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IONOSPHERIC DATA

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PREPARED BY CENTRAL RADIO PROPAGATION LABORATORY
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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 17 April to 5 May 1944, beginning with data for 1 January 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 51 and figures 1 to 100 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:
- Okinawa I.

National Bureau of Standards (Central Radio Propagation Laboratory):
- Adak, Alaska
- 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, Department of National Defense:
- 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.	
	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	88	42

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

The data given in tables 52 to 63 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 64 presents ionosphere character figures for Washington, D. C., during December 1947, as determined by the criteria presented in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, magnetic K-figures, which are usually covariant with them.

Table 65 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 December 1947.

Table 66 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. from November 21 through December 10, 1947.

Table 67 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24, GCT, November 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 1 February 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.

AMERICAN AND ZÜRICH PROVISIONAL RELATIVE SUNSPOT NUMBERS

Table 68 presents the daily median values of relative sunspot numbers as reported by American observers for December 1947. The reports are reduced, by appropriate constants, approximately to the Zürich scale of relative sunspot numbers. The monthly relative sunspot number is the mean of the daily median values listed in the table. In addition, table 68 lists the daily provisional Zürich sunspot numbers.

SOLAR CORONAL INTENSITIES OBSERVED AT CLIMAX, COLORADO

In tables 69 and 70 the intensities of the green (λ 5303A), first red (λ 6374A), and second red (λ 6704A) lines of the solar corona as observed from November 1, 1947, through December 31, 1947, by the High Altitude Observatory of Harvard University and the University of Colorado at Climax, Colorado, are given for every 5° measured from astronomical north positively through the east for each day on which observations were possible. An arbitrary intensity-scale of approximately 0 to 40 is used. To convert from astronomical north and to determine the positions relative to the solar rotational equator, subtract the algebraic value of the position-angle of the solar axis. This quantity varies from -26 to +26 degrees during the year, and is tabulated in the nautical almanacs. If observations are uncertain, the initials l.w. (low weight) follow the date. The time of observation in hours GCT is listed. Dashes indicate that the intensity for that position is below the observable threshold. Absence of observation made at a given position is indicated by X.

Table 1

Washington, D. C., (39.0°N, 77.5°W) December 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	250	4.6						2.9
01	260	4.5						2.7
02	260	4.6						2.8
03	270	4.5						2.8
04	270	4.4						2.7
05	260	4.4						2.8
06	250	4.3						2.9
07	250	4.9						3.0
08	230	8.6			120	2.2	1.7	3.3
09	230	10.8			110	2.7		3.3
10	230	11.7			110	3.2		3.2
11	230	12.6			110	3.3		3.2
12	230	12.6			120	3.4		3.1
13	230	12.6	220		120	3.4		3.0
14	230	12.5			110	3.2		3.0
15	230	12.4			110	2.9		3.1
16	230	(12.0)			110	2.2		(3.1)
17	230	(11.0)			110		1.8	(3.1)
18	230	(9.8)					1.8	(3.1)
19	220	8.6					1.9	3.1
20	230	7.1						3.0
21	240	5.8						3.0
22	250	5.6						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) November 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	300	6.7						
01	300	5.2						
02	300	4.8						
03	310	5.0						
04	300	4.7						
05	300	4.4						
06	330	5.2						
07	300	6.2						
08	285	7.2						
09	270	8.0						
10	270	8.6						
11	270	8.7						
12	270	9.0						
13	260	9.2						
14	250	9.5						
15	260	9.2						
16	280	9.0						
17	280	8.2						
18	300	8.0						
19	290	6.8						
20	280	7.2						
21	300	7.2						
22	280	7.0						
23	295	6.7						

Time: 75.0°W.
Sweep: 2.2 Mc to 15.0 Mc in 1 minute; 1.9 Mc to 13.0 Mc, manual operation.

Table 3

Fairbanks, Alaska (64.9°N, 147.8°W) November 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	310	4.2					5.6	2.5
01	372	4.2					5.0	2.5
02	355	4.8					4.9	2.5
03	350	4.8					4.3	2.5
04	315	5.0					3.8	2.5
05	300	4.9					4.0	2.5
06	285	4.6					3.2	2.6
07	285	4.7				1.5	3.2	2.7
08	265	5.8				1.8	2.9	2.8
09	250	7.5				2.0	2.8	2.9
10	250	9.1				2.2	2.9	3.0
11	240	11.0				2.3	2.6	3.0
12	240	12.2				2.3	3.0	2.9
13	240	12.9				2.2	2.9	2.9
14	238	13.0				1.8	2.8	2.9
15	230	12.4				1.5	2.8	2.9
16	232	11.5				1.2	2.8	2.9
17	230	9.7				1.0	3.0	2.9
18	245	6.7					3.0	2.9
19	250	5.3				1.1	2.9	3.0
20	265	4.8					3.1	2.9
21	280	4.4					3.3	2.9
22	300	4.2					4.1	2.7
23	300	4.2					5.4	2.7

Time: 150.0°W.
Sweep: 15.0 Mc to 0.5 Mc in 15 minutes.

Table 4

Prince Rupert (54.3°N, 130.3°W) November 1947

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	F2-M3000
00	280	3.7						2.8
01	300	3.5					3.1	2.7
02	310	3.6					1.9	2.6
03	330	3.4					2.2	2.6
04	335	3.5					3.2	2.6
05	315	3.6					3.3	2.6
06	300	3.7					3.8	2.7
07	295	3.6					3.3	2.7
08	270	5.2			E	E		2.8
09	240	8.7			120	2.2		3.0
10	240	10.5			120	2.5		3.0
11	240	12.8			120	2.8		3.0
12	240	13.4			120	2.9		3.0
13	240	13.8			120	2.9		2.9
14	240	14.0			120	2.8		2.9
15	240	13.9			120	2.5		2.9
16	230	13.6			120	2.1		2.9
17	230	12.7			E	E		2.9
18	230	10.6					2.0	3.0
19	230	9.0						3.0
20	230	6.4						3.0
21	240	5.2						3.0
22	260	4.5						3.0
23	260	3.9						2.8

Time: 120.0°W.
Sweep: Manual operation.

Table 5

Adak, Alaska (51.9°N, 178.6°W) November 1947

Time	h'F2	f^{o}F2	h'F1	f^{o}F1	h'E	f^{o}E	fEs	F2-M3000
00	325	3.2						2.6
01	340	3.2						2.5
02	330	3.2						2.8
03	350	3.2						2.6
04	350	3.2						2.5
05	330	3.3						2.6
06	300	3.3						2.6
07	240	6.7			145	2.0	2.4	2.9
08	220	10.0			120	2.3	3.2	3.1
09	220	13.0			120	2.7	4.7	3.1
10	230	14.7			110	3.0		3.0
11	230	D			110	3.1		3.0
12	230	15.0			110	3.1	3.8	3.0
13	230	14.6			120	3.0		3.0
14	230	14.0			120	2.8		3.0
15	230	13.6			120	2.5		3.1
16	220	11.8			120	1.9	2.8	3.1
17	220	10.0					2.4	3.1
18	210	6.8						3.1
19	230	5.0						3.2
20	250	3.8						3.1
21	280	3.3						2.8
22	285	3.3					2.4	2.8
23	300	3.2					2.4	2.7

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

Table 6

Portage la Prairie (49.9°N, 98.3°W) November 1947

Time	h'F2	f^{o}F2	h'F1	f^{o}F1	h'E	f^{o}E	fEs	F2-M3000
00	260	5.3						(2.7)
01	270	5.2					2.0	(2.6)
02	285	5.0					2.7	(2.6)
03	280	(4.8)					2.6	(2.7)
04	270	4.4					2.6	(2.6)
05	285	4.0					2.5	(2.6)
06	280	4.3					2.0	(2.6)
07	260	4.6			E	E	1.8	(2.7)
08	250	6.6			120	1.8		(2.9)
09	240	9.5			110	2.4		3.0
10	230	11.3			110	2.8		3.0
11	235	12.8			110	3.0		3.0
12	240	13.6			110	3.1		2.9
13	230	13.7			110	3.1		2.9
14	240	(13.6)			120	2.9		(2.9)
15	240	(13.6)			120	2.6		(2.9)
16	230	13.8			130	2.2		(2.8)
17	230	12.8			E	E		2.8
18	220	11.6						2.8
19	230	10.4						2.9
20	230	8.5						(2.8)
21	240	7.4						2.9
22	240	6.0						2.8
23	255	5.4						(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) November 1947

Time	h'F2	f^{o}F2	h'F1	f^{o}F1	h'E	f^{o}E	fEs	F2-M3000
00	305	8.1						2.7
01	315	5.4						2.8
02	325	5.0						2.9
03	310	4.9						2.9
04	280	5.3						2.9
05	280	5.0						3.0
06	280	4.4						3.0
07	270	6.0						3.0
08	250	8.6				2.3	2.4	3.0
09	250	11.7			130	2.7	2.7	3.0
10	240	13.3			120	3.1		2.9
11	245	14.0			130	3.2		2.9
12	250	14.2			130	3.3		2.9
13	250	14.0			130	3.3		2.8
14	250	14.0			130	3.0		2.9
15	250	13.8			130	2.7		2.9
16	250	13.2				2.1		2.9
17	240	11.8						2.9
18	240	10.6						2.9
19	255	9.0						2.9
20	260	7.9						2.9
21	275	7.1						2.8
22	300	6.6						2.8
23	310	5.6						2.9

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

Table 8

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

Time	h'F2	f^{o}F2	h'F1	f^{o}F1	h'E	f^{o}E	fEs	F2-M3000
00	280	6.1						2.7
01	280	5.6						2.8
02	280	5.2						2.7
03	300	4.7						2.8
04	300	4.4						2.8
05	290	4.5						2.9
06	280	4.8						2.8
07	260	6.4						2.9
08	240	8.9			125	2.0		2.9
09	230	12.3			120	2.8		2.9
10	230	13.2			120	3.0		2.8
11	230	13.7			120	3.1		2.8
12	240	14.0			120	3.2		2.8
13	240	13.7			120	3.2		2.8
14	240	13.7			120	3.0		2.8
15	240	13.4			120	2.7		2.8
16	235	13.2				2.0		2.8
17	230	12.1						2.8
18	240	10.7						2.8
19	240	9.8						2.8
20	240	8.4						2.8
21	250	7.1						2.7
22	270	6.8						2.7
23	270	6.4						2.7

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

Table 9

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	290	6.8						2.6
01	295	6.6						2.6
02	280	6.5						2.6
03	265	5.9					1.2	2.6
04	265	6.0					1.2	2.7
05	260	5.6					1.4	2.7
06	270	5.6						2.7
07	255	8.3						2.9
08	245	11.5						2.9
09	250	12.9						3.0
10	245	12.6						3.0
11	250	14.0						2.8
12	250	13.9						2.8
13	260	13.4						2.8
14	250	13.4						2.7
15	250	13.3						2.8
16	250	12.8						2.8
17	250	11.8						2.8
18	260	11.1						2.8
19	255	9.9						2.6
20	260	8.4						2.7
21	270	8.0						2.7
22	280	7.3						2.6
23	280	6.9						2.6

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

Table 10

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	4.0						2.7
01	280	3.8						2.7
02	290	3.8						2.6
03	300	3.8						2.6
04	280	3.8						2.8
05	300	3.9						2.6
06	280	4.0						2.7
07	240	6.7			120	2.0		3.0
08	230	9.5			110	2.8		3.4
09	230	11.4			110	3.2		3.2
10	230	12.0			110	3.4		3.2
11	220	12.5	220		110	3.6		3.0
12	220	12.5			110	3.6		3.0
13	230	12.6			110	3.6		2.9
14	230	12.5			110	3.4		2.9
15	240	12.5			110	3.1		3.0
16	230	12.0			110	2.5		3.0
17	220	11.0						3.1
18	210	9.1					2.4	3.2
19	220	8.0						3.2
20	220	6.7						3.0
21	230	4.8						3.0
22	260	4.4						2.8
23	260	4.0						2.7

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

Table 11

White Sands, New Mexico (32.6°N, 106.5°W) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	255	4.5					3.0	2.7
01	260	4.3					3.1	2.7
02	280	4.2					3.0	2.8
03	285	4.0					3.0	2.7
04	290	3.9					3.0	2.6
05	300	3.9					3.2	2.6
06	280	4.3					3.2	2.7
07	240	8.2					3.3	3.0
08	220	11.0			120	3.0	3.7	3.1
09	220	12.1			120	3.4	5.2	3.1
10	[illegible]	[illegible]			120	3.6	[illegible]	3.0
11	[illegible]	[illegible]			120	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]			120	[illegible]	[illegible]	[illegible]
13	220	12.7			120	3.7	4.9	2.8
14	230	13.4			115	3.5	5.1	2.8
15	230	12.3			120	3.3	4.8	2.8
16	235	12.0			115	2.6	3.6	2.8
17	220	11.1					3.3	3.0
18	220	10.0					3.0	2.9
19	230	9.0					3.3	3.0
20	230	7.0					2.7	2.9
21	240	5.8					2.9	2.9
22	250	5.1					3.0	2.8
23	270	4.7					3.0	2.7

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

Table 12

Baton Rouge, Louisiana (30.5°N, 91.2°W) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	4.8						2.9
01	300	4.6						2.8
02	300	4.4						2.8
03	320	4.2						2.8
04	330	4.0						2.7
05	320	3.8						2.7
06	300	4.8						2.8
07	290	9.3						3.1
08	290	[illegible]	240		120	[illegible]		3.1
09	290	[illegible]	240		[illegible]	[illegible]		3.0
10	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
11	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
12	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		2.9
13	300	13.0	240		120	3.6		2.8
14	310	12.9	250		120	3.6		2.8
15	300	12.3	250		120	3.2		2.8
16	300	12.0	250		120	2.4		2.9
17	280	11.5						2.8
18	250	10.0						2.8
19	265	8.6						2.8
20	260	7.2						2.9
21	270	6.6						2.9
22	290	5.6						2.9
23	290	5.0						2.9

Time: 90.0°W.
Sweep: 2.0 Mc to 15.0 Mc in 5 minutes, automatic operation.

Table 13

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	8.0						2.8
01	260	6.7						2.8
02	260	5.5						2.8
03	265	4.4						2.8
04	310	3.8						2.4
05	340	3.3						2.4
06	360	3.8						2.4
07	270	8.2				2.2		2.8
08	260	12.2			140	2.9		3.0
09	250	14.6	250		140	3.4		3.0
10	280	15.5	240	8.8	130	3.6		3.0
11	310	15.8	240	7.2	130	3.9		2.9
12	330	16.4	235	7.2	130	4.0		2.8
13	350	17.0	240	7.0	130	3.9		2.8
14	340	17.0	240	7.0	130	3.7		2.8
15	325	16.4	250	6.5	130	3.4		2.8
16	280	15.8	250	6.4	130	3.1		2.8
17	250	15.2			135	2.5	3.6	2.8
18	240	14.2					3.5	2.9
19	240	13.0					2.8	2.8
20	260	12.3						2.7
21	250	12.8						2.8
22	250	11.8						2.8
23	245	10.3						2.9

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

Table 14

San Juan, Puerto (18.4°N, 66.1°W) November 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		7.8						3.0
01		6.6						3.0
02		5.2						2.9
03		4.4						2.7
04		4.2						2.6
05		4.5						2.7
06		5.3						2.7
07	250	9.4		2.5				3.0
08	260	11.8				(3.0)		3.0
09	270	13.0				3.3		3.0
10	280	13.6				(3.6)		2.9
11	290	13.1					(4.5)	2.8
12	300	13.3				(4.0)	(5.0)	2.7
13	300	12.8				(4.0)	(5.0)	2.6
14	300	12.5				(3.8)	(5.0)	2.6
15	300	12.1				(3.5)	(4.7)	2.6
16	295	12.0				3.1	4.4	2.7
17	290	11.7						2.8
18	290	11.1						2.8
19	290	10.0						2.7
20		9.3						2.7
21		9.4						2.7
22		8.7						2.8
23		8.5						2.8

Time: 60.0°W.
Sweep: 2.8 Mc to 13.0 Mc, manual operation.

Table 15

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	11.8					4.8	2.8
01	230	10.4					4.8	2.9
02	230	9.8					2.8	3.1
03	220	8.7					2.8	3.1
04	230	6.8					2.5	3.0
05	230	8.3					2.8	3.0
06	240	5.9					4.0	2.9
07	260	9.9					5.0	2.9
08	250	13.1					5.0	2.9
09	240	15.4				3.5	5.8	2.8
10	230	15.2					5.8	2.4
11	220	14.0				3.9	6.5	2.2
12	220	13.0					6.0	2.2
13	220	13.1			110	4.0	5.4	2.1
14	230	13.6					5.4	2.2
15	240	13.8					5.5	2.3
16	250	14.2					6.0	2.4
17	260	14.4					5.5	2.4
18	280	14.5					5.4	2.4
19	240	14.1					4.1	2.2
20	310	14.0					2.6	2.2
21	290	13.8					2.9	2.4
22	250	13.2					3.1	2.7
23	240	12.4					4.1	2.8

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

Table 16

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	8.4						3.1
01	230	6.8						3.1
02	250	5.2						2.9
03	270	3.8						2.8
04	320	3.6						2.7
05	300	4.0						2.7
06	280	6.3						2.9
07	250	10.5			120	2.5	2.8	3.0
08	250	13.3			120	3.1	3.6	3.0
09	250	14.2	240	(4.8)	120	3.5	4.2	3.0
10	260	14.2	240	5.1	120	3.9	4.5	2.8
11	270	14.3	235	5.2	120	4.0	4.7	2.8
12	260	13.8	230	(5.3)	120	4.1	4.8	2.6
13	260	13.6	230	(5.2)	120	4.0	4.8	2.6
14	280	13.2	240	5.4	120	3.8	4.6	2.6
15	275	13.0	240	(5.3)	120	3.6	4.4	2.5
16	260	13.0	250		120	3.2	4.0	2.6
17	260	12.6			120	2.5	3.0	2.6
18	275	12.4					2.7	2.7
19	265	11.6					2.3	2.7
20	260	11.0					1.7	2.7
21	275	11.0						2.7
22	260	11.3						2.8
23	250	10.4						2.9

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

Table 17

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	(12.3)					3.6	(2.9)
01	250	(11.0)					3.7	(2.8)
02	250	(9.6)					3.6	(2.9)
03	250	8.8					3.5	2.9
04	250	7.8					3.3	3.0
05	240	7.5					3.3	3.0
06	260	7.2					3.2	2.9
07	260	(11.0)			120	2.7	4.0	(2.8)
08	250	13.3			120	3.4	4.8	2.7
09	240	13.9			120	3.7	4.7	2.6
10	250	13.3	220		120	3.9	4.6	2.4
11	270	12.9	220	5.1	110	4.1		2.4
12	260	12.8	210	5.0	110	4.2		2.3
13	250	13.3	210	4.8	110			2.3
14	250	13.8	210	4.5	110	4.0		2.4
15	250	14.4	230	4.4	110	3.7	3.8	2.4
16	250	14.9	240		110	3.3	4.4	2.5
17	260	15.2			120	2.8	4.4	2.6
18	290	15.2					3.8	2.5
19	330	14.6					3.5	2.5
20	330	14.5					3.0	2.4
21	315	14.2					3.6	2.4
22	300	13.7					4.0	(2.5)
23	280	13.2					4.0	(2.8)

Time: 157.5°W.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 36 seconds, automatic;
13.0 Mc to 18.0 Mc, manual operation.

Table 18

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	3.9					3.2	2.6
01	320	4.1					2.9	2.6
02	330	4.0					2.7	2.6
03	340	4.1					3.1	2.6
04	340	4.0					3.6	2.6
05	340	4.0					3.3	2.5
06	350	3.9				E	3.3	2.6
07	285	4.6			E	E	2.4	2.8
08	260	5.9			125	2.1	3.0	2.9
09	260	7.8	250	4.1	120	2.6	3.0	2.9
10	260	8.0	240	4.5	120	3.0	3.6	2.8
11	270	8.6	240	4.6	120	3.1	3.4	2.7
12	275	9.9	240	4.6	120	3.2	3.8	2.7
13	265	10.8	240	4.6	120	3.2	3.4	2.7
14	250	11.4	240	4.5	120	3.1	3.4	2.7
15	250	11.4	250	4.5	120	3.0		2.7
16	250	11.7	255	4.4	120	2.5		2.7
17	245	11.5			130	2.1	2.3	2.8
18	240	10.2			E	E	1.8	2.8
19	240	9.4				E	2.6	2.8
20	240	8.1						2.9
21	250	5.9						2.9
22	260	5.3						2.9
23	270	4.2						2.9

Time: 120.0°W.
Sweep: Manual operation.

Table 19

Portage la Prairie, Canada (49.9°N, 98.3°W) October 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	6.2					2.8	2.6
01	300	5.8					3.2	(2.5)
02	290	5.3					2.2	(2.6)
03	305	5.5					2.2	(2.6)
04	310	5.0					2.4	(2.5)
05	310	4.8					2.4	(2.5)
06	300	5.0					1.8	(2.6)
07	270	5.8			E	E		(2.8)
08	250	7.5			115	2.4		2.9
09	240	9.2			110	2.9		2.9
10	230	10.4			110	3.1		2.8
11	230	11.2			110	3.4		2.8
12	230	11.4			110	3.4		2.7
13	240	12.4			110	3.4		2.7
14	240	12.0			110	3.3		2.6
15	240	11.8			110	3.1		2.7
16	240	12.0			110	2.6		2.7
17	250	(12.0)			120	2.1		(2.7)
18	240	(11.6)			E	E		(2.8)
19	240	10.2					1.6	(2.7)
20	250	8.7					1.8	2.8
21	250	8.5					2.0	(2.8)
22	250	7.8					1.8	2.7
23	255	6.8					2.2	2.7

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

Table 20

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	(300)	(6.2)					(2.2)	(2.6)
01	(300)	(5.9)					(2.0)	(2.6)
02	(295)	(5.6)						(2.6)
03	(300)	(5.8)					(2.4)	
04	(300)	(5.5)					(2.2)	(2.6)
05	(290)	(5.2)					(1.7)	(2.5)
06	(260)	(7.4)	230					
07	(270)						(2.4)	
08	(240)						(3.8)	
09	(240)		210				(4.0)	
10	(240)						(3.8)	
11	(260)							
12	(290)							
13	(300)							
14	(310)							
15	(270)							
16	(260)							
17	(300)						(3.8)	
18	(290)						(2.6)	
19	(250)	(8.1)					(3.4)	
20	(230)	(7.8)						
21	240	(7.0)						
22	285	7.0					(2.6)	2.7
23	(290)	(6.5)					(2.2)	2.7

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

Table 21

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	6.6					2.6	2.5
01	300	6.6					2.6	2.5
02	310	6.4					3.0	2.5
03	300	6.1					2.6	2.8
04	280	6.0					2.4	2.5
05	310	5.8					2.6	2.6
06	290	8.2				E	2.2	2.8
07	250	10.5			120	2.8	3.6	3.0
08	250	(12.6)					3.2	(3.1)
09								
10								
11								
12								
13								
14								
15								
16								
17	270	10.9					3.5	2.9
18	260	10.2				E	3.0	2.8
19	275	9.0					3.2	2.8
20	275	8.2					3.2	2.8
21	280	7.8					3.0	2.7
22	300	7.4					3.0	2.7
23	300	6.8					2.6	2.6

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

Table 22

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	290	6.9					3.0	2.7
01	290	6.8					2.2	2.7
02	290	6.5					2.5	2.7
03	280	6.4					2.0	2.6
04	280	6.0					1.4	2.7
05	280	5.9					1.4	2.7
06	270	8.2	240			E	2.2	3.0
07	250	12.0			120	2.4	2.7	3.1
08	250	13.6	220		120	2.9	3.5	3.0
09	250	13.9	230		110	3.3	3.7	2.9
10	260	14.2	220		110	3.5	3.7	2.8
11	280	14.2	230		110	3.6	3.8	2.8
12	280	14.2	235		110	3.7	4.2	2.7
13	260	14.1	230		120	3.6	3.7	2.7
14	270	14.0	230		110	3.5	3.6	2.7
15	270	13.6	250		110	3.3	3.4	2.7
16	270	13.0	240		110	2.7	3.7	2.7
17	270	12.0	235		115	1.8	3.7	2.9
18	270	10.6	240				3.0	2.9
19	250	9.2					3.1	3.0
20	250	8.6					2.7	2.9
21	260	8.1					2.6	2.9
22	280	7.2					2.8	2.7
23	280	7.0					2.2	2.7

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

Table 23

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	280	8.6					2.1	2.7
01	280	8.2					2.2	2.7
02	280	7.8					2.4	2.7
03	280	5.7						2.7
04	270	6.0						2.7
05	290	5.5						2.6
06	300	6.2	280			E		2.7
07	260	10.4	250		115	2.2		3.0
08	280	12.7	240		110	2.9	3.8	3.1
09	270	14.0	225		110	3.6	4.4	2.8
10	280	14.2	230		110	3.8	4.6	2.8
11	280	14.5	230		110	3.8	4.8	2.7
12	300	14.5	220		110	4.0	5.0	2.6
13	300	15.1	230		110	3.8	4.6	2.8
14	300	14.9	240		110	3.8	4.6	2.7
15	300	14.7	230		110	3.5	4.5	2.7
16	300	14.5	250		110	3.2	4.4	2.7
17	290	14.1	230		110	3.8	4.0	2.8
18	280	13.3	225				3.0	2.8
19	275	12.1	240			E	2.4	2.7
20	250	11.2					2.4	2.8
21	270	10.8					2.4	2.8
22	280	10.0					2.4	2.7
23	280	8.9					2.4	2.8

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

Table 24

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		(9.2)					3.2	
01		9.9					3.2	2.7
02		8.8					3.6	2.8
03		8.8					3.4	2.8
04		7.3					3.2	2.6
05		6.5					3.2	3.5
06		8.7					2.6	2.5
07		10.8					3.4	2.6
08		(13.2)					4.6	2.3
09		(14.2)					4.8	(2.6)
10		(14.4)					5.1	(2.6)
11		(14.3)					5.2	(2.5)
12		(14.8)		7.8			5.2	(2.4)
13		S*		7.6			5.0	
14		S		7.5			4.8	
15		S		7.4			4.8	
16		S		6.4			4.8	
17		S					4.3	
18		S					4.4	
19		S					4.0	
20		S					3.6	
21		S					3.8	
22		S					3.7	
23		S					3.5	

Time: 135.0°E.
Sweep: 1.8 Mc to 18.0 Mc in 15 minutes, manual operation.
*Records indicate values usually >12.0 Mc, wherever "S" appears.

Table 25

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	15.0					5.5	3.0
01	230	13.3					5.5	3.0
02	225	11.6					5.0	3.1
03	230	9.0					4.5	2.9
04	235	7.7					4.5	2.9
05	235	7.0					5.0	2.8
06	250	7.2					5.0	2.8
07	260	10.5					5.7	2.9
08	240	13.8			110	(3.3)	5.2	2.8
09	230	15.2					5.5	2.6
10	230	15.2					5.5	2.4
11	220	14.9					8.0	2.2
12	220	14.5					5.0	2.3
13	230	14.9	230				5.5	2.2
14	380	15.6	220				5.4	2.2
15	375	16.1	230				5.5	2.3
16	250	16.7	250				8.2	2.4
17	260	16.4			120	(2.8)	6.2	2.3
18	290	15.4					5.0	2.2
19	380	14.8					2.9	2.0
20	370	(16.1)					2.8	(2.4)
21	210	(15.2)					3.0	(2.4)
22	270	(14.5)					3.3	(2.7)
23	250	(15.6)					2.8	(2.8)

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

Table 26

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		10.3					2.6	2.9
01		9.4					2.2	2.9
02		8.5					2.5	2.9
03		8.1					3.1	2.9
04		7.0					3.2	2.9
05		6.2					3.2	3.1
06		9.7				2.8	3.8	2.8
07		12.9				2.6	5.0	2.7
08		14.6				4.0	5.4	2.5
09		14.1				4.4	5.5	2.3
10		13.1				4.6	7.6	2.1
11		13.1				4.6	7.2	2.1
12		12.8				4.6	5.4	2.1
13		13.2				4.5	5.1	2.1
14		14.1				4.1	5.0	2.1
15		14.4				2.7	5.2	2.1
16		13.4				3.0	4.8	2.1
17		11.9				(2.2)	3.7	2.1
18		11.0					2.9	2.0
19		10.0						1.9
20		10.1						2.1
21		10.2					2.2	2.4
22		10.3					2.9	2.6
23		10.7					3.1	2.8

Time: 120.0°E.
Sweep: 1.6 Mc to 18.0 Mc, manual operation.

Table 27

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	11.0						2.7
01	250	9.4					2.9	2.8
02	250	8.7					3.0	2.8
03	240	8.0					2.8	2.9
04	240	7.4					2.8	3.0
05	240	6.2					2.8	2.9
06	270	9.3				2.3	2.8	2.9
07	240	12.2				3.2	5.5	2.8
08	240	14.2				3.8	9.9	2.7
09	230	15.1	220	5.4		4.0	10.0	2.4
10	240	14.4	220	5.4		4.0	10.0	2.2
11	240	13.0	220	5.5		4.2	10.1	2.0
12	225	12.5	210	5.4		4.1	10.0	2.0
13	250	12.4	210	5.4		4.0	10.1	2.0
14	240	12.6	220	5.5		4.0	10.1	2.0
15	230	12.6	220			3.7	10.0	2.0
16	250	12.8				3.3	10.0	2.0
17	280	12.8				2.5	8.3	2.0
18	330	12.8				1.6		2.0
19	430	11.6						2.0
20	420	10.5						2.0
21	350	11.8						2.2
22	270	11.4						2.4
23	270	11.7						2.6

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

Table 28

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	7.6						2.8
01	260	7.1						2.8
02	(260)	8.3						2.8
03	(260)	6.0						2.8
04	(230)	5.6						2.7
05	290	5.6						2.7
06	240	7.9				2.2	2.9	3.1
07	230	10.8			100	3.0		3.1
08	230	11.9	220		100	3.5		3.0
09	(250)	12.5	210		100	(3.9)		2.9
10	(280)	13.0	210		100	4.0		2.8
11	330	13.1	(210)	(7.3)	100			2.7
12	350	13.4	210	7.5	100			2.7
13	350	13.5	220	(7.3)	100	(4.0)		2.6
14	360	13.1	220	8.8	100	(4.0)		2.6
15	350	13.0	230	(6.6)	100	(3.9)		2.6
16	(330)	12.8	230		100	3.5	4.0	2.7
17	(270)	12.5	240		110	2.8	3.6	2.7
18	250	12.1				(2.0)	2.5	2.8
19	240	11.6						2.8
20	250	10.6						2.9
21	250	10.0						2.9
22	260	9.1						2.9
23	260	8.0						2.9

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

Table 29

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	295	7.3					3.1	2.5
01	280	7.0					3.0	2.5
02	275	6.6					3.0	2.5
03	290	6.4					3.0	2.5
04	290	6.3					2.9	2.5
05	300	6.2				1.1	3.0	2.5
06	280	7.8	280	3.3		2.0	3.0	2.9
07	250	9.2	240	4.2		2.8	3.4	2.9
08	270	9.7	235	4.9		3.4	3.8	2.8
09	275	10.4	225	5.1		3.6	3.9	2.7
10	325	10.8	220	5.8		3.8	4.3	2.7
11	330	11.4	215	6.4		3.9	4.4	2.6
12	342	11.9	215	6.7		4.0	4.4	2.6
13	370	12.2	220	6.8		3.9	4.3	2.6
14	350	11.6	230	6.6		3.8	4.1	2.5
15	362	11.5	230	6.5		3.6	3.8	2.5
16	250	11.2	240	5.2		3.3	3.5	2.5
17	250	11.1				2.7	3.1	2.7
18	250	11.0				1.8	3.0	2.7
19	245	10.2					3.0	2.7
20	250	9.2					3.0	2.7
21	260	8.4					2.8	2.6
22	285	7.7					3.0	2.6
23	290	7.5					2.9	2.5

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

Table 30

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	320	7.4						2.4
01	310	6.6						2.4
02	310	6.5						2.4
03	310	6.2					2.1	2.4
04	320	5.9					2.1	2.5
05	300	5.2				1.5	2.7	2.6
06	260	6.2				2.4		2.8
07	250	6.5				2.8		2.8
08	250	7.5		5.0		3.3		2.8
09	290	7.4	235	5.3		3.5		2.7
10	320	9.3	240	5.4		3.7		2.7
11	380	9.2	240	6.2		3.8		2.7
12	340	10.3	240	5.9		3.8		2.6
13	360	11.0	240	6.5		3.7		2.6
14	350	10.3	240	6.4		3.7		2.5
15	250	10.1	245	6.2		3.5		2.5
16	250	9.5	250			3.1		2.6
17	260	9.6				2.6		2.6
18	280	10.6				1.8	2.6	2.6
19	280	9.6					2.1	2.5
20	290	8.8					1.7	2.4
21	300	8.8						2.3
22	300	8.1						2.4
23	320	7.4						2.4

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

Table 31*

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	330	5.0					2.6	2.3
01	342	4.9					1.5	
02	342	4.4					1.8	2.2
03	336	4.2					1.5	
04	328	3.6					2.6	2.3
05	307	3.7			110**	1.6**	3.3	2.4
06	280	5.0	295	3.6	118	2.0	3.3	2.5
07	306	6.0	253	4.3	112	2.6	3.3	
08	324	6.6	243	4.7	110	3.0		2.6
09	327	7.2	234	5.1	109	3.3	3.3	
10	337	8.2	236	5.3	108	3.6		2.6
11	337	8.4	235	5.5	108	3.7	4.2	
12	319	9.1	231	5.7	108	3.6	3.9	2.6
13	325	9.1	232	5.7	109	3.7	3.7	
14	306	9.0	225	5.6	108	3.6		2.6
15	303	8.6	237	5.5	108	3.3		
16	278	8.8	243	5.0	109	3.0	3.3	2.6
17	262	9.0	237	5.2	112	2.5	3.3	
18	263	8.8			127	2.0	2.2	2.6
19	262	8.5			138**	1.9**	3.2	
20	273	7.4					3.2	2.5
21	286	6.3					3.3	
22	304	5.8					3.0	2.3
23	320	5.4					2.4	

Time: Local.
Sweep: 0.5 Mc to 14.0 Mc in 6 minutes.
*Average values except f°F2 and fEs, which are median values.
**Less than three observations.

Table 32

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	310	7.4					2.7	2.6
01	310	6.8					2.6	2.5
02	300	6.7					3.0	2.5
03	310	6.2					3.1	2.5
04	300	6.3					3.0	2.5
05	300	6.2			B	B	2.7	2.6
06	270	7.2					3.2	2.8
07	265	8.3			120	2.8	4.0	2.9
08	(250)	(8.9)					3.7	(2.7)
09								
10								
11								
12								
13								
14								
15								
16								
17	270	8.8			110	2.4	3.4	(2.8)
18	260	8.5					3.7	2.9
19	270	8.3					3.0	2.8
20	290	7.8					3.6	2.7
21	290	7.8					3.2	2.6
22	300	7.1					3.1	2.6
23	300	7.4					3.0	2.6

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

Table 33

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		10.7					2.4	3.1
01		9.4						3.0
02		8.2					1.8	3.0
03		7.7					2.6	3.0
04		6.9					3.6	3.0
05		6.0					3.8	3.0
06		8.8				2.6	4.0	2.9
07		11.6				3.3	5.3	2.7
08		13.0				4.1	7.8	2.4
09		13.6				(4.4)	9.0	2.3
10		13.4				(4.5)	8.5	2.3
11		13.0				4.6	9.4	2.2
12		13.1				4.6	7.7	2.1
13		13.0				4.4	7.4	2.2
14		13.2				(4.2)	6.6	2.2
15		13.0				(3.8)	5.6	2.1
16		13.0				(3.2)	5.8	2.1
17		12.0				2.3	4.7	2.1
18		11.1					3.2	2.1
19		10.1					1.8	2.0
20		10.4					1.9	2.2
21		11.4					2.3	2.5
22		11.6					3.0	2.7
23		11.0					2.8	2.9

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

Table 34

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	9.2						2.8
01	230	8.6						2.8
02	250	8.1					2.8	2.9
03	250	7.3					2.8	2.9
04	250	6.4					2.5	3.0
05	240	5.8					2.8	3.0
06	270	7.6				1.9	2.9	2.9
07	240	11.0				3.0	5.6	2.9
08	230	13.1				3.6	10.0	2.7
09	230	14.2	210	5.4		4.0	10.2	2.4
10	215	14.2	210	5.5		4.2	10.2	2.2
11	215	12.8	210	5.5		4.2	10.2	2.1
12	220	12.3	200	5.4		4.3	10.2	2.1
13	240	12.3	205	5.4		4.3	10.2	2.1
14	250	12.4	210	5.4		4.0	10.2	2.1
15	220	12.3	220	5.4		3.8	10.2	2.0
16	240	12.0				3.3	10.2	2.0
17	270	11.6				2.6	8.4	2.1
18	330	10.8				1.5	2.7	2.1
19	430	9.5						2.0
20	370	10.2						2.1
21	300	10.2						2.4
22	250	10.4						2.6
23	230	10.0						2.8

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

Table 35

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	10.1					2.5	
01	250	9.2					2.5	
02	240	8.4					2.1	
03	250	7.7					2.2	
04	265	7.2						
05	270	6.6					2.1	
06	250	8.7				1.8	2.6	
07	240	11.6			100	2.6	2.4	
08	230	D			100	3.3		
09	225	D	215	5.3	100	3.7		
10	230	D	220	6.8	100	4.0		
11	305	D	220	8.0	100	4.1		
12	310	D	205	7.0	100	4.2	5.0	
13	345	D	230	7.3	100	4.0	5.0	
14	355	D	230	7.0	100	3.7	5.0	
15	325	D	250	6.9	100	3.5	3.8	
16	250	D	240	6.5	100	3.2	4.7	
17	260	D			100	2.5	4.0	
18	270	D				1.4	3.8	
19	270	D					3.0	
20	260	12.1					3.0	
21	250	11.8					2.6	
22	260	10.8					2.5	
23	260	10.4					2.5	

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

Table 36

Rarotonga I. (21.3°S, 159.8°W) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		11.3						
01		10.1						
02		9.5						
03		9.0						
04		8.4						
05		8.0						
06		8.2						
07		11.7						
08		13.8						
09		14.5						
10		14.6						
11		14.6						
12		15.0						
13		14.4						
14		14.4						
15		14.3						
16		14.0						
17		13.8						
18		13.8						
19		13.6						
20		12.9						
21		12.5						
22		12.3						
23		11.9						

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

Table 37

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	8.1					2.0	2.7
01	270	7.6					2.1	2.7
02	265	7.3					2.0	2.6
03	275	6.8					1.5	2.5
04	300	6.8						2.5
05	280	6.6						2.6
06	260	7.9				2.0		3.0
07	240	10.7			110	2.8		3.1
08	230	12.3			110	3.4		3.1
09	230	13.0	220		110	3.7		3.0
10	230	13.0			110	3.9		2.9
11	245	13.0	220	5.4	110	4.0		2.8
12	275	12.4	220	6.0	110	4.1	2.8	2.8
13	270	12.3	230	7.0	110	4.0		2.7
14	260	11.9	220		110	3.9		2.6
15	230	11.6			110	3.5		2.6
16	250	11.2			110	3.0	2.1	2.7
17	250	11.0			120	2.2	3.2	2.7
18	250	10.4					3.0	2.8
19	260	9.7					2.8	2.7
20	280	9.4					2.8	2.7
21	270	9.5					2.1	2.7
22	270	8.8					2.6	2.8
23	265	8.8					2.3	2.7

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

Table 38

Canberra, Australia (35.3°S, 149.0°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	7.2					2.0	2.7
01	290	7.0					2.7	2.7
02	280	6.8					2.0	2.6
03	280	6.2					2.0	2.6
04	300	6.0					2.0	2.6
05	290	5.7					2.0	2.7
06	270	7.0						3.0
07	240	8.1			120	2.3		3.1
08	240	10.4			100	3.0	3.4	3.2
09	240	11.5		4.8	105	3.4		(3.1)
10	240	12.1	225	4.8	100	3.8		3.0
11	250	13.0	225	5.2	100	3.8		3.0
12	240	12.6	220	5.1	100	3.8		2.9
13	250	12.2	220	4.8	100	3.8		2.9
14	250	12.0	225	4.7	100	3.8		2.8
15	240	11.8			100	3.7		2.9
16	240	11.1			100	3.1		2.8
17	240	11.0			110	2.5		3.0
18	240	10.9					2.0	2.9
19	250	9.8						2.9
20	260	9.1						2.8
21	260	8.3						2.9
22	260	7.8						2.7
23	270	7.3					2.0	2.8

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

Table 39

Hobart, Tasmania (42.8°S, 147.4°E) September 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	275	6.3						2.6
01	270	6.0						2.6
02	270	5.8						2.6
03	265	5.2						2.6
04	270	4.8						2.6
05	275	4.4						2.6
06	265	5.1						2.8
07	250	7.0			100	2.3		3.0
08	240	7.5			100	2.9		3.2
09	240	9.0	225		100	3.3		3.1
10	250	9.2	225	5.0	100	3.4		3.0
11	300	9.4	220	5.3	100	3.5		(3.1)
12	265	10.0	220	5.2	90	3.8		3.0
13	290	10.0	205	5.1	100	3.6		3.0
14	250	10.0	205	5.2	90	3.5		3.1
15	240	10.0	205	5.3	95	3.4		(3.0)
16	240	10.0	215		100	3.0		3.0
17	240	9.5			100	2.4		3.0
18	250	9.5					1.8	2.9
19	250	9.0						2.9
20	250	7.5						2.7
21	250	7.4						2.7
22	250	7.0						2.7
23	250	6.7						2.6

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

Table 40

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	230	8.2					1.9	2.8
01	230	8.0					2.9	3.0
02	230	7.6					2.9	3.0
03	240	6.5					2.8	3.0
04	250	5.9					2.8	3.0
05	250	5.0					2.9	3.0
06	290	5.5				1.6	3.0	2.8
07	250	8.7				2.7	7.9	2.9
08	240	11.0				3.4	10.2	2.6
09	230	12.1				3.9	10.3	2.4
10	220	12.0	210	5.4		4.0	10.3	2.3
11	230	12.2	210	5.4		4.1	10.4	2.2
12	220	12.3	200	5.4		4.2	10.4	2.2
13	220	11.9	210	5.4		4.2	10.4	2.1
14	220	11.4	210	5.4		4.0	10.4	2.1
15	220	11.4				3.8	10.3	2.1
16	240	11.1				3.3	10.3	2.1
17	270	10.7				2.5	10.2	2.1
18	320	10.0				1.5	2.9	2.1
19	400	8.8						2.0
20	355	8.4						2.2
21	295	8.7						2.4
22	240	8.5						2.6
23	230	8.6						2.7

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

Table 41

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	245	7.4					2.0	2.9
01	250	6.9					2.4	3.0
02	230	6.0					2.6	3.0
03	250	5.2					2.6	2.7
04	275	4.9					2.9	2.7
05	300	4.5					2.3	2.6
06	260	5.0					2.3	2.9
07	240	8.6				2.4	3.0	3.2
08	240	11.0	240		100	3.1	3.2	3.2
09	250	>12.0	240		100	3.5	3.8	(3.1)
10	250	12.5	225		100	3.8	3.4	
11	250	12.0	220	5.3	100	3.9	3.8	3.0
12	300	12.0	200	6.2	100	(3.9)		2.9
13	322	11.4	200	6.5	100	3.8	3.6	2.8
14	310	11.5	210	6.3	100	3.9	4.5	2.7
15	320	11.5	225	6.8	100	3.7	3.5	2.7
16	295	11.0	230		100	3.5	3.0	2.7
17	250	11.0			100	2.8	3.1	2.8
18	250	10.5				1.8	3.0	2.8
19	245	9.5					2.8	2.8
20	250	9.0					2.5	2.8
21	255	8.7					2.6	2.8
22	250	8.9					2.5	3.0
23	240	8.0					2.5	3.0

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

Table 42

Rarotonga I. (21.3°S, 159.8°W) August 1947

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		8.8						
01		7.5						
02		6.8						
03		5.9						
04		5.3						
05		5.1						
06		5.2						
07		9.9						
08		12.6						
09		14.0						
10		14.0						
11		12.9						
12		12.5						
13		12.6						
14		12.4						
15		12.6						
16		12.5						
17		12.1						
18		12.2						
19		11.7						
20		11.7						
21		11.0						
22		10.5						
23		9.4						

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

Table 43*

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		[illegible]						
01		4.3						
02		4.2						
03		4.0						
04		[illegible]						
05		4.0		2.8				
06		[illegible]						
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14		[illegible]				[illegible]	[illegible]	
15		9.3				2.8	3.4	
16		8.6				2.2		
17		8.1						
18		5.8		4.8				
19		5.0						
20		4.6						
21		4.2						
22		4.5						
23		4.4						

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

Table 44

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

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	** F2-M3000
00	[illegible]	[illegible]						3.4
01	450	(8.8)						
02	420	8.4						
03	[illegible]	[illegible]						
04	[illegible]	[illegible]						2.8
05	420	[illegible]						
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	12.0						
15	420	12.0						
16	420	11.6						2.5
17	430	11.8						
18								
19								
20	430	9.5						2.5
21	450	9.0						
22	460	9.0						
23	460	9.0						

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 45

Bombay, India ([illegible]) [illegible]

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00								2.8
01								
02								
03	360	9.4						
04								3.0
05	330	7.6						
06	300	[illegible]						
07	330	[illegible]						
08	390	[illegible]						2.7
09	480	10.6						
10	510	11.8						
11	540	12.0						
12	540	12.8						2.3
13	540	13.3						
14	540	13.6						
15	535	13.9						
16	510	13.9						2.4
17	450	14.6						
18	450	14.0						
19	480	13.1						
20	510	12.0						2.3
21	510	10.5						
22	525	9.5						
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 46

Madras, India (13.0°N, 80.3°E) July 1947

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000**
00								
01								
02								
03								
04								
05								
06								
07	420	10.2						
08	450	10.9						2.5
09	510	11.3						
10	600	11.3						
11	600	11.4						
12	600	11.4						2.2
13	600	11.8						
14	600	11.8						
15	660	12.0						
16	600	12.6						2.3
17	600	12.8						
18	540	12.8						
19	540	12.4						
20		11.0						
21		10.3						
22		10.2						
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 47

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

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	230	8.0						2.8
01	230	7.8						2.9
02	235	7.3						3.0
03	235	6.6						3.0
04	240	5.7						3.0
05	240	5.0						3.0
06	300	5.2				1.5	2.9	2.8
07	260	8.0				2.6	8.4	2.8
08	240	10.0				3.3	10.2	2.7
09	230	10.7	220			3.7	10.3	2.5
10	230	10.8	220	5.4		3.9	10.4	2.3
11	270	10.6	210	5.4		4.0	10.4	2.2
12	270	10.4	210	5.5		4.1	10.4	2.2
13	280	10.3	210	5.4		4.0	10.4	2.1
14	220	10.2	210	5.5		3.9	10.4	2.1
15	230	10.3				3.8	10.3	2.1
16	240	10.1				3.2	10.3	2.1
17	270	10.0				2.5	10.0	2.2
18	330	9.3				1.5	2.9	2.2
19	370	8.7						2.1
20	330	6.7						2.2
21	280	8.8						2.4
22	250	8.7						2.6
23	230	8.3						2.8

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

Table 48

Bocayuva, Brazil (17.1°S, 43.8°W) May 1947*

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	220	8.7					4.0	3.1
01	220	7.9					2.3	3.2
02	220	7.1						3.1
03	220	6.4						3.2
04	240	5.4						3.1
05	240	5.2						3.2
06	260	5.7			(130)	(1.6)		2.9
07	250	10.3			110	2.6		3.1
08	240	(13.1)			100	3.3		(3.1)
09	220	(14.5)			100	3.7		(3.0)
10	210	14.8			100	3.9		(2.8)
11	200	(14.7)			100	(4.0)		(2.5)
12	200	(13.8)			100	(4.0)	4.0	(2.5)
13	205	(13.5)			100	3.9	4.3	(2.4)
14	200	(13.5)			100	(3.8)	4.0	(2.3)
15	220	(13.2)			100	3.7	4.3	(2.3)
16	240	(13.2)			110	3.2	4.2	(2.4)
17	260	(12.6)			100	2.4	3.9	(2.5)
18	285	(11.7)					3.2	(2.6)
19	310	(10.8)					3.0	(2.5)
20	300	9.6					2.0	(2.5)
21	275	(8.6)					2.4	(2.7)
22	250	(8.0)					4.8	(2.9)
23	230	8.5					4.4	3.0

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.
*Data for May 1 through 24, including period of eclipse on May 20.

Table 49

ribourg, Germany (48.1°N, 7.8°E) December 1946

ime	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	290	3.6					2.5	
01	280	3.7						
02	280	3.8					2.8	
03	270	3.5					2.3	
04	250	3.4					2.3	
05	240	3.2						
06	230	3.0						
07	230	4.0						
08	210	7.6			130	1.8		
09	210	(10.1)			110	2.5	3.5	
10	210	(11.1)			110	2.7	3.8	
11	210	11.3-12.0			105	3.0	4.0	
12	210	(11.1)			110	3.1	4.0	
13	205	(10.6)			110	2.9	4.0	
14	210	(11.1)			110	2.8	3.6	
15	210	(10.8)			110	2.4	3.6	
16	208	9.5			135	1.8	2.5	
17	200	(7.5)					3.0	
18	210	(5.9)					2.6	
19	210	4.6					2.2	
20	220	3.8					1.7	
21	250	3.4						
22	290	3.5					2.2	
23	280	3.5					1.8	

Time: Local.
Sweep: 1.4 Mc to 16.6 Mc in 10 minutes, automatic operation, except for December 12, 13, and 31, on which dates a sweep of 2.0 Mc to 11.5 Mc, manual operation, was used.

Table 50

Fribourg, Germany (48.1°N, 7.8°E) November 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	285	4.0					(2.3)	
01	280	4.0					2.4	
02	280	3.9					2.3	
03	275	3.8					2.6	
04	255	3.8					2.8	
05	240	3.5					(2.3)	
06	235	3.1					2.5	
07	220	(5.8)				(E)	2.7	
08	210	8.9			105	2.2	3.7	
09	210	(10.8)			100		3.9	
10	210	(11.6)D			100	2.9	4.3	
11	210	(12.3)D			100	3.1	4.7	
12	210	(11.8)D			100	3.1	4.1	
13	210	(11.6)D			100	3.0	3.9	
14	210	(11.3)D			100	2.6	3.7	
15	210	(11.1)D			110	2.4	3.8	
16	210	(10.7)			110	(1.8)	3.4	
17	210	8.6			100	(E)	3.4	
18	220	7.4					2.5	
19	220	5.9					2.7	
20	220	4.9						
21	260	4.1						
22	280	4.0						
23	290	4.0						

Time: Local.
Sweep: 1.4 Mc to 16.6 Mc in 10 minutes, automatic operation, November 7-21 and 28-30; 2.0 Mc to 11.5 Mc, manual operation, November 1-7 and 22-28.

Table 51

Fribourg, Germany (48.1°N, 7.8°E) October 1946

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		4.7						
01		4.7						
02		4.7						
03		4.6						
04		4.4					2.9	
05		3.8					2.9	
06		4.9					2.7	
07		7.3		3.3		2.2	4.1	
08		8.9		3.8		2.6	4.4	
09		9.9		4.5		3.0	5.1	
10		(10.5)		4.3		(3.1)	5.6	
11		11.1		4.6			5.6	
12		11.2		4.7		(3.2)	5.6	
13		(11.1)		4.6		3.2	5.5	
14		11.2		4.1		3.2	5.2	
15		11.2		3.7		3.0	4.6	
16		11.0		3.6		2.5	4.1	
17		10.0		3.1		1.9	3.7	
18		(8.6)					3.4	
19		7.5					3.2	
20		6.2					2.9	
21		5.5					2.5	
22		5.3						
23		4.9						

Time: Local.
Sweep: 2.0 Mc to 11.5 Mc, manual operation, except for October 1-7, on which dates a sweep of 1.4 Mc to 16.6 Mc in 10 minutes, automatic operation, was used.

Form adopted June 1946

TABLE 52

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

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), December (Month), 1947

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: A.H.S-S.M.O.-E.J.W.

Calculated by: G.G.H., K.L.W.

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

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 53

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

IONOSPHERIC DATA

f°F2 (Characteristic), Mc (Unit), December (Month) 1947

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W.-A.H.S.-S.M.O.

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	(6.4)J	5.6	4.8 V	(4.1)JF	4.1 V	3.8 F	3.4 F	5.2 F	9.2	11.4	12.5	12.7	13.2	13.0	12.8	13.1	(12.4)P	11.8	(10.2)J	(8.7)J	8.0	7.4	7.3	6.1
2	5.4	5.0 F	4.8 F	4.3	4.4	4.4	4.2	5.4	8.9	11.5	11.7	13.2	13.3	13.3	13.8	C	(12.2)	C	C	C	C	C	(8.0)	(7.8)
3	(5.7)	(5.4)F	(5.2)F	(5.2)	[5.3]C	(5.4)	(5.3)	(6.0)	(10.5)	10.8	13.0	(13.6)	12.4	12.4	12.4	(11.8)PS	(11.9)S	(10.0)S	9.1	8.2	7.0	5.9	5.4	4.9
4	5.0	4.8	4.7	4.7	4.5	4.6	4.3	5.0	8.3	10.0	10.8	11.7	12.5	12.4	12.5	12.5	(9.9)	(11.0)S	9.0	8.0	7.2	5.9	5.6	5.0
5	4.8 F	5.3 F	5.8 F	5.7	5.3	5.0	4.3	5.6	9.6	11.5	11.6	12.2	12.6	(12.5)C	[12.4]C	12.2	(11.8)S	(10.3)P	9.4	8.6	7.0	(5.8)JV	6.0	5.8
6	5.9	5.9	6.2	5.8	4.9	4.6	4.4	5.1 V	(8.6)J	9.0	(10.5)J	10.7	11.7	11.9	12.0	(11.7)J	(11.3)PS	11.0	(9.7)P	8.0 V	6.6	(5.7)F	4.6	4.6 F
7	(4.6)F	(4.1)JF	3.8 F	(3.8)JF	3.4 F	(3.1)F	3.4 F	5.0 F	8.6	(10.0)P	(11.0)J	12.6	12.2	12.1	12.3	11.7	12.0	(11.0)J	(9.2)JF	8.0	6.4	(5.5)V	(4.2)JF	(4.0)JF
8	(4.3)JF	(3.8)F	(4.0)F	(4.3)JF	4.6	5.0 F	5.0	5.0 F	8.6	11.5	10.6	12.6	12.7	13.2	(12.5)J	S C	(11.8)P	(10.5)P	(9.0)P	(8.0)J	(6.9)S	[5.6]C	4.8	(4.6)J
9	4.6	(4.6)J	4.9	5.0	5.1	(4.5)P	4.0	5.1	9.4	11.1	11.5	12.0	12.2	12.5	12.4	(12.7)J	(12.6)J	(11.0)JS	(9.8)P	9.0	7.4	6.6	6.0	(5.0)J
10	(4.2)JF	3.8 ZF	(3.6)J	(3.0)JF	(3.0)JF	(2.8)JF	F	4.6 F	(8.6)J	11.3	11.2	12.6	12.4	12.4	12.5	(13.1)J	12.5	S C	9.7	(8.5)P	6.9	5.4	5.4	4.7
11	4.3	4.1	(4.1)JV	(4.3)JV	(4.3)J	(4.3)J	3.8	5.0	8.6	(10.7)J	(12.1)SC	12.5	13.1	12.5	12.2	12.4	(12.6)	10.5	9.6	(9.6)	7.0	5.6 F	5.3 F	4.9
12	5.0 F	5.3 F	5.5 F	4.9 F	4.7 F	(4.1)JF	(3.9)JF	4.9 F	8.9	10.5	10.6	12.6	12.6	13.2	13.0	(12.4)	(11.4)J	(11.8)J	(11.0)J	8.4	(7.8)J	7.0	6.2	5.7
13	5.4	5.2	5.3	4.7 F	4.3 F	4.0 F	3.0 F	(4.4)JF	8.0	10.4	11.0	13.4	13.2	13.5	13.8	(13.0)J	13.0	12.3	(10.8)J	9.2	7.2	5.6	5.7	4.6 F
14	3.3 F	3.4 F	2.8 F	2.8 F	2.4 F	2.3 F	2.4 F	4.4	7.7	10.6	11.5	13.2	13.8	14.0	(15.2)	13.0	(12.7)J	11.8	(10.4)	9.4	7.2	5.8	5.4	4.6
15	3.2 F	3.4 F	4.1 F	3.9 F	3.9 F	3.9 F	3.9 F	4.8 F	8.4	(11.2)J	11.7	12.5	12.5	12.6	C	(11.6)J	(11.8)J	10.8	10.3	9.0	6.7	5.4 F	4.8 F	4.2
16	4.2 F	4.4 F	4.8	4.7 F	4.1	3.7	3.2	4.7	8.9	10.2	10.9	11.5	12.0	12.5	12.6	11.6	11.0	(12.2)J	9.6	6.9 F	5.7	4.3 F	3.7 F	3.6 F
17	3.9 F	3.9 F	4.4	4.6	4.4	4.0	3.6	4.5	8.4	11.3	(11.4)J	(11.0)J	12.0	12.2	11.8	11.6	(11.3)	(10.6)	9.0	7.8	6.2	4.5 F	4.3 F	4.2 F
18	4.5	4.3	4.4	4.3	4.3	4.0	3.8	4.6	8.6	10.6	(12.5)J	(12.8)P	12.6	13.2	13.0	12.4	(11.7)J	(11.6)J	10.4	9.4	(7.7)S	5.3 F	4.9 F	4.7 F
19	4.4 F	4.5	4.5 F	4.5 F	4.5 F	4.3 F	4.3 F	5.2	8.5	11.0	11.7	12.4	(12.8)P	12.9	(13.0)	(12.2)J	(11.8)J	(10.6)C	(9.6)J	9.1	7.3	(6.0)J	((.)J	4.9
20	4.8	4.7 YF	4.4 F	4.3 F	4.3 F	4.3	4.0	4.4	8.6	10.8	11.5	(12.6)	(12.6)	(13.2)C	12.6	(13.0)	12.0	12.2	(10.2)	(8.7)	7.0	[6.0]C	5.6	5.4
21	4.6	4.5	4.5	4.2	4.0 F	4.0 F	4.1	4.6	8.2	10.0	(12.0)	(13.0)	(12.0)	12.0	(12.3)	(11.7)	12.0	(10.4)	(8.7)J	(8.6)J	7.5	5.8	4.6	5.0
22	4.7	4.3	4.7	4.7	4.5	4.5	4.4	5.4	8.2	11.9	(12.4)J	(12.8)J	(13.5)	13.5	12.8	N	N	C	C	9.8	8.0	(7.1)J	(7.1)J	7.3
23	(7.0)J	(7.3)JF	5.9 F	(5.9)JF	5.3 F	4.5 F	4.5 F	4.7 F	8.2	9.8	(11.2)J	12.5	12.6	(13.0)C	(13.2)C	(13.0)C	C	C	C	9.6	7.3	7.3	6.4	6.0
24	4.4 F	3.8 F	4.9 F	4.6 F	4.8	5.0	5.0	5.2 F	8.0	11.5	12.5	12.6	12.8	12.2	12.0	12.0	11.7	(10.2)	(10.6)	8.4	(7.0)P	(6.6)J	6.2	5.4
25	4.4	4.3	4.6	5.0	4.8	5.0	5.0	5.7	9.0	(10.7)	(12.8)	13.3	13.2	(13.0)	(12.8)	(12.6)	[13.0]C	(11.5)	(10.5)	8.0	7.5	(6.8)J	6.8	5.4 F
26	5.0 F	5.0 F	4.2 F	3.6 F	3.8 F	(4.0)F	4.6 F	5.0 F	9.0	11.0	12.0	13.0	(13.0)	12.6	(13.0)	13.0	12.7	(12.0)	[10.4]C	(8.8)CJ	7.5	7.2	6.4	5.5
27	(5.4)	5.2	4.8 F	5.0 F	5.1	5.2	5.0	4.6	7.7	11.0	12.1	13.2	13.0	12.6	12.4	11.0	(10.8)C	(10.4)CJ	C	8.2	7.4	6.6	6.0	5.4
28	4.5 F	(3.8)FV	(3.8)F	(4.1)F	(4.4)RZ	F	(4.5)F	4.0 F	7.7	10.5	13.0	13.0	12.5	12.2	12.2	(10.8)C	(11.0)	(10.4)C	9.2	8.0	6.5	(6.5)F	5.8	4.9 F
29	3.9 FZ	4.1 F	4.4 F	4.5	4.4	4.8	4.8	(4.4)R	(8.0)	10.3	12.9	12.4	12.7	(12.7)	(12.5)	[12.4]C	(12.4)	(10.7)	10.7	(9.3)	(8.3)J	(6.7)	(6.4)J	4.9 V
30	4.0	3.9	4.0	(4.1)	4.5	4.5	4.5	4.9	8.0	(12.0)C	12.7	13.4	13.2	13.3	12.8	12.3	(12.4)	(11.0)S	(10.0)S	9.4	(6.6)	5.3	5.2	4.7
31	4.5	4.5	4.8	4.5	4.3	4.5	4.4	4.5	(7.0)V	9.3	11.9	12.9	(12.4)	12.5	11.9	12.4	(12.2)S	(10.8)S	9.8	8.7	6.2	4.6	4.9	4.8
Median	4.6	4.5	4.6	4.5	4.4	4.4	4.3	4.9	8.6	10.8	11.7	12.6	12.6	12.6	12.5	12.4	(12.0)	(11.0)	(9.8)	8.6	7.1	5.8	5.6	4.9
Count	31	31	31	31	31	30	30	31	31	31	31	31	31	31	30	29	29	27	27	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 - 702510

Form adopted June 1946

TABLE 54

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

IONOSPHERIC DATA

f°F2 (Characteristic), Mc (Unit), December (Month) 1947

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by: A.H.S.-S.M.O.-E.J.W.

Lat 39.0°N, Long 77.5°W

75° W Mean Time

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

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	5.9	5.2	(4.2)JF	(3.8)JF	3.6F	3.7F	3.8F	78	10.4	12.6	12.6	13.1	13.3	12.7	13.1	(12.7)J	S C	(10.2)J	9.5	8.3	7.8	(7.6)P	7.4	(5.4)J
2	(5.2)J	(4.8)F	4.5F	4.1F	4.4	4.3	4.4	7.8	(10.6)J	11.8	12.3	13.2	13.5	13.6	(12.5)	C	C	C	C	C	C	C	(8.0)	7.6
3	(5.6)	(5.2)F	(5.8)P	(5.3)	C	C	C	(8.2)	[10.6]C	10.8	(13.0)	13.4	12.3	C	12.6	S C	(11.3)S	9.4	8.8	7.4	(6.4)J	5.7	5.0	5.0
4	5.0	4.8	4.7	4.6	4.7	4.6	3.6	6.6	9.0	(10.8)J	11.6	12.5	12.4	12.5	11.9	9.5	(12.0)J	9.9	9.9	8.5	6.3	5.7	5.4	5.0
5	4.8	5.7	5.9	5.5	5.6	4.6	4.6	7.6	9.4Z	12.2	11.6	12.5	12.2	[12.4]	(12.3)S	(12.0)S	(11.3)J	(9.8)S	8.8	8.0	(6.6)JF	6.0	5.9	5.9
6	5.8F	6.0	5.8	5.4	4.5	(4.6)J	4.4F	6.4	8.6	10.2	11.0	11.4	12.3	12.0	(11.7)J	11.6	S C	(10.9)J	(8.4)F	7.6V	(6.2)J	(4.9)B	4.3F	(4.7)F
7	(4.3)F	3.9F	4.7F	(3.8)F	(3.3)JF	3.1F	3.9F	(7.4)	10.3	10.5	(11.7)J	12.5	12.2	12.3	(12.2)S	(12.2)JS	(11.2)JS	(9.7)P	(8.2)JF	7.0	5.9	5.4	(4.2)JF	(4.2)JF
8	(3.9)F	(3.9)F	(4.2)JF	4.4F	5.0V	5.0	4.6F	6.6	(10.5)S	11.3	12.1	12.2	12.5	(13.0)J	(13.2)S	S C	S C	S C	8.5	(7.9)S	(6.0)S	[5.2]C	(4.7)V	4.5
9	4.5	4.6	4.8	5.0	4.9	4.4	(4.0)	7.2	10.0	11.8	11.5	12.5	13.0	[12.4]C	(12.4)S	(12.7)J	S C	(10.9)S	9.5	7.9	6.6	6.1	5.5	(4.9)JF
10	(4.0)JF	3.8Z	(3.2)J	(3.0)JF	(2.7)JF	(2.8)JF	F	7.4V	(10.5)J	(11.6)P	12.0	12.0	(12.2)P	12.5	(12.0)S	12.1	(11.4)S	(9.8)P	9.4	8.2	(5.9)J	5.3	5.0	4.4
11	4.0	(3.9)J	(4.2)J	(4.2)JV	(4.5)J	3.9	3.7	6.8	9.5	(11.2)J	(12.2)S	12.6	12.4	12.5	12.6	S C	12.0	11.6	9.0	[illegible]	6.6	5.3F	5.1	4.5F
12	5.3	(5.4)J	5.4	4.7F	4.4F	(3.9)JF	(4.1)JF	6.7	9.9	11.0	12.2	12.6	12.4	12.8	13.0	12.2	10.8	(10.2)J	9.6	7.4	7.5	(6.8)J	5.5	5.5
13	5.2	5.4	5.1	4.2F	4.1	F	4.0F	(6.7)J	9.5	11.0	11.8	13.0	13.4	13.5	13.0	12.6	12.6	(11.8)J	9.6	8.7	(6.4)J	5.9	(5.1)J	4.2
14	3.2F	2.8F	2.9F	7.2F	2.4F	2.2F	2.5F	6.0	10.0	11.0	12.2	13.6	14.0	14.0	(14.0)	(12.6)	(12.6)	S C	(8.9)J	(8.6)J	6.0	5.6	5.0	(3.9)JF
15	3.0F	3.7F	(4.0)J	3.9F	3.9F	3.9F	3.8	7.0	9.6	10.6	12.0	12.5	12.7	12.8	11.8	12.4	10.3	10.4	9.6	7.4	[6.0]P	4.9	4.7	(4.9)J
16	4.4F	4.5	4.8	4.2	3.9	3.3F	3.2	6.8	(10.2)	10.6	11.0	11.6	12.5	12.5	11.8	11.4	11.7J	9.7	8.4	5.8	4.9F	3.9F	3.7F	3.6F
17	3.9	4.2F	4.5	4.6	4.3	3.9	3.3	6.7	9.8	10.5	(11.4)J	12.6	12.0	12.4	11.5	[11.4]C	(11.0)J	9.4	9.0	(7.9)J	5.6	4.4F	4.1F	4.5
18	4.3	4.3	4.4	4.4	4.1	3.7F	3.7	6.6	9.8	(12.3)S	12.6	12.7	13.3	13.3	13.1	(12.0)S	12.0	11.0	10.5S	8.2	6.5S	4.8F	4.9F	5.0
19	4.4F	4.2	4.5	4.4F	4.6F	4.6	4.2F	7.0	12.2	11.7	12.4	13.2	13.1	13.3	(12.5)	(12.2)J	(10.2)	C	9.8	(8.0)J	6.9	(5.8)	5.5	4.9
20	4.6FV	(4.6)	4.5	4.2F	4.4	4.3	4.0	6.6	9.5	(11.2)J	(11.7)	(12.6)	12.6	12.6	(13.0)	(12.7)	(12.0)	C	C	8.0	6.2	5.8	5.6	5.4
21	4.4	4.6	4.4	4.3F	4.0F	4.1	3.8	6.6	9.5	10.5	(11.8)	(13.0)	12.1	(12.3)	(11.4)	11.6	C	9.4	8.9	8.2	(6.6)J	5.3	4.5	4.6
22	4.4	4.6	4.7	4.7	4.5	4.4	4.6	8.9	C	(12.2)	(12.5)	(13.0)	(13.5)	(12.6)	(12.0)	N	N	N	9.8	8.8	7.8	(7.1)J	[7.2]C	7.1
23	(6.9)J	(7.8)FJ	(5.7)	5.1	4.9F	4.7	4.3F	6.9	[9.0]C	10.8	(11.0)	[12.6]C	13.2	13.0	13.3	(12.5)C	C	(11.4)CJ	A	8.5	7.2	6.8	6.8	5.2FV
24	4.0F	4.3F	4.6F	4.6F	5.0	4.8	4.5F	6.7	9.8	(11.2)	13.3	13.1	12.6	12.0	(12.2)	(12.0)	(11.7)	(10.0)	9.6	8.0	(6.6)J	6.0	(6.2)J	4.8
25	4.2	4.4	4.6	4.8	4.9	5.0V	5.0	7.0	9.7	(11.2)	(13.0)	(13.5)	(13.0)	(12.6)	(13.0)	(13.0)	(12.1)	[11.0]C	(9.5)	8.0	7.0	6.6	6.4	5.4F
26	5.0F	4.8F	3.8	3.6F	3.8F	F	4.4F	7.0	(10.0)C	(10.7)C	12.6	(13.0)	13.2	12.8	12.7	12.8	(12.0)C	(10.8)	10.0	(8.4)	7.5	6.6	5.7	5.5
27	5.4	5.0F	5.0F	5.0F	4.9	5.2	4.4	(6.2)J	8.8	11.8	12.8	(13.1)C	12.5	12.0	12.2	[10.9]C	(10.5)C	11.2	9.1	7.3	6.8	(6.5)J	5.8	4.9F
28	3.8F	3.4F	3.8F	4.2F	(4.3)F	(4.2)F	(4.0)F	6.0	9.5	(12.0)	(12.7)	12.5	12.3	12.2	(10.9)	(11.2)	[10.7]C	9.8	(8.4)J	7.7	5.5F	5.9	5.5	3.9F
29	3.8F	4.2F	4.4F	4.3F	4.8	4.8	(4.5)AF	(6.2)J	8.3	11.7	13.4	12.8	12.7	12.6	(12.6)	(12.2)J	C	(10.6)	(9.7)	8.9	(6.9)	(6.6)	5.6	4.2
30	3.9	(4.0)F	3.8F	4.3	4.5	4.5	4.3	6.2	(10.3)	(11.8)	(13.2)	13.3	13.3	13.4	12.4	(12.1)J	(11.4)S	(10.5)S	(9.7)S	7.6	5.8	5.0	5.1	4.6
31	4.5	4.7	4.8	4.5	4.3	4.5	4.4	6.5	(8.9)	9.4	(12.4)	(12.5)	(12.5)J	11.9	13.4	(12.4)S	(11.2)S	(10.0)S	9.8	7.4	5.2	4.9	5.2	4.3
Median	4.4	4.6	4.5	4.4	4.4	4.4	4.1	6.7	9.8	11.2	12.2	12.6	12.6	12.6	(12.4)	(12.2)	(11.4)	(10.2)	9.5	8.0	6.4	5.8	5.4	4.9
Count	31	31	31	31	30	28	29	31	30	31	31	31	31	30	31	26	22	25	28	29	30	31	31	31

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 — 702519

TABLE 55

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

Form adopted June 1946

IONOSPHERIC DATA

h'F1 (Characteristic), Km (Unit) December (Month), 1947

Observed at Washington, D.C.

Lat. 39.0°N, Long. 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: A.H.S.-S.M.O.-E.J.W.

Calculated by: G.G.H., 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																								
2														220										
3																								
4																								
5												210												
6													210	200	210									
7																								
8													200	220	220									
9																								
10																								
11													200		210									
12													200											
13												220												
14																								
15																								
16																								
17																								
18																								
19																								
20											220													
21																								
22																								
23														220	220	230								
24																								
25														230										
26																								
27																								
28																								
29												230												
30																								
31																								
Median														220										
Count														5										

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 56

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

IONOSPHERIC DATA

f° F1 (Characteristic), Mc (Unit), December (Month) 19 47

Observed at Washington, D.C.

Lat 39.0° N, Long 77.5° W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: A.H.S.-S.M.O.-E.J.W.

Calculated by: ______________ , ______

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														L												
3																										
4																										
5												L														
6													L	L	L											
7																										
8													L	L	L											
9																										
10																										
11													L		L											
12													L													
13												L														
14																										
15																										
16																										
17																										
18																										
19																										
20											L															
21																										
22																										
23														L	L	L										
24																										
25														L												
26																										
27																										
28																										
29												L														
30																										
31																										
Median																										
Count																										

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 57

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

Form adopted June 1946

IONOSPHERIC DATA

h'E (Characteristic), km (Unit), December (Month), 1947

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: A.H.S., S.M.O., E.J.W.

Calculated by: G.G.H., 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								A	(130)^A	110	110	110	110	(120)^B	(130)^B	(110)^B	110	110						
2										100	100	100	110	120	100	C	C							
3								C	110	100	110	100	120	(130)^B	(110)^B	110	(130)^S	S						
4									110	100	100	100	100	110	100	110	120							
5									100	100	100	100	90	120	C	B	110	A	A					
6									(120)^S	100	(110)	(110)	(120)	B	(110)	(120)	(120)^S	S						
7									(120)^S	120	(120)	(120)	(120)	(120)	(120)	110	B	A						
8									130	120	(110)	(120)	(120)	(120)	110	120	120	S						
9									130	120	A	A	(130)^B	(140)^B	B	B	130	(120)^S						
10									130	120	120	(110)^B	A	(110)	110	110	(130)	A	A					
11									120	A	110	110	100	100	100	100	100							
12									120	110	110	100	120	130	120	130	130	130	100					
13									110	110	110	100	100	100	120	120	130							
14								150	120	110	100	110	110	100	120	120	130	110						
15									100	100	120	120	130	110	C	100	110							
16									150	120	110	130	130	120	130	130	130	140						
17									140	B	130	120	130	100	140^B	130^B	B	100						
18									A	120	120	120	(130)^B	100	100	100	100	100						
19									130	120	120	110	100	100	120	120	B							
20									110	110	110	B	B	B	B	(110)	110							
21									120^H	120	110	110	(120)^B	130	120	120	120							
22									110	A	110	110	110	120	130	110	110	C	C					
23									C	130	120	110	100	100	100	100	100							
24									A	120	120	120	130	120	110	110	110	110						
25									130	110	110	110	120^H	100	110	110	110	110						
26									120	110	110	100	100	100	100	110	110							
27									110	110	110	110	100	100	100	100	100							
28									120	110	100	100	100	100	120	110	110							
29									130	110	110	110	110	120	(100)	100	100	A						
30									130	130	130	130	120	120	120	120	120							
31									100	100	100	(120)^B	(120)^B	120^B	B	B	B	(120)^S						
Median									120	110	110	110	120	120	110	110	110	110						
Count									27	28	30	29	29	29	26	27	26	10						

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 58

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

IONOSPHERIC DATA

f°E (Characteristic), Mc (Unit), December (Month) 1947

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: A.H.S.-S.M.O.-E.J.W.

Calculated by: G.G.H., 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								A	2.5	B	(3.1)F	3.4	3.5	3.4	(3.3)	B	A	A						
2										(2.6)	A	3.4	A	3.3	B C	C	C							
3								C	2.2	B C	B C	A	3.5	(3.3)	(3.2)B	B C	B C	S						
4									2.2	2.6	3.3	3.4	3.4	3.1	(3.3)	B	2.4							
5									A	2.7	3.3	3.4	3.7	3.4	(3.2)G	B	2.0	A	A					
6									(2.2)B	(2.7)B	(3.2)B	B	(3.5)B	(3.3)D	(3.1)B	B	(1.9)H	S						
7									2.2	B	(3.1)B	3.3	(3.3)B	3.4	3.2	B	B	A						
8									(1.9)H	B	B	3.2	(3.2)H	3.3	B	B	2.1	S						
9									(2.0)H	B	3.3	3.4	3.7	B	B	B	B	S						
10									(2.2)F	B	3.1	3.3	A	A	A	A	B C	A	A					
11									2.3	A	3.1	(3.1)H	3.3	3.4	3.2	(2.9)H	2.2							
12									2.2	A	3.0	3.3	3.4	3.3	3.1	2.9	2.5	2.1	A					
13									2.2	2.7	3.1	3.3	3.4	3.4	3.2	2.8	A							
14								A	B	2.9	3.2	3.4	3.4	3.4	A	A	A	A						
15									2.5	3.1	3.2	3.3	3.3	3.3	[illegible]	3.1	2.5							
16									2.4	2.8	3.2	3.4	3.7	A	3.3	2.9	(2.2)	B						
17									2.5	B	3.2	3.5	3.7	3.6	3.4	3.0	B	B						
18									A	A	3.1	3.3	3.4	3.7	3.3	3.1	B	A						
19									2.3	2.8	3.3	3.5	A	3.3	3.0	2.6	B							
20									A	A	A	B	B	B	3.2	B	B							
21									2.2H	B	3.2	B	(3.6)	3.5	3.3	(3.1)	2.0							
22									2.0	A	3.1	3.2	(3.3)	3.4	3.2	2.7	B	C	C					
23									2.3	2.7	3.2	A	(3.4)	3.4	3.1	A	A							
24									A	A	A	3.3	3.5	3.4	3.0	B	B	A						
25									2.2H	2.8	3.1	3.4	(3.5)H	3.4	3.2	A	A	A						
26									(2.1)A	(2.8)A	3.2	3.5	3.6	(3.5)	B	2.9	B							
27									A	2.7	3.1	3.3	3.4	3.4	(3.2)A	2.9	(2.2)A							
28									(2.1)	2.8	A	(3.4)A	3.4	3.4	(3.2)A	A	(2.1)							
29									2.0	2.7	A	(3.3)A	3.4	3.3	3.4	3.2	(2.4)	A						
30									2.0	2.7	3.1	3.3	3.4	3.4	3.1	2.9	2.3							
31									1.8	3.0	3.2	(3.3)	(3.3)	(3.3)B	B	B	B	(1.6)HS						
Median									2.2	2.7	3.2	3.3	3.4	3.4	3.2	2.9	2.2							
Count									24	17	24	[illegible]	27	[illegible]	[illegible]	14	13							

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 59

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

IONOSPHERIC DATA

Es (Characteristic), Mc, km (Unit), December (Month), 1947

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Scaled by AHS - S.M.O.-E.J.W.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								58 110	2.1 110				38 130	37 130		4.3 120	44 120	2.2 110						
2									22 100		32 120		34 110									C		
3												80 100												
4									17 100									20 110						
5									36 100		39 110	61 110			C	23 110	22 120	24 130	2.3 130	19 120	1.9 130			
6					22 120	59 100			20 100											1.9 100				
7	48 140											35 130	34 120				22 110	1.8 100	19 110	33 120	21 100			
8						19 110			19 120	19 100					33 120							C		
9								19 120			40 100	60 100				31 (130) B			23 120	3.4 120	60 120	35 120		
10			18 120					37 130			50 (180)		54 130	33 130	34 130	33 130		49 120	10.0 120	3.4 120	60 120	32 120	1.9 120	18 120
11										25 120			33 100	34 100		32 100	29 110		42 110	59 120	62 110	3.6 110		
12	32 120			3.7 140	33 140		38 110	23 120	33 110	28 110									33 110					
13						3.5 140			46 110	44 150							24 130							
14								29 160							48 120	34 120	52 120	75 110	76 110	48 120		19 100	20 110	
15													53 130	46 130	C									
16									56 120	27 120		30 110	33 110	36 130						33 110	34 130			
17							21 130													3.2 110	2.2 110			
18									25 120	32 130				34 100				22 100						
19			37 110										32 100	37 130		37 120		21 110	20 100	34 110	21 110	36 100	36 100	46 100
20			30 110			2.2 100	44 100	35 110	75 110	58 110	33 110							31 110	18 120	35 120	34 110	55 110	74 110	35 110
21	34 120	34 110	32 110	30 120		1.3 110					43 130		23 100	2.2 100	23 100		23 140	22 110	34 100	3.7 110	35 110	43 100	39 100	51 100
22	43 100	37 100	46 100	36 100	22 100	20 110	22 110		23 110	28 110	35 150	39 140	3.5 130					C	C				3.3 130	
23				3.3 120								41 110				30 100	3.2 100	32 100	52 120	42 120			20 150	28 120
24	18 120	28 120	20 120			3.1 100		78 120	59 120	41 120	32 120							36 110	38 110	22 120	40 110	18 120		32 120
25							37 110		18 110						3.0 100	34 110	48 110	54 110	38 100	32 110				32 110
26	20 110		3.2 110					58 120	56 120	5.8 140	38 110													
27						22 110	26 110		43 110	92 110	44 110				36 120	32 140	30 100	3.0 110	2.8 110	19 100	36 120			
28			16 110	21 110	1.5 120			3.2 120			79 100	44 120	32 100	40 160	34 120	29 110	29 170			33 120	3.5 120			
29			1.4 100				51 110	77 110		30 110	58 110	36 110						44 110	34 110	21 110	78 120	46 120	56 120	1.8 100
30	1.9 110						60 120	3.5 110			38 130				37 140			1.9 120	36 120					
31								20 110			40 100													
Median	**	**	**	**	**	**	**	**	1.7	**	**	**	**	**	**	**	**	1.8	18	19	**	**	**	**
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	31	30	30	31	31	29	31	31

** MEDIAN fEs LESS THAN MEDIAN f°E, OR LESS THAN LOWER FREQUENCY LIMIT OF RECORDER

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 60

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

IONOSPHERIC DATA

F2-M1500 (Characteristic) ______ (Unit) December (Month), 1947

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by AHS, SMO, EJW,

Calculated by: JLK, NM

Form adopted June 1946

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	(20)J	2.1	2.0 V	(20)JF	1.8 V	1.9 F	1.3	2.1 F	2.3	2.5	2.2	2.2	2.1	2.2	2.1	2.1	2.3	21	(2.1)J	(23)	1.9	2.1	2.0	2.0
2	2.0	20 F	20 F	1.9 F	1.8	2.0	2.0	22	24	2.1	2.2	22	18	20	20	C	(1.9)	C	C	C	C	C	(20)	(22)
3	(1.9)	(1.9) F	(1.8) F	(1.9)	C	C	C	(2.2)	(23)	2.2	2.1	(24)	2.0	2.1	22	(24)SP	(2.1)S	(23)S	20	2.1	2.1	2.1	2.0	1.9
4	20	1.9	20	20	2.0	21	2.3	2.1	23	2.6	2.1	2.1	2.0	21	2.2	2.2	(21)	(22)J	21	22	2.0	20	21	1.9
5	1.8 F	1.7	19 F	1.9	21	20	1.7	2.1	23	2.3	21	23	21	(21)	C	2.1	(25)S	(22)P	2.0	21	2.0	(1.7)JV	1.7	1.7
6	1.8	17	18	18	2.0	1.7	1.6	1.9 V	(2.2)J	2.2	(2.2)J	2.2	2.1	21	20	(2.1)J	(20)SP	2.1	(2.1)P	21 V	2.1	2.0 F	2.0	2.0 F
7	(21) F	(22)JF	1.9 F	(22)JF	22 F	(1.9) F	1.9 F	21 F	26	(2.4)P	(23)J	2.2	2.1	2.0	2.1	2.1	22	(23)J	(2.1)J	2.1	2.0	(2.0)Y	(1.8)JF	(1.4)JF
8	(1.9)JF	(1.9)F	(1.8)F	(1.7)JF	1.8	1.9 F	2.0	22 F	22	2.4	2.3	2.1	2.0	23	(22)J	S C	(2.1)P	(22)P	(2.1)P	(2.0)J	(2.2)S	C	1.9	(1.8)J
9	1.8	(1.7)J	18	18	2.0	(1.9)P	1.8	1.4	24	2.2	22	22	20	21	2.1	(2.0)J	(2.1)J	(2.1)JS	(2.1)P	2.1	2.0	2.0	1.9	(1.6)J
10	(20)JF	1.8 ZF	(1.7)J	(1.8)JF	(1.8)JF	F	F	(20)F	(26)J	2.4	2.1	21	22	20	2.1	(2.0)J	20	S C	2.2	(2.1)P	22	19	20	20
11	1.9	1.8	(18)JV	(1.7)JV	(19)J	(22)J	1.9	2.0	22	(2.6)J	(22)SC	2.2	2.1	21	2.1	2.0	(2.1)	23	2.1	(2.1)	2.0	20 F	2.0 F	1.9
12	1.7 F	1.7 F	19 F	1.8 F	1.8 F	(1.8)JF	(1.7)JF	20	22	22	22	21	2.1	19	1.9	(2.1)	(2.2)J	(1.9)J	(19)J	1.9	(1.9)J	2.1	1.9	22
13	1.8	22	1.9	19 F	1.7 F	1.7	1.7	(1.7)JF	22	2.2	2.	21	2.0	20	20	(2.1)J	21	20	(2.1)J	2.0	21	1.8	2.1	2.0 F
14	1.8 F	16 F	1.8 F	19 F	20 F	1.6 F	1.8 F	1.4	20	22	2.1	20	20	1.9	(1.9)	2.0	(2.0)J	1.8	(1.7)	2.1	21	1.9	2.0	1.8
15	1.7 F	18 F	18 F	1.7 F	1.8 F	1.8 F	1.9 F	20 F	22	(21)J	2.1	20	21	2.1	[illegible]	(2.0)J	(20)J	22	1.9	1.9	2.0	20 F	1.4 F	2.0
16	1.8 F	1.8 F	1.9	20 F	1.8	1.8	1.9	1.9	2.2	24	2.2	2.3	20	22	1.9	2.1	21	(2.2)J	21	20 F	2.0	21 F	19 F	18 F
17	1.8 F	1.8 F	1.8	1.8	20	2.0	20	2.0	22	22	(2.2)J	(24)J	20	1.9	21	2.1	(1.4)	(21)	1.9	22	23	1.9 F	20 F	2.0 F
18	19	1.8	1.8	1.9	1.8	2.0	1.9	2.0	2.3	2.3	(21)P	(22)P	2.1	20	2.0	2.1	(1.9)J	(1.4)J	20	1.9	(1.9)S	1.9 F	1.9 F	1.9 F
19	17 F	1.8	1.7 F	1.7 F	17 F	1.8 F	1.9 F	1.4	21	2.2	2.	21	(20)P	2.2	(2.0)	(2.0)J	(22)J	(2.1)C	(23)J	2.1	22	(20)J	(18)J	(20)F
20	19	18 FV	1.9 F	21 F	20 F	2.0	20	20	24	22	2.3	(21)	(20)	(2.0)C	2.	(1.9)	20	20	(2.1)	(2.1)	21	C	(1.9)H	21
21	20	19	2.0	20	1.9 F	20 F	22	21	22	2.3	(21)	(2.1)	(21)	20	(20)	(2.1)	2.0	(2.2)	(21)J	(22)J	22	2.0	20	20
22	20	1.9 F	1.9	19	1.7	1.8	1.8	1.9	2.4	2.3	(23)J	(2.2)J	(2.1)	2.1	22	N	N	C	C	2.2	2.0	(2.2)J	(2.0)J	20
23	(21)J	(20)JF	22 F	(19)JF	1.8 F	1.8 F	2.0 F	1.7 F	2.2	2.2	(2.0)J	22	21	(20)C	(2.0)C	(22)C	C	C	C	1.9	20	19	2.1	2.3
24	2.0 F	17 F	1.8 F	1.8 F	1.8	2.0	1.9	2.0 F	22	2.3	22	2.2	21	2.0	1.9	2.1	2.1	(22)	(2.3)	2.0	(2.1)F	(1.9)J	2.0	2.1
25	20	1.9	1.9	18	1.8	1.8	2.0	22	23	(23)	(2.2)	21	20	(20)	(20)	(21)	C	(20)	(2.0)	2.1	21	(2.0)J	2.1	22 F
26	(19) F	21 F	20 F	(18) F	(1.7) F	(18) F	2.0 F	21 F	22	2.2	2.2	22	(2.1)	21	(1.9)	2.1	(2.0)	(21)	C	(2.0)CJ	2.1	20	22	2.0
27	(23)	1.8	1.8 F	1.8 F	1.8	1.8	2.1	21	2.3	21	2.2	2.1	2.1	20	1.9	1.9	(2.1)C	(2.3)JC	C	2.0	2.0	2.0	22	2.0
28	(21) F	(20)FV	(1.8) F	(1.9) F	(18)FZ	F	(23) F	(2.1) F	2.2	2.2	2.2	22	21	2.0	2.0	(25)C	(1.8)	(2.0)C	2.0	2.1	2.2	(1.9)F	23	2.2 F
29	(17)FZ	2.0 F	20 F	1.9	1.8	1.7	2.2	(23)AF	(2.3)	2.3	2.2	2.3	2.1	(20)	(2.0)	C	(2.1)	(2.1)	2.0	2.2	(2.2)J	(21)	(2.2)J	2.3 V
30	20 F	1.8 F	1.8 F	(1.9) F	1.9 F	20	20	18	22	(2.4)C	2.3	2.3	2.1	22	22	2.2	23	(20)S	(2.2)S	22	(22)	1.9	2.1	21
31	20	19	20	2.1	20	20	21	21	(25)V	2.4	2.4	22	(23)	22	21	22	(2.1)S	(22)S	2.1	22	2.2	22	20	21
Median	1.9	1.8	1.9	1.9	1.8	1.7	1.9	2.0	2.2	2.3	2.2	2.2	2.1	2.0	2.0	2.1	(2.1)	(2.1)	2.1	2.1	2.1	2.0	2.0	2.0
Count	31	31	31	31	30	28	29	31	31	31	31	31	31	31	29	27	28	27	26	30	30	28	31	31

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 61

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

IONOSPHERIC DATA

Form adopted June 1946

F2-M 3000 (Characteristic), ____ (Unit), December (Month), 1947

National Bureau of Standards (Institution)

Observed at Washington, D.C.

Lat. 39.0°N, Long 77.5°W

75°W Mean Time

Scaled by: A.H.S., S.M.O., E.J.W.

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	(3.2)J	3.2	2.9V	(2.9)JF	2.7V	27F	2.7F	3.1F	34	34	32	31	31	3.0	30	3.7	3.2	3.1	(3.1)J	(3.3)J	2.9	3.2	29	3.1
2	3.1	3.0F	3.0F	28F	27	29	3.0	32	34	3.2	32	32	31	30	31	C	(3.1)	C	C	C	C	C	(3.1)	(3.3)
3	(32)	(29)F	(28)F	(28)	C	C	C	(3.2)	(33)	32	32	(33)	31	31	3.2	(3.2)FS	(3.2)S	(3.4)S	31	3.2	3.0	3.1	30	2.9
4	30	29	30	30	29	3.1	34	3.1	31	34	31	32	30	31	33	33	(3.7)	(3.0)J	30	3.2	3.1	3.2	32	2.8
5	2.7F	26F	29F	30	31	30	2.8	34	3.4	33	32	33	31	(30)C	C	31	(32)S	(33)P	3.0	31	3.0	(26)JV	25	2.6
6	2.7	27	27	27	29	26	25	3.0V	(33)J	33	(33)J	33	31	30	30	(3.2)J	(3.0)PS	31	(30)P	30V	3.0	2.9F	29	2.9F
7	(3.0)F	(3.2)JF	27F	(27)JF	30F	(29)F	2.8F	30F	35	(34)P	(33)J	33	31	34	31	32	32	(3.3)J	(3.0)JF	31	3.0	(3.1)V	(30)JF	(2.9)JF
8	(29)JF	(27)F	(28)F	(25)JF	27	28F	29	30F	33	35	33	3.2	31	3.3	(3.2)J	S C	3.0P	(33)P	(32)P	(2.9)J	(3.9)S	C	28	(2.6)J
9	2.7	(26)J	27	27	27	(28)P	28	2.7	32	32	31	33	30	30	31	(30)J	(31)J	(34)JS	(32)P	32	3.0	3.0	3.0	(24)J
10	(30)JF	27ZF	(26)J	(26)JF	(26)JF	F	F	(29)F	(35)J	34	31	32	32	30	31	(3.1)J	30	S C	32	(2.9)P	3.3	28	3.0	2.9
11	2.8	2.6	(27)JV	(2.6)JV	(29)J	(3.1)J	29	3.0	33	(3.3)J	(32)SC	3.1	3.1	31	3.2	31	(30)	3.3	3.1	(2.9)	3.1	29F	2.9F	2.9
12	26F	26F	29F	29F	2.7F	(2.7)JF	(26)JF	30	33	33	33	31	32	28	29	(3.0)	(30)J	(29)J	(31)J	2.8	(2.8)J	3.1	2.8	3.2
13	28	2.7	29	28F	26F	2.5F	2.6F	(3.0)JF	33	33	33	31	30	31	3.0	(31)J	31	30	(31)J	29	31	2.8	3.1	2.8F
14	27F	24F	26F	31F	28F	25F	27F	27	30	33	31	31	30	30	(28)	31	(26)J	30	(29)	32	3.2	2.9	31	2.8
15	2.6F	26F	27F	26F	28F	27F	29F	31F	33	(33)J	32	30	30	30	C	(30)J	(29)J	34	27	28	3.0	28F	2.9F	30
16	27F	2.7F	2.8	34F	2.7	2.8	29	28	31	34	34	31	29	30	29	2.9	31	(31)J	3.1	32F	3.0	3.0F	2.9F	27F
17	28F	2.7F	26	27	3.0	3.0	29	29	32	33	(31)J	(34)J	31	29	31	31	(29)	(31)	3.0	31	34	2.8F	3.0F	2.8F
18	29	26	27	28	27	28	28	29	31	32	(32)P	(32)P	32	28	3.0	3.1	(3.0)J	(30)J	31	30	(30)S	2.9F	27F	2.8F
19	25F	27	2.6F	26F	26F	27F	28F	28	32	30	32	31	(30)P	32	(30)	(2.9)J	(33)J	(33)C	(33)J	31	3.2	(3.1)J	(27)J	(2.9)F
20	28	28FV	2.8F	30F	3.0F	29	28	30	34	32	3.4	(32)	(30)	(30)C	29	(28)	31	29	(31)	(30)	3.2	C	(32)A	3.1
21	30	28	3.0	30	26F	30F	32	30	33	33	(31)	(31)	(32)	3.0	(30)	(32)	3.1	(32)	(32)J	(31)J	3.2	3.0	3.0	30
22	29	28F	28	28	26	27	27	29	36	33	(33)J	(32)J	(32)	3.1	32	N	N	C	C	33	30	(2.9)J	(30)J	31
23	(33)J	(28)JF	32F	(26)JF	27F	28F	29F	29F	33	33	(31)J	31	3.1	(32)C	(30)C	(3.1)C	C	C	C	2.9	31	3.0	30	33
24	3.0F	29F	31F	29F	28	28	28	3.0F	34	33	34	33	30	30	29	3.1	(2.9)	(30)	(31)	30	(3.0)F	(3.0)J	29	30
25	30	27	28	27	27	27	29	32	33	(33)	(32)	31	30	(28)	(29)	(31)	C	(30)	(30)	30	2.9	(29)J	31	32F
26	(28)F	31F	29F	(26)F	(25)F	(28)F	30F	31F	33	32	32	3.2	(31)	29	(29)	30	(3.1)	(30)	C	(30)CJ	29	3.2	30	30
27	(30)	26	2.6F	2.6F	26	27	31	30	34	34	33	31	30	30	27	30	(3.1)C	(3.0)CJ	C	3.1	28	3.0	31	3.0
28	(3.1)F	(29)FV	(28)F	(28)F	(27)FZ	F	(33)F	(32)F	33	31	32	32	30	30	30	(31)C	(31)C	(3.2)C	30	32	3.2	(2.8)F	31	31F
29	(2.9)FZ	29F	29F	2.8	27	29	32	(34)AF	(34)	33	32	32	30	(30)	(30)	C	(3.1)	(3.2)	30	(32)	(3.1)J	(30)	(33)J	33V
30	3.0F	27F	28F	(27)F	28F	29	30	2.8	33	(34)C	34	32	3.0	32	32	32	(33)	(3.0)S	(33)S	33	(32)	29	3.1	31
31	29	28	30	31	30	30	3.1	31	(35)V	34	34	33	(33)	33	31	3.0	(3.1)S	(3.3)S	31	3.2	32	3.1	29	31
Median	2.9	2.7	28	2.8	2.7	28	2.9	30	33	33	32	3.2	31	30	30	31	(31)	(3.1)	(31)	31	30	30	30	30
Count	31	31	31	31	30	28	29	31	31	31	31	31	31	31	29	27	28	27	26	30	30	28	31	31

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 62

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

Form adopted June 1946

IONOSPHERIC DATA

F1-M 3000 December 1947

Washington, D.C.

Lat 39.0°N Long 77.5°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by A.H.S., S.M.O., E.J.W.

Calculated by

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														L										
3																								
4																								
5												L												
6													L	L	L									
7																								
8													L	L	L									
9																								
10																								
11													L		L									
12													L											
13												L												
14																								
15																								
16																								
17																								
18																								
19																								
20											L													
21																								
22																								
23														L	L	L								
24																								
25														L										
26																								
27																								
28																								
29												L												
30																								
31																								
Median																								
Count																								

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 63

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

IONOSPHERIC DATA

E-M1500 (Characteristic), ____ (Unit), December (Month) 1947

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: A.H.S., S.M.O., E.J.W.

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

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								A	37	[illegible]	(43)F	41	43	44	(44)	B	A	A						
2										(42)	A	44	A	45	B	C	C							
3								C	52	B	B	A	41	(43)	(44)B	B	B							
4									41	42	41	44	44	48	(44)	B	40							
5									A	45	39	41	41	44	C	B	45							
6									(43)B	(41)B	(44)B	B	(42)B	(43)B	(44)B	B	(44)H	S						
7									43	B	(43)B	43	(44)B	44	44	B	B							
8									(42)H	B	B	44	(45)H	45	B	B	47	S						
9									(45)H	B	41	41	38	B	B	B	B	S						
10									(41)F	B	41	39	A	A	A	A	BC	A	A					
11									39	A	39	(40)H	42	40	42	(41)H	45							
12									40	A	40	41	41	42	47	40	44	43	A					
13									41	40	40	42	40	41	44	41	A							
14								A	B	39	41	41	41	41	A	A	A	A						
15									38	37	41	41	44	34	C	40	42							
16									37	36	41	39	41	A	42	43	(43)	B						
17									40	B	38	37	38	39	40	40	B	B						
18									A	A	40	41	43	34	41	40	B	A						
19									36	39	41	40	A	42	41	42	B							
20									A	A	A	B	B	B	(42)	B	B							
21									37H	B	41	B	42	43	42	45	45							
22									42	A	42	44	(45)	41	42	41	C	C	C					
23									33	34	41	A	(41)	41	44	A	A							
24									A	A	A	42	44	45	44	B	B	A						
25									37H	45	42	41	(42)H	42	44	A	(A)	A						
26									(43)A	(44)A	44	43	42	(40)	B	43	B							
27									A	42	43	42	44	44	A	50	(45)A							
28									(39)	41	A	(42)A	46	44	(42)A	A	(47)							
29									41	(40)A	A	(45)A	43	42	31	47	(47)	A						
30									41	41	42	42	43	42	45	40	43							
31									50	3[illegible]	41	(42)	(43)	(44)B	B	B	B	(44)HS						
Median									41	41	41	42	42	42	44	41	45							
Count									[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3							

1.0 25.0 0.25

x

Table 64

Ionospheric Storminess at Washington, D.C.

December 1947

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	0	2			3	1
2	1	1			1	2
3	1	2			1	1
4	1	2			1	2
5	1	2			3	2
6	2	3			4	4
7	2	1			3	2
8	3	2			3	1
9	3	2			3	3
10	3	2			3	2
11	3	2			3	2
12	2	2			3	3
13	1	1			4	3
14	3	0			3	2
15	3	2			3	2
16	2	2			2	0
17	3	3			1	1
18	2	1			1	2
19	2	2			3	1
20	1	2			1	1
21	2	2			0	0
22	3	1			1	2
23	2	1			3	2
24	1	2			1	1
25	1	1			1	1
26	1	1			2	2
27	2	2			2	2
28	2	2			1	2
29	2	1			2	2
30	2	1			0	1
31	1	2			0	1

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

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

Table 65

Sudden Ionosphere Disturbances Observed at Washington, D.C.

December 1947

1947 Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
December 1	1843	1925	Ohio, D. C.	0.1	
3	1622	1700	Ohio, D.C., England, New Brunswick	0.05	
6	1712	1805	Ohio, D.C., England, New Brunswick	0.0	Terr.mag.pulse** 1712-1800
18	1732	1750	Ohio, D.C., New Brunswick	0.1	Terr.mag.pulse** 1730-1745
18	1817	1835	Ohio, D.C.	0.2	
19	1715	1745	Ohio, D.C.	0.2	

*Ratio of received field intensity during SID to average field intensity before and after, for station W8XAL, 6080 kilocycles, 600 kilometers distant.

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

Table 66

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief,

Cable and Wireless, Ltd., as Observed in England

1947 Day	GCT Beginning	GCT End	Receiving station	Location of transmitters
November 21	1145	1230	Brentwood	Austria, Belgian Congo, Canary Is., Chile, Greece, Iran, Kenya, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Turkey, Yugoslavia, Zanzibar
21	1205	1230	Somerton	Argentina, Brazil, Ceylon, Gold Coast, India, Nigeria, Union of South Africa
December 10	0855	0925	Brentwood	Afghanistan, Belgian Congo, Canary Is., India, Kenya, Madagascar, Southern Rhodesia, Spain, Zanzibar

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 67

Provisional Radio Propagation Quality Figures
(Including Comparisons with CRPL Warnings and CRPL Probable Disturbed Period Forecasts)
November 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	6				2	2	7	6				2	2
2	6	6				2	1	6	5				2	1
3	6	6				1	2	6	6				1	2
4	5	6				2	2	7	6				2	2
5	6	6				1	1	7	6				1	1
6	5	6			X	0	1	6	5			X	0	1
7	6	6			X	0	2	7	6			X	0	2
8	6	5				3	3	(4)	6				3	3
9	(4)	(3)		X		3	5	5	5		X		3	5
10	(3)	(3)	X	X		4	4	5	6	X	X		4	4
11	(4)	(3)	X	X		4	4	5	7	X	X		4	4
12	(4)	(4)	X	X		4	2	6	6	X	X		4	2
13	(4)	(4)	X			3	2	5	5	X			3	2
14	5	5				2	2	(4)	5				2	2
15	5	5				4	2	6	5				4	2
16	5	5				3	2	6	6				3	2
17	5	6				2	1	7	7				2	1
18	6	6				2	2	6	6				2	2
19	5	5				4	2	6	6				4	2
20	6	5				2	2	7	7				2	2
21	(4)	5				1	2	6	5				1	2
22	6	6				1	1	7	5				1	1
23	5	6				2	1	6	5				2	1
24	6	5				1	3	6	5				1	3
25	6	6				2	1	7	5				2	1
26	5	6				1	2	7	7				1	2
27	6	6				1	2	6	6				1	2
28	6	7				1	1	6	6				1	1
29	6	6				2	2	6	8				2	2
30	6	6				2	2	6	7				2	2
Score:														
H			5		0					0		0		
M			1		6					2		2		
G			24		22					23		26		
(S)			0		1					4		1		
S			0		1					1		1		

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

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

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

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

**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: November 5, 8, 9, 10, 11, and 12.

Table 68

American and Zürich Provisional Relative Sunspot Numbers

December 1947

Day	American* number	Zürich** number	Day	American* number	Zürich** number
1	127	110	16	121	107
2	107	86	17	150	133
3	95	105	18	137	121
4	80	90	19	139	109
5	99	89	20	143	140
6	128	97	21	110	92
7	124	120	22	120	100
8	116	110	23	98	95
9	104	99	24	116	117
10	110	114	25	122	104
11	127	108	26	142	170
12	145	122	27	159	159
13	155	110	28	157	142
14	145	131	29	150	135
15	127	136	30	118	129
			31	122	135
No. of Days: 31			Monthly Means:	125.6	116.6

*Median of data from 23 observers.

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

Table 69

CORONAL OBSERVATIONS AT CLIMAX, COLORADO

November 1947

First row - green line 5303A
Second row - red line 6374A
Third row - red line 6704A

Day	Time of observation GCT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175
1	1912-1938	4	5	5	5	3	2	2	3	3	--	--	--	--	--	3	8	9	14	13	14	14	13	9	10	8	8	10	12	7	8	8	7	9	9	8	8
										1	2	2	2		1		1	3	3	1	1	1					1	2	4	3	1						
2	1718-1741	4	5	3	2	--	--	--	--	--	--	--	3	2	--	--	--	4	5	13	14	16	15	18	11	12	12	12	10	--	--	3	4	6	8	8	7
																	1	1	1	1	2	2	1							7	4	1					
12	1755-1803	-	-	--	--	--	--	--	--	--	--	5	5	6	6	7	9	11	12	14	15	25	26	14	10	11	13	13	14	12	12	11	10	8	7	--	--
																				11	9	9	11	10		4	8	3	1	1	1	1					
																		1	1	2	2	3	3	3	2	1	1	2	2	2	2	2	2	1	1		
13	1655-1715	-	-	3	3	2	--	3	3	3	3	--	8	9	9	7	7	8	9	13	16	20	27	28	12	16	22	24	22	22	22	21	18	8	7	7	--
																1	3	3	5	10	10	9	9	12	5	10	5	5	2	8	9	7	6	1			
																		1	1	1	2	2	3	3	2	2	2	3	3	3	3	2	2	1	1	1	
27	1719-1743	4	3	3	--	--	--	--	--	--	--	--	--	--	4	5	8	10	18	14	15	13	11	6	5	4	9	4	--	3	10	12	6	11	12	11	8
															1	1	1	1						1	2	2	1	1									
												1	1	1																							
28	1644-1706	3	2	--	--	--	--	--	--	--	--	--	3	4	6	9	11	14	14	14	14	14	12	11	8	8	10	9	2	2	7	12	7	9	14	15	14
																										1	1	1									
29	1720-1737	3	2	--	--	--	--	--	--	--	--	--	--	--	--	5	8	12	11	13	13	14	14	10	12	13	15	12	--	--	13	11	8	10	15	13	5
																						1				6	5	5	2								
																					1	1	1	1	1	1											

Table 69 (continued)

Day	Time of observation GCT	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
1	1912-1938	7	7	8	9	10	9	8	8	8	7	4	4	4	6	9	14	19	25	25	28	38	35	30	19	18	18	17	20	22	19	13	10	8	6	4	4
																				1	1	4	3	3	2	1	2	2	14	27	9	9	4	3			
																1	1	3	5	7	7	7	5	3	3	2	1	1	1	1							
2	1718-1741	6	8	9	10	10	9	7	8	8	7	3	--	--	--	12	12	11	14	15	16	38	34	31	31	26	26	24	31	20	14	10	5	3	3	3	4
																		1	1		1	2	3	7	5	4	1	1	12	14	8	2	2	1			
									1	1	1	1				1	2	3	2	3	4	5	4	3	2	1	1	1	1								
12	1755-1803	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	1655-1715	3	4	8	8	8	3	3	3	--	--	8	10	8	5	7	9	8	7	8	14	13	12	10	9	11	11	11	18	17	15	14	12	8	--	--	--
																			1	1	4	5	5	4	3	1											
											1	1	2	2	2	1	1	1			1	1	1			1	1	1	1	1	1						
27	1719-1743	3	5	8	8	7	7	7	6	4	--	--	--	8	19	22	22	23	20	22	22	25	19	12	10	12	11	11	11	9	9	11	9	9	9	8	7
																1	1	3	1	1	9	8	6	10	8	8	11	5	2								
															1	2	2	3	2	1	2	4	2	1													
28	1644-1706	4	4	10	10	10	10	10	11	12	2	2	--	--	20	27	28	32	25	24	28	33	9	9	10	14	14	13	10	8	10	9	8	7	7	5	4
																	1	1	1	1	2	3	2	2	1	2	5	5	2	1							
													1	1	2	3	5	4	5	5	5	5	3	1	1	1	1										
29	1720-1737	5	5	6	7	8	8	7	7	4	--	--	--	--	18	17	25	30	20	22	21	25	20	15	13	14	15	13	7	5	8	8	7	7	6	5	4
												1	1	1					1	2	3	10	7	8	8	3	2	1	1							
																1	4	5	4	4	4	4	4	3	1	2	2	2	1								

Table 70

CORONAL OBSERVATIONS AT CLIMAX, COLORADO

December 1947

First row - green line 5303A
Second row - red line 6374A
Third row - red line 6702A

Day	Time of observation GCT	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175
2	1722-1734	-	-	--	--	--	--	--	--	--	--	--	--	--	--	3	15	15	25	42	42	31	25	17	13	14	10	--	6	6	6	8	10	11	10	9	8
																	2	8	2	7	19	10	5	1	1	1	3	7	2	1	1						
																	1	1	2	2	2	1	1														
5	1705-1724	-	-	--	--	--	--	--	--	--	--	--	--	--	5	6	8	10	11	16	16	12	10	14	15	18	19	18	7	8	8	7	10	10	10	9	7
																				1	3	2	1	10	12	9	10	2									
																				1	1	1	1	1	1	1	1	1									
10	1932-1955	-	-	--	--	--	--	--	--	--	5	10	10	8	8	7	8	11	11	12	11	10	14	22	28	22	24	26	22	20	12	8	5	--	--	--	--
																							3	7	11	2	13	13	12								
																				1	1	1	1	1	1	1	1	1	1	1	1	1					
23	2028-2056	-	-	--	--	--	--	--	--	--	--	4	6	9	11	13	15	13	11	8	9	11	13	17	27	20	12	10	9	9	11	12	5	4	3	5	8
												1	6	10	2	9	4	2		1	1	15	14	12													
																							1	3	3	2	1										
27	1610-1634	-	-	--	--	--	--	--	--	--	--	--	5	12	11	11	12	14	16	15	13	13	18	20	20	10	--	--	9	7	9	12	12	10	7	6	6
																	0	2	3	3	5	5	2	1	1	1										
28	1653-1719	3	2	3	3	3	3	2	2	2	4	7	15	14	14	14	18	24	27	27	20	11	18	24	18	--	10	13	16	19	18	19	17	12	10	9	9
																	1	4	5	2	3	3	2	1	1	1	1									
																		1	1																	
29	1641-1703	3	4	4	4	3	2	--	2	2	3	4	13	13	10	12	20	38	41	18	10	11	14	14	10	--	--	8	11	15	13	15	14	10	8	7	7
																		8	12	7	8	8	6	4	4	2	1									
																1	1	1																	
31	1705-1744	3	4	7	--	--	--	--	--	--	--	3	8	9	10	9	12	14	10	9	8	11	15	14	10	5	--	--	--	--	3	6	8	8	3	--	--
															1	1	8	8	5	2	14	13	10	9	5	1									
															1	1	1	1	1	1	2	2	2	1	1	1									

Table 70 (continued)

Day	Time of observation GCT	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355
2	No observation																																				
5	1705-1724	7	7	8	10	9	10	10	6	5	5	7	7	5	14	15	15	19	22	22	20	17	17	18	18	19	18	17	19	5	--	--	--	--	--	--	--
																			1	4	4	1					1	2	10	10	2						
														1	1	1	1	3	4	4	3	2	2	1	1	1	1	1									
10	1932-1955	--	7	8	8	6	--	--	--	--	8	11	6	--	8	9	6	5	15	25	23	12	5	5	7	8	11	13	9	7	--	--	--	--	--	--	--
																	1	6	15	5	1															
23	2028-2056	8	8	8	7	5	4	3	3	4	4	6	9	14	18	27	28	30	29	23	20	14	15	20	20	19	14	12	9	5	7	8	8	6	4		
														1	10	17	10	3		10	5	3	1												
												1	1	1	2	2	2	3	3	2	2	1	1	1	1										
27	1610-1634	6	8	9	9	8	7	--	--	--	--	10	17	14	18	30	34	28	25	22	17	11	10	17	18	25	18	12	11	11	10	9	9	7	6	6	--
														0	3	8	2	2		2	12	10	8	8	3										
										0	2	2	2	3	5	2	1	1	1																
28	1653-1719	9	9	9	11	10	9	6	5	8	14	15	14	17	28	28	22	24	16	13	11	9	15	14	30	24	13	10	8	8	9	11	7	5	6	6	5
																1	1	1	1	2	3	5	2	1	2	1	1								
												1	1	2	2	2					1	1	2	2	1										
29	1641-1703	7	9	9	9	8	6	7	10	10	10	12	13	16	18	33	33	33	28	16	14	13	13	28	28	18	20	11	7	8	12	12	11	10	9	5	4
									1	1	1	1	1	6	2	1	3	3	3	1	9	10	7	4	3	1	1								
										1	1	2	2	2	2	1	1				1	1	1												
31	1705-1744	3	4	5	5	5	3	--	--	--	--	--	--	5	31	28	23	30	25	15	15	15	28	38	35	25	22	15	4	6	6	5	8	9	7	5	3
											1	4	5	5	1					1	1	3	5	1	2	1	1	1							
											1	1	1	2	2	2	1	1	1	1	2	2	1												

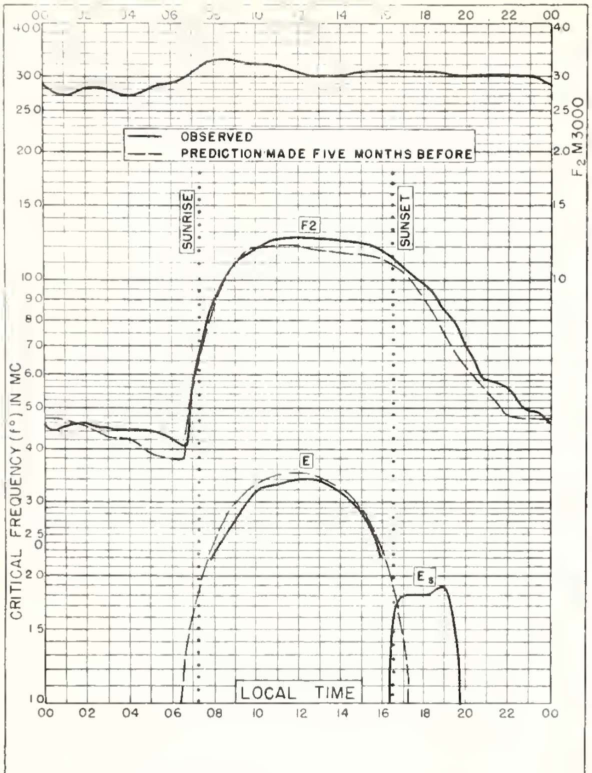


Fig. 1 WASHINGTON, D.C. 39.0°N, 77.5°W DECEMBER 1947

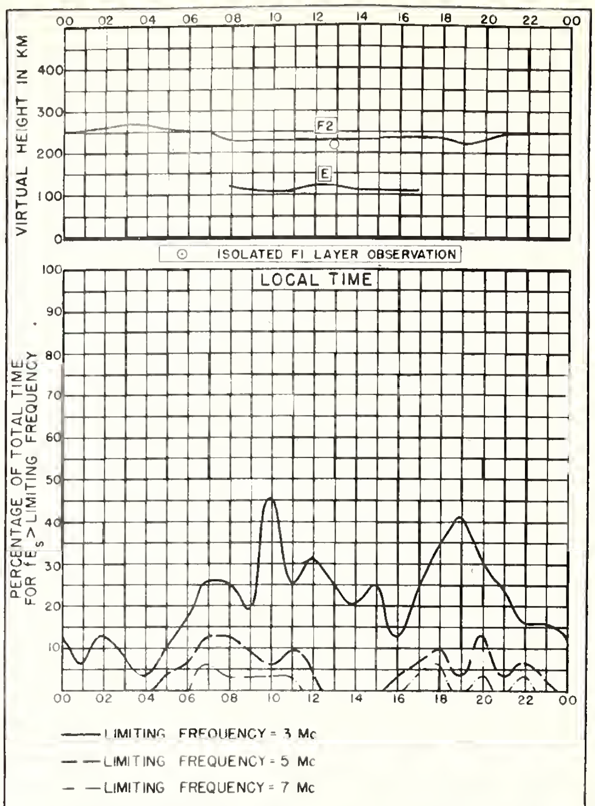


Fig. 2 WASHINGTON, D.C. DECEMBER 1947

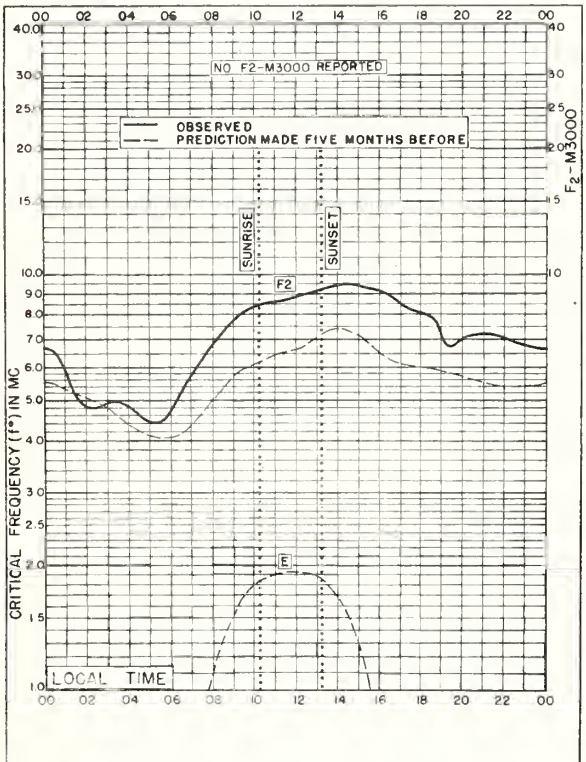


Fig. 3 CLYDE, BAFFIN I. 70.5°N, 68.6°W NOVEMBER 1947

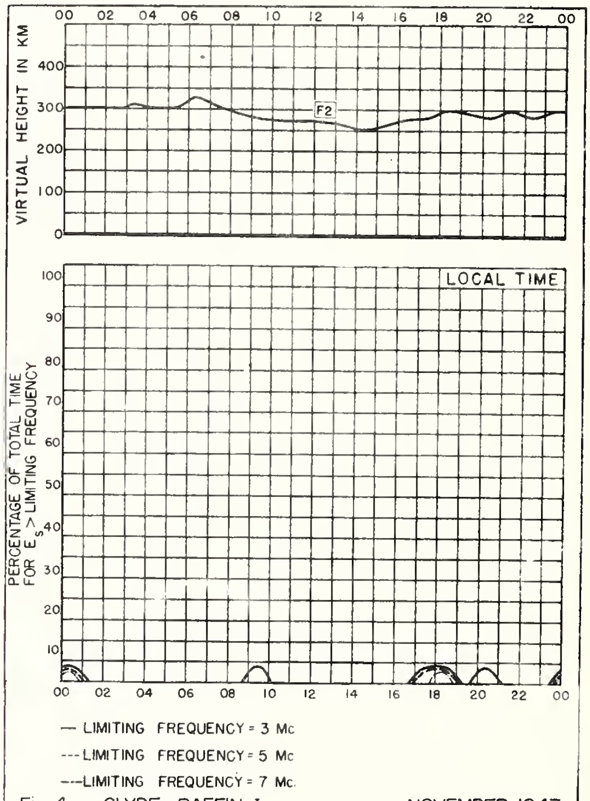


Fig. 4 CLYDE, BAFFIN I. NOVEMBER 1947

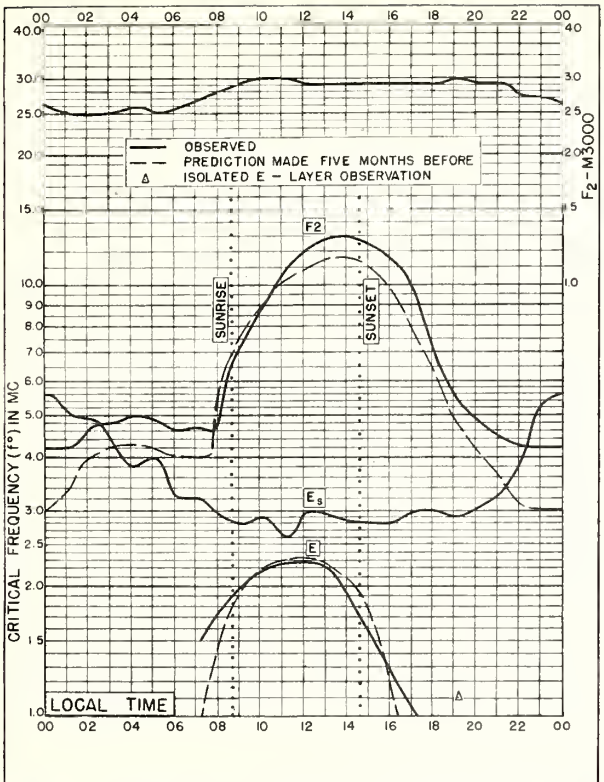


Fig. 5. FAIRBANKS, ALASKA
64.9°N, 147.8°W NOVEMBER 1947

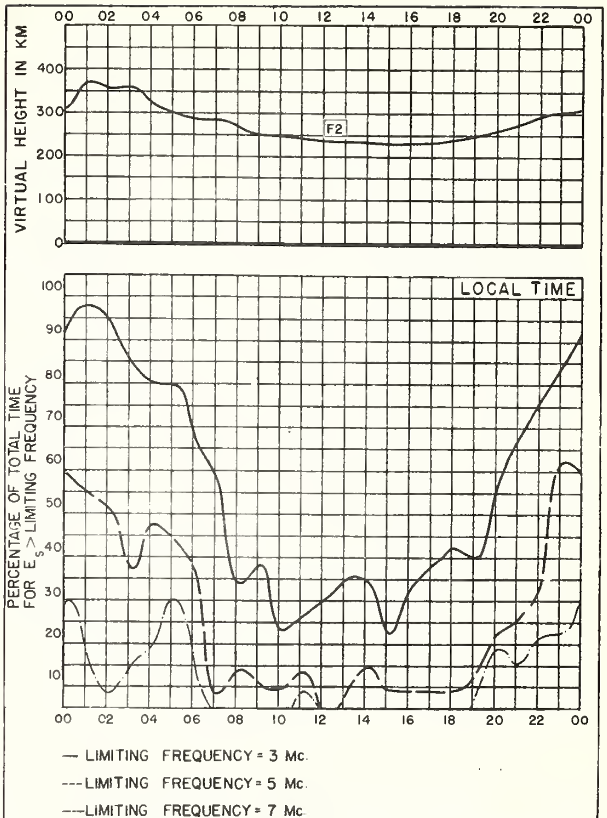


Fig. 6. FAIRBANKS, ALASKA NOVEMBER 1947

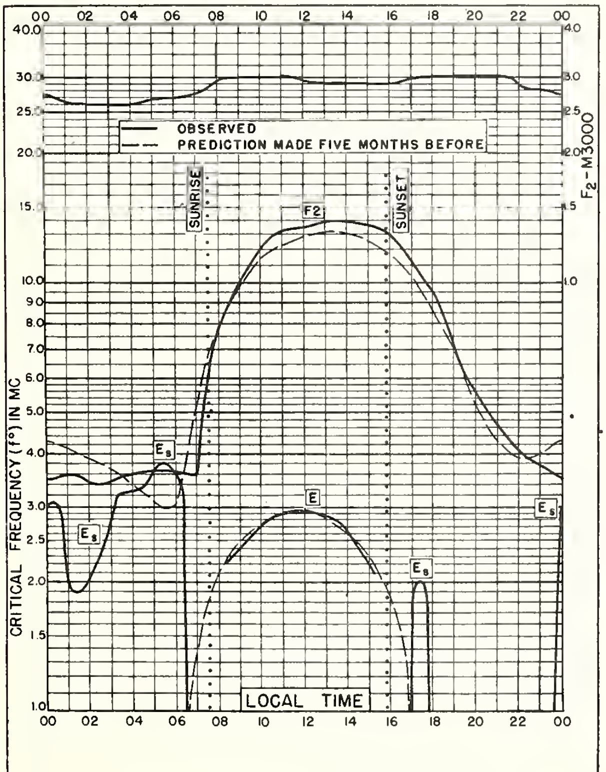


Fig. 7. PRINCE RUPERT, CANADA
54.3°N, 130.3°W NOVEMBER 1947

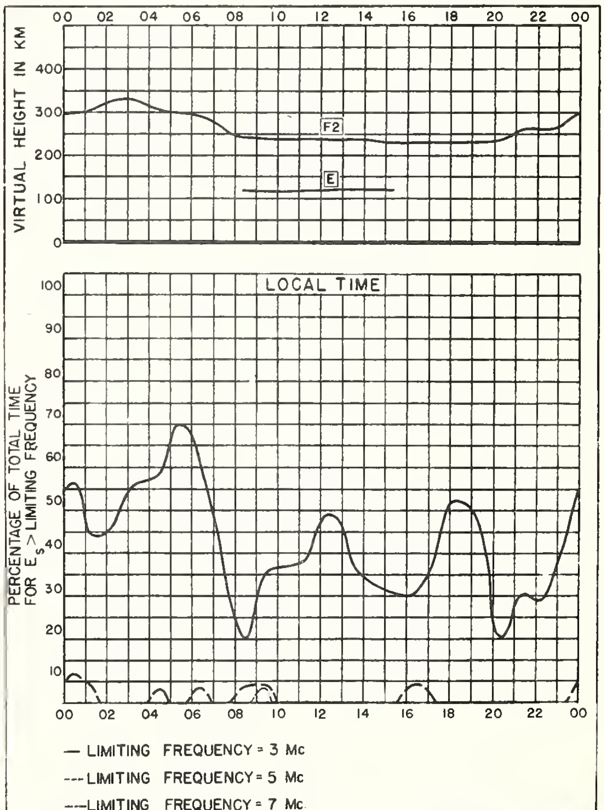


Fig. 8. PRINCE RUPERT, CANADA NOVEMBER 1947

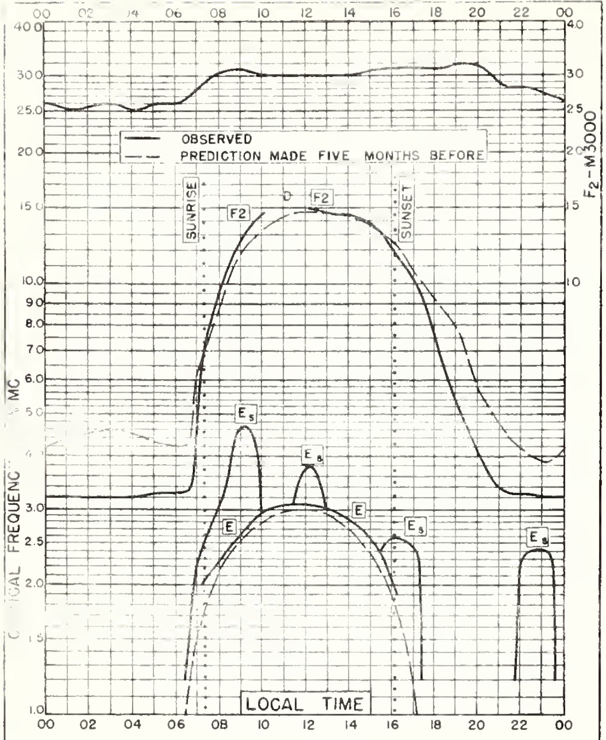


Fig. 9 ADAK, ALASKA
51.9°N, 176.6°W NOVEMBER 1947

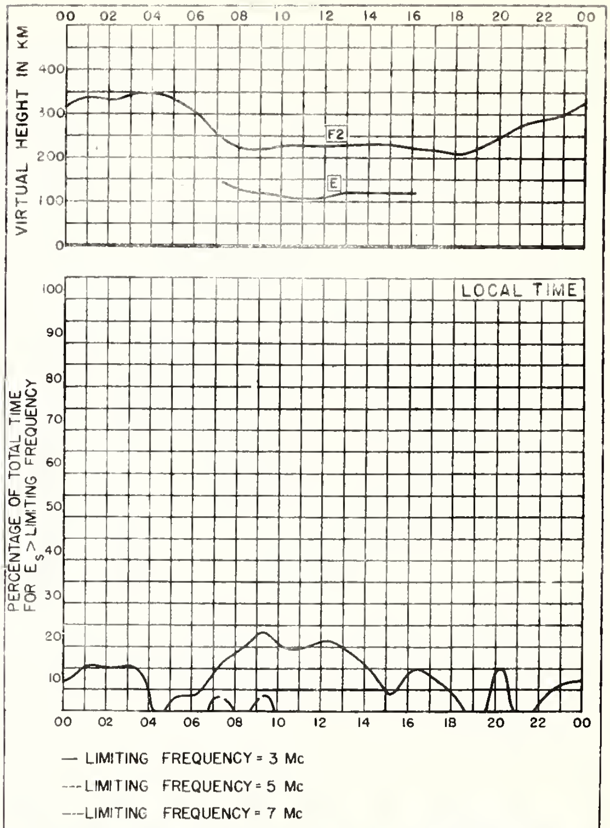


Fig. 10. ADAK, ALASKA NOVEMBER 1947

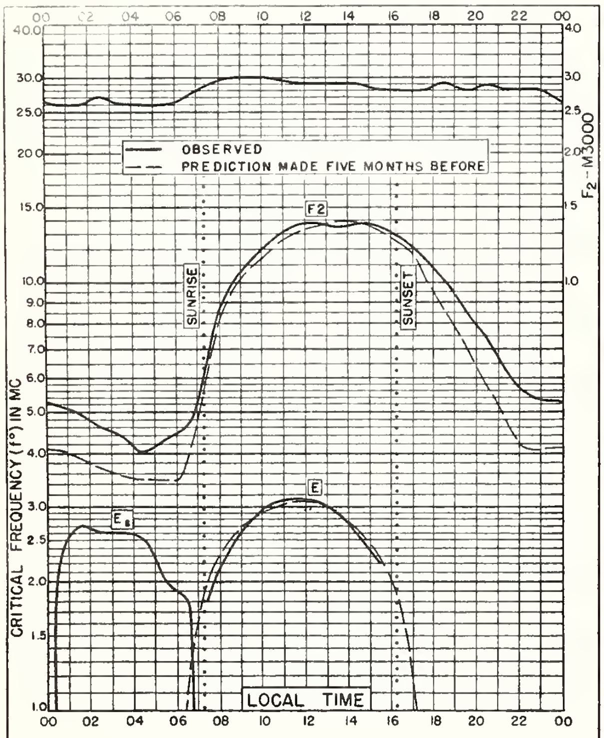


Fig. 11. PORTAGE la PRAIRIE, CANADA
49.9°N, 98.3°W NOVEMBER 1947

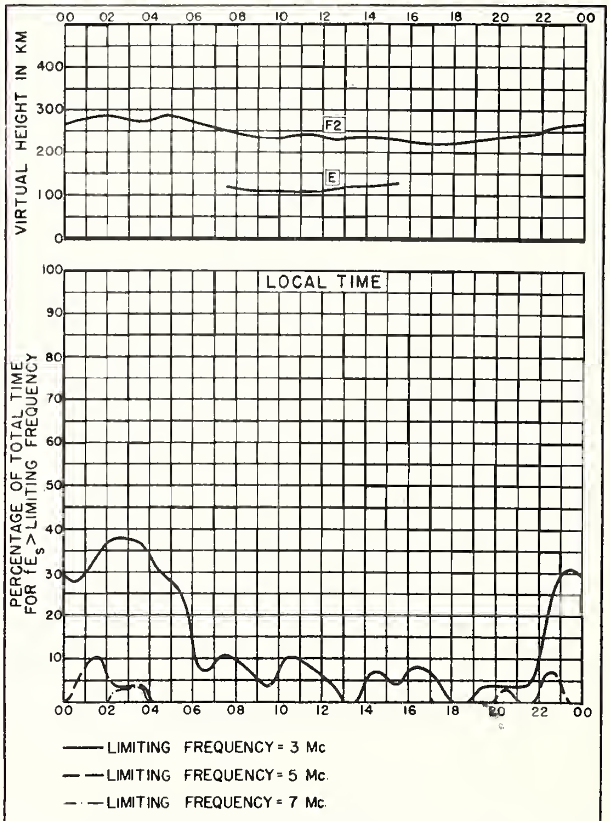


Fig. 12. PORTAGE la PRAIRIE, CANADA NOVEMBER 1947

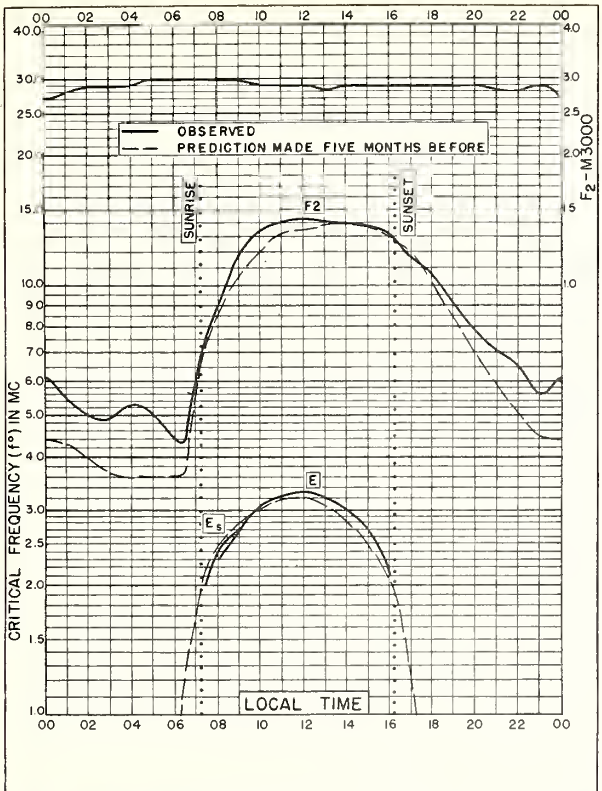


Fig. 13. ST. JOHN'S, NEWFOUNDLAND
47.6° N, 52.7° W NOVEMBER 1947

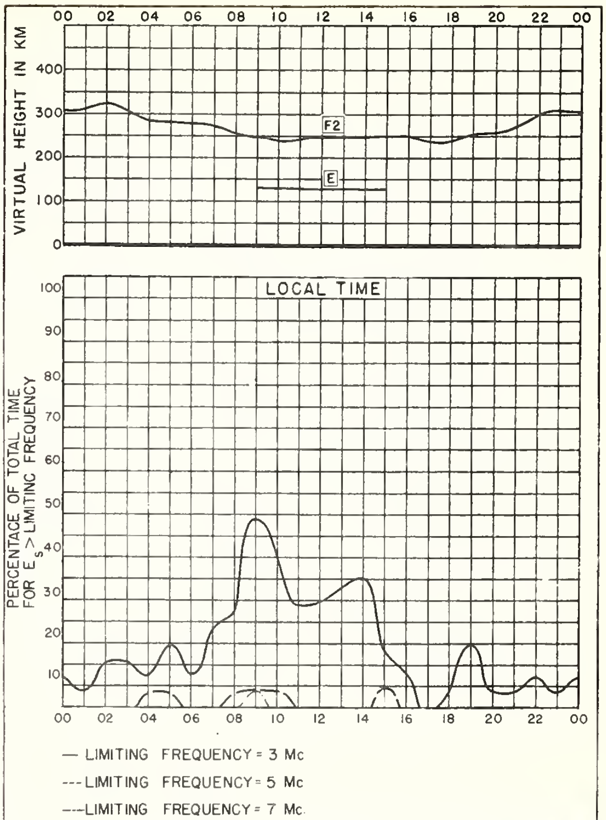


Fig. 14 ST. JOHN'S, NEWFOUNDLAND NOVEMBER 1947

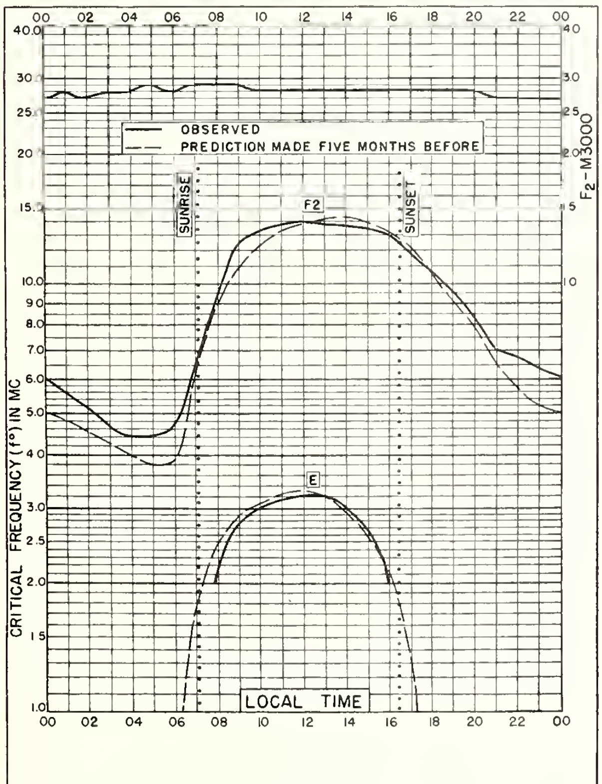


Fig. 15. OTTAWA, CANADA
45.5° N, 75.8° W NOVEMBER 1947

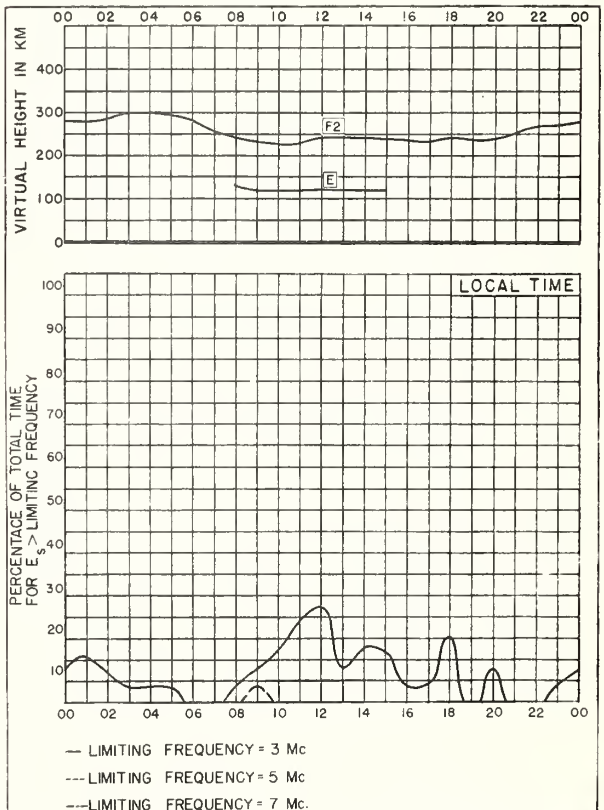


Fig. 16. OTTAWA, CANADA NOVEMBER 1947

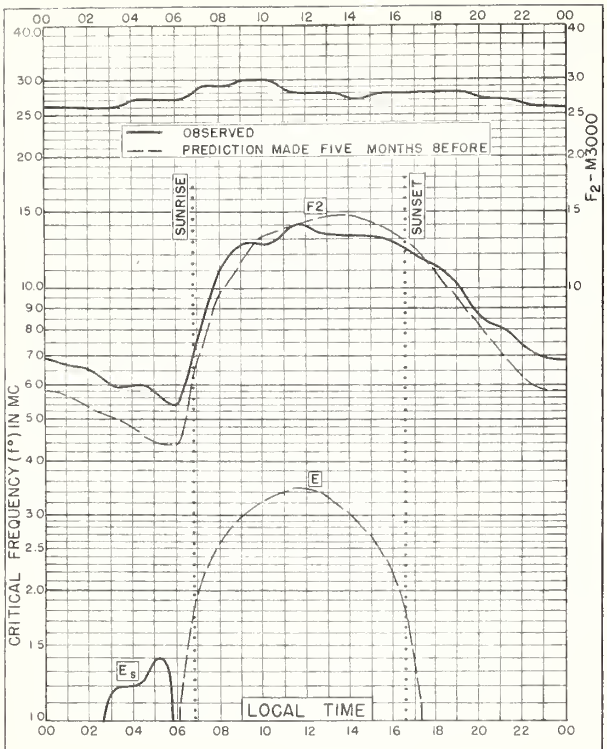


Fig 17. BOSTON, MASSACHUSETTS
42.4°N, 71.2°W NOVEMBER 1947

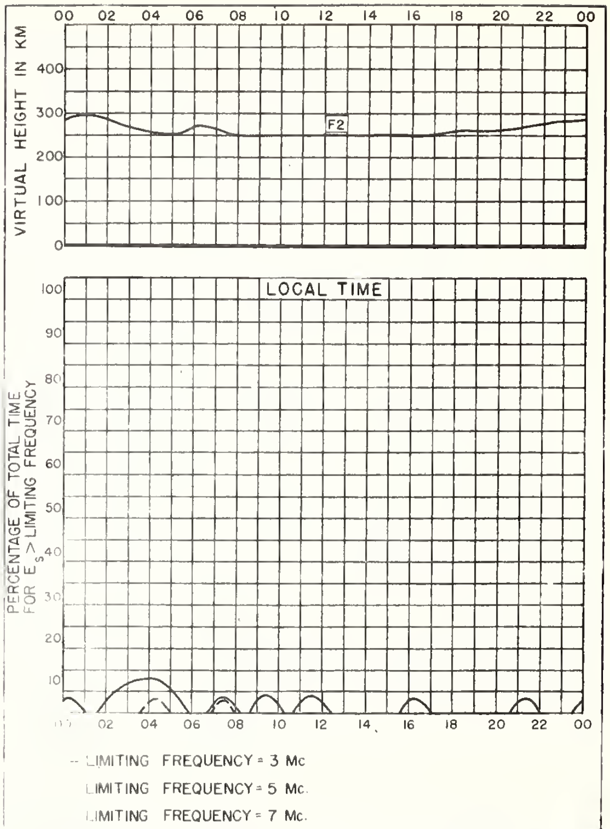


Fig 18 BOSTON, MASSACHUSETTS NOVEMBER 1947

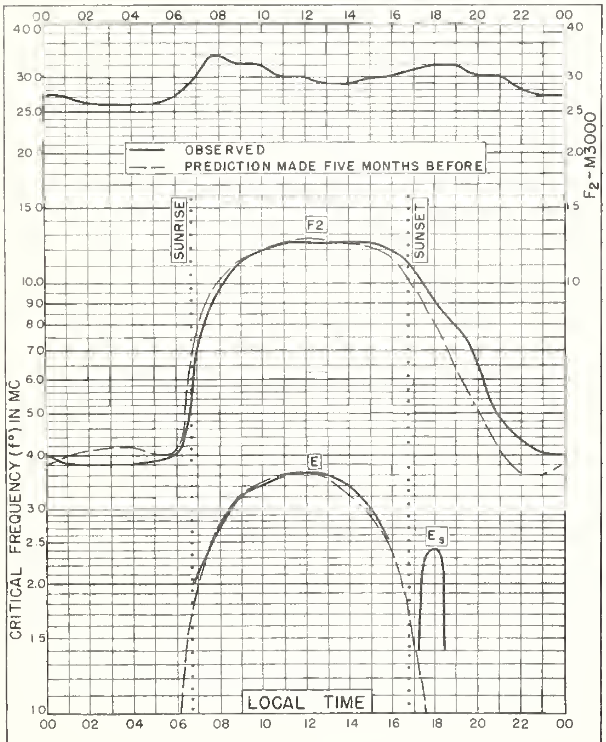


Fig 19. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W NOVEMBER 1947

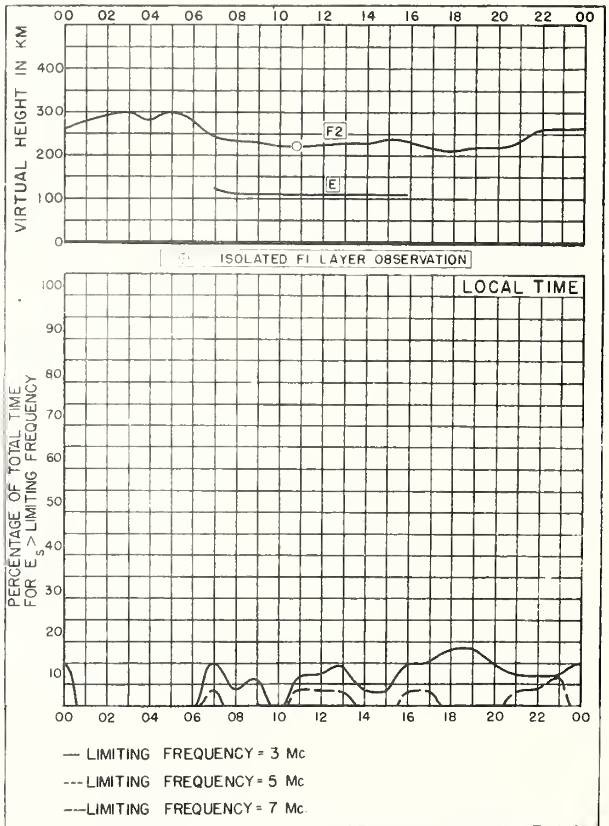


Fig. 20. SAN FRANCISCO, CALIFORNIA NOVEMBER 1947

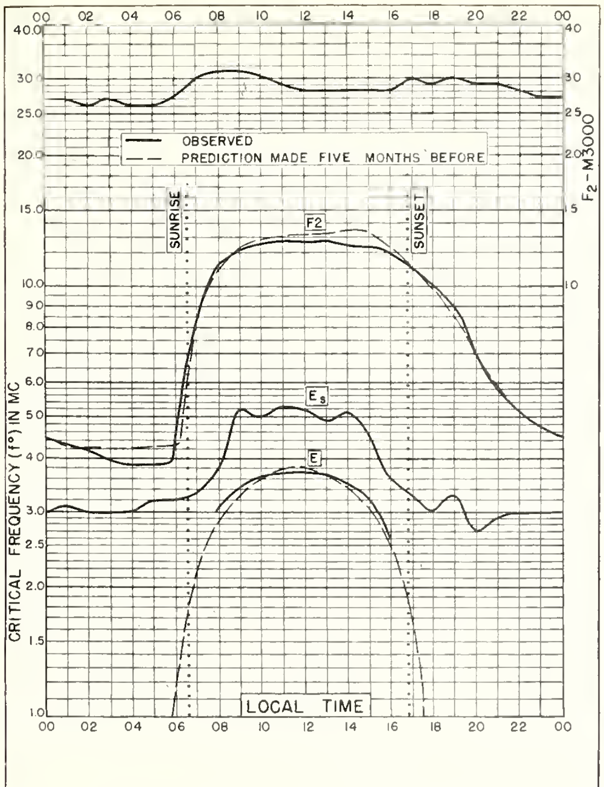
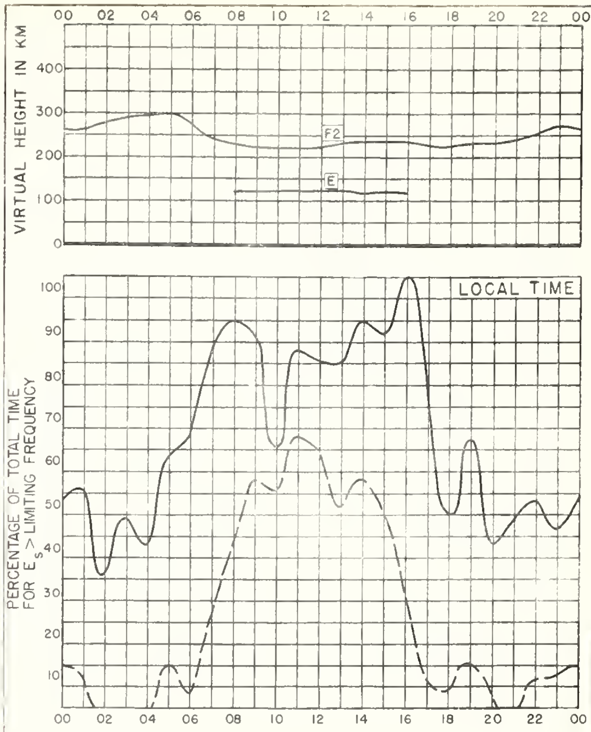


Fig. 21 WHITE SANDS, NEW MEXICO
32.6°N, 106.5°W NOVEMBER 1947



— LIMITING FREQUENCY = 3 Mc
--- LIMITING FREQUENCY = 5 Mc
--- LIMITING FREQUENCY = 7 Mc

Fig. 22. WHITE SANDS, NEW MEXICO NOVEMBER 1947

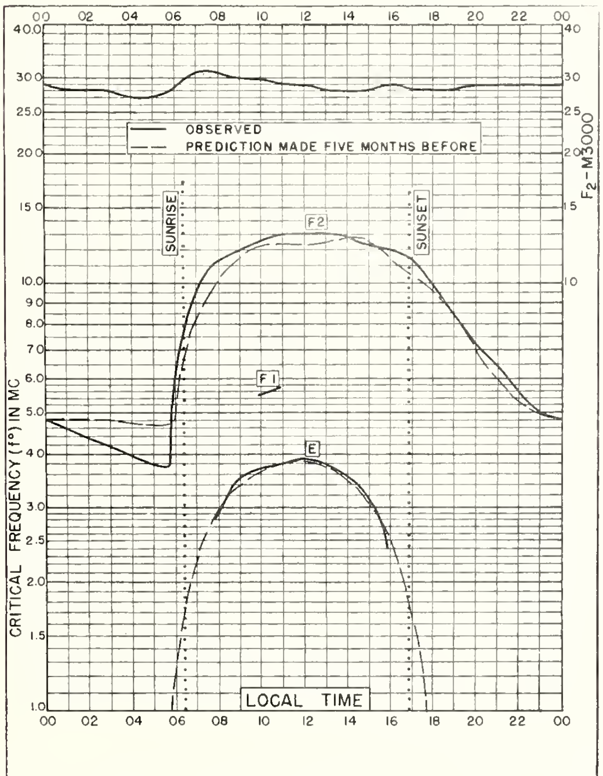
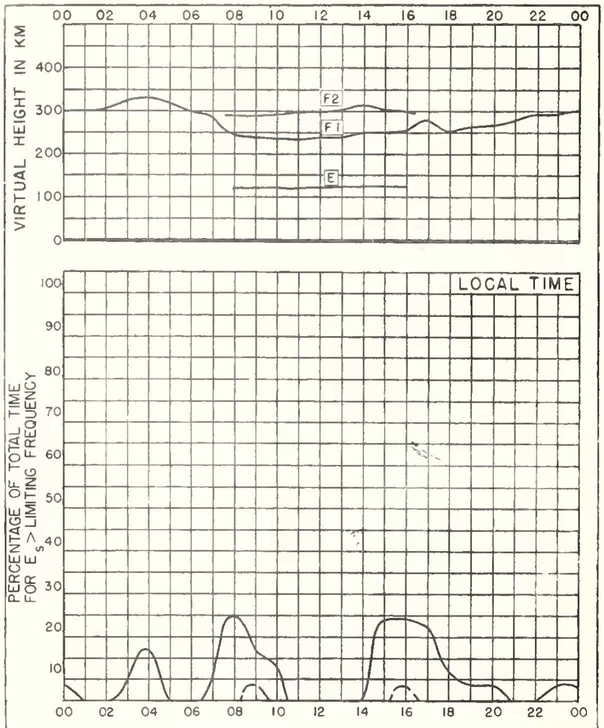


Fig. 23. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W NOVEMBER 1947



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

Fig. 24. BATON ROUGE, LOUISIANA NOVEMBER 1947

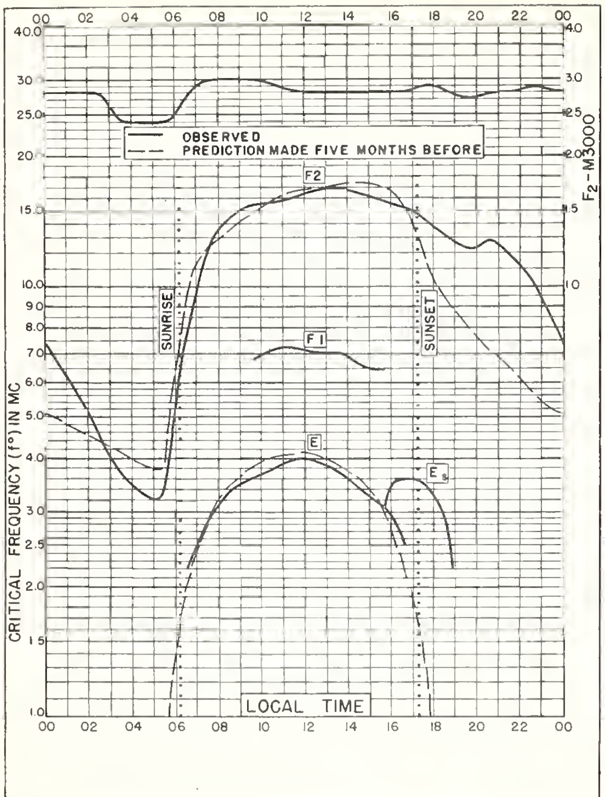


Fig 25. MAUI, HAWAII
20.8°N, 156.5°W NOVEMBER 1947

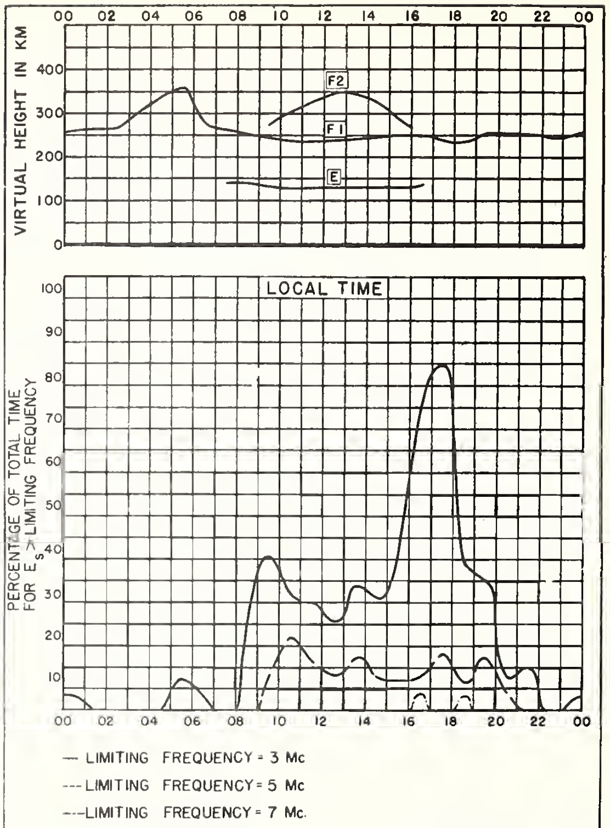


Fig. 26. MAUI, HAWAII NOVEMBER 1947

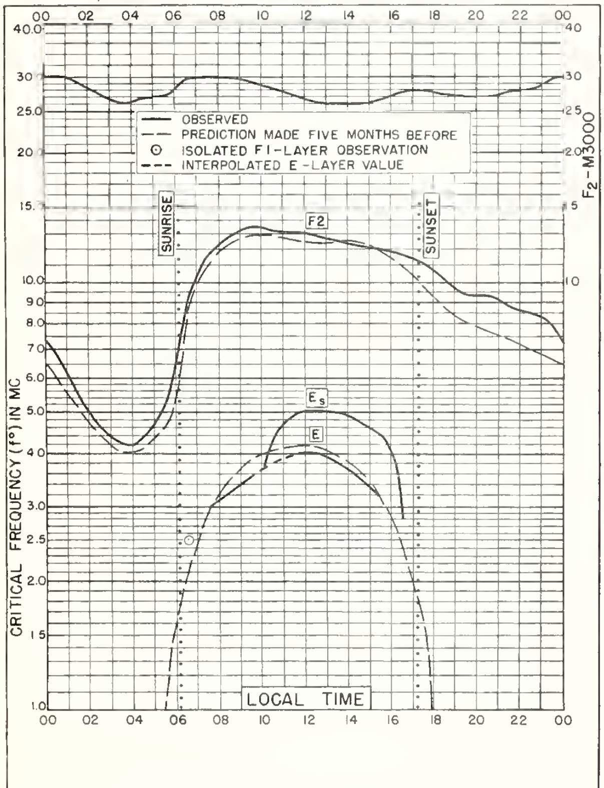


Fig. 27 SAN JUAN, PUERTO RICO
18.4°N, 66.1°W NOVEMBER 1947

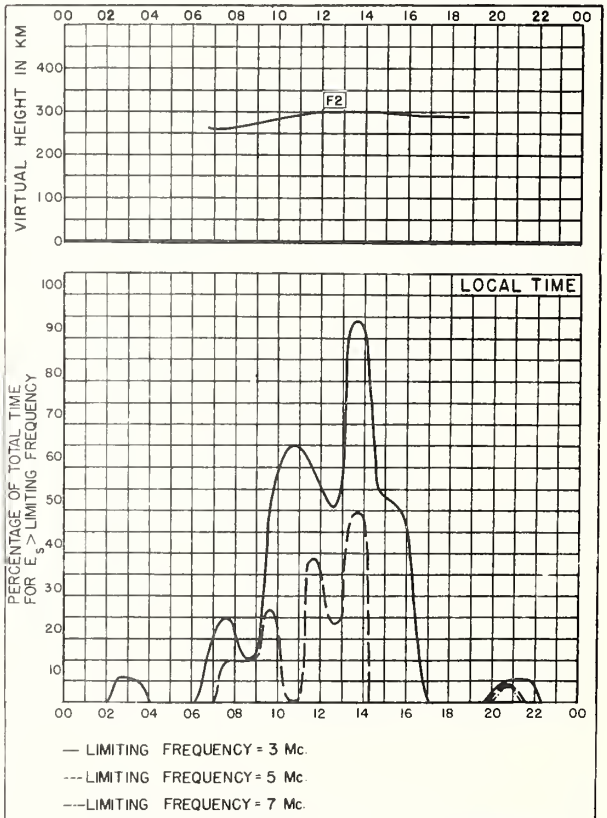


Fig. 28. SAN JUAN, PUERTO RICO NOVEMBER 1947

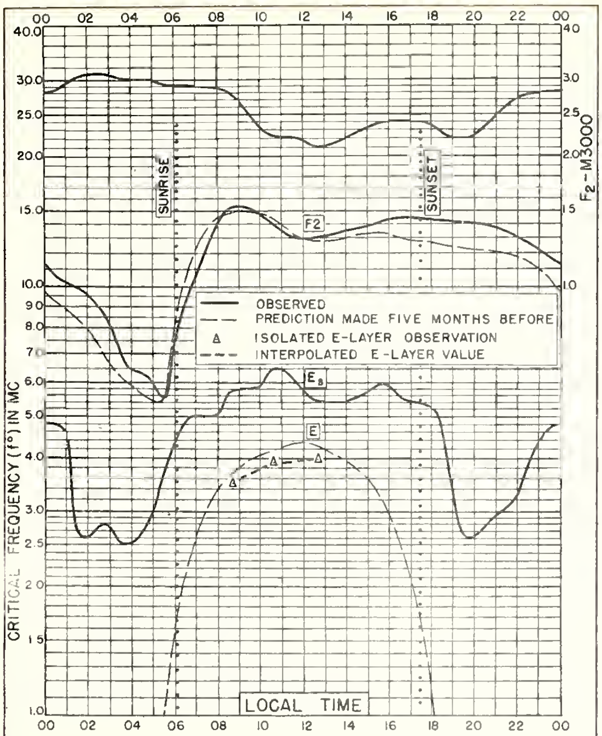


Fig. 29. GUAM I.
13.6°N, 144.9°E NOVEMBER 1947

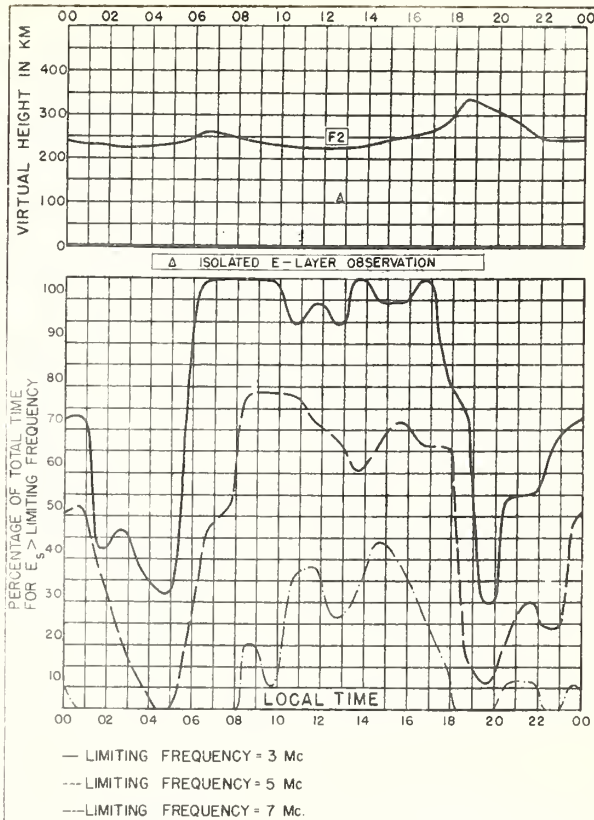


Fig 30. GUAM I. NOVEMBER 1947

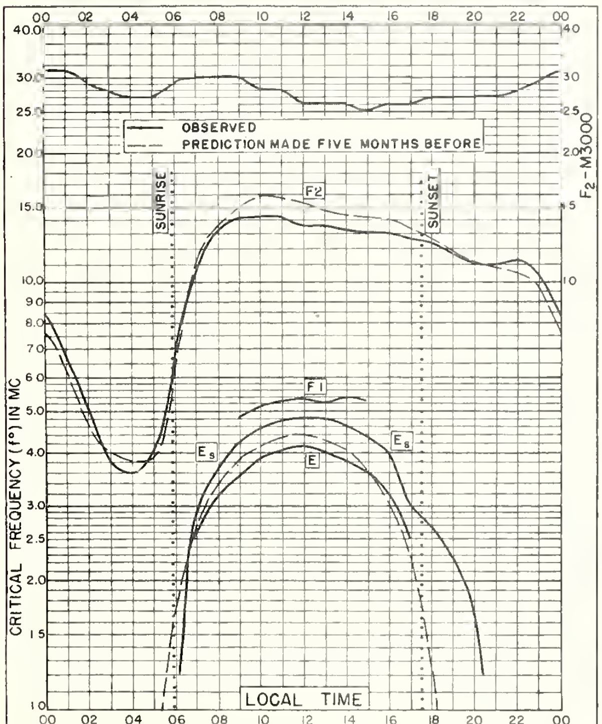


Fig. 31. TRINIDAD, BRIT WEST INDIES
10.6°N, 61.2°W NOVEMBER 1947

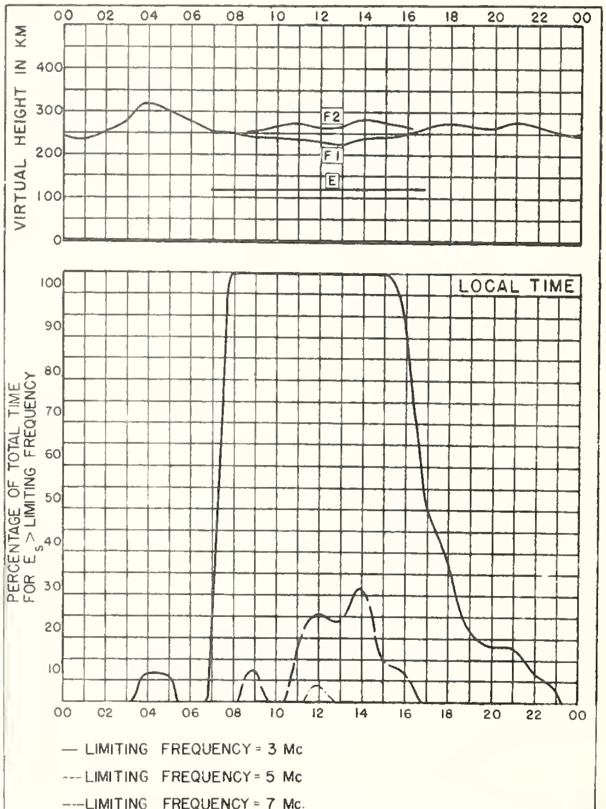


Fig. 32. TRINIDAD, BRIT WEST INDIES NOVEMBER 1947

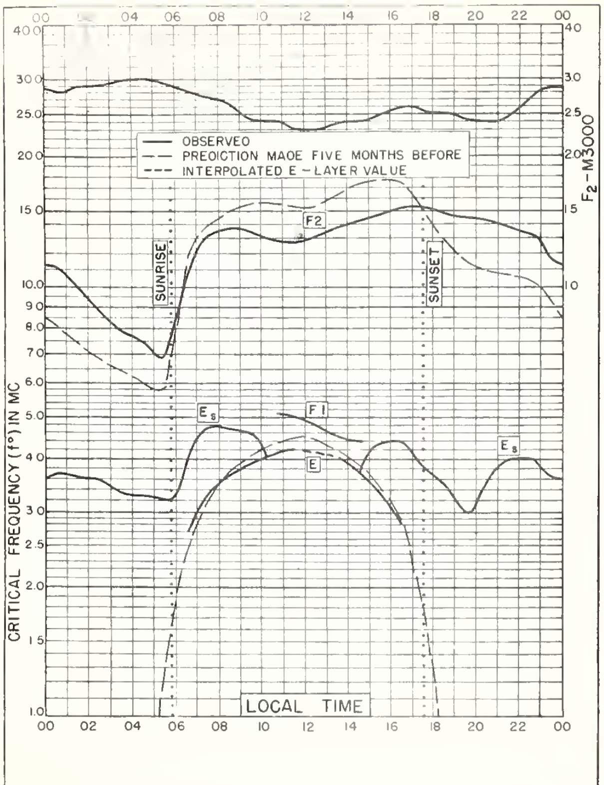


Fig 33. PALMYRA I.
5.9°N, 162.1°W NOVEMBER 1947

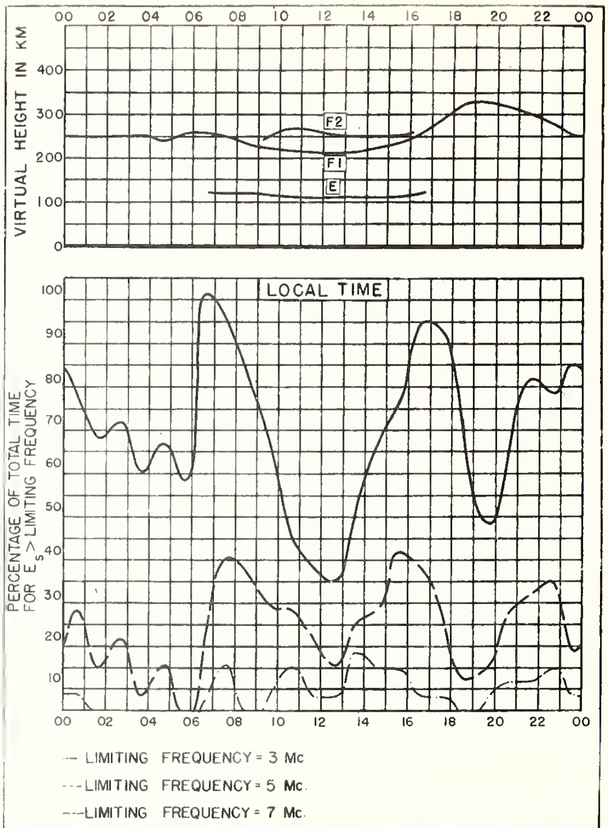


Fig. 34. PALMYRA I. NOVEMBER 1947

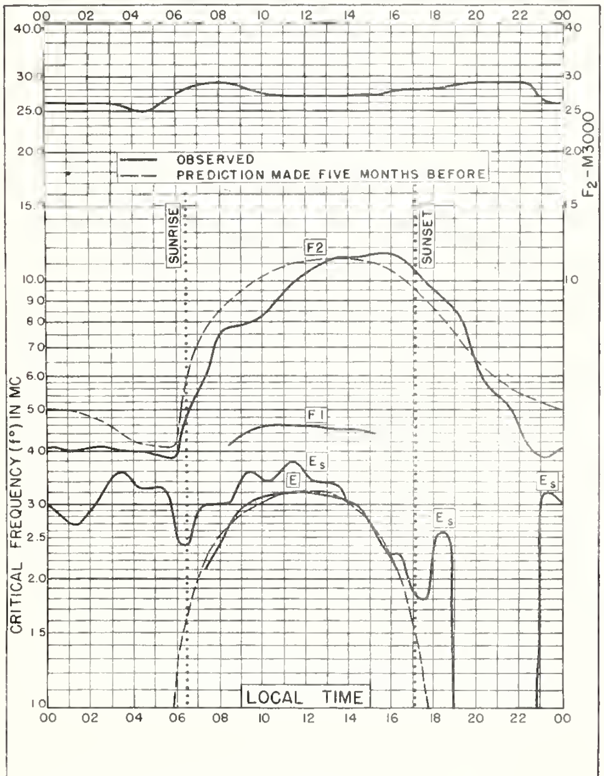


Fig. 35. PRINCE RUPERT, CANADA
54.3°N, 130.3°W OCTOBER 1947

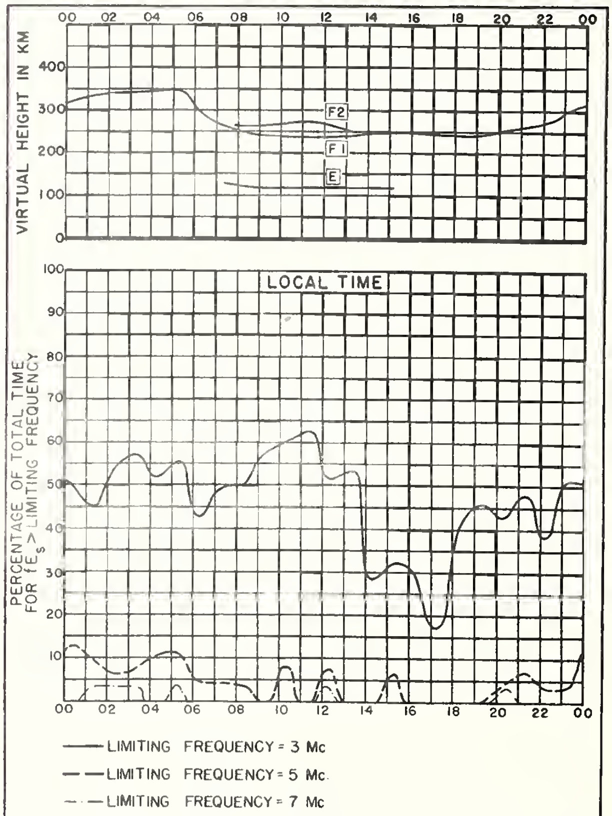


Fig 36. PRINCE RUPERT, CANADA OCTOBER 1947

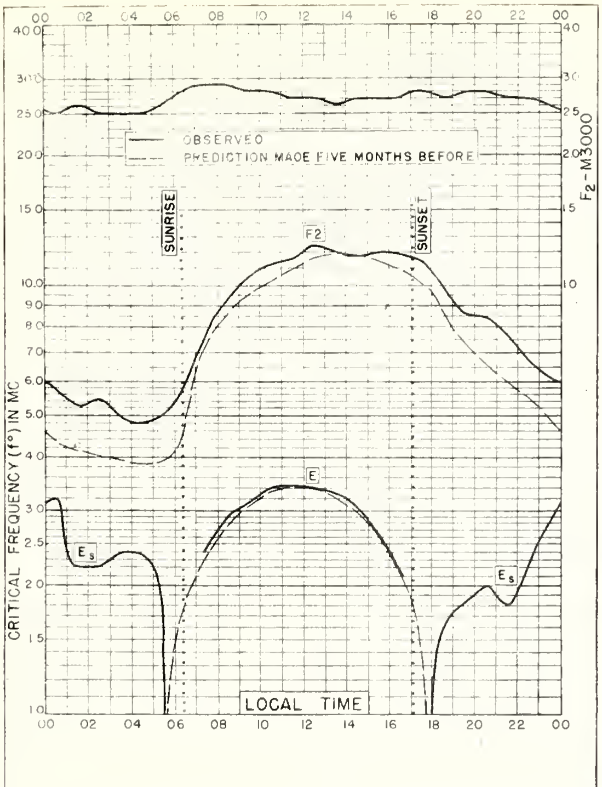


Fig. 37 PORTAGE la PRAIRIE, CANADA
49.9°N, 98.3°W OCTOBER 1947

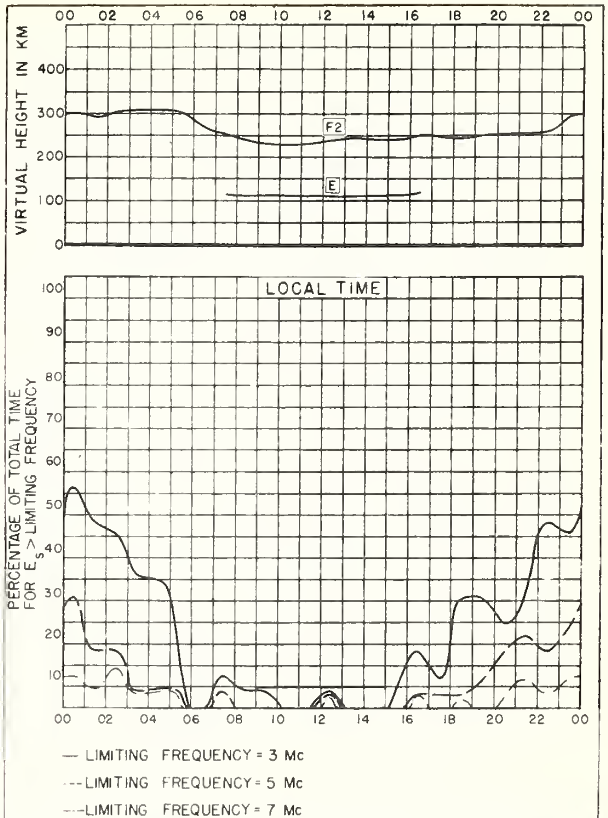


Fig. 38. PORTAGE la PRAIRIE, CANADA OCTOBER 1947

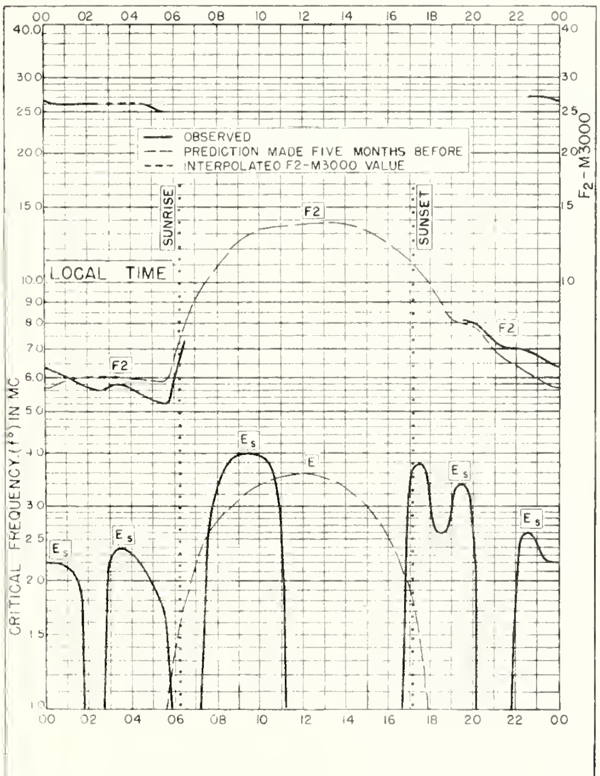


Fig 39 WAKKANAI, JAPAN
45.4°N, 141.7°E OCTOBER 1947

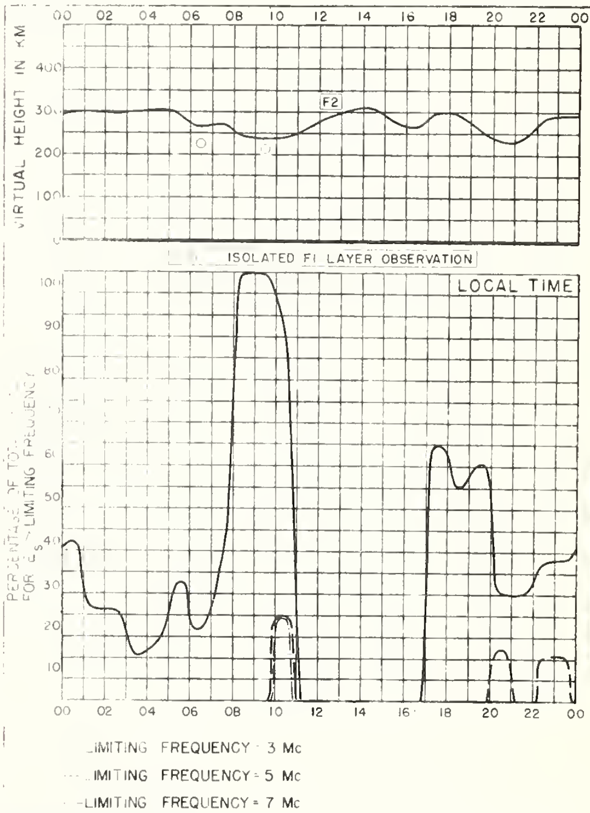


Fig 40 WAKKANAI, JAPAN OCTOBER 1947

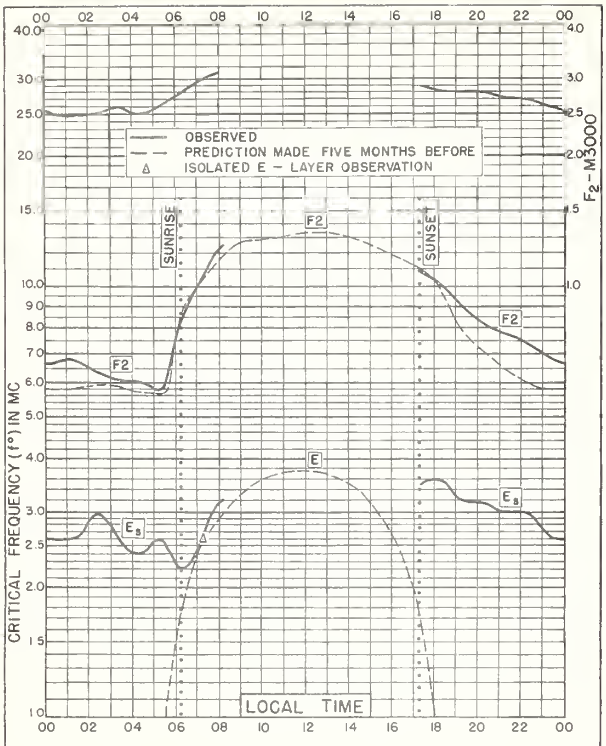
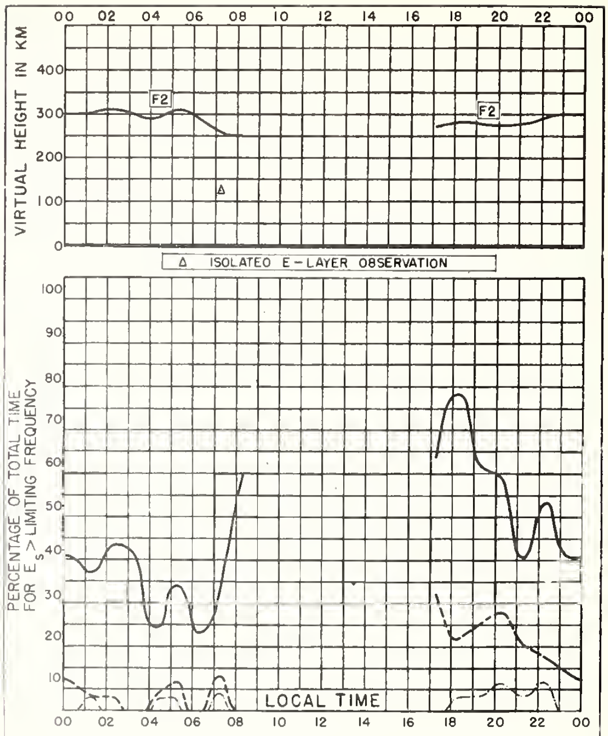


Fig 41. FUKAURA, JAPAN
40.6°N, 139.9°E OCTOBER 1947



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

Fig 42. FUKAURA, JAPAN OCTOBER 1947

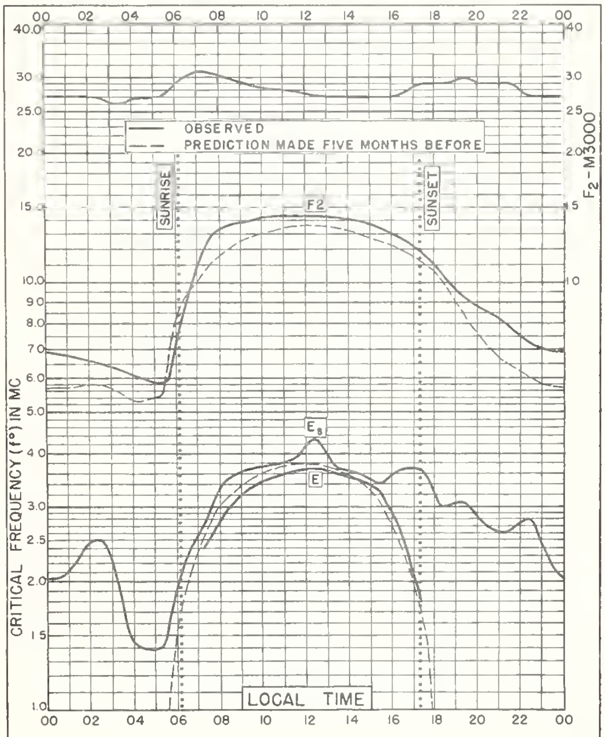
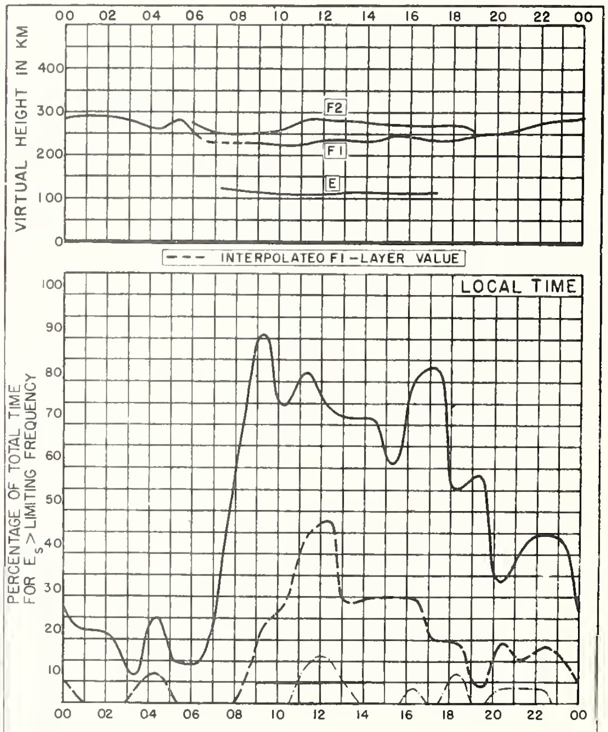


Fig.43. SHIBATA, JAPAN
37.9°N, 139.3°E OCTOBER 1947



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

Fig 44. SHIBATA, JAPAN OCTOBER 1947

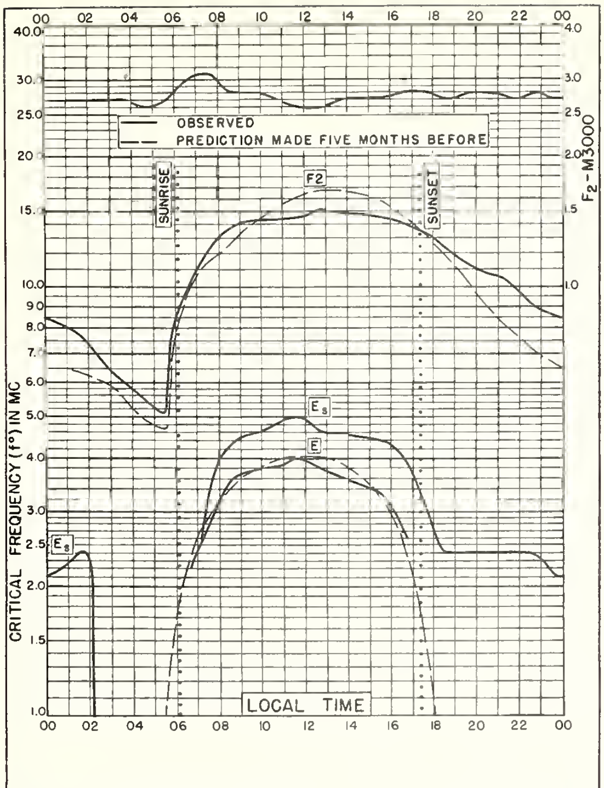


Fig. 45. YAMAKAWA, JAPAN
31.2°N, 130.6°E OCTOBER 1947

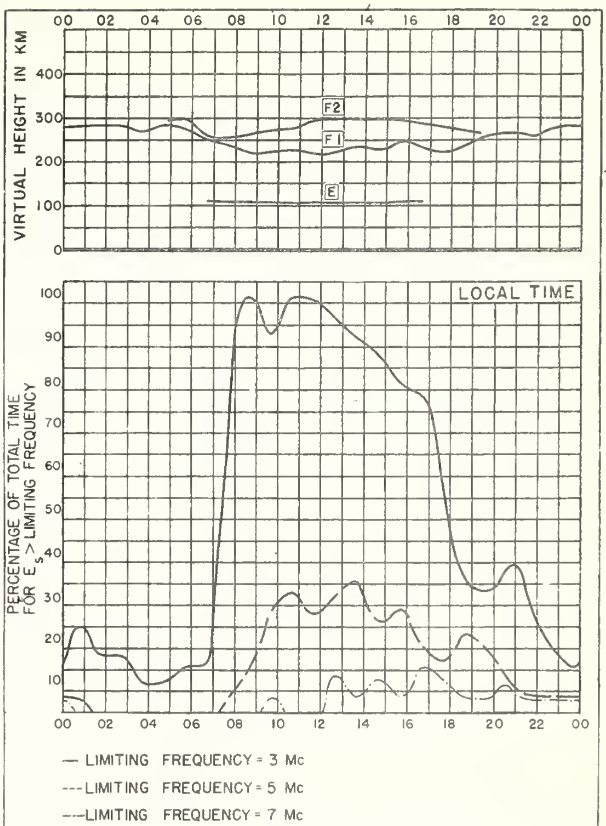


Fig. 46. YAMAKAWA, JAPAN OCTOBER 1947

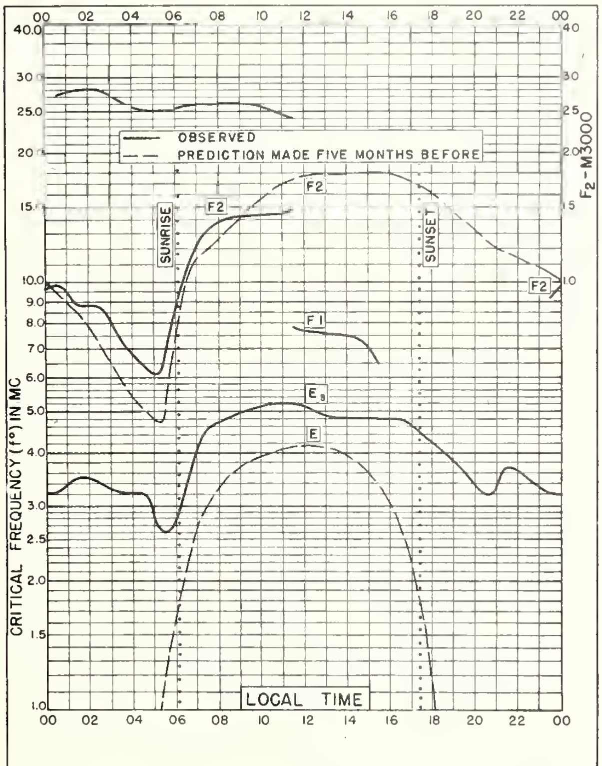


Fig. 47 OKINAWA I.
26.3°N, 127.7°E OCTOBER 1947

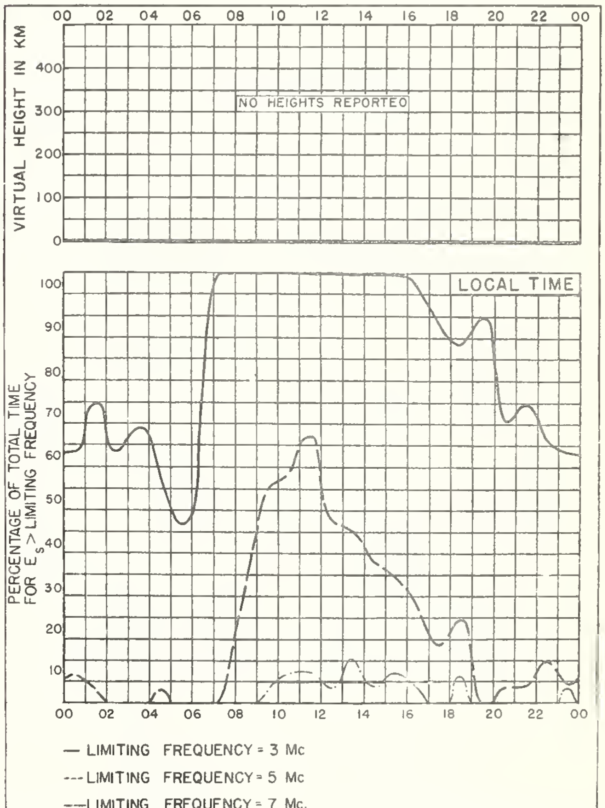


Fig. 48. OKINAWA I. OCTOBER 1947

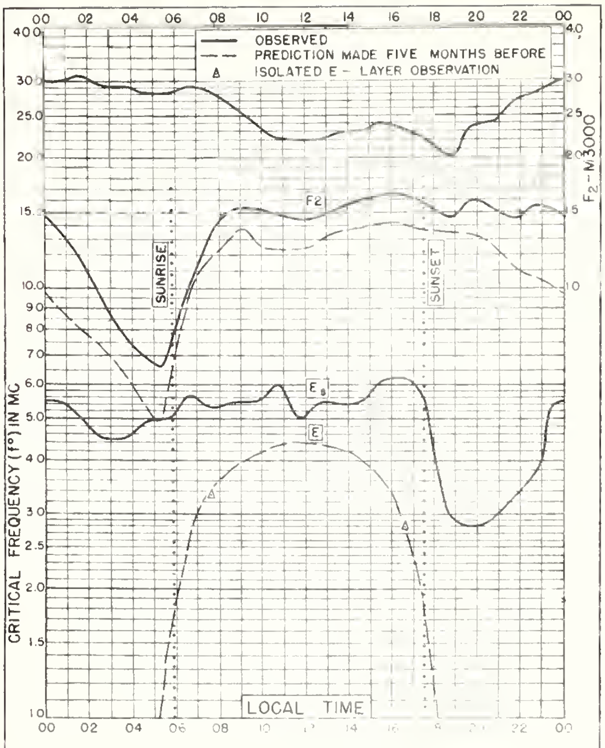


Fig 49 GUAM I
13.6°N, 144.9°E 1947

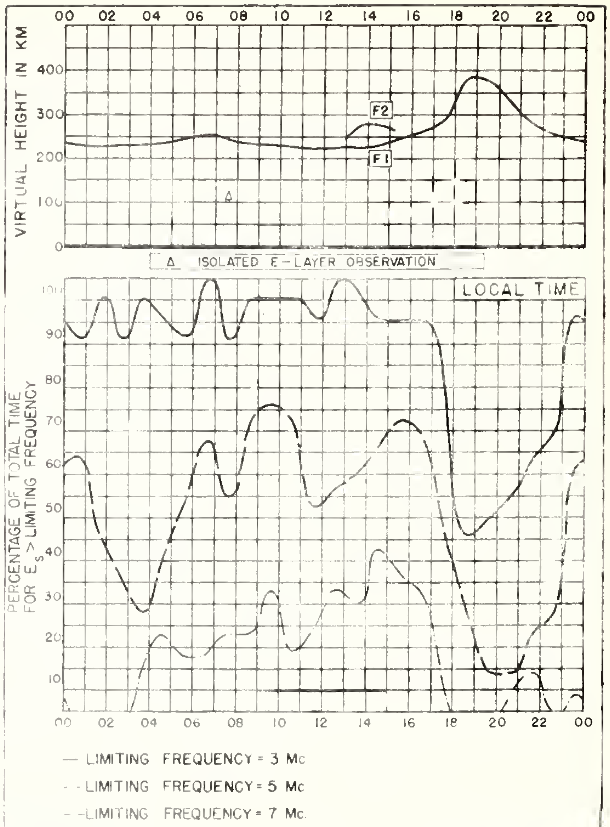


Fig 50 GUAM I OCTOBER 1947

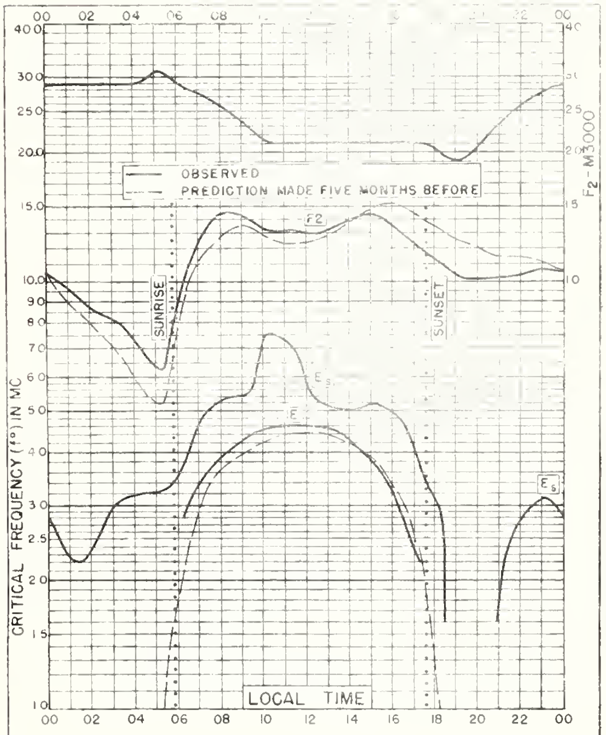


Fig 51 LEYTE, PHILIPPINE IS
11.0°N, 125.0°E OCTOBER 1947

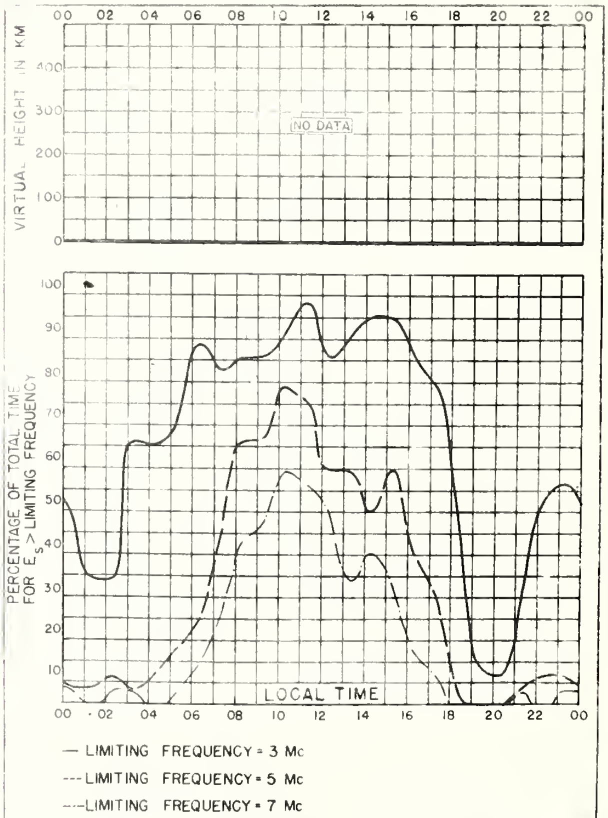


Fig 52. LEYTE, PHILIPPINE IS OCTOBER 1947

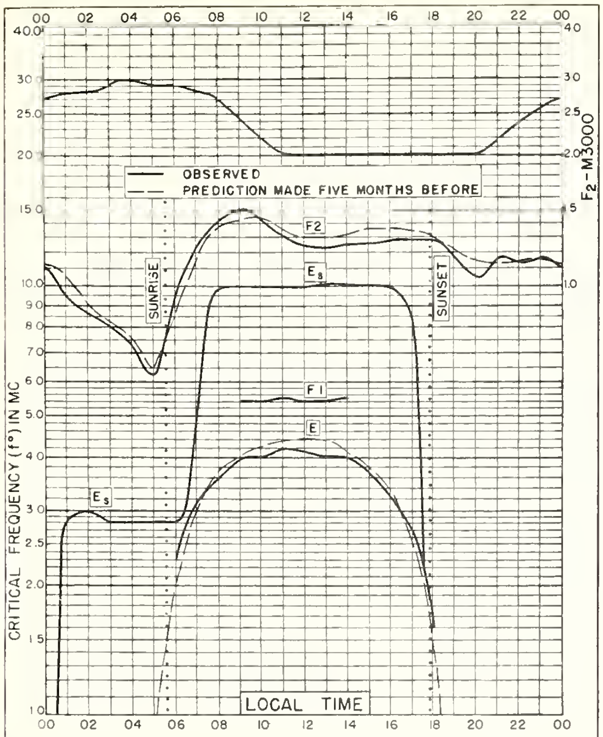


Fig 53. HUANCAYO, PERU
12.0°S, 75.3°W OCTOBER 1947

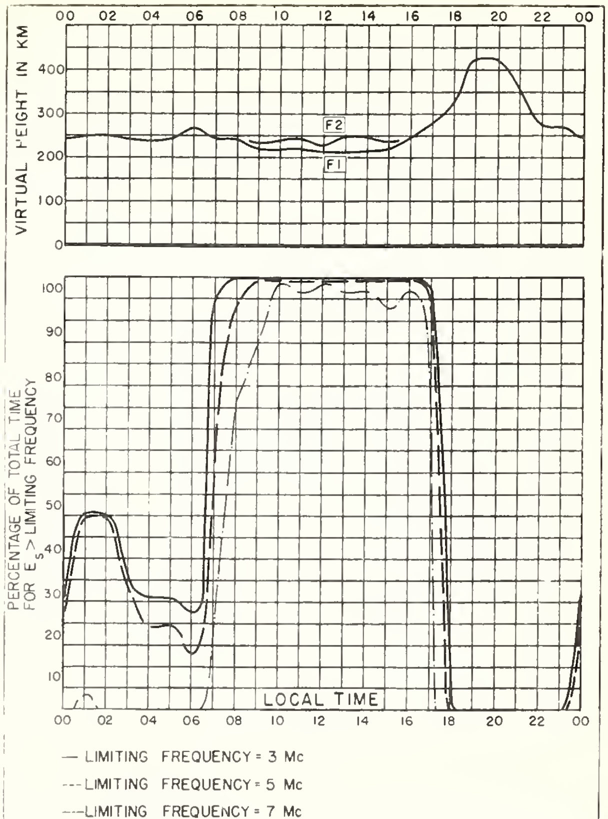


Fig 54. HUANCAYO, PERU OCTOBER 1947

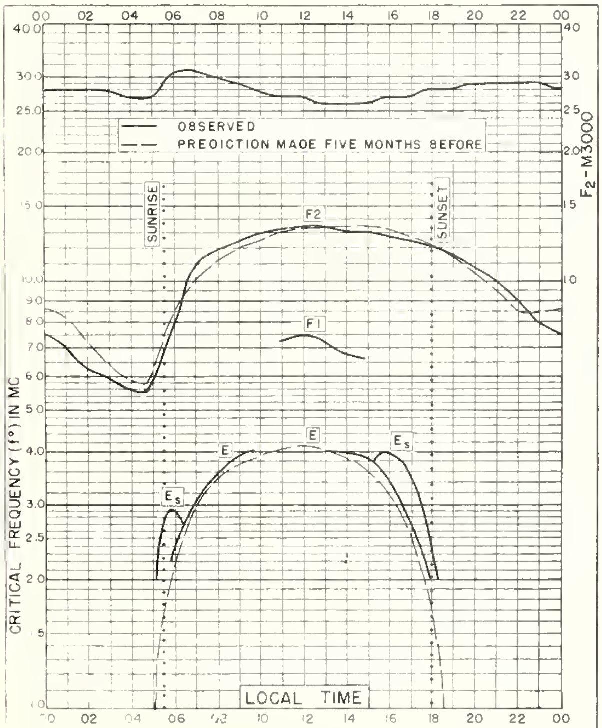


Fig 55. JOHANNESBURG, U. OF S. AFRICA
26.2°S, 28.0°E OCTOBER 1947

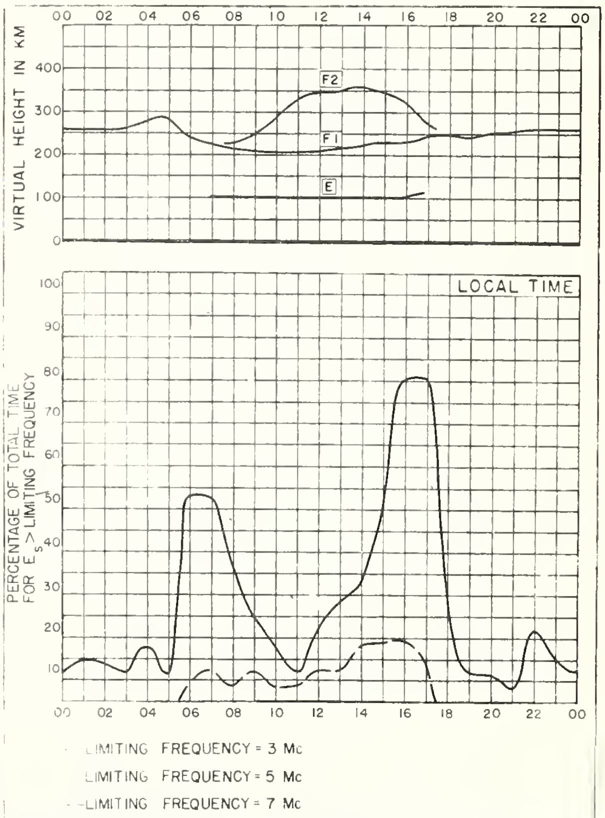


Fig. 56. JOHANNESBURG, U. OF S. AFRICA OCTOBER 1947

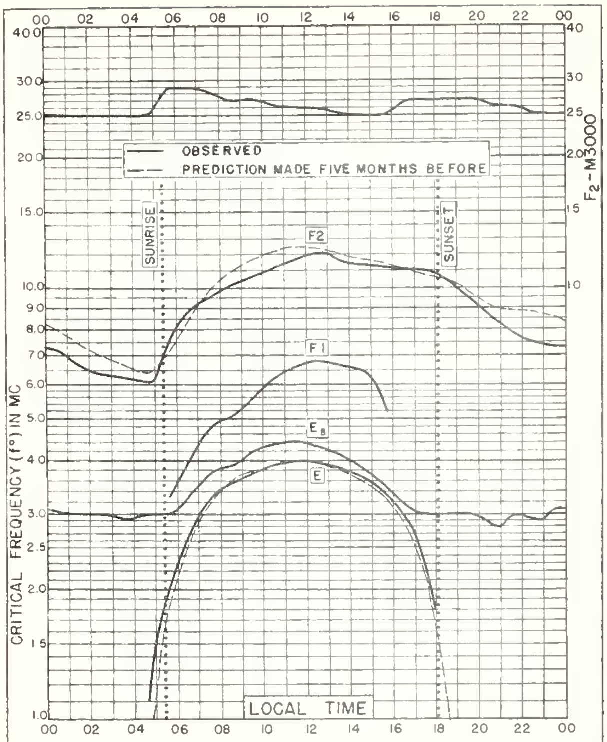


Fig 57 WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E OCTOBER 1947

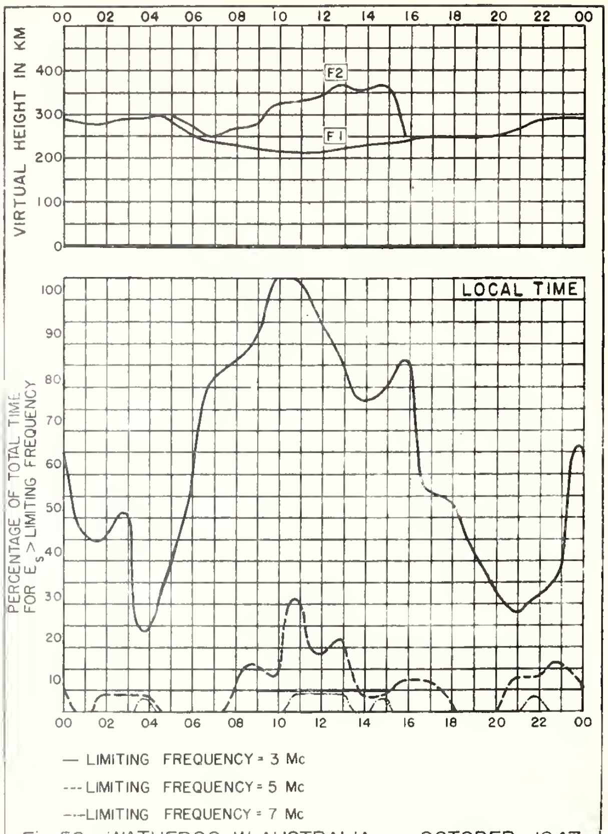


Fig. 58 WATHEROO, W. AUSTRALIA OCTOBER 1947

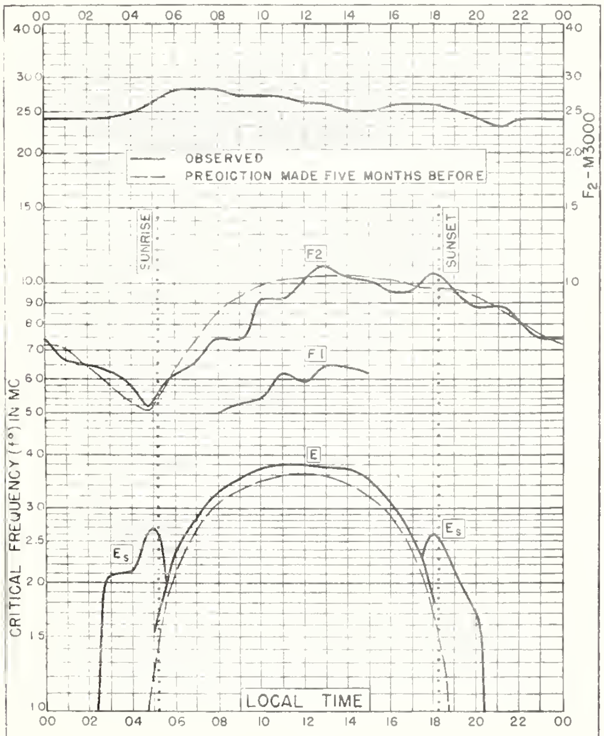


Fig 59 CHRISTCHURCH, N. Z.
43.5°S, 172.7°E OCTOBER 1947

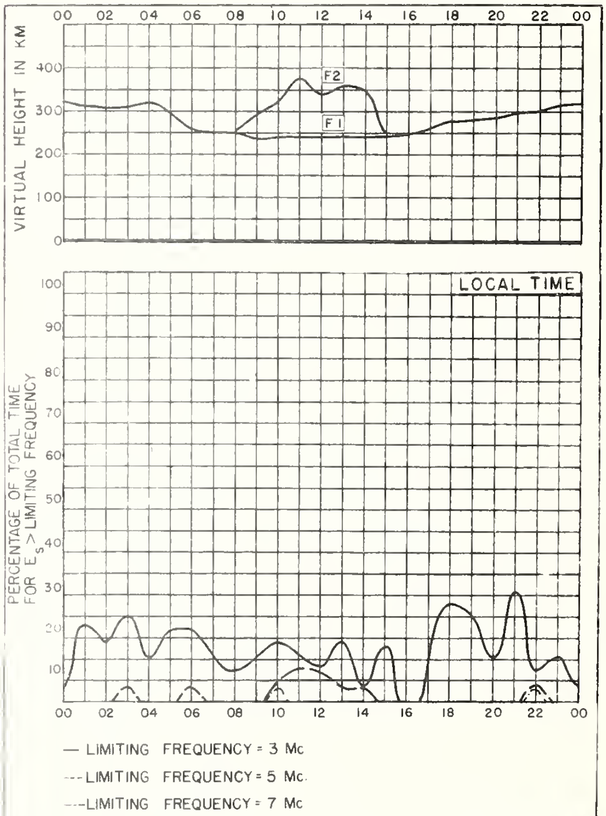


Fig. 60 CHRISTCHURCH, N Z. OCTOBER 1947

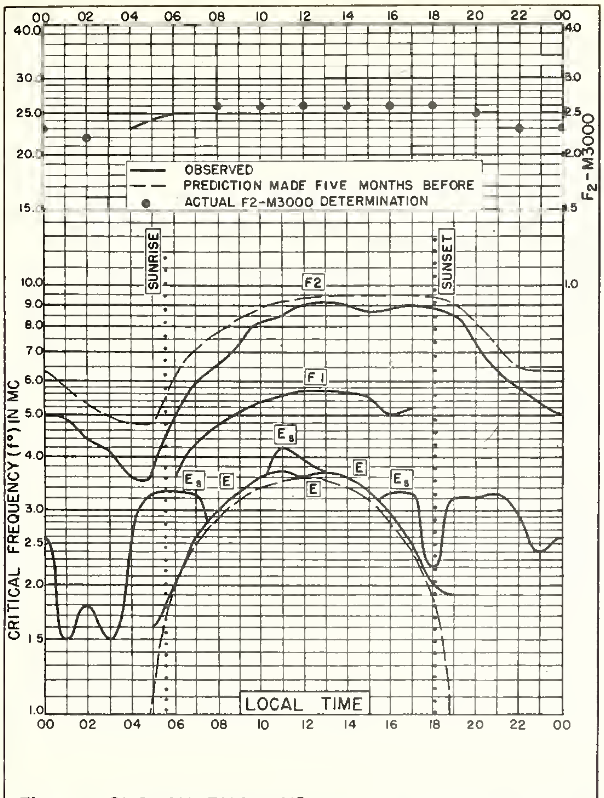


Fig. 61. SLOUGH, ENGLAND
51.5°N, 0.6°W SEPTEMBER 1947

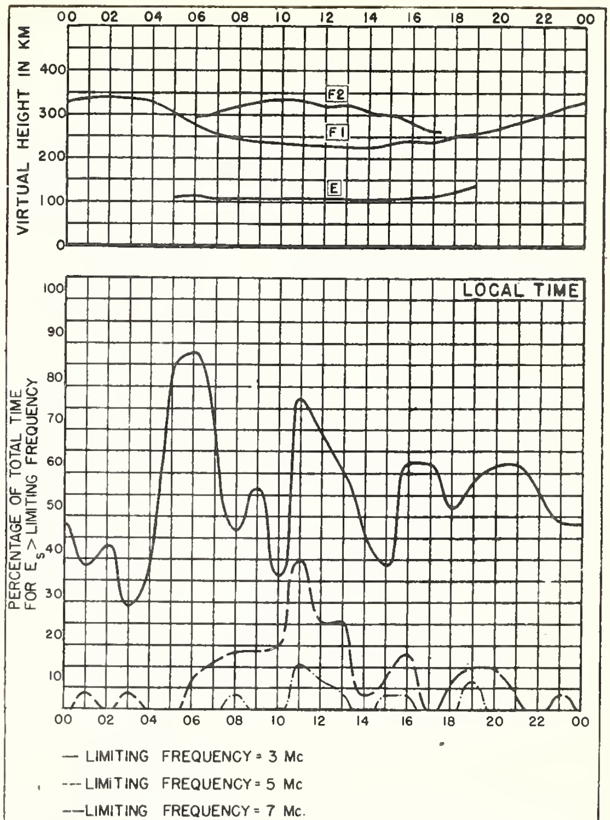


Fig. 62. SLOUGH, ENGLAND SEPTEMBER 1947

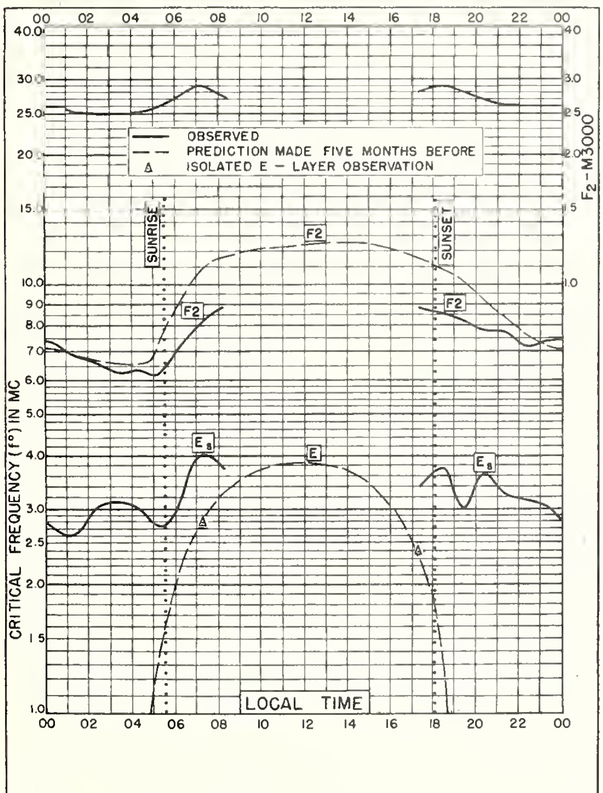


Fig 63. FUKAURA, JAPAN
40.6°N, 139.9°E SEPTEMBER 1947

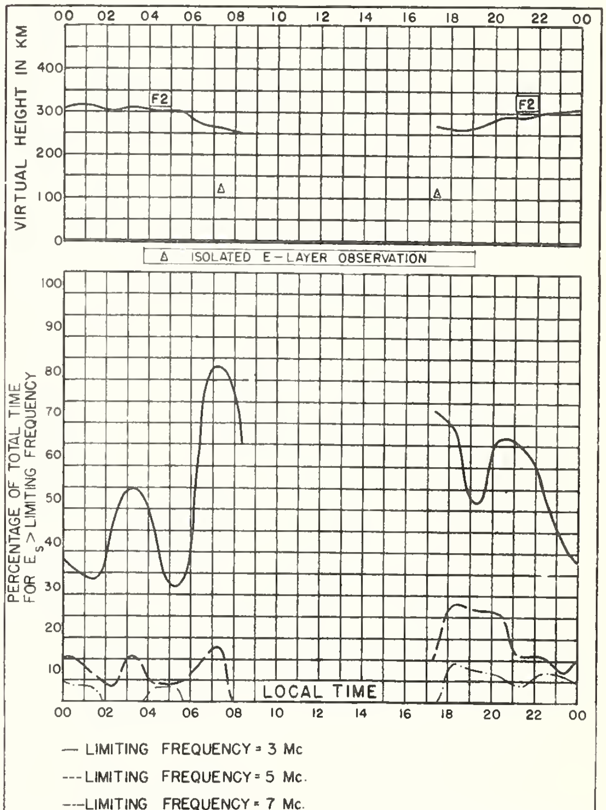


Fig. 64. FUKAURA, JAPAN SEPTEMBER 1947

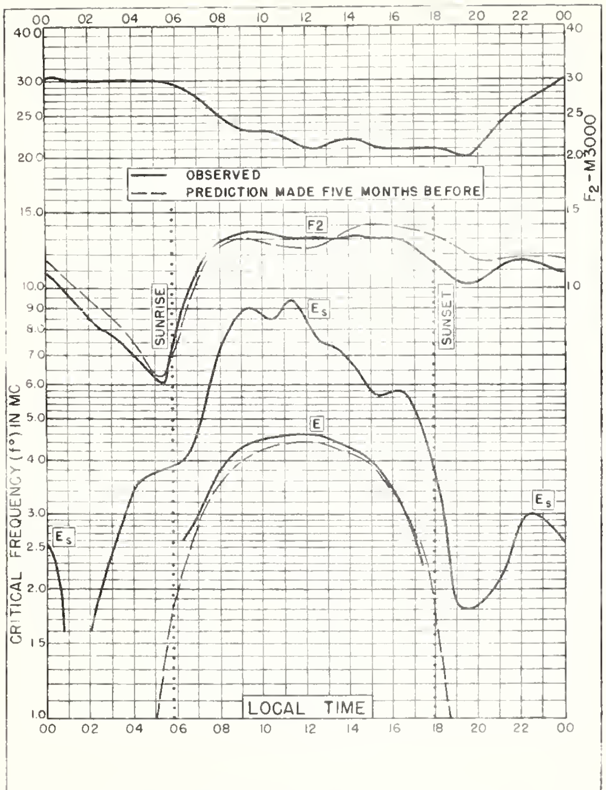


Fig. 65. LEYTE, PHILIPPINE IS.
11.0°N, 125.0°E SEPTEMBER 1947

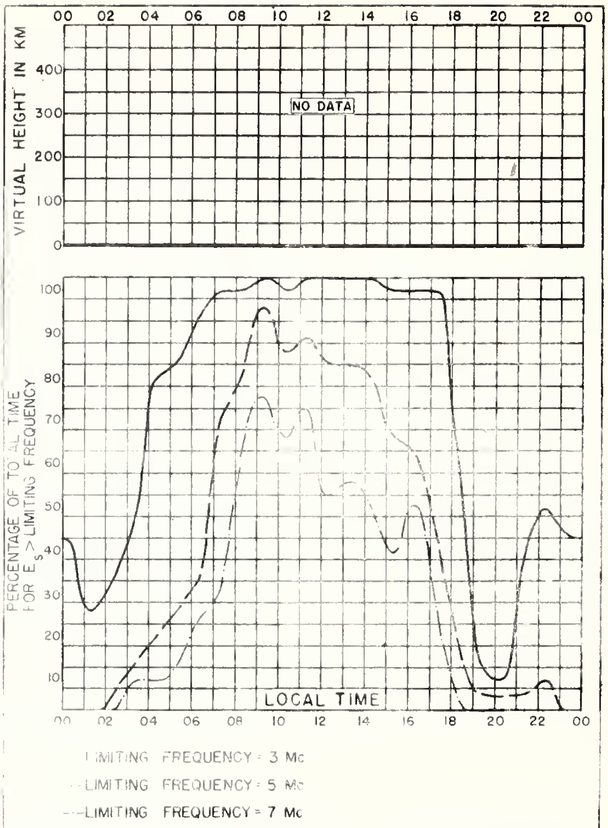


Fig. 66. LEYTE, PHILIPPINE IS. SEPTEMBER 1947

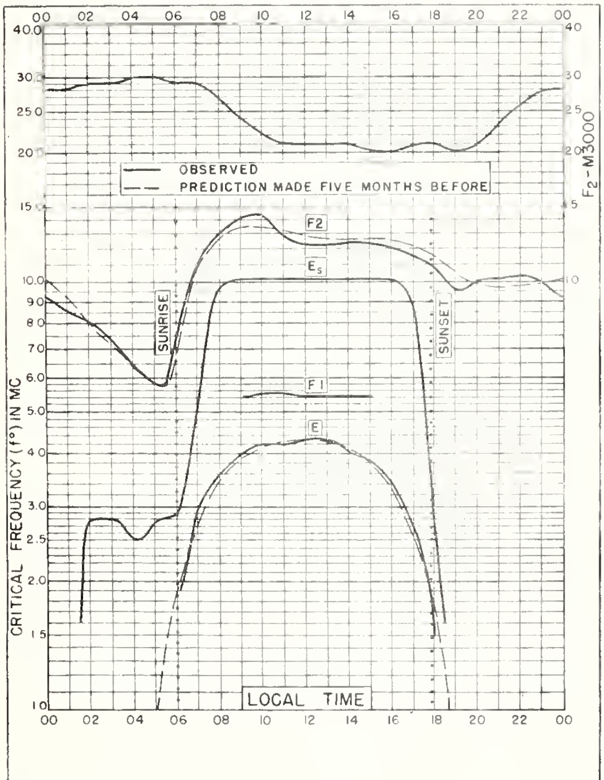


Fig. 67. HUANCAYO, PERU
12.0°S, 75.3°W SEPTEMBER 1947

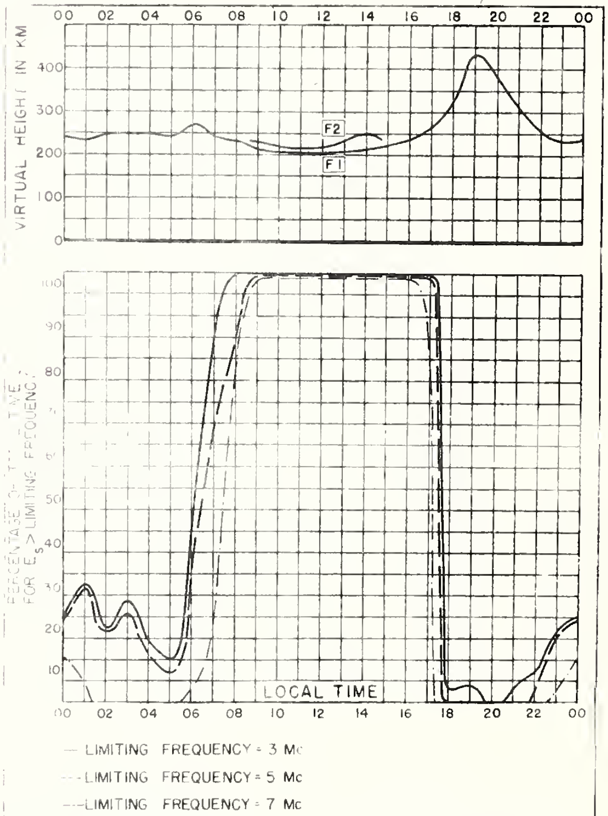


Fig. 68. HUANCAYO, PERU SEPTEMBER 1947

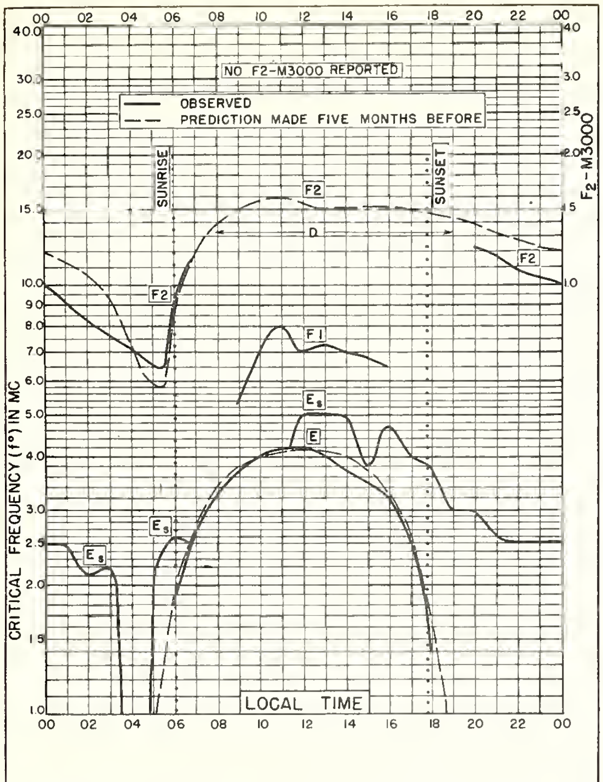


Fig. 69. FIJI IS.
18.0°S, 178.2°E SEPTEMBER 1947

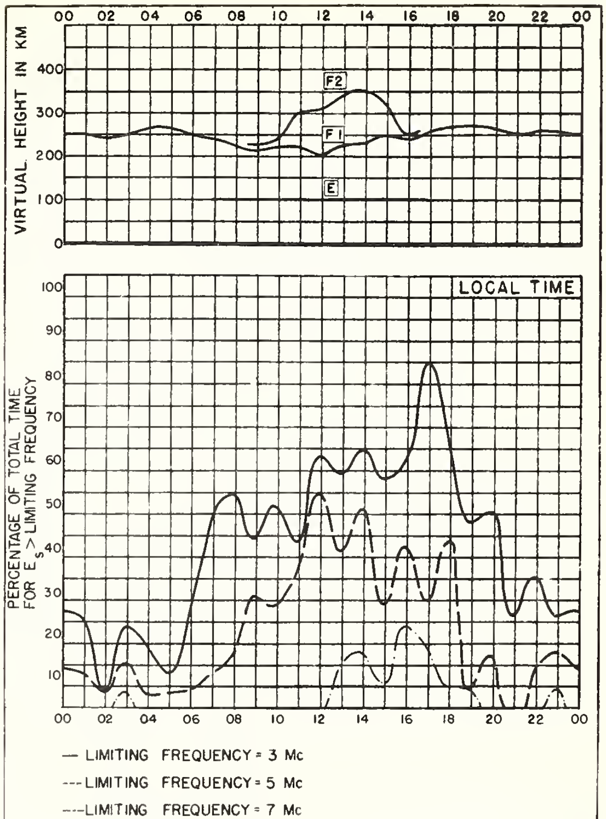


Fig. 70. FIJI IS. SEPTEMBER 1947

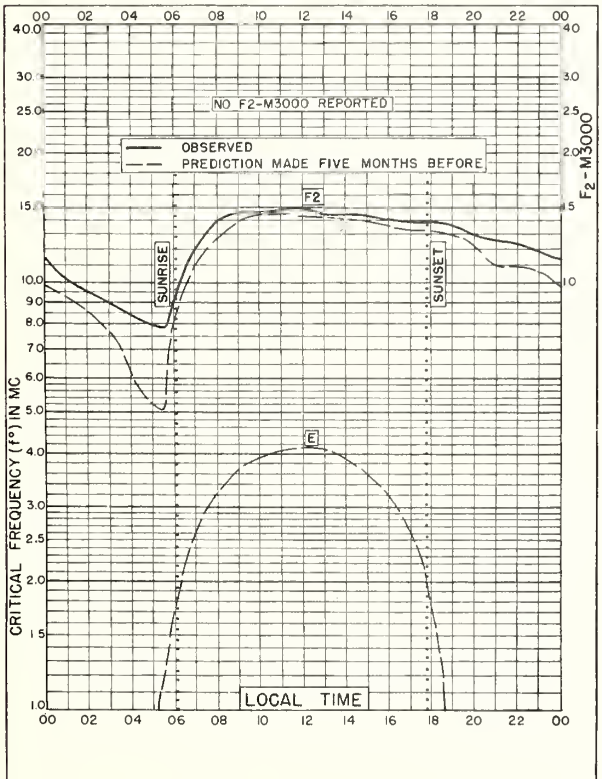


Fig. 71. RAROTONGA I.
21.3°S, 159.8°W SEPTEMBER 1947

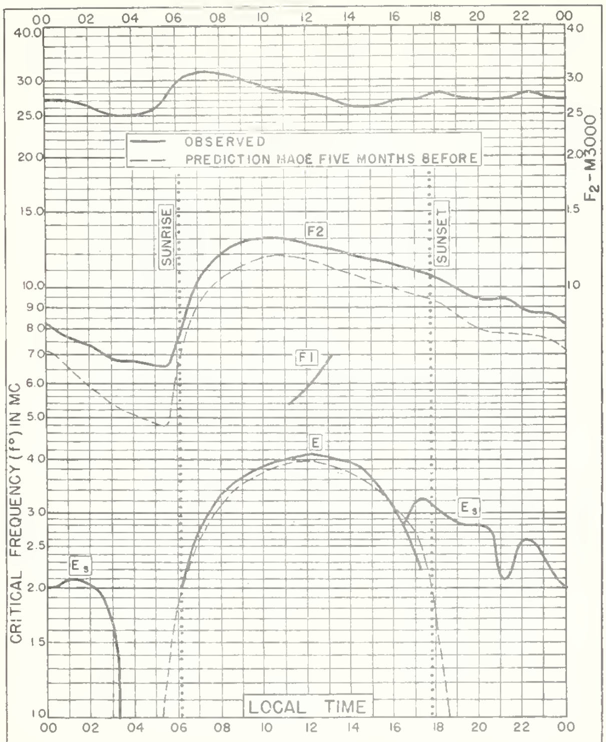


Fig. 72 BRISBANE, AUSTRALIA
27.5°S, 153.0°E SEPTEMBER 1947

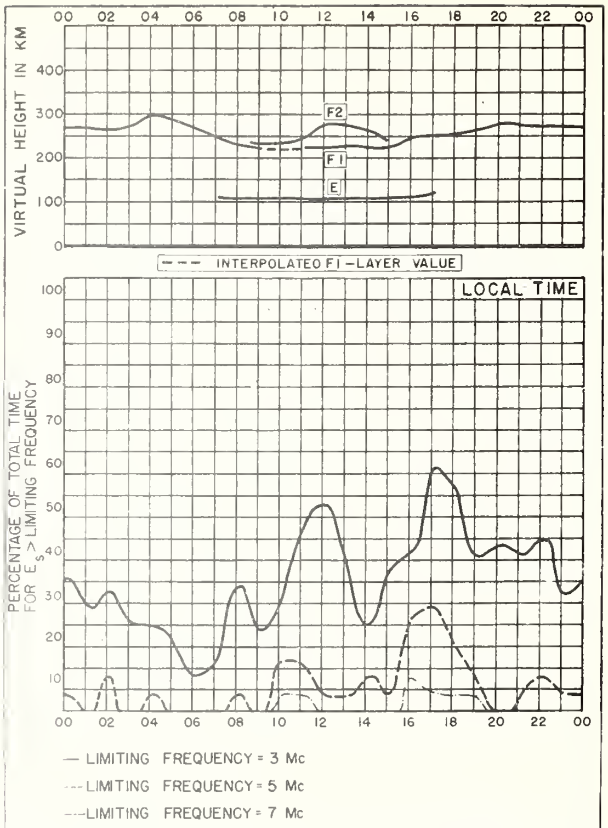


Fig. 73. BRISBANE, AUSTRALIA SEPTEMBER 1947

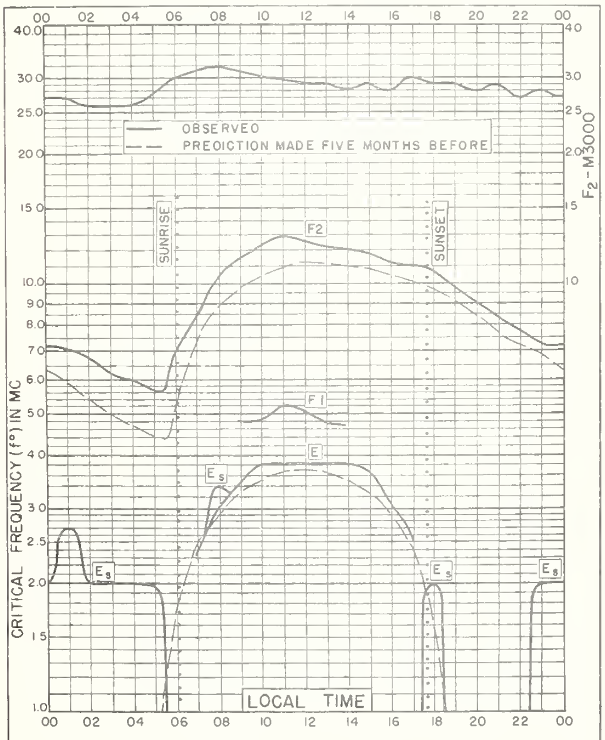


Fig 74. CANBERRA, AUSTRALIA
35.3°S, 149.0°E SEPTEMBER 1947

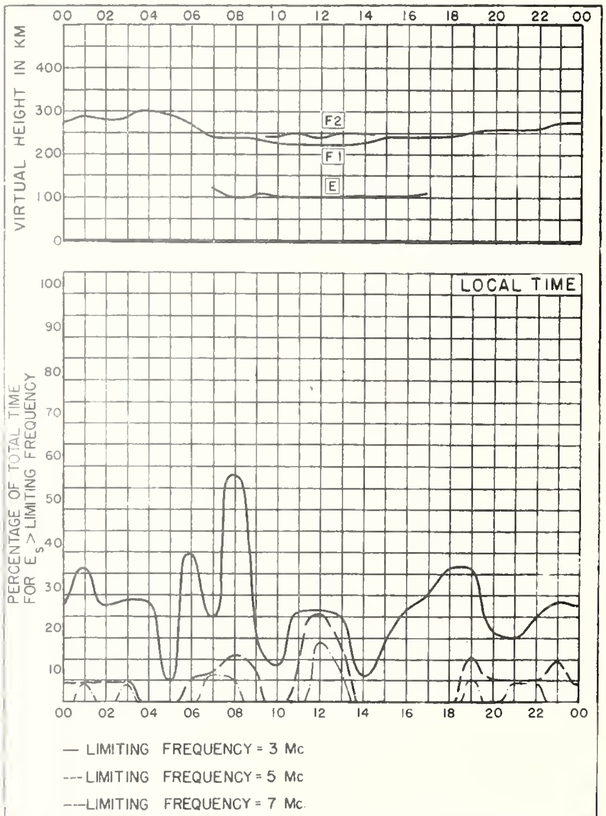


Fig. 75. CANBERRA, AUSTRALIA SEPTEMBER 1947

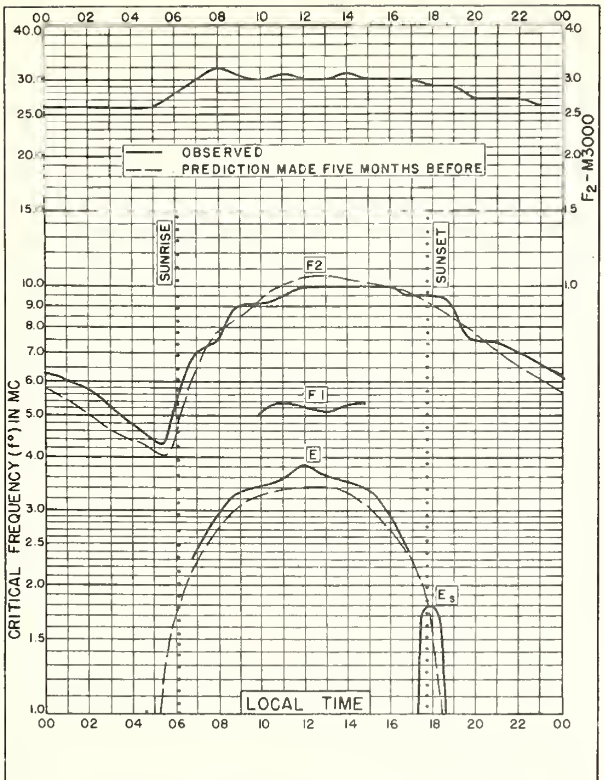


Fig 76. HOBART, TASMANIA
42.8°S, 147.4°E SEPTEMBER 1947

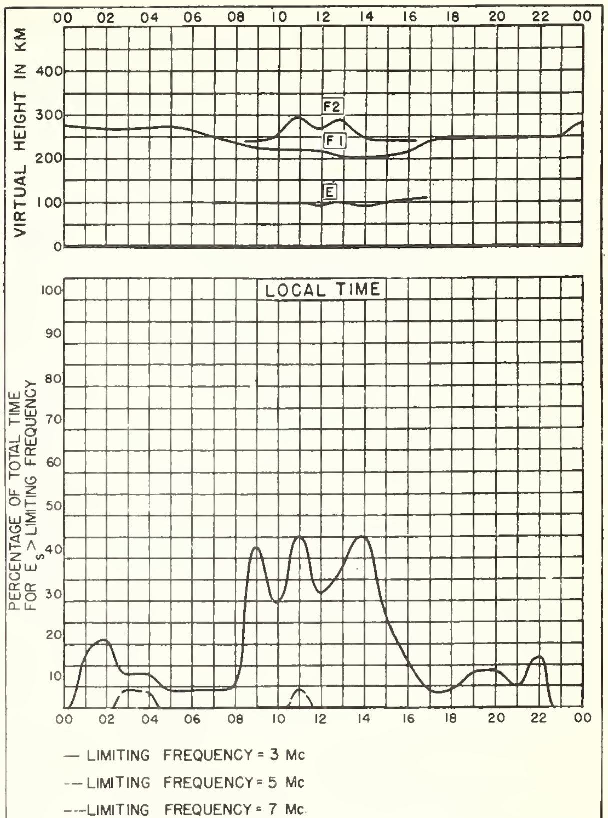


Fig 77. HOBART, TASMANIA SEPTEMBER 1947

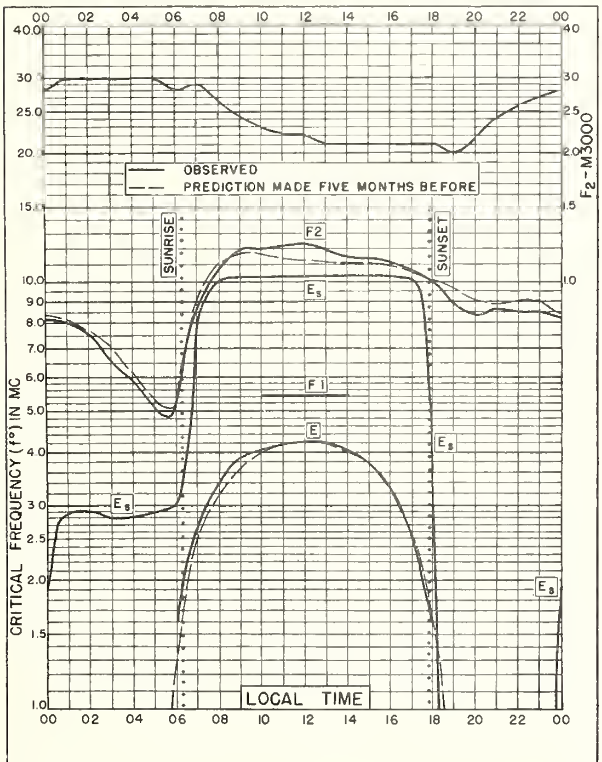


Fig. 78. HUANCAYO, PERU
12.0°S, 75.3°W AUGUST 1947

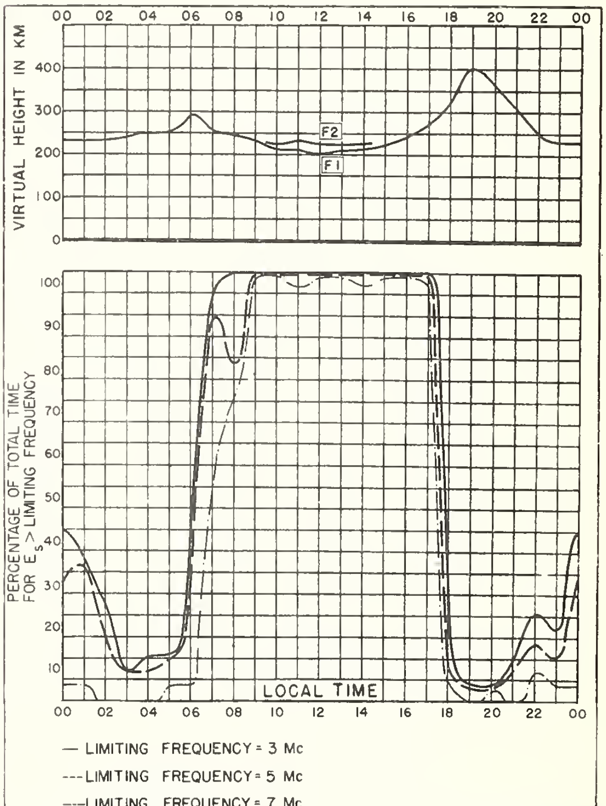


Fig. 79. HUANCAYO, PERU AUGUST 1947

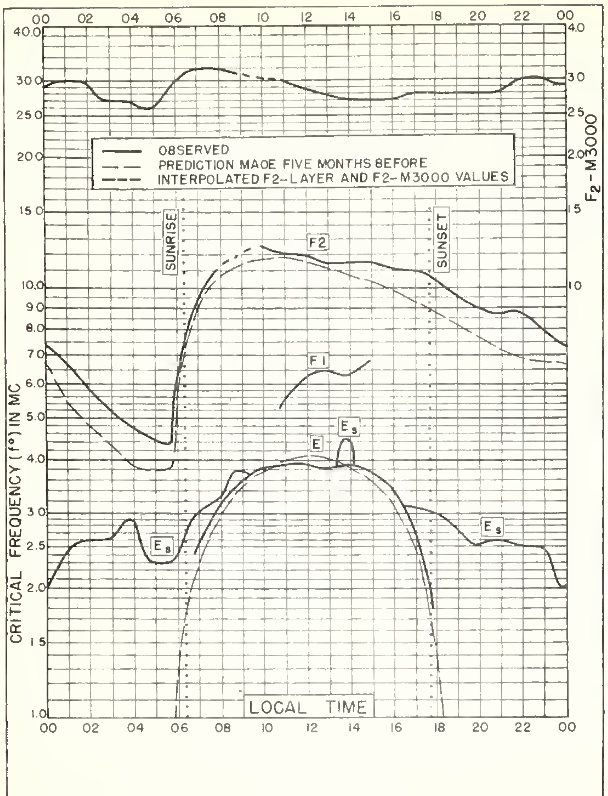


Fig 80. TOWNSVILLE, AUSTRALIA
19.4°S, 146.5°E AUGUST 1947

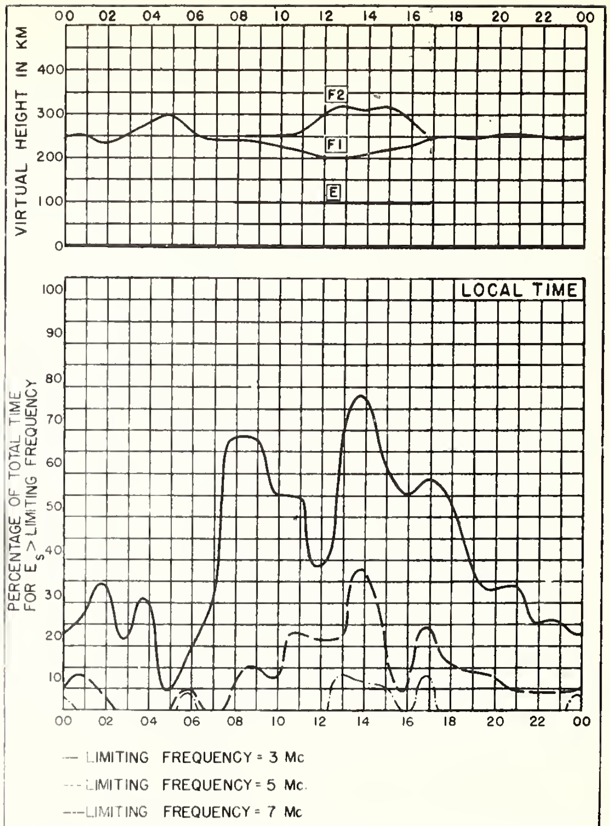


Fig 81 TOWNSVILLE, AUSTRALIA AUGUST 1947

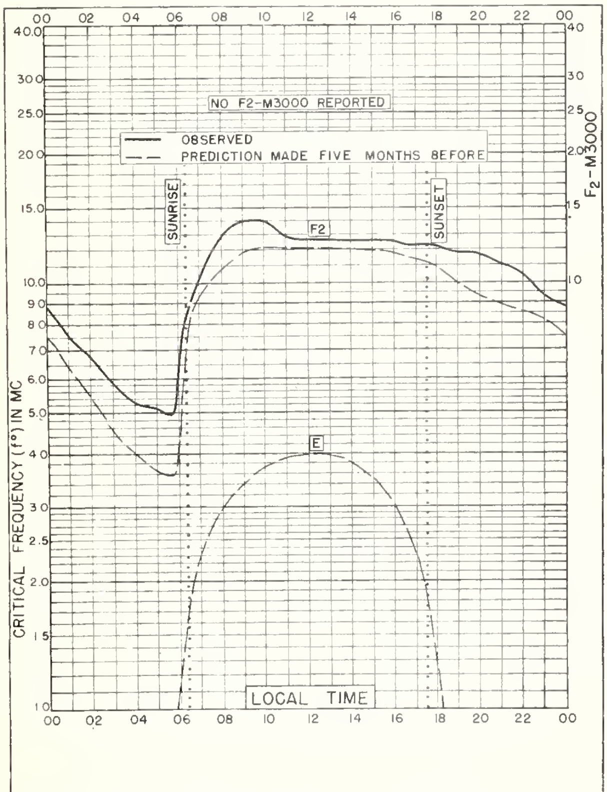


Fig. 82. RAROTONGA I.
21.3°S, 159.8°W AUGUST 1947

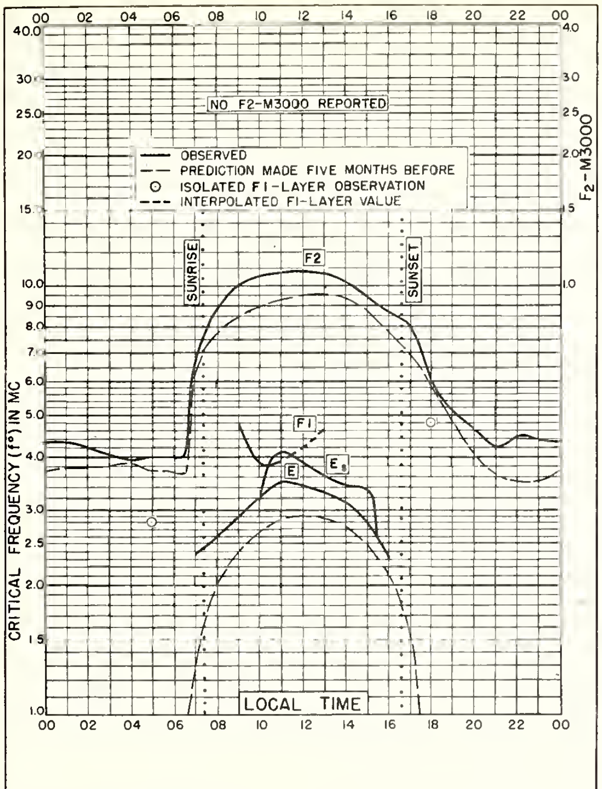


Fig. 83. FALKLAND IS.
51.7°S, 57.7°W AUGUST 1947

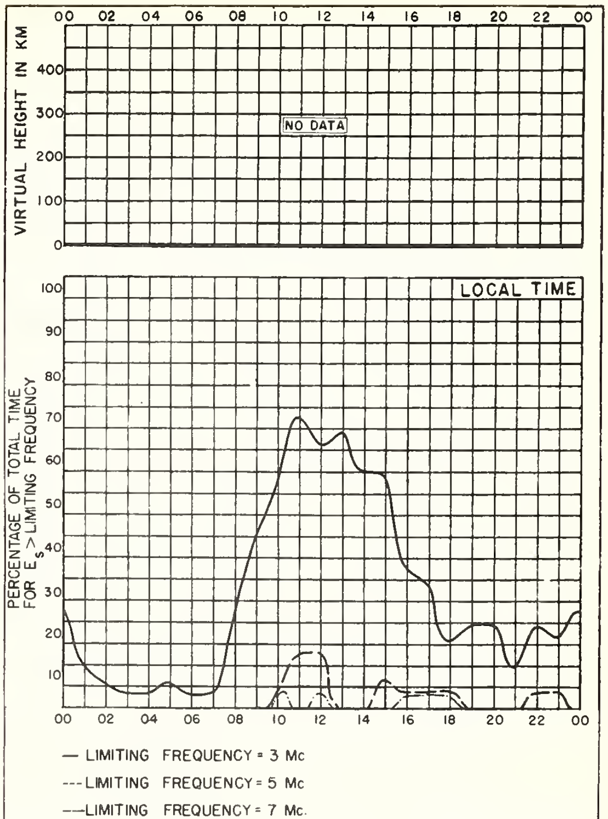


Fig. 84. FALKLAND IS AUGUST 1947

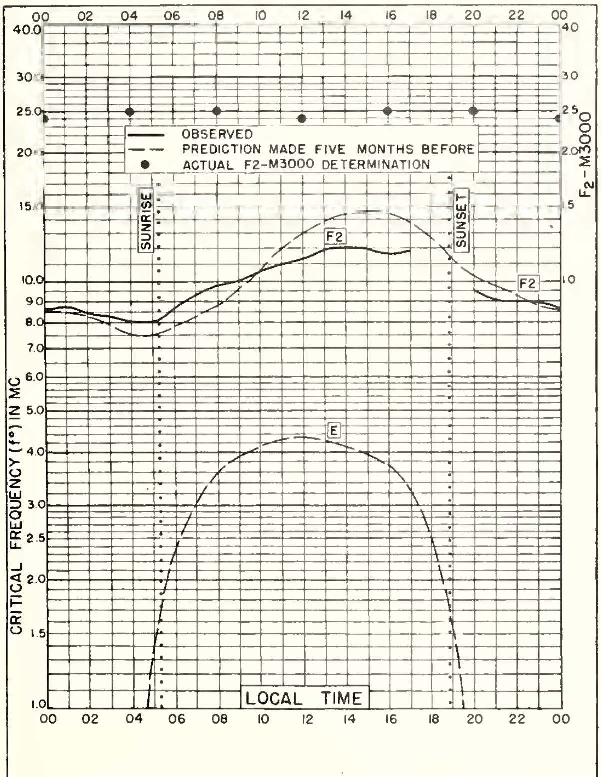


Fig. 85. DELHI, INDIA
28.6°N, 77.1°E JULY 1947

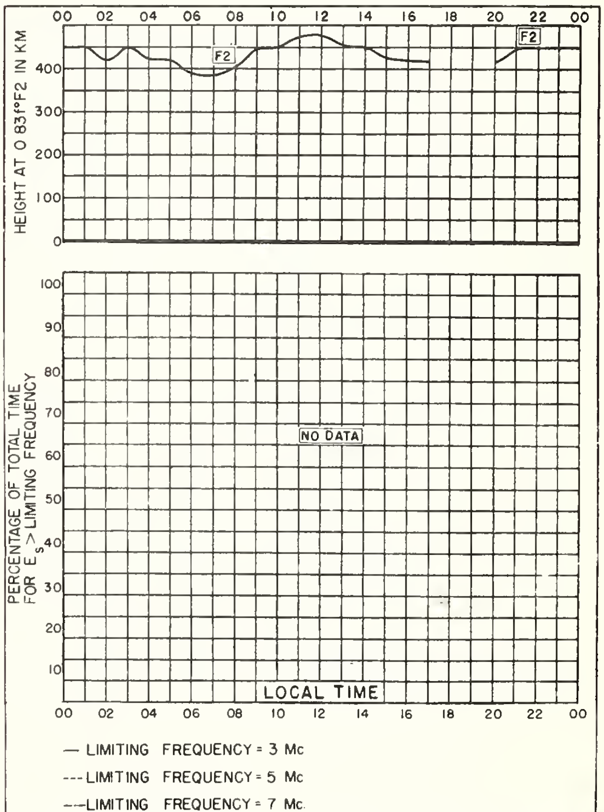


Fig. 86. DELHI, INDIA JULY 1947

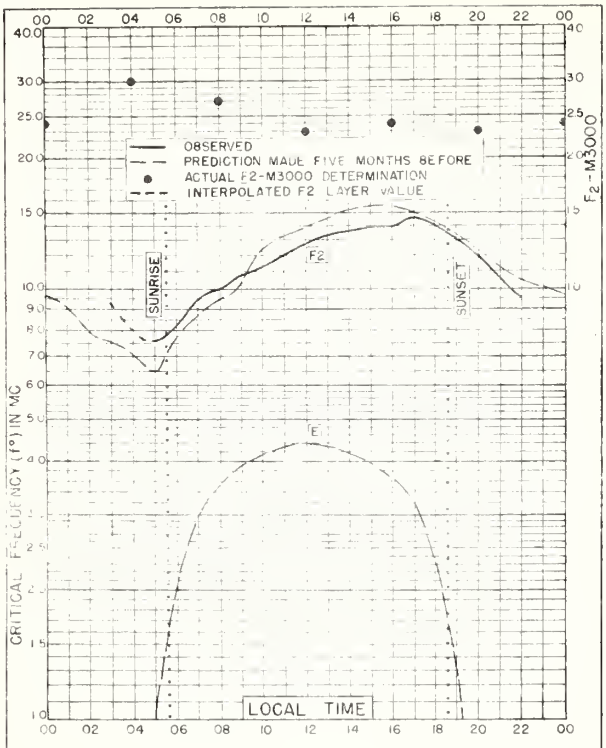


Fig 87. BOMBAY, INDIA
19.0°N, 73.0°E JULY 1947

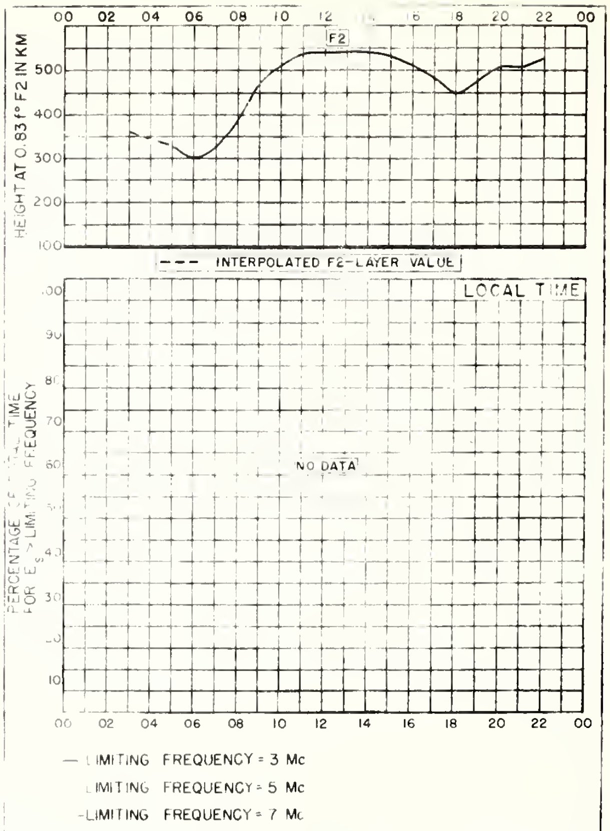
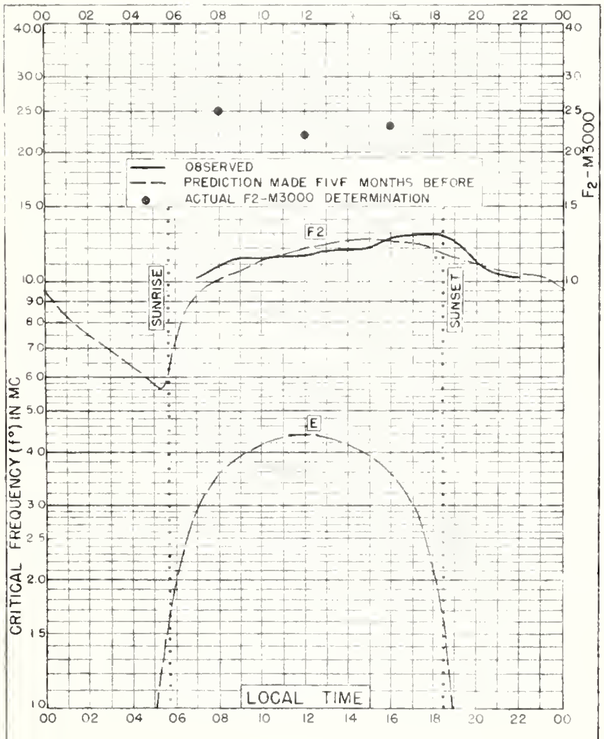


Fig 88. BOMBAY, INDIA JULY 1947



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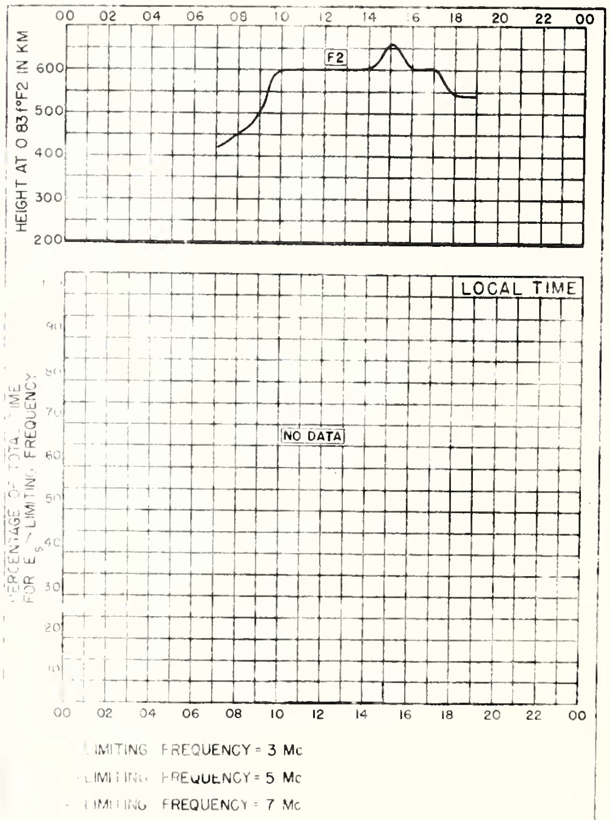

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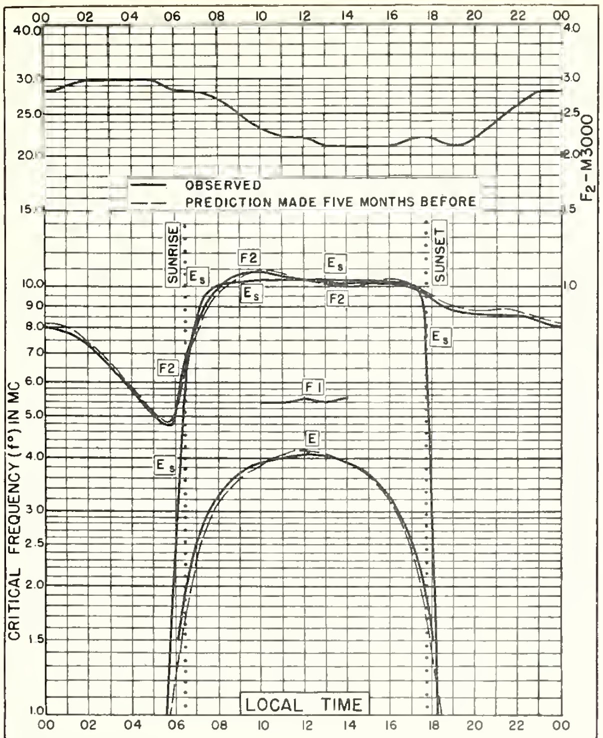

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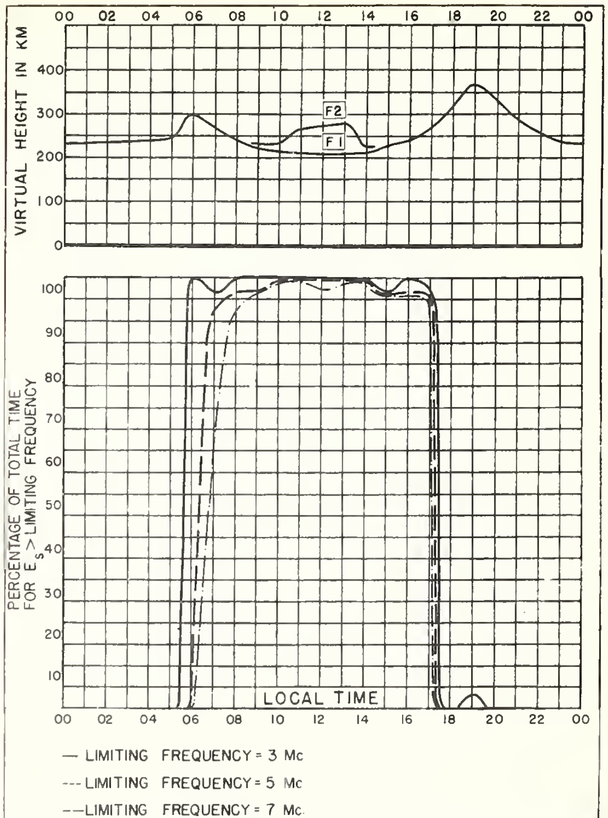

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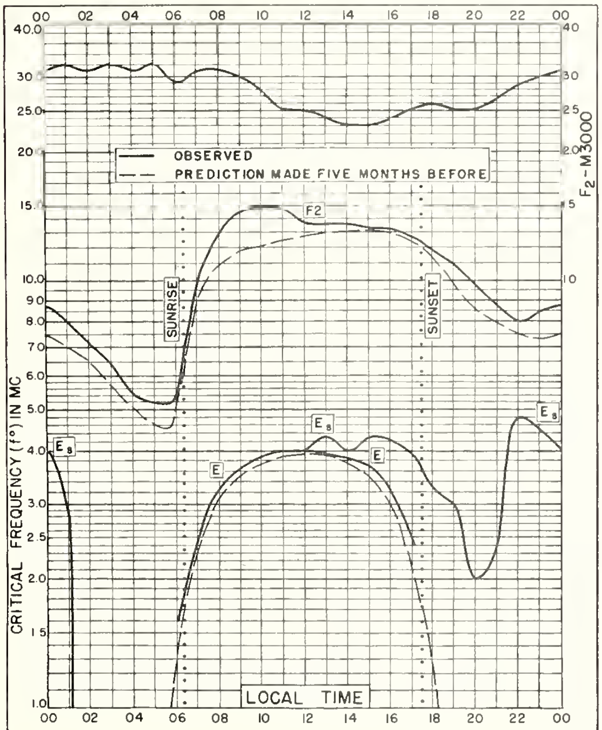

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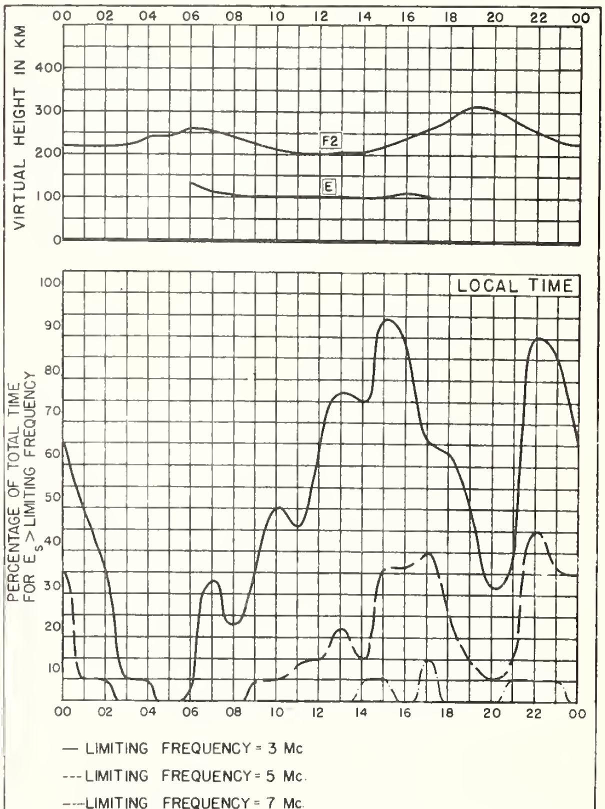

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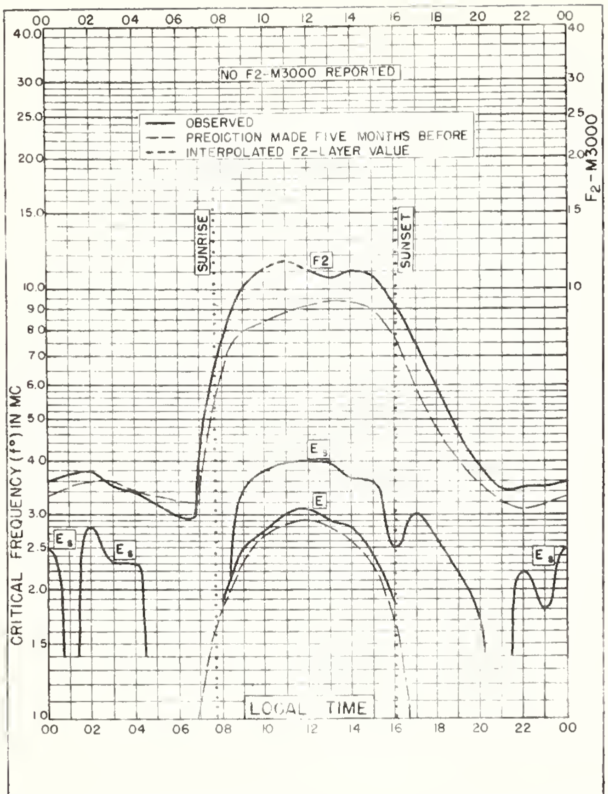

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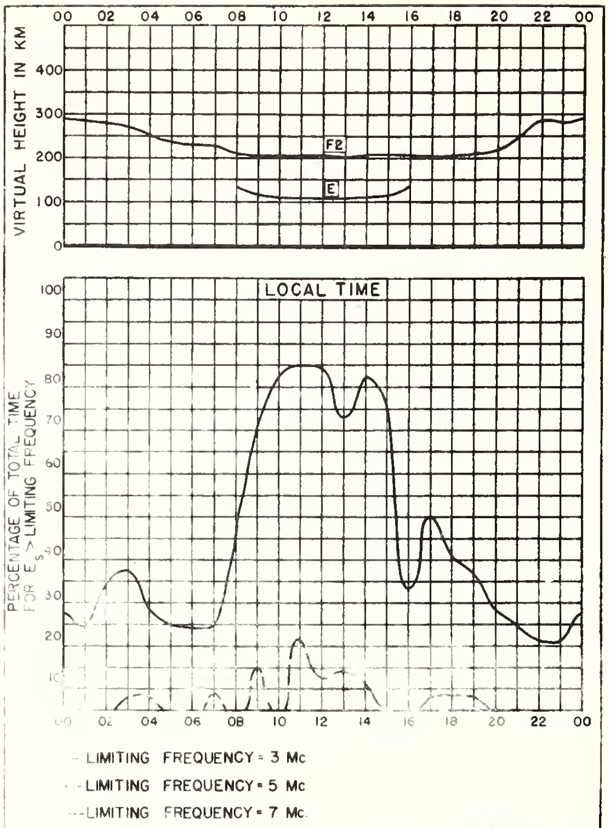

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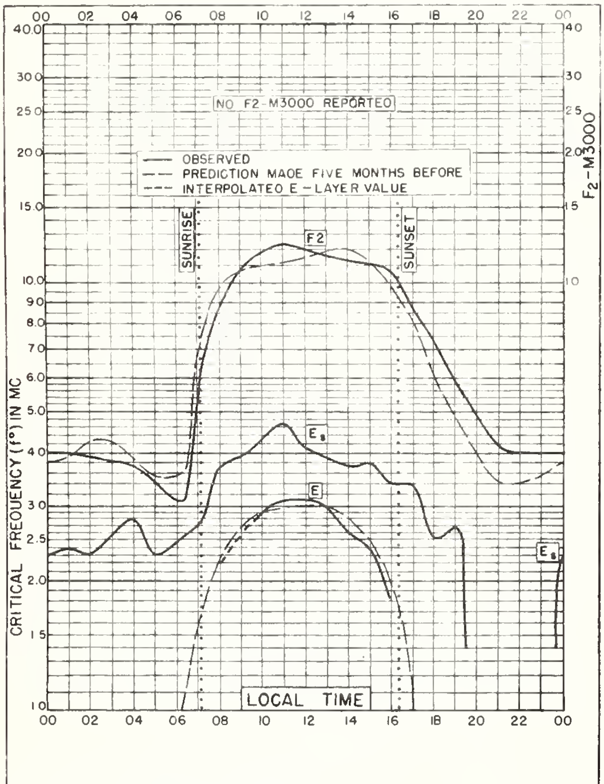

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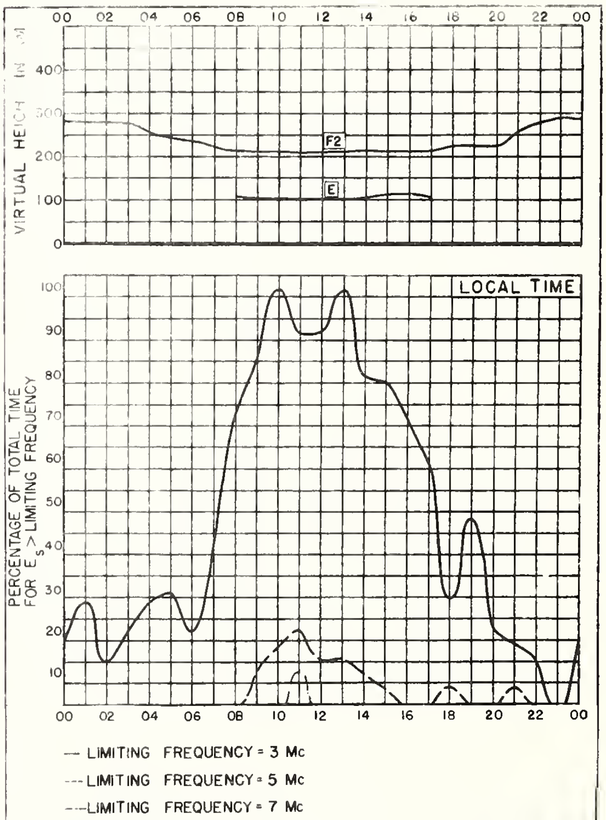

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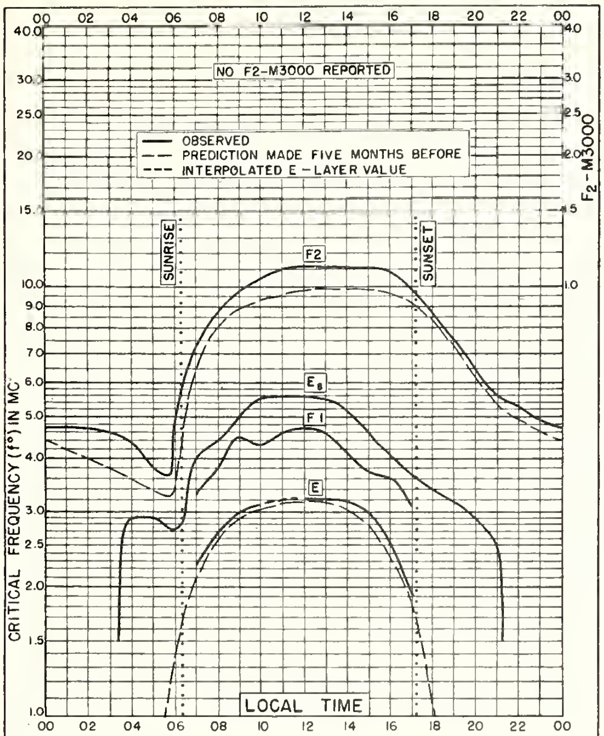

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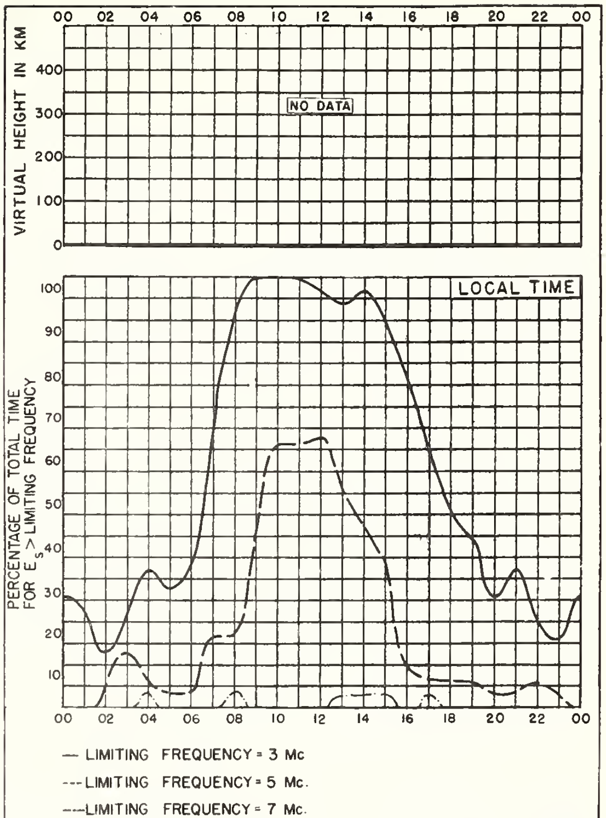

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Telephoned and telegraphed reports of ionospheric, solar, geomagnetic, and radio propagation data.

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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.

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Nonscheduled reports:
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