IONOSPHERIC DATA

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U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
WASHINGTON, D. C.

CRPL-F88

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CONTENTS

SYMBOLS, TERMINOLOGY, CONVENTIONS

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

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

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

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

a. For all ionospheric characteristics:

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

b. For critical frequencies and virtual heights:

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

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

Values missing because of G are counted:

1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

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

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

c. For MUF factor (M-factors):

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

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

d. For sporadic E (Es):

Values of fEs missing because of E or G (and B when applied to the E region only) are counted as equal to or less than the median foE, or equal to or less than the lower frequency count of the recorder.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Month	Predicted Sunspot Number						
	1951	1950	1949	1948	1947	1946	1945
December		86	108	114	126	85	38
November	52	87	112	115	124	83	36
October	52	90	114	116	119	81	23
September	54	91	115	117	121	79	22
August	57	96	111	123	122	77	20
July	60	101	108	125	116	73	
June	63	103	108	129	112	67	
May	68	102	108	130	109	67	
April	74	101	109	133	107	62	
March	78	103	111	133	105	51	
February	82	103	113	133	90	46	
January	85	105	112	130	88	42	

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 72 and figures 1 to 144 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

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

Commonwealth of Australia, Department of External Affairs:
- Macquarie I.

Australian Department of Supply and Shipping, Bureau of Mineral Resources, Geology and Geophysics:
- Watheroo, Western Australia

Defence Research Board, Canada:
- Baker Lake, Canada
- Churchill, Canada
- Fort Chimo, Canada
- Ottawa, Canada
- Prince Rupert, Canada
- St. John's, Newfoundland
- Winnipeg, Canada

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

French Ministry of Naval Armaments (Section for Scientific Research):
- Dakar, French West Africa
- Fribourg, Germany

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

The Royal Netherlands Meteorological Institute:
- De Bilt, Holland

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

Christchurch Geophysical Observatory, New Zealand Department of Scientific and Industrial Research:
- Christchurch, New Zealand

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

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

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

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

United States Army Signal Corps:
- Adak, Alaska
- Okinawa I.
- White Sands, New Mexico

National Bureau of Standards (Central Radio Propagation Laboratory):
- Anchorage, Alaska
- Baton Rouge, Louisiana (Louisiana State University)
- Fairbanks, Alaska
- Huancayo, Peru (Instituto Geofisico de Huancayo)
- Maui, Hawaii
- Narsarssuak, Greenland
- Point Barrow, Alaska
- Puerto Rico, West Indies
- San Francisco, California (Stanford University)
- Washington, D. C.

HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 73 to 84 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols, Terminology, Conventions." Beginning with September 1949, the data are taken at Ft. Belvoir, Virginia.

IONOSPHERIC STORMINESS AT WASHINGTON, D.C.

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

RADIO PROPAGATION QUALITY FIGURES

Table 86 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, October 1951, compared with the CRPL daily radio disturbance warnings, which are primarily for the North Atlantic paths, the CRPL weekly radio propagation forecasts of probable disturbed periods, and the half-day Cheltenham, Maryland, geomagnetic K-figures.

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

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

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

OBSERVATIONS OF THE SOLAR CORONA

Tables 87 through 89 give the observations of the solar corona during November 1951 obtained at Climax, Colorado, by the High Altitude Observatory of Harvard University and the University of Colorado. The data are listed separately for east and west limbs at 5-degree intervals of position angle north and south of the Solar Equator at the limb. The time of observation is given to the nearest tenth of a day, GCT.

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

The following symbols are used in tables 87 through 89: a, observation of low weight; -, corona not visible; and X, position angle not included in plate estimates.

RELATIVE SUNSPOT NUMBERS

Table 90 lists the daily provisional Zürich relative sunspot number, R_Z, as communicated by the Swiss Federal Observatory. Table 91 continues the new series of American relative sunspot numbers, $R_{A'}$. Beginning with 1951, the observations collected by the Solar Division, AAVSO, have been reduced according to a new procedure, such that only high quality observations of experienced observers are combined into $R_{A'}$. Observatory coefficients for each of the 22 selected observers were recomputed on data for 1948-1950, years when there was a wide range of solar activity. Otherwise, the procedure is that outlined in Publication of the Astronomical Society of the Pacific, 61, 13, 1949. The scale of the American numbers in 1951 will differ from that of the reports for earlier years because of these changes, and the new series is designated $R_{A'}$ rather than R_A. The American relative sunspot number will appear monthly in these pages, as communicated by the Solar Division.

OBSERVATIONS OF SOLAR FLARES

Table 92 gives the preliminary record of solar flares reported to the CRPL. These reports are communicated on a rapid schedule at the sacrifice of detailed accuracy. Definitive and complete records are published later in the Quarterly Bulletin of Solar Activity, I.A.U., in various observatory publications, and elsewhere. The present listing serves to identify and roughly describe the phenomena observed. Details should be sought from the reporting observatory.

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

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

INDICES OF GEOMAGNETIC ACTIVITY

Table 93 lists various indices of geomagnetic activity based on data from magnetic observatories widely distributed throughout the world. The indices are: (1) preliminary mean 3-hourly K-indices, Kw; (2) preliminary international character-figures, C; (3) geomagnetic planetary three-hour-range indices, Kp; (4) magnetically selected quiet and disturbed days.

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

Kp is the mean standardized K-index from 11 observatories between geomagnetic latitudes 47 and 63 degrees. The scale is 0 to 9, expressed in thirds of a unit, e.g., 5- is 4 2/3, 5o is 5 0/3, and 5 + is 5 1/3. This planetary index is designed to measure solar particle-radiation by its magnetic effects, specifically to meet the needs of research workers in the ionospheric field. A complete description of Kp has appeared in Bulletin 12b, "Geomagnetic Indices C and K, 1948," published in Washington, D. C., 1949, by the Association of Terrestrial Magnetism and Electricity, International Union of Geodesy and Geophysics. Tables of Kp for 1945-48 are in Bulletin 12b; for 1940-44 and 1949, in these CRPL-F reports, F65-67; for 1950, monthly in F68 and following issues. Current tables are also published quarterly in the Journal of Geophysical Research along with data on sudden commencements (sc) and solar flare effects (sfe).

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

SUDDEN IONOSPHERE DISTURBANCES

Tables 94 through 97 list respectively the sudden ionosphere disturbances observed at Ft. Belvoir, Virginia, November 1951; at Platanos, Argentina, October 1951; in England, November 1951; and on Barbados, B.W.I., September 1951.

ERRATA

1. CRPL-F87; pp. 19, 20, and 23; tables 44, 52, and 67, respectively: The first footnote should read "Average values except foF2 and fEs, which are median values."

2. CRPL-F84, p. 20, table 51: At 1400 in the (M3000)F2 column, the value should be (3.4).

INDEX OF IONOSPHERIC DATA PUBLISHED IN 1951 (CRPL-F77 THROUGH F88)

The following index of tables and graphs of ionospheric data published in the CRPL-F series in 1951 is divided into two parts. Part I is an index of data observed in 1950 and 1951. Part II is an index of data observed prior to 1950.

In general, both table and graphs for a given station for a given month appear in the same issue.

Indexes of ionospheric data published prior to 1951 are in IRPL-F17, CRPL-F28, -F40, -F52, -F64, and -F76.

PART I

Index of Tables and Graphs of Ionospheric Data Observed in 1950 and 1951 and Published in 1951 (CRPL-F77 through F88)

Station	1950												1951											
	J	F	M	A	M	J	Jy	A	S	O	N	D	J	F	M	A	M	J	Jy	A	S	O	N	D
Adak, Alaska															83	83	83	84+	85	87	88	88		
Akita, Japan										77	78	79	80	81	82	83	84	86	87	88				
Anchorage, Alaska																83	83	84	85	86	87	88		
Baker Lake, Canada															83	84	85	87	87	88				
Baton Rouge, Louisiana											78	79	80	81	82	82	84	85				88		
Bombay, India							78	78	79	81	82	82	85	85	86	86	87							
Boston, Massachusetts											77	78	79	80	81	82	84	85						
Brisbane, Australia								77	78	81	82	83	85	85	85	85	87	88	88					
Buenos Aires, Argentina													86	86	86	86								
Calcutta, India							85	85	85	85#	85	85	85	85	85	85	87							
Canberra, Australia								77	78	81	82	83	85		85	85	87	88						
Capetown, Union of S.Africa										77	78	79	80	81	82	84	84	86	87	88	88			
Christchurch, New Zealand									78	79	79	81	82	84	84	84	87	87	88					
Churchill, Canada															83	83	84	86	88	88	88			
Dakar, French West Africa				79	79	79	83	81	83	83	83	83	84	86	86	88								
De Bilt, Holland										77		78		80	81	82		85	86	87	88			
Delhi, India							78	78	79	81	82	82	85	85	86	86	87							
Domont, France				78	80			82	83	84	84	84	86	87	88									
Fairbanks, Alaska																83	84	84	85	87	88			
Falkland Is.										86	86	86	86	86	87*	87	87							
Formosa, China										77	78	79	80	81	82	84	85	86	87	88				
Fort Chimo, Canada														83	83	85	85	86	87	88				
Fraserburgh, Scotland											86	86	86	86	86	87	87*	87						
Fribourg, Germany				79	79	79	84		83	86	83	83	86	86	86	88	88	88						
Graz, Austria														81	81		84	85						
Guam I	77	78								77	77	78	79	80	81	83	84	85	85	86	87			
Hobart, Tasmania								77	78	81	82	83	85	85	85	85	87	88	88					
Huancayo, Peru											77	78	79	80	81	82	83	84	86	86	87	88		
Johannesburg, Union of S.Africa										77	78	79	80	81	82	84	84	86	87	88	88			
Kiruna, Sweden										77	77	79	81	81	81	87	88	88	88	88				
Lindau/Harz, Germany										78	78	80	81	82	82	84	84	87						
Macquarie I.						88	88	88	88	88	88	88	88	88	88	88								
Madras, India							78	78	79	81	82	82	85	85	86	86	87							
Maui, Hawaii											77	78	79	80	81	82	83	84	85	86	87	88		
Narsarssuak, Greenland												83	83	83	83	83	87	86	85	87	87	88		
Okinawa I											77	78	80	80	81	82	83	84	85	87	88	88		
Oslo, Norway											77	78	79	80	81	82	83	84	85	86	87	88		
Ottawa, Canada															83	83	85	86	88	88				
Panama Canal Zone																		84	86	87	87			
Point Barrow, Alaska																83	83	84	85	87	87	88		
Poitiers, France				78	80	81	81	82	84	84"	84	84	86	87	88									
Portage la Prairie, Canada															83									
Prince Rupert, Canada															83	83	84	86	88	88	88			
Puerto Rico, W.I.																86	85	84	85	86	87	88		
Rarotonga I.								78	78	79	81	81	82	84	84	85	87	87						

PART I (CONTINUED)

Index of Tables and Graphs of Ionospheric Data Observed in 1950 and 1951 and Published in 1951 (CRPL-F77 through F88)

Station	1950												1951											
	J	F	M	A	M	J	Jy	A	S	O	N	D	J	F	M	A	M	J	Jy	A	S	O	N	D
Resolute Bay, Canada														83	83	83	85	87						
Reykjavik, Iceland	83	83	84	84	84	84+	84	84	84	84	84	84	85	85	86	87	87	86						
Rome, Italy													87	87	87	87	87							
St.John's,Newfoundland															83	83	85	86	87	88	88			
San Francisco, California											77	78	79	80	81	82	83	84	85	86	87	88		
San Juan, Puerto Rico											77	78												
Schwarzenburg, Switzerland												81	81	81	83	83	84	86	86	87	88			
Singapore, British Malaya											86	86	86	86	86	87	87*	87						
Slough, England											86	86	86	86	86	87	87	87						
Terre Adelie														87	88									
Tiruchy, India							78	78	79	81	82	82	85	85	86	86	87							
Tokyo, Japan										77	78	79	80	81	82	83	84	86	87	88				
Trinidad, British West Indies											77	78	79	80	81	82	83	84						
Tromso,Norway													82	82	82	82	83	84	85	86	87	88		
Wakkanai, Japan										77	78	79	80	81	82	83	84	86	87	88				
Washington, D.C.												77	78	79	80	81	82	83	84	85	86	87	88	
Watheroo, Western Australia										78	79	79	81	82	83	84	85	87	87	88				
White Sands, New Mexico											77	78	79	80	81	82	83	84	85	86	87	88		
Winnipeg, Canada																83		86	88	88	88			
Yamagawa, Japan										77	78	79	80	81	82	83	84	86	87	88				

+See erratum in F85, p. 10.
#See erratum in F86, p. 11.
*See erratum in F88, p. 11.
"See erratum in F88, p. 11.

PART II

Index of Tables and Graphs of Ionospheric Data Observed Prior to 1950 and Published in 1951 (CRPL-F77 through F88)

Station	1948												1949											
	J	F	M	A	M	J	Jy	A	S	O	N	D	J	F	M	A	M	J	Jy	A	S	O	N	D
Campbell I.						78	77	77	77	77	77	77					*	78	77	77	77	77		
Guam I.																						78	78	78
	1946												1947											
Campbell I.						78												78	77	77	77	77	77	77
	1944												1945											
Campbell I.																		78	77	77	78	78	78	77

*See erratum in F77, p. 11.

Table 1

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.6						2.9
01	280	3.4						2.9
02	280	3.5						2.9
03	270	3.6						3.0
04	260	3.4						3.0
05	260	3.1						3.0
06	(270)	3.0						3.0
07	240	4.8			(120)	1.8		3.2
08	240	7.0	230	---	120	2.2		3.4
09	240	7.6	220	---	120	2.7		3.4
10	250	8.2	210	3.9	110	2.9		3.2
11	260	8.8	220	4.2	110	3.1		3.2
12	260	9.2	220	---	110	3.1		3.1
13	260	9.3	230	(4.0)	110	3.1		3.1
14	250	9.1	230	3.9	120	2.9		3.2
15	250	9.0	230	---	120	2.6		3.2
16	230	8.6	---	---	120	2.1		3.2
17	220	7.6						3.2
18	230	6.6						3.0
19	240	5.6						3.0
20	250	4.6						3.0
21	260	4.0						3.0
22	(270)	3.8						3.0
23	(280)	3.8						3.0

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

Table 2

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	(3.6)					5.0	(2.9)
01	300	(3.4)					4.5	(2.9)
02	290	(3.6)					4.2	(2.8)
03	300	(3.6)					4.6	(2.8)
04	310	(3.4)					3.3	(2.7)
05	320	(3.7)					3.8	(2.9)
06	320	(3.8)					3.8	(2.8)
07	320	3.9					4.0	2.9
08	290	4.2			---	---	4.6	3.0
09	260	4.7	---	---	---	---	4.0	3.1
10	260	5.0	260	---	---	---	3.3	3.1
11	280	5.4	250	---	120	2.4		3.1
12	260	5.4	260	---	---	---		3.1
13	260	5.6	240	---	120	2.4		3.1
14	260	6.0	230	---	130	2.3		3.2
15	270	6.3	240	---	120	2.2		3.1
16	250	6.0	---	---	---	---		3.1
17	260	5.1			---	---	2.2	3.0
18	280	4.0					2.5	3.0
19	280	3.5					3.4	3.0
20	280	(3.4)					4.3	(3.0)
21	290	(3.3)					4.3	3.0
22	260	(3.6)					4.4	(3.0)
23	300	(3.4)					5.6	(3.0)

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

Table 3

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(365)	(3.4)					4.7	(2.8)
01	(350)	(3.5)					5.2	(2.7)
02	(350)	(3.6)					5.1	(2.7)
03	310	(3.4)					5.2	(2.8)
04	290	3.5					4.1	3.0
05	285	3.1			---	---	4.4	3.0
06	280	3.2			115	1.5	3.2	3.0
07	250	4.0	---	---	115	(1.7)	3.2	3.1
08	250	4.8	240	---	110	(2.0)	3.2	3.2
09	255	5.5	240	---	110	(2.2)	3.0	3.2
10	260	5.6	240	---	110	(2.3)	3.1	3.2
11	260	5.8	245	---	120	(2.4)	2.4	3.2
12	260	5.7	250	---	110	2.4		3.2
13	255	5.8	250	---	120	2.4		3.2
14	250	5.4	245	---	110	(2.2)	3.0	3.2
15	250	5.0	---	---	---	2.0	3.2	3.3
16	240	5.2			---	1.8	3.0	3.2
17	245	5.3			---	---	4.2	3.2
18	295	4.6					3.4	3.0
19	260	(4.3)					4.4	(3.1)
20	315	(4.2)					4.3	3.0
21	(280)	(3.9)					5.2	(2.9)
22	320	(4.2)					4.8	(2.8)
23	(350)	(3.8)					5.0	2.7

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

Table 4

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	380	(2.8)						(2.6)
01	(390)	(2.6)						(2.6)
02	(390)	2.6						(2.5)
03	(400)	(2.4)					3.6	(2.5)
04	(400)	(2.6)						(2.4)
05	---	(2.7)					3.4	---
06	320	3.0						2.8
07	280	3.6						3.0
08	280	4.7	280	---				3.0
09	290	5.8	290	3.8				2.9
10	300	6.2	250	3.9				2.9
11	280	6.8	250	4.0	---	---		3.0
12	290	6.9	260	4.1	---	---		2.9
13	300	7.0	270	3.9	---	---		2.9
14	300	7.0	280	---	---	---		3.0
15	280	7.0	290	---				3.0
16	270	6.7						3.0
17	260	6.3						3.1
18	270	5.3						3.0
19	280	3.9						2.9
20	290	3.4						2.8
21	300	2.4						2.8
22	(300)	2.4						2.8
23	350	(2.4)						(2.7)

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

Table 5

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(380)	(2.8)					4.2	---
01	(370)	(3.1)					3.8	(2.5)
02	---	---					4.0	---
03	(420)	(3.7)					4.2	(2.6)
04	(400)	(3.8)					4.0	(2.7)
05	(360)	(3.1)					4.0	(2.7)
06	(330)	3.1					3.3	(2.9)
07	290	(4.0)						3.0
08	(310)	4.8	---	---				3.0
09	(310)	5.3	---	---	---	---		3.0
10	340	5.7	270	---	(140)	---		2.9
11	340	6.1	270	---	(140)	---		2.8
12	340	6.0	280	3.8	---	---		2.8
13	340	6.2	(280)	---	(140)	(2.7)		2.8
14	320	6.1	280	---	---	---		2.9
15	310	6.0	280	---	---	---		2.9
16	340	4.7	300	---	(140)	---	2.1	2.8
17	(360)	(4.4)			---	---	3.9	(2.8)
18	(360)	(3.7)					4.2	(2.7)
19	(340)	(3.8)					5.5	(2.7)
20	(330)	(3.3)					6.3	(2.7)
21	(340)	(4.0)					6.0	(2.8)
22	(360)	(3.3)					5.4	---
23	(380)	(3.1)					3.5	---

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

Table 6

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	2.7					2.8	2.8
01	320	2.7					2.8	2.8
02	325	2.6					2.9	2.8
03	315	2.4					2.7	2.8
04	310	2.2					2.8	2.8
05	300	2.0					3.0	3.0
06	280	2.5					2.8	3.1
07	250	3.8	---	---	130	1.6	2.9	3.1
08	235	4.8	235	---	125	2.0	2.2	3.3
09	245	5.6	225	3.5	120	2.3	3.0	3.4
10	250	5.9	220	3.8	110	2.4	3.4	3.4
11	250	6.4	220	4.0	110	2.6	3.5	3.3
12	250	6.6	215	4.0	110	2.6	3.4	3.3
13	250	6.7	220	4.0	110	2.6	3.4	3.3
14	250	6.6	230	3.8	110	2.4	3.2	3.4
15	235	6.4	230	---	120	2.2	3.0	3.4
16	230	6.4	235	---	125	2.1	2.8	3.3
17	225	6.5			---	E	3.0	3.3
18	225	5.6			---	E	1.5	3.2
19	230	4.7					2.8	3.2
20	245	3.5					2.2	3.1
21	275	3.0					2.0	(3.0)
22	320	2.9						2.9
23	325	3.0					2.4	2.8

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

Table 7

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.2					2.1	2.8
01	300	3.1					2.3	2.7
02	300	3.1					2.2	2.8
03	300	2.9					2.3	2.7
04	300	2.9					2.4	2.8
05	280	2.8	---	---			3.0	2.8
06	270	3.7	---	---	120	1.4	2.4	3.0
07	240	5.6	240	2.5	120	1.9	2.4	3.3
08	230	6.7	230	3.5	120	2.4	3.4	3.3
09	240	7.6	220	3.4	110	2.7	3.0	3.2
10	260	8.3	220	(4.1)	110	2.8	3.9	3.2
11	250	8.6	220	4.2	110	2.9	4.6	3.2
12	250	8.8	220	4.2	110	2.9	4.6	3.2
13	240	8.6	230	---	110	2.8	4.0	3.3
14	230	8.2	230	---	110	2.6	3.8	3.3
15	230	7.8	230	---	110	2.4	4.4	3.3
16	230	7.0	230	---	120	1.8	4.2	3.4
17	220	6.3	---	---	110	---	3.9	3.3
18	220	5.1					4.1	3.2
19	240	4.0					3.7	3.1
20	250	3.1					3.2	3.0
21	260	3.2					2.1	3.0
22	270	3.0					2.4	2.9
23	280	2.8					1.4	2.8

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

Table 8

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.3					2.4	2.9
01	280	3.4					2.2	2.9
02	280	3.4					2.4	2.9
03	280	3.5						2.9
04	270	3.4						3.0
05	280	3.3						2.9
06	260	(3.7)						3.0
07	230	6.0	---	---	---	---	2.0	3.4
08	240	7.0	230	4.0	(120)	(2.6)	2.9	3.4
09	250	7.7	220	4.1	110	(3.0)	2.8	3.3
10	270	8.2	210	4.4	110	---	2.9	3.2
11	270	8.9	220	4.6	110	---		3.1
12	270	9.4	220	4.6	110	(3.4)	2.6	3.1
13	270	9.2	230	4.5	110	3.3	2.8	3.2
14	260	9.0	230	4.4	120	3.1		3.2
15	250	9.0	240	4.1	110	2.9		3.2
16	240	8.8	240	---	120	(2.6)		3.3
17	230	7.6			110	---	2.2	3.4
18	220	6.3					2.2	3.3
19	230	5.0					2.7	3.3
20	230	3.6						3.3
21	(250)	3.1						3.1
22	280	(3.2)						3.0
23	290	3.2						2.9

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

Table 9

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	3.6						2.9
01	270	3.6						3.0
02	260	3.7						2.9
03	250	3.7						3.0
04	250	3.6						3.0
05	260	3.5						3.0
06	250	4.1			---	---		3.1
07	230	6.4	230	---	110	2.0		3.4
08	240	7.8	210	4.0	100	2.6	2.8	3.4
09	240	8.1	200	4.4	100	3.0	3.2	3.4
10	260	8.8	190	4.6	100	3.2	3.4	3.2
11	270	9.3	200	4.7	100	3.3		3.1
12	270	10.0	200	4.8	100	3.4	3.4	3.1
13	270	10.0	210	4.8	100	3.3		3.1
14	260	9.6	220	4.6	100	3.2		3.1
15	250	9.6	220	---	100	3.0		3.2
16	230	9.2	230	---	110	2.5	2.9	3.3
17	220	8.6			120	1.9	2.4	3.4
18	210	7.1					2.7	3.4
19	210	4.8					2.6	3.3
20	240	3.9						3.2
21	250	3.5						3.1
22	(280)	3.6					2.5	2.9
23	280	3.5					2.0	2.9

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

Table 10

Baton Rouge, Louisiana (30.5°N, 91.2°W) October 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.8						2.8
01	300	3.9						2.8
02	290	4.0					3.0	2.8
03	280	4.0					3.0	2.9
04	270	3.7						2.9
05	280	3.6						2.9
06	270	4.3					3.6	3.0
07	250	6.8	---	---	120	2.2	3.6	3.3
08	260	8.0	230	---	120	(2.6)	6.4	3.3
09	270	8.3	220	---	110	2.9	6.0	3.2
10	280	8.6	220	4.6	110	3.2	5.4	3.1
11	280	9.7	220	4.7	120	3.4	5.4	3.0
12	290	10.3	220	(4.7)	120	3.4	5.0	3.0
13	290	10.4	230	4.7	120	3.4	3.7	3.0
14	280	10.4	240	4.8	120	3.2	3.9	3.0
15	270	10.2	250	---	120	2.9	3.8	3.1
16	250	9.6	240	---	120	2.5	4.1	3.1
17	240	8.8			130	2.2	2.2	3.2
18	230	7.5					3.3	3.2
19	230	5.3					2.4	3.0
20	260	4.5						3.0
21	280	4.1						2.9
22	290	4.0						2.8
23	300	3.9						2.8

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 11

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.6						2.7
01	280	5.0						2.8
02	270	4.4						2.9
03	260	4.0						3.0
04	260	3.3						3.0
05	(310)	3.1						2.7
06	280	4.8						3.0
07	260	7.6	260	---	130	2.1		3.2
08	280	8.8	260	---	120	(2.8)	3.6	3.2
09	290	9.8	250	---	(120)	3.2	3.8	3.0
10	310	11.3	250	---	130	(3.3)	4.3	3.0
11	300	12.4	250	---	(130)	(3.4)	4.0	2.8
12	330	12.7	250	---	130	(3.5)	3.8	2.9
13	320	13.4	260	---	130	(3.5)		2.8
14	300	13.8	260	---	(130)	3.4	4.0	2.9
15	280	13.4	260	---	130	3.1		2.9
16	270	12.4	260	---	130	(2.6)	2.9	3.0
17	260	12.0			130	2.0	2.5	3.0
18	250	11.8					2.9	3.0
19	230	9.2						2.9
20	260	8.0					2.5	2.7
21	270	7.2					2.4	2.8
22	280	6.0					2.2	2.6
23	310	5.4						2.6

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

Table 12

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	4.1						3.0
01	240	3.8						3.2
02	250	2.9					1.6	3.1
03	260	2.5					2.3	3.1
04	280	2.4					1.8	2.9
05	310	2.3					2.0	2.7
06	300	3.0			---	---		2.8
07	250	6.6	---	---	130	2.1	2.6	3.2
08	260	8.4	230	---	120	2.7	4.4	3.2
09	280	9.5	220	(4.6)	120	3.1	4.2	3.0
10	300	10.8	220	(4.8)	120	3.3	4.6	2.9
11	290	12.6	220	(4.9)	120	3.5	5.0	3.0
12	300	12.4	210	(5.0)	120	3.5	4.8	3.0
13	300	13.2	220	5.0	120	3.5	4.6	3.0
14	290	13.9	230	4.9	120	3.4	4.8	3.0
15	270	13.9	230	4.7	120	3.2	4.8	3.1
16	250	13.0	230	---	110	2.8	5.2	3.2
17	240	11.4	---	---	120	2.3	4.4	3.2
18	220	9.4			---	---	3.5	3.4
19	220	7.6					4.0	3.1
20	240	6.4					3.0	2.8
21	250	5.6					2.4	2.8
22	260	5.0					1.7	2.9
23	260	4.5						3.0

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

Table 13

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	4.7						3.0
01	250	4.8						3.0
02	220	4.7						3.3
03	220	4.1						3.3
04	240	3.5						3.0
05	270	3.3						2.9
06	250	3.5						3.0
07	220	6.5	---	---	110	2.0		3.5
08	220	7.7	220	---	100	2.6		3.5
09	260	8.5	210	---	100	3.1		3.3
10	250	9.4	210	4.6	100	3.4		3.3
11	260	10.3	200	4.8	100	3.5		3.2
12	260	10.3	210	4.8	100	3.6		3.1
13	270	10.8	210	4.9	100	3.5		3.1
14	270	11.3	210	4.8	100	3.4		3.1
15	260	11.5	220	---	100	3.2		3.2
16	240	10.8	210	---	100	2.9	3.6	3.2
17	220	10.0	220	---	100	2.4	3.5	3.3
18	210	9.1			---	---	2.6	3.3
19	210	7.0					2.7	3.2
20	220	5.4						3.1
21	250	5.0						2.9
22	270	4.8						2.9
23	260	4.7						3.0

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

Table 14

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	9.1						3.2
01	220	8.0					2.9	3.2
02	250	6.2						3.2
03	240	5.5						3.2
04	250	5.2					2.5	3.2
05	270	4.0					2.9	3.2
06	260	6.9			100	2.1	3.2	3.2
07	240	9.3	---	---	100	2.7	3.8	3.3
08	290	10.8	220	---	100	3.1	5.5	3.0
09	300	11.2	210	(4.9)	100	---	8.0	2.8
10	300	10.6	210	4.9	100	---	8.0	2.5
11	300	10.2	210	4.9	100	---	8.1	2.5
12	310	10.0	210	4.9	100	---	8.0	2.5
13	300	10.1	200	4.9	100	---	8.0	2.5
14	300	10.6	200	(4.8)	100	---	8.0	2.5
15	290	11.2	210	---	100	3.1	7.8	2.5
16	220	11.2			100	2.7	5.5	2.5
17	270	10.8			100	2.2	4.6	2.5
18	300	10.6			100	---		2.6
19	350	11.3						2.4
20	310	(11.1)						(2.4)
21	290	9.6						2.7
22	270	(9.0)						(2.8)
23	250	(10.4)						(3.0)

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

Table 15

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(420)	(4.3)					4.9	---
01	(420)	(3.8)					4.6	(2.4)
02	480	(3.6)					4.6	(2.3)
03	(420)	(3.9)					5.0	(2.3)
04	(430)	(3.9)			---	---	4.6	(2.4)
05	(370)	(4.0)			---	---		(2.5)
06	(430)	4.4	---	---	---	---		(2.5)
07	(410)	(4.8)	300	---	---	---		(2.6)
08	(410)	(5.1)	300	---	---	---		(2.5)
09	(460)	(5.2)	(300)	(3.9)	---	---		(2.4)
10	460	(5.2)	(310)	(4.0)	---	---		(2.5)
11	460	5.6	300	(4.2)	---	---		2.5
12	460	5.5	(320)	(4.2)	---	---		2.5
13	440	(5.7)	310	---	---	---		(2.5)
14	430	5.2	310	---	---	---		2.5
15	430	(5.2)	330	(3.8)	---	---		(2.6)
16	400	(5.0)	300	---	---	---		(2.6)
17	360	(5.2)	---	---				(2.7)
18	340	5.3						2.7
19	340	(5.2)					3.1	(2.6)
20	360	(4.6)					3.8	(2.6)
21	(340)	(4.4)					4.6	(2.5)
22	(350)	(4.6)					5.0	(2.5)
23	(400)	(4.0)					4.5	(2.4)

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

Table 16

Churchill, Canada (58.8°N, 94.2°W) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	4.2			---	---	6.0	(2.9)
01	300	3.4			---	---	6.4	3.0
02	300	3.0			---	---	4.3	3.0
03	310	2.6			140	2.6	4.4	(3.1)
04	290	3.1			110	2.0	3.4	3.2
05	300	3.3	---	---	120	2.8	2.5	3.0
06	300	4.0	---	---	110	2.6	2.0	3.0
07	320	4.4	250	3.2	110	3.0		2.9
08	330	4.9	240	3.7	110	3.0		2.9
09	340	5.1	230	4.1	110	3.0		2.9
10	360	5.5	220	4.2	100	3.0		2.9
11	380	5.8	210	4.4	100	3.0		2.8
12	360	5.8	230	4.3	100	3.0		2.8
13	360	6.0	220	4.1	100	3.0		2.8
14	360	6.0	230	4.0	110	3.0		2.8
15	360	6.2	230	4.0	110	3.0		2.8
16	320	6.0	240	4.0	110	2.8		2.8
17	300	5.3	270	---	110	2.8		2.8
18	300	5.0	---	---	120	2.8		3.0
19	290	4.5			110	2.9	7.7	2.9
20	280	4.1			120	2.8	7.9	3.0
21	300	4.0			120	2.8	7.0	2.9
22	300	3.4			---	---	7.9	2.9
23	320	3.7					7.9	(2.8)

Time: 90.0°W.
Sweep: 0.6 Mc to 20.0 Mc in 15 seconds.

Table 17

Prince Rupert, Canada (54.3°N, 130.3°W) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	350	3.0					2.5	3.0
01	330	3.0					2.2	3.0
02	340	2.8					2.0	3.0
03	340	2.3					2.3	3.0
04	350	2.2					2.0	2.8
05	390	2.7					2.0	2.9
06	300	3.0			110	1.9	1.6	3.0
07	300	4.0	260	3.2	110	2.2		3.1
08	400	4.6	230	3.7	110	2.5		3.0
09	400	4.8	230	3.8	110	2.9	1.2	3.1
10	400	5.1	220	4.0	100	3.0		3.0
11	410	5.2	210	4.2	110	3.2		2.9
12	390	5.5	210	4.3	100	3.1		3.0
13	370	5.5	230	4.4	100	3.1		3.2
14	400	5.4	230	4.2	100	3.1		3.0
15	370	5.6	220	4.2	110	3.0		3.0
16	310	5.8	230	4.2	110	2.8		3.0
17	280	5.4	240	4.0	110	2.6		3.2
18	270	5.6	230	---	110	2.3	2.0	3.2
19	250	5.2			---	1.9	2.0	3.3
20	250	4.2					1.5	3.2
21	260	4.0					2.0	3.1
22	270	3.0					1.8	3.1
23	280	3.0					2.1	3.0

Time: 120.0°W.
Sweep: 0.6 Mc to 20.0 Mc in 15 seconds.

Table 18

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	(3.0)						2.8
01	310	(3.0)					2.3	2.7
02	300	(3.0)						2.8
03	295	(3.0)					2.2	2.8
04	280	(3.0)					2.7	2.9
05	280	3.2			---	E	3.0	3.1
06	270	4.6	250	3.4	115	2.1	3.4	3.2
07	280	5.1	230	4.0	110	2.5	3.6	3.2
08	300	5.6	220	4.0	105	2.8	3.9	3.2
09	340	5.6	215	4.3	105	3.0	4.0	3.0
10	360	5.7	205	4.5	105	3.1	4.0	3.0
11	315	6.1	210	4.5	105	3.2	4.0	3.0
12	310	6.5	205	4.5	105	3.2	4.0	3.0
13	305	6.4	210	4.5	105	3.2	4.0	3.1
14	300	6.5	210	4.4	105	3.0	3.7	3.0
15	300	6.3	220	4.0	105	2.9		3.1
16	265	6.4	240	3.8	105	2.6		3.1
17	260	6.5	250	---	125	2.1		3.1
18	250	6.2			---	E	2.8	3.1
19	250	>6.0					2.4	3.0
20	245	5.2						3.0
21	260	4.5						2.9
22	290	3.9						2.8
23	300	(3.6)						2.8

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

Table 19

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.2					2.2	2.7
01	320	3.2					2.0	2.6
02	320	2.9					2.2	2.6
03	320	2.8					2.0	2.6
04	320	2.6					2.2	2.6
05	300	2.8	360	---	---	---	2.4	2.7
06	280	3.9	260	---	120	1.8	2.3	3.0
07	280	4.4	240	3.5	110	2.2	2.4	2.9
08	380	4.6	230	3.8	110	2.7	3.8	2.8
09	440	4.6	220	4.1	110	2.9	4.2	3.0
10	500	4.8	220	4.2	110	3.1	4.0	2.6
11	410	5.2	210	4.3	110	3.1	4.0	2.7
12	360	5.5	210	4.3	110	3.1	4.0	2.8
13	320	6.0	220	4.3	110	3.0	3.8	3.0
14	300	5.7	220	4.2	110	3.0	3.9	3.1
15	300	6.2	230	4.0	110	2.7	3.4	3.0
16	280	6.0	240	3.9	110	2.4		3.1
17	250	5.9	250	---	120	1.9	2.4	3.1
18	250	5.6			130	1.4	2.6	3.1
19	250	4.7					2.3	3.0
20	260	4.9					2.2	2.9
21	260	4.0					1.8	2.9
22	260	3.7						2.8
23	280	3.4					1.9	2.7

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

Table 20

Winnipeg, Canada (49.9°N, 97.4°W) September 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	2.8					3.2	(2.8)
01	(320)	2.6					3.8	---
02	310	2.6					3.6	---
03	320	3.5					3.3	---
04	300	3.1			---	---	3.2	---
05	300	2.8			---	---	2.2	(2.9)
06	290	3.2			120	1.8	1.9	2.9
07	280	4.2	---	---	120	2.2	2.1	3.0
08	320	4.7	230	4.0	110	2.6	3.1	2.9
09	360	5.0	220	4.0	110	3.0	1.8	2.7
10	380	5.4	220	4.4	110	3.1	2.5	2.6
11	380	5.7	210	4.4	110	3.2		2.8
12	400	5.8	220	4.6	110	3.2	2.0	2.7
13	380	6.2	220	4.6	110	3.4		2.6
14	370	6.0	220	4.4	110	3.2	2.0	2.8
15	360	6.0	230	4.2	110	3.0	2.6	2.8
16	350	6.0	230	4.1	110	3.0	2.0	2.7
17	300	6.0	240	3.9	120	2.7	1.6	2.9
18	280	5.8	260	---	120	2.2	2.5	2.9
19	280	5.5			---	---	2.0	2.8
20	280	5.0					1.9	2.9
21	260	4.0					1.8	3.0
22	260	3.4					2.5	(3.0)
23	300	3.0					2.9	---

Time: 90.0°W.
Sweep: 0.6 Mc to 20.0 Mc in 15 seconds.

Table 21

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.4					1.8	2.8
01	300	3.4					2.0	2.8
02	300	3.0					1.6	2.8
03	290	2.7					1.3	2.8
04	260	2.3					1.3	2.8
05	270	3.2					1.8	3.1
06	260	4.2	230	---	110	2.3	2.0	3.2
07	290	5.0	230	3.7	110	2.6		3.2
08	310	5.3	230	4.0	110	3.0		3.1
09	300	5.8	210	4.3	110	3.2		3.1
10	330	6.0	210	4.5	110	3.3		3.1
11	360	6.1	210	4.5	110	3.3		3.0
12	340	6.3	220	4.6	110	3.4		3.0
13	340	6.4	220	4.3	110	3.4		2.9
14	320	6.5	220	4.2	110	3.2		2.9
15	310	6.8	230	4.0	110	3.0		3.0
16	300	6.9	240	3.8	110	2.7		3.0
17	280	7.0	250	3.5	120	2.3	1.8	3.0
18	270	7.2			---	---	1.9	3.0
19	260	6.5					1.7	2.9
20	260	5.2					1.6	2.9
21	280	4.6					1.7	2.8
22	280	3.9					1.7	2.8
23	300	3.5					1.6	2.8

Time: 60.0°W.
Sweep: 0.6 Mc to 20.0 Mc in 15 seconds.

Table 22

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	3.8						
01	300	3.8						
02	300	3.6						
03	300	3.5						
04	300	3.2						
05	300	2.8						
06	300	3.1			---	---		
07	250	4.3	---	---	115	2.1		
08	260	5.4	245	3.8	105	2.6		
09	275	6.6	230	4.4	100	3.0		
10	300	6.6	220	4.5	100	3.0		
11	300	6.5	210	4.6	100	3.2		
12	310	6.6	205	4.6	100	3.3		
13	300	6.6	210	4.8	100	3.4		
14	300	7.0	220	4.6	100	3.2		
15	300	6.7	230	4.6	100	3.2		
16	290	6.8	230	4.4	100	2.8		
17	250	6.5	---	---	105	2.5		
18	250	6.6			120	2.2		
19	255	6.6			---	---		
20	250	6.2						
21	250	5.6						
22	260	4.5						
23	300	4.2						

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

Table 23

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	>6.8					2.7	2.8
01	270	6.2					2.0	2.8
02	270	5.2					2.0	2.8
03	260	4.8					1.8	2.9
04	260	4.4					1.6	2.8
05	260	3.8						2.9
06	250	5.8			(120)	---		3.2
07	240	7.6	---	---	(120)	2.5	3.5	3.4
08	250	8.0	230	---	110	3.0	4.1	3.2
09	280	8.0	230	---	(110)	3.4	4.4	3.0
10	320	9.4	230	---	110	3.6	4.8	2.9
11	320	11.1	230	---	110	(3.6)	4.4	2.8
12	330	11.5	230	---	110	---	4.1	2.9
13	310	12.0	230	---	110	3.6		2.9
14	320	12.2	230	---	120	(3.5)	3.8	2.9
15	310	12.2	240	---	120	(3.3)		3.0
16	290	12.8	250	---	110	2.9	4.0	3.0
17	260	12.8	240	---	110	2.4	4.0	3.1
18	250	11.8			---	---	3.6	3.2
19	240	9.7					3.0	3.0
20	240	(8.6)					2.9	2.8
21	280	7.9					2.8	2.7
22	290	7.3					2.7	2.7
23	300	7.0					2.9	2.8

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

Table 24

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.4						3.0
01	260	3.3						3.0
02	250	3.1						3.0
03	260	3.0						2.9
04	280	2.8						2.9
05	280	2.7					1.6	2.8
06	260	4.1			---	1.6		3.1
07	240	6.7	230	---	110	2.3		3.4
08	250	7.4	230	4.4	110	2.9		3.3
09	270	8.3	220	4.6	110	3.2		3.2
10	280	8.9	210	4.8	110	3.5		3.1
11	290	9.2	210	5.0	110	3.6		3.0
12	290	9.9	210	4.9	110	3.6	4.0	3.0
13	280	9.5	200	4.8	110	3.6		3.0
14	290	9.6	210	4.8	110	3.5	3.6	3.0
15	280	9.2	210	4.5	110	3.3	4.0	3.0
16	260	9.0	220	4.0	110	3.0	3.6	3.1
17	240	8.5	230	---	110	2.5		3.2
18	230	7.9			---	1.8	1.6	3.2
19	230	7.0						3.2
20	230	5.6						3.2
21	250	4.6						3.1
22	260	3.8						3.1
23	260	3.4						3.0

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

Table 25

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.0						2.9
01	280	3.0						2.9
02	280	3.1						2.9
03	270	3.1						2.9
04	270	3.0						2.8
05	280	3.0						2.8
06	270	3.0						2.9
07	240	5.0			---	1.9		3.2
08	240	6.6	240	---	120	2.5		3.3
09	260	7.2	230	4.3	110	2.9		3.2
10	280	7.6	220	4.6	110	3.2		3.1
11	290	8.8	220	4.7	110	3.4		2.9
12	300	9.4	220	4.8	110	3.5		2.9
13	290	9.8	220	4.8	110	3.5		2.9
14	290	10.0	220	4.7	110	3.4	3.7	3.0
15	280	9.9	220	4.6	110	3.3	3.7	2.9
16	270	9.4	220	4.2	110	3.1	3.6	3.0
17	250	8.9	230	3.7	120	2.7	3.2	3.1
18	240	8.2			120	2.1		3.2
19	230	7.2						3.2
20	230	5.6						3.1
21	240	4.2						3.0
22	250	3.6						3.1
23	260	3.2						2.9

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

Table 26

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---					4.2	
01	(310)	(4.3)					3.9	
02	310	4.2					3.9	
03	300	4.1					2.4	
04	(315)	4.1	240	---	---	---	2.1	
05	(360)	4.4	230	3.3	105	2.0		
06	395	4.9	230	3.8	100	2.2		
07	365	5.2	220	4.0	100	2.4		
08	355	5.4	210	4.1	100	2.6		
09	350	5.6	205	4.2	100	2.7	3.0	
10	350	5.7	200	4.2	100	2.8	3.0	
11	350	5.8	200	4.3	100	2.9	3.1	
12	340	5.9	200	4.3	100	2.9	3.1	
13	345	5.7	200	4.3	100	2.8		
14	330	5.4	200	4.2	100	2.9		
15	350	5.3	210	4.1	100	2.8		
16	(310)	5.2	215	4.0	100	2.7	2.8	
17	(320)	5.1	230	3.8	105	2.3	3.0	
18	310	5.0	240	---	100	2.1	4.0	
19	(305)	5.0	250	---	105	2.0	3.9	
20	(300)	4.9	250	---	105	1.9	4.0	
21	290	4.5					3.3	
22	(290)	(4.4)					3.9	
23	(305)	(4.3)					4.2	

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

Table 27

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	4.7					3.5	2.7
01	310	4.4			---	---	4.0	(2.7)
02	300	4.1	---	---	---	---	3.7	2.7
03	320	3.8	---	---	---	---	4.2	2.8
04	340	4.0	---	---	---	---	3.2	2.8
05	330	3.8	310	---	140	2.0	1.9	2.8
06	320	4.0	300	3.5	120	2.3	2.3	2.8
07	500	4.6	280	3.8	120	2.6		2.7
08	600	4.8	280	3.8	120	2.9		2.7
09	570	4.8	260	3.9	120	3.0		(2.5)
10	600	4.9	280	4.0	110	3.2		2.3
11	530	5.0	260	4.0	110	3.2		2.5
12	520	5.1	280	4.1	110	3.2		2.5
13	500	5.2	260	4.2	120	3.2		2.6
14	430	5.6	250	4.2	110	3.2		2.7
15	460	5.6	250	4.1	120	3.1		2.7
16	440	5.6	260	4.0	120	3.1		2.6
17	460	5.0	260	3.8	120	2.8	3.0	2.6
18	330	5.0	280	3.8	120	2.5	5.7	2.6
19	320	5.2	300	---	140	2.3	7.1	2.7
20	320	5.0	---	---	140	---	6.2	2.8
21	300	5.0			---	---	5.5	2.8
22	310	4.2					5.2	2.8
23	300	4.9					4.0	2.7

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

Table 28

Churchill, Canada (58.8°N, 94.2°W) August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	4.0			---	---	7.4	3.2
01	280	4.0			---	---	6.0	2.9
02	300	3.4			---	---	5.0	3.1
03	300	3.6			---	---	4.0	3.0
04	300	3.3			110	2.0	3.0	3.2
05	300	3.9	---	---	110	2.8	2.1	3.1
06	320	4.0	220	3.4	100	2.9		3.0
07	330	4.8	220	4.0	100	3.0		3.0
08	400	5.0	210	4.1	100	3.1		(2.8)
09	400	5.0	200	4.3	100	3.2		2.9
10	410	5.2	210	4.4	100	3.2		2.7
11	400	5.3	220	4.3	100	3.2		2.7
12	400	5.6	200	4.5	100	3.3		2.8
13	400	5.7	210	4.4	100	3.3		2.9
14	390	5.8	210	4.4	100	3.2		2.8
15	380	6.0	210	4.2	100	3.2		2.8
16	370	5.8	220	4.1	100	3.0		2.8
17	360	5.6	220	4.0	100	3.0		2.9
18	320	5.2	250	4.0	110	3.0		2.9
19	310	5.0	280	---	110	3.0		2.9
20	300	4.8			110	2.9	3.8	3.0
21	300	4.5			120	2.7	6.0	3.0
22	270	4.0			---	---	6.0	3.0
23	280	3.8			---	---	8.2	3.2

Time: 90.0°W.
Sweep: 0.6 Mc to 20.0 Mc in 15 seconds.

Table 29

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	[illegible]	3.2					5.7	---
01	290	4.0			---	---	4.4	---
02	300	3.2			---	---	4.0	(2.7)
03	310	3.0	---	---	110	2.9	4.0	---
04	300	3.5	---	---	100	3.0	3.6	(2.9)
05	300	4.0	---	---	100	3.3	4.8	(3.0)
06	320	4.6	260	---	100	3.3	4.1	(2.9)
07	340	4.8	200	4.0	100	3.2	3.5	2.9
08	360	5.2	200	4.3	90	3.3		2.9
09	400	5.0	200	4.4	90	3.2		2.8
10	360	5.3	200	4.4	100	3.2		2.8
11	380	5.4	200	4.5	90	3.4		2.8
12	380	5.5	200	4.4	100	3.6	3.2	2.8
13	380	5.8	200	4.3	90	3.3		2.8
14	390	5.7	200	4.3	100	3.3		2.7
15	380	5.4	200	4.2	100	3.2		2.7
16	370	5.2	220	4.0	100	2.8		2.7
17	320	5.2	220	3.8	100	3.0	3.8	2.7
18	310	5.0	260	3.7	100	2.9		2.7
19	300	4.8	---	---	100	2.8	3.2	(2.9)
20	270	4.6			---	---	3.0	---
21	280	4.0			---	---	4.8	---
22	290	3.7					5.2	---
23	260	4.0					5.4	---

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

Table 30

Prince Rupert, Canada (54.3°N, 130.3°W) August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.0			---	---	1.4	2.8
01	300	2.9			---	---	1.7	3.0
02	330	2.7			---	---	1.2	2.8
03	330	2.4			---	---	2.2	2.9
04	310	2.5			---	---	1.8	2.9
05	300	3.0	---	---	120	1.6	1.9	2.8
06	410	3.5	260	3.0	110	2.0	2.0	2.7
07	420	4.2	230	3.6	110	2.4		2.7
08	420	4.5	220	3.8	100	2.8		2.6
09	480	4.8	210	4.0	100	3.0		2.6
10	490	5.0	200	4.2	100	3.1	3.3	2.6
11	460	5.1	210	4.3	100	3.2		2.6
12	440	5.3	210	4.4	100	3.2		2.8
13	450	5.3	220	4.5	110	3.3		2.8
14	420	5.2	210	4.4	100	3.3		2.8
15	440	5.2	210	4.3	100	3.2		2.7
16	400	5.2	220	4.2	100	3.0		2.9
17	360	5.3	220	4.2	110	3.0		3.0
18	310	5.2	240	3.8	110	2.5		3.0
19	270	5.1	240	3.6	110	2.2	2.2	3.0
20	260	5.0			140	1.8	2.4	3.2
21	260	4.8			---	---	2.0	3.0
22	260	4.4			---	---	3.1	3.0
23	280	3.3			---	---	2.5	3.0

Time: 120.0°W.
Sweep: 0.6 Mc to 20.0 Mc in 15 seconds.

Table 31

Winnipeg, Canada (49.9°N, 97.4°W) August 1951*

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(330)	(2.4)					(1.9)	---
01	(310)	(3.0)					(3.0)	---
02	---	(3.0)					2.3	---
03	---	---					(2.5)	---
04	---	---					(3.3)	---
05	(350)	(3.1)	---	---			(2.7)	---
06	---	(3.3)	---	---	---	---	(1.8)	---
07	---	---	---	---	---	---		---
08	---	---	---	---	---	---		---
09	---	---	---	---	---	---	(3.0)	---
10	---	---	220	4.0	110	3.0	(2.1)	---
11	(440)	(5.0)	220	4.3	---	---	(3.0)	(2.7)
12	(440)	(5.2)	---	4.4	---	---	(3.2)	(2.7)
13	(430)	(5.0)	220	4.3	100	3.3		(2.7)
14	(400)	(5.0)	220	4.3	---	3.0	(2.2)	(2.7)
15	(410)	5.2	220	4.2	110	---	2.6	(2.6)
16	(400)	5.3	220	4.2	---	---	3.0	(2.6)
17	360	5.4	240	3.9	---	---	2.8	(2.8)
18	(300)	6.0	---	---	---	---	2.8	(2.7)
19	(260)	(5.7)	---	---	---	---	3.0	---
20	(240)	(5.0)			---	---	2.0	---
21	(270)	(4.5)					1.8	---
22	(270)	(4.0)					(3.0)	---
23	(310)	(3.0)					2.6	---

Time: 90.0°W.
Sweep: 0.6 Mc to 20.0 Mc in 15 seconds.
*Data for 18 (2300) through 31.

Table 32

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEe	(M3000)F2
00	300	3.3					1.4	2.7
01	280	3.2					1.6	2.8
02	280	2.9					2.1	2.9
03	290	2.8	---	---			3.1	2.7
04	300	2.4	---	---	---	---	1.6	2.9
06	270	3.4	240	---	120	2.0	2.0	3.0
06	350	4.4	230	3.6	110	2.4		3.0
07	340	5.0	220	4.0	110	2.8		3.2
08	340	5.2	210	4.3	100	3.0		3.0
09	360	5.3	200	4.4	100	3.2	3.6	2.9
10	380	5.5	200	4.6	100	3.3	3.6	3.0
11	400	5.6	200	4.7	100	3.4	3.2	2.9
12	400	5.8	210	4.6	100	3.4		2.9
13	400	5.8	210	4.6	100	3.3		2.8
14	370	6.0	210	4.6	100	3.3		2.9
15	340	6.0	210	4.4	100	3.2		2.9
16	330	6.2	220	4.2	100	2.8		2.9
17	300	6.3	240	3.8	100	2.6		3.0
18	270	6.8	250	3.2	110	2.2	2.2	2.9
19	250	7.0					1.7	3.0
20	240	6.4					1.6	3.0
21	260	6.6					1.4	3.0
22	280	5.0					1.6	2.8
23	300	4.2					1.7	2.8

Time: 60.0°W.
Sweep: 0.6 Mc to 20.0 Mc in 16 seconds.

Table 33

Ottawa, Canada (45.4°N, 75.7°W) August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.0					1.9	2.9
01	290	3.0					1.9	2.9
02	320	2.8					1.9	3.0
03	300	2.7					1.9	3.0
04	310	2.5					1.8	2.9
05	280	3.0			---	---	2.0	3.1
06	280	3.8	240	3.7	120	2.3		3.1
07	340	4.6	220	3.8	110	2.7		3.1
08	370	4.9	220	4.0	110	2.9		3.0
09	400	5.0	210	4.2	110	3.2		3.0
10	380	5.0	210	4.4	110	3.3		2.8
11	390	5.2	200	4.4	110	3.4		2.8
12	430	5.3	210	4.6	110	3.6		2.7
13	400	5.6	210	4.6	110	3.5		2.8
14	420	5.4	210	4.5	110	3.4		2.8
15	380	5.6	220	4.5	110	3.3		2.9
16	350	5.8	220	4.2	110	3.1		3.0
17	330	6.1	230	3.9	110	2.8		3.0
18	280	6.3	240	3.4	120	2.3	2.4	3.0
19	260	6.5			---	---	2.4	3.0
20	240	6.0					1.9	3.0
21	250	5.2					1.8	3.0
22	280	4.6					1.8	2.9
23	280	3.7					1.9	3.0

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

Table 34

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	5.4					3.2	2.6
01	320	5.3					2.5	2.6
02	320	5.1					3.0	2.6
03	320	4.6					2.6	2.6
04	320	4.6					2.0	2.6
05	320	5.0	---	---	---	---	2.6	2.6
06	350	5.7	290	3.8	120	2.2	4.3	2.8
07	330	6.3	280	4.2	120	2.7	5.2	2.8
08	340	6.6	250	4.4	120	2.9	5.4	2.9
09	340	5.9	250	4.6	120	---	5.4	2.9
10	410	5.8	250	4.7	120	---	5.2	2.7
11	400	6.0	240	4.8	---	---	4.2	2.6
12	400	6.0	250	4.9	120	---	5.0	2.8
13	400	6.5	260	4.8	130	3.5	4.2	2.7
14	380	6.4	260	4.6	120	---	3.7	2.8
15	370	6.4	270	4.4	120	3.2	4.0	2.8
16	360	6.1	280	4.2	120	3.0	4.5	2.8
17	320	6.4	280	3.7	120	2.7	4.8	2.8
18	320	6.2	---	---	---	---	5.2	2.8
19	300	7.1					5.6	2.7
20	320	6.4					5.0	2.6
21	320	6.3					4.1	2.7
22	320	6.0					4.3	2.7
23	320	6.0					3.0	2.6

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 2 minutes.

Table 35

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.6					4.2	2.9
01	290	5.2					3.4	2.8
02	290	5.0					3.4	2.9
03	280	4.9					3.2	2.9
04	300	4.6					2.8	2.8
05	270	4.9	250	---	---	1.6	3.0	3.0
06	280	6.0	240	3.5	110	2.3	3.6	3.1
07	290	6.4	230	4.0	110	2.6	4.8	3.1
08	290	6.3	---	4.4	110	2.8	6.4	3.3
09	310	6.4	210	4.6	110	3.1	6.6	3.1
10	(330)	(6.8)	220	4.7	110	3.2	7.2	(3.0)
11	340	6.4	220	4.8	110	---	6.6	2.9
12	330	6.9	230	4.9	110	---	5.0	3.0
13	340	6.7	240	4.8	110	---	5.2	2.9
14	330	6.8	240	4.6	110	3.2	4.6	3.0
15	310	6.9	230	4.6	110	3.2	4.6	3.0
16	300	6.6	250	4.2	110	2.9	4.0	3.2
17	290	6.8	240	4.0	110	2.6	4.4	3.1
18	270	6.9	240	3.4	120	---	4.8	3.2
19	260	6.8					4.4	3.1
20	260	6.6					4.4	3.1
21	290	6.2					4.6	2.9
22	290	5.6					4.7	2.9
23	290	6.0					4.8	2.8

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

Table 36

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	5.9					3.8	2.8
01	280	5.5					3.1	2.8
02	270	5.4					2.8	2.9
03	270	5.0					3.0	2.9
04	280	4.4					2.5	2.8
05	270	4.9	---	---	120	1.6	2.7	3.0
06	290	6.3	240	---	110	2.2	3.3	3.0
07	260	7.2	230	3.9	100	2.6	4.2	3.3
08	260	6.6	200	---	100	2.9	5.5	3.3
09	280	6.7	220	---	100	3.2	4.9	3.2
10	320	6.6	220	5.1	100	3.3	5.2	3.0
11	330	6.8	220	5.1	100	3.4	4.2	3.0
12	330	7.0	---	5.2	100	3.6	5.2	3.0
13	320	7.2	230	5.0	100	3.6	4.1	3.0
14	320	7.5	---	5.0	100	3.3	4.1	2.9
15	300	7.6	230	4.8	100	3.2	3.7	3.1
16	300	7.2	230	---	100	2.9	3.9	3.1
17	280	7.0	240	---	100	2.5	4.2	3.1
18	270	7.1	250	---	---	---	3.8	3.1
19	250	6.8					3.7	3.1
20	260	6.6					4.0	3.0
21	260	6.6					4.4	2.9
22	280	5.8					4.1	2.8
23	280	5.6					4.2	2.8

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

Table 37

Yamagawa, Japan (31.2°N, 130.6°E) — August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	5.2					3.8	2.8
01	300	5.2					3.3	2.9
02	300	5.1					3.0	3.0
03	280	4.9					2.8	2.9
04	290	4.4					2.4	2.9
05	290	4.6					2.4	2.9
06	270	5.5	---	---	---	---	2.6	3.1
07	250	7.2	240	---	110	2.1	4.0	3.3
08	250	6.8	---	---	110	---	4.2	3.4
09	300	7.0	220	---	100	---	4.6	2.9
10	300	7.2	230	---	---	---	4.5	3.0
11	340	7.7	210	---	---	---	4.7	2.9
12	340	8.3	260	---	---	---	5.0	2.9
13	350	8.5	250	5.2	---	---	6.0	2.9
14	340	9.0	240	---	---	---	6.0	2.8
15	320	9.1	220	4.9	---	---	5.4	2.9
16	300	9.1	220	---	---	---	5.2	3.0
17	300	8.9	270	---	100	2.6	4.2	3.2
18	290	8.3	240	---	100	2.0	3.8	3.1
19	250	8.4					4.2	3.2
20	250	6.9					3.9	3.2
21	260	6.0					3.5	2.9
22	300	5.3					4.4	2.9
23	300	5.9					4.3	2.9

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

Table 38

Formosa, China (25.0°N, 121.0°E) — August 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	7.3					4.4	3.1
01	280	7.5					4.5	3.2
02	260	7.2					3.9	3.4
03	260	6.4					3.1	3.4
04	250	5.2					3.3	3.5
05	250	5.2			---	---	3.0	3.4
06	240	5.7	220	3.7	120	3.1	3.4	3.7
07	240	7.0	210	4.2	120	3.2	4.8	3.8
08	265	7.3	210	4.6	120	3.2	5.6	3.6
09	270	7.8	210	5.2	110	3.5	5.5	3.7
10	310	8.4	210	5.5	110	3.5	6.0	3.2
11	320	9.8	200	5.3	120	3.9	5.5	3.2
12	320	10.7	200	5.6	120	3.7	5.6	3.2
13	320	10.8	200	5.8	120	4.0	5.4	3.2
14	315	11.7	220	6.0	110	4.0	5.4	3.3
15	310	11.7	200	5.7	110	3.4	5.6	3.4
16	285	11.5	210	5.0	110	3.5	6.2	3.4
17	280	11.3	220	4.8	120	3.4	5.4	3.4
18	260	11.3	220	4.4	110	3.1	4.6	3.6
19	220	10.5	200	4.6	100	---	3.2	3.6
20	240	8.5					3.6	3.6
21	260	7.5					3.4	3.4
22	290	6.8					3.2	3.1
23	285	7.2					4.5	3.2

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

Table 39

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	2.8						3.1
01	260	2.7						3.0
02	270	2.6					1.4	2.9
03	260	2.7					2.0	3.0
04	250	2.6					2.1	3.0
05	260	2.6					2.0	3.0
06	260	2.6					1.9	3.0
07	230	5.8			120	1.9		3.4
08	230	6.9	220	3.5	110	2.6		3.4
09	260	7.6	220	4.3	110	3.1		3.3
10	270	8.1	200	4.6	110	3.3		3.2
11	270	8.4	210	4.7	110	3.5		3.2
12	270	8.5	210	4.7	110	3.5		3.2
13	270	8.1	200	4.6	110	3.5	3.7	3.2
14	280	8.1	200	4.5	110	3.4	3.8	3.1
15	270	8.5	220	4.3	110	3.2	3.7	3.2
16	250	8.1	220	3.7	110	2.8	3.4	3.2
17	230	7.7	---	---	110	2.3	2.7	3.2
18	220	6.9			---	---	2.4	3.3
19	220	5.0					2.0	3.3
20	230	3.6						3.2
21	240	3.3						3.2
22	250	3.1						3.1
23	250	2.9						3.2

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

Table 40

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.4					2.6	2.9
01	260	3.4					3.0	3.0
02	260	3.4					3.0	2.9
03	250	3.3					3.0	3.C
04	240	3.3					3.0	3.0
05	250	3.0					2.8	3.0
06	245	2.9					2.8	3.1
07	240	4.9				1.8		3.5
08	240	6.2	230	3.3		2.4		3.4
09	250	7.0	230	4.2		2.8		3.4
10	265	7.6	230	4.4		3.1		3.4
11	290	8.1	220	4.7		3.3		3.3
12	270	8.1	230	4.6		3.3		3.3
13	270	7.8	230	4.6		3.2		3.2
14	270	7.8	230	4.5		3.2	3.2	3.2
15	270	8.2	225	4.1		3.0	3.2	3.2
16	250	7.7	220	3.6		2.7	3.0	3.4
17	240	6.8				2.0	2.7	3.4
18	230	6.0					2.8	3.3
19	230	4.6					3.0	3.2
20	240	4.0					2.5	3.1
21	250	3.6					2.4	2.9
22	250	3.5					2.5	2.9
23	260	3.5					2.6	2.9

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

Table 41

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	2.6						2.9
01	270	2.6						2.9
02	280	2.7						2.8
03	280	2.8						2.9
04	260	3.0						3.0
05	250	2.8						3.1
06	260	2.6						3.0
07	260	3.1			---	E		3.0
08	230	5.6	---	---	120	2.0		3.4
09	250	6.8	240	(3.3)	120	2.6		3.4
10	260	7.2	230	4.1	120	3.0		3.3
11	270	7.7	220	4.5	110	3.2		3.2
12	280	7.9	210	4.6	110	3.3		3.1
13	280	8.1	220	4.6	110	3.4		3.0
14	280	8.7	220	4.6	110	3.3		3.0
15	270	9.2	220	4.4	110	3.1	4.0	3.1
16	260	8.6	230	4.0	110	2.9	3.6	3.1
17	240	7.7	230	(3.2)	120	2.5	2.9	3.2
18	230	7.4			110	1.8	2.3	3.3
19	220	5.6					2.1	3.3
20	230	3.7					1.7	3.2
21	240	3.1						3.2
22	240	3.0						3.2
23	250	2.6						3.1

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

Table 42

Kiruna, Sweden (67.8°N, 20.5°E) — July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(305)	(4.9)					4.0	
01	(310)	(5.0)					3.8	
02	(340)	4.2	280	---	---	---	3.0	
03	370	4.7	240	3.2	100	2.0		
04	385	4.7	240	3.4	100	2.0		
05	380	4.8	220	3.5	100	2.3		
06	375	5.1	220	3.8	100	2.5		
07	385	5.2	210	4.0	100	2.7	3.0	
08	390	5.3	200	4.1	100	2.8	2.9	
09	370	5.7	200	4.1	100	2.8		
10	365	5.8	200	4.2	100	2.9	3.2	
11	365	5.8	200	4.3	100	2.9		
12	355	5.8	200	4.2	100	3.0		
13	365	5.7	200	4.2	100	2.9		
14	350	5.6	200	4.2	100	2.9	3.2	
15	340	5.4	200	4.2	100	2.8		
16	355	5.2	210	4.1	100	2.8		
17	330	5.2	220	4.0	100	2.5	3.0	
18	(330)	5.2	230	3.8	100	2.3	3.9	
19	---	5.1	245	---	100	2.1	3.7	
20	(350)	5.0	250	---	105	2.0	3.9	
21	(300)	5.1	250	---	100	1.9	4.0	
22	(330)	5.0	260	---	---	---	4.0	
23	(295)	(5.0)					4.2	

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

Table 43

Churchill, Canada (58.8°N, 94.2°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	4.6			---	---	7.3	3.0
01	295	4.2			---	---	5.9	3.0
02	300	4.4			---	---	6.0	2.8
03	290	4.0			110	1.8	5.0	3.0
04	290	4.2	---	---	110	2.0	3.0	3.1
05	280	4.0	---	---	100	2.4	1.5	3.0
06	360	4.5	260	3.9	100	2.9		3.0
07	410	4.6	280	4.0	110	3.4		(2.7)
08	460	5.0	250	4.3	100	3.4		2.6
09	460	5.2	210	4.2	100	3.2		2.5
10	420	5.5	220	4.5	100	3.5		2.8
11	410	5.7	210	4.5	100	3.2		2.7
12	440	5.4	220	4.5	100	3.0		2.6
13	420	5.8	220	4.5	100	3.2		2.7
14	400	5.6	210	4.5	100	3.2		2.7
15	390	5.9	220	4.4	100	3.0		2.7
16	380	5.7	220	4.3	100	3.0		2.8
17	360	5.6	240	4.2	100	3.0		2.7
18	330	5.6	260	4.0	110	3.0		2.8
19	330	5.0	280	3.6	110	3.0		2.9
20	320	5.0	---	---	110	2.9	6.5	3.0
21	300	4.9			110	2.9	6.4	3.0
22	280	4.5			120	2.4	8.0	3.0
23	270	5.0			---	---	8.2	(3.0)

Time: 90.0°W.
Sweep: 0.6 Mc to 20.0 Mc in 15 seconds.

Table 44

Prince Rupert, Canada (54.3°N, 130.3°W) July 1961

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	3.8					3.0	2.9
01	300	3.3					1.4	2.8
02	300	3.3					2.0	2.7
03	300	3.1					1.6	2.8
04	320	3.2	---	---	---	---	1.6	2.7
06	410	4.0	270	3.0	120	1.8		2.7
06	420	4.2	240	3.2	110	3.1		2.8
07	420	4.7	220	3.8	100	2.6		2.6
08	450	4.9	210	4.0	100	3.0		2.7
09	460	6.0	200	4.1	100	3.1	3.3	2.6
10	460	5.0	200	4.3	100	3.2		2.7
11	450	6.0	210	4.4	100	3.3	4.2	2.6
12	440	5.3	210	4.6	100	3.4	3.8	2.8
13	440	5.3	210	4.6	100	3.4	3.8	2.7
14	440	5.4	210	4.6	100	3.4	3.9	2.7
16	420	6.3	210	4.5	100	3.3		2.7
16	420	6.2	210	4.4	100	3.1	3.6	2.8
17	390	5.3	210	4.3	100	3.0		2.9
18	340	5.3	220	4.0	100	2.8		3.0
19	300	5.4	240	3.7	110	2.4	3.0	3.0
20	270	5.5	260	2.8	120	2.0	3.9	3.0
21	260	5.5			---	---	2.8	3.1
22	260	5.0					3.2	3.0
23	270	3.9					2.8	2.9

Time: 120.0°W.
Sweep: 0.6 Mc to 20.0 Mc in 15 seconds.

Table 45

Winnipeg, Canada (49.9°N, 97.4°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	3.4					3.0	(2.8)
01	300	3.6					3.9	2.6
02	310	3.4					4.0	2.7
03	300	3.4					3.4	(2.8)
04	300	3.2	---	---	---	---	3.0	(2.8)
05	260	3.7	240	---	110	---	3.2	2.7
06	(370)	4.1	230	3.5	120	2.3		(2.8)
07	450	4.7	220	3.9	110	2.8		2.8
08	460	5.0	210	4.0	110	3.0		2.6
09	440	5.2	200	4.2	110	3.3		2.6
10	390	5.7	210	4.4	110	(3.4)		2.8
11	400	5.7	200	4.5	110	(3.5)	3.6	2.6
12	440	5.5	200	4.6	100	(3.4)	3.4	2.6
13	430	5.5	220	4.5	110	(3.6)	3.4	2.5
14	430	5.6	220	4.8	110	3.4	2.6	2.5
15	430	5.7	220	4.4	110	(3.4)	3.4	2.8
16	390	5.8	220	4.4	110	(3.2)		2.6
17	380	6.9	220	4.2	110	3.0		2.7
18	320	5.9	230	4.0	110	2.8	2.3	2.8
19	300	6.0	240	3.8	120	2.6	2.9	2.8
20	270	6.0	---	---	---	---	2.0	2.8
21	260	5.5					2.0	2.8
22	260	4.8					1.7	2.8
23	290	3.7					3.2	2.8

Time: 90.0°W.
Sweep: 0.6 Mc to 20.0 Mc in 15 seconds.

Table 46

Ottawa, Canada (45.4°N, 75.7°W) July 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	3.8					2.0	2.8
01	290	3.6	---	---	---	---	2.8	2.8
02	280	3.2	---	---	---	---	3.4	2.7
03	290	2.9	---	---	---	---	3.4	2.8
04	290	3.0	---	---	---	---	2.0	2.8
05	260	3.4	230	2.9	120	1.9	1.9	2.8
06	280	4.0	220	3.6	110	2.6		2.9
07	340	4.6	210	3.9	110	2.9		2.8
08	400	4.6	200	4.2	110	3.0		2.8
09	400	5.2	200	4.3	100	3.2		2.7
10	420	5.2	200	4.4	100	3.4		2.7
11	420	5.3	200	4.6	100	3.6		2.8
12	430	5.3	200	4.6	100	3.6		2.8
13	420	5.2	200	4.4	110	3.6		2.8
14	420	5.4	210	4.5	100	3.5		2.8
15	390	5.8	210	4.4	110	3.4		2.7
16	370	6.0	220	4.3	110	3.2		2.8
17	340	6.0	220	4.0	110	2.9		2.8
18	310	6.0	230	3.8	120	2.7		2.8
19	260	6.1	250	---	120	2.0	2.5	2.8
20	250	6.3			---	---	2.3	2.8
21	250	5.9					1.9	2.7
22	260	5.0					2.4	2.8
23	270	4.1					1.8	2.7

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

Table 47

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	4.0						3.0
01	260	4.0						3.0
02	260	4.0					2.4	3.0
03	255	4.0					3.2	3.1
04	240	3.8					1.9	3.2
05	250	3.5					2.6	3.1
06	240	3.4						3.2
07	220	5.4			150	2.0		3.4
08	230	6.8	230	3.7	110	2.6		3.4
09	250	7.4	230	4.4	110	3.0		3.4
10	250	7.6	220	4.4	100	3.2		3.4
11	250	7.1	210	4.6	100	3.3		3.4
12	265	7.7	210	4.6	100	3.3		3.3
13	270	7.5	210	4.5	100	3.3		3.3
14	260	7.6	210	4.4	100	3.2	3.9	3.3
15	250	7.5	220	4.0	100	3.0	4.0	3.3
16	230	6.9	220	3.4	120	2.6	3.5	3.3
17	220	6.8			160	1.8	3.0	3.3
18	220	5.6					3.6	3.3
19	220	4.5					2.6	3.2
20	245	4.0						3.1
21	250	4.0						3.0
22	250	3.9						3.0
23	260	4.0						3.1

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

Table 48

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	2.6					3.1	2.9
01	280	2.6					3.3	2.9
02	300	2.3					3.5	2.8
03	280	2.5					3.0	2.9
04	270	2.4					3.5	2.9
05	250	2.5					3.0	2.9
06	250	2.2					1.5	3.0
07	260	2.4						3.0
08	230	4.8			120	1.9	2.3	3.3
09	230	5.8			110	2.5		3.3
10	230	6.5	---	---	100	3.0		3.2
11	250	7.0	215	4.3	100	3.0		3.2
12	250	7.2	205	4.4	100	3.1		3.2
13	250	7.2	210	4.3	100	3.0		3.1
14	250	7.5	220	4.2	100	3.0		3.2
15	250	7.3	210	3.7	100	2.6		3.2
16	230	7.2			110	2.1		3.2
17	220	6.5					3.0	3.1
18	230	5.5					2.0	3.0
19	230	4.6						3.0
20	245	3.8						3.0
21	250	3.3						3.0
22	260	2.9						2.9
23	290	2.7						2.9

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

Table 49

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	2.9					3.0	2.9
01	290	2.8					3.8	2.9
02	290	2.7					3.4	2.9
03	280	2.7					3.2	2.9
04	270	2.5					3.3	3.1
05	250	2.2					3.4	3.2
06	250	1.8					3.7	3.2
07	260	2.5				---	3.0	3.2
08	240	4.8	---	---		1.6	2.9	3.5
09	240	5.7	240	3.3		2.3	3.5	3.5
10	250	6.3	240	3.8		2.7	3.7	3.4
11	250	6.8	230	4.0		2.8	3.9	3.4
12	270	7.2	230	4.2		2.9	4.2	3.2
13	260	7.5	240	4.2		2.9	5.7	3.3
14	260	7.4	230	3.9		2.7	4.5	3.3
15	250	6.8	230	3.5		2.4	4.0	3.3
16	240	6.5	250	3.0		1.7	4.4	3.3
17	240	5.8				1.3	4.0	3.2
18	250	5.0					3.5	3.1
19	250	4.2					2.9	3.1
20	250	3.7					2.8	3.0
21	260	3.4					2.8	2.9
22	280	3.1					2.8	2.9
23	290	3.0					2.8	2.9

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

Table 50

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(315)	---	---	---	---	---	4.1	
01	(330)	(4.4)	---	---	---	---	3.7	
02	340	4.6	250	2.7	---	---	3.4	
03	330	4.8	250	3.1	100	1.9	2.0	
04	365	4.8	240	3.3	100	2.1		
05	350	5.2	230	3.5	100	2.2		
06	370	5.3	225	3.8	100	2.5		
07	370	5.4	220	4.0	100	2.6		
08	355	5.9	210	4.0	100	2.8		
09	350	5.8	210	4.1	100	2.9		
10	350	5.7	210	4.1	100	3.0		
11	360	5.4	200	4.2	100	3.0	3.1	
12	380	5.4	200	4.3	100	3.0	3.2	
13	360	5.5	200	4.2	100	2.9		
14	350	5.6	205	4.3	100	2.9		
15	350	5.4	205	4.1	100	2.7		
16	340	5.4	220	4.0	100	2.5		
17	330	5.2	230	4.0	100	2.4	3.1	
18	300	5.3	235	3.9	105	2.3	3.2	
19	(305)	5.1	245	3.6	110	2.1	3.2	
20	(340)	5.0	255	---	110	2.1	3.4	
21	(330)	5.0	260	---	110	2.0	3.7	
22	(330)	(4.7)	275	---	105	1.9	3.8	
23	(320)	---	---	---	---	---	3.7	

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

Table 51

Fribourg, Germany (48.1°N, 7.8°E) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	6.0					2.8	2.7
01	290	5.5					2.9	2.7
02	295	5.3					3.0	2.7
03	290	5.3					3.1	2.7
04	290	5.0	---	---	---	E	2.7	2.8
05	302	5.6	265	3.3	121	2.0	3.3	2.9
06	310	6.0	250	4.1	117	2.7	3.0	3.0
07	340	6.5	252	4.4	113	3.0	3.0	2.9
08	340	7.0	260	4.6	111	3.2	4.1	2.9
09	350	6.9	235	4.8	111	3.4	4.7	2.9
10	335	7.2	245	5.0	109	3.5	3.8	3.0
11	360	7.0	230	4.9	111	3.6	4.1	2.9
12	350	6.6	220	5.0	110	3.6	4.3	2.9
13	375	6.8	225	4.9	111	3.5	4.3	2.8
14	360	6.8	240	4.9	111	3.5	3.4	2.8
15	370	6.8	235	4.9	111	3.5	3.4	2.8
16	340	7.0	245	4.6	112	3.3		2.9
17	318	6.8	270	4.4	111	3.0		2.9
18	305	7.0	265	3.8	117	2.6		2.9
19	285	7.0	275	---	125	2.0	4.0	3.0
20	270	7.3					4.4	(3.0)
21	280	7.1					3.4	2.9
22	265	6.9					3.0	2.9
23	280	6.4					2.8	2.7

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 52

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	4.0						3.0
01	270	4.0						2.9
02	250	4.3						3.1
03	250	4.3						3.1
04	240	4.2						3.2
05	230	3.6						3.2
06	250	3.5						3.1
07	220	5.5			150	2.1		3.4
08	230	7.0	---	3.4	110	2.6		3.4
09	250	7.6	230	4.4	105	3.0		3.4
10	250	8.1	220	4.5	100	3.2		3.4
11	250	7.6	215	4.6	100	3.4		3.3
12	250	8.1	210	4.6	100	3.5		3.3
13	260	8.0	210	4.7	100	3.4	4.0	3.3
14	250	8.0	210	4.4	100	3.2	3.4	3.3
15	250	8.1	225	4.0	100	2.9	4.2	3.3
16	230	7.5	---	3.2	120	2.5	3.6	3.4
17	220	6.8			---	1.6	4.0	3.3
18	210	5.4					3.2	3.2
19	220	4.4					2.2	3.2
20	240	4.0						3.1
21	245	4.0						3.1
22	240	3.8						3.1
23	250	4.0						3.0

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

Table 53

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	255	3.4					1.6	2.9
01	260	3.5					2.4	3.0
02	260	3.7					2.5	3.0
03	255	4.0					2.5	3.0
04	240	4.0					2.4	3.2
05	210	3.7					2.5	3.3
06	220	(3.0)					2.3	3.0
07	230	4.0			---	(1.6)	2.2	3.3
08	210	6.1			(110)	2.1		3.6
09	220	7.0	215	(3.6)	110	2.7		3.5
10	230	7.3	210	(4.2)	100	3.0		3.5
11	230	7.7	220	(4.4)	100	3.1		3.5
12	240	7.3	210	(4.5)	100	3.2	3.6	3.5
13	240	7.6	210	(4.3)	100	3.2	3.8	3.4
14	240	7.7	215	(4.2)	100	3.0	3.8	3.5
15	230	7.8	220	---	105	2.7	3.5	3.5
16	220	7.4	---	---	110	2.2	2.4	3.5
17	210	7.0			---	<1.7	2.4	3.5
18	210	5.2					2.4	3.3
19	220	4.5					2.3	3.3
20	220	3.8						3.2
21	(240)	3.6					2.4	3.0
22	(250)	3.5						3.0
23	(260)	3.2						2.9

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

Table 54

Hobart, Australia (42.8°S,147.4°E) June 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	2[illegible]0	2.5						2.8
01	295	2.5					1.7	2.9
02	295	2.5					2.2	2.8
03	290	2.5						2.9
04	260	2.5						3.0
05	250	2.6						3.0
06	250	2.2						3.0
07	260	2.3						2.9
08	240	5.0			120	1.9	2.1	3.3
09	230	6.5			110	2.5		3.3
10	240	7.0	---	---	110	2.9		3.2
11	235	7.4	220	4.0	100	3.0		3.2
12	250	7.5	210	4.2	100	3.1		3.2
13	250	7.7	210	4.1	100	3.0		3.2
14	240	8.0	230	4.0	100	3.0		3.1
15	240	7.6	---	---	110	2.5		3.2
16	230	7.8			110	2.0	2.3	3.2
17	220	7.0			---	E	2.0	3.1
18	220	5.7						3.0
19	230	4.5						3.1
20	240	3.5						3.0
21	250	2.9						3.0
22	265	2.5						2.9
23	290	2.5						2.9

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

Table 55

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	(5.0)					4.0	
01	315	4.5					3.0	
02	305	4.5	280	---	---	---	2.1	
03	325	4.8	270	3.0	105	1.7	2.0	
04	345	4.6	250	3.3	105	2.0		
05	380	4.7	240	3.6	100	2.1		
06	390	5.0	235	3.8	100	2.4		
07	380	5.2	230	4.0	100	2.8		
08	360	5.6	225	4.1	100	2.9		
09	375	6.0	220	4.3	100	2.9		
10	355	6.0	220	4.3	100	3.0		
11	355	6.0	215	4.3	100	3.0		
12	350	6.0	215	4.3	100	3.1		
13	340	5.8	210	4.3	100	3.0		
14	350	5.6	220	4.3	100	3.0		
15	350	5.5	220	4.2	100	2.9		
16	340	5.6	230	4.1	100	2.7		
17	315	5.7	235	3.9	100	2.6	2.8	
18	310	5.4	245	3.7	100	2.3	3.2	
19	325	5.4	250	---	110	2.1	4.0	
20	320	5.4	250	---	110	2.0	3.1	
21	310	5.1	270	---	110	1.9	2.6	
22	300	4.4	---	---	---	---	3.1	
23	305	4.6					4.2	

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

Table 56

Fribourg, Germany (48.1°N, 7.8°E) May 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	288	5.7						2.6
01	300	5.3					1.9	2.6
02	300	5.1					2.2	2.7
03	282	4.8						2.7
04	290	4.6	---	---			2.1	2.8
05	270	4.6	260	3.0	126	1.8	2.7	2.9
06	288	5.2	250	3.7	113	2.4	3.1	3.0
07	340	5.8	250	4.4	111	2.8		2.9
08	330	6.2	230	4.4	110	3.1	3.8	2.9
09	340	6.7	225	4.6	111	3.3	4.2	2.9
10	350	6.8	228	4.7	111	3.4	3.5	2.9
11	360	6.9	230	4.8	111	3.5	3.9	2.8
12	365	6.8	242	4.9	111	3.6	3.4	2.8
13	340	7.1	232	4.8	111	3.6	3.9	2.9
14	340	7.0	240	4.7	111	3.4		2.9
15	330	7.0	240	4.7	111	3.3		2.9
16	320	7.2	240	4.5	113	3.2		2.9
17	310	7.4	250	4.2	113	2.8	3.1	3.0
18	290	7.3	260	3.8	119	2.4	3.6	3.0
19	280	7.4	---	---	133	1.8	3.5	3.0
20	265	7.1					2.9	3.0
21	260	7.0					2.8	2.9
22	265	6.5						2.8
23	280	5.7						2.7

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 57

Fribourg, Germany (48.1°N, 7.8°E) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	4.5						2.6
01	305	4.2					1.8	2.6
02	305	4.0						2.6
03	300	3.8						2.7
04	285	3.8						2.7
05	280	3.7			130	1.4	2.2	2.9
06	260	4.8	260	---	125	2.0	2.4	3.1
07	270	5.3	248	4.1	115	2.5	3.0	3.1
08	320	5.5	235	4.3	113	3.0	3.0	3.1
09	320	5.9	238	4.5	111	3.2	3.4	3.0
10	325	6.7	230	4.6	111	3.3	4.0	3.0
11	318	7.0	225	4.7	111	3.4		3.0
12	328	7.2	230	4.8	111	3.5	3.4	2.9
13	312	7.5	235	4.7	111	3.4		3.0
14	310	7.6	230	4.6	111	3.3		3.0
15	302	7.6	240	4.4	111	3.2		3.0
16	300	7.6	245	4.1	111	2.8	1.7	3.0
17	280	7.4	250	4.0	117	2.5		3.0
18	260	7.7	---	---	123	2.1	2.7	3.0
19	250	7.2					1.7	3.1
20	245	6.6						3.0
21	250	6.0						2.9
22	270	5.0						2.8
23	290	4.6						2.7

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 58

Dakar, French West Africa (14.6°N, 17.4°W) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	302	7.5						2.8
01	265	6.9					2.8	2.8
02	270	6.2					3.0	2.9
03	255	5.8					3.2	3.0
04	250	5.3					3.3	3.0
05	255	4.4					3.0	3.0
06	255	5.7			121	1.6	3.0	3.1
07	245	7.8	238	---	113	2.5	3.7	3.2
08	270	9.4	230	---	111	3.1	3.2	3.1
09	288	10.6	215	5.0	109	3.4		3.0
10	300	11.6	220	5.1	107	3.6	3.9	2.9
11	325	12.6	210	5.2	107	3.8	4.1	2.8
12	350	13.5	208	5.1	107	3.9	4.2	2.7
13	335	(14.0)	200	5.0	107	3.9		2.6
14	310	(14.0)	215	5.0	107	3.7	4.6	(2.6)
15	310	14.0	222	4.9	107	3.4	4.8	(2.8)
16	280	14.0	228	4.6	109	3.1	4.2	(2.7)
17	265	14.0	232	---	110	2.5	3.8	2.7
18	250	13.0	---	---	---	---	3.8	2.8
19	290	12.0					3.4	2.6
20	340	11.2						(2.5)
21	345	10.6						2.5
22	335	9.3						2.6
23	330	8.5						2.7

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 59

Macquarie I. (54.5°S, 159.0°E) April 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(330)	(3.8)					3.8	(2.9)
01	(350)	(3.7)					3.8	(2.9)
02	(350)	(4.3)					3.5	(2.9)
03	(300)	(3.7)					3.5	(3.0)
04	(300)	(3.9)					3.5	(3.0)
05	(265)	(3.5)					3.3	(3.0)
06	300	3.0					2.0	2.9
07	250	4.4			110	1.8	2.0	3.0
08	250	5.4	---	---	110	2.2		3.2
09	250	5.8	---	---	110	2.6		3.2
10	260	7.0	230	4.0	110	3.0		3.1
11	270	6.8	230	4.0	110	2.9		3.1
12	255	8.3	225	---	110	3.0		3.1
13	260	7.4	240	4.0	115	2.8		3.1
14	270	7.0	250	4.0	120	2.8		3.1
15	250	7.4	---	---	120	2.4		3.1
16	245	6.8	---	---	140	2.0		3.1
17	250	6.8			---	E	3.6	3.1
18	265	5.5					3.6	3.0
19	(310)	(4.4)					(4.2)	(3.0)
20	(290)	(4.5)					5.0	(2.9)
21	(285)	(4.5)					4.5	(3.0)
22	---	---					5.2	---
23	---	---					4.7	---

Time: 157.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 60

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

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	3.4						2.9
01	<280	3.2						2.8
02	280	3.2						2.9
03	280	3.0						2.9
04	280	2.6						3.0
05	250	2.6						3.2
06	240	3.6	220	---	110	1.7		3.3
07	220	5.0	200	---	100	1.9		3.6
08	220	5.7	200	---	100	2.4		3.5
09	230	7.1	190	4.0	100	2.7	2.9	3.4
10	255	7.4	180	4.0	90	2.9		3.3
11	250	7.4	180	4.0	95	3.0		3.4
12	240	7.4	180	4.0	90	3.1		3.3
13	240	7.3	190	4.1	90	3.1		3.4
14	240	7.4	190	4.2	90	2.9		3.3
15	240	7.6	200	---	100	2.7		3.4
16	230	7.8	200	---	100	2.4		3.4
17	225	7.4	210	---	100	2.0		3.4
18	230	6.7	200	---	100	1.7		3.4
19	205	5.7	200	---				3.3
20	200	4.8						3.3
21	230	4.2						3.1
22	255	3.8						3.0
23	270	3.6						2.9

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

Table 61

Poitiers, France (46.6°N, 0.3°E) — March 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<330	3.9						(2.8)
01	<330	3.5						(2.7)
02	<330	3.6						(2.8)
03	<330	3.5						---
04	<320	3.2						---
05	---	2.6						---
06	280	3.7						(3.2)
07	235	5.2	---	---				(3.4)
08	250	5.8	225	3.6				(3.2)
09	255	6.7	220	4.0				3.2
10	270	7.2	210	4.1				3.3
11	270	7.2	220	4.2				3.2
12	280	7.4	215	4.3				3.3
13	275	7.4	205	4.2				3.2
14	260	7.0	225	4.1				3.3
15	260	7.5	<230	4.0				3.3
16	260	7.5	230	---				3.3
17	250	7.4	230	---				3.4
18	230	7.2	---	---				(3.4)
19	235	6.0						(3.0)
20	250	5.3						(3.0)
21	270	4.6						3.0
22	< 300	4.1						(2.8)
23	< 330	4.0						(2.8)

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

Table 62

Macquarie I. (54.5°S, 159.0°E) — March 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.6					3.8	(3.0)
01	(325)	(3.8)					4.2	(3.0)
02	350	3.6					3.6	2.9
03	300	3.1					2.0	3.0
04	300	3.1					3.4	3.0
05	260	3.1						3.0
06	250	3.6			115	1.8		3.1
07	230	4.4	---	---	120	2.2		3.3
08	275	5.0	210	4.0	110	2.6		3.2
09	300	5.2	210	4.1	110	(2.8)		3.2
10	300	5.8	200	4.2	110	(3.0)		3.2
11	300	5.9	210	4.3	110	(3.1)		3.2
12	305	6.0	200	4.4	110	(3.1)		3.2
13	310	6.0	210	4.4	110	(3.1)		3.1
14	300	6.1	205	4.3	110	(3.0)		3.1
15	300	6.2	220	4.2	100	(2.8)		3.1
16	280	6.2	225	3.8	110	(2.7)		3.1
17	255	5.8	260	---	110	(2.2)		3.1
18	250	5.5			135	(2.0)	2.6	3.0
19	(270)	(5.5)						(3.3)
20	245	5.5					4.3	3.2
21	250	4.6					4.0	3.1
22	265	4.1					4.0	3.0
23	285	4.4					4.2	3.0

Time: 157.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 63

Terre Adelie (66.8°S, 141.4°E) — March 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.3	250	3.8	115	2.4	1.5	
01	320	6.0	240	4.0	120	2.6	1.5	
02	310	5.6	230	4.0	110	2.6	1.5	
03	300	5.7	230	4.0	110	2.7	1.5	
04	350	5.6	230	3.9	115	2.6	1.5	
05	315	6.0	230	3.9	120	2.6	1.5	
06	310	5.7	235	3.7	125	2.4	2.0	
07	300	5.6	250	3.6	135	1.7	1.5	
08	270	5.7	250	3.5	145	1.5	1.5	
09	260	5.8					2.4	
10	250	5.5					1.5	
11	250	5.4					1.5	
12	250	4.5					1.9	
13	270	3.6					1.5	
14	270	2.8					1.9	
15	300	2.8					1.5	
16	300	2.8					1.5	
17	300	2.6					3.0	
18	320	2.7					2.3	
19	300	2.4					2.7	
20	280	2.8					3.7	
21	280	3.5	250			1.5	2.8	
22	300	4.5	250	3.6	130	1.5	1.5	
23	290	5.0	240	3.5	120	2.4	1.5	

Time: 0.0°.
Sweep: 1.5 Mc to 17.0 Mc in 1 minute.

Table 64

Macquarie I. (54.5°S, 159.0°E) — February 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.6					3.8	2.9
01	(300)	(3.3)					3.7	(3.0)
02	(300)	(3.5)					3.6	(3.0)
03	(325)	(3.2)					3.6	(2.8)
04	290	3.2					3.2	(3.0)
05	250	3.8					2.5	(3.2)
06	250	4.3	---	---	110	2.2		3.1
07	250	4.8	220	3.9	110	2.6	3.0	3.2
08	350	5.1	215	4.2	110	3.0		3.0
09	350	5.6	210	4.4	110	3.2	3.1	2.9
10	340	6.2	200	4.4	110	3.2	3.5	3.0
11	325	6.0	200	4.5	100	3.4		3.1
12	330	6.0	200	4.5	105	3.5		3.1
13	330	6.0	205	4.5	105	3.4		3.0
14	330	6.4	210	4.4	110	3.3		3.0
15	320	6.6	210	4.3	110	3.2		3.0
16	300	6.5	220	4.2	110	3.0		3.1
17	290	6.5	220	4.2	110	2.7	3.1	2.9
18	260	6.4	---	---	110	2.4	2.9	3.1
19	---	---			---	---		---
20	280	5.0					3.6	2.9
21	260	5.0					5.0	3.0
22	(270)	(4.5)					5.0	(3.0)
23	300	3.8					4.9	3.0

Time: 157.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 65

Macquarie I. (54.5°S, 159.0°E) — January 1951

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	4.1					4.4	3.0
01	300	3.6					4.4	3.0
02	300	3.4					4.0	3.1
03	285	3.4					3.6	3.0
04	260	3.6			---	---	3.0	3.1
05	250	4.1	---	---	100	2.4	3.6	3.1
06	255	4.7	220	3.9	100	2.6	3.5	3.2
07	350	5.2	210	4.3	100	3.0	3.6	3.1
08	345	5.4	200	4.4	100	3.2	3.5	3.0
09	330	5.7	200	4.5	100	3.3	3.6	3.0
10	340	5.8	200	4.5	100	3.5	3.7	3.1
11	350	5.7	200	4.6	100	3.5	3.6	3.0
12	355	5.8	200	4.6	100	3.5	3.6	3.0
13	350	6.0	200	4.6	100	3.5	3.5	3.0
14	345	6.0	200	4.5	100	3.5	3.5	3.0
15	330	6.4	200	4.5	100	3.3	[illegible]	3.0
16	310	6.3	200	4.5	100	3.2	3.4	3.0
17	300	6.2	210	4.2	110	2.9	3.5	3.1
18	270	6.1	215	3.8	110	2.6	3.6	3.2
19	(260)	(5.1)			---	---	(3.6)	(3.1)
20	270	5.0					4.0	3.0
21	265	4.8					3.8	3.1
22	280	4.5					4.6	3.0
23	300	4.4					4.5	3.0

Time: 157.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 66

Macquarie I. (54.5°S, 159.0°E) — December 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	265	4.5					3.8	3.0
01	255	4.4					3.6	3.0
02	250	4.3					2.8	3.0
03	250	4.0					2.7	3.1
04	240	4.0			100	2.0	3.2	3.2
05	230	4.5	---	---	100	2.4	3.2	3.2
06	280	5.1	210	4.0	100	2.7	3.3	3.1
07	325	5.4	200	4.3	100	2.9	3.5	3.1
08	320	5.6	200	4.4	100	3.2	3.5	3.1
09	320	5.8	200	4.5	100	3.4	3.6	3.1
10	310	6.0	190	4.6	100	3.4	3.6	3.0
11	350	5.9	190	4.6	100	3.5	3.6	3.0
12	330	6.0	195	4.6	100	3.5	3.6	3.0
13	320	6.2	190	4.7	100	3.5	3.6	3.1
14	335	6.5	200	4.6	100	3.5	3.5	3.0
15	305	6.4	195	4.5	100	3.4		3.0
16	300	6.5	200	4.4	100	3.2		3.1
17	260	6.7	200	4.2	100	2.9	3.6	3.1
18	255	6.5	205	3.8	100	2.5	3.4	3.2
19	(240)	(6.4)			---	---	(3.6)	(3.1)
20	240	6.0					3.7	3.1
21	250	5.0					4.0	3.1
22	260	5.5					4.3	3.1
23	260	5.0					4.1	3.0

Time: 157.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 67

Macquarie I. (54.5°S, 159.0°E) — November 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(285)	(4.2)					3.8	(3.0)
01	(280)	(4.0)					3.6	(2.9)
02	(260)	3.4					3.4	2.9
03	255	3.6					2.7	3.0
04	245	3.7					2.8	3.0
05	245	4.4			100	2.2	2.6	3.1
06	230	4.7	---	---	100	2.6		3.1
07	340	5.0	200	4.2	100	2.9	3.2	3.0
08	360	5.3	200	4.4	100	3.0	3.5	2.9
09	360	5.6	200	4.5	100	3.2	3.4	2.9
10	355	5.7	200	4.5	100	3.3		2.9
11	335	5.8	200	4.5	100	3.4	3.4	3.0
12	320	6.1	200	4.6	100	3.4		3.0
13	340	6.2	200	4.5	100	3.4	3.6	3.0
14	330	6.0	200	4.5	100	3.2		3.0
15	300	6.4	200	4.4	100	3.1		3.0
16	290	6.5	200	4.3	100	2.9	3.2	3.0
17	260	6.6	200	4.2	100	2.6	3.5	3.0
18	250	6.3	---	---	100	2.4	3.6	3.1
19	---	---						---
20	(230)	(6.0)					3.6	(3.2)
21	(255)	(4.9)					4.3	(3.0)
22	(250)	(5.0)					3.9	(3.0)
23	(260)	(4.6)					3.6	(2.9)

Time: 157.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 68

Macquarie I. (54.5°S, 159.0°E) — October 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	3.8					3.6	3.0
01	260	3.5					2.8	3.0
02	260	3.5					3.5	3.0
03	250	3.2					3.2	2.9
04	280	2.8					3.0	2.9
05	240	3.6						3.0
06	225	4.4			100	2.2		3.2
07	210	5.0	---	---	100	2.6		3.1
08	270	5.4	200	4.4	100	2.9		3.1
09	315	5.6	200	4.4	100	3.1		3.1
10	330	5.7	200	4.4	100	3.2		3.1
11	330	5.9	200	4.5	100	3.3		3.0
12	330	6.0	200	4.5	100	3.3		3.0
13	315	6.4	190	4.4	100	3.2		3.0
14	300	6.6	190	4.5	100	3.2		3.0
15	300	6.6	200	4.2	100	3.0		3.0
16	300	6.6	200	4.0	100	2.7		3.0
17	250	6.0	---	---	100	2.3	3.3	3.1
18	250	6.0			100	2.0	4.3	3.0
19	(240)	(6.0)					(4.4)	(3.1)
20	(280)	(5.5)					4.4	(3.0)
21	(270)	(4.6)					3.6	(3.0)
22	(250)	(4.6)					3.6	(3.0)
23	(300)	(4.5)					4.3	(2.9)

Time: 157.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 69

Macquarie I. (54.5°S, 159.0°E) — September 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(300)	(3.2)					4.0	(3.0)
01	(300)	(3.0)					4.4	(3.0)
02	(280)	(3.0)					3.8	(3.0)
03	270	3.0					2.8	3.0
04	265	3.0						3.0
05	250	2.9						3.0
06	240	3.6			---	E		3.2
07	230	4.2	---	---	---	---		3.3
08	255	5.0	210	3.8	100	2.7		3.3
09	280	5.0	200	4.1	100	2.8		3.2
10	300	5.4	200	4.2	100	3.0		3.2
11	300	5.8	195	4.3	100	3.1		3.2
12	300	6.0	200	4.3	100	3.0		3.1
13	260	6.4	200	4.2	100	3.1		3.3
14	280	6.2	200	4.1	100	2.9		3.2
15	260	5.6	200	3.8	100	2.8		3.2
16	250	5.8	210	---	100	2.3		3.2
17	240	5.8			115	1.9		3.2
18	240	5.2					2.1	3.2
19	(240)	(5.0)					(3.5)	(3.0)
20	240	4.2					3.5	3.0
21	(260)	(3.6)					4.4	(3.1)
22	(265)	(3.3)					3.7	(3.0)
23	(270)	(3.8)					4.5	(3.0)

Time: 157.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 70

Macquarie I. (54.5°S, 159.0°E) — August 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(260)	(2.8)					4.3	(3.0)
01	(255)	(2.3)					3.6	(3.0)
02	(295)	(3.0)					4.1	(3.1)
03	(250)	(2.3)					3.5	(3.1)
04	(270)	(2.7)					4.0	(3.0)
05	260	2.3					3.5	3.0
06	(260)	(2.2)					3.5	(3.1)
07	245	3.0					2.2	3.1
08	210	4.1			100	1.9	2.2	3.5
09	210	4.8			100	2.3		3.4
10	225	5.0	200	---	95	2.6		3.4
11	250	5.7	190	3.8	100	2.7		3.3
12	250	5.8	195	---	100	2.8	3.0	3.2
13	240	6.0	190	3.6	100	2.7		3.3
14	250	6.0	200	3.6	100	2.6		3.3
15	(240)	(6.3)	215	---	---	---	2.5	(3.2)
16	(230)	(5.6)			100	2.1		(3.3)
17	(245)	(5.5)					2.4	(3.2)
18	(250)	(4.5)					2.2	(3.3)
19	(260)	(4.0)					(2.7)	(3.0)
20	(245)	(3.4)					(2.8)	(3.1)
21	(270)	(3.5)					4.4	(3.1)
22	(280)	(2.8)					3.5	(3.0)
23	(260)	(2.6)					4.0	(3.0

Time: 157.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 71

Macquarie I. (54.5°S, 159.0°E) — July 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.4					4.0	3.0
01	270	3.5					3.4	3.0
02	260	3.2					3.1	3.0
03	260	3.2					3.1	3.0
04	250	3.1					2.2	3.0
05	260	2.6					2.1	3.1
06	250	2.4					2.0	3.1
07	250	2.6					2.2	3.1
08	210	3.8			---	E	2.2	3.5
09	200	5.1			100	2.1	2.2	3.6
10	200	5.6	---	---	100	2.4	2.6	3.5
11	200	6.6	---	---	100	2.6		3.6
12	(200)	(7.0)	---	---	100	2.6	(2.7)	(3.6)
13	200	7.1	---	---	100	2.6		3.5
14	200	7.4	---	---	100	2.4		3.6
16	(200)	(7.2)			---	2.3	(2.5)	(3.6)
16	(205)	(7.1)			---	E		(3.5)
17	205	6.4					(2.0)	3.4
18	(215)	(4.5)					2.0	(3.2)
19	---	---						---
20	(260)	(3.5)					4.5	(3.2)
21	250	3.1					3.2	3.1
22	275	3.0					4.3	3.0
23	(265)	(3.5)					4.6	(3.1)

Time: 157.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 72*

Macquarie I. (54.5°S, 159.0°E) — June 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(275)	(3.4)					(3.2)	(3.4)
01	(260)	(3.4)					(3.4)	(3.2)
02	---	---					(2.3)	---
03	(255)	(3.6)						(3.2)
04	(255)	(3.3)						(3.0)
05	(255)	(3.2)						(3.1)
06	(225)	(2.8)						(3.3)
07	(240)	(2.8)						(3.4)
08	(200)	(4.2)			---	---	(2.2)	(3.6)
09	(200)	(5.5)			---	1.9	(2.0)	(3.7)
10	(200)	(6.6)			100	2.3	(2.4)	(3.8)
11	(195)	(7.0)			---	---	(2.7)	(3.8)
12	(200)	(7.1)			---	---		(3.7)
13	---	---			---	---	(3.4)	---
14	---	---			---	---	(2.6)	---
15	---	---			---	---		---
16	(200)	(6.6)					(2.1)	(3.6)
17	---	---						---
18	(215)	(4.7)						(3.4)
19	(230)	(4.1)						(3.3)
20	(250)	(3.4)					(3.6)	(3.1)
21	---	---						---
22	---	---					(5.3)	---
23	(260)	(3.4)					(2.4)	(3.1)

Time: 157.5°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.
*This station began operation on June 13, 1950.

TABLE 73

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

Form adopted June 1946

IONOSPHERIC DATA

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

National Bureau of Standards (Institution)

Observed at Washington, D. C.

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

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Calculated by: Mc C., W. J. C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	270	(270)S	270	220	(300)A	(290)S	(290)S	240	240	240	250	260	260	260	260	250	240	230	(220)S	250	240	260	260	(300)A
2	(290)S	300	260	240	240	250	(270)S	240	250	250	260	260	260	270	260	250	240	230	230	240	240	260	260	(300)S
3	(290)S	300	260	230	230	270	(270)S	230	250	260	[260]L	260	270	270	260	250	240	230	240	250	260	280	290	(260)S
4	(280)S	270	260	280	280	230	230	240	240	260	270	270	280	270	260	250	240	230	280	C	C	250	260	(270)A
5	290	260	280	290	270	260	270	250	250	240	240	260	250	240	250	250	230	220	230	230	(260)B	(280)B	(270)S	(290)S
6	(290)S	(270)S	300	(290)S	260	280	(300)S	230	240	260	260	280	270	270	260	260	230	220	230	230	240	280	(310)S	(300)S
7	(310)S	(280)S	(250)S	260	260	(280)S	[260]S	230	220	250	240	240	250	260	260	260	240	220	210	240	260	(300)S	270	(290)B
8	280	260	240	270	250	(270)S	(280)S	230	220	240	240	250H	240	260	260	250	230	230	220	210	230	(260)S	260	(300)S
9	340	310	240	250	260	260	(250)S	240	230	230H	250	250	270	260	260	230	230	230	(260)A	250	250	260	280	260
10	240	260	310	290	220	250	260	240	240	230	220	250	240	250	240	230	230	230	220	250	(250)A	(250)S	(280)A	(270)S
11	(280)S	(300)S	(290)S	(280)S	250	250	(290)S	250	240	240	250	260	260	280	250	250	240	220	230	240	250	(270)S	260	(280)S
12	220	260	240	260	260	[290]S	(320)KS	280K	250K	300K	320K	330K	300K	290K	260K	250K	230K	250K	240K	260K	280K	280K	260K	260K
13	(290)KS	(300)KS	300K	(290)KS	(290)KS	(420)KF	(420)KS	290K	280K	330K	340K	[340]KL	350K	330K	290K	270K	250K	260K	250K	(250)KS	270K	290K	280K	280K
14	260K	260K	250K	240K	(300)KA	(310)KS	(260)KS	250K	250K	250K	260K	290	260	270	270	250	250	230	240S	(240)S	250	270S	(300)S	(270)S
15	310	300	280	(260)S	(250)S	(310)S	(300)S	240	230	240	240	260	270	250	260	250	230	240	220	240	240	(270)S	(270)S	290S
16	(280)S	(280)S	260	250	220	240	(260)S	240	240	250	250	250	250	230H	240	230	230	210	230	230	240	(260)S	(290)S	280
17	(290)S	(300)S	300	320	290	260	(260)S	250	240	240	270	270	270	270	260	260	250	240	220	230	230	250	(300)S	(300)S
18	330	(310)S	(220)S	250	230	260	[260]A	250	230	240	(240)L	250	260	260	250	250	230	220	230	(240)A	A	A	(300)S	(270)S
19	[280]A	300	280	260	240	250	(270)S	240	230	230	230	240H	250	260	(250)L	260	230	220	230	(250)S	260	(260)S	(270)S	(270)S
20	(280)S	(270)S	290	270	270	270	(270)S	250	250	250	250	260	250	250	250	280	230	220	230	230	230	250	250	250
21	270	[270]C	280	280	270	(290)S	(300)KA	260K	250K	290K	280KH	220K	260K	260K	260K	250K	240K	220K	(240)KA	250	270	260	(250)S	260
22	260	250	(290)S	270	280	280	(290)A	260	250	250	250	220	260	270	260	250	240	240	(250)A	(250)A	(220)A	240	(250)A	300
23	(260)S	270	280	270	250	250	(290)A	250	240	240	260	270	250	260	250	240	250	230	230	230	230	(260)S	[260]A	(270)S
24	(290)S	(300)S	280	220	260	250	(250)S	240	230	250	240	250	250	250	240	240	220	220	[240]A	250	(250)S	280	280	280
25	270	280	220	260	270	280	(280)A	260	230	250	250	260	250	260	250	240	230	220	220	230	250	(260)S	(260)S	(260)S
26	300	(300)S	290	280	260	250	(250)S	240	220	230	260	250	240	260	240	240	230	220	240	(250)A	250	(230)S	(280)S	(280)S
27	(270)S	300	300	270	260	250	270	240	240	220	240	250	(260)A	250	260	230	230	210	220	240	(250)S	250	(290)S	280
28	270	(280)S	250	230	260	270	(280)S	240	220	230	240	260	250	250	250	240	230	230	230	230	250	230	(250)S	250
29	260	270	270	270	260	260S	(270)S	250	230	240	230	240	240	250	240	230	230	220	230	250	230	250	250	240
30	(230)S	270	270	(290)S	(300)S	260	250	250	230	230	(250)A	260	250	250	250	240	230	220	220	240	250	280	[280]A	(280)A
31																								
Median	282	280	280	220	260	260	(270)	240	240	240	250	260	260	260	250	250	230	220	230	240	260	260	(270)	(280)
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	28	29	30	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 74

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

Form adopted June 1946

IONOSPHERIC DATA

fo F2 (Characteristic), Mc (Unit), November (Month), 1951

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: Mc C., W. J. C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	3.6F	3.1FS	2.8F	2.5F	2.4F	2.3F	2.5F	5.4F	7.5	8.4	8.5	8.6F	9.6	9.5	9.4	9.8	9.2	7.6S	6.6FS	6.2S	5.6	5.0	4.6FS	4.2JS
2	(4.3)FS	4.1F	4.6F	4.0F	3.3F	3.0F	2.9F	5.8	7.4	9.0	9.4	9.6	10.6	10.6	10.5	10.4S	9.7	9.0	7.0	6.5	5.6	5.0S	4.6	4.1S
3	4.1	4.6	4.5	4.1JS	3.7	(1.9)VS	2.3S	5.3JS	7.7	8.6V	9.5H	10.6	10.6	10.1	10.2J	10.5	9.1	8.8	8.2	6.2	5.4	4.9	4.9V	4.1JS
4	4.3S	4.2FJ	(3.6)FP	(3.7)FJ	(3.5)F	(2.4)F	4.0	6.0	7.5	9.2	9.3	10.0	11.2	11.0	10.9	10.6	9.4	8.0	6.4	C	C	4.5	4.1	(4.0)JS
5	(4.0)JF	3.8	(3.9)FS	(3.7)F	3.8	3.6	3.2	5.4	6.3	7.6	8.6	8.8	8.8JH	(9.0)V	9.0	9.0	9.2	7.4	5.9	4.9	3.6	3.1	2.9	2.8
6	2.8	2.9F	2.5F	2.5F	2.5F	2.3F	2.3FS	(4.9)S	7.0	7.6	8.0	9.7	10.0	9.6	9.1	8.8	9.0	7.4S	6.6	5.4	4.4JS	4.0S	3.7	(3.7)S
7	3.6	3.6	(3.8)SF	3.1F	(2.5)F	2.2JS	(2.1)SA	4.7F	7.0	8.2	9.1	8.4	8.8	8.8	9.6	9.2	8.6	8.0	6.2S	5.1J	3.6JS	3.3S	3.5	3.5
8	3.3	3.1F	3.1	2.7	2.7	2.3FS	2.4FS	5.2	6.9	(8.5)V	8.6	9.2H	9.5	9.3	9.1	9.4	9.0	8.5	7.8	5.2	4.1	3.4S	3.1	2.8
9	2.8	3.1	3.5F	2.9F	(3.1)FJ	3.1F	3.1F	6.0	7.9	7.8H	8.6J	10.1	11.2	10.6	11.4	10.2JS	9.4S	8.6	7.2	6.6S	6.2	5.7	5.4S	5.0FS
10	4.2JS	3.2	2.6F	2.8F	3.1F	3.3F	3.2F	5.8F	7.0	7.1	8.3	9.2	9.6	9.3	9.0	9.0H	8.5	7.2S	5.6	5.4S	5.5	3.8	3.3S	3.2
11	3.1	3.0	3.1F	3.2	(3.2)F	2.7F	2.8	5.2	6.8	7.0	7.0	8.5	8.5	9.6	9.0	8.4	8.5	7.4	6.9	6.6	5.8	5.2S	5.0S	5.2JS
12	5.2S	4.6FS	4.0S	3.8	3.2JV	(2.5)F	(2.5)FK	K4.2JS	5.0K	5.6K	6.0K	6.6K	7.0K	7.2K	7.6K	7.2K	6.8SK	K6.6SF	(5.0)SK	K4.5SF	4.3SK	K4.2JS	3.9SK	(3.8)FK
13	3.6FK	3.4K	3.6K	3.6K	2.1FK	[2.0]FK	(1.8)FK	3.8K	5.0K	5.5K	6.0K	6.0K	7.0K	8.2K	8.8K	8.1K	7.2SK	(7.4)SK	K7.4JS	6.6SK	6.4K	4.4VK	5.4K	6.5K
14	K(6.0)JS	5.4K	5.2SK	4.0K	2.6FK	2.9FK	K3.3JS	5.1K	7.2K	7.3K	6.8K	9.0	9.2	8.8	8.9	9.0	8.6	7.9JS	7.5S	6.1S	(4.5)PS	2.8F	2.4F	(3.1)P
15	3.1	3.3S	3.3	(2.9)FP	(1.8)F	(2.0)FP	[2.6]FS	6.9FJ	7.2	7.0	8.2	8.8	9.7	9.2	9.3	8.4	7.9	7.6	6.0S	5.4	4.2S	3.7	3.9JS	3.5
16	3.9	4.1	4.2	4.3	3.7	2.6	2.4JS	4.8JS	6.8	7.2	8.4	8.8	9.2	8.8H	9.0	8.4	7.4	6.8	6.0	5.6	4.3	3.4	3.2	3.1
17	3.0	2.9	3.3F	3.2F	(3.8)JF	(3.3)FS	3.6	4.6	6.3	9.5	7.0	8.0	9.0	8.8	7.6	8.3	8.0	8.2	7.0S	6.0	4.6S	3.1	2.7F	2.2F
18	2.5	2.5F	3.0F	3.3F	3.0F	2.5F	2.3	4.5	6.8	8.0	7.8	8.4	8.3	9.1	8.4	8.2	7.5	7.0	5.8S	4.3	(3.4)A	3.1	3.0F	2.8F
19	2.7F	2.1F	3.5F	3.7F	3.9FS	3.3Z	3.0	(5.4)S	7.2	7.3	7.3	8.4H	8.5	9.4	8.2	8.4	8.5	7.0	(5.8)JS	5.1	(4.8)S	3.5S	3.2	3.2
20	3.3	3.3	3.4F	3.5FS	(3.5)FS	3.1	3.0F	4.4S	6.0	6.8	7.7	8.4	8.7	9.6	10.0	9.2S	9.2F	8.7S	6.6	6.3	(5.0)JS	4.6S	4.1JS	4.0S
21	3.6S	3.5J	3.7	3.6	3.6	3.4	3.2K	3.7K	4.7K	5.6K	6.3HK	7.0K	7.2K	7.1K	7.6K	7.5K	8.0K	6.7K	K(6.1)JS	5.2S	4.9	4.7	(4.2)JP	(4.3)JP
22	4.4J	3.8S	(3.7)P	3.7	3.8	3.7	3.3FS	4.3	5.9	6.4	6.8	7.8	8.6	8.3	7.9	7.7S	7.8S	8.2	7.4	6.2S	4.7	4.7	4.1S	3.5
23	3.7J	3.8	3.5	3.9S	3.7	3.4	3.3S	4.8	7.2	7.3	7.8	9.0	9.0	9.0	9.3	8.6	9.2F	8.1	7.7JS	5.6	4.3JS	3.7JS	3.4	3.1
24	3.0S	(3.7)PS	3.6F	(4.0)PF	4.1FS	3.8F	3.3F	4.3	6.4	7.8	8.3	9.6	9.7	10.5	10.0	9.8	8.6S	7.3S	6.0S	4.6	3.9JS	3.8JS	4.0JS	4.2J
25	4.0	3.5S	3.5S	3.8JS	(3.4)S	3.1F	3.1F	4.3	6.2	7.2	7.8	8.8	9.6	9.8	9.0	9.2	8.5	7.4S	6.6	4.6S	4.0	3.1	(3.1)S	3.0
26	(2.7)JF	2.4JF	2.5F	2.8F	3.7JS	3.6FS	3.0F	4.5FS	7.0	7.8	8.3	9.5	9.2JS	9.2	(9.1)S	9.0	8.0	7.0	7.0	6.0	5.4	4.2JS	3.6	3.3F
27	3.2	3.2	3.5	3.8	3.8	3.3F	3.4SF	4.6F	7.2	7.2S	8.2	8.6	9.3	8.2	9.0	8.2	8.6	7.4	6.2	5.3	4.5	4.0S	3.7	3.8JS
28	3.7S	3.6	3.7	3.4F	3.0V	3.1F	3.2	5.0	7.0	7.5	8.2	10.2	10.0	10.2	10.0	9.8	9.2	8.2	7.4	6.2	6.0	5.2S	4.7	4.5
29	4.5	4.2JS	3.7	3.7FS	3.8	3.4F	3.1F	(4.6)PS	7.0	8.6	9.4	11.2	9.4	10.0	10.0	9.4	9.0	7.9	7.4JS	7.0	6.0S	5.5JS	5.2FS	4.7F
30	3.3V	3.0F	3.0F	3.0F	3.5ZF	4.1	3.4	4.9	6.8	8.0	8.4	10.4	11.0	10.7	10.2	10.0	9.8	7.6JS	6.6S	5.3	4.1	3.5	[3.6]A	3.8
31																								
Median	3.6	3.4	3.5	3.6	3.4	3.1	3.0	4.8	7.0	7.6	8.2	8.8	9.2	9.3	9.1	9.0	8.6	7.6	6.6	5.6	4.6	4.0	3.8	3.8
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	30	30	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 75

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

IONOSPHERIC DATA

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

Observed at Washington, D. C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards
(Institution)

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

Calculated by: Mc C., W. J. C.

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	(3.3)JF	2.9F	2.6F	2.4F	2.3F	2.3F	3.8F	7.1PS	8.0F	8.6	8.5	9.1	9.4PF	9.4	9.7	9.6	8.6	6.8S	(6.8)S	6.0	5.0	4.6	(4.6)S	4.4
2	4.2F	4.8F	4.4F	3.8F	3.0F	2.9F	4.3S	6.8	8.0	9.2	9.2	10.3	9.4	10.5	10.8	10.3	9.2	8.0S	6.8	6.1S	5.1S	5.0JS	4.3S	4.1J
3	4.3JS	4.9	4.4	4.0	2.8	2.1PS	3.8JS	7.4	8.2	9.0V	9.6V	10.3	10.7	10.0	10.0	9.4	8.4	8.8	7.4S	5.6	5.2S	4.5	5.0	4.3JS
4	4.3JS	(3.7)F	3.7F	3.8	4.2	4.0	4.4	7.0	8.0	8.6V	9.2	10.1	11.2	10.5	11.0	10.0	9.0	7.0	C	C	4.5	4.1	4.3	4.1
5	4.0F	(4.2)F	3.8F	3.7	3.7	3.4	3.9	6.0	7.3	7.9	7.4	8.2	8.2H	9.0	9.3	9.6	8.5	6.6	6.0	4.3	3.3	3.0	2.8	2.8
6	2.7F	2.5SF	2.5F	2.6F	2.4F	2.2SF	3.4F	6.2	7.2JS	8.2	8.0	10.0	10.0	9.2	8.7	8.9	8.0	6.8S	6.0	4.7	4.2JF	3.6S	(3.5)S	3.6JS
7	3.6	3.5	3.2	2.9	2.2F	1.9F	3.3F	6.2	7.7	9.0	9.0	9.2	9.0	9.1	9.4	9.0V	8.2	7.6	6.6	4.3	(3.4)S	3.4	3.4	3.2F
8	3.3F	3.1F	3.1J	2.7F	2.4F	2.3FS	3.4F	6.4	7.8	8.5	8.4	9.6	9.1	9.0	8.9	9.0	8.8S	8.7	6.7	4.7	3.7	3.3	3.0	2.7
9	3.0	3.3PS	2.9F	2.9F	3.2FJ	3.2F	(4.3)FJ	7.2	8.0	8.7	9.2	10.4	10.9	11.2	11.5	9.8	9.0	7.5	6.9JS	6.6	6.0S	5.5	5.4	4.5FS
10	3.5FS	2.8F	2.8F	3.1F	3.3	3.2F	3.7S	7.0	7.8	7.6H	9.0J	10.6	10.2	10.0	8.7	8.4	7.8	6.5	5.5	5.0JS	4.0JS	3.6	3.3	3.3
11	3.0	3.0	3.1F	3.2F	3.0F	2.6F	3.5	6.2	6.6	7.0	7.6	8.2	9.0	9.2	8.6	8.6	8.2	7.3	6.8S	6.0	5.6	5.4FS	5.0FS	5.1S
12	5.0S	4.5JS	3.9JS	3.7	2.9JF	(2.5)F	3.2K	4.7K	5.5HK	5.6K	6.4K	6.8K	6.8K	7.4K	7.4K	7.0K	6.5K	6.0K	J(4.8)SK	F4.3SK	4.3SK	3.8FK	S3.8FK	F3.3SK
13	3.3K	3.5K	3.6K	3.2K	(1.7)FK	[1.9]FK	2.6FK	4.8SK	5.6K	5.8K	6.4K	6.4K	7.4K	8.9K	8.0K	7.6K	7.2K	8.4K	J7.3SK	6.6K	5.2ZK	J5.0SK	J6.0SK	6.6K
14	5.6K	5.2SK	5.2K	4.5K	2.5FK	J3.2SK	4.0K	5.8K	6.8K	7.2K	7.4K	9.2	9.0	9.0	8.8	8.6	8.7PS	6.9S	6.6	5.6FS	(3.7)JF	2.8F	(3.1)P	3.0JS
15	3.3	3.3	(3.1)F	(2.5)JF	(1.7)F	(1.8)F	(3.0)F	6.0JF	7.4	7.9	8.8	9.0	9.4	9.0	9.2	8.4	7.8	7.0S	5.9S	4.7	(3.5)S	4.0	3.6S	3.6S
16	4.0JS	4.3	4.1S	3.9S	3.2S	2.5JS	3.1	6.0	7.2	8.2	8.4	9.0	9.3	8.8	8.8	8.0	7.0	6.2	6.0	5.1	3.5	3.2	3.1	3.0
17	3.1	3.0F	3.2F	3.3F	3.6F	3.5	4.0	5.6	6.2	6.8	7.2	8.6	9.2	8.0	8.0	7.8	7.6S	8.1S	6.6S	6.6	4.0JS	2.9	2.5JF	2.6FJ
18	2.6F	2.7	3.2F	3.3F	2.9ZF	2.4F	2.9	6.0	7.2	8.0	8.4	8.2	8.6	8.4	8.2	7.6	7.4	6.1	5.2S	3.7	3.3	3.0	3.0F	2.9F
19	3.2F	3.5F	3.5JF	3.6SF	3.7SF	3.0	3.5F	6.0	7.1	6.8	8.3	8.5	8.6P	9.0	8.0	9.0	7.4	6.3S	(5.3)S	4.9S	4.1	3.3S	3.2	3.2
20	3.3	3.3	3.5FS	3.5	3.5	3.0	3.3	5.2	6.2	7.3	8.4	8.8	8.6	[9.3]C	10.1J	9.0	9.0	7.7PS	6.5	5.4	4.6	4.2	4.1J	3.4
21	3.4PJ	(3.4)J	3.5	3.6	3.6JS	3.2	3.2K	4.4K	5.2K	5.9K	6.6K	7.1K	7.2K	7.3K	7.6K	7.8K	7.3K	JP6.6SK	5.3K	5.0	4.8	4.5	(4.4)PJ	4.3
22	4.1J	(3.8)JP	3.6P	3.8P	4.0VS	3.5	3.6FS	5.3	6.0	6.5	7.4	8.4	8.3	8.2	8.1	8.0	7.8	8.0JS	7.0	5.7	5.0S	4.5PS	3.4	(3.6)PJ
23	3.6PS	3.4	3.8	(3.9)PJ	3.5	3.3	3.6	5.9	6.8	7.8	8.4	9.4	9.0	9.3	9.0	8.0	8.7	7.8JS	6.8JS	4.9	4.0PS	(3.6)JS	3.5PS	(3.0)A
24	(3.3)JS	(3.9)S	(3.8)PF	(4.5)JF	4.1JF	(3.9)PS	3.4	5.6	6.8	7.8	8.6	9.7	10.3	10.5	9.9	9.7	8.5PS	(6.3)PS	(4.6)S	4.1	3.7	4.0	4.2JS	4.0
25	3.8JS	3.5JS	3.9JS	3.4	3.2JS	3.1	3.1F	5.2S	7.2	7.4	7.8	9.7	9.5	9.4	9.4	9.0	8.7	7.4	5.4	4.2S	3.5	(3.1)S	3.9JS	J2.7SF
26	2.6F	2.5F	2.5F	3.0FS	3.5F	3.1F	3.2	6.1	7.5H	7.2H	8.8	9.4	9.8	9.6Z	9.2	8.4S	8.2	7.0S	6.0JS	5.7	4.9	3.9	3.5JS	3.3
27	2.8F	3.4	3.7	3.7	3.7F	3.4S	3.4F	6.0	7.5	8.0	8.5	9.0	9.2	8.2	8.4	8.2	8.4	7.0	5.5	5.0	4.8S	3.7S	3.6S	3.6
28	3.6	3.8	3.6	3.1V	3.2	3.0J	3.7	6.4	7.0	8.0	9.4	10.2	10.0	10.2	10.3	9.6	8.8	8.2	7.0	6.0	6.2	5.0S	4.7	4.6H
29	4.2S	3.8F	3.8F	3.7	3.6	3.1F	3.3F	6.0Z	7.6	8.4	9.6	11.2	10.0	10.2	9.7	8.8	8.7	8.2	(7.2)S	7.0S	5.6JS	(5.0)F	4.6F	4.2
30	3.3F	3.0F	2.8F	3.2ZF	3.8	3.8	3.5	5.8	7.6	7.8	9.8	10.6	11.1	10.5	10.0	9.8	8.8	7.2	5.6S	4.4V	(3.9)JS	3.6	(3.5)A	3.7JS
31																								
Median	3.4	3.4	3.6	3.4	3.2	3.0	3.4	6.0	7.2	7.8	8.4	9.2	9.2	9.2	9.1	8.8	8.4	7.1	6.5	5.0	4.2	3.8	3.6	3.6
Count	30	30	30	30	30	30	30	30	30	3.0	30	30	30	30	30	30	30	30	29	29	30	30	30	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 76

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

IONOSPHERIC DATA

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

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

National Bureau of Standards (Institution)

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

Calculated by: Mc C., W.J.C.

75°W Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									Q	230	210	A	B	220	230	240	Q							
2									240	(230)^B	(220)^B	B	B	(230)^B	240	240	B							
3									200^H	220^H	210	240	210	220	240	210	Q							
4									Q	230	230	[220]^B	220	230	240	240	Q							
5									230	230	210	190^H	210	190^H	230	230	Q							
6									Q	210	210	200^H	200^H	230	230	230	Q							
7									Q	Q	230^H	230	240	210	240	230	Q							
8									Q	210^H	210^H	220	(210)^H	240	220	230	Q							
9									Q	200^H	200	A	A	240	240	A	Q							
10									Q	Q	Q	230^H	220	220	Q	Q	Q							
11										220	210	250	230	210	240	Q								
12										220^K	210^K	220^K	230^K	240^K	230^K	240^K								
13									240^K	240^{HK}	(200)^{AK}	220^K	260^{HK}	(260)^{BK}	250^K	230^K								
14										210^K	210^K	200^H	240	230	230	240	A							
15									220	220	200	200^H	220	200^H	190^H	230								
16									230	210	200^H	200^H	180^H	220	200^H	Q								
17										230	220^H	210	220	220	210	200	240							
18										230	220	230	230	220	220									
19										220	210	200^H	190^H	240	230	230								
20									230	210	210	200	210	230	(240)^A	A								
21									230^K	250^K	210^{HK}	(220)^{AK}	220^{HK}	230^{HK}	230^K	240^K								
22									240	210	(230)^B	240	(230)^B	(230)^B	B	B								
23										230	220	[220]^B	220	220	220	200^H								
24										230	200^H	220	230	230	230	220								
25										240	220	200	210^H	230	240	220								
26										220	220	210^H	210^H	240	230	Q								
27										210^H	230	240	A	A	Q									
28										220	220	240	230	220	(220)^B	230								
29										Q	Q	210	230	220	230	220								
30										Q	A	A	220	240	230	Q								
31																								
Median									230	220	210	220	220	230	230	230	—							
Count									9	26	27	26	26	29	27	20	1							

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 77

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

IONOSPHERIC DATA

fo F1 (Characteristic), Mc (Unit), November (Month), 1951

Observed at Washington, D.C.

Lat 38°.7N, Long 77.1°W

75° W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: Mc C., W. J. C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									Q	L	L	A	L	L	L	L	Q							
2									L	L	L	L	L	L	L	L	L							
3									L	L	L	L	L	L	L	3.5	Q							
4									Q	L	L	B	L	L	L	L	Q							
5									L	L	4.0	42 H	L	L	L	L	Q							
6									Q	L	L	L	L	L	L	L	Q							
7									Q	Q	L	L	L	36	L	L	Q							
8									Q	L	L	L	L	L	4.0	L	Q							
9									Q	L	A	A	A	L	L	A	Q							
10									Q	Q	Q	L	L	L	Q	Q	Q							
11										L	35	L	L	L	L	Q								
12										3.5 K	4.1 K	4.2 K	4.3 K	(4.2) L K	3.9 K	L K								
13									L K	38 H K	41 K	[42] L K	44 H K	43 K	40 K	L K								
14										3.2 K	36 K	L	L	L	L	L	L							
15									L	L	3.8	L	L	L	L	L								
16									L	L	L	L	43 H	[3.8] L	3.4 H	Q								
17										L	L	L	L	(4.0) L	3.7	3.4 H	L							
18										L	L	L	L	L	L									
19										L	L	L	L	L	L	L								
20									L	(3.2) L	L	L	L	L	L	L								
21									L K	L K	L K	(37) A K	L K	L K	L K	L K								
22									L	L	L	L	L	L	B	L								
23										L	L	B	L	L	L	L								
24										L	L	L	L	L	L	L								
25										L	L	(3.7) L	L	L	L	L								
26										L	L	L	L	L	L	Q								
27										L	L	L	A	A	Q									
28										L	L	L	L	L	L	L								
29										Q	Q	L	L	L	L	L								
30										Q	A	A	L	L	L	Q								
31																								
Median									—	—	39	4.2	—	(4.0)	3.9	—	—							
Count										4	6	5	3	5	5	2								

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 78

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

Form adopted June 1946

IONOSPHERIC DATA

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

Observed at Washington, D. C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: Mc C., W. J. C.

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

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 79

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

IONOSPHERIC DATA

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

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: Mc C., W.J.C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									2.6H	B	A	A	B	3.1	3.0	[2.6]A	2.3							
2									B	B	B	B	B	B	3.1	2.9	B							
3								1.9	2.4	2.9	3.0	(3.2)A	3.2	[3.1]A	(3.0)A	2.6	(2.4)P							
4								2.0	2.5	2.8	3.0	[3.1]B	3.1	3.1	3.0	2.6	2.3							
5								2.0H	2.4	(3.0)P	3.1	(3.1)A	[3.1]A	3.1	[3.0]A	2.8	B							
6								1.7	(2.5)H	2.7H	2.9	3.1	3.1	3.1	3.0	2.7	2.2							
7									2.4	(2.8)P	(3.1)H	3.1	3.2	3.2	3.0	2.7	2.2							
8									2.3	2.6	[2.8]A	3.1	3.2	3.2H	2.9	2.7	2.3H							
9									2.3	2.6H	2.9	3.1	3.1	3.1	3.0	2.7	A							
10									2.0	(2.9)P	(3.0)A	3.1	3.1	3.1	3.0	2.7	2.0							
11									2.3	2.7H	3.0	3.1	[3.1]A	3.1	3.0	2.7	2.1							
12									2.3HK	2.5K	2.9K	3.1K	3.1K	3.1K	3.0K	2.6K	2.0K							
13									2.2HK	2.7K	(2.9)AK	3.0K	3.1K	[3.0]BK	3.0K	(2.6)BK	BK							
14								1.8K	[2.2]AK	2.5HK	2.9K	3.0	3.1	3.0	2.9	2.6	A							
15								1.8	(2.4)H	2.7	2.9H	3.0	3.1H	3.0	2.8	2.6	1.9							
16									2.2H	2.6	3.0	3.0	3.1H	3.0	2.9H	2.6	2.2							
17									2.1	2.8H	2.9	3.2H	3.1	3.1	3.0H	2.5	2.1H							
18									A	2.7	3.0H	3.1	3.1	3.1H	2.9	2.5	1.9							
19									2.2	2.7	2.9	3.0	3.1	3.1	2.9	2.6	1.6							
20									2.1	2.6	2.8	3.0	3.1	3.0	[2.7]A	(2.4)A	A							
21									AK	AK	2.7K	[2.9]AK	3.1K	3.0K	[2.7]BK	(2.5)PK	2.1K							
22									(2.1)P	(2.5)P	(3.0)P	(3.1)B	B	B	B	B	B							
23										2.6	(2.8)B	[2.9]B	3.0	2.9	2.7	2.5H	S							
24									2.1H	2.5	2.8	3.0B	3.0	3.0	2.8	2.6	2.0B							
25									A	A	A	A	A	3.0	2.8	2.5	1.7							
26									2.2	2.7	2.8	3.0	A	A	A	C	B							
27									2.1H	2.5	2.9	3.0	3.1	3.0	2.8	2.5	2.1							
28									A	2.7	3.0	3.2	(3.2)B	B	B	(2.5)B	2.1							
29									2.1	[2.5]A	2.9	3.0	3.2H	3.0	2.8H	2.5	2.1H							
30									2.1H	2.6	A	A	A	(2.9)A	2.7	2.5								
31																								
Median								1.8	2.2	2.7	2.9	3.1	3.1	3.1	2.9	2.6	2.1							
Count								6	24	26	26	26	24	26	27	28	20							

Sweep 1.0 Mc to 25.0 Mc In 0.25 min

Manual ☐ Automatic ☒

U.S. GOVERNMENT PRINTING OFFICE 1946 O - 702519

TABLE 80

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

Form adopted June 1946

IONOSPHERIC DATA

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

National Bureau of Standards (Institution)

Observed at Washington, D.C.

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

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Calculated by: Mc C

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	26Y/100	25Y/100	E	E	17/110	E	E	E	G	G	35/110	68/110	G	30Y/100	26/100	45Y/100	21/100	E	E	E	E	E	E	30/110
2	28Y/110	E	E	E	E	E	E	E	B	B	B	B	B	B	91Y/110	G	B	E	E	E	E	E	E	E
3	E	E	E	E	E	14Y/120	(17)S/120	G	G	G	G	34Y/120	G	35/120	32/120	29/120	G	E	E	E	E	E	E	E
4	E	E	E	E	E	E	70Y/130	G	94Y/140	G	G	B	G	G	G	G	27Y/120	E	E	C	C	E	E	33Y/110
5	32Y/110	24Y/110	31Y/110	E	24Y/110	E	60/110	G	G	G	G	33/110	94/120	G	35/110	G	G	21Y/100	32Y/100	34Y/100	E	E	E	E
6	E	E	E	27Y/120	33Y/120	E	E	G	G	G	G	G	G	G	64Y/100	G	G	E	19/100	31/100	E	E	E	E
7	E	E	E	E	E	E	56/110	E	G	G	G	G	G	G	G	G	G	19/120	16Y/120	18/130	E	E	E	E
8	E	E	E	E	E	E	E	E	G	G	37Y/110	G	G	G	G	G	G	E	E	E	E	E	28Y/130	E
9	E	E	E	E	E	E	E	E	G	G	G	38Y/120	70Y/110	G	18/100	58/130	61/130	56/130	(90)S H/120	17Y/120	E	E	E	19/120
10	E	E	E	E	E	E	74Y/110	36/110	68Y/120	G	36Y/110	G	G	41Y/100	22/100	41/130	47/130	47/110	28/120	35/110	43/110	E	31/110	E
11	E	24Y/100	E	32Y/100	E	E	E	E	G	G	G	G	43Y/130	G	G	G	G	E	E	E	30Y/110	32Y/110	E	E
12	E	E	E	27Y/110	E	E	E	70Y/110	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	32Y/120	30Y/110	G	90/100	G	G	G	G	B	B	E	E	E	31/140	E	E	E
14	E	E	E	E	29/130	70Y/120	E	G	36/110	G	94Y/110	G	G	G	G	G	32Y/100	18/110	E	E	E	E	E	E
15	E	E	E	E	E	58Y/130	E	56Y/110	38Y/100	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	30/100	G	E	E	E	E	E	E	E
17	E	E	E	27Y/110	47Y/110	30/110	E	E	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
18	E	E	E	E	E	E	62Y/120	E	32Y/120	26/110	G	G	G	G	G	43/120	24/120	48/110	E	54Y/110	85/110	40/110	27Y/110	23Y/110
19	22/110	21/110	E	E	E	E	92Y/120	70Y/120	G	G	G	84Y/120	G	G	G	G	G	E	E	33/120	30/110	E	24/110	E
20	E	E	E	E	50/140	E	E	31Y/110	29/120	G	G	G	G	G	34/110	28/110	39/110	E	E	E	31/110	25/110	35Y/110	E
21	E	E	E	(23)S/10	E	E	37/110	29Y/120	22/120	24/110	G	42/100	G	G	G	G	23/140	33/120	50/120	E	E	E	E	E°
22	E	E	E	E	E	E	30/110	E	G	G	G	G	B	B	B	B	B	21/120	30Y/120	32/120	37/110	E	32Y/110	E
23	E	E	E	E	E	E	29/110	E	E	G	G	G	G	G	G	G	G	E	E	E	E	E	34/110	E
24	E	E	E	E	E	E	29Y/110	E	G	G	G	G	G	G	G	G	G	18(130)S	35/110	E	E	E	E	E
25	31Y/110	E	26/110	E	E	E	37/120	27/120	23/110	37/110	42Y/120	35/120	31/130	G	G	G	37/120	28Y/110	E	E	E	E	E	E
26	E	E	E	E	E	E	28/120	30Y/120	32/110	24/110	G	29/120	39/110	37Y/100	39 H/100	C	B	E	31Y/110	40/110	E	E	E	E
27	E	E	E	E	E	E	E	26/110	G	G	G	G	64/130	61/130	62/120	44/130	G	E	E	E	E	E	E	E
28	23/100	E	E	E	E	E	E	E	23 H/110	G	G	G	G	B	B	G	G	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	G	44/110	G	G	G	G	G	G	G	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	37/110	72/110	G	52/110	73/100	70Y/100	30/100	26/100	G	E	26/110	E	E	64Y/120	42Y/120	86/110	36/110
31																								
Median	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	29	29	30	30	

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

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 81

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

IONOSPHERIC DATA

(M1500)F2, ____ (Characteristic) (Unit), November (Month), 1951

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: Mc C., E. J. 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	2.1 F	2.2 SF	2.1 F	2.1 F	2.2 F	2.1 F	2.1 F	2.3 F	2.3	2.3	2.2	2.1 F	2.1	2.1	2.1	2.0	2.2	2.2 S	2.0 SF	2.0 S	2.0	2.0	2.0 FS	(1.9) JS
2	(1.9) FS	1.8 F	2.0 F	1.9 F	2.1 F	2.0 F	2.0 F	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.1	2.1 S	2.1	2.2	2.0	2.0	2.1	2.1 S	2.0	1.8 S
3	1.7	1.8	2.0	(2.2) JS	2.4	(2.2) VS	2.3 G	(2.2) JS	2.3	2.1 V	2.1 H	2.1	2.1	2.2	(2.2) J	2.2	2.2	2.1	2.0	1.9	1.9	1.8	1.8 V	(1.8) JS
4	1.8 S	(2.0) FJ	(2.0) FP	(2.0) FJ	(1.9) F	(2.3) F	2.3	2.3	2.4	2.3	2.3	2.1	2.0	2.1	2.1	2.2	2.3	2.2	2.0	C	C	2.1	2.0	(2.0) JS
5	(1.9) JF	1.9	(1.9) FS	(1.9) F	1.9	1.9	2.0	2.1	2.3	2.3	2.4	2.3	(2.1) JH	(2.2) V	2.1	2.1	2.3	2.3	2.0	2.1	2.0	2.0	1.9	1.9
6	1.8	2.0 F	1.8 F	1.9 F	2.0 F	2.0 F	2.0 FS	(2.3) S	2.3	2.2	2.2	2.1	2.0	2.1	2.1	2.1	2.2	2.2 S	2.1	2.0	(2.1) JS	2.0 S	1.7	(1.8) S
7	1.8	1.9	(2.0) SF	2.1 F	(2.0) F	(2.0) JS	(1.9) SA	2.3 F	2.3	2.3	2.3	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.1 S	(2.2) J	(2.0) JS	1.9 S	2.0	1.9
8	2.0	2.0 F	2.1	2.0	2.0	2.0 FS	2.0 FS	2.2	2.4	(2.2) V	2.3	2.2 H	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.0	2.0 S	2.1	1.9
9	1.7	1.9	2.0 F	2.2 F	(1.9) FJ	2.1 F	2.1 F	2.2	2.4	2.2 H	(2.1) J	1.9	2.0	2.0	2.1	(2.1) JS	2.2 S	2.1	1.9	2.0 S	1.9	1.9	1.9 S	2.0 FS
10	(2.0) JS	2.0	1.8 F	1.9 F	2.0 F	2.0 F	2.1 F	2.3 F	2.3	2.4	2.2	2.2	2.2	2.1	2.3	2.2 H	2.3	2.2 S	2.1	2.1 S	2.1	2.1	2.0 S	2.0
11	1.9	1.9	1.9 F	2.0	(2.2) F	2.0 F	1.9	2.2	2.3	2.3	2.1	2.2	2.0	2.1	2.1	2.1	2.3	2.2	1.9	2.0	2.0	1.9 S	1.9 S	(1.9) JS
12	2.0 S	2.0 FS	2.2 S	2.0	(1.9) JV	(1.6) F	(1.9) FK	K (2.0) JS	2.1 K	2.1 K	2.0 K	1.9 K	2.1 K	2.0 K	2.2 K	2.2 K	2.3 SK	K 2.2 SF	(2.0) SK	K 1.9 SF	1.9 SK	K (2.0) JS	2.0 SK	(1.9) FK
13	1.9 FK	1.8 K	1.9 K	1.8 K	1.7 FK	F K	(1.6) FK	2.0 K	2.2 K	2.0 K	1.9 K	1.9 K	1.8 K	1.8 K	1.9 K	2.0 K	2.0 SK	(1.9) SK	K (1.8) JS	1.8 SK	1.8 K	1.8 VK	1.7 K	1.9 K
14	K (2.0) JS	1.9 K	2.0 SK	2.1 K	1.8 FK	1.8 FK	K (2.0) JS	2.3 K	2.4 K	2.3 K	2.1 K	2.0	2.2	2.1	2.2	2.2	2.1	(2.2) JS	2.0 S	2.0 S	(2.0) PS	2.1 F	2.0 F	(2.0) P
15	1.8	1.9 S	1.9	(2.0) FP	(2.3) F	(2.1) FP	F S	(2.3) FJ	2.3	2.4	2.0	2.1	2.2	2.1	2.1	2.1	2.2	2.2	2.1 S	2.1	2.2 S	1.9	(2.0) JS	1.9
16	2.0	1.9	1.9	2.1	2.1	2.1	(2.1) JS	(2.2) JS	2.3	2.2	2.2	2.3	2.3	2.2 H	2.3	2.3	2.4	2.2	2.1	2.1	2.2	2.0	2.0	2.0
17	1.8	1.9	1.9 F	1.8 F	(1.9) JF	(2.0) FS	2.0	2.2	2.3	2.3	2.3	2.1	2.1	2.3	2.2	2.1	2.2	2.0	2.0 S	2.0	2.2 S	2.0	2.0 F	2.0 F
18	1.9	1.9 F	2.0 F	2.1 F	2.1 F	2.0 F	1.9	2.2	2.4	2.3	2.3	2.3	2.2	2.3	2.3	2.2	2.2	2.2	2.2 S	2.2	(2.0) A	2.1	1.9 F	1.9 F
19	1.9 F	1.8 F	2.0 F	2.1 F	2.1 FS	2.1 Z	2.1	(2.3) S	2.3	2.3	2.2	2.2 H	2.2	2.1	2.2	2.2	2.3	2.2	(1.9) JS	2.0	(2.0) S	1.9 S	1.9	2.0
20	2.0	2.0	2.0 F	2.0 FS	(1.5) FS	2.0	2.0 F	2.2 S	2.3	2.3	2.2	2.3	2.2	2.1	2.2	2.2 S	2.3 F	2.3 S	2.0	2.1	(2.1) JS	2.0 S	(2.0) JS	2.0 S
21	1.9 S	(1.9) J	1.9	1.9	1.9	1.9	1.9 K	2.2 K	2.2 K	2.1 K	2.1 HK	2.2 K	2.3 K	2.2 K	2.2 K	2.2 K	2.3 K	2.1 K	K (2.1) JS	2.0 S	1.9	2.0	(2.0) JP	(2.0) JP
22	(2.1) J	2.0 S	(1.9) P	1.9	1.9	2.0	2.0 FS	2.2	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2 S	2.2 S	2.1	2.0	2.0 S	1.9	2.1	2.2 S	1.9
23	(2.1) J	2.1	1.9	2.0 S	2.0	2.0	2.0 S	2.3	2.5	2.3	2.2	2.2	2.1	2.1	2.2	2.2	2.1 F	2.1	(2.2) JS	2.2	(2.2) JS	(1.9) JS	2.0	1.9
24	1.9 S	(1.9) PS	2.1 F	(2.1) PF	2.2 FS	2.1 F	2.1 F	2.2	2.4	2.4	2.3	2.1	2.1	2.2	2.3	2.2	2.4	2.3 S	2.4 S	2.1	(2.0) JS	(1.9) JS	(2.0) JS	(2.0) J
25	1.9	1.9 S	2.0 S	(2.0) JS	(2.0) S	1.9 F	1.9 F	2.1	2.3	2.3	2.3	2.1	2.1	2.2	2.2	2.2	2.2	2.3 S	2.1	2.0 S	2.0	2.0	(2.1) S	2.1
26	(1.9) JF	(1.9) JF	1.9 F	1.9 F	(1.9) JS	1.9 FS	2.1 F	2.1 FS	2.3	2.3	2.2	2.1	(2.2) JS	2.3	(2.2) S	2.2	2.3	2.1	2.2	2.1	2.2	(2.2) JS	1.9	2.0 F
27	1.9	2.0	1.9	2.1	2.2	2.0 F	1.9 SF	2.3 F	2.4	2.2 S	2.3	2.3	2.2	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.1 S	1.9	(2.0) JS
28	2.0 S	2.0	2.1	2.2 F	1.9 V	1.9 F	1.9	2.3	2.5	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.1	1.9	2.0	2.1 S	1.9	2.1
29	2.1	(2.0) JS	1.9	1.9 FS	1.9	2.0 F	2.0 F	(2.1) PS	2.3	2.3	2.0	2.2	2.2	2.2	2.2	2.1	2.1	2.0	(2.1) JS	2.0	2.1 S	(2.0) JS	2.2 FS	2.2 F
30	2.0 Y	2.0 F	2.0 F	1.9 F	1.8 ZF	2.0	2.1	2.2	2.4	2.4	2.1	2.2	2.1	2.1	2.2	2.2	2.3	(2.2) JS	2.0 S	2.3	2.1	2.2	A	2.2
31																								
Median	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.2	2.3	2.3	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0
Count	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	30	30	30	30	29	29	30	29	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 82

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

Form adopted June 1946

IONOSPHERIC DATA

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

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

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

Calculated by: Mc C., W.J.C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	31F	32FS	3.1F	3.2F	3.2F	32F	31F	34F	33	34	33	3.2F	31	31	31	30	32	32S	30FS	3.0S	3.0	30	3.0FS	(29)JS
2	(2.8)FS	28F	30F	29F	3.1F	30F	30F	3.3	32	32	3.1	30	3.0	30	31	3.1S	31	3.2	30	30	31	3.1S	30	27S
3	26	27	30	(32)JS	34	(33)VS	34S	(32)JS	33	31V	31H	3.1	31	32	(32)J	33	32	31	30	29	2.9	2.7	27V	(27)JS
4	27S	(3.0)FS	(30)FP	(29)FJ	(28)F	(33)F	33	33	34	34	3.3	31	3.0	31	31	32	33	32	29	C	C	31	30	(30)JS
5	(29)JF	29	(29)FS	(28)F	2.9	28	30	31	34	34	34	33	(31)JH	(32)V	31	31	33	3.3	30	31	30	30	28	28
6	28	29F	27F	29F	30F	30F	30FS	(33)S	34	32	32	31	3.0	31	31	31	32	32S	31	30	(31)JS	30S	26	(27)S
7	27	2.9	(29)SF	31F	(30)F	(3.0)JS	(28)SA	33F	34	33	33	31	3.1	31	3.1	32	3.1	32	31S	(32)J	(3.0)JS	28S	30	29
8	30	30F	31	30	3.0	30FS	30FS	32	35	(3.2)V	33	3.2H	32	32	3.2	32	33	31	32	31	30	30S	31	28
9	2.6	28	30F	32F	(2.9)FJ	31F	32F	32	3.5	3.2H	(31)J	29	30	30	31	(31)JS	32S	31	29	30S	29	28	28S	30FS
10	(30)JS	30	27F	28F	29F	30F	31F	34F	34	34	32	32	32	31	33	32H	33	32S	31	31S	31	30	30S	30
11	29	29	28F	30	(32)F	30F	29	32	34	34	3.1	32	3.0	31	30	31	33	32	2.9	30	3.0	28S	28S	(29)JS
12	29S	30FS	32S	3.0	(29)JV	(25)F	(28)FK	K(30)JS	31K	31K	30K	29K	3.1K	30K	32K	32K	33SK	K32SF	(3.0)SK	K29SF	2.9SK	K(3.0)JS	30SK	(28)FK
13	29FK	27K	28K	28K	26FK	FK	(2.5)FK	30K	32K	30K	28K	28K	27K	2.8K	29K	30K	30SK	(29)SK	K(28)JS	27SK	27K	2.7VK	26K	2.8K
14	K(30)JS	28K	30SK	31K	27FK	27FK	K(29)JS	33K	35K	33K	3.1K	30	32	3.1	32	32	31	(32)JS	30S	30S	(29)PS	32F	30F	(30)P
15	2.7	29S	29	(30)FP	(33)F	(32)FP	FS	(34)FS	34	34	30	32	3.2	31	31	31	32	32	31S	31	32S	2.9	(30)JS	28
16	30	29	29	31	31	31	(31)JS	(3.2)JS	34	32	32	33	33	32H	33	34	34	32	3.1	31	32	30	2.9	29
17	28	2.8	28F	29F	(28)FS	(30)FS	30	32	34	34	3.3	31	31	33	32	31	31	30	30S	30	32S	30	30F	30F
18	28	29F	30F	31F	31F	30F	28	32	34	34	33	34	32	34	33	32	3.2	32	32S	32	(30)A	31	29F	29F
19	29F	28F	30F	31F	31FS	31Z	31	(33)S	34	34	32	32H	32	31	32	3.2	33	32	(29)JS	30	(30)S	2.9S	29	30
20	29	30	29	30FS	(28)FS	30	30F	32F	34	34	32	33	32	31	32	3.2S	3.3F	34S	30	31	(31)JS	30S	(31)JS	30S
21	28S	(28)J	2.9	28	28	28	28K	32K	32K	31K	3.1HK	32K	33K	32K	32K	32K	34K	31K	K(31)JS	30S	29	30	(29)JP	(30)JP
22	(31)J	30S	(29)P	2.8	2.9	30	30FS	32	34	33	33	32	32	32	32	3.2S	32S	31	30	30S	28	31	32S	28
23	(31)J	31	28	29S	30	30	30S	33	36	33	32	32	31	31	32	3.2	31F	31	(32)JS	32	(32)JS	(29)JS	30	27
24	2.9S	(28)PS	31F	(32)PF	32FS	31F	31F	32	35	35	33	31	31	32	3.3	3.2	34S	33S	34S	31	(30)JS	(29)JS	(30)JS	30J
25	29	29S	30S	(30)JS	(30)S	29F	29F	31	32	34	33	31	31	32	32	32	32	33S	31	30S	30	30	(31)S	31
26	(29)JF	(2.9)JF	29F	29F	(29)JS	29FS	31F	31FS	34	33	32	31	(32)JS	33	(32)S	32	33	31	32	31	32	(32)JS	29	30F
27	28	30	2.9	31	32	30F	29SF	33F	3.5	32S	34	33	32	34	33	33	32	32	31	31	30	31S	29	(30)JS
28	30S	30	31	32F	29V	29F	29	33	36	34	32	32	32	32	3.2	31	32	31	31	29	30	31S	29	31
29	31	(30)JS	29	29FS	29	29F	30F	(31)PS	34	34	3.0	32	32	32	32	31	31	30	(31)JS	30	31S	(30)JS	32FS	32F
30	30V	3.0F	30F	2.9F	27ZF	30	31	32	34	35	31	32	31	31	32	32	33	(32)JS	30S	33	31	30	A	32
31																								
Median	29	29	29	30	30	30	30	32	34	34	32	32	31	31	32	32	32	32	30	30	30	30	30	30
Count	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	30	30	30	[illegible]	29	29	30	29	[illegible]

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 83

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

IONOSPHERIC DATA

Form adopted June 1946

(M3000)F1, ______ (Unit), November (Month), 1951
(Characteristic)

National Bureau of Standards (Institution)

Observed at Washington, D.C.

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

Lat 38.7°N, Long 77.1°W

75°W Mean Time

Calculated by: Mc C., W.J.C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									Q	L	L	A	L	L	L	L	Q							
2									L	L	L	L	L	L	L	L	L							
3									L	L	L	L	L	L	L	39	Q							
4									Q	L	L	B	L	L	L	L	Q							
5									L	L	39	38^{H}	L	L	L	L	Q							
6									Q	L	L	L	L	L	L	L	Q							
7									Q	Q	L	L	L	41	L	L	Q							
8									Q	L	L	L	L	L	39	L	Q							
9									Q	L	A	A	A	L	L	A	Q							
10									Q	Q	Q	L	L	L	Q	Q	Q							
11										L	40	L	L	L	L	Q								
12										38^{K}	35^{K}	34^{K}	3.5^{K}	$(3.5)^{L}_{K}$	37^{K}	L^{K}								
13									L^{K}	34^{H}_{K}	33^{K}	L^{K}	33^{H}_{K}	3.2^{K}	35^{K}	L^{K}								
14										40^{K}	41^{K}	L	L	L	L	L	L							
15									L	L	39	L	L	L	L	L								
16									L	L	L	L	37	L	41^{H}	Q								
17										L	L	L	L	$(37)^{L}$	40	40^{H}	L							
18										L	L	L	L	L	L									
19										L	L	L	L	L	L	L								
20									L	$(40)^{L}$	L	L	L	L	L	L								
21									L^{K}	L^{K}	L^{K}	$(40)^{A}_{K}$	L^{K}	L^{K}	L^{K}	L^{K}								
22									L	L	L	L	L	L	B	L								
23										L	L	B	L	L	L	L								
24										L	L	L	L	L	L	L								
25										L	L	$(40)^{L}$	L	L	L	L								
26										L	L	L	L	L	L	Q								
27										L	L	L	A	A	Q									
28										L	L	L	L	L	L	L								
29										Q	Q	L	L	L	L	L								
30										Q	A	A	L	L	L	Q								
31																								
Median									—	—	3.9	—	—	—	3.9	—	—							
Count										4	6	4	3	4	5	2								

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 84

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

IONOSPHERIC DATA

(M1500)E (Characteristic), ____ (Unit), November (Month), 1951

National Bureau of Standards (Institution)

Observed at Washington, D. C.

Lat. 38.7°N, Long. 77.1°W

75°W Mean Time

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

Calculated by: Mc C., W. J. C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									38H	B	A	A	B	4.0	40	A	42							
2									B	B	B	B	B	B	41	40	B							
3								41	39	40	40	(40)A	42	A	(43)A	44	(35)P							
4								41	41	42	4.2	B	40	4.1	41	40	35							
5								4.2H	42	(38)P	40	(42)A	A	41	A	4.2	B							
6								38	(38)H	40H	40	38	40	41	41	40	4.1							
7									40	(41)P	(4.2)H	40	39	41	43	42	43							
8									40	42	A	40	41	41H	43	40	3.9H							
9									41	39H	39	37	40	40	3.9	40	A							
10									42	(41)P	(38)A	4.0	40	40	40	41	4.1							
11									4.0	39H	39	40	A	41	40	42	43							
12									40HK	40K	39K	4.0K	40K	41K	41K	43K	42K							
13									42HK	39K	(40)AK	41K	40K	BK	42K	(41)BK	BK							
14								43K	AK	41HK	4.1K	4.0	4.1	42	42	42	A							
15								4.3	(43)H	38	40H	41	41H	40	4.1	4.1	41							
16									37H	39	41	41	42H	42	40H	42	40							
17									32	35H	38	39H	3.8	39	41H	41	41H							
18									A	37	40H	39	39	39H	40	41	41							
19									38	40	40	41	41	41	42	41	40							
20									38	41	41	42	42	42	A	(46)A	A							
21										AK	39K	AK	40K	40K	BK	(39)PK	42K							
22									(38)P	(39)P	(39)P	(39)B	B	B	B	B	B							
23										39	(40)B	B	39	41	41	40H	S							
24									39H	40	41	4.1B	41	42	42	41	40B							
25									A	A	A	A	A	41	41	42	43							
26									37	40	4.1	41	A	A	A	C	B							
27									38H	40	41	41	41	40	41	40	35							
28									A	41	40	4.0	B	B	B	(40)B	42							
29									38	A	41	40	40H	42	4.2H	41	40H							
30									42H	40	A	A	A	(43)A	40	39								
31																								
Median								4.2	3.9	40	40	40	40	41	41	4.1	41							
Count								6	23	25	25	23	21	24	24	27	20							

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Table 85

Ionospheric Storminess at Washington, D. C.

November 1951

Day	Ionospheric character* 00-12 GCT	Ionospheric character* 12-24 GCT	Principal storms Beginning GCT	Principal storms End GCT	Geomagnetic character** 00-12 GCT	Geomagnetic character** 12-24 GCT
1	2	1			1	2
2	0	1			3	2
3	1	2			4	3
4	1	2			4	3
5	1	2			3	3
6	2	1			3	3
7	2	2			4	3
8	2	1			2	2
9	2	3			3	2
10	1	2			1	1
11	2	2			0	2
12	3	5	1100	----	4	2
13	4	4	----	----	4	4
14	4	3	----	1600	4	4
15	3	2			4	3
16	2	2			3	2
17	3	3			2	4
18	3	2			3	1
19	2	2			2	2
20	2	1			2	3
21	1	4	1100	2400	2	2
22	1	3			3	3
23	2	2			3	3
24	2	1			2	3
25	1	1			3	3
26	3	1			1	3
27	2	2			1	2
28	1	1			2	4
29	1	2			4	3
30	1	2			3	2

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

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

----Dashes indicate continuing storm.

Table 86

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

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

Score:	Warning N.A.	Warning N.P.	Forecast N.A.	Forecast N.P.
H	17	8	9	4
(M)	0	0	0	0
M	2	0	7	2
G	39	41	35	40
O	4	13	11	16

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

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

Symbols:
W Disturbed conditions expected
U Unstable conditions expected
N No disturbance expected
X Probable disturbed date

Scoring:
H Storm ($Q \leq 4$) hit
(M) Storm severer than predicted
M Storm missed
G Good day forecast
O Overwarning

Scoring by half day according to following table:

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

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

**In addition to dates marked X, the following were designated as probable disturbed days on forecast more than three or four days in advance of said dates: October 8, 9, 13, 14, 22, 23, 24.

***Low weight.

Table 87a

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

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1951																																					
Nov. 2.8	-	-	-	-	-	-	-	-	-	-	3	3	3	3	5	10	12	12	13	15	12	15	13	10	5	3	5	3	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	3	5	12	10	8	10	8	5	2	2	2	-	-	-	-	-	-	-	-	-
5.9	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3	5	12	10	3	5	8	5	3	3	3	2	2	-	-	-	-	-	-	-	X	X	X
6.7	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3	5	12	8	3	3	3	3	4	3	4	3	3	3	-	-	-	-	-	-	-	-	-
7.6	-	-	-	-	-	-	-	-	2	2	3	5	8	8	8	10	15	17	8	5	3	3	5	3	3	3	3	3	3	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	2	2	3	5	8	10	10	8	8	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.7	-	-	-	-	-	-	2	3	3	5	5	3	8	8	10	10	8	10	8	5	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.7a	-	-	-	-	8	5	5	5	3	3	8	10	12	12	15	15	15	15	12	3	3	2	3	2	2	2	2	2	2	2	-	-	-	-	-	-	-
18.7	-	-	-	3	5	8	8	5	3	3	10	10	10	12	10	10	12	10	12	3	3	5	5	3	3	3	3	3	3	2	2	-	-	-	-	-	-
19.7a	-	-	-	3	3	3	5	5	3	8	10	10	10	10	8	8	8	5	5	8	5	5	5	3	3	2	2	2	2	3	3	3	-	-	-	-	-
20.7	-	-	-	2	3	3	8	5	3	3	5	15	12	8	10	10	10	8	10	10	12	12	8	5	3	3	2	3	2	2	2	2	2	-	-	-	-
21.7	-	-	-	-	-	-	-	-	-	3	3	3	3	5	8	10	12	10	10	12	12	12	12	3	3	2	2	2	-	-	-	-	-	-	X	X	X
25.9	X	X	X	X	X	X	X	X	X	5	3	3	3	5	10	18	13	15	8	3	2	2	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
26.7	-	-	-	-	-	-	-	3	3	4	3	3	5	8	25	14	15	12	8	5	5	5	5	3	3	3	3	2	2	3	3	3	2	2	-	-	-
28.7	-	-	-	-	-	-	-	-	-	3	2	2	2	5	8	5	5	8	3	5	12	10	8	5	3	3	5	3	2	2	2	3	3	2	-	-	-
29.7	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	3	3	3	3	5	12	12	10	5	3	3	5	3	2	2	2	2	-	-	-	-	-
30.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	5	5	14	12	10	8	5	3	3	3	3	3	3	-	-	-	-	-	-

Table 88a

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

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1951																																					
Nov. 2.8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	5	2	3	10	12	3	3	3	5	5	3	3	3	3	3	2	2	2	-	-	-
3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	8	5	3	3	3	5	2	2	3	5	2	2	2	2	2	2	2	2
5.9	-	-	-	-	-	2	2	2	2	2	2	3	3	3	2	2	12	5	3	3	5	3	3	3	3	3	3	3	3	3	-	-	-	-	X	X	X
6.7	3	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	10	5	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	2	2	2	2
7.6	3	3	3	3	3	3	3	3	3	3	2	2	2	2	-	-	3	20	3	3	3	2	3	2	3	5	3	3	3	3	5	3	3	3	3	3	3
9.6	2	2	2	2	2	2	2	2	2	3	3	3	2	-	-	-	-	2	3	2	2	2	2	2	2	2	2	2	3	3	2	2	2	2	2	3	3
10.7	2	2	2	2	2	2	2	2	2	2	3	3	3	2	2	2	2	3	2	3	3	2	2	2	3	3	3	2	5	3	2	2	2	2	2	3	3
17.7a	2	2	2	-	-	-	-	-	-	-	-	-	3	3	5	13	12	12	15	5	3	3	3	3	2	2	2	3	3	2	3	3	3	3	2	2	2
18.7	3	3	3	3	-	-	-	-	-	-	-	-	-	-	2	3	2	5	5	3	5	5	3	3	3	2	2	3	3	3	3	3	3	3	2	2	2
19.7a	2	2	2	2	2	-	-	-	-	-	-	-	-	2	3	5	3	3	3	10	12	10	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
20.7	3	2	2	2	2	2	2	-	-	2	2	2	3	3	5	8	10	8	8	8	12	15	3	-	-	-	-	-	3	5	2	2	2	2	2	2	2
21.7	2	2	2	2	3	3	3	2	2	2	2	2	-	3	3	3	12	12	8	5	15	17	3	2	2	2	3	3	3	3	3	3	3	3	X	X	X
25.9	X	X	X	X	X	X	X	X	X	3	3	2	2	3	12	12	10	5	5	3	3	3	3	2	2	2	2	3	3	3	3	3	3	3	X	X	X
26.7	3	5	3	3	3	3	3	2	3	3	2	2	2	2	12	20	10	3	2	2	4	3	4	3	2	3	4	3	3	3	3	3	3	3	3	3	3
28.7	2	3	3	3	3	2	2	2	2	3	2	2	2	2	2	4	3	3	3	-	-	-	5	-	-	2	3	5	12	12	5	3	3	2	2	3	3
29.7	2	2	3	3	3	3	2	2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	2	2	2	3	4	2	2	2	2	2	2	2	2
30.7a	2	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-

Table 89a

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

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1951																																					
Nov. 2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	3	3	4	3	4	5	3	3	2	2	2	-	-	-	-	-	-	-	-	-
3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	3	3	3	3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X
6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.6	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	3	3	3	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17.7a	-	-	-	-	-	2	2	2	2	2	2	3	3	3	3	3	3	3	3	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18.7	-	-	-	-	-	-	-	-	2	2	2	2	3	3	3	3	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19.7a	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20.7	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	X	X	X
25.9	X	X	X	X	X	X	X	X	X	-	-	-	-	2	2	2	2	2	2	2	2	2	2	-	-	-	-	-	X	X	X	X	X	X	X	X	X
26.7	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	3	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-
28.7	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	3	3	3	3	2	2	2	2	-	-	-	-	-	-	-	-	-
29.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	3	3	3	2	2	2	2	2	-	-	-	-	-	-	-	-
30.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2	3	3	3	3	3	2	2	2	2	2	2	-	-	-	-	-	-	-

Table 87b

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

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1951																																					
Nov. 2.8	–	–	–	–	–	–	–	–	–	–	–	–	3	3	3	3	3	3	5	8	5	3	5	5	3	3	3	3	3	3	–	–	–	–	–	–	–
3.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	3	8	10	8	5	5	3	3	3	3	3	–	–	–	–	–	–	–	–	–
5.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	–	–	–	–	–
6.7	–	–	–	–	–	–	2	2	2	2	2	3	3	3	3	5	12	8	5	5	3	3	8	5	5	5	5	3	3	2	2	3	3	3	–	–	–
7.6	–	–	–	–	–	2	2	2	2	2	2	3	3	3	8	15	20	15	15	12	10	12	12	10	8	8	10	3	5	3	3	5	5	–	–	–	–
9.6a	–	–	–	–	–	–	–	–	2	2	2	2	2	2	2	3	5	5	3	3	3	3	3	2	2	2	2	–	–	–	–	–	–	–	–	–	–
10.7	–	–	–	–	–	–	–	–	–	–	–	–	2	2	2	3	3	3	3	3	3	2	3	2	3	3	2	2	2	2	2	2	2	–	–	–	–
17.7	–	–	–	–	–	3	3	3	3	3	3	3	5	10	14	14	15	20	20	10	10	5	5	5	3	3	–	–	–	–	–	–	–	–	–	–	–
18.7	–	–	–	–	–	3	3	3	3	3	3	3	3	8	13	12	17	15	15	10	12	5	5	3	3	3	–	–	–	–	–	–	–	–	–	–	–
19.7	–	–	–	–	–	–	–	–	–	–	–	3	3	3	5	5	5	10	15	10	12	10	10	5	3	2	2	2	–	–	–	–	–	–	–	–	–
20.7	–	–	–	–	–	–	–	–	–	–	–	3	3	3	3	3	3	3	8	10	12	12	10	8	5	3	3	3	3	3	–	–	–	–	–	–	–
21.7	X	X	X	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3	5	8	5	X	X	X	X	X	X	X	X	X	X	X	–	–	–
25.9	–	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
26.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3	5	8	5	10	5	3	3	3	3	3	3	2	2	2	–	–	–	–	–
28.7	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3	3	3	3	8	10	15	10	12	8	4	5	3	2	3	3	3	3	2	2	–	–	–
29.7	–	–	–	–	–	–	–	–	–	–	–	–	3	3	3	3	3	8	12	15	13	15	15	12	5	3	3	3	2	3	3	–	–	–	–	–	–
30.7a	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	3	5	5	8	10	8	10	12	8	3	3	3	3	3	3	–	–	–	–	–	–	–

Table 88b

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

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1951																																					
Nov. 2.8	–	–	–	–	–	–	2	2	3	3	3	3	3	3	3	3	2	2	2	3	10	5	–	–	–	–	–	–	–	–	–	–	–	2	2	2	2
3.8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	2	2	2	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	–	–	–	–	–
6.7	2	2	2	2	2	2	–	–	–	2	2	2	2	2	2	3	12	8	8	8	5	8	3	2	–	–	–	–	–	–	–	–	–	3	3	3	3
7.6	3	3	3	3	3	3	3	3	3	5	3	3	–	–	–	12	25	12	15	15	5	8	3	3	2	2	3	2	2	2	2	2	2	2	2	3	3
9.6a	3	3	3	2	2	2	2	2	2	–	–	–	–	–	–	2	13	12	10	3	10	5	3	–	–	–	–	–	–	–	–	–	–	2	2	2	2
10.7	3	3	3	2	2	2	2	2	2	–	–	–	–	–	–	2	8	5	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
17.7	2	2	2	2	2	2	2	2	3	3	5	3	5	5	3	5	2	10	8	8	10	3	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2
18.7	2	2	2	2	2	2	3	3	3	3	10	5	8	3	8	3	3	5	15	5	8	15	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3
19.7	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	5	8	5	2	5	3	2	2	2	2	2	2	2	2	2	2	2	3	2
20.7	2	2	2	2	2	2	2	2	2	3	3	3	2	3	5	3	5	8	3	5	8	10	8	5	3	2	2	2	3	3	3	3	3	3	3	3	3
21.7	X	X	X	X	2	2	2	2	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	X	X	X	X	X	X	X	X	X	X	2	2	2	2
25.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
26.7	3	3	3	3	3	3	3	3	5	5	5	5	5	3	3	3	5	4	4	3	3	8	2	–	–	–	–	–	–	2	2	3	3	5	5	3	3
28.7	3	3	3	3	3	3	2	3	3	5	5	8	4	5	10	8	3	3	3	12	8	3	2	3	3	2	–	–	–	–	3	2	3	3	3	3	2
29.7	2	2	2	2	2	2	2	2	2	3	3	3	2	2	3	3	3	3	10	15	3	8	2	2	–	–	–	–	–	2	2	2	2	2	2	2	2
30.7a	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8	2	–	–	5	8	2	5	–	–	–	–	–	–	–	–	–	2	2	2	2	2

Table 89b

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

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1951																																					
Nov. 2.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	2	2	2	2	2	–	–	–	–	–	–	–	–	–	–
3.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	3	3	3	3	3	3	3	3	3	3	–	–	–	–	–	–	–	–	–
5.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	–	–	–	–	–
6.7	–	–	–	–	–	–	–	–	–	–	2	2	2	2	3	3	3	3	3	3	2	2	2	2	2	2	2	2	–	–	–	–	–	–	–	–	–
7.6	–	–	–	–	–	–	–	–	–	–	2	2	2	2	2	5	8	5	5	3	3	3	3	3	3	3	3	2	2	2	2	2	–	–	–	–	–
9.6a	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	2	2	2	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
10.7	–	–	–	–	–	–	–	–	–	–	–	–	2	2	2	2	2	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
17.7	–	–	–	–	–	–	–	–	–	–	2	2	2	3	3	3	5	3	2	2	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
18.7	–	–	–	–	–	–	–	–	–	–	–	–	2	2	2	3	3	3	3	2	2	2	2	2	2	2	–	–	–	–	–	–	–	–	–	–	–
19.7	–	–	–	–	–	–	–	–	–	–	2	2	2	2	2	2	2	3	3	2	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
20.7	–	–	–	–	–	–	–	–	–	2	2	2	2	2	2	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
21.7	X	X	X	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	2	2	2	X	X	X	X	X	X	X	X	X	X	–	–	–	–
25.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
26.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	2	2	2	2	2	2	2	–	–	–	–	–	–	–
28.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	3	3	3	3	2	2	2	2	2	2	–	–	–	–	–	–	–
29.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	2	2	3	3	3	3	3	3	2	2	2	2	2	2	2	–	–	–	–
30.7a	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	2	3	3	3	3	3	3	–	–	–	–	–	–	–	–	–	–	–	–

Note: Yellow line (5694A): Nov. 7.6 at S10 west limb, intensity 5.

Table 90

Zürich Provisional Relative Sunspot Numbers

November 1951

Date	R_Z*	Date	R_Z*
1	45	17	46
2	57	18	44
3	46	19	42
4	53	20	43
5	61	21	45
6	56	22	52
7	62	23	54
8	62	24	54
9	61	25	54
10	62	26	60
11	76	27	75
12	65	28	59
13	41	29	55
14	40	30	31
15	40		
16	50	Mean:	53.0

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

Table 91

American Relative Sunspot Numbers

October 1951

Date	R_A,*	Date	R_A,*
1	44	17	62
2	50	18	58
3	46	19	64
4	41	20	45
5	25	21	32
6	20	22	29
7	13	23	15
8	36	24	21
9	61	25	28
10	77	26	45
11	94	27	56
12	88	28	71
13	65	29	77
14	56	30	75
15	55	31	64
16	61	Mean:	50.8

*Combination of reports from 22 observers; see page 9.

Table 92

Solar Flares, October 1951

Observatory	Date 1951	Time Observed Beginning (GCT)	Time Observed Ending (GCT)	Duration (Min)	Area (Mill of Visible Hemisph)	Position Latitude (Deg)	Position Longitude Diff (Deg)	Time of Maximum (GCT)	Int. of Maximum	Relative Area of Maximum (Tenths)	Importance	SID Observed
Sac.Peak	Oct. 8	1440	1550	70	34	S15	E88	1506	14	5	1 -	
"	8	2300	2320A	App.25	57	S15	E88	2303	12	3	1 -	
"	9	1800	1855	55	80	S16	E66	1845	10	6	1 -	
"	13	1655	1733	38	34	S12	E11	1705	13	8	1 -	
McMath	13	1700				S12	E14	--			1	
Sac.Peak	16	1935	1954	19	73	S14	W36	1940	9	8	1 -	
"	16	2000	2020A	App.25	51	S14	W36	2004	8	6	1 -	
McMath	17	1740				S17	W46	--			1 ..	
Sac.Peak	17	1745	1840	55	112	S10	W46	1757	13	1	1	
"	18	1505	1605	60	39	S16	W66	1545	9	3	1 -	
Wendelst.	19	1023B	1049	App.30	97	N11	W35	1028			1 -	
Schauins.	19	1050				N10	W40	--			1	
Sac.Peak	19	1435	1515	40	107	S20	W88	1451	12	1	1	
"	19	1501	1525	24	12	S20	W88	1511	10	6	1 -	
"	19	1625B	1635	App.15	68	S15	W88	1625B	10	2	1 -	
Wendelst.	28	0726B	0744A	App.20	339	N08	E57	--			2	
Sac.Peak	29	1525	1550	25	33	N10	W49	1533	16	4	1 -	
"	29	1723	1748	25	100	S10	E39	1724	19	8	1	

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

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

Table 93

Indices of Geomagnetic Activity for October 1951

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

Gr. Day 1951	Values Kw	Sum	C	Values Kp	Sum	Final Sel. Days
1	2.1 1.2 1.2 1.4 1.0 2.4 2.3 2.1	13.7	0.3	2o1+1+1+ 1-3-3-2o	14o	Five Quiet
2	3.2 3.2 3.0 2.2 1.7 1.9 1.6 3.1	19.9	0.7	4-4-4-3- 2-2o2-4-	23-	
3	1.3 1.1 0.8 2.1 2.4 1.1 2.6 2.3	13.7	0.4	2-2-1-2+ 2+1o2+2+	14+	
4	0.7 0.6 0.4 1.0 1.0 1.5 2.2 1.9	9.3	0.2	1-0+0+1- 0+1+2o2-	7+	4
5	2.4 0.6 0.8 0.6 0.8 1.0 1.9 1.9	10.0	0.2	3o0+1-0+ 0+1-2-2o	9o	6
						24
6	1.5 0.8 0.6 0.8 0.4 0.2 0.3 0.6	5.2	0.0	2-1-1-1- 0o0o0o0+	4o	25
7	1.2 1.4 2.2 3.0 3.8 4.6 5.7 4.8	26.7	1.5	1+2o3-3+ 4+5+7-5+	31o	31
8	5.1 4.8 5.1 4.7 4.6 4.1 3.7 4.2	36.3	1.6	6o6-6+6o 5+5o4o4o	42+	
9	3.6 3.1 3.0 3.9 4.3 3.2 2.9 4.6	28.6	1.2	4o4o4-5- 5o3+3o5+	33o	
10	3.9 3.7 3.1 4.4 3.6 4.8 4.2 3.9	31.6	1.4	5o4+4o5+ 4o6-5-5-	38-	
11	3.6 2.5 3.3 3.6 3.1 3.1 2.5 0.9	22.6	0.9	4+3+4o4c 3+3+2+1-	25+	Five Dist.
12	1.5 2.3 2.1 3.6 3.3 2.7 2.2 2.0	19.7	0.7	2o3o3-4o 4-3-2+2o	22+	
13	2.5 2.9 3.2 4.3 3.0 2.1 3.6 4.8	26.4	1.2	3o4-3+5o 3o2+4o6-	30o	
14	4.1 2.3 2.7 3.0 1.4 3.3 4.4 3.4	24.6	1.0	5-3-3o3+ 1+3+5+4+	28o	8
15	2.6 1.9 2.2 2.1 1.4 1.3 3.1 3.6	18.2	0.7	3+3-3-2+ 1+1+3-4o	20+	17,
						18
16	3.0 3.2 2.7 3.3 2.6 3.2 3.7 4.3	26.0	1.0	3o4o3+4- 2+3+4o5-	28+	19
17	5.0 5.2 4.7 4.9 4.4 5.8 5.5 4.7	40.2	1.7	6o6+6+6o 6-7o7-6-	50-	28
18	3.9 4.1 4.7 4.2 3.9 4.9 4.0 4.0	33.7	1.4	4+5+6o5+ 4+5+4+4+	39+	
19	4.8 4.4 3.8 3.5 3.8 4.1 4.7 4.9	34.0	1.5	6o5+5o4+ 4+4+5+6-	40+	
20	4.9 2.6 3.4 3.3 3.0 2.2 4.0 2.1	25.5	1.0	6o3+4+4- 3+2o4o2o	29-	
						Ten
21	2.7 3.2 2.6 3.4 2.3 2.2 2.7 2.2	21.3	0.8	3o4+3o4+ 2+2o2+2o	23+	Quiet
22	3.2 2.8 2.5 2.7 3.3 4.4 3.8 3.2	25.9	1.0	4-3+3-3o 3+5o4o3+	28+	
23	2.5 1.7 1.8 2.0 2.5 3.0 2.2 2.6	18.3	0.7	3o2o2+2+ 3-3o2o2+	20-	1
24	1.7 1.4 1.6 1.6 0.8 0.6 1.7 1.8	11.2	0.1	2o2-1+2- 0+1-2-2o	11+	3
25	1.6 0.7 0.6 0.7 0.9 0.8 1.0 1.2	7.5	0.0	1+1-0+1- 0+1-0+1-	5o	4
						5
26	1.3 1.2 2.2 3.4 2.7 1.9 2.6 4.8	20.1	1.0	1+1+2+4o 3-2o2+5+	21+	6
27	2.9 3.1 1.9 2.1 2.3 0.8 0.3 1.4	14.8	0.5	3o4o2+2+ 2+0+0+1+	16o	24
28	0.7 2.7 2.7 4.4 6.5 7.3 7.4 4.7	36.4	1.9	0+4-3+5+ 7o8o9-5o	41+	25
29	3.4 2.7 2.1 2.0 2.4 1.4 1.1 1.4	16.5	0.6	4-3+3-2o 3-1+1o2-	18+	27
30	1.1 2.5 2.6 2.9 1.5 0.8 1.1 0.3	12.8	0.5	1o3+3+3+ 1+1o1o0o	14+	30
						31
31	0.3 0.9 0.7 0.6 1.1 0.6 1.2 1.5	6.9	0.0	0o1-1-1- 1-1-1o1+	6-	
Mean	2.65 2.40 2.57 2.91 2.41 2.76 2.62 2.88	2.65	0.83			

Table 94

Sudden Ionosphere Disturbances Observed at Washington, D. C.

November 1951

1951 Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
November					
3	2135	2210	Ohio, D. C., Mexico	0.1	
4	1502	1650	Ohio, D. C.	0.0	
7	1820	1910	Ohio, D. C., Colombia	---	Solar flare** 1830
13	1950	2100	Ohio, D. C., Mexico	0.2	Terr.mag.pulse*** 1952-2030

*Ratio of received field intensity during SID to average field intensity before and after, for station KQ2XAU (formerly W8XAL), 6080 kilocycles, 600 kilometers distant.

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

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

---Insufficient data.

Table 95

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

1951 Day	GCT Beginning	GCT End	Location of transmitters
October 19	1735	1745	Brazil, England, France, Germany, Netherlands, Spain

Table 96

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief,

Cable and Wireless, Ltd., as Observed in England

1951 Day	GCT Beginning	End	Receiving station	Location of transmitters
November				
6	0946	1000	Brentwood	Austria, Belgian Congo, Brazil, Canary Is., Eritrea, Greece, Kenya, Madagascar, New York, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Trans-Jordan, Turkey, Yugoslavia, Zanzibar
6	0940	1000	Somerton	Argentina, Ceylon, Formosa, India, Iran, Malay States, Thailand

Table 97

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief,

Cable and Wireless, Ltd., as Observed in Barbados, B.W.I.

1951 Day	GCT Beginning	End	Location of transmitters	Other phenomena
September				
3	1310	1400	Canada, England, Grenada, Jamaica, Peru, Trinidad	Solar flare* 1320 Solar flare** 1330
15	1510	1525	Bermuda, Canada, England, Florida, Grenada, Jamaica, Peru, St. Lucia, St. Vincent, Trinidad	Solar flare* 1510 Solar flare** 1500 Terr.mag.pulse*** 1510-1530

*Time of observation at McMath-Hulbert Observatory, Pontiac, Michigan.
**Time of observation at Sacramento Peak, New Mexico.
***As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

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

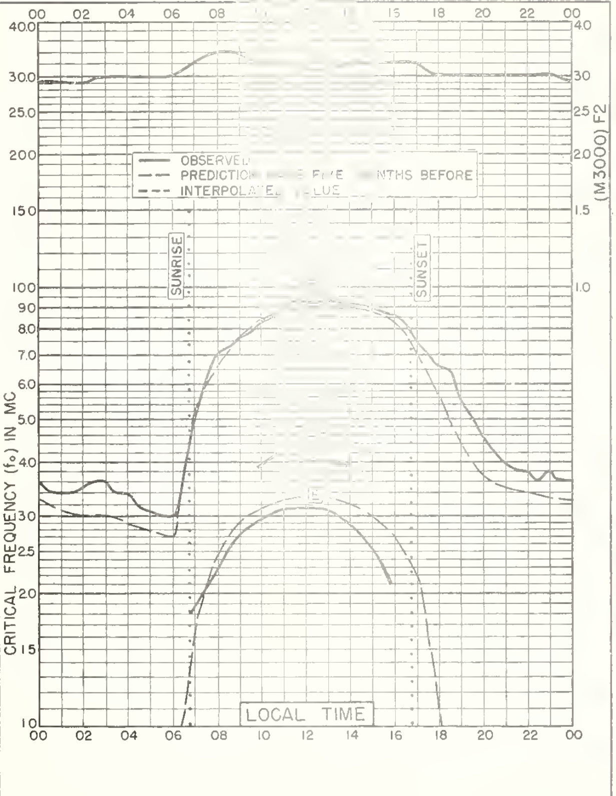

Fig. 1. WASHINGTON, D. C. 38.7°N, 77.1°W NOVEMBER 1951

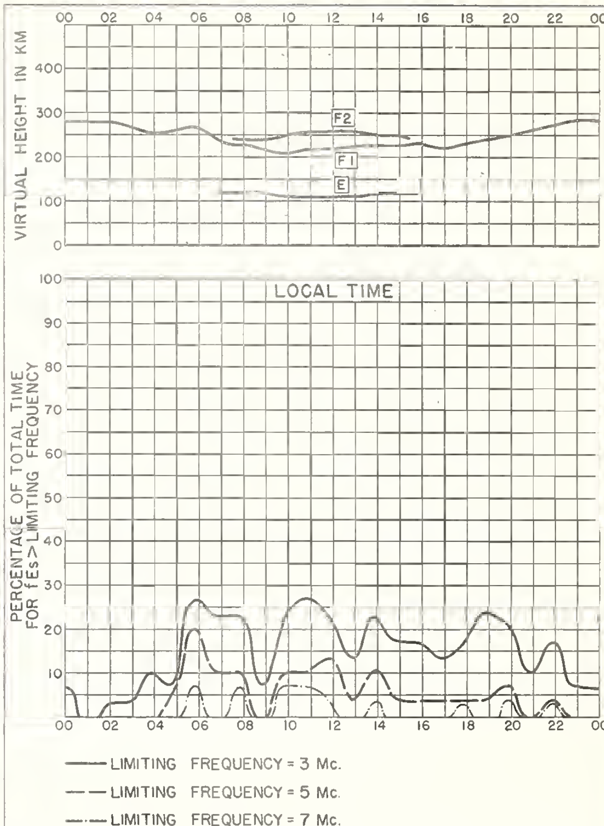

Fig. 2. WASHINGTON, D. C. NOVEMBER 1951

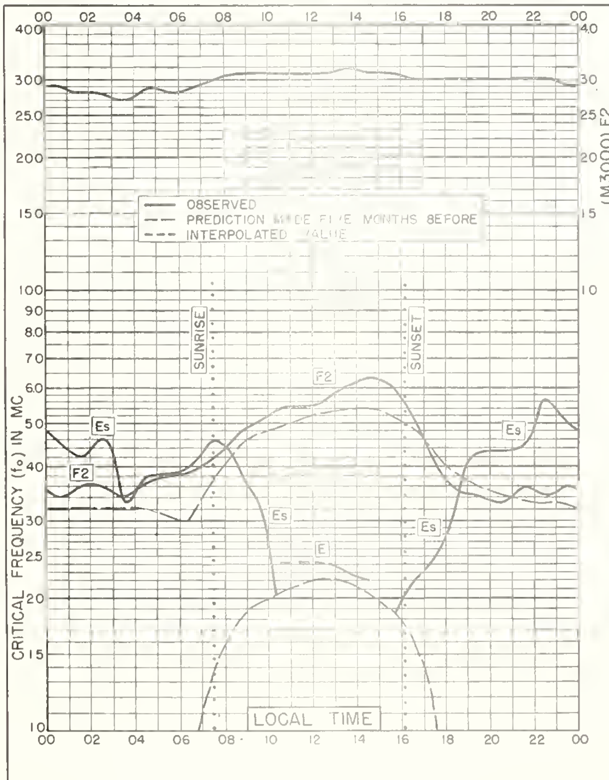

Fig 3. POINT BARROW, ALASKA 71.3°N, 156.8°W OCTOBER 1951

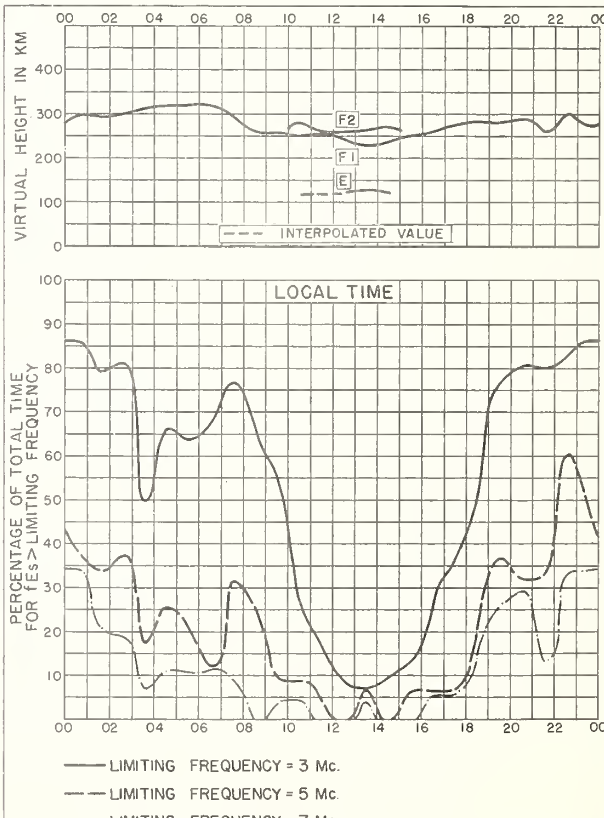

Fig. 4. POINT BARROW, ALASKA OCTOBER 1951

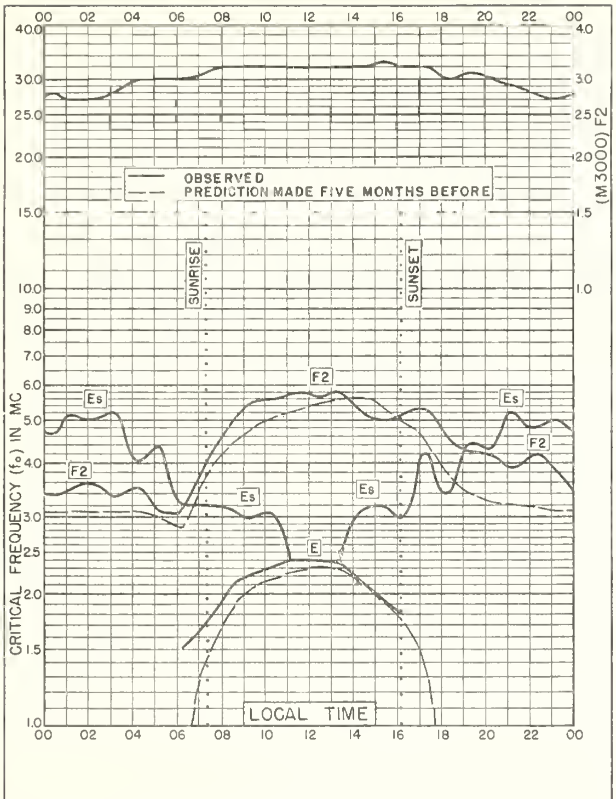

Fig. 5. TROMSO, NORWAY
69.7°N, 19.0°E OCTOBER 1951

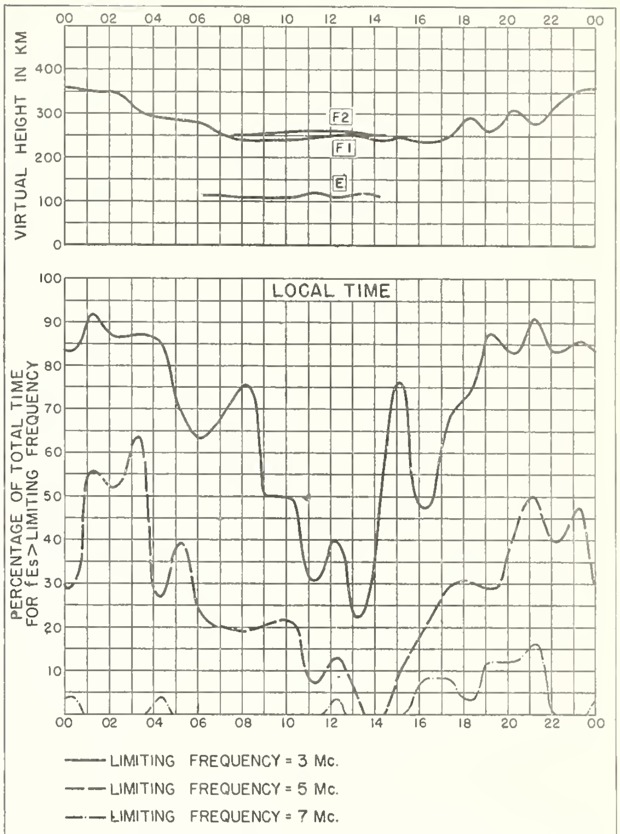

Fig. 6. TROMSO, NORWAY OCTOBER 1951

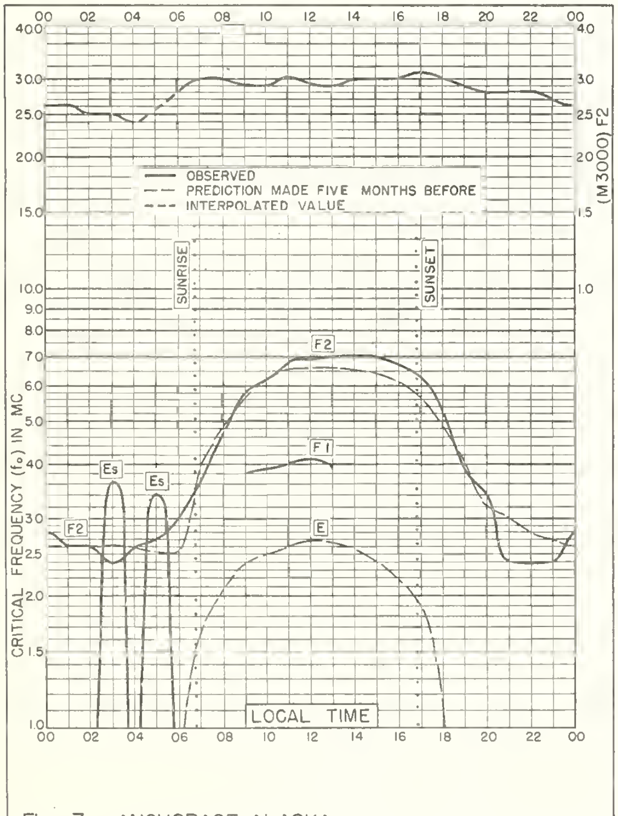

Fig. 7. ANCHORAGE, ALASKA
61.2°N, 149.9°W OCTOBER 1951

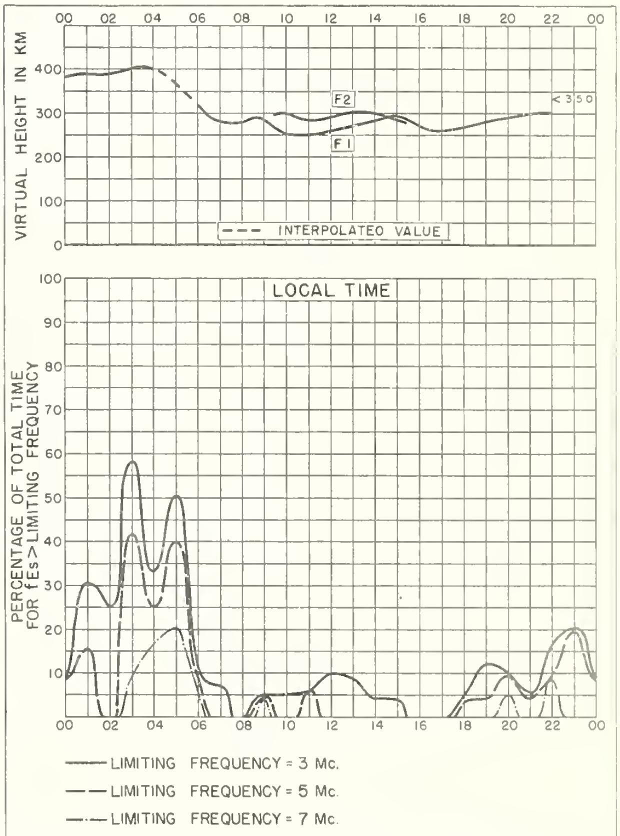

Fig. 8. ANCHORAGE, ALASKA OCTOBER 1951

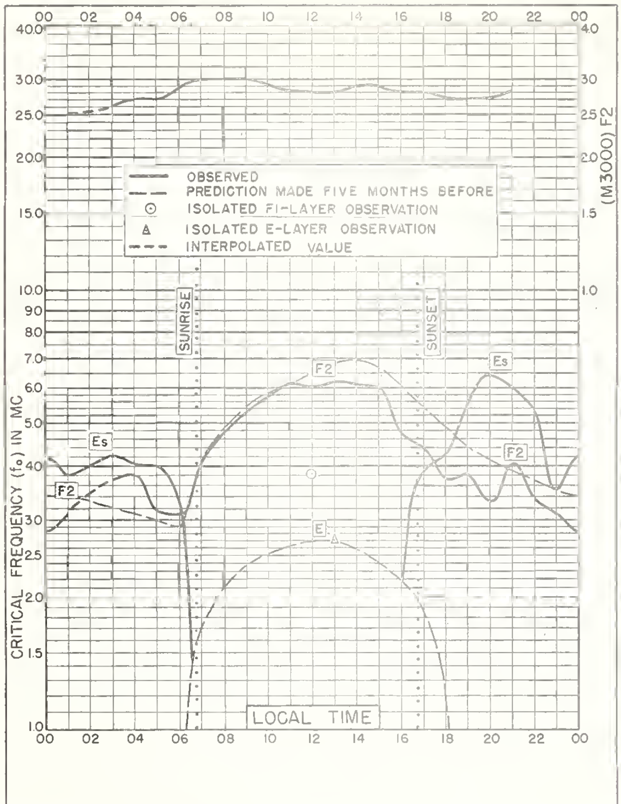

Fig. 9 NARSARSSUAK, GREENLAND
61.2°N, 45.4°W OCTOBER 1951

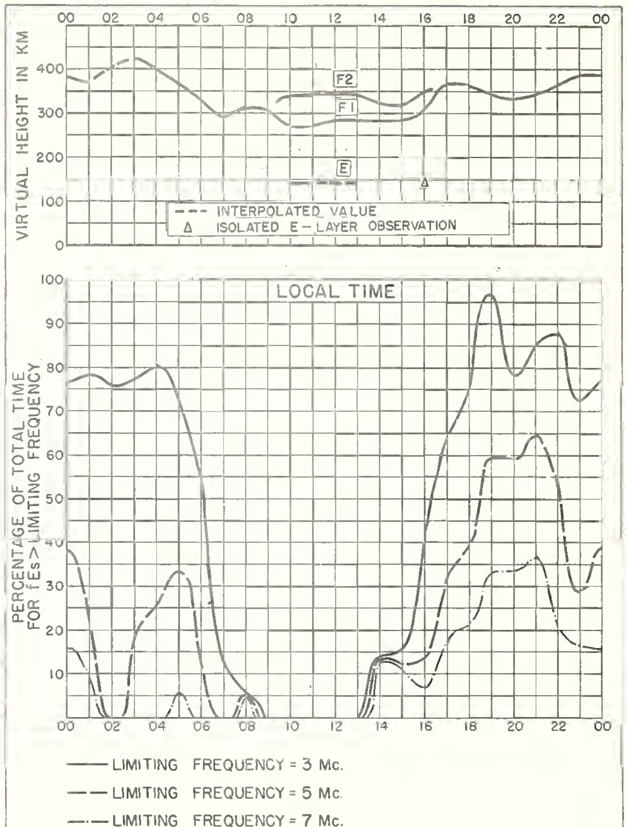

Fig. 10. NARSARSSUAK, GREENLAND OCTOBER 1951

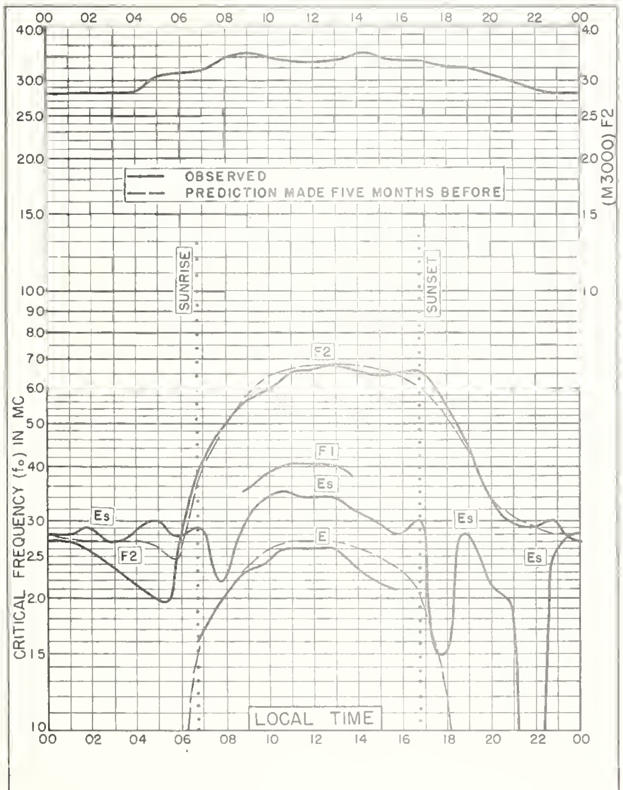

Fig. 11. OSLO, NORWAY
60.0°N, 11.0°E OCTOBER 1951

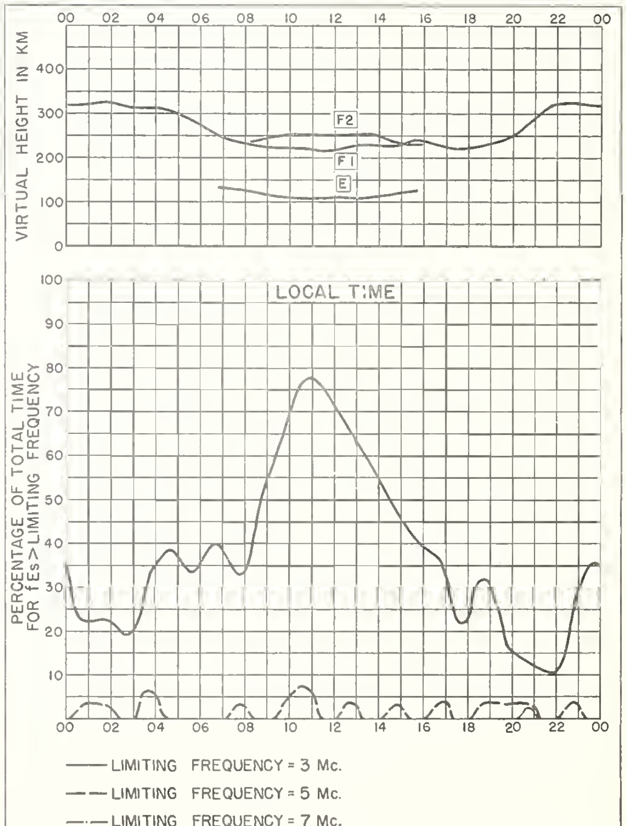

Fig. 12. OSLO, NORWAY OCTOBER 1951

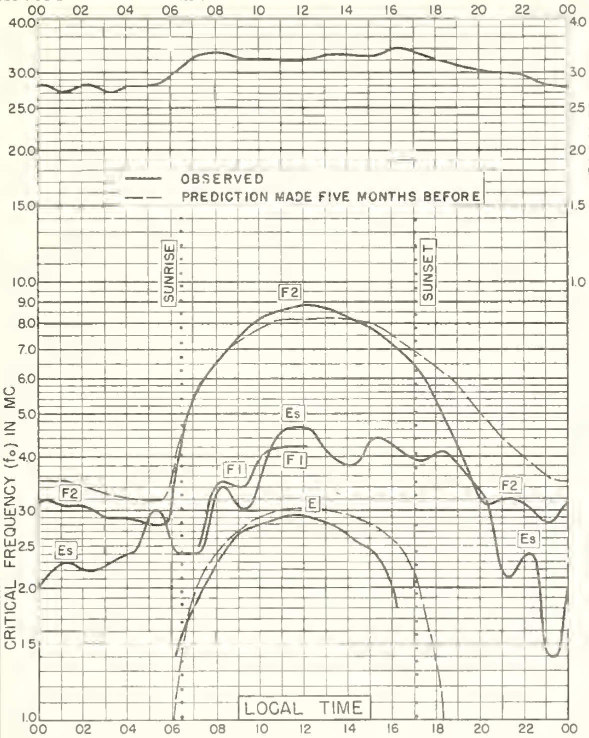

Fig 13. ADAK, ALASKA
51.9°N, 176.6°W OCTOBER 1951

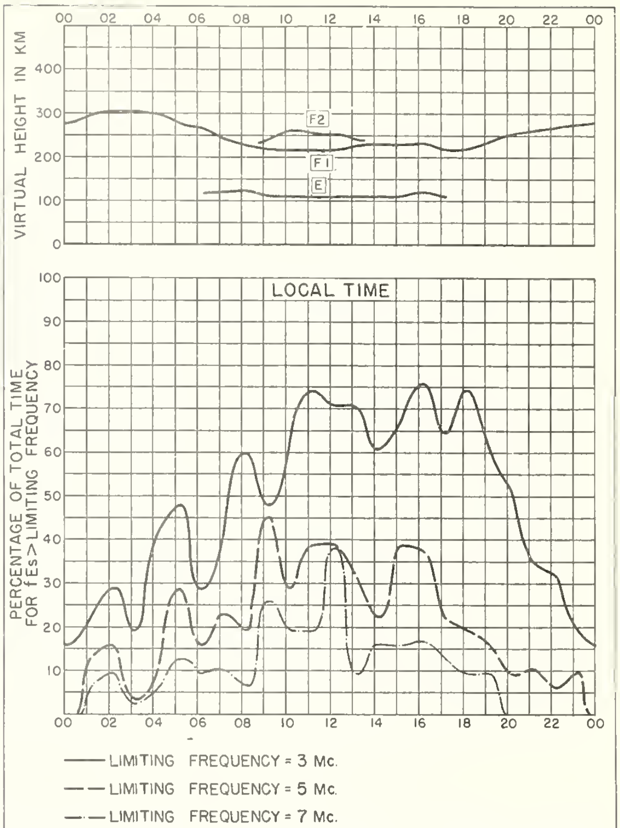

Fig 14. ADAK, ALASKA OCTOBER 1951

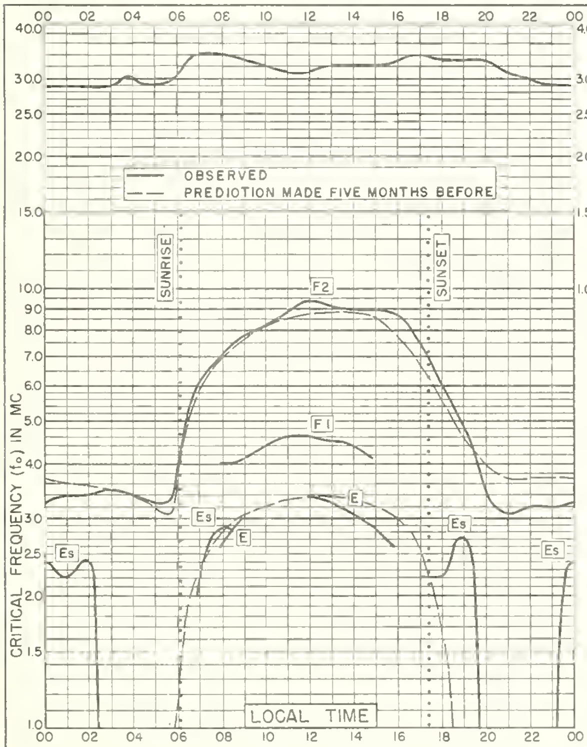

Fig. 15. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W OCTOBER 1951

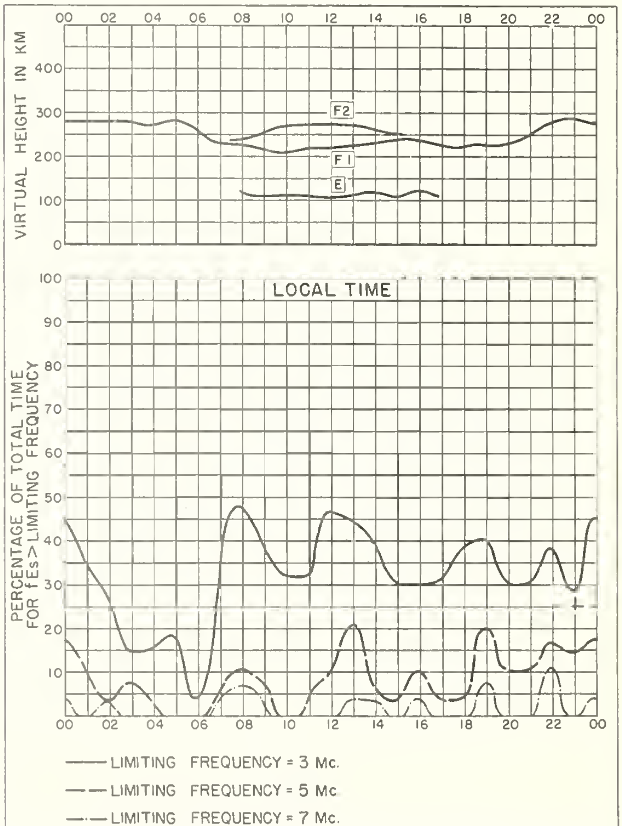

Fig. 16. SAN FRANCISCO, CALIFORNIA OCTOBER 1951

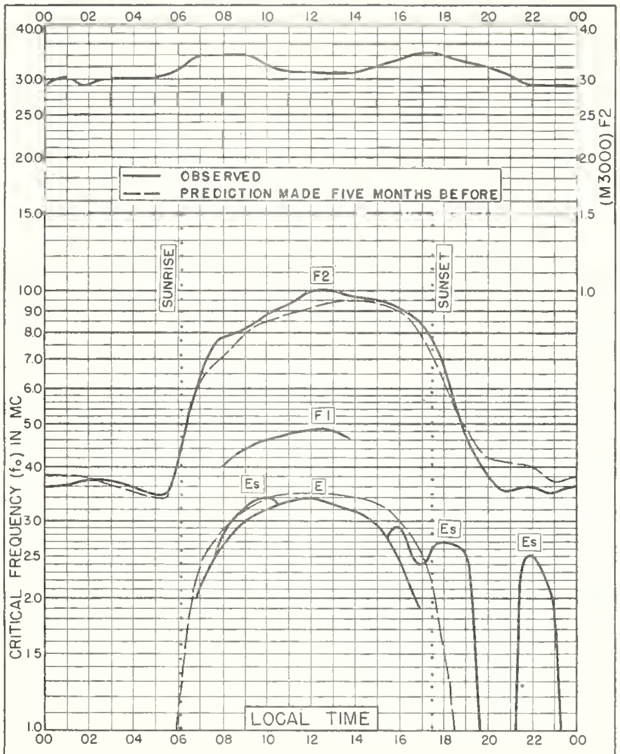

Fig. 17 WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W OCTOBER 1951

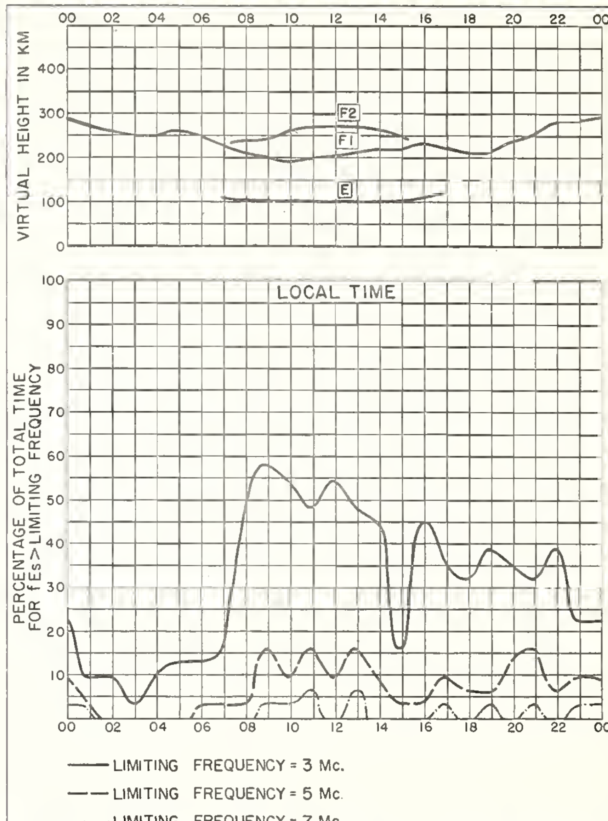

Fig. 18. WHITE SANDS, NEW MEXICO OCTOBER 1951

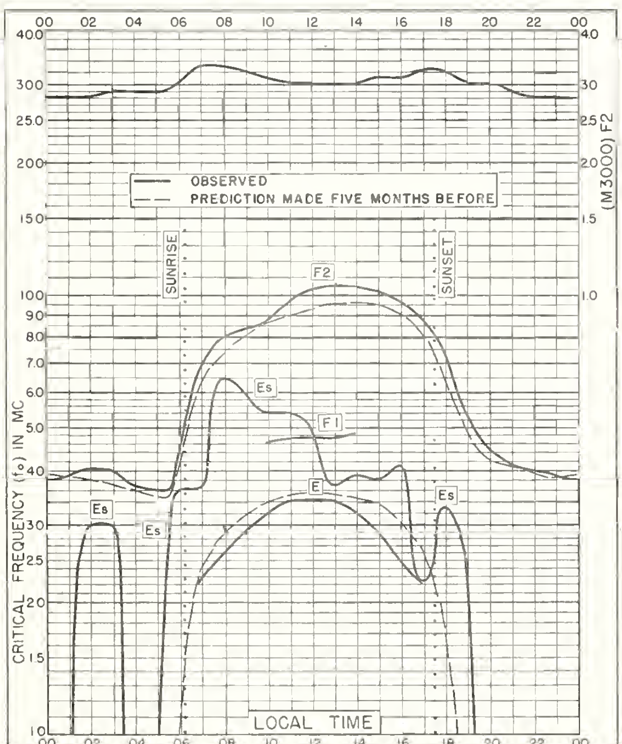

Fig. 19 BATON ROUGE, LOUISIANA
30.5°N, 91.2°W OCTOBER 1951

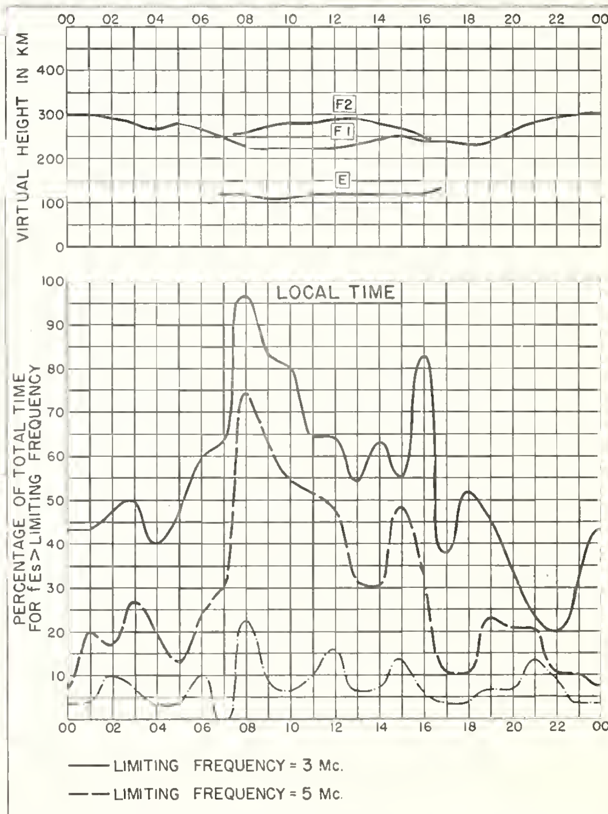

Fig. 20. BATON ROUGE, LOUISIANA OCTOBER 1951

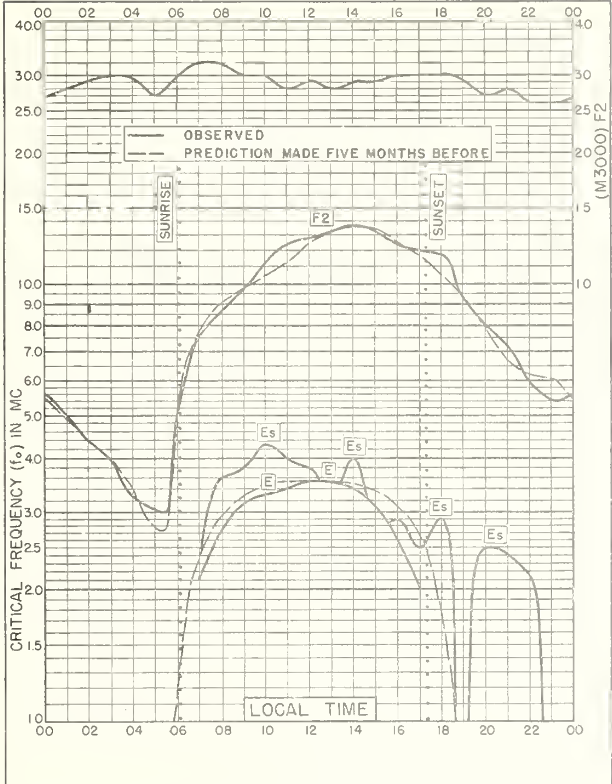

Fig. 21. OKINAWA I.
26.3°N, 127.8°E OCTOBER 1951

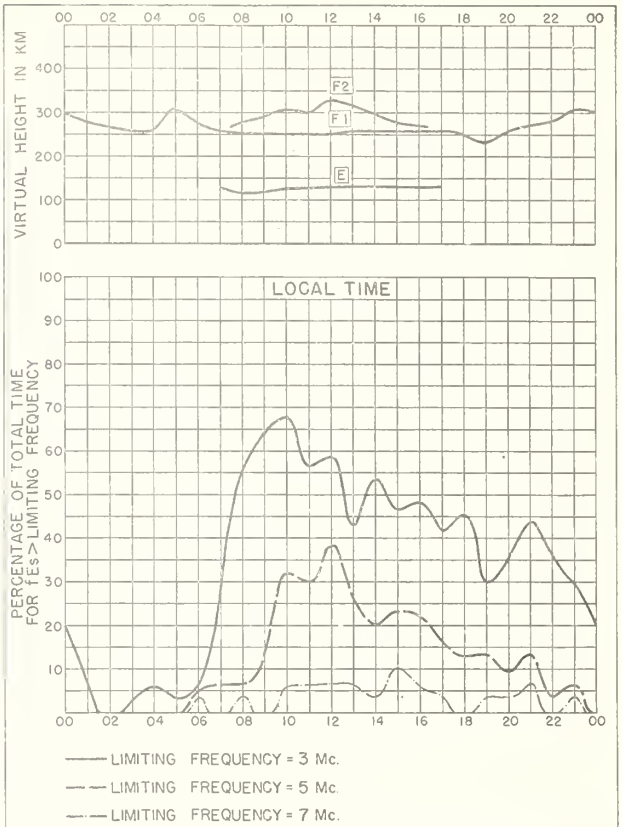

Fig. 22. OKINAWA I. OCTOBER 1951

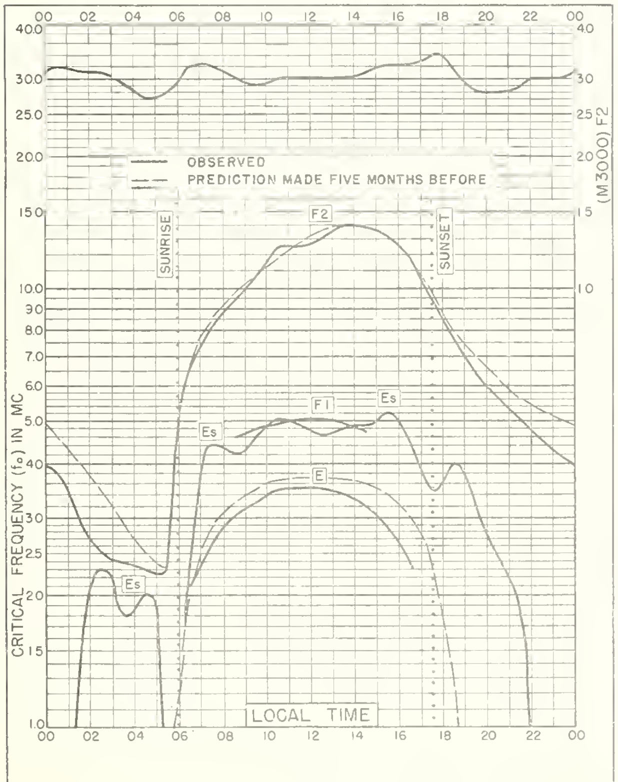

Fig. 23. MAUI, HAWAII
20.8°N, 156.5°W OCTOBER 1951

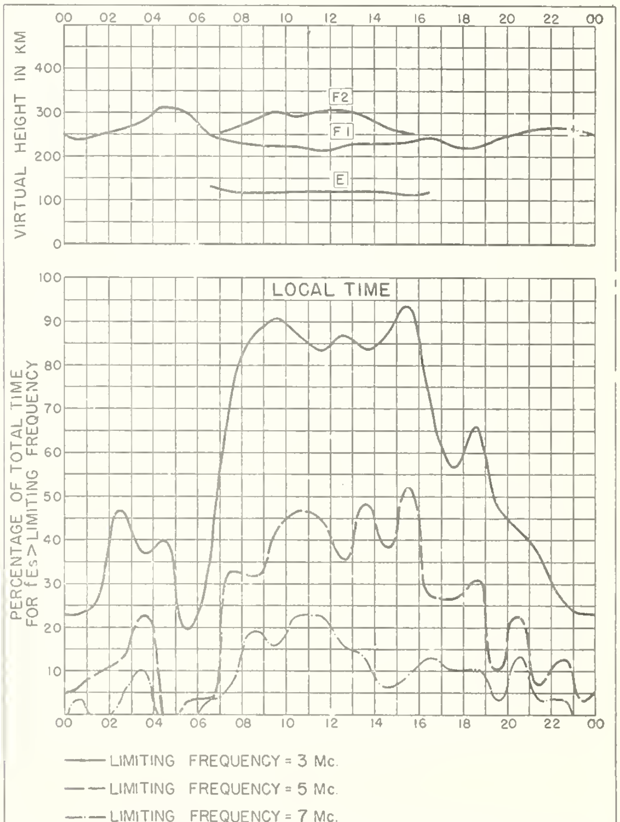

Fig. 24. MAUI, HAWAII OCTOBER 1951

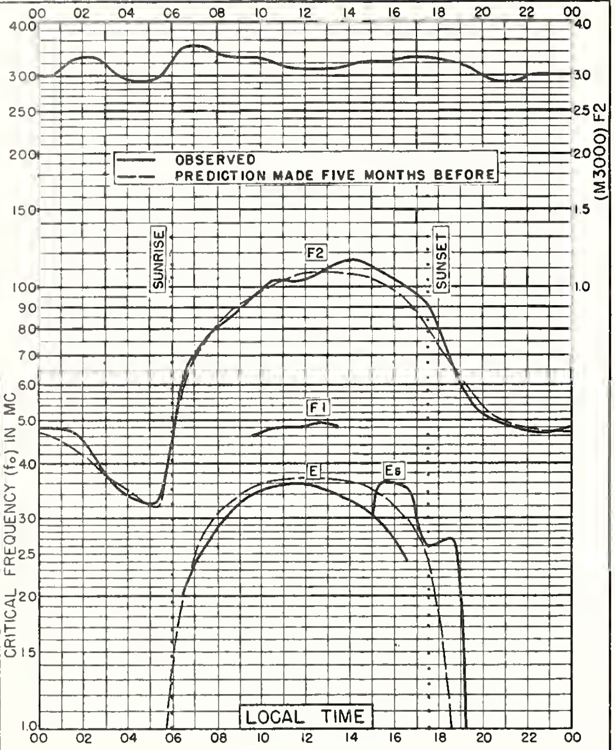

Fig 25. PUERTO RICO, W. I.
18.5°N, 67.2°W OCTOBER 1951

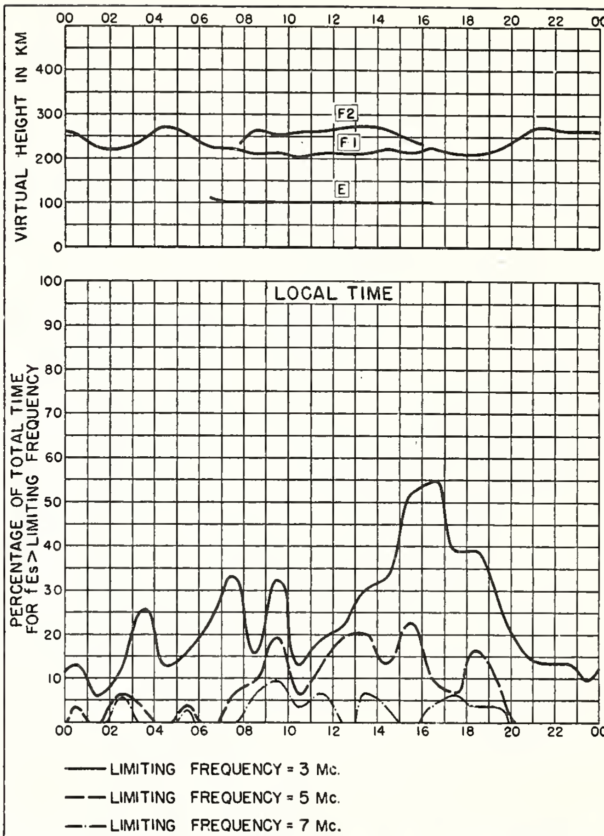

Fig. 26. PUERTO RICO, W. I. OCTOBER 1951

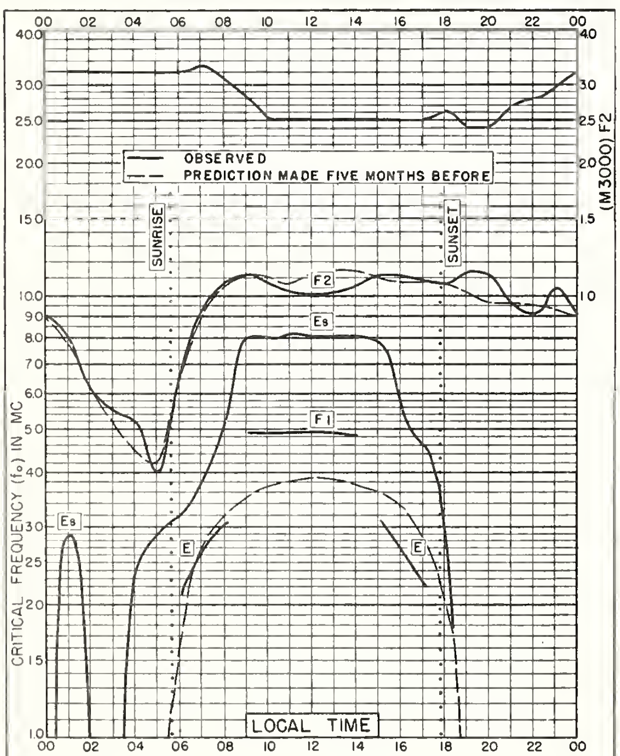

Fig 27. HUANCAYO, PERU
12.0°S, 75.3°W OCTOBER 1951

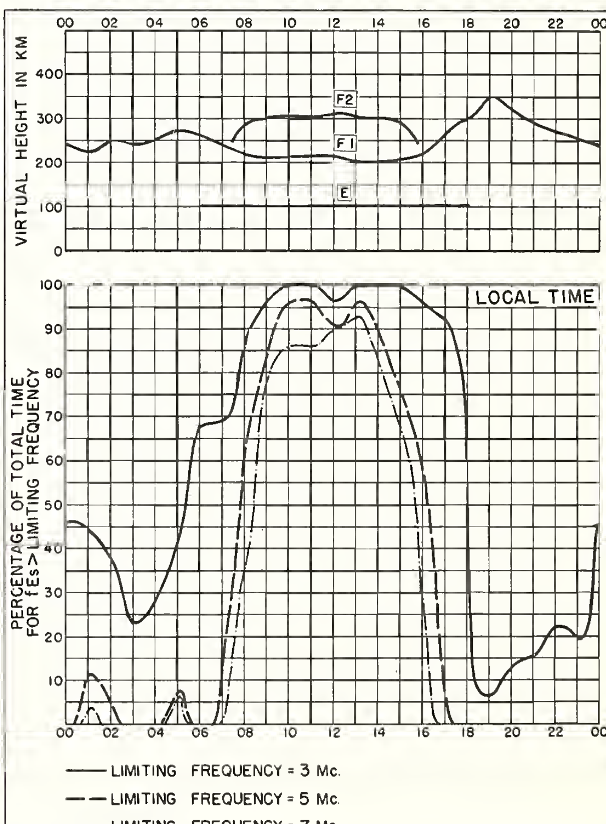

Fig. 28. HUANCAYO, PERU OCTOBER 1951

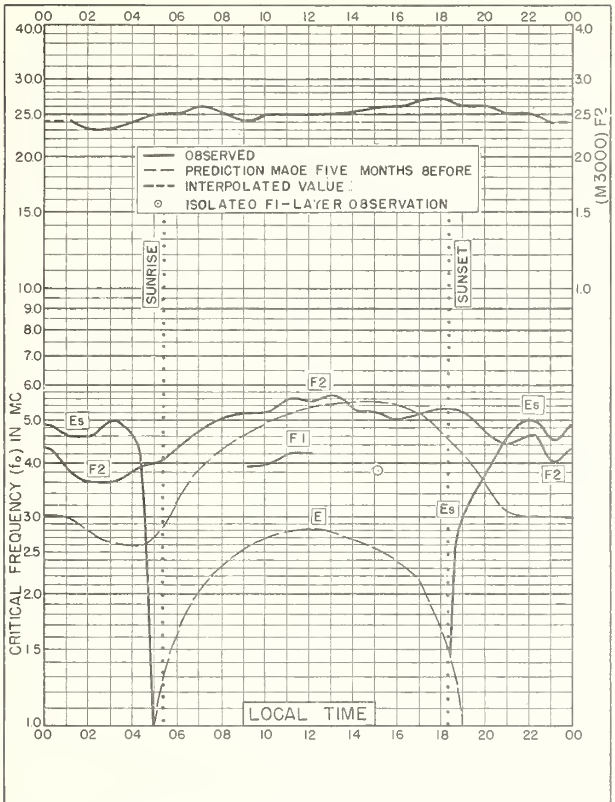

Fig. 29. FAIRBANKS, ALASKA
64.9°N, 147.8°W SEPTEMBER 1951

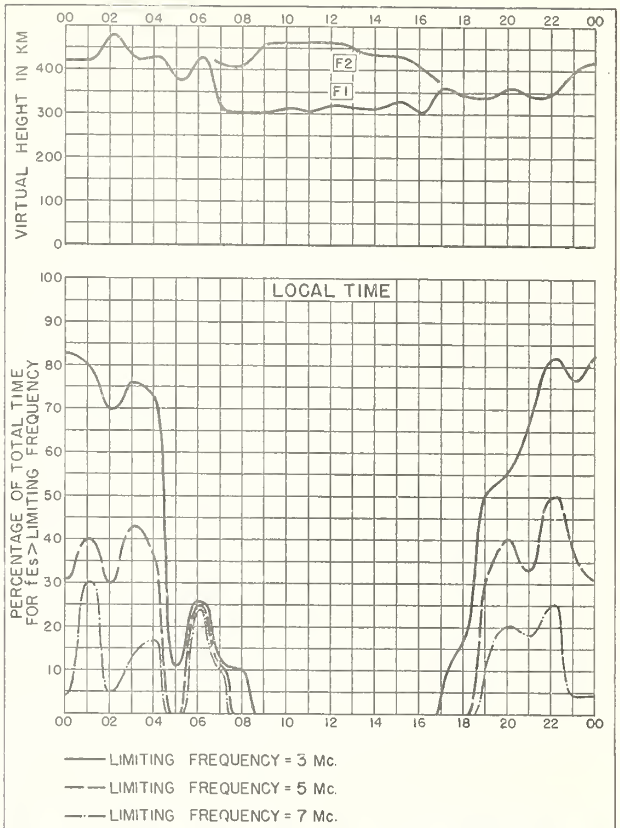

Fig. 30. FAIRBANKS, ALASKA SEPTEMBER 1951

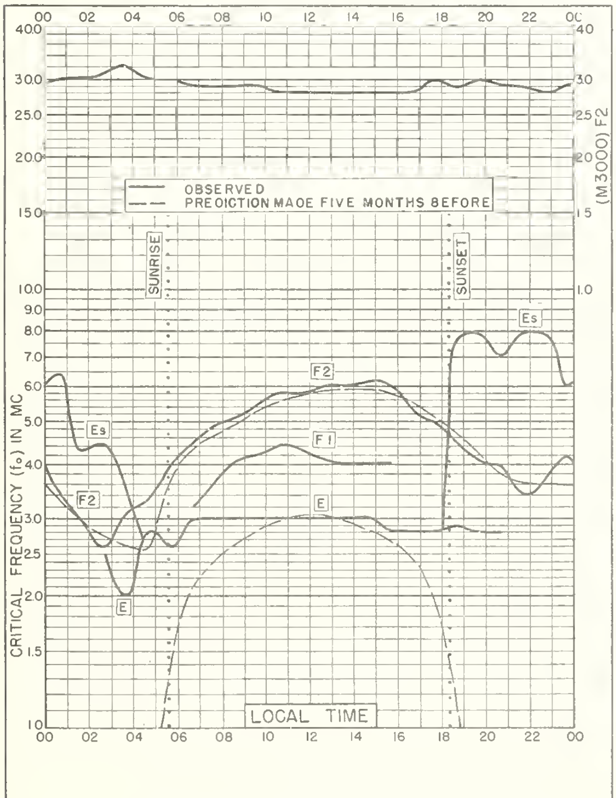

Fig. 31. CHURCHILL, CANADA
58.8°N, 94.2°W SEPTEMBER 1951

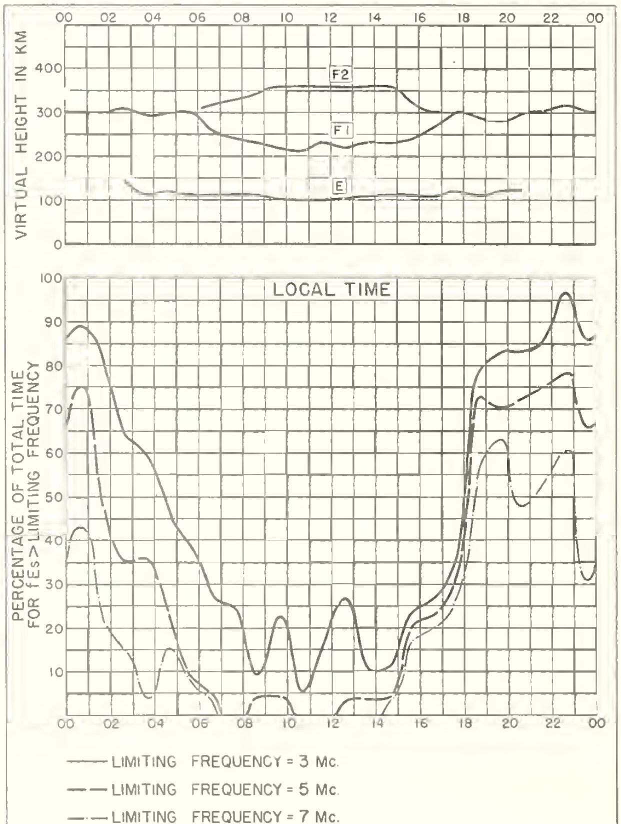

Fig. 32. CHURCHILL, CANADA SEPTEMBER 1951

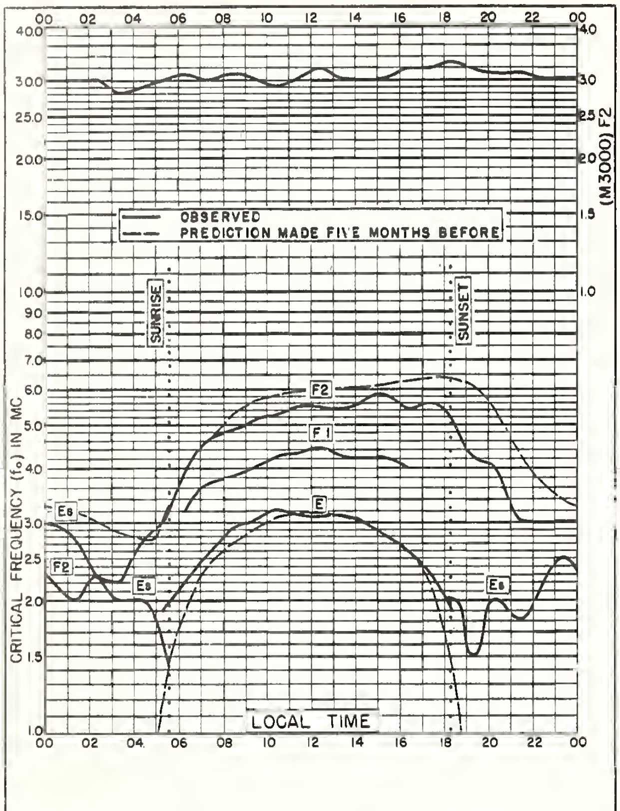

Fig. 33. PRINCE RUPERT, CANADA
54.3°N, 130.3°W SEPTEMBER 1951

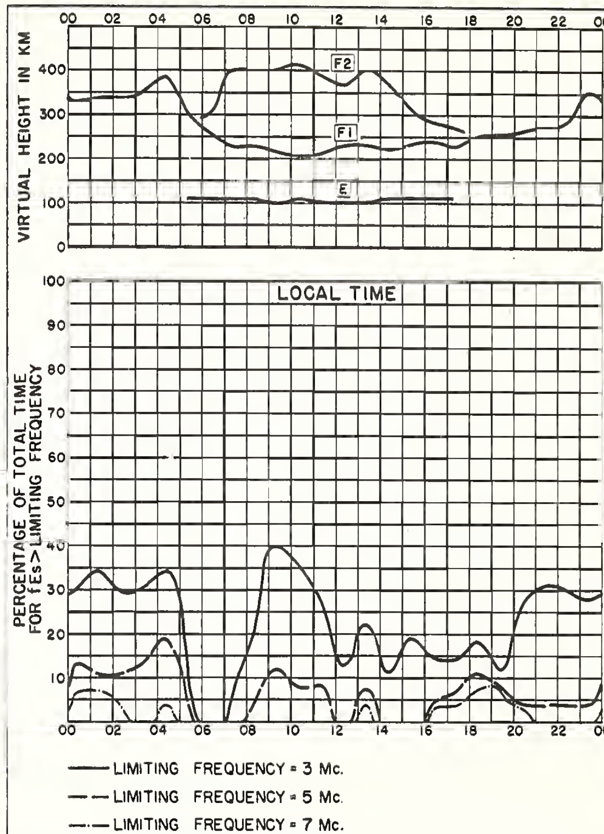

Fig. 34. PRINCE RUPERT, CANADA SEPTEMBER 1951

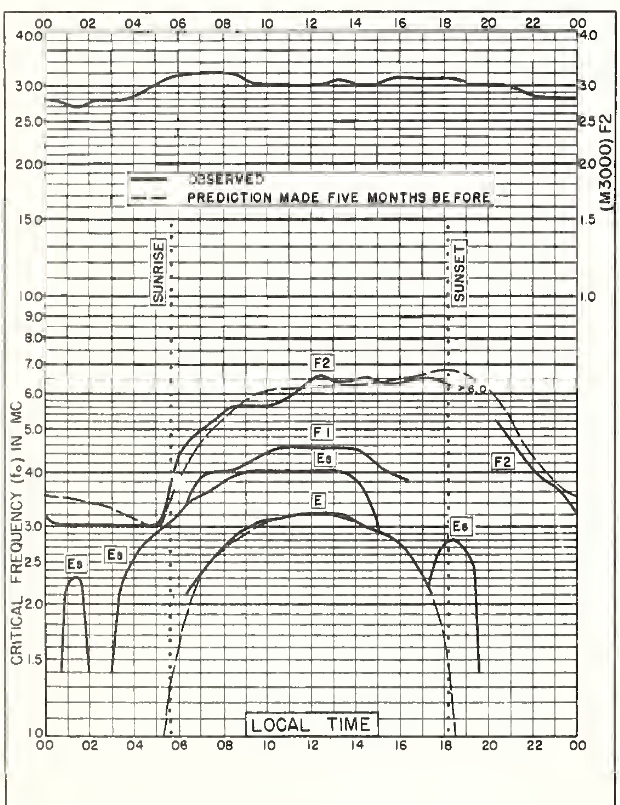

Fig. 35. De BILT, HOLLAND
52.1°N, 5.2°E SEPTEMBER 1951

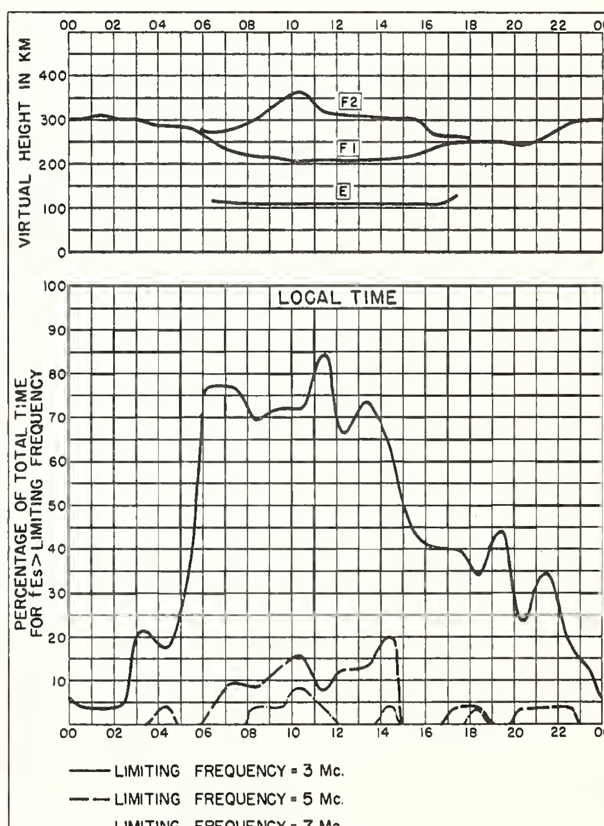

Fig. 36. De BILT, HOLLAND SEPTEMBER 1951

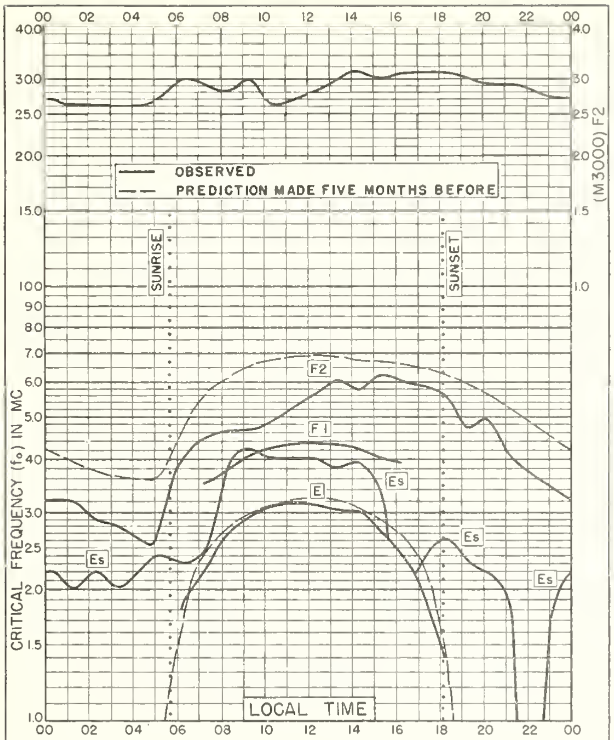

Fig. 37 ADAK, ALASKA
51.9°N, 176.6°W SEPTEMBER 1951

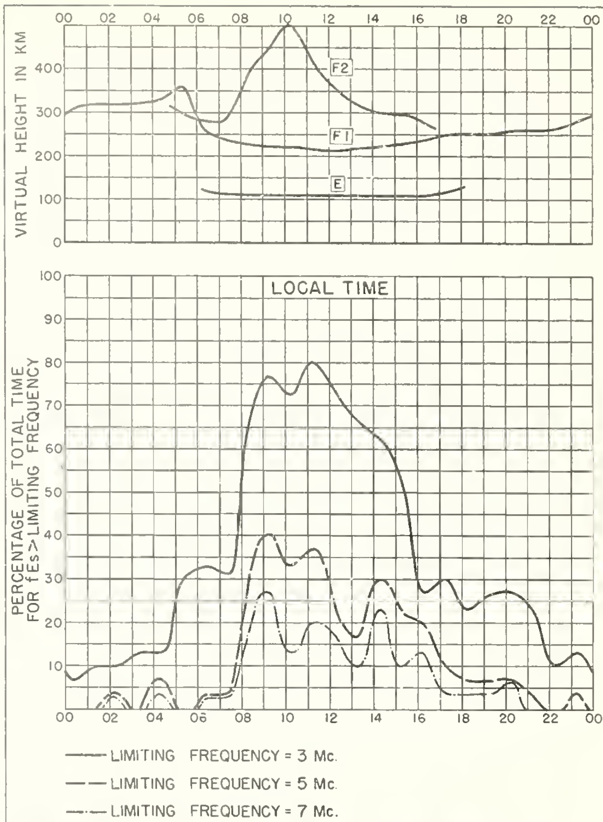

Fig. 38 ADAK, ALASKA SEPTEMBER 1951

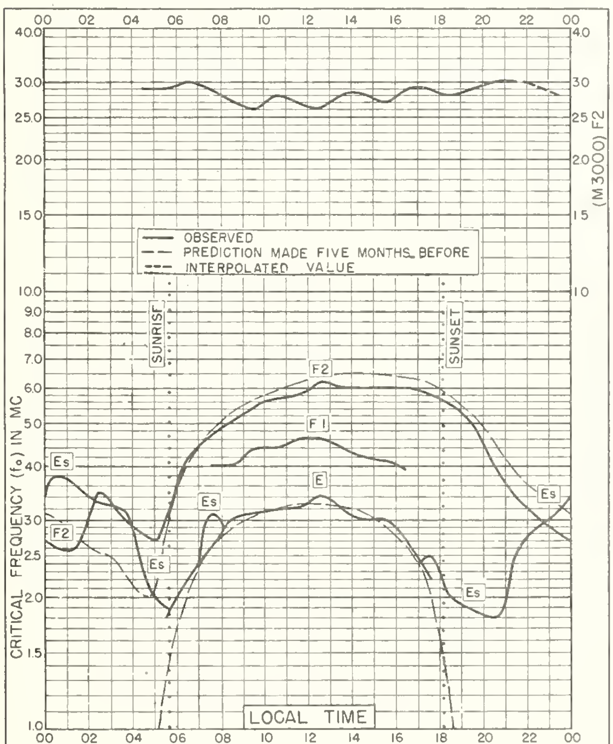

Fig. 39 WINNIPEG, CANADA
49.9°N, 97.4°W SEPTEMBER 1951

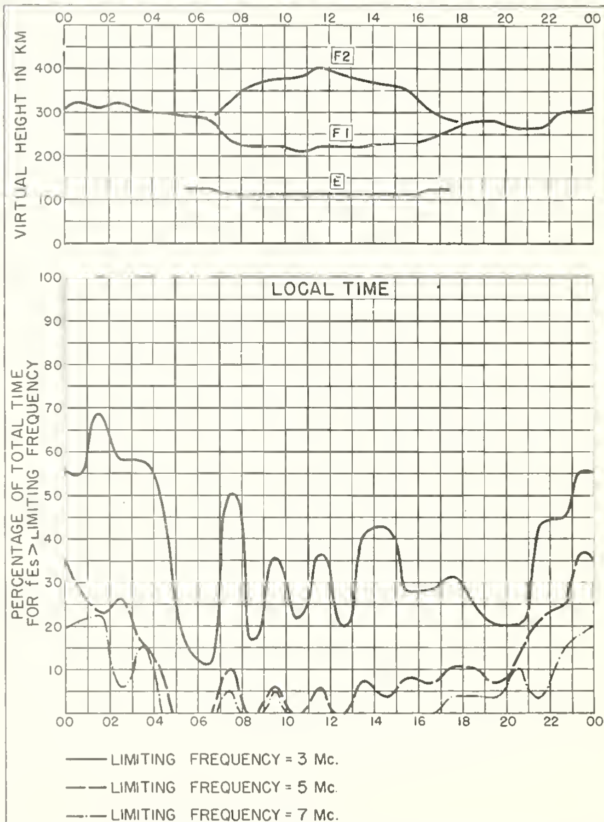

Fig. 40 WINNIPEG, CANADA SEPTEMBER 1951

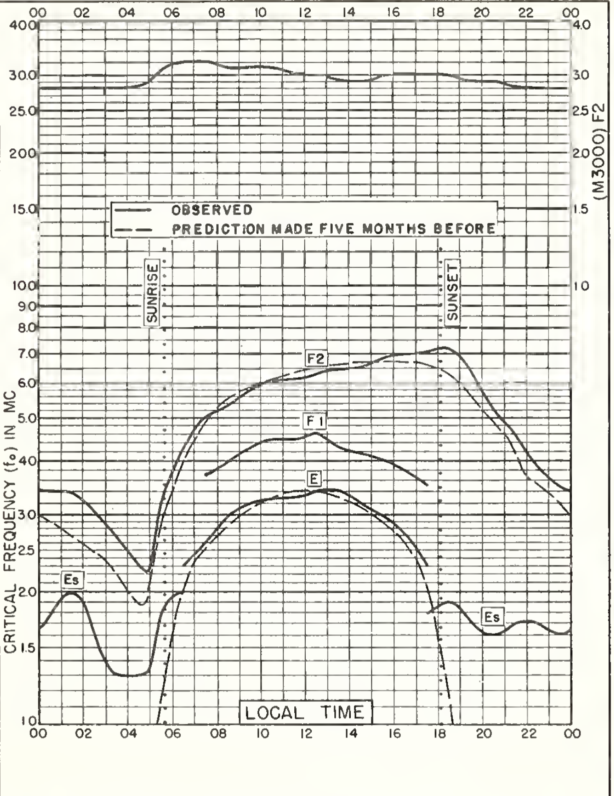

Fig. 41. ST. JOHN'S, NEWFOUNDLAND
47.6°N, 52.7°W SEPTEMBER 1951

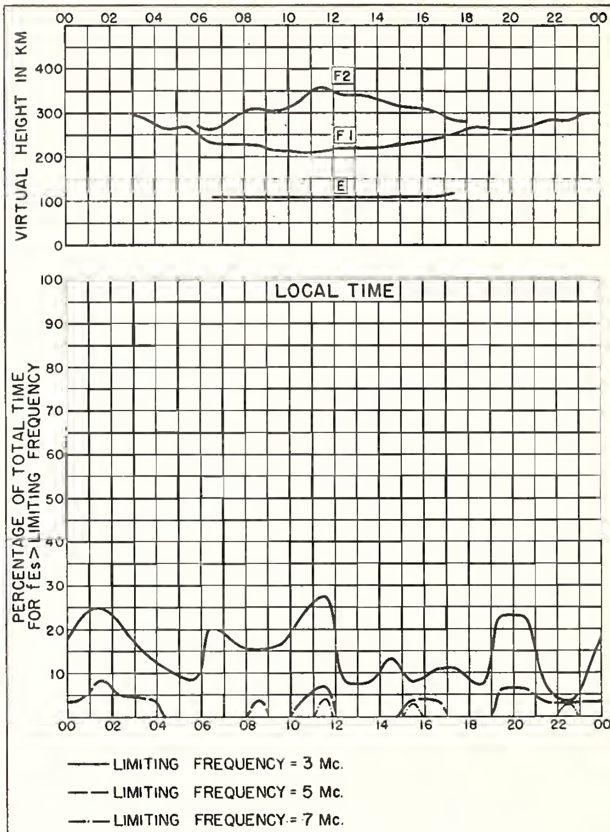

Fig. 42. ST. JOHN'S, NEWFOUNDLAND SEPTEMBER 1951

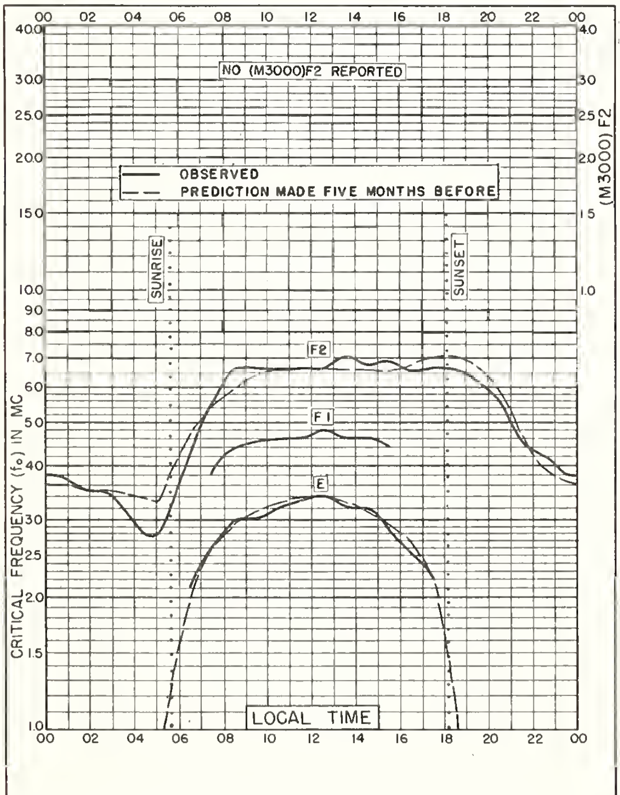

Fig. 43. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E SEPTEMBER 1951

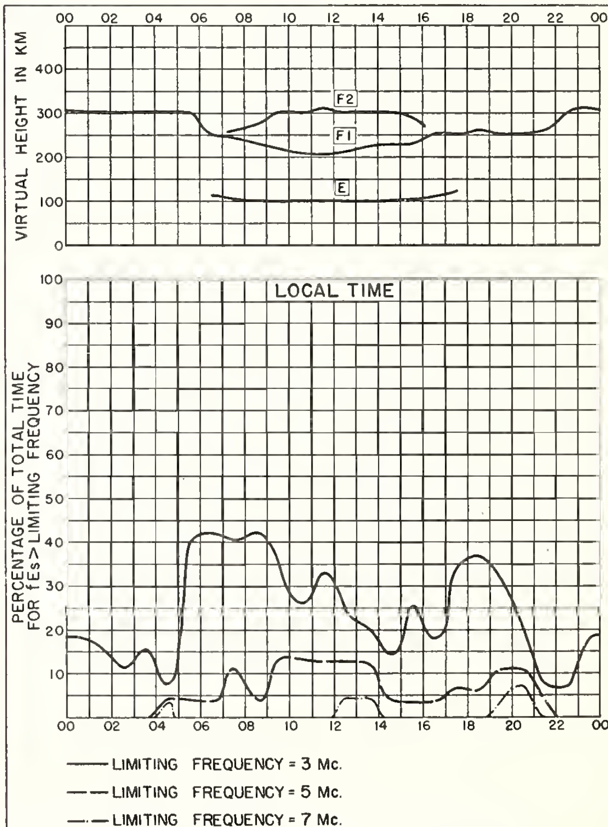

Fig. 44. SCHWARZENBURG, SWITZERLAND SEPTEMBER 1951

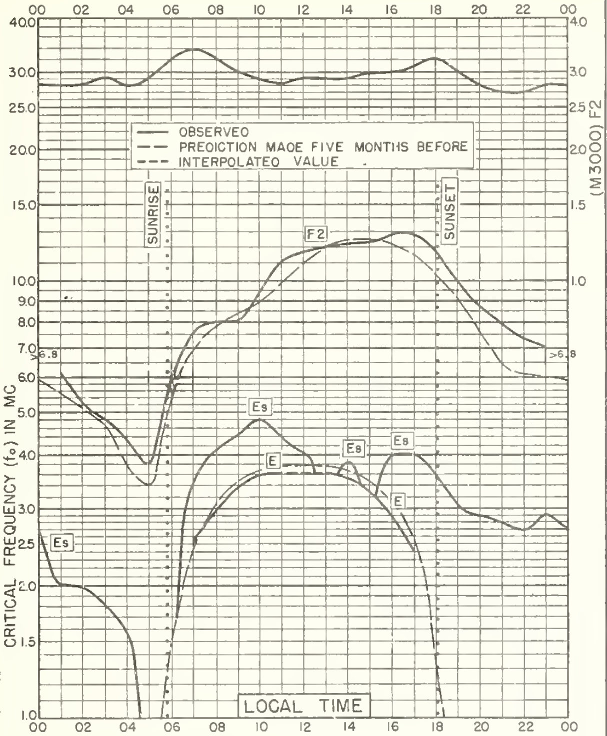

Fig. 45. OKINAWA I.
26.3°N, 127. 8°E SEPTEMBER 1951

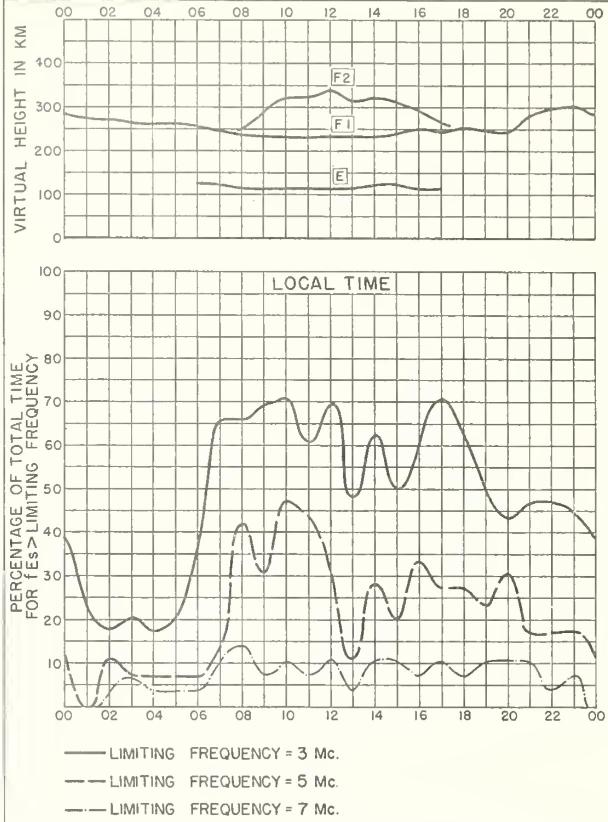

Fig. 46. OKINAWA I. SEPTEMBER 1951

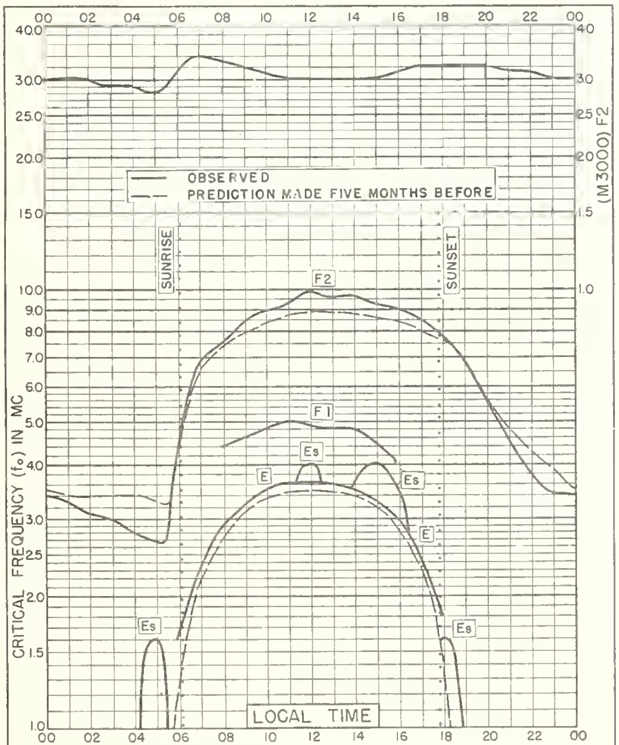

Fig. 47 JOHANNESBURG, U. OF S. AFRICA
26.2°S, 28.1°E SEPTEMBER 1951

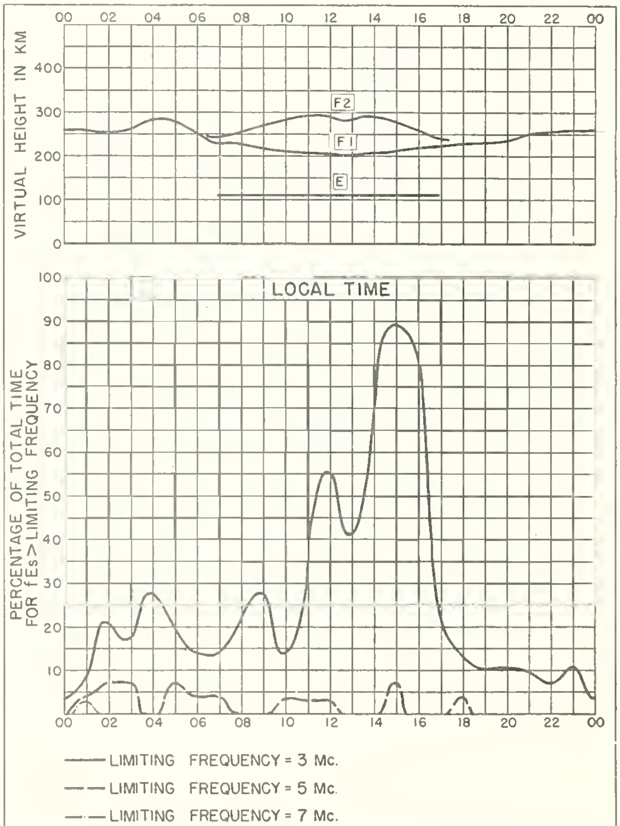

Fig. 48. JOHANNESBURG, U. OF S. AFRICA SEPTEMBER 1951

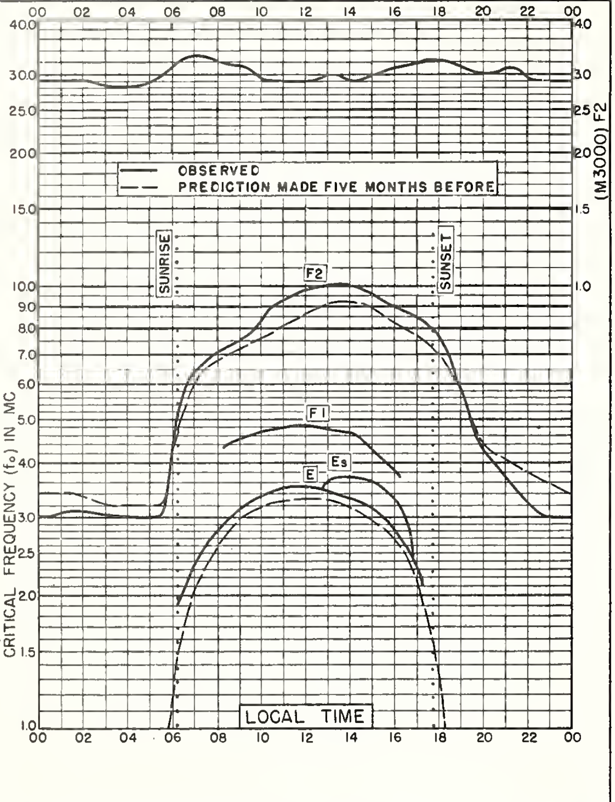

Fig. 49. CAPETOWN, U. OF S. AFRICA
34.2°S, 18.3°E SEPTEMBER 1951

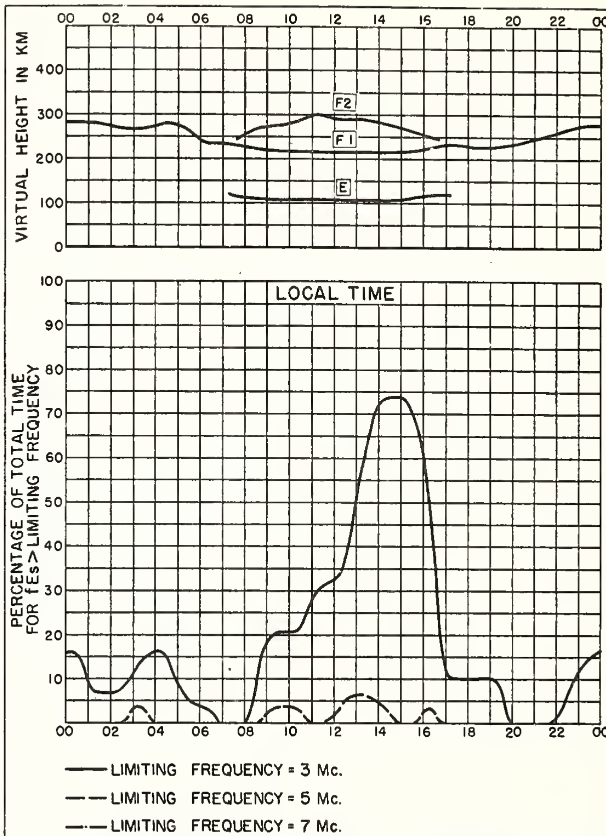

Fig. 50. CAPETOWN, U. OF S. AFRICA SEPTEMBER 1951

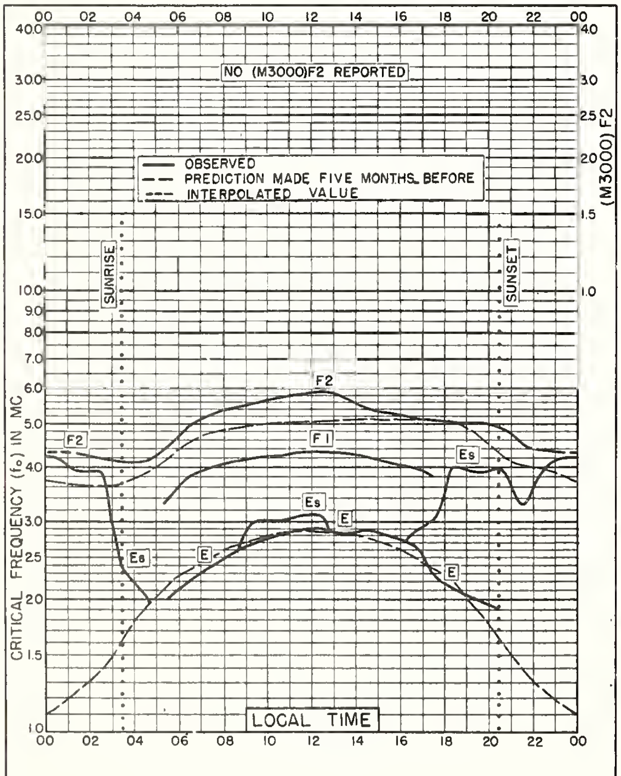

Fig. 51. KIRUNA, SWEDEN
67.8°N, 20.5°E AUGUST 1951

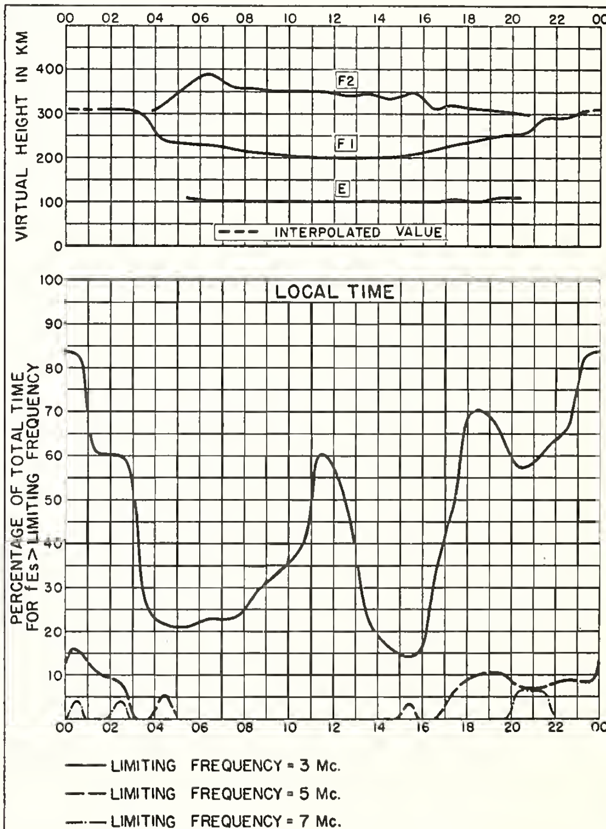

Fig. 52. KIRUNA, SWEDEN AUGUST 1951

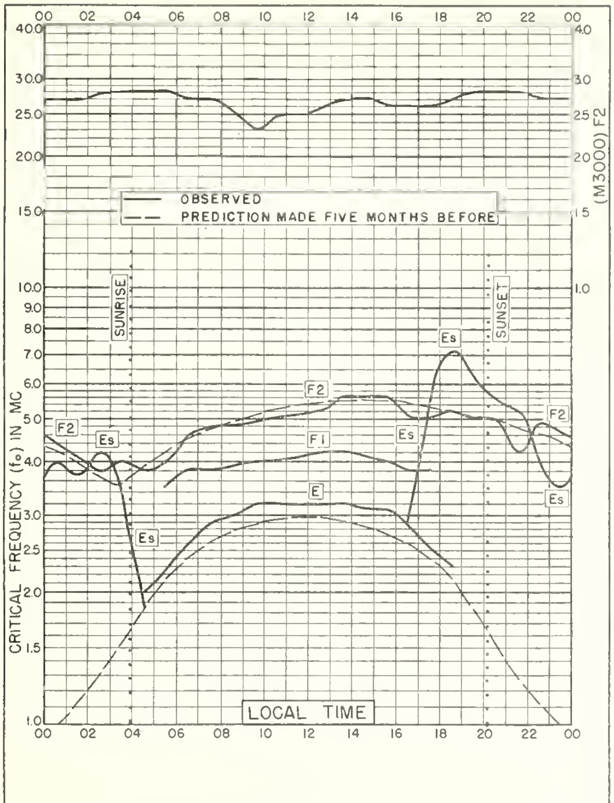

Fig. 53. BAKER LAKE, CANADA
64.3°N, 96.0°W AUGUST 1951

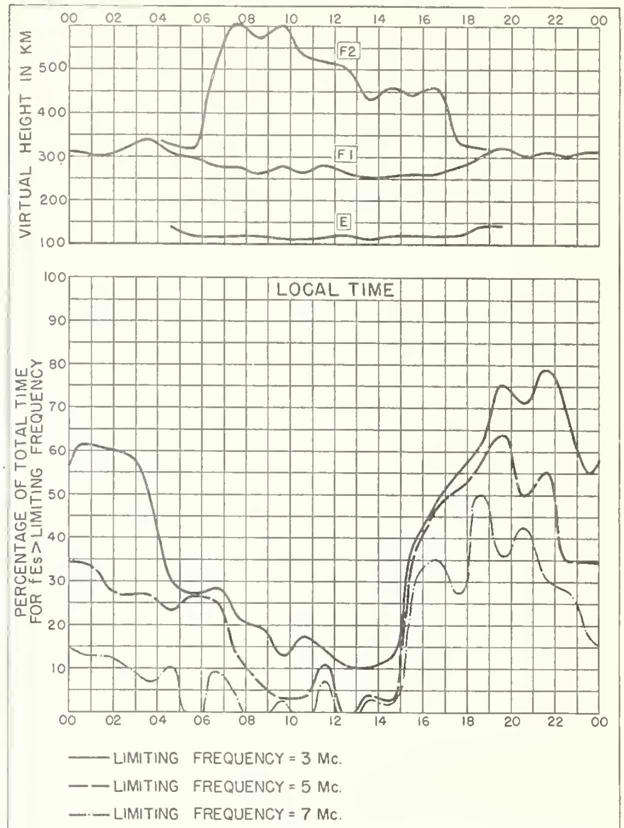

Fig. 54. BAKER LAKE, CANADA AUGUST 1951

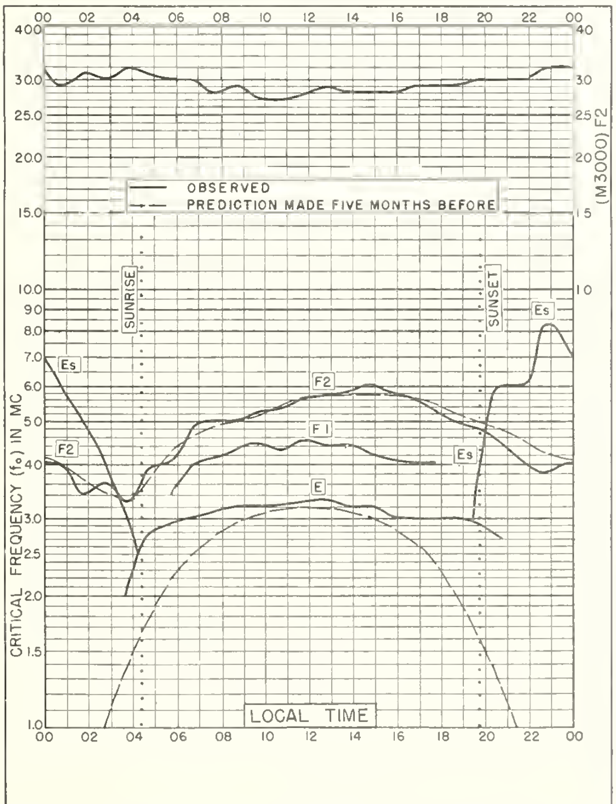

Fig. 55. CHURCHILL, CANADA
58.8°N, 94.2°W AUGUST 1951

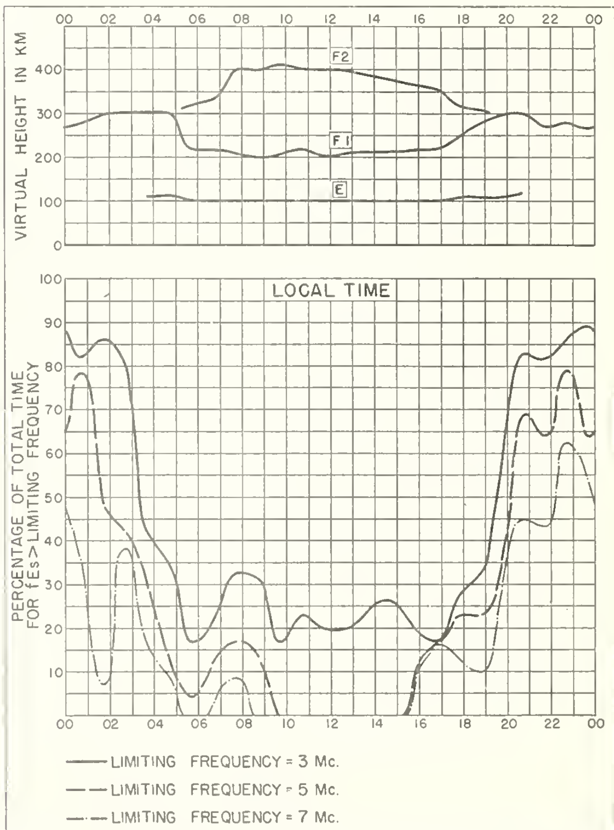

Fig. 56. CHURCHILL, CANADA AUGUST 1951

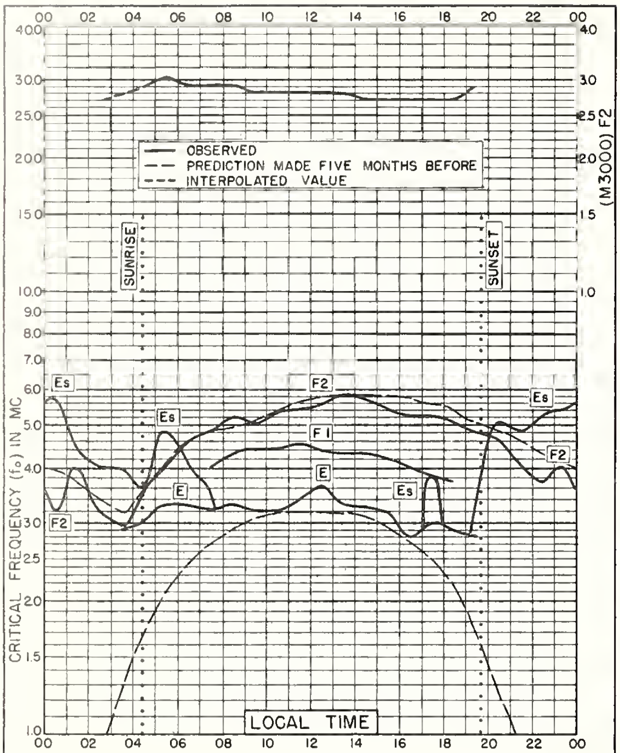

Fig. 57. FORT CHIMO, CANADA
58.1°N, 68.3°W AUGUST 1951

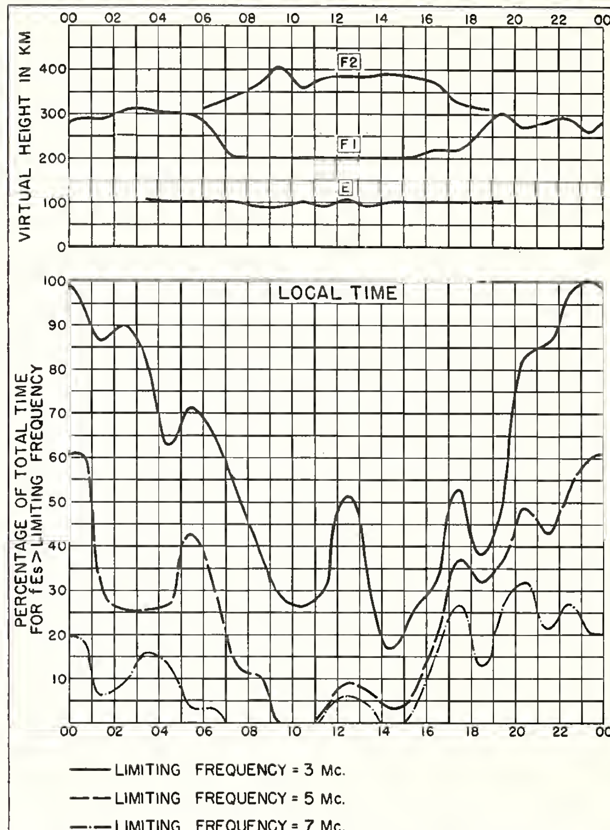

Fig. 58. FORT CHIMO, CANADA AUGUST 1951

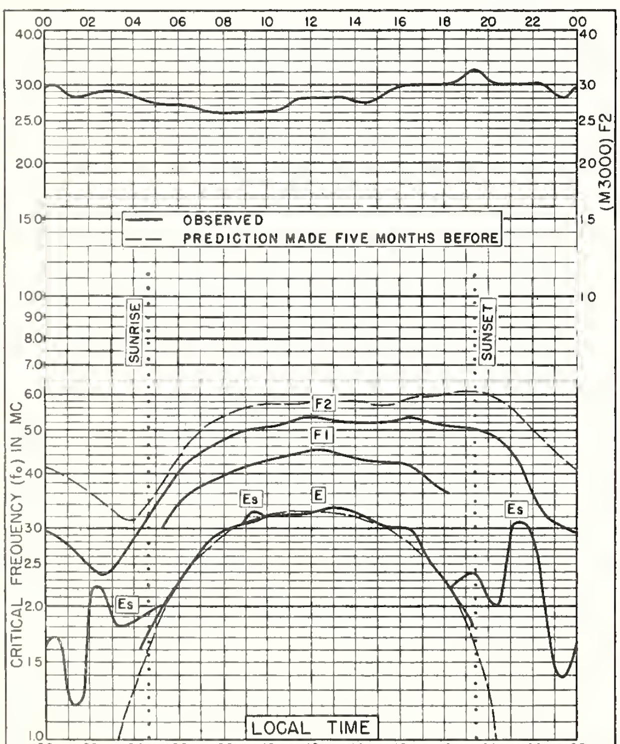

Fig. 59. PRINCE RUPERT, CANADA
54.3°N, 130.3°W AUGUST 1951

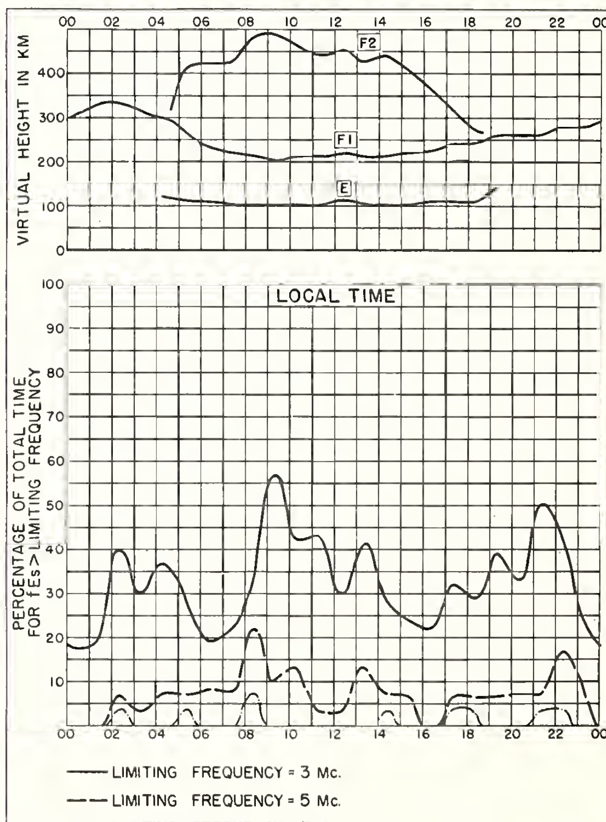

Fig. 60. PRINCE RUPERT, CANADA AUGUST 1951

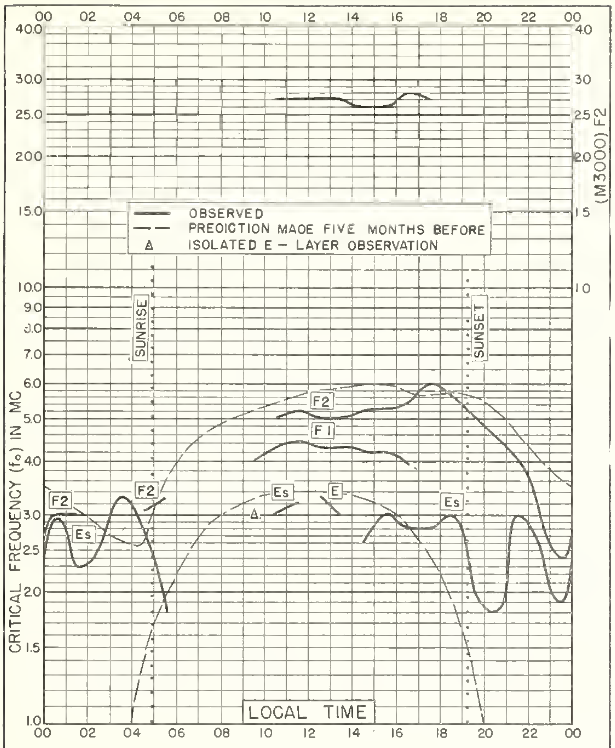

Fig. 61. WINNIPEG, CANADA
49.9°N, 97.4°W AUGUST 1951

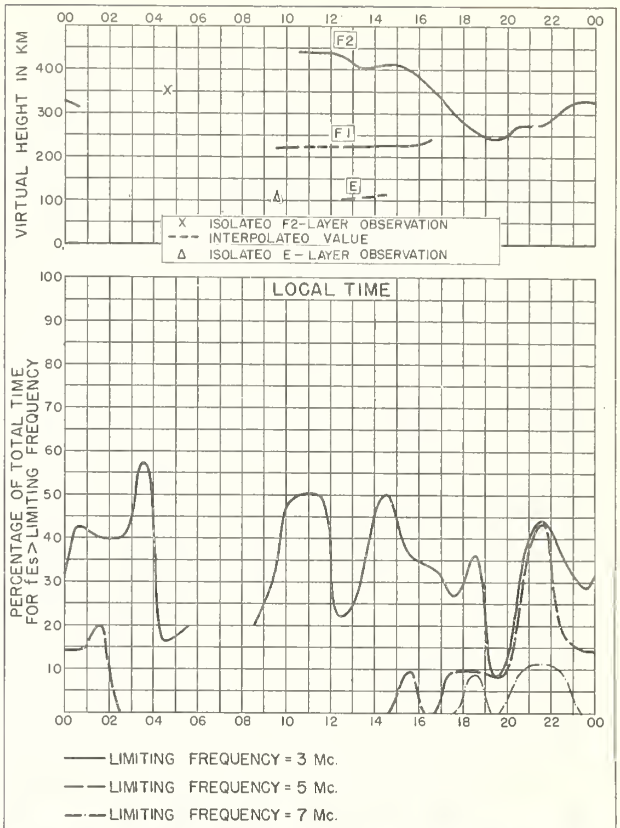

Fig. 62. WINNIPEG, CANADA AUGUST 1951

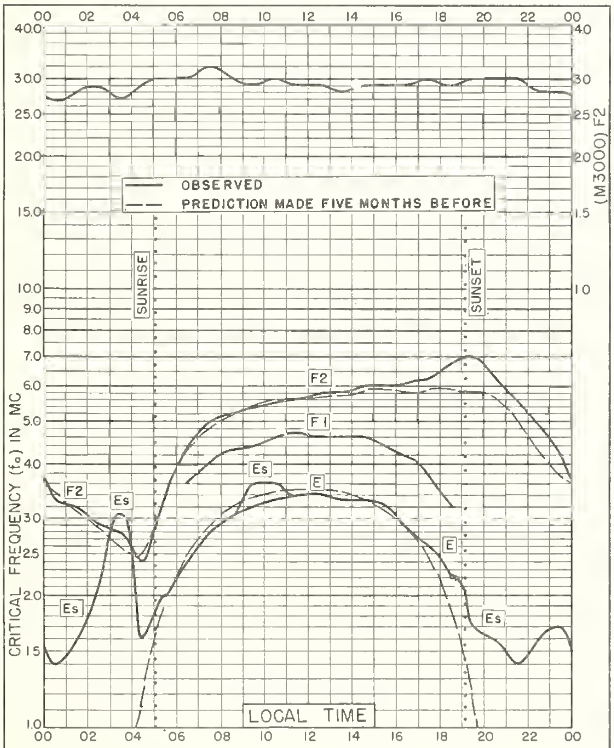

Fig. 63. ST. JOHN'S, NEWFOUNDLAND
47.6°N, 52.7°W AUGUST 1951

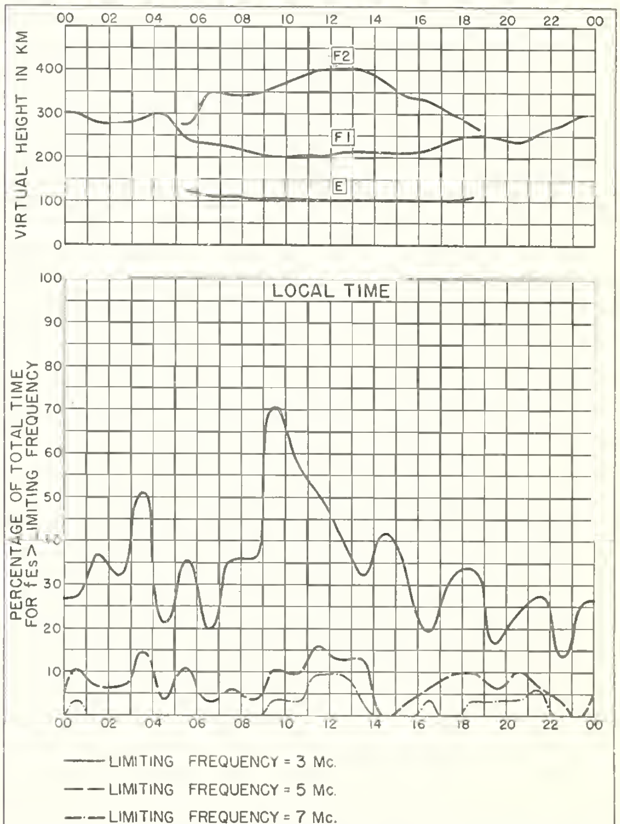

Fig. 64. ST. JOHN'S, NEWFOUNDLAND AUGUST 1951

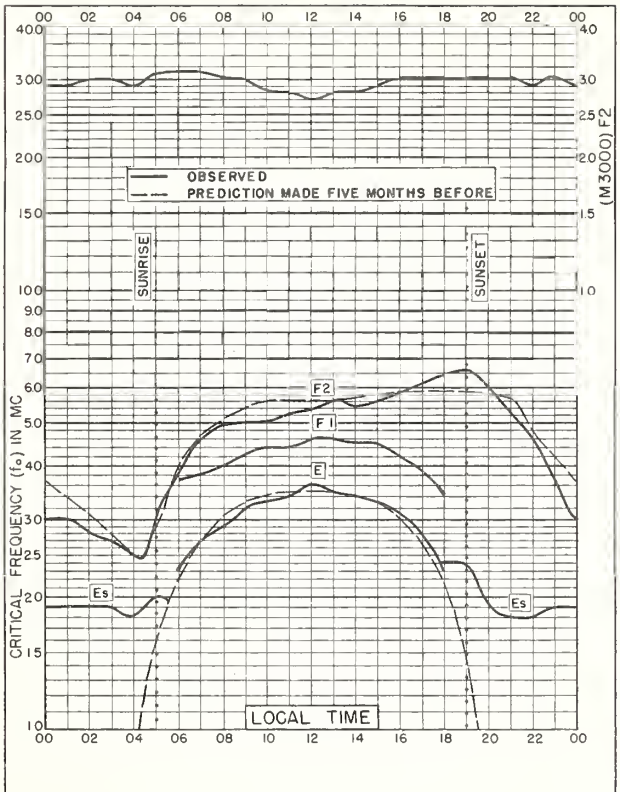

Fig 65. OTTAWA, CANADA
45.4°N, 75.7°W AUGUST 1951

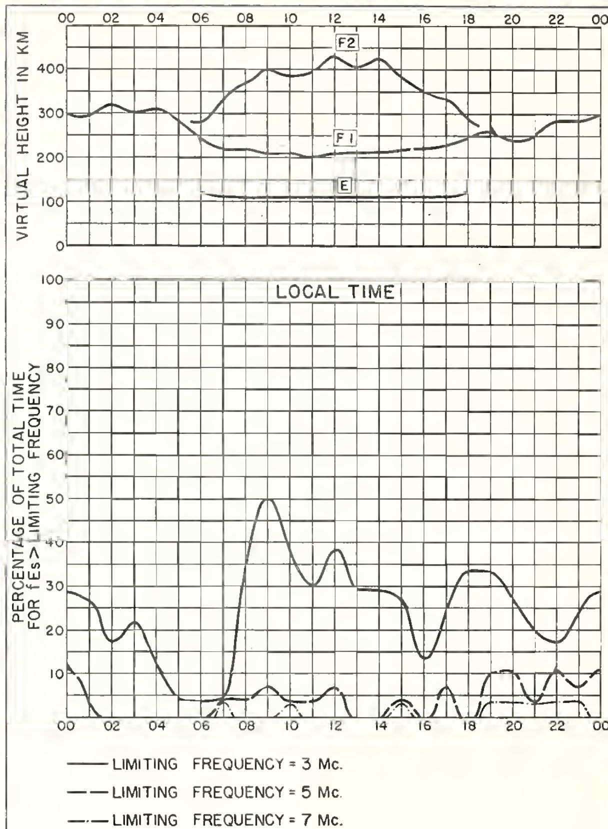

Fig 66. OTTAWA, CANADA AUGUST 1951

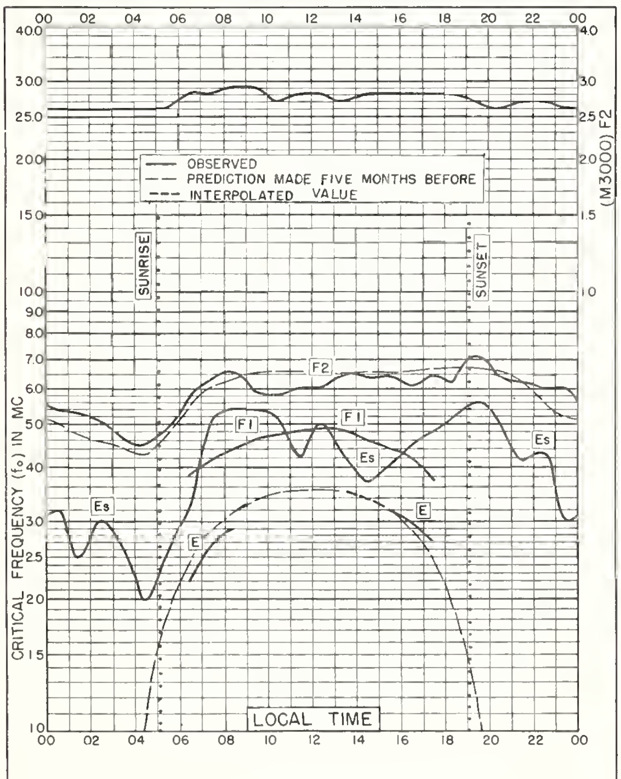

Fig 67. WAKKANAI, JAPAN
45.4°N, 141.7°E AUGUST 1951

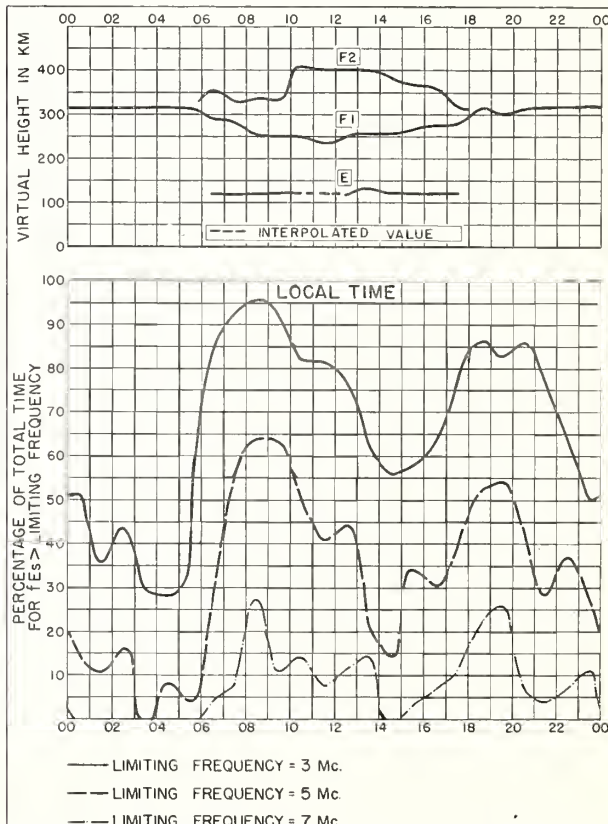

Fig 68. WAKKANAI, JAPAN AUGUST 1951

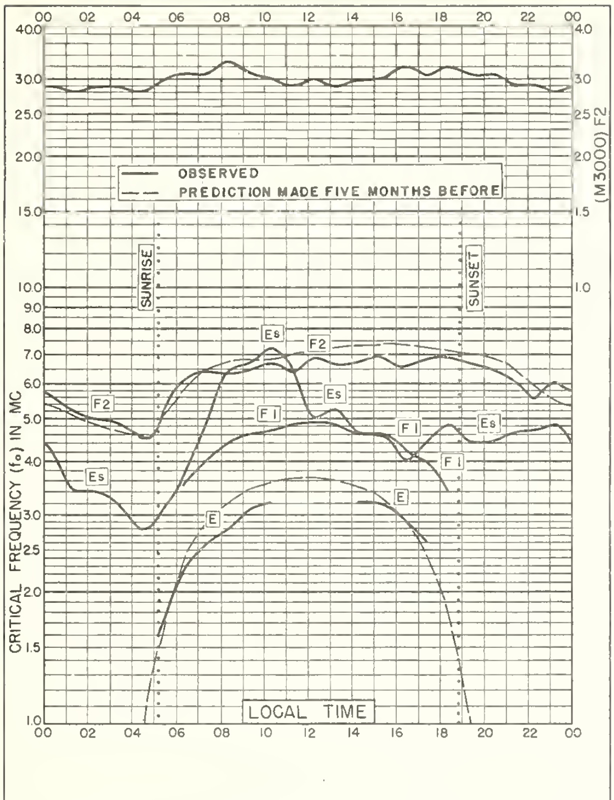

Fig 69. AKITA, JAPAN
39.7°N, 140.1°E AUGUST 1951

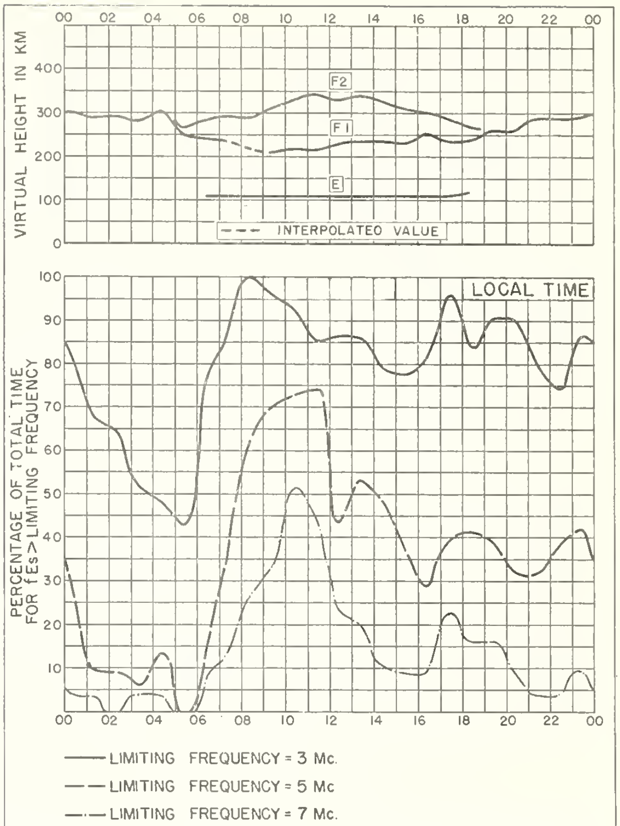

Fig. 70. AKITA, JAPAN AUGUST 1951

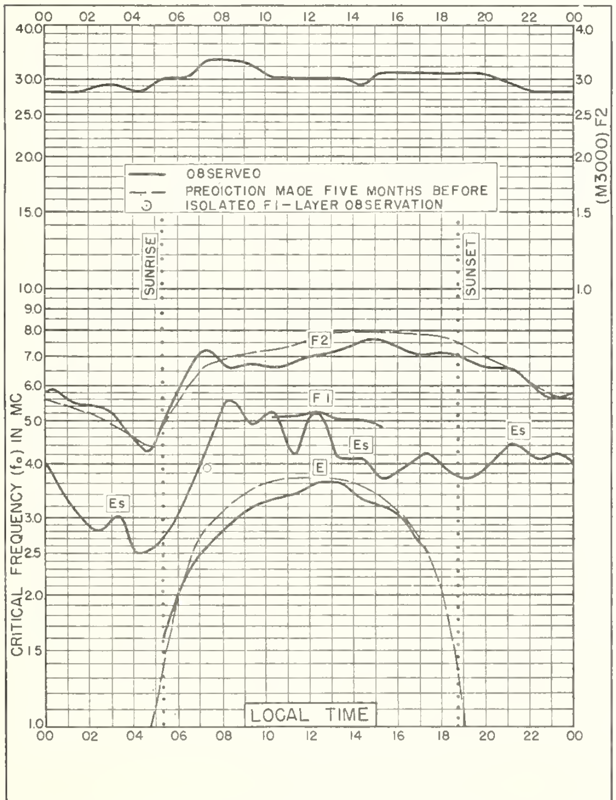

Fig. 71. TOKYO, JAPAN
35.7°N, 139.5°E AUGUST 1951

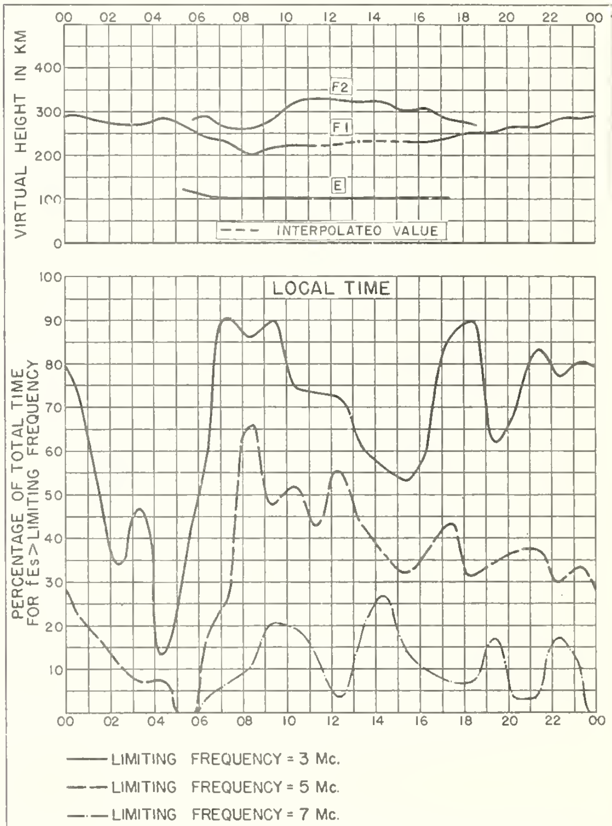

Fig. 72. TOKYO, JAPAN AUGUST 1951

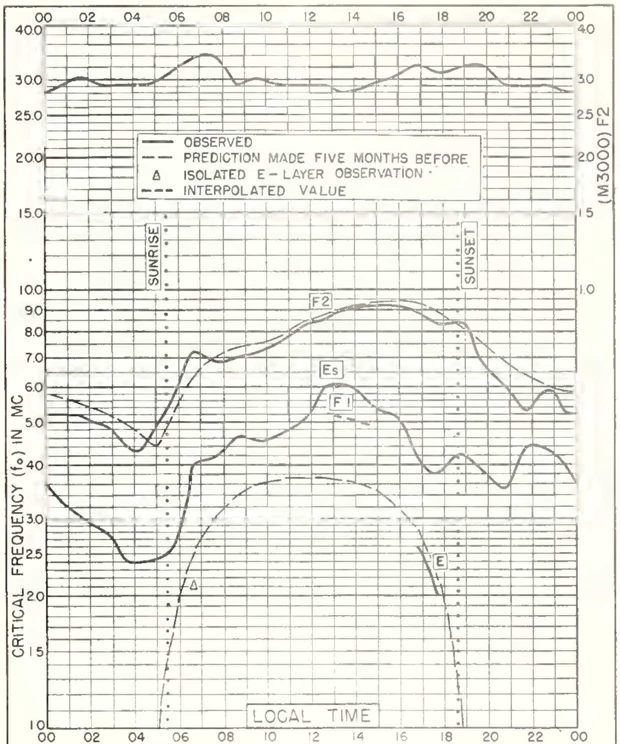

Fig. 73. YAMAGAWA, JAPAN
31.2°N, 130.6°E AUGUST 1951

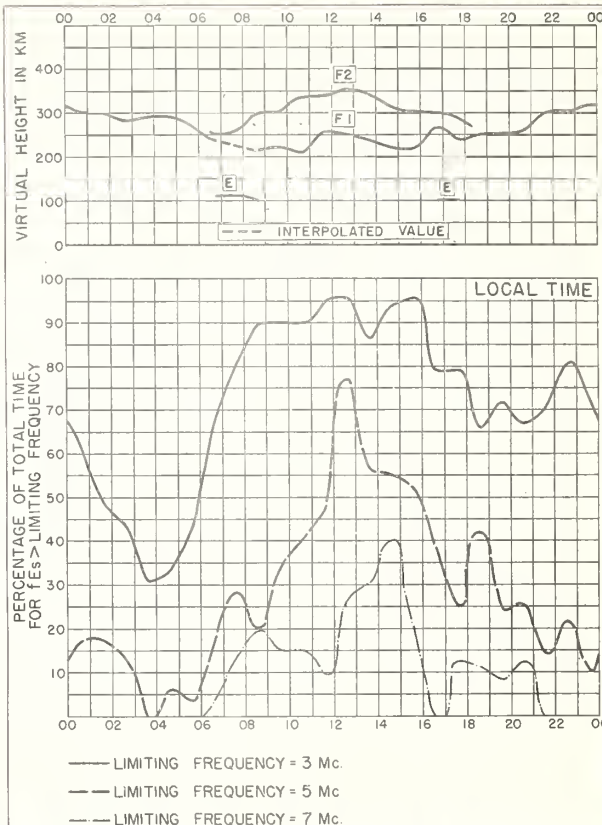

Fig. 74 YAMAGAWA, JAPAN AUGUST 1951

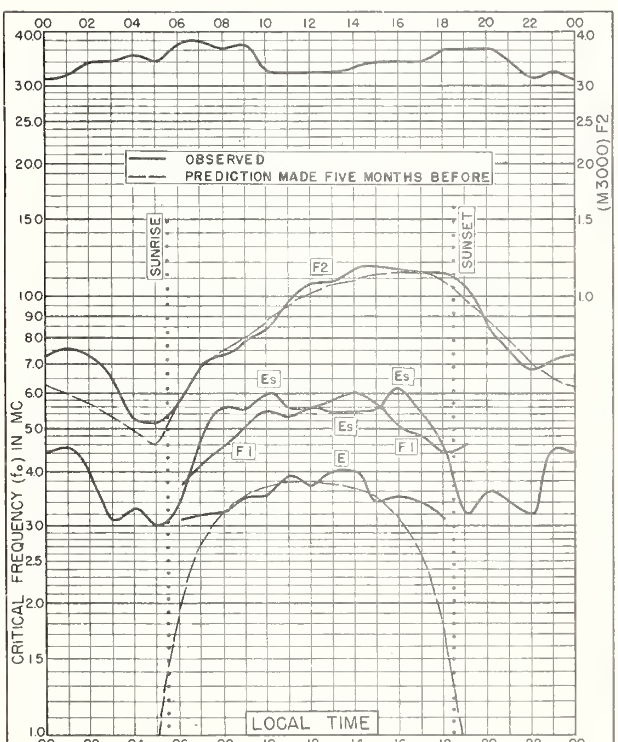

Fig. 75. FORMOSA, CHINA
25.0°N, 121.0°E AUGUST 1951

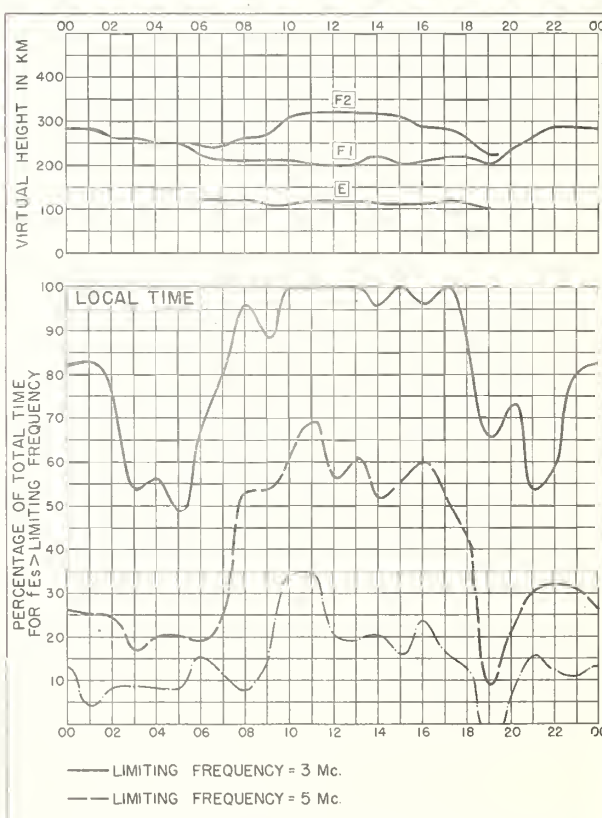

Fig. 76. FORMOSA, CHINA AUGUST 1951

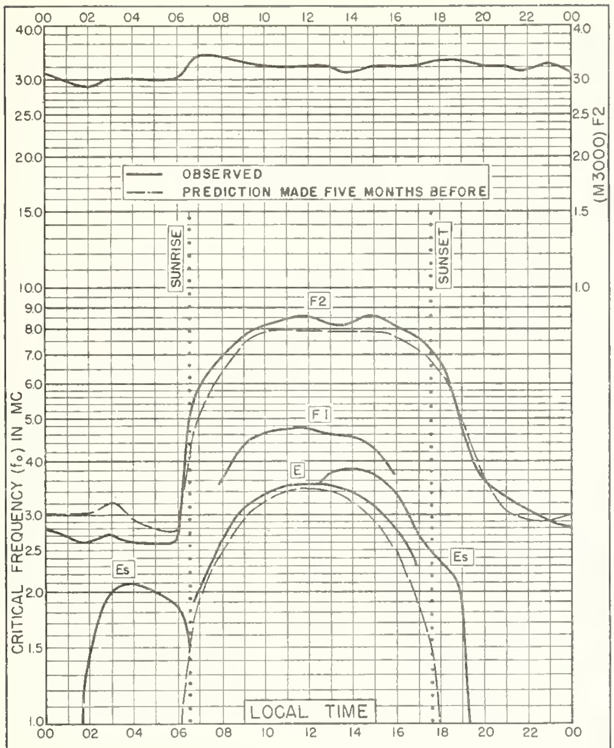

Fig. 77 JOHANNESBURG, U. OF S. AFRICA
26.2°S, 28.1°E AUGUST 1951

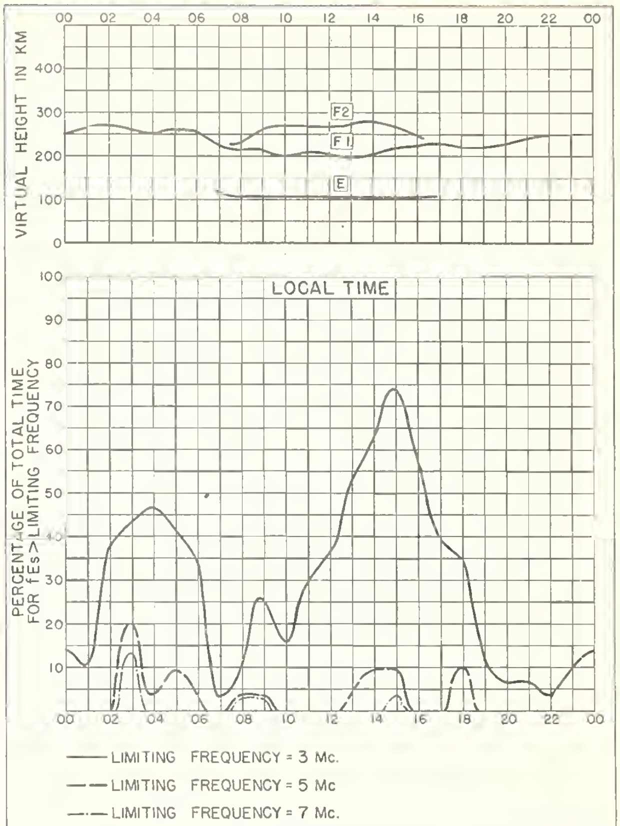

Fig. 78. JOHANNESBURG, U. OF S. AFRICA AUGUST 1951

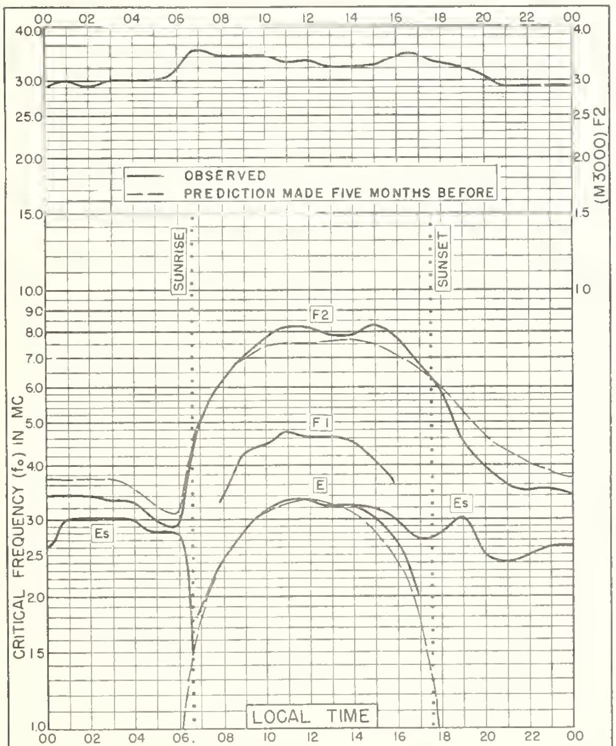

Fig. 79. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E AUGUST 1951

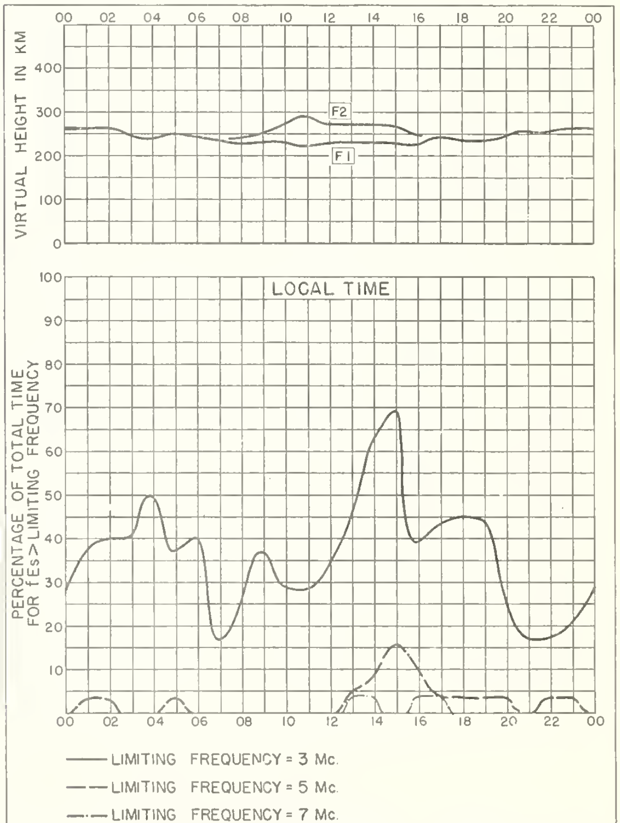

Fig. 80. WATHEROO, W. AUSTRALIA AUGUST 1951

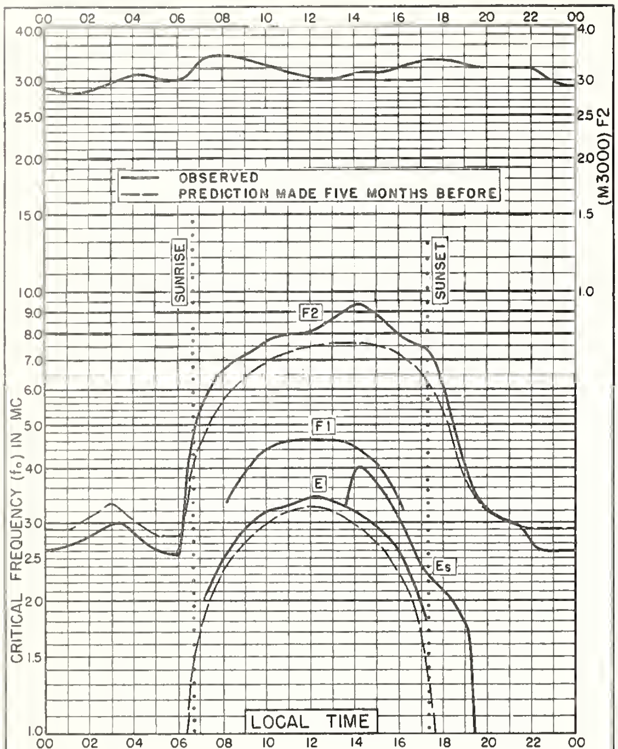

Fig. 81. CAPETOWN, U. OF S. AFRICA
34.2°S, 18.3°E AUGUST 1951

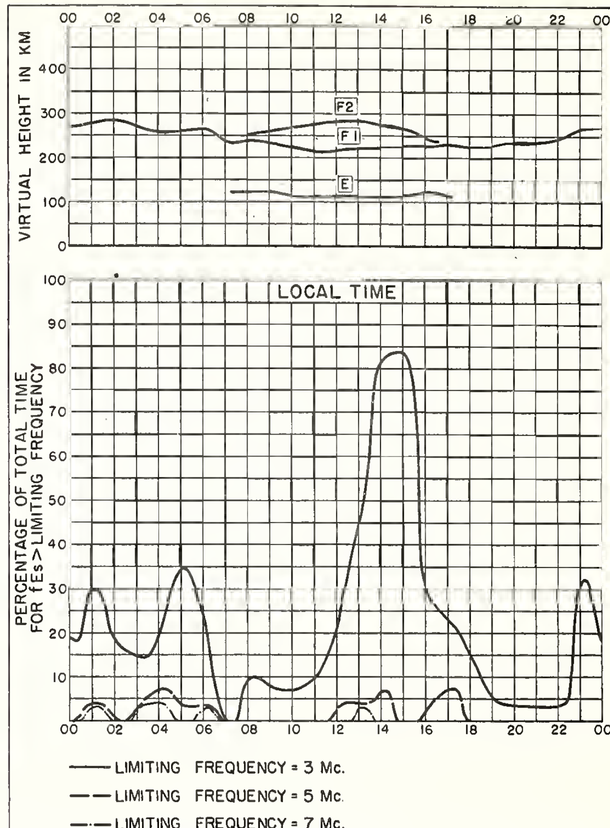

Fig. 82. CAPETOWN, U. OF S. AFRICA AUGUST 1951

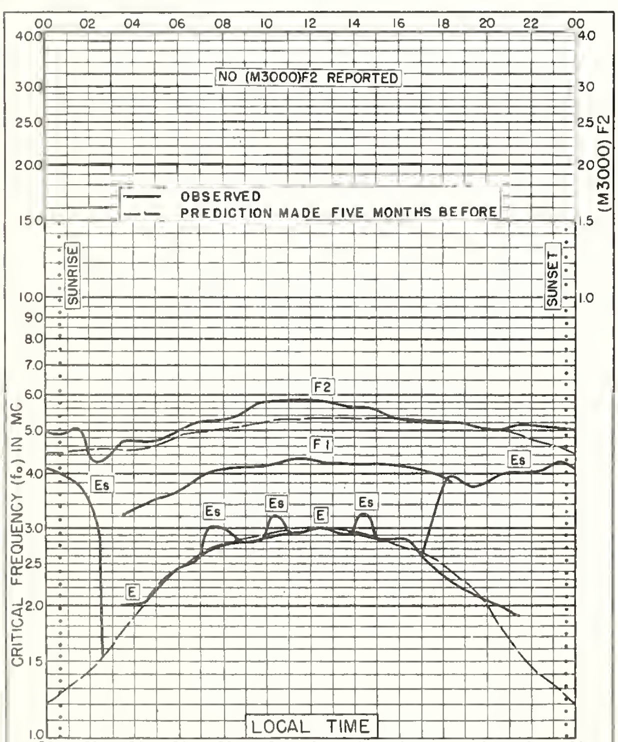

Fig. 83. KIRUNA, SWEDEN
67.8°N, 20.5°E JULY 1951

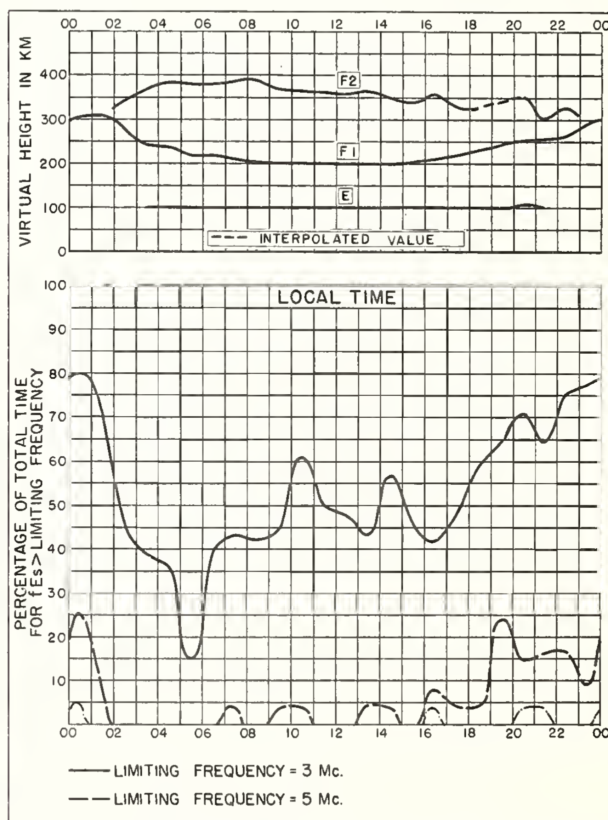

Fig. 84. KIRUNA, SWEDEN JULY 1951

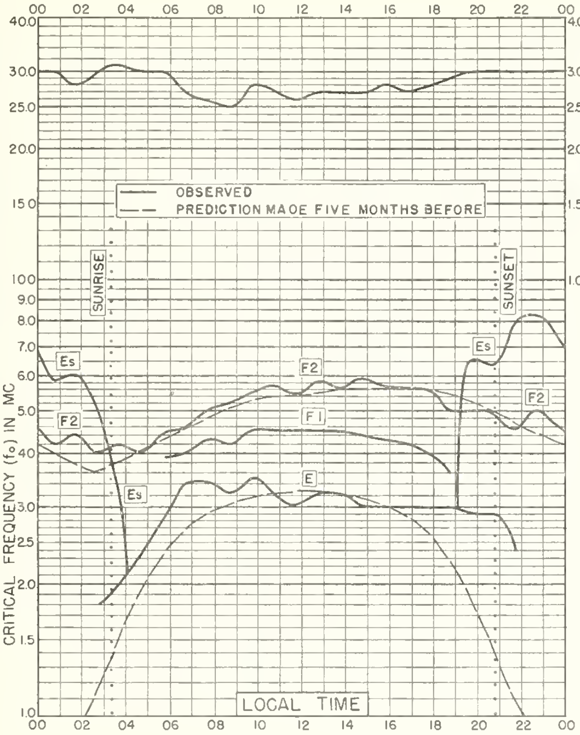

Fig. 85. CHURCHILL, CANADA
58.8°N, 94.2°W JULY 1951

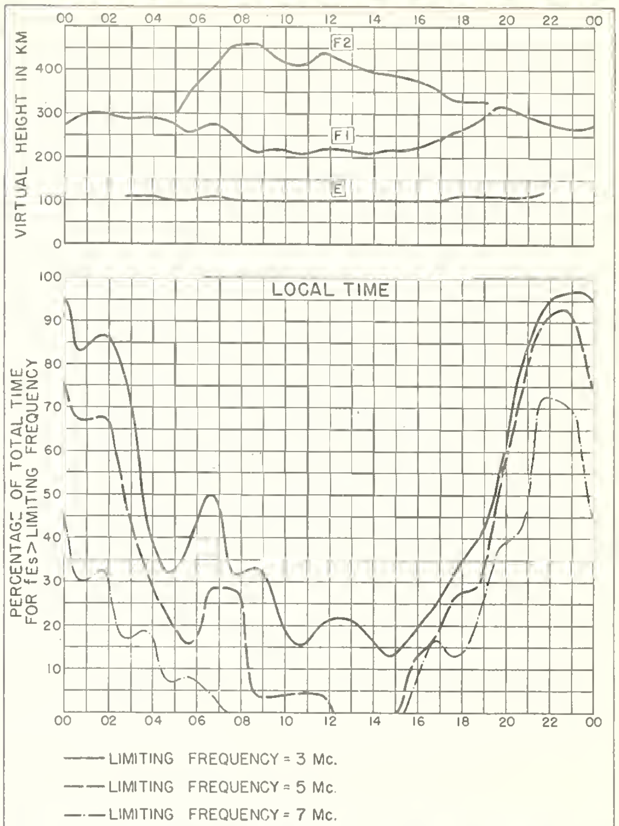

Fig. 86. CHURCHILL, CANADA JULY 1951

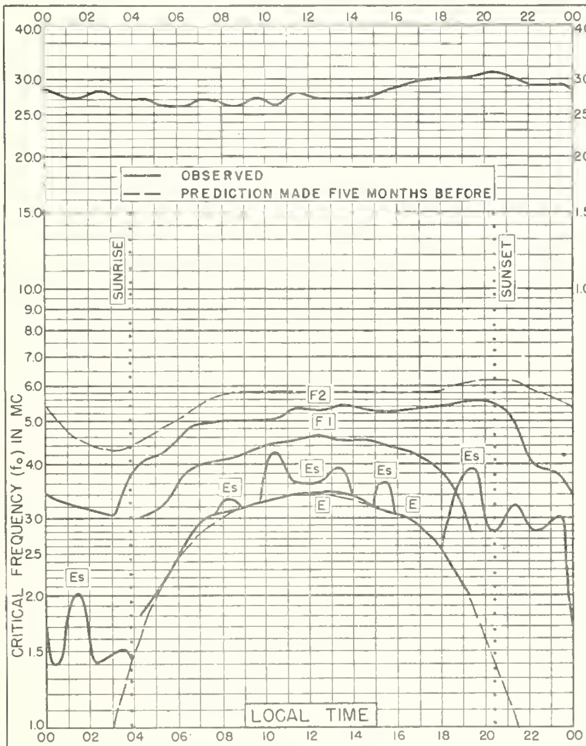

Fig. 87. PRINCE RUPERT, CANADA
54.3°N, 130.3°W JULY 1951

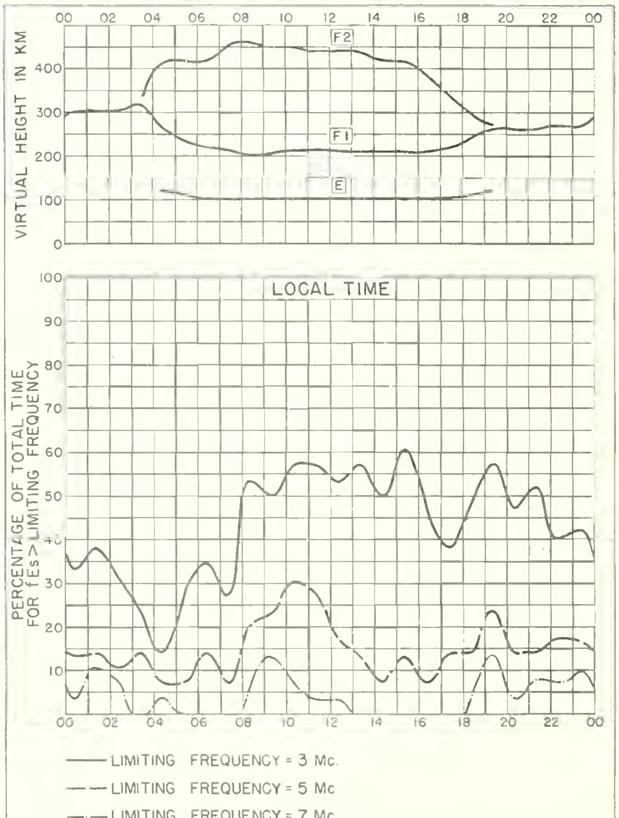

Fig. 88. PRINCE RUPERT, CANADA JULY 1951

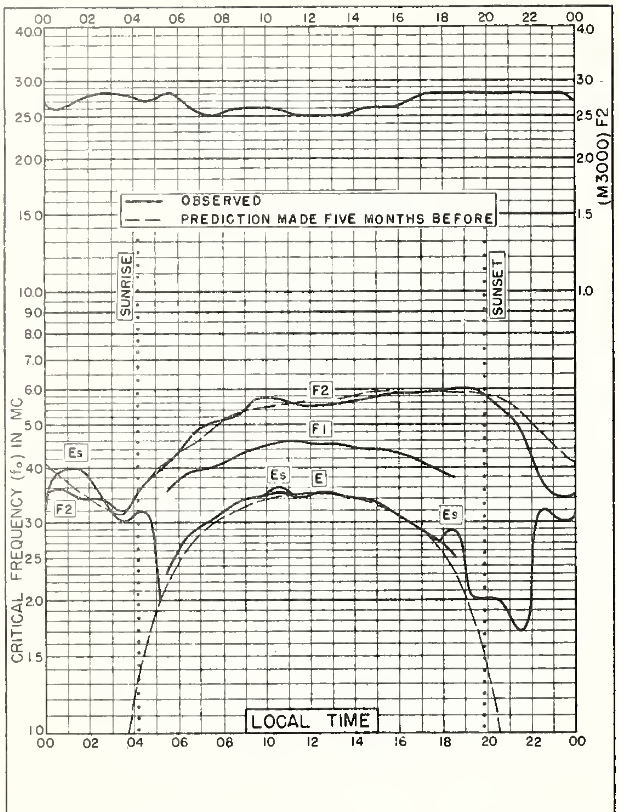

Fig. 89. WINNIPEG, CANADA
49.9°N, 97.4°W JULY 1951

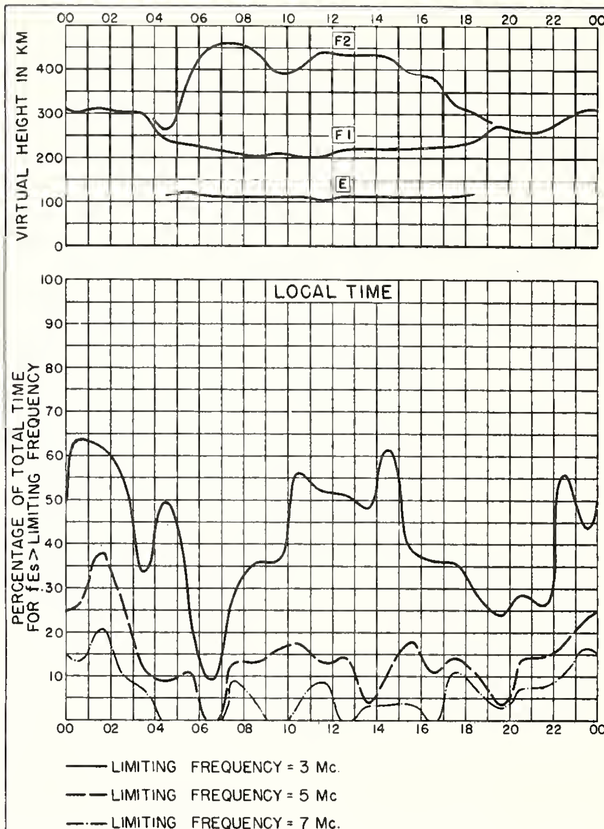

Fig. 90. WINNIPEG, CANADA JULY 1951

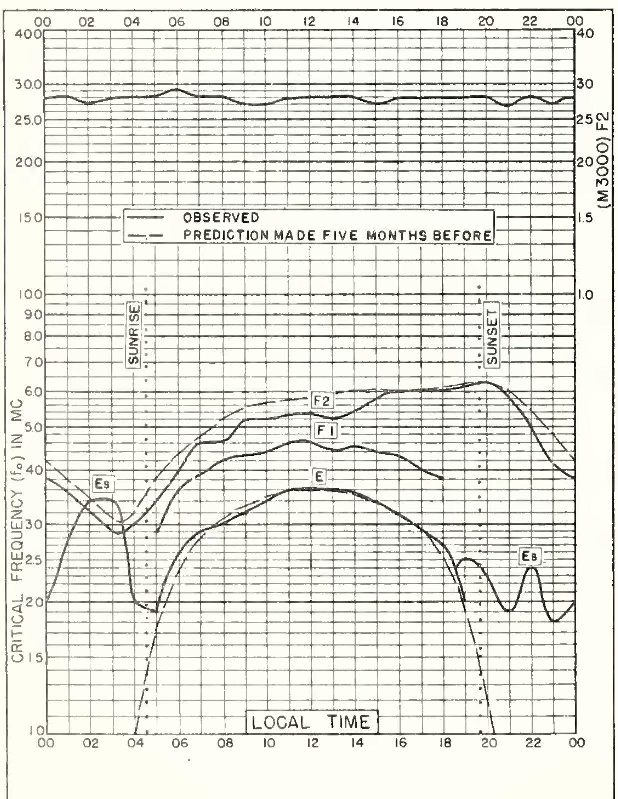

Fig. 91. OTTAWA, CANADA
45.4°N, 75.7°W JULY 1951

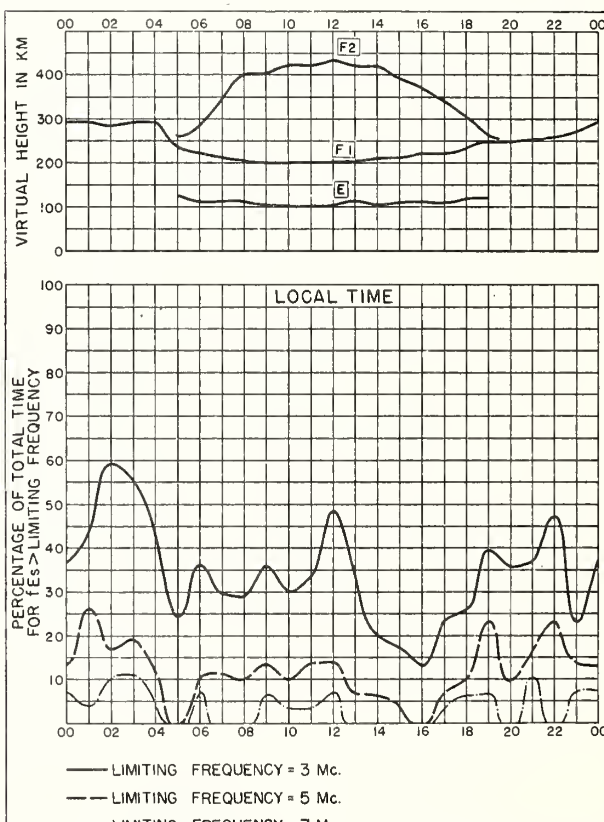

Fig. 92. OTTAWA, CANADA JULY 1951

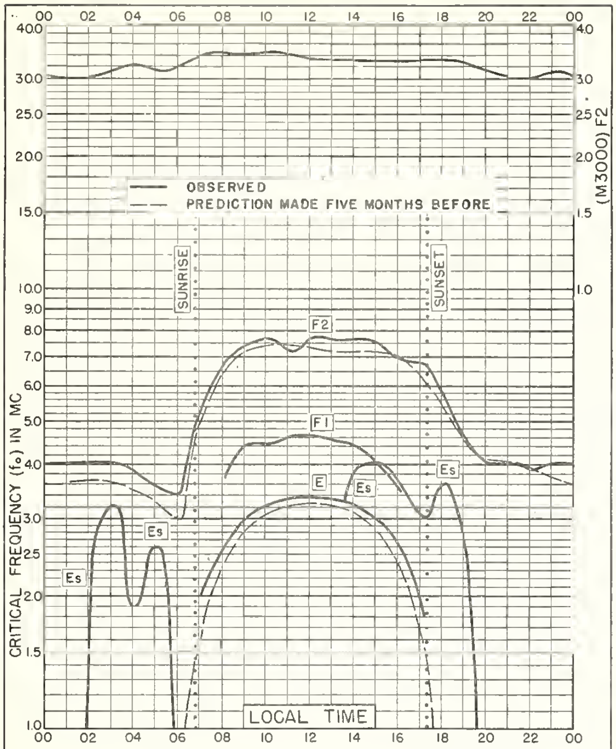

Fig. 93. BRISBANE, AUSTRALIA
27.5° S, 153.0° E JULY 1951

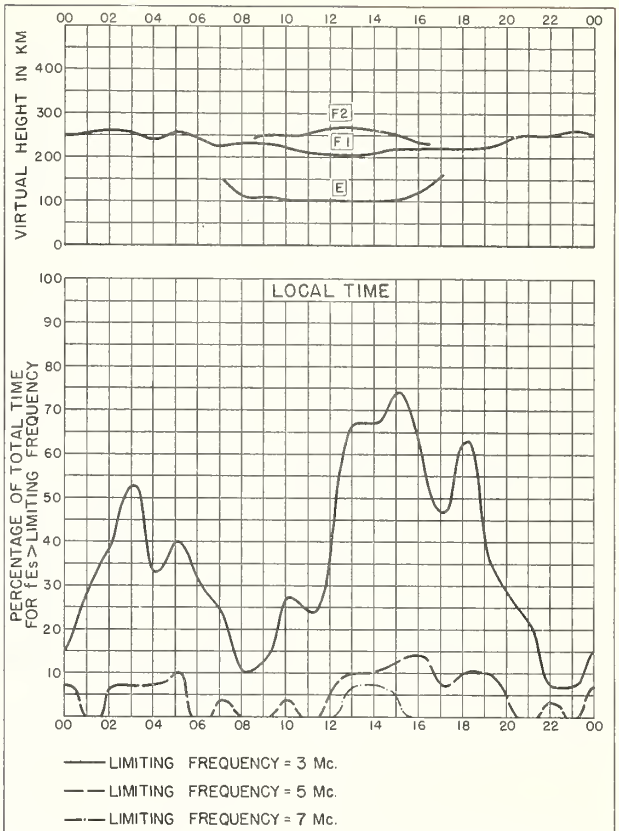

Fig. 94. BRISBANE, AUSTRALIA JULY 1951

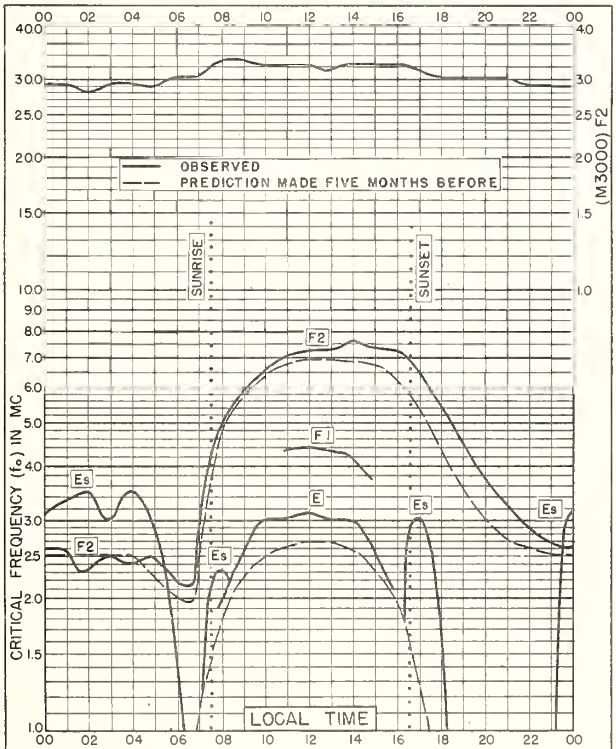

Fig. 95. HOBART, TASMANIA
42.8°S, 147.4°E JULY 1951

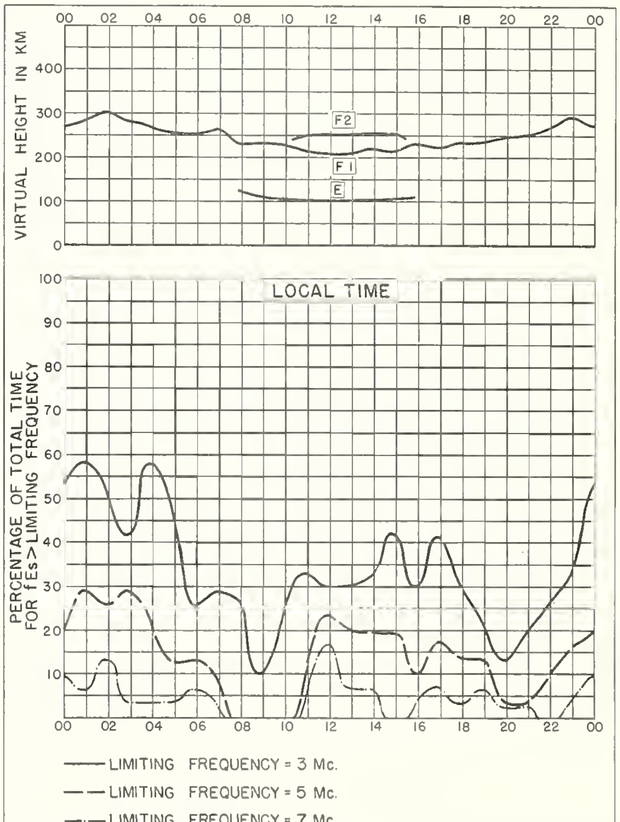

Fig. 96. HOBART, TASMANIA JULY 1951

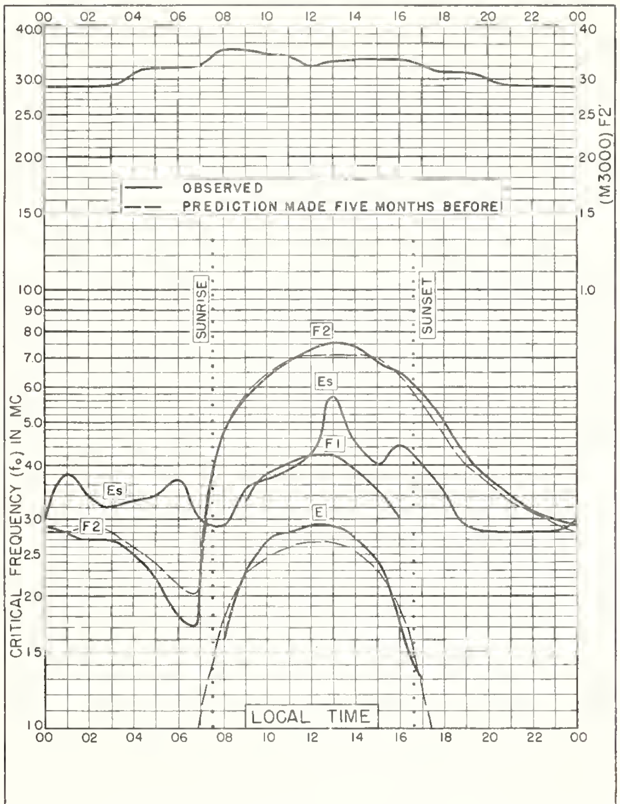

Fig. 97. CHRISTCHURCH, N.Z.
43.6°S, 172.7°E JULY 1951

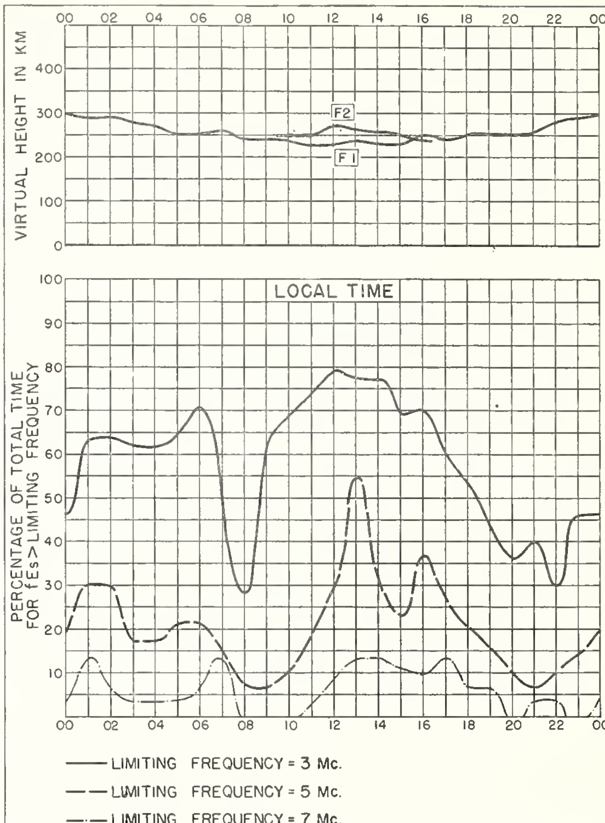

Fig. 98. CHRISTCHURCH, N.Z. JULY 1951

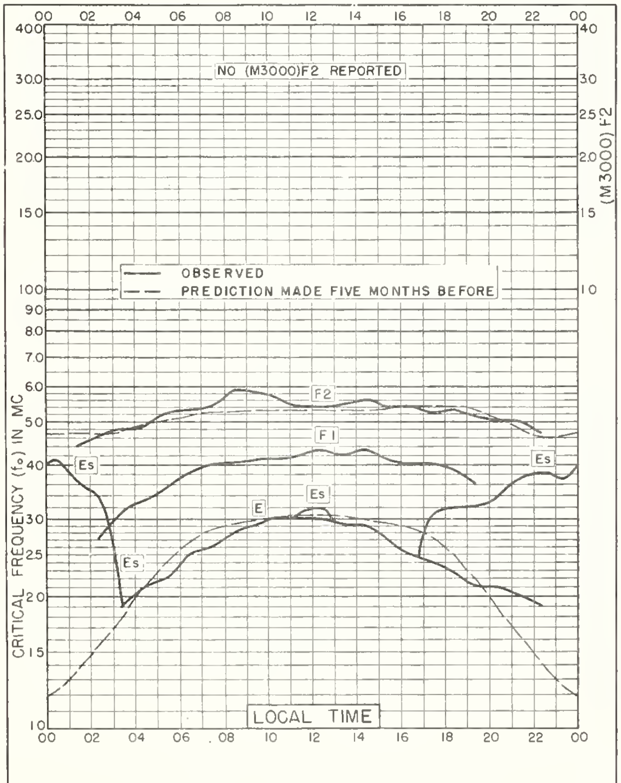

Fig. 99. KIRUNA, SWEDEN
67.8°N, 20.5°E JUNE 1951

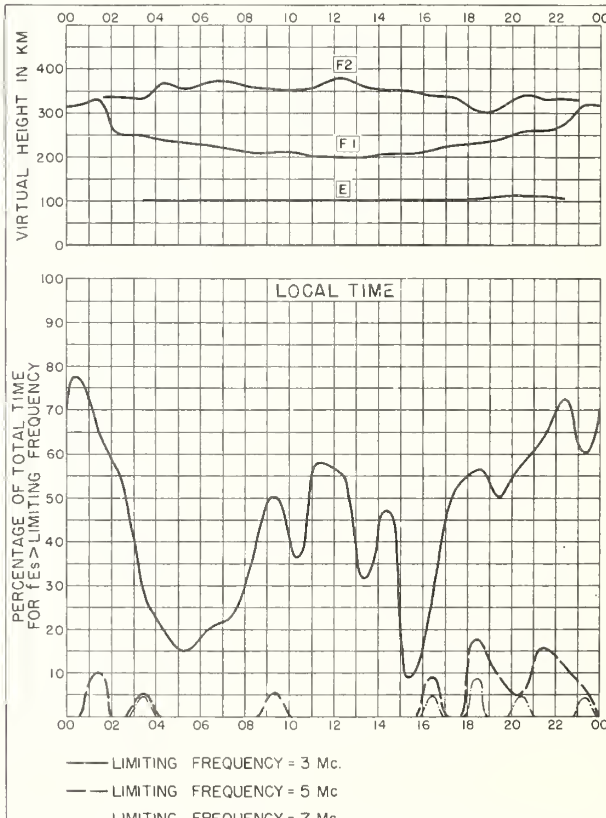

Fig. 100. KIRUNA, SWEDEN JUNE 1951

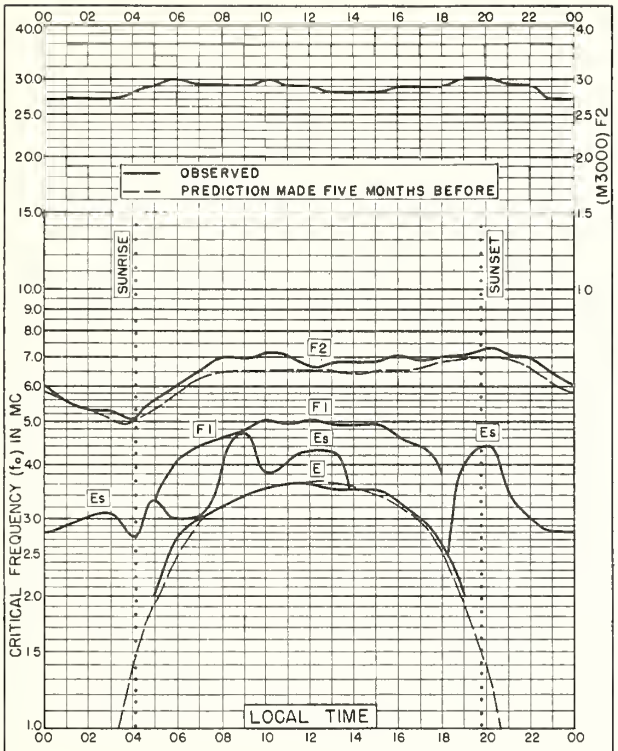

Fig. 101. FRIBOURG, GERMANY
48.1°N, 7.8°E JUNE 1951

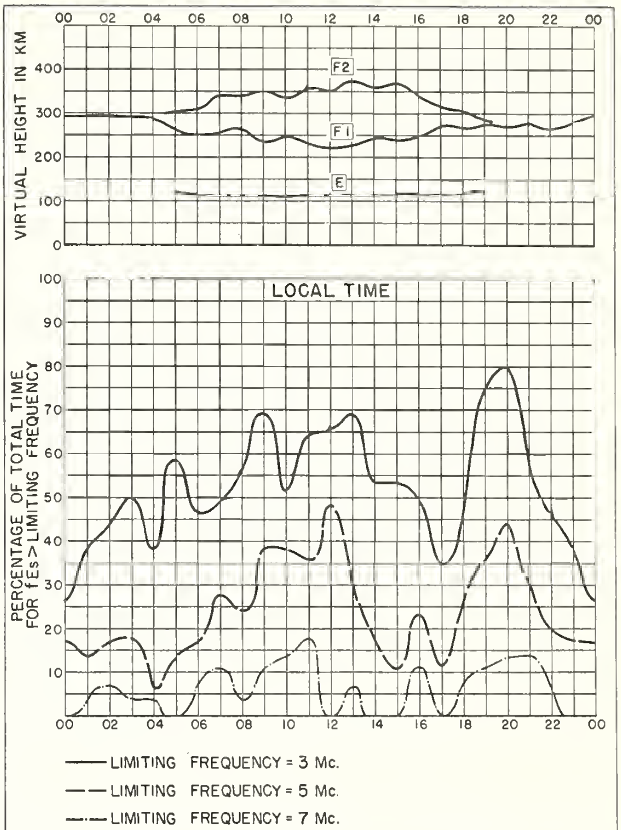

Fig. 102. FRIBOURG, GERMANY JUNE 1951

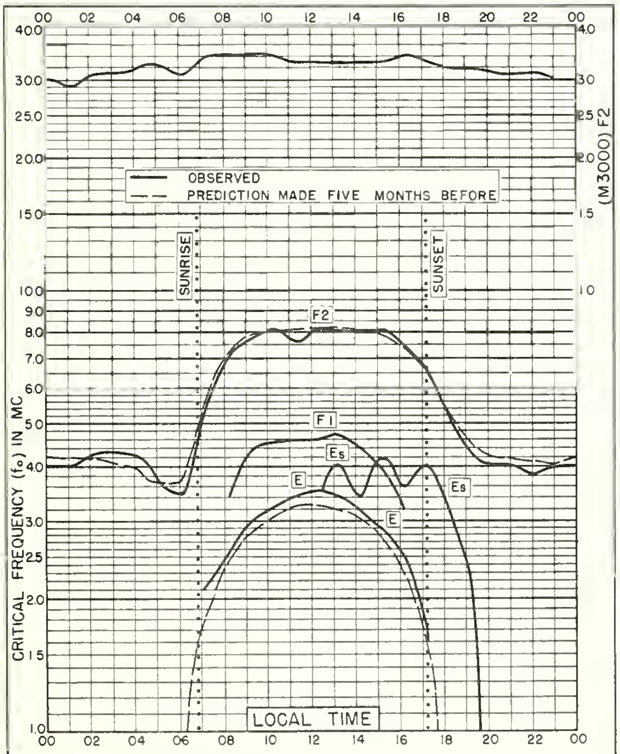

Fig. 103. BRISBANE, AUSTRALIA
27.5°S, 153.0°E JUNE 1951

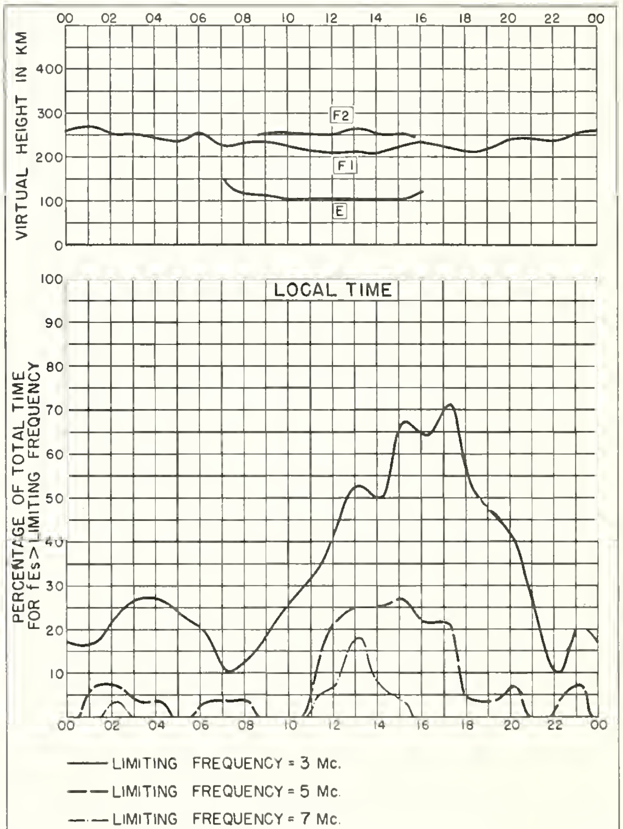

Fig. 104. BRISBANE, AUSTRALIA JUNE 1951

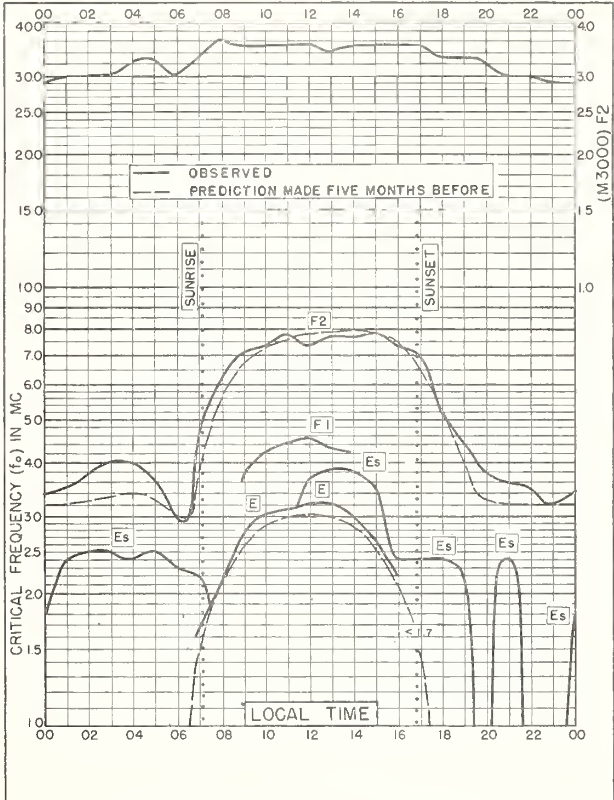

Fig. 105. CANBERRA, AUSTRALIA
35.3°S, 149.0°E JUNE 1951

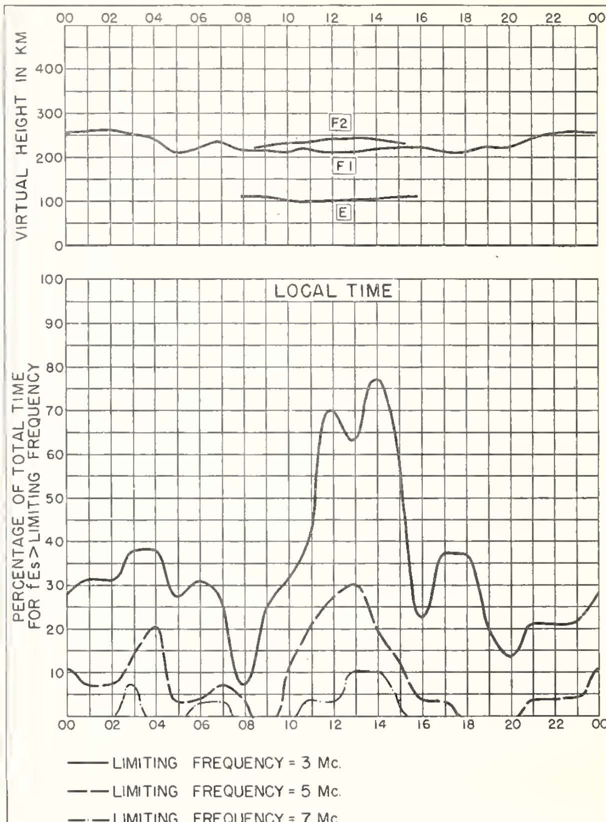

Fig. 106. CANBERRA, AUSTRALIA JUNE 1951

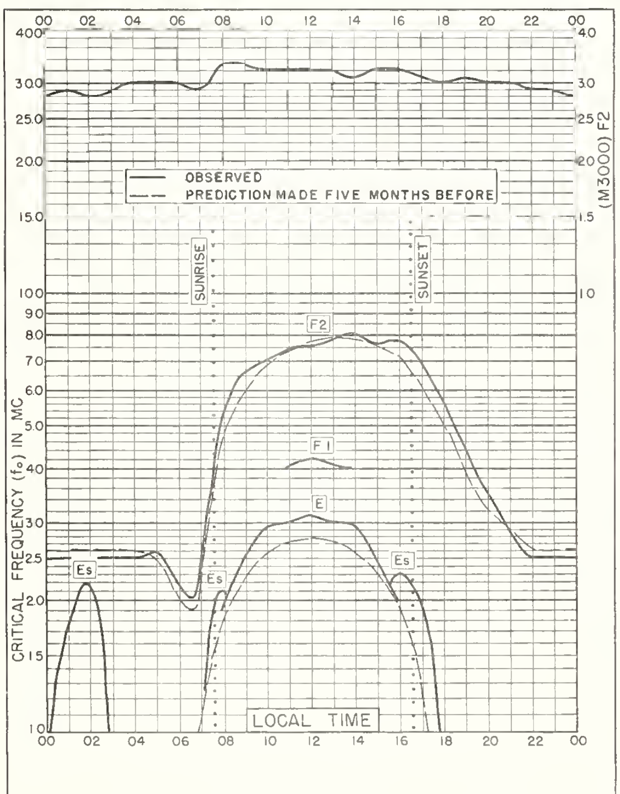

Fig. 107. HOBART, TASMANIA
42.8°S, 147.4°E JUNE 1951

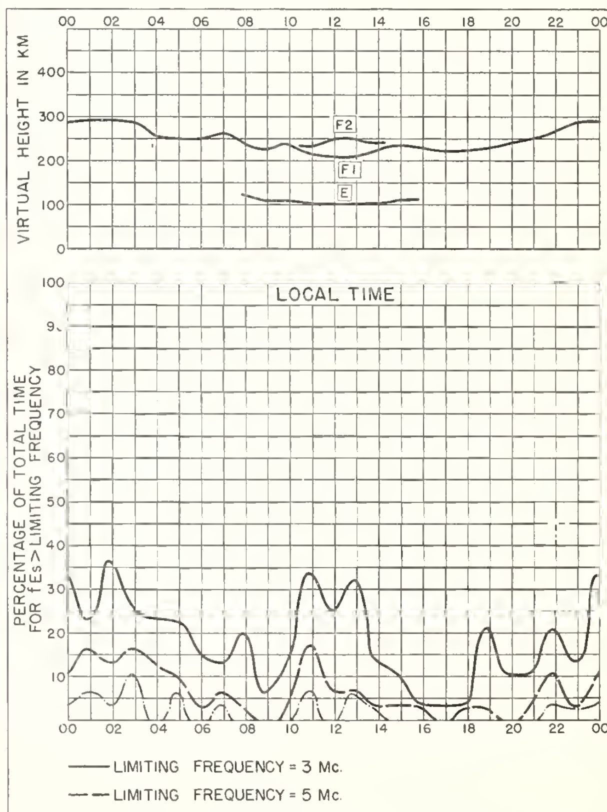

Fig. 108. HOBART, TASMANIA JUNE 1951

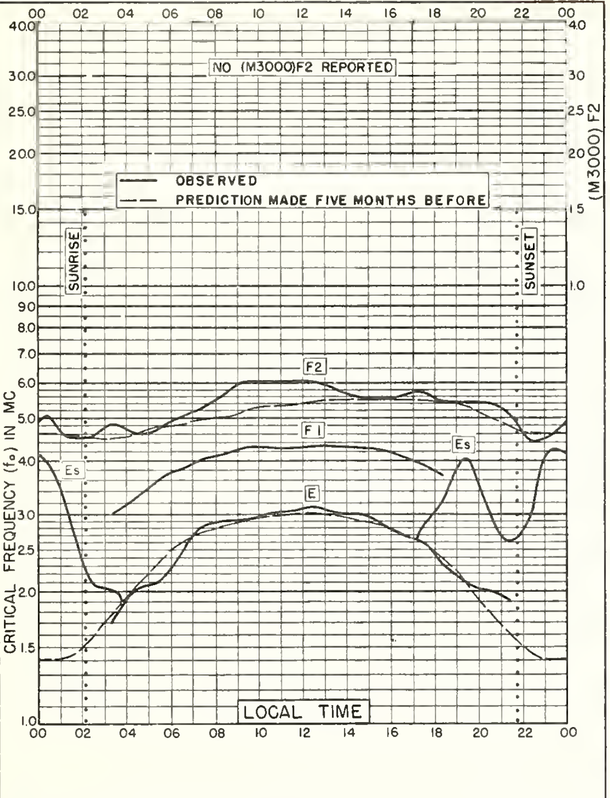

Fig. 109. KIRUNA, SWEDEN
67.8°N, 20.5°E MAY 1951

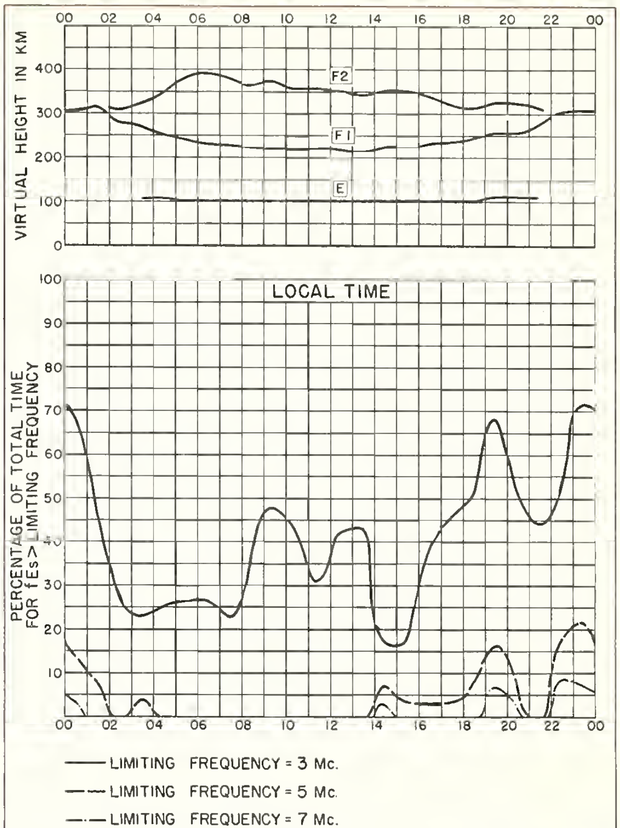

Fig. 110. KIRUNA, SWEDEN MAY 1951

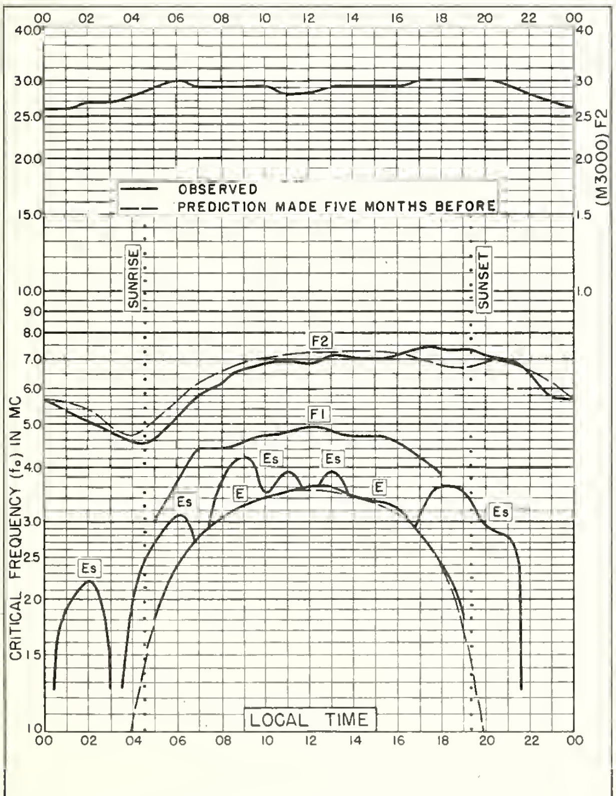

Fig. 111. FRIBOURG, GERMANY
48.1°N, 7.8°E MAY 1951

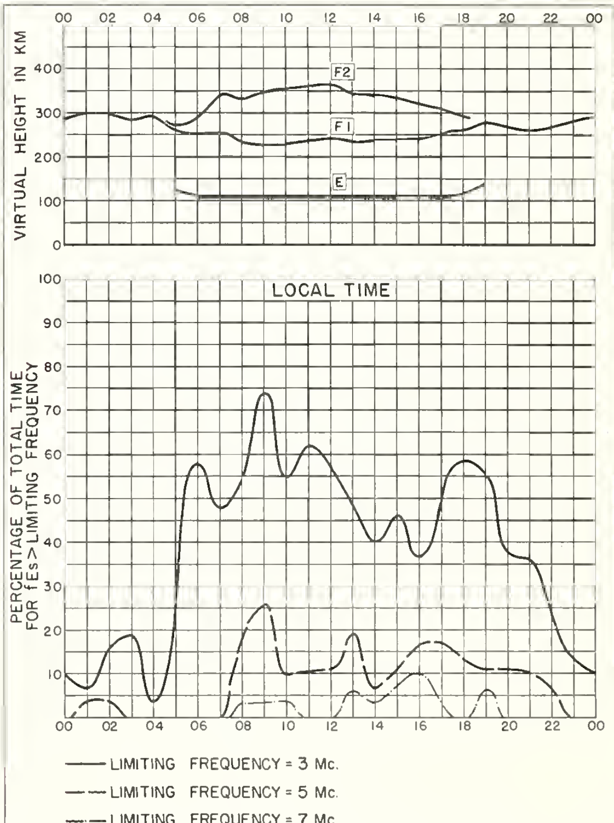

Fig. 112. FRIBOURG, GERMANY MAY 1951

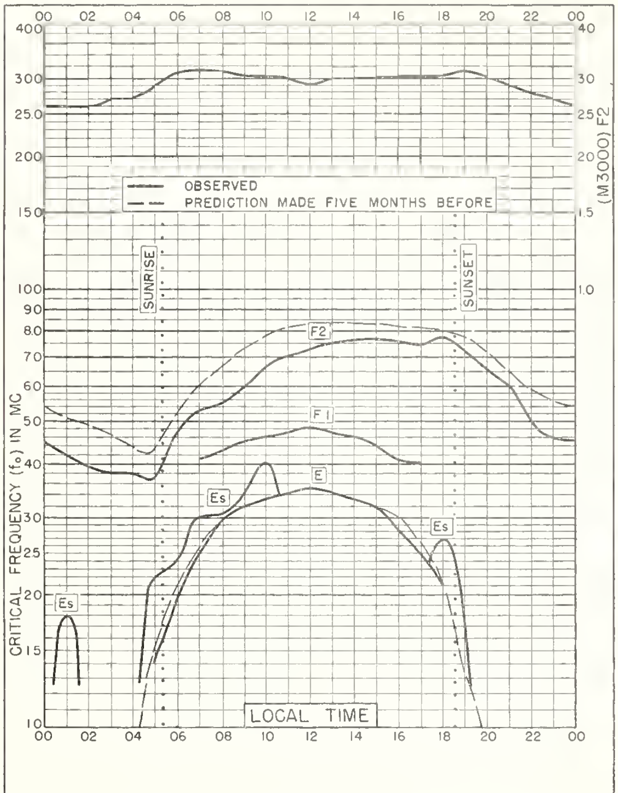

Fig. 113 FRIBOURG, GERMANY
48.1°N, 7.8°E APRIL 1951

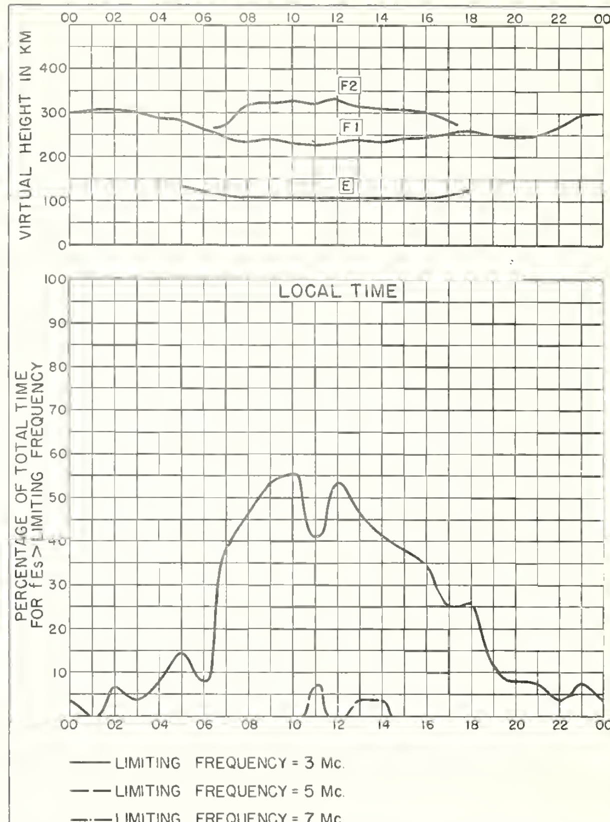

Fig. 114. FRIBOURG, GERMANY APRIL 1951

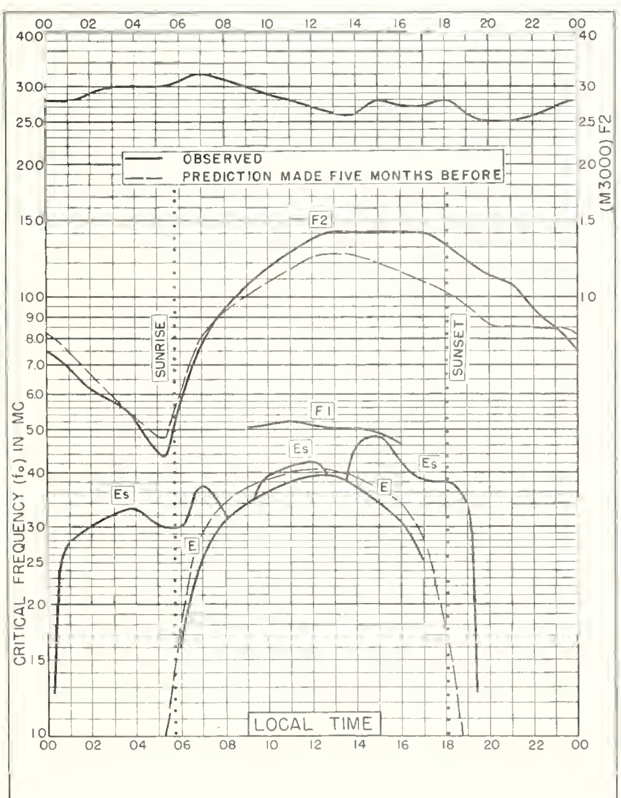

Fig 115. DAKAR, FRENCH W. AFRICA
14.6°N, 17.4°W APRIL 1951

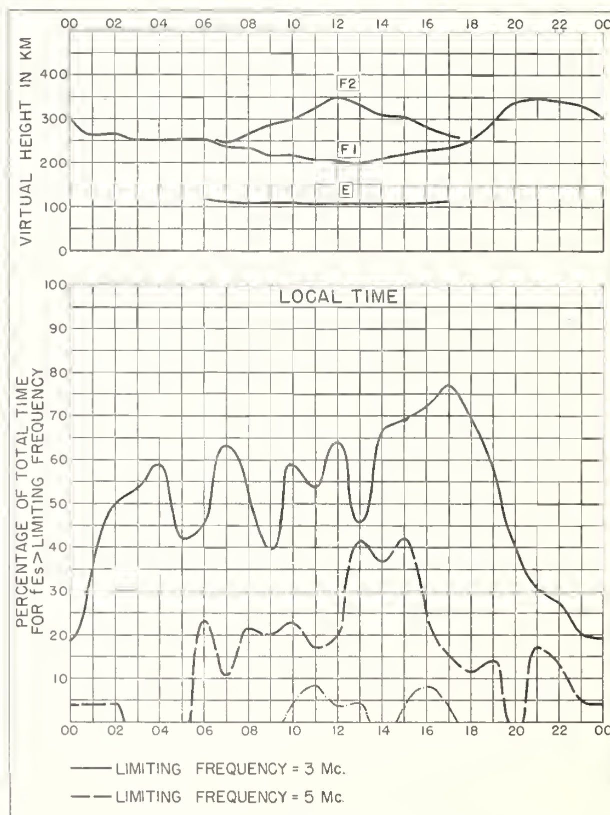

Fig. 116. DAKAR, FRENCH W. AFRICA APRIL 1951

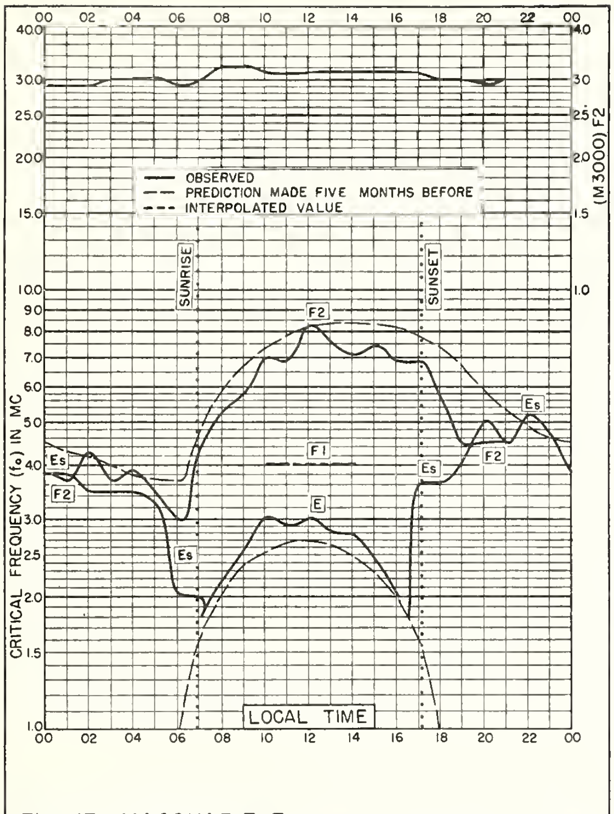

Fig. 117. MACQUARIE I.
54.5°S, 159.0°E APRIL 1951

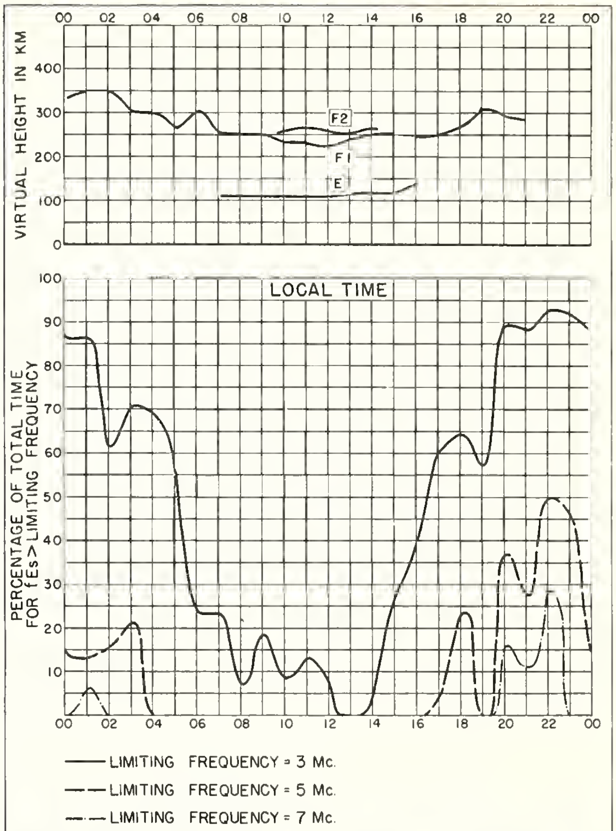

Fig. 118. MACQUARIE I. APRIL 1951

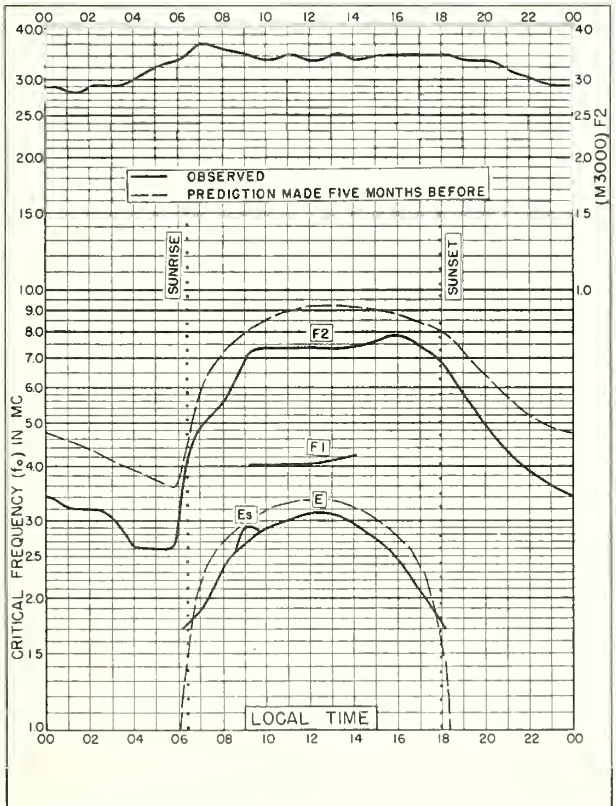

Fig. 119. DOMONT, FRANCE
49.0°N, 2.3°E MARCH 1951

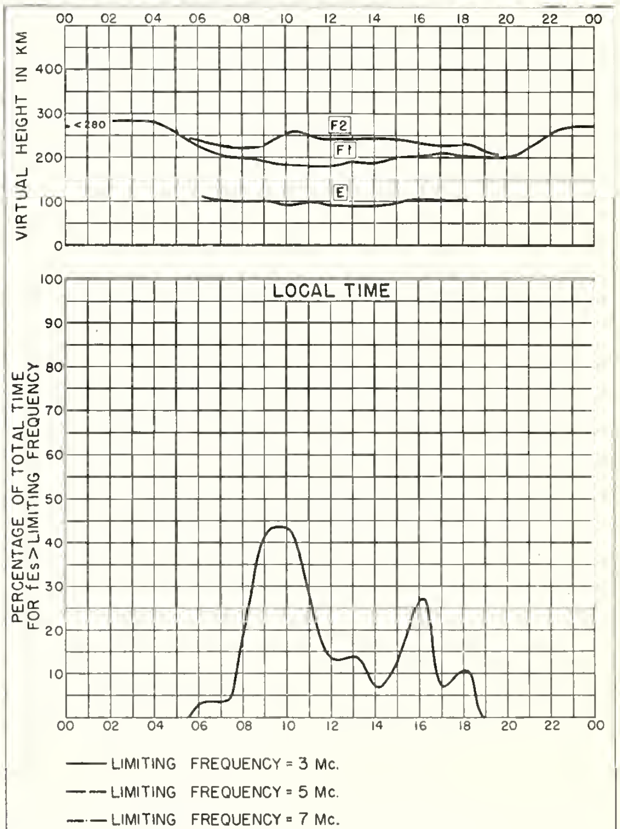

Fig. 120. DOMONT, FRANCE MARCH 1951

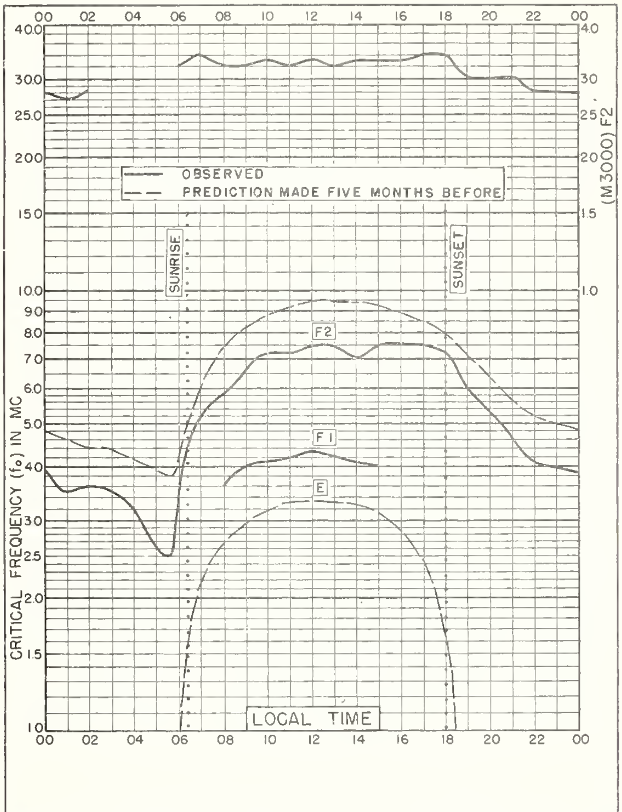

Fig. 121. POITIERS, FRANCE
46.6°N, 0.3°E MARCH 1951

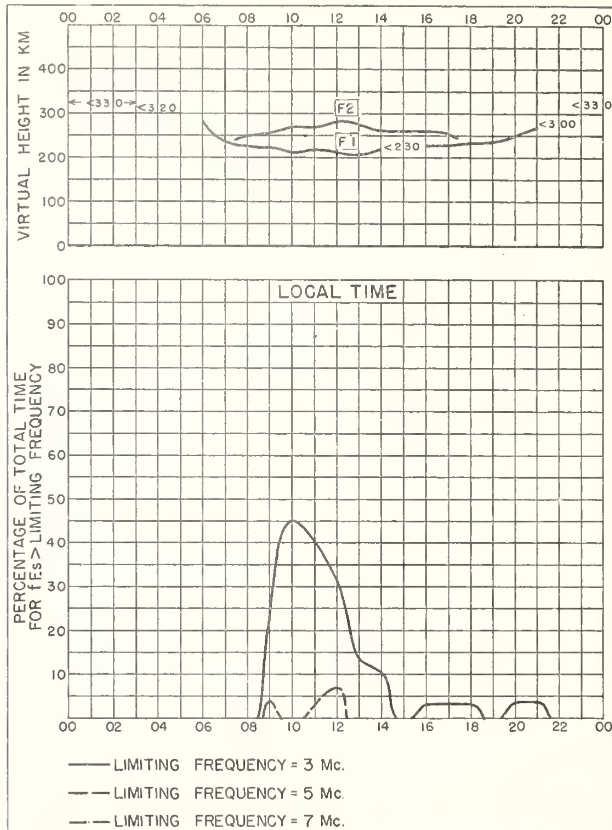

Fig. 122. POITIERS, FRANCE MARCH 1951

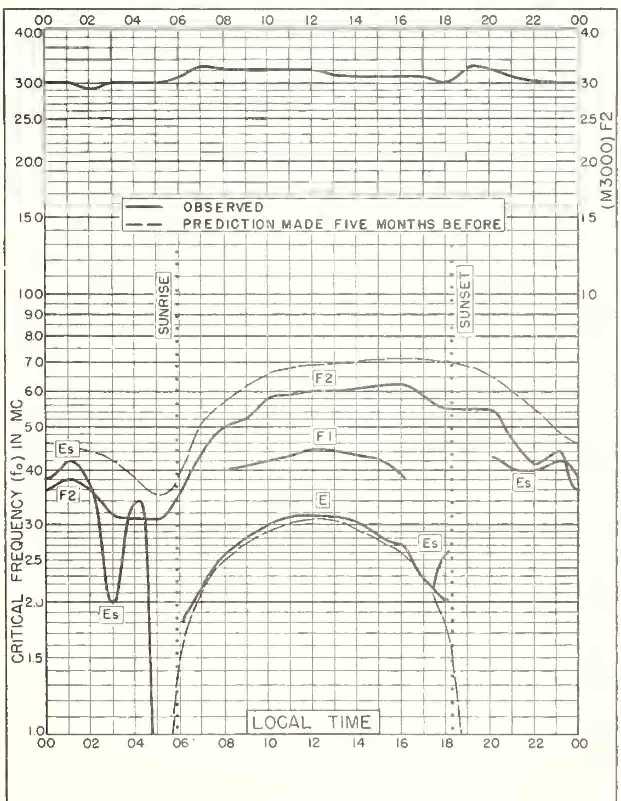

Fig. 123. MACQUARIE I.
54.5°S, 159.0°E MARCH 1951

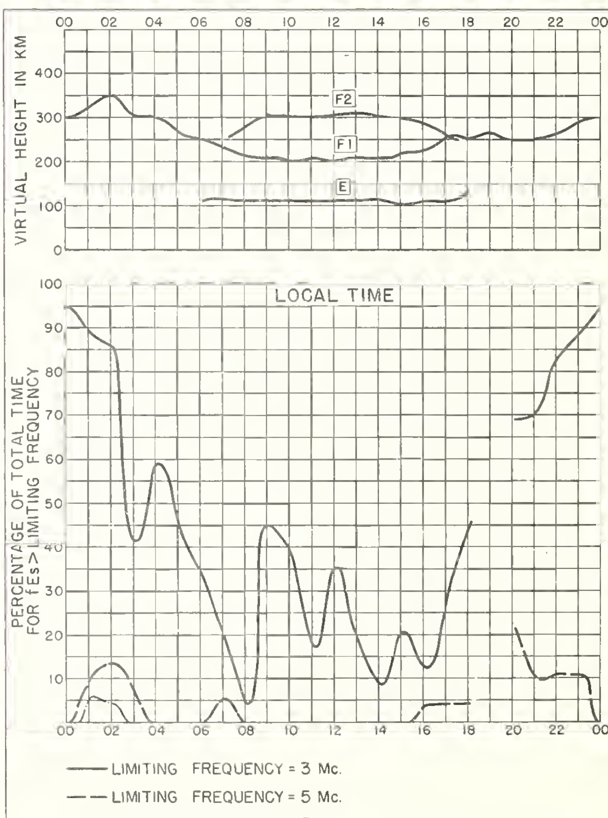

Fig 124. MACQUARIE I. MARCH 1951

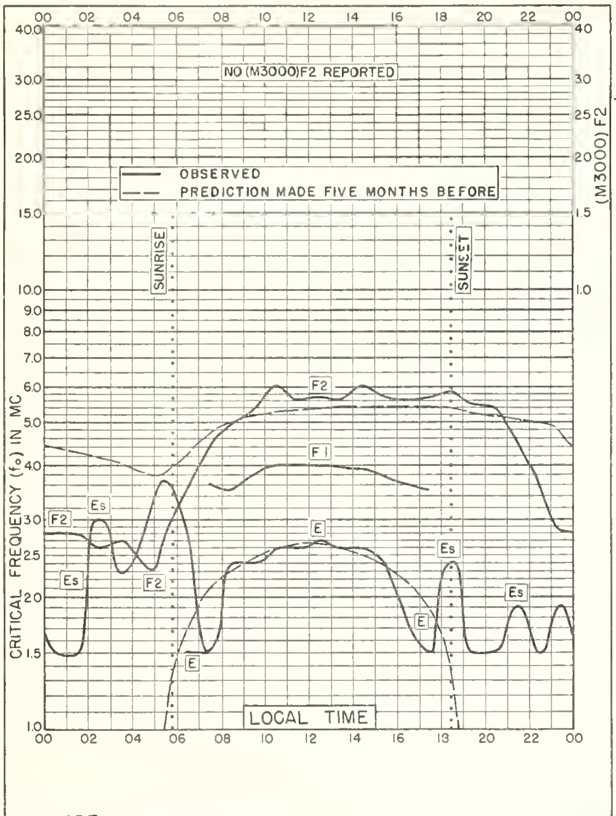

Fig. 125. TERRE ADELIE
66.8°S, 141.4°E MARCH 1951

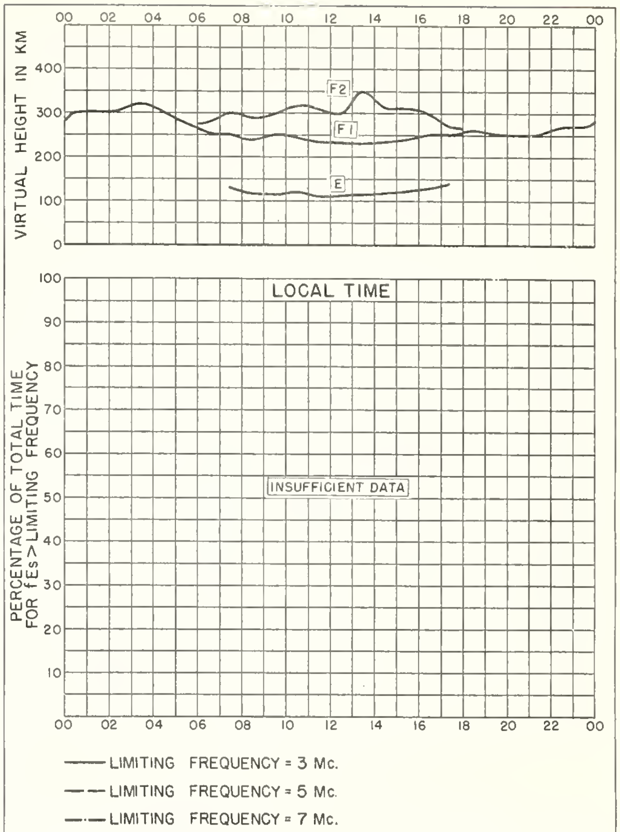

Fig. 126. TERRE ADELIE MARCH 1951

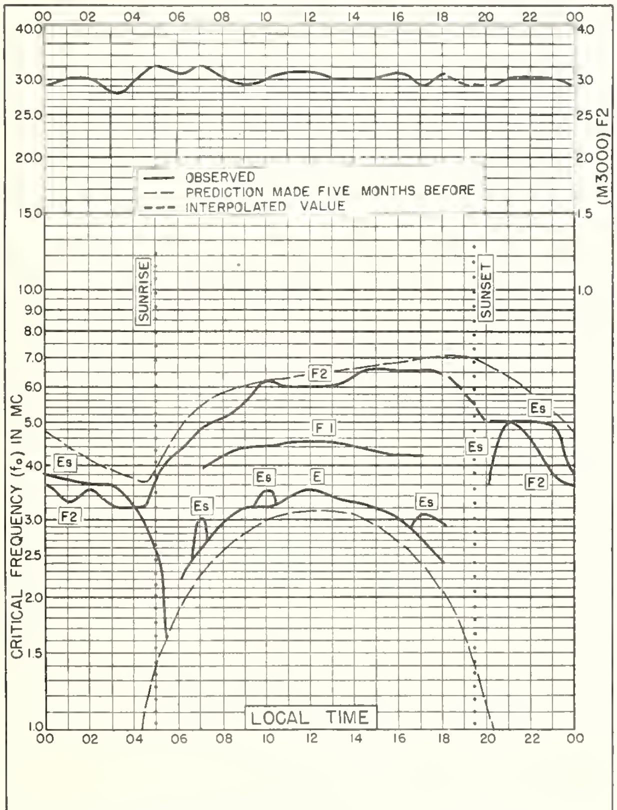

Fig 127. MACQUARIE I.
54.5°S, 159.0°E FEBRUARY 1951

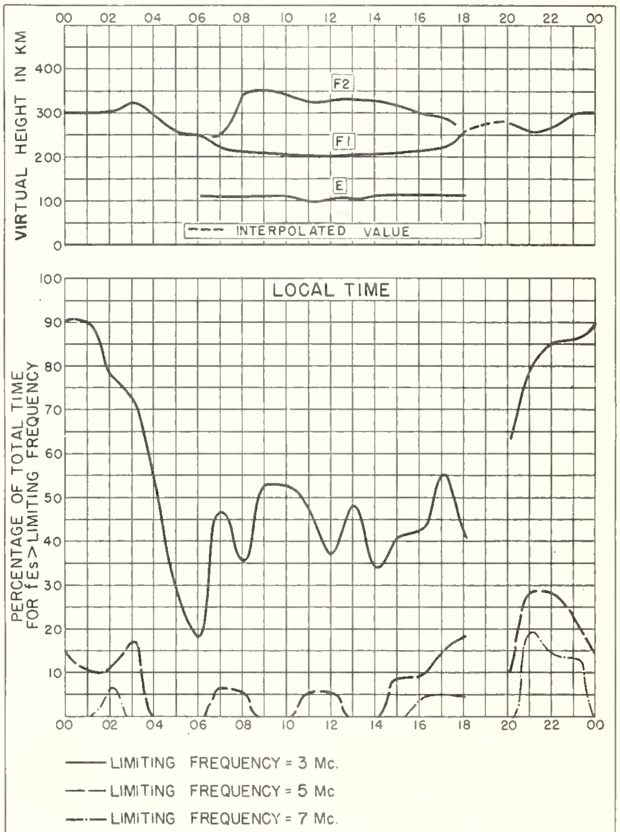

Fig. 128. MACQUARIE I. FEBRUARY 1951

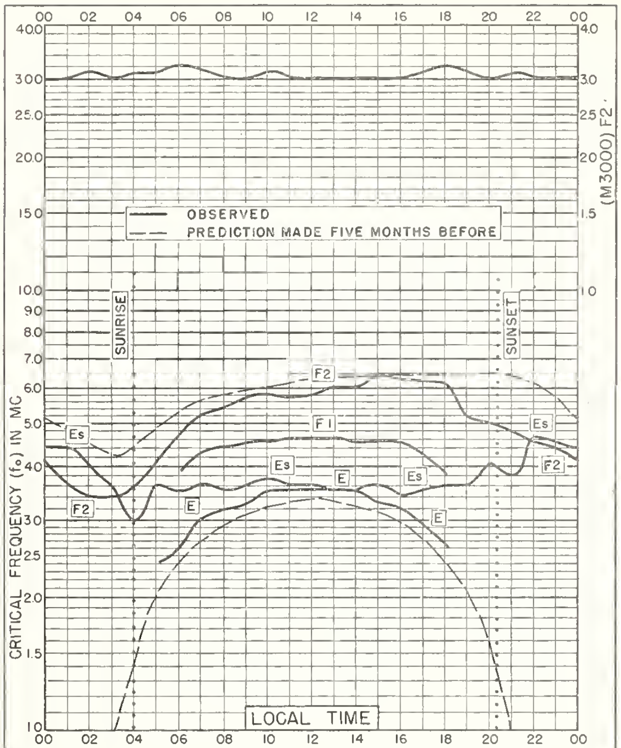

Fig.129. MACQUARIE I.
54.5°S, 159.0°E JANUARY 1951

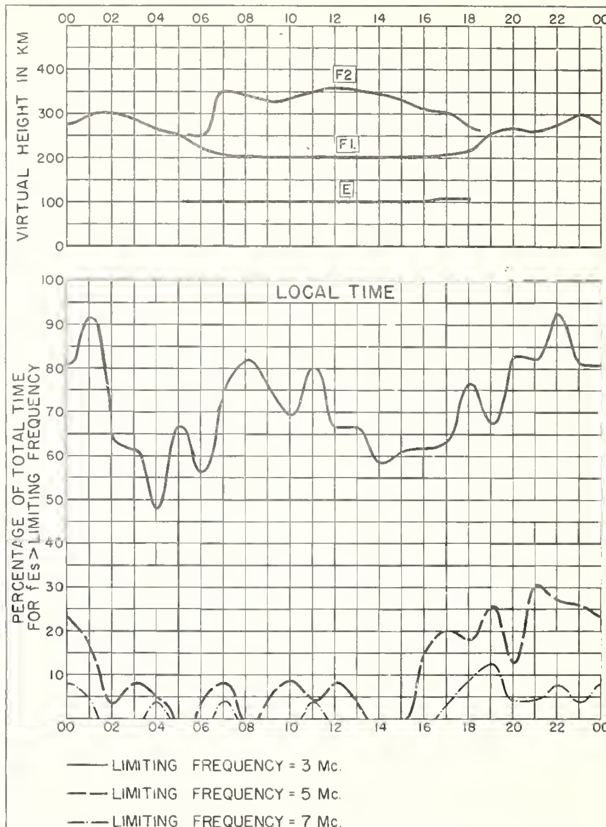

Fig. 130. MACQUARIE I. JANUARY 1951

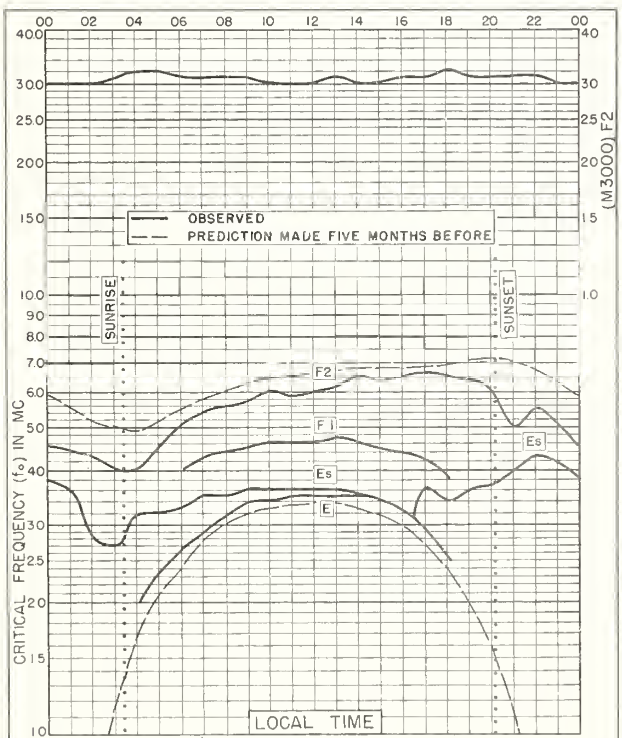

Fig 131. MACQUARIE I.
54.5°S, 159.0°E DECEMBER 1950

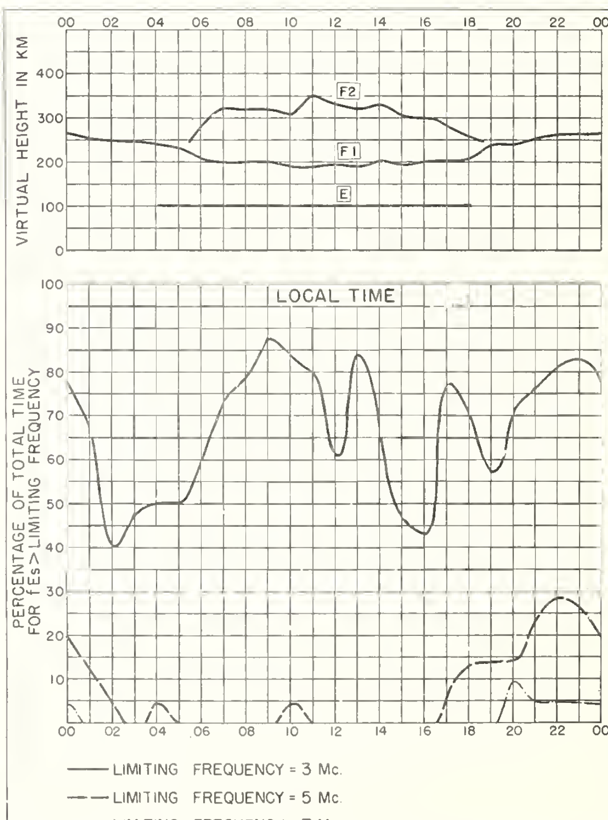

Fig. 132. MACQUARIE I. DECEMBER 1950

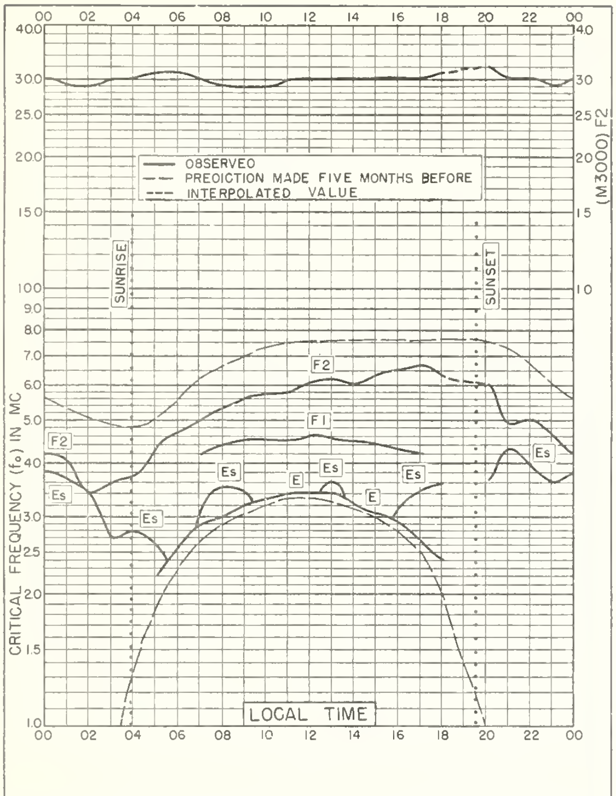

Fig. 133. MACQUARIE I.
54.5°S, 159.0°E NOVEMBER 1950

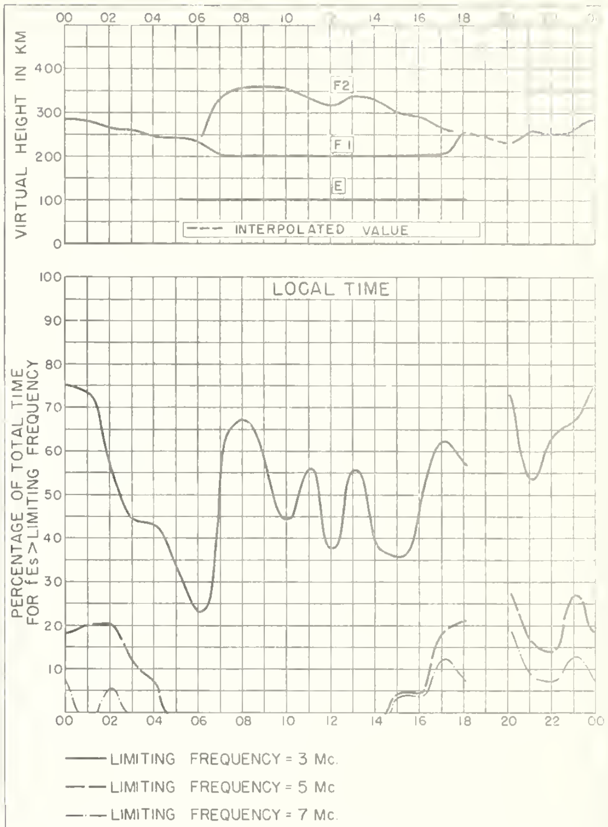

Fig. 134. MACQUARIE I NOVEMBER 1950

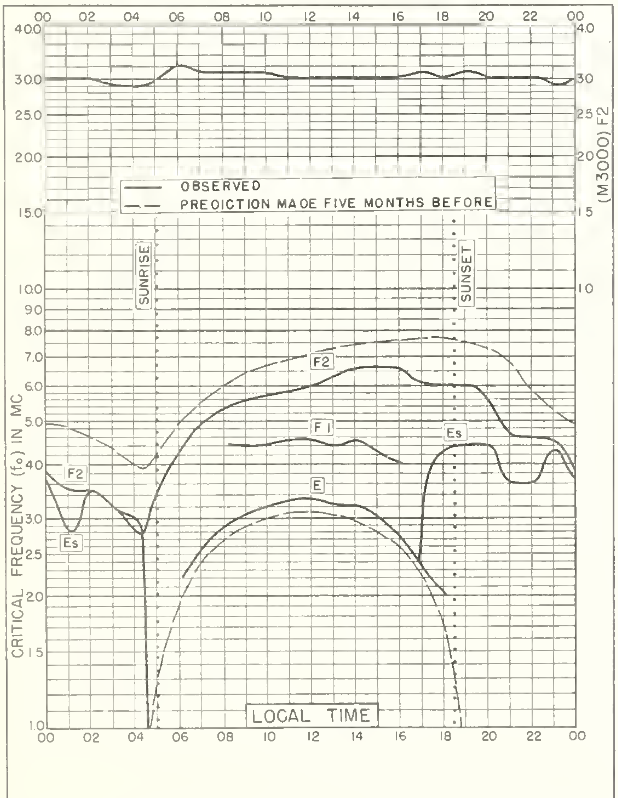

Fig. 135. MACQUARIE I.
54.5°S, 159.0°E OCTOBER 1950

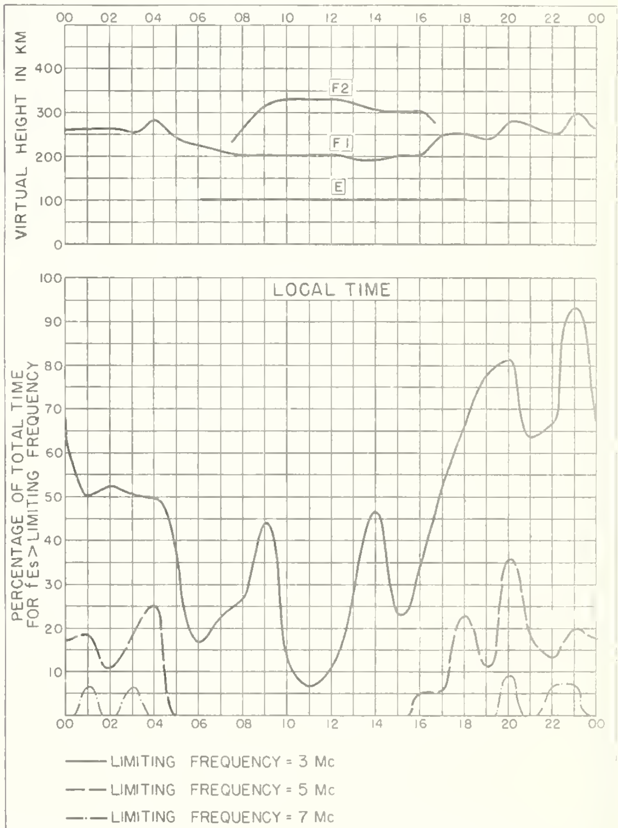

Fig. 136. MACQUARIE I. OCTOBER 1950

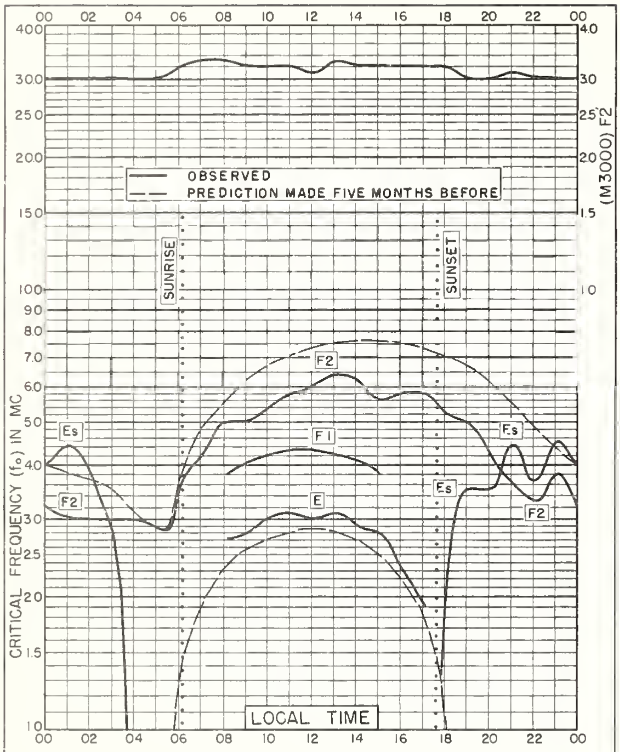

Fig. 137. MACQUARIE I.
54.5° S, 159.0°E SEPTEMBER 1950

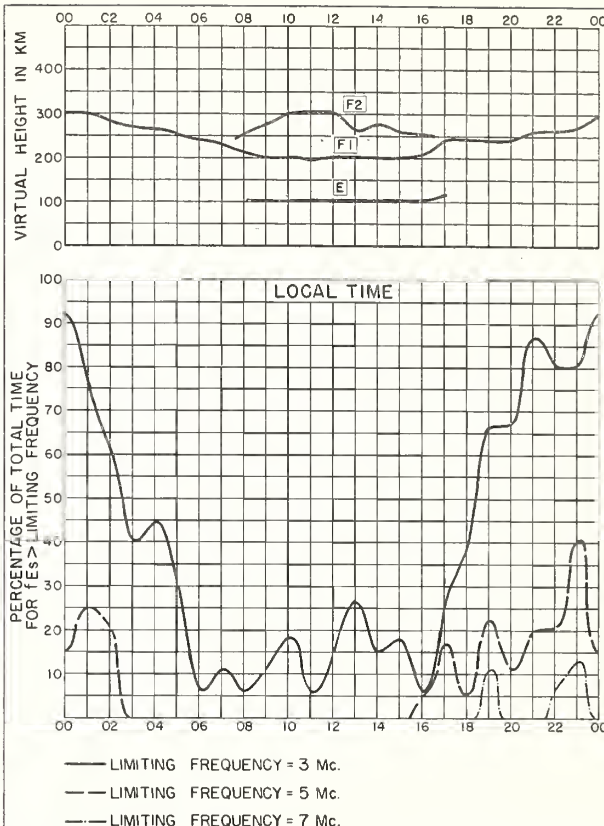

Fig. 138. MACQUARIE I. SEPTEMBER 1950

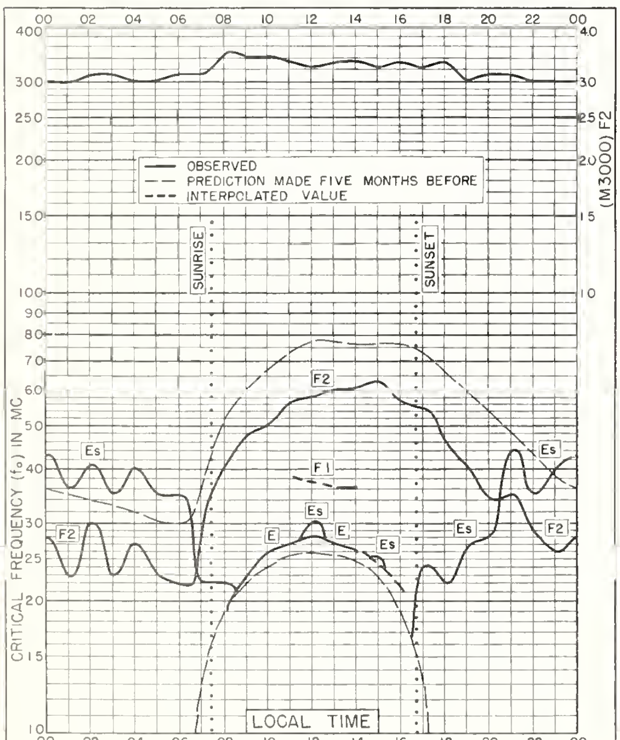

Fig 139. MACQUARIE I.
54.5°S, 159.0°E AUGUST 1950

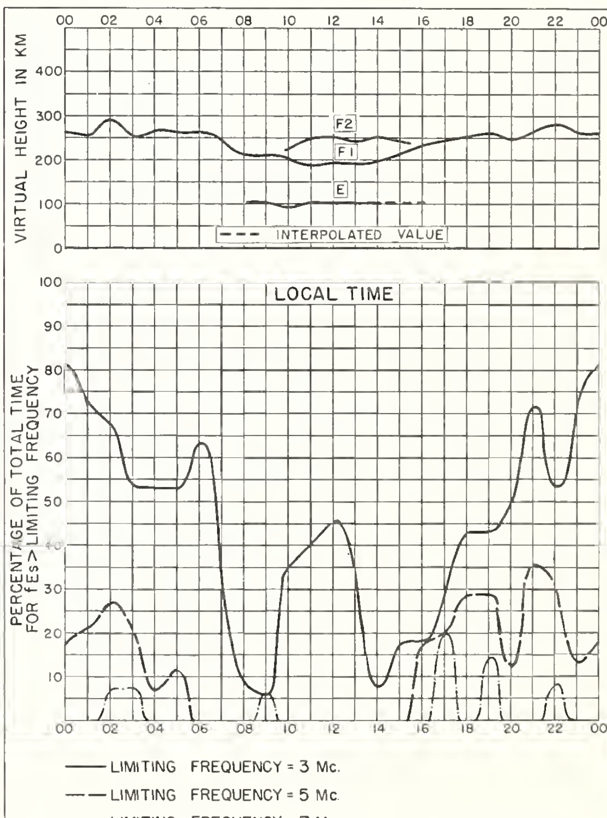

Fig. 140. MACQUARIE I. AUGUST 1950

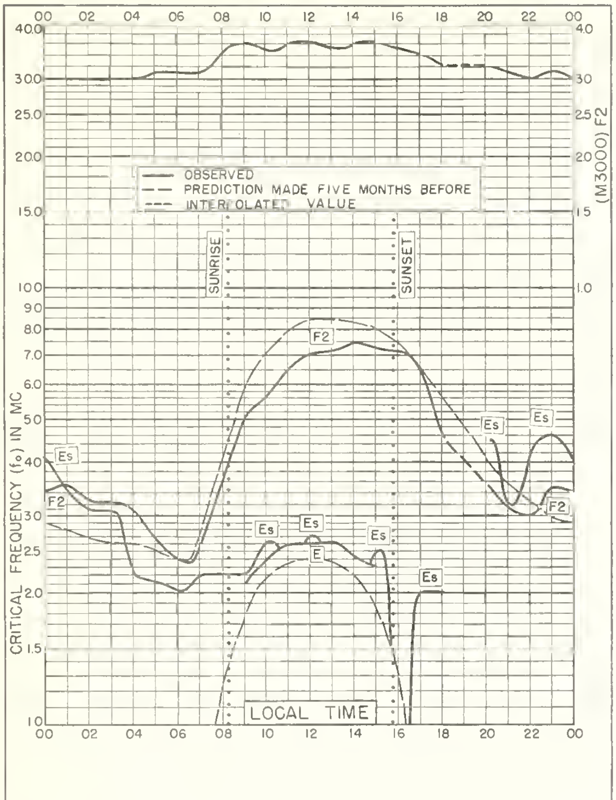

Fig. 141. MACQUARIE I.
54.5°S, 159.0°E JULY 1950

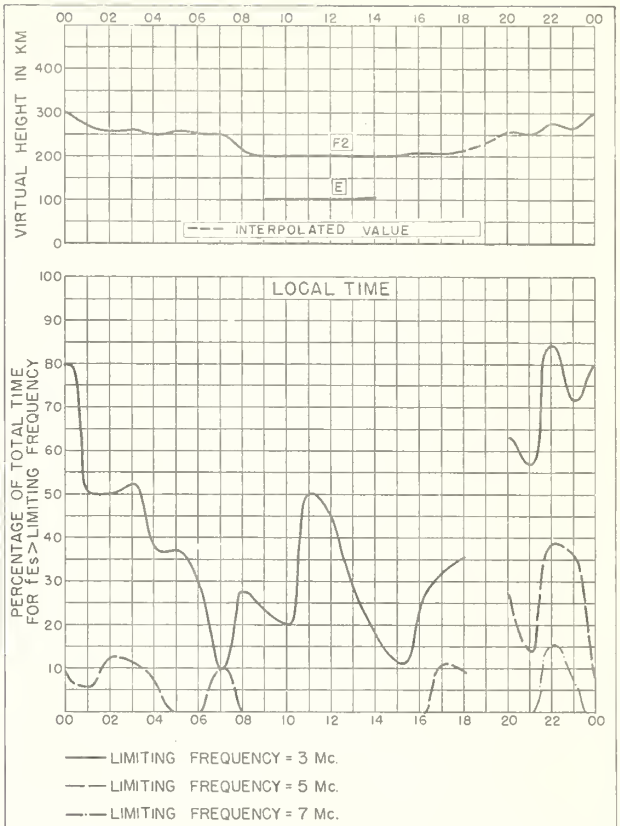

Fig. 142. MACQUARIE I. JULY 1950

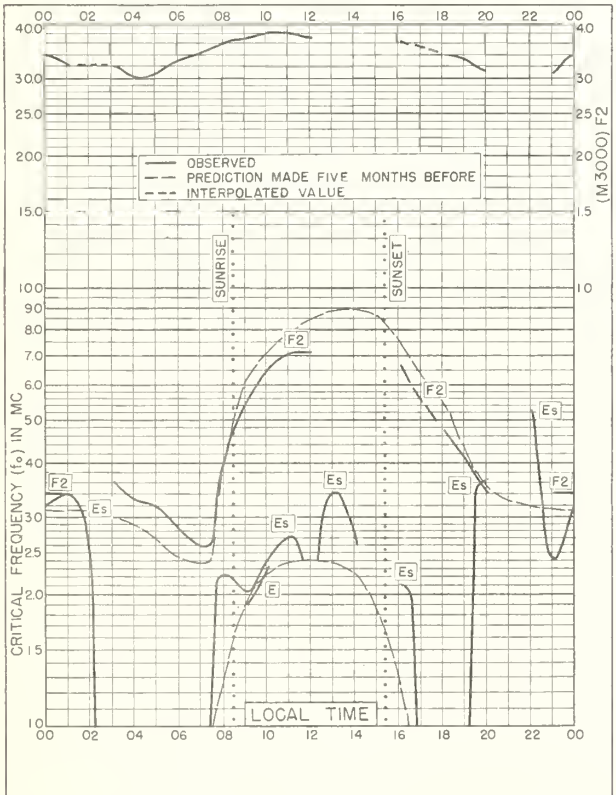

Fig. 143. MACQUARIE I.
54.5° S, 159.0°E JUNE 1950

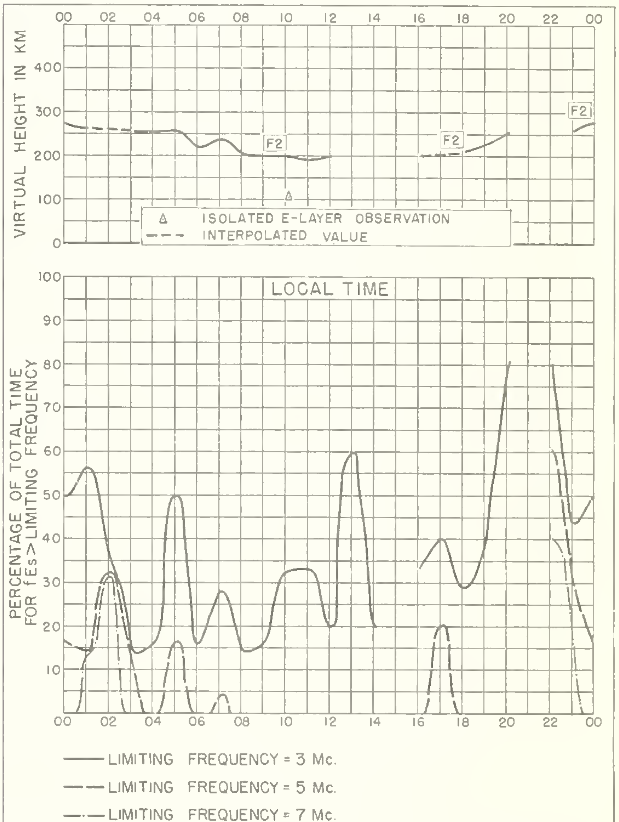

Fig. 144. MACQUARIE I. JUNE 1950

Index of Tables and Graphs of Ionospheric Data

in CRPL-F88

Index (CRPL-F88, continued)

Index (CRPL-F88, concluded)

CRPL and IRPL Reports

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

Daily:

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

Weekly:

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

Semimonthly:

CRPL—Ja. Semimonthly Frequency Revision Factors For CRPL Basic Radio Propagation Prediction Reports.

Monthly:

CRPL—D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11–499–, monthly supplements to TM 11–499; Dept. of the Navy, DNC 13 ( ) series; Dept. of the Air Force, TO 16-1B-2 series.)
CRPL—F. Ionospheric Data.
*IRPL—A. Recommended Frequency Bands for Ships and Aircraft in the Atlantic and Pacific.
*IRPL—H. Frequency Guide for Operating Personnel.

Circulars of the National Bureau of Standards:

NBS Circular 462. Ionospheric Radio Propagation.
NBS Circular 465. Instructions for the Use of Basic Radio Propagation Predictions.

Reports issued in past:

IRPL—C61. Report of the International Radio Propagation Conference, 17 April to 5 May 1944.
IRPL—G1 through G12. Correlation of D. F. Errors With Ionospheric Conditions.
IRPL—R. Nonscheduled reports:
R4. Methods Used by IRPL for the Prediction of Ionosphere Characteristics and Maximum Usable Frequencies.
R5. Criteria for Ionospheric Storminess.
**R6. Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
R7. Second Report on Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
R9. An Automatic Instantaneous Indicator of Skip Distance and MUF.
R10. A Proposal for the Use of Rockets for the Study of the Ionosphere.
**R11. A Nomographic Method for both Prediction and Observation Correlation of Ionosphere Characteristics.
**R12. Short Time Variations in Ionospheric Characteristics.
R14. A Graphical Method for Calculating Ground Reflection Coefficients.
**R15. Predicted Limits for F2-Layer Radio Transmission Throughout the Solar Cycle.
**R17. Japanese Ionospheric Data—1943.
R18. Comparison of Geomagnetic Records and North Atlantic Radio Propagation Quality Figures—October 1943 Through May 1945.
**R21. Notes on the Preparation of Skip-Distance and MUF Charts for Use by Direction-Finder Stations. (For distances out to 4000 km.)
**R23. Solar-Cycle Data for Correlation with Radio Propagation Phenomena.
**R24. Relations Between Band Width, Pulse Shape and Usefulness of Pulses in the Loran System.
**R25. The Prediction of Solar Activity as a Basis for the Prediction of Radio Propagation Phenomena.
R26. The Ionosphere as a Measure of Solar Activity.
R27. Relationships Between Radio Propagation Disturbance and Central Meridian Passage of Sunspots Grouped by Distance From Center of Disc.
**R30. Disturbance Rating in Values of IRPL Quality-Figure Scale from A. T. & T. Co. Transmission Disturbance Reports to Replace T. D. Figures as Reported.
R31. North Atlantic Radio Propagation Disturbances, October 1943 Through October 1945.
**R33. Ionospheric Data on File at IRPL.
**R34. The Interpretation of Recorded Values of *fEs*.
R35. Comparison of Percentage of Total Time of Second-Multiple *Es* Reflections and That of *fEs* in Excess of 3 Mc.
IRPL—T. Reports on tropospheric propagation:
T1. Radar operation and weather. (Superseded by JANP 101.)
T2. Radar coverage and weather. (Superseded by JANP 102.)
CRPL—T3. Tropospheric Propagation and Radio-Meteorology. (Reissue of Columbia Wave Propagation Group WPG—5.)

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