3.1
13	230	12.3	200		100	3.5		3.1
14	230	11.8	200		110	3.3		3.0
15	230	11.6	200		110	3.0		3.0
16	230	(11.2)			110	2.6		3.1
17	220	(10.5)			135	1.9		3.2
18	210	9.5						3.0
19	220	8.5						3.0
20	220	7.1						3.1
21	230	5.8						3.1
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) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	4.5						
01	300	4.5						
02	300	4.3						
03	315	4.0						
04	(305)	3.4						
05	(300)	3.3						
06	300	4.2						
07	300	3.9						
08	300	4.7						
09	290	5.5						
10	275	6.3						
11	280	6.7						
12	270	8.0						
13	270	8.2						
14	265	8.0						
15	270	7.4						
16	290	6.7						
17	280	6.0						
18	300	6.0						
19	300	5.9						
20	300	5.6						
21	300	5.6						
22	300	5.4						
23	300	4.8						

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) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	320	3.2					5.6	2.8
01	352	3.2					5.6	2.8
02	350	3.5					5.6	2.5
03	350	4.1					5.6	2.6
04	340	4.4					5.4	2.6
05	305	4.6					5.5	2.6
06	290	4.7					4.8	2.6
07	295	4.2					3.0	2.6
08	270	4.2				1.2	3.0	2.8
09	260	5.3				1.5	2.8	3.0
10	250	6.9				1.9	2.8	3.1
11	240	8.6				2.0	2.8	3.1
12	240	10.2				2.0	2.7	3.1
13	240	11.2				1.9	2.8	3.1
14	234	10.8				1.5	1.6	3.1
15	230	10.1				1.1	2.6	3.0
16	230	9.3					2.8	3.1
17	226	7.2					2.6	3.2
18	235	5.1					2.9	3.1
19	260	3.5					2.9	3.0
20	276	3.4					3.0	3.0
21	285	3.0					3.2	3.0
22	300	3.4					4.2	3.0
23	320	3.2					4.8	3.0

Time: 150.0°W.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes.

Table 4

Churchill, Canada (58.8°N, 94.2°W) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	4.6					3.8	
01	290	4.2					3.6	
02	290	4.2					3.6	
03	300	3.9					3.2	
04	(305)	(3.6)					3.3	
05	330	3.6					3.4	
06	330	4.6					3.5	
07	310	4.8					3.4	(2.8)
08	(310)	5.6					3.5	(2.9)
09	280	6.8				E	2.6	2.9
10	265	8.6	270	5.8		E		3.1
11	280	10.2	290	5.9		2.8		3.1
12	270	11.2		5.9				3.1
13	270	12.3		5.9				2.9
14	260	12.4	260	5.9		E		2.9
15	260	12.8	270	5.9				3.0
16	250	12.0	260	6.0				3.0
17	280	9.6					2.5	(2.9)
18	290	5.8		3.6			2.6	(2.9)
19	290	(5.8)		3.6			3.4	(2.8)
20	300	(5.1)		3.2			3.4	
21	300	4.8		2.8			3.5	
22	295	(5.2)					3.6	
23	300	4.8					4.0	

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) December 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	345	2.7						2.6
01	340	2.8						2.5
02	370	2.8						2.5
03	360	2.9						2.6
04	350	2.9						2.5
05	340	2.9						2.5
06	310	2.8						2.6
07	280	3.6						2.5
08	240	7.4			170	2.0		3.1
09	230	10.4			120	2.5		3.3
10	230	13.0			100	2.6		3.2
11	240	13.5			100	2.8		3.2
12	240	13.8			100	2.9		3.2
13	230	13.3			100	2.8		3.2
14	230	12.4			110	2.6		3.2
15	230	11.0			120	2.2		3.2
16	220	9.3			120			3.2
17	220	7.1						3.1
18	220	5.0						3.3
19	240	3.2						3.2
20	270	2.4						3.0
21	280	2.4						2.9
22	300	2.6						2.8
23	315	2.6						2.6

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) December 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	270	3.8						(2.8)
01	275	3.6					2.0	(2.7)
02	300	(3.5)					3.0	(2.7)
03	300	3.8					3.2	(2.6)
04	280	3.6					2.8	(2.6)
05	280	3.6					2.0	(2.7)
06	270	3.4					2.1	(2.7)
07	270	3.6					2.0	(2.7)
08	260	4.4			E	E	2.0	(2.8)
09	240	7.2			110	2.0		3.1
10	230	9.7			110	2.5		3.1
11	235	11.3			110	2.8		3.1
12	230	12.1			110	2.9		3.0
13	230	12.8			120	2.9		3.0
14	240	13.2			120	2.7		3.0
15	230	13.2			120	2.4		3.0
16	230	12.8			140	2.0	1.8	3.0
17	220	12.0			E	E	1.8	3.0
18	220	10.4						3.0
19	220	9.0						3.0
20	225	7.0						3.0
21	235	5.8						(2.9)
22	250	4.9						(3.0)
23	260	4.1						(2.8)

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

Table 7

St. John's, Newfoundland (47.6°N, 52.7°W) December 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	330	2.8						2.9
01	330	2.8						2.9
02	330	2.9						3.0
03	330	2.8						3.0
04	320	3.0						3.0
05	310	2.9						3.0
06	310	3.0						3.0
07	290	3.6						3.1
08	260	6.6					2.2	3.1
09	250	10.3			120	2.5	3.3	3.0
10	250	12.3			120	2.8	3.1	3.0
11	250	13.4			120	3.0	3.3	2.9
12	250	13.6			130	3.1	3.2	2.9
13	250	13.4			120	3.0	3.2	2.9
14	260	13.1			130	2.8	2.9	2.9
15	260	13.0			130	2.6		2.9
16	250	12.3				1.8	2.0	3.0
17	230	11.2						2.9
18	230	9.9						2.9
19	240	8.0						2.9
20	260	6.4						2.9
21	290	5.0						2.9
22	310	4.0						2.9
23	320	3.2						3.0

Time: 52.5°W.
Sweep: 2.0 Mc to 18.0 Mc, manual operation.

Table 8

Ottawa, Canada (45.5°N, 75.8°W) December 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	300	4.4						2.8
01	310	3.9						2.8
02	320	3.8						2.8
03	320	3.5						2.8
04	310	3.4						2.9
05	300	3.7						2.9
06	300	3.7						2.9
07	280	4.1						2.9
08	260	6.8						2.8
09	240	10.0			120	2.5		2.9
10	240	11.7			120	2.8		2.9
11	240	12.3			130	2.8		2.9
12	250	13.0			130	3.1		2.7
13	250	12.9			130	3.0		2.7
14	250	12.8			125	2.8		2.7
15	250	12.6			130	2.5		2.8
16	250	12.1						2.8
17	240	11.1						2.7
18	250	9.6						2.8
19	250	8.5						2.8
20	260	6.7						2.8
21	270	5.9						2.8
22	295	5.0						2.8
23	300	4.5						2.8

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

Table [illegible]

Boston, Massachusetts (42.4°N, 71.2°W) December 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	282	5.0						2.6
01	298	4.8						2.6
02	280	4.9						2.7
03	270	4.7					1.2	2.7
04	275	4.5					1.9	2.7
05	260	4.4					1.8	2.7
06	268	4.4						2.8
07	250	6.0						2.9
08	245	9.8						3.1
09	240	11.5						3.0
10	245	12.2						3.0
11	245	13.0						3.0
12	250	12.8						2.9
13	250	12.8						2.9
14	250	13.0						2.9
15	240	12.9						2.8
16	245	12.0						2.9
17	250	10.9						2.9
18	250	10.0						2.9
19	250	8.8						2.9
20	250	6.9						2.8
21	250	5.8						2.8
22	275	5.4						2.8
23	278	5.2						2.7

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

Table [illegible]

San Francisco, California (37.4°N, 122.2°W) December 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	320	3.1					2.5	2.6
01	300	3.2					2.4	2.7
02	280	3.4						2.7
03	280	3.4						2.8
04	280	3.2						2.7
05	300	3.4						2.7
06	300	3.2						2.8
07	260	4.9					2.4	2.8
08	220	7.9			120	2.3		3.6
09	220	10.0			110	2.7		3.4
10	220	11.0			110	3.3		3.2
11	230	12.0	220		110	3.5		3.2
12	220	12.0			110	3.5		3.1
13	230	12.0			110	3.4		3.1
14	230	11.9			110	3.4		3.0
15	235	11.7			110	3.0		3.1
16	230	11.0			110	2.4		3.2
17	210	9.7						3.2
18	220	8.0					2.4	3.2
19	220	7.0					2.5	3.2
20	220	4.9					2.4	3.2
21	240	3.4					2.4	3.2
22	280	2.7					2.6	3.0
23	300	2.8					2.7	2.8

Time: 120.0°W.
Sweep: 1.4 Mc to 18.5 Mc in 4 minutes 30 seconds, automatic operation.

Table 11

White Sands, New Mexico (32.3°N, 106.5°W) December 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	300	3.4					3.4	2.7
01	300	3.6					3.8	2.7
02	300	3.6					3.3	2.7
03	300	3.6					3.2	2.7
04	280	3.7					3.1	2.8
05	300	3.5					3.2	2.7
06	280	3.6					3.3	2.8
07	240	6.4					3.3	3.0
08	230	9.4			120	2.6	4.1	3.2
09	230	10.7			120	3.2	5.0	3.1
10	220	11.8			120	3.4	5.4	3.1
11	220	12.0			120	3.6	5.4	3.0
12	230	12.3			120	3.6	5.3	2.9
13	230	12.2			110	3.6	5.6	2.9
14	240	11.8			110	3.5	5.3	2.9
15	240	11.6			120	3.2	5.1	2.9
16	240	11.0			120	2.6	4.7	3.0
17	220	10.0					3.9	3.0
18	220	8.4					3.3	3.0
19	230	7.3					3.4	3.1
20	225	5.5					4.2	3.1
21	240	4.3					3.5	3.0
22	260	3.4					3.5	2.9
23	290	3.4					3.7	2.8

Time: 105.0°W.
Sweep: 0.79 Mc to 14.0 Mc in 2 minutes.

Table 12

Wuchang, China (30.6°N, 114.4°E) December 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	250	5.0						2.8
01	250	4.2						2.8
02	270	4.0						2.8
03	260	3.8						2.8
04	260	3.6						3.0
05	250	3.2						2.8
06	260	3.1						2.9
07	240	6.6			150	1.7		3.1
08	220	10.5			100	2.3		3.3
09	220	12.5			100	2.9		3.2
10	220	13.5	205	6.0	100	3.2		3.2
11	220	13.5	200	5.4	100	3.4		3.1
12	220	14.0	210	7.1	100	3.6		3.0
13	240	13.4	200	6.4	100	3.5		3.0
14	260	13.7	210	6.6	100	3.4		3.0
15	230	13.4	220	5.6	100	3.1		3.0
16	225	13.5	210	4.6	100	2.7		3.2
17	210	12.4			100	2.1	2.2	3.2
18	200	10.9			90		2.8	3.2
19	200	8.9					2.7	3.1
20	200	8.6					2.2	3.2
21	200	7.8						3.2
22	210	6.4						3.0
23	230	4.9						2.7

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

Table 13

aton Rouge, Louisiana (30.5°N, 91.2°W) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	4.0						2.9
01	300	4.0						2.8
02	300	4.0						2.8
03	320	4.0						2.8
04	310	4.0						2.8
05	300	4.0						2.9
06	290	4.3						3.0
07	280	7.3						3.2
08	285	9.5	240		120	2.6		3.2
09	290	11.1	240		120	3.2		3.2
10	290	11.5	230		120	3.5		3.0
11	300	11.9	230		120	3.7		3.0
12	300	12.1	230		120	3.7		2.9
13	300	12.0	240		120	3.7		2.9
14	300	11.7	240		120	3.5		2.9
15	300	11.5	250		120	3.1		2.9
16	300	11.0	250		120	2.4	3.5	2.9
17	280	9.6						3.0
18	260	8.3						3.0
19	265	7.3					3.8	3.0
20	250	5.6						3.0
21	270	5.0						3.1
22	280	4.3						3.0
23	300	4.0						2.9

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

Table 14

Okinawa I. (26.3°N, 127.7°E) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		7.2					2.0	2.7
01		6.2						(2.9)
02		6.1						3.0
03		5.4						2.9
04		(5.2)					1.9	(3.0)
05		(4.5)					1.9	(2.7)
06		4.2					2.0	2.8
07		6.7					2.0	3.0
08		10.8				(2.9)	3.2	3.4
09		12.9					4.4	3.3
10		(13.7)					4.8	(3.3)
11		(13.0)					5.0	(3.1)
12		14.1					5.0	(3.0)
13		(14.4)					5.4	(2.9)
14		(14.6)					5.4	(2.9)
15		(14.5)					5.2	(3.0)
16		(14.5)					5.0	(3.0)
17		(13.8)				(2.6)	4.0	(3.0)
18		(12.6)					3.0	(3.1)
19		11.2					3.0	(3.0)
20		10.8					2.4	3.0
21		10.6					2.4	3.0
22		9.7					2.2	2.9
23		8.2					2.2	2.8

Time: 135.0°E.
Sweep: 1.8 Mc to 18.0 Mc in 15 minutes, manual operation.

Table 15

Maui, Hawaii (20.8°N, 156.5°W) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	6.0						2.8
01	280	5.7						2.8
02	260	4.6						3.0
03	280	3.8						2.7
04	320	4.0						2.5
05	360	3.7						2.4
06	350	3.9						2.4
07	300	6.6						2.8
08	260	11.2			140	2.7		2.9
09	255	13.9	250	5.7	140	3.2		3.0
10	260	14.0	250	5.2	130	3.5		3.0
11	260	14.0	240	5.7	130	3.7		2.9
12	300	14.3	240	6.4	130	3.8		2.7
13	310	14.7	240	6.0	130	3.8		2.7
14	310	14.8	250	6.2	130	3.6		2.7
15	290	14.8	250	5.8	130	3.4	4.3	2.7
16	250	14.1	250		130	3.1	4.1	2.8
17	250	13.3			130	2.6	3.7	2.9
18	235	12.1					3.3	3.0
19	230	9.9					3.0	2.8
20	260	8.6					3.0	2.8
21	250	8.9					2.5	(2.9)
22	250	9.4						3.0
23	250	7.5						2.8

Time: 150.0°.
Sweep: [illegible].2 Mc to 16.0 Mc in 1 minute; [illegible]

Table 16

San Júan, Puerto Rico (18.4°N, 66.1°W) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		5.8						2.9
01		4.9						2.8
02		4.5						2.8
03		4.0						2.8
04		(4.1)						2.7
05		4.5						2.6
06		4.6						2.7
07	280	7.6						3.0
08	280	10.9		3.3		E		3.0
09	280	12.4				3.2		3.0
10	285	12.3				3.5	4.2	2.9
11	290	11.8				3.8		2.8
12	300	11.5		6.5		3.8		2.7
13	325	11.4				3.8		2.6
14	325	11.4		5.8		3.8	4.8	2.7
15	315	11.2				3.5	4.7	2.7
16	300	10.9				3.2	4.5	2.7
17	300	10.7						2.8
18	290	10.0						2.8
19	290	9.0						2.8
20		7.5						2.8
21		7.2						2.8
22		6.7						2.8
23		6.3						2.8

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

Table 17

Guam I. (13.6°N, 144.9°E) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	10.6					4.5	2.9
01	230	9.4					4.5	3.0
02	230	8.6					3.1	3.1
03	220	7.4					3.0	3.1
04	230	6.4					3.0	3.0
05	240	5.6					3.4	3.0
06	240	5.3					3.0	3.0
07	270	8.3					4.0	2.9
08	250	11.7					5.8	2.9
09	235	14.2					7.0	2.9
10	220	14.5					7.5	2.6
11	220	14.1					8.0	2.4
12	210	13.2					7.8	2.3
13	210	13.1					7.2	2.2
14	220	13.3					7.2	2.3
15	230	13.8					7.0	2.4
16	240	14.0					5.2	2.5
17	250	14.0					4.4	2.5
18	270	14.0					3.0	2.6
19	285	13.3					2.6	2.5
20	280	12.6					2.4	(2.4)
21	275	11.5					2.6	2.6
22	250	11.5					3.8	2.7
23	240	11.0					4.8	2.9

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

Table 18

Trinidad, Brit. West Indies (10.6°N, 61.2°W) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	7.0						3.1
01	230	5.0						3.1
02	250	3.7						2.9
03	280	3.6						2.7
04	300	3.6						2.6
05	280	4.2						2.8
06	270	5.4					2.2	2.8
07	250	9.4			120	2.3	2.8	3.1
08	240	11.6			120	3.1	3.4	3.1
09	260	12.8	240	(5.0)	120	3.5	4.2	3.1
10	270	12.8	220	(5.2)	120	3.7	4.4	3.0
11	270	12.2	230	5.2	120	3.9	4.6	2.9
12	280	11.8	220	5.4	120	3.9	4.8	2.7
13	300	11.9	220	6.0	120	3.9	4.7	2.7
14	320	11.8	240	6.0	120	3.8	4.8	2.7
15	285	11.2	240	5.4	120	3.6	4.6	2.6
16	260	11.2	245	5.1	120	3.2	4.4	2.7
17	260	11.4			120	2.6	3.8	2.8
18	250	10.8					3.2	2.8
19	250	9.6					3.0	2.8
20	250	8.7					2.6	2.8
21	280	8.3					2.6	2.7
22	260	8.8					2.4	2.8
23	240	8.3						2.9

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

Table 19

Palmyra I. (5.9°N, 162.1°W) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	(9.5)					4.0	(2.8)
01	275	(8.0)					3.9	(2.8)
02	290	(7.5)					3.8	(2.9)
03	290	(6.8)					3.3	(2.9)
04	290	(6.7)					3.1	2.9
05	270	(6.6)					3.4	(2.8)
06	265	6.4					3.3	2.8
07	260	9.5			130	2.4	3.8	2.9
08	250	[illegible]			110	3.1	4.2	2.8
09	240	14.2	230		110	3.6	4.0	2.7
10	290	14.5	220	5.1	110	3.8	4.0	2.5
11	300	13.8	220	5.2	110	4.0		2.3
12	310	13.3	210	5.2	110	4.1		2.3
13	370	[illegible]	210	5.2	110	4.0		2.3
14	400	13.0	210	5.0	110	3.9		2.3
15	410	13.6	230	5.6	110	3.6	3.6	2.4
16	400	14.2	250		110	3.3	3.9	2.4
17	250	14.3	250		110	2.8	4.0	2.6
18	290	14.4			150		3.8	2.6
19	300	13.9					3.4	2.6
20	300	13.8					2.7	2.4
21	300	13.4					3.5	2.4
22	280	12.7					3.5	(2.6)
23	270	11.0					[illegible]	(2.7)

Time: 157.5°W.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 36 seconds; 13.0 Mc to 16.0 Mc, manual operation.

Table 20

Huancayo, Peru (12.0°S, 75.3°W) December 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	360	(9.0)					2.8	2.4
01	340	(8.5)					2.9	2.6
02	360	(8.3)					2.9	2.7
03	290	(7.6)					2.8	2.8
04	250	6.8					2.9	3.0
05	250	6.4					2.8	3.0
06	260	9.6				2.3	2.8	3.0
07	240	[illegible]				3.1	5.5	2.9
08	230	12.4				3.5	9.6	2.8
09	225	13.2				3.8	10.0	2.6
10	220	13.6				4.1	10.0	2.4
11	220	13.8				4.2	10.0	2.2
12	210	13.8					10.0	2.2
13	210	13.9					10.0	2.2
14	210	14.0				4.0	10.0	2.2
15	220	14.0				3.7	10.0	2.2
16	230	13.4				3.4	9.8	2.2
17	260	13.4				2.8	5.5	2.1
18	290	12.9				1.8	2.9	2.1
19	350	11.4						2.2
20	410	10.2						2.0
21	430	10.0						2.1
22	420	(10.0)						2.2
23	400	(9.4)						2.3

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

Table 21

Churchill, Canada (58.8°N, 94.2°W) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	310	(4.6)					4.8	
01	320	(5.4)					3.5	(2.7)
02	340	5.2					3.6	(2.7)
03	320	5.4					2.6	(2.7)
04	340	5.0					3.2	(2.6)
05	355	4.8					2.8	(2.6)
06	330	5.2					3.4	2.6
07	320	5.2				E	3.2	2.7
08	290	6.5				E	2.7	2.8
09	260	9.0						2.9
10	270	10.1						2.9
11	265	11.5				2.6		2.9
12	260	12.7				2.7		2.8
13	260	13.4			150	2.6		2.8
14	250	13.8			E	E		2.8
15	260	13.6			E	E		2.8
16	280	11.7				E		2.8
17	290	9.9					2.4	(2.8)
18	300	7.1		(3.4)			3.0	(2.8)
19	300	6.4					3.1	(2.8)
20	320	(5.9)					3.7	
21	320	(6.0)					3.5	(2.6)
22	320	(5.6)					3.8	
23	300	(5.5)					3.7	

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

Table 22

Wuchang, China (30.6°N, 114.4°E) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	7.1						2.9
01	240	6.3						2.9
02	240	5.8						2.9
03	235	5.0						3.0
04	230	4.4						3.2
05	250	3.8						2.8
06	280	3.9						2.8
07	240	8.5			138	1.8		3.2
08	220	12.5			100	2.5		3.3
09	220	13.7			100	3.0		3.2
10	215	14.5	210		100	3.3		3.1
11	230	14.7	205	6.6	95	3.5		3.0
12	250	15.3	210	7.3	93	3.6		2.9
13	242	16.0	210	6.0	95	3.6		2.8
14	225	16.0	215	6.6	100	3.5		2.8
15	230	15.4	220	6.5	100	3.2		2.8
16	220	15.0	220	6.4	100	2.8		2.9
17	220	14.5			100	2.3		2.9
18	218	14.0					2.4	3.0
19	210	12.4					2.0	3.1
20	218	12.0					1.7	3.0
21	210	10.6						3.1
22	220	8.9						3.0
23	230	7.5						2.9

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

Table 23

Okinawa I. (26.3°N, 127.7°E) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		(9.1)					2.2	2.6
01		8.6					(2.3)	2.8
02		8.8					2.0	2.9
03		7.9					2.0	3.1
04		5.5					1.9	3.0
05		4.4					2.0	2.6
06		4.3					2.0	2.5
07		8.6					3.0	2.8
08		S					4.0	S
09		(13.9)					4.5	3.4
10		S					4.8	S
11		S					4.8	S
12		S					4.8	S
13		(16.4)					5.2	3.2
14		S					5.2	S
15		S					5.4	S
16		S					5.2	S
17		S					4.6	S
18		S					3.5	S
19		S					2.8	S
20		S					2.1	S
21		S					2.4	S
22		S					2.4	S
23		(10.4)					2.6	3.1

Time: 135.0°E.
Sweep: 1.8 Mc to 18.0 Mc in 15 minutes, manual operation.

Table 24

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		10.2					1.9	3.1
01		9.3					1.8	3.1
02		8.1					1.8	3.0
03		7.2					1.8	3.0
04		6.6					1.8	3.0
05		6.0					2.4	3.1
06		8.8				2.6	3.0	2.9
07		12.2				3.5	3.4	2.8
08		14.2				(3.8)	4.6	2.6
09		13.7				(4.2)	5.2	2.5
10		12.4					5.2	2.3
11		12.0					5.6	2.3
12		12.2				(4.4)	6.2	2.2
13		12.2					6.0	2.2
14		12.0					5.4	2.2
15		12.1				3.6	5.1	2.2
16		12.0				(2.8)	4.6	2.2
17		11.9				2.0	4.1	2.3
18		11.4					3.2	2.2
19		10.8					1.8	2.0
20		10.7					1.9	2.3
21		10.8					3.0	2.5
22		10.8					3.0	2.7
23		10.4					2.6	3.0

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

Table 26

Huancayo, Peru (12.0°S, 75.3°W) November 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	275	8.9					2.8	2.6
01	260	8.4					2.8	2.7
02	250	8.4					2.8	2.8
03	240	7.9					2.8	3.0
04	230	7.4					2.8	3.0
05	250	6.6					2.8	2.9
06	260	9.7				2.4	2.9	3.0
07	245	12.2				3.2	5.5	2.8
08	230	13.6				3.6	9.8	2.6
09	230	14.6				3.9	9.8	2.4
10	220	14.8	220	5.5		4.0	10.0	2.3
11	220	14.8					10.0	2.2
12	220	14.3	210	6.4			10.0	2.1
13	220	14.0	215	5.4			10.0	2.1
14	220	13.8	210	5.5			10.0	2.0
15	230	12.9				3.7	10.0	2.0
16	250	12.9				3.3	10.0	2.0
17	270	11.9				2.6	5.5	2.0
18	305	11.2						2.1
19	400	10.1						2.0
20	410	9.5						2.0
21	400	9.2						2.1
22	350	8.8						2.2
23	300	8.4						2.4

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

Table 26

Johannesburg, Union of S. Africa (26.2°S, 28.0°E) November 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	280	7.8						2.8
01	270	7.0						2.8
02	280	6.6						2.8
03	280	6.3						2.8
04	270	5.7						2.8
06	260	6.9						2.9
06	230	7.6			110	2.5		3.0
07	230	9.3	220		100	3.1		3.0
08	(275)	10.6	220	(5.0)	100	3.5		2.8
09	300	11.4	210	5.0	100	3.8		2.8
10	325	11.8	220	6.0	100			2.6
11	370	12.0	(205)	6.7	100			2.6
12	360	12.3	(200)	6.4	100			2.6
13	370	12.3	230	6.2	100	(4.0)		2.6
14	365	12.4	(220)	6.2	100	(3.9)		2.6
15	360	12.2	220	6.0	100	3.7		2.6
16	330	11.7	230	5.6	100	3.5		2.6
17	(300)	11.5	240	5.5	110	3.0	3.6	2.7
18	250	11.4			100	(2.3)	3.0	2.8
19	250	11.0					2.6	(2.8)
20	250	10.3						2.8
21	250	9.4						2.8
22	260	8.6						2.8
23	270	8.0						2.8

Time: 30.0°E.
Sweep: 2.0 Mc to 15.0 Mc in 8 seconds.

Table 27

Peiping, China (39.9°N, 116.4°E) October 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00		7.3						3.0
01		7.2						3.1
02		7.0						3.2
03		7.0						3.2
04		6.7						3.1
06		6.8						3.1
06		7.2						3.2
07		9.7						3.5
08		11.4						3.7
09		11.7						3.7
10		12.0						3.7
11		12.4						3.6
12		12.2						3.6
13		12.0						3.7
14		12.1						3.5
15		12.2						3.6
16		12.0						3.5
17		11.6						3.5
18		11.4						3.6
19		10.6						3.5
20		9.8						3.3
21		9.4						3.4
22		8.8						3.3
23		8.0						3.1

Time: 120.0°E.
Sweep: 1.7 Mc to 20.0 Mc in 15 minutes, manual operation.

Table 28

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	300	7.0					2.6	2.5
01	320	7.0					2.6	2.6
02	300	7.0					2.8	2.5
03	295	6.1					2.2	2.5
04	290	5.8					2.8	2.4
05	310	5.9					2.2	2.4
06	270	8.1			120	2.0	2.4	2.8
07	250	12.2			110	2.6	2.8	3.0
08	250	13.8	250		105	3.2	4.2	2.9
09	250	14.2	230		105	3.6	4.6	2.8
10	270	14.5	230		110	3.8	5.2	2.8
11	280	14.7	240		110	3.8	5.0	2.7
12	300	14.9	240		100	3.8	5.2	2.6
13	310	14.9	245		100	3.8	5.0	2.6
14	315	14.5	250		100	3.8	4.4	2.6
15	290	14.1	250		100	3.3	4.4	2.6
16	270	13.2	260		100	2.8	4.3	2.7
17	260	12.8	260		100	2.3	3.6	2.7
18	250	11.0	230				3.3	2.8
19	270	10.0					3.2	2.7
20	270	9.3					2.8	2.7
21	285	8.6					2.4	2.6
22	290	8.0					2.4	2.6
23	300	7.5					2.7	2.6

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc.

Table 29

Nanking, China (32.1°N, 119.0°E) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05								
06	280	6.7					1.8	2.6
07	265	11.6			120	2.3	2.4	2.8
08	270	13.0	250		130	3.1	4.0	2.9
09	285	14.0	260		120	3.6	4.6	2.6
10	300	14.0	260		120	3.7	4.8	2.7
11	320	14.0	245	7.4	120		4.4	2.5
12	355	14.3	260	7.6	120	4.2	5.0	2.5
13	360	14.8	260	7.2	105	4.0	4.6	2.5
14	380	15.0	260	7.0	120	3.9	3.9	2.4
15	360	15.0	260	6.8	120	3.4	3.7	2.4
16	340	14.5	260	(6.4)	120	3.2	3.4	2.5
17	300	14.2	255		125	2.5	3.7	2.5
18	280	13.2	245				3.0	2.5
19	280	12.6					2.8	2.5
20	280	12.0					2.1	2.5
21	270	11.0					2.4	2.5
22	245	10.4					2.1	(2.6)
23								

Time: 120.0°E.
Sweep: 1.7 Mc to 15.0 Mc in 20 minutes, manual operation.

Table 30

Chungking, China (29.4°N, 106.5°E) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	9.3					2.6	2.7
01	260	8.5						2.6
02	260	6.7						2.6
03	260	6.8						2.6
04	285	5.6						2.5
05	300	5.1					3.0	2.4
06	300	7.8					3.6	2.6
07	260	12.0					4.4	3.0
08	255	14.0			110	3.2	5.2	2.7
09	265	15.2	245		120	3.4	6.0	2.7
10	290	15.5	240				5.6	2.7
11	290	16.0	240				7.0	2.5
12	320	16.5	230	7.2	110	4.0	4.6	2.5
13	320	16.8	240	7.2			4.6	2.6
14	320	17.0	240	7.2	100	3.6	4.8	2.5
15	320	17.0	260	7.0	110	3.4	4.5	2.6
16	310	16.0	260		110	3.0	4.0	2.6
17	280	16.1	280		110	3.0	4.3	2.6
18	260	15.7					3.6	2.8
19	260	14.9					3.2	2.7
20	270	14.4						2.8
21	250	14.0						2.7
22	245	12.0						2.6
23	250	10.8					2.4	2.6

Time: 105.0°E.
Sweep: 1.7 Mc to 20.0 Mc in 15 minutes, manual operation.

Table 31

Fiji Is. (18.0°S, 178.2°E) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	11.5					2.6	
01	270	10.6					2.5	
02	300	10.6					2.5	
03	310	10.4					2.6	
04	290	10.5						
05	275	10.0						
06	255	11.0			100	2.1	2.8	
07	230	12.6			100	2.8		
08	220	12.6			100	3.3		
09	220	13.3			100	3.7		
10	230	D			100	3.8		
11	310	D	220	7.8	100	4.0	4.6	
12	385	D	220	7.2	100	4.0		
13	380	D	220	7.0	100	3.9		
14	390	D	230	7.0	100	3.8		
15	370	D	240	6.8	100	3.7		
16	255	D	260	6.5	100	3.4	4.5	
17	260	D			100	2.7	4.2	
18	270	13.0			100	1.7	3.7	
19	305	12.9					3.8	
20	325	12.6					2.7	
21	310	D					2.5	
22	295	13.0					2.6	
23	275	12.4					2.5	

Time: 180.0°E.
Sweep: Upper limit, 13.0 Mc.

Table 32

Bagneux, France (48.8°N, 2.3°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05								
06	280							
07	260							
08	250							
09	240							
10	260		220					
11	260		230					
12	250							
13	240		210					
14	280		220					
15	240		240					
16	245							
17	250							
18	250							
19	260							
20	270							
21	275							
22	310							
23								

Time: 0.0°.
Sweep: 4.0 Mc to 11.2 Mc in 12 minutes.

Table 33

Lanchow, China (36.1°N, 103.8°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	360	7.6						2.3
01	360	7.3						2.3
02	360	6.8						2.3
03	360	6.4						2.3
04	380	5.8						2.3
05	380	6.4						2.2
06	360	7.6						2.4
07	300	10.2			150	2.9	3.8	2.6
08	300	11.8	280		140	3.2	4.4	2.5
09	300	12.5	280		140	3.6	4.7	2.5
10	320	12.5	280		140		4.6	2.4
11	325	13.0	300		140		4.6	2.4
12	340	13.0	290		130		4.4	2.4
13	340	13.0	300		140		4.5	2.4
14	340	13.0	300		140		4.3	2.3
15	340	13.1	280		140		4.4	2.4
16	320	13.0	280		140		4.3	2.4
17	320	12.5	300		140	2.9	4.0	2.5
18	320	12.0					3.2	2.5
19		11.0						
20	320	9.8					4.0	2.5
21	335	8.8					3.8	2.4
22	340	8.2					3.5	2.4
23	360	8.5					3.2	2.3

Time: 105.0°E.
Sweep: 2.2 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 34

Delhi, India (28.6°N, 77.1°E) September 1947

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00	420	8.2						2.5
01	420	7.4						
02	420	7.5						
03	(420)	(7.0)						
04	420	7.0						2.6
05	390	7.3						
06	360	8.5						
07	360	11.1						
08	360	11.9						2.7
09	390	12.5						
10	390	12.6						
11	405	(13.0)						
12	420	(13.0)						2.7
13	420	(13.0)						
14	420	(13.0)						
15	420	(13.0)						
16	(405)	(12.7)						
17	(390)	(12.6)						
18		(12.5)						
19								
20	420	10.9						2.5
21	420	10.0						
22	435	9.2						
23	435	8.4						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**M3000, average values; other columns, median values.

Table 35

Bombay, India (19.0°N, 73.0°E) September 1947

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00								2.6
01								
02								
03								
04								
05								
06								
07	330	11.2						
08	360	11.8						2.8
09	450	12.6						
10	480	12.9						
11	510	(13.5)						
12		(13.7)						2.5
13	570	(13.8)						
14		(14.0)						
15		(14.4)						
16		(14.4)						2.5
17	(570)	14.5						
18	(570)	(14.7)						
19	525	14.7						
20	525	14.5						2.4
21	525	14.0						
22	570	13.7						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**M3000, average values; other columns, median values.

Table 36

Madras, India (13.0°N, 80.2°E) September 1947

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00								
01								
02								
03								
04								
05								
06								
07	375	10.7						
08	450	13.1						2.5
09	525	13.8						
10	540	(14.0)						
11	600	13.5						
12	600	13.2						2.1
13	600	13.1						
14	600	13.4						
15	660	13.6						
16	600	13.8						2.1
17	600	(13.8)						
18	600	(13.5)						
19	(600)	(13.0)						
20		(12.2)						
21		(12.0)						
22		12.0						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**M3000, average values; other columns, median values.

Table 37

Townsville, Australia (19.4°S, 146.5°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	230	9.3					2.4	2.9
01	240	8.6					1.8	2.8
02	240	7.5					2.5	2.7
03	250	7.0					2.2	2.6
04	280	6.5					2.4	2.6
05	295	6.5					2.1	2.7
06	280	7.6			145	1.5	2.3	2.9
07	240	11.0			100	2.6	2.9	3.2
08	240	12.0	225		100	3.3	3.0	(3.1)
09	250	12.0	225		100	3.7		(3.1)
10	250	12.0	210	(5.4)	100	3.9		
11	260	D		(5.6)	100	(4.0)		
12	295	12.0	200	6.0	100	(4.0)	4.6	(2.9)
13	325	12.0	200	7.0	100	(4.0)	4.8	(2.7)
14	345	12.0	200	7.0	100	3.9	4.8	(2.8)
15	330	12.0	220	7.0	100	3.6		2.7
16	305	11.8	230	(6.7)	100	3.3	2.5	2.7
17	250	(11.5)	250		100	2.8	3.0	2.8
18	260	11.5				1.8	3.0	2.8
19	250	11.0					2.4	2.8
20	250	10.5					2.5	2.7
21	260	10.5					2.0	2.9
22	255	10.5					2.4	2.8
23	250	10.1					2.4	2.8

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

Table 38

Bagneux, France (48.8°N, 2.3°E) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05								
06	250							
07	275		230					
08	320	(7.0)	220				4.7	
09	300	(7.6)	230					
10	350	(8.6)	230				4.6	
11	355		245					
12	350		230					
13	305							
14	(260)							
15	(280)							
16	310		240				(4.6)	
17	270							
18	270							
19	260							
20	270							
21	300						4.4	
22	320							
23								

Time: 0.0°.
Sweep: 4.0 Mc to 11.2 Mc in 12 minutes.

Table 39

Delhi, India (28.6°N, 77.1°E) August 1947

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	** F2-M3000
00	450	9.1						2.4
01	420	8.6						
02	420	8.5						
03	435	7.6						
04	420	7.7						2.5
05	420	7.7						
06	390	8.4						
07	360	9.7						
08	390	10.2						2.7
09	420	10.8						
10	420	11.6						
11	420	12.0						
12	420	(12.5)						2.6
13	420	(12.6)						
14	420	(12.4)						
15	420	(12.4)						
16	420	(12.2)						2.6
17	405	(12.0)						
18		(12.0)						
19		11.4						
20	420	10.7						2.5
21	420	10.2						
22	420	9.6						
23	420	9.4						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual [illegible]ion.
*Height at 0.83 f°F2.
**M3000, average values; other columns, median values.

Table 40

Bombay, India (19.0°N, 73.0°E) August 1947

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	** F2-M3000
00								2.6
01								
02								
03								
04								2.7
05								
06								
07	330	9.8						
08	360	11.0						2.8
09	450	11.7						
10	510	12.4						
11	540	13.0						
12	540	13.5						2.3
13	(585)	(13.9)						
14		(14.0)						
15	570	(14.2)						
16	540	14.4						2.3
17	540	(14.4)						
18	510	14.1						
19	510	13.8						
20	495	13.2						2.3
21	51[illegible]	12.9						
22	510	12.4						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**M3000, average values; other columns, median values.

Table 41

Madras, India (13.0°N, 80.2°E) August 1947

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00								
01								
02								
03								
04								
05								
06								
07	420	10.3						
08	480	11.4						2.5
09	540	11.6						
10	540	12.0						
11	570	11.5						
12	600	11.3						2.1
13	600	11.4						
14	600	11.8						
15	600	12.0						
16	600	12.0						2.1
17	600	11.8						
18	600	11.3						
19	570	11.5						
20	600	(11.0)						2.1
21	(480)	11.0						
22	480	11.2						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**M3000, average values; other columns, median values.

Table 42

Bagneux, France (48.8°N, 2.3°E) July 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05								
06	330	7.9	260					
07	305		245				4.8	
08	335	7.8	215				4.9	
09	365	9.3	220					
10	360	9.0	210					
11	410	8.5	210	5.6			4.6	
12	400	8.9	190	5.7				
13	400	8.9	210					
14	400	8.4	220					
15	388	8.2	240					
16	390	7.8	248					
17	350		230					
18	300							
19	285	8.6						
20	280	7.7						
21	310							
22	310							
23								

Time: 0.0°.
Sweep: 4.0 Mc to 11.2 Mc in 12 minutes.

Table 43

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	4.0					2.3	
01	270	3.9						
02	275	3.9						
03	280	3.9						
04	255	3.6						
05	235	3.1						
06	250	3.1						
07	230	4.0						
08	210	8.4			110	1.7	2.9	
09	210	10.8			110	2.5	3.5	
10	215	(11.2)			105	2.9	3.6	
11	210	(11.2)			105	3.1	3.5	
12	210	(11.6)			110	3.2	4.0	
13	210	(11.0)			100	3.1	4.3	
14	215	10.8			100	3.0	3.6	
15	210	(10.4)			105	2.6	3.6	
16	210	9.7			100	2.1	3.2	
17	210	8.5			110	1.6	(2.6)	
18	200	6.6						
19	210	5.4						
20	230	4.6						
21	245	4.2						
22	260	4.1						
23	260	4.1					(2.5)	

Time: Local.
Sweep: January 1 to 3: 2.0 Mc to 11.5 Mc, manual operation; January 3 to 31: 1.4 Mc to 16.6 Mc in 10 minutes, automatic operation.

Table 44*

Delhi, India (28.6°N, 77.1°E) December 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
0030		2.8						
0130		3.0						
0230		2.9						
0330		3.1						
0430		3.0						
0530		3.1						
0630		2.7						
0730		2.8						
0830		5.3						
0930		7.1						
1030		7.2						
1130		7.1						
1230		6.5						
1330		7.3						
1430		7.7						
1530		7.3						
1630		7.1						
1730		7.1						
1830		6.0						
1930		4.7						
2030		4.1						
2130		3.8						
2230		3.4						
2330		2.9						

Time: 97.5°E.
Sweep: Manual operation.
*Average values.

Table 45*

Delhi, India (28.6°N, 77.1°E) November 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
0030		3.0						
0130		3.0						
0230		3.0						
0330		3.1						
0430		3.2						
0530		3.1						
0630		2.9						
0730		3.4						
0830		6.9						
0930		7.8						
1030		8.1						
1130		8.2						
1230		8.1						
1330		8.4						
1430		8.9						
1530		9.0						
1630		8.7						
1730		8.1						
1830		7.2						
1930		5.2						
2030		4.5						
2130		4.0						
2230		3.0						
2330		3.0						

Time: 97.5°E.
Sweep: Manual operation.
*Average values.

Table 46*

Delhi, India (28.6°N, 77.1°E) October 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
0030		3.4						
0130		3.3						
0230		3.2						
0330		3.3						
0430		3.1						
0530		3.0						
0630		3.1						
0730		4.5						
0830		6.7						
0930		7.7						
1030		8.2						
1130		8.5						
1230		9.0						
1330		9.2						
1430		10.0						
1530		10.2						
1630		9.9						
1730		9.0						
1830		8.4						
1930		7.0						
2030		4.9						
2130		4.1						
2230		3.7						
2330		3.4						

Time: 97.5°E.
Sweep: Manual operation.
*Average values.

Table 47*

Delhi, India (28.6°N, 77.1°E) September 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
0030								
0130								
0230								
0330								
0430								
0530		2.9						
0630		3.5						
0730		4.7						
0830		5.8						
0930		6.8						
1030		7.4						
1130		8.0						
1230		8.5						
1330		10.2						
1430		10.5						
1530		10.3						
1630		9.6						
1730		8.8						
1830		7.9						
1930		7.0						
2030		6.1						
2130		5.0						
2230		4.2						
2330		3.4						

Time: 97.5°E.
Sweep: Manual operation.
*Average values.

Table 48*

Delhi, India (28.6°N, 77.1°E) August 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		3.9						
01								
02								
03								
04								
05		3.5						
06		4.1						
07		5.4						
08		6.1						
09		6.8						
10		6.9						
11		7.3						
12		8.2						
13		8.3						
14		8.6						
15		9.0						
16		9.4						
17		8.0						
18		8.0						
19		7.8						
20		7.0						
21		6.0						
22		5.2						
23								

Time: 82.5°E.
Sweep: Manual operation.
*Average values.

Table 49*

Delhi, India (28.6°N, 77.1°E) July 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05		4.6						
06		4.7						
07		5.2						
08		5.7						
09		6.4						
10		7.3						
11		7.7						
12		7.9						
13		8.3						
14		8.6						
15		9.1						
16		8.8						
17		8.2						
18		8.0						
19		8.4						
20		7.7						
21		7.3						
22		5.3						
23								

Time: 82.5°E.
Sweep: Manual operation.
*Average values.

Table 50*

Delhi, India (28.6°N, 77.1°E) June 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05		4.5						
06		5.6						
07		6.2						
08		6.3						
09		7.0						
10		7.5						
11		7.8						
12		9.0						
13		8.6						
14		8.2						
15		8.1						
16		8.1						
17		7.8						
18		7.4						
19		7.9						
20		7.8						
21		5.8						
22		5.9						
23								

Time: 82.5°E.
Sweep: Manual operation.
*Average values.

Table 51*

Delhi, India (28.6°N, 77.1°E) May 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05		4.4						
06		5.8						
07		7.0						
08		7.4						
09		8.0						
10		9.1						
11		10.4						
12								
13								
14								
15								
16								
17		10.1						
18		8.8						
19		9.5						
20		7.6						
21		7.4						
22		6.8						
23		6.8						

Time: 82.5°E.
Sweep: Manual operation.
*Average values.

Table 52*

Delhi, India (28.6°N, 77.1°E) April 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05		3.8						
06		5.5						
07		7.5						
08		8.0						
09		8.8						
10		9.2						
11		10.5						
12		12.0						
13		12.7						
14		13.0						
15		12.8						
16		11.5						
17		12.0						
18		10.5						
19		9.4						
20		8.2						
21		6.9						
22		6.3						
23		5.9						

Time: 82.5°E.
Sweep: Manual operation.
*Average values.

Table 53*

Delhi, India (28.6°N, 77.1°E) March 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05		3.3						
06		3.9						
07		6.8						
08		7.5						
09		8.9						
10		10.0						
11		10.7						
12		11.5						
13		12.1						
14		12.4						
15		12.1						
16		11.6						
17		10.9						
18		11.4						
19		8.7						
20		6.9						
21		5.3						
22		4.5						
23		4.0						

Time: 82.5°E.
Sweep: Manual operation.
*Average values.

Table 54*

Delhi, India (28.6°N, 77.1°E) February 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05		2.8						
06		2.9						
07		4.6						
08		6.6						
09		7.3						
10		8.6						
11		9.9						
12		10.3						
13		10.1						
14		10.1						
15		9.2						
16		9.0						
17		8.4						
18		7.3						
19		6.0						
20		5.1						
21		4.2						
22		3.7						
23		3.4						

Time: 82.5°E.
Sweep: Manual operation.
*Average values.

Table 55*

Delhi, India (28.6°N, 77.1°E) January 1942

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05								
06								
07								
08		6.4						
09		7.2						
10		7.8						
11		8.7						
12		9.5						
13		9.6						
14		9.4						
15		8.8						
16		8.1						
17		7.2						
18		6.3						
19		5.4						
20		4.8						
21		4.0						
22		3.4						
23		2.8						

Time: 82.5°E.
Sweep: Manual operation.
*Average values.

Table 56*

Canberra, Australia (35.3°S, 149.0°E) December 1939

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	258	8.1					5.1	
01	250	7.6					5.8	
02	261	6.7					4.7	
03	261	5.9					5.3	
04	265	5.5					4.7	
05	243	5.6				2.6#	4.2	
06	235	6.1				2.5	4.0	
07	262	6.6		4.2#		2.9	5.1	
08	272	7.2		4.4		3.2	6.0	
09	277	7.6		4.9		3.4	6.0	
10	288	8.2		5.1		3.5	6.5	
11	296	8.5		5.2		3.6	6.0	
12	284	8.8		5.2		3.6	6.4	
13	290	8.6		5.2		3.6	6.1	
14	281	8.7		5.1		3.6	5.6	
15	280	8.8		5.2		3.6	5.7	
16	273	8.8		4.7		3.3	4.8	
17	260	8.8		4.6		3.0	5.5	
18	260	8.8				2.4	6.6	
19	250	8.7					5.9	
20	267	8.3					5.6	
21	272	8.4					6.0	
22	275	8.6					4.7	
23	255	8.6					5.3	

Time: 150.0°E.
Sweep: 2.2 Mc to 13.0 Mc in 2 minutes.
*Average values.
**Reported as "Abnormal E."
#[illegible] of t[illegible] values only.

Table 57*

Canberra, Australia (35.3°S, 149.0°E) November 1939

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs**	F2-M3000
00	309	8.1					4.3	
01	285	7.5					4.1	
02	285	6.6					4.1	
03	291	6.1					4.2	
04	310	5.8					4.0	
05	288	6.0		3.7#			3.8	
06	287	6.5	260	3.8		2.5	3.8	
07	334	6.9	251	4.4		3.0	4.8	
08	359	7.4	241	4.8		3.3	5.7	
09	373	8.1	237	5.0		3.6	5.8	
10	371	8.4	231	4.9		3.6	5.8	
11	378	8.6	226	5.0		3.7	5.7	
12	372	9.0	224	4.9		3.7	5.6	
13	344	9.1	225	4.9		3.7	5.9	
14	355	9.1	232	4.9		3.7	6.6	
15	335	9.0	235	4.7		3.6	5.5	
16	318	8.8	246	4.5		3.3	5.7	
17	301	8.7	255	4.0		2.8	5.0	
18	272	8.5		3.4#		2.3	5.5	
19	265	8.4					4.6	
20	294	8.0					5.8	
21	315	8.0					5.9	
22	317	8.1					4.8	
23	316	8.1					5.1	

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 58*

Canberra, Australia (35.3°S, 149.0°E) October 1939

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs**	F2-M3000
00	311	7.2					3.7	
01	306	6.9					3.4	
02	301	6.4					3.1	
03	308	5.9					3.5	
04	328	5.6					3.8	
05	324	5.6					3.8	
06	276	6.8	255#	3.7#		2.3	3.8	
07	281	8.2	252	4.1		2.9	4.3	
08	296	8.9	242	4.5		3.2	5.2	
09	310	9.5	232	4.8		3.5	5.2	
10	315	9.9	225	5.0		3.7	5.0	
11	305	10.2	221	4.9		3.8	5.2	
12	292	10.3	218	4.9		3.8	4.9	
13	288	11.2	223	4.8		3.8	5.0	
14	288	10.1	225	4.6		3.7	5.0	
15	284	9.9	232	4.6		3.5	4.5	
16	271	9.7	243	4.2		3.2	4.4	
17	267	9.5	266	3.8		2.6	4.0	
18	261	9.2				(2.2)#	3.9	
19	268	8.7					3.9	
20	278	8.2					3.6	
21	298	7.8					3.8	
22	312	7.4					4.0	
23	316	7.3					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 59*

Canberra, Australia (35.3°S, 149.0°E) September 1939

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs**	F2-M3000
00	285	6.7					3.8	
01	295	6.3					3.8	
02	295	6.0					3.9	
03	294	5.5					3.4	
04	310	5.2					3.1	
05	310	5.0					3.9	
06	275	6.1				(2.2)#	4.0	
07	258	8.1	240#	4.5#		2.6	4.1	
08	263	9.3	240	4.2		3.1	4.3	
09	267	9.8	231	4.5		3.4	4.0	
10	284	10.3	228	4.8		3.6	5.1	
11	285	10.6	217	4.8		3.8		
12	289	10.8	219	4.8		3.8	4.0	
13	275	10.4	215	4.6		3.8		
14	277	10.0	224	4.6		3.6	5.8	
15	270	10.0	225	4.3		3.4	4.4	
16	260	9.8	243	4.1		3.1	4.0	
17	260	9.7	255#	3.6#		2.5	4.0	
18	255	9.4					3.8	
19	263	8.7					3.5	
20	270	8.4					3.1	
21	270	8.0					4.0	
22	276	7.3					4.5	
23	278	7.0					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 60*

Canberra, Australia (35.3°S, 149.0°E) August 1939

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs**	F2-M3000
00	308	4.6					3.9	
01	312	4.5					3.9	
02	309	4.4					4.2	
03	298	4.4					4.0	
04	292	4.2					3.8	
05	293	3.8					3.5	
06	300	3.7					3.4	
07	259	6.2				2.1	3.4	
08	248	7.7	220#	3.8		2.6	4.0	
09	253	8.4	243	4.1		3.0	4.3	
10	273	9.0	235	4.5		3.3	4.6	
11	287	9.4	232	4.6		3.4	4.3	
12	275	9.3	227	4.6		3.5	5.3	
13	277	9.1	223	4.5		3.5	5.2	
14	283	9.3	223	4.4		3.4	5.1	
15	264	8.8	226	4.1		3.2	5.1	
16	251	8.5	238	3.7		2.8	4.2	
17	247	8.1				2.1	4.0	
18	241	7.4					3.5	
19	259	6.4					3.7	
20	271	6.1					3.8	
21	273	5.6					3.8	
22	288	5.2					3.8	
23	292	4.9					4.1	

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) July 1939

Time	h'F2	foF2	h'F1	foF1	h'E	foE	**fEs	F2-M3000
00	330	3.6					4.5	
01	334	3.7					4.2	
02	317	3.9					4.5	
03	306	4.0					4.8	
04	280	3.8					4.3	
05	292	3.3					3.7	
06	298	2.9					3.7	
07	260	4.6					3.7	
08	248	7.3				2.3	4.1	
09	252	8.1	254	4.0		2.8	4.2	
10	254	8.5	243	4.2		3.1	4.0	
11	263	9.1	239	4.4		3.2	4.2	
12	264	9.2	231	4.4		3.4	4.6	
13	265	9.0	228	4.4		3.4	4.5	
14	267	9.2	232	4.3		3.2	4.6	
15	252	8.6	236	4.0		2.9	4.7	
16	246	8.1	275#	3.3		2.5	4.4	
17	243	7.5				2.0#	4.0	
18	239	6.6					3.7	
19	253	6.1					3.6	
20	254	4.8					3.4	
21	281	4.4					3.7	
22	297	4.1					3.6	
23	298	3.8					3.6	

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 62*

Canberra, Australia (35.3°S, 149.0°E) June 1939

Time	h'F2	foF2	h'F1	foF1	h'E	foE	**fEs	F2-M3000
00	318	4.0					3.6	
01	319	4.0					4.0	
02	311	4.0					3.7	
03	316	4.1					3.6	
04	307	4.2					3.7	
05	286	4.2					3.7	
06	274	3.9					3.6	
07	256	5.0				2.1#	3.6	
08	248	7.8				2.4	4.1	
09	253	9.0	247	3.9		2.8	3.8	
10	255	9.6	244	4.2		3.1	4.2	
11	258	10.0	238	4.4		3.2	4.4	
12	258	9.7	234	4.4		3.3	4.6	
13	254	9.9	234	4.4		3.3	5.2	
14	261	10.2	231	4.2		3.2	5.8	
15	256	10.1	239	3.9		2.8	5.2	
16	245	9.6		3.8#		2.4	4.7	
17	249	8.7					4.1	
18	251	7.3					4.0	
19	252	6.1					3.9	
20	259	5.2					3.5	
21	283	4.5					3.4	
22	285	4.3					3.2	
23	306	4.2					3.4	

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) May 1939

Time	h'F2	foF2	h'F1	foF1	h'E	foE	**fEs	F2-M3000
00	313	4.9					5.7	
01	316	4.8					4.4	
02	318	4.8					4.3	
03	309	4.8					3.9	
04	289	4.9					3.7	
05	271	4.3					4.1	
06	273	3.8					3.6	
07	250	6.0				2.0	4.2	
08	245	8.5	230	3.2#		2.5	4.1	
09	258	10.0	238	4.0		3.0	4.6	
10	262	10.6	232	4.2		3.2	4.6	
11	263	11.0	228	4.3		3.4	4.4	
12	263	11.1	223	4.4		3.4	4.7	
13	264	11.3	225	4.3		3.4	4.8	
14	269	11.6	229	4.1		3.2	4.4	
15	259	11.3	236	3.8		3.0	4.7	
16	246	10.7				2.5	4.5	
17	244	10.0				2.0	4.6	
18	244	8.5					4.0	
19	253	7.3					4.0	
20	265	6.4					4.1	
21	274	5.8					3.8	
22	293	5.3					5.2	
23	293	5.0					5.4	

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) April 1939

Time	h'F2	foF2	h'F1	foF1	h'E	foE	**fEs	F2-M3000
00	317	5.3					4.5	
01	322	5.2					4.3	
02	320	5.1					4.1	
03	309	4.9					4.2	
04	306	4.6					3.6	
05	301	4.2					3.6	
06	281	4.0					3.8	
07	251	6.6				2.1	4.1	
08	253	8.5	253	3.6		2.7	4.4	
09	265	9.7	237	4.2		3.1	4.3	
10	266	10.4	229	4.4		3.3	5.0	
11	262	10.9	218	4.6		3.5	5.4	
12	267	11.1	226	4.6		3.6	5.4	
13	263	11.2	224	4.5		3.6	5.2	
14	268	11.1	227	4.5		3.4	5.3	
15	267	11.2	238	4.2		3.2	4.5	
16	254	10.9	258			2.8	4.5	
17	248	10.2					4.3	
18	248	9.2					4.5	
19	256	8.2					4.1	
20	261	7.5					3.8	
21	266	6.6					4.3	
22	283	6.2					4.4	
23	300	5.7					4.7	

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) March 1939

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	318	6.2					3.7	
01	305	6.0					3.5	
02	296	5.8					3.5	
03	296	5.3					3.4	
04	306	5.0					3.4	
05	307	4.7					2.8	
06	279	5.1				(1.9)#	3.4	
07	273	6.7	263	3.5		2.3	4.3	
08	267	7.7	241	3.9		2.9	4.1	
09	273	8.4	235	4.4		3.2	4.3	
10	280	8.7	221	4.5		3.4	4.7	
11	278	9.3	221	4.6		3.6	5.4	
12	266	9.6	215	4.6		3.6	5.9	
13	271	9.8	219	4.5		3.6	4.6	
14	273	9.9	231	4.5		3.6	4.9	
15	280	9.8	240	4.5		3.4	4.9	
16	272	9.6	246	4.1		3.1	4.3	
17	270	9.7	254	3.5		2.6	4.4	
18	256	9.7				2.4#	3.7	
19	251	8.7					3.2	
20	257	7.4					3.1	
21	282	6.7					3.4	
22	304	6.3					3.5	
23	319	6.3					3.6	

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) February 1939

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	304	7.2					4.5	
01	290	6.9					4.9	
02	289	6.5					4.4	
03	284	5.7					4.8	
04	283	5.0					4.5	
05	280	4.9					3.6	
06	246	5.7		(3.0)#			3.8	
07	263	6.7	242	4.1		2.6	4.2	
08	304	7.5	232	4.5		3.1	4.1	
09	316	8.1	225	4.8		3.4	4.7	
10	312	8.8	223	4.9		3.7	4.8	
11	305	8.9	216	5.0		3.8	5.2	
12	310	9.0	218	5.0		3.9	5.8	
13	297	9.0	214	5.0		3.9	4.9	
14	303	9.1	220	5.0		3.8	6.0	
15	301	9.2	221	4.8		3.6	5.1	
16	298	9.1	220	4.6		3.3	4.4	
17	290	9.0	229	4.2		3.0	4.3	
18	256	8.9	239	3.5		2.4	4.0	
19	243	9.0					3.8	
20	250	8.2					2.8	
21	276	7.7					4.2	
22	294	7.5					3.9	
23	303	7.4					4.5	

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 67*

Canberra, Australia (35.3°S, 149.0°E) January 1939

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs**	F2-M3000
00	285	7.7					3.8	
01	295	7.6					3.4	
02	300	6.6					4.5	
03	270	5.9					4.8#	
04	280	4.9					4.8#	
05	290	4.5					4.5#	
06	250	5.3	230#	3.6#		2.6	4.9	
07	290	6.3	247	4.5		3.0	4.2	
08	315	7.2	230	4.6		3.4	4.6	
09	310	8.4	210	4.8		3.6	4.9	
10	320	9.0	222	5.0		3.8	6.3	
11	325	8.9	218	5.4		3.8#	6.3	
12	335	8.8	215	5.4		3.8#	5.8	
13	345	8.8	210	5.2		3.8#	6.3	
14	348	8.8	210	5.4			6.8	
15	335	8.5	215	5.1		3.8#	6.7	
16	330	8.0	220	4.8		3.4	4.8	
17	295	8.1	235	4.2		3.2	4.5	
18	290	7.6	230	3.9		2.7	5.1	
19	265	7.5		3.5#			5.9	
20	290	7.7					5.6	
21	320	8.4					5.7	
22	305	8.5					5.7	
23	275	8.3					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 68

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

Form adopted June 1946

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), January (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. J. S., J. M. C., E. J. W.

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	280	300	280	250	250	250	250	240	220	220	210	230	230	220	220	240	230	210	200	250	210	220	230	230
2	260	250	250	260	C	230	220	210	240	240	240	220	220	230	220	230	230	220	220	240	230	250	250	240
3	250	280	330	290	(300)	280	270	270	240	230	220	220	220	230	230	230	230	220	220	(240)^A	230	240	240	240
4	240	240	240	250	230	230	220	220	230	220	A	230	220	240	200	220	230	220	210	230	220	220	240	250
5	270	300	270	270	260	240	240	230	230	220	220	210	220	240	220	220	220	220	230	220	220	240	230	240
6	250	300	300	250	250	280	270	250	220	210	200	220	220	230	230	240	230	220	200	220	240	230	250	230
7	250	C	C	C	290	300	290	240	240	230	230	220	230	230	230	230	230	230	200	210	220	240	240	250
8	270	300	290	270	250	240	240	250	240	220	230	230	220	230	230	230	240	220	220	220	200	270	270	270
9	260	300	260	250	280	250	260	250	240	230	220	230	230	230	220	230	240	220	200	200	200	240	(250)^S	250
10	280	(290)^S	300	260	240	240	(260)^S	(250)^S	220	220	220	230	230	240	200	230	240	220	200	240	220^F	230	240	260
11	280	280	300	270	260	270	270	240	230	240	220	230	230	220	230	240	230	220	200	250	230	240	(250)^S	250
12	250	250	250	250	250	250	(250)^S	(250)^S	230	230	210	220	220	220	220	240	230	230	220	220	230	230	240	260
13	250	270	270	250	250	250	250	(270)^A	220	230	(220)^A	240	230	230	220	230	230	230	250	250	220	240	240	240
14	250	250	260	270	250	260	280	260	230	230	230	220	240	230	220	230	240	230	200	210	240	220	240	270
15	260	270	260	270	250	250	250	240	230	230	220	200	220	230	230	C	230	220	210	220	230	230	240	260
16	240	300	280	270	250	230	C	C	C	C	C	220	230	230	240	230	230	230	200	220	240	220	230	270
17	260	280	270	270	250	250	240	250	240	240	230	230	250	250	230	230	250	240	200	220	240	230	240	250
18	240	250	260	250	240	240	250	240	240	220	220	240	240	240	230	240	240	230	210	240	230	230	(270)^A	250
19	260	250	250	250	220	250	(260)^S	240	220	240	230	240	250	230	230	240	230	240	220	220	210	240	250	290
20	270	300	300	250	250	250	250	240	230	230	220	240	240	(200)	230	C	240	230	220	240	200	230	240	230
21	270	290	260	240	250	240	250	210	220	240	220	220	230	220	230	240	240	C	C	C	C	C	250	C
22	220	250	240	240	250	260	250	250	220	220	220	220	210	220	230	220	230	230	220	200	210	230	240	250
23	250	300	300	270	C	260	(300)^C	300	260	230	210	230	230	230	230	230	230	230	200	210	210	210	240	250
24	230	250	250	260	250	230	250	240	200	220	220	220	220	230	C	230	210	220	200	230	230	210	240	240
25	250	280	280	250	230	210	230	250	210	210	210	240	230	210	220	220	220	220	220	210	220	210	240	250
26	240	270	270	250	230	240	230	230	220	C	240	210	220	230	230	230	220	200	220	210	220	240	240	250
27	250	250	240	240	240	250	(280)^S	240	220	220	230	250	210	230	230	240	220	220	200	200	230	230	250	240
28	250	250	240	250	230	250	270	250	220	220	200	240	240	230	240	230	230	220	200	220	210	250	250	250
29	240	240	230	230	240	270	250	240	210	220	210	250	230	250	220	220	230	230	210	200	210	220	240	230
30	270	280	280	270	240	250	(240)^C	(270)^C	(230)^A	220	230	240	250	250	230	210	230	220	210	210	210	250	250	250
31	250	260	240	210	250	250	250	230	220	230	210	240	240	250	240	240	220	220	220	200	200	230	250	230
Median	250	275	265	250	250	250	250	240	230	230	220	230	230	230	230	230	230	220	210	220	220	230	240	250
Count	31	30	30	30	29	31	30	30	30	29	29	31	31	31	30	29	31	30	30	30	30	30	31	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 69

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

IONOSPHERIC DATA

f°F2 (Characteristic) . Mc (Unit) January (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. J. S., J. M. C., E. J. W.

Calculated by: M. C. E., 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	4.4	4.4	4.9	5.0	4.9	4.8	4.8	5.1V	7.8	9.3	10.8	(13.1)	(12.7)	12.9	(12.3)	(12.5)	(12.5)C	(11.8)	8.8	7.7	6.8	6.6	(6.0)	5.5
2	(6.5)	5.4F	(5.5)	(5.0)F	[5.2]C	5.2	4.9	4.2	7.4	(10.4)	[12.3]C	(12.6)C	(12.1)S	(12.3)	(12.1)	12.7	(13.0)	(12.0)C	9.5	(8.0)J	7.4	6.7	6.3	6.6
3	5.4	4.7F	4.9V	4.9F	4.7F	4.2F	4.2F	4.5	7.4	10.1	10.9	12.8	13.0	14.2	12.7	12.6	11.8	11.3	(9.0)	7.8	6.0	6.0	(5.3)F	4.9F
4	4.9F	4.4F	4.0F	3.8F	3.8F	3.7ZF	(3.6)F	4.0F	7.4	9.7	11.8	12.8	12.3	12.4	12.1	(11.3)	(11.8)	(10.8)	8.7	8.6	7.1	5.6	4.6	4.2
5	3.8F	3.8	4.0	4.1	4.2	4.0	3.8F	4.1F	7.8	9.8	(10.6)	12.7	13.0	12.4	(12.5)S	11.9	11.3	(10.3)	9.4	8.8	(7.7)J	6.2	5.5	4.5
6	3.8V	3.6F	3.7	3.9	3.8	3.3	3.7	4.5	(8.2)	(10.5)	(12.5)	12.8	(13.7)	12.8	12.8	12.8	12.9	(12.0)JS	9.5S	8.0	7.3	6.4	5.7	5.1
7	4.5F	C	C	C	3.8F	3.9F	4.2F	4.7F	(8.3)	(10.1)C	(13.0)	(13.9)	(14.0)	13.2	12.7	(13.0)	(12.5)	(11.6)	(10.6)S	9.0	7.6	(7.1)J	5.6	5.9
8	5.3F	5.3F	5.0F	5.3	5.0	4.5	4.1	3.9F	6.8	9.3	11.7	(13.5)	(13.3)	(12.5)	(10.8)JS	12.2	(12.3)S	(12.5)S	10.7	9.0	(6.8)	5.5F	4.8F	5.3F
9	(4.4)F	(4.0)F	4.5F	4.1F	4.1F	4.2F	4.2F	4.3F	7.7	(9.8)S	10.7	12.3	12.5	12.2	(11.4)S	(11.5)S	(11.5)S	[10.5]C	9.3	(7.0)J	(5.4)S	(4.7)J	(3.8)JF	(3.6)F
10	3.2F	3.2F	(3.4)F	(3.6)F	(4.2)J	3.5F	(3.2)F	(3.8)F	(7.4)S	9.3	10.5	(12.7)P	13.0	12.4	(11.5)S	12.1	(12.2)S	(11.2)J	9.1	(9.0)S	(7.5)JF	(6.0)JS	(4.4)JF	(4.6)JF
11	(4.2)JF	(4.4)JF	(4.3)F	(4.0)JF	(4.0)JF	(4.2)JFV	(4.0)F	4.5	7.9	10.0	9.8	12.6	12.6	(12.5)S	11.4	11.8	(10.7)S	[9.6]SC	(8.6)J	(8.6)S	(7.4)J	(5.6)S	5.5	4.9
12	(4.0)JF	(4.1)JF	(4.2)JF	4.0F	3.5F	(3.4)F	3.2F	(3.9)F	(8.0)S	(9.8)JS	(10.2)S	11.9	12.1	11.7	10.7	(10.0)S	(10.0)S	(10.7)J	(9.5)S	8.4	7.2	5.7	4.7F	4.5
13	4.0F	3.9F	4.1F	(4.0)F	3.9	3.8	3.7	(4.0)J	(7.5)J	(10.3)S	(11.2)P	12.0V	13.2	12.7	11.8	11.5	(11.5)	(10.8)	(10.2)	(8.6)	7.7	(6.1)	5.5	5.0
14	4.5F	3.7	3.6F	4.0F	4.1	3.7	3.8	4.1	8.3	11.3	(12.2)P	12.4P	12.2	12.4	(12.0)	(12.1)	[11.1]S	(10.2)JS	(9.6)J	8.2	7.6	(6.6)	4.6	4.3
15	4.3	4.2	4.1F	4.1F	4.1F	3.9F	3.9F	4.1F	(7.7)FS	9.8	(11.6)J	(12.2)S	12.3	12.4	11.4	[11.0]C	10.7	(10.3)S	(9.3)S	7.5	(7.1)JS	5.8	(4.5)SS	3.9F
16	3.6FS	3.9F	4.1FS	4.4	4.3	3.8	C	C	C	C	C	(9.3)P	(10.5)C	(10.2)P	10.7	10.7	(10.4)	9.8	(9.3)	7.8	7.5	5.5	(4.2)JS	3.9
17	3.7F	3.9F	3.7F	4.1S	4.1	4.1F	3.4F	3.9F	7.1	9.4	(9.8)	(11.1)	12.3	12.4	(12.5)	11.6S	[11.0]S	(10.3)	10.4	8.9	7.9	6.8F	5.5	5.2
18	5.3	5.1	5.4	5.3	5.0	4.8	(3.9)JV	(4.2)J	(8.3)Z	8.8	(10.8)J	(12.2)	12.0	(11.0)P	11.8	(11.3)	(10.8)	[10.1]S	9.4	(8.1)J	(6.8)J	(5.4)S	(5.2)J	5.0
19	(4.8)JF	(4.4)JF	(4.5)JF	(4.6)JF	(4.3)JF	(3.7)JF	3.1F	(4.2)F	(7.8)V	(10.6)	10.6	(11.4)	12.4	(12.2)P	(11.3)P	11.6	(11.5)S	10.5	(9.8)S	(8.6)S	7.1F	4.8F	(4.1)JF	4.3F
20	4.5F	4.7F	5.1	5.1FS	5.0	4.9	4.9	5.0	7.8	9.4	10.9	13.2	12.6	12.0	12.8	[11.9]C	(11.2)	(10.7)	(10.2)S	10.2S	6.9	5.7	5.5	4.5F
21	4.5F	(4.9)F	5.3F	4.5F	4.2F	3.9F	3.3F	3.9F	7.3	10.2	11.2	12.5	11.8	12.0V	12.1	11.8	11.6	C	C	C	C	C	5.4	[5.1]C
22	(4.8)JF	4.2F	(4.3)J	(4.2)JF	(3.9)JF	3.4F	3.7F	5.0F	8.2	10.0	10.8	11.7	13.0	(12.0)	11.5	11.0	11.0	(10.0)	9.8	8.6	7.7	6.1	5.2	4.2
23	4.2	4.4	5.0	5.0	[4.2]C	3.4F	3.1	4.0	8.0	(10.0)	(11.0)	13.2	11.8	11.2	11.4	11.4S	(11.3)S	SC	9.3	8.7S	7.1	5.5	4.8	5.0F
24	4.3F	3.9F	4.1F	3.9	4.4F	3.7FS	3.5F	4.3F	(8.6)	9.4	(10.3)S	(10.7)J	11.8	(11.4)	[11.0]C	9.8	[11.2]S	11.8S	9.7	7.7	7.4	5.8	5.5F	4.3F
25	4.2F	3.8S	4.0S	(4.0)F	4.3F	3.3F	3.2F	4.0F	8.3	9.2	9.3	10.4	11.5	11.6	(11.6)	11.2	(10.9)S	(9.7)S	(9.5)S	8.0	7.0	5.9	5.0F	4.8F
26	4.3F	4.1F	4.2F	4.3F	4.3F	4.4F	4.0F	4.5	7.7	[9.2]C	10.7	10.9	10.5	11.6	11.6	10.7	(10.7)S	(9.4)P	8.8	7.5	(6.8)J	6.0	5.4	5.1
27	5.3	5.0	5.0	5.0	4.1	4.1	(4.4)R	(5.0)R	7.9	9.2	9.7	11.6	12.1	12.3	12.4	12.0	11.4	11.0	10.0	7.5	7.3	6.0	5.8	5.5
28	4.9	4.8F	4.6	(4.5)J	(4.2)J	3.2F	3.6F	4.6	8.2	9.5	10.7	11.4	12.4	11.7	12.2	11.4	10.5	10.3	9.8	8.6	(7.0)J	5.7	5.9	5.8
29	6.0	5.8	5.0F	4.6F	4.2F	3.8F	4.0F	4.6	7.4	9.1	10.8	13.1	12.2	12.7	12.3	11.8	SC	(10.5)S	SC	8.6	7.1	5.8	5.3	(4.4)J
30	4.2	4.4	4.7	4.8	(4.6)J	3.8V	3.2F	(4.4)F	7.8	9.1	(10.6)S	12.1	(13.0)P	12.3	11.6	11.4	11.0	10.0	10.0	8.8	(7.0)J	5.9	5.5	5.4
31	5.3	5.2	5.7	4.8F	4.2F	4.0F	3.8	(4.5)J	7.6	9.2	10.5	11.4	(11.4)	11.5	(11.5)	(10.8)	9.8	9.6	9.6	7.0	6.0	5.8	5.4	4.8
Median	4.4	4.4	4.4	4.4	4.2	3.9	3.8	4.2	7.8	9.8	10.8	12.4	12.3	12.3	11.8	11.6	(11.2)	(10.5)	9.5	8.5	7.1	5.8	5.4	4.9
Count	31	30	30	30	31	31	30	30	30	30	30	31	31	31	31	31	30	29	29	30	30	30	31	31

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 702519

TABLE 70

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

Form adopted June 1946

IONOSPHERIC DATA

f°F2 (Characteristic), Mc (Unit), January (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. J. S., J. M. C., E. J. W.

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

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	4.4	4.8	5.2F	4.8	4.6	4.9	4.7V	6.4	9.0	9.7	(12.1)	12.9	12.4	[12.3]S	(12.2)	[12.3]S	(12.3)JC	(11.6)C	8.2	7.4	5.8	(6.8)	5.5	5.5
2	(6.1)	5.2	5.0	5.0F	5.2	5.0	4.7	5.5	8.8	(10.9)C	13.0	(12.2)S	12.0	12.2	(12.3)	(12.8)	13.0	[10.6]C	(8.1)J	7.6	6.6	(6.6)C	6.5	(6.0)V
3	5.4FV	4.5F	5.0	4.6F	4.4F	4.1F	4.2F	5.9	9.1	10.2	11.5	12.9	(14.0)	13.3	12.8	11.8	11.7	(9.7)	9.0	(6.9)J	5.9	5.6	5.0F	4.8F
4	4.6F	4.2F	3.8F	3.7F	3.8F	3.8F	3.4F	5.3F	8.5F	9.2	12.7	12.5	12.5	11.6	11.5	(12.0)C	(11.5)C	9.7	8.7	7.8	6.6	4.8	4.4	4.0
5	3.7F	3.8F	4.1	4.0F	4.1	3.9	3.7F	5.7	9.4	10.5	11.8	12.5	12.8	(12.5)S	12.0	(12.2)J	(11.6)J	9.4	9.0	(8.0)J	(6.4)J	5.9	4.6F	4.2
6	3.7	3.5	3.8	3.8	3.7F	3.5	3.8	(6.2)	9.5	(11.7)	(12.6)	(13.3)J	(13.4)	13.0	13.0	13.0	(12.2)S	(11.0)S	8.6	7.7	6.8	5.7	5.7	4.9
7	C	C	C	3.9F	3.8F	4.0F	4.2F	6.5	8.3	10.5	13.5	(13.4)	(13.6)	13.8	[13.4]C	(12.9)S	(12.0)P	(12.0)S	(10.0)S	8.3	7.0	(6.1)	5.7	5.6F
8	5.4	5.4	5.3F	5.2	4.6	4.5S	4.1	5.6	8.7	(10.8)	(13.5)	(13.0)	(13.0)S	(12.5)	12.1	(12.2)	(11.6)S	(10.3)S	(9.9)S	7.4	6.3	5.3	4.9	(5.0)F
9	4.0F	4.2F	(4.3)FS	4.3F	4.1F	4.3F	4.1F	5.9	8.6	10.4	12.3	12.1	(13.4)	11.9	11.5	[10.9]C	(10.3)S	(9.6)S	8.0	(7.2)JS	[5.5]SC	3.8F	(3.5)F	3.2F
10	(3.0)F	3.2F	(3.6)F	(4.2)ZV	(3.8)F	3.3	(3.2)F	(5.8)S	(8.2)J	[10.1]SC	11.9	12.9	12.7	12.4	(12.1)J	(12.1)S	(12.0)S	(10.6)S	(8.8)S	(8.2)J	(6.3)JS	(5.4)F	(4.3)F	4.5F
11	(4.0)JF	(4.2)F	(4.3)JF	(4.0)JF	(4.0)FV	(3.9)F	4.2F	6.1	9.6	(9.7)J	(11.7)J	(12.6)S	(12.5)S	12.5	(12.2)S	(11.3)S	(10.7)JS	(9.7)J	7.8	(6.9)J	(6.3)J	5.4	5.0	4.8
12	4.2F	4.3	4.0F	3.7F	3.4F	3.4F	(3.2)JF	5.8	(9.3)JS	(10.1)C	12.0	12.1	11.8	11.2	(10.7)J	(10.1)S	[9.6]SC	(9.0)S	8.8	7.5	(6.5)J	5.3	(4.6)J	4.3F
13	4.0F	4.0F	(4.2)JF	3.9	3.9	3.8	3.7	5.6	8.8	(10.7)J	(11.0)S	12.3	12.7	(11.7)J	12.0	11.6	(10.8)	(10.2)	8.4	(9.2)	(6.6)	(6.2)	5.4	4.8
14	4.3F	3.9F	4.0F	4.1	3.7	3.6	3.5	(6.1)J	8.9	(12.2)P	(12.5)S	12.4	12.5	12.0	(12.0)	S	S	(10.0)JS	9.4	8.1	7.2	5.4	4.5	4.5
15	4.3	4.2F	3.9F	4.1F	4.1F	3.9F	3.5F	(5.1)F	9.5	[10.9]C	12.2	12.3	12.7	12.5	C	C	SC	10.3S	7.9	7.6	6.1S	(5.1)J	(4.7)JF	(3.9)JF
16	3.6F	4.0F	(4.2)JF	4.5F	4.2	C	C	C	C	C	C	C	11.4	10.8	(10.4)	(10.7)	[10.3]S	(9.9)	(8.4)J	7.5	(6.7)J	4.7	4.1S	3.9FS
17	3.7F	3.9F	4.1	4.1S	3.9F	3.8F	3.5F	(5.6)	8.2	[9.7]C	(11.1)J	11.5	12.4	(12.8)	12.4	(10.3)S	10.4	(11.4)	10.4	(8.5)	7.6	6.0	5.6	5.4
18	5.0	(5.5)S	5.5	5.4	4.8V	3.9JV	3.9	(6.2)J	9.6	9.6	12.1	12.6	(12.2)J	(10.8)P	[11.0]C	(11.2)JS	SC	SC	8.3	(7.7)J	(6.2)JS	(5.0)J	5.3	(4.8)S
19	(4.4)JF	(4.4)JF	(4.6)JF	(4.4)JF	3.6F	3.3F	3.2F	(5.7)JF	9.4	(11.0)JS	(11.5)J	11.4	11.7	12.2	(11.2)J	11.5	10.7	(10.2)S	9.3	(8.7)S	5.7F	4.5F	4.3F	4.5F
20	4.3F	4.9F	5.2F	5.2F	5.1	4.9	4.5	6.5	9.6	10.8	11.5	12.7	13.3	12.2	C	C	(10.8)S	(10.7)	(10.2)S	8.6S	6.3	5.1	4.5	4.6F
21	(4.9)F	5.8FS	4.9F	4.6F	4.0F	3.9F	3.7F	5.2	8.6	[9.7]	10.7	(12.7)	(11.7)C	[12.0]SC	12.2	11.6	SC	C	C	C	C	5.8V	(5.3)V	(4.8)JV
22	5.0V	(4.6)V	(4.4)	(4.0)JF	3.8F	3.3F	(4.1)JF	6.4	9.6	10.6	11.3	12.5	12.2	(11.3)	(11.4)	10.8	(10.2)	(10.0)	9.5	7.8	(7.0)J	5.4	4.5	4.3
23	4.0F	4.8	5.0	5.0	[4.1]C	3.2F	3.2	6.2	9.4	9.7	12.5	12.8	11.5	11.5	11.5	(11.3)S	(11.3)S	10.6	9.0	7.6	(6.4)S	5.2	4.8F	4.6
24	(4.6)V	4.1F	3.9F	4.1F	4.1F	3.5F	3.5F	6.1	(9.3)S	(11.4)	9.2	11.5	10.5	11.7	(10.5)J	S	S	9.9	8.1	7.7	6.9	5.5F	4.9F	4.1
25	3.9S	4.1	[4.2]C	4.3F	4.4FV	F	3.1F	6.5	9.4	9.8	11.3	10.7	11.8	11.6	11.6	(10.9)S	(9.7)S	(9.6)S	8.7	7.7	(6.7)	5.2	4.9F	4.6F
26	4.1F	4.3F	4.2F	4.5F	4.4	4.3F	3.9F	5.7	8.9S	[10.0]C	11.2	11.8S	11.9	11.4	(11.3)S	[10.9]SC	(10.5)S	9.0	8.4	7.6	6.1	5.5	5.2V	5.0
27	5.0	5.1	5.1	4.7V	4.1	4.3	5.0R	(6.8)J	8.4	9.6	10.8	12.0	12.5	12.5	12.0	11.5	11.0	10.5	8.0	(7.4)J	(6.7)J	5.8	5.8	5.2
28	5.0	5.0F	(4.4)J	4.4	3.4F	3.2F	4.2F	6.5	9.2	10.4	10.8	12.0	12.3	12.0	11.6	(11.6)J	10.2	10.0	9.2	8.2	6.0	6.0	5.8	5.8
29	5.8	5.0F	4.6F	4.2F	4.0	4.0F	4.2F	6.0	8.8	9.6	11.6	C	12.3	12.5	(12.0)P	(11.5)S	(10.3)S	SC	(9.7)JS	7.7	(6.6)J	5.6	5.2	(4.0)J
30	(4.2)S	(4.6)J	4.8	4.8	(4.2)J	(3.6)F	(3.4)F	5.8	(9.0)S	9.5	11.4	12.9	12.7	(12.0)JS	11.6	11.5	10.4	10.2	9.8	7.4	(6.2)	5.8	5.4	5.5
31	5.2	5.4	5.0F	4.2F	4.2F	3.8F	3.8	(6.4)J	7.6	10.5	11.4	(11.4)	11.5	11.5	11.0	(9.8)	9.7	9.2	8.2	7.0	5.4	5.4	5.0	4.6
Median	4.3	4.4	4.4	4.3	4.1	3.9	3.8	6.0	9.0	10.3	11.6	12.5	12.4	12.0	12.0	(11.5)	(10.8)	10.1	8.8	7.7	6.4	5.4	5.0	4.6
Count	30	30	30	31	31	29	30	30	30	30	30	29	- 31	31	29	27	26	28	30	30	30	31	31	31

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 702519

Form adopted June 1946

TABLE 71

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

IONOSPHERIC DATA

h'F1 (Characteristic), Km (Unit), January (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. J. S., J. M. C., E. J. W.

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																									
3																									
4														200											
5														220											
6														210	210										
7											220		200		190										
8											200	220		190	200										
9												210	200												
10														200											
11															220										
12																									
13												220													
14												190													
15																									
16													200	200	220										
17													210	210	210										
18														220											
19											210	220	200			220									
20												220	180		210										
21													220												
22															200										
23											200			180											
24														200		190									
25												200													
26											190			200	190	200									
27											210	210		220	200	220									
28												200	200	220	200	200	210								
29												210	210	200	190	200									
30												220	210	190	200										
31												210	210	200	200	200									
Median											205	210	200	200	200	200									
Count											6	12	- 11	16	14	7									

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 703518

Form adopted June 1946

TABLE 72

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

IONOSPHERIC DATA

f°F1 (Characteristic), Mc (Unit), January (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. J. S., J. M. C., E. J. W.

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																								
3																								
4														L										
5														L										
6														L	L									
7											L		L		3.6									
8											L	L		L H	L									
9												(3.8)	L											
10														L										
11															L									
12																								
13												L												
14												L												
15																								
16													L	L	L									
17													L	L	L									
18														L										
19											L	L	L			L								
20												L	L		L									
21													L											
22															L									
23											L			L										
24														L		3.5								
25												L												
26											L			L	3.7	L								
27											L	L		L	L	L								
28												L	L	L	L	L	L							
29												L	L	L	L	L								
30												L	L	(44) P	L									
31												L	L	L	L	L								
Median																								
Count																								

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U.S. GOVERNMENT PRINTING OFFICE 1946 O 702510

Form adopted June 1946

TABLE 73

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

IONOSPHERIC DATA

h'E (Characteristic), Km (Unit), January (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. J. S., J. M. C., E. J. W.

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									140	120	110	110	110	110	110	110	110							
2									100	100	100	110	110	100	110	110	110							
3									100	100	100	100	100	110	110	120	120^{H}	140						
4									120^{H}	110	100	100	100	110	110	100	100	100						
5									120	110^{H}	110	110	110	100	100	100	100							
6									A	100	100	100	100	100	110^{H}	110	120^{H}							
7										110	100	110	110	120	110	110	120	S						
8									(100)^{A}	110^{H}	110	110	110	100	110	110	110	120						
9									100	120	110	100	100	100	100	100	120	(140)^{S}						
10									A	100	(120)^{A}	A	(130)^{B}	120	(120)^{B}	120	120	A						
11									(140)^{S}	110	110	(110)^{B}	(120)^{B}	(120)^{B}	(120)^{A}	(120)^{Y}	A							
12									S	100	110	110	110	110	110	110	120	(140)^{S}						
13									A	120^{A}	A	A	(120)^{A}	(120)^{A}	100	110	110	130^{B}						
14									(110)	110	100	100	100	100	100	100	100	100						
15									120	110	110	120	120	120	110	C	120							
16									C	C	C	120^{A}	110	120	110	100	120	140						
17									120	110	100	100	110	110	120	110	130	130						
18									130^{A}	120	110	120	110	(120)^{V}	A	(130)^{A}	(120)^{A}	(150)^{S}						
19									(120)^{S}	120	110	100	100	100	100	110	110	140						
20									130	100	(110)	100	(100)	110	100	C	110	100^{H}						
21									130	100	100	(100)	100	100	100	(140)^{A}	130	C						
22									100	100	100	100	100	100	100	100	100	(150)^{B}						
23									130^{B}	100	100	100	100	100	100	100	100	160						
24									100	A	A	A	A	100	C	100	110							
25									(130)^{S}	130	A	120	120	100	(120)	(120)	(120)	(150)						
26									(120)	C	110	100	100	110	120	110	110	120						
27									(130)^{S}	110	110	100	(120)^{B}	(120)^{B}	(110)^{B}	(120)^{B}	100	110^{B}						
28									110	100	100	100	100	100	100	100	100	A						
29									110	100	100	100	100	100	100	100	100	110						
30									C	(130)^{A}	110	A	100	100	(100)^{A}	100	100	110						
31									100	100	100	100	100	100	100	100	100	140						
Median									120	110	110	100	105	100	110	110	110	135						
Count									24	28	27	27	30	31	29	29	30	20						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 74

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

IONOSPHERIC DATA

f°E (Characteristic), Mc (Unit), January (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. J. S., J. M. C., E. J. W.

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

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

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 712518

Form adopted June 1946

TABLE 75

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

IONOSPHERIC DATA

E_s (Characteristic), Mc-Km (Unit), January (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. J. S., J. M. C., E. J. W.

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

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																							2.2 100	
2					C														1.9 100	2.0 100				2.0 110
3	3.1 100			3.6 110	3.5 100	3.3 110	3.8 100	3.3 100	3.4 100		3.2 130								1.8 130	4.2 130	2.1 130			
4	1.8 120										9.7 100						3.5 100	3.6 100	3.4 100					
5					1.4 110						3.3 120					2.8 150						1.7 100		1.9 100
6								1.9 110	2.0 110															
7		C	C	C							3.3 110				3.1 120									2.0 120
8	3.2 120		3.3 110	3.3 110			3.2 100	3.3 110	3.3 100		3.3 130				3.3 120					2.0 110	3.5 130		2.7 100	
9			3.1 130	3.3 100						2.2 100		3.4 140					3.7 130							
10								3.2 110	2.3 100	2.3 100	3.4 110	4.4 120						1.8 120						
11							2.0 120		2.3 130				3.4 150	3.4 130	3.3 130	3.0 120	2.6 130	4.4 120	3.4 140		(2.2)S 100	(3.4)S 100	(3.3)S 100	2.2 100
12								3.6 100	(3.3)S 100					9.0 120		3.3 100								
13							5.8 110	4.7 100	4.7 100	3.8 110	4.6 110	5.4 130	5.9 100	3.4 110					3.9 100	4.2 100		3.4 100	3.0 100	
14		1.7 100	3.4 110	1.7 100	3.3 100	3.3 100	3.3 100	(2.1) 100		3.7 120								3.1 100	3.3 100	2.2 100				
15										3.1 130	3.3 110					C	3.2 140							
16					3.2 100		C	C	C	C	C	3.2 120												
17																								
18				2.3 140					2.3 120	2.8 140	3.1 130	3.4 130	4.2 120	3.7 120	5.1 120	2.6 110	(2.4) 110						3.4 100	1.8 100
19											4.7 110	5.7 140		4.2 100						1.7 300				
20											3.3 130	3.5 110				C								
21			3.7 120						1.9 100	3.2 140	4.7 130	3.7 120	3.9 110	3.6 120	3.4 120	3.3 150	2.3 110	C	C	C	C	C		C
22	3.2 140	1.8 130	2.4 100		3.2 130	2.4 120	1.8 100	3.0 110			6.0 120	4.0 120				3.8 130	3.3 100							
23		(2.7)C 110		3.2 150	C					4.2 130		7.4 110	5.2 100	6.0 100		3.3 100		2.1 100						
24				4.7 100		3.5 100	3.2 100	(5.6) 100	5.4 100	4.05 100	7.4 100	5.6 100	5.0 100		C	5.8 110			2.2 100	3.4 100				
25											3.9 100													
26										C														
27										2.7 120														
28		3.2 100		2.8 100	3.2 100				3.0 110	3.3 100					4.4 130			2.1 110						
29											3.6 100	4.1 100						2.3 120						
30			2.4 120	2.4 100	2.4 120	3.3 100	C		(3.8) C (100)	(4.1)S 100	3.4 110	4.2 100			3.6 120	3.8 110								
31									3.4 100	4.4 100	5.8 100	3.9 100				3.6 100		2.2 100						
Median	**	**	**	**	**	**	**	**	**	**	3.3	**	**	**	**	**	**	**	**	**	**	**	**	**
Count	31	30	30	30	29	31	29	30	30	29	30	31	-31	31	30	29	31	30	30	30	30	30	31	30

** MEDIAN fE_s LESS THAN MEDIAN f^oE, OR LESS THAN LOWER FREQUENCY LIMIT OF RECORDER.

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 76

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

IONOSPHERIC DATA

F2-M1500 (Characteristic), ______ (Unit), January (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. J. S., J. M. C., E. J. W.

Calculated by: N. M., 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	2.0	1.8	1.7	2.0	1.9	1.9	2.0	2.8V	2.3	2.4	2.2	(2.2)	(2.2)	2.1	(2.1)	(2.2)	(2.2)C	(2.2)	2.1	2.0	2.0	1.9	(2.2)	2.1
2	(2.0)	2.0	(2.0)	(2.0)F	C	2.0	2.0	2.1	2.3	(2.4)	C	(2.2)C	(2.1)S	(2.1)	(2.1)	2.0	(2.1)	(2.2)C	2.1	(2.0)J	2.0	1.9	2.0	2.1
3	(2.0)V	1.8F	1.6V	1.8F	1.9	(1.8)F	1.9F	1.8	2.2	2.3	2.2	2.1	2.1	2.1	1.9	2.1	2.0	2.0	(1.9)	2.1	2.1	2.2	(2.0)F	2.0F
4	2.0	(2.0)F	(2.0)	(2.0)F	(1.9)F	(2.2)ZF	(2.2)F	(1.8)F	2.4	2.4	2.2	2.2	2.2	2.2	2.2	(1.9)	(2.2)	(2.3)	2.0	2.2	2.3	2.3	2.1	2.0
5	1.9	1.9	2.0	2.0	2.0	2.0	2.1F	2.2F	2.1	2.4	(2.3)	2.2	2.1	2.2	(2.1)S	2.1	2.2	(2.2)	2.1	2.2	(2.3)J	2.3	2.2	2.2
6	2.1V	1.8F	1.8F	2.0	2.1	1.9F	1.9	2.0	(2.3)	(2.3)	(2.0)	2.2	(2.3)	2.1	2.1	2.3	2.1	(2.2)J	2.0S	2.0	2.1	2.1	2.0	2.1
7	2.0F	C	C	C	1.7F	1.8F	1.9F	2.1F	(2.2)	(2.3)C	(2.2)	(2.3)	(2.2)	2.2	2.0	(2.2)	(2.2)	(2.2)	(2.2)S	2.1	2.0	(2.1)J	2.1	2.1
8	2.0F	1.8F	2.0F	2.0	2.0	1.9	2.0	1.9F	2.2	2.3	2.1	(2.2)	(2.1)	(2.1)	(2.2)JS	1.9	(2.1)S	(2.0)S	2.1	2.0	(2.0)	1.9F	1.9F	1.9F
9	(2.0)F	(2.0)F	1.9F	1.9F	1.9F	1.9F	1.9F	2.2F	2.3	(2.3)S	2.2	2.3	2.2	2.1	(1.9)S	(2.0)S	(2.3)S	SC	2.0	(2.1)J	(2.0)S	(2.2)J	(2.1)JF	(2.1)F
10	2.0F	1.8F	(1.8)F	(2.0)F	(2.2)J	2.1F	(2.0)F	(2.0)F	(2.4)S	2.4	2.2	(2.1)P	2.1	2.2	(2.1)S	2.1	(2.1)S	(2.2)J	2.0	(2.0)S	(2.1)JF	(2.2)JS	(2.1)JF	(1.9)JF
11	(2.0)JF	(2.0)JF	(1.9)F	(2.0)JF	(1.9)JF	(1.8)VF	(1.9)F	2.1	2.3	2.4	2.3	2.3	2.1	(2.0)S	2.2	2.1	(2.1)S	SC	(2.1)J	(2.1)S	(2.3)J	(2.2)S	2.0	1.9
12	(2.0)JF	(2.1)JF	(2.1)JF	2.0F	2.0F	(2.0)F	2.0F	(2.1)F	(2.4)S	(2.5)JS	(2.1)S	2.1	2.1	2.2	2.1	(2.4)S	(2.3)S	(2.2)J	(2.1)S	2.0	2.2	2.3	2.0F	2.0
13	1.9F	2.0F	2.0F	(1.9)F	2.0	1.9	2.0	(2.1)J	(2.3)J	(2.3)S	(2.5)P	2.4V	2.2	2.0	1.9	2.0	(2.1)	(2.0)	(2.1)	(1.9)	2.2	(2.1)	2.1	2.1
14	2.1	2.1	2.0F	2.0F	2.0	1.9	1.8	2.0	2.3	2.3	(2.5)P	(2.1)P	2.2	2.0	(2.1)	(1.9)	S	(2.3)JS	(2.3)J	2.0	2.1	(2.1)	2.0	2.0
15	1.9	2.0	1.9F	1.9F	2.0F	2.0F	2.0F	2.0	(2.1)ES	2.6	(2.3)J	(2.2)S	2.0	2.0	2.0	C	2.1	(2.1)S	(2.1)S	2.0	(2.2)JS	2.2	(2.2)JS	2.0F
16	2.1ES	1.8F	1.8ES	1.9	2.0	2.1	C	C	C	C	C	(2.5)P	(2.3)C	(2.1)P	2.2	2.1	(2.1)	(2.2)	(2.0)	2.1	2.3	2.2	(2.1)JS	2.0
17	1.8	1.8F	1.9F	1.8S	2.0	1.9F	1.9F	2.0F	2.3	2.3	(2.6)	(2.1)	2.0	1.9	(1.9)	2.0S	S	(2.2)	1.8	2.0	2.2	2.1F	2.1	1.9
18	1.9	1.9	1.9	2.0	2.0	2.1	(1.9)JV	(2.0)J	(2.1)Z	2.1	(2.2)J	(2.3)	2.2	(2.1)P	2.0	(2.1)	(2.1)	SC	2.1	(2.1)J	(2.2)J	(2.0)S	(1.9)J	1.9
19	(1.9)JF	(1.9)JF	(2.0)JF	(1.9)JF	(2.3)JF	(2.1)JF	2.1F	(2.0)F	(2.3)Z	(2.5)	2.3	(2.1)	2.1	(2.0)P	(2.1)P	2.0	(2.1)S	2.2	(2.0)S	(2.0)S	2.1F	2.0F	(2.0)JF	1.9F
20	1.8F	1.8F	1.8	1.8ES	2.0	2.0	2.0	2.0	2.3	2.3	2.1	2.1	2.2	2.0	2.0	C	(2.0)	(2.1)	(1.8)S	2.1S	1.9	2.0	2.0	1.9F
21	2.0F	(1.8)F	1.9F	2.1F	1.9	1.9F	1.9F	1.9F	2.3	2.4	2.1	1.9	2.0	2.0V	2.0	2.0	2.0	C	C	C	C	C	2.1	C
22	(1.9)JF	2.3	2.0	(2.1)JF	(2.1)JF	2.1	1.9	2.0	2.2	2.1	2.1	2.1	2.1	(2.0)	2.2	2.0	2.0	(2.2)	2.1	2.0	2.1	2.1	2.1	1.9
23	1.8	1.7	1.8	1.8	C	1.8F	1.7	1.8	1.9	(2.2)	(2.0)	1.9	2.1	2.2	2.2	2.1S	(2.1)S	S	2.0	2.0S	2.1	2.1	2.1	2.0F
24	2.1F	2.0F	2.0F	1.9	2.0F	2.2ES	1.9F	2.1F	(2.2)	2.3	(2.4)S	(2.2)J	2.1	(2.1)	C	2.4	S	1.9S	2.0	2.0	2.1	2.1	2.2F	2.0F
25	2.0F	1.9S	1.9S	(1.8)F	2.0F	2.1F	1.9F	2.0F	2.3	2.3	2.2	2.2	2.0	2.1	(2.0)	2.1	(2.1)S	(2.2)S	(2.0)S	2.2	2.1	2.4	1.9F	1.9F
26	1.8F	1.9F	1.9F	1.9F	2.0F	2.0F	2.1F	2.2	2.4	C	2.3	1.9	2.4	2.1	2.0	2.1	(2.2)S	(2.1)P	2.0	2.2	(2.1)J	2.2	2.0	1.9
27	1.9	2.0	2.1	2.0	1.8	1.9	(1.8)R	(2.1)R	2.3	2.4	2.3	2.2	2.1	2.0	2.0	2.1	2.1	2.1	2.2	2.0	2.0	2.1	2.1	2.0
28	2.0	2.0F	2.0	(2.1)J	(2.1)J	2.0F	1.9F	2.1	2.4	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.2	2.0	2.0	(2.2)J	1.9	1.9	1.9
29	2.1	2.2	2.0F	2.0F	1.8F	1.9F	2.0F	2.0	2.4	2.2	2.2	2.1	2.0	2.0	2.0	2.1	SC	(2.1)S	SC	2.2	2.1	2.0	2.2	(2.2)J
30	1.9	1.8	1.8	1.8	(2.1)J	1.9V	2.1F	(1.9)F	2.3	2.0	(2.1)S	2.1	(2.2)P	2.1	2.0	2.0	2.1	2.2	2.0	2.0	(2.1)J	2.0	1.9	2.0
31	1.9	1.9	2.1	2.0F	2.0F	2.0F	1.8	(2.1)J	2.4	2.2	2.1	2.3	(2.0)	2.1	(2.2)	(2.1)	(2.2)	2.1	2.2	1.9	2.2	2.0	2.0	2.3
Median	2.0	1.9	1.9	2.0	2.0	2.0	1.9	2.0	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.1	(2.1)	(2.2)	2.0	2.0	2.1	2.1	2.1	2.0
Count	31	30	30	30	29	31	30	30	30	29	29	31	31	31	30	29	27	26	29	30	30	30	31	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 77

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

IONOSPHERIC DATA

F2-M 3000 (Characteristic) January (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. J. S., J. M. C., E. J. W.

Calculated by: B. C. V., 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	2.9	[illegible]	2.9	3.0	2.9	2.8	3.0	3.2V	3.3	3.5	3.2	(3.2)	(3.2)	3.1	(3.1)	(3.2)	(3.2)C	(3.2)	3.1	3.1	2.9	2.9	(3.3)	3.1
2	(3.0)	3.0	(3.0)	(3.0)F	C	3.0	2.9	3.1	3.4	(3.4)	C	(3.2)C	(3.2)S	(3.1)	(3.1)	3.0	(3.0)	(3.2)C	3.1	(2.9)J	3.0	2.8	3.0	3.3
3	(3.0)	2.7F	2.4V	2.8F	2.8F	(2.7)F	2.8F	2.7	3.1	3.3	3.3	3.0	3.2	3.0	2.9	3.1	3.0	3.1	(2.9)	3.1	3.1	3.2	(2.9)F	3.0F
4	(3.1)F	(3.0)F	(3.0)F	(2.9)F	(2.9)F	(3.2)Z F	(3.3)F	(2.8)F	3.5	3.5	3.2	3.4	3.2	3.2	3.2	(3.0)	(3.3)	(3.1)	2.9	3.1	3.2	3.3	3.2	3.0
5	2.9	2.8	2.9	3.0	2.7	2.9	3.1F	3.2F	3.3	3.4	(3.4)	3.1	3.2	3.1	(3.0)S	3.2	3.2	(3.2)	3.1	3.2	(3.4)J	3.2	3.3	3.3
6	3.0V	2.7F	2.7F	2.9	3.0F	2.9F	2.9	3.0	(3.4)	(3.4)	(3.0)	3.3	(3.3)	3.1	3.2	3.3	3.1	(3.2)J	3.1S	3.0	3.1	3.1	3.0	3.1
7	2.9F	C	C	C	2.6F	2.7F	2 F	3.0F	(3.4)	(3.4)C	(3.2)	(3.2)	(3.1)	(3.2)	3.0	(3.2)	(3.1)	(3.3)	(3.2)S	3.2	3.0	(3.1)J	3.1	3.1
8	3.0F	2.7F	3.0F	3.0	2.9	2.8	3.0	2.9F	3.2	3.8	3.1	(3.2)	(3.1)	(3.1)	(3.0)J C	2.8	(3.1)S	(3.0)S	3.2	3.0	(2.8)	2.8F	2.9F	2.9F
9	(2.7)F	(2.9)F	2.8F	2.8F	2.7F	2.7F	2.9F	3.1F	3.4	(3.4)S	3.3	3.3	3.1	3.2	(3.2)S	(3.0)S	(3.2)S	S C	3.0	(3.1)J	(3.0)S	(3.3)S	(3.0)J F	(3.1)F
10	3.0F	2.4F	(2.7)F	(2.9)F	(3.0)J	3.0F	(2.9)F	(2.9)F	(3.6)S	3.3	3.3	(3.1)P	3.2	3.1	(3.0)S	3.1	(3.0)S	(3.2)J	3.0	(3.1)S	(3.1)J F	(3.3)	(3.0)	(2.9)J F
11	(3.0)J F	(2.9)J F	(2.8)F	(3.0)J F	(2.9)J F	(2.8)J F	(2.8)F	3.1	3.4	3.5	3.3	3.2	3.2	(3.1)S	3.1	3.1	(3.1)S	S C	(3.0)J	(3.1)S	(3.4)J	(3.2)S	2.9	3.1
12	(3.0)J F	(3.1)J F	(3.2)J F	3.0F	2.9F	(2.9)F	3.0F	(3.0)F	(3.1)S	(3.6)S	(3.0)S	3.0	2.9	3.2	3.1	(3.5)S	(3.4)S	(3.2)J	(3.2)S	3.0	3.3	3.3	2.9F	2.9
13	2.9F	2.9F	2.9F	(3.2)F	2.9	2.9	3.0	(3.3)J	(3.3)J	(3.3)S	(3.5)P	3.2V	3.1	3.0	2.9	2.9	(3.0)	(3.0)	(2.9)	(2.8)	3.1	(3.1)	3.1	3.1
14	3.1	3.0	3.0F	2.9F	3.0	2.8	2.8	3.0	3.4	3.4	(3.3)P	(2.8)J	3.3	3.0	(3.0)	(2.9)	S	(3.4)J S	(3.4)J	2.9	3.2	(3.2)	2.7	2.9
15	2.8	2.9	2.8F	2.8F	3.0F	2.9F	3.0F	3.0F	(3.1)F S	3.6	(3.3)J	(3.2)S	3.0	3.0	3.1	C	3.1	(3.2)S	(3.0)S	2.9	(3.2)J S	3.2	(3.2)J S	2.9F
16	3.1	2.6F	2.4F S	2.8	3.0	3.0	C	C	C	C	C	(3.7)P	(3.1)C	(3.0)P	3.0	3.1	(3.2)	(3.4)	(3.0)	3.0	3.3	3.3	(3.1)J S	2.9
17	2.8F	2.7F	2.8F	2.7S	2.9	2.9C	2.9F	3.1F	3.3	3.4	(3.6)	(3.2)	3.0	2.9	(2.9)	3.0S	S	(3.2)	2.8	2.9	3.1	3.1F	3.1	2.9
18	2.8	2.8	2.6	2.9	3.0	3.1	(2.7)J	(2.9)J	(3.3)Z	3.2	(3.2)J	(3.3)	3.2	(3.2)P	3.0	(3.1)	(3.1)	S C	3.0	(3.1)J	(3.2)J	(2.8)S	(2.8)J	3.0
19	(2.9)J F	(2.8)J F	(3.0)J F	(3.1)J F	(3.3)J F	(3.0)J F	3.1F	(2.9)F	(3.3)V	(3.6)	(3.3)	(3.1)	3.1	(3.0)P	(3.1)P	2.9	(3.0)S	3.3	(3.0)S	(3.0)S	3.2F	3.0F	(2.9)J F	2.8F
20	2.7F	2.7F	2.7	2.8F S	2.8	2.9	3.0	3.0	3.4	3.3	3.1	3.2	3.3	3.0	2.9	C	(3.0)	(3.2)	(2.6)S	3.0S	2.8	3.0	2.9	2.8F
21	2.9F	(2.7)F	2.9F	3.2F	3.0F	2.8F	3.0F	2.8F	3.4	3.5	3.0	2.9	3.0	2.9V	2.9	3.0	3.0	C	C	C	C	C	3.1	C
22	2.8F J	3.1	(3.0)J	(3.0)J F	(3.1)J F	3.0	2.8	3.2	3.4	3.2	3.1	3.2	3.0	(3.1)	3.1	3.0	2.7	3.3	3.0	2.9	3.2	3.2	3.1	2.7
23	2.7	2.5	2.6	2.7	C	2.7F	2.5	2.6	2.9	(3.1)	(2.9)	2.6	3.0	3.1	3.2	2.8S	(2.9)S	S C	3.0	3.0S	3.3	3.1	3.1	3.0F
24	3.1F	2.9F	2.9F	2.8	3.0F	3.2F	2.8F	3.0F	(3.3)	3.4	(3.5)S	(3.3)J	3.1	(3.2)	C	3.5	S	2.7S	2.9	3.0	3.1	3.0	3.2F	2.8F
25	2.9F	2.8S	2.8S	(2.7)F	3.0F	3.0F	2.8F	3.0F	3.5	3.4	3.1	3.2	2.9	3.0	(3.0)	3.1	(3.1)S	(3.3)S	(3.0)S	3.1	3.3	3.2	2.9F	2.8F
26	2.7F	2.6F	2.8F	2.9F	2.9F	3.0F	3.1F	3.1	3.5	C	3.4	3.1	3.5	3.1	3.0	3.1	(3.3)S	(3.0)P	3.0	3.2	(3.0)J	3.0	3.0	2.8
27	2.9	2.9	2.9	3.0	2.7	2.7	(2.7)R	(3.0)R	3.4	3.4	3.3	3.2	3.1	3.1	3.0	3.0	3.1	3.1	3.1	2.8	2.9	3.0	3.1	3.3
28	2.9	3.0F	3.0	(3.0)J	(3.1)J	2.9F	3.1F	3.1	3.3	3.3	3.3	3.1	2.9	3.0	3.1	3.0	3.1	3.2	3.1	3.0	(3.1)J	2.8	2.8	2.8
29	3.2	3.2	3.0F	2.9F	2.7F	2.9F	3.0F	3.1	3.4	3.1	3.1	3.1	3.0	3.0	2.9	3.0	S C	(3.1)S	S C	3.2	3.1	3.1	3.2	(3.6)J
30	2.2	2.7	2.7	2.7	(3.[illegible])J	2.9	3.1F	(2.8)F	3.4	3.4	(3.2)S	2.9	(3.2)P	3.2	3.0	3.0	3.1	3.2	3.0	2.9	(3.1)J	3.0	2.7	2.9
31	2.9	2.9	3.2	3.0F	2.4F	2.7F	2.7	(3.2)J	3.5	2.8	3.1	3.2	(3.1)	3.1	(3.1)	(2.8)	(3.3)	3.1	3.1	3.1	3.3	3.0	2.9	3.3
Median	2.9	2.8	2.9	2.9	2.9	2.9	2.9	3.0	3.4	3.4	3.2	3.2	3.1	3.1	3.0	3.0	(3.1)	(3.2)	3.0	3.0	3.1	3.1	3.0	3.0
Count	31	30	30	30	29	31	30	30	30	29	29	31	- 31	31	30	29	27	26	29	30	30	30	31	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

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TABLE 78

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

Form adopted June 1946

IONOSPHERIC DATA

F1-M3000 (Characteristic), ______ (Unit), January (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. J. S., J. M. C., E. J. W.

Calculated by: N. M., 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																								
3																								
4														L										
5														L										
6														L	L									
7											L		L		4.3									
8											L	L		L[H]	L									
9												(4.2)	L											
10														L										
11															L									
12																								
13												L												
14																								
15																								
16													L	L	L									
17													L	L	L									
18														L										
19											L	L	L			L								
20												L	L		L									
21													L											
22															L									
23											L			L										
24														L		4.3								
25												L												
26											L			L	3.5	L								
27											L	L		L	L	L								
28												L	L	L		L	L							
29												L	L	L	L	L								
30												L	L	(3.0)[A]	L									
31												L	L	L	L	L								
Median																								
Count																								

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 79

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

IONOSPHERIC DATA

E-M1500 (Characteristic), ______ (Unit), January (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. J. S., J. M. C., E. J. W.

Calculated by: B. C. V., 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									4.2	4.3	4.4	4.3	4.4	4.4	4.6	4.4	4.4							
2									4.5	(4.4)^{H}	(4.2)	4.4	4.4	4.3	4.4	4.4	(4.2)^{H}							
3									A	B	(4.7)^{A}	(4.4)	4.1	4.2	(4.4)	4.2	(4.1)^{H}	4.2						
4									4.5^{H}	(4.8)	A	(4.6)	4.4	4.4	4.7	(4.4)	A	A						
5									4.5	(4.6)^{H}	(4.8)^{A}	(4.4)	4.4	4.4	4.4	4.4	B							
6									A	4.5	(4.5)	4.5	4.3	4.1	4.2^{H}	4.1	3.8^{H}							
7										4.5	A	4.4	4.4	4.7	4.6	4.3	4.1	S						
8									A	4.1^{H}	(4.3)	(4.2)	(4.2)	(4.2)^{H}	4.5	4.1	(4.4)	(4.3)						
9									4.1	4.4	4.5	4.6	(4.4)	(4.8)	4.2	(4.3)^{H}	(4.6)^{F}	(3.8)						
10									A	(4.4)^{H}	(4.3)$^{H}_{F}$	A	4.0	4.3	4.2	4.2	(4.2)^{S}	A						
11									(4.0)^{H}	4.2	(4.1)	4.5^{H}	4.5	(4.3)^{H}	(4.6)^{H}	(4.2)	A							
12									S	(4.6)^{S}	4.2	(4.4)	4.1	4.5	4.1	4.0	3.7	3.6						
13									A	4.0	A	A	(4.3)^{A}	4.4	4.5	4.2	3.9	(4.3)						
14									4.1^{F}	3.9	4.3	(4.3)^{F}	4.3	4.2	4.3	4.3	4.3	A						
15									3.6^{H}	4.1	A	4.0	4.2	4.2	4.2	C	4.4^{A}							
16									C	C	C	(4.2)^{A}	4.3	(4.0)	4.4	3.9	4.0	3.8						
17									3.5^{F}	4.3	3.9	4.0	4.1	4.2	4.2^{H}	3.9	3.7	3.8						
18									(3.9)	(4.1)	4.3	4.3	4.3	4.7	A	4.2	(4.4)^{H}	3.8						
19									(4.4)^{H}	(4.2)	(4.1)^{A}	4.3	4.3	4.4	4.4	3.8	4.2	(4.0)^{H}						
20									4.2^{H}	4.6^{H}	4.1	4.1	4.3	4.0	4.2	C	4.3	4.1						
21									3.8^{H}	4.1	4.5^{H}	(4.3)^{B}	A	A	A	3.9	4.1	C						
22									4.8	B	4.5	4.4	(4.3)	4.2	4.2	4.1	A	(3.4)^{B}						
23									3.5	3.9	4.4	4.5	A	A	4.2	4.0	4.3	S						
24									(4.2)	A	A	A	A	4.1	C	4.0	4.1							
25									3.6	4.2	A	4.1	4.2	4.1	4.1	4.2	4.2	3.8						
26									(4.1)	C	4.1	3.9	4.0	4.1	4.2	4.7	4.2	4.7						
27									4.3	4.6	4.6	4.1	(4.6)^{H}	(4.3)^{B}	4.4	4.2	4.5	(4.2)^{H}						
28									4.0	A	4.4	4.4	4.1	4.3	4.4	4.4	4.4	3.9^{H}						
29									4.1^{H}	4.5	4.7	A	4.9	4.3	4.6	4.5	4.0	A						
30									C	A	4.0	A	4.3	4.4	A	A	4.5	4.7						
31									4.5	A	A	4.1	4.3	4.6	4.7	4.5	4.0	3.4						
Median									4.1	4.3	4.3	4.3	4.3	4.3	4.4	4.2	4.2	3.9						
Count									22	23	23	26	28	29	27	28	27	17						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

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Table 80

Ionospheric Storminess at Washington, D.C.

January 1948

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

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

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

Table 81

Sudden Ionosphere Disturbances Observed at Washington, D.C.

January 1948

Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*
19	1324	1350	D.C., England	0.1
20	1955	2025	Ohio, D.C.	0.1

*Ratio of received field intensity during SID on January 19 to average field intensity before and after, for station GLH, 13525 kilocycles, received in New York, 5340 kilometers distant. Station W8XAL, 6080 kilocycles, 600 kilometers distant, was used for the SID on January 20.

Table 82

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

1948 Day	GCT Beginning	GCT End	Receiving station	Location of transmitters
January 19	1320	1350	Brentwood	Belgian Congo, Bulgaria, Canary Is., Chile, Greece, Iran, Kenya, Portugal, Southern Rhodesia, Spain, U.S.S.R., Zanzibar
19	1325	1345	Somerton	Argentina, Barbados, Brazil, Gold Coast, Nigeria, Union of S. Africa

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 83

Provisional Radio Propagation Quality Figures
(Including Comparisons with CRPL Warnings and CRPL Probable Disturbed Period Forecasts)
December 1947

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

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

**In addition to dates marked X, the following were designated as probable disturbed days on forecasts more than eight days in advance of said dates: December 6 and 7.

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.

Table 84a

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

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																		P
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1948																																						
Jan. 1.7	X	X	X	X	X	X	X	X	X	3	3	5	8	11	12	11	12	12	11	10	24	23	23	22	21	10	5	9	11	11	12	12	12	10	10	9	9	0
5.9	-	-	-	-	-	-	-	-	3	5	10	8	9	17	31	30	30	20	13	14	22	24	28	35	18	14	12	10	9	8	6	5	7	4	5	5	5	0
6.7	3	3	8	10	10	9	9	10	12	13	13	13	15	20	20	30	25	26	27	16	15	20	35	40	46	20	16	16	14	13	13	12	10	8	8	11	10	0
7.9	1	2	2	2	2	1	5	10	12	12	14	16	40	40	20	10	5	5	8	12	28	27	27	23	22	22	16	11	10	10	7	3	3	3	5	7	7	0
9.9	3	5	7	7	6	8	11	14	14	13	19	25	32	30	13	5	3	7	14	20	35	38	46	43	38	30	17	15	13	9	10	9	5	7	8	10	10	0
10.7	-	-	-	-	-	2	4	5	5	3	4	4	5	5	5	5	4	2	3	10	11	14	20	25	25	13	13	12	3	2	2	2	2	3	4	5	5	0
14.8	-	-	-	1	1	2	3	4	5	5	4	5	11	20	23	24	30	26	18	14	14	17	25	23	27	15	11	1	-	-	3	5	-	-	4	5	8	-5
30.8	-	-	-	-	-	-	-	-	-	-	-	5	3	3	13	15	22	21	17	14	18	30	25	23	20	6	5	10	10	11	11	12	12	11	9	5	3	-10

Table 85a

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

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																		P
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1948																																						
Jan. 1.7	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	1	2	2	1	18	15	8	11	13	1	1	-	-	-	-	-	-	-	-	-	-	0
5.9	1	1	1	1	1	1	1	2	2	1	1	8	10	10	8	10	9	8	1	1	12	7	2	10	5	2	1	1	1	1	1	1	1	-	-	-	-	0
6.7	-	-	-	-	-	-	-	-	-	-	-	1	12	9	13	8	12	11	8	5	4	10	20	14	10	2	-	-	1	1	1	1	1	-	-	-	-	0
7.9	-	-	-	-	-	-	-	-	-	-	-	1	9	10	12	4	2	-	-	5	15	11	10	6	[illegible]	1	-	1	1	1	1	-	-	-	-	-	-	0
9.9	-	-	-	-	-	-	-	-	-	-	1	2	9	10	12	12	11	5	6	10	10	10	11	5	1	1	1	1	3	4	2	1	1	1	1	1	1	0
10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	2	1	1	1	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	0
14.8	-	-	-	-	-	-	-	-	-	-	-	1	2	2	2	2	2	3	-	-	1	10	4	5	4	2	1	1	-	-	-	-	-	-	-	-	-	-5
30.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	3	2	1	1	2	2	2	2	2	1	1	-	-	-	-	-	-	-	-	-	-10

Table 86a

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

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																		P
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1948																																						
Jan. 1.7	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	1	1	2	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	0
5.9	-	-		-	-	-	-	-	-	-	-	-	-	-	1	2	2	2	1	1	2	2	3	3	2	2	2	1	-	-	-	-	-	-	-	-	-	0
6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	3	4	6	6	3	3	2	2	-	-	-	-	-	-	-	-	0
7.9	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	1	-	-	-	-	2	2	2	[illegible]	1	-	-	-	-	-	-	-	-	-	-	-	-	0
9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	4	3	2	1	1	-	-	-	-	-	-	-	-	-	-	0
10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	1	-	-	-	-	-	-	-	-	-	-	-	0
14.8	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	2	-	-	-	1	1	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-5
30.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-10

Table 84b

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

Date GCT	Degrees south of the solar equator 90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0°	Degrees north of the solar equator 5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	P
1948																																						
Jan. 1.7	9	10	10	10	9	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0
5.9	5	6	8	8	6	5	5	7	10	12	12	12	17	18	18	20	15	9	8	8	5	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X	-	0
6.7	10	10	12	12	11	10	10	12	18	20	19	19	23	30	30	35	33	20	15	13	13	25	24	30	20	12	9	7	5	3	2	2	-	-	3	3	3	0
7.9	7	6	8	10	10	9	10	12	20	20	20	20	15	11	15	18	30	37	40	15	15	16	17	19	22	25	15	10	5	2	-	-	-	-	-	-	1	0
9.9	10	10	12	12	11	10	15	16	14	14	15	12	12	15	20	25	25	18	20	23	25	24	22	20	18	16	13	9	7	5	3	2	1	1	1	2	3	0
10.7	5	3	5	5	4	5	9	10	9	8	9	8	7	7	9	12	12	10	11	13	12	12	11	7	6	5	5	3	2	-	-	-	-	-	-	-	-	0
14.8	8	9	9	9	10	10	11	12	10	9	9	8	-	12	18	19	18	23	17	13	12	12	12	11	12	12	9	8	7	6	5	4	3	2	-	-	-	-5
30.8	3	3	2	2	2	3	3	2	3	5	10	11	12	12	14	18	16	16	15	15	15	17	16	14	13	13	5	3	3	5	5	5	3	2	1	-	-	-10

Table 85b

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

Date GCT	Degrees south of the solar equator 90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0°	Degrees north of the solar equator 5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	P
1948																																						
Jan. 1.7	-	-	-	-	-	-	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	0
5.9	-	-	-	-	-	-	-	-	-	-	-	1	12	2	2	17	15	10	3	3	3	5	5	7	X	X	X	X	X	X	X	X	X	X	X	X	1	0
6.7	-	-	-	-	-	-	-	-	-	-	-	2	2	4	3	13	22	20	12	7	7	10	3	17	8	7	2	-	-	-	-	-	-	-	-	-	-	0
7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	10	14	14	3	4	7	12	10	13	3	2	1	1	1	1	1	-	-	-	-	-	0
9.9	1	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	2	8	11	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14.8	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	5	10	12	12	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-5
30.8	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	2	3	2	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-10

Table 86b

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

Date GCT	Degrees south of the solar equator 90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0°	Degrees north of the solar equator 5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	P
1948																																						
Jan. 1.7	-	-	-	-	-	-	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	0
5.9	-	-	-	-	-	-	-	-	-	1	1	1	1	2	2	2	2	1	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X	-	0
6.7	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	3	2	1	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	0
7.9	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
9.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	0
10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14.8	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-5
30.8	-	-	-	-	-	-	-	-	-	-		1	1	2	2	2	2	2	1	1	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-10

Particulars of observations, Climax, Colorado,
December 1946-December 1947.

Date, GCT	Green line threshold intensity at 45°	90°	135°	225°	270°	315°	Obs.	Meas.
1946								
Dec. 2.7	3	4	3	10	4	4	E	E
7.9	2	2	3	-	-	-	E	E
8.9	8	6	8	8	9	10	E	E
16.8	10	9	9	10	9	11	E	E
18.7	4	2	2	2	3	4	E	E
27.9	13	9	8	-	-	-	E	E
28.7	2	4	7	2	3	2	E	E
29.7	3	6	9	3	4	4	E	E
30.7	9	8	9	8	8	8	E	E
31.7	3	3	3	3	3	3	E	E
1947								
Jan. 3.9	9	7	6	5	5	7	E	E
7.7	4	4	3	3	3	5	E	E
8.7	5	5	5	5	7	5	E	E
9.9	5	5	7	4	4	8	E	E
10.8	7	10	9	10	-	-	E	E
11.7	4	6	5	4	4	5	E	E
12.7	3	4	4	4	5	6	E	E
16.8	8	7	8	7	9	11	E	E
17.7	9	11	8	6	7	6	E	E
21.8	3	3	3	3	5	3	R	R
22.7	3	3	3	3	3	3	R	R
23.7	3	4	3	2	3	3	R	R
28.8	-	-	4	-	-	-	R	R
Feb. 2.9	8	10	11	7	8	7	R	R
4.9	5	6	6	4	4	4	R	R
5.7	4	5	3	3	3	4	R	R
6.7	3	3	4	3	3	5	R	R
8.7	4	2	2	2	2	3	R	R
12.7	1	2	2	1	2	2	R	R
14.0a	6	6	7	-	-	-	R	R
14.7	2	2	2	2	2	2	R	R
15.8	2	6	6	4	3	2	E	R
Mar. 6.7	5	6	4	10	7	4	E	E
13.7	6	5	4	6	7	6	R	R
19.8	3	3	4	4	3	3	E	R
20.8	>15	6	5	5	8	6	E	R
21.7	6	5	6	5	4	6	E	R
22.7	7	8	8	6	7	8	E	R
27.7	5	4	4	3	3	3	E	R

Date, GCT	Green line threshold intensity at 45°	90°	135°	225°	270°	315°	Obs.	Meas.
1947								
Apr. 14.7	5	5	5	5	5	4	E	E
20.7	5	5	5	5	5	5	E	E
21.6	6	5	6	5	5	4	E	E
May 13.9	8	10	-	9	9	8	E	E
20.6	9	8	4	5	4	4	E	E
21.6	7	10	5	7	7	6	E	E
22.6	8	8	9	8	8	9	E	E
25.6	7	7	7	6	7	8	R	R
June 1.6	-	6	6	-	-	-	R	R
2.7a	6?	6?	6?	-	-	-	E	R
6.9	8	8	7	8	7	9	E	R
7.6	7	13	6	10	5	5	R	R
8.6	10	11	12	9	8	9	R	R
9.7	6	7	8	10	9	7	R	R-E
10.7	5	5	4	5	4	5	R	R
13.6	5	5	4	4	5	5	R	R
14.6	5	5	4	4	4	4	R	R
15.6	7	7	7	7	7	7	R	R
19.6	5	6	6	4	5	4	R	R
20.7	5	5	5	6	10	-	R	R
24.6	6	7	5	10	8	7	E	R
25.6	5	5	6	6	6	6	E	E
26.6	11	15	12	13	15	15	E	E
27.6	10	10	11	10	11	10	E	E
28.6	10	11	10	10	11	10	E	E
29.7	8	9	9	10	7	10	E	R
30.6	11	13	11	11	11	11	E	R
July 1.6	7	6	6	7	7	5	E	E
2.6	9	12	13	9	7	9	E	E
5.6	13	13	12	12	11	11	E	E
8.6	9	10	10	10	10	11	E	E
9.6	8	8	8	-	-	-	E	E
10.6	9	9	9	10	9	9	E	E
11.6	13	13	13	13	13	13	E	E
12.6	11	11	11	12	11	11	E	E
17.8	10	10	10	13	13	11	E	E
19.8	5	4	3	4	3	3	E	E
20.6	10	11	11	-	-	-	E	E
24.6	5	5	4	4	4	4	E	E
25.6	9	9	9	9	9	8	E	E

a = low weight
R = W.O. Roberts
L = L. Larmore

E = J.W. Evans
W = M. Warner
F = W. Fleming

Particulars of observations, Climax, Colorado,
December 1946-December 1947.

Date, GCT	Green line threshold intensity at						Obs.	Meas.	Date, GCT	Green line threshold intensity at						Obs.	Meas.
	45°	90°	135°	225°	270°	315°				45°	90°	135°	225°	270°	315°		
1947									1947								
July 26.6	6	6	6	6	7	5	E	E	Sept. 7.6	6	6	6	6	5	5	W	E
27.6	7	8	8	6	5	5	E	E	9.8	8	9	7	13	8	7	W	E
28.6	9	8	7	7	9	9	E	E	12.7	8	7	7	8	8	8	W	E
29.7	9	7	6	7	7	10	W	E	13.6	14	11	11	12	13	11	F	E
31.6	8	-	-	8	11	10	W	E	20.7	15	14	15	12	12	10	F	E
Aug. 1.6	11	12	10	11	9	10	W	E	21.6	15	12	11	15	14	15	F	E
2.7	9	11	11	9	10	10	R	E	22.7	12	15	-	-	-	-	W	E
3.6	9	8	8	10	10	10	R	E	23.7	10	9	9	11	10	12	W	E
4.6	8	8	8	8	8	7	W	R	25.7	10	11	12	10	9	11	W	E
6.6	9	8	9	9	8	8	W	E	26.7	10	8	9	5	8	11	W	E
7.7	6	8	6	8	8	9	W	E	Oct. 8.9	6	6	5	8	14	9	E	E
8.6	8	8	9	7	8	7	W	E	16.7	3	4	4	3	4	4	W	E
9.6	8	9	9	9	8	7	W	E	21.8	12	11	9	-	-	-	E	E
10.6	9	11	9	9	10	9	W	R	27.8	5	6	6	6	12	9	W	E
11.6	7	7	7	8	-	-	W	R	31.8	7	6	6	6	8	12	W	E
12.9	9	9	11	9	10	10	W	R	Nov. 1.8	4	5	5	4	4	5	W	E
14.7	5	3-4	4	4	4-5	5	W	R	2.7	4	4	3	3	3	4	W	E
20.6	5	4	4	4	4	4	R-E	E	12.7	15	5	6	-	-	-	W	E
21.8	4	4	5	-	3	-	W	R	13.7	4	5	5	4	4	5	W	E
22.8	-	-	4	-	-	-	R	R	27.7	5	6	6	5	5	6	W	E
23.6	6	5	5	6	9	6	R-W	E	28.7	4	3	3	3	4	3	W	E
24.6	3	4	3	5	5	6	E	E	29.7	3	3	3	4	4	4	W	E
25.6	4	4	5	4	4	4	W	E	Dec. 2.7	11	7	7	-	-	-	W	E
26.6	7	6	7	11	10	11	W	R	5.7	5	4	4	4	4	4	W	E
27.8	5	6	5	5	6	6	W	E	10.8	7	7	7	6	6	7	W	E
29.6	6	15	5	12	7	7	W	R	23.9	7	6	5	6	7	6	E	E
31.7	8	4	3	3	3	4	W	R	27.7	5	6	6	6	5	10	E	E
Sept. 1.7	6	5	5	6	6	7	W	R	28.7	2	3	3	3	3	5	E	E
2.6	5	6	7	5	6	6	W	E	29.7	3	3	3	3	3	3	E	E
4.7	8	7	8	7	6	7	W	E	31.7	5	9	9	6	5	3	F	E

Table 88

American and Zürich Provisional Relative Sunspot Numbers

January 1948

Date	R_A*	R_Z**	Date	R_A*	R_Z**
1	170	124	16	136	112
2	181	131	17	131	93
3	183	137	18	112	85
4	143	124	19	100	98
5	136	114	20	106	89
6	124	104	21	132	111
7	150	112	22	145	115
8	141	120	23	134	109
9	162	133	24	118	103
10	130	112	25	135	105
11	101	89	26	152	107
12	111	90	27	128	108
13	120	91	28	121	96
14	119	115	29	112	88
15	130	114	30	101	75
			31	69	62
			Mean:	130.1	105.4

*Combination of 35 observers; see page 9.
**Dependent on observations at Zürich Observatory and its stations at Locarno and Arosa.

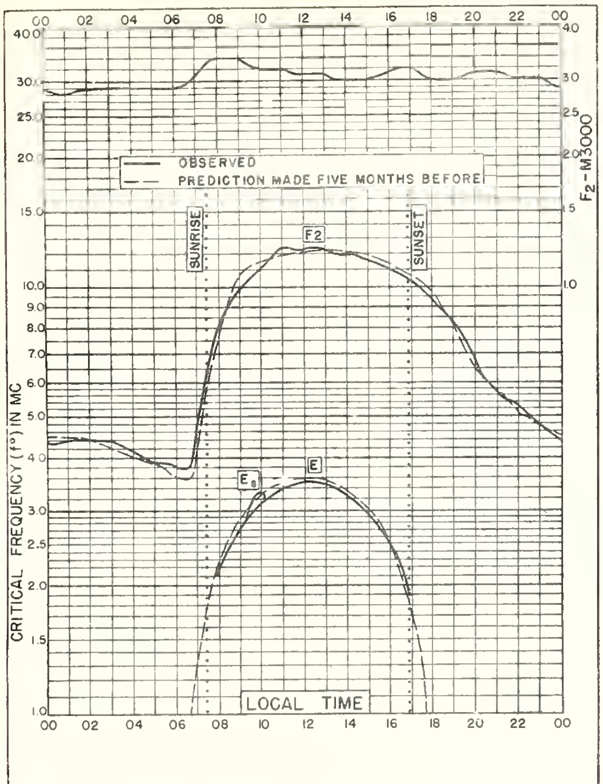

Fig. 1. WASHINGTON, D.C. 39.0°N, 77.5°W JANUARY 1948

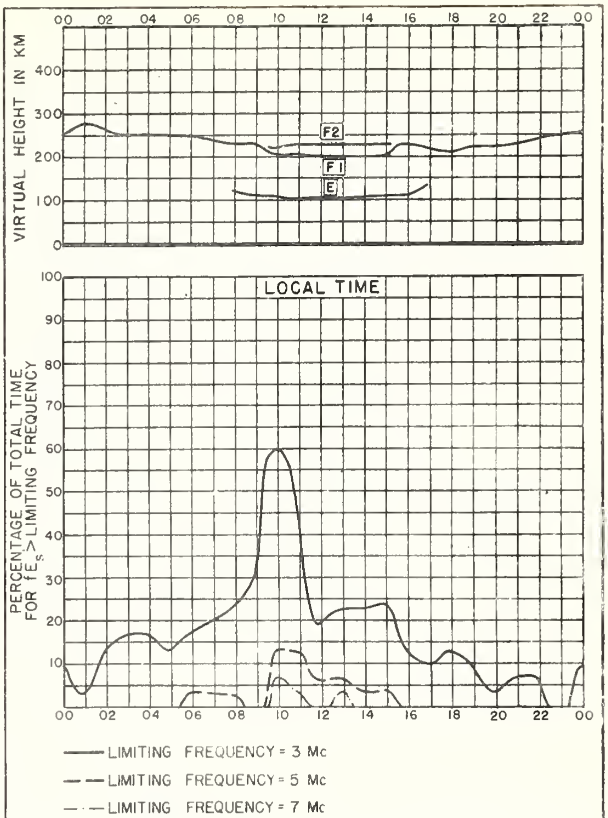

Fig. 2. WASHINGTON, D.C. JANUARY 1948

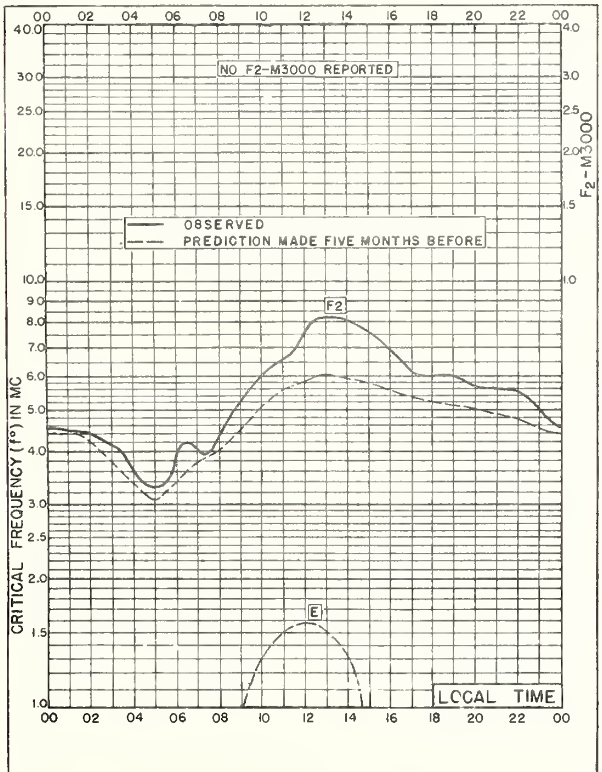

Fig. 3. CLYDE, BAFFIN I. 70.5° N, 68.6°W DECEMBER 1947

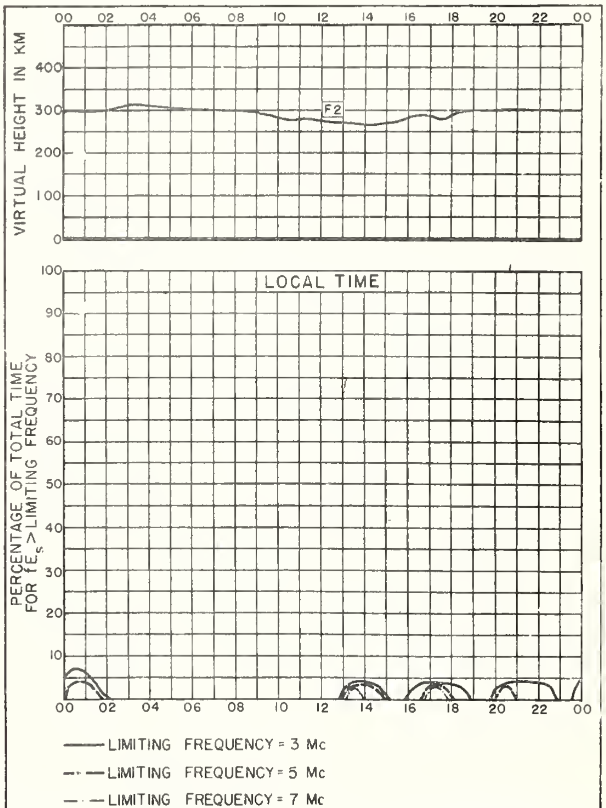

Fig. 4. CLYDE, BAFFIN I. DECEMBER 1947

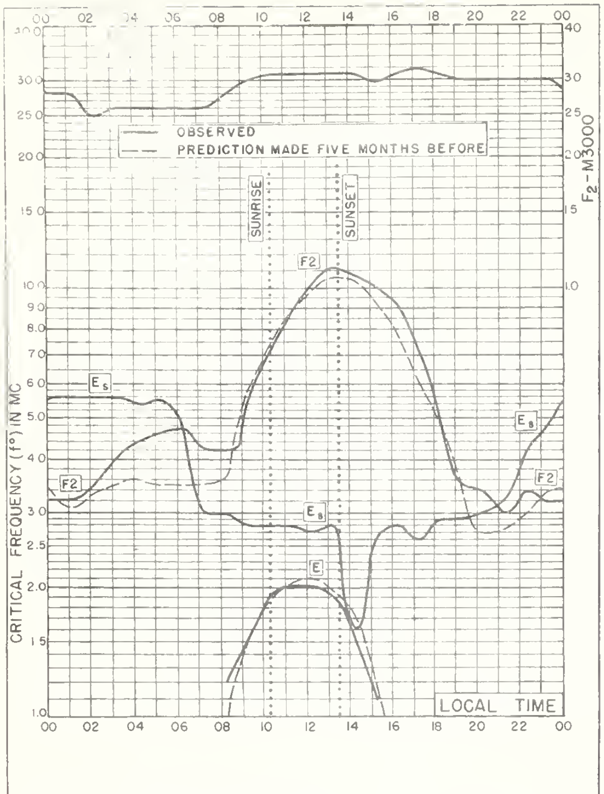

Fig. 5. FAIRBANKS, ALASKA
64.9°N, 147.8°W DECEMBER 1947

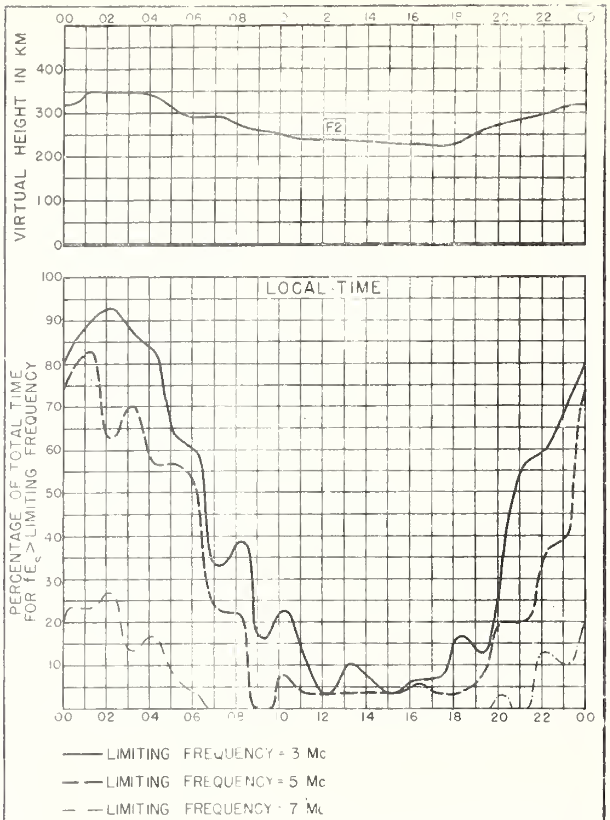

Fig 6. FAIRBANKS, ALASKA DECEMBER 1947

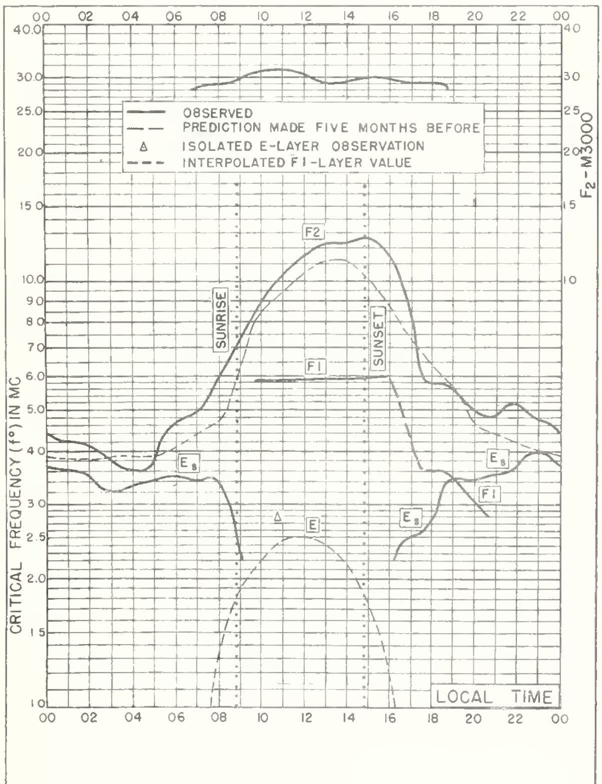

Fig. 7. CHURCHILL, CANADA
58.8°N, 94.2°W DECEMBER 1947

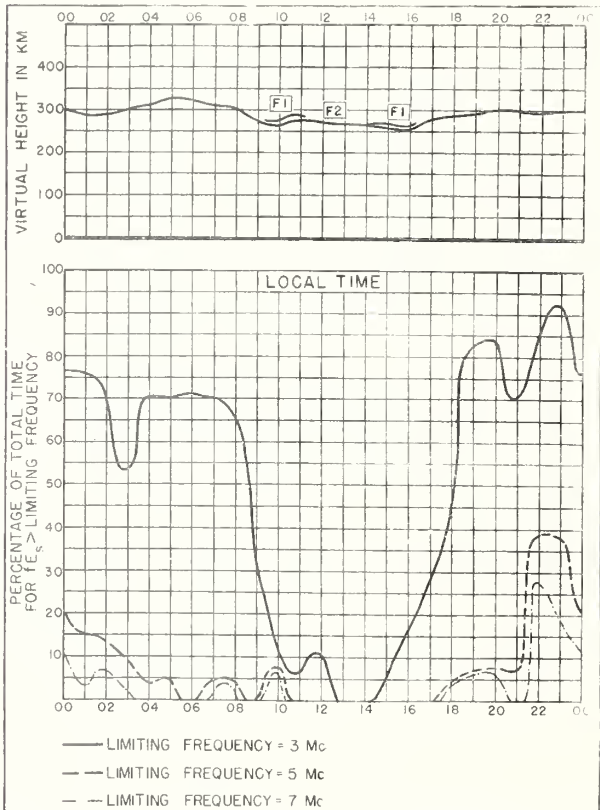

Fig 8. CHURCHILL, CANADA DECEMBER 1947

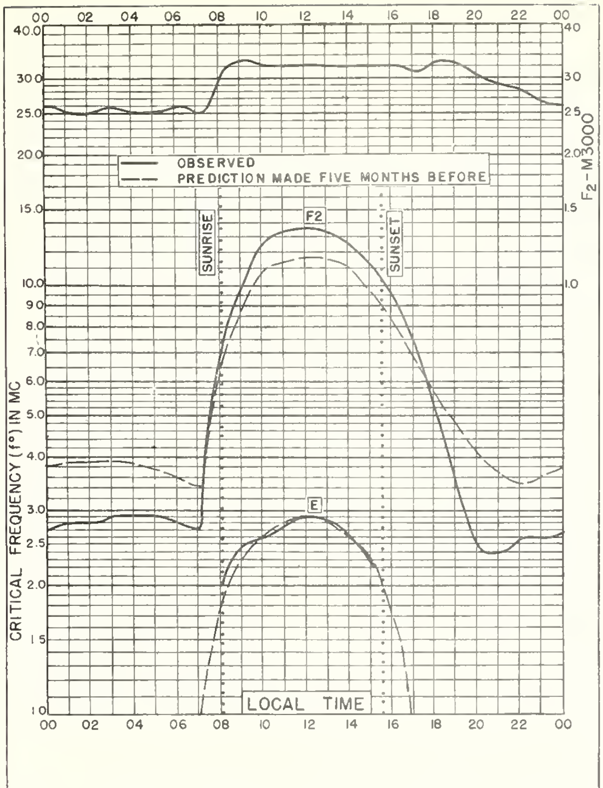

Fig. 9. ADAK, ALASKA
51.9°N, 176.6°W DECEMBER 1947

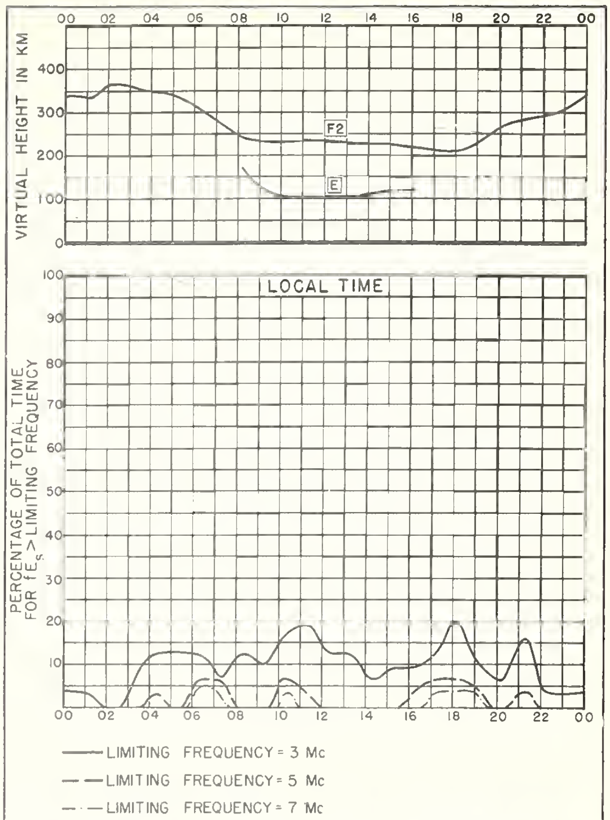

Fig. 10. ADAK, ALASKA DECEMBER 1947

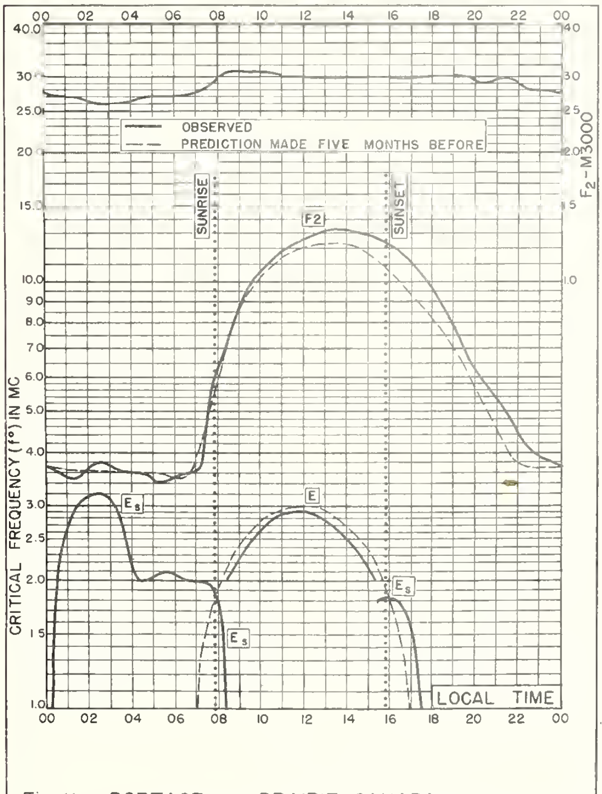

Fig. 11. PORTAGE la PRAIRIE, CANADA
49.9°N, 98.3°W DECEMBER 1947

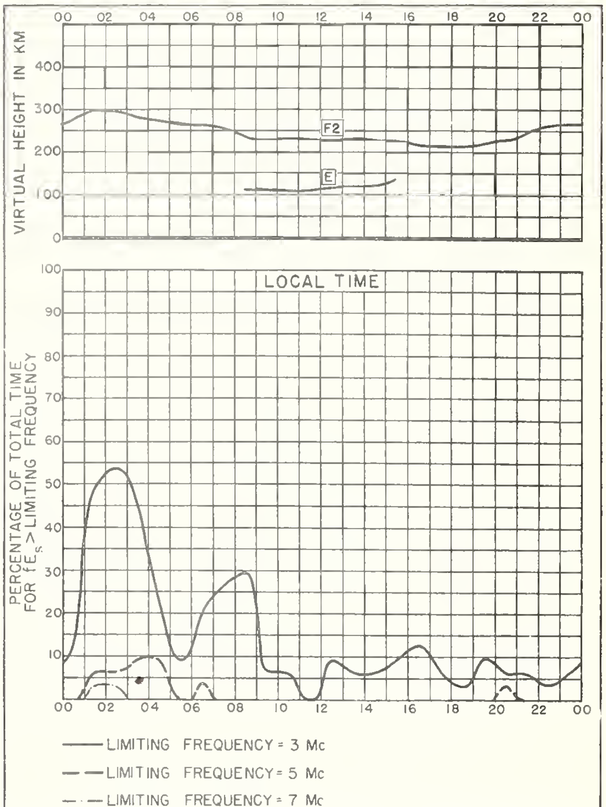

Fig. 12. PORTAGE la PRAIRIE, CANADA DECEMBER 1947

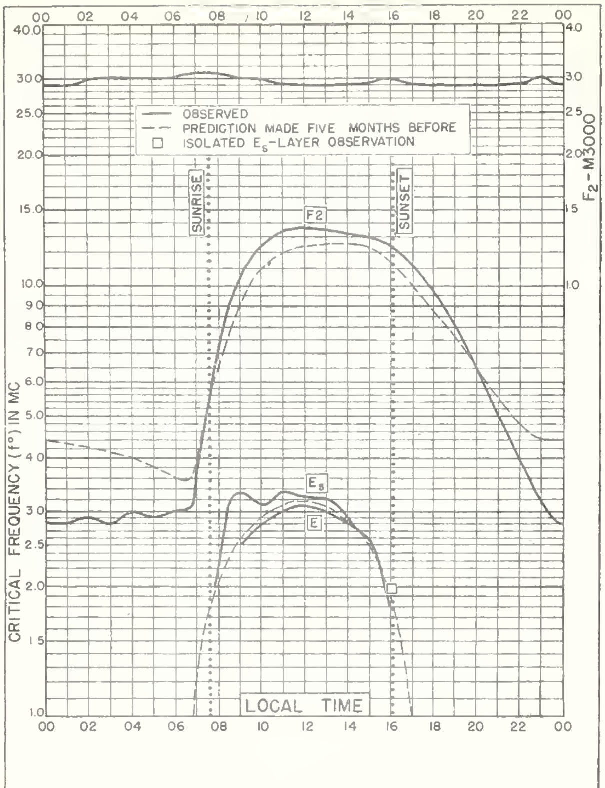

Fig. 13. ST. JOHN'S, NEWFOUNDLAND
47.6°N, 52.7°W DECEMBER 1947

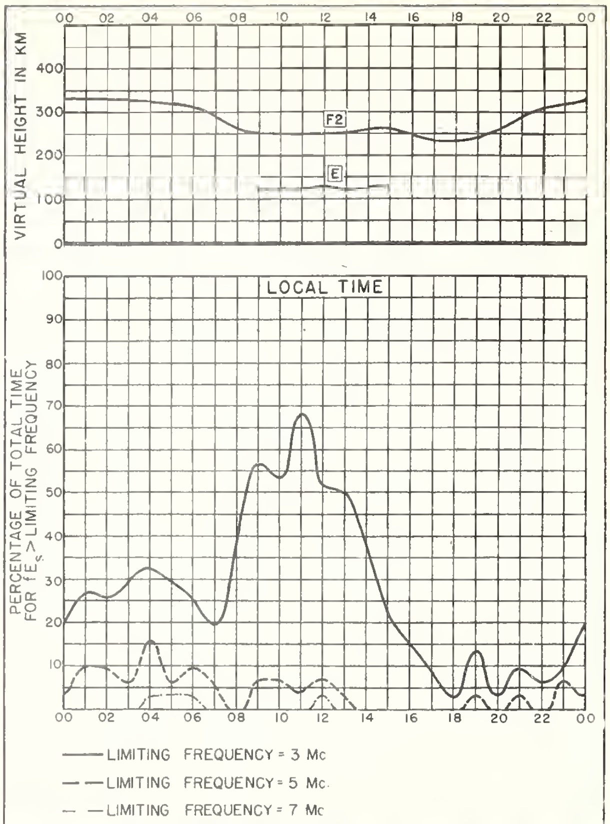

Fig. 14. ST. JOHN'S, NEWFOUNDLAND DECEMBER 1947

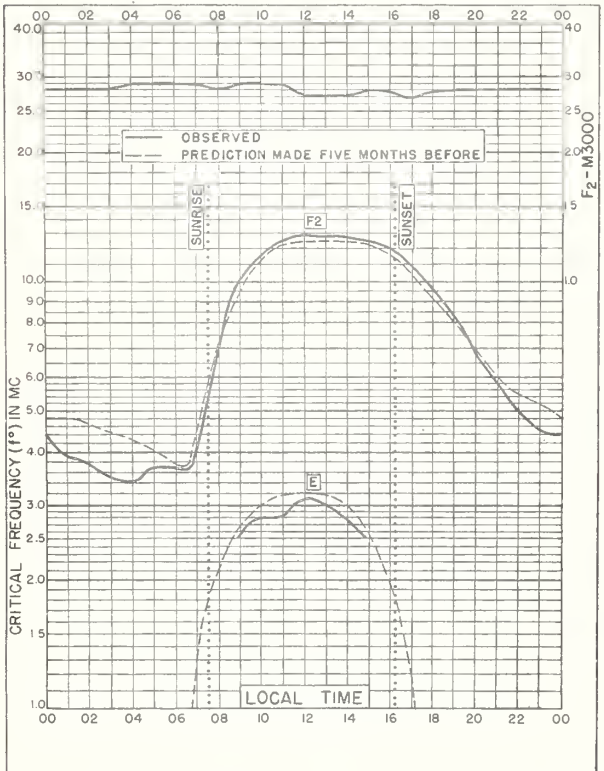

Fig. 15. OTTAWA, CANADA
45.5°N, 75.8°W DECEMBER 1947

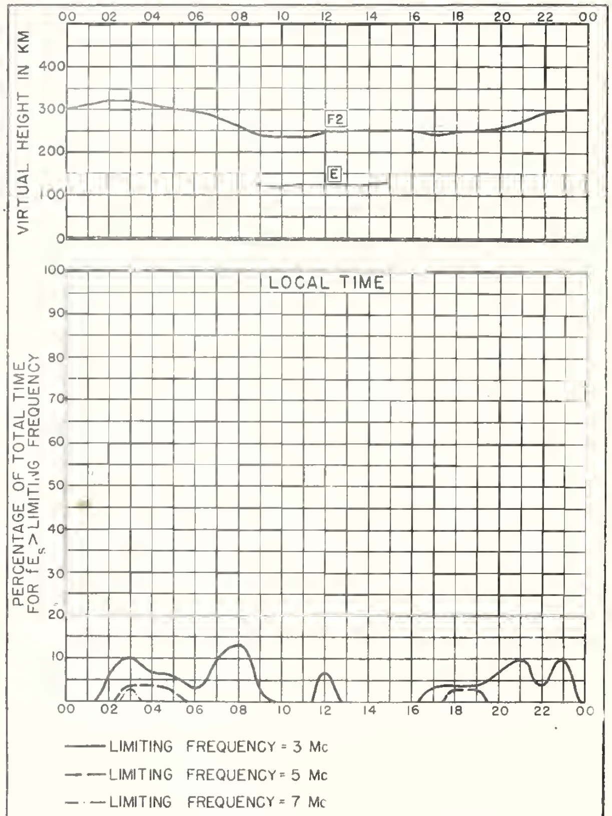

Fig. 16. OTTAWA, CANADA DECEMBER 1947

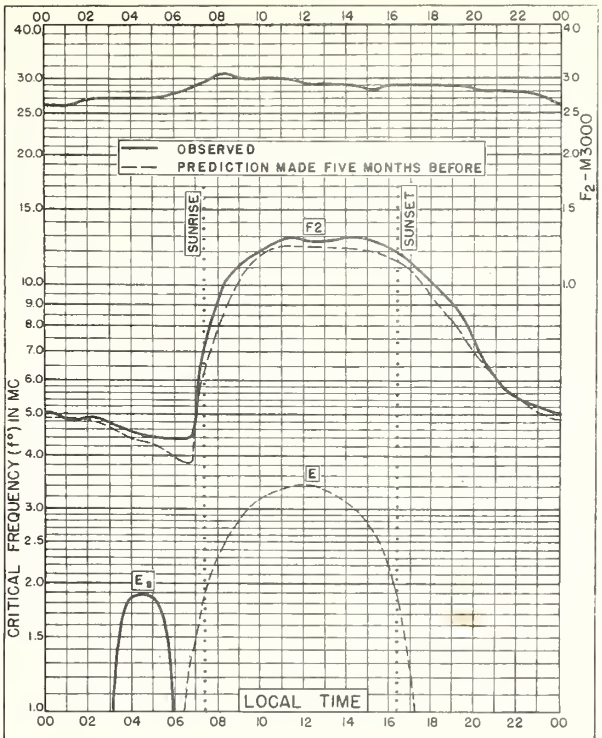

Fig. 17. BOSTON, MASSACHUSETTS
42.4°N, 71.2°W DECEMBER 1947

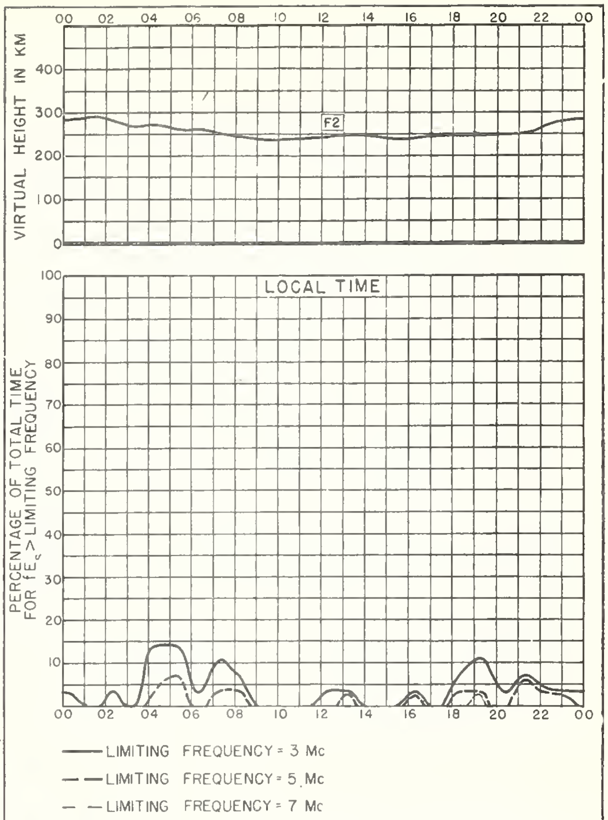

Fig. 18. BOSTON, MASSACHUSETTS DECEMBER 1947

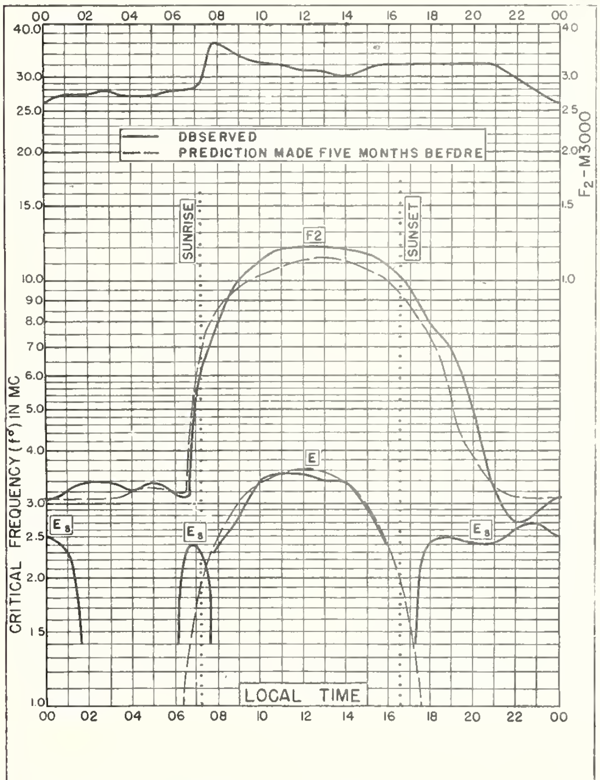

Fig. 19. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W DECEMBER 1947

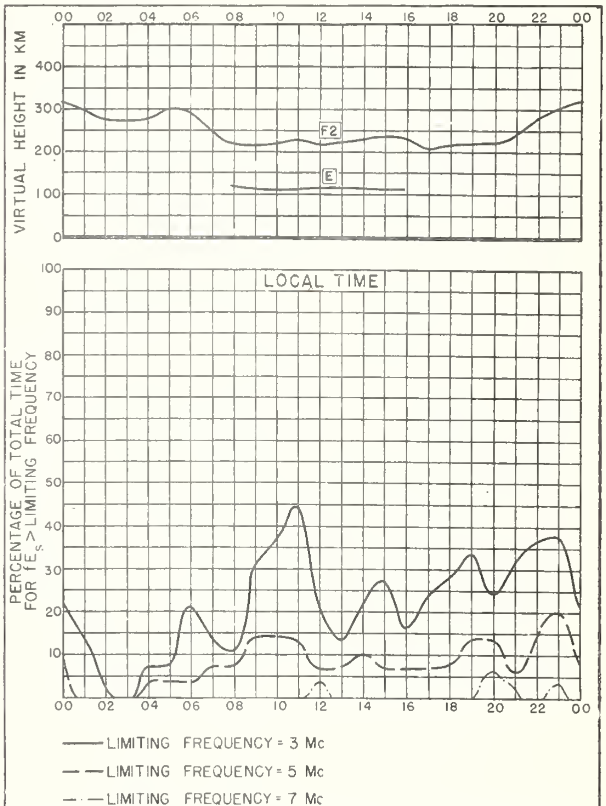

Fig. 20. SAN FRANCISCO, CALIFORNIA DECEMBER 1947

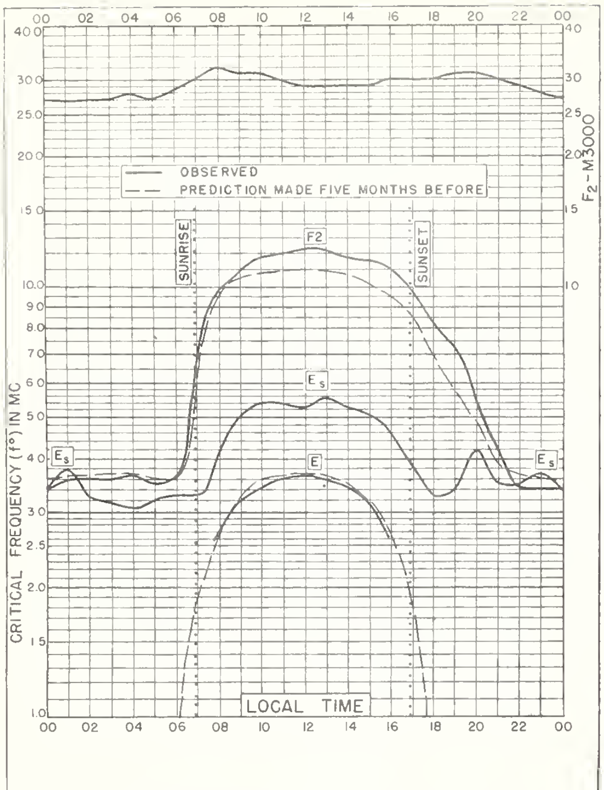

Fig 21. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W DECEMBER 1947

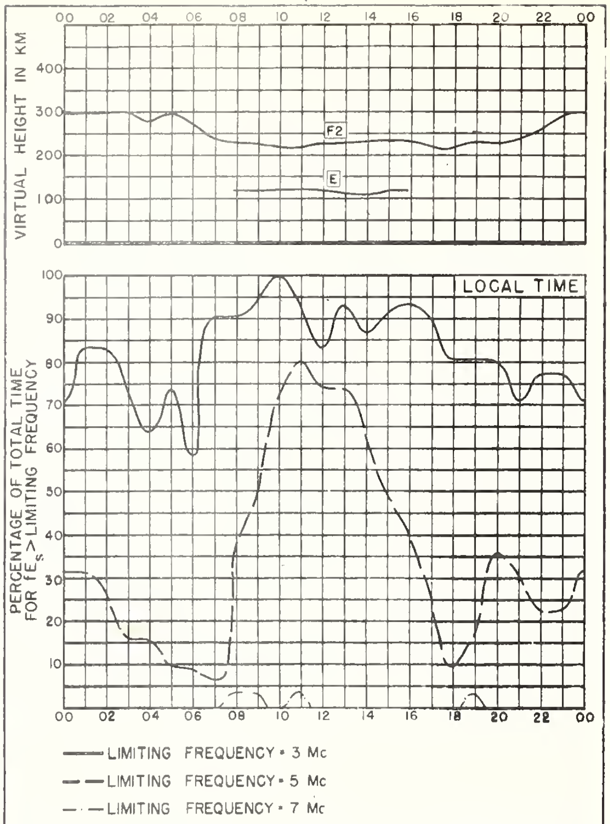

Fig. 22. WHITE SANDS, NEW MEXICO DECEMBER 1947

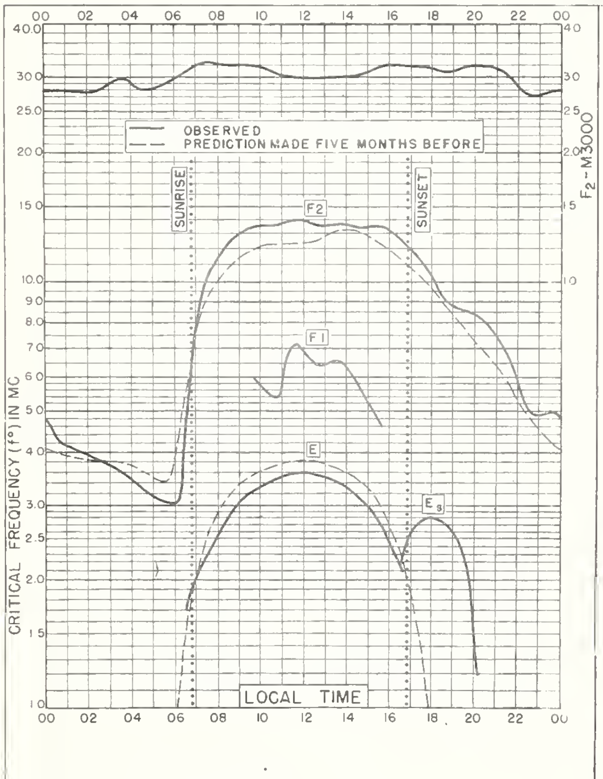

Fig 23. WUCHANG, CHINA
30.6°N, 114.4°E DECEMBER 1947

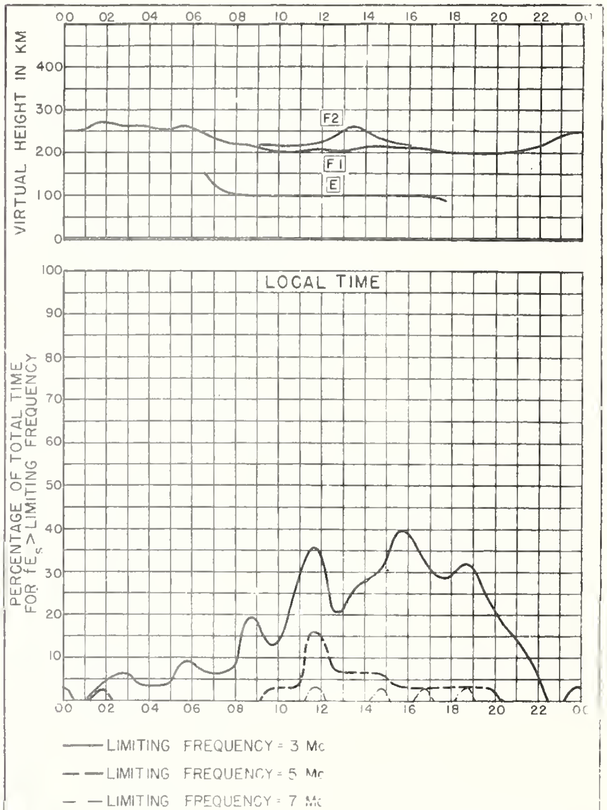

Fig 24. WUCHANG, CHINA DECEMBER 1947

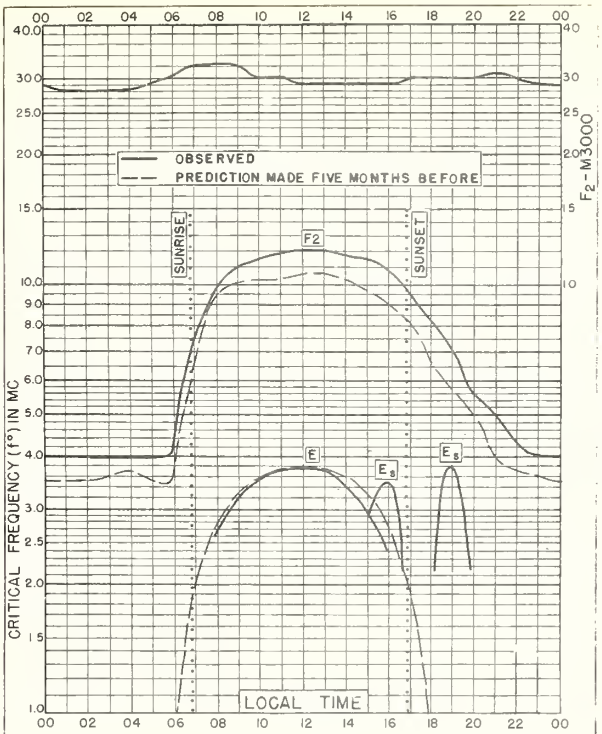

Fig. 25. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W DECEMBER 1947

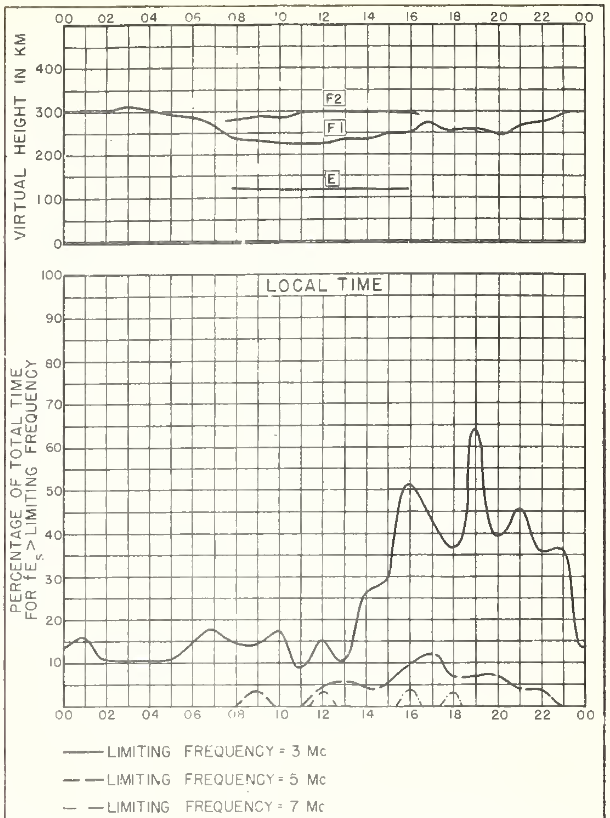

Fig 26. BATON ROUGE, LOUISIANA DECEMBER 1947

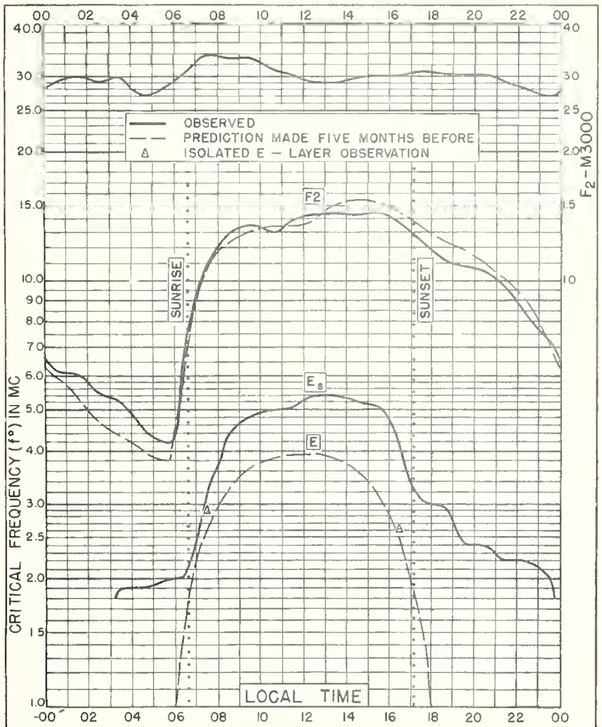

Fig 27. OKINAWA I.
26.3°N, 127.7°E DECEMBER 1947

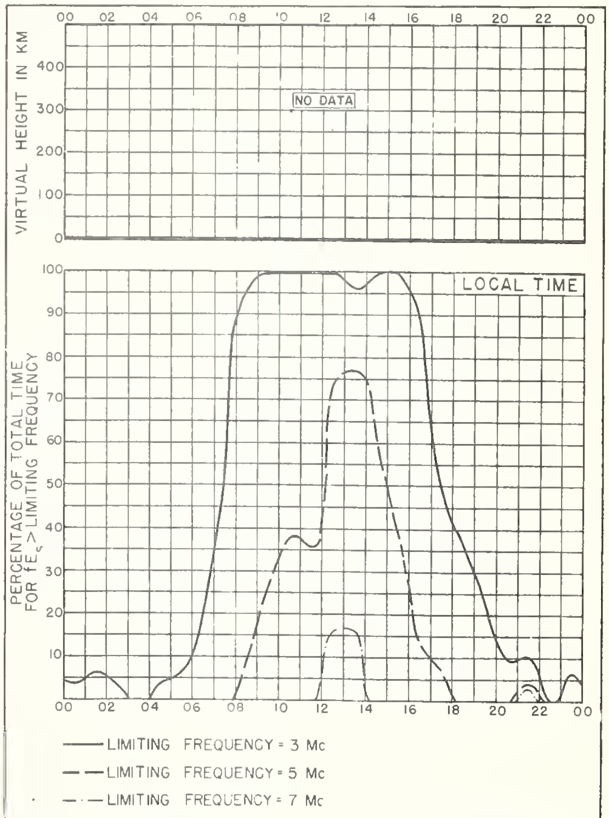

Fig. 28 OKINAWA I. DECEMBER 1947

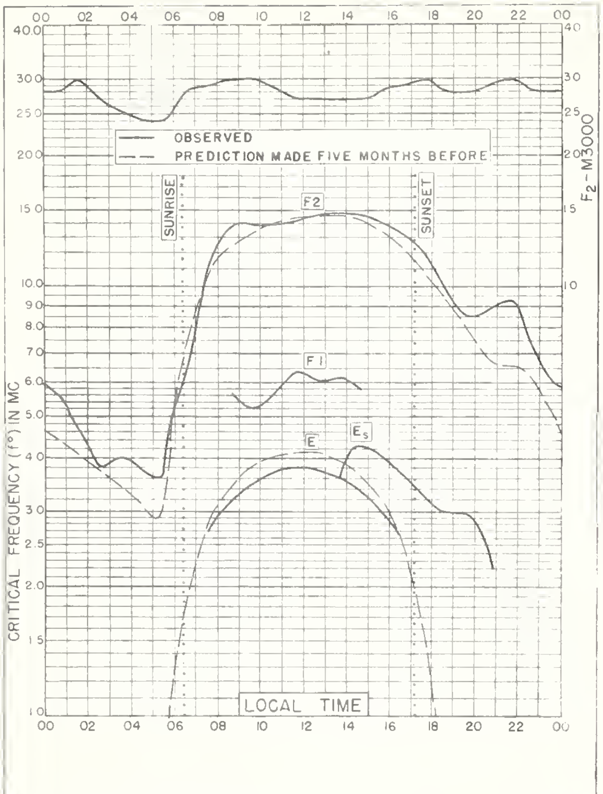

Fig 29. MAUI, HAWAII
20 8°N, 156 5°W DECEMBER 1947

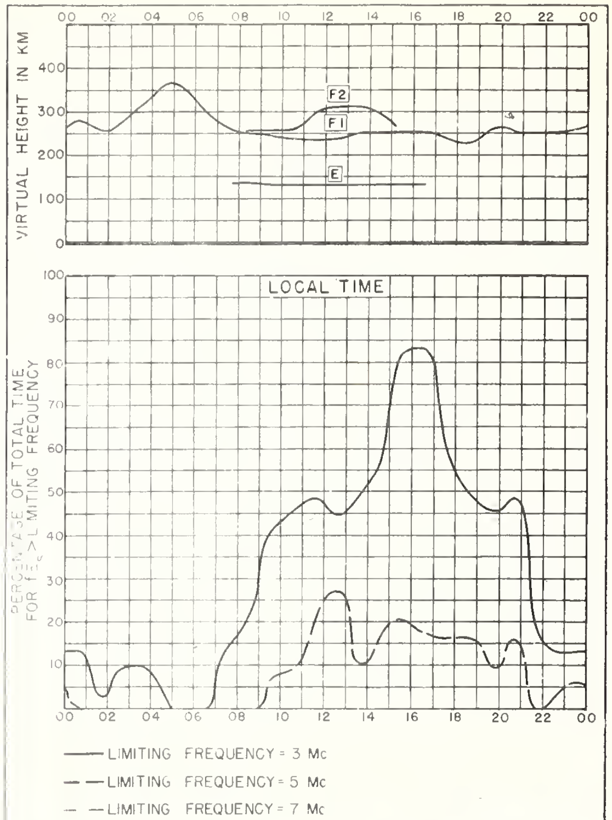

Fig 30. MAUI, HAWAII DECEMBER 1947

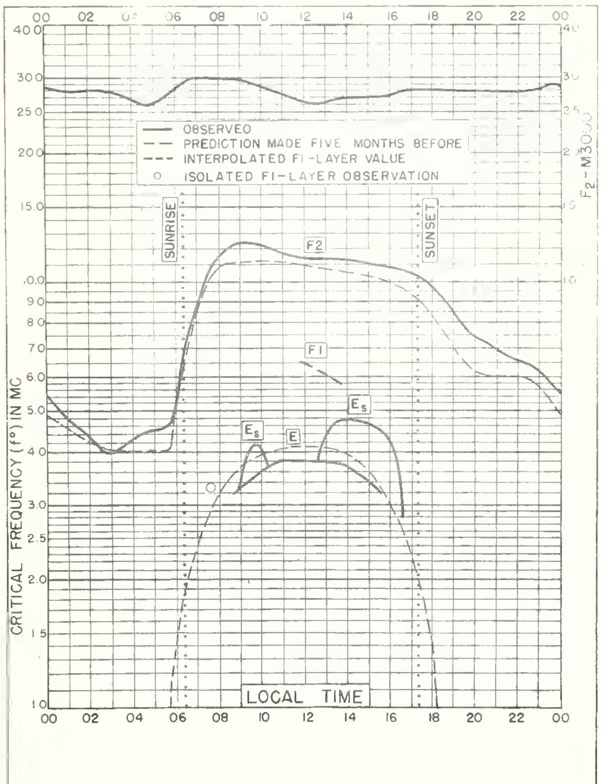

Fig 31. SAN JUAN, PUERTO RICO
18.4°N, 66 1°W DECEMBER 1947

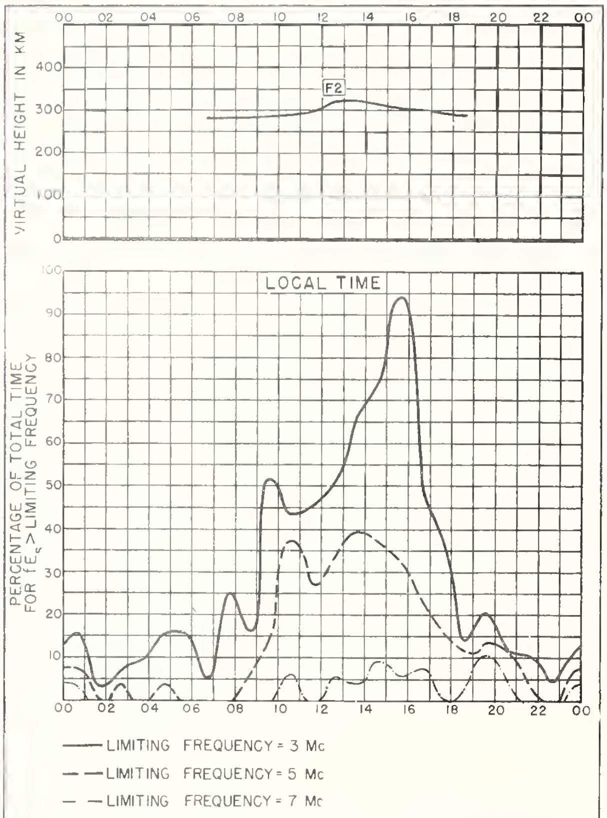

Fig. 32. SAN JUAN, PUERTO RICO DECEMBER 1947

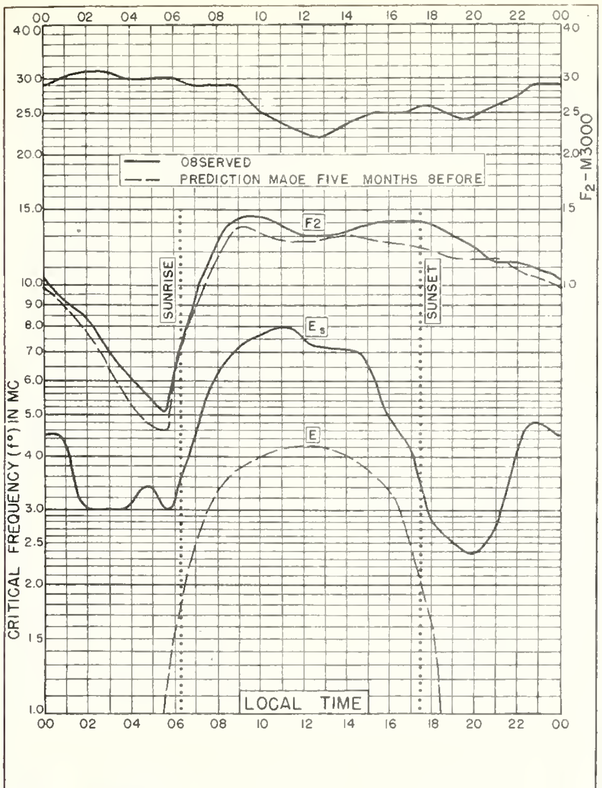

Fig. 33. GUAM I.
13.6°N, 144.9°E DECEMBER 1947

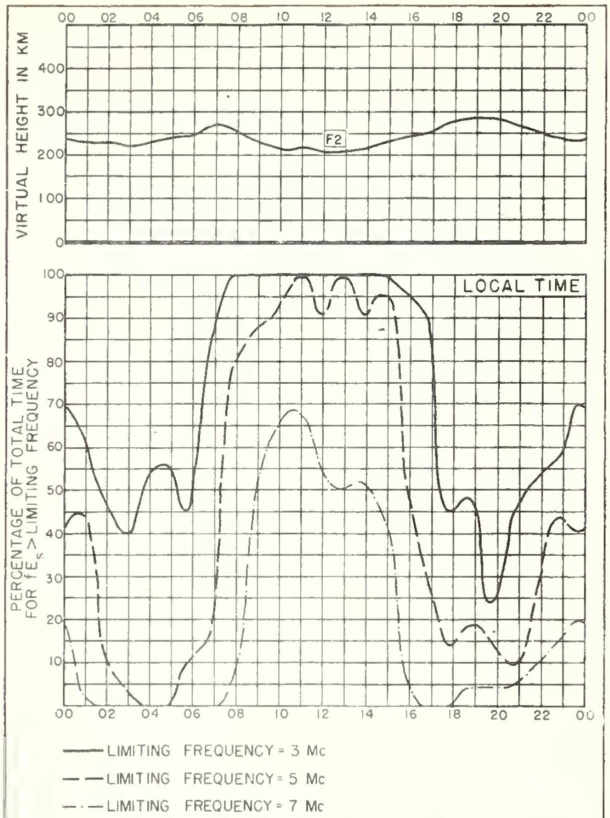

Fig. 34. GUAM I. DECEMBER 1947

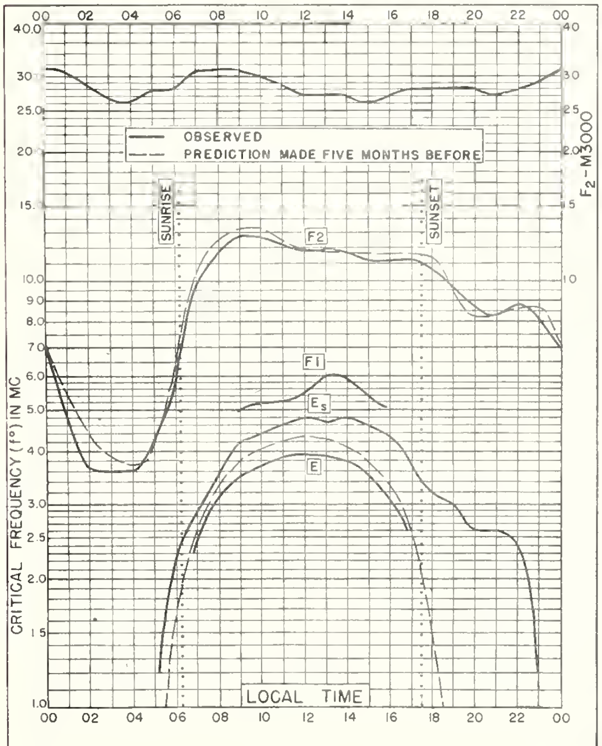

Fig. 35. TRINIDAD, BRIT. WEST INDIES
10.6°N, 61.2°W DECEMBER 1947

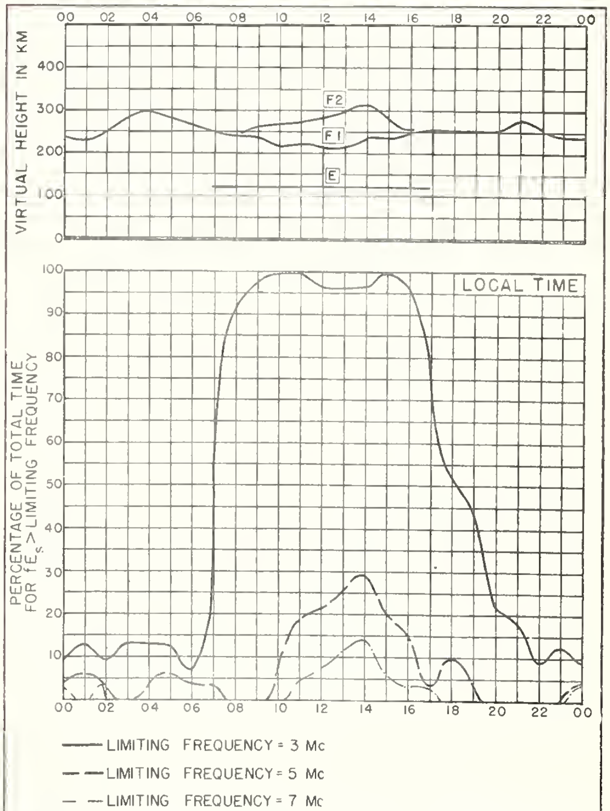

Fig. 36. TRINIDAD, BRIT WEST INDIES DECEMBER 1947

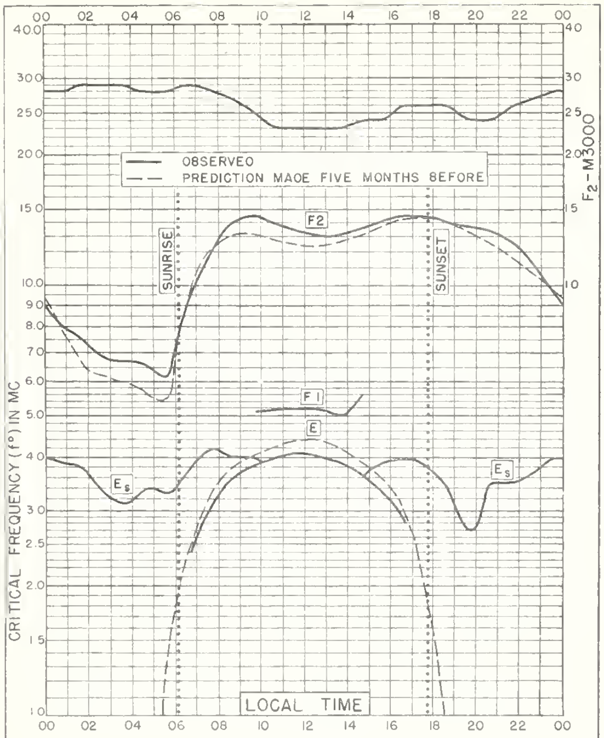

Fig. 37. PALMYRA I.
5.9°N, 162.1°W DECEMBER 1947

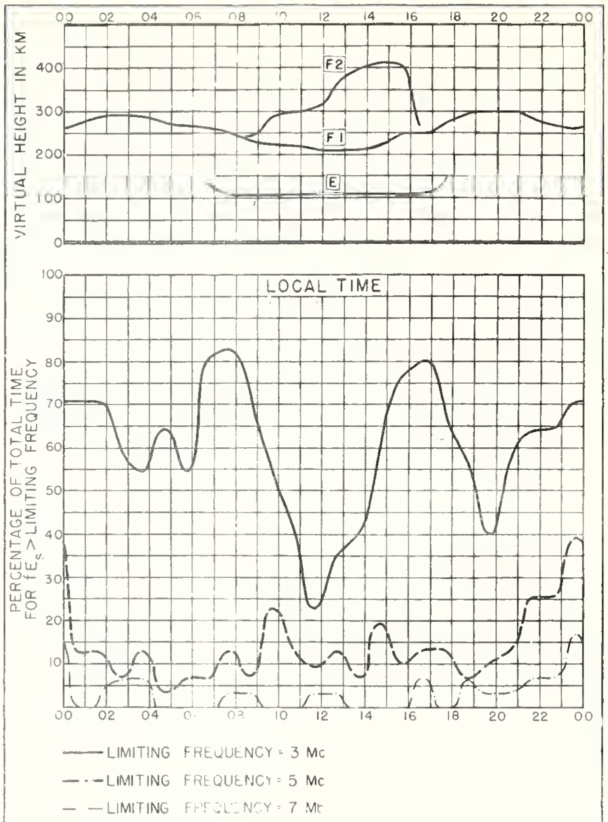

Fig. 38. PALMYRA I. DECEMBER 1947

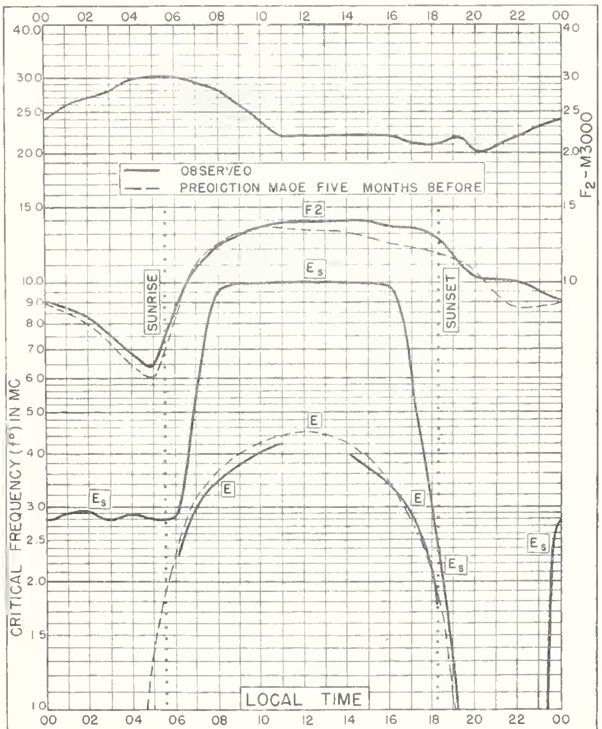

Fig. 39. HUANCAYO, PERU
12.0°S, 75.3°W DECEMBER 1947

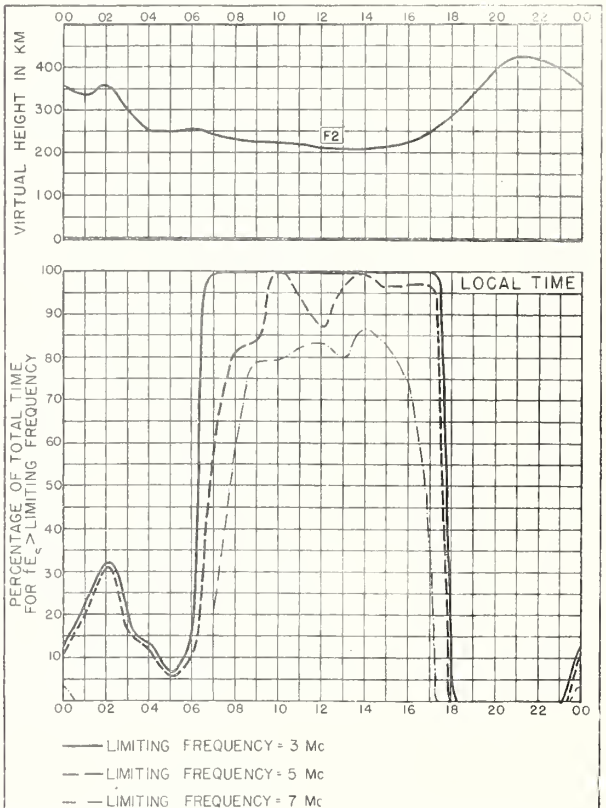

Fig 40. HUANCAYO, PERU DECEMBER 1947

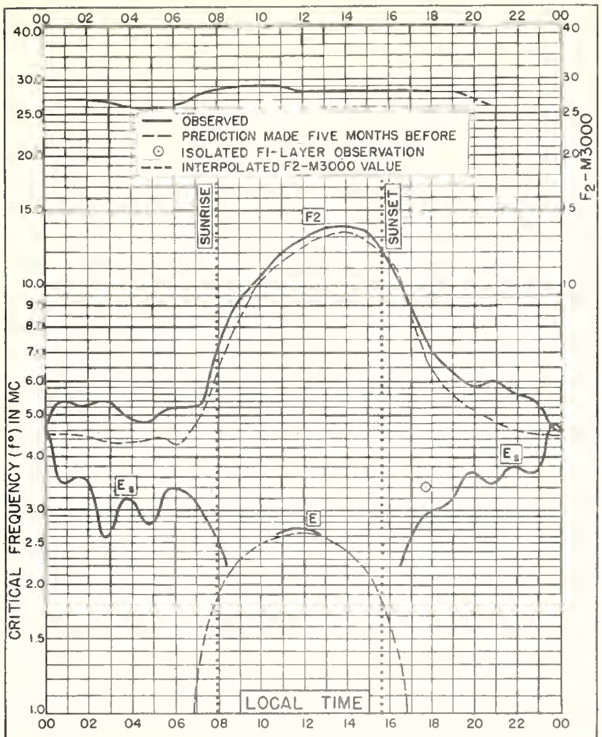

Fig. 41. CHURCHILL, CANADA
58.8°N, 94.2°W NOVEMBER 1947

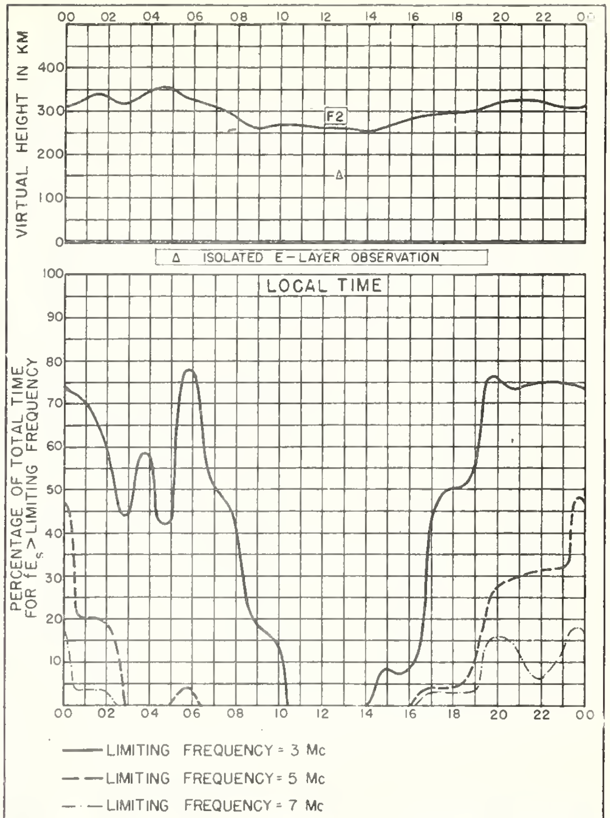

Fig. 42. CHURCHILL, CANADA NOVEMBER 1947

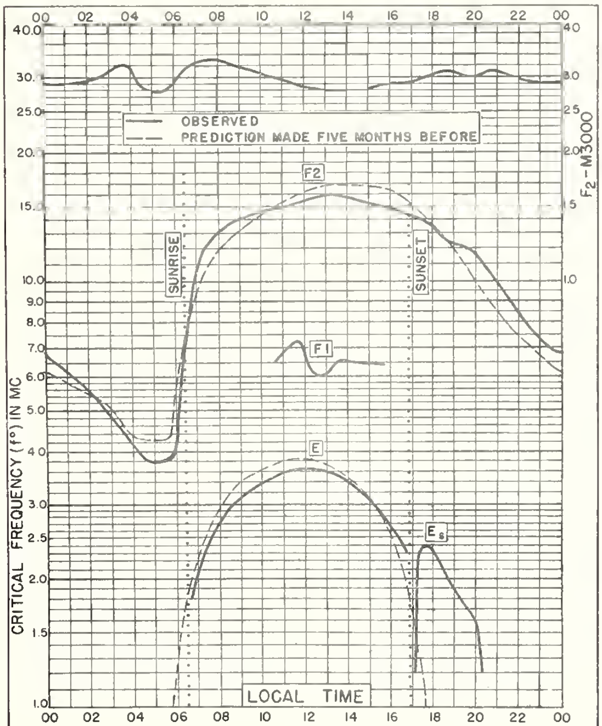

Fig 43. WUCHANG, CHINA
30.6°N, 114.4°E NOVEMBER 1947

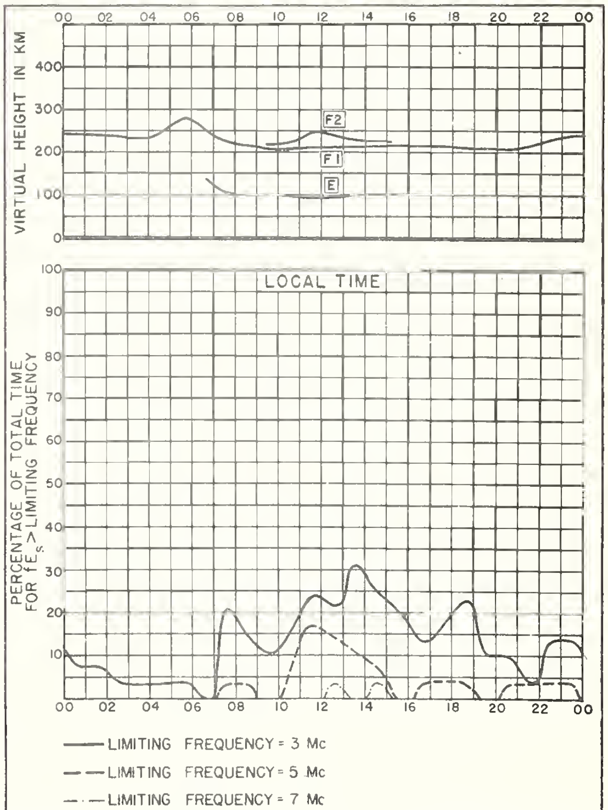

Fig. 44. WUCHANG, CHINA NOVEMBER 1947

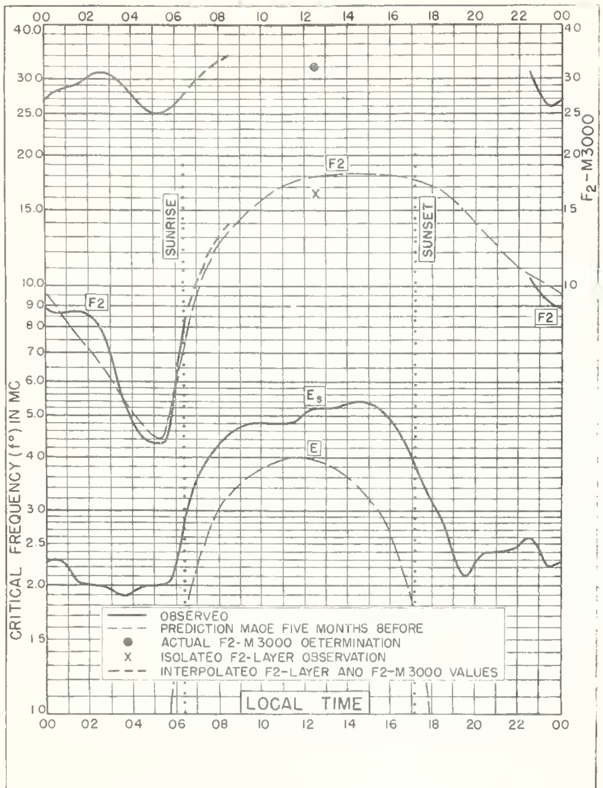

Fig. 45. OKINAWA I.
26.3°N, 127.7°E NOVEMBER 1947

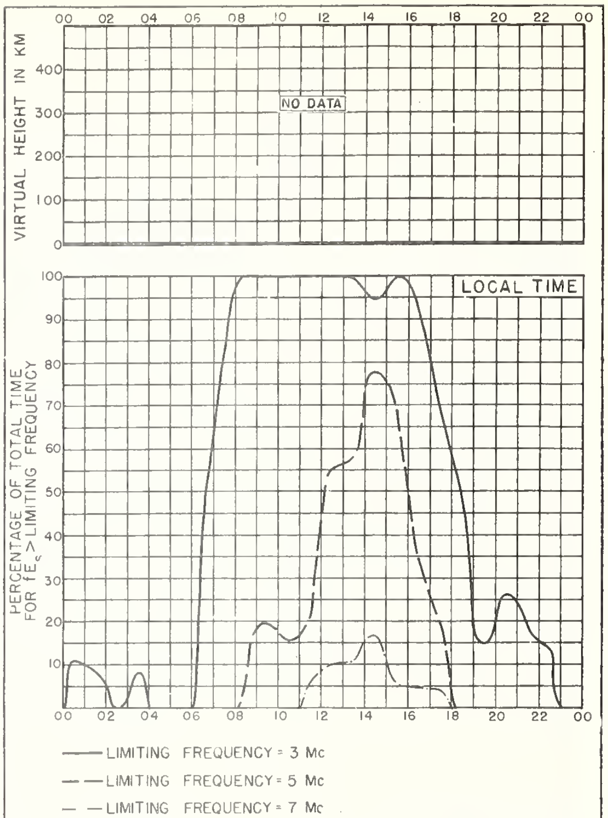

Fig. 46. OKINAWA I NOVEMBER 1947

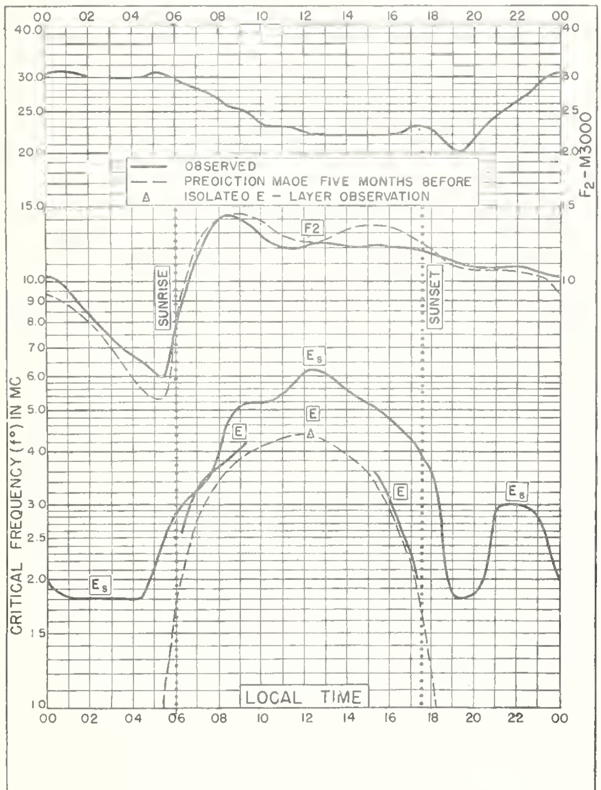

Fig. 47. LEYTE, PHILIPPINE IS
11.0°N, 125.0°E, NOVEMBER 1947

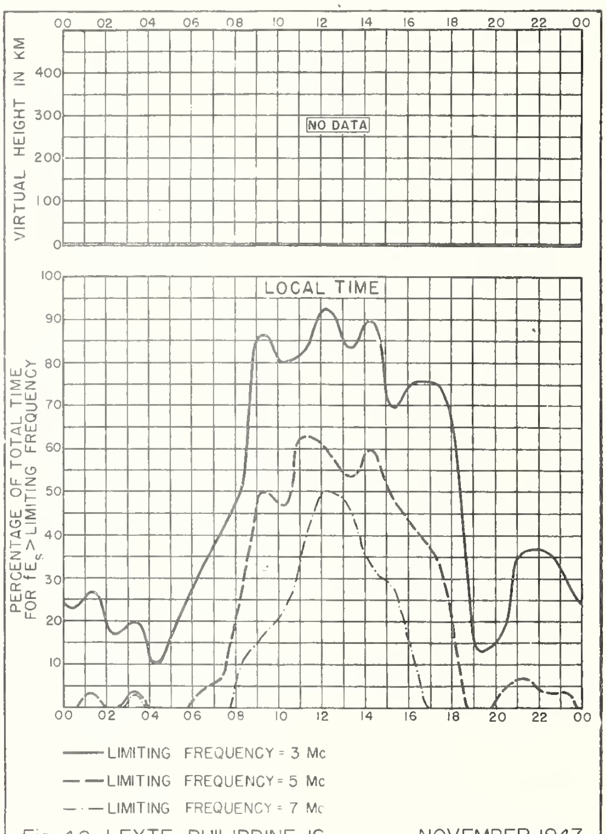

Fig. 48. LEYTE, PHILIPPINE IS. NOVEMBER 1947

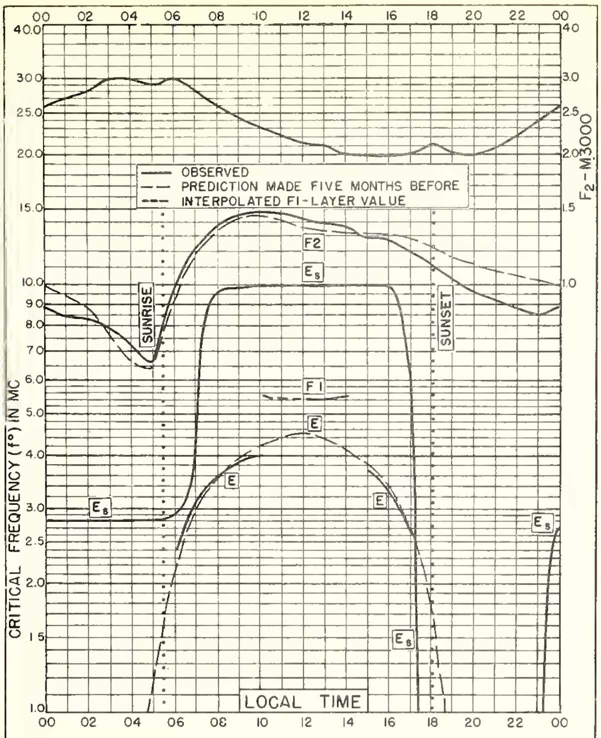

Fig.49 HUANCAYO, PERU
12.0°S, 75.3°W NOVEMBER 1947

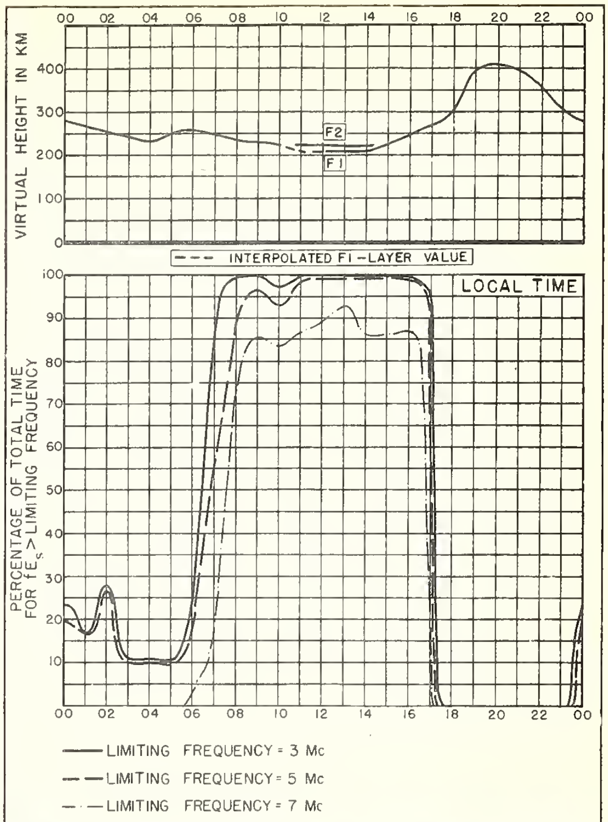

Fig.50 HUANCAYO, PERU NOVEMBER 1947

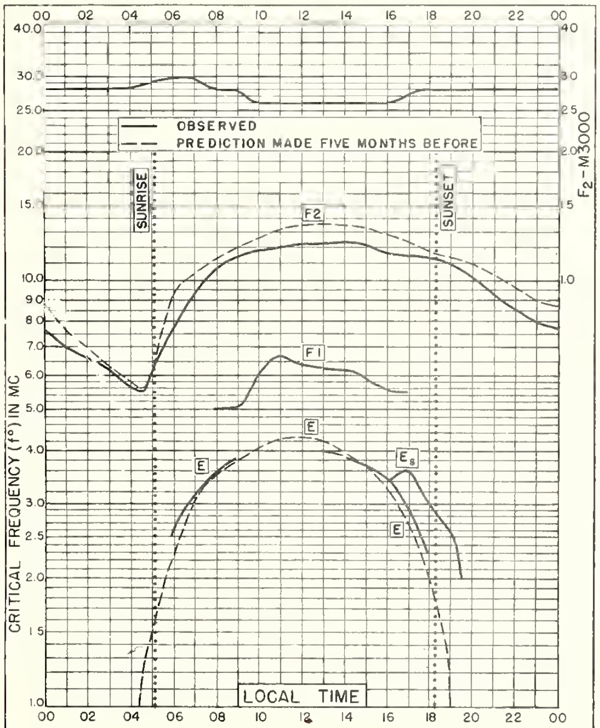

Fig. 51. JOHANNESBURG, U OF S. AFRICA
26.2°S, 28.0°E NOVEMBER 1947

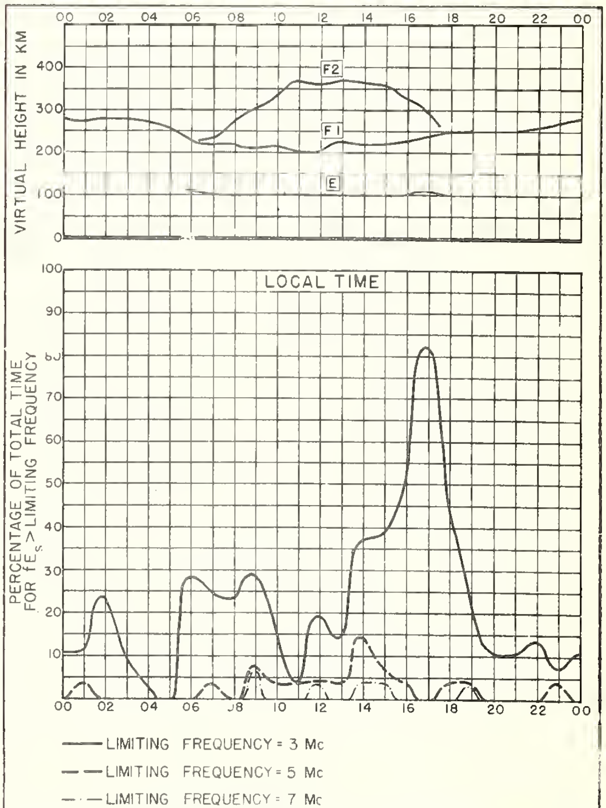

Fig. 52. JOHANNESBURG, U OF S AFRICA NOVEMBER 1947

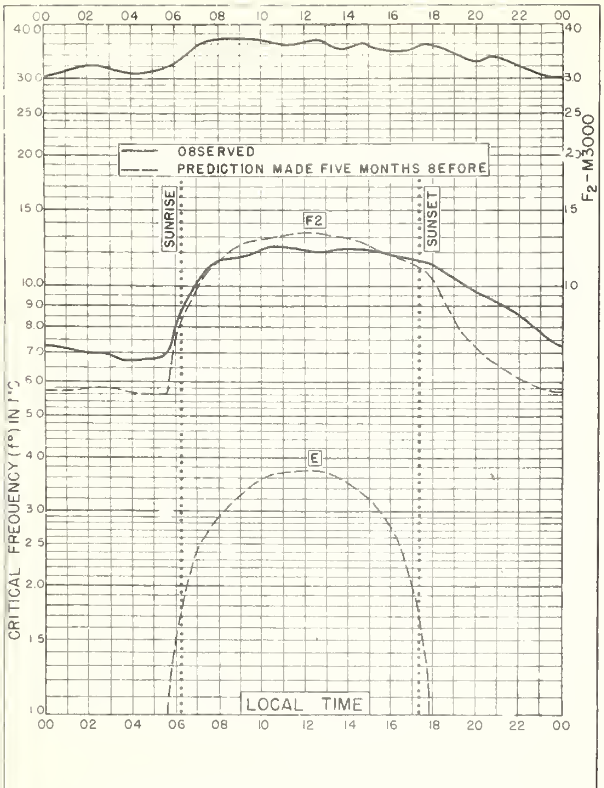

Fig. 53. PEIPING, CHINA
39.9°N, 116.4°E OCTOBER 1947

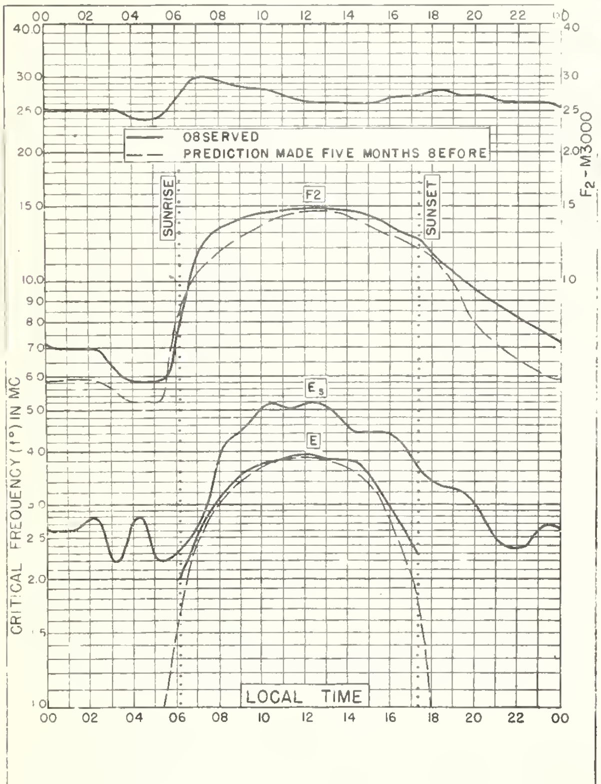

Fig. 54 TOKYO, JAPAN
35.7°N, 139.5°E OCTOBER 1947

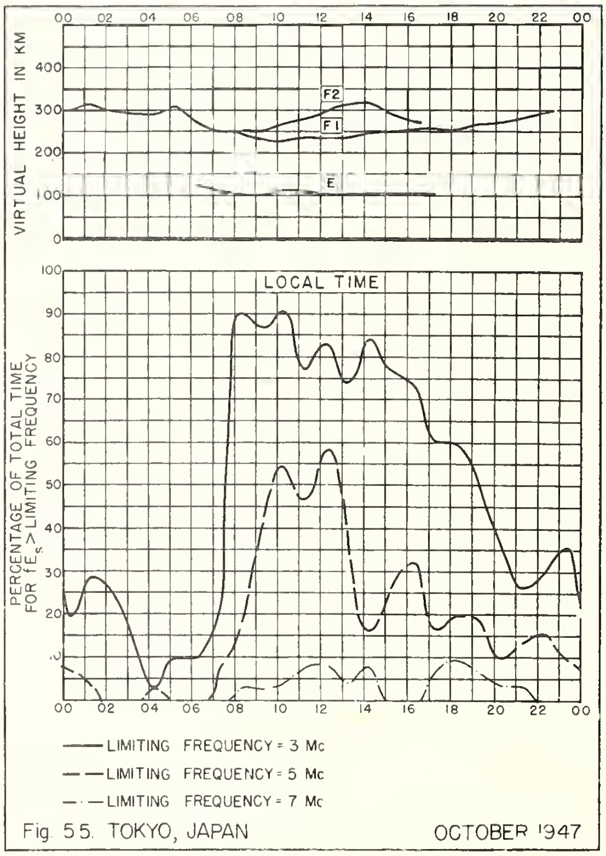

Fig. 55. TOKYO, JAPAN OCTOBER 1947

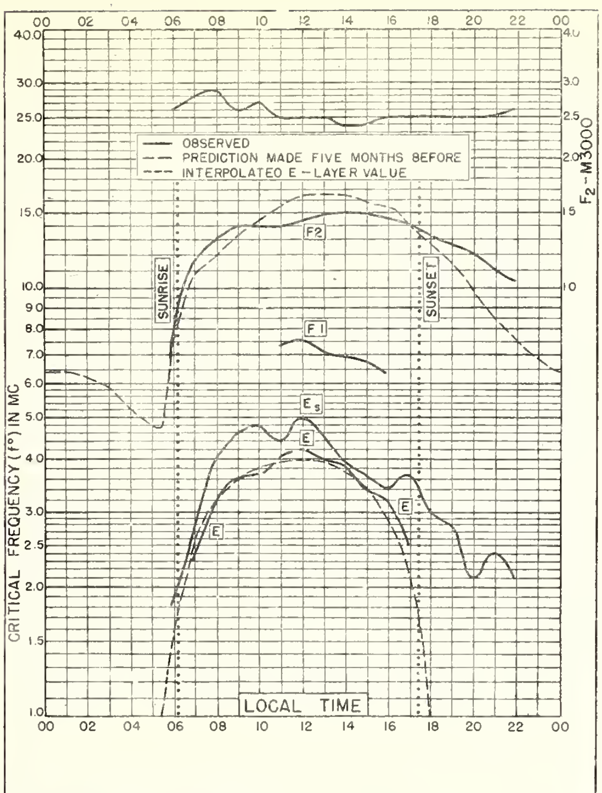

Fig. 56. NANKING, CHINA
32.1°N, 119.0°E OCTOBER 1947

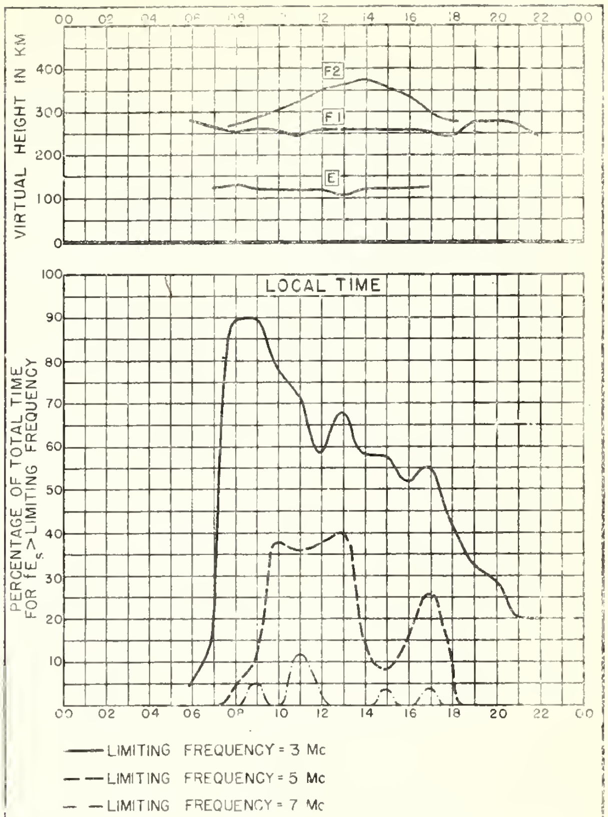

Fig. 57. NANKING, CHINA OCTOBER 1947

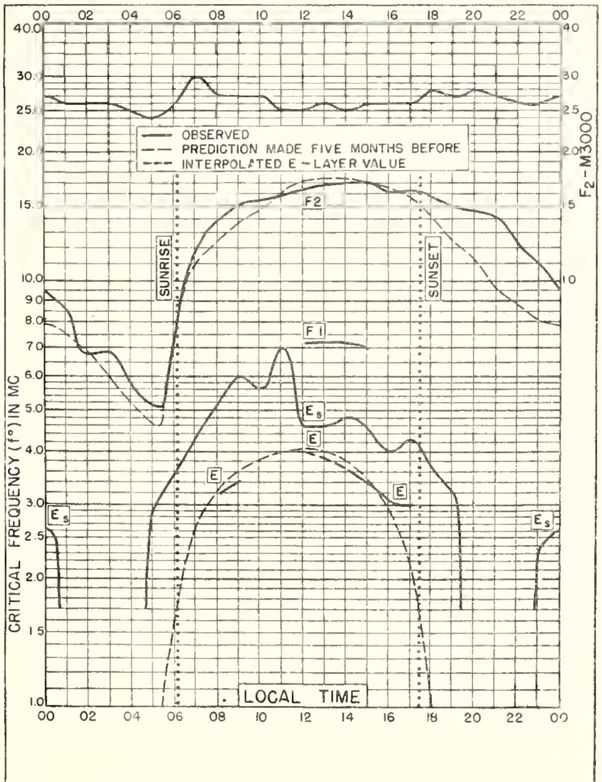

Fig. 58. CHUNGKING, CHINA
29.4° N, 106.8°E OCTOBER 1947

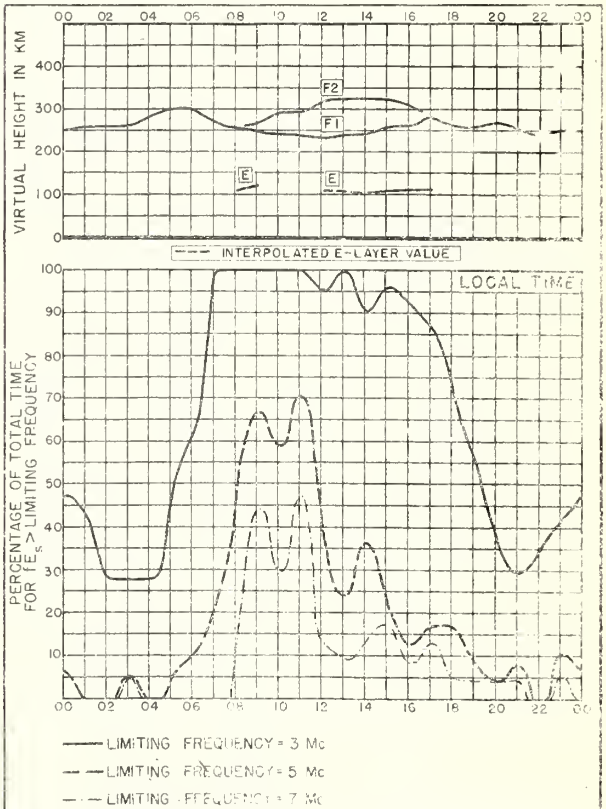

Fig. 59. CHUNGKING, CHINA OCTOBER 1947

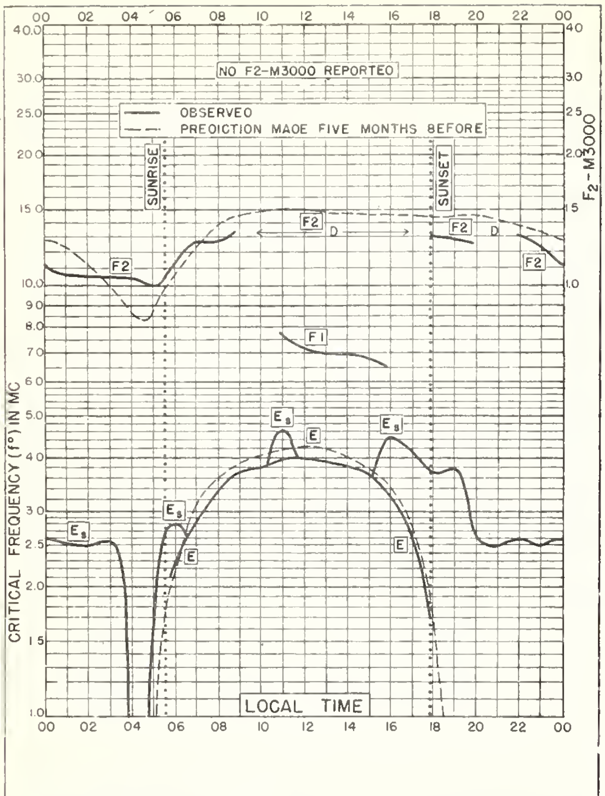

Fig. 60. FIJI IS.
18.0°S, 178.2°E OCTOBER 1947

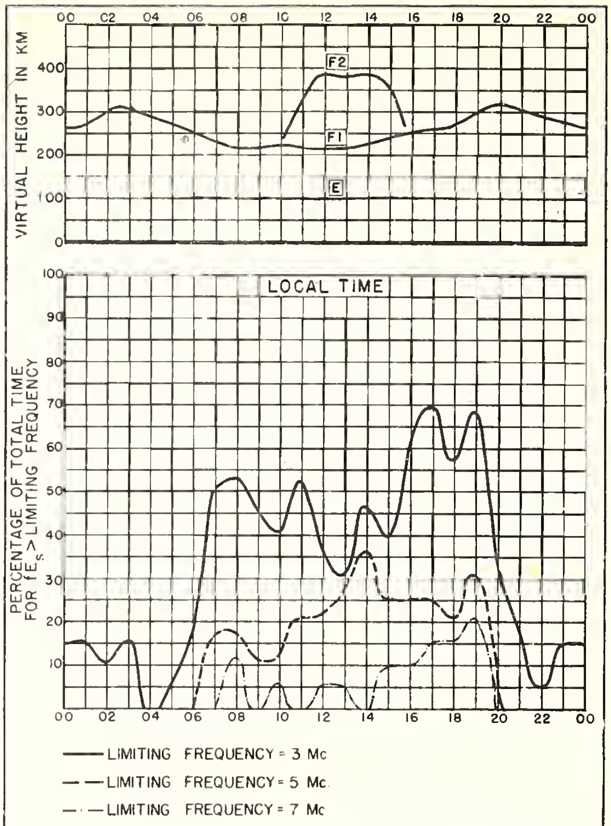

Fig. 61. FIJI IS. OCTOBER 1947

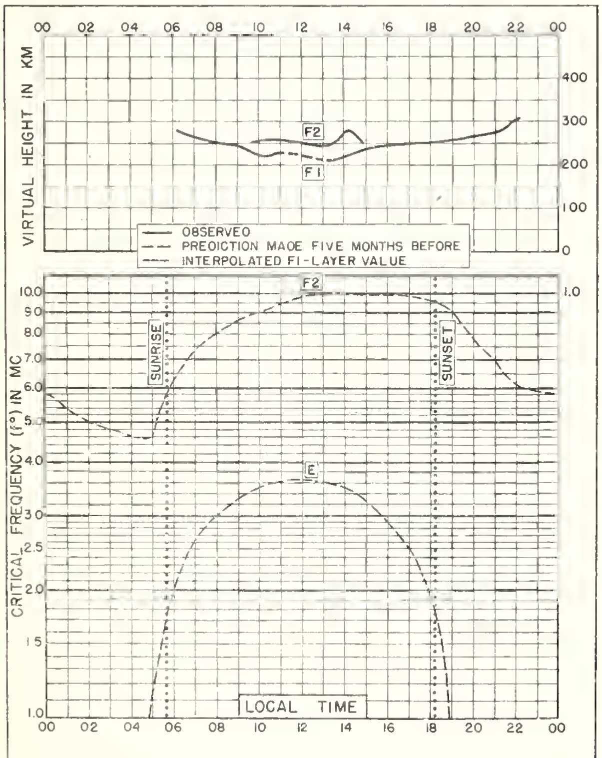

Fig. 62. BAGNEUX, FRANCE
48.8°N, 2.3°E SEPTEMBER 1947

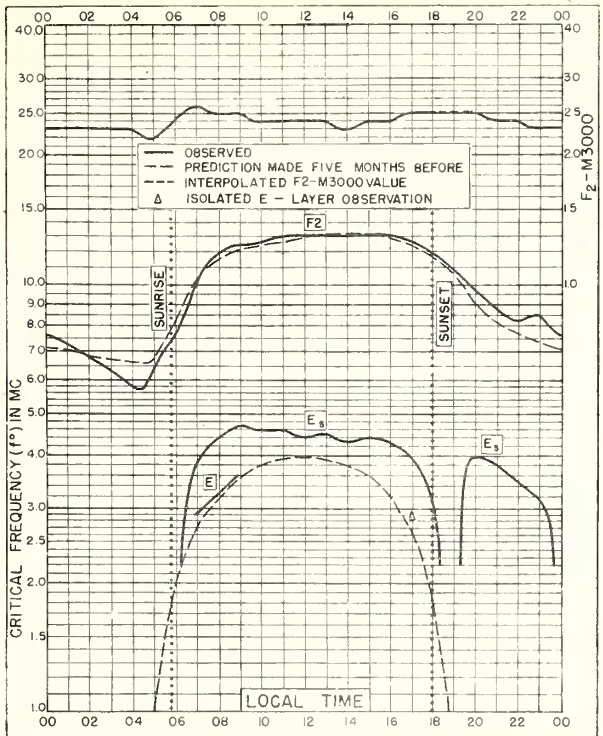

Fig. 63. LANCHOW, CHINA
36.1° N, 103.8° E SEPTEMBER 1947

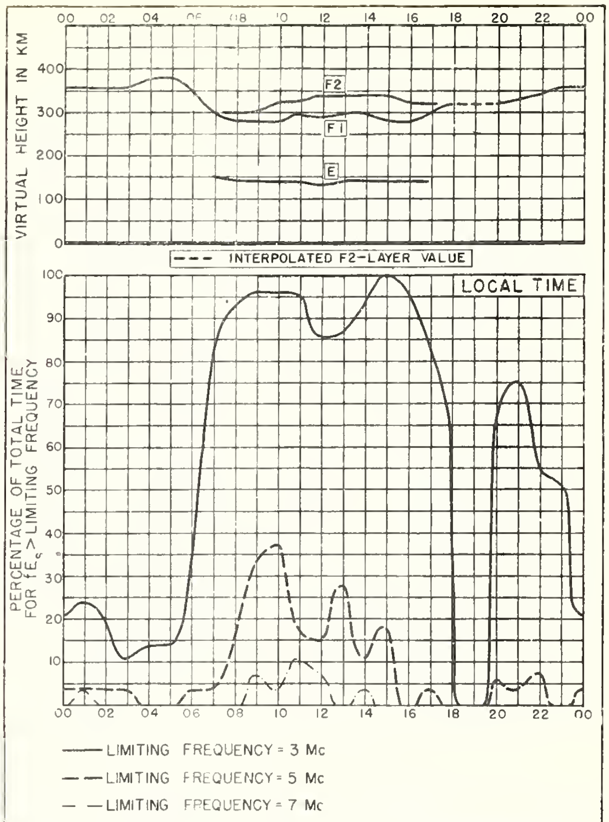

Fig. 64. LANCHOW, CHINA SEPTEMBER 1947

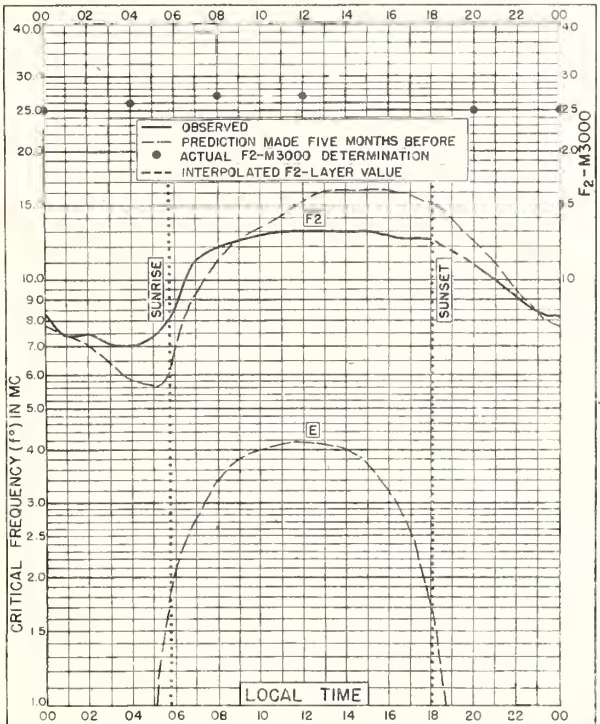

Fig. 65 DELHI, INDIA
28.6°N, 77.1°E SEPTEMBER 1947

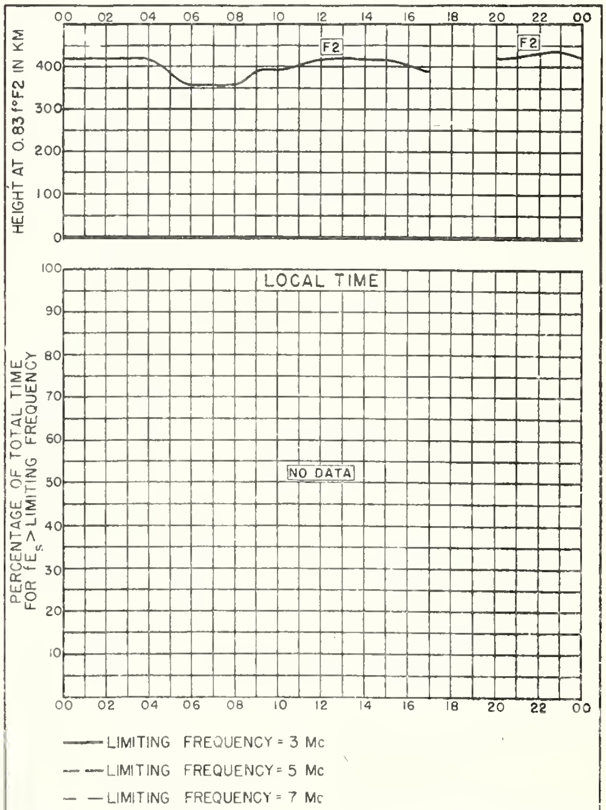

Fig 66. DELHI, INDIA SEPTEMBER 1947

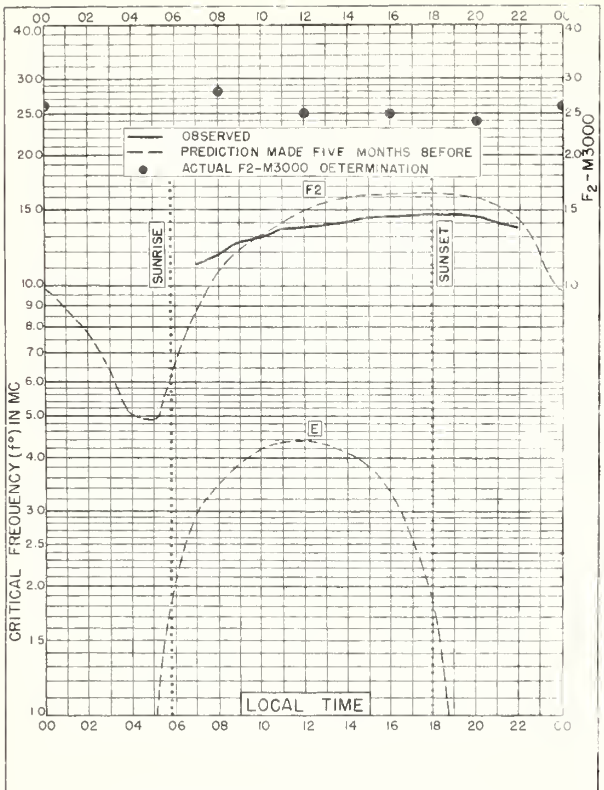

Fig.67. BOMBAY, INDIA
19.0°N, 73.0°E SEPTEMBER 1947

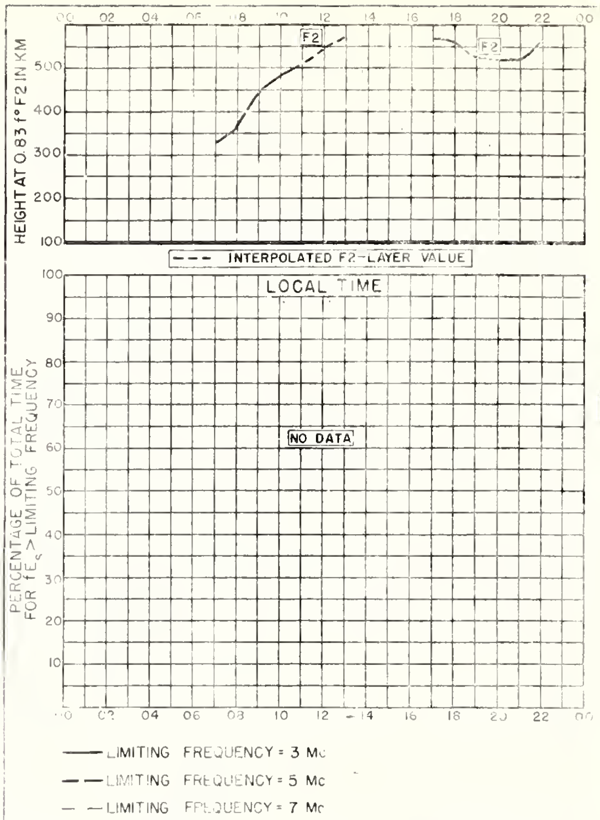

Fig.68 BOMBAY, INDIA SEPTEMBER 1947

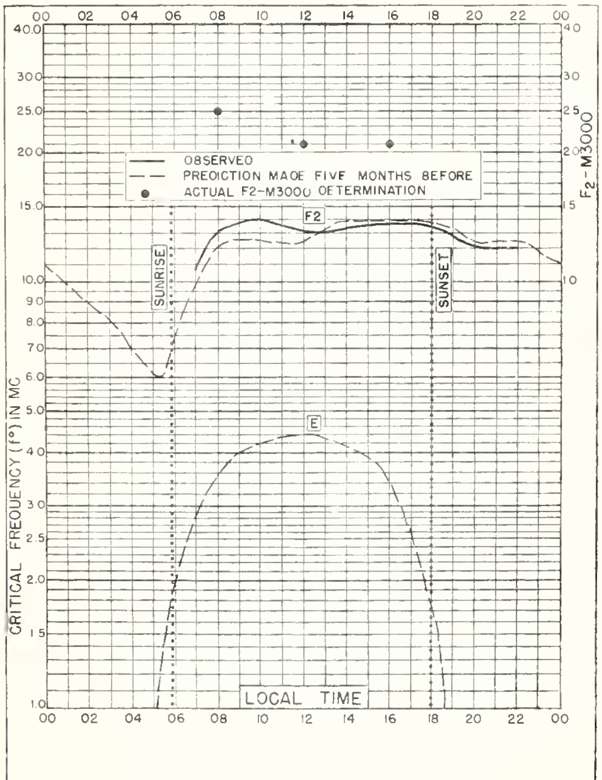

Fig.69. MADRAS, INDIA
13.0°N, 80.2°E SEPTEMBER 1947

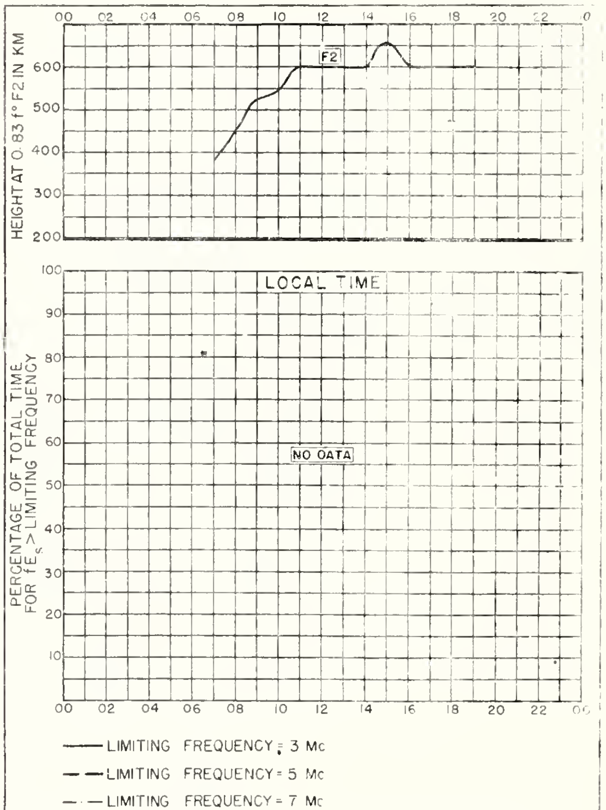

Fig.70 MADRAS, INDIA SEPTEMBER 1947

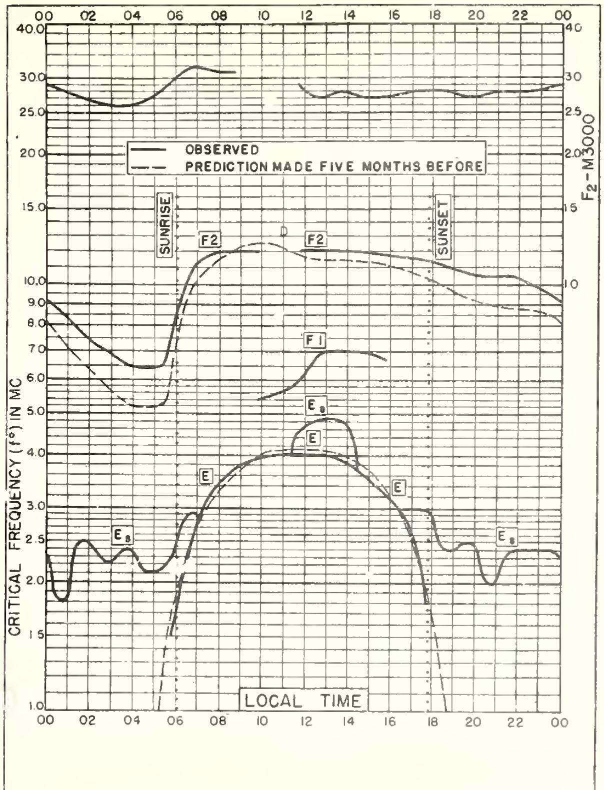

Fig 71. TOWNSVILLE, AUSTRALIA
19.4°S, 146.5°E SEPTEMBER 1947

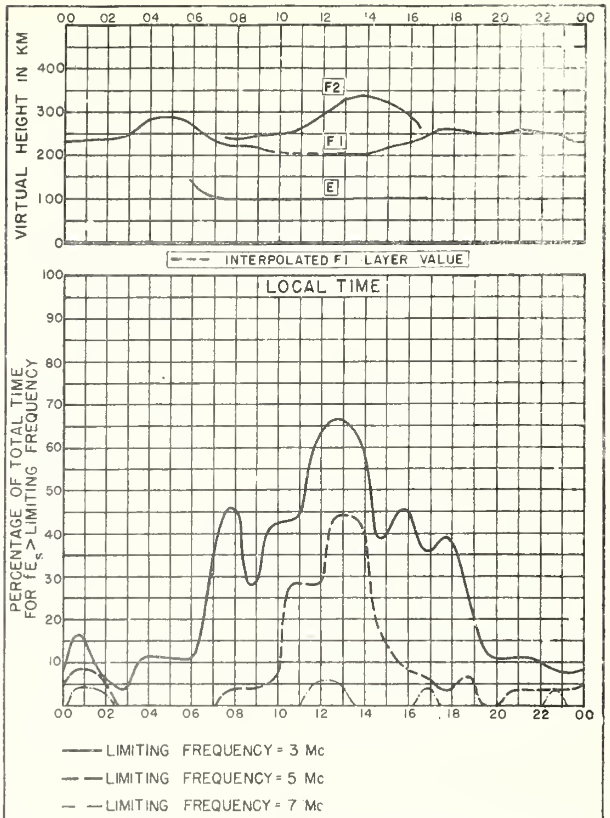

Fig. 72. TOWNSVILLE, AUSTRALIA SEPTEMBER 1947

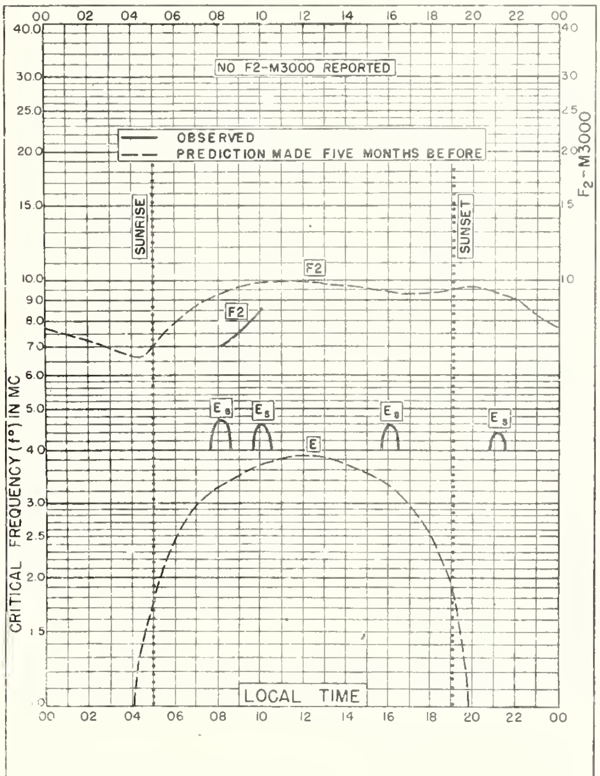

Fig. 73 BAGNEUX, FRANCE
48.8°N, 2.3°E AUGUST 1947

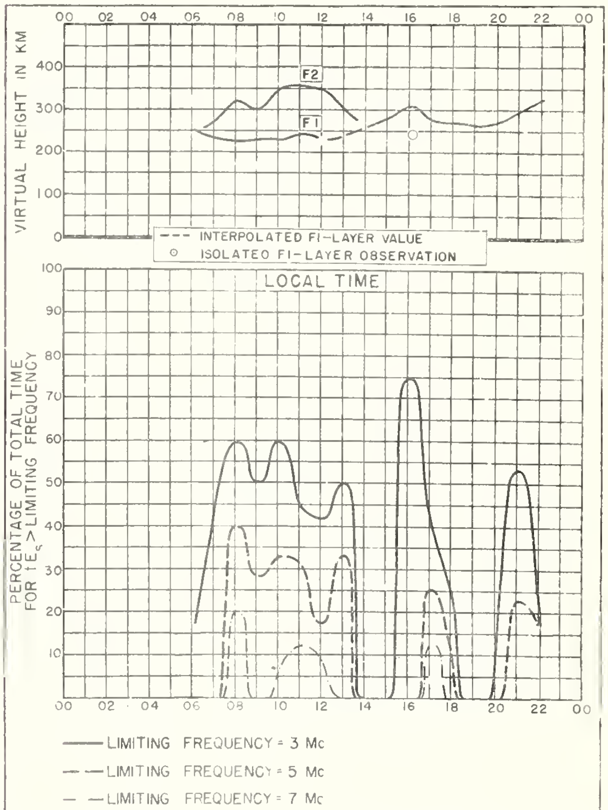

Fig 74 BAGNEUX, FRANCE AUGUST 1947

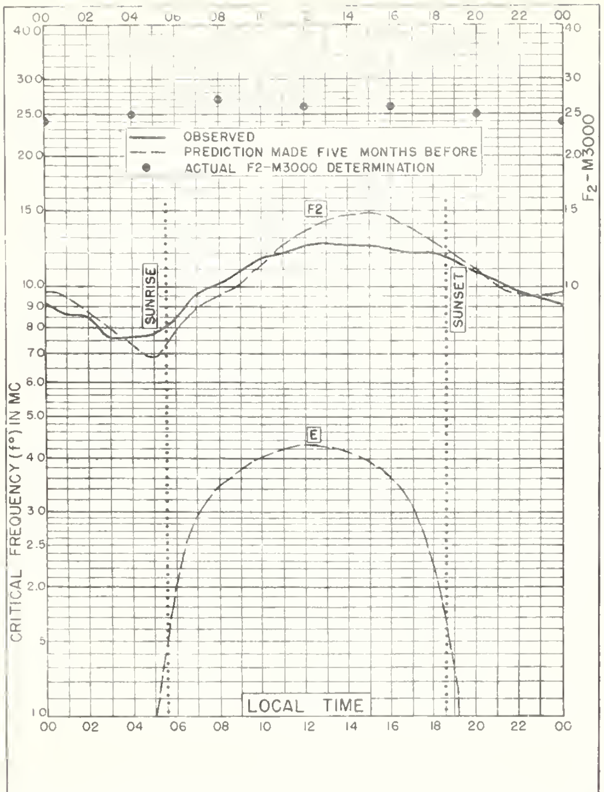

Fig. 75. DELHI, INDIA
28.6°N, 77.1°E AUGUST 1947

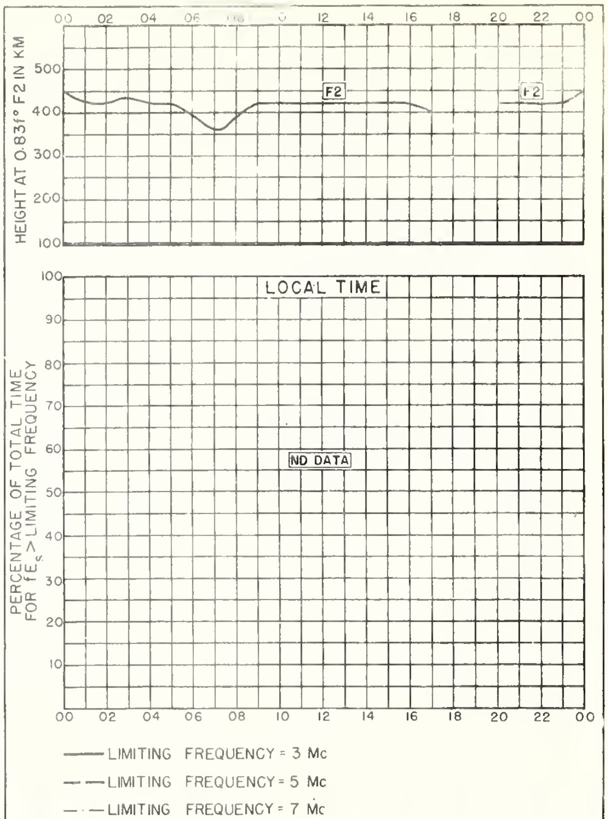

Fig. 76. DELHI, INDIA AUGUST 1947

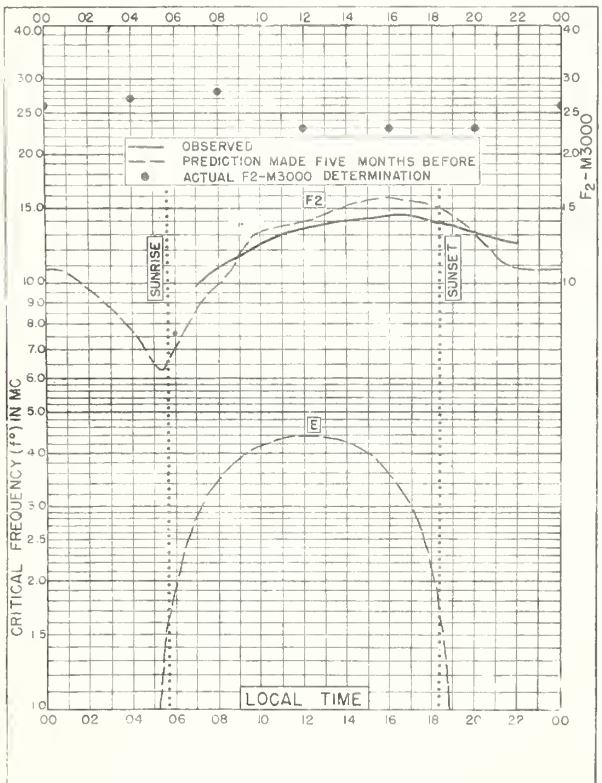

Fig. 77 BOMBAY, INDIA
19.0°N, 73.0°E AUGUST 1947

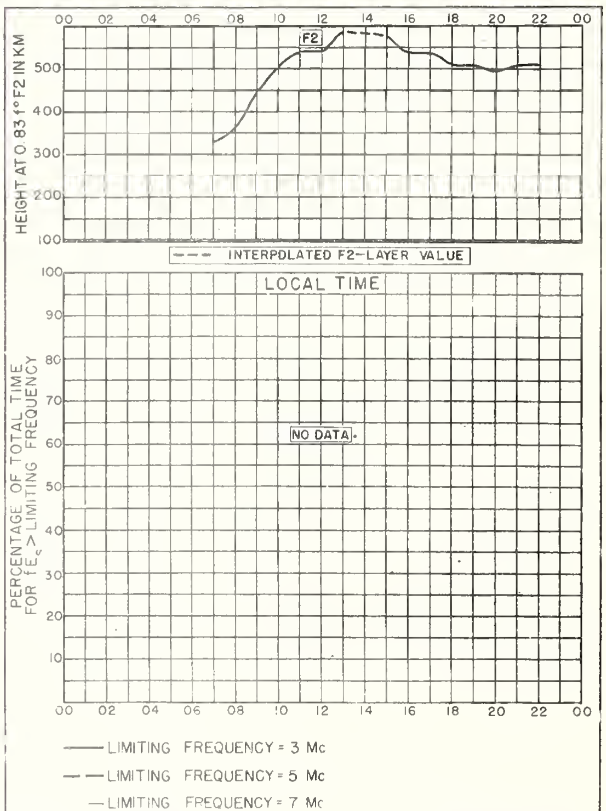

Fig. 78. BOMBAY, INDIA AUGUST 1947

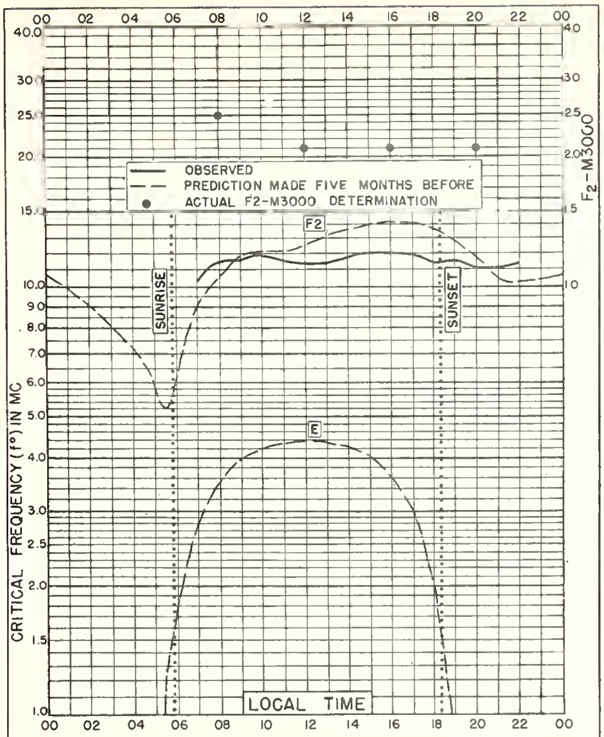

Fig.79. MADRAS, INDIA
13.0°N, 80.2°E AUGUST 1947

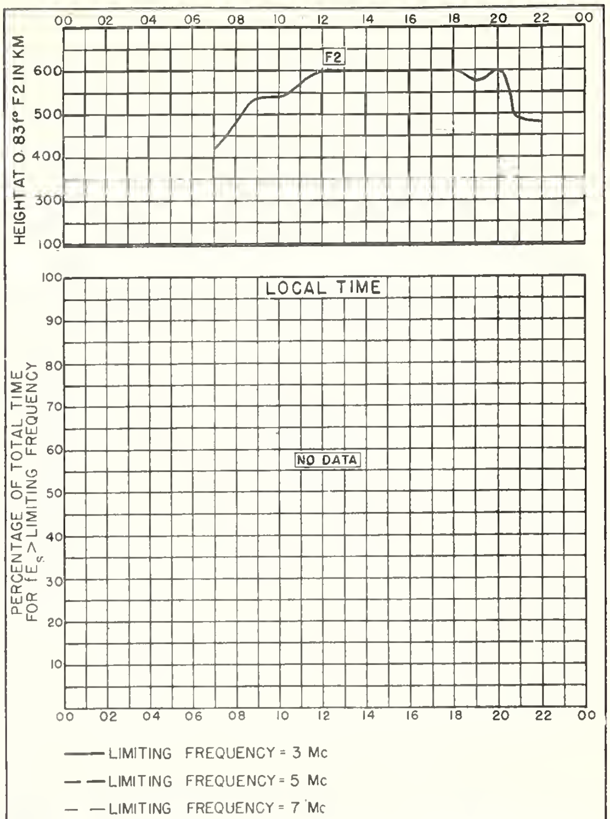

Fig.80. MADRAS, INDIA AUGUST 1947

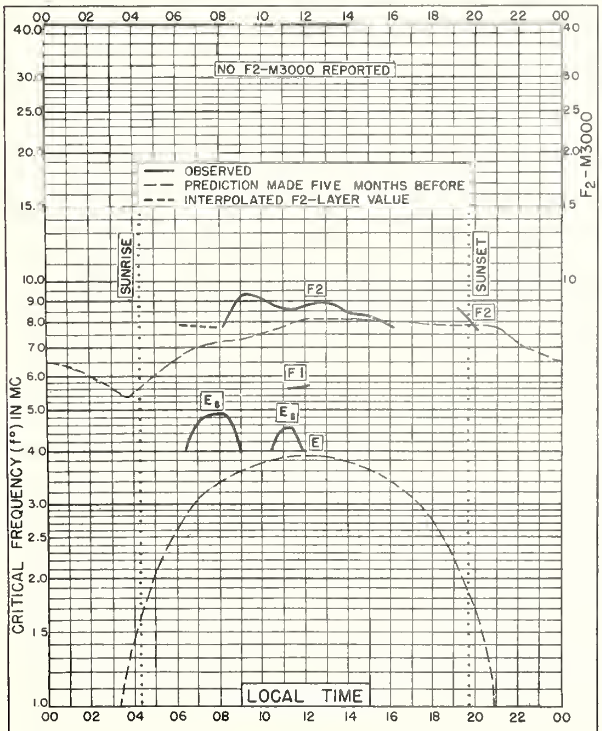

Fig. 81. BAGNEUX, FRANCE
48 8°N, 2.3°E JULY 1947

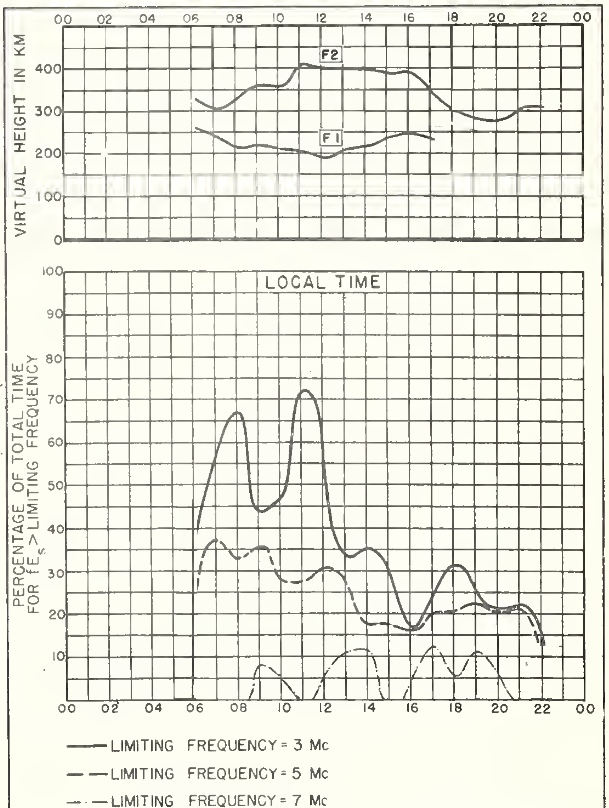

Fig. 82. BAGNEUX, FRANCE JULY 1947

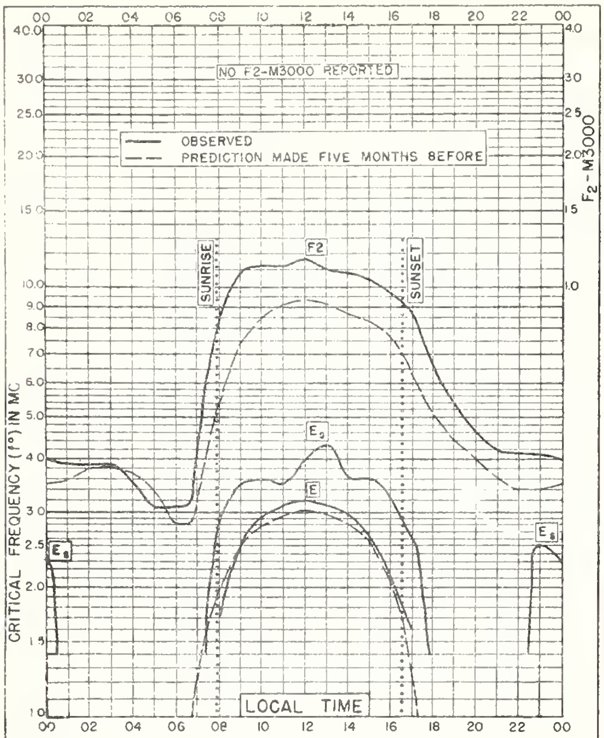

Fig. 83. FRIBOURG, GERMANY
48.1°N, 7.8°E JANUARY 1947

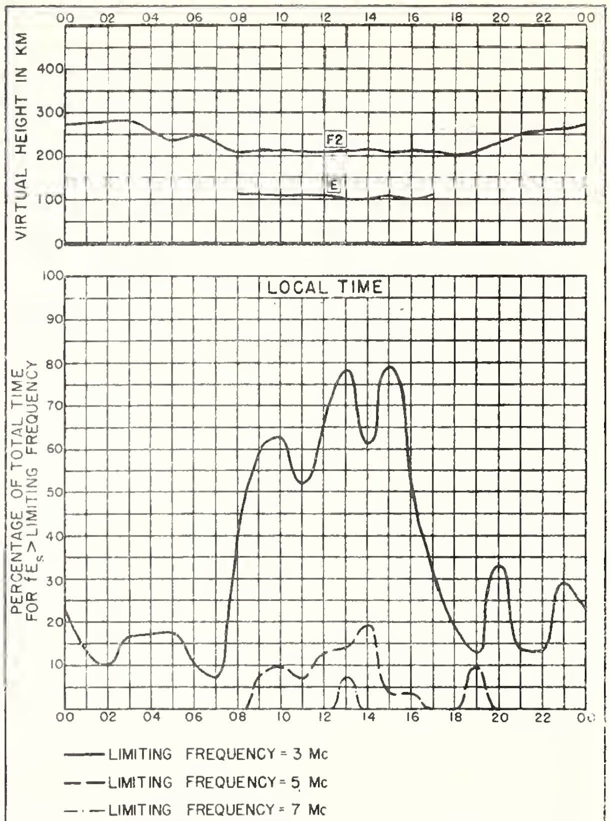

Fig. 84 FRIBOURG, GERMANY JANUARY 1947

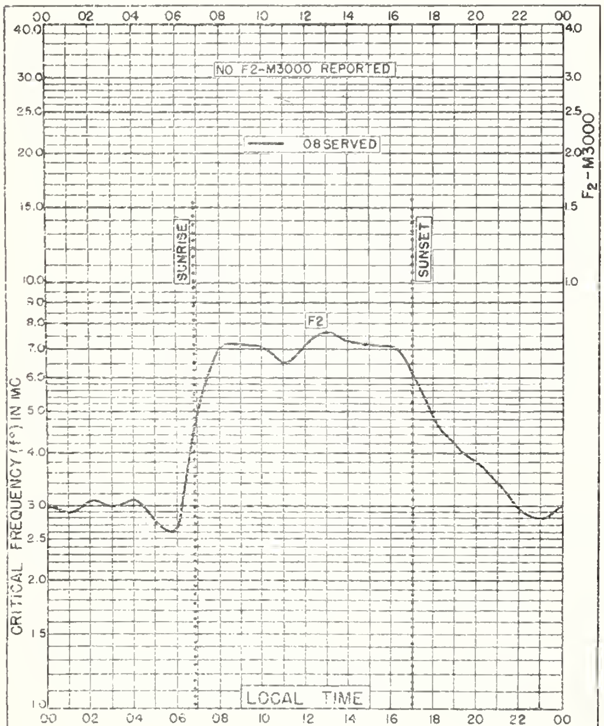

Fig. 85 DELHI, INDIA
28.6°N, 77.1°E DECEMBER 1942

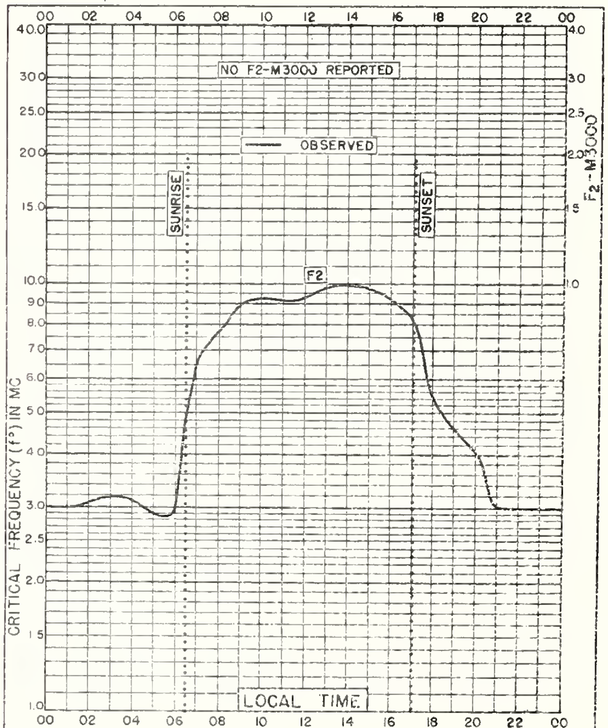

Fig. 86 DELHI, INDIA
28.6°N, 77.1°E NOVEMBER 1942

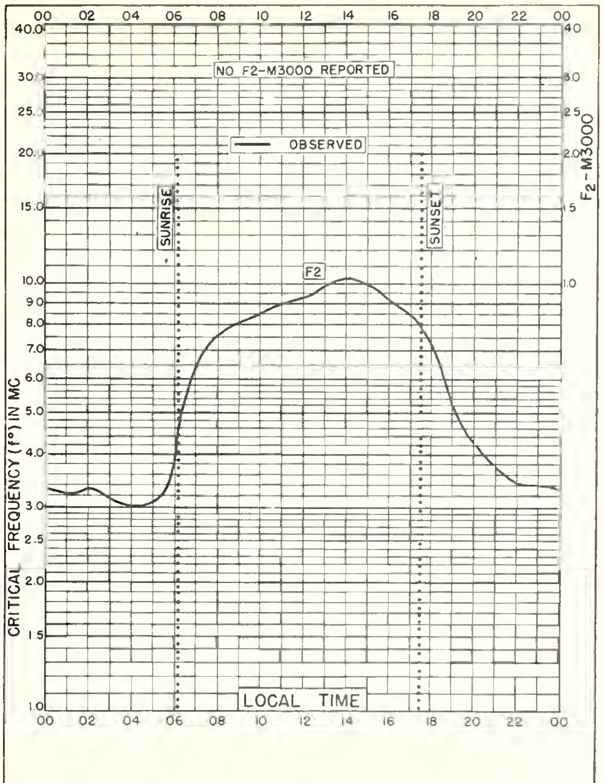

Fig. 87. DELHI, INDIA
28.6°N, 77.1°E OCTOBER 1942

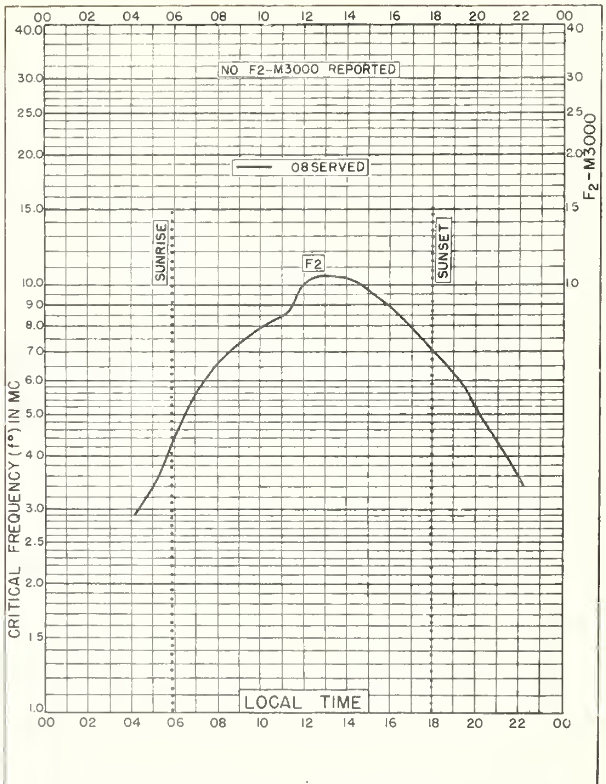

Fig. 88. DELHI, INDIA
28.6°N, 77.1°E SEPTEMBER 1942

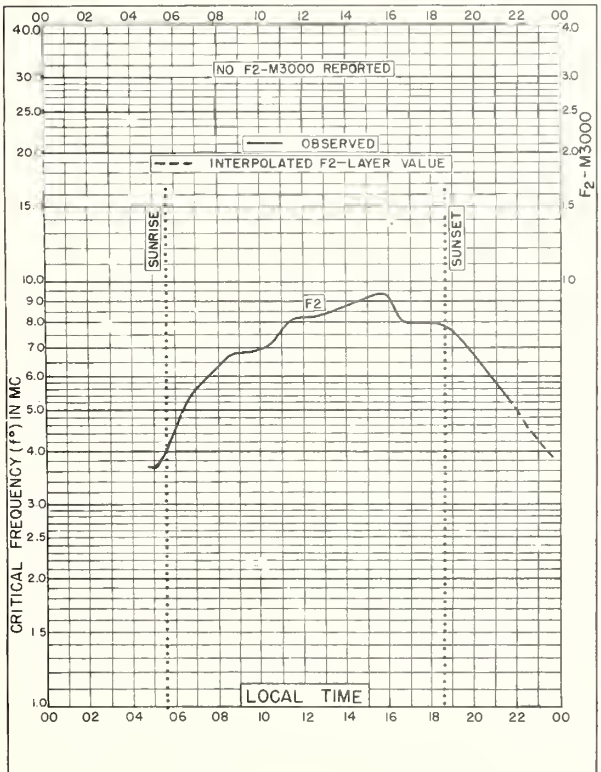

Fig. 89. DELHI, INDIA
28.6°N, 77.1°E AUGUST 1942

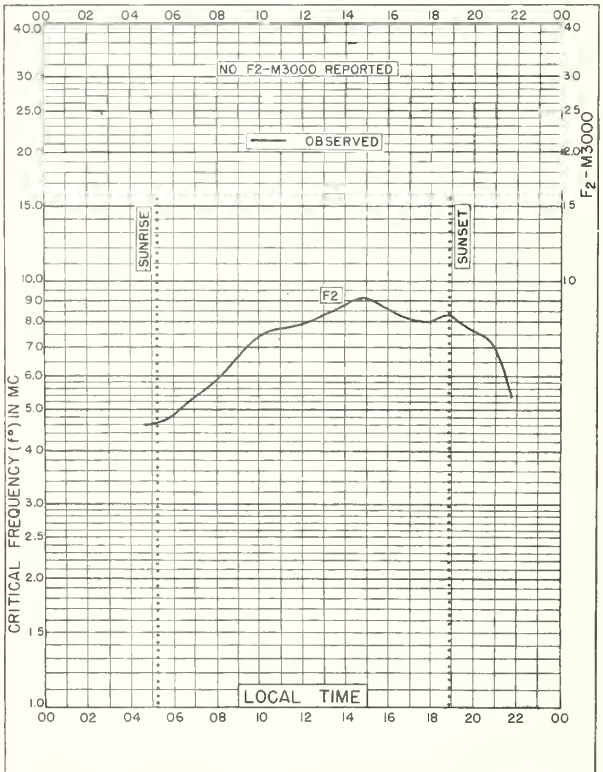

Fig. 90. DELHI, INDIA
28.6°N, 77.1°E JULY 1942

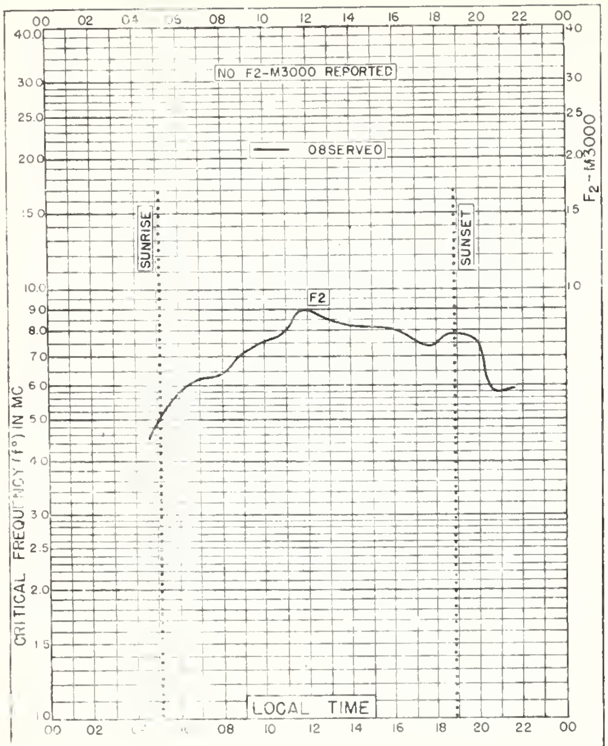

Fig. 91. DELHI, INDIA
28.6° N, 77.1° E JUNE 1942

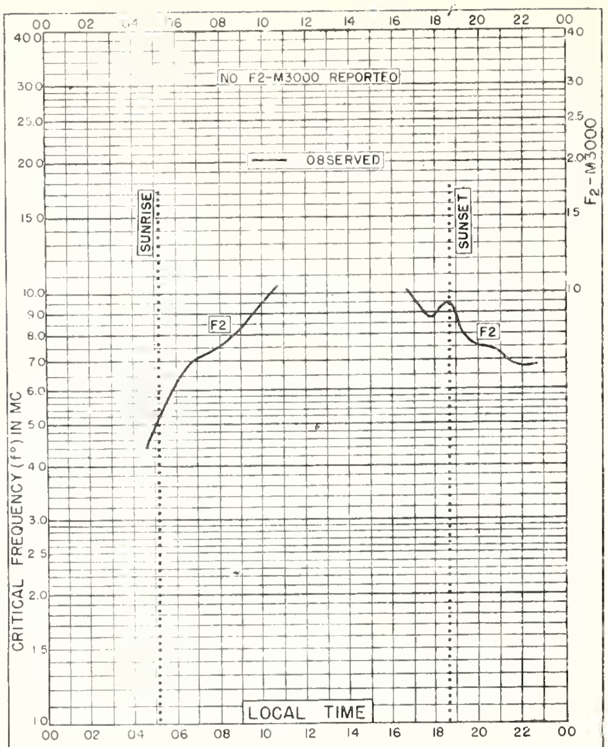

Fig. 92. DELHI, INDIA
28.6°N, 77.1°E MAY 1942

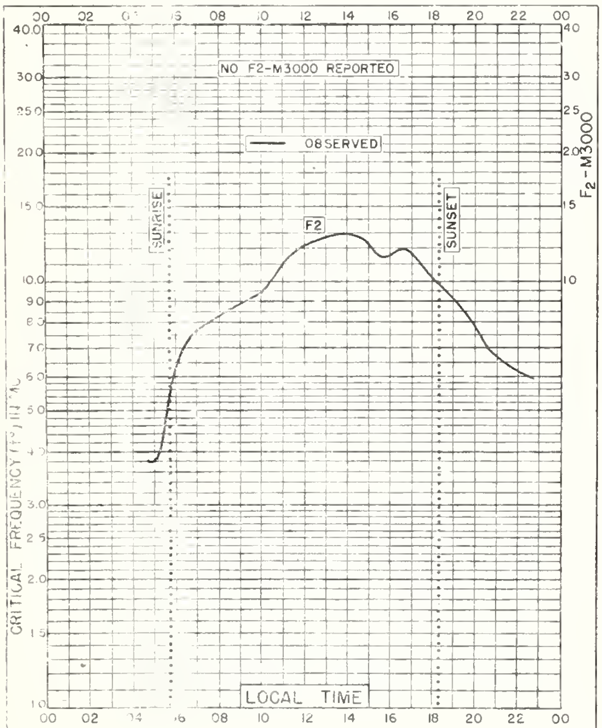

Fig. 93. DELHI, INDIA
28.6°N, 77.1°E APRIL 1942

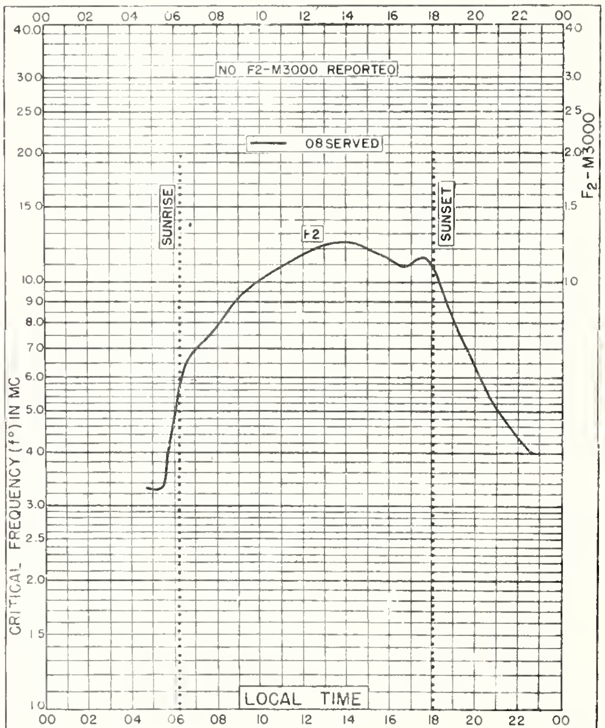

Fig. 94. DELHI, INDIA
28.6°N, 77.1°E MARCH 1942

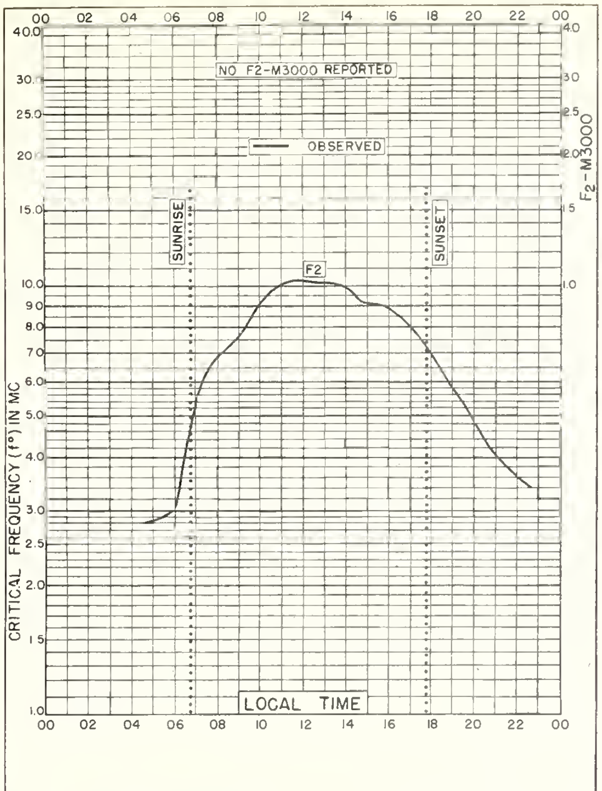

Fig. 95. DELHI, INDIA
28.6°N, 77.1°E FEBRUARY 1942

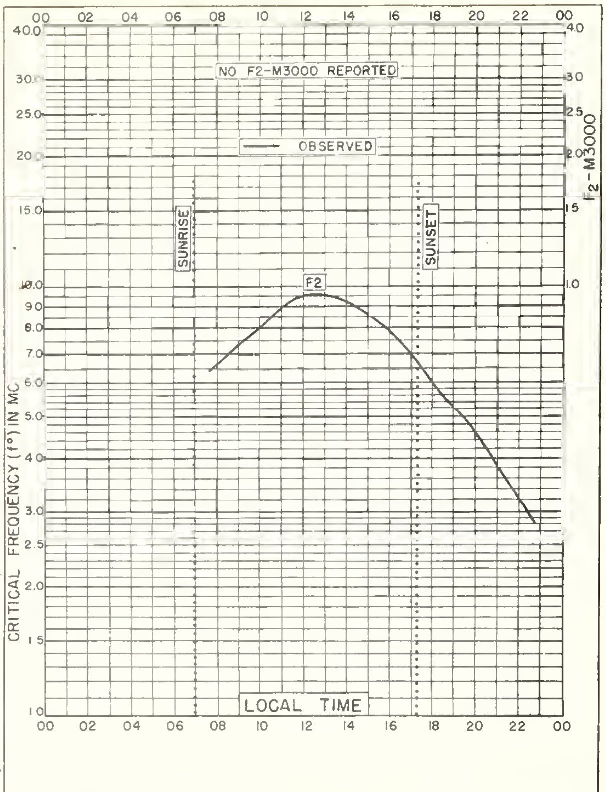

Fig. 96. DELHI, INDIA
28.6°N, 77.1°E JANUARY 1942

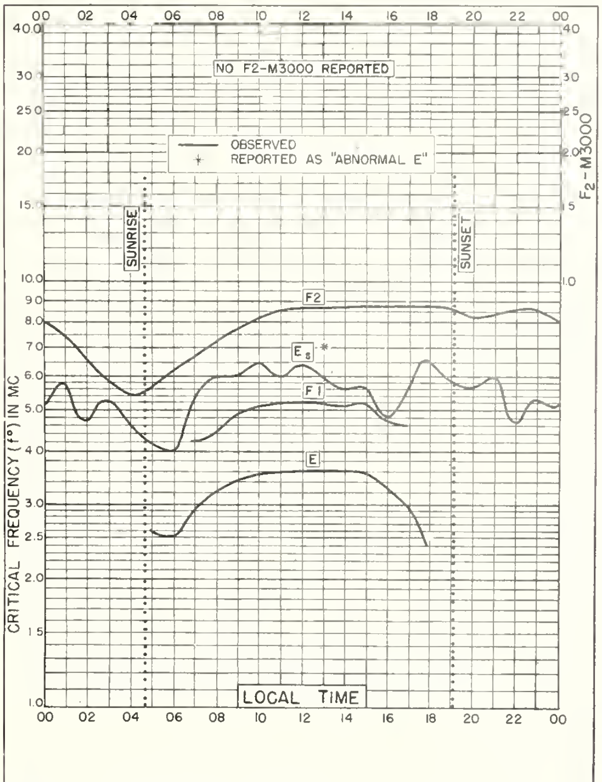

Fig. 97. CANBERRA, AUSTRALIA
35.3°S, 149.0°E DECEMBER 1939

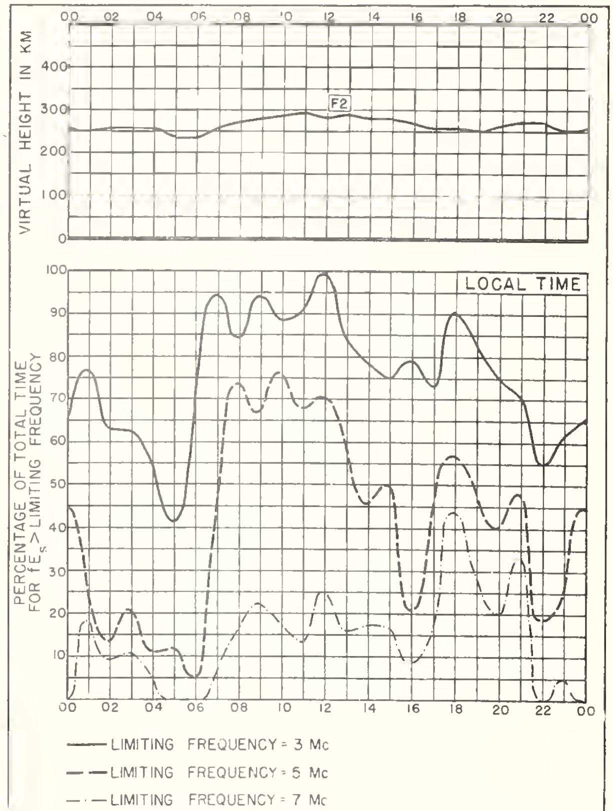

Fig. 98. CANBERRA, AUSTRALIA DECEMBER 1939

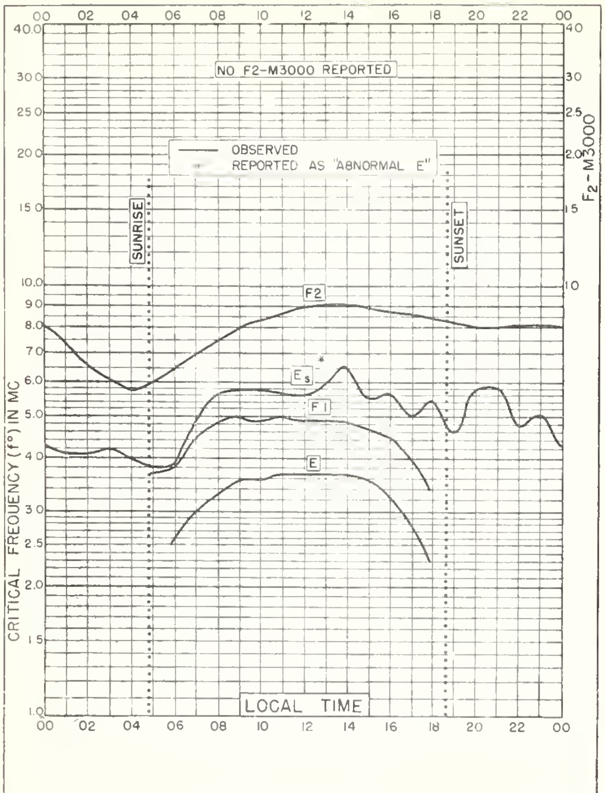

Fig 99. CANBERRA, AUSTRALIA
35.3°S, 149.0°E NOVEMBER 1939

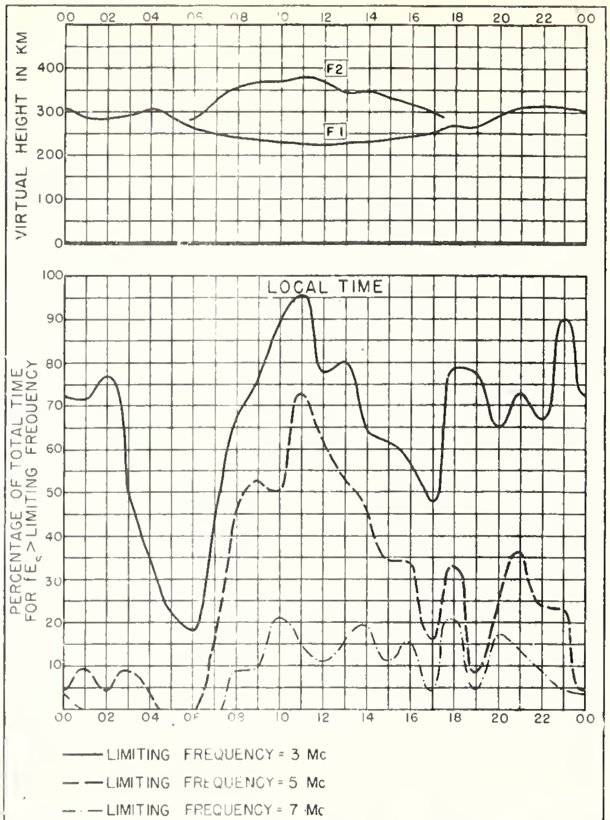

Fig. 100. CANBERRA, AUSTRALIA NOVEMBER 1939

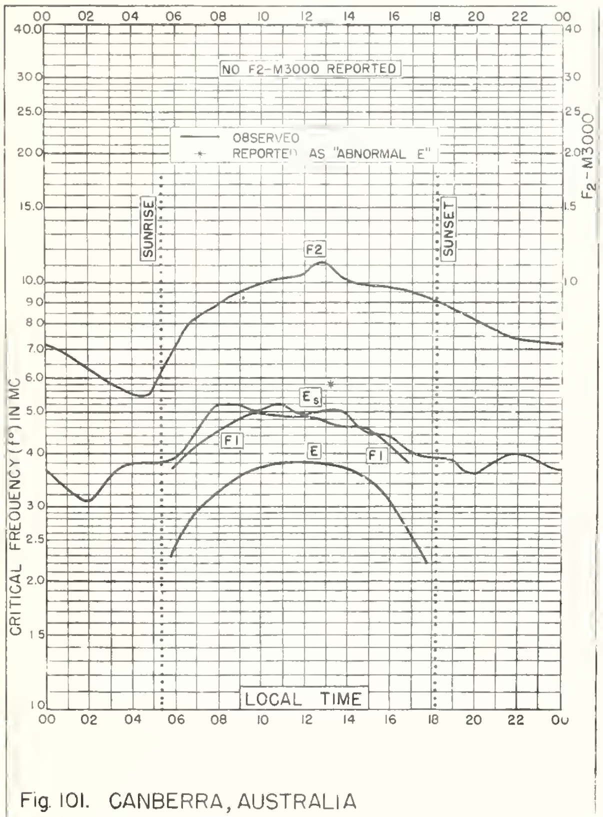

Fig. 101. CANBERRA, AUSTRALIA
35.3°S, 149.0°E OCTOBER 1939

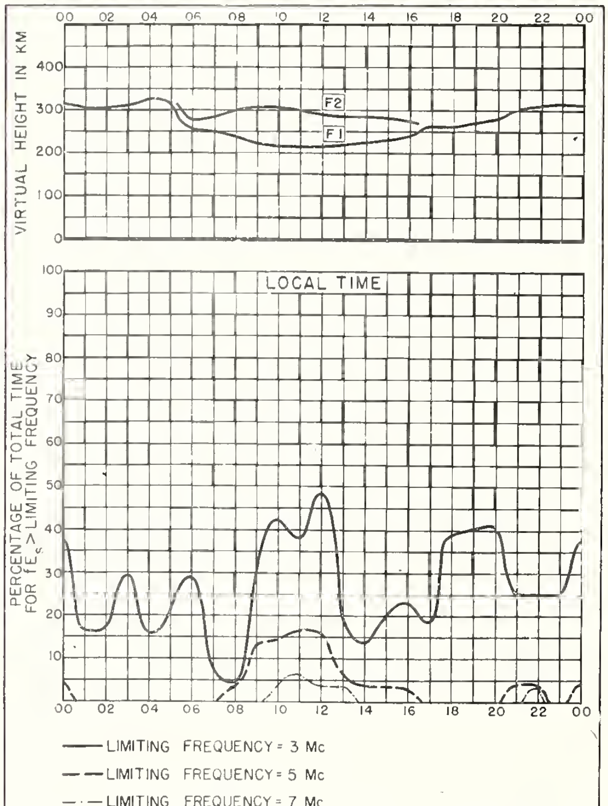

Fig. 102. CANBERRA, AUSTRALIA OCTOBER 1939

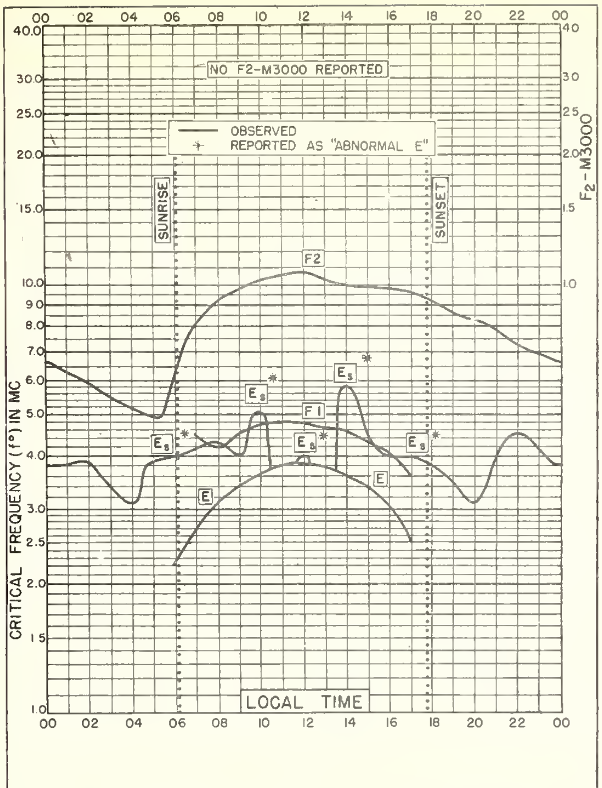

Fig. 103. CANBERRA, AUSTRALIA
35.3°S, 149.0°E SEPTEMBER 1939

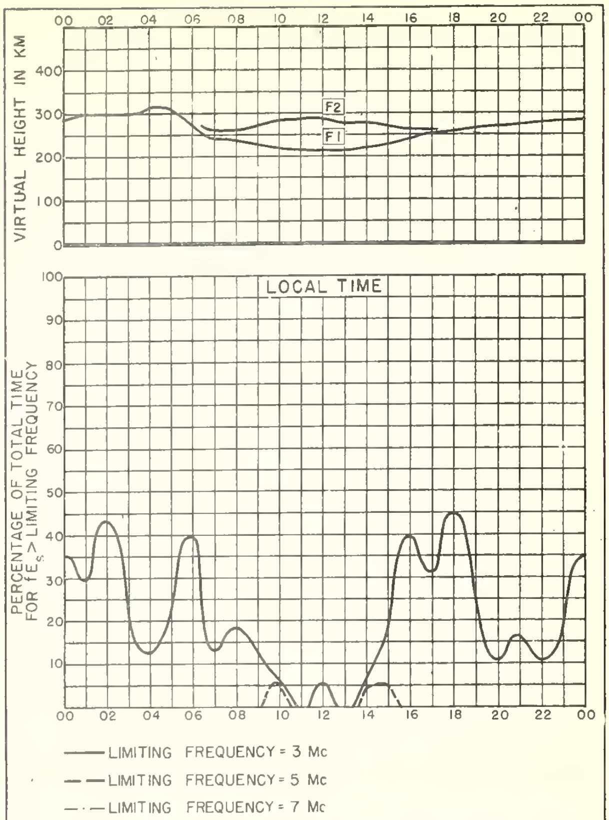

Fig. 104. CANBERRA, AUSTRALIA SEPTEMBER 1939

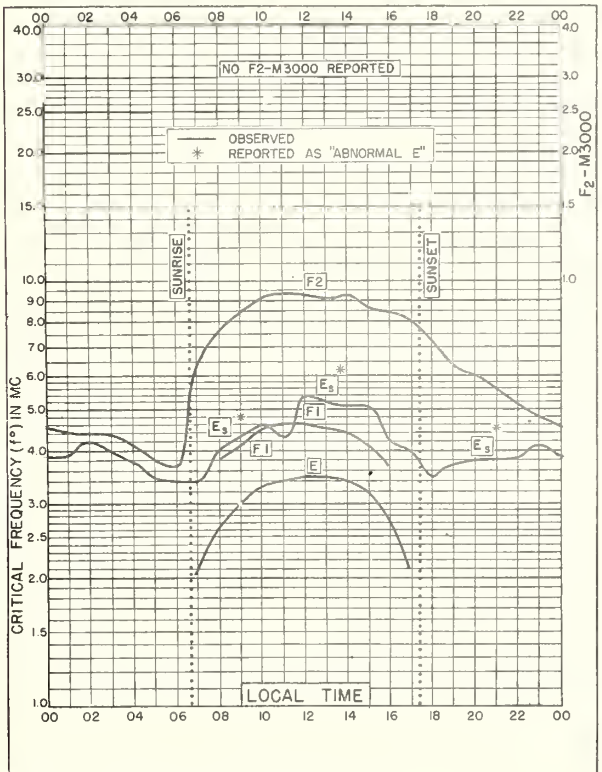

Fig. 105. CANBERRA, AUSTRALIA
35.3°S, 149.0°E AUGUST 1939

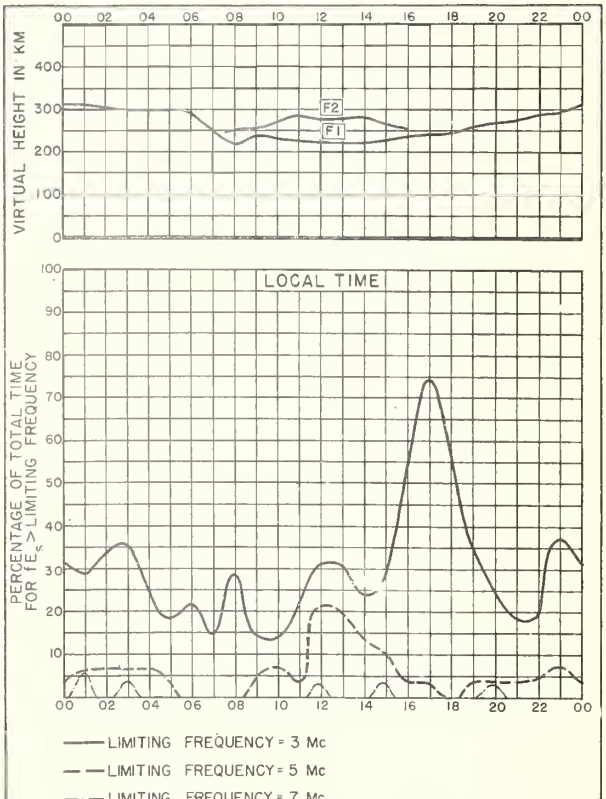

Fig. 106. CANBERRA, AUSTRALIA AUGUST 1939

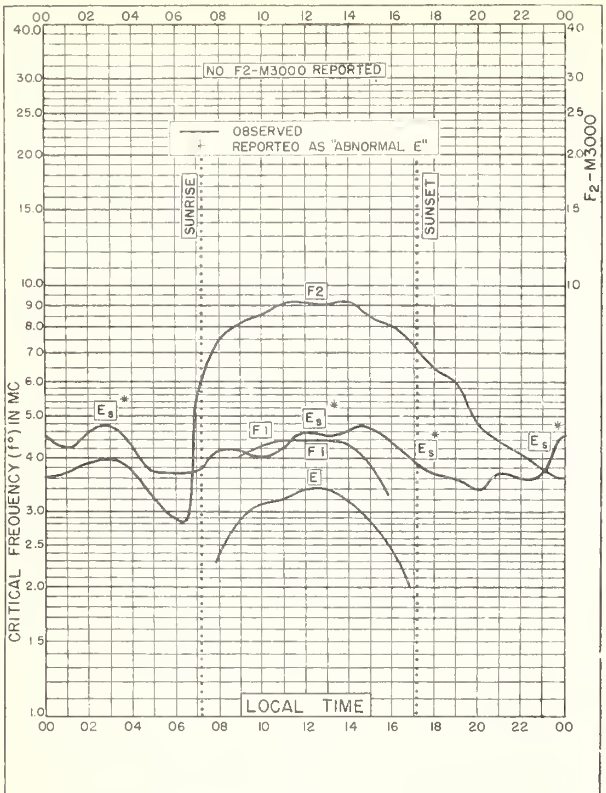

Fig. 107. CANBERRA, AUSTRALIA
35.3°S, 149.0°E JULY 1939

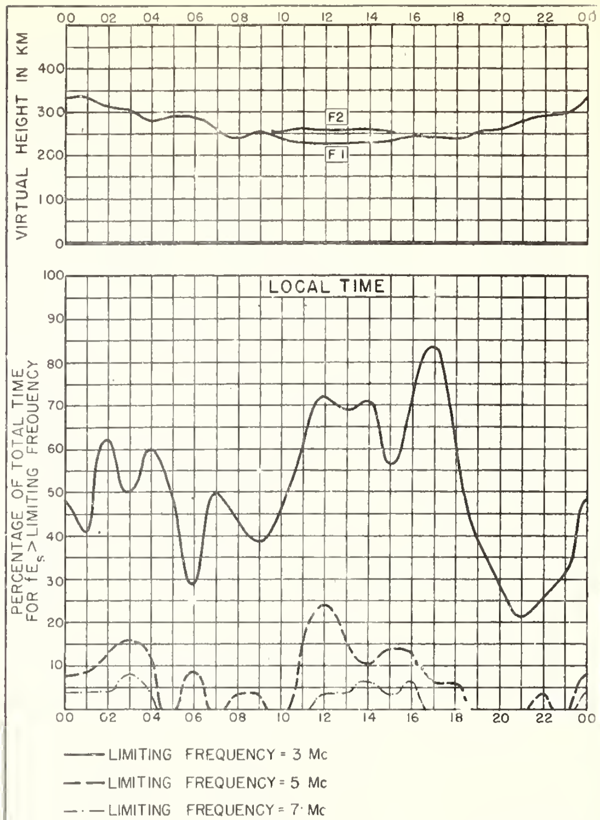

Fig. 108. CANBERRA, AUSTRALIA JULY 1939

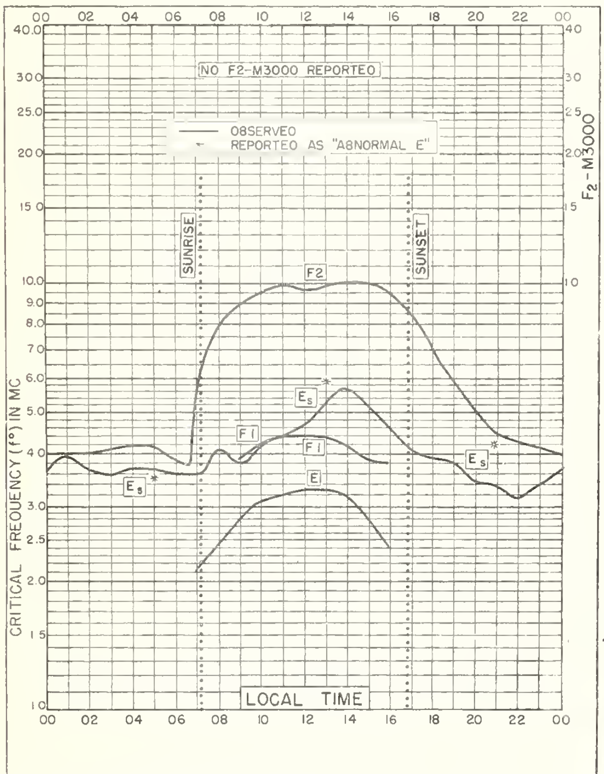

Fig. 109. CANBERRA, AUSTRALIA
35.3°S, 149.0°E JUNE 1939

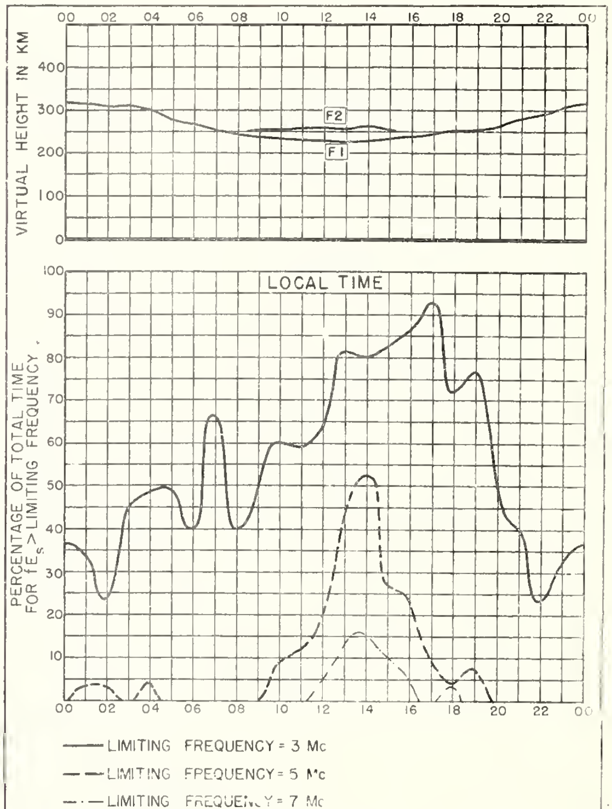

Fig. 110. CANBERRA, AUSTRALIA JUNE 1939

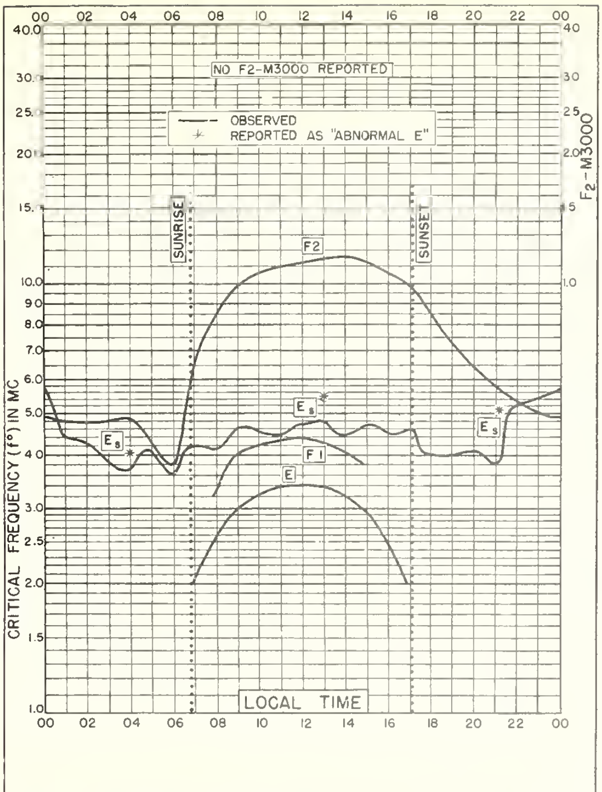

Fig. 111. CANBERRA, AUSTRALIA
35.3°S, 149.0°E MAY 1939

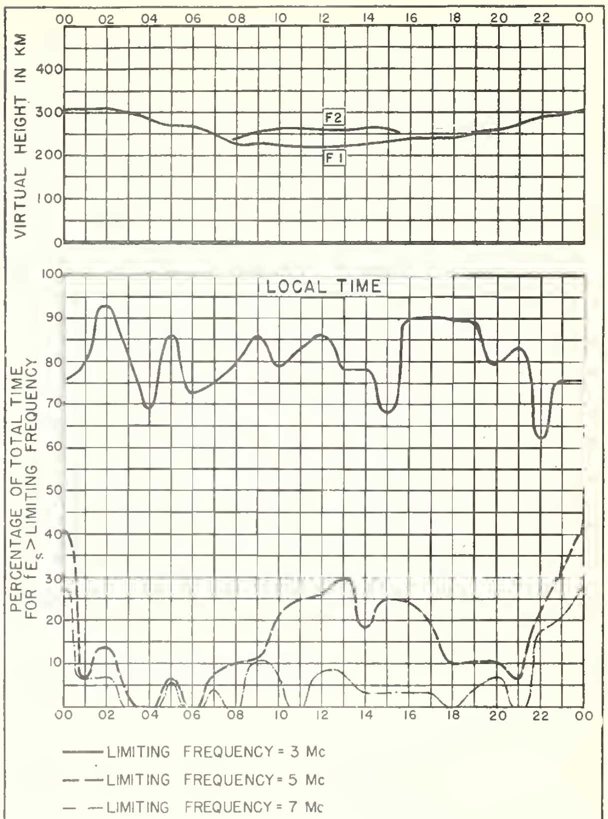

Fig. 112. CANBERRA, AUSTRALIA MAY 1939

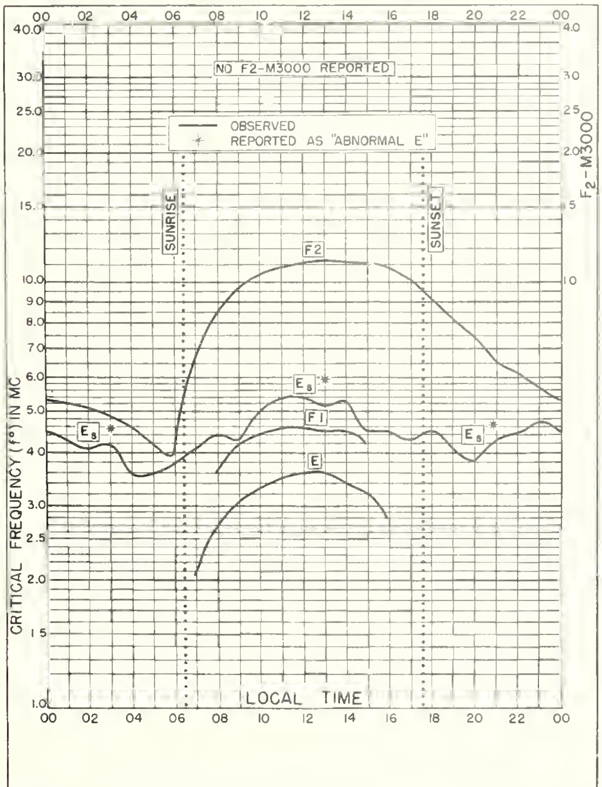

Fig. 113. CANBERRA, AUSTRALIA
35.3°S, 149.0°E APRIL 1939

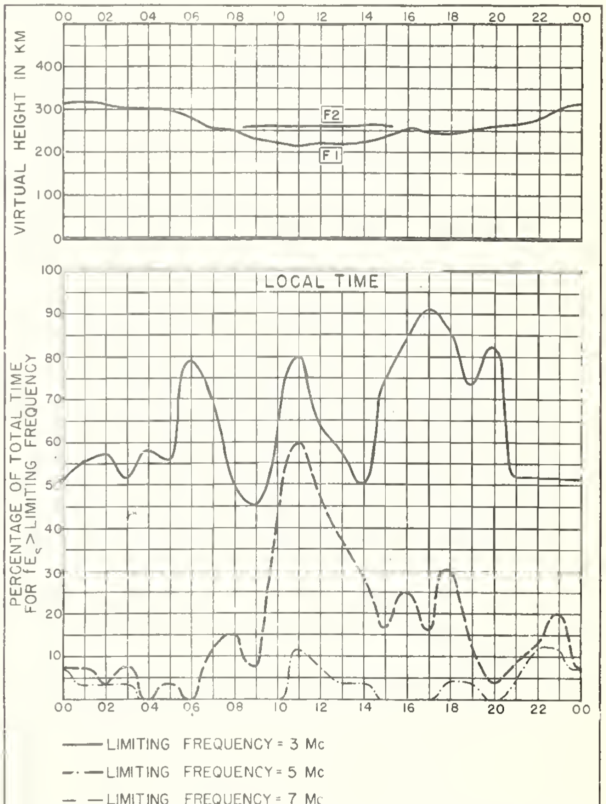

Fig 114. CANBERRA, AUSTRALIA APRIL 1939

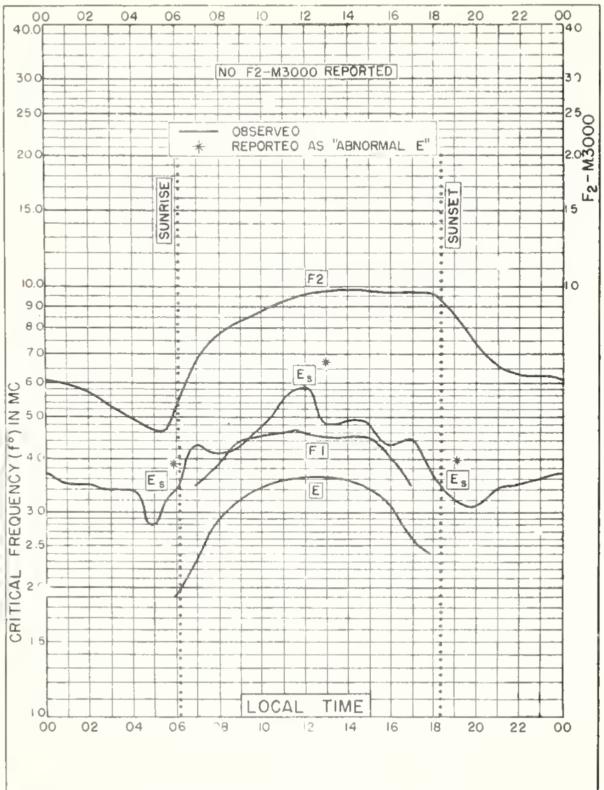

Fig 115. CANBERRA, AUSTRALIA
35.3°S, 149.0°E MARCH 1939

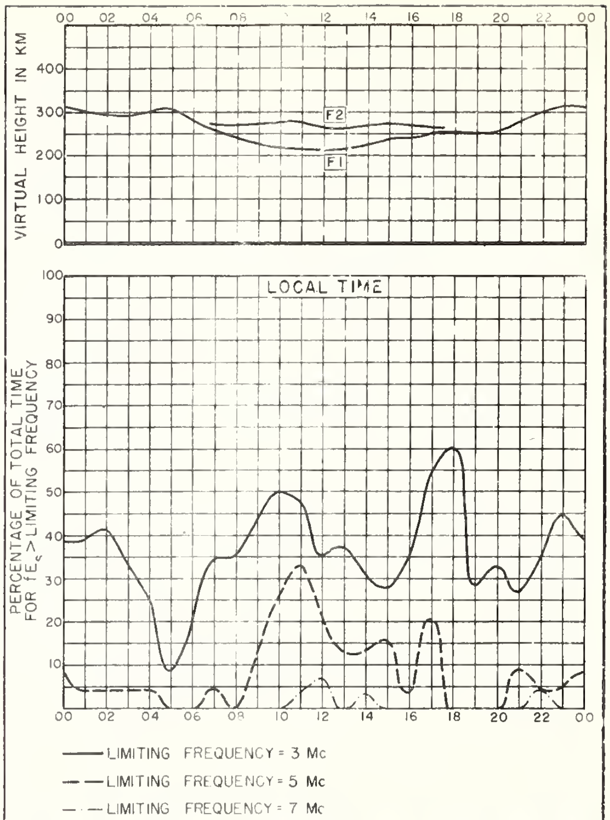

Fig 116. CANBERRA, AUSTRALIA MARCH 1939

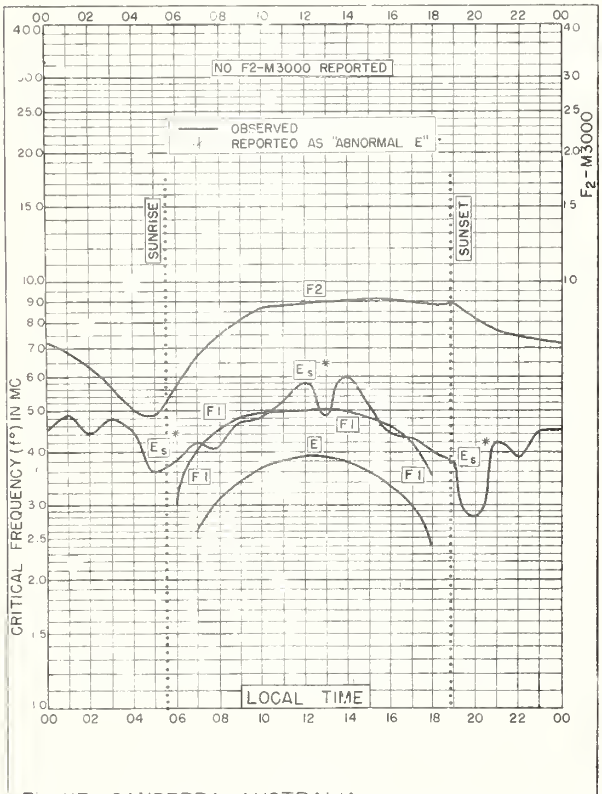

Fig 117 CANBERRA, AUSTRALIA
35.3°S, 149.0 E FEBRUARY 1939

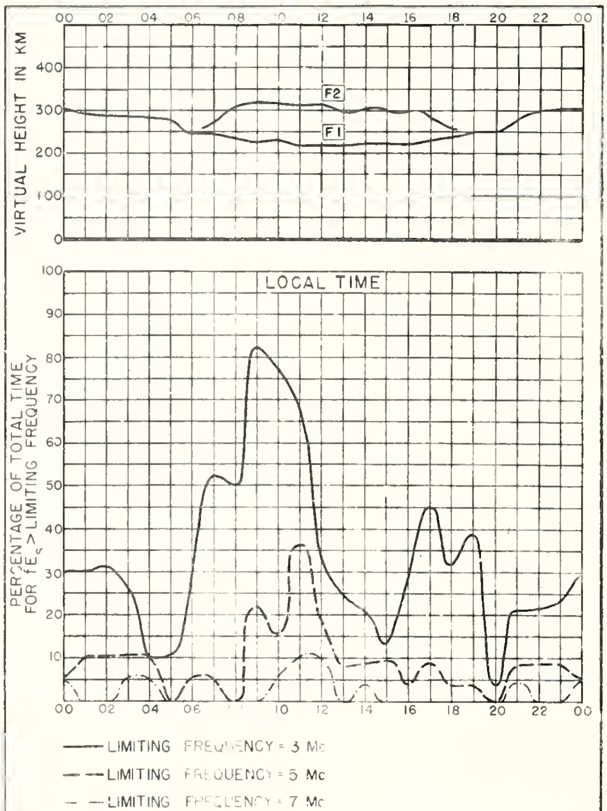

Fig. 118 CANBERRA, AUSTRALIA FEBRUARY 1939

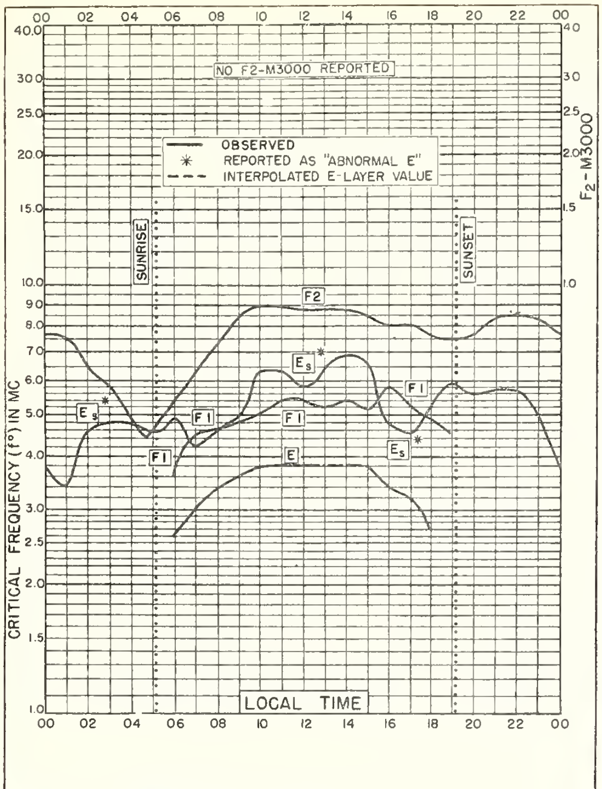

Fig. 119. CANBERRA, AUSTRALIA
35.3° S, 149.0° E JANUARY 1939

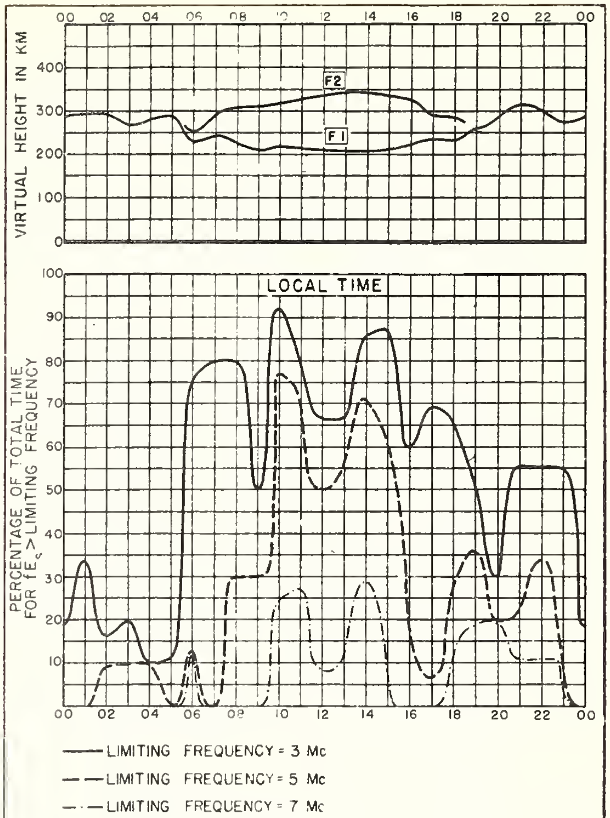

Fig 120. CANBERRA, AUSTRALIA JANUARY 1939

Index of Tables and Graphs of Ionospheric Data

in CRPL-F42

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–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:
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