PART A

IONOSPHERIC DATA

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U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

CRPL-F 165
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CONTENTS

SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, and continuing through December 1956, 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 Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Geneva, 1951. Excerpts concerning symbols and terminology from Document No. 626-E of this Meeting are given on pages 2-7 of the report CRPL-F89, "Ionospheric Data," issued January 1952. Reprints of these pages are available upon request.

Beginning with data for January 1957, the symbols used are given in NBS Report 5033, "Summary of Changes in Ionospheric Vertical Soundings, Observing and Scaling Procedures - Effective 1 January 1957," which draws upon the First Report of the Special Committee on World-Wide Ionospheric Soundings (URSI/AGI), Brussels, Sept. 2, 1956. A list of these symbols is available upon request.

In the Second Report of the Special Committee on World-Wide Ionospheric Soundings of the URSI/AGI Committee, May 1957, a new descriptive letter was introduced:

M Measurement questionable because the ordinary and extraordinary components are not distinguishable.

There was an expansion in meaning of the following:

Z (1) (qualifying letter) Measurement deduced from the third magnetoionic component.
(2) (descriptive letter) Third magnetoionic component present.

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.

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 above.

a. For all ionospheric characteristics:

Values missing because of A, C, F, H, L, N or R 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'F (and h'E near sunrise and sunset) missing for this reason are counted usually as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count.

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; the descriptive symbol D, only when it replaces a frequency characteristic.

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 are counted as equal to or less than the median foE, or equal to or less than the lower frequency limit of the recorder.

B for fEs is counted on the low side when there is a numerical value of a higher layer critical frequency; otherwise it is omitted from the median count.

S for fEs is counted on the low side at night; during the day it is omitted from the median count (beginning with data for November 1957).

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 the count is four or less, the data are considered insufficient and no median value is computed.

2. For the F2 layer, h'F or foEs, if the count is from five to nine, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as the count is at least five, the median is not considered doubtful. A count of at least 5 is considered sufficient for an h'Es median.

3. For all layers, if more than half of the data used to compute the medians 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.

Ordinarily, a blank space in the fEs or foEs 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'F2 or h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 is usually the result of seasonal effects.

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

a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is 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.

d. The tables may contain median values of either foEs or fEs. The graph of median Es corresponds to the table. Percentage curves of fEs are estimated from values of foEs when necessary.

PREDICTED AND OBSERVED SUNSPOT NUMBERS

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

Month	Predicted Sunspot Number										
	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948
December		150*	150	42	11	15	33	53	86	108	114
November		150*	147	35	10	16	38	52	87	112	115
October	150*	150*	135	31	10	17	43	52	90	114	116
September	150*	150*	119	30	8	18	46	54	91	115	117
August	150*	150*	105	27	8	18	49	57	96	111	123
July	150*	150*	95	22	8	20	51	60	101	108	125
June	150*	150*	89	18	9	21	52	63	103	108	129
May	150*	150*	77	16	10	22	52	68	102	108	130
April	150*	150*	68	13	10	24	52	74	101	109	133
March	150*	150*	60	14	11	27	52	78	103	111	133
February	150*	150*	53	14	12	29	51	82	103	113	133
January	150*	150*	48	12	14	30	53	85	105	112	130

*This number is believed representative of solar activity at a maximum portion of the current sunspot cycle.

The latest available information follows concerning the corresponding observed Zürich numbers beginning with the minimum of April 1954. Final numbers are listed through June 1957.

Observed Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1954				3	4	4	5	7	8	8	9	12
1955	14	16	19	23	29	35	40	46	55	64	73	81
1956	89	98	109	119	127	137	146	150	151	156	160	164
1957	170	172	174	181	186	188	191	194	196	198		

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

University of Graz:
- Graz, Austria

Meteorological Service of the Belgian Congo and Ruanda-Urundi:
- Bùnia, Belgian Congo
- Elisabethville, Belgian Congo
- Leopoldville, Belgian Congo

Universidad Mayor de San Andres:
- La Paz, Bolivia

British Department of Scientific and Industrial Research, Radio Research Board:
- Inverness, Scotland

Defence Research Board, Canada:
- Baker Lake, Canada
- Churchill, Canada
- Meanook, Canada
- Ottawa, Canada
- Resolute Bay, Canada
- Winnipeg, Canada

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

General Direction of Posts and Telegraphs, Helsinki, Finland:
- Nurmijarvi, Finland

National Laboratory of Radio-Electricity (French Ionospheric Bureau):
- Casablanca, Morocco

The Royal Netherlands Meteorological Institute:
- De Bilt, Holland

Icelandic Post and Telegraph Administration:
Reykjavik, Iceland

Indian Council of Scientific and Industrial Research, Radio Research Committee, New Delhi, India:
Bombay (All India Radio)
Madras (All India Radio)
Tiruchy (All India Radio)

Ministry of Postal Services, Radio Research Laboratories, Tokyo, Japan:
Akita, Japan
Tokyo (Kokubunji), Japan
Wakkanai, Japan
Yamagawa, Japan

Christchurch Geophysical Observatory, New Zealand Department of Scientific and Industrial Research:
Campbell I.

Norwegian Defence Research Establishment, Kjeller per Lillestrom, Norway:
Oslo, Norway
Tromso, Norway

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

Research Institute of National Defence, Stockholm, Sweden:
Kiruna, Sweden
Lycksele, Sweden
Upsala, Sweden

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

United States Army Signal Corps:
Adak, Alaska
Ft. Monmouth, New Jersey
Grand Bahama I.
Okinawa I.
St. John's, Newfoundland
Thule, Greenland
White Sands, New Mexico

National Bureau of Standards (Central Radio Propagation Laboratory):
Anchorage, Alaska
Chiclayo, Peru
Chimbote, Peru

National Bureau of Standards (Central Radio Propagation Laboratory), continued:
Ellsworth Station, Antarctica
Fairbanks, Alaska (Geophysical Institute of the University of Alaska)
Huancayo, Peru (Instituto Geofisico de Huancayo)
Panama Canal Zone
Point Barrow, Alaska
Puerto Rico, W. I.
Talara, Peru (Instituto Geofisico de Huancayo)

EXAMPLES OF IONOSPHERIC VERTICAL SOUNDINGS
Grand Bahama Is.; December 23, 1957
Geomagnetic Latitude [illegible]°N)

The following ionograms were obtained at the Signal Corps Grand Bahama Is. vertical sounding station. They are typical of day and night conditions for December at this geomagnetic latitude. Ionospheric data are scaled directly from these records onto the daily f-plot, a graph of frequency characteristics vs. time. The f-plot for the day represented by these soundings is found on the following page. Medians as found in the Tables of Ionospheric Data are calculated using hourly values taken from the f-plot or directly from the ionogram.

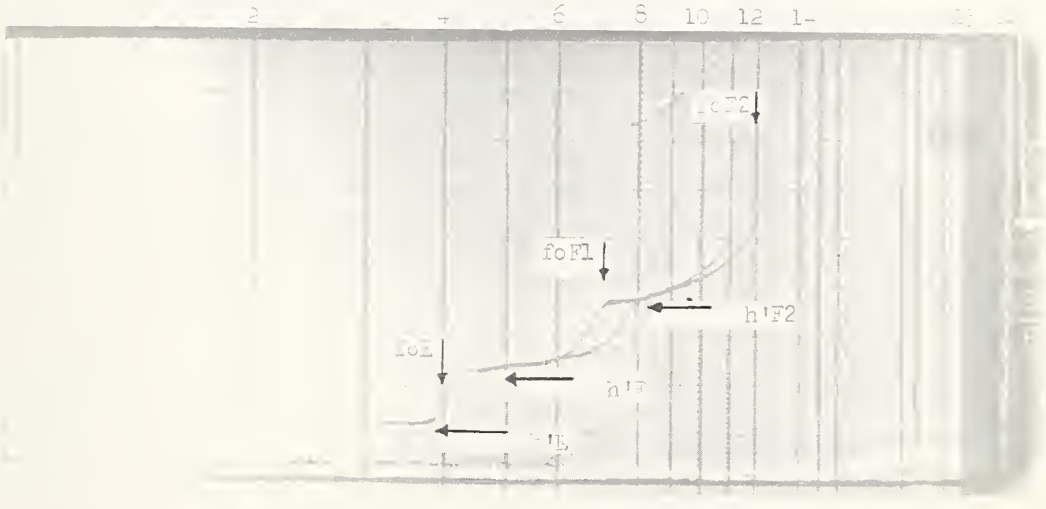


Fig. A. Grand Bahama Is., December 23, 1957, 1245 hours, 75°W time.

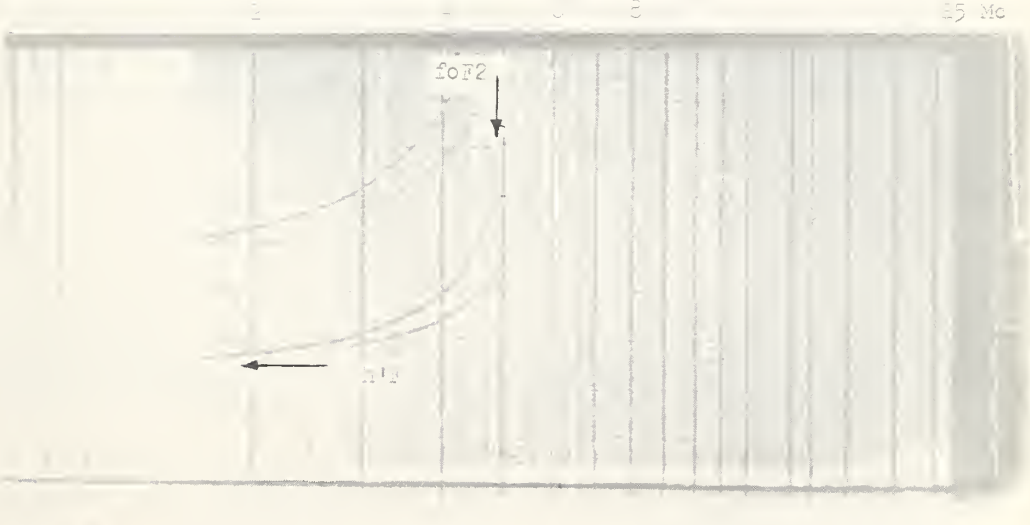
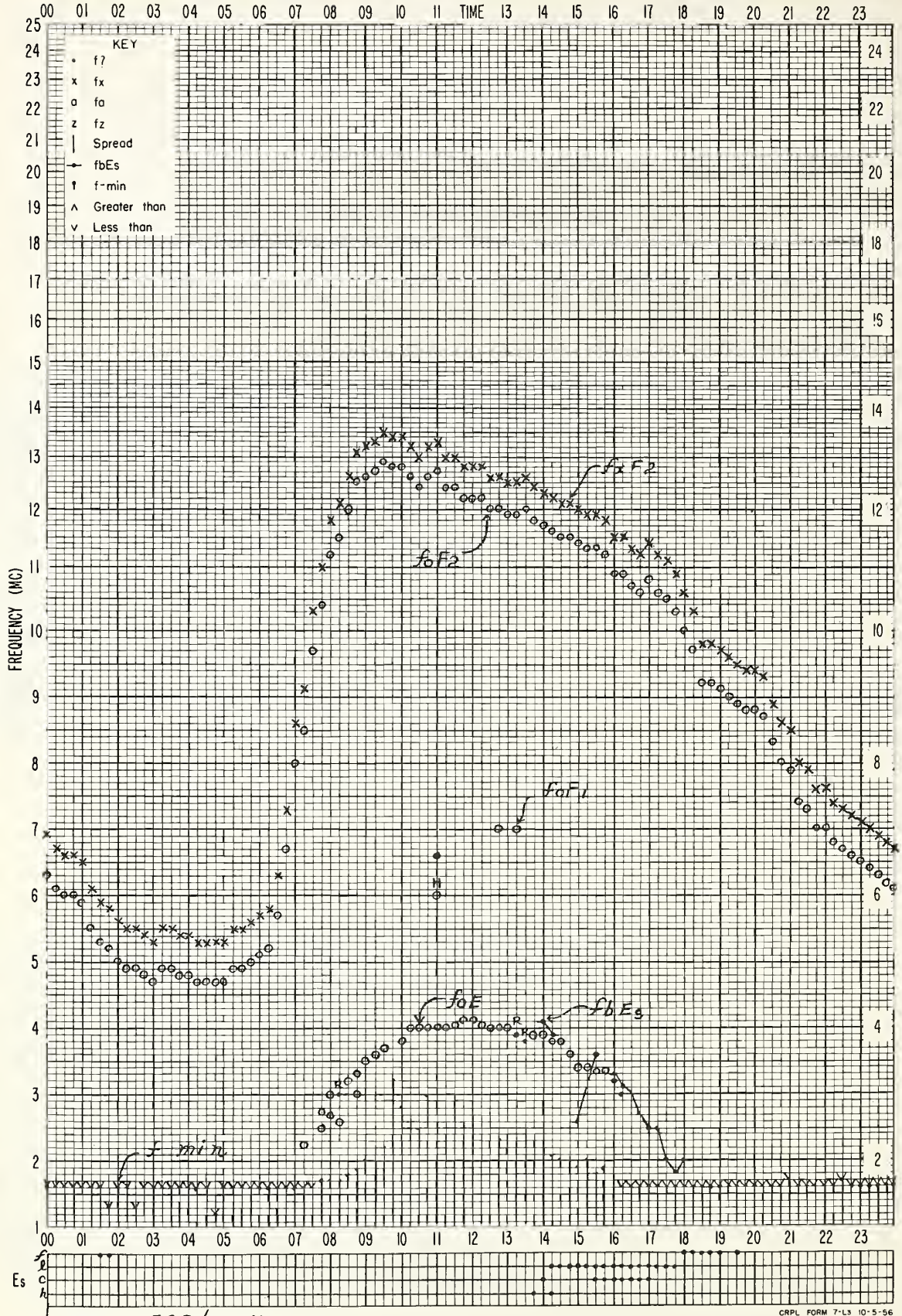


Fig. B. Grand Bahama Is., December 23, 1957, 0215 hours, 75°W time.

STATION GRAND BAHAMA IS. f - PLOT OF IONOSPHERIC DATA DATE DEC. 23, 1957



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TABLES OF IONOSPHERIC DATA

February 1958 - March 1956

Table 1

Kiruna, Sweden (67.8°N, 20.3°E) February 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.6	(375)				2.6	2.4
01		5.4	400				2.5	2.4
02		6.0	380				2.3	2.4
03		5.0	375				2.5	2.45
04		5.0	350				2.3	2.6
05		5.0	310				2.0	2.6
06		5.2	300				2.5	2.6
07		5.5	280		---	---	2.0	2.6
08		6.1	270		---	1.8	2.3	2.8
09		7.6	255		---	2.0	2.6	2.8
10		9.1	250		---	2.2	2.7	2.8
11		10.2	250		---	(2.2)	2.6	2.8
12		11.0	250		---	2.2	2.8	2.8
13		11.0	250		---	2.3	2.8	2.8
14		10.4	250		---	2.1	2.8	2.8
15		9.1	250		---	1.9	2.5	3.0
16		6.8	250		---	1.7	2.7	2.8
17		6.0	270		---	---	2.7	2.8
18		4.2	<270				2.7	2.7
19		5.1	305				2.6	2.7
20		5.0	(300)				2.5	2.6
21		6.0	(305)				2.4	2.6
22		6.0	355				2.6	2.4
23		6.0	(350)				2.6	2.4

Time: 15.0°E.
Sweep: 0.8 Mc to 14.0 Mc in 30 seconds.

Table 2

Fairbanks, Alaska (64.9°N, 147.8°W) February 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		---					4.3	----
01		---					4.8	----
02		---					5.9	----
03		---					5.3	----
04		(5.2)					4.0	(2.45)
05		(4.8)					4.6	----
06		---					4.5	----
07		(6.7)						(2.80)
00		(5.5)						(2.85)
09		(6.4)						(2.90)
10		7.9			---	----		2.90
11		8.0			---	----		2.90
12		9.1			---	----		2.90
13		10.2			---	----		2.90
14		9.8			---	----		2.85
15		10.8			---	----		2.85
16		10.6						2.95
17		9.5						2.90
18		(6.8)						2.90
19		(5.7)					2.0	(2.90)
20		(5.0)					3.9	(3.00)
21		---					4.0	----
22		(3.6)					4.6	(2.90)
23		---					4.2	----

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 3

Lycksele, Sweden (64.6°N, 18.8°E) February 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.8	390				2.1	2.4
01		5.8	345				2.6	2.4
02		5.7	345				1.5	2.5
03		5.3	345				2.2	2.5
04		5.1	320					2.55
05		5.2	305					2.6
06		5.2	290		---	-----		2.6
07		5.4	270		---	E		2.7
08		6.4	255		115	1.80		2.9
09		8.2	245		---	2.00		3.0
10		9.4	245		---	2.20		3.0
11		10.4	240		---	2.30		3.0
12		11.3	240		---	2.40		3.0
13		11.6	240		---	2.40		3.0
14		11.5	240		---	2.15		3.0
15		11.2	235		---	2.00		3.0
16		9.8	230		---	-----		3.0
17		7.9	240		---	E		2.9
18		5.4	260		---	E		2.8
19		4.9	285					2.75
20		5.0	305				1.9	2.55
21		5.0	350				2.2	2.5
22		5.0	330				2.4	2.5
23		5.0	350				2.2	2.5

Time: 15.0°E.
Sweep: 1.4 Mc to 16.0 Mc in 6 minutes, automatic operation.

Table 4

Anchorage, Alaska (61.2°N, 149.9°W) February 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(3.8)					2.4	(2.50)
01		(3.8)					2.5	(2.45)
02		(3.9)					3.4	(2.40)
03		(4.4)					2.6	(2.40)
04		(4.6)						(2.40)
05		(4.5)					1.7	(2.40)
06		(4.8)						2.40
07		(4.7)						(2.60)
08		5.9			(118)	1.70		2.90
09		7.0			117	2.40		3.00
10		8.0			123	2.70		3.00
11		9.2			121	2.85		2.90
12		10.6		---	(125)	2.80		2.90
13		11.2			125	2.75		2.90
14		11.5			125	2.60		2.90
15		11.7			129	2.50		2.90
16		11.7			130	(2.10)		2.90
17		11.1			131	(1.60)		2.95
18		9.2			---	----		2.90
19		7.0			---	----		2.90
20		(5.0)						(2.90)
21		(4.2)						(2.85)
22		(4.3)					2.2	(2.80)
23		(3.7)						(2.70)

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 5

Upsala, Sweden (59.8°N, 17.6°E) February 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		4.1	335				2.4	2.4
01		4.0	330				2.6	2.4
02		4.0	320				2.8	2.4
03		3.9	315				2.8	2.4
04		4.0	305				2.5	2.5
05		4.3	290				2.4	2.5
06		4.2	270		---	E	2.5	2.6
07		5.5	255		---	E	2.6	2.7
08		7.2	240		125	1.90	3.0	2.9
09		9.0	240		115	2.40	3.0	2.9
10		10.0	240		115	2.70	2.9	2.9
11		11.1	240		110	2.80	3.0	2.9
12	---	11.8	240	---	110	2.90		2.9
13		12.6	240		115	2.85		2.9
14		12.4	235		115	2.70	2.8	2.9
15		12.8	230		125	2.50		2.9
16		11.6	225		130	2.05	2.8	2.95
17		10.0	220		---	E		3.0
18		8.1	220		---	E		2.9
19		6.2	230					2.8
20		4.9	255					2.65
21		3.9	280					2.6
22		4.4	315					2.5
23		4.2	340					2.5

Time: 15.0°E.
Sweep: 1.4 Mc to 17.0 Mc in 6 minutes, automatic operation.

Table 6

Graz, Austria (47.1°N, 15.5°E) February 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		>4.6	350					
01		>4.6	350					
02		>4.4	365					
03		>4.4	370					
04		(4.6)	360					
05		4.2	320					
06		3.9	310					
07		>4.9	260					
08		>9.0	240					
09		>9.5	235					
10		>10.2	230					
11		>10.3	240		(128)	3.3		
12		>10.4	240		140	3.4		
13		>9.6	230					
14		>9.5	235		(130)	3.3		
15		>9.9	250					
16		>9.6	240					
17		>9.2	220					
18		>8.9	235					
19		(8.3)	245					
20		>4.8	260					
21		>4.9	280					
22		>4.6	300					
23		(5.0)	340					

Time: 15.0°E.
Sweep: 2.5 Mc to 11.5 Mc in 2 minutes or
2.5 Mc to 21.0 Mc in 50 seconds.

Table 7

Thule, Greenland (76.6°N, 68.7°W) January 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(6.4)	250					(2.70)
01		(5.9)	260					(2.80)
02		(5.7)	255					(3.00)
03		(5.7)	250					----
04		(5.2)	250					(2.90)
05		(5.0)	250					(2.70)
06		(5.3)	265					(2.80)
07		(5.8)	260					(2.70)
08		(5.6)	255					(2.70)
09		(5.8)	250					(2.80)
10		(7.3)	245					(2.70)
11		(5.5)	245					(2.90)
12		(7.2)	250					(3.00)
13		(7.3)	250					(2.85)
14		(8.6)	250					(2.80)
15		(8.0)	250					(2.80)
16		(6.6)	245					(2.85)
17		(7.8)	250					(2.75)
18		(6.9)	250					(2.65)
19		(7.1)	260					(2.70)
20		(6.3)	250		---	---		2.70
21		(7.6)	245					(2.70)
22		(5.9)	245					(2.60)
23		(5.9)	250					2.80

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 8

Point Barrow, Alaska (71.3°N, 156.8°W) January 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(4.6)	270				5.9	----
01		(5.0)	310				5.9	----
02		(4.5)	310				5.0	----
03		(5.5)	320				3.6	----
04		(4.6)	<325				3.6	----
05		---	350				3.5	
06		(5.9)	360		---	---	>2.7	----
07		(5.6)	370		---	---	3.3	----
08		(5.75)	(355)		---	---	3.3	----
09		(5.8)	320		---	---	3.7	----
10		(6.2)	305		---	---	3.2	(2.65)
11		(7.2)	300		---	---	3.0	(2.75)
12		(8.2)	280		---	---		2.75
13		9.75	270		---	---		2.85
14		(10.7)	260		---	---		2.82
15		(11.6)	250		---	---		2.85
16		11.4	260		---	---		2.80
17		(9.4)	250		---	---		(2.85)
18		(6.85)	270		---	---	2.0	(2.75)
19		(4.4)	280		---	---	2.8	----
20		---	290		---	---	3.0	
21		(5.2)	300		---	---	3.4	----
22		---	290		---	---	5.7	----
23		---	285		---	---	5.7	

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 9

Fairbanks, Alaska (64.9°N, 147.8°W) January 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(4.6)					3.9	(2.75)
01		(4.7)					4.4	(2.80)
02		(4.95)					5.0	----
03		(4.1)					4.5	----
04		(4.95)					5.3	(2.35)
05		(5.3)					4.2	(2.50)
06		(5.3)					2.8	(2.50)
07		(5.8)						(2.60)
00		(5.6)						(2.65)
09		(6.9)			---	---		(2.82)
10		(8.6)			---	---		(2.92)
11		(10.1)			---	---		2.95
12		11.3			---	---		2.95
13		(12.2)			---	---		2.90
14		12.8			---	---		2.90
15		(12.8)			---	---		2.90
16		(12.25)						2.90
17		(10.8)						(2.95)
18		(8.9)						(2.90)
19		(6.75)						(2.95)
20		(5.45)						(2.98)
21		(4.7)					2.2	(2.95)
22		(4.8)					3.6	(2.85)
23		(4.3)					3.8	(2.88)

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 10

Anchorage, Alaska (61.2°N, 149.9°W) January 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		3.8					2.6	2.60
01		(4.0)					2.4	(2.50)
02		4.3					2.8	2.35
03		(4.4)					3.0	(2.30)
04		(4.8)					3.2	(2.35)
05		(4.2)					1.8	2.30
06		(4.0)						2.30
07		(4.3)						(2.50)
00		(5.2)			135	----		(2.65)
09		7.4			115	(1.90)		2.90
10		9.5			(121)	(2.25)		2.95
11		11.8			<134	2.50		2.95
12		13.2			129	2.55		2.95
13		13.3			135	2.50		2.90
14		13.6			(137)	2.30		2.95
15		13.1			<143	2.10		2.90
16		12.9			139	(1.70)		2.90
17		11.6						2.90
18		9.6						2.90
19		7.8						2.90
20		6.0						2.90
21		4.8						2.90
22		4.2						2.75
23		4.0					1.4	2.70

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 11

Ft. Monmouth, New Jersey (40.4°N, 74.1°W) January 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.8	<250					2.70
01		6.8	<260					2.75
02		6.4	(260)					2.70
03		6.3	(250)					2.70
04		6.0	<260					2.70
05		5.9	<250					2.75
06		5.6	<245					2.80
07		6.4	240					2.95
08		10.3	220		111	(2.45)		3.10
09		13.3	220		109	3.00		3.05
10		15.1	215		109	3.30		3.00
11		15.2	220		107	3.55		2.95
12		15.0	215		105	3.65		2.85
13	---	14.2	215		109	3.60		2.80
14		14.1	220		109	3.40		2.80
15		14.1	225		109	3.10		2.80
16		13.6	225		111	2.50		2.80
17		13.1	225					2.85
18		12.2	220					2.80
19		10.8	225					2.80
20		9.8	230					2.80
21		9.1	240					2.80
22		8.0	<240					2.80
23		7.5	240					2.80

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 12

Grand Bahama I. (26.6°N, 78.2°W) January 1958

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.3	250					2.90
01		6.75	240					3.00
02		5.55	240					2.85
03		5.0	260					2.62
04		4.85	<300					2.50
05		5.1	290					2.70
06		5.4	260				(2.3)	2.90
07		7.4	255		<180	1.80		3.00
00		11.35	230		110	2.75	2.2	3.10
09		13.55	230		109	3.28	3.3	3.05
10		14.0	220		109	3.60	4.0	3.00
11		13.4	210	---	109	3.80	4.2	2.80
12		13.4	210	---	109	4.00	4.0	2.70
13		13.2	220	---	107	4.00	4.0	2.60
14	---	13.1	225	---	109	3.90	3.8	2.55
15	---	12.85	230	---	109	3.62	3.7	2.60
16		12.7	235		111	3.25	2.7	2.60
17		12.4	240		119	2.50	2.4	2.65
18		12.0	235				3.3	2.70
19		10.5	245				3.1	2.75
20		9.9	250				2.0	2.80
21		9.1	240				1.9	2.85
22		8.2	245					2.80
23		7.8	250					2.85

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 13

Thule, Greenland (76.6°N, 68.7°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(6.1)	270					(2.50)
01		5.8	270					2.75
02	---	5.6	260					2.70
03		(5.4)	250					(2.75)
04		(5.5)	265					2.00
05		(4.6)	260					(2.70)
06		(5.0)	270					(2.75)
07		(4.9)	270		---	---		(2.80)
08		(4.6)	265					(2.90)
09		(6.5)	255					(2.80)
10		(6.2)	250					(2.80)
11		(7.7)	255					(2.80)
12		(6.6)	260					(2.65)
13		(7.0)	260					(2.65)
14		(7.5)	250					(2.65)
15		(0.0)	250					(2.60)
16		(0.0)	260					(2.55)
17		(7.0)	260					2.70
18		(8.0)	265					(2.55)
19		(6.6)	<260					(2.45)
20		(5.7)	260					(2.55)
21		(5.8)	260					----
22		(6.2)	260					(2.65)
23		(5.8)	260					(2.75)

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 14

Resolute Bay, Canada (74.7°N, 94.9°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.8	260		---	---		---
01		5.6	260		---	---		(2.4)
02		6.0	260		---	1.2		
03		6.0	260		---	---		---
04		5.1	260		---	1.1		---
05		5.0	260		---	---		---
06		5.2	270		---	1.1	1.6	---
07		(4.7)	280		---	1.1	1.1	---
08		5.0	290		---	1.1	1.5	---
09		5.5	260		---	1.1		---
10		6.0	260		---	1.2	2.4	
11		6.7	260		---	1.1	1.6	---
12		7.0	240		---	1.2	1.2	---
13		7.6	250		---	1.1	1.1	---
14		6.9	250		---	1.1		(2.5)
15		(7.2)	250		---	1.0		---
16		7.0	250		---	1.1		---
17		6.6	260		---	---		---
18		6.2	280		---	1.0		
19		6.3	260		---	1.0		---
20		6.0	260		---	---		---
21		6.0	260		---	---		---
22		6.0	260		---	---		---
23		6.0	260		---	---		---

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 15

Point Barrow, Alaska (71.3°N, 156.8°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.3)	300				4.5	----
01		---	320				6.0	----
02		(4.4)	<300				5.4	----
03		---	340				4.2	----
04		---	315				4.2	
05		---	330				3.8	----
06		(4.95)	340		---	---	>3.1	----
07		(5.3)	325		---	---	4.2	----
00		(5.3)	330		---	---	3.2	(2.40)
09		(5.95)	<325		---	---	3.8	(2.40)
10		(6.9)	315		---	---		(2.55)
11		(7.6)	320		---	---	2.6	(2.70)
12		(7.3)	305		---	---		(2.70)
13		(8.7)	290		---	---		2.70
14		10.0	275		---	---		2.70
15		10.95	265		---	---		2.75
16		(10.7)	270		---	---		2.75
17		8.1	280		---	---	2.0	(2.70)
18		(6.4)	300		---	---	2.9	(2.70)
19		(5.7)	285		---	---	3.0	----
20		(5.75)	305		---	---	3.5	----
21		---	300				4.4	----
22		---	310				5.2	----
23		(5.5)	305				4.3	----

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 16

Tromso, Norway (69.7°N, 19.0°E) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.2)	---				4.3	----
01		(5.6)	(355)				3.3	----
02		(5.2)	---				3.8	----
03		(6.0)	(345)				4.2	(2.30)
04		5.8	(330)				4.0	(2.30)
05		6.0	---				4.0	(2.40)
06		5.6	(300)					2.55
07		5.4	(300)					2.50
00		5.5	310					2.40
09		6.6	300					2.55
10		9.1	260		---	----		2.65
11		11.2	250		140	1.70		2.70
12		12.6	250		130	1.80	1.8	2.70
13		12.2	250		140	1.70	1.8	2.75
14		10.3	255		---	----	1.9	2.70
15		6.2	260		---	----	2.3	2.70
16		5.5	260		---	----	2.8	2.70
17		4.7	260		---	----	2.9	2.70
18		5.2	(280)		---	----	3.2	2.65
19		4.8	(300)				4.0	2.60
20		(5.0)	(350)				4.0	----
21		(5.4)	---				>4.0	----
22		(4.9)	---				3.2	----
23		---	---				3.6	----

Time: 15.0°E.
Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 17

Fairbanks, Alaska (64.9°N, 147.8°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.0)					4.4	(2.70)
01		(5.0)					4.4	(2.75)
02		---					4.7	----
03		---					4.2	----
04		---					4.0	----
05		(5.25)					2.1	----
06		(5.5)						(2.50)
07		(4.9)						(2.50)
00		(5.5)						(2.60)
09		(6.2)						(2.75)
10		(8.4)						(2.90)
11		(10.4)						(3.00)
12		(11.2)						(3.00)
13		11.95						2.95
14		12.0						2.92
15		(12.0)						(2.88)
16		(11.25)						2.90
17		(9.45)						2.90
18		(7.2)						(2.90)
19		(5.7)						2.88
20		(5.0)						(2.85)
21		(4.9)					2.6	(2.90)
22		(4.5)					4.2	(2.78)
23		(4.5)					4.0	----

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 18

Baker Lake, Canada (64.3°N, 96.0°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.0	280				6.2	---
01		5.2	280		---	---	5.0	---
02		5.0	280		---	---	5.0	---
03		4.9	300		---	---	4.8	---
04		4.7	300		---	1.8	5.0	
05		4.8	300		---	2.0	5.0	---
06		4.5	300		125	1.8	5.0	
07		4.5	290		135	(1.8)	4.2	
08		4.8	300		140	(2.0)	4.0	---
09		4.8	300		120	2.0	4.1	---
10		6.2	290		115	2.2	4.0	
11		6.8	290		110	(2.4)	4.4	---
12		8.2	270		120	2.4	3.9	(3.0)
13		10.0	270		120	2.3	3.0	---
14		(9.0)	260		110	2.2	3.4	---
15		7.3	280		120	2.0	4.0	---
16		(6.2)	280		130	1.8	4.0	---
17		5.5	300		---	(1.8)	4.2	---
18		5.4	290		120	(2.0)	4.6	
19		(5.8)	300		---	1.8	5.1	
20		5.3	270		---	2.0	5.0	
21		5.5	280		---	---	6.8	---
22		5.3	300		---	---	6.8	---
23		5.2	280		---	---	6.0	---

Time: 90.0°W.
Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 19

Reykjavik, Iceland (64.1°N, 21.8°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		---	305				2.8	----
01		---	400				3.0	----
02		---	370				3.6	----
03		---	410				3.8	----
04		(5.9)	360				2.9	----
05		(5.8)	345					(2.60)
06		(5.8)	300					(2.50)
07		(5.5)	300					(2.60)
00		(5.0)	320					(2.60)
09		6.4	300					2.70
10		9.1	270		---	---		2.85
11		>11.0	250		---	---		(2.90)
12		>12.4	250		---	---		(2.85)
13		>12.5	240		---	---		(2.85)
14		12.0	250		---	---		2.90
15		>12.0	260		---	---		----
16		>10.3	280		---	---		(2.55)
17		7.0	285					(2.70)
18		>5.7	300				2.5	----
19		(5.2)	335				2.8	(2.50)
20		---	370				3.4	----
21		---	370				3.2	
22		---	385				5.1	
23		---	370				3.4	----

Time: 15.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 20

Anchorage, Alaska (61.2°N, 149.9°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(4.2)					3.1	2.50
01		(4.3)					3.4	(2.40)
02		(4.4)					4.1	(2.40)
03		(4.7)					3.6	(2.40)
04		(4.6)					3.5	(2.40)
05		(4.6)					2.8	(2.35)
06		(4.6)					2.0	(2.45)
07		(4.5)						(2.40)
00		4.8						2.50
09		6.8			117	(1.80)	2.0	2.70
10		9.0			(115)	(2.20)		2.90
11		11.2			<131	2.35		2.95
12		12.6			129	2.40		2.90
13		13.2			127	2.40		2.90
14		13.2			139	(2.15)		2.85
15		12.5			(131)	(1.70)		2.80
16		11.8			---	----		2.80
17		10.8						2.85
18		8.8						2.85
19		6.4						2.80
20		4.9						2.80
21		4.3						2.70
22		(3.8)					1.2	(2.70)
23		(3.8)					2.6	(2.50)

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 21

Nurmijarvi, Finland (60.5°N, 24.6°E) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.0)					<1.7	(2.40)
01		3.4					<1.7	2.40
02		4.2					<1.7	2.40
03		3.6					<1.7	2.50
04		3.4					<1.6	2.50
05		(3.4)					<1.5	(2.50)
06		---						----
07		4.2						2.60
08		5.1						2.55
09		7.2						2.75
10		10.3						2.85
11		13.0						2.90
12		14.0						2.90
13		15.0						2.80
14		15.0						2.90
15		14.0						2.90
16		13.0						2.90
17		11.5						2.90
18		9.4						2.85
19		7.6						2.00
20		5.8					<1.8	2.70
21		5.0					<1.7	2.60
22		4.7					<1.8	2.50
23		4.8					<1.7	2.40

Time: 30.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 1 minute.

Table 22

Upsala, Sweden (59.8°N, 17.6°E) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		3.7	360				2.5	2.4
01		3.4	340				3.0	2.4
02		3.4	330				3.2	2.4
03		3.4	320				3.0	2.4
04		3.5	295				3.0	2.5
05		4.3	275				3.1	2.5
06		4.0	270				3.0	2.5
07		4.2	260				3.2	2.6
08		6.2	245		---	E	3.2	2.7
09		9.3	240		115	1.80	4.9	2.9
10		12.5	240		115	2.20	5.0	2.9
11		14.3	235		115	2.50	4.3	2.9
12		14.9	230	---	125	2.50	4.8	2.8
13		15.2	235		125	2.40	3.1	2.8
14		14.7	225		125	2.10	3.2	2.8
15		13.6	225		---	1.60	3.1	2.9
16		12.5	220		---	E	3.1	2.9
17		9.5	220				2.7	2.9
18		7.7	220				3.0	2.8
19		6.1	240				2.6	2.8
20		4.8	260				2.5	2.6
21		4.3	290				2.5	2.5
22		4.2	320				2.3	2.4
23		4.2	345				2.5	2.4

Time: 15.0°E.
Sweep: 1.4 Mc to 17.0 Mc in 6 minutes, automatic operation.

Table 23

De Bilt, Holland (52.1°N, 5.2°E) December 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	4.8						2.50
01	320	4.6						2.55
02	315	4.3						2.60
03	300	4.0						2.60
04	300	3.6						2.65
05	280	3.4						2.70
06	290	3.3						2.70
07	250	5.1			---	---		2.90
08	220	9.0			150	2.2		3.05
09	215	12.2			130	2.8		3.10
10	215	13.9			120	3.1		3.10
11	215	>13.6			115	3.2		(3.20)
12	220	>14.1			120	3.2		(3.00)
13	220	>14.2			120	3.0		(2.90)
14	215	>14.2			120	2.9		(3.05)
15	215	>13.0			---	2.5		3.00
16	210	>11.8			---	1.8		3.00
17	210	10.7						3.00
18	220	8.5						3.00
19	230	6.9						2.95
20	250	5.7						2.75
21	280	5.2						2.75
22	300	5.0						2.65
23	330	4.6						2.50

Time: 0.0°.
Sweep: 1.4 Mc to 16.0 Mc in 40 seconds.

Table 24

Adak, Alaska (51.9°N, 176.6°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		3.5	340					2.40
01		3.3	340					2.40
02		3.3	<355					2.30
03		3.3	(370)					2.30
04		3.2	(360)					2.40
05		3.2	<340					2.40
06		3.1	(310)					2.40
07		4.7	265		---	E		2.40
00		8.1	245		109	(2.10)		2.85
09		11.6	240		(121)	----		3.00
10		13.8	235		125	2.90		3.00
11		14.3	235		125	3.00		2.90
12		14.0	230		<125	3.00		2.85
13		13.8	235		121	2.95		2.80
14		13.5	240		<124	(2.50)		2.80
15		12.6	235		---	----		2.85
16		11.3	230		---	E		2.80
17		9.0	230		---	----		2.85
18		8.2	235					2.90
19		5.9	235					3.00
20		4.2	250					2.80
21		3.8	285					2.70
22		3.7	300					2.55
23		3.6	(315)					2.50

Time: 180.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 25

Winnipeg, Canada (49.9°N, 97.4°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.0	200					---
01		5.0	290				3.6	---
02		5.5	300				4.0	---
03		5.3	300				2.9	---
04		5.0	300				2.0	---
05		5.2	300				2.3	---
06		5.3	290		---	---		---
07		5.2	200		---	---		---
08		6.2	200		---	1.7		(2.85)
09		9.0	240		115	2.4		2.9
10		11.5	230		110	2.8		2.85
11		13.2	230		110	3.0		(2.05)
12		14.0	230	---	110	3.0		2.9
13		14.0	230		110	3.1		2.8
14		13.8	240		110	3.0		(2.7)
15		13.6	230		110	2.8		---
16		13.2	240		120	2.3		---
17		12.8	230		---	1.6		(2.8)
18		11.0	240					---
19		10.0	240					(2.8)
20		8.2	240					(2.8)
21		7.2	270					(2.0)
22		6.4	280					(2.75)
23		5.7	200					---

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 26

St. John's, Newfoundland (47.6°N, 52.7°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.6	300					2.40
01		5.9	320					2.50
02		5.9	300					2.50
03		5.6	285					2.55
04		5.8	285					2.60
05		5.4	280					2.60
06		5.2	265					2.65
07		7.0	260		(129)	1.75		2.90
00		10.6	230		129	2.40	2.7	3.00
09		13.0	230		120	2.90	3.0	3.00
10		14.6	230		119	3.10	3.1	2.95
11		14.8	230		118	3.30		2.90
12		15.0	225		119	3.30		2.85
13		14.8	230		119	3.10		2.80
14		14.6	230		119	2.80		2.80
15		13.8	235		(129)	2.40		2.80
16		13.0	235					2.80
17		11.5	235					2.75
18		10.0	245					2.75
19		8.5	250					2.70
20		7.8	265					2.60
21		7.0	280					2.60
22		6.0	300					2.55
23		5.2	300					2.50

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 27

Graz, Austria (47.1°N, 15.5°E) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		>4.7	360					
01		>4.6	370					
02		>4.7	360					
03		>4.7	360					
04		4.4	340					
05		4.0	320					
06		4.0	325					
07		>4.0	295					
08		>9.0	240					
09		>9.4	250	---	---	---		
10		>9.5	250	---	---	3.2		
11		>9.5	250	---	---	3.4		
12		>9.4	250	---	---	(3.3)		
13		>9.5	250	---	---	3.3		
14		>9.5	250	---	---	---		
15		>9.5	250					
16		>9.4	250					
17		>9.0	250					
18		>8.8	250					
19		(7.8)	260					
20		>4.9	275					
21		>4.8	300					
22		>4.8	340					
23		>4.7	345					

Time: 15.0°E.
Sweep: 2.5 Mc to 11.5 Mc in 2 minutes or 2.5 Mc to 21.0 Mc in 50 seconds.

Table 28

Schwarzenburg, Switzerland (46.8°N, 7.3°E) December 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	5.4						3.0
01	300	5.2						2.9
02	300	5.3						2.8
03	300	5.2						2.8
04	200	5.0						2.9
05	270	4.6						3.0
06	270	4.1						2.9
07	250	4.5						3.0
08	220	8.0				---		3.4
09	200	11.0			100	2.4		3.5
10	200	13.8			100	2.8		3.4
11	200	14.8			100	3.0		3.3
12	200	14.6			100	3.2		3.3
13	200	14.2			100	3.2		3.2
14	200	14.0			100	3.0		3.2
15	210	13.4			100	2.8		3.2
16	210	12.6			100	2.3		3.3
17	210	11.0				---		3.25
18	210	9.8						3.3
19	210	8.9						3.2
20	220	7.7						3.1
21	240	6.4						3.1
22	300	5.9						3.0
23	200	5.4						3.0

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

Table 29

Ft. Monmouth, New Jersey (40.3°N, 74.1°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.6	(260)					2.60
01		6.7	(270)					2.60
02		6.5	<270					2.70
03		6.0	(260)					2.70
04		5.8	<270					2.60
05		5.9	(255)					2.65
06		5.6	<260					2.70
07		6.8	250					2.90
00		10.0	230		118	2.50		3.10
09		12.6	220		<115	3.10		3.10
10		13.9	225		113	3.40		2.95
11		14.2	220		111	3.60		2.85
12		13.8	220		<111	3.60		2.80
13		13.8	230		(111)	3.50		2.75
14		13.6	230		111	3.30		2.70
15		13.0	230		111	----		2.70
16		12.6	230		---	----		2.75
17		12.0	240				2.6	2.75
18		11.0	235					2.75
19		9.8	240					2.75
20		8.8	240					2.75
21		7.8	250					2.70
22		7.4	250					2.70
23		7.0	260					2.70

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 30

White Sands, New Mexico (32.3°N, 106.5°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		4.7	<295					2.60
01		4.5	<295					2.60
02		4.4	<300					2.60
03		4.3	<300					2.60
04		4.0	<300					2.50
05		3.9	(300)					2.60
06		3.8	<300					2.65
07		6.8	270		<172	1.95		2.85
00		10.4	245		119	2.80		3.05
09		12.4	240		115	3.25		3.00
10		12.9	240		111	3.60		2.85
11	---	13.0	235	---	113	3.80		2.70
12	---	13.0	235	---	115	3.90		2.65
13	---	12.8	240	---	113	3.80	4.0	2.55
14	---	12.6	240	---	<115	3.60	4.0	2.55
15		12.3	240	---	117	3.20	3.5	2.55
16		11.8	245		119	2.80	2.8	2.60
17		11.3	250		---	----	2.2	2.65
18		10.4	250				3.4	2.65
19		9.3	250				2.4	2.75
20		7.8	240				2.1	2.80
21		6.6	<250					2.80
22		5.5	<270				2.2	2.70
23		4.9	(280)					2.60

Time: 105.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 31

Grand Bahama I. (26.6°N, 78.2°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.0	265					2.70
01		5.9	265					2.75
02		5.5	260					2.70
03		4.8	280					2.60
04		4.9	310					2.50
05		5.0	290					2.60
06		5.1	270				(3.0)	2.80
07		8.0	260		(155)	2.05		2.95
00		11.4	240		117	2.90		3.00
09		12.9	235		111	3.40		2.95
10		12.9	230		111	3.75		2.80
11	---	12.4	230		109	3.95	4.0	2.75
12	---	12.2	220	---	109	4.00		2.60
13	---	11.8	230	---	109	4.00	4.0	2.50
14	---	11.9	230	---	109	3.85	4.0	2.50
15	---	11.6	235	---	113	3.50	3.7	2.50
16		11.2	240		113	3.15		2.55
17		11.0	250		131	2.35		2.60
18		10.2	245				3.0	2.60
19		9.5	260				1.9	2.65
20		8.8	255				2.0	2.70
21		8.2	250				1.9	2.75
22		7.4	250					2.80
23		6.6	250					2.75

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 32

Okinawa I. (26.3°N, 127.8°E) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		11.6	250					2.75
01		11.2	260					2.80
02		9.7	245					3.00
03		8.4	230					2.85
04		7.1	230					2.95
05		5.2	<250					2.60
06		5.3	<300					2.55
07		8.4	280					2.80
08		11.9	250		119	(2.70)		3.05
09		13.9	245		113	3.30		3.00
10		14.5	240		111	3.65		2.90
11	---	13.5	230	---	111	3.85		2.65
12	(420)	13.6	230	7.1	111	4.00	4.1	2.55
13	415	14.2	230	7.4	111	4.00	4.0	2.50
14	410	14.4	235	7.2	111	3.90		2.50
15	400	14.3	240	6.6	113	3.65		2.50
16	---	14.4	245	---	116	3.20		2.50
17		14.4	260		<123	(2.60)		2.60
18		>14.0	260				3.1	2.65
19		14.3	260					2.65
20		(15.0)	250					2.75
21		(15.4)	240					(2.80)
22		(14.1)	230					2.80
23		(13.0)	230					(2.75)

Time: 135.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 33

Formosa, China (25.0°N, 121.5°E) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		12.4	260					2.70
01		11.5	250					2.95
02		9.4	240					3.00
03		8.2	240					3.00
04		5.7	(240)					2.65
05		5.5	<280					2.55
06		6.6	290					2.60
07		10.6	270			(2.2)		2.90
00		14.0	250			(3.0)	3.4	3.00
09		14.8	240			3.6	3.7	2.90
10		14.3	240			3.9	4.2	2.00
11	---	14.1	240	---		4.0	4.3	2.55
12	(390)	14.7	240	(7.2)		4.1	4.3	2.50
13	(440)	15.0	240	---		4.1	4.4	2.45
14	(450)	15.3	240	(7.0)		3.9	4.2	2.45
15	(420)	15.5	240	---		3.6	4.0	2.45
16	---	15.2	250			3.1	3.5	2.50
17		15.9	270			2.0	2.7	2.50
18		>16.3	270				1.9	2.55
19		16.0	280					2.55
20		17.0	270					2.65
21		(16.1)	240					2.75
22		14.9	230					2.75
23		12.9	240					2.70

Time: 120.0°E.
Sweep: 1.1 Mc to 19.5 Mc in 15 minutes, manual operation.

Table 34

Puerto Rico, W.I. (18.5°N, 67.2°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.0	245					2.80
01		6.2	245					2.80
02		5.6	245					2.80
03		4.6	250					2.60
04		4.7	<300					2.40
05		4.9	305					2.50
06		5.2	275				(2.5)	2.75
07		8.2	265		<155	(2.00)		2.90
08		11.8	245		111	2.80		3.00
09		13.5	240		109	3.45		3.00
10		13.0	235		109	3.80		2.85
11		12.3	230		109	(4.00)	4.1	2.70
12	---	11.7	220	7.3	109	(4.05)	4.2	2.55
13	400	11.4	225	6.7	109	(4.05)	4.5	2.50
14	(420)	11.4	230	6.7	109	(3.95)	4.2	2.45
15	---	11.0	240	6.9	109	3.75	3.8	2.45
16		10.9	240	---	112	3.40	3.5	2.50
17		10.8	250		119	2.70	3.0	2.55
18		10.6	270				2.0	2.65
19		9.9	(255)					2.60
20		9.4	275					2.65
21		9.1	270					2.70
22		8.6	250					2.75
23		7.8	245					2.90

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 35

Panama Canal Zone (9.4°N, 79.9°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		0.8	240					2.75
01		7.4	225					2.65
02		6.4	245					2.60
03		5.8	270					2.60
04		5.4	280					2.45
05		5.6	295					2.45
06		7.4	285				4.4	2.60
07		11.4	270		126	2.60	2.8	2.80
00		13.7	250		113	3.20	3.5	2.90
09		13.8	240		109	3.75		2.75
10	---	13.5	235		107	4.00	4.6	2.65
11	440	12.9	235	7.7	107	4.20	4.9	2.50
12	450	12.5	240	7.3	107	4.20	5.1	2.40
13	470	12.4	230	7.0	109	4.20	5.1	2.35
14	470	12.3	235	6.6	109	4.10	4.8	2.30
15	450	11.8	240	6.8	110	3.90	4.7	2.30
16	460	11.6	250		115	3.60	4.8	2.35
17		11.3	270		<121	3.00	4.4	2.35
10		11.0	<290				4.4	2.50
19		11.3	<270				2.9	2.60
20		10.3	270				3.0	2.60
21		10.2	270				2.1	2.60
22		10.5	250					2.70
23		10.0	235					2.75

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 36

Talara, Peru (4.6°S, 81.3°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		10.8	295				4.6	2.50
01		10.2	275				5.0	2.50
02		9.8	265				4.4	2.65
03		9.3	250				4.6	2.80
04		8.6	245				4.5	2.90
05		7.4	240				4.4	3.05
06		7.8	270				4.1	2.75
07		11.2	265		119	2.80	4.4	2.70
00		13.4	250		111	3.50	3.9	2.65
09		14.1	235		109	4.00	4.6	2.55
10	(500)	14.2	230	---	111	4.30	4.4	2.40
11	(525)	14.3	220	(7.2)	111	4.45		2.25
12	580	14.1	215	7.0	111	4.50		2.20
13	575	13.9	220	6.9	109	4.40	4.7	2.15
14	600	13.8	(220)	6.5	109	4.30	4.6	2.05
15	---	13.2	225	---	109	4.00	4.7	2.05
16		13.1	245		109	3.75	4.9	2.05
17		(13.0)	260		113	3.25	4.4	(2.10)
18		>12.7	290		127	2.50	4.5	(2.15)
19		(12.8)	330				4.3	(2.25)
20		(12.0)	360				3.1	(2.30)
21		(11.6)	320				3.1	(2.25)
22		11.8	<310				3.7	(2.35)
23		11.5	(290)				4.5	2.45

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 37

Huancayo, Peru (12.0°S, 75.3°W) December 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		8.5	420				3.5	2.20
01		8.1	395				4.0	2.30
02		8.8	350				4.3	2.55
03		8.7	300				4.4	2.75
04		8.1	250				4.5	2.85
05		7.2	250				4.7	2.85
06		9.6	200		119	2.40	5.0	2.70
07		11.7	255		109	3.20	6.0	2.55
08		13.1	240		109	3.75	9.0	2.40
09		13.7	230		109	(4.15)	9.0	2.35
10		14.0	225		---	(4.40)	11.0	2.20
11		13.6	220		---	4.50	11.0	2.05
12	---	13.5	215	6.0	---	(4.50)	11.0	2.00
13	---	13.3	210	6.6	---	----	11.5	1.95
14	---	12.7	215	6.4	---	----	11.0	1.95
15		12.0	225	6.0	---	(4.00)	11.0	1.95
16		12.0	245		107	(3.65)	9.0	1.95
17		11.7	265		109	(3.20)	7.2	2.00
18		11.6	300		---	(2.30)	5.0	2.05
19		11.4	355					2.05
20		10.5	(420)					2.05
21		9.0	(420)					2.00
22		9.1	(400)					2.05
23		8.0	(400)					2.15

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 38

Resolute Bay, Canada (74.7°N, 94.9°W) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		6.2	260		---	---	3.2	(2.5)
01		6.0	260		---	---	<1.2	(2.4)
02		6.0	270		---	---	1.7	(2.5)
03		5.9	270		---	---	<2.1	(2.6)
04		6.0	270		---	---	3.4	(2.6)
05		(5.0)	200		---	---	3.5	----
06		5.0	280		---	---	<2.9	(2.65)
07		5.2	280		---	1.3	<2.4	
08		5.2	200		---	1.4	3.5	----
09		6.4	260		---	1.6	3.2	(2.5)
10		7.1	260		130	1.6	<3.8	(2.65)
11		7.0	270		135	1.7	<2.2	(2.65)
12		8.1	270		130	1.7	3.5	----
13		9.3	270		130	1.7	1.9	(2.6)
14		7.9	270		170	1.6	1.8	(2.4)
15		7.6	270		---	1.3	<1.5	(2.4)
16		7.8	280		---	1.3	<1.4	----
17		7.2	260		---	1.1	<1.2	----
18		(7.0)	270		---	---	(1.1)	
19		6.7	270		---	1.2	<1.3	----
20		6.6	270		---	1.1	<1.3	----
21		6.6	270		---	---	<1.2	----
22		6.4	280		---	---	<1.3	----
23		6.4	260		---	---	<1.8	----

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 39

Kiruna, Sweden (67.8°N, 20.3°E) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.0	360				(4.5)	2.4
01		7.0	365				(4.1)	2.4
02		7.0	330				(3.5)	2.4
03		7.0	325				(3.3)	2.4
04		7.0	280				(3.0)	2.4
05		6.0	265				(3.3)	2.5
06		6.0	255		---	---	2.0	2.4
07		6.0	265		---	---	(2.3)	2.45
00		7.3	270		---	1.8	1.9	2.6
09		9.5	250		---	1.9		2.75
10		11.8	250		---	2.0		2.8
11		12.9	245		---	2.0		2.0
12		14.0	245		---	2.1	(2.4)	2.0
13		14.0	240		---	2.0		2.0
14		13.0	240		---	1.8	2.0	2.8
15		9.8	240		---	1.0	2.0	2.8
16		7.0	240		---	---	(3.3)	2.7
17		5.2	240				2.8	2.75
18		6.0	265				(3.3)	2.6
19		5.0	330				(3.3)	2.5
20		6.0	360				(4.0)	2.6
21		5.5	365				(4.2)	2.4
22		6.4	370				(3.5)	2.4
23		7.0	365				(4.3)	2.4

Time: 15.0°E.
Sweep: 0.8 Mc to 14.0 Mc in 30 seconds.

Table 40

Baker Lake, Canada (64.3°N, 96.0°W) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		6.0	280				4.5	---
01		5.4	290		---	---	4.0	---
02		5.6	290		---	---	4.5	
03		5.4	300		---	---	4.5	---
04		5.1	310		---	---	4.8	---
05	---	(5.0)	300	---	130	1.7	5.0	---
06	---	5.0	300	---	125	(1.8)	4.6	
07	---	5.0	310	---	125	1.8	4.7	---
08	---	5.0	310	---	120	2.1	5.0	---
09	---	5.9	300	---	110	2.4	4.2	---
10	---	6.7	290	---	120	2.5	4.0	---
11	---	8.0	280	---	110	2.6	4.0	(2.9)
12	---	10.0	270	---	115	2.6	3.5	(2.8)
13	---	12.9	270	---	120	2.6	3.5	(2.0)
14	---	(11.0)	270	---	120	2.3	<2.9	(2.85)
15	---	(8.0)	290	---	120	2.2	3.0	---
16		(7.2)	200		120	2.0	4.0	---
17		(6.4)	300		120	2.0	4.0	---
18		6.2	300		120	2.2	5.3	
19		5.8	300		120	2.0	5.0	
20		6.0	300		120	(1.9)	5.0	---
21		6.0	280		---	---	5.4	
22		6.0	280		---	---	6.0	---
23		5.8	300		---	---	6.3	---

Time: 90.0°W.
Sweep: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 41

Oslo, Norway (60.0°N, 11.1°E) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.3	350					2.40
01		4.6	340					2.40
02		4.3	340					2.40
03		4.4	320				1.7	2.40
04		4.4	310					2.45
05		4.2	270					2.55
06		4.1	250					2.55
07		(4.7)	250		---	----		2.40
00		7.6	250		115	(1.80)		2.70
09		10.9	250		115	2.20	3.0	2.80
10	---	13.4	240		115	2.55	3.0	2.85
11	240	14.8	240		115	2.70	2.9	2.80
12	240	(15.5)	(250)		115	2.80	2.9	(2.80)
13	240	>15.6	(250)		115	2.75	3.0	(2.70)
14	240	(15.3)	240		125	2.50	2.9	(2.80)
15	---	(14.7)	240		120	2.20		2.00
16		14.3	240		---	(1.75)		2.80
17		12.6	225					2.80
18		10.2	240					2.80
19		8.2	240					2.70
20		6.7	260					2.55
21		6.3	290					2.55
22		5.7	300					2.45
23		5.1	315					2.35

Time: 15.0°E.
Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 42

Churchill, Canada (58.8°N, 94.2°W) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		6.0	300		125	2.0	4.5	
01		5.5	320		125	2.0	4.4	
02		5.5	320		130	2.0	4.4	
03		6.0	340		120	2.1	4.2	---
04		5.3	320		120	2.1	4.0	---
05		5.1	360		120	2.1	3.2	---
06		5.4	320		120	2.2	3.8	
07		5.5	340		115	2.2	4.0	
08		6.6	310		110	2.2	4.0	---
09		8.5	280		110	2.6	3.8	(2.6)
10		9.6	280		120	2.9	3.8	2.7
11		11.2	260		120	3.0		2.6
12		13.0	250		120	2.9		2.5
13	---	13.9	250	---	125	2.8		(2.6)
14		14.3	260		125	2.7		(2.6)
15		14.0	270		125	2.2		---
16		11.2	270		125	2.0	2.2	---
17		8.0	290		130	1.8	2.4	---
18		6.2	300		120	2.0	3.2	---
19		7.0	310		120	2.4	3.2	---
20		6.5	320		120	2.3	5.0	---
21		6.0	300		125	2.2	4.2	---
22		6.0	320		120	2.0	4.8	---
23		6.4	300		130	2.0	4.9	---

Time: 90.0°W.
Sweep: 1.0 Mc to 17.0 Mc in 16 seconds.

Table 43

Inverness, Scotland (57.4°N, 4.2°W) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		5.3	330				<1.4	2.60
01		5.1	350				<1.4	2.50
02		5.1	340				<1.4	2.60
03		4.7	335				<1.4	2.70
04		4.5	300				<1.4	2.70
05		4.3	285				<1.4	2.80
06		4.2	280				<1.4	2.80
07		(5.2)	275				<1.6	2.75
00		8.0	250		130	1.85	<2.1	3.10
09		11.6	245		110	2.35		3.20
10		13.8	240		110	2.70		3.15
11		>15.0	235		110	2.90		2.95
12		>15.0	235		110	3.00		<3.00
13		>15.0	235		110	2.90		(2.90)
14		>15.0	240		115	2.70		<3.00
15		>15.0	230		125	2.40		3.00
16		14.2	235		150	1.90		3.10
17		12.5	235				<1.6	3.10
18		10.4	225				<1.6	3.05
19		8.4	230				<1.6	2.95
20		7.1	255				<1.6	2.85
21		6.4	275				<1.6	2.80
22		6.0	310				<1.6	2.60
23		5.7	310				<1.6	2.60

Time: 0.0°.
Sweep: 0.67 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 44

Meanook, Canada (54.6°N, 113.3°W) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.8	280				4.2	
01		5.6	280				4.8	
02		5.4	300				5.0	
03		5.1	300				4.6	
04		5.0	330				4.0	
05		5.3	290				4.2	
06		5.0	300					
07		5.1	300					
08		6.4	280		---	2.0		
09		8.7	240		---	2.4		
10		10.6	230		110	2.8		
11		12.4	230		110	3.0		
12		13.6	230		105	3.0		
13		13.8	230		105	3.0		
14		14.2	230		105	2.9		
15		14.0	230		105	2.7		
16		14.0	230		---	2.3		
17		13.2	230		---	---		
18		11.8	230		---	---		
19		10.2	230					
20		8.7	240					
21		7.2	240					
22		6.8	250					
23		6.1	280				3.8	

Time: 105.0°W.
Sweep: 1.6 Mc to 20.0 Mc in 15 seconds.

Table 45

Winnipeg, Canada (49.9°N, 97.4°W) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		6.5	300					(2.6)
01		6.0	300				2.5	---
02		6.0	310					(2.6)
03		5.8	310					---
04		5.9	300					---
05		5.6	310					(2.6)
06		5.6	300					---
07		6.0	300		---	---		---
08		7.8	280		110	2.0		(2.7)
09		10.0	250		110	2.8		(2.8)
10		11.4	240		110	3.0		(2.75)
11		13.2	240		105	3.2		(2.8)
12		13.2	240		105	3.1		---
13		(13.6)	240		100	3.2		---
14		13.9	240		110	3.1		---
15		14.0	240		110	3.0		---
16		(13.6)	250		110	2.5		---
17		(13.0)	250		---	1.8		---
18		11.2	240					---
19		10.1	240					---
20		9.1	260					(2.7)
21		8.2	280					(2.6)
22		7.3	280					(2.65)
23		7.0	280					(2.6)

Time: 90.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 46

Graz, Austria (47.1°N, 15.5°E) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		(6.6)	350					
01		(6.1)	355					
02		(5.8)	360					
03		>4.9	360					
04		>4.9	320					
05		>4.6	300					
06		>4.3	305					
07		7.6	260					
00		>9.4	250					
09		>9.9	250					
10		>10.4	250			(3.4)		
11		>10.2	250			3.5		
12		>9.6	250			3.5		
13		>10.0	250			(3.5)		
14		>9.5	250					
15		>9.6	250					
16		>9.4	250					
17		>9.3	260					
18		>9.0	270					
19		>8.4	270					
20		(7.4)	290					
21		>7.0	310					
22		(6.8)	340					
23		(6.8)	345					

Time: 15.0°E.
Sweep: 2.5 Mc to 11.5 Mc in 2 minutes.

Table 47

Ottawa, Canada (45.4°N, 75.9°W) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		7.2	300					(2.5)
01		7.0	300					(2.5)
02		7.0	300					2.5
03		7.0	300					2.5
04		6.3	300					2.6
05		6.0	300					2.55
06		5.9	300		---	---		2.5
07		7.4	280		---	1.9		2.7
08		11.0	250		110	2.5		2.75
09		12.6	250		110	3.0		(2.7)
10		(13.5)	240		110	3.2		---
11		(13.5)	240		110	3.5		
12		(14.0)	240		110	3.5		
13		(14.0)	250		110	3.4		---
14		(13.5)	250		120	3.2		---
15		(13.2)	250		120	2.8		---
16		(13.0)	260		120	2.2		
17		(12.5)	260		---	1.8		
18		(11.8)	260					
19		(10.1)	270					
20		(9.4)	270					
21		9.0	270					---
22		7.8	280					(2.5)
23		7.5	300					(2.4)

Time: 75.0°W.
Sweep: 1.6 Mc to 20.0 Mc in 15 seconds.

Table 48

Wakkanai, Japan (45.4°N, 141.7°E) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.2	310					2.40
01		6.0	310					2.40
02		6.0	310					2.40
03		5.8	310					2.40
04		5.7	305					2.40
05		5.6	275					2.50
06		6.2	255					2.65
07		10.2	245			2.25		2.90
08		12.7	240			2.80		3.00
09		(14.0)	235			3.15		(3.00)
10		(13.8)	235			3.45		(3.00)
11		(13.7)	240			3.50		(2.90)
12		13.2	235			3.50		2.00
13		13.0	240			3.40		2.75
14		12.9	240			3.00		2.70
15		12.8	245			2.50		2.75
16		12.2	245			1.90	3.4	2.75
17		11.2	245					2.65
10		9.8	250					2.70
19		8.6	250					2.75
20		7.4	260					2.70
21		6.8	275					2.55
22		6.5	280					2.55
23		6.1	300					2.45

Time: 135.0°E.
Sweep: 1.0 Mc to 20.7 Mc in 1 minute.

Table 49

Akita, Japan (39.7°N, 140.1°E) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.5	295					2.45
01		6.2	295				2.0	2.45
02		6.2	300				2.1	2.45
03		6.0	300				2.4	2.40
04		5.7	300				2.0	2.40
05		5.9	295					2.50
06		7.0	250					2.80
07		10.8	245			2.15		3.00
08		12.9	240			2.90		3.00
09	---	14.4	240			3.40		2.90
10		14.6	240			3.55		2.80
11		14.5	240			3.60		2.70
12		13.7	240			3.65		2.65
13		13.5	240			3.50		2.60
14		13.2	245			3.30		2.60
15		12.6	245			2.80		2.60
16		12.1	250			2.10		2.65
17		11.3	250					2.70
18		10.2	250				2.2	2.80
19		9.3	250					2.70
20		8.0	250					2.70
21		7.2	270					2.65
22		7.0	275					2.60
23		6.8	280					2.55

Time: 135.0°E.
Sweep: 0.85 Mc to 22.0 Mc in 2 minutes.

Table 50

Tokyo, Japan (35.7°N, 139.5°E) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.8	290					2.50
01		6.6	305					2.50
02		6.3	300					2.50
03		5.9	305					2.50
04		5.4	325					2.40
05		5.8	310					2.55
06		7.2	275			----		2.75
07		11.3	250			2.45		3.00
00		13.4	245			3.05		2.90
09		14.5	250			3.50		2.80
10	---	14.9	250			3.70		2.70
11	---	14.8	250			3.80		2.60
12		14.4	245			3.80		2.50
13		14.2	250			3.70		2.50
14		13.7	250			3.50		2.50
15		13.2	250			3.00		2.50
16		12.8	255			2.30		2.55
17		11.9	260			E		2.60
18		11.0	270				2.2	2.65
19		10.2	260					2.60
20		9.1	260					2.60
21		8.4	280					2.60
22		7.8	285					2.60
23		7.2	290					2.60

Time: 135.0°E.
Sweep: 2.0 Mc to 20.0 Mc in 20 seconds.

Table 51

Yamagawa, Japan (31.2°N, 130.6°E) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(8.6)	245					(2.75)
01		(8.2)	250					(2.80)
02		7.5	240					2.80
03		6.8	245					2.75
04		5.8	230					2.70
05		5.4	260					2.60
06		6.3	255					2.00
07		9.4	245			1.90		3.05
00		13.0	225			2.85		3.10
09		14.5	220			3.40	3.4	3.00
10		15.0	220			3.70		2.90
11		15.0	220			3.90	4.0	2.70
12		15.0	220			3.95	4.1	2.65
13		15.0	220			3.90	4.0	2.60
14		14.5	225			(3.80)	3.9	2.55
15		14.0	230			3.45		2.60
16		13.5	240			2.85		2.65
17		13.4	245			2.00	2.4	2.70
18		12.8	240				2.0	2.70
19		11.8	250					2.75
20		(11.7)	245					(2.75)
21		10.9	240					2.80
22		(10.0)	240					(2.75)
23		(9.3)	240					(2.80)

Time: 135.0°E.
Sweep: 1.0 Mc to 20.0 Mc in 1 minute.

Table 52

Grand Bahama I. (26.6°N, 78.2°W) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.2	260					2.70
01		7.0	260					2.70
02		6.4	260					2.70
03		5.6	260					2.60
04		5.2	<300					2.50
05		5.4	290					2.60
06		5.8	270				(3.1)	2.65
07		9.5	250		(138)	2.40		2.90
00		12.2	240		111	3.10		2.95
09		13.6	235		109	3.50		2.85
10		13.9	230		109	3.85		2.75
11		13.5	230		111	4.00	4.1	2.65
12	---	13.4	230	---	111	4.00	4.0	2.55
13	---	13.0	230	---	109	(4.00)	4.2	2.50
14	---	12.8	235	---	109	3.90	4.0	2.50
15	---	12.4	240	---	111	3.50	3.6	2.45
16		12.0	240		113	3.00	3.2	2.50
17		12.0	255		121	2.20	2.2	2.60
18		11.2	245				3.4	2.60
19		10.0	255					2.60
20		9.6	265					2.70
21		9.0	260					2.70
22		8.4	260					2.70
23		7.8	260					2.70

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 53

Bunia, Belgian Congo (1.5°N, 30.2°E) November 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	12.2						2.44
01	255	11.8						2.56
02	235	10.8					1.5	2.66
03	220	9.0					1.9	2.79
04	265	8.6			140	---	3.0	2.76
05	---	10.6	250	---	115	3.1	3.6	2.60
06	---	11.7	240	---	110	3.6		2.34
07	---	12.4	230	---	110	4.0		2.12
08	---	13.1	230	---	110	4.2		2.04
09	---	13.7	220	---	110	4.4		2.01
10	520	14.1	220	---	110	4.4		1.99
11	530	14.1	225	---	110	4.2		1.96
12	570	14.1	225	(6.8)	110	4.0		1.94
13	550	14.0	240	---	110	3.8		1.94
14	(550)	14.0	250	---	115	3.4		1.91
15	580	13.9	280	---	120	2.6	3.3	1.88
16	---	13.2	350	---			2.7	1.79
17	430	(13.2)						(1.80
18	390	----						----
19	310	----					2.0	----
20	255	(12.2)					2.0	(2.06)
21	270	(11.5)						(2.19)
22	300	12.0						2.22
23	300	12.0						2.33

Time: 0.0°.
Sweep: 1.0 Mc to 20.0 Mc in 7 seconds.

Table 54

Leopoldville, Belgian Congo (4.4°S, 15.2°E) November 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	13.0						2.34
01	260	12.2						2.43
02	245	9.6						2.48
03	235	8.4						2.50
04	240	6.6						2.47
05	265	8.5	---	---	125	2.2	2.3	2.56
06	265	10.4	240	---	110	3.1	3.6	2.49
07	290	11.0	235	---	110	3.8		2.31
08	---	11.5	230	---	105	4.0		2.07
09	(470)	12.5	230	---	110	4.1		1.95
10	490	13.0	235	---	110	4.4		1.96
11	500	13.8	240	---	110	---		1.99
12	500	14.0	240	---	110	4.2		1.98
13	500	14.4	235	---	110	4.1		1.98
14	490	14.6	240	---	110	4.0		1.98
15	470	14.6	250	---	110	3.4	4.0	1.97
16	450	14.2	270	---	115	2.7	3.2	2.00
17	405	14.0	325	---			3.0	2.01
18	380	15.0					3.0	1.99
19	335	16.0					2.3	<2.14
20	280	15.8						2.37
21	245	15.0						2.39
22	245	14.0						2.29
23	270	13.0						2.25

Time: 0.0°.
Sweep: 1.0 Mc to 20.0 Mc in 7 seconds.

Table 55

Talara, Peru (4.6°S, 81.3°W) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		11.6	265				4.4	(2.50)
01		10.8	260				4.4	2.60
02		10.3	250				4.8	2.70
03		9.6	245				4.5	2.90
04		9.0	230				4.2	3.05
05		7.4	235				4.2	3.00
06		8.15	285		---	----	3.3	2.70
07		11.4	260		116	2.85	4.4	2.75
00		13.9S	240		111	3.50	3.7	2.65
09		14.95	230		111	4.00	4.2	2.50
10	---	15.1	220		108	4.25		2.30
11	---	15.0	215	---	109	4.40		2.15
12	(500)	15.0	210	(7.5)	111	4.45		2.10
13	(530)	14.9	210	7.2	109	4.40		2.00
14	(550)	14.8	220	(6.9)	109	4.25	4.6	2.00
15	---	14.5	<230	---	107	4.00	4.5	2.00
16	---	>14.0	240		109	3.60	4.8	(2.00)
17		(13.3)	260		111	3.10	4.4	(2.00)
18		>13.05	290		131	2.25	3.4	(2.08)
19		(12.5)	340				4.1	(2.15)
20		11.6	380					(2.10)
21		(11.7)	360				2.0	(2.20)
22		(11.8)	305				3.1	(2.25)
23		(11.7)	280				4.4	(2.45)

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 56

Chiclayo, Peru (6.8°S, 79.8°W) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(10.6)	285				4.5	2.40
01		10.3	285				4.2	2.50
02		9.6	270				2.4	2.70
03		9.0	250					2.90
04		8.5	235					3.05
05		6.8	240					3.00
06		8.2	300		---	----		2.75
07		11.7	260		121	3.00	3.8	2.70
00		13.9	245		119	3.55	4.0	2.55
09		14.7	235		115	4.00		2.40
10		14.8	225		111	4.25		2.20
11		14.6	220		114	4.40		2.05
12		14.4	<225	(7.8)	112	4.45		2.00
13		(13.8)	215	(7.4)	115	4.40		2.00
14		(13.3)	<230	(6.9)	115	4.20		2.00
15		(13.0)	(230)	---	115	3.95		1.95
16		(13.0)	<250		115	3.65	5.0	2.00
17		(12.0)	270		117	3.00	4.8	2.00
18		(11.6)	305		151	2.20	2.8	(2.00)
19		(11.0)	370					(2.10)
20		(10.8)	415					(2.00)
21		(10.8)	380					----
22		(10.6)	350					(2.15)
23		(10.6)	320				2.4	(2.35)

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 57

Elisabethville, Belgian Congo (11.6°S, 27.5°E) November 1957

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	8.8						2.34
01	275	0.3						2.36
02	270	7.0						2.32
03	260	6.9						2.36
04	260	8.6			125	2.1	2.8	2.51
05	250	10.2	245	---	110	3.1	3.6	2.53
06	(260)	11.2	240	---	105	3.6	3.9	2.40
07	(350)	11.6	240	---	110	4.0		2.24
08	(410)	11.9	240	---	110	4.1		2.12
09	450	12.4	240	(7.0)	110	4.2		2.08
10	460	12.8	240	6.9	110	4.3		2.08
11	460	12.8	240	6.6	110	4.2		2.07
12	470	12.6	240	6.4	110	4.1	4.7	2.06
13	46S	12.6	245	6.0	110	4.0	4.9	2.05
14	440	12.4	245	---	110	3.6	4.5	2.08
15	400	12.4	260	---	115	3.0	4.3	2.12
16	345	12.6	(290)	---	---	---	3.6	2.15
17	320	12.4					3.0	2.22
18	310	13.0					2.4	2.25
19	290	12.8					2.4	2.33
20	270	12.3					1.9	2.36
21	260	11.4					1.7	2.40
22	260	10.1						2.30
23	270	9.6						2.29

Time: 0.0°.
Sweep: 1.0 Mc to 20.0 Mc in 7 seconds.

Table 58

Huancayo, Peru (12.0°S, 75.3°W) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.0	300					2.40
01		9.0	290				3.4	2.55
02		9.2	260				4.4	2.65
03		8.9	245				4.5	2.85
04		7.8	230				4.5	2.95
05		7.0	240		---	----	4.7	2.85
06		10.1	270		123	2.40	4.7	2.75
07		12.6	250		111	3.20	7.8	2.60
00		14.0	235		109	3.80	9.2	2.45
09		14.S	225		109	4.10	11.6	2.25
10		14.6	220		109	4.40	11.8	2.10
11		(14.2)	220	---	109	4.50	12.0	2.00
12	---	>13.4	215	7.3	109	4.50	12.0	1.95
13	---	>13.2	215	7.2	109	----	11.6	1.95
14	---	>12.6	220	---	109	4.30	11.5	1.90
15	---	12.4	220	---	109	4.00	11.1	1.95
16	---	12.2	250		109	3.50	9.4	1.90
17		>11.9	270		109	2.90	7.5	1.85
18		>11.2	315		<151	1.90	4.7	1.90
19		>10.6	410					1.95
20		9.3	450					1.90
21		>9.2	435					1.95
22		9.1	395					2.05
23		9.0	360					2.25

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 59

Brisbane, Australia (27.5°S, 152.9°E) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		8.4	310				2.5	2.40
01		8.0	330				2.8	2.30
02		7.5	<350				2.4	2.30
03		7.4	340				2.5	2.30
04		7.2	330		---	----		2.30
05	---	7.2	310	---	---	(2.00)		2.35
06	---	7.6	260	---	120	2.80	3.0	2.40
07	500	8.3	240	5.3	120	>3.40	3.9	2.40
00	490	8.6	240	6.0	120	>3.80	4.5	2.35
09	470	9.0	240	6.4	120	(4.00)	4.9	2.35
10	460	10.3	240	6.8	120	>4.00	5.4	2.35
11	450	11.0	230	6.8	120	>4.10	4.8	2.35
12	460	10.9	230	6.6	110	>4.15	4.6	2.30
13	460	10.8	<240	6.5	120	>4.00	>4.2	2.30
14	460	10.2	240	6.S	120	>3.80		2.30
15	450	9.6	<250	6.0	120	>3.90	4.4	2.35
16	(460)	9.4	250	5.5	120	>3.50	3.8	2.35
17		9.0	260		130	2.95	3.4	2.40
18		9.0	300		---	E	3.6	2.40
19		9.0	340		---	E	3.4	2.40
20		9.0	350				2.8	2.35
21		9.0	350				3.1	2.40
22		9.0	340				3.2	2.40
23		0.9	320				2.6	2.40

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

Table 60

Capetown, Union of S. Africa (34.1°S, 18.3°E) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.8	<300				2.7	2.50
01		6.0	<300				2.6	2.45
02		5.7	<310				2.8	2.40
03		5.4	<335				3.2	2.35
04		5.1	<350				3.0	2.35
05		5.0	360			<1.6	2.2	2.40
06		7.0	280			2.2	2.5	2.60
07	---	8.7	250	---		3.0		2.60
00	---	10.2	250	---		3.5	3.7	2.50
09	(500)	10.9	240	6.0		3.9	4.1	2.45
10	440	11.1	(235)	6.8		4.1	4.6	2.35
11	460	11.6	---	6.8		---	4.9	2.30
12	460	11.6	---	6.8		---	5.1	2.30
13	470	11.7	---	6.7		---	5.0	2.30
14	470	11.6	---	6.6		---	4.9	2.30
15	460	11.2	---	6.5		---	4.7	2.30
16	450	10.8	240	6.4		3.9	4.4	2.30
17	(430)	10.6	250	---		3.6	3.9	2.35
18		10.4	260			3.0	3.2	2.40
19		10.2	200			2.3	3.0	2.50
20		9.7	275			---	2.6	2.55
21		8.6	<280				2.9	2.50
22		7.0	(290)				2.8	2.50
23		7.1	<295				2.8	2.50

Time: 30.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 7 seconds.

Table 61

Canberra, Australia (35.3°S, 149.0°E) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		7.5	330				2.8	2.30
01		7.2	320				2.8	2.30
02		6.8	350				3.2	2.25
03		6.7	355				3.1	2.25
04		6.4	350					2.30
05	---	>6.5	315	---	120	1.90	2.0	2.40
06	---	7.2	265	---	110	2.80	2.9	2.45
07	560	7.4	245	5.2	105	3.40	3.5	2.30
08	555	7.7	240	5.6	105	3.75	4.2	2.35
09	540	0.4	(240)	6.0	105	4.00	4.7	2.30
10	535	>8.6	(240)	6.2	105	4.15	5.1	2.30
11	540	8.6	(240)	6.6	105	4.20	5.2	(2.20)
12	530	8.9	245	(6.4)	105	4.20	5.2	2.25
13	500	9.1	(240)	6.6	105	4.10	5.3	2.25
14	490	>9.0	240	6.5	105	4.00	4.5	2.20
15	490	8.8	240	6.2	105	4.00	4.3	2.30
16	470	8.6	240	(6.0)	110	3.70	4.0	2.30
17	(470)	8.5	255	(5.0)	110	3.25	3.6	2.35
18		8.5	290		120	2.55	3.0	2.40
19		8.5	305		---	<1.60	3.4	2.35
20		>7.7	330				3.1	(2.35)
21		>7.8	340				3.4	(2.20)
22		>8.0	330				3.0	(2.30)
23		>7.6	(325)				3.7	(2.30)

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

Table 62

Campbell I. (52.5°S, 169.2°E) November 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		6.6	350				3.2	2.30
01		5.7	370				3.2	2.15
02		4.9	330		---	---	2.2	2.30
03		4.7	320		---	1.6	2.0	2.40
04		5.2	300		100	2.1	2.1	2.55
05	---	6.0	260	4.1	105	2.7		2.55
06	---	6.5	250	>4.7	105	3.2		2.60
07	---	7.0	240	5.4	100	3.6		2.40
00	(580)	7.4	220	5.6	100	3.8		2.45
09	470	8.1	220	6.2	100	3.9	4.0	2.50
10	500	8.0	220	6.3	105	4.0	4.2	2.40
11	500	8.2	220	6.4	105	4.1	4.3	2.40
12	510	8.4	220	6.2	105	4.1		2.40
13	480	8.5	220	6.1	105	4.1		2.40
14	470	8.4	220	6.1	110	4.0		2.40
15	450	8.3	230	5.8	110	3.8		2.40
16	(440)	8.5	240	5.6	105	3.6		2.40
17	---	8.4	250	4.7	110	3.2		2.50
18	---	(8.3)	270	4.0	110	2.7		(2.50)
19		(7.3)	300		125	2.1		(2.40)
20		(8.3)	320		130	1.7	2.0	(2.40)
21		7.8	320		---	---	<1.5	(2.35)
22		(6.2)	340		---	---	2.6	(2.30)
23		(6.7)	360				4.2	(2.30)

Time: 165.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

Table 63

Meanook, Canada (54.6°N, 113.3°W) October 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	fEs	(M3000)F2
00		5.3	280					
01		5.0	290					
02		(4.7)	300					
03		5.0	330					
04		5.0	340					
05		5.1	320					
06		5.4	300		---	---		
07		6.1	280		---	2.0		
08		8.3	240		105	2.3		
09		10.0	230		100	2.9		
10	---	11.0	220	---	100	3.1		
11	---	12.0	220	---	100	3.3		
12	---	12.1	220	---	100	3.4		
13	---	12.8	220	---	100	3.4		
14		12.9	230		100	3.3		
15		12.6	230		100	3.0		
16		12.7	240		105	2.7		
17		12.4	240		100	2.2		
18		12.0	240		---	---		
19		10.2	240					
20		9.0	240					
21		8.2	240					
22		7.0	250					
23		6.1	270					

Time: 105.0°W.
Sweep: 1.6 Mc to 20.0 Mc in 15 seconds.

Table 64

Talara, Peru (4.6°S, 81.3°W) October 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(11.6)	240				4.5	2.60
01		10.6	240				4.5	2.65
02		9.8	250				4.5	2.80
03		8.9	240				4.3	2.80
04		7.5	240				3.7	2.90
05		6.4	240				3.5	3.00
06		6.8	280		---	----	3.8	2.70
07		11.2	260		121	2.80	3.4	2.80
00		13.9	250		115	3.50	3.9	2.70
09		14.8	230		113	4.00		2.55
10	---	15.0	230		111	4.30		2.30
11	---	15.0	220	7.0	111	4.45		2.15
12	---	14.9	220	7.5	111	4.50		2.10
13	---	14.6	215	7.2	111	4.50		2.05
14	---	>14.2	215	7.0	111	4.30		2.00
15	---	>13.2	220	6.7	111	4.00	4.1	1.95
16		>13.0	240	---	111	3.55	4.3	2.00
17		12.7	265		113	3.10	4.4	1.95
18		(12.6)	300		<147	2.25	5.0	(2.05)
19		(11.5)	<280				4.5	(2.10)
20		>11.5	440					2.05
21		>11.8	380				2.1	(2.15)
22		(11.7)	300				2.3	(2.40)
23		>11.0	260				4.3	(2.40)

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 65

La Paz, Bolivia (16.5°S, 68.0°W) October 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.6	280				3.8	2.55
01		10.0	260				4.0	2.70
02		8.4	250				2.7	2.65
03		8.2	255					2.70
04		8.0	250				3.6	2.75
05		7.9	245				3.8	2.85
06		9.1	275		121	1.60	4.2	2.75
07		11.7	260		119	2.90	4.6	2.85
00		13.5	240		111	3.60	3.8	2.70
09		14.7	235		115	4.00	6.7	2.50
10	---	15.2	230		117	(4.30)	8.0	2.30
11	---	15.2	<220	---	---	----	8.7	2.10
12	---	(14.5)	<220	---	---	----	8.6	2.05
13		>13.6	220	---	---	----	9.0	2.00
14		(13.0)	<220	---	---	----	8.6	
15		(12.2)	225	---	---	----	9.0	1.95
16		>12.0	240		---	----	9.0	1.90
17		(11.7)	255		---	(3.30)	8.4	1.90
18		>11.3	290		(125)	2.45	5.3	1.90
19		(10.3)	375					(1.95)
20		(9.1)	460					1.90
21		(9.4)	450					2.00
22		9.2	390				2.2	2.10
23		10.0	340				3.2	2.25

Time: 60.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 66

Ellsworth Station, Antarctica (77.7°S, 41.1°W) September 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		(5.3)	350				3.6	(2.50)
01		(5.8)	370				3.3	(2.40)
02		(5.6)	380				2.8	(2.35)
03		(6.2)	(350)				1.2	(2.50)
04		(5.6)	305		---	----		(2.55)
05		5.9	305		136	1.50		2.55
06		6.0	285		121	(1.80)		2.65
07		6.7	260	---	125	2.20		2.85
00		6.6	270	---	(129)	(2.30)		2.95
09		7.4	250	---	122	2.45		3.00
10		7.8	240	---	127	2.55		3.10
11	---	8.4	245	---	121	2.70		3.05
12	---	8.9	240	---	122	2.70		3.05
13	---	9.5	240	---	120	>2.60		3.00
14	---	9.6	235	---	125	2.60		3.00
15	---	9.8	240		128	2.50		3.10
16		9.6	245		(137)	2.20		3.15
17		9.5	240		134	(1.90)		3.10
18		8.5	250		---	----		3.05
19		(8.3)	260		---	----		3.00
20		(6.0)	(255)		---	----		(2.90)
21		(5.3)	(290)					(2.70)
22		(6.2)	(315)				2.5	2.60
23		(6.0)	(380)				2.7	(2.50)

Time: 45.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 67

Chiclayo, Peru (6.8°S, 79.8°W) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		9.5	225					3.00
01		8.8	225					3.10
02		8.3	230					3.10
03		7.0	230					3.15
04		5.8	235					3.20
05		4.8	240					3.00
06		4.4	250		---	----	(2.7)	2.80
07		7.2	255		123	2.30	4.4	2.90
08		9.2	240		113	3.10	5.2	2.85
09		10.1	220		111	3.50	5.4	2.50
10		10.7	210		109	3.90		2.40
11	---	10.8	210		109	4.00		2.25
12	---	10.6	200		111	4.15		2.20
13	---	10.3	200	---	109	4.00		2.15
14	---	10.4	200	---	111	(4.00)		2.15
15	---	10.5	200	---	111	(3.80)		2.15
16	---	10.2	220		111	3.40		2.20
17		10.2	240		111	2.90		2.20
18		9.9	280		---	2.20	5.0	(2.25)
19		(9.3)	360					(2.20)
20		9.1	380					2.25
21		>9.2	310					2.45
22		(9.7)	255					2.70
23		>9.2	230					2.85

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 68

Chimbote, Peru (9.1°S, 78.6°W) August 1957

Time	h'F2	foF2	h'F	foF1	h'E	foE	foEs	(M3000)F2
00		8.8	230					2.90
01		8.0	230					3.00
02		7.65	230					3.08
03		6.3	240					3.10
04		5.45	240					3.10
05		4.55	245					3.10
06		4.35	260					2.68
07		7.6	255		129	2.30		2.95
08		9.7	235		115	3.10	5.6	2.78
09		10.7	220		113	3.55	6.8	2.50
10	---	10.95	215		113	3.90	7.4	2.35
11	---	10.7	210		113	(4.00)	8.1	2.20
12	---	10.5	205	---	113	4.10	8.4	2.15
13	---	10.3	205	---	111	4.02	8.6	2.20
14	---	10.3	205	(6.0)	111	3.98	8.0	2.15
15	---	10.2	(210)	---	111	3.70	7.1	2.15
16		10.0	220		113	3.35	7.0	2.15
17		10.0	245		119	2.82	4.4	2.15
18		9.6	285		---	----	5.5	2.20
19		9.0	380				4.6	2.15
20		8.65	385					2.15
21		8.9	290					2.45
22		8.95	250					2.65
23		9.0	230					2.85

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 69

Casablanca, Morocco (33.6°N, 7.6°W) August 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<300	8.50					3.4	(2.50)
01	<305	(8.35)					3.4	(2.55)
02	<305	(8.40)					3.2	----
03	<295	(7.90)					2.6	----
04	<200	(6.90)					2.6	----
05	<270	6.75					2.9	(2.70)
06	(260)	6.80			---	E	2.6	(2.90)
07	(250)	7.70	---	----	120	2.40	3.1	3.20
08	(245)	7.90	235	----	110	(3.00)	3.9	3.20
09	(285)	8.55	---	----	110	(3.45)	3.5	3.10
10	(300)	9.10	---	----	110	----	4.2	2.95
11	---	9.10	---	----	110	----	4.2	2.80
12	(355)	10.10	---	----	110	----		2.75
13	(350)	10.75	---	----	110	----		2.70
14	(360)	10.90	---	----	110	----		2.70
15	350	11.10	---	6.00	110	----		2.70
16	(330)	11.05	---	----	110	(3.60)		2.80
17	(325)	10.80	250	----	110	3.15	4.0	(2.80)
18	(300)	>11.20	255	----	120	2.60	3.9	(2.80)
19	270	(10.95)	---	----	---	E	3.4	(2.85)
20	<250	>9.10					3.4	----
21	<270	8.65					3.5	(2.65)
22	<290	(9.10)					2.5	(2.60)
23	<300	>8.85					3.7	(2.60)

Time: 0.0°.
Sweep: 1.6 Mc to 16.0 Mc in 1 minute 15 seconds.

Table 70

Bombay, India (19.0°N, 73.0°E) March 1956

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	300	5.7						3.10
07	340	6.6						2.90
08:30	360	9.3						2.80
09	380	9.7						2.70
10	390	10.4						2.65
11	480	11.8						2.30
12	480	12.5						2.30
13	510	12.7						2.25
14	(480)	(12.6)						(2.30)
15	(480)	(11.8)						(2.30)
16	(440)	(11.9)						(2.50)
17	(390)	(10.9)						(2.65)
18	390	10.8						2.65
19	360	9.4						2.80
20	(330)	(8.1)						(2.95)
21	330	6.5						2.95
22	300	5.8						3.10
23								

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 71

Madras, India (13.0°N, 80.2°E) March 1956

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	320	9.3						3.00
07	320	10.9						3.00
08	390	12.4						2.65
09	420	13.0						2.55
10	460	12.1						2.40
11	480	11.9						2.30
12	480	12.0						2.30
13	480	12.0						2.30
14	480	12.4						2.30
15	480	12.9						2.30
16	440	12.4						2.50
17	440	12.2						2.50
18	480	11.6						2.30
19	440	>11.0						2.50
20	(370)	(11.8)						(2.75)
21	---	>11.0						----
22	(370)	11.2						(2.75)
23								

Time: 75.0°E.
Sweep: 1.5 Mc to 18.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 72

Tiruchy, India (10.8°N, 70.8°E) March 1956

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	360	6.5						2.80
07	400	9.5						2.60
08	440	10.1						2.50
09	480	10.2						2.30
10	480	10.4						2.30
11	480	10.4						2.30
12	480	10.4						2.30
13	480	10.4						2.30
14	480	10.3						2.30
15	480	10.2						2.30
16	480	10.0						2.30
17	480	9.6						2.30
18	480	9.4						2.30
19	480	9.0						2.30
20	480	9.0						2.30
21	480	8.4						2.30
21:30	480	---						2.30
22								

Time: 75.0°E.
Sweep: 1.5 Mc to 10.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

USCOMM-NBS-6L

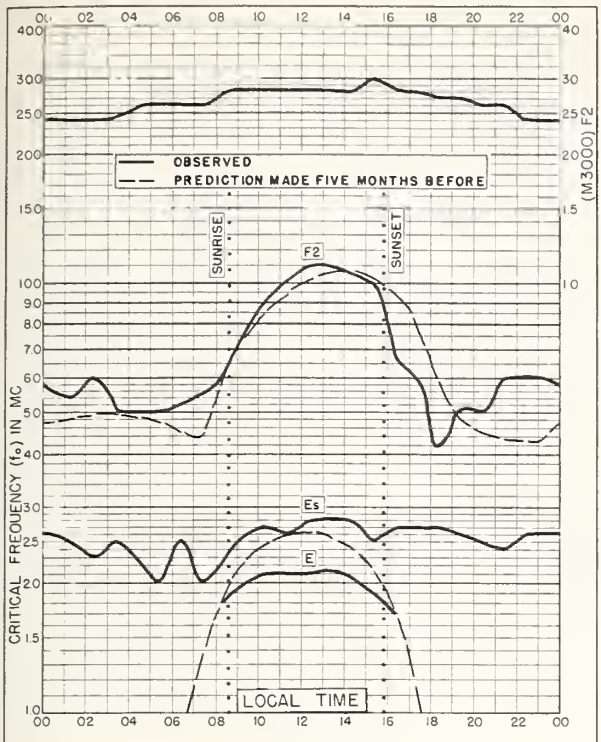


Fig. 1. KIRUNA, SWEDEN
67.8°N, 20.3°E FEBRUARY 1958

NBS 503

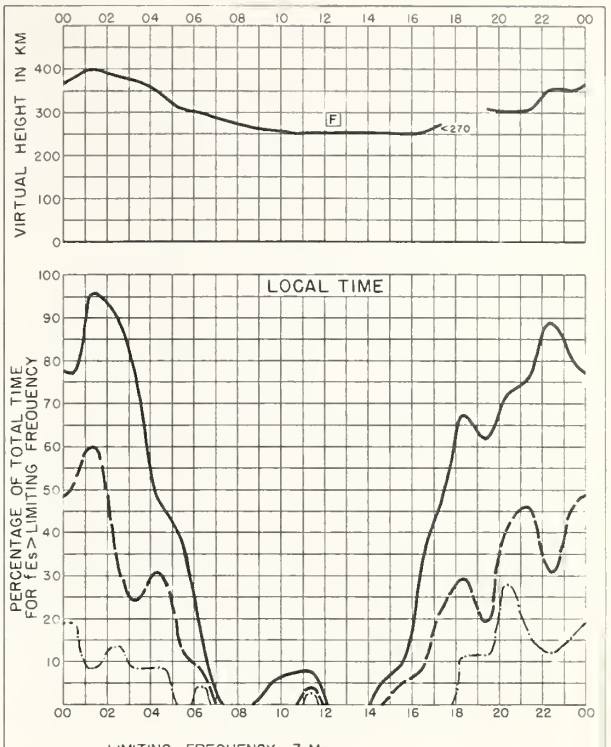


Fig. 2. KIRUNA, SWEDEN FEBRUARY 1958

NBS 490

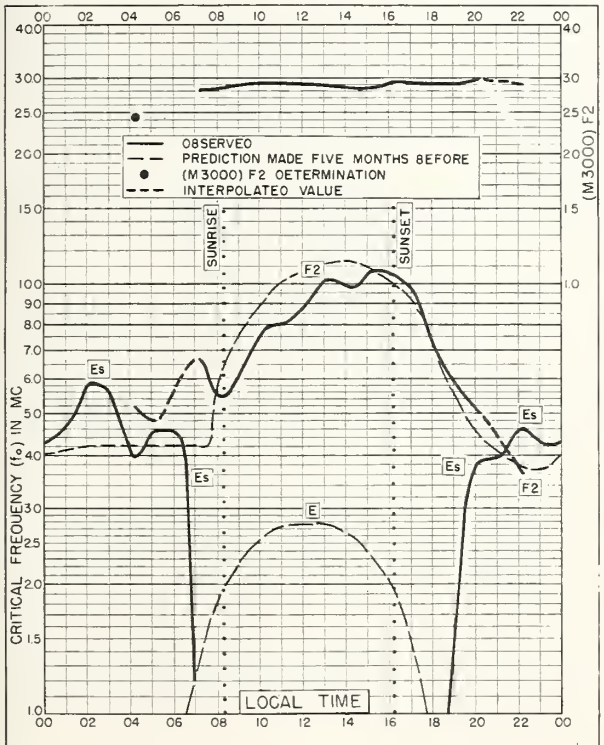


Fig. 3. FAIRBANKS, ALASKA
64.9°N, 147.8°W FEBRUARY 1958

NBS 503

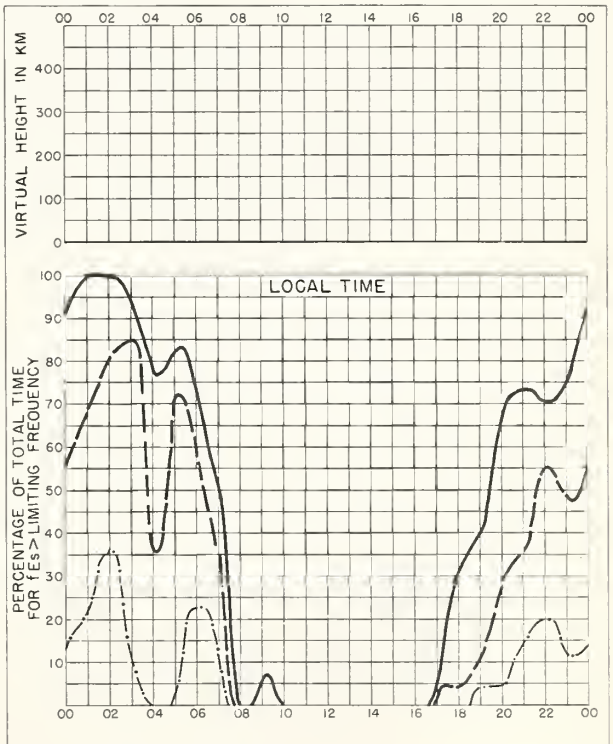


Fig. 4. FAIRBANKS, ALASKA FEBRUARY 1958

NBS 490

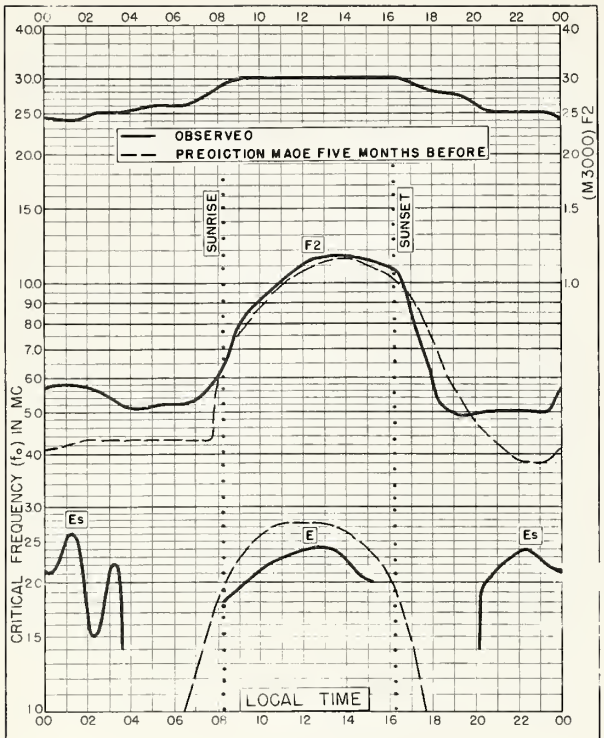


Fig. 5. LYCKSELE, SWEDEN
64.6°N, 18.8°E FEBRUARY 1958

NBS 503

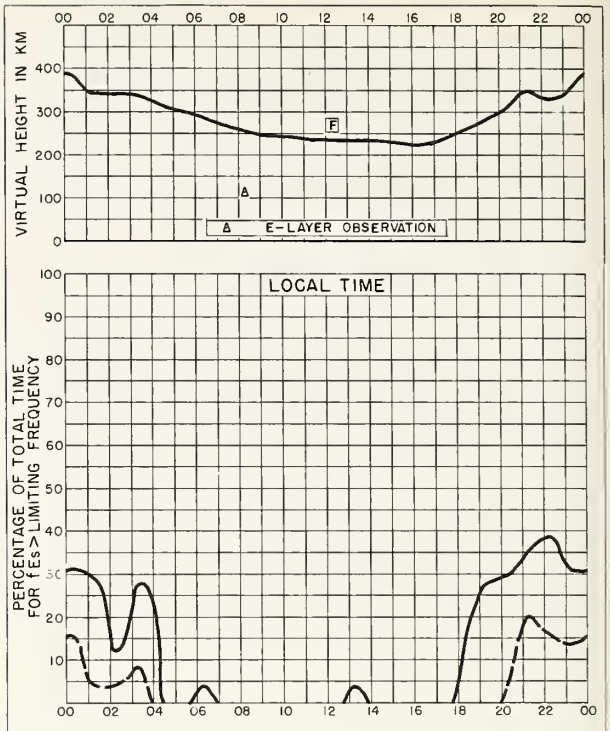


Fig. 6. LYCKSELE, SWEDEN FEBRUARY 1958

NBS 490

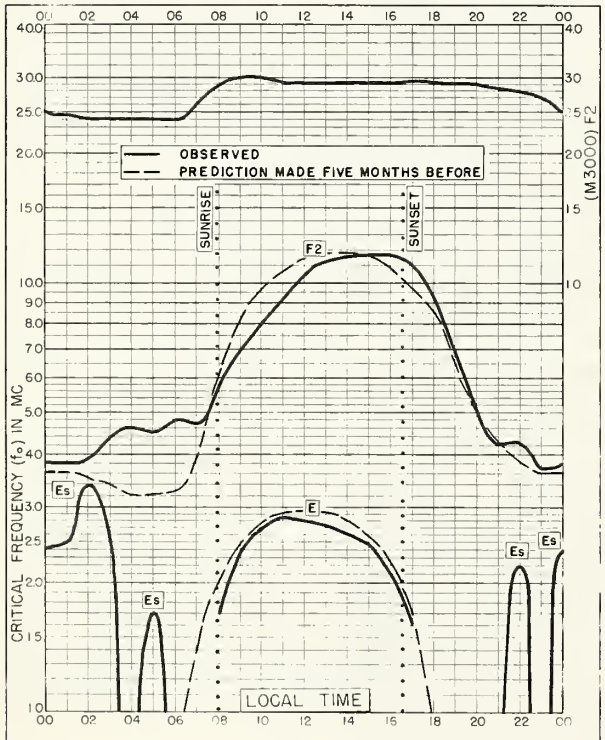


Fig. 7. ANCHORAGE, ALASKA
61.2°N, 149.9°W FEBRUARY 1958

NBS 503

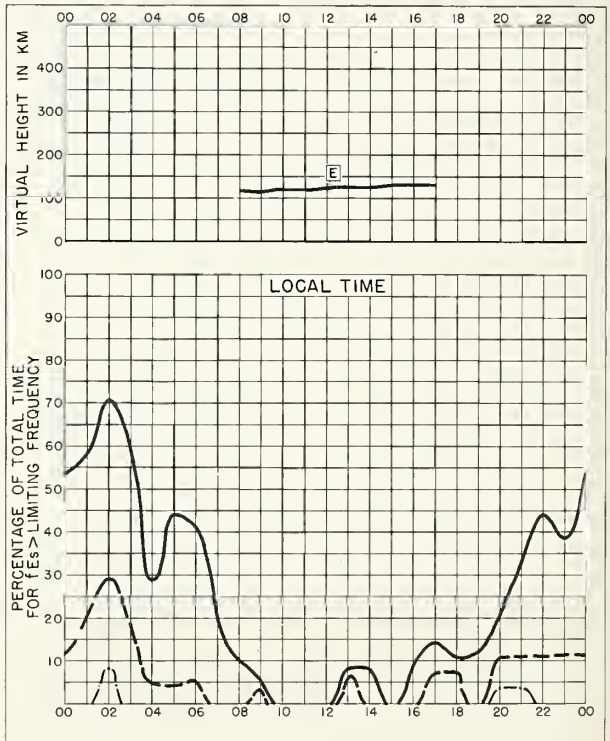


Fig. 8. ANCHORAGE, ALASKA FEBRUARY 1958

NBS 490

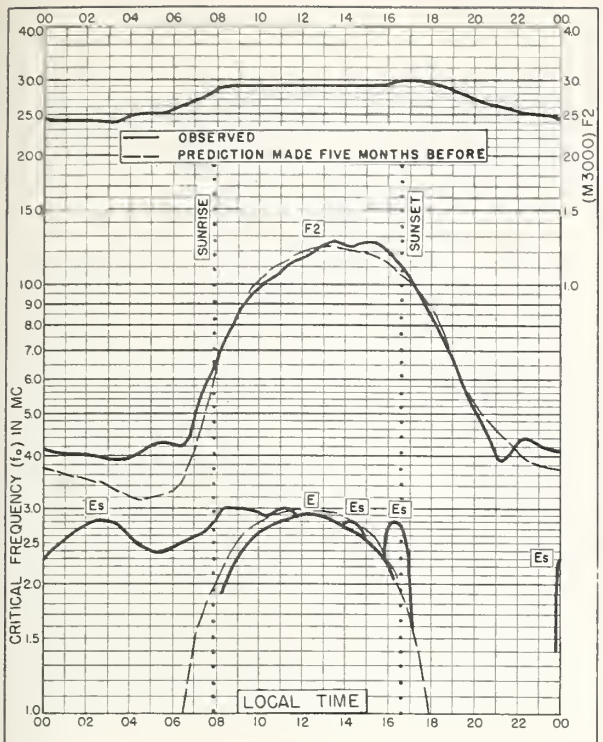


Fig. 9. UPSALA, SWEDEN
59.8°N, 17.6°E FEBRUARY 1958

NBS 503

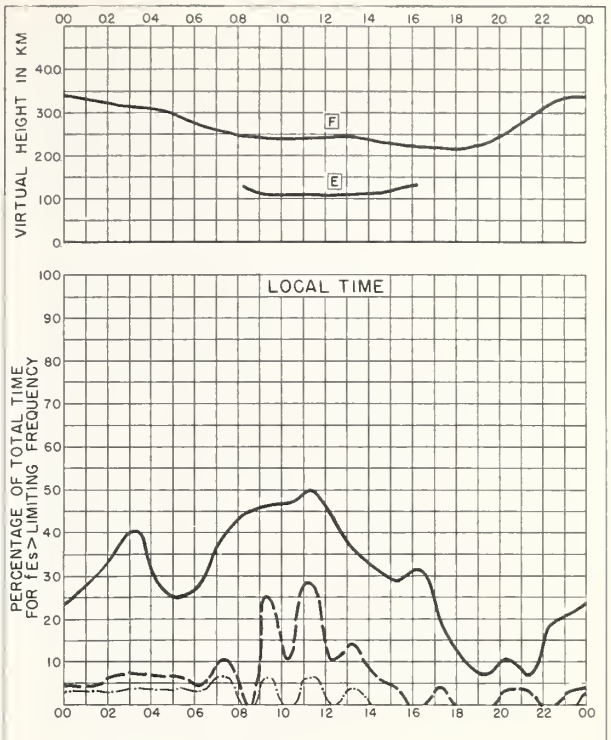


Fig. 10. UPSALA, SWEDEN FEBRUARY 1958

NBS 490

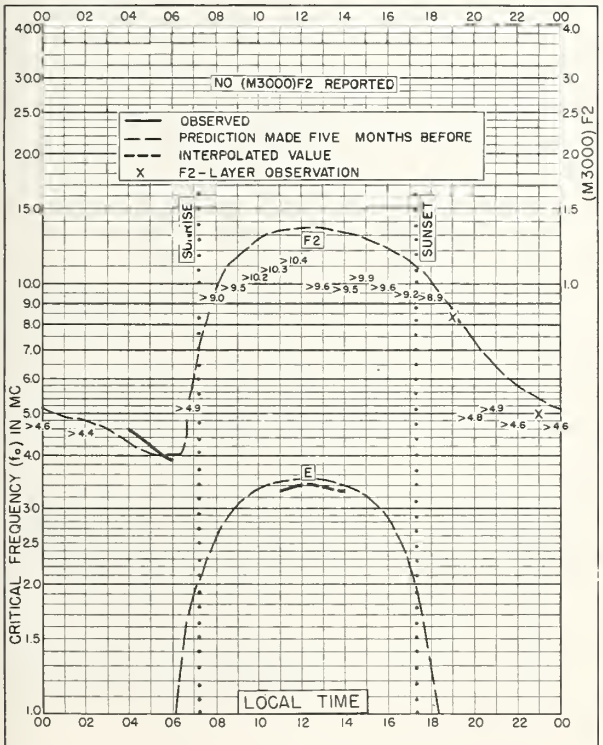


Fig. 11. GRAZ, AUSTRIA
47.1°N, 15.5°E FEBRUARY 1958

NBS 503

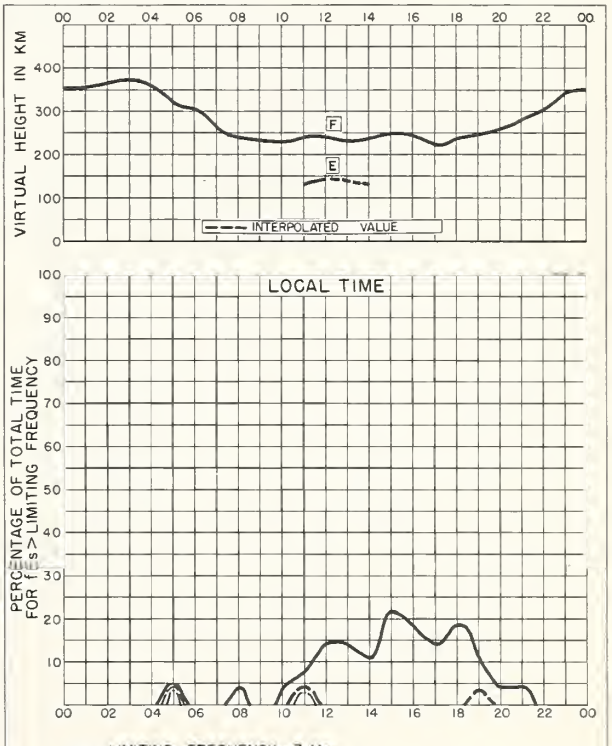


Fig. 12. GRAZ, AUSTRIA FEBRUARY 1958

NBS 490

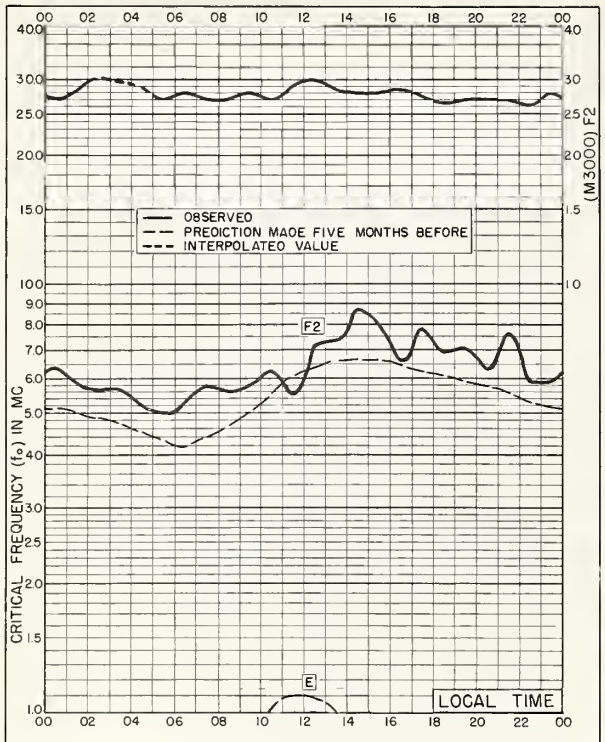


Fig. 13. THULE, GREENLAND
76.6°N, 68.7°W JANUARY 1958

NBS 503

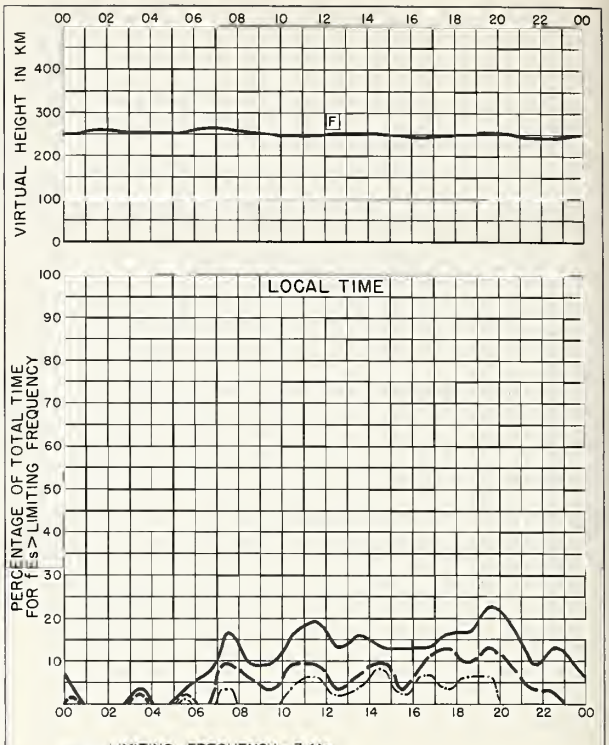


Fig. 14. THULE, GREENLAND JANUARY 1958

NBS 490

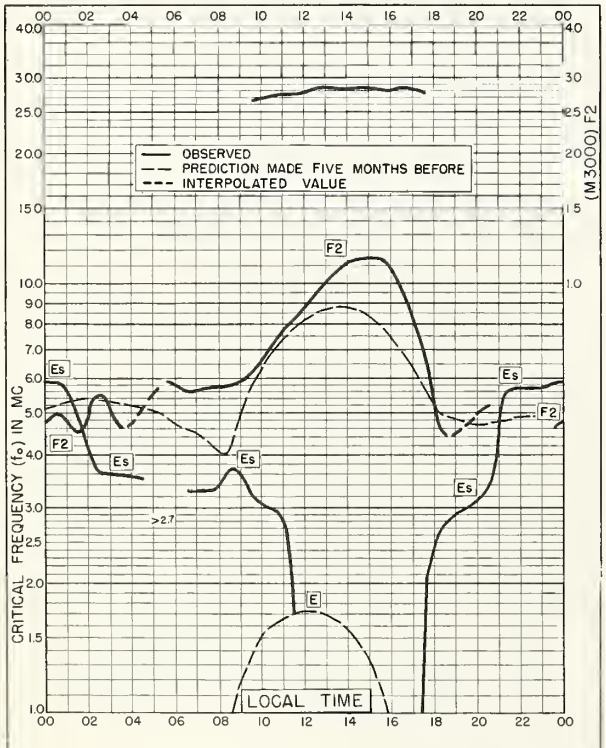


Fig. 15. POINT BARROW, ALASKA
71.3°N, 156.8°W JANUARY 1958

NBS 503

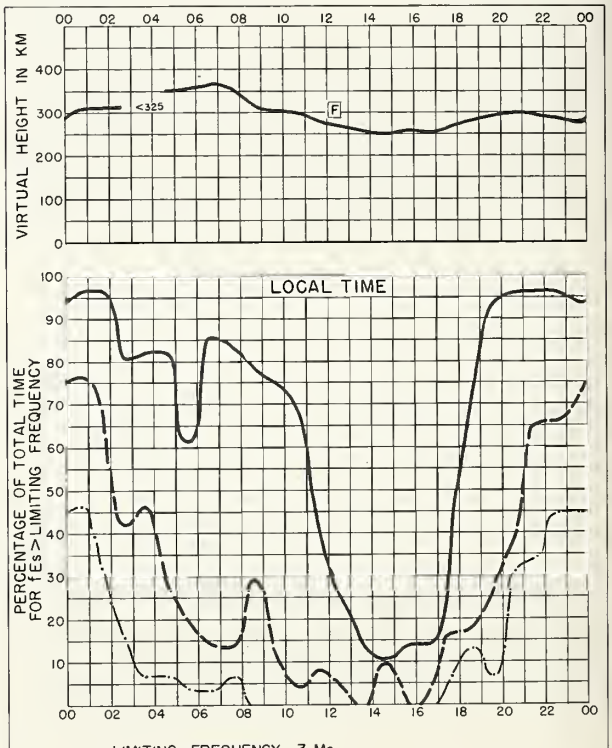


Fig. 16. POINT BARROW, ALASKA JANUARY 1958

NBS 490

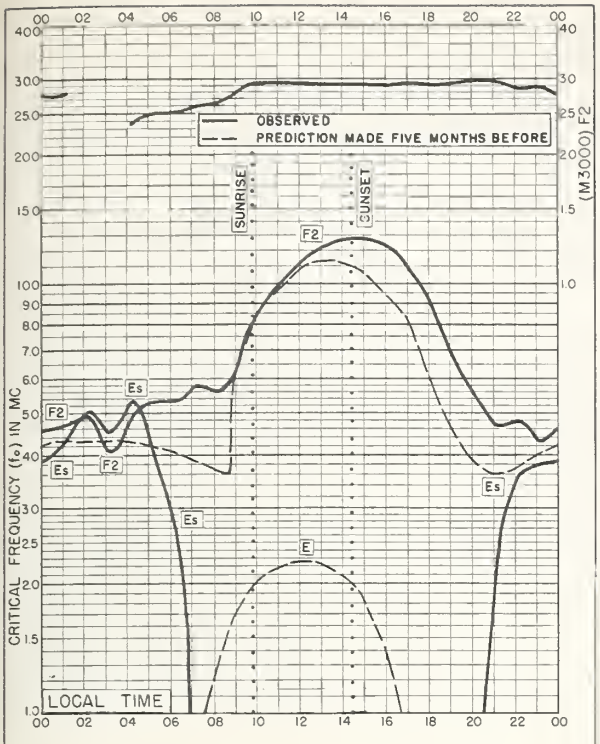


Fig. 17. FAIRBANKS, ALASKA
64.9°N, 147.8°W JANUARY 1958

NBS 503

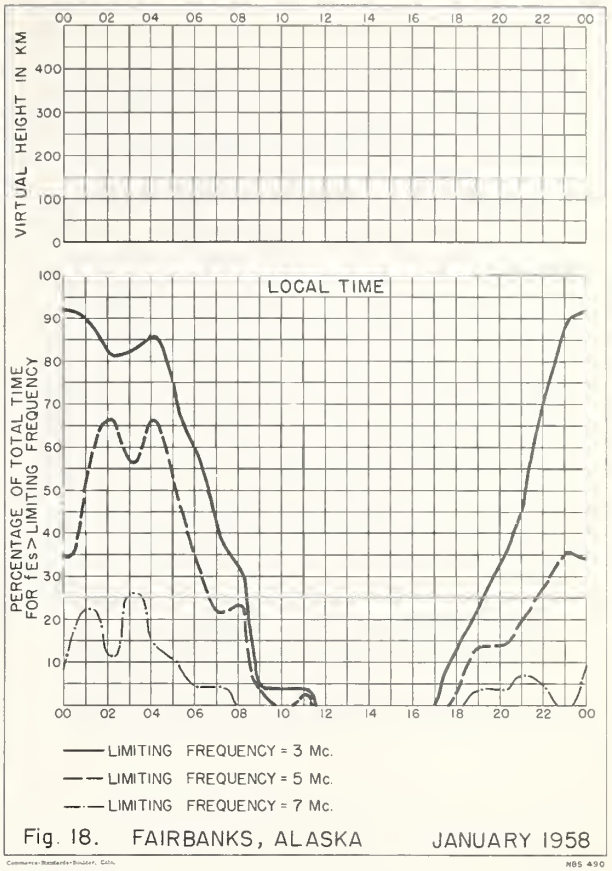


Fig. 18. FAIRBANKS, ALASKA JANUARY 1958

NBS 490

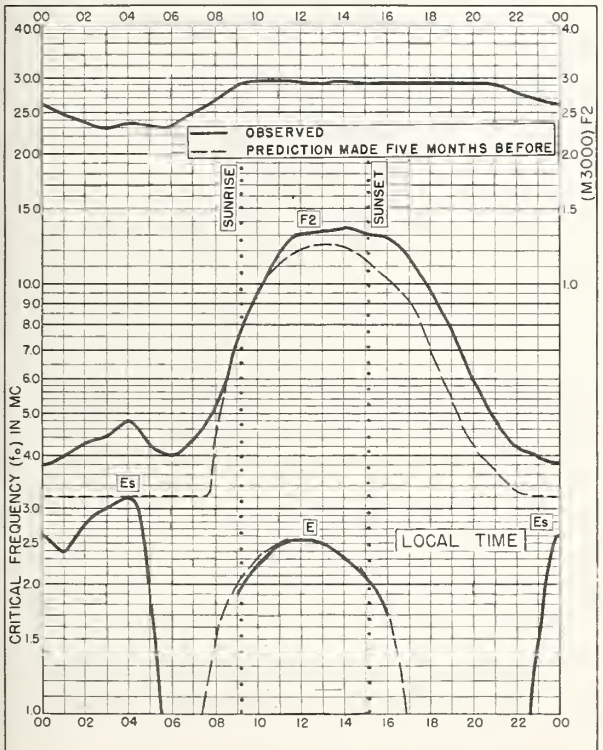


Fig. 19. ANCHORAGE, ALASKA
61.2°N, 149.9°W JANUARY 1958

NBS 503

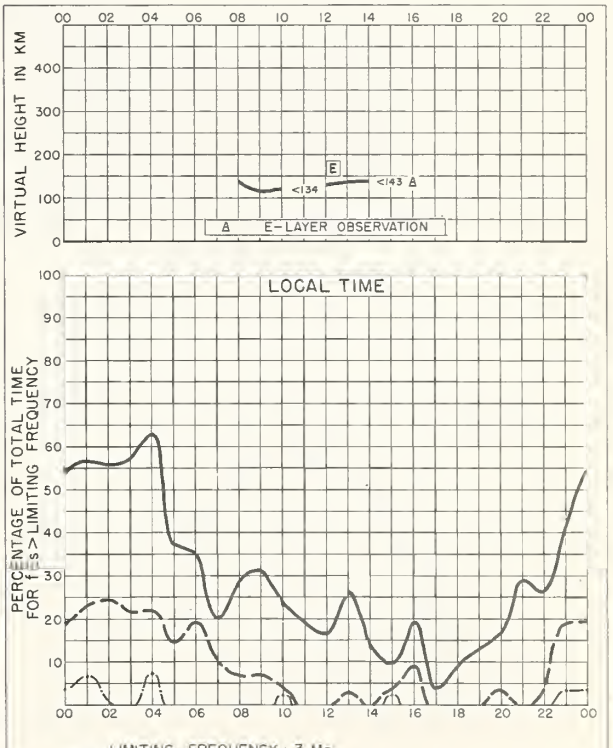


Fig. 20. ANCHORAGE, ALASKA JANUARY 1958

NBS 490

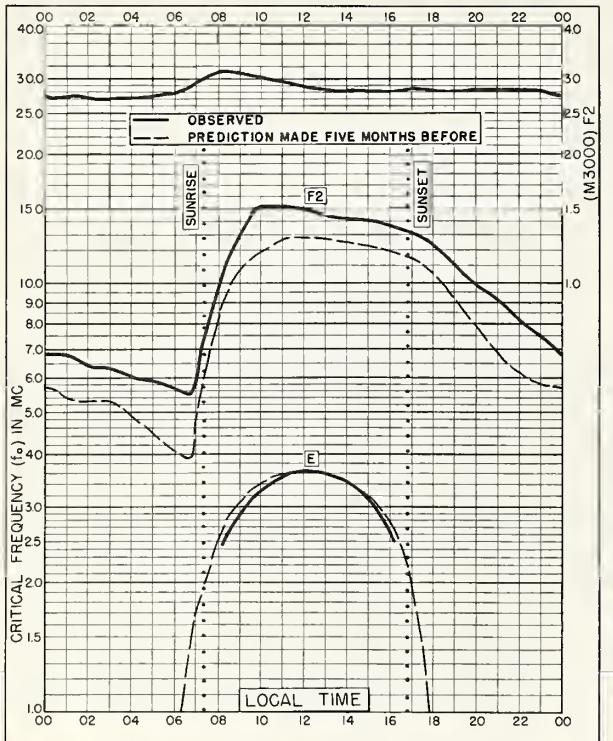
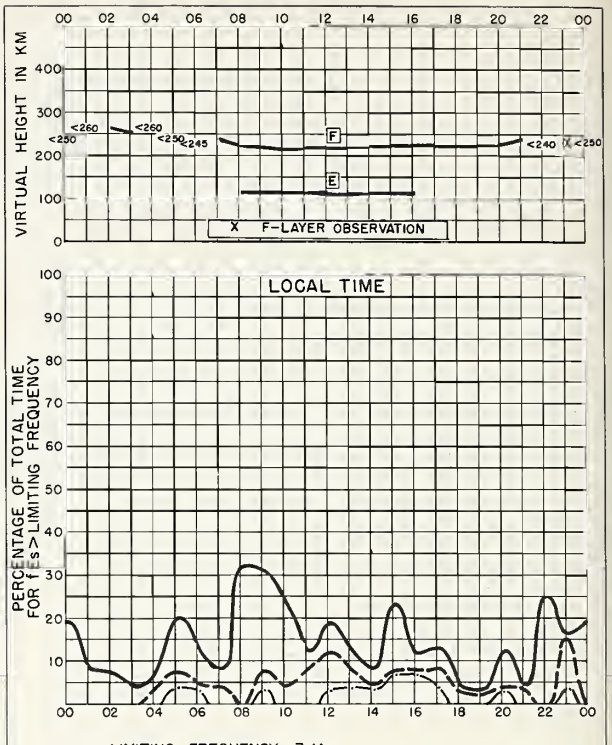


Fig. 21. FT. MONMOUTH, NEW JERSEY
40.4°N, 74.1°W JANUARY 1958



JANUARY 1958

Fig. 22. FT. MONMOUTH, NEW JERSEY

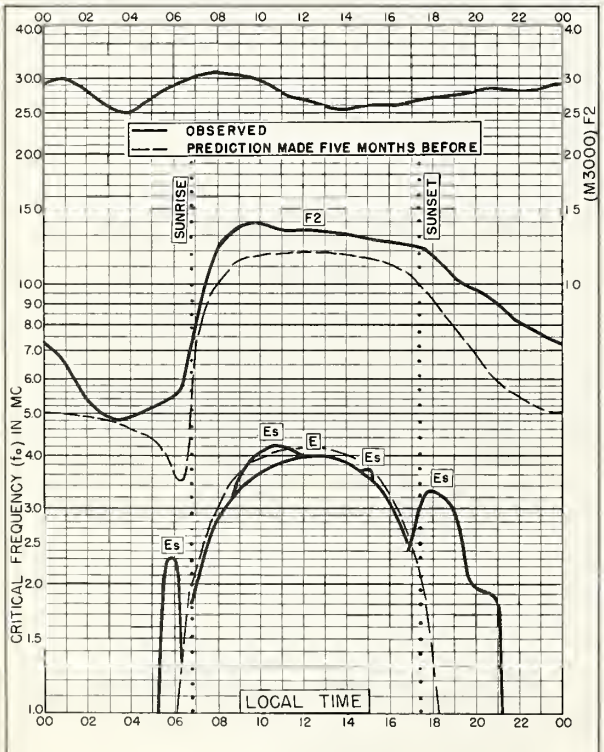


Fig. 23. GRAND BAHAMA I.
26.6°N, 78.2°W JANUARY 1958

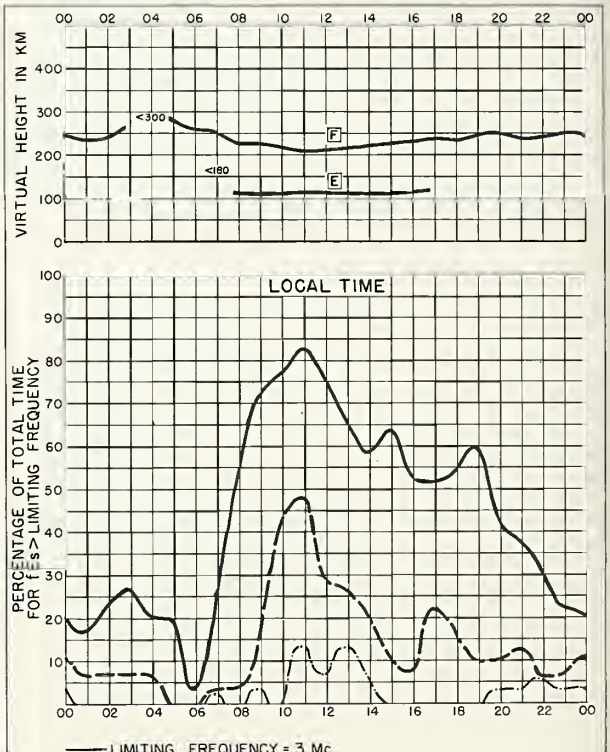


Fig. 24. GRAND BAHAMA I. JANUARY 1958

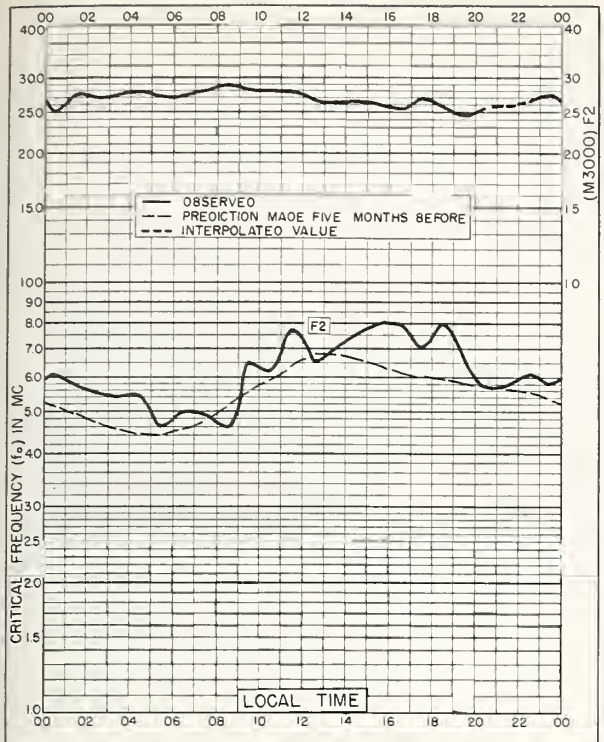


Fig. 25. THULE, GREENLAND
76.6°N, 68.7°W DECEMBER 1957

NBS 503

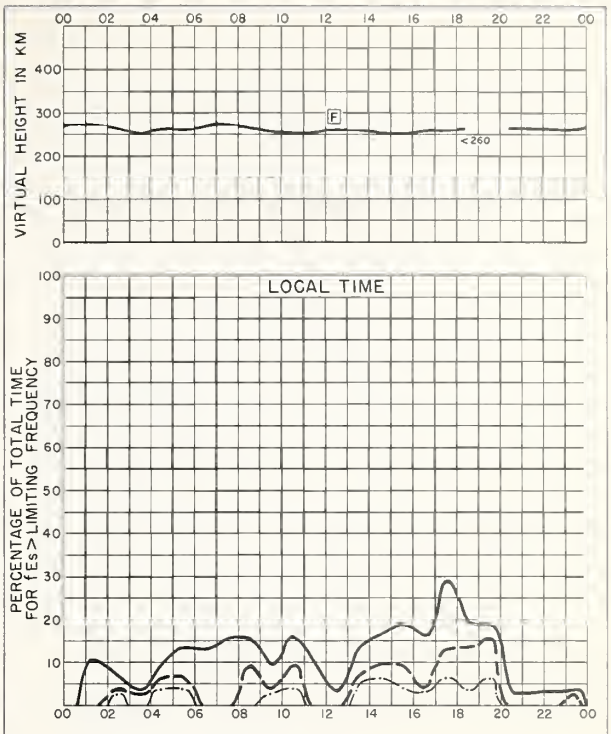


Fig. 26. THULE, GREENLAND DECEMBER 1957

NBS 490

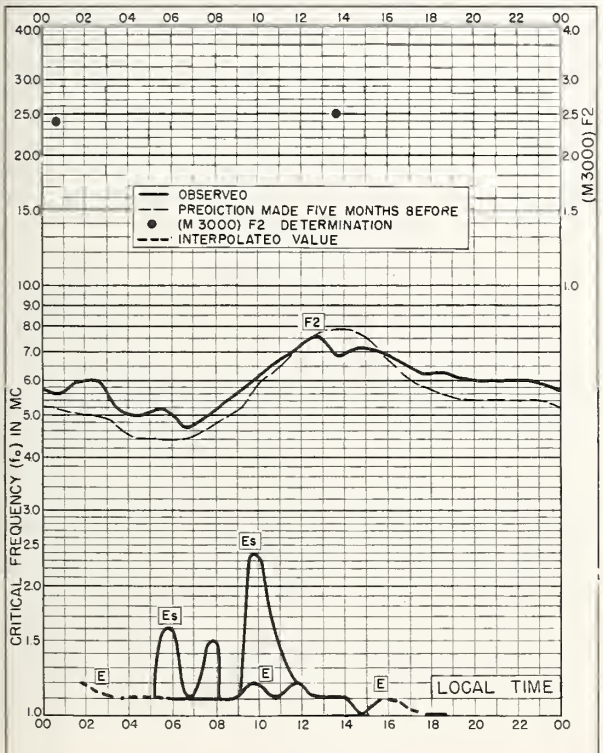


Fig. 27. RESOLUTE BAY, CANADA
74.7°N, 94.9°W DECEMBER 1957

NBS 503

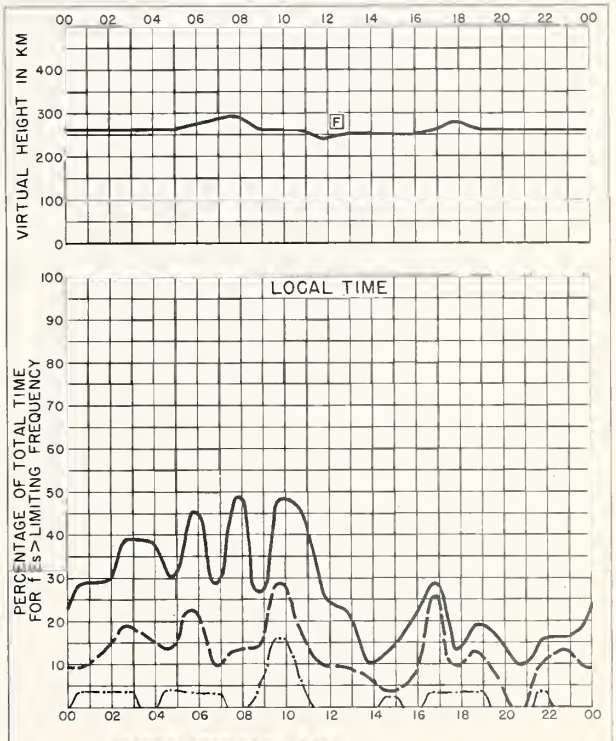


Fig. 28. RESOLUTE BAY, CANADA DECEMBER 1957

NBS 490

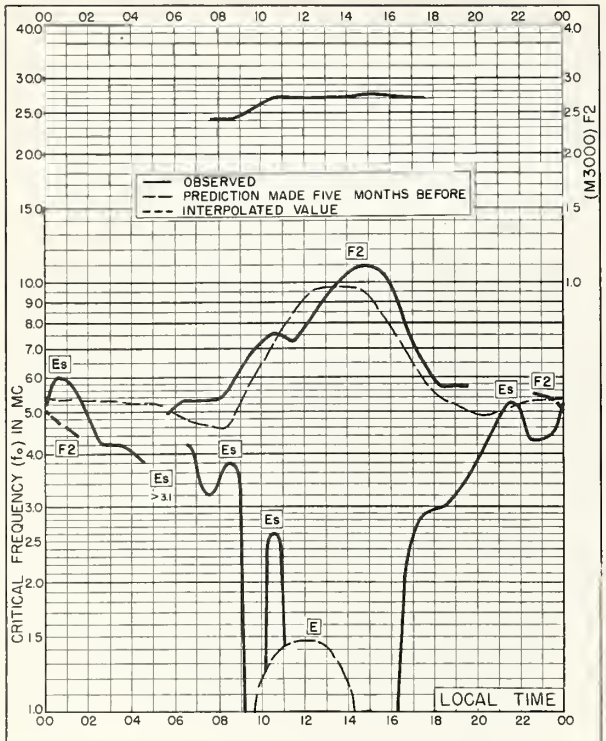


Fig. 29. POINT BARROW, ALASKA
71.3°N, 156.8°W DECEMBER 1957

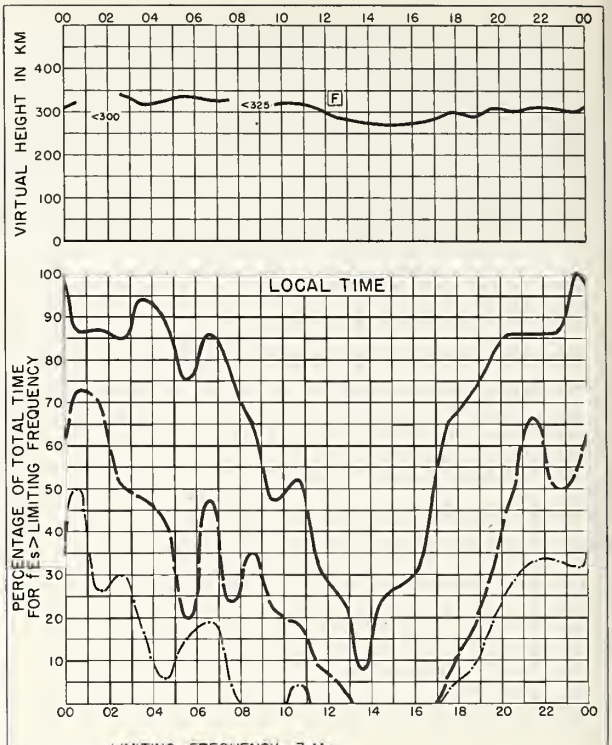


Fig. 30. POINT BARROW, ALASKA DECEMBER 1957

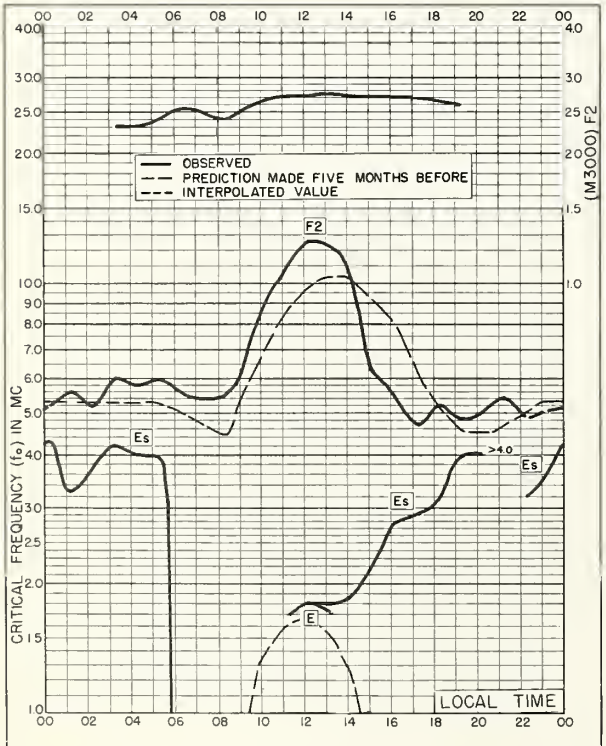


Fig. 31. TROMSO, NORWAY
69.7°N, 19.0°E DECEMBER 1957

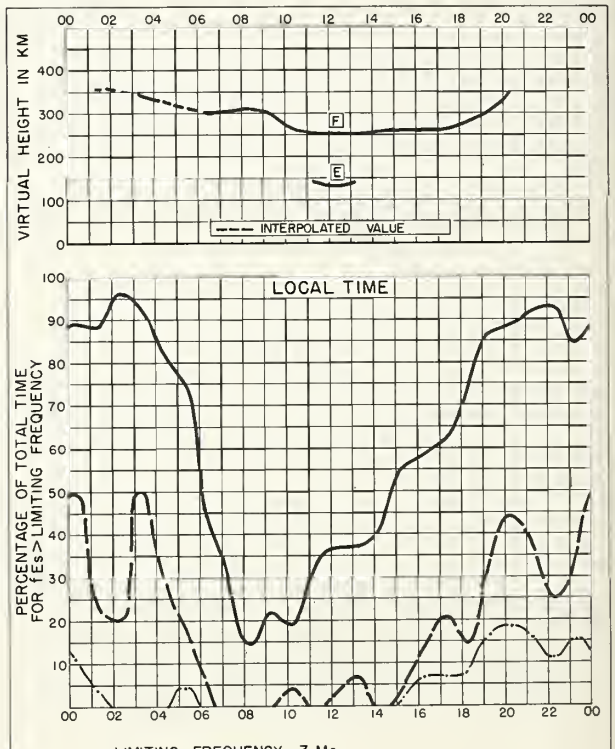


Fig. 32. TROMSO, NORWAY DECEMBER 1957

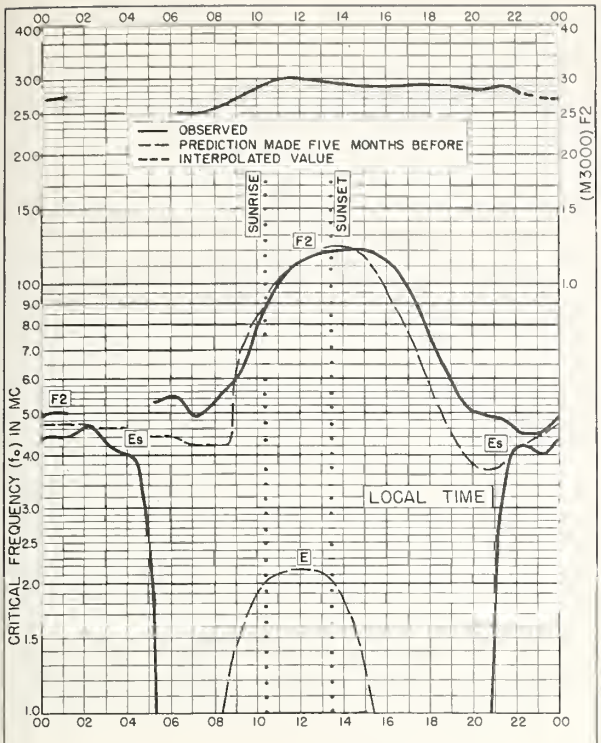


Fig. 33. FAIRBANKS, ALASKA
64.9°N, 147.8°W DECEMBER 1957

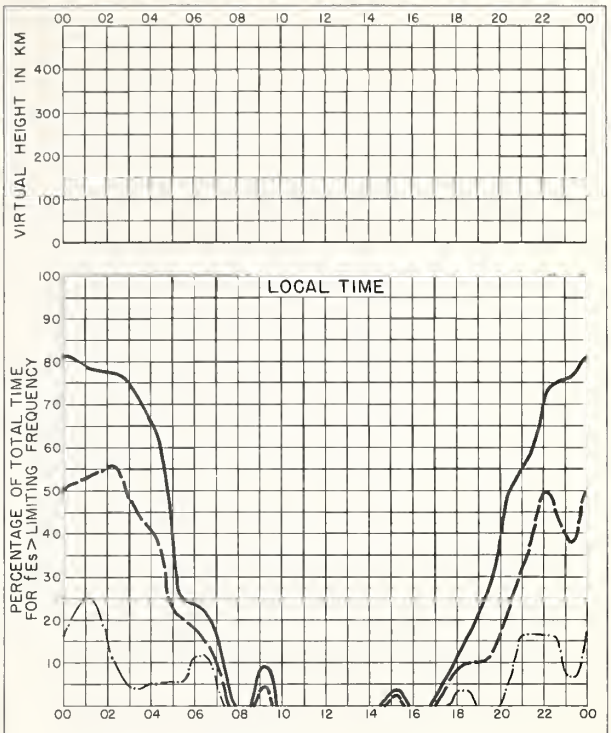


Fig. 34. FAIRBANKS, ALASKA DECEMBER 1957

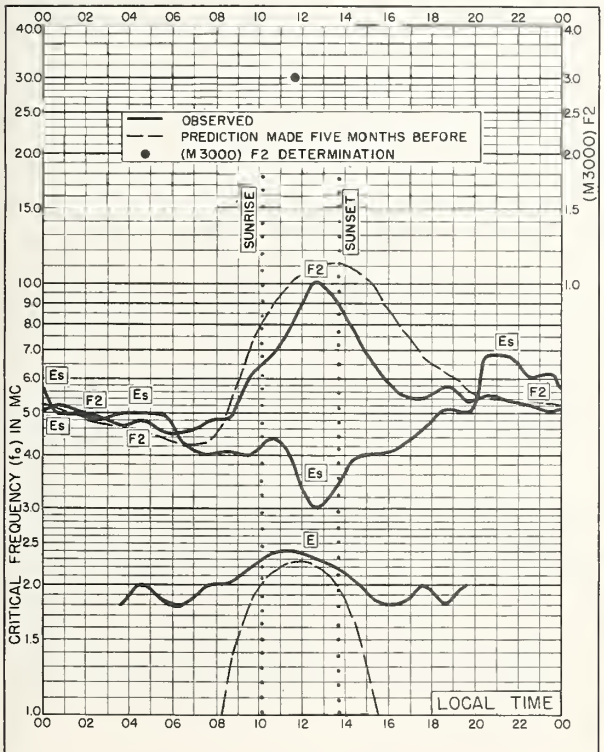


Fig. 35. BAKER LAKE, CANADA
64.3°N, 96.0°W DECEMBER 1957

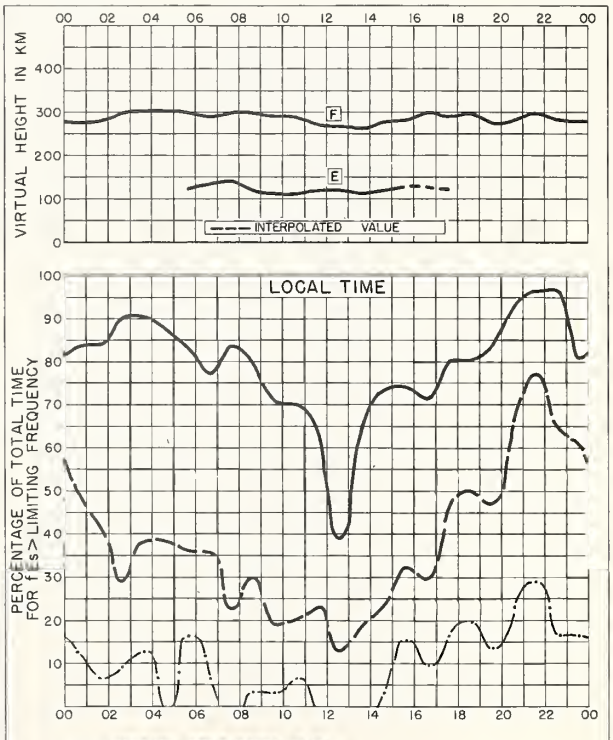


Fig. 36. BAKER LAKE, CANADA DECEMBER 1957

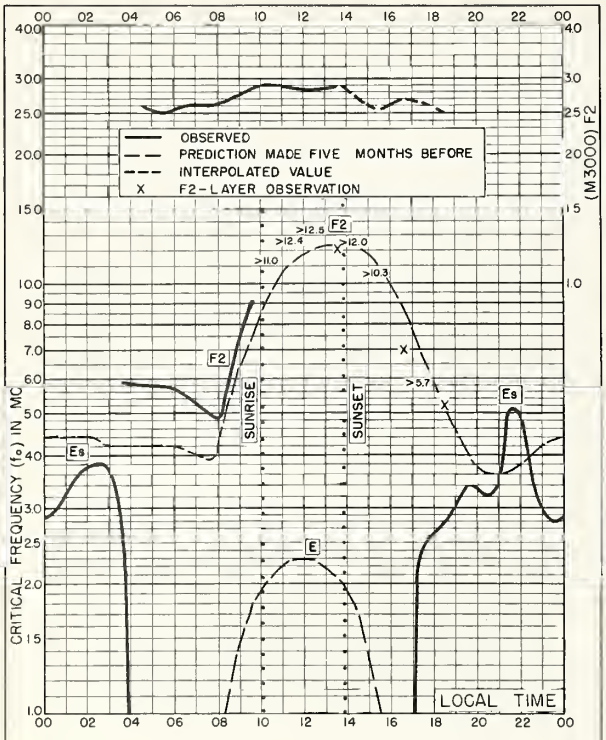


Fig. 37. REYKJAVIK, ICELAND
64.1°N, 21.8° W DECEMBER 1957

NBS 503

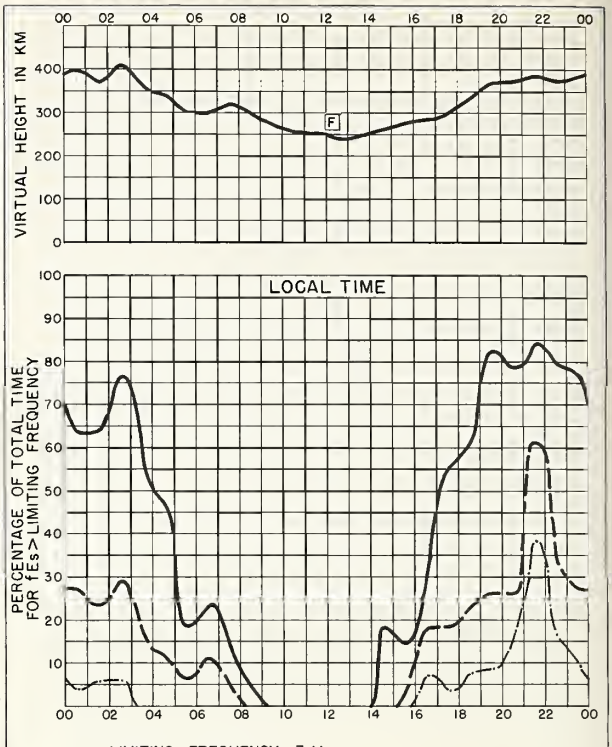


Fig. 38. REYKJAVIK, ICELAND DECEMBER 1957

NBS 490

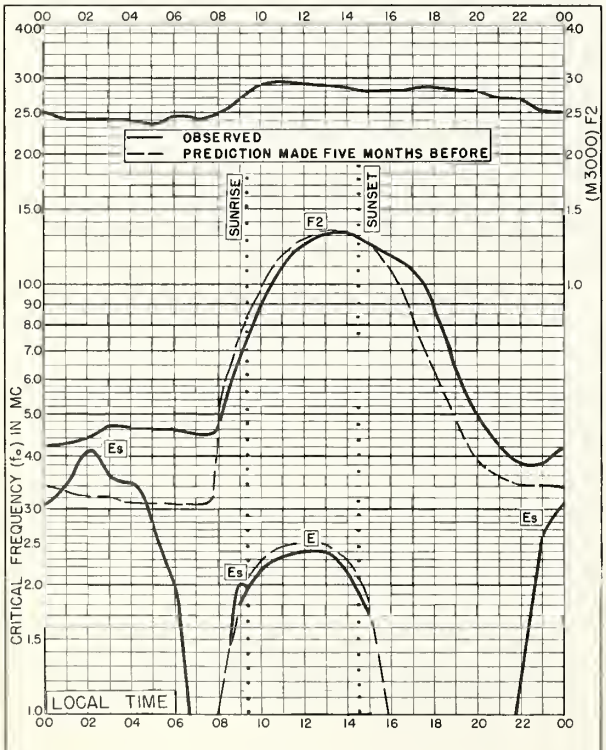


Fig. 39. ANCHORAGE, ALASKA
61.2°N, 149.9° W DECEMBER 1957

NBS 503

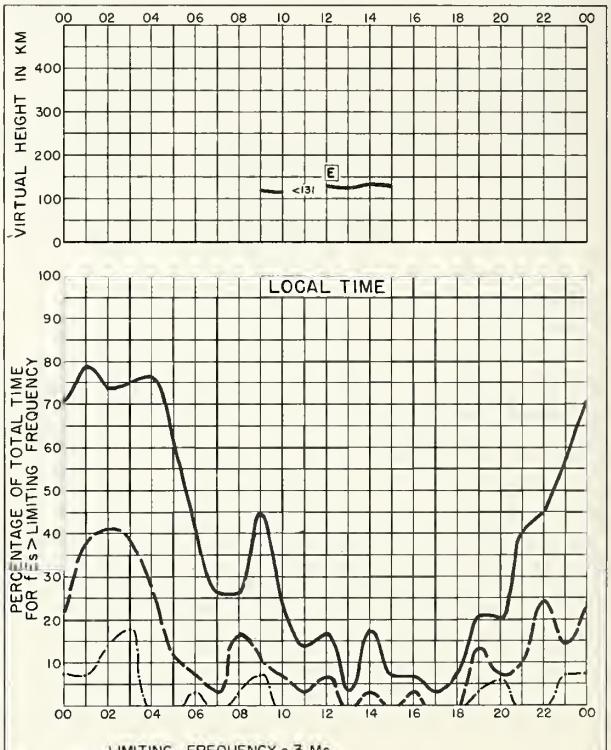


Fig. 40. ANCHORAGE, ALASKA DECEMBER 1957

NBS 490

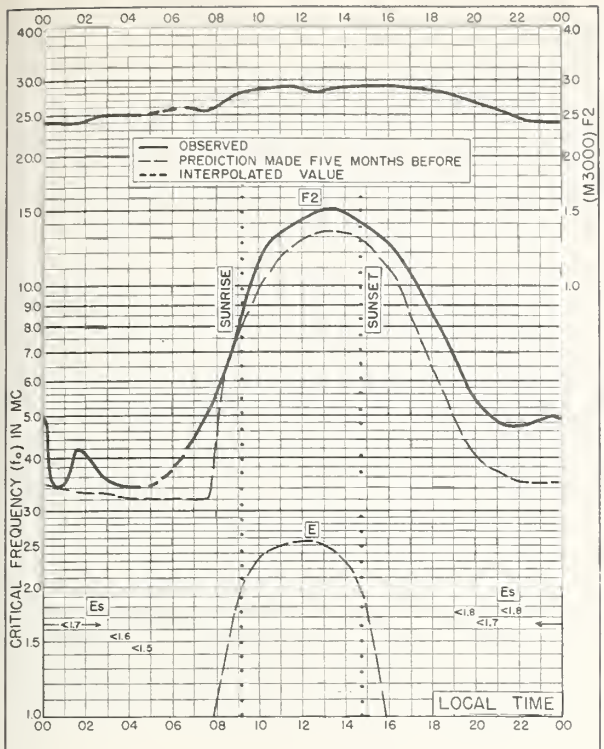


Fig. 41. NURMIJARVI, FINLAND
60.5°N, 24.6°E DECEMBER 1957

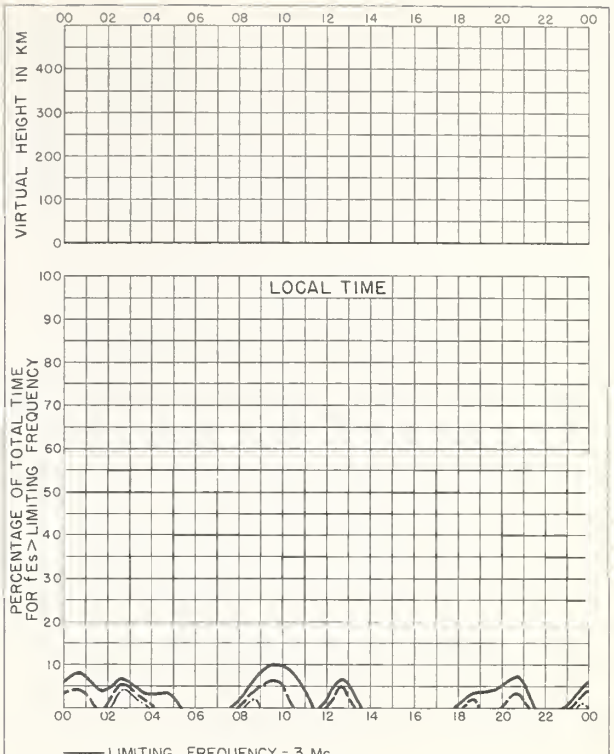


Fig. 42. NURMIJARVI, FINLAND DECEMBER 1957

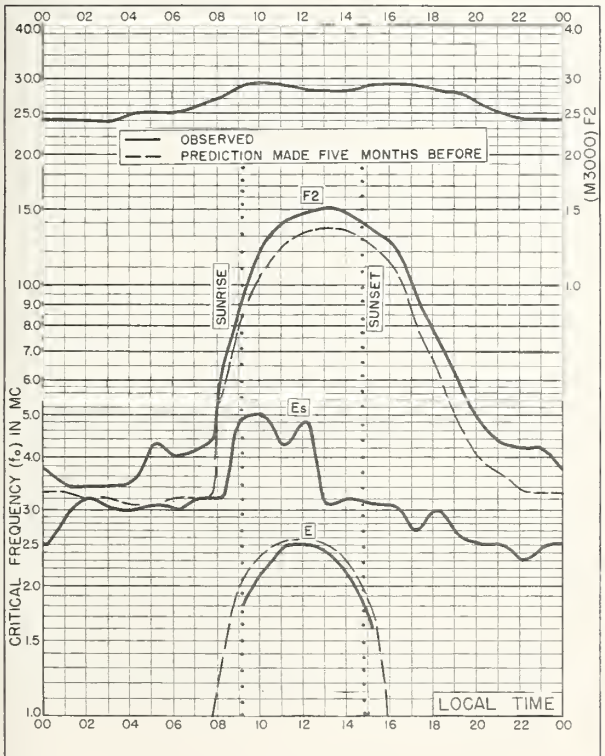


Fig. 43. UPSALA, SWEDEN
59.8°N, 17.6°E DECEMBER 1957

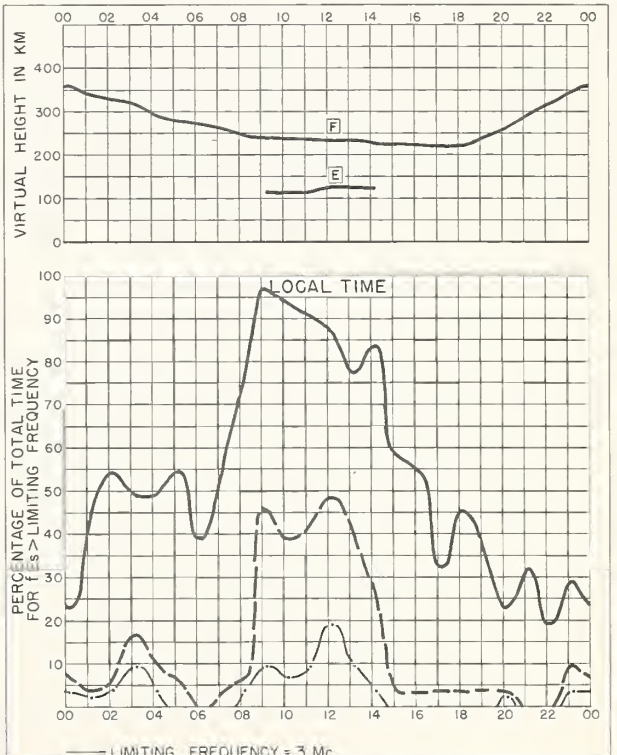


Fig 44. UPSALA, SWEDEN DECEMBER 1957

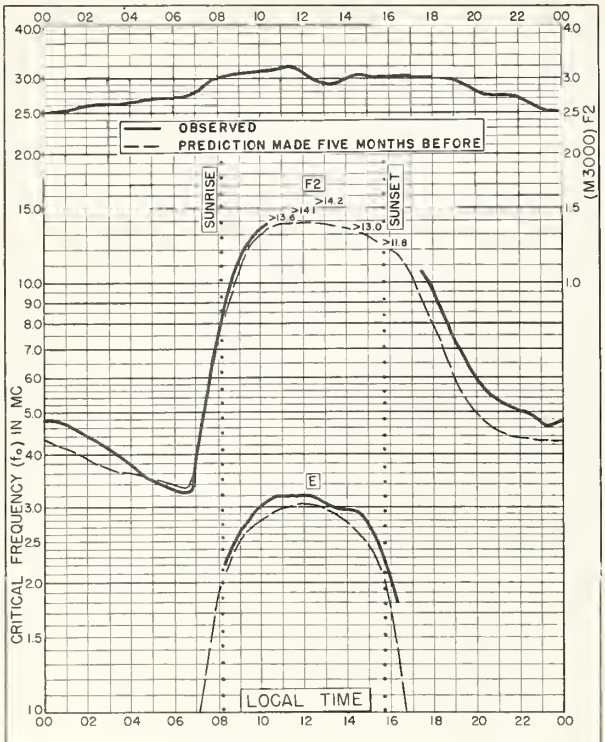


Fig. 45. De BILT, HOLLAND
52.1°N, 5.2°E DECEMBER 1957

NBS 503

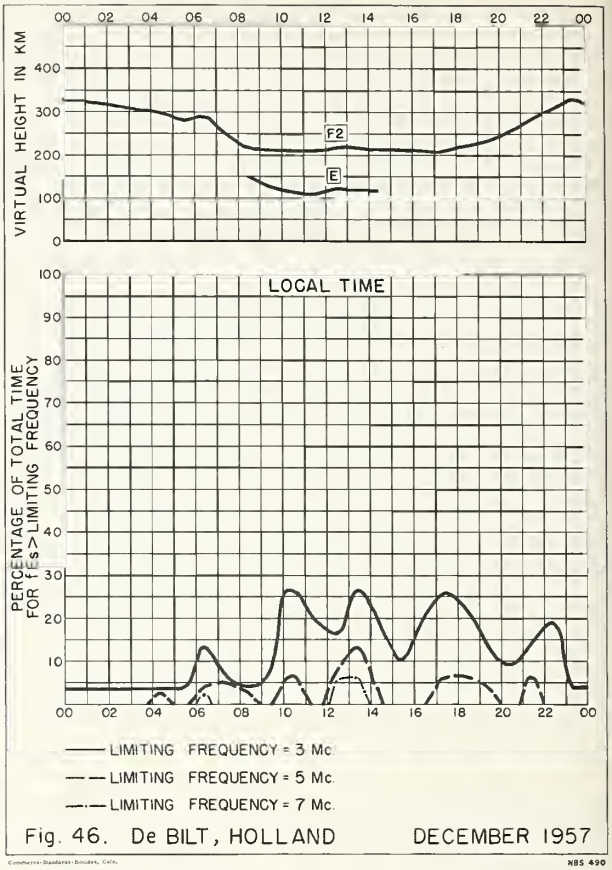


Fig. 46. De BILT, HOLLAND DECEMBER 1957

NBS 490

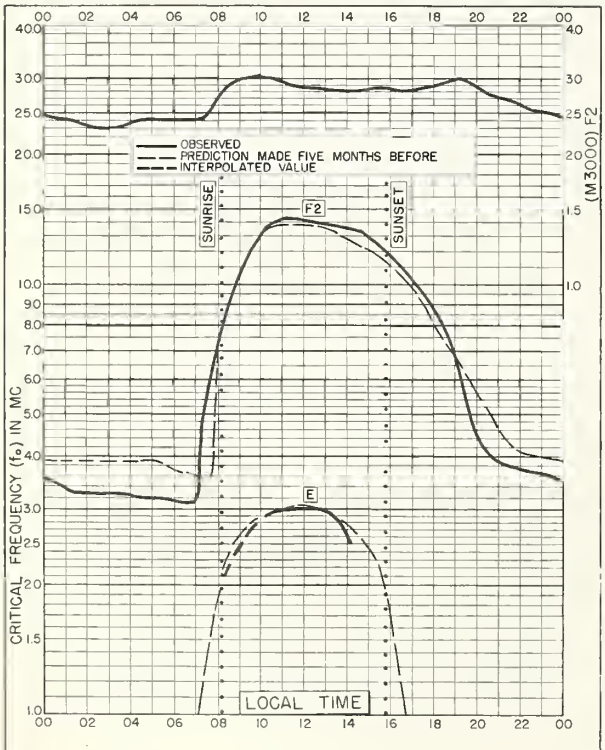


Fig. 47. ADAK, ALASKA
51.9°N, 176.6°W DECEMBER 1957

NBS 503

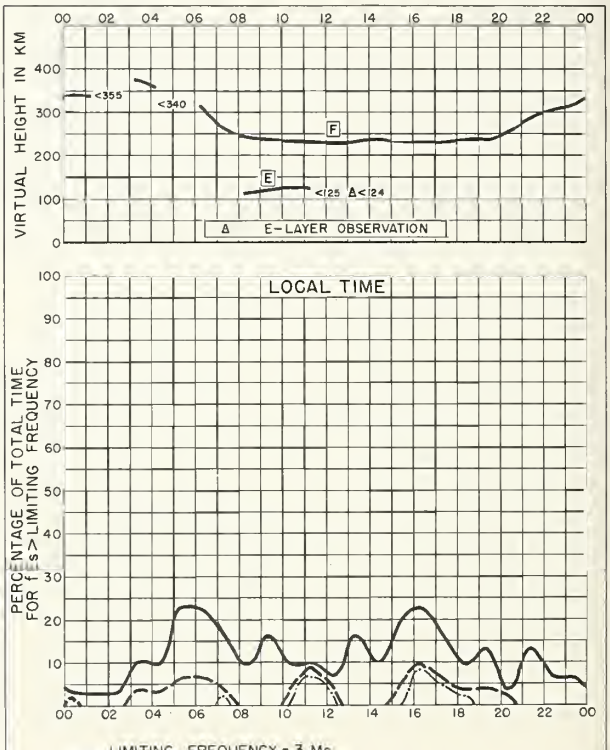


Fig. 48. ADAK, ALASKA DECEMBER 1957

NBS 490

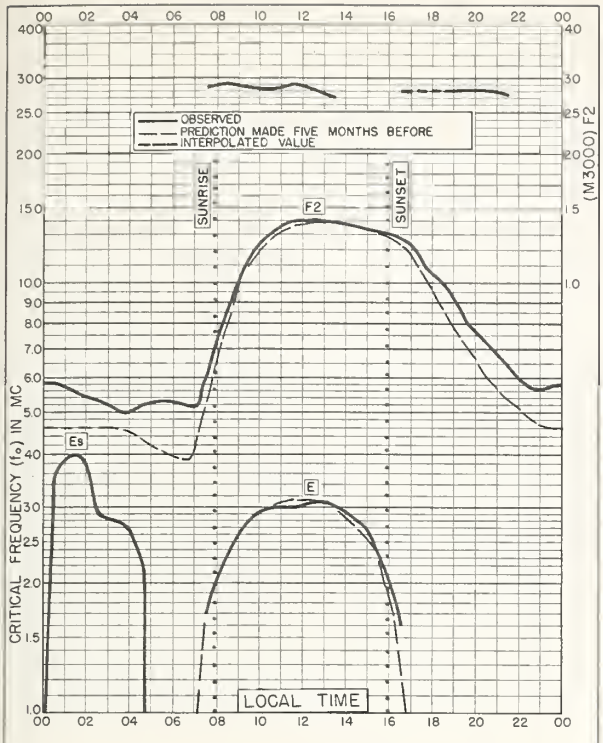


Fig. 49. WINNIPEG, CANADA
49.9°N, 97.4°W DECEMBER 1957

NBS 503

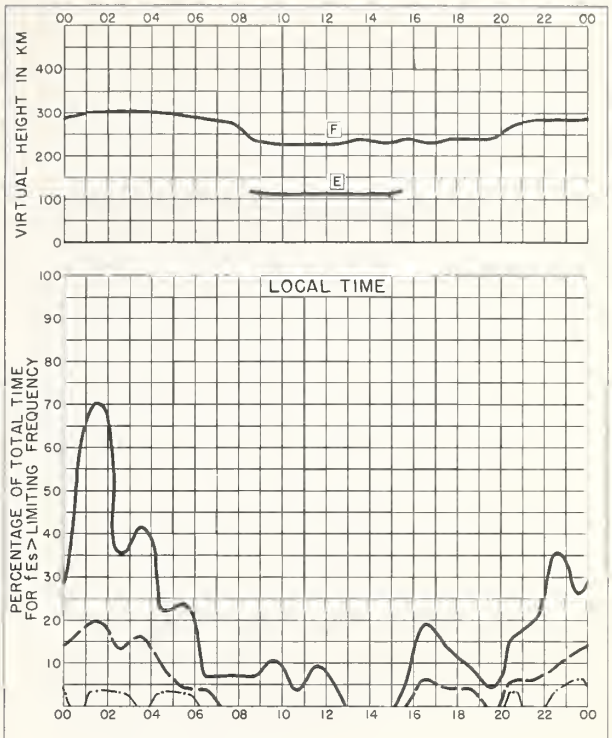


Fig. 50. WINNIPEG, CANADA DECEMBER 1957

NBS 490

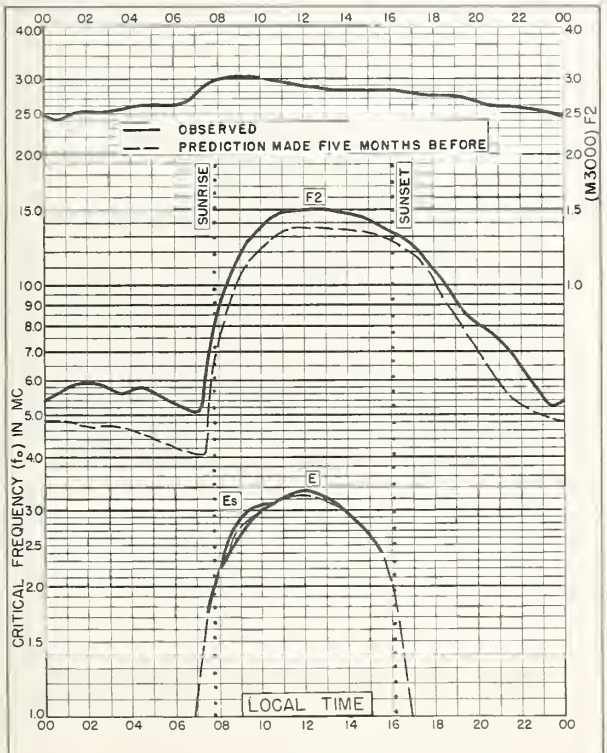


Fig. 51. ST. JOHN'S, NEWFOUNDLAND
47.6°N, 52.7°W DECEMBER 1957

NBS 503

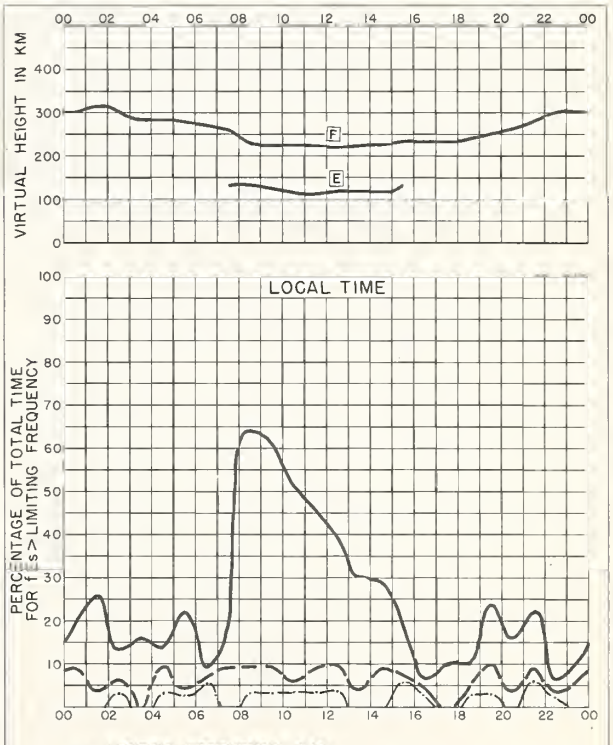


Fig. 52. ST. JOHN'S, NEWFOUNDLAND DECEMBER 1957

NBS 490

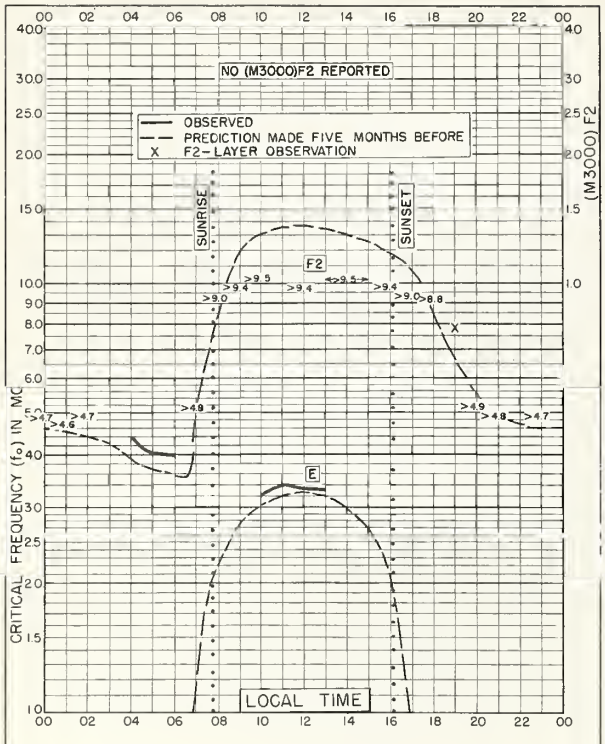


Fig. 53. GRAZ, AUSTRIA
47.1°N, 15.5°E DECEMBER 1957

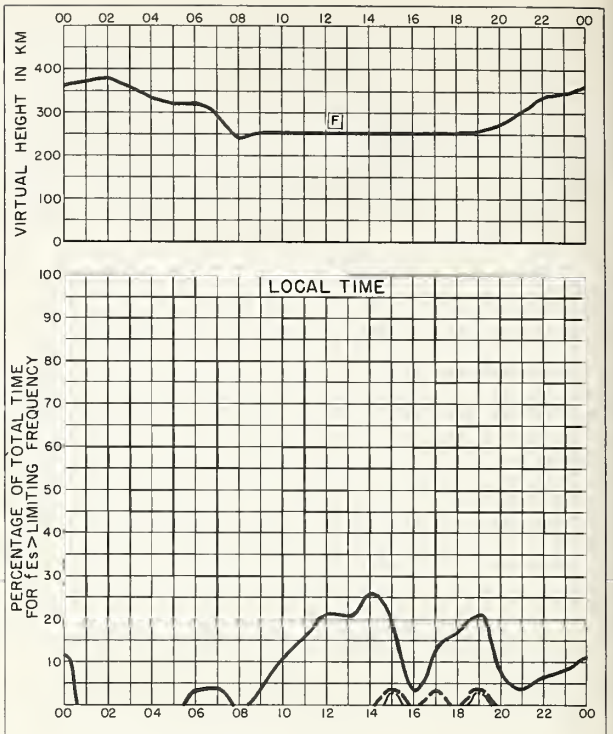


Fig. 54. GRAZ, AUSTRIA DECEMBER 1957

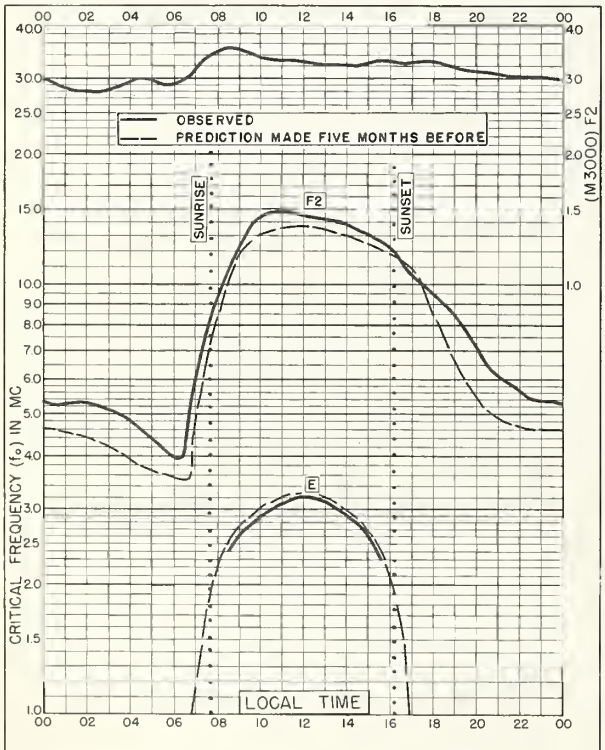


Fig. 55. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E DECEMBER 1957

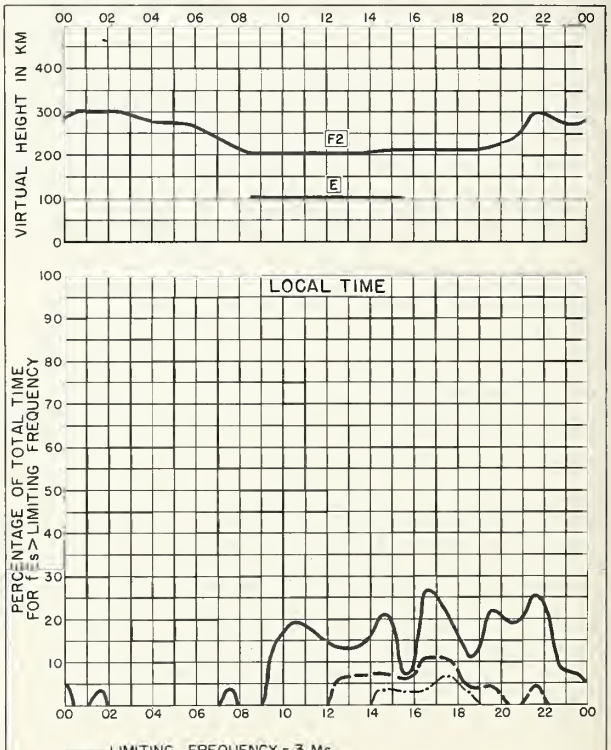


Fig. 56. SCHWARZENBURG, SWITZERLAND DECEMBER 1957

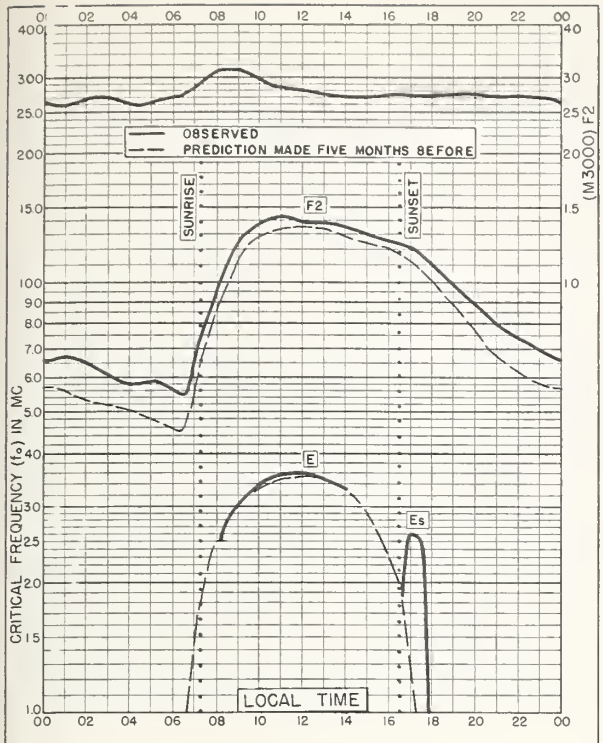
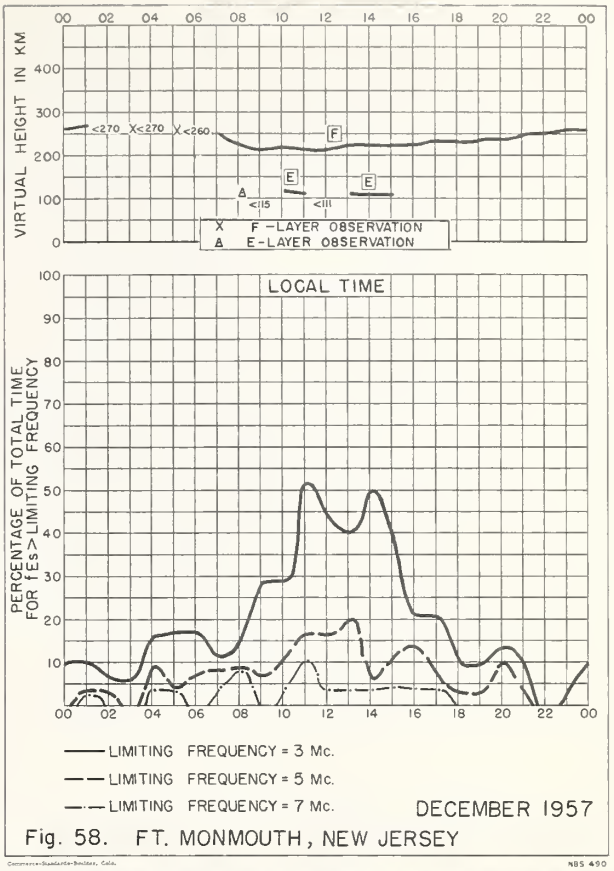


Fig. 57. FT. MONMOUTH, NEW JERSEY
40.3°N, 74.1°W DECEMBER 1957

NBS 503



DECEMBER 1957

Fig. 58. FT. MONMOUTH, NEW JERSEY

NBS 490

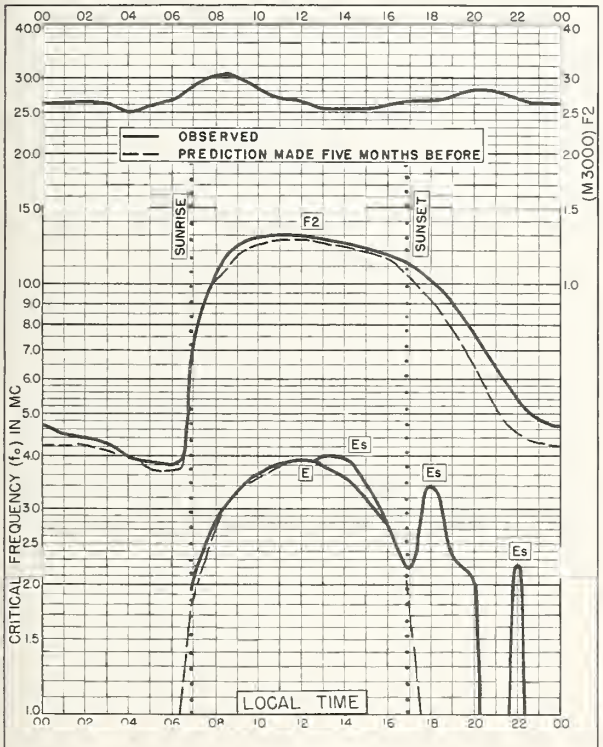
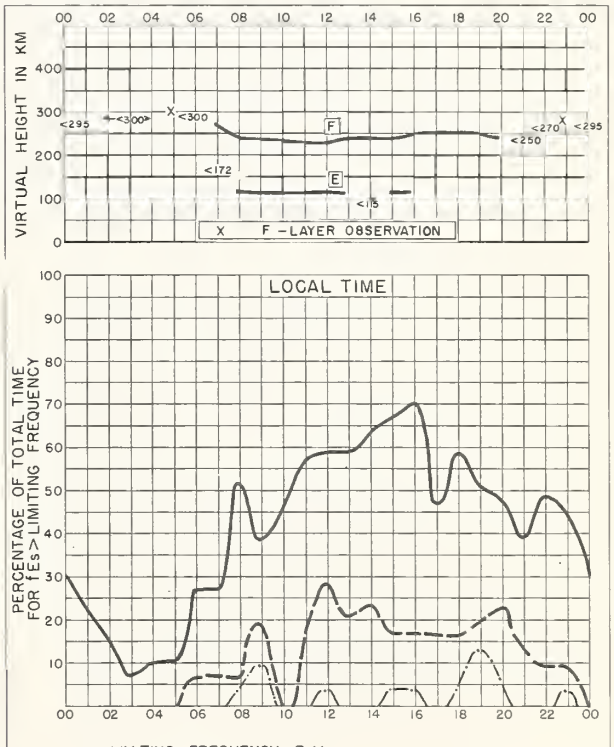


Fig 59. WHITE SANDS, NEW MEXICO
32.3°N, 106.5° W DECEMBER 1957

NBS 503



DECEMBER 1957

Fig. 60. WHITE SANDS, NEW MEXICO

NBS 490

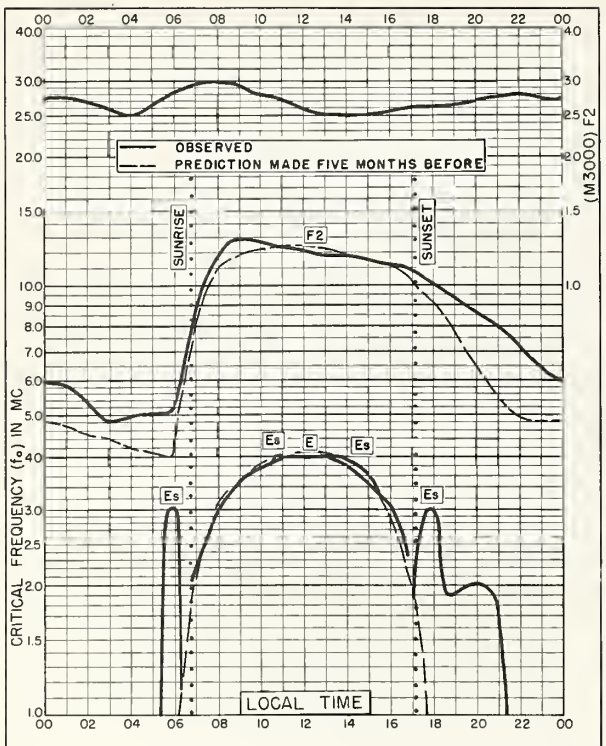


Fig. 61. GRAND BAHAMA I.
26.6°N, 78.2°W DECEMBER 1957

NBS 503

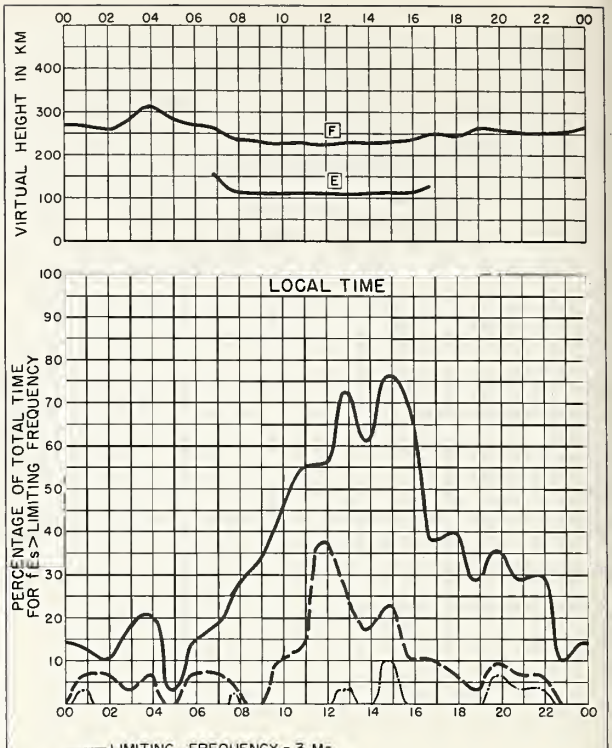


Fig. 62. GRAND BAHAMA I. DECEMBER 1957

NBS 490

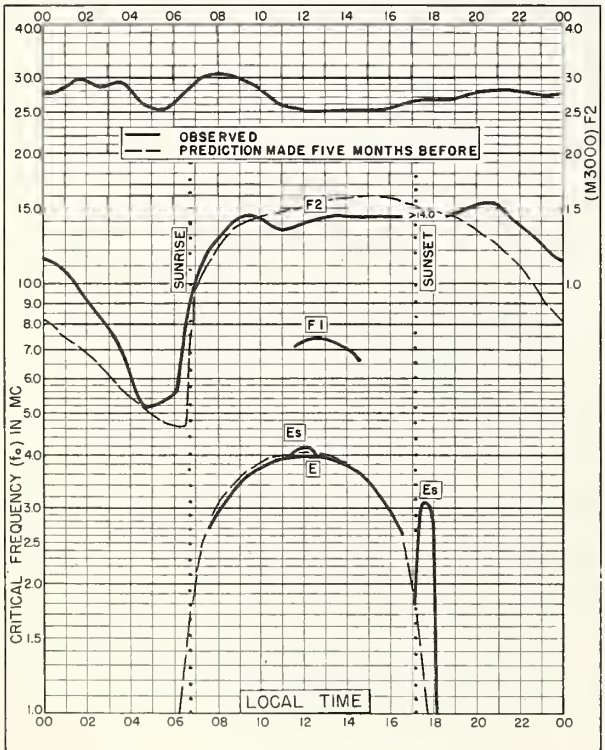


Fig. 63. OKINAWA I.
26.3°N, 127.8°E DECEMBER 1957

NBS 503

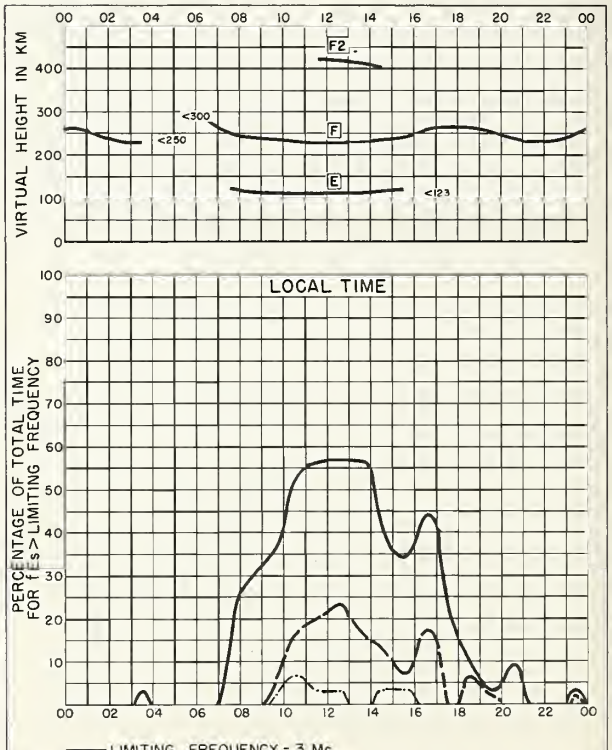


Fig. 64. OKINAWA I. DECEMBER 1957

NBS 490

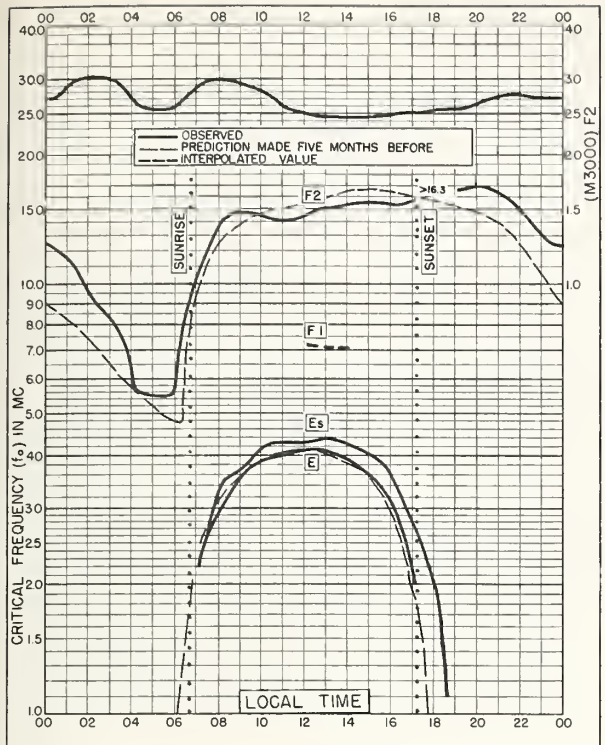


Fig. 65. FORMOSA, CHINA
25.0°N, 121.5°E DECEMBER 1957

Commerce-Standards-Boulder, Colo. NBS 503

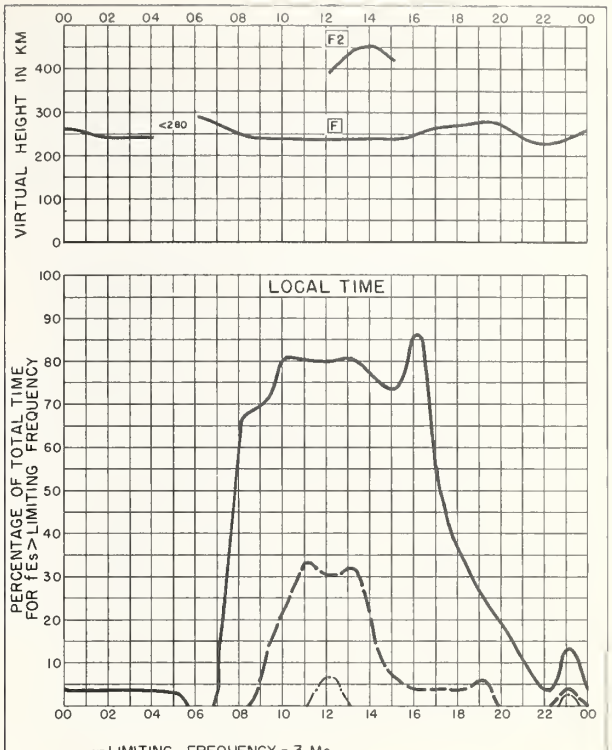


Fig. 66. FORMOSA, CHINA DECEMBER 1957

Commerce-Standards-Boulder, Colo. NBS 490

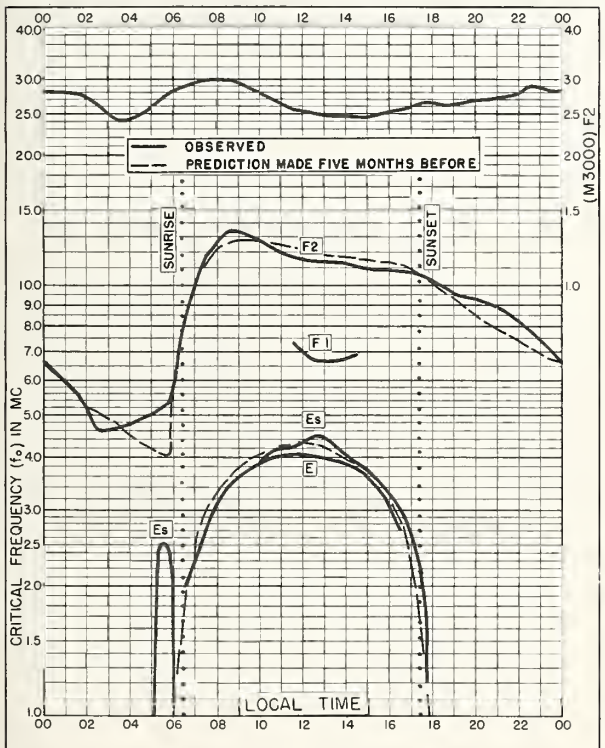


Fig. 67. PUERTO RICO, W.I.
18.5°N, 67.2°W DECEMBER 1957

Commerce-Standards-Boulder, Colo. NBS 503

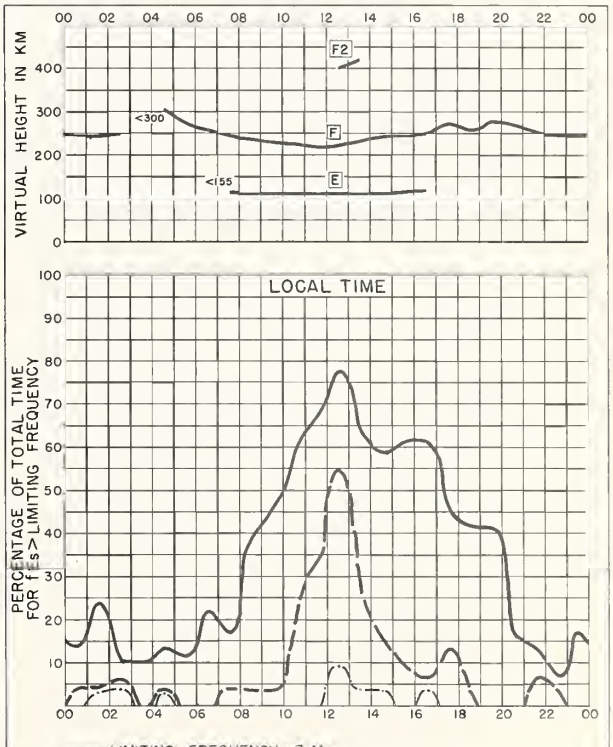


Fig. 68. PUERTO RICO, W.I. DECEMBER 1957

Commerce-Standards-Boulder, Colo. NBS 490

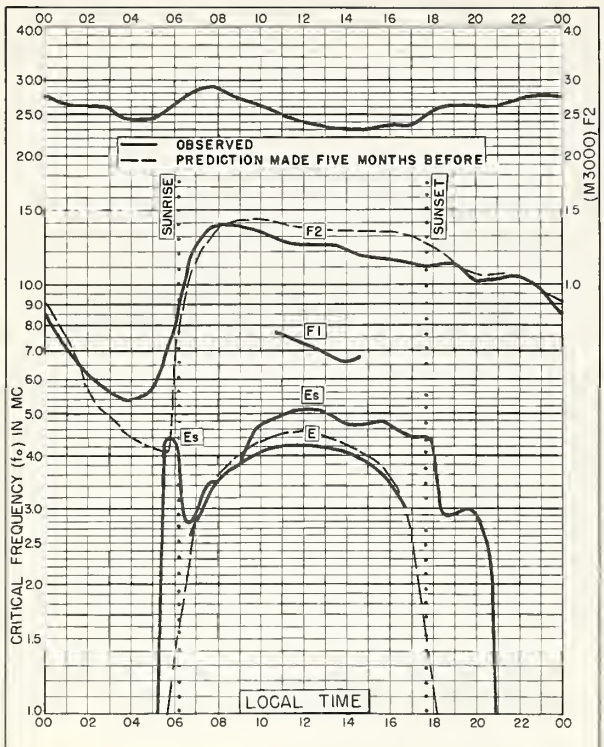


Fig. 69. PANAMA CANAL ZONE
9.4°N, 79.9°W DECEMBER 1957

NBS 503

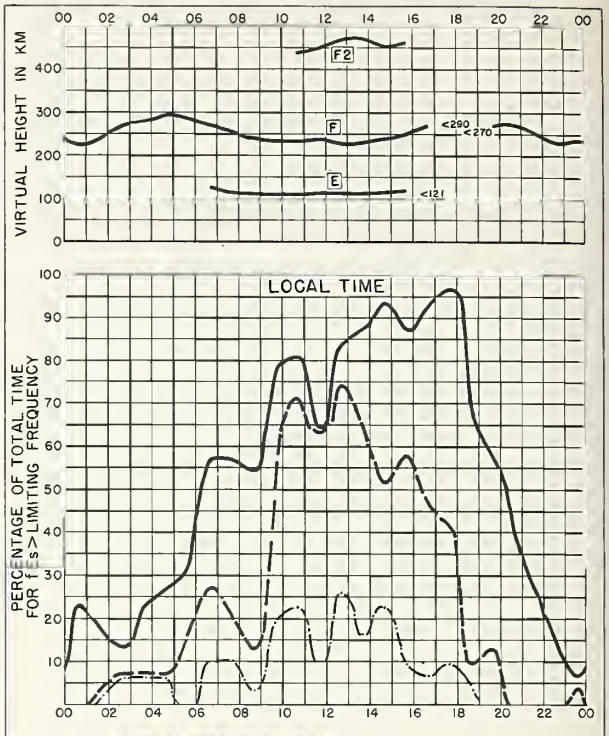


Fig. 70. PANAMA CANAL ZONE DECEMBER 1957

NBS 490

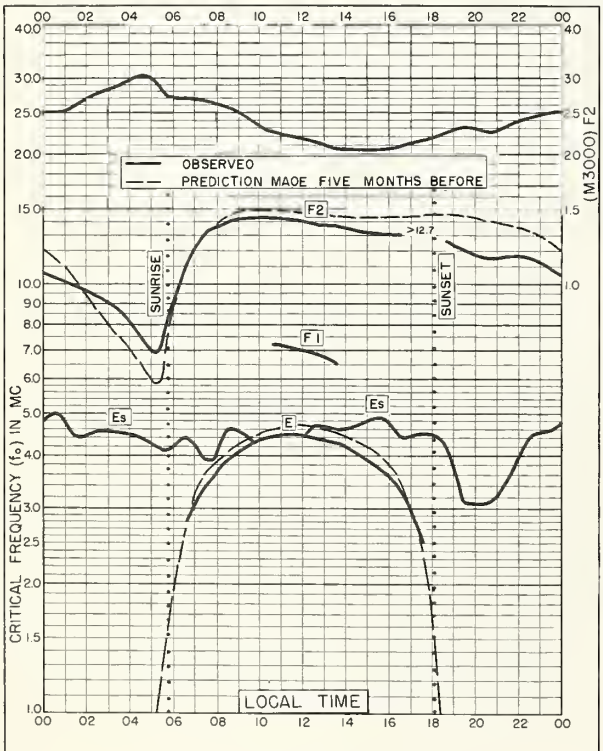


Fig. 71. TALARA, PERU
4.6°S, 81.3°W DECEMBER 1957

NBS 503

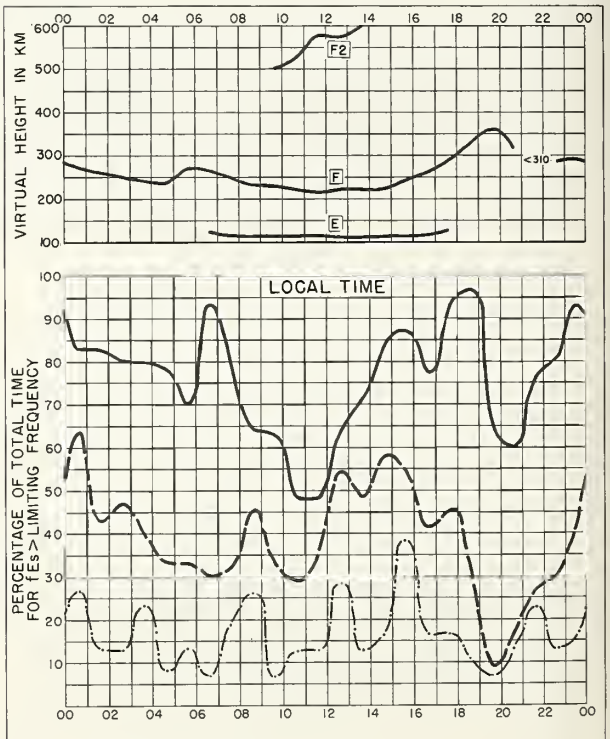


Fig. 72. TALARA, PERU DECEMBER 1957

NBS 490

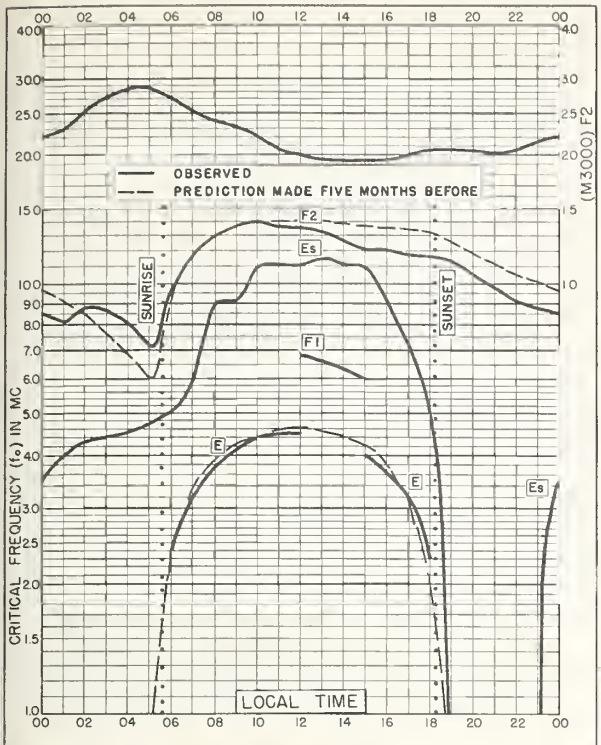


Fig. 73. HUANCAYO, PERU
12.0°S, 75.3°W DECEMBER 1957

NBS 503

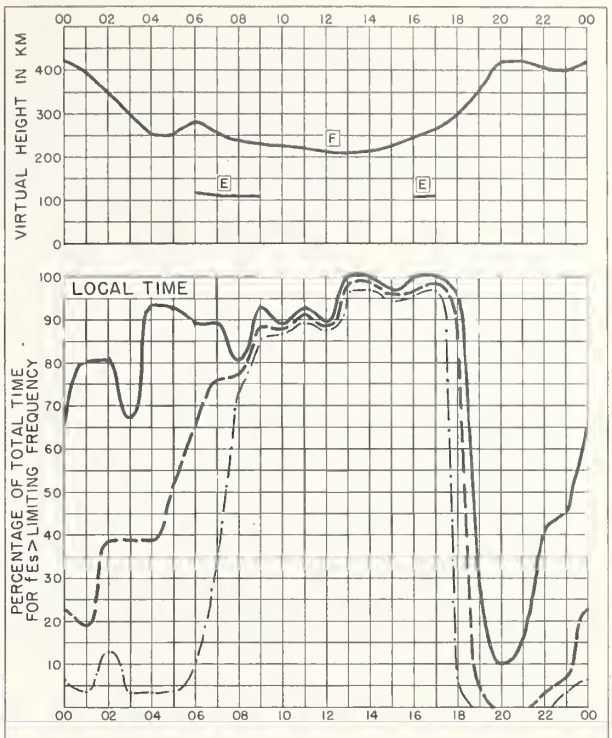


Fig. 74. HUANCAYO, PERU DECEMBER 1957

NBS 490

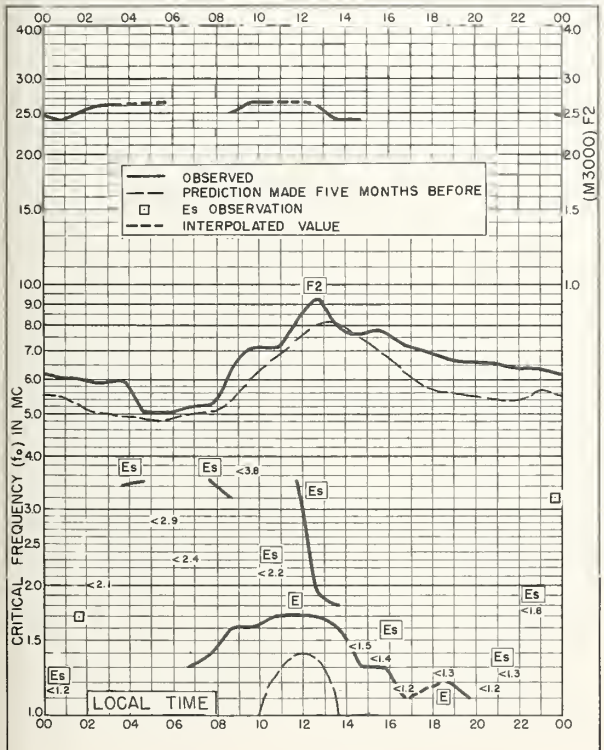


Fig. 75. RESOLUTE BAY, CANADA
74.7°N, 94.9°W NOVEMBER 1957

NBS 503

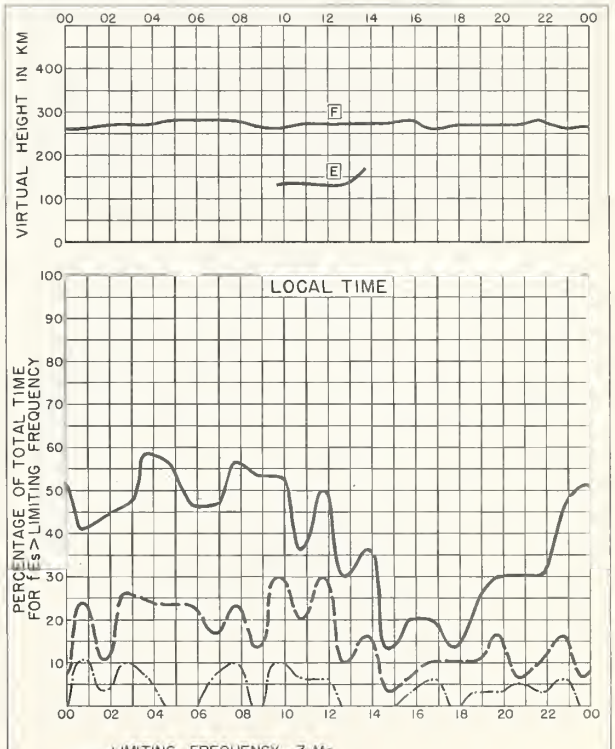


Fig. 76. RESOLUTE BAY, CANADA NOVEMBER 1957

NBS 490

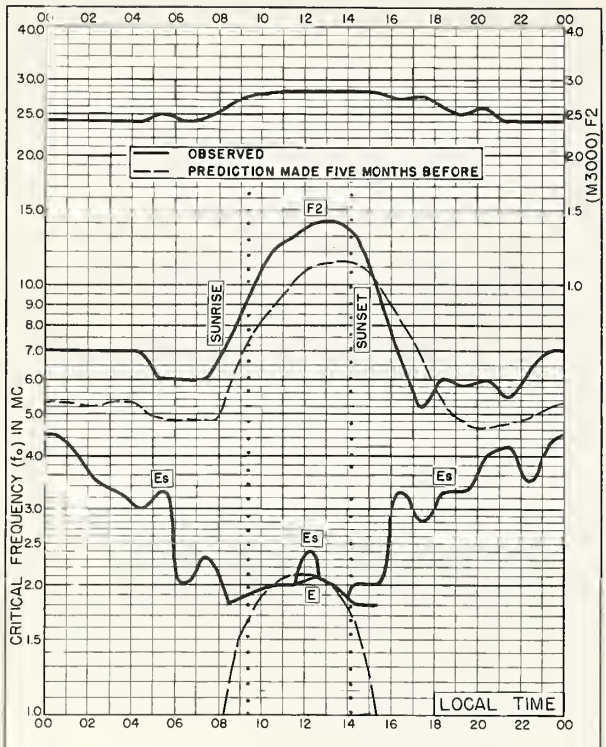


Fig. 77. KIRUNA, SWEDEN
67.8°N, 20.3°E NOVEMBER 1957

NBS 503

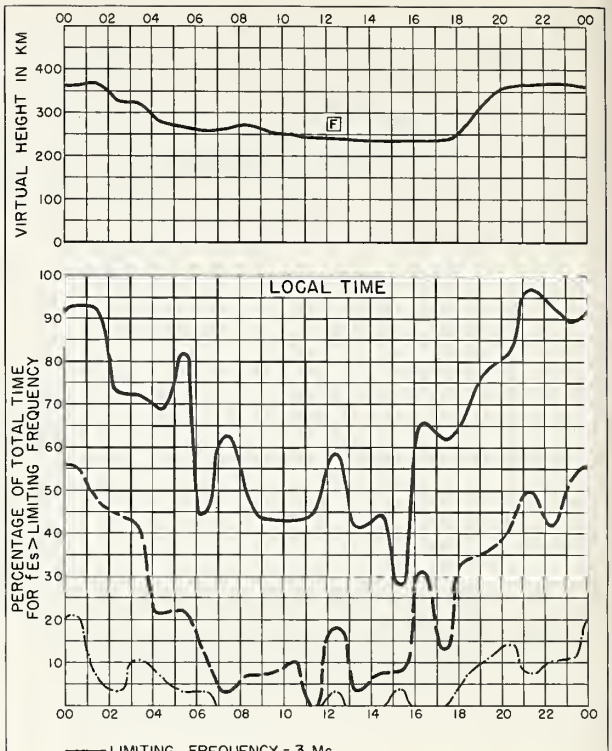


Fig. 78. KIRUNA, SWEDEN NOVEMBER 1957

Commerce-Standards-Boulder, Colo.

NBS 490

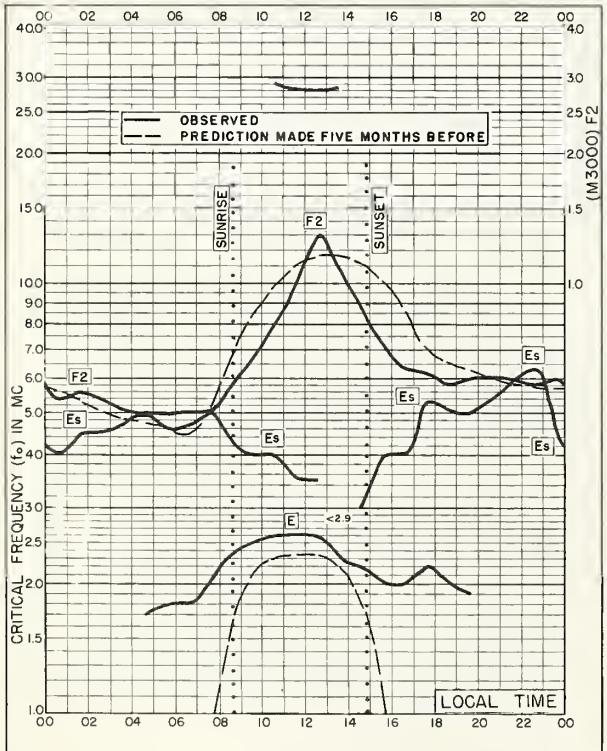


Fig. 79. BAKER LAKE, CANADA
64.3°N, 96.0°W NOVEMBER 1957

NBS 503

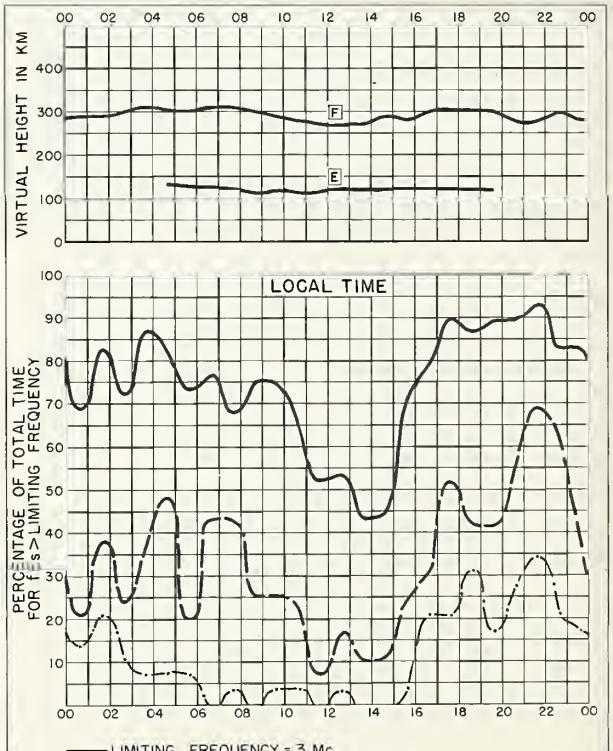


Fig. 80. BAKER LAKE, CANADA NOVEMBER 1957

Commerce-Standards-Boulder, Colo.

NBS 490

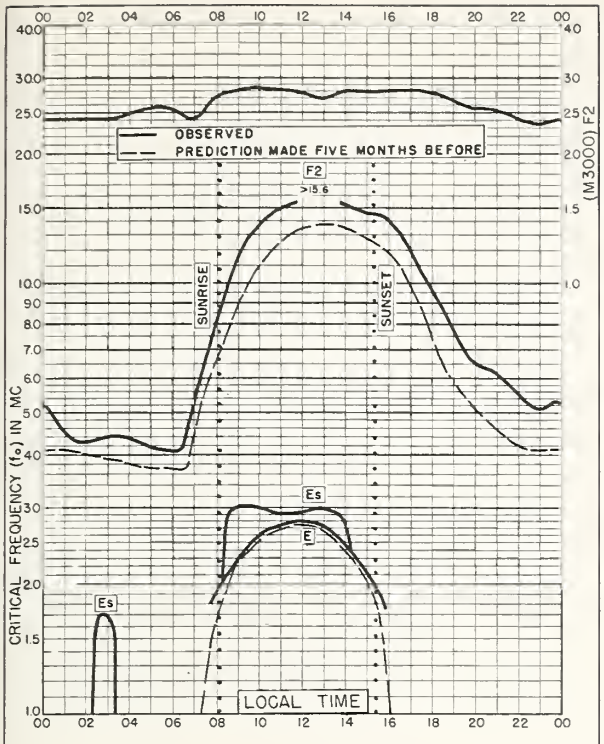


Fig. 81. OSLO, NORWAY
60.0°N, 11.1°E NOVEMBER 1957

NBS 503

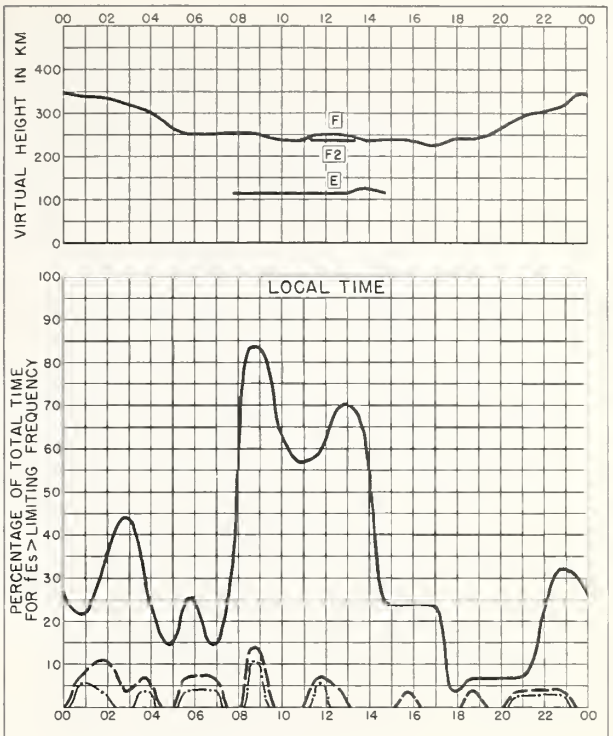


Fig. 82. OSLO, NORWAY NOVEMBER 1957

NBS 490

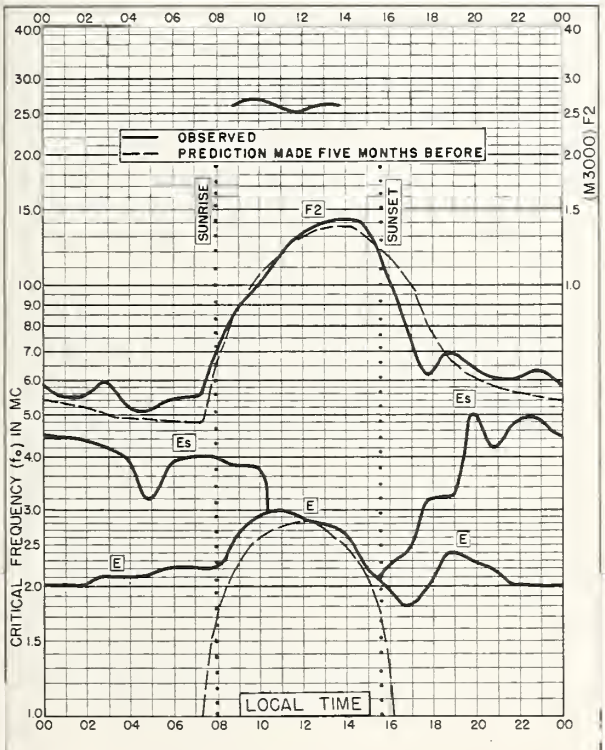


Fig. 83. CHURCHILL, CANADA
58.8°N, 94.2°W NOVEMBER 1957

NBS 503

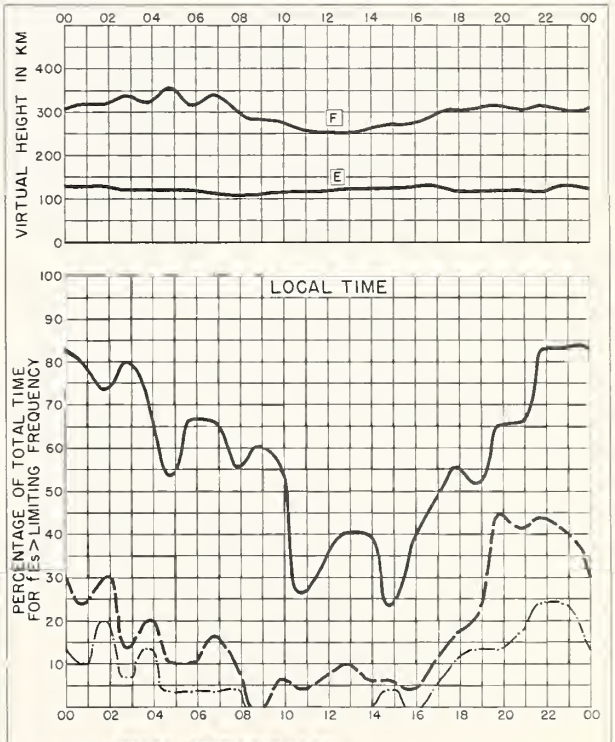


Fig. 84. CHURCHILL, CANADA NOVEMBER 1957

NBS 490

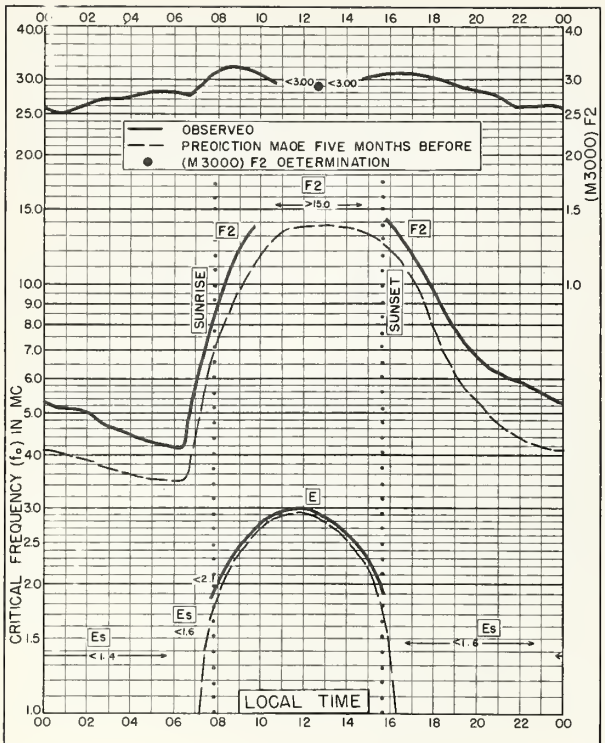


Fig. 85. INVERNESS, SCOTLAND
57.4°N, 4.2°W NOVEMBER 1957

NBS 503

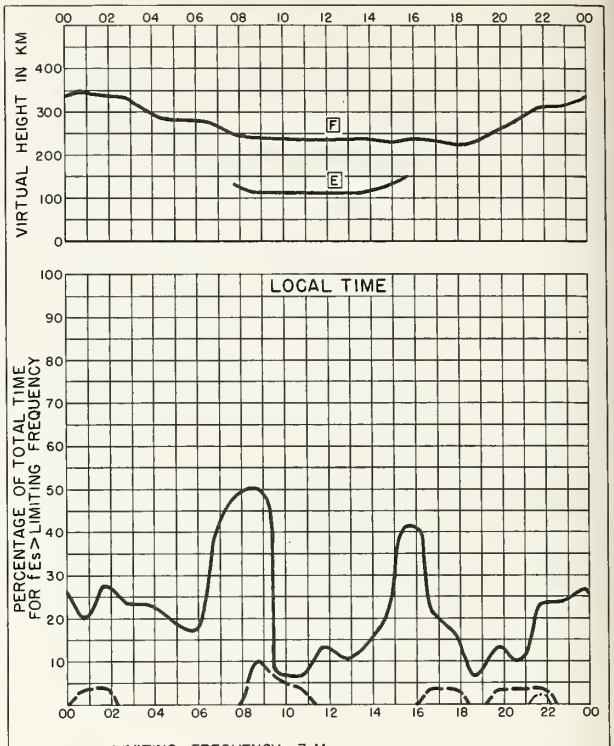


Fig. 86. INVERNESS, SCOTLAND NOVEMBER 1957

NBS 490

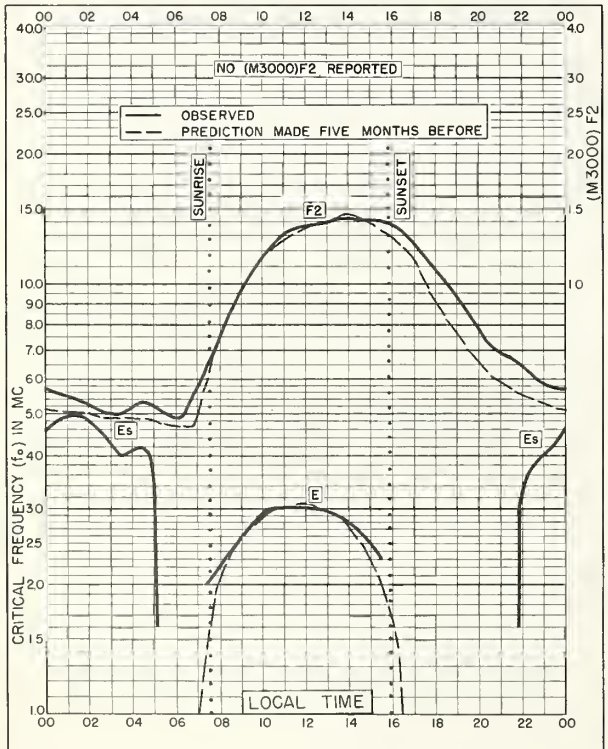


Fig. 87. MEANOOK, CANADA
54.6°N, 113.3°W NOVEMBER 1957

NBS 503

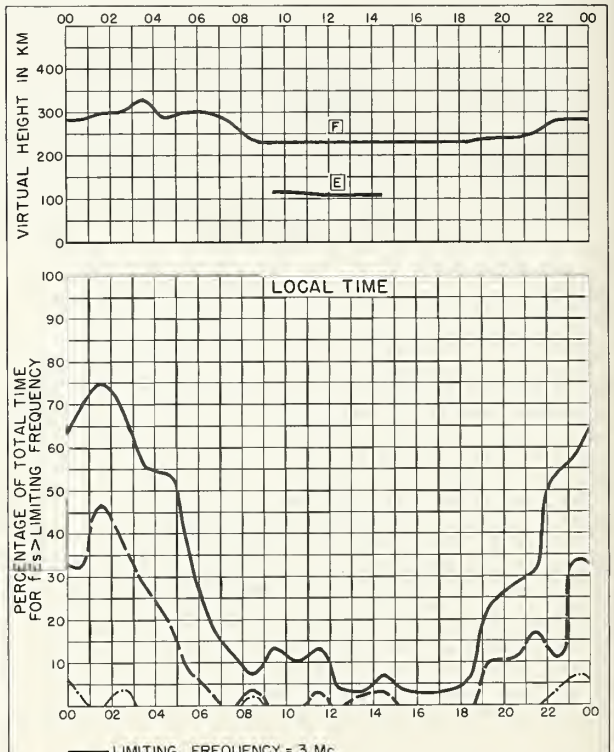


Fig. 88. MEANOOK, CANADA NOVEMBER 1957

NBS 490

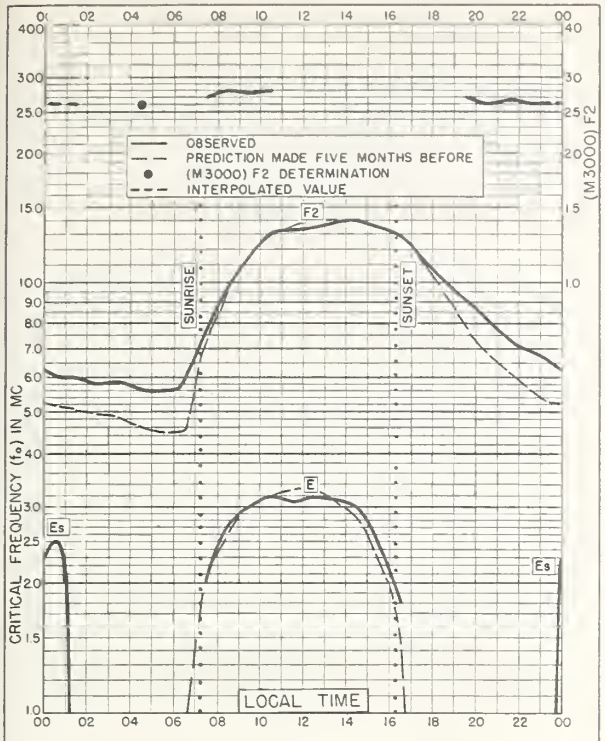


Fig. 89. WINNIPEG, CANADA
49.9°N, 97.4°W NOVEMBER 1957

NBS 503

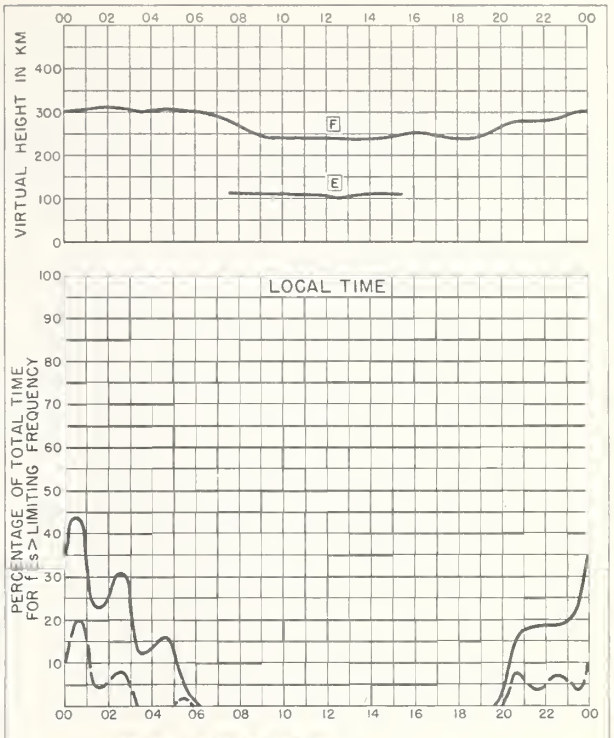


Fig. 90. WINNIPEG, CANADA NOVEMBER 1957

NBS 490

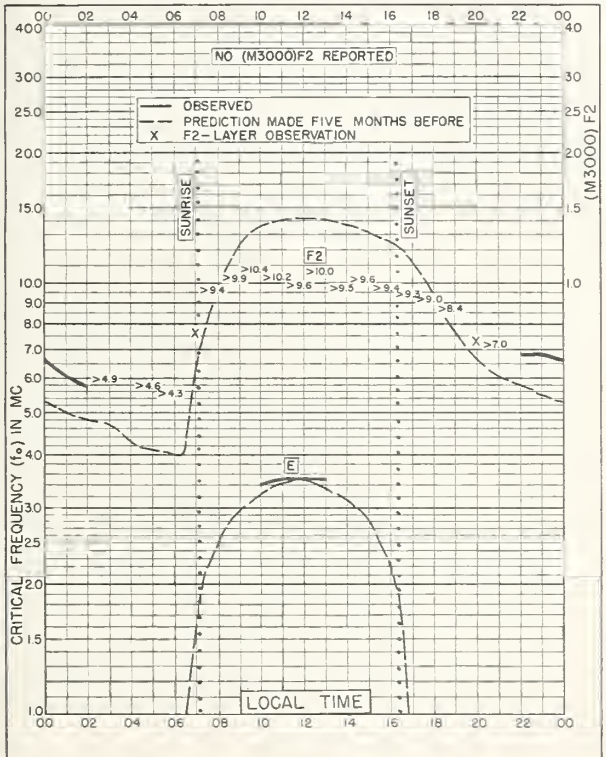


Fig. 91. GRAZ, AUSTRIA
47.1°N, 15.5°E NOVEMBER 1957

NBS 503

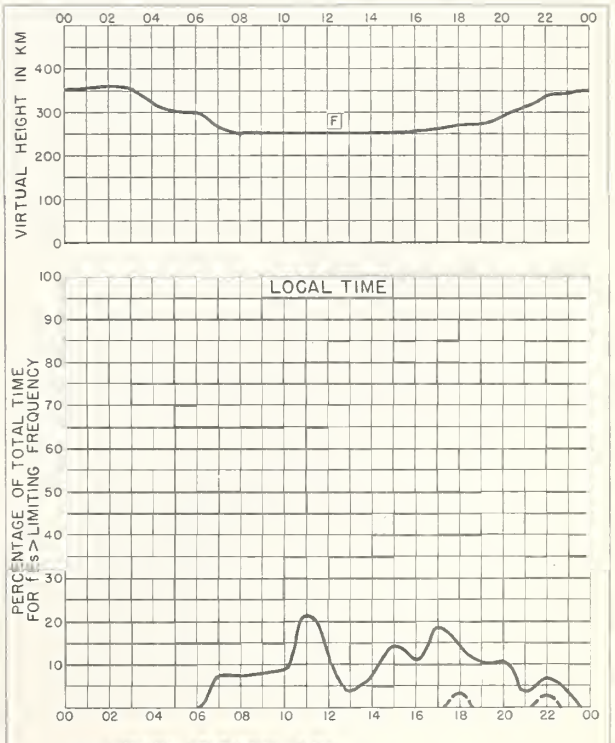


Fig. 92. GRAZ, AUSTRIA NOVEMBER 1957

NBS 490

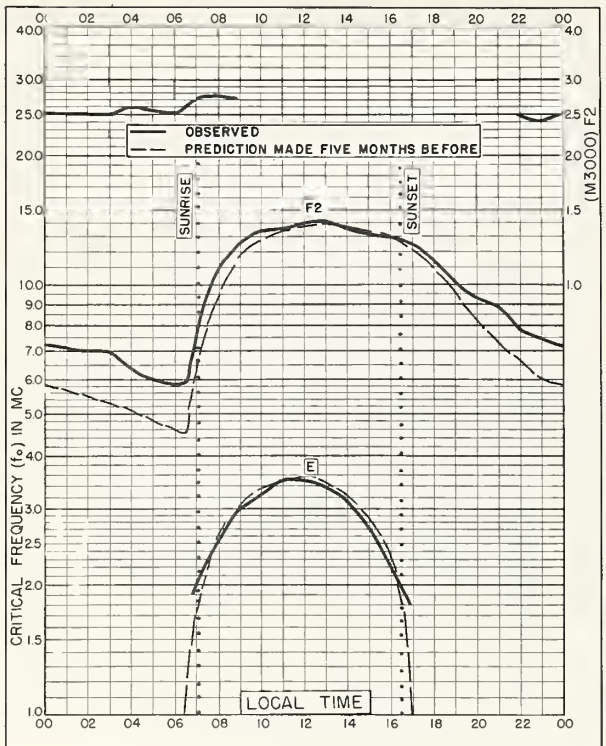


Fig. 93. OTTAWA, CANADA
45.4°N, 75.9°W NOVEMBER 1957

NBS 503

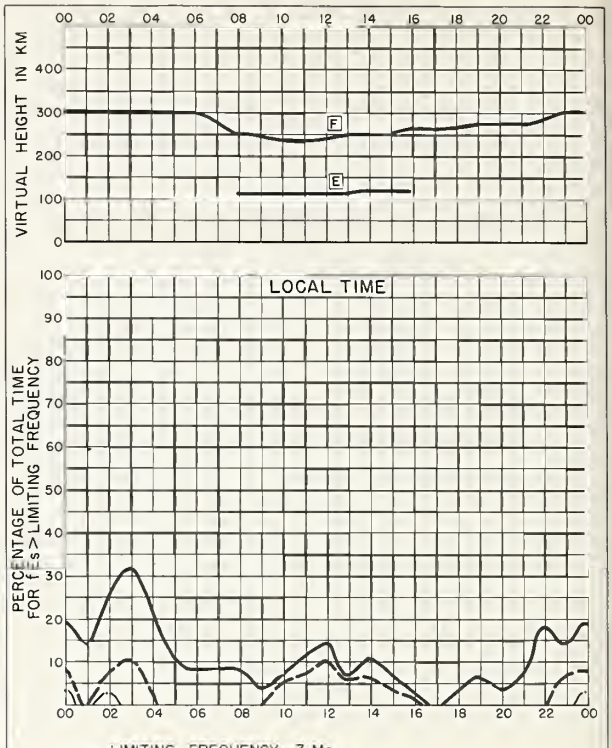


Fig. 94. OTTAWA, CANADA NOVEMBER 1957

NBS 490

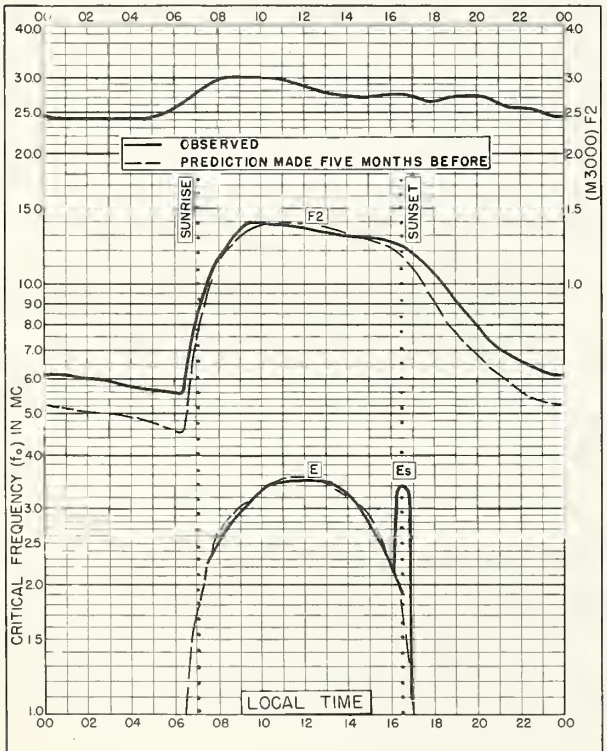


Fig. 95. WAKKANAI, JAPAN
45.4°N, 141.7°E NOVEMBER 1957

NBS 503

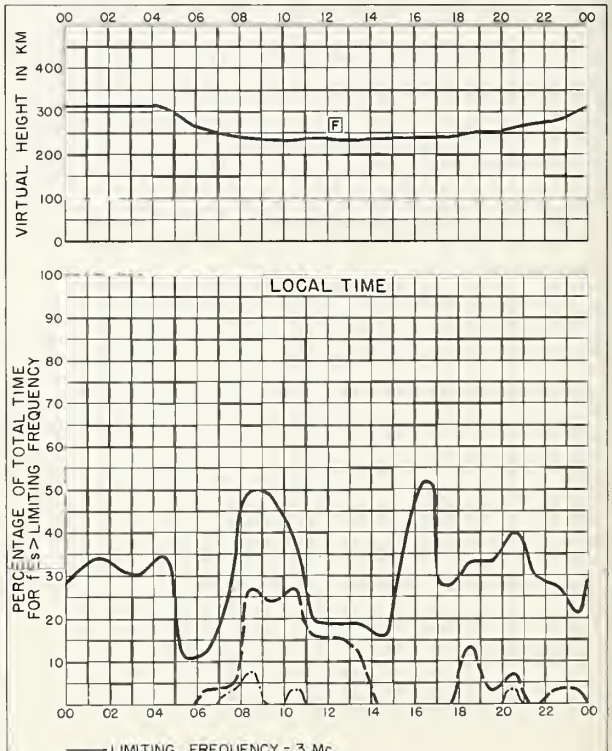


Fig. 96. WAKKANAI, JAPAN NOVEMBER 1957

NBS 490

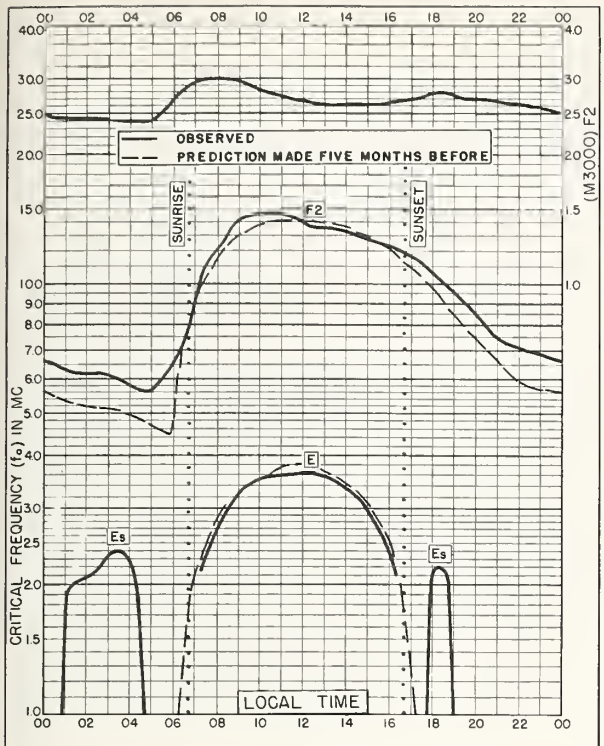


Fig. 97. AKITA, JAPAN
39.7°N, 140.1°E NOVEMBER 1957

NBS 503

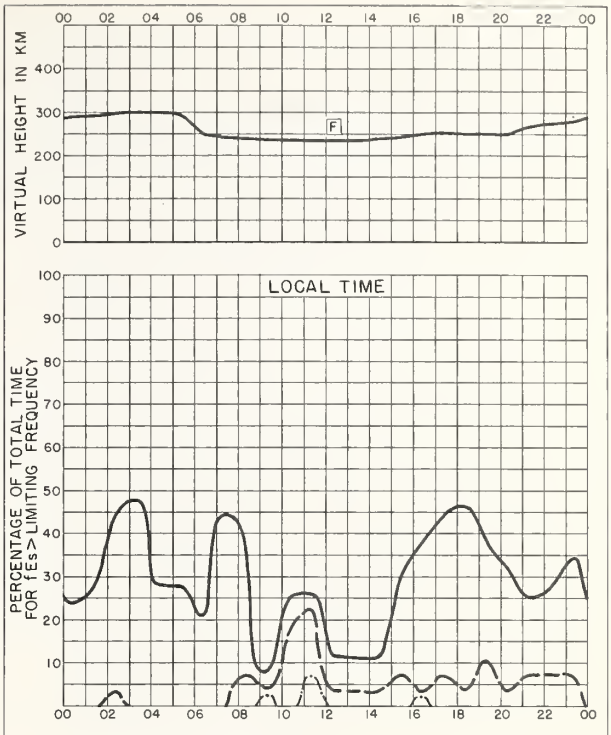


Fig. 98. AKITA, JAPAN NOVEMBER 1957

NBS 490

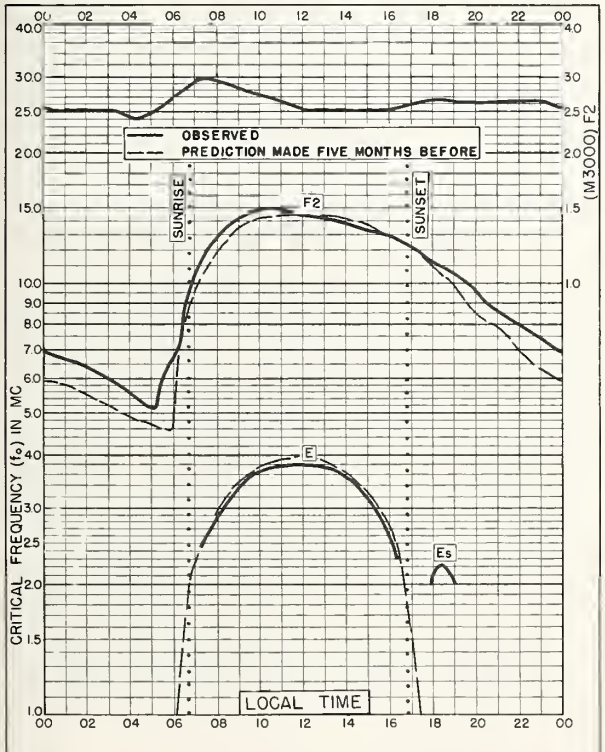


Fig. 99. TOKYO, JAPAN
35.7°N, 139.5°E NOVEMBER 1957

NBS 503

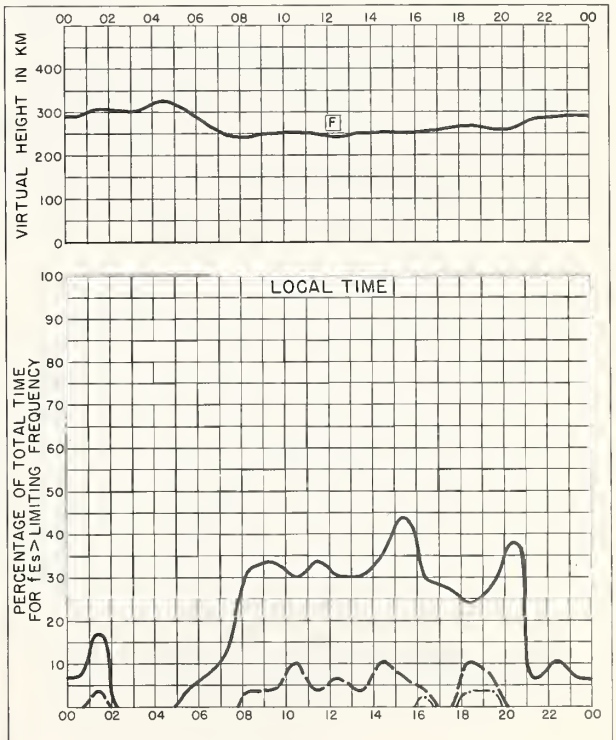


Fig. 100. TOKYO, JAPAN NOVEMBER 1957

NBS 490

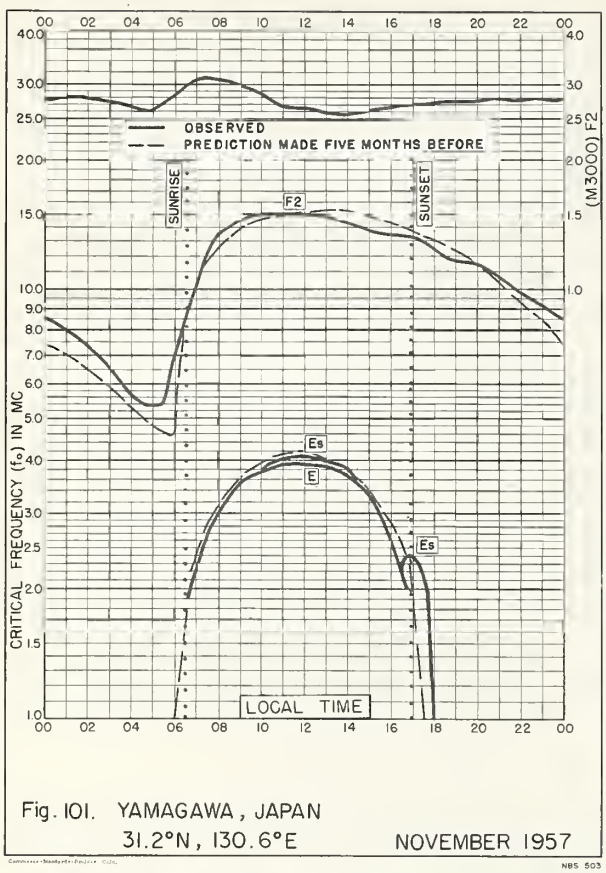


Fig. 101. YAMAGAWA, JAPAN
31.2°N, 130.6°E NOVEMBER 1957

NBS 503

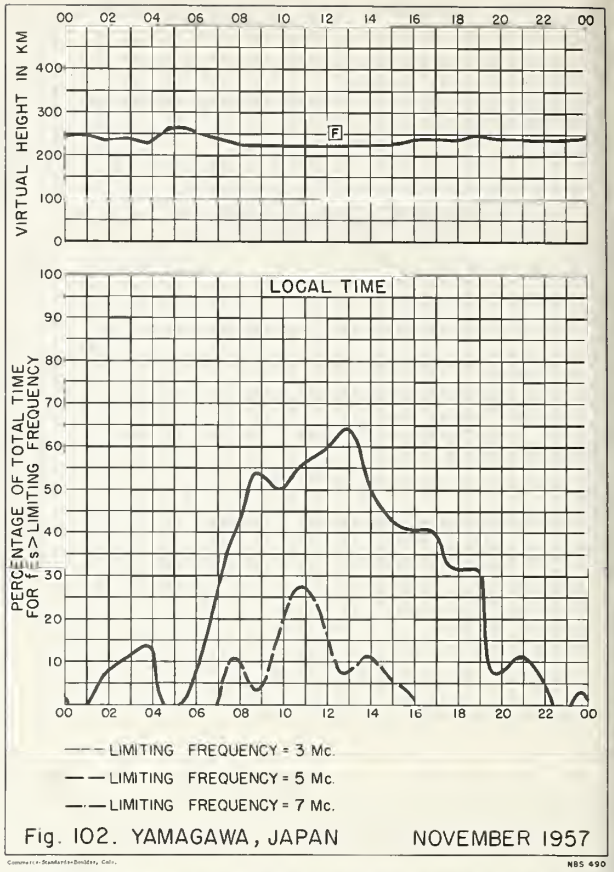


Fig. 102. YAMAGAWA, JAPAN NOVEMBER 1957

NBS 490

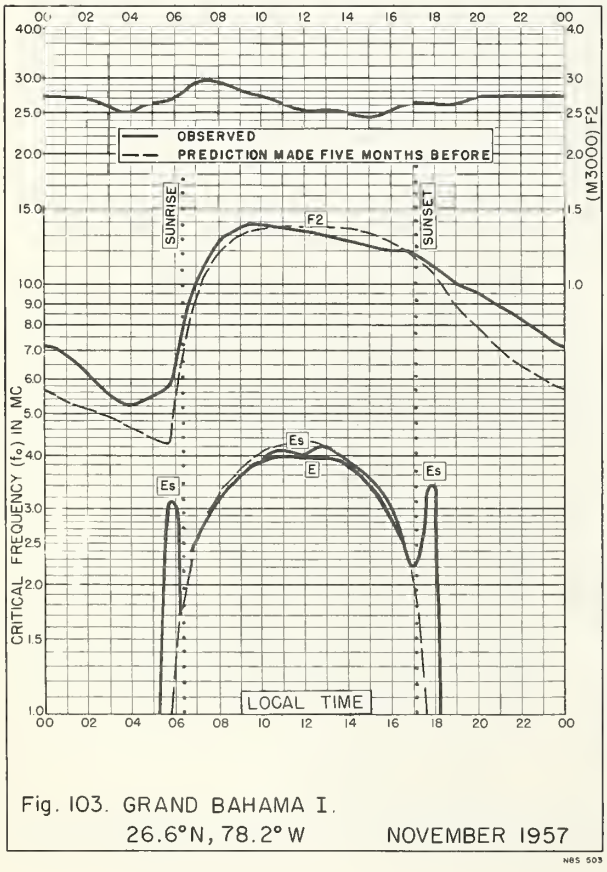


Fig. 103. GRAND BAHAMA I.
26.6°N, 78.2° W NOVEMBER 1957

NBS 503

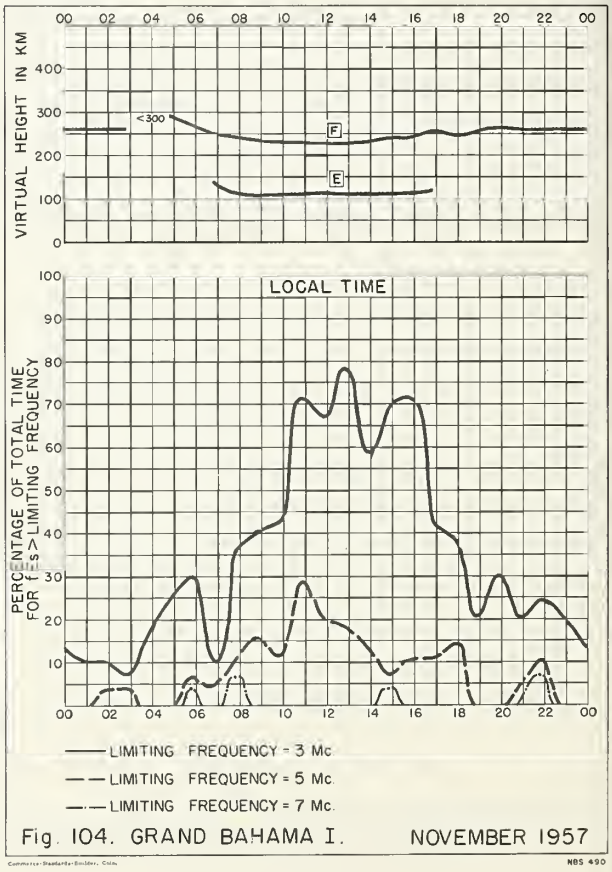


Fig. 104. GRAND BAHAMA I. NOVEMBER 1957

NBS 490

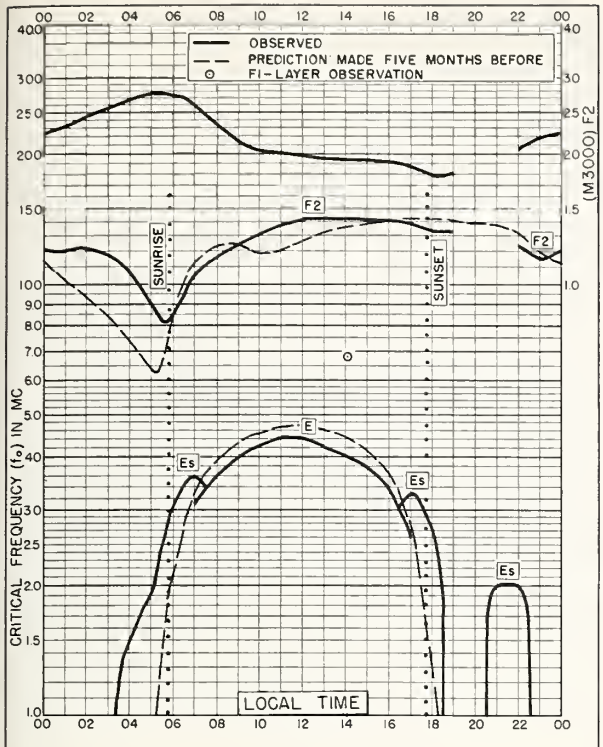


Fig. 105. BUNIA, BELGIAN CONGO
1.5°N, 30.2°E NOVEMBER 1957

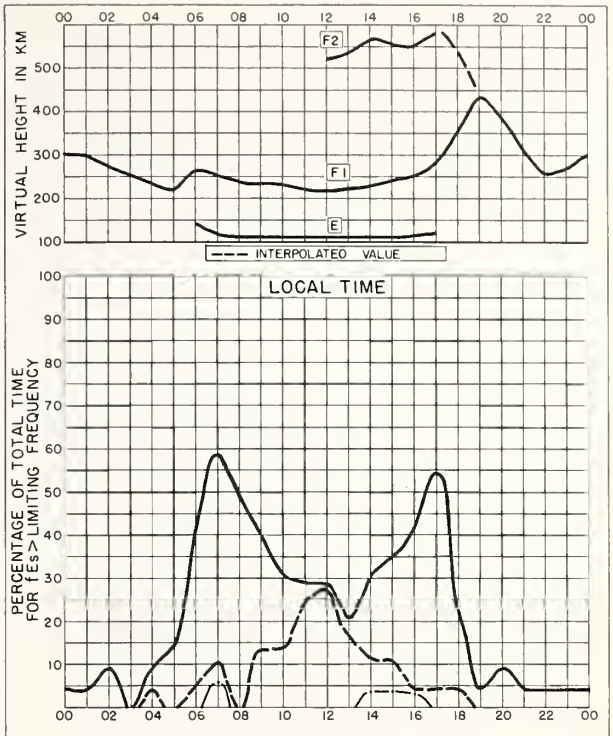


Fig. 106. BUNIA, BELGIAN CONGO NOVEMBER 1957

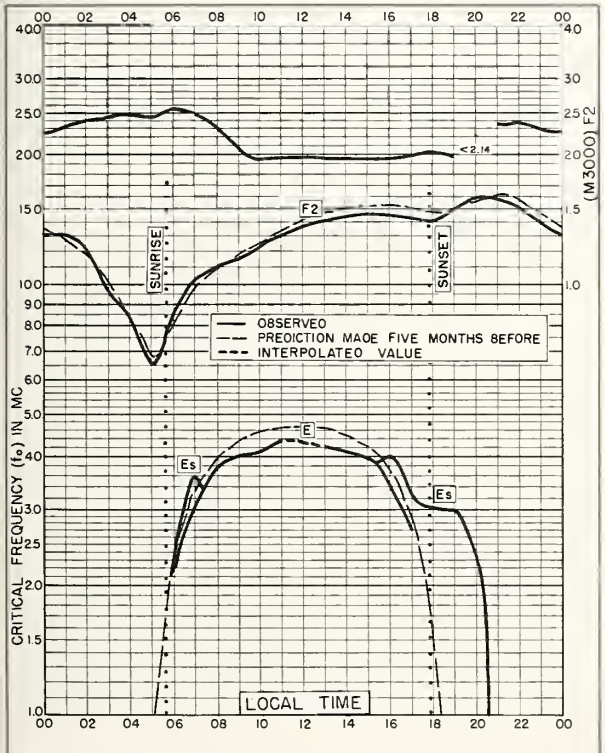


Fig. 107. LEOPOLDVILLE, BELGIAN CONGO
4.4°S, 15.2°E NOVEMBER 1957

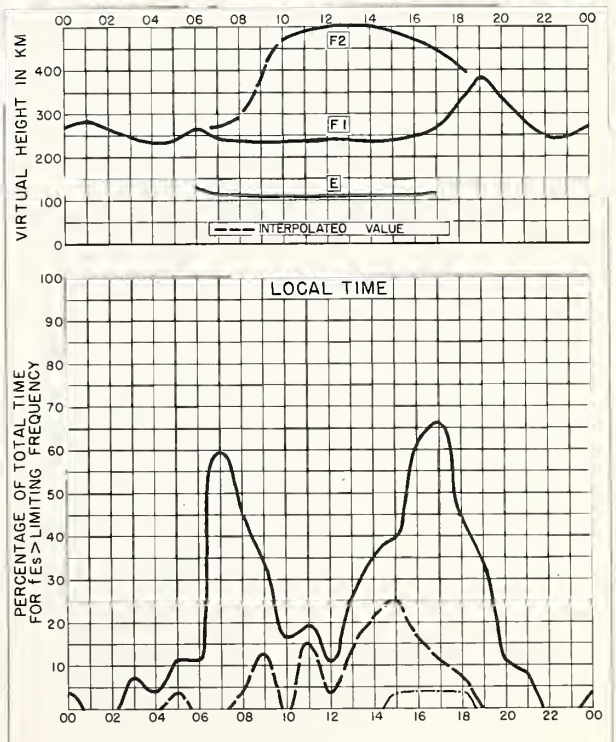


Fig. 108. LEOPOLDVILLE, BELGIAN CONGO NOVEMBER 1957

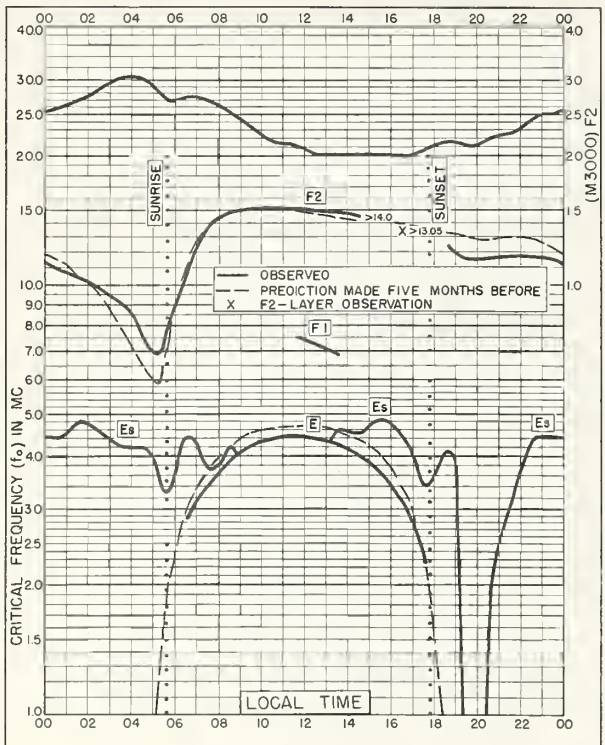


Fig. 109. TALARA, PERU
4.6°S, 81.3°W NOVEMBER 1957

NBS 503

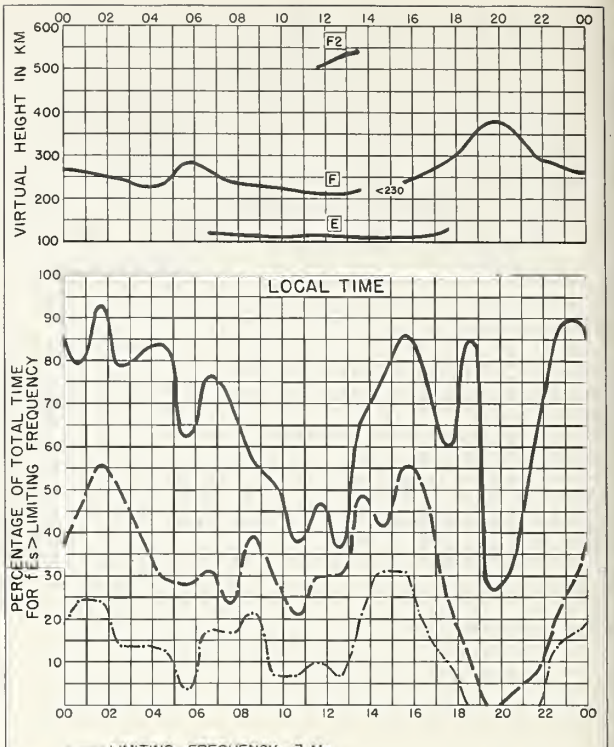


Fig. 110. TALARA, PERU NOVEMBER 1957

NBS 490

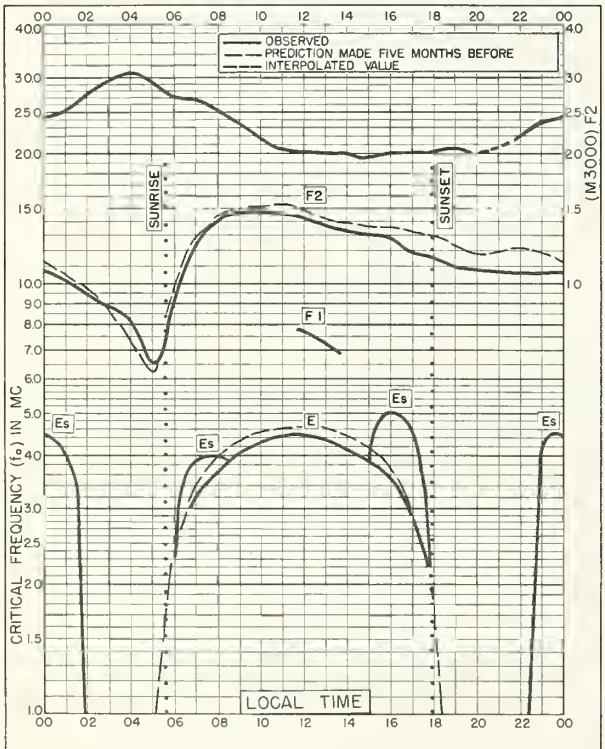


Fig. 111. CHICLAYO, PERU
6.8°S, 79.8°W NOVEMBER 1957

NBS 503

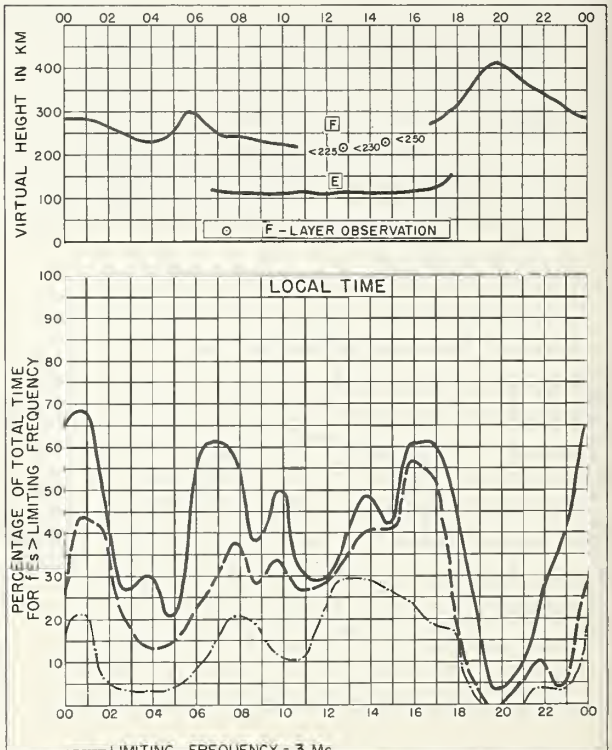


Fig. 112. CHICLAYO, PERU NOVEMBER 1957

NBS 490

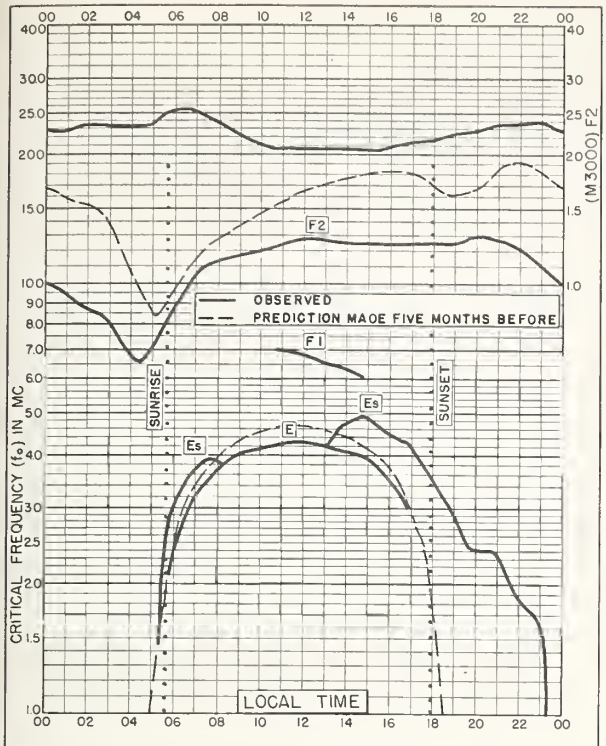


Fig. 113. ELISABETHVILLE, BELGIAN CONGO
11.6°S, 27.5°E NOVEMBER 1957

Commerce-Standards-Boulder, Colo.
NBS 503

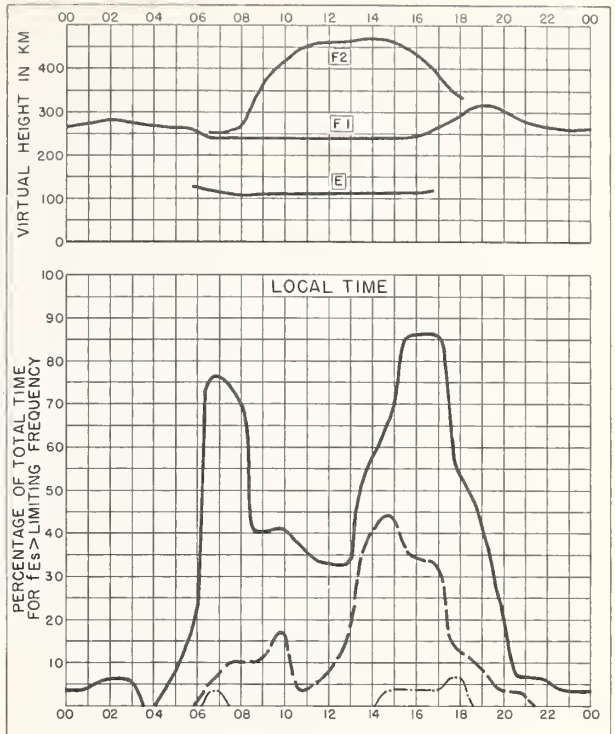


Fig. 114. ELISABETHVILLE, BELGIAN CONGO NOVEMBER 1957

Commerce-Standards-Boulder, Colo.
NBS 490

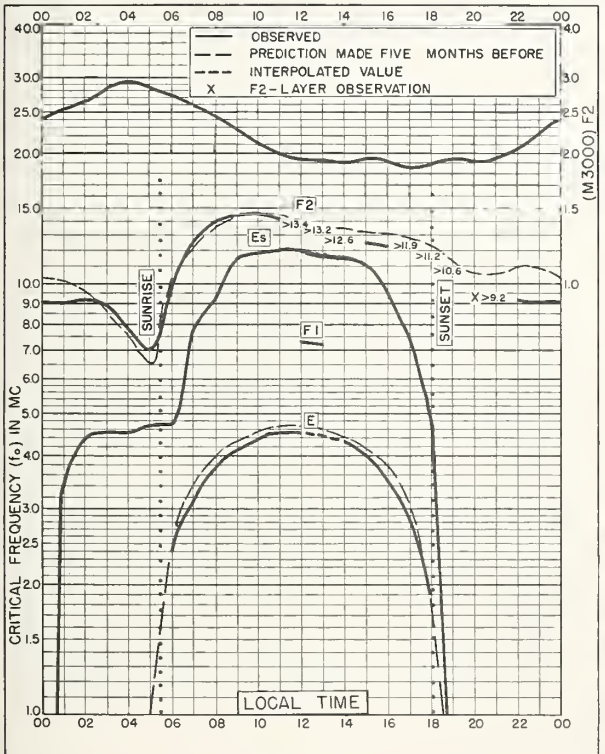


Fig. 115. HUANCAYO, PERU
12.0°S, 75.3°W NOVEMBER 1957

Commerce-Standards-Boulder, Colo.
NBS 503

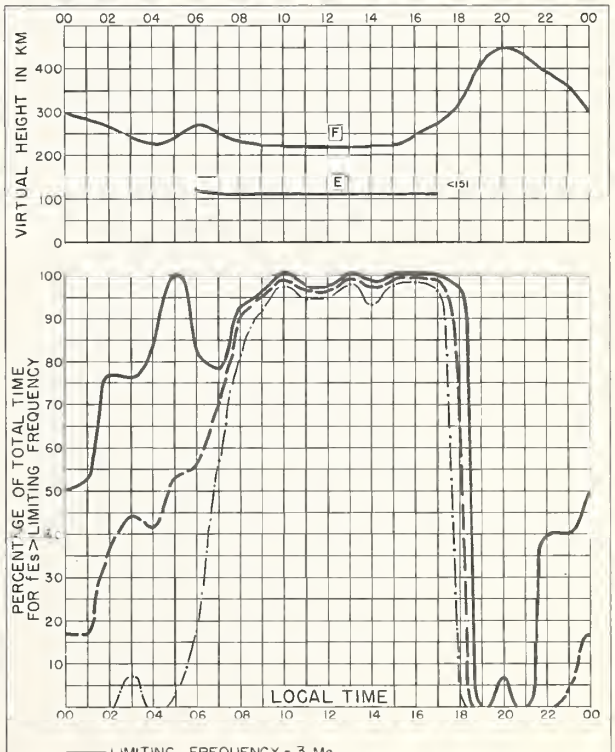


Fig. 116. HUANCAYO, PERU NOVEMBER 1957

Commerce-Standards-Boulder, Colo.
NBS 490

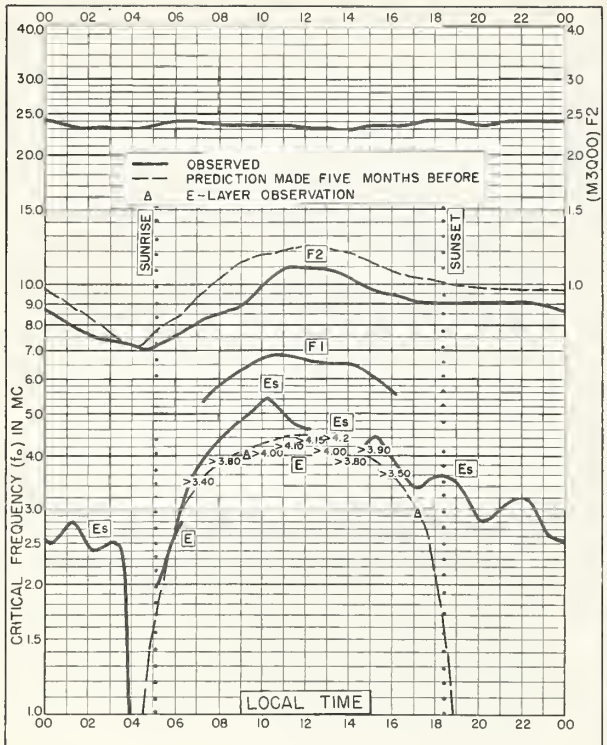


Fig. 117. BRISBANE, AUSTRALIA
27.5°S, 152.9°E NOVEMBER 1957

NBS 503

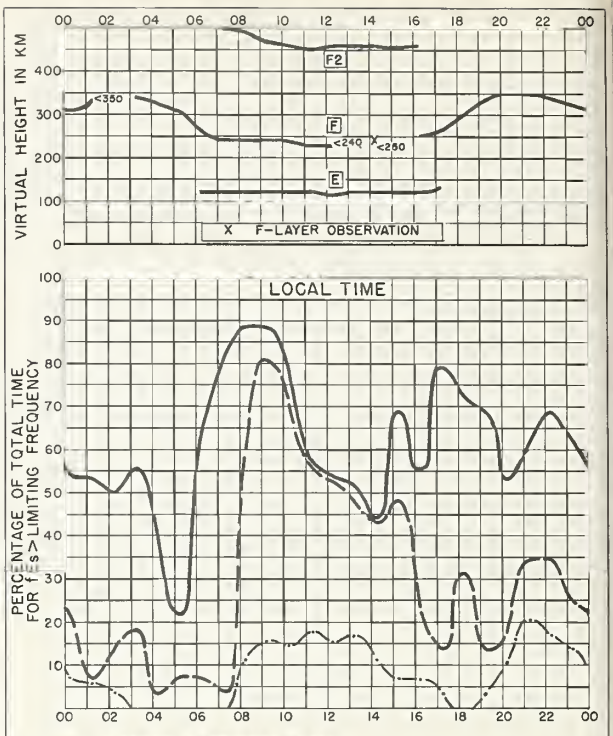


Fig. 118. BRISBANE, AUSTRALIA NOVEMBER 1957

NBS 490

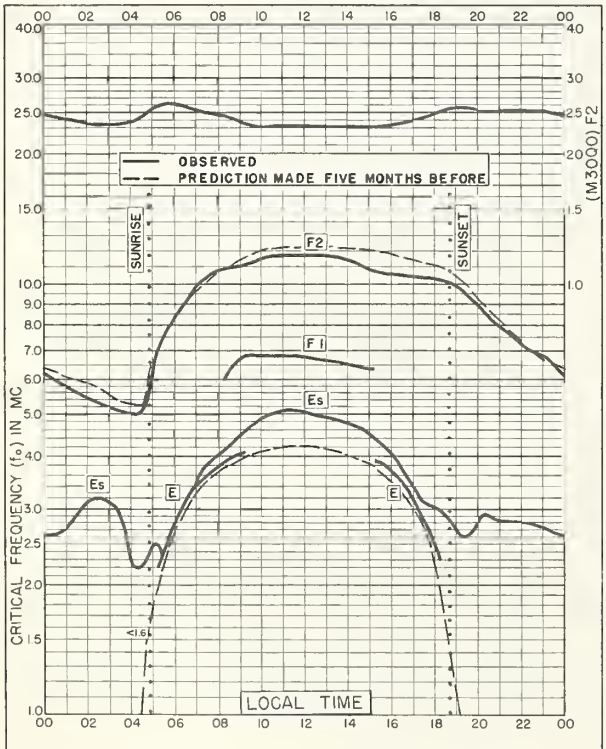
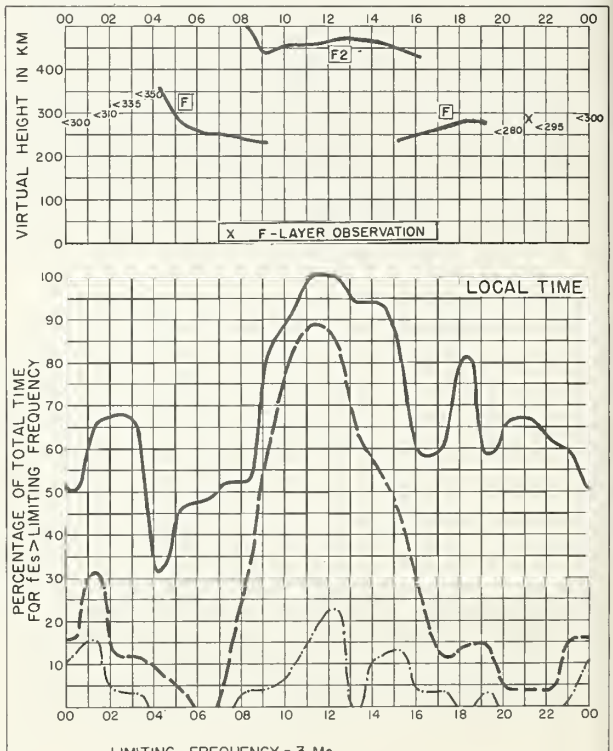


Fig. 119. CAPETOWN, UNION OF S. AFRICA
34.1°S, 18.3°E NOVEMBER 1957

NBS 503



NOVEMBER 1957

Fig. 120. CAPETOWN, UNION OF S. AFRICA

NBS 490

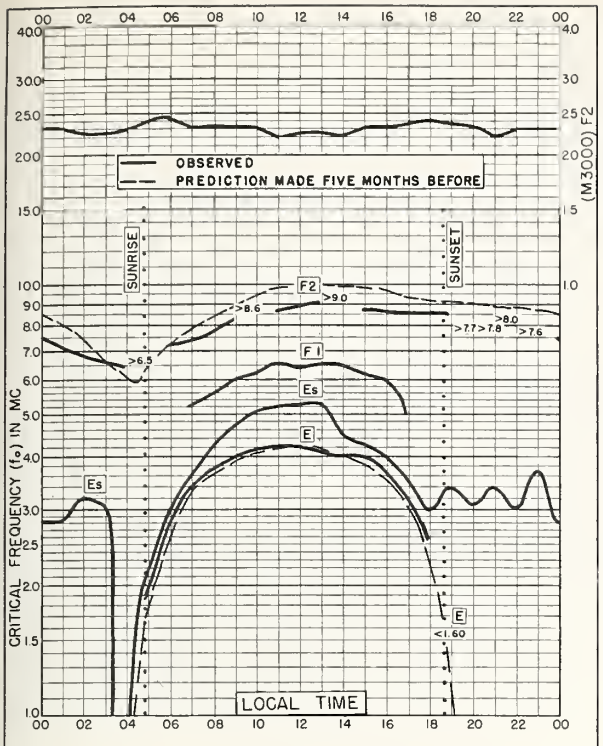


Fig. 121. CANBERRA, AUSTRALIA
35.3°S, 149.0°E NOVEMBER 1957

NBS 503

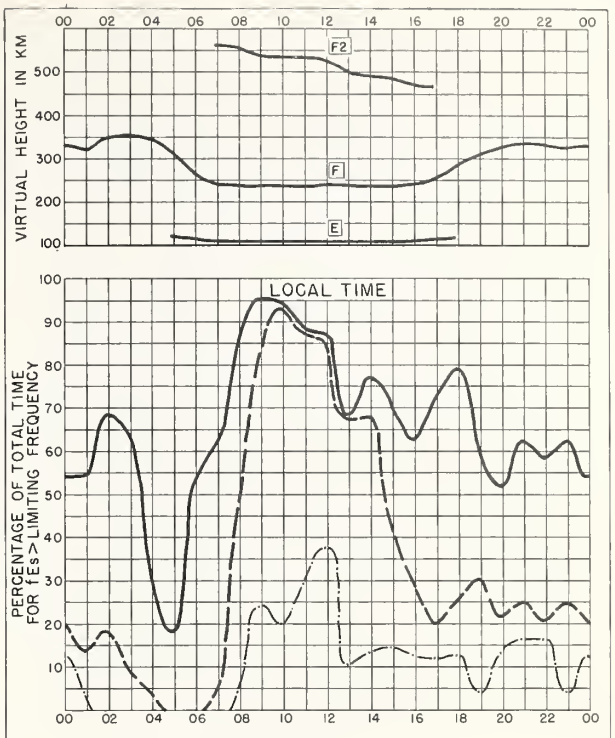


Fig. 122. CANBERRA, AUSTRALIA NOVEMBER 1957

NBS 490

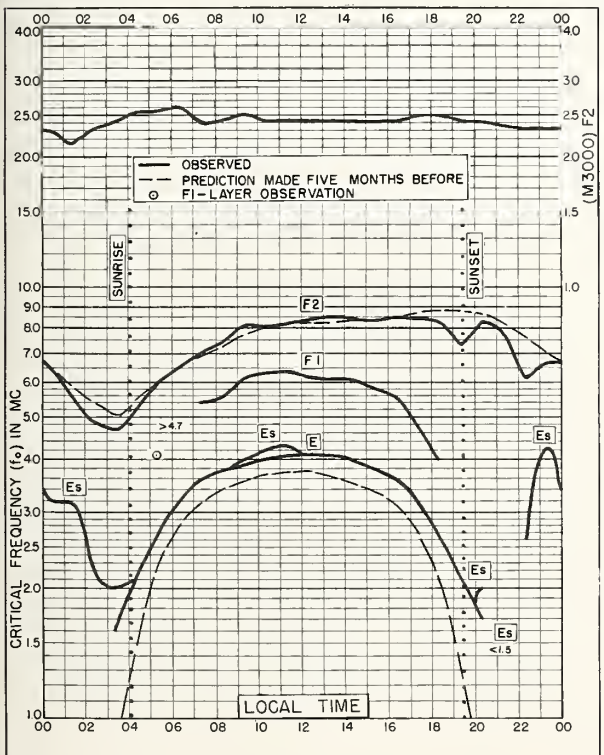


Fig. 123. CAMPBELL I.
52.5°S. 169.2°E NOVEMBER 1957

NBS 503

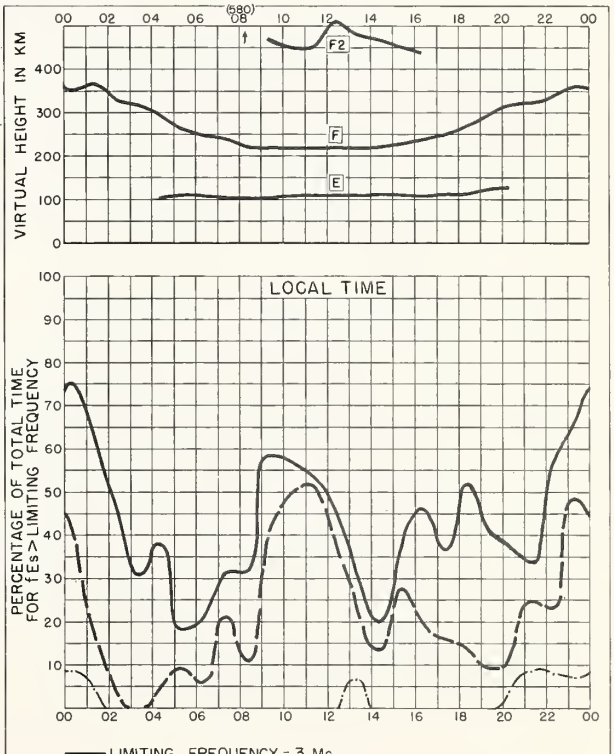


Fig. 124. CAMPBELL I. NOVEMBER 1957

NBS 490

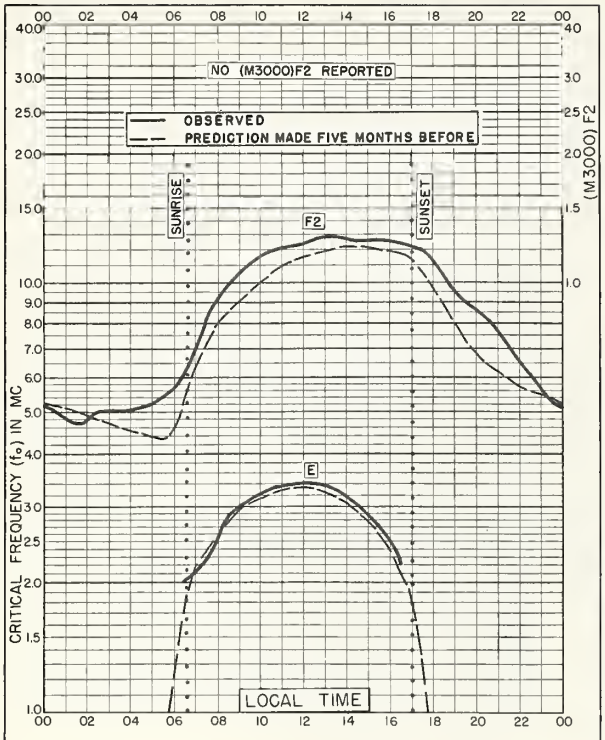


Fig. 125. MEANOOK, CANADA
54.6°N, 113.3°W OCTOBER 1957

NBS 503

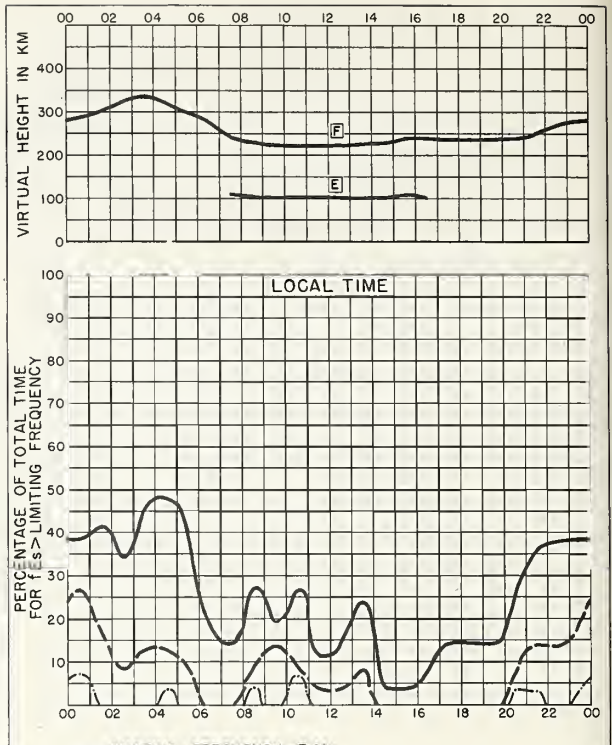


Fig. 126. MEANOOK, CANADA OCTOBER 1957

NBS 490

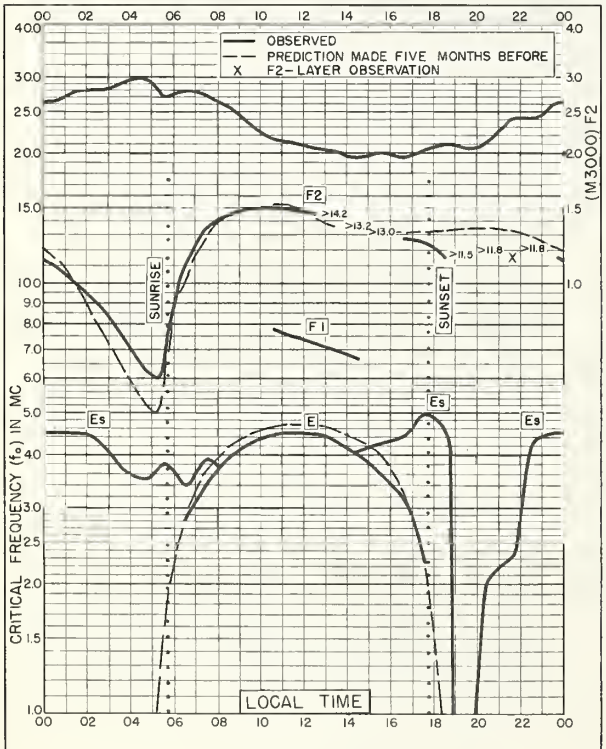


Fig. 127. TALARA, PERU
4.6°S, 81.3°W OCTOBER 1957

NBS 503

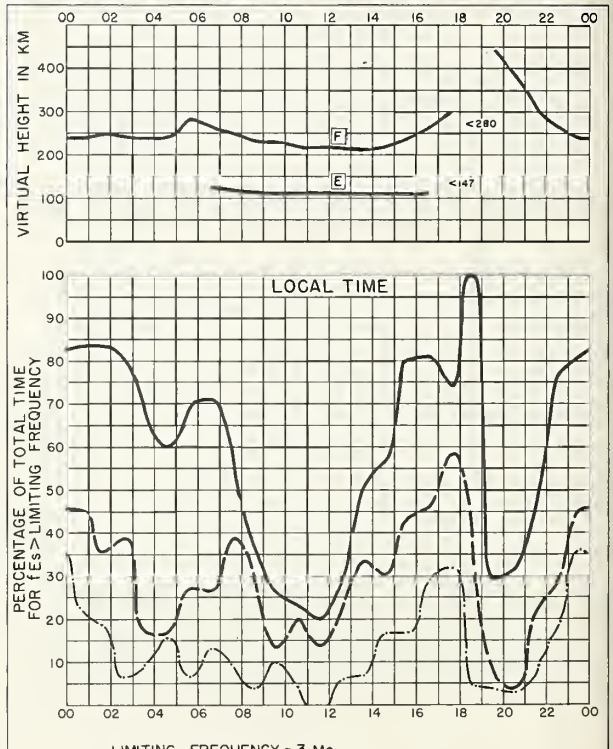


Fig. 128. TALARA, PERU OCTOBER 1957

NBS 490

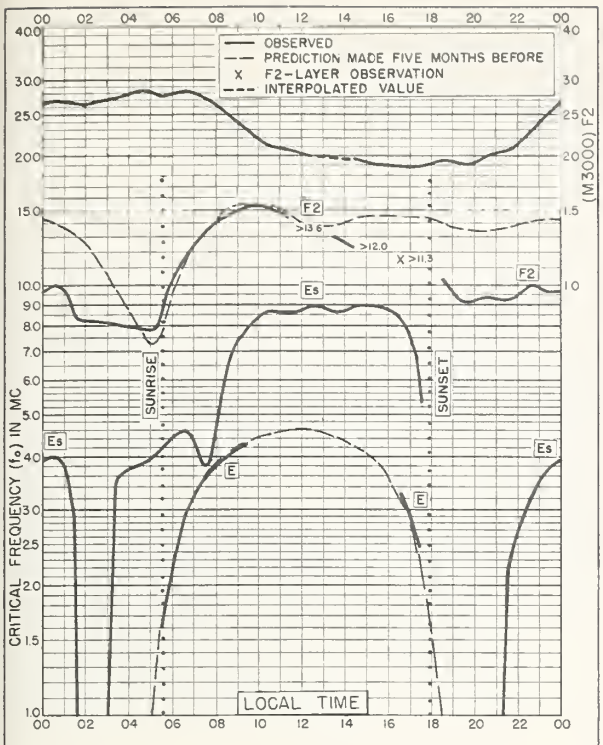


Fig. 129. La PAZ, BOLIVIA
16.5°S, 68.0°W OCTOBER 1957

NBS 503

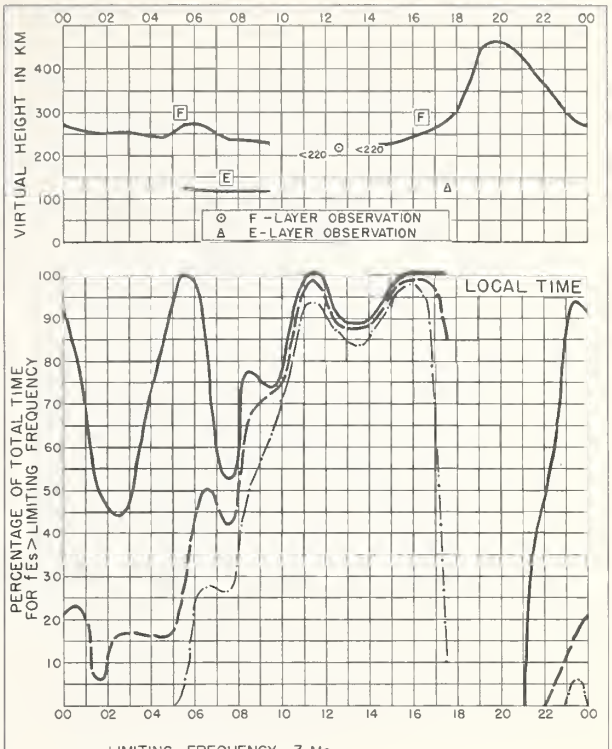


Fig. 130. La PAZ, BOLIVIA OCTOBER 1957

NBS 490

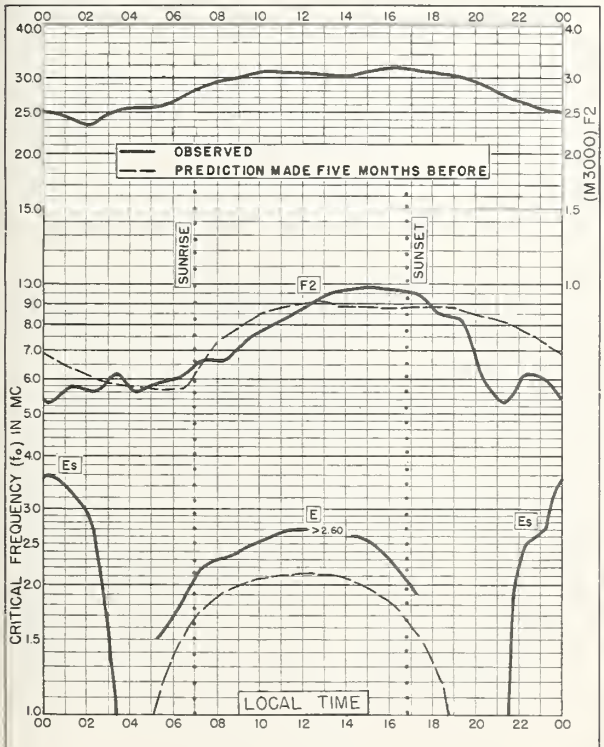


Fig. 131. ELLSWORTH STATION, ANTARCTICA
77.7°S, 41.1°W SEPTEMBER 1957

NBS 503

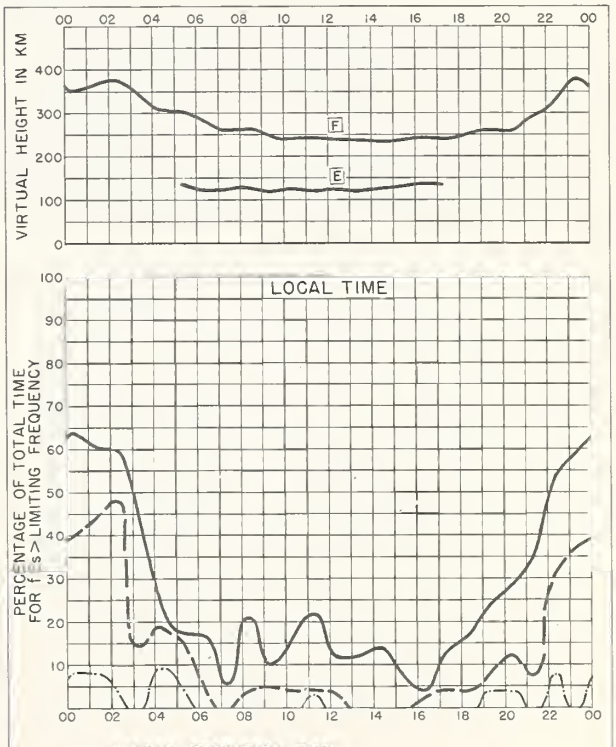


Fig. 132. ELLSWORTH STATION, ANTARCTICA SEPTEMBER 1957

NBS 490

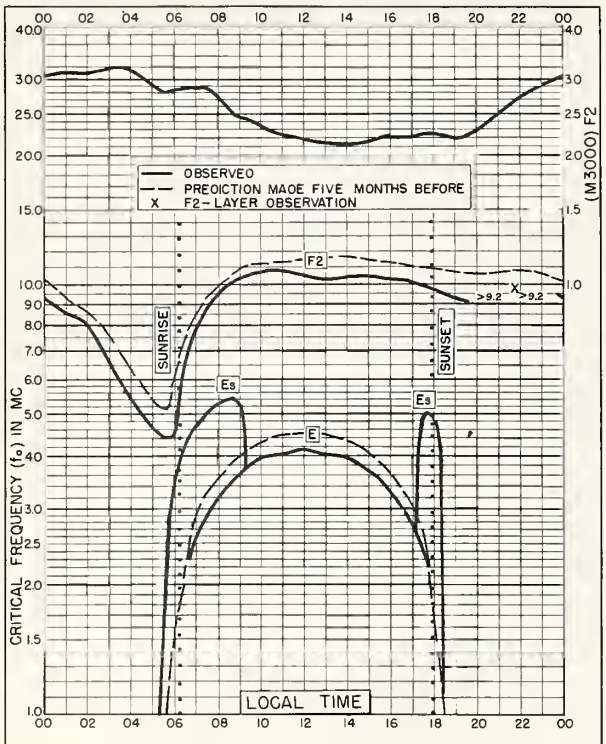


Fig. 133. CHICLAYO, PERU
6.8°S, 79.8°W AUGUST 1957

NBS 503

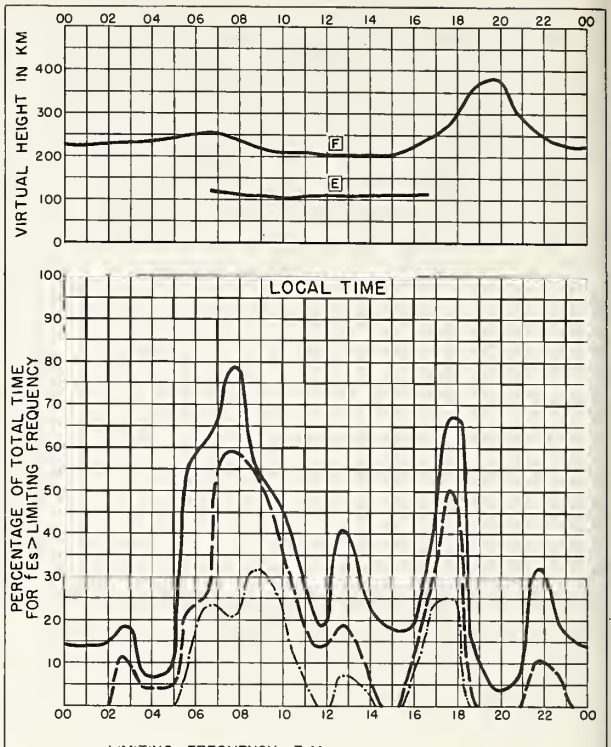


Fig. 134. CHICLAYO, PERU AUGUST 1957

NBS 490

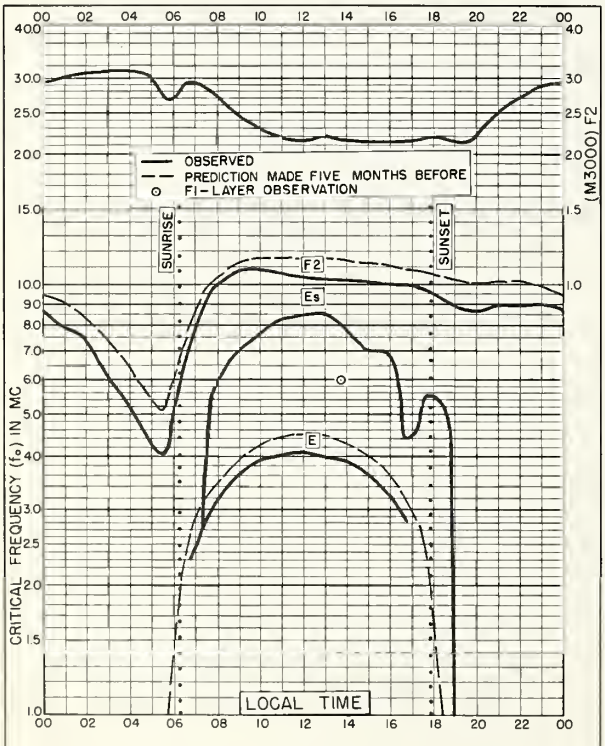


Fig. 135. CHIMBOTE, PERU
9.1°S, 78.6°W AUGUST 1957

NBS 503

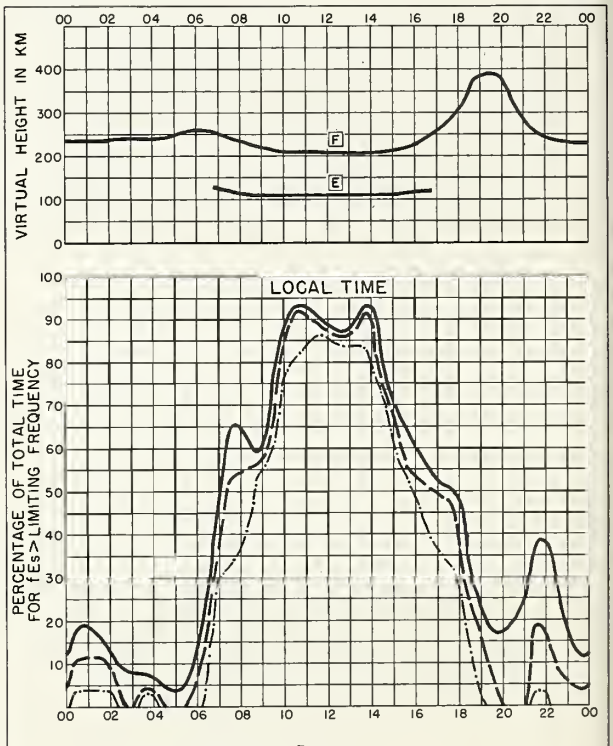


Fig. 136. CHIMBOTE, PERU AUGUST 1957

NBS 490

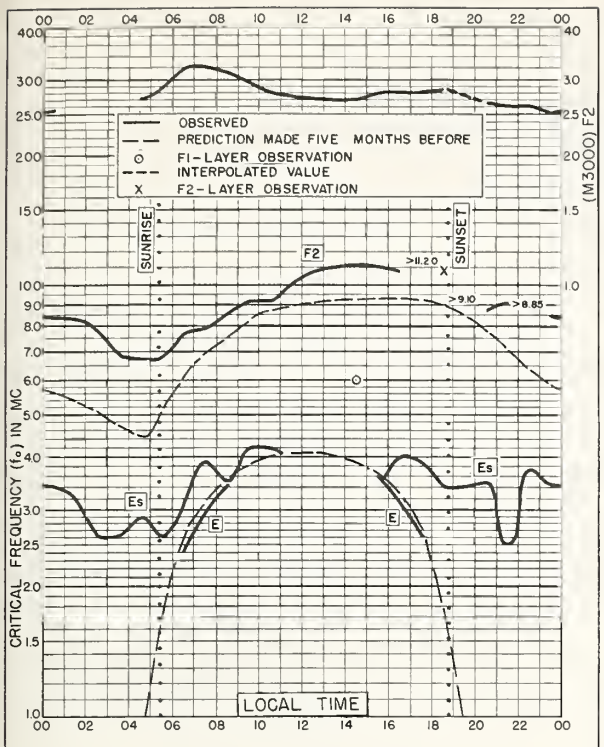


Fig. 137. CASABLANCA, MOROCCO
33.6°N, 7.6° W AUGUST 1956

NBS 503

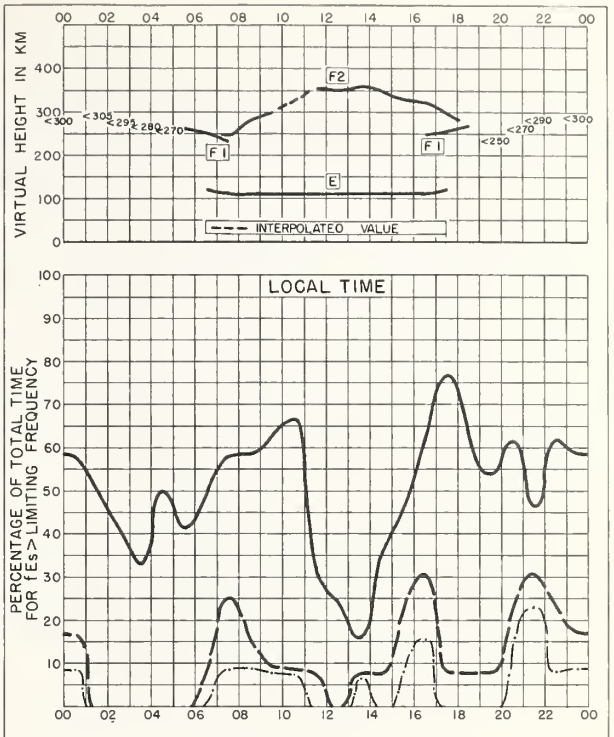


Fig. 138. CASABLANCA, MOROCCO AUGUST 1956

NBS 490

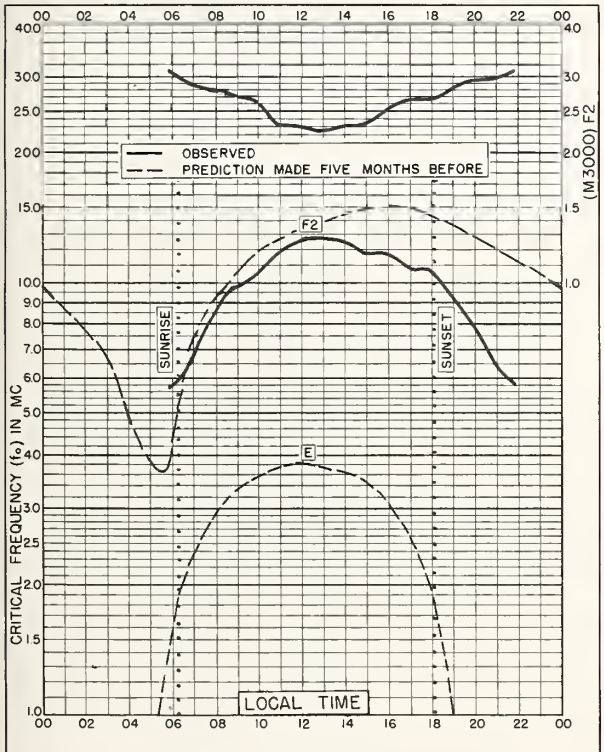


Fig. 139. BOMBAY, INDIA
19.0°N, 73.0°E MARCH 1956

NBS 503

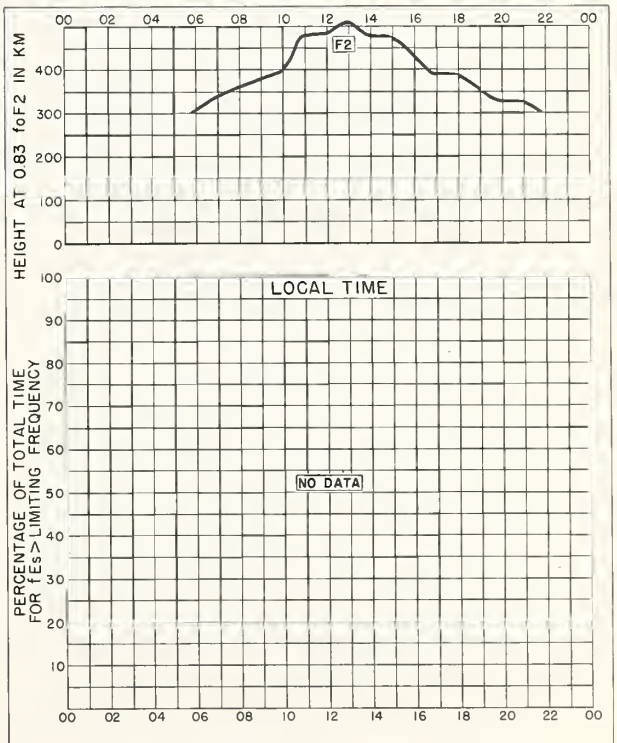


Fig. 140. BOMBAY, INDIA MARCH 1956

NBS 490

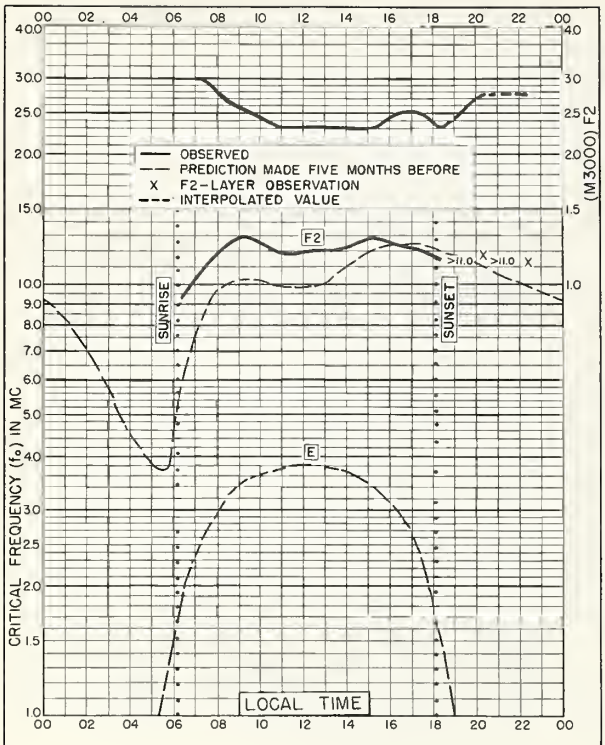


Fig. 141. MADRAS, INDIA
13.0°N, 80.2°E MARCH 1956

NBS 503

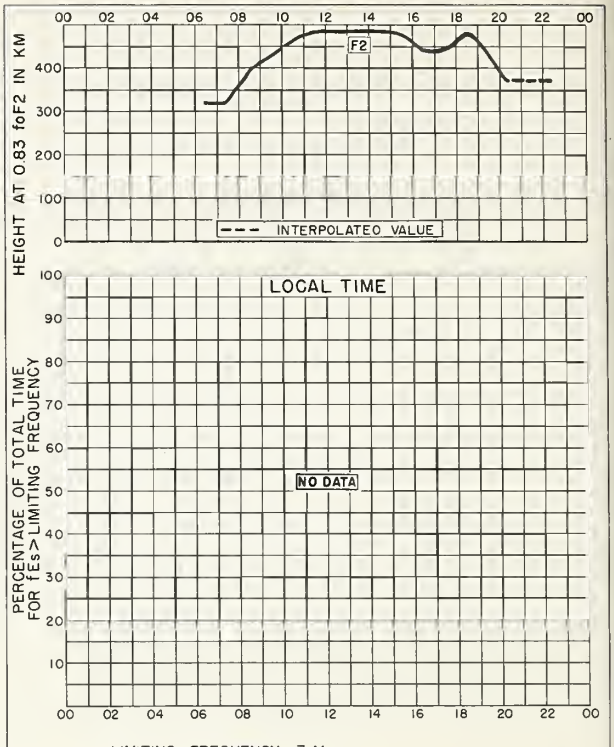


Fig. 142. MADRAS, INDIA MARCH 1956

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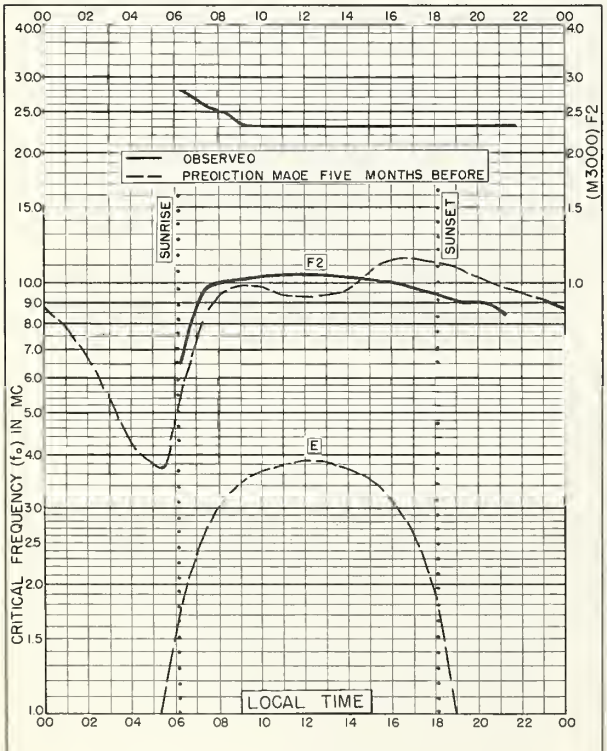

Fig. 143. TIRUCHY, INDIA
10.8°N, 78.8°E MARCH 1956

NBS 503

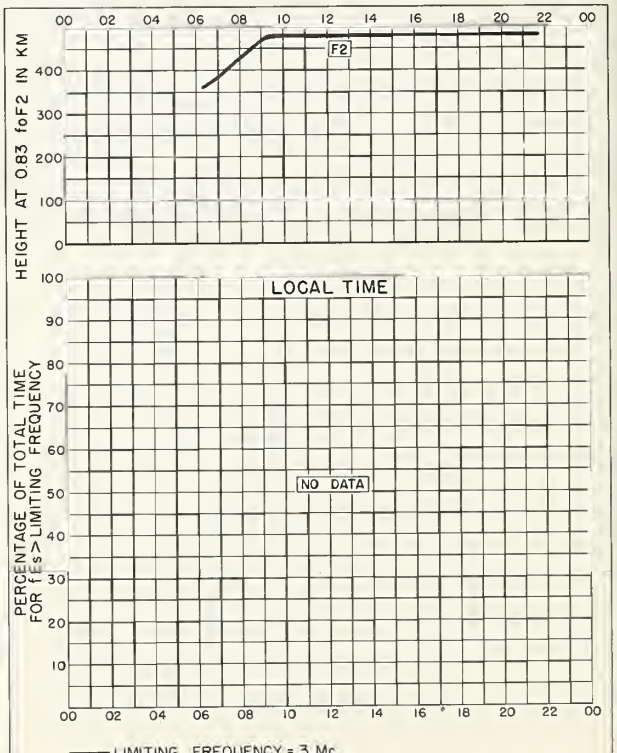

Fig 144. TIRUCHY, INDIA MARCH 1956

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