

Copsg
CRPL-F 219 PART A

FOR OFFICIAL USE

National Bureau of Standards
Library, N.W. Bldg ✓

DEC 6 1962

Reference book not to be
taken from the library.

PART A

IONOSPHERIC DATA

ISSUED
NOVEMBER 1962

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



CRPL-F 219

PART A

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

Issued
23 Nov. 1962

IONOSPHERIC DATA

CONTENTS

	<u>Page</u>
Ionospheric Data (revised text)	ii
Table of Smoothed Observed Zurich Sunspot Numbers	iii
World-Wide Sources of Ionospheric Data	iv
Tables of Ionospheric Data	1
Graphs of Ionospheric Data	26
Index of Tables and Graphs of Ionospheric Data in CRPL-F219 (Part A)	51

IONOSPHERIC DATA

The CRPL-F series bulletins are issued as part of the responsibility of the Central Radio Propagation Laboratory for the exchange and dissemination of ionospheric and related geophysical data. While originally a by-product of the collection of data by the CRPL for use in radio propagation studies, the CRPL-F series bulletins, Part A, "Ionospheric Data," and Part B, "Solar-Geophysical Data," have provided useful service by collecting and making available a wide variety of data in convenient form for use in research, not only on radio propagation and the ionosphere, but also on a wide variety of geophysical problems. Beginning with CRPL-F 211, Part A, "Ionospheric Data," a number of changes have been made in the tables of ionospheric data which, by providing more information, should increase their usefulness.

The current form of the tables of ionospheric data provides the monthly medians and, in addition, the number of values entering into median determination (count) for all ionospheric characteristics listed. Also, the upper and lower quartile values, indicated by UQ and LQ in the tables, are listed for foF2, h'F2, h'F, and (M3000)F2. Quartile values are not listed for the other characteristics because of space limitations. The tables are prepared by IBM machine methods, which, by improving the speed and efficiency of preparation, permit earlier publication of the data.

Graphs of critical frequencies and (M3000)F2 will continue to appear. Graphs of percentage of time of occurrence for fEs and virtual heights of the regular ionospheric layers are no longer included. This change was necessary to provide space for the enlarged tables. Data on percentage of time of occurrence of fEs above 3, 5, and 7 Mc are still available from the CRPL and the IGY World Data Center A for Airglow and Ionosphere.

For many years, the tables of ionospheric data appearing in the F-series, Part A, listed values of medians recomputed at CRPL. While this practice enforced a certain uniformity, it was subject to some valid criticism for tampering with original data. The tables and graphs now show the ionospheric data just as they are provided by the originating laboratory. Responsibility for the accuracy and reliability of the data now rests entirely with the originator.

Gaps in the tables when data normally might be expected indicate the data were not provided by the originator. Following the recommendation of the World-Wide Soundings Committee, only values of median foEs are listed. In the few cases where fEs is still reported instead of foEs, the data will not be printed. Data will appear in the F-series, Part A, only when the complete daily-hourly tabulations have been received by the CRPL or the IGY World Data Center A for Airglow and Ionosphere.

Information on symbols, terminology, and conventions may be found in the "URSI Handbook of Ionogram Interpretation and Reduction, of the World-Wide Soundings Committee," edited by W. R. Piggott and K. Rawer (Elsevier, 1961), which supersedes previous documents. A list of symbols is available from CRPL on request.

The following table contains the latest available information on smoothed observed Zurich sunspot numbers, beginning with the minimum of April 1954. Final numbers are listed through June 1961, the succeeding values being based on provisional data.

Smoothed Observed Zurich Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	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	197	200	201	200
1958	199	201	201	197	191	187	185	185	184	182	181	180
1959	179	177	174	169	165	161	156	151	146	141	137	132
1960	129	125	122	120	117	114	109	102	98	93	88	84
1961	80	75	69	64	60	56	53	52	52	51	50	48
1962	44	41	39	38								

Units of Ionospheric Data Tables

foF2, foEs - - - Tenthhs of a megacycle
 foF1, FoE - - - Hundredths of a megacycle
 h'F2, h'F, h'E - Kilometers
 (M3000)F2 - - - Hundredths

NOTE: Occasionally, when the median falls between two of the observed values, the median is carried an extra decimal place beyond these units. Those cases are easily identifiable by the extra digit appearing to the right of the number, in a column usually left blank.

MED - Median
 CNT - Count
 UQ - Upper Quartile
 LQ - Lower Quartile

WORLD-WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 100 and figures 1 to 100 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:

Central African Institute for Scientific Research:
Lwiro, Congo

Republica Argentina, Ministerio de Marina:
Trelew, Argentina

Commonwealth of Australia, Ionospheric Prediction Service of the
Commonwealth Observatory:
Mawson
Wilkes Station, Antarctica

University of Graz:
Graz, Austria

Escola Politecnica, University of Sao Paulo:
Sao Paulo, Brazil

British Department of Scientific and Industrial Research, Radio
Research Board:
Port Lockroy

Defence Research Board, Canada:
Winnipeg, Canada

Czechoslovak Academy of Sciences:
Pruhonice, Czechoslovakia

Danish National Committee of URSI:
Narssarssuaq, Greenland

Ionospheric Research Group (GRI) France:
Casablanca, Morocco
Dakar, French West Africa
Djibouti, French Somaliland
Poitiers, France
Tahiti, Society Is.
Tamanrasset, French West Africa
Tananarive, Madagascar

Ionospheric Institute, Breisach, Germany:
Freiburg, Germany

Indian Council of Scientific and Industrial Research, Radio Research
Committee, New Delhi, India:
Ahmedabad (Physical Research Laboratory)

Ministry of Posts and Telecommunications, Radio Research
Laboratories, Tokyo, Japan:
Syowa Base, Antarctica

General Directorate of Telecommunications, Mexico:
El Cerillo, Mexico

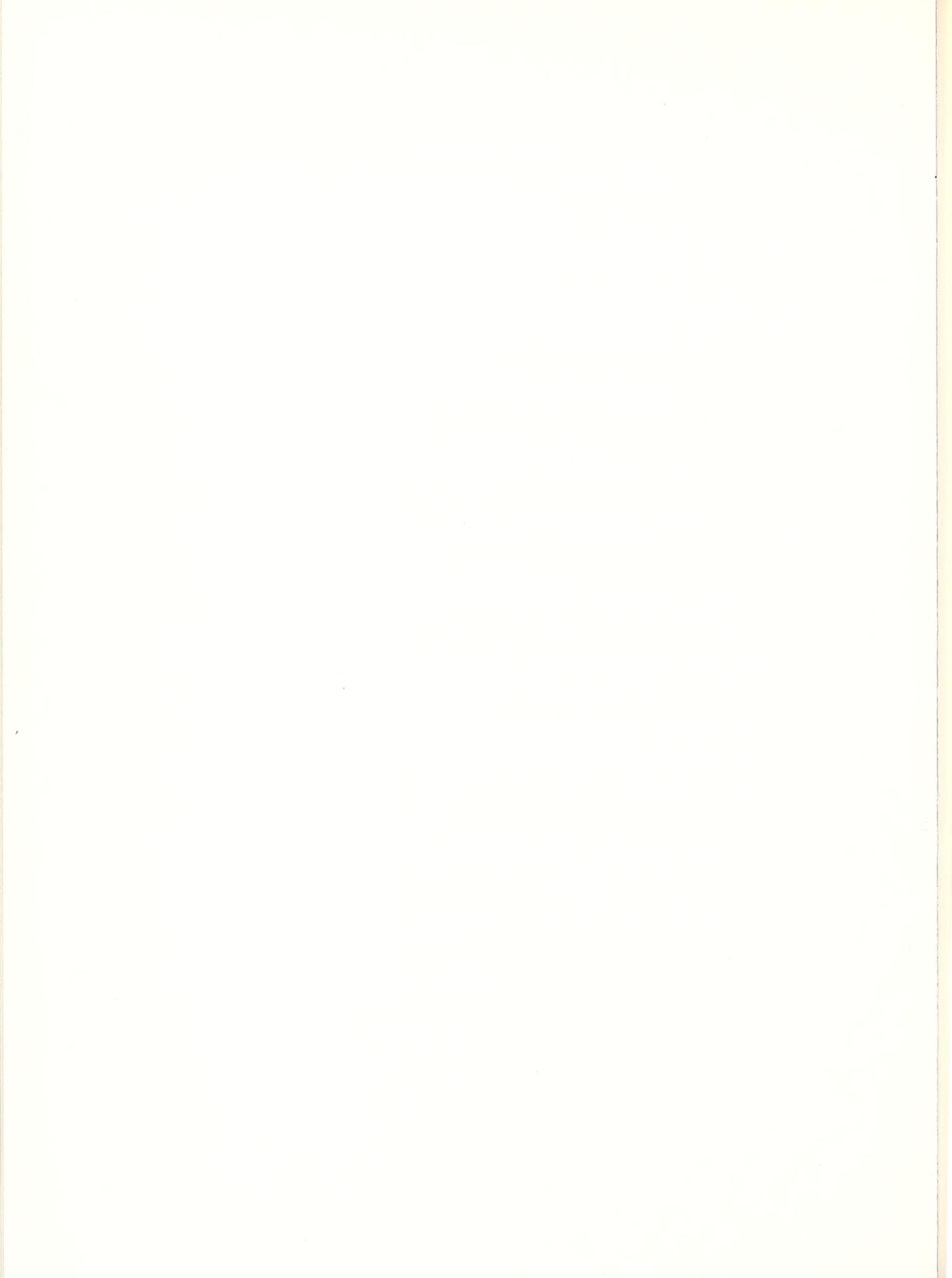
Christchurch Geophysical Observatory, New Zealand Department of
Scientific and Industrial Research:
Campbell I.
Christchurch, New Zealand
Rarotonga I., Cook Is.

South African Council for Scientific and Industrial Research:
Salisbury, Southern Rhodesia (University College of
Rhodesia and Nyasaland)

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

United States Army Signal Corps:
Fort Monmouth, New Jersey
Grand Bahama I.
Thule, Greenland

National Bureau of Standards (Central Radio Propagation Laboratory):
Fairbanks (College), Alaska (Geophysical Institute of the
University of Alaska)
Point Barrow, Alaska
Pole Station, Antarctica



TABLES OF IONOSPHERIC DATA

1000 J. POLYMER SCIENCE: PART A

ABLE

IEEEP 1.0 MC TO 25.0 MC IN 13.5 SECONDS.

MEC P 1.0 MC TO 250 MC IN 13.5 SECONDS.

4

TUMBLEWEED

35 40 435 405 41 38 24 16

14 24 22

14

Fairbanks, Alaska (60°30' N, 147°30' W)													Time: 1500 W												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
16 F 2	MED	U	2.5	2.0	U	2.7	2.5	U	2.8	3.0	3.5	3.5	3.25	3.7	3.3	3.0	3.8	3.0	2.5	2.2	2.1	1.8	1.8	2.05	
	CNT	4	3.0	2.9	2.9	3.5	3.0	2.8	2.8	3.0	3.8	4.0	4.0	3.2	3.8	3.2	2.8	3.6	3.6	3.4	3.7	4.7	4.0	3.2	
	UO	30	30	29	30	26	26	21	24	22	28	41	48	55	58	59	59	53	62	53	42	34	25	24	
	LO	30	30	27	28	26	21											3.2	2.2	2.0	2.1	1.8	1.7	1.6	
17 F 2	MED	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
	CNT	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
	LQ	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
18 F 1	MED	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
	CNT	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
	UO	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
	LO	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
(M 3000) F 2	MED	U	2.0	2.0	U	2.5	U	2.5	U	2.7	3.0	3.25	3.25	3.15	3.45	3.40	3.50	3.30	3.40	3.40	3.10	3.15	3.15	3.05	
	CNT	2	2.7	2.5	2.5	4	2.7	3.0	3.0	3.7	3.8	4.2	4.2	3.6	4.6	2.7	2.7	2.2	2.4	2.7	2.3	2.1	2.1	2.0	
	UO	280	310	300	280	280	275	290	300	300	300	320	330	335	335	335	335	335	335	335	335	335	335	335	330
	LO	280	310	300	280	280	275	290	300	300	300	320	330	335	335	335	335	335	335	335	335	335	335	335	330
19 F 1	MED	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
	CNT	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
	UO	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
	LO	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
19 E 2	MED	U	3.5	4.0	4.25	3.5	2.2	2.0	1.9	2.3	2.4	2.8	2.7	2.6	2.8	2.4	2.5	2.2	2.8	2.9	2.1	1.7	2.2	2.4	2.3
	CNT	2.2	2.3	2.2	2.0	2.2	2.0	2.0	1.9	2.3	2.4	2.8	2.7	2.6	2.8	2.4	2.5	2.2	2.8	2.9	2.1	1.7	2.2	2.4	2.3
	UO	2.2	2.3	2.2	2.0	2.2	2.0	2.0	1.9	2.3	2.4	2.8	2.7	2.6	2.8	2.4	2.5	2.2	2.8	2.9	2.1	1.7	2.2	2.4	2.3
	LO	2.2	2.3	2.2	2.0	2.2	2.0	2.0	1.9	2.3	2.4	2.8	2.7	2.6	2.8	2.4	2.5	2.2	2.8	2.9	2.1	1.7	2.2	2.4	2.3

WEEP 140 MC TO 250 MC IN 13.5 SECONDS.

TABLE 5
THULE, GREENLAND (76°0N., 68°0W.)

HOUR	TIME 75.0N												TIME 75.0N														
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
16F2	MED	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U			
CNT	U	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25			
UQ	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25			
LO	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25			
NF2	MED	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U			
CNT	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U			
UQ	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U			
h F	MED	2545	252	250	247	257	250	247	240	231	231	224	231	224	230	237	240	250	245	257	250	245	257	250	245		
UQ	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25			
LO	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25			
IM3000F2	MED	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300		
CNT	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300		
UQ	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300		
LO	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300		
16F1	MED	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
CNT	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
UQ	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
h E	MED	1	1	4	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210		
UQ	1	1	4	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220		
LO	1	1	4	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220		
16E1	MED	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
CNT	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
UQ	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U		
h E	MED	3	6	11	17	23	29	35	41	47	53	59	65	71	77	83	89	95	101	107	113	119	125	131	137		
UQ	3	6	11	17	23	29	35	41	47	53	59	65	71	77	83	89	95	101	107	113	119	125	131	137	143		
LO	3	6	11	17	23	29	35	41	47	53	59	65	71	77	83	89	95	101	107	113	119	125	131	137	143		
16E4	MED	28	28	27	27	26	26	25	25	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
CNT	28	28	27	27	26	26	25	25	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
UQ	28	28	27	27	26	26	25	25	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
LO	28	28	27	27	26	26	25	25	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
16F1	MED	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
CNT	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
UQ	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
h F	MED	298	295	292	290	287	284	281	278	275	272	270	267	264	261	258	255	252	249	246	243	240	237	234	231	228	
UQ	298	295	292	290	287	284	281	278	275	272	270	267	264	261	258	255	252	249	246	243	240	237	234	231	228		
LO	298	295	292	290	287	284	281	278	275	272	270	267	264	261	258	255	252	249	246	243	240	237	234	231	228		
NF2	MED	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
CNT	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
UQ	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
LO	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
16F1	MED	305	302	300	297	294	291	288	285	282	279	276	273	270	267	264	261	258	255	252	249	246	243	240	237	234	
CNT	305	302	300	297	294	291	288	285	282	279	276	273	270	267	264	261	258	255	252	249	246	243	240	237	234	231	
UQ	305	302	300	297	294	291	288	285	282	279	276	273	270	267	264	261	258	255	252	249	246	243	240	237	234	231	
LO	305	302	300	297	294	291	288	285	282	279	276	273	270	267	264	261	258	255	252	249	246	243	240	237	234	231	
16E1	MED	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
CNT	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
UQ	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
LO	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
16E4	MED	315	312	309	306	303	300	297	294	291	288	285	282	279	276	273	270	267	264	261	258	255	252	249	246	243	240
CNT	315	312	309	306	303	300	297	294	291	288	285	282	279	276	273	270	267	264	261	258	255	252	249	246	243	240	
UQ	315	312	309	306	303	300	297	294	291	288	285	282	279	276	273	270	267	264	261	258	255	252	249	246	243	240	
LO	315	312	309	306	303	300	297	294	291	288	285	282	279	276	273	270	267	264	261	258	255	252	249	246	243	240	
16F1	MED	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
CNT	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
UQ	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
LO	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	
16E1	MED	319	316	313	310	307	304	301	298	295	292	289	286	283	280	277	274	271	268	265	262	259	256	253	250	247	244
CNT	319	316	313	310	307	304	301	298	295	292	289	286	283	280	277	274	271	268	265	262	259	256	253	250	247	244	241
UQ	319	316	313	310	307	304	301	298	295	292	289	286	283	280	277	274	271	268	265	262	259	256	253	250	247	244	241
LO	319	316	313	310	307	304	301	298	295	292	289	286	283	280	277	274	271	268	265	262	259	256	253	250	247	244	241

TABLE 9

TABLE

TABLE II

SWEET 1.0 MC TO 25.0 MC IN 13.5 SECONDS

138

TABLE I4

TABLE 15

TABLE I b

הוירט

1.0 D MC TO 25.0 HC IN 13.5 SECONDS.

CROSS-LEVEL MODELS FOR READING COMPREHENSION 23

TABLE I7

1.0 MC TO 25.0 MC IN 13.5 SECONDS.

TABLE 19

卷之三

TABLE 20

A9811 - 1941 (1)

24

22

23

TABLE 24

TAKS
79

186

MCGEEPE 1.0 MC TO 250 MC IN 13.5 SECONDS.

ULTRASOUND • 1964

APRIL 1966
SLEEP 0.6 MC TO 25.0 MC IN 5 MINUTES. AUTOMATIC OPERATION.

TABLE 34
EL CERILLO, MEXICO (19°33'N., 98°54'W.)

TIME 9:00C												TIME 15:00C												
HOUR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
10 F2	MED	44	35	32	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	CNT	26	29	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	UO																							
	LQ																							
10 F2	MED																							
	CNT																							
	UO																							
	LQ																							
10 F	MED																							
	CNT																							
	UO																							
	LQ																							
(M3000)F2	MED	240	190	240	270	280	300	320	340	360	380	390	390	390	390	390	390	390	390	390	390	390	390	390
	CNT	29	30	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	UO																							
	LQ																							
10 F1	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED	44	41	41	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
	CNT	24	25	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT																							
	UO																							
	LQ																							
10 E	MED																							
	CNT					</td																		

41

TABLE 42

443

TABLE I

SMEC EPC 2,60 M€; TO 18,00 MC IN 50 SECUNDOS

AUGUST 4, 1929

TABLE 45

SYDNEY BASE*, ANTARCTICA 169°03' S 39°06' E*

TIME 45.00

HOUR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
fo F2	MED	45	37	35	39	42	42	42	42	42	50	59	78	86	94	92	80	70	46	3/	2/	2/	2/	2/
CNT	CNT	45	37	35	39	42	42	42	42	42	50	59	71	81	91	92	80	70	46	3/	2/	2/	2/	2/
UQ	CNT	46	38	36	40	43	43	43	43	43	50	59	72	81	91	92	80	70	46	3/	2/	2/	2/	2/
LQ	CNT	34	31	34	34	34	34	34	34	34	45	54	72	73	83	83	70	60	46	3/	2/	2/	2/	2/
(M3000)F2	MED																							
CNT	UQ																							
LQ	CNT																							
h F2	MED																							
CNT	UQ																							
UQ	CNT																							
h' F	MED	45	39	36	40	43	43	43	43	43	50	59	78	86	94	92	80	70	46	3/	2/	2/	2/	2/
CNT	CNT	45	39	36	40	43	43	43	43	43	50	59	71	81	91	92	80	70	46	3/	2/	2/	2/	2/
UQ	CNT	46	38	36	40	43	43	43	43	43	50	59	72	81	91	92	80	70	46	3/	2/	2/	2/	2/
LQ	CNT	34	31	34	34	34	34	34	34	34	45	54	73	73	83	83	70	60	46	3/	2/	2/	2/	2/
(M3000)F2	MED																							
CNT	UQ																							
LQ	CNT																							
fo F1	MED																							
CNT	UQ																							
UQ	CNT																							
fo E	MED	32	29	30	31	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
CNT	CNT	32	29	30	31	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
UQ	CNT	33	30	31	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
LQ	CNT	32	29	30	31	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
fo E	MED	35	40	44	40	46	40	46	40	46	38	40	38	40	38	40	38	40	34	3/	2/	2/	2/	2/
CNT	CNT	35	40	44	40	46	40	46	40	46	38	40	38	40	38	40	38	40	34	3/	2/	2/	2/	2/
UQ	CNT	36	41	42	41	46	41	46	41	46	39	41	39	41	39	41	39	41	34	3/	2/	2/	2/	2/
LQ	CNT	32	29	30	31	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
fo E	MED	30	37	39	37	42	44	38	42	44	38	42	44	38	42	44	38	42	34	3/	2/	2/	2/	2/
CNT	CNT	30	37	39	37	42	44	38	42	44	38	42	44	38	42	44	38	42	34	3/	2/	2/	2/	2/
UQ	CNT	31	38	39	37	42	44	38	42	44	38	42	44	38	42	44	38	42	34	3/	2/	2/	2/	2/
LQ	CNT	31	38	39	37	42	44	38	42	44	38	42	44	38	42	44	38	42	34	3/	2/	2/	2/	2/
fo F1	MED																							
CNT	UQ																							
UQ	CNT																							
h F2	MED	38	40	38	37	40	42	40	42	40	42	40	42	40	42	40	42	40	37	3/	2/	2/	2/	2/
CNT	CNT	38	40	38	37	40	42	40	42	40	42	40	42	40	42	40	42	40	37	3/	2/	2/	2/	2/
UQ	CNT	39	41	42	40	43	41	43	40	43	41	43	40	43	41	43	40	43	37	3/	2/	2/	2/	2/
LQ	CNT	32	30	33	32	33	32	33	32	33	32	33	32	33	32	33	32	33	37	3/	2/	2/	2/	2/
fo F2	MED	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
CNT	CNT	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
UQ	CNT	31	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32
LQ	CNT	32	30	33	32	33	32	33	32	33	32	33	32	33	32	33	32	33	30	31	32	31	30	32
h F2	MED	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
CNT	CNT	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
UQ	CNT	31	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32
LQ	CNT	32	30	33	32	33	32	33	32	33	32	33	32	33	32	33	32	33	30	31	32	31	30	32
h F2	MED	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
CNT	CNT	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
UQ	CNT	31	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32
LQ	CNT	32	30	33	32	33	32	33	32	33	32	33	32	33	32	33	32	33	30	31	32	31	30	32
h F2	MED	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
CNT	CNT	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
UQ	CNT	31	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32
LQ	CNT	32	30	33	32	33	32	33	32	33	32	33	32	33	32	33	32	33	30	31	32	31	30	32
h F2	MED	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
CNT	CNT	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
UQ	CNT	31	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32
LQ	CNT	32	30	33	32	33	32	33	32	33	32	33	32	33	32	33	32	33	30	31	32	31	30	32
h F2	MED	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
CNT	CNT	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
UQ	CNT	31	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32
LQ	CNT	32	30	33	32	33	32	33	32	33	32	33	32	33	32	33	32	33	30	31	32	31	30	32
h F2	MED	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
CNT	CNT	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
UQ	CNT	31	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32
LQ	CNT	32	30	33	32	33	32	33	32	33	32	33	32	33	32	33	32	33	30	31	32	31	30	32
h F2	MED	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
CNT	CNT	30	31	30	29	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31	30	31
UQ	CNT	31	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32	31	30	32
LQ	CNT	32	30	33	32	33	32	33	32	33	32	33												

TABLE 53

TABLE 54

A84E 55

WESEP 1.0 MC TO 25.0 MC IN 15 SECONDS.

EEP 1.0 MC TO 25.0 MC IN 15 SECONDS.

IEEE P 1.0 MC TO 20.0 MC IN 20 SECONDS.

TABLE 57

260

TABLE VI

SWEEP 1.0 MC TO 10.0 MC.

JANUARY • 1953

SEP 14.0 MC TO 22.0 MC IN 7 SECON

SEP 10.0 MC TO 16.0 MC IN 7 SECON

19

32

29

381

SWEET 1.0 MC TO 16.0 MC IN 7 ECONOMIC

Volume 1 1958

SLEEP 1+3 MC TO 18.0 MC IN 30 SECONDS.

REVIEW

THE SAME P 100 MC TO 160 MC IN 7 SECONDS.

דרכו • 292

May 1956

April 1985 65

TABLE 66

ט'ז

TABLE 68

SEP 1•2 MC TO 20•0 MC.

DECEMBER • 1957

SWEET 1.025 MC TO 20.0 MC.

17

CASABLANCA • MOROCCO (33°6'N. 7°0'W.)

TABLE 69

TABLE 70

卷之三

21

二〇一七

TABLE I3

۲۰۷

ABLE 75

TABLE 76

SPEECH 102 HLC 10/20/00

MAGEMEIN 1331

SWEET 100% MELON

۱۰۷

TABLE 78

- 1660 - 6 MC TO 14 & MC

卷之三

TIERS, FRANCE : 4606N. 0.3E.

ER 1-5 MC 14-5 MC

TABLE 79

100

TABLE 80

1

LASABLANCA, MOHOCO (23°08'N, 7°06'W)

THE JOURNAL OF CLIMATE

81

TABLE II

83

TABLE 84

L597

L56T

Lynx 11(1)

TABLE 9a
CAMPBELL, 1525±5°C, 1694±5°

HOUR	TIME, 165±0°C																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
10 F2	MED	4.4	4.2	4.0	3.7	3.5	3.6	3.0	2.1	1.6	1.2	1.2	1.1	1.0	1.0	0.9	0.7	0.6	0.5	0.5	0.4	0.3	0.2	0.1	
	CNT	2.9	2.8	2.7	2.6	2.7	2.7	2.5	2.1	1.6	1.2	1.2	1.1	1.0	1.0	0.9	0.7	0.6	0.5	0.5	0.4	0.3	0.2	0.1	
	LO	3.1	3.0	2.9	2.8	2.7	2.7	2.6	2.2	1.7	1.3	1.3	1.2	1.1	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	
	UO	3.1	3.0	2.9	2.8	2.7	2.7	2.6	2.2	1.7	1.3	1.3	1.2	1.1	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	
10 F2	MED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	CNT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	LO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
10 F2	MED	2.85	2.90	2.94	2.91	2.72	2.62	2.55	2.39	2.10	1.85	1.65	1.45	1.25	1.05	0.85	0.65	0.45	0.25	0.05	0.00	0.00	0.00	0.00	
	CNT	2.8	2.9	2.9	2.9	2.8	2.6	2.5	2.4	2.1	1.8	1.6	1.4	1.2	1.0	0.8	0.6	0.4	0.2	0.0	0.00	0.00	0.00	0.00	
	LO	2.85	2.89	2.92	2.95	2.70	2.60	2.50	2.45	2.15	1.85	1.65	1.45	1.25	1.05	0.85	0.65	0.45	0.25	0.05	0.00	0.00	0.00	0.00	
(M3000)F2	MED	2.65	2.69	2.73	2.68	2.65	2.55	2.45	2.35	2.15	1.95	1.75	1.55	1.35	1.15	0.95	0.75	0.55	0.35	0.15	0.05	0.00	0.00	0.00	
	CNT	2.6	2.6	2.7	2.6	2.6	2.5	2.4	2.3	2.1	1.9	1.7	1.5	1.3	1.1	0.9	0.7	0.5	0.3	0.1	0.05	0.00	0.00	0.00	0.00
	LO	2.65	2.69	2.73	2.68	2.65	2.55	2.45	2.35	2.15	1.95	1.75	1.55	1.35	1.15	0.95	0.75	0.55	0.35	0.15	0.05	0.00	0.00	0.00	
10 F1	MED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	CNT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	LO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
10 F1	MED	1.55	1.45	1.35	1.25	1.15	1.05	0.95	0.85	0.75	0.65	0.55	0.45	0.35	0.25	0.15	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	CNT	1.55	1.45	1.35	1.25	1.15	1.05	0.95	0.85	0.75	0.65	0.55	0.45	0.35	0.25	0.15	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	LO	1.55	1.45	1.35	1.25	1.15	1.05	0.95	0.85	0.75	0.65	0.55	0.45	0.35	0.25	0.15	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
10 E	MED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	CNT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	LO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
10 E	MED	1.38	1.43	1.41	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	
	CNT	1.38	1.43	1.41	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	
	LO	1.38	1.43	1.41	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	
10 E	MED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	CNT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	LO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

SWEEP 1+0 MC TO 13.0 MC IN 2 MINUTES*

JANUARY 1, 1957

TABLE 9b
LWIR, CO/CO 12.3/3.5, 28+6EI

HOUR	TIME, 20±0 MC IN 3 MINUTES*																							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
10 F2	MED	1.00	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.80	0.79	0.78	0.77	0.76
	CNT	1.00	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.80	0.79	0.78	0.77	0.76
	LO	1.00	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.80	0.79	0.78	0.77	0.76
10 F2	MED	2.20	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25
	CNT	2.20	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25
	LO	2.20	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25
10 F1	MED	3.03	3.04	3.05	3.13	3.15	3.16	3.22	3.24	3.26	3.28	3.30	3.32	3.34	3.36	3.38	3.40	3.42	3.44	3.46	3.48	3.50	3.52	3.54
	CNT	3.03	3.04	3.05	3.13	3.15	3.16	3.22	3.24	3.26	3.28	3.30	3.32	3.34	3.36	3.38	3.40	3.42	3.44	3.46	3.48	3.50	3.52	3.54
	LO	3.03	3.04	3.05	3.13	3.15	3.16	3.22	3.24	3.26	3.28	3.30	3.32	3.34	3.36	3.38	3.40	3.42	3.44	3.46	3.48	3.50	3.52	3.54
10 E	MED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CNT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	LO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 E	MED	1.19	1.21	1.23	1.25	1.27	1.29	1.31	1.33	1.35	1.37	1.39	1.41	1.43	1.45	1.47	1.49	1.51	1.53	1.55	1.57	1.59	1.61	1.63
	CNT	1.19	1.21	1.23	1.25	1.27	1.29	1.31	1.33	1.35	1.37	1.39	1.41	1.43	1.45	1.47	1.49	1.51	1.53	1.55	1.57	1.59	1.61	1.63
	LO	1.19	1.21	1.23	1.25	1.27	1.29	1.31	1.33	1.35	1.37	1.39	1.41	1.43	1.45	1.47	1.49	1.51	1.53	1.55	1.57	1.59	1.61	1.63
10 E	MED	2.26	2.26	2.28	2.28	2.30	2.30	2.32	2.32	2.34	2.34	2.36	2.36	2.38	2.38	2.40	2.40	2.42	2.42	2.44	2.44	2.46	2.46	2.48
	CNT	2.26	2.26	2.28	2.28	2.30	2.30	2.32	2.32	2.34	2.34	2.36	2.36	2.38	2.38	2.40	2.40	2.42	2.42	2.44	2.44	2.46	2.46	2.48
	LO	2.26	2.26	2.28	2.28	2.30	2.30	2.32	2.32	2.34	2.34	2.36	2.36	2.38	2.38	2.40	2.40	2.42	2.42	2.44	2.44	2.46	2.46	2.48

SWEEP 1+2.5 MC TO 20±0 MC IN 10 MINUTES*

JUNE 1, 1956

||
||
||

GRAPHS OF IONOSPHERIC DATA



Fig. 1. THULE , GREENLAND
76.0°N , 68.0°W DECEMBER 1961



Fig. 2. FAIRBANKS , ALASKA
64.9°N , 147.8°W DECEMBER 1961

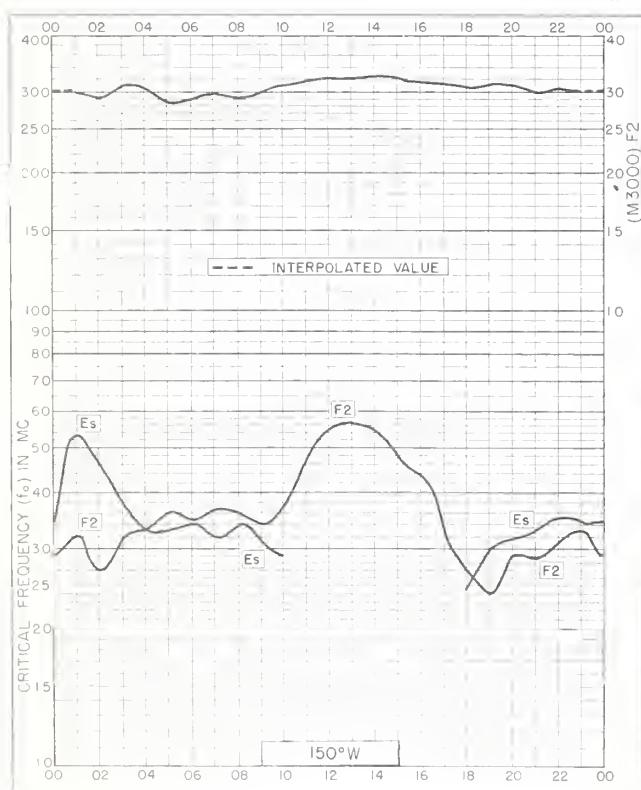


Fig. 3. POINT BARROW , ALASKA
71.3°N , 156.8°W NOVEMBER 1961

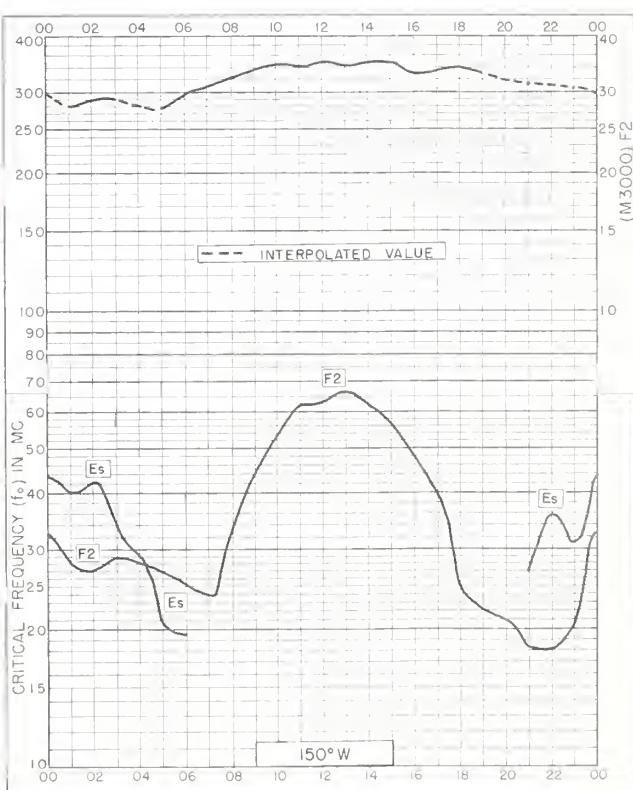


Fig. 4. FAIRBANKS , ALASKA
64.9°N , 147.8°W NOVEMBER 1961

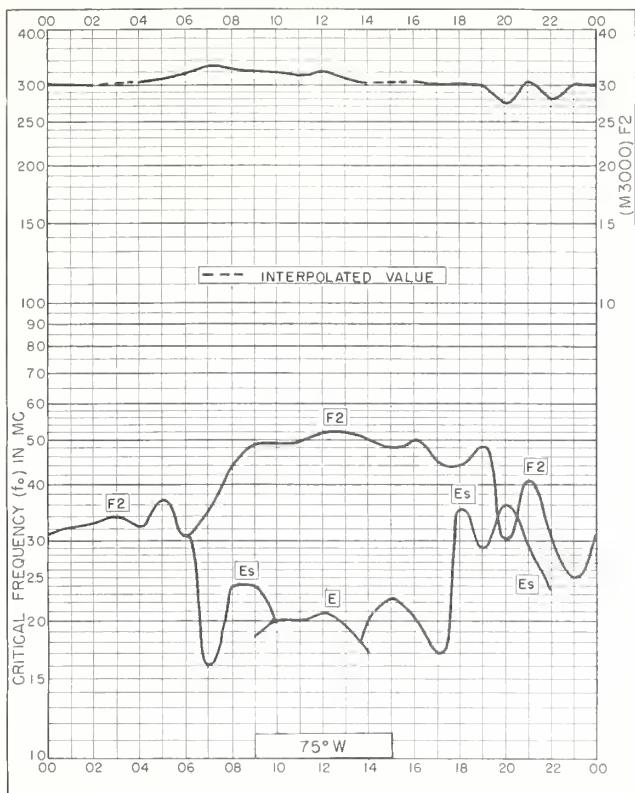


Fig. 5. THULE , GREENLAND
76.0°N , 68.0°W OCTOBER 1961

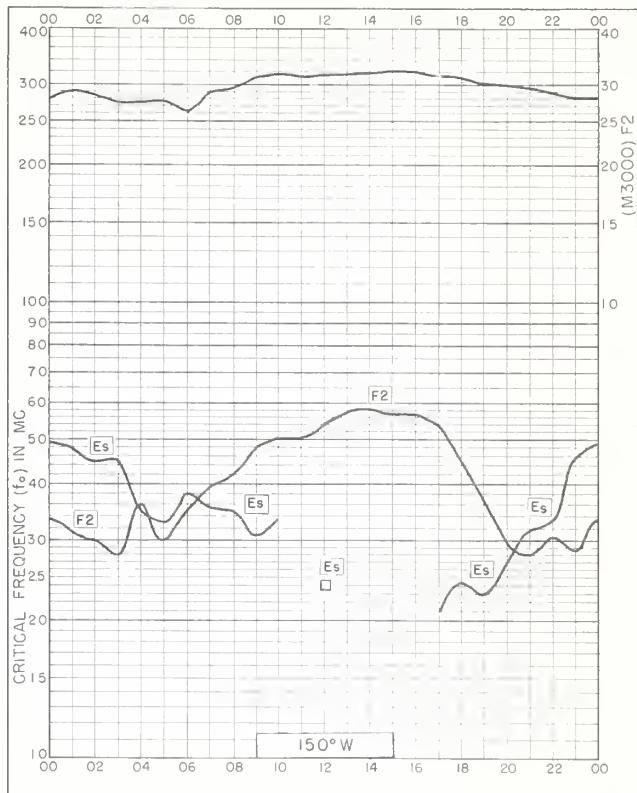


Fig. 6. POINT BARROW , ALASKA
71.3°N , 156.8°W OCTOBER 1961

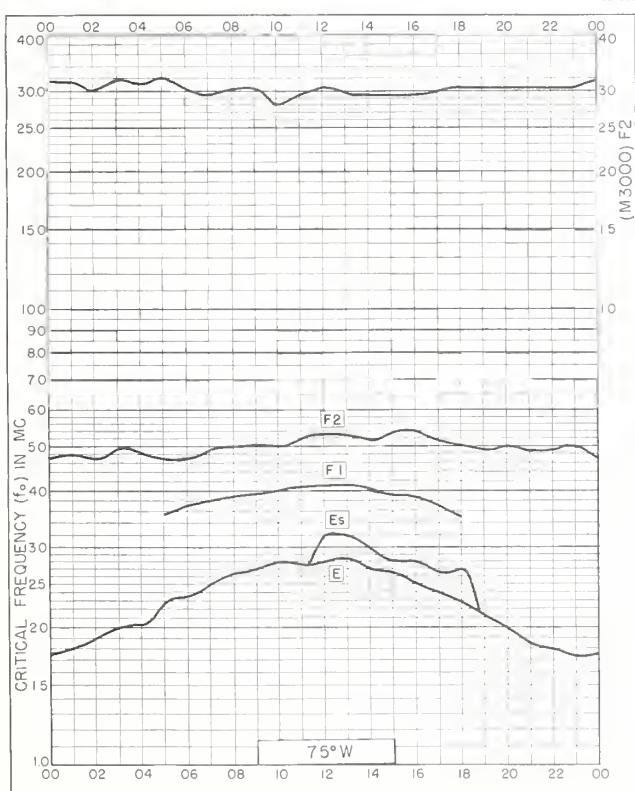


Fig. 7. THULE , GREENLAND
76.0°N , 68.0°W AUGUST 1961

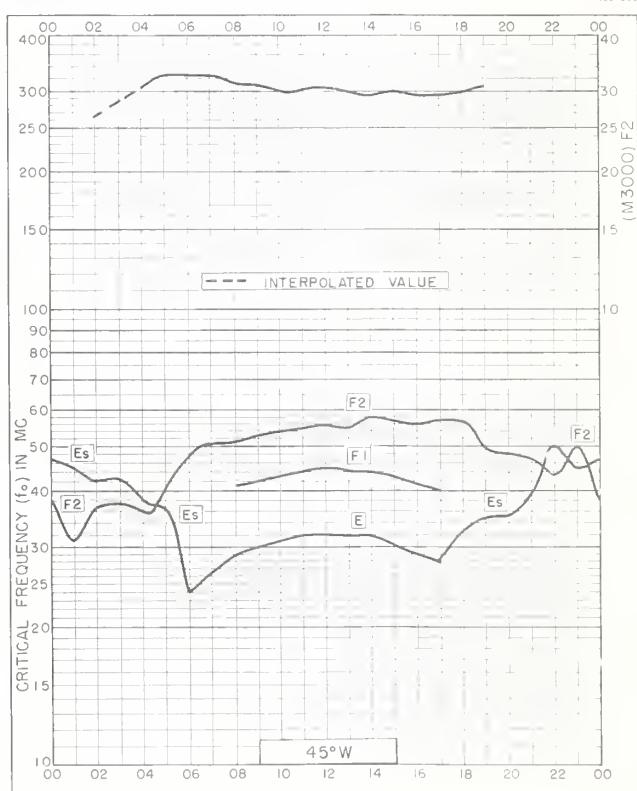


Fig. 8. NARSSARSSUAQ , GREENLAND
61.2°N , 45.4°W AUGUST 1961

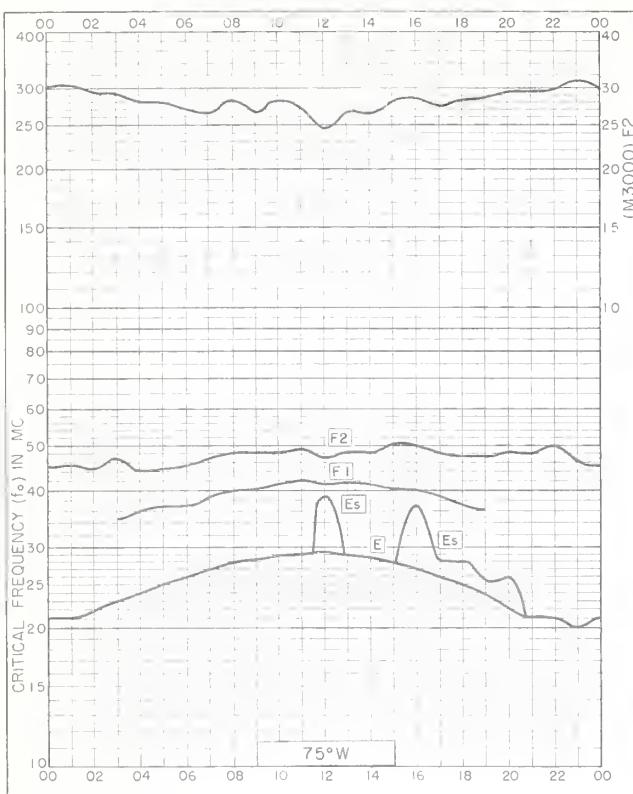


Fig. 9. THULE , GREENLAND
76.0°N, 68.0°W JULY 1961

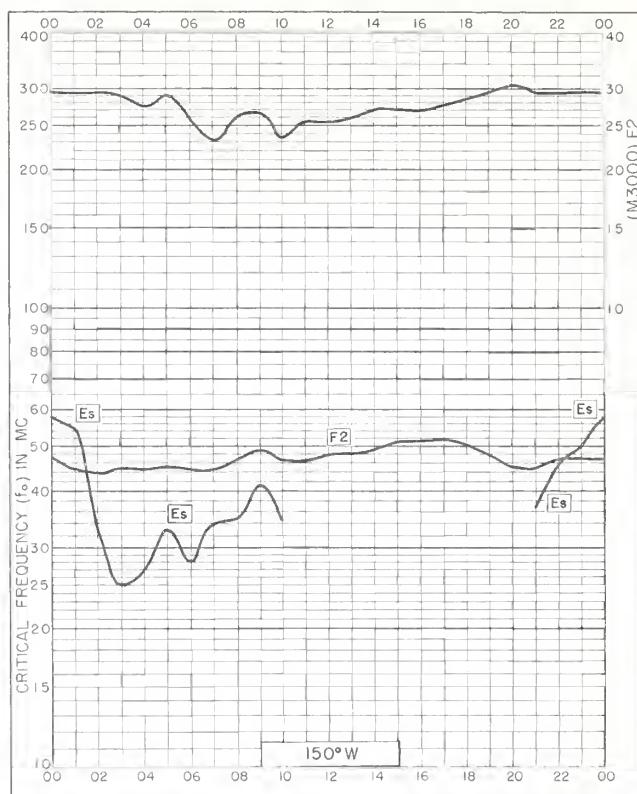


Fig. 10. POINT BARROW , ALASKA
71.3°N, 156.8°W JULY 1961

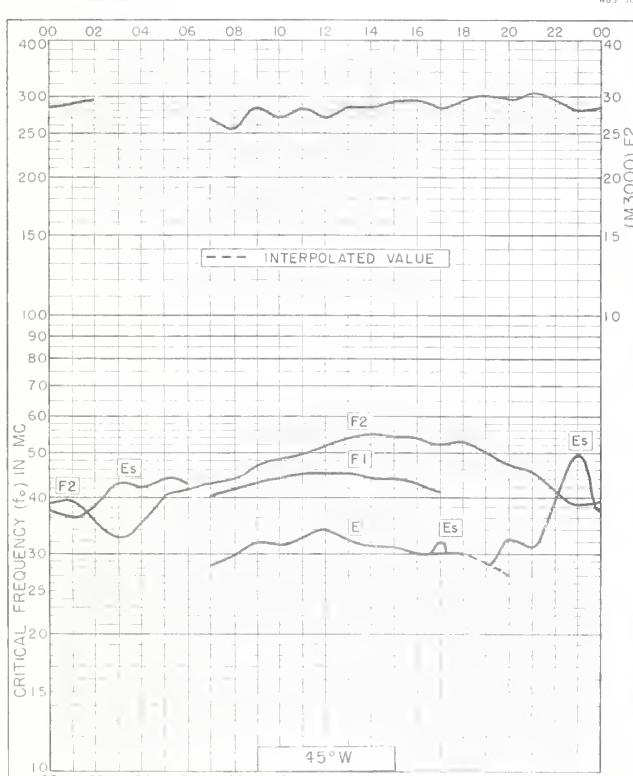


Fig. 11. NARSSARSSUAQ , GREENLAND
61.2°N, 45.4°W JULY 1961

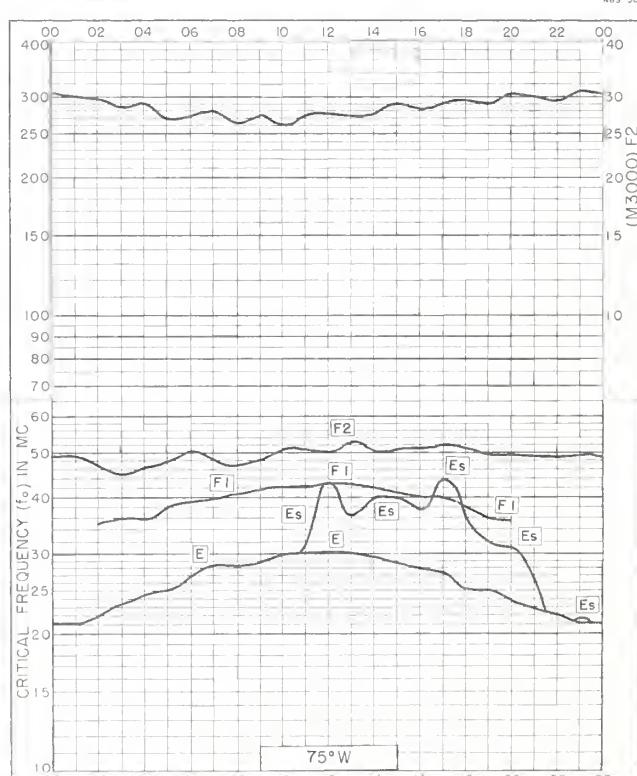
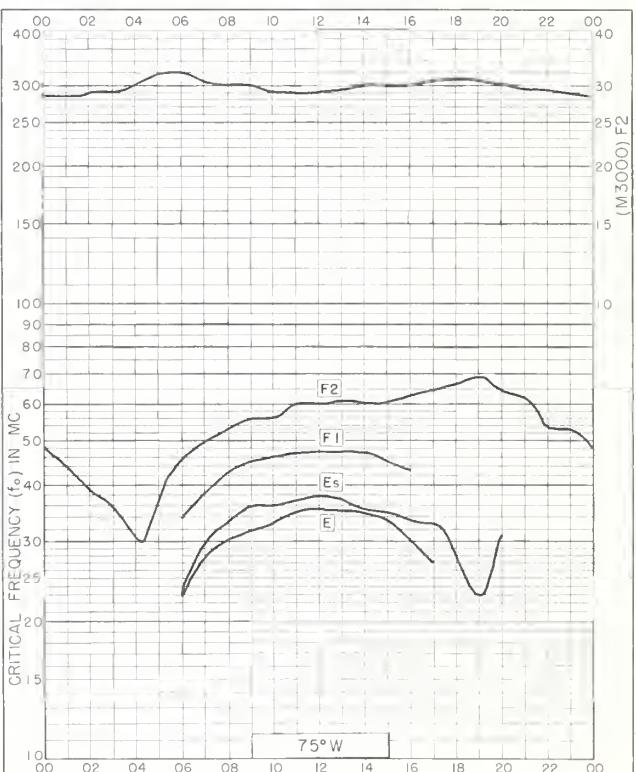
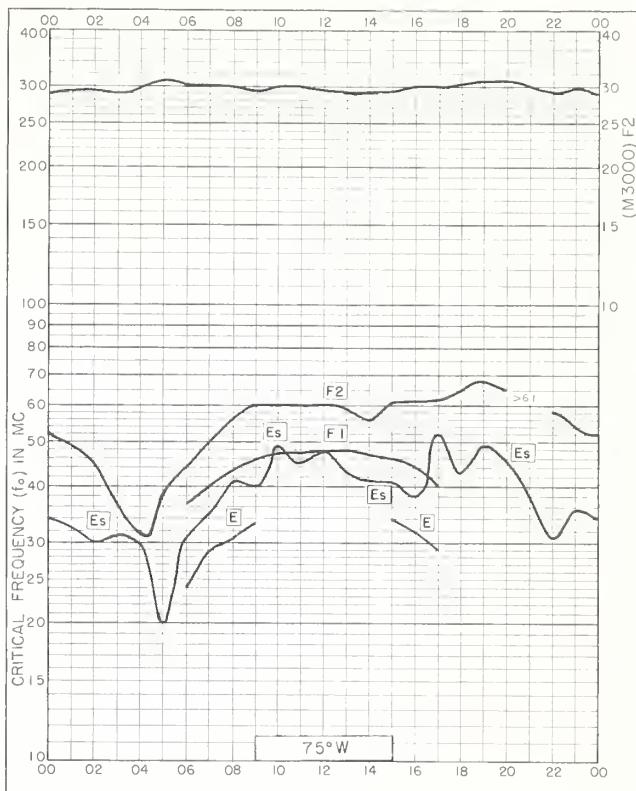
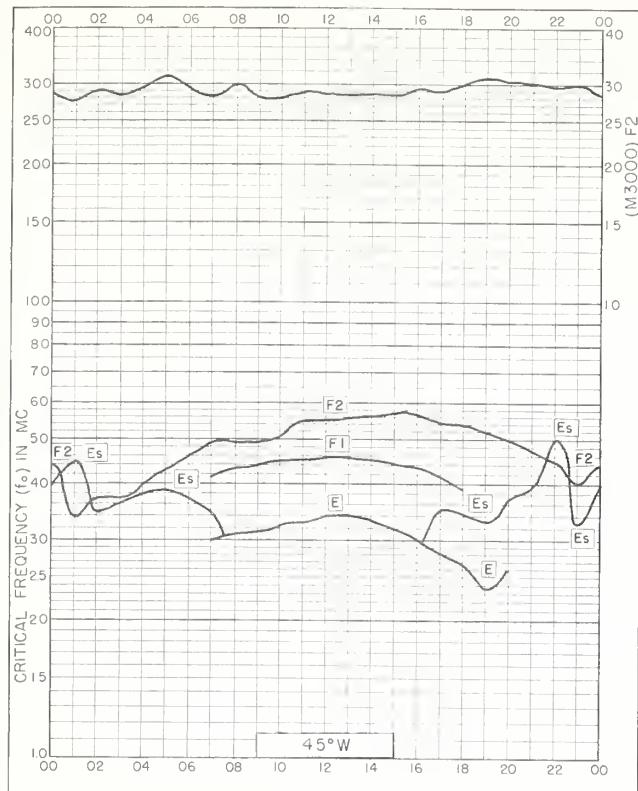


Fig. 12. THULE , GREENLAND
76.0°N, 68.0°W JUNE 1961



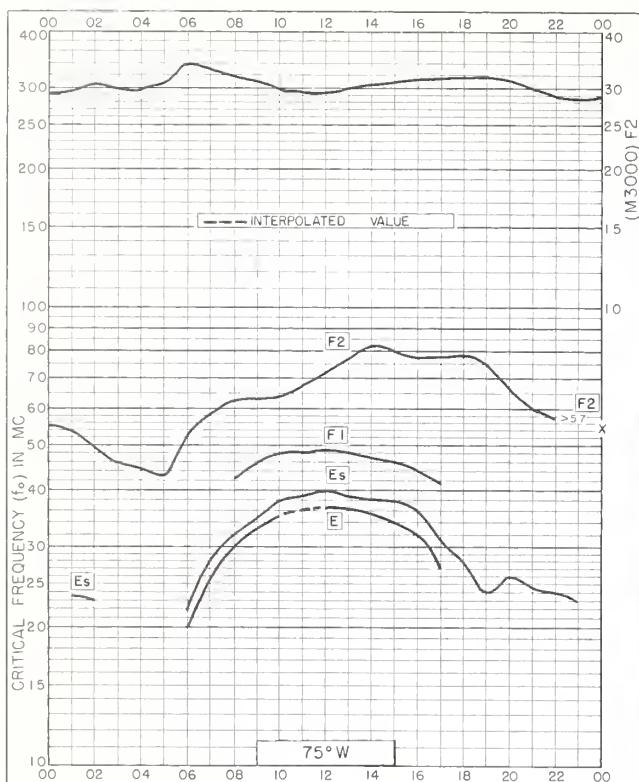


Fig. 17. GRAND BAHAMA I.
26.6°N, 78.2°W
MAY 1961

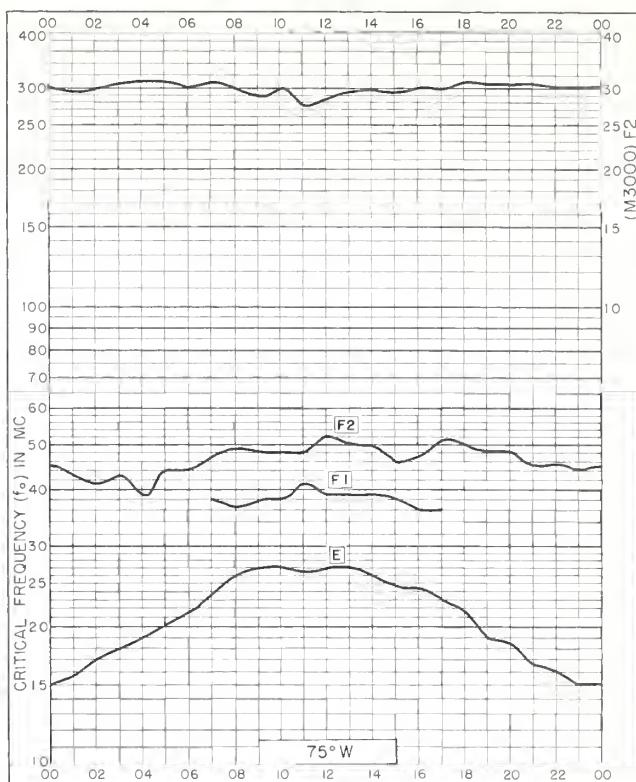


Fig. 18. THULE, GREENLAND
76.0°N, 68.0°W
APRIL 1961

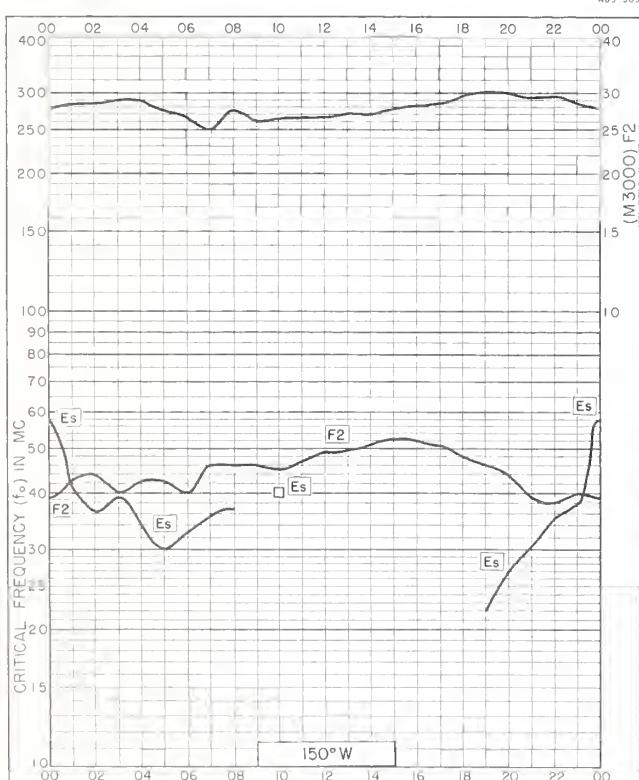


Fig. 19. POINT BARROW, ALASKA
71.3°N, 156.8°W
APRIL 1961

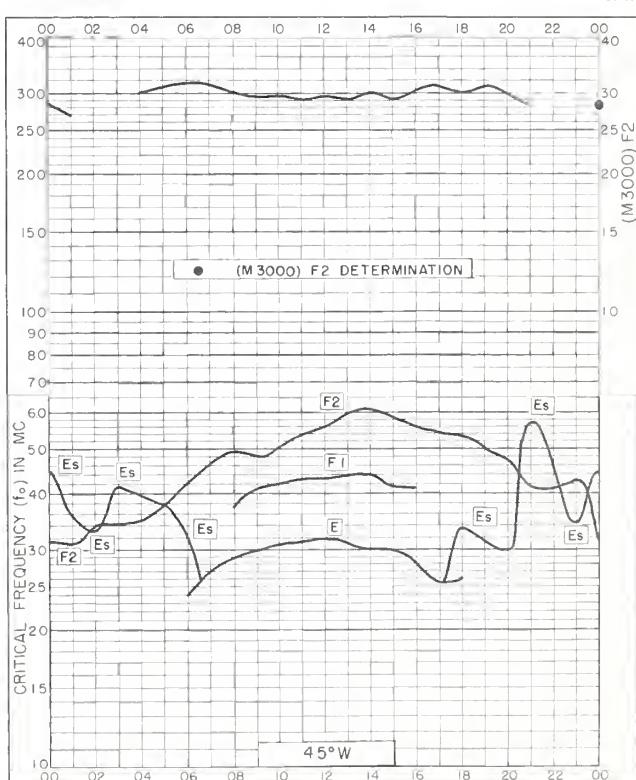


Fig. 20. NARSSARSSUAG, GREENLAND
61.2°N, 45.4°W
APRIL 1961

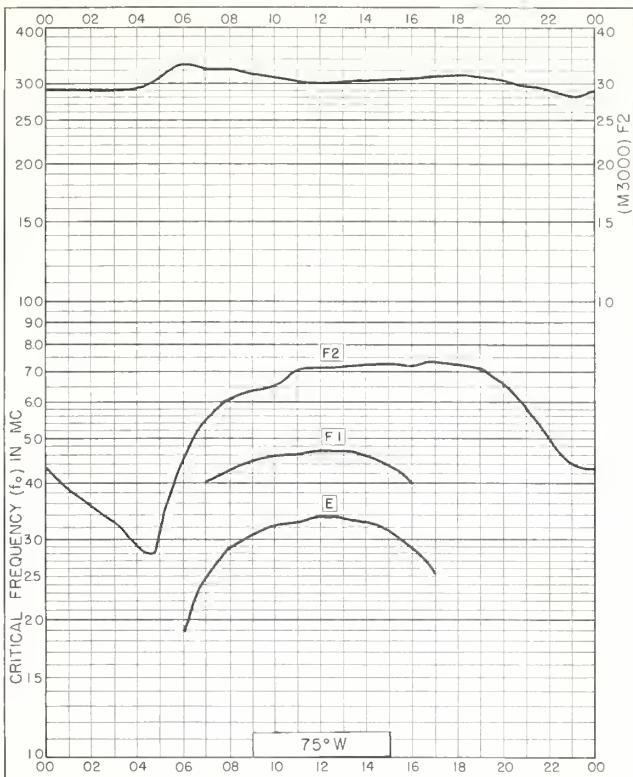


Fig. 21. FT. MONMOUTH, NEW JERSEY
 40.4°N, 74.1°W APRIL 1961

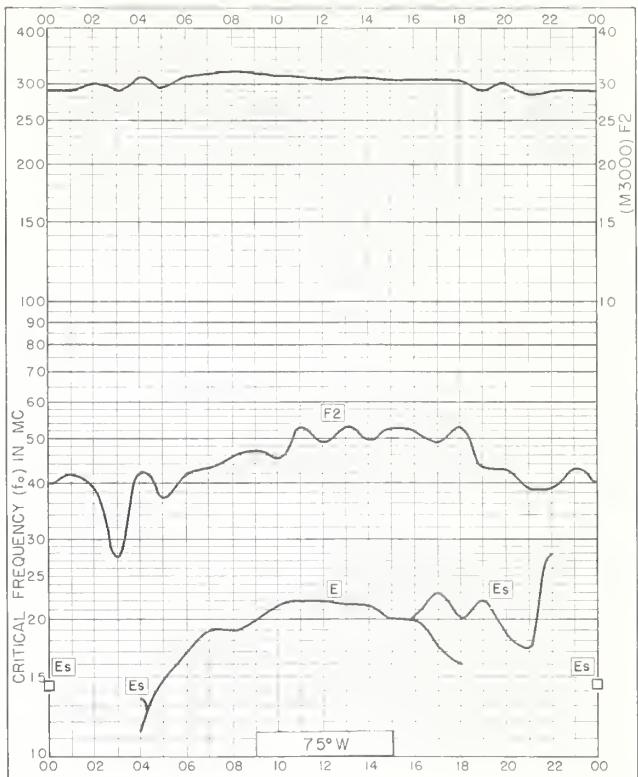


Fig. 22. THULE, GREENLAND
76.0°N, 68.0°W MARCH 1961

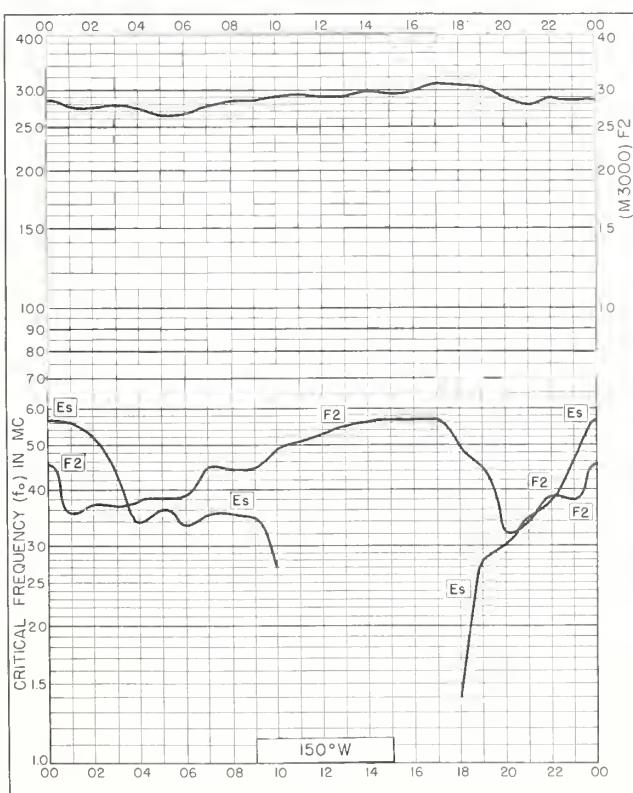


Fig. 23. POINT BARROW, ALASKA
 71.3°N, 156.8°W MARCH 1961

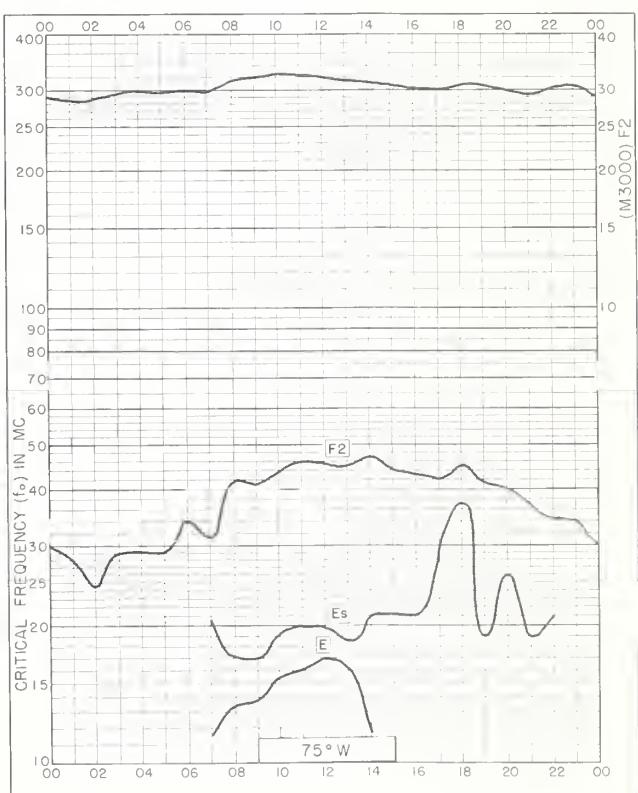


Fig. 24. THULE, GREENLAND
 76.0°N, 68.0°W FEBRUARY 1961

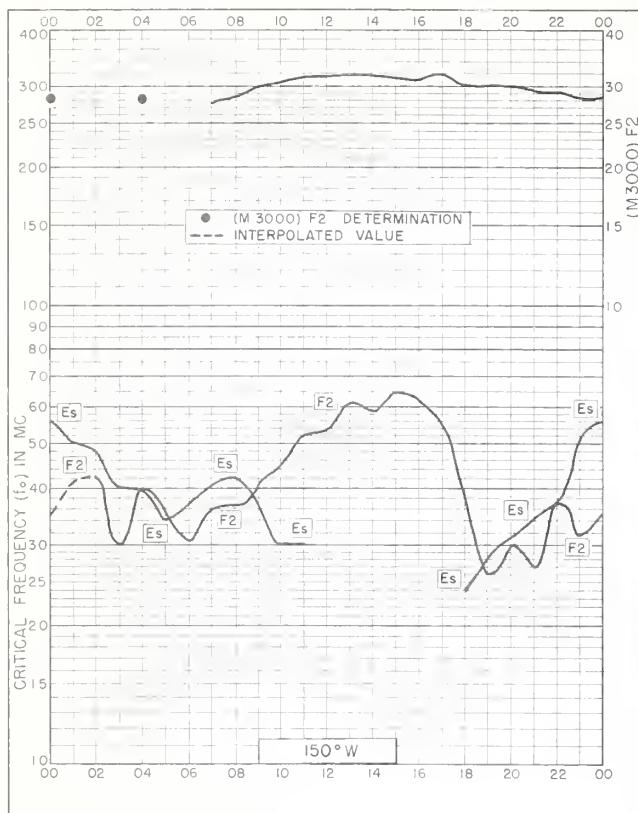


Fig. 25. POINT BARROW, ALASKA
71.3°N, 156.8°W FEBRUARY 1961



Fig. 26. THULE, GREENLAND
76.0°N, 68.0°W JANUARY 1961

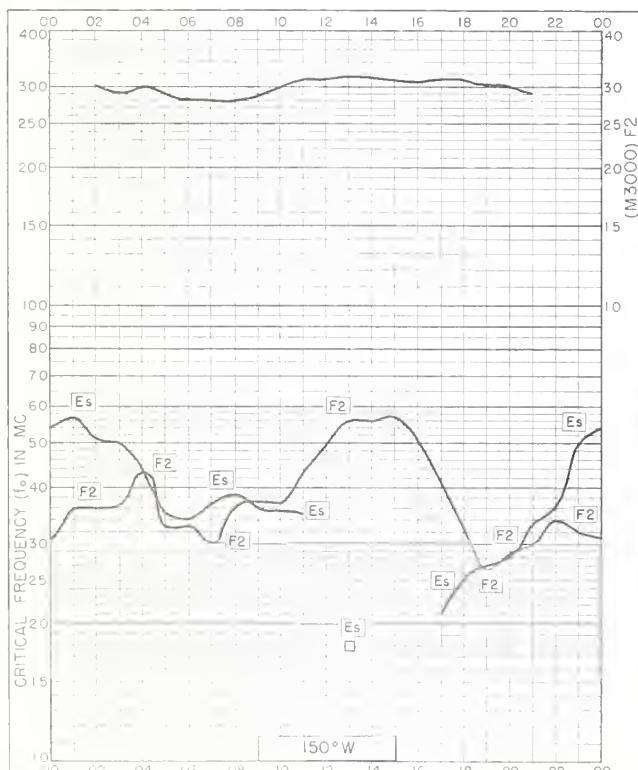


Fig. 27. POINT BARROW, ALASKA
71.3°N, 156.8°W JANUARY 1961

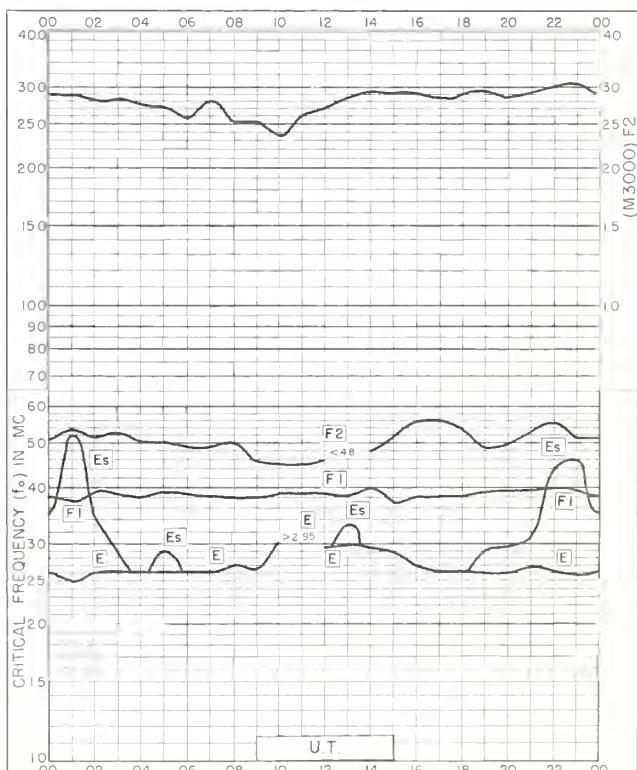


Fig. 28. POLE STATION
90.0°S JANUARY 1961

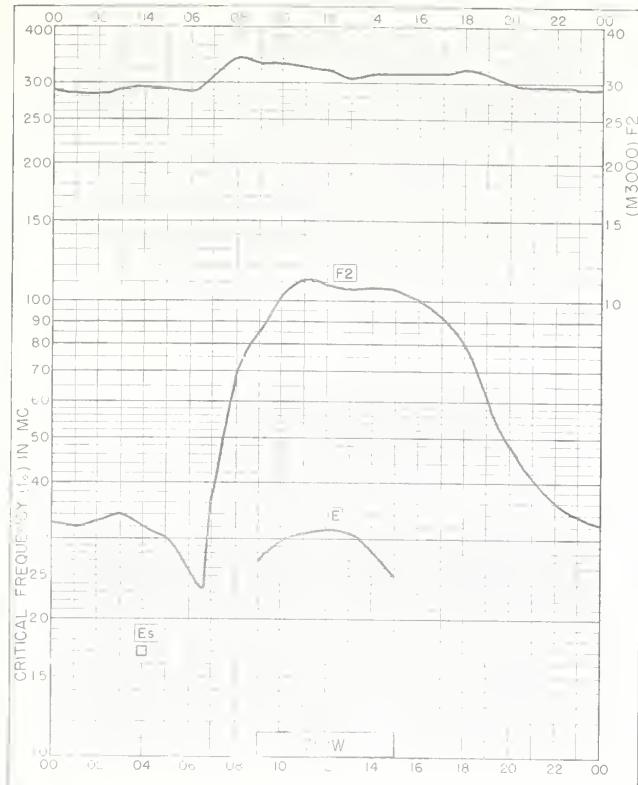


Fig. 29. FT. MONMOUTH, NEW JERSEY
40.4°N, 74.1°W DECEMBER 1960

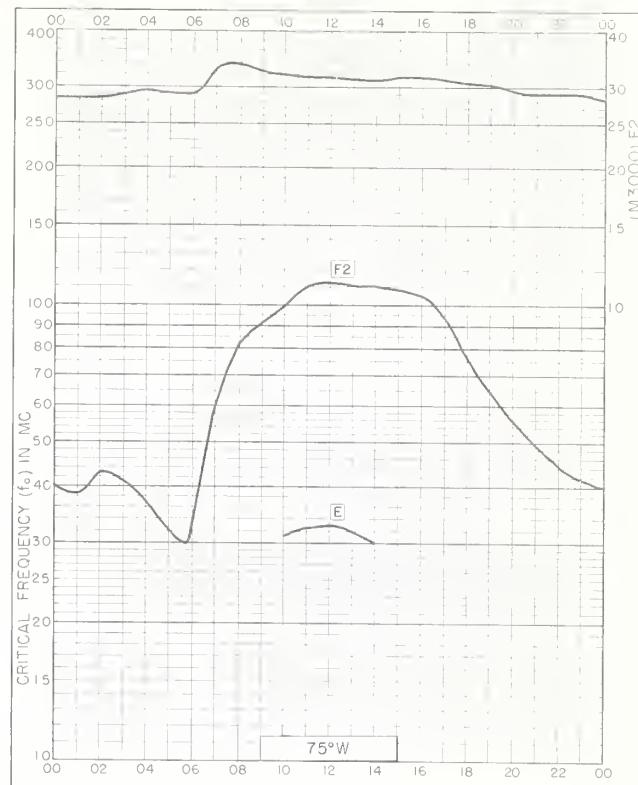


Fig. 30. FT. MONMOUTH, NEW JERSEY
40.4°N, 74.1°W NOVEMBER 1960

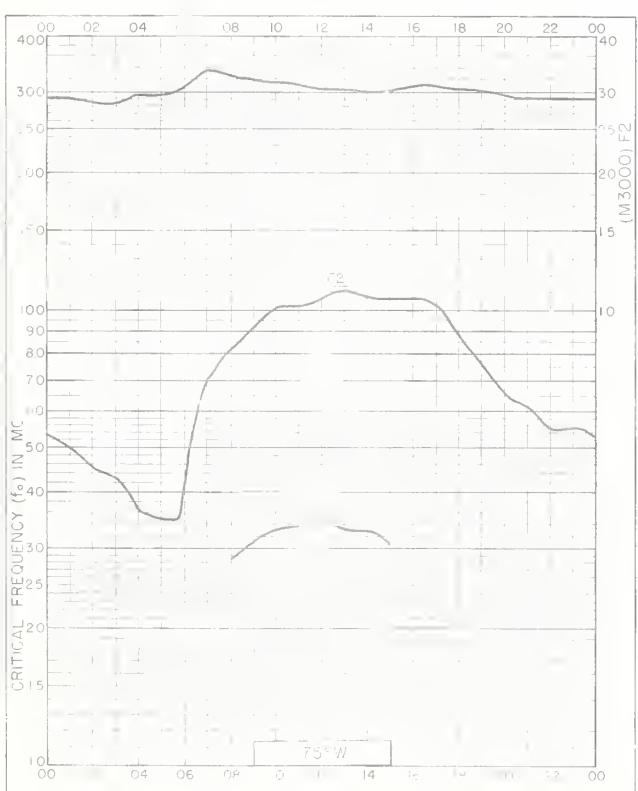


Fig. 31. FT. MONMOUTH, NEW JERSEY
40.4°N, 74.1°W OCTOBER 1960

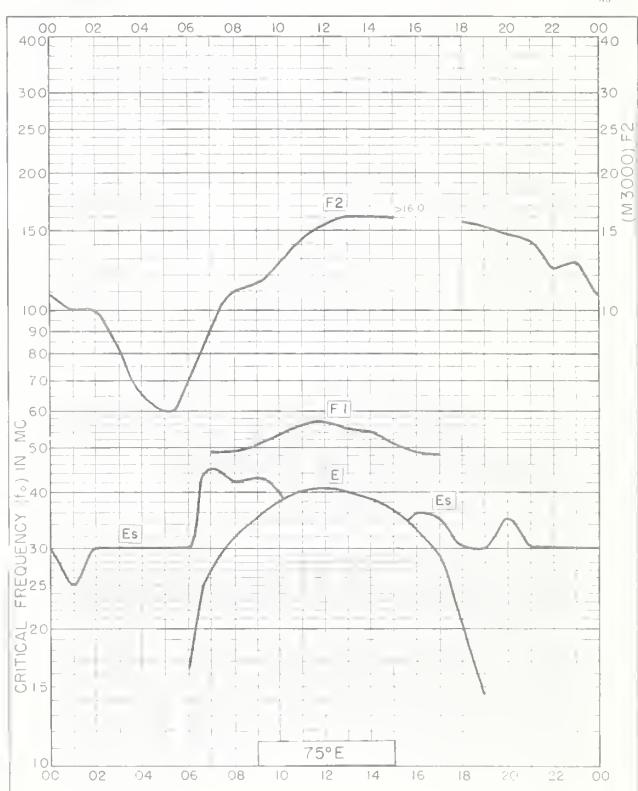


Fig. 32. AHMEDABAD, INDIA
23.0°N, 72.6°E APRIL 1960

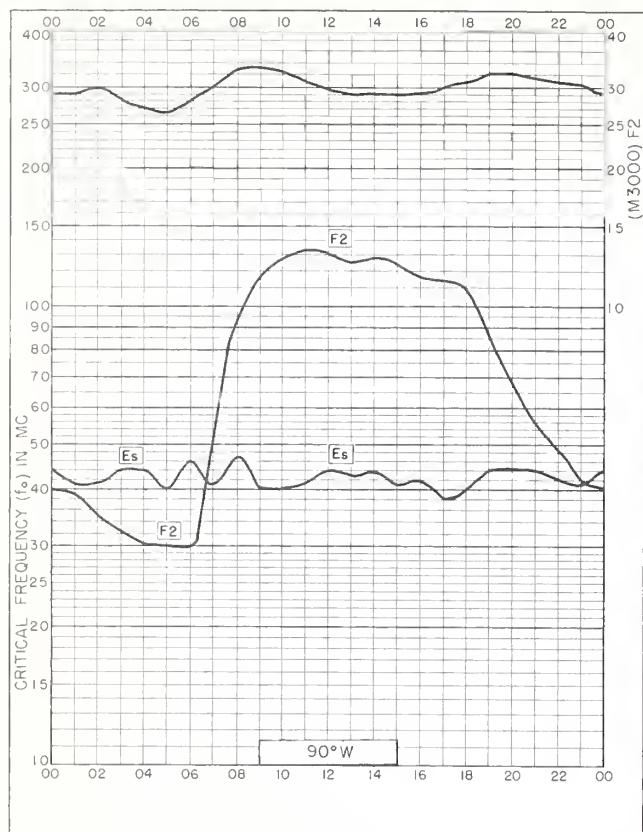


Fig. 33. EL CERILLO, MEXICO
19.3°N, 99.5°W DECEMBER 1959

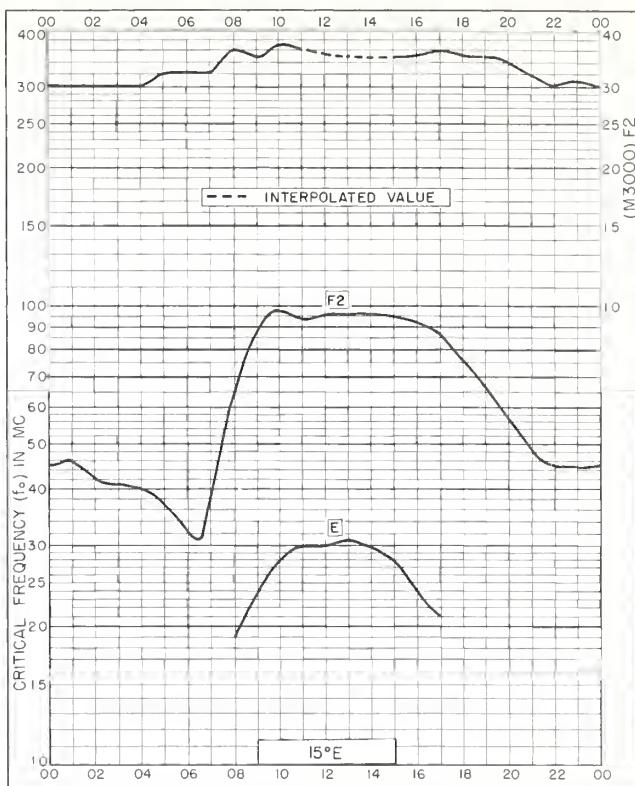


Fig. 34. SOTTENS, SWITZERLAND
46.6°N, 6.7°E NOVEMBER 1959



Fig. 35. SOTTENS, SWITZERLAND
46.6°N, 6.7°E OCTOBER 1959

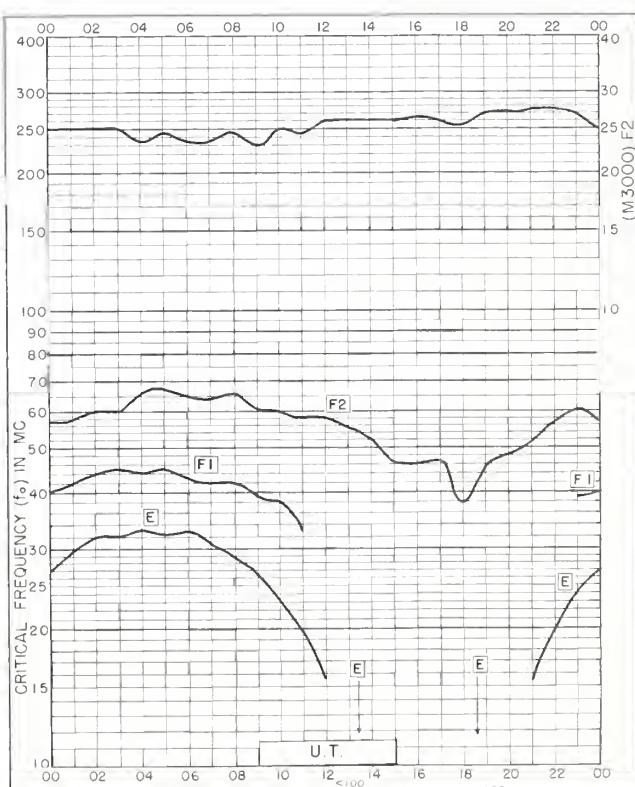


Fig. 36. WILKES STATION
66.3°S, 110.5°E OCTOBER 1959

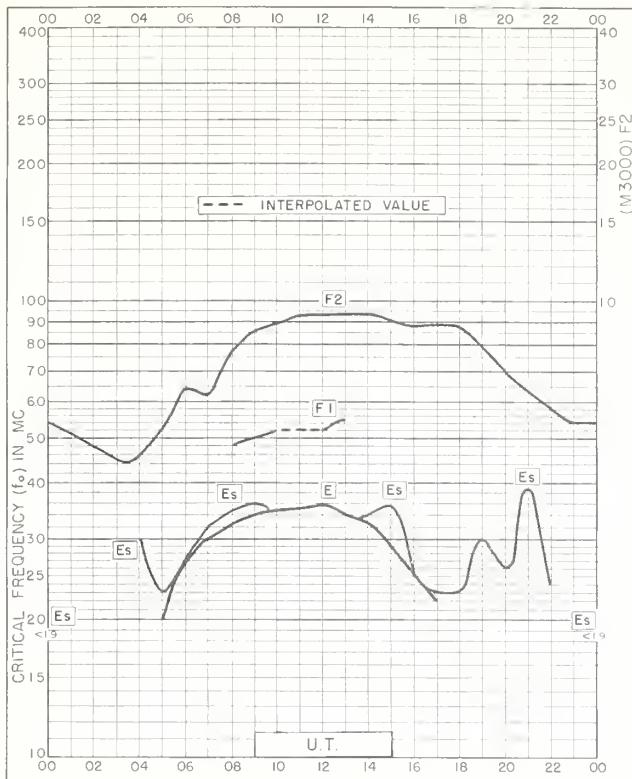


Fig. 37. PRUHONICE, CZECHOSLOVAKIA
50.0°N, 14.6°E SEPTEMBER 1959

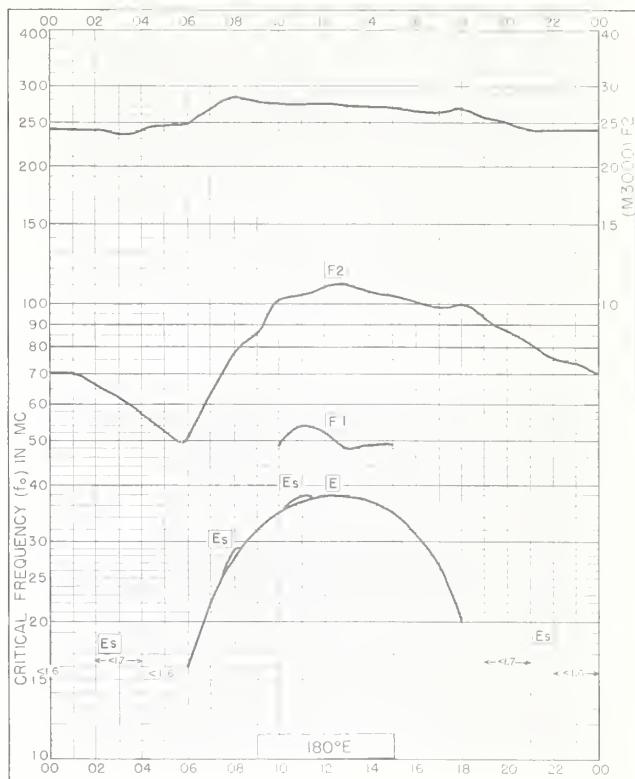


Fig. 38. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E SEPTEMBER 1959

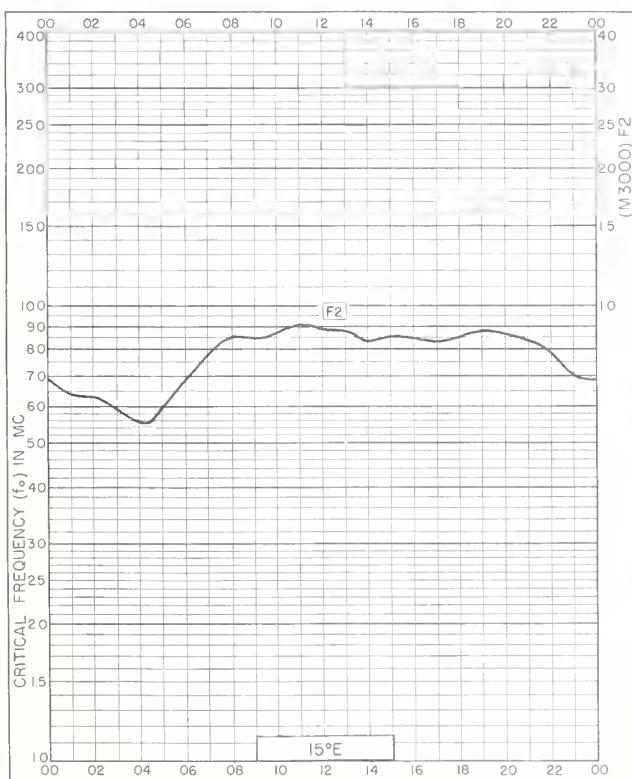


Fig. 39. GRAZ, AUSTRIA
47.1°N, 15.5°E AUGUST 1959

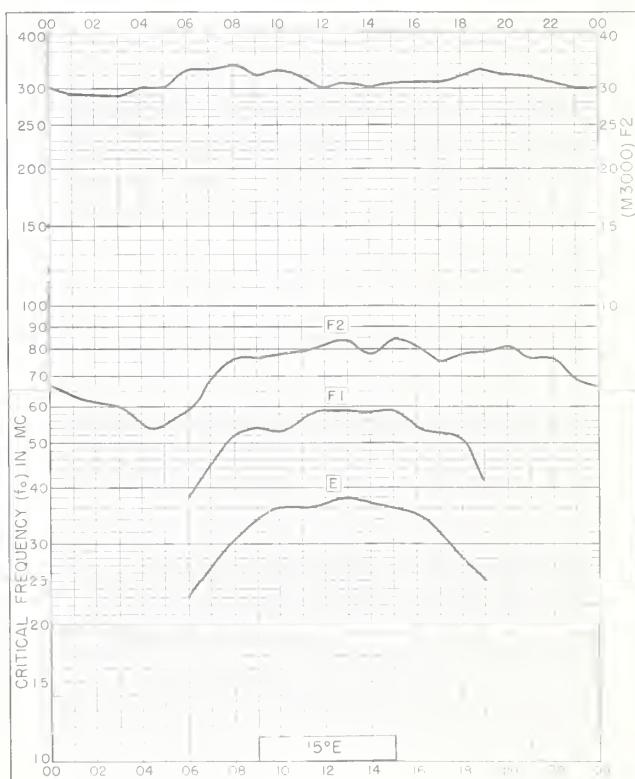


Fig. 40. SOTTENS, SWITZERLAND
46.6°N, 6.7°E AUGUST 1959

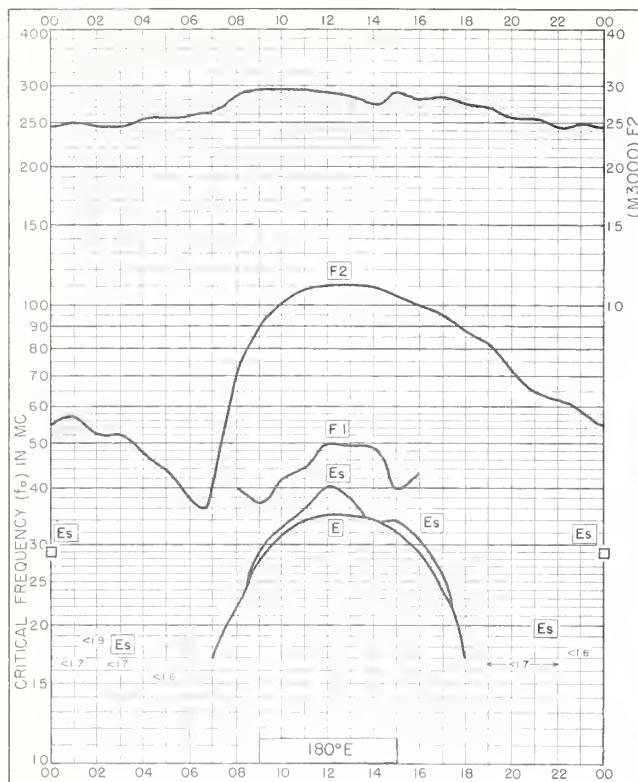


Fig. 41. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E AUGUST 1959

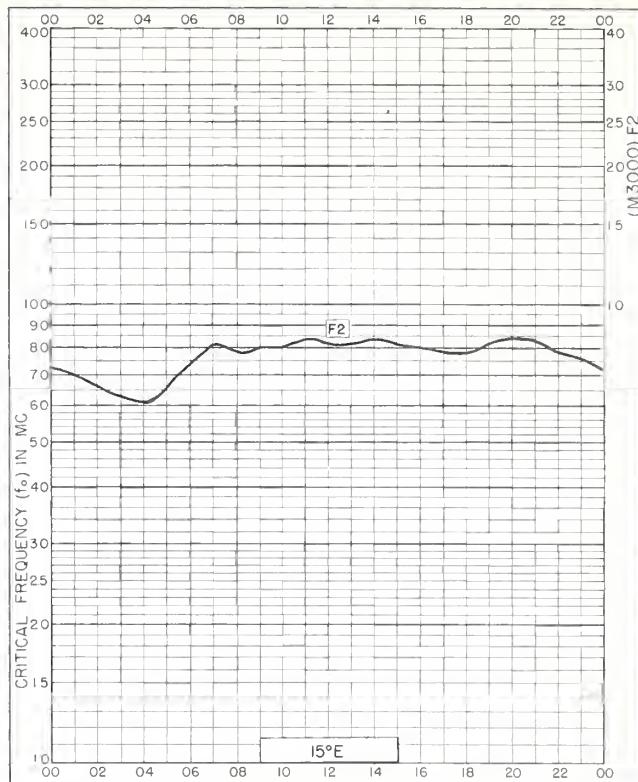


Fig. 42. GRAZ, AUSTRIA
47.1°N, 15.5°E JULY 1959

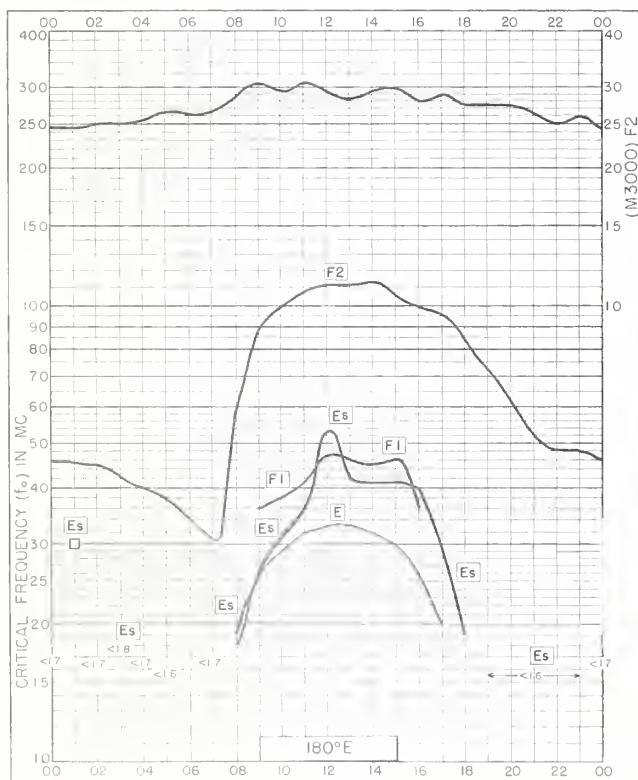


Fig. 43. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E JULY 1959

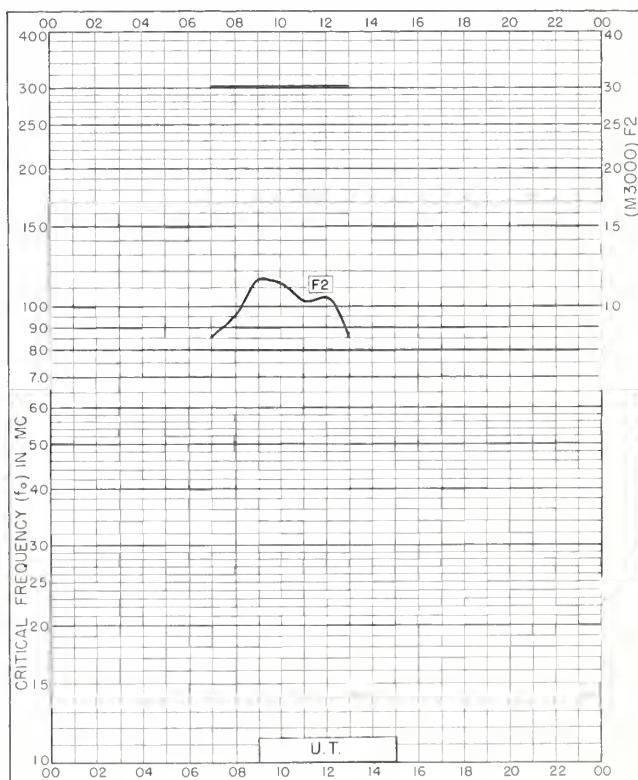


Fig. 44. MAWSON
67.6°S, 62.9°E JULY 1959

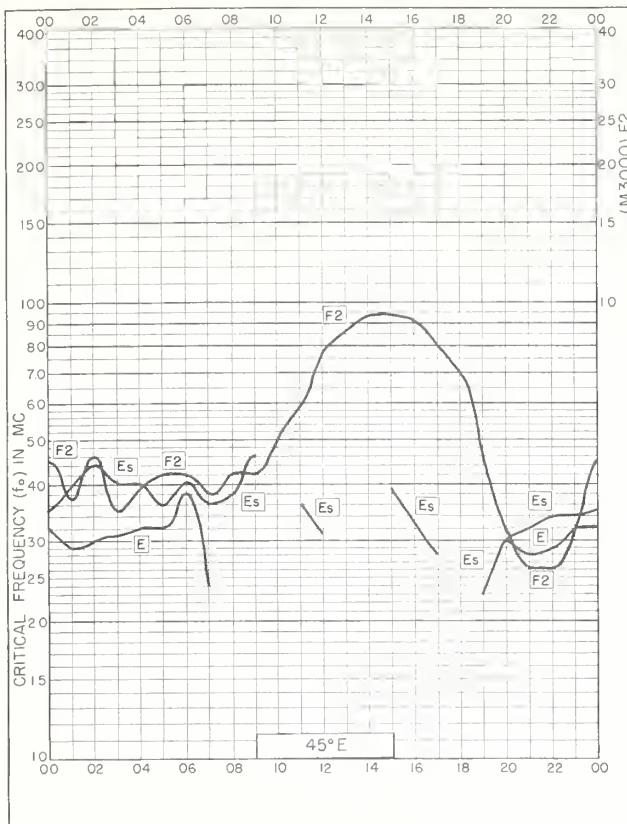


Fig. 45. SYOWA BASE
69.0°, 39.6°E JULY 1959

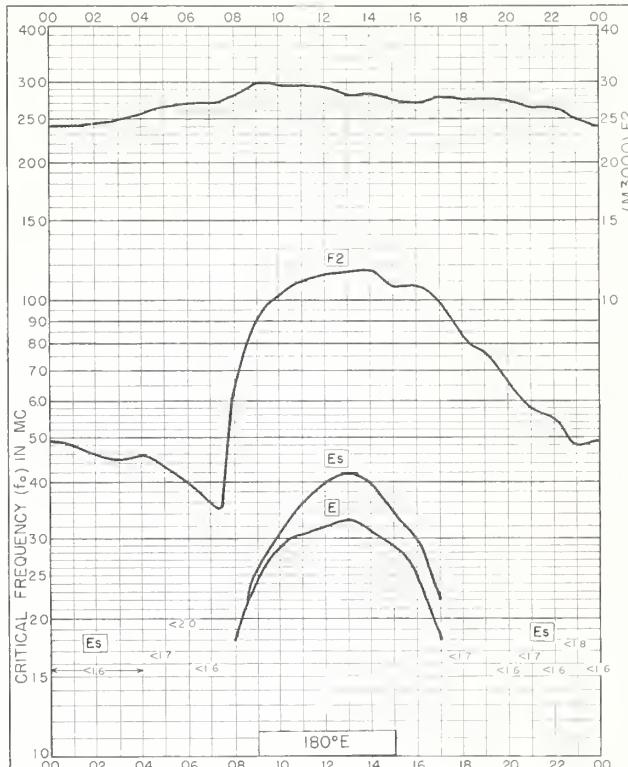


Fig. 46. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E JUNE 1959

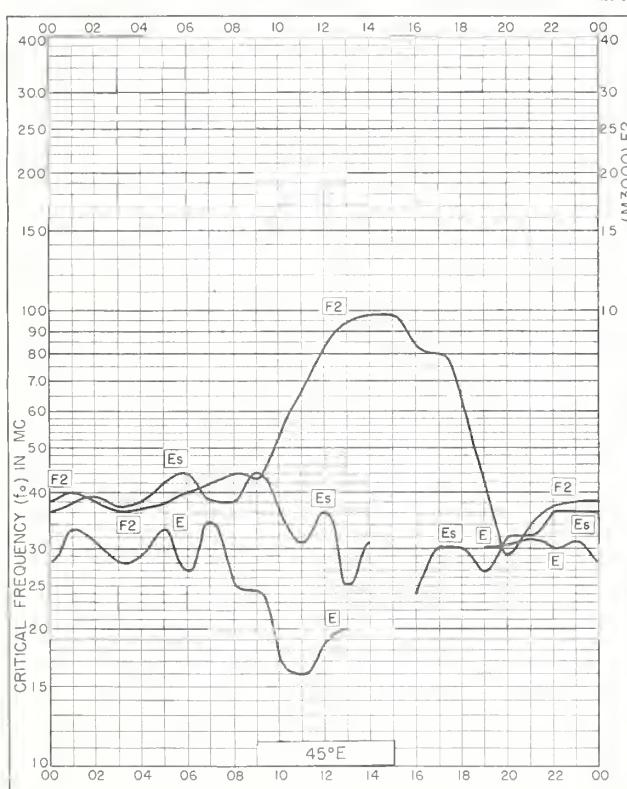


Fig. 47. SYOWA BASE
69.0°S, 39.6°E JUNE 1959

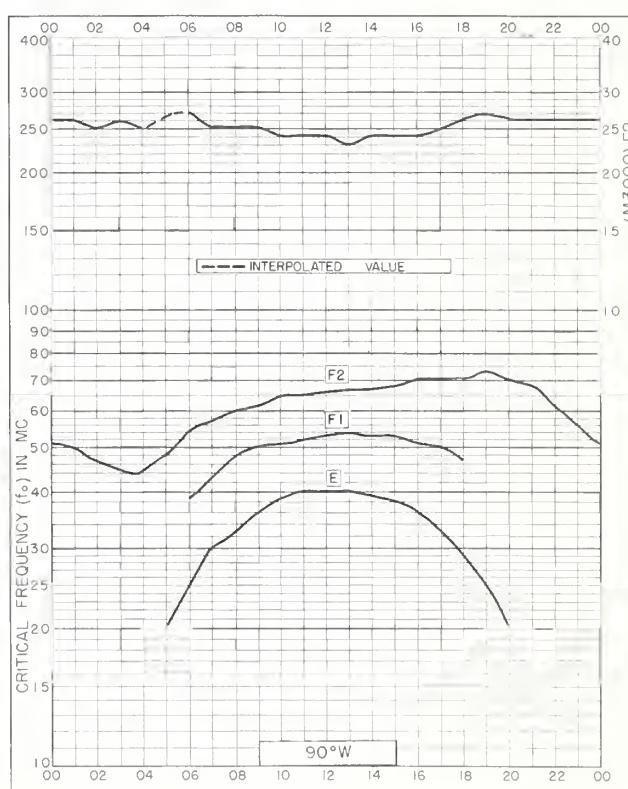


Fig. 48. WINNIPEG, CANADA
49.9°N, 97.4°W MAY 1959

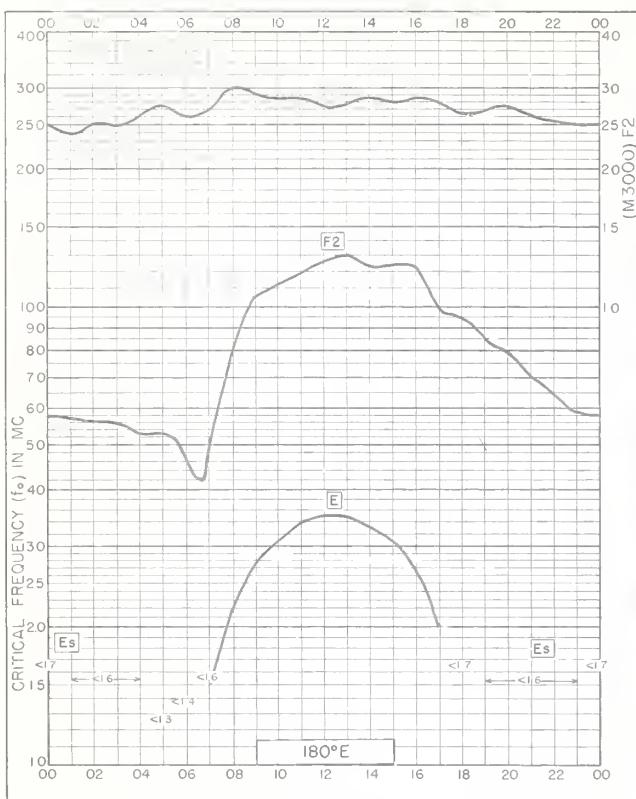


Fig. 49. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E MAY 1959

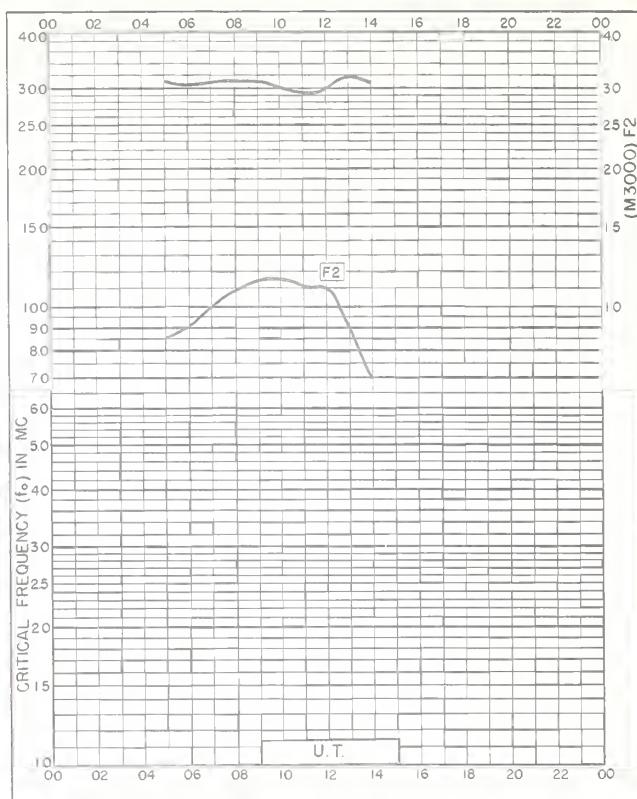


Fig. 50. MAWSON
67.6°S, 62.9°E MAY 1959

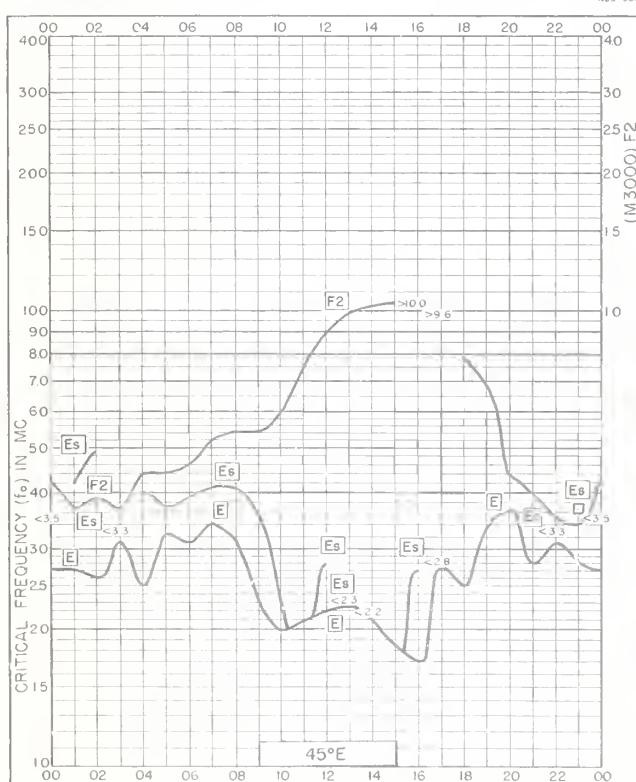


Fig. 51. SYOWA BASE
69.0°S, 39.6°E MAY 1959

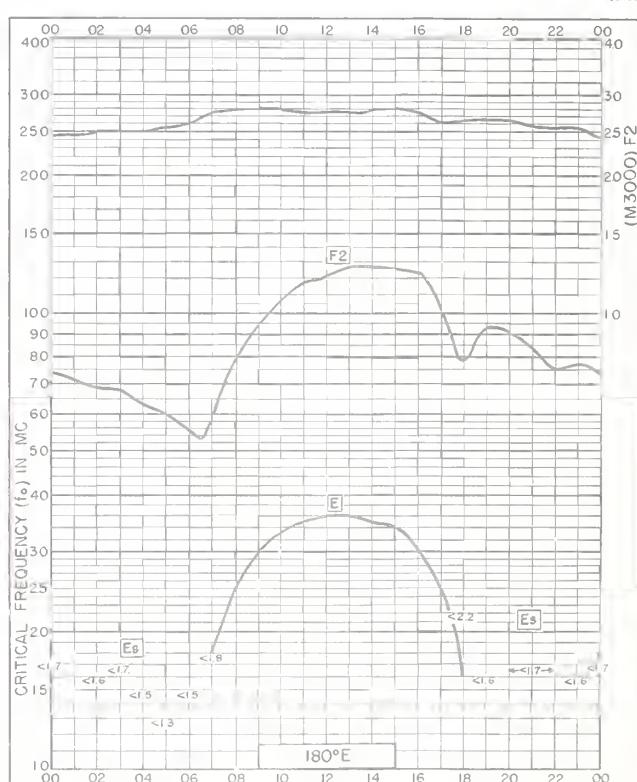
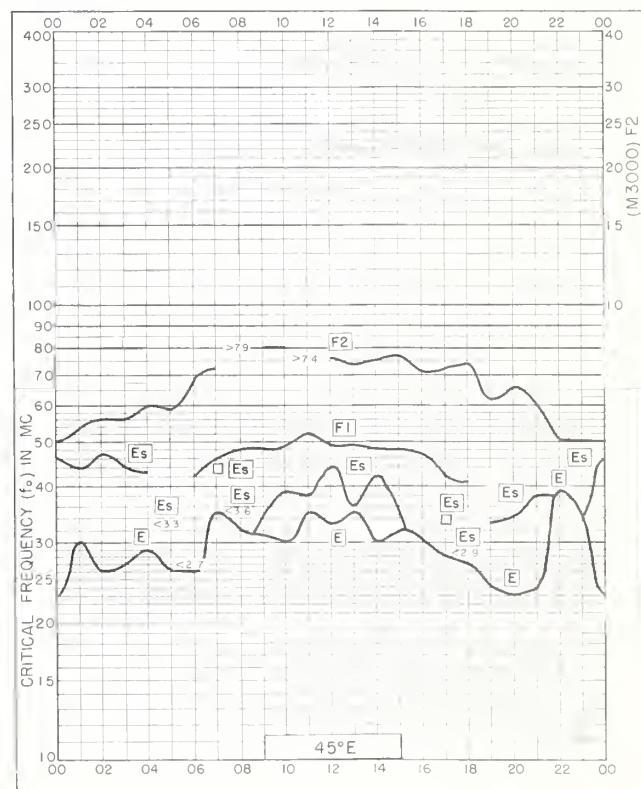
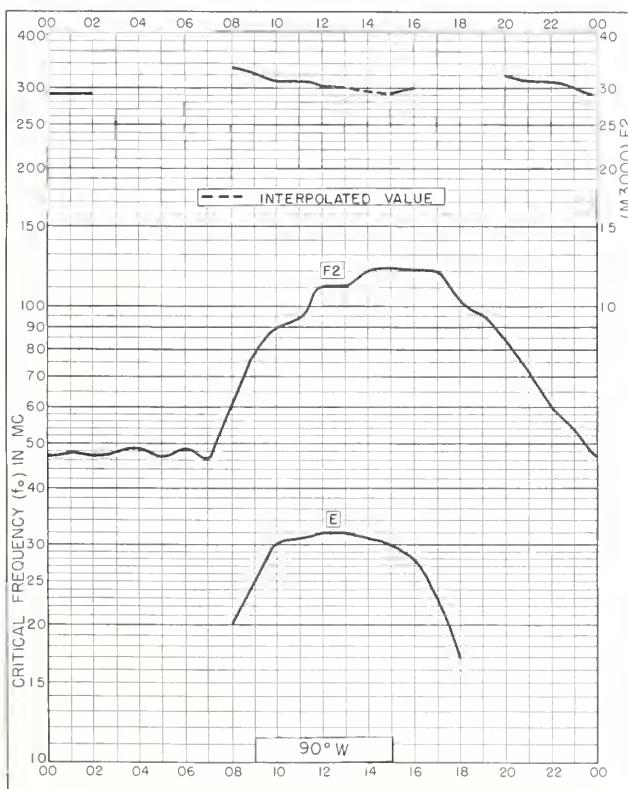
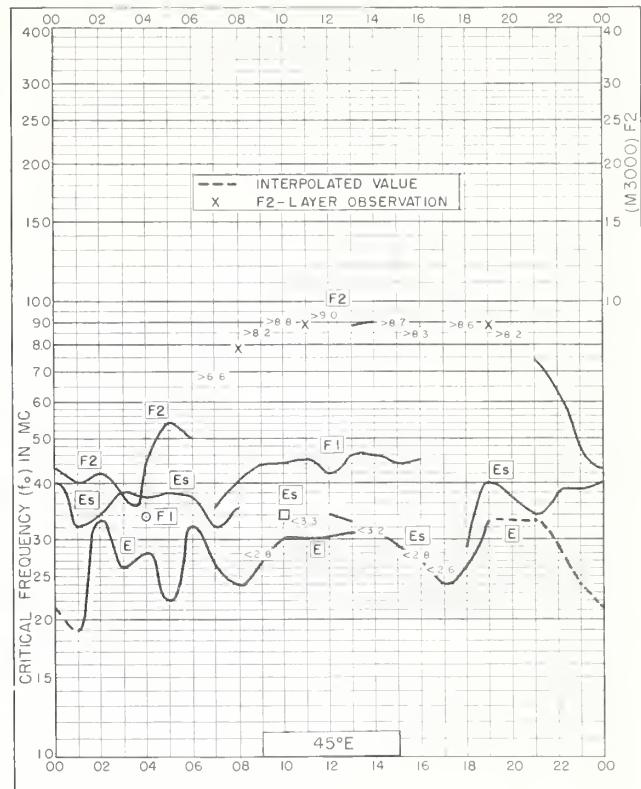
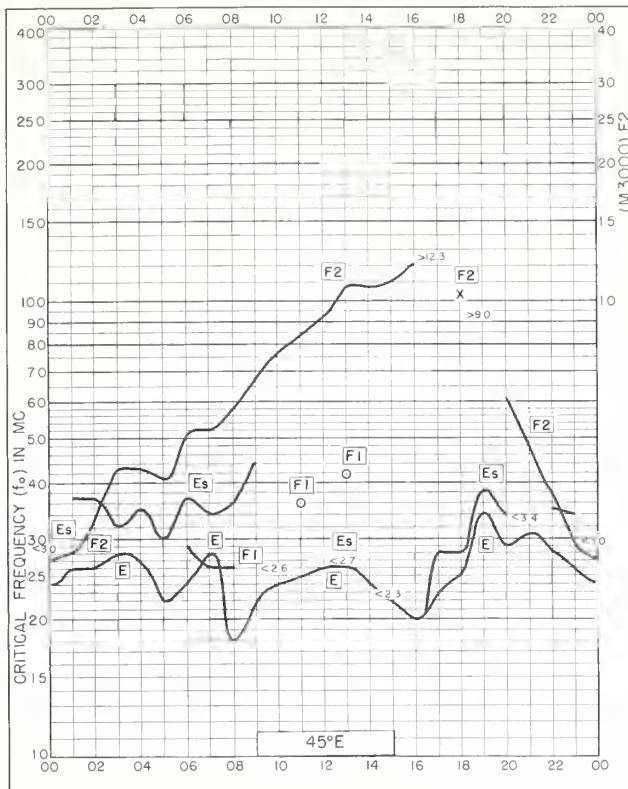


Fig. 52. CHRISTCHURCH, NEW ZEALAND
43.6°S, 172.8°E APRIL 1959



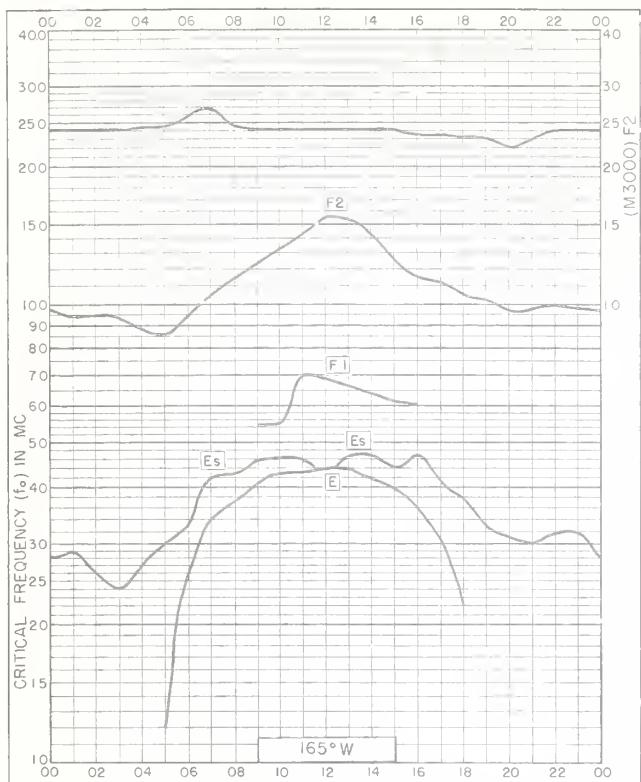


Fig. 57. RAROTONGA I.
21.2°S, 159.8°W JANUARY 1959

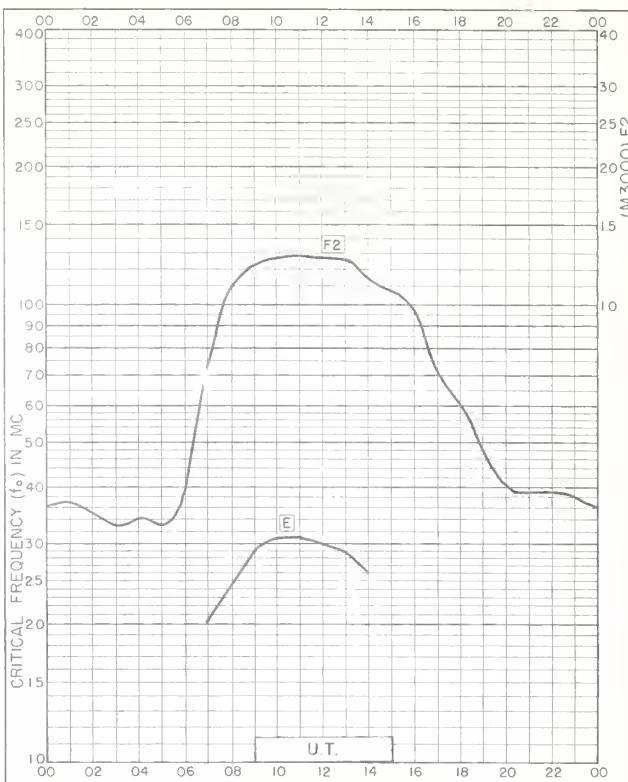


Fig. 58. PRUHONICE, CZECHOSLOVAKIA
50.0°N, 14.6°E DECEMBER 1958

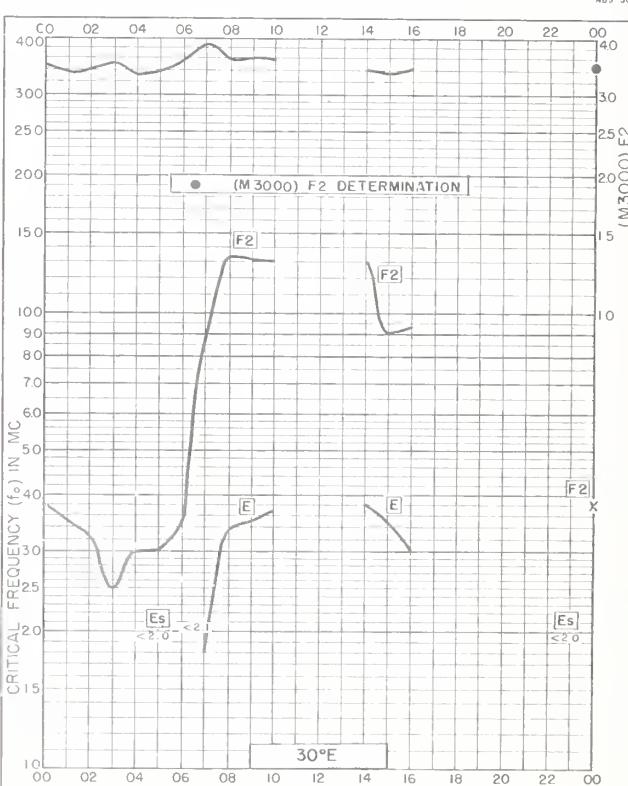


Fig. 59. SALISBURY, SOUTHERN RHODESIA
17.8°S, 31.0°E SEPTEMBER 1958



Fig. 60. SALISBURY, SOUTHERN RHODESIA
17.8°S, 31.0°E JUNE 1958

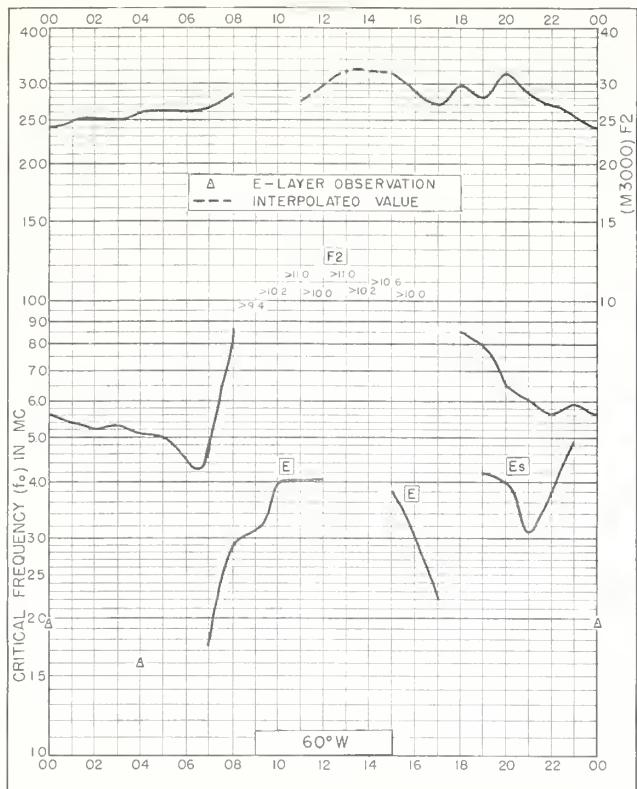


Fig. 61. TRELEW, ARGENTINA
43.2°S, 65.3°W JUNE 1958

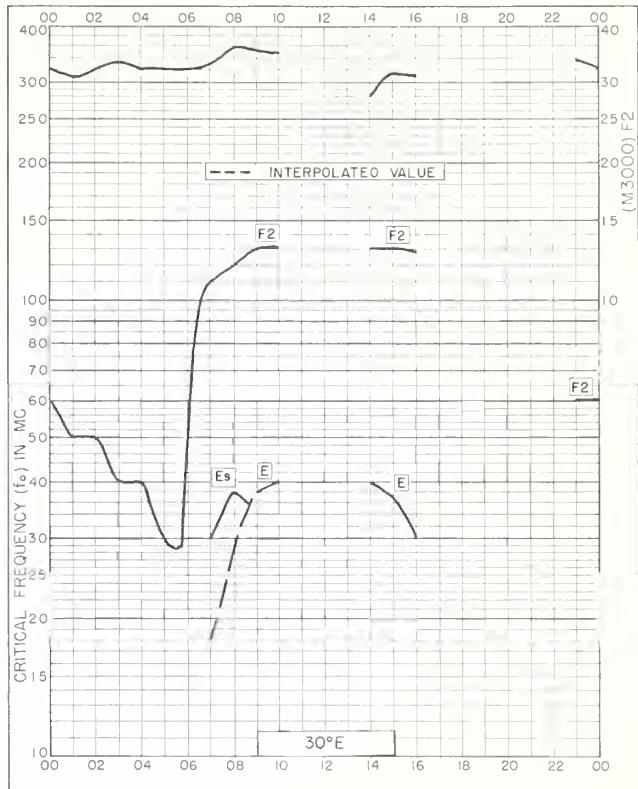


Fig. 62. SALISBURY, SOUTHERN RHODESIA
17.8°S, 31.0°E MAY 1958

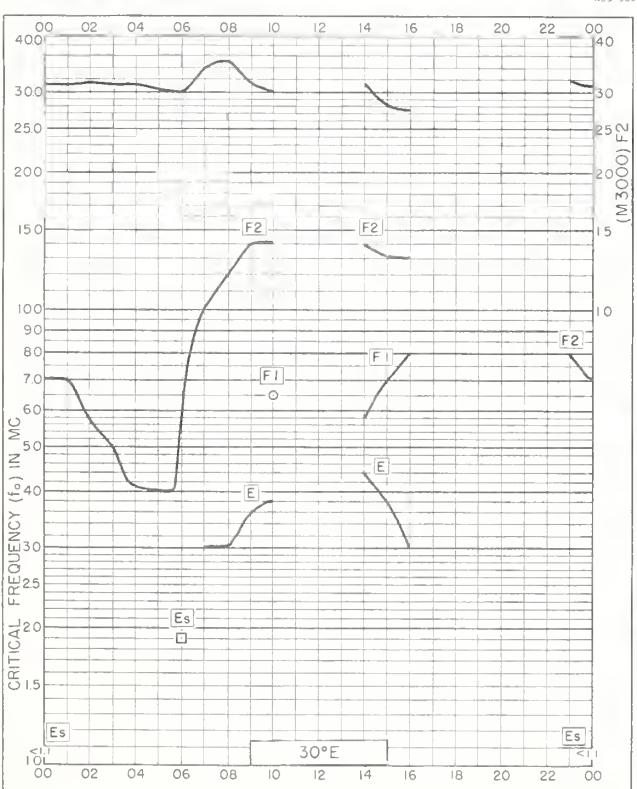


Fig. 63. SALISBURY, SOUTHERN RHODESIA
17.8°S, 31.0°E APRIL 1958

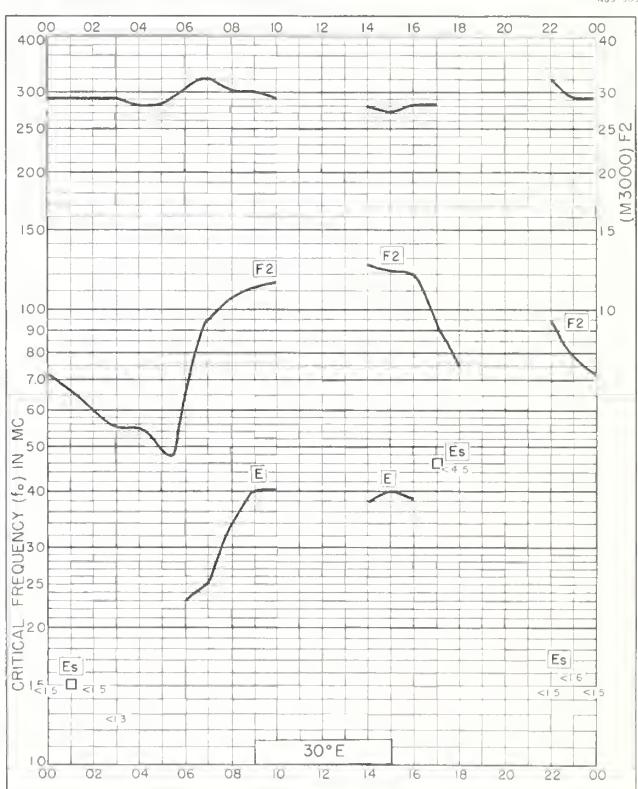


Fig. 64. SALISBURY, SOUTHERN RHODESIA
17.8°S, 31.0°E FEBRUARY 1958



Fig. 65. POITIERS, FRANCE
46.6°N, 0.3°E DECEMBER 1957



Fig. 66. CASABLANCA, MOROCCO
33.6°N, 7.6°W DECEMBER 1957

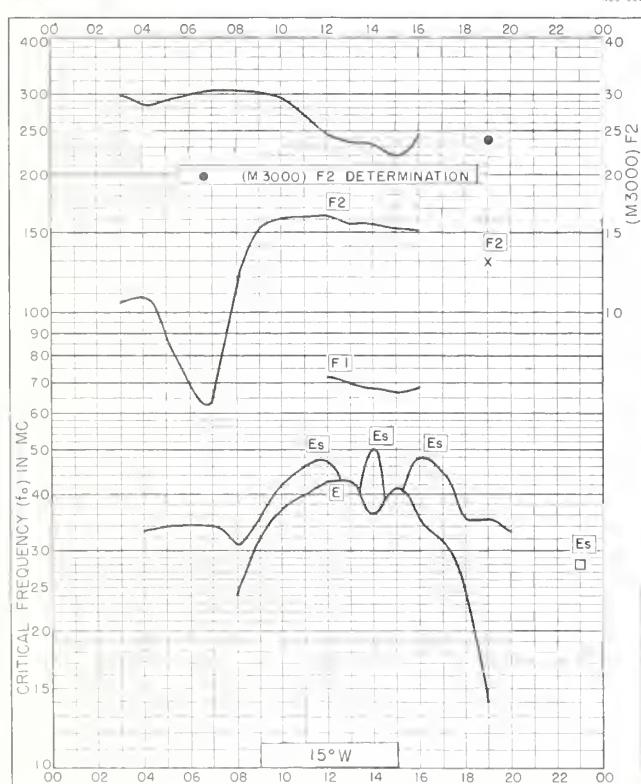


Fig. 67. DAKAR, FRENCH W. AFRICA
14.7°N, 17.4°W DECEMBER 1957



Fig. 68. DJIBOUTI, FRENCH SOMALILAND
11.6°N, 43.2°E DECEMBER 1957

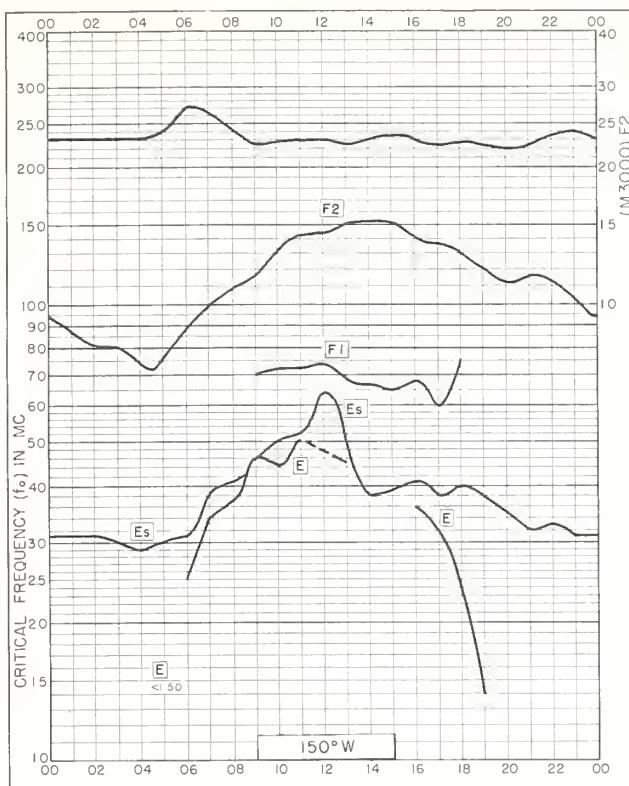


Fig. 69. TAHITI, SOCIETY IS.
17.7°S, 149.3°W DECEMBER 1957

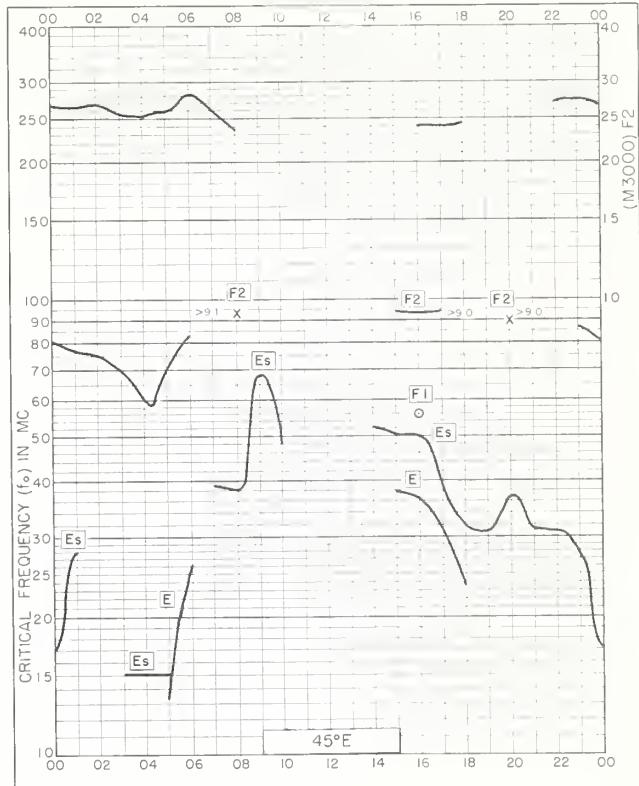


Fig. 70. TANANARIVE, MADAGASCAR
18.8°S, 47.5°E DECEMBER 1957

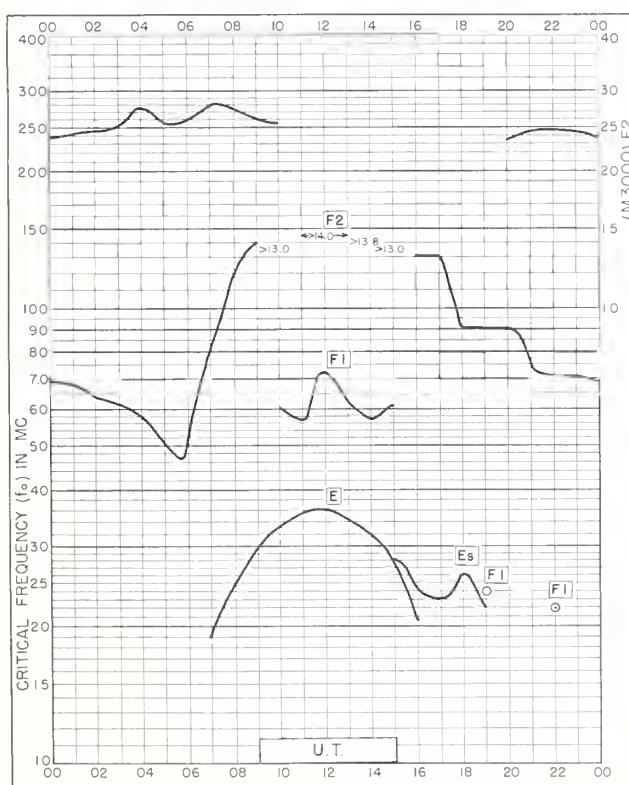


Fig. 71. POITIERS, FRANCE
46.6°N, 0.3°E NOVEMBER 1957

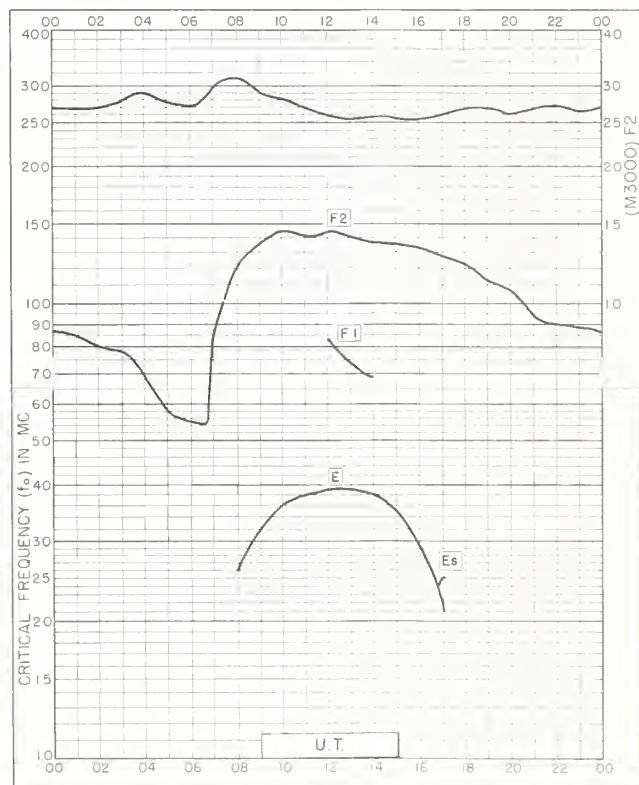


Fig. 72. CASABLANCA, MOROCCO
33.6°N, 7.6°W NOVEMBER 1957

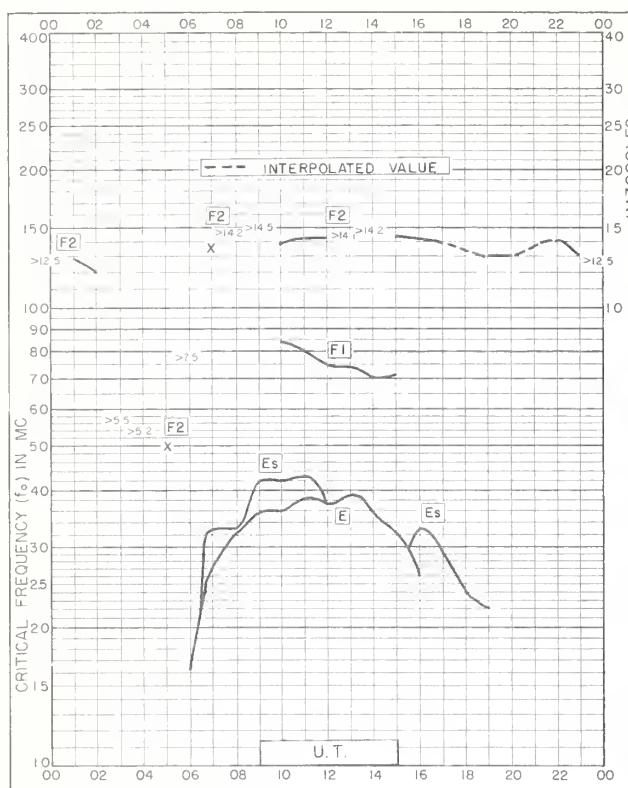


Fig. 73. TAMANRASSET, FRENCH W. AFRICA
22.8°N, 5.5°E NOVEMBER 1957

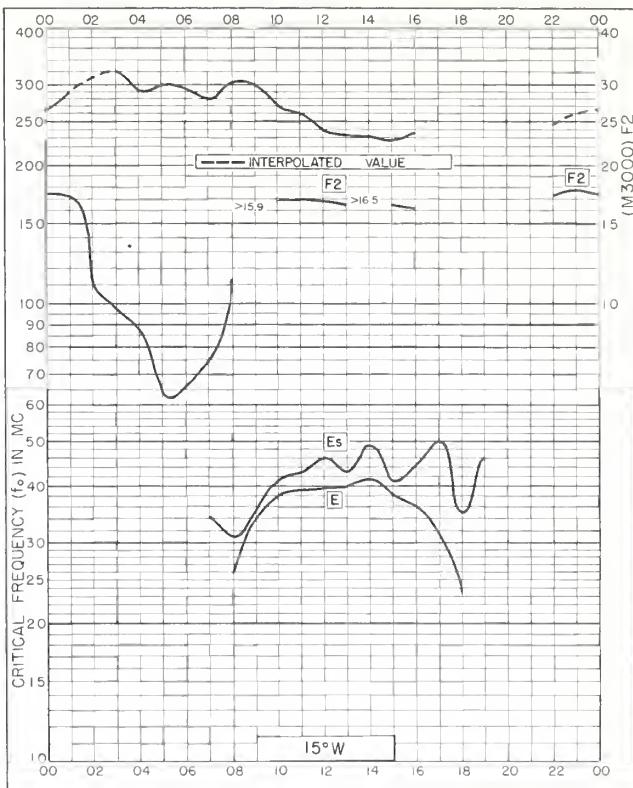


Fig. 74. DAKAR, FRENCH W. AFRICA
14.7°N, 17.4°W NOVEMBER 1957

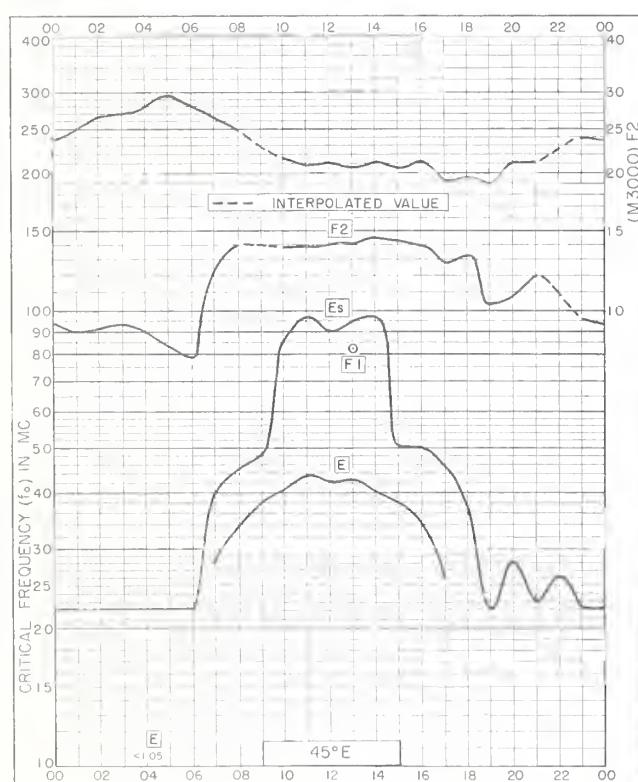


Fig. 75. DJIBOUTI, FRENCH SOMALILAND
11.6°N, 43.2°E NOVEMBER 1957



Fig. 76. TANANARIVE, MADAGASCAR
18.8°S, 47.5°E NOVEMBER 1957

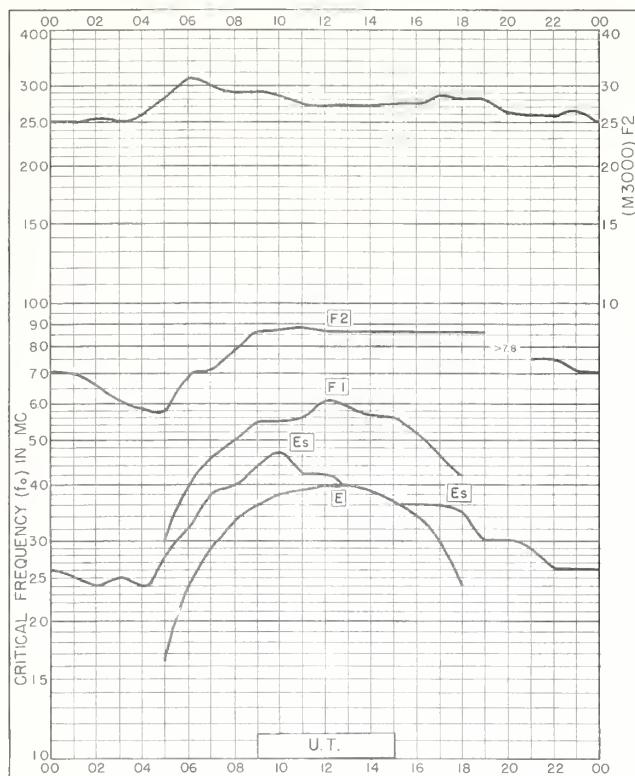


Fig. 77. POITIERS, FRANCE
46.6°N, 0.3°E AUGUST 1957

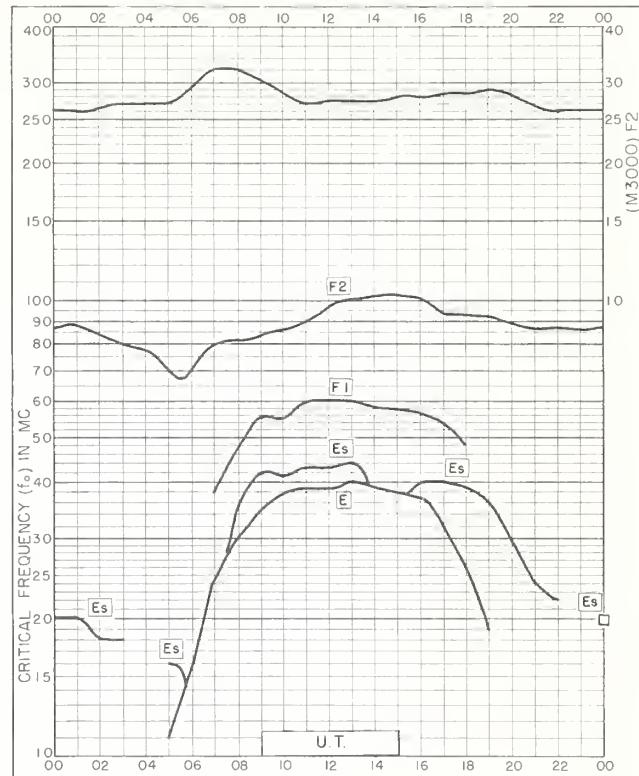


Fig. 78. CASABLANCA, MOROCCO
33.6°N, 7.6°W AUGUST 1957



Fig. 79. TAMANRASSET, FRENCH W. AFRICA
22.8°N, 5.5°E AUGUST 1957

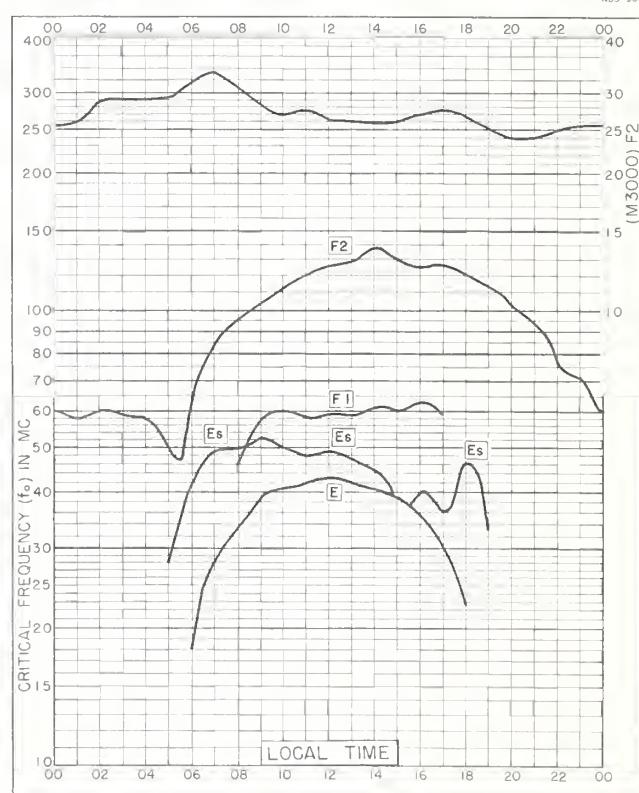


Fig. 80. DAKAR, FRENCH W. AFRICA
14.7°N, 17.4°W AUGUST 1957

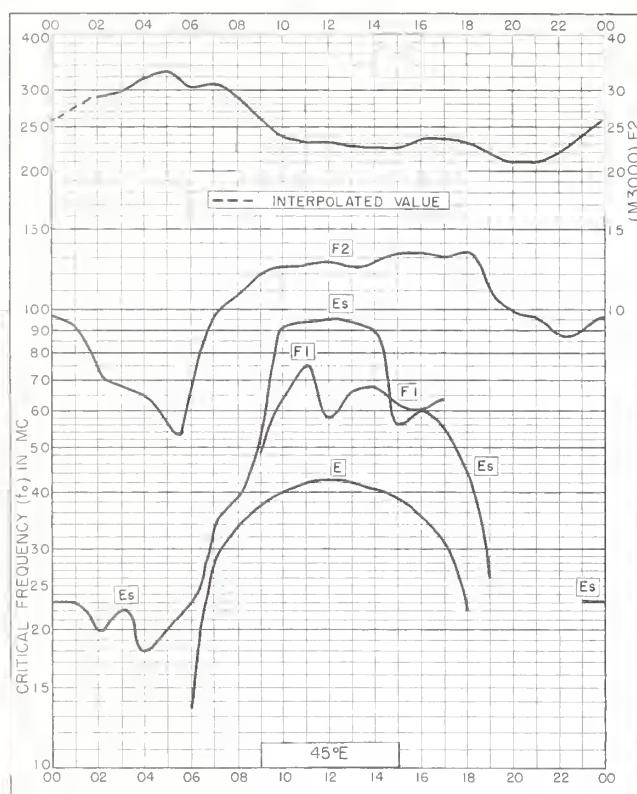


Fig. 81. DJIBOUTI, FRENCH SOMALILAND
11.6°N, 43.2°E AUGUST 1957

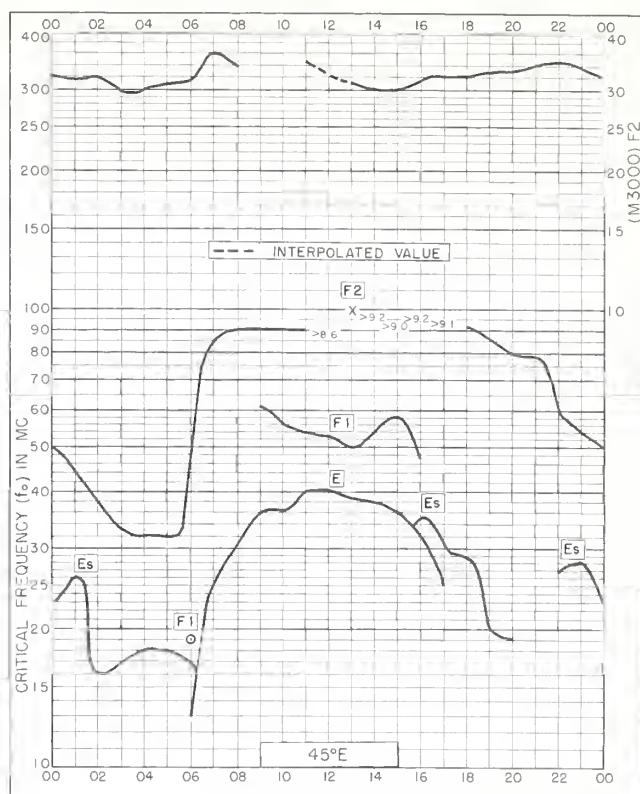


Fig. 82. TANANARIVE, MADAGASCAR
18.8°S, 47.5°E AUGUST 1957



Fig. 83. POITIERS, FRANCE
46.6°N, 0.3°E JULY 1957

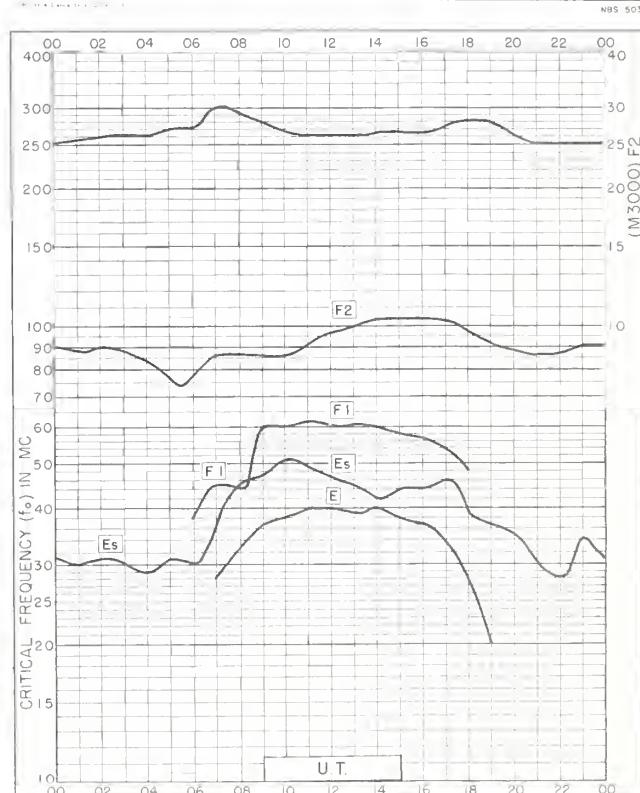


Fig. 84. CASABLANCA, MOROCCO
33.6°N, 7.6°W JULY 1957

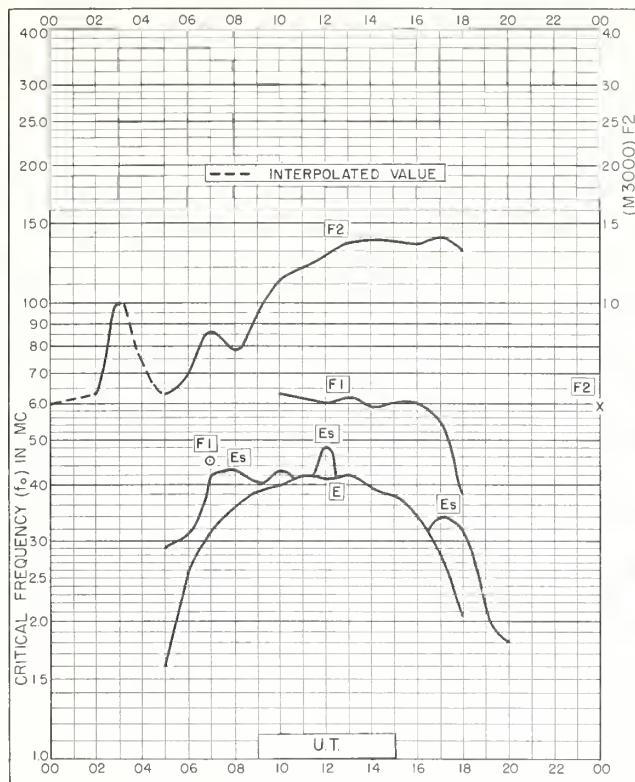


Fig. 85. TAMANRASSET, FRENCH W. AFRICA
22.8°N, 5.5°E JULY 1957

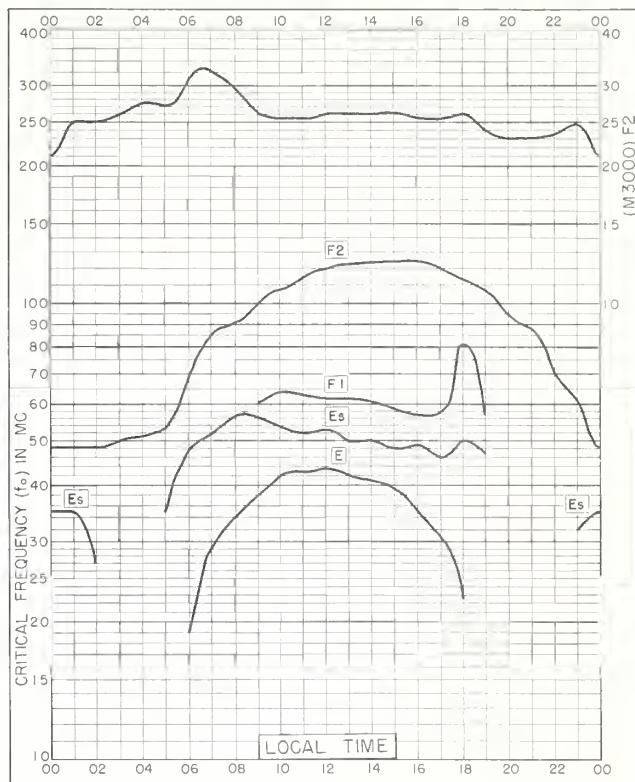


Fig. 86. DAKAR, FRENCH W. AFRICA
14.7°N, 17.4°W JULY 1957

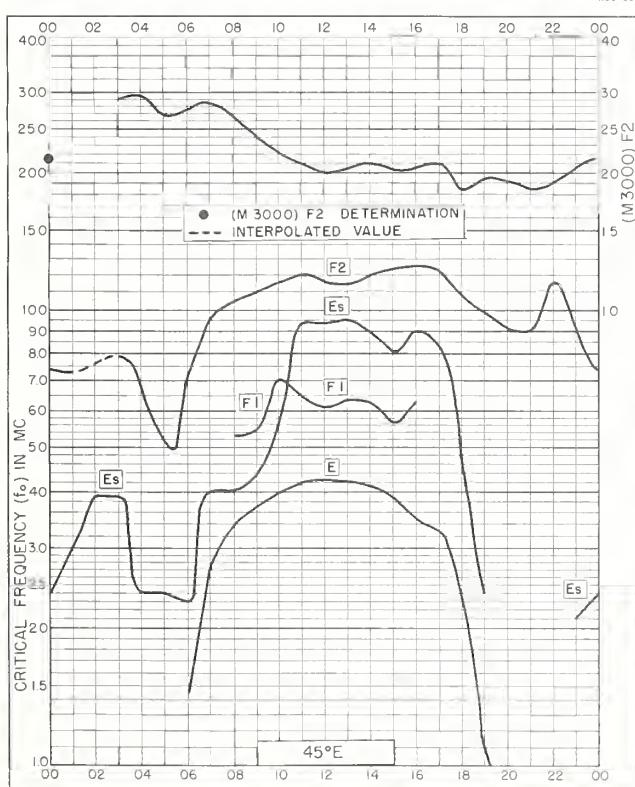


Fig. 87. DJIBOUTI, FRENCH SOMALILAND
11.6°N, 43.2°E JULY 1957

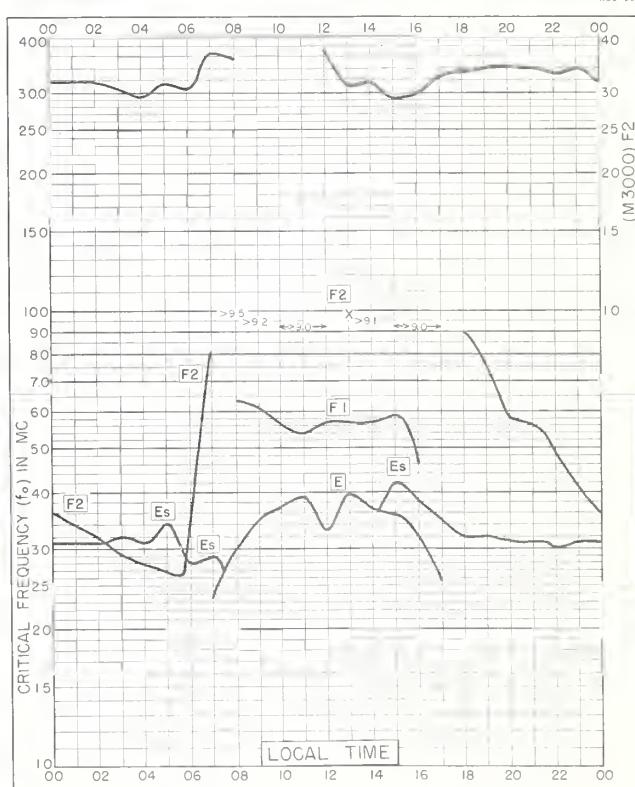
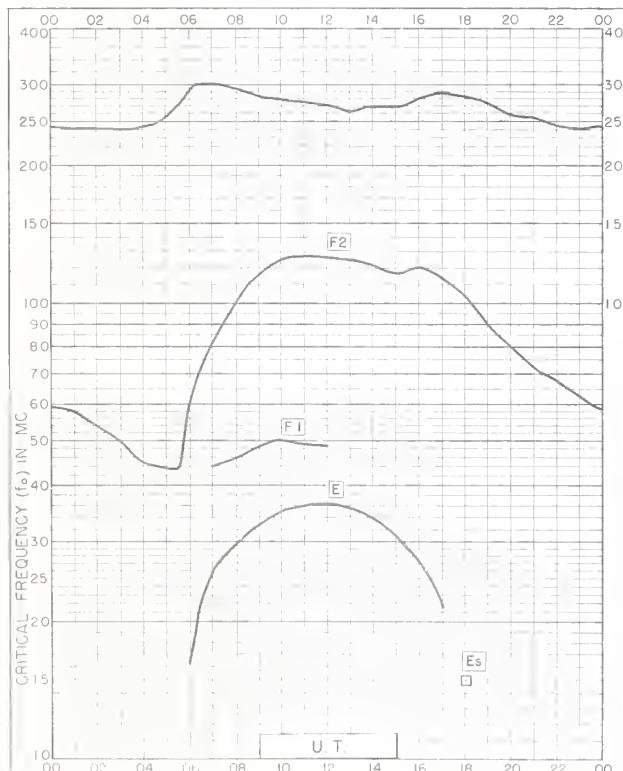
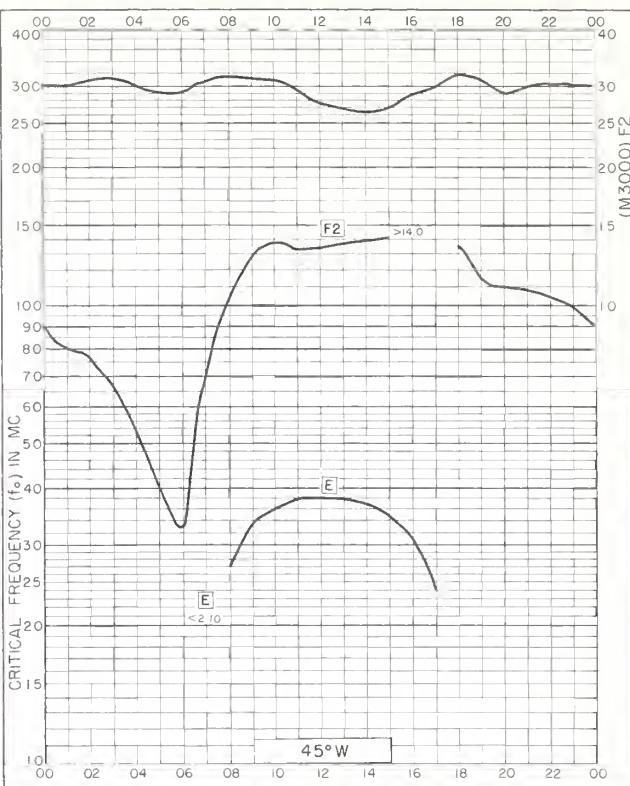
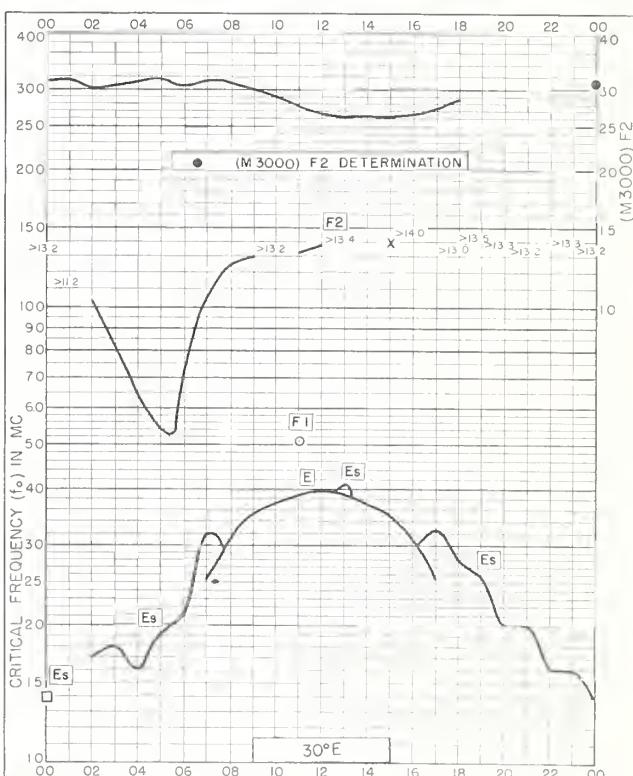
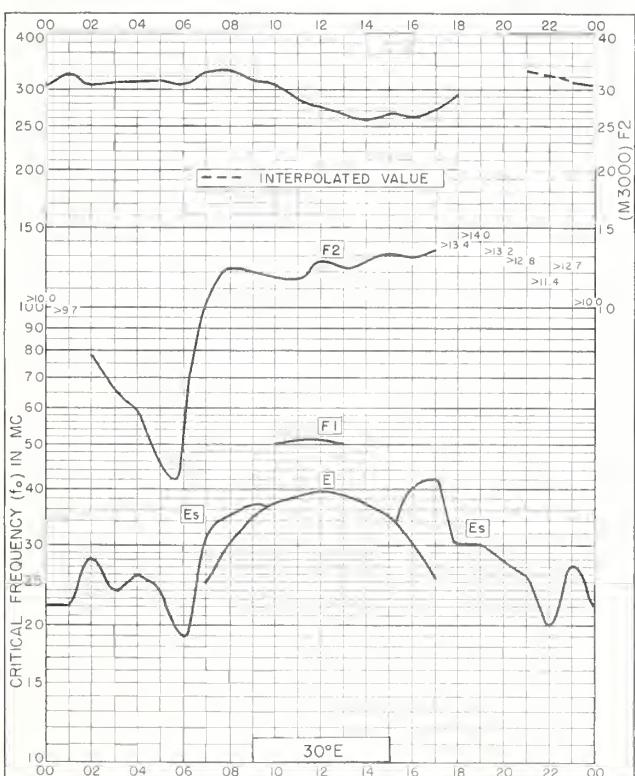
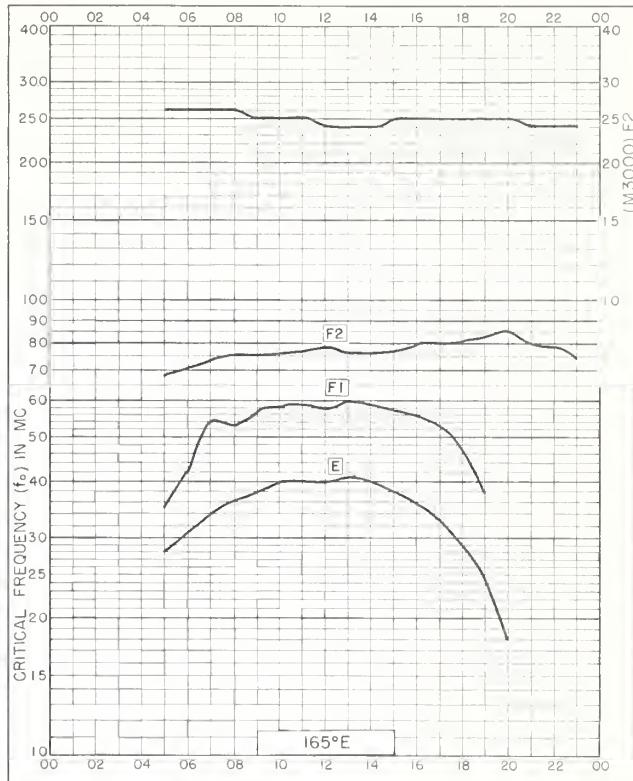
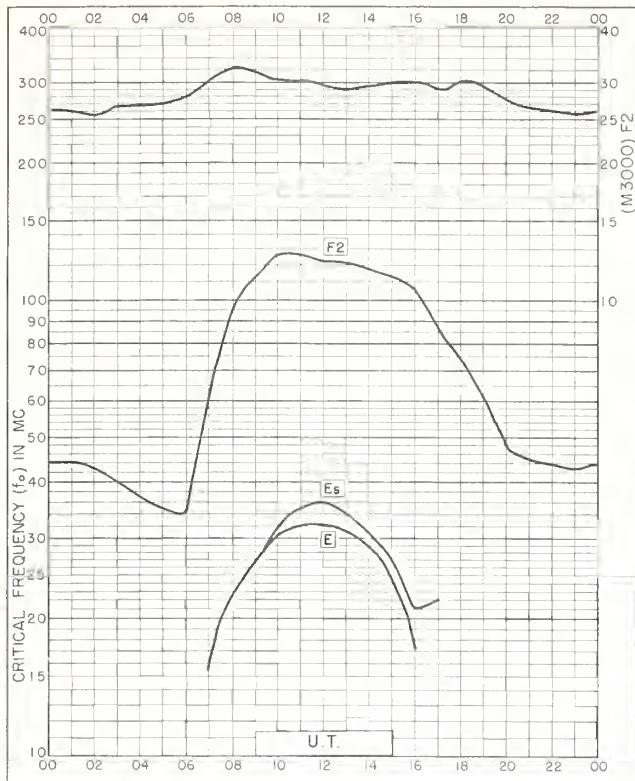
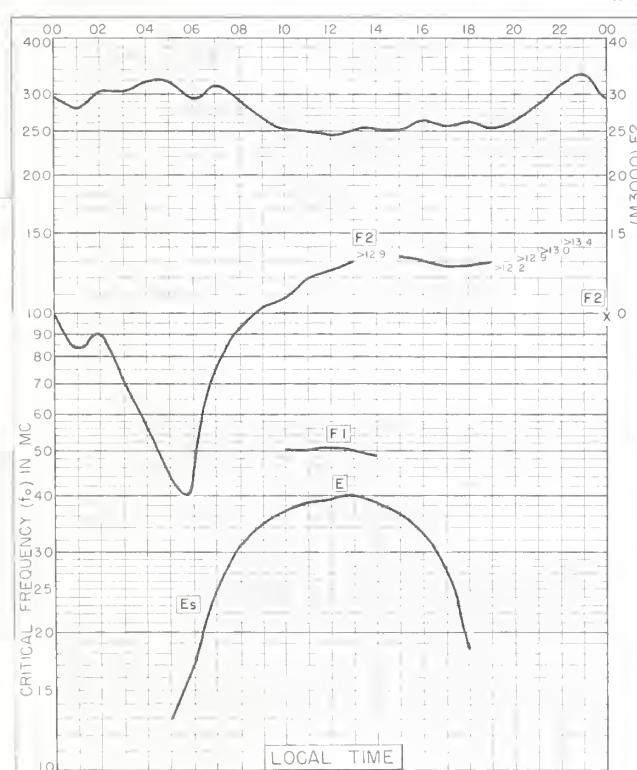
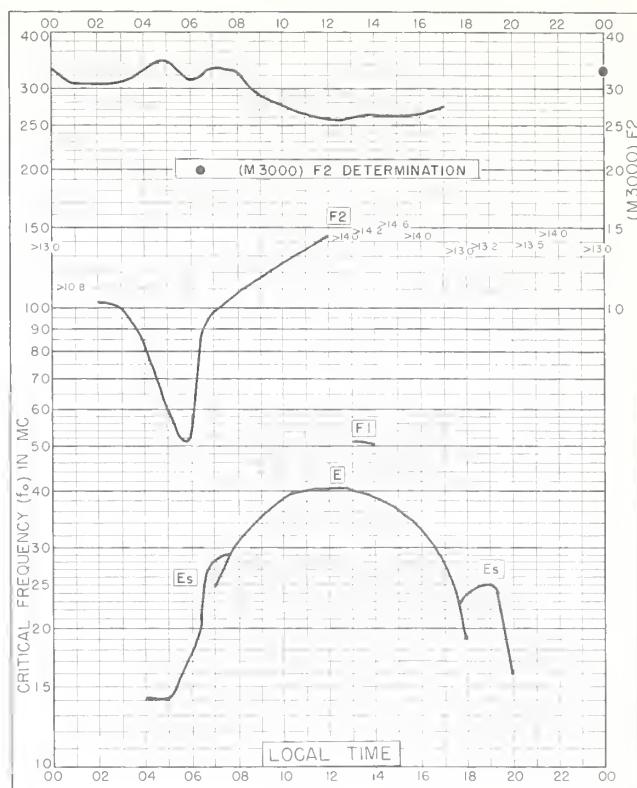
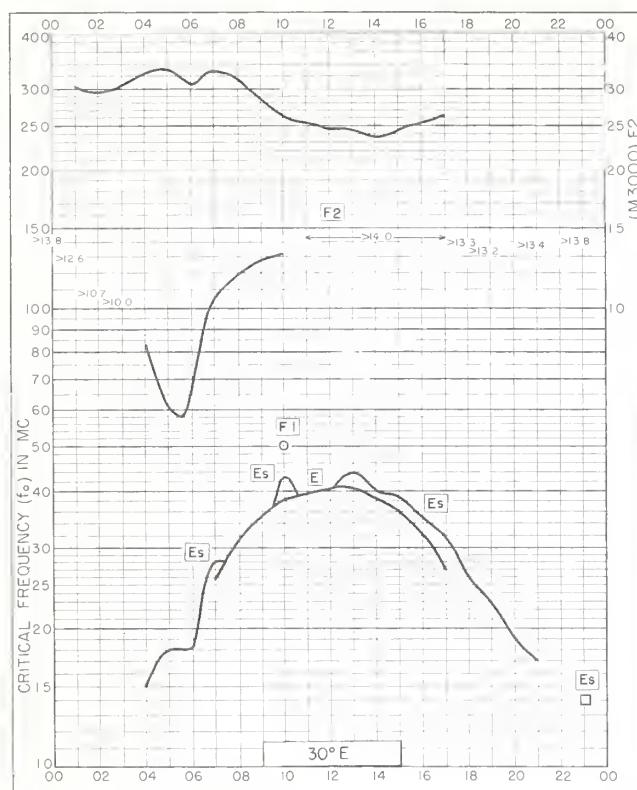


Fig. 88. TANANARIVE, MADAGASCAR
18.8°S, 47.5°E JULY 1957







Index of Tables and Graphs of Ionospheric Data
in CRPL-F219 (Part A)

	<u>Table page</u>	<u>Figure page</u>
Ahmedabad, India April 1960	8	33
Campbell I. January 1957	24	49
Casablanca, Morocco December 1957	17	42
November 1957	18	43
August 1957	20	45
July 1957	21	46
Christchurch, New Zealand September 1959	10	35
August 1959	11	36
July 1959	11	36
June 1959	12	37
May 1959	13	38
April 1959	13	38
Dakar, French W. Africa December 1957	17	42
November 1957	19	44
August 1957	20	45
July 1957	22	47
Djibouti, French Somaliland December 1957	17	42
November 1957	19	44
August 1957	21	46
July 1957	22	47
El Cerillo, Mexico December 1959	9	34
Fairbanks, Alaska December 1961	1	26
November 1961	1	26
Ft. Monmouth, New Jersey June 1961	4	29
May 1961	4	29
April 1961	6	31
December 1960	8	33
November 1960	8	33
October 1960	8	33

Index (CRPL-F219 (Part A) continued)

	<u>Table page</u>	<u>Figure page</u>
Freiburg, Germany		
March 1957	23	48
February 1957	23	48
January 1957	24	49
Grand Bahama I.		
May 1961	5	30
Graz, Austria		
August 1959	10	35
July 1959	11	36
Lwiro, Congo		
June 1956	24	49
May 1956	24	49
April 1956	25	50
March 1956	25	50
February 1956	25	50
January 1956	25	50
Mawson		
July 1959	11	36
May 1959	13	38
Narssarssuaq, Greenland		
August 1961	2	27
July 1961	3	28
June 1961	4	29
April 1961	5	30
Point Barrow, Alaska		
November 1961	1	26
October 1961	2	27
July 1961	3	28
April 1961	5	30
March 1961	6	31
February 1961	7	32
January 1961	7	32
Poitiers, France		
December 1957	17	42
November 1957	18	43
August 1957	20	45
July 1957	21	46
Pole Station		
January 1961	7	32

Index (CRPL-F219 (Part A), continued)

	<u>Table page</u>	<u>Figure page</u>
Port Lockroy		
July 1957	23	48
Pruhonice, Czechoslovakia		
September 1959	10	35
December 1958	15	40
Rarotonga I.		
January 1959	15	40
Salisbury, Southern Rhodesia		
September 1958	15	40
June 1958	15	40
May 1958	16	41
April 1958	16	41
February 1958	16	41
Sao Paulo, Brazil		
June 1957	23	48
Sottens, Switzerland		
November 1959	9	34
October 1959	9	34
August 1959	10	35
Syowa Base, Antarctica		
July 1959	12	37
June 1959	12	37
May 1959	13	38
April 1959	14	39
March 1959	14	39
February 1959	14	39
Tahiti, Society Is.		
December 1957	18	43
Tamanarasset, French W. Africa		
November 1957	19	44
August 1957	20	45
July 1957	22	47
Tananarive, Madagascar		
December 1957	18	43
November 1957	19	44
August 1957	21	46
July 1957	22	47

Index (CRPL-F219 (Part A), concluded)

	<u>Table page</u>	<u>Figure page</u>
Thule, Greenland		
December 1961	1	26
October 1961	2	27
August 1961	2	27
July 1961	3	28
June 1961	3	28
May 1961	4	29
April 1961	5	30
March 1961	6	31
February 1961	6	31
January 1961	7	32
Trelew, Argentina		
June 1958	16	41
Wilkes Station		
October 1959	9	34
Winnipeg, Canada		
May 1959	12	37
February 1959	14	39

CRPL Reports

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

Daily:

Radio disturbance forecasts, every half hour from broadcast stations WWV and WWVH of the National Bureau of Standards.

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

Weekly:

CRPL-J. North Atlantic Radio Propagation Forecast.
CRPL-Jp. North Pacific Radio Propagation Forecast.

Semimonthly:

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

Monthly:

CRPL-D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11-499—, monthly supplements to TM 11-499; Dept. of the Air Force, TO 31-3-28 series). On sale by Superintendent of Documents. Members of the Armed Forces should address cognizant military office.

CRPL-F. (Part A). Ionospheric Data.
(Part B). Solar-Geophysical Data.

Limited distribution. These publications are in general disseminated only to those individuals or scientific organizations which collaborate in the exchange of ionospheric, solar, geomagnetic, or other radio propagation data.

Catalog of Data:

A catalog of records and data on file at the U. S. IGY World Data Center A for Airglow and Ionosphere, Boulder Laboratories, National Bureau of Standards, which includes a fee schedule to cover the cost of supplying copies, is available upon request.

The publications listed above may be obtained without charge from the Central Radio Propagation Laboratory, National Bureau of Standards, Boulder Laboratories, Boulder, Colorado, unless otherwise indicated. Please note that the F series is not generally available.

Circulars of the National Bureau of Standards pertaining to Radio Sky Wave Transmission:

NBS Circular 462. Ionospheric Radio Propagation. \$1.25.
NBS Circular 465. Instructions for the Use of Basic Radio Propagation Predictions. 30 cents.
NBS Circular 557. Worldwide Radio Noise Levels Expected in the Frequency Band 10 Kilocycles to 100 megacycles. 30 cents.
NBS Circular 582. Worldwide Occurrence of Sporadic E. \$3.25.

These Circulars are on sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Members of the Armed Forces should address the respective military office having cognizance of radio wave propagation.

Selected Technical Notes of the National Bureau of Standards:

NBS Tech. Note 2. PB151361. World Maps of F2 Critical Frequencies and Maximum Usable Frequency Factors. \$3.50. PB151361-2. \$3.50.
NBS Tech. Note 13. PB151372. Technical Considerations Leading to an Optimum Allocation of Radio Frequencies in the Band 25 to 60 Mc. \$2.50.
NBS Tech. Note 18. PB151377. Radio Noise Data for the IGY. \$2.50.
18-2. PB151377-2. Quarterly Radio Noise Data (Mar.-May 1959). \$1.00.
18-3. PB151377-3. (June-Aug. 1959). \$1.00.
18-4. PB151377-4, etc. (Sept.-Nov. 1959). \$1.50.
NBS Tech. Note 31. PB151390. An Atlas of Oblique-Incidence Ionograms. \$2.25.
NBS Tech. Note 40-1. PB151399-1. Mean Electron Density Variations of the Quiet Ionosphere, 1: March 1959. \$1.25.
40-2. PB151399-2, etc. 2: April 1959. \$1.25.
NBS Tech. Note 117. PB161618. Variations in Frequency of Occurrence of Sporadic E, 1949—1959. \$0.75. These Technical Notes are on sale by the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. Order by PB number.

