AD NUMBER

AD480582

LIMITATION CHANGES

TO:

Approved for public release; distribution is unlimited.

FROM:

**Distribution authorized to U.S. Gov't. agencies and their contractors;
Administrative/Operational Use; MAY 1965. Other requests shall be referred to Defense Advanced Research Projects Agency, Washington, DC.**

AUTHORITY

darpa ltr 6 dec 1972

Ionospheric Data Report — May 1965

IONOSPHERIC DATA: BANGKOK, THAILAND

Compiled by: VICHAI T. NIMIT

Prepared for:

U.S. ARMY ELECTRONICS LABORATORIES
FORT MONMOUTH, NEW JERSEY

CONTRACT DA-36-039-AMC-00040(E)
ORDER NO. 5384-PM-63-91

SPONSORED BY THE ADVANCED RESEARCH PROJECTS AGENCY
FOR THE
THAI-U.S. MILITARY RESEARCH AND DEVELOPMENT CENTER
SUPREME COMMAND HEADQUARTERS
BANGKOK, THAILAND

STANFORD RESEARCH INSTITUTE
MENLO PARK, CALIFORNIA

STANFORD RESEARCH INSTITUTE
MENLO PARK, CALIFORNIA

(11) July 1965
(12) 34 p.

Ionospheric Data Report — May 1965

(1) IONOSPHERIC DATA: BANGKOK, THAILAND.

(9) Data rept. for May 65,

Prepared for:

U.S. ARMY ELECTRONICS LABO[illegible] TORIES
FORT MONMOUTH, NEW JERSE[illegible]

(15) CONTRACT DA-36-039-AMC-00040(E), ARPA
ORDER NO. 5384-PM-63-91 (Order-371
PR&C NO. 64-ELN/D-6034
ARPA ORDER NO. 371

(10) *Compiled by:* VICHAI T. NIMIT.

(16) *SRI-Project 4240*

SPONSORED BY THE ADVANCED RESEARCH PROJECTS AGENCY
FOR THE
THAI-U.S. MILITARY RESEARCH AND DEVELOPMENT CENTER
SUPREME COMMAND HEADQUARTERS
BANGKOK, THAILAND

Copy No. .....

(B 33500)

ack

CONTENTS

ILLUSTRATIONS

I INTRODUCTION

Ionospheric observations are being carried out at the Laboratory of the Military Research and Development Center at Bangkok, Thailand, a joint United States-Thailand organization. A Model C-2 vertical-incidence sounder supplied and operated by the United States Army Radio Propagation Agency has been installed there. Table I gives pertinent information about the site.

Table I

VERTICAL-INCIDENCE SOUNDER SITE
AT BANGKOK, THAILAND

Geographic		Geomagnetic	
Latitude	Longitude	Latitude	Longitude
13.73°N	100.57°E	2.5°N	169.83°E

Dip angle: 10°N

Distance from dip equator: 450 km

Equipment:

Instrument: Type C2 (automatic)

PRF: 60 pps

Frequency sweep time: 30 sec

Frequency sweep range: 1 to 25 Mc

Pulse duration: 50 μsec

Peak pulse power: approximately 10 kw.

The cooperation and participation of staff members of the Thailand Ministry of Defense and the support of the United States Advanced Research

Projects Agency, the United States Army Electronics Laboratories, and the United States Army Radio Propagation Agency made it possible for the data presented in this report to be accumulated.

II TERMINOLOGY AND SYMBOLS

The terminology and symbols used in this data report are in accordance with the conventions established by the World Wide Soundings Committee.[1]

A. TERMINOLOGY

f_oF_2, f_oF_1, f_oE	The ordinary wave critical frequency for the F_2 and F_1 layers and the E region, respectively.
$f_{\cdot}E_s$	The ordinary wave top frequency corresponding to the highest frequency at which a mainly continuous E_s trace is observed.
f_bE_s	The blanketing frequency of an E_s layer, i.e., the lowest ordinary wave frequency at which the E_s layer begins to become transparent. (This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.)
f_{min}	The frequency below which no echoes are observed.
$M(3000)F_2$	The maximum usable frequency factor for a path of 3000 km for transmission by the F_2 layer.
$h'F_2$	The minimum virtual height of the ordinary wave trace for the highest stable stratification in the F region.
$h'F$	The most significant F-region virtual height parameter, that for the lowest F-region stratification. (Thus $h'F$ is identical with the current $h'F_2$ when F-region stratification is absent, i.e., at night, and with current $h'F_1$ when F_1 stratification is present.)

[1]W. R. Piggott and K. Rawer, URSI Handbook of Ionogram Interpretation and Reduction of the World Wide Sounding Committee (Elsevier Publishing Company, Amsterdam, London, New York, 1961).

B. DESCRIPTIVE LETTERS

Certain effects observed on ionograms may make it difficult or impossible to obtain accurate numerical values. The descriptive letters listed below, when used alone indicate, in general, the presence of a phenomenon that may have influenced the measurement. Qualifying letters (Sec. C) indicate the nature of the uncertainty.

- A A lower thin layer present, e.g., E_s
- B Absorption in the vicinity of f_{min}
- C Any non-ionospheric reason
- D The upper limit of the normal frequency range
- E The lower limit of the normal frequency range
- F Spread echoes present
- G Ionization density of the layer too small for measurement
- H Stratification present
- L No sufficiently definite cusp between layers of the trace
- M Ordinary and extraordinary components indistinguishable
- N Conditions such that the measurement cannot be interpreted
- O Measurement referring to the ordinary component
- R Attenuation in the vicinity of a critical frequency
- S Interference or atmospherics
- T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful
- V Forked trace
- W Echo lying outside the height range recorded
- X Measurement referring to the extraordinary component
- Y Intermittent trace
- Z Third magneto-ionic component present.

C. QUALIFYING LETTERS

- D Greater than. . .
- E Less than. . .

I An interpolated value

J Ordinary component characteristic deduced from the extraordinary component

O Extraordinary component characteristic deduced from the ordinary component

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful

U Uncertain numerical value

Z Measurement deduced from the third magneto-ionic component.

D. DESCRIPTION OF STANDARD TYPES OF E_s

The eight standard types of E_s are identified by lower-case letters: f, l, c, h, q, r, a, and s. These letters suggest the corresponding names, flat, low, cusp, high, equatorial, retardation, auroral, and slant, respectively, but are not restrictive. The letter n is used to designate an E_s trace that does not correspond to one of the eight types. The classifications are:

f An E_s trace showing no appreciable increase of height with frequency, usually relatively solid at most latitudes. (This classification may be used only at night; it appears that flat E_s traces observed in the daytime are classified according to their virtual height: h or l.)

l A flat E_s trace at or below the normal E-region minimum virtual height in the day or below the E-region minimum virtual height at night.

c An E_s trace showing a relatively symmetrical cusp at or below f_0E. (This is usualiy continuous with the normal E trace, although when the deviative absorption is large, part or all of the cusp may be missing—usually a daytime type.)

h An E_s trace showing a discontinuity in height with the normal E-region trace at or above f_0E and an asymmetrical cusp. (The low-frequency end of the E_s trace lies clearly above the high-frequency end of the normal E trace—usually a daytime type.)

q An E_s trace that is diffuse and nonblanketing over a wide frequency range, the spread being most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)

r An E_s trace that is nonblanketing over part or all of its frequency range, showing an increase in virtual height at the high-frequency

end similar to group retardation. (This is distinguished from the usual group retardation—as in the case of an occulting thick E region—by the lack of group retardation in the F traces at corresponding frequencies and the lack of complete blanketing.)

a An E_s pattern having a well-defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. (These sometimes extend over several hundred kilometers of virtual height.)

s A diffuse E_s trace that rises steadily with frequency, usually emerging from another type of E_s trace. (The rising trace alone is classified as s; the horizontal trace is classified separately. At high latitudes, the slant trace usually starts to rise from a horizontal E_s trace, such as l or f, at frequencies that greatly exceed the E-region critical frequency, e.g., about 6 Mc; whereas at low latitudes it usually rises from equatorial-type E_s, q, c, or h, at frequencies near the regular E critical frequency. Type s is never used to determine $f_o E$ unless echoes clearly identifiable as E_s echoes are seen.)

n An E trace that cannot be classified as one of the standard types. (This must not be used for intermediate cases between any two classes. A choice should always be made whenever possible, even if it is doubtful.)

E. MULTIPLE REFLECTIONS FROM E_s

When the ionogram shows the presence of multiple reflections from E_s, the number of traces seen will be recorded with the letter indicating the type.

Characteristic: fmin

IONOSPHERIC DATA
Sweep, 1 Mc to 25 Mc in 6

May 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57 E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11
1	019*	016	016	0 5	015	E015S	E026S	E027S	E0[illegible]S	E028S	E034S	035
2	E019S	016	014	E	017	B	E020S	028	031	027	032	029
3	E020S	E014S	E015S	014	015	B	E022S	E023S	E028S	028	E030S	032
4	E020S	016	014	014	013	E015S	E023S	E022S	025	028	E029S	E026S
5	E018S	016	E013S	014	E	E019S	E023S	E023S	027	027	E030S	E[illegible]26S
6	E020S	016	019	015	014	016	E022S	E021S	025	026	028	029
7	E020S	017	018	015	011	E014S	E021S	E023S	028	027	S	030
8	020	016	015	015	013	E015S	023	023	027	030	031	030
9	021	017	015	015	013	E015S	E020S	E022S	024	027	030	029
10	020	015	013	E	B	B	E023S	022	024	025	029	036
11	020	E015S	015	E	014	E015S	E023S	026	026	C	031	032
12	E020S	E014S	015	015	E	B	E024S	027	027	028	035	030
13	E020S	016	016	015	E	016	E023S	E022S	E025S	E060C	C	C
14	E020S	E015S	E014S	012	014	023	E027S	E024S	025	026	E030S	E030S
15	E022S	019	E017S	015	012	018	E023S	E025S	024	028	E028S	E027S
16	E020S	E016S	E	E	014	017	E023S	E025S	030	E027S	E029S	E031S
17	E020S	E015S	013	E	014	017	E025S	E029S	031	C	E030S	E030S
18	E023S	019	018	015	013	019	E025S	026	030	033	C	E036S
19	E023S	E016S	E015S	E	E	E017S	E027S	E023S	E025S	C	C	E040S
20	B	B	B	014	E	016	E021S	E027S	E026S	E028S	E028S	E030S
21	E022S	E016S	014	015	013	E018S	E025S	E030S	027	031	E030S	E030S
22	E018S	E016S	E 15S	E	E	E017S	E025S	E024S	E028S	E030S	E030S	E030S
23	E020S	014	[illegible]	E	E013S	E015S	E022S	E025S	E025S	E028S	032	E030S
24	E020S	016	015	E	E	E015S	E023S	E023S	E025S	E027S	030	E031S
25	E020S	E015S	E	013	E	E016S	E023S	E024S	E029S	E026S	E028S	E030S
26	E020S	E014S	E014S	E	E	E016S	E030S	E026S	E025S	E030S	E030S	E030S
27	C	E015S	E015S	E014[illegible]	B	B	E023S	E027S	030	033	038	E038S
28	E020S	E016S	017	E	B	E018S	E024S	E024S	E027S	E029S	E029S	E030S
29	E020S	E014S	E	014	012	E018S	E023S	E027S	E025S	E030S	E030S	E030S
30	E023S	E014S	E	014	013	B	E024S	E026S	030	034	037	E040S
31	E022S	E	E	017	014	E019S	E023S	E024S	E025S	028	029	E040S
Median	020	016	015	015	013	016	023	024	027	028	030	030
Count	29	29	24	20	19	25	31	31	31	28	27	30
UQ	021	016	016	015	014	018	025	027	029	030	031	032
LQ	020	015	014	014	013	015	023	023	025	027	029	030
QR	1	1	2	1	1	3	2	4	4	3	2	2

*Tabulation of 019 = 1.9 Mc.

OSPHERIC DATA
to 25 Mc in 0.5 minute

May 1965

0	11	12	13	14	15	16	17	18	19	20	21	22	23
34S	035	040	040	040	030	030	029	024	023	019	E022S	E023S	E023S
32	029	027	027	034	026	032	029	E024S	E025S	E025S	E022S	E022S	E022S
30S	032	030	029	035	028	E024S	E024S	E023S	E024S	E023S	E024S	E021S	024
29S	E028S	E030S	E038S	E028S	035	031	E025S	E024S	E023S	E022S	E022S	E023S	E021S
30S	E028S	031	028	028	C	027	025	E023S	E021S	E023S	E022S	E021S	E022S
29	029	030	029	029	030	027	028	024	023	022	023	022	E020S
S	030	030	030	029	027	024	023	023	023	021	023	023	023
31	030	030	030	028	029	024	023	025	025	025	026	025	026
30	029	037	037	034	027	027	026	E022S	023	025	024	023	020
29	036	039	031	036	024	030	025	025	028	023	022	024	022
31	032	028	028	028	030	031	029	023	020	022	022	023	020
35	030	030	029	028	026	023	E023S	E023S	E023S	023	022	022	023
C	C	C	C	040	036	031	E029S	E025S	E025S	023	E022S	E023S	E023S
30S	E030S	E029S	E030S	030	029	025	E024S	E023S	E022S	E020S	E023S	E025S	E023S
28S	E027S	E028S	E027S	E028S	E027S	E024S	E024S	E023S	E021S	025	E024S	E024S	E023S
29S	E031S	033	032	E029S	E025S	E023S	E024S	E023S	E021S	E023S	E024S	E024S	E023S
30S	E030S	E035S	E040S	032	E030S	032	E025S	E026S	025	E024S	E025S	E022S	E025S
C	E036S	E039S	E040S	040	E030S	025	E024S	E025S	E023S	E025S	E023S	E024S	E023S
C	E040S	E030S	E027S	E027S	E028S	E025S	E025S	E026S	E023S	E022S	E025S	E023S	E021S
28S	E030S	E030S	E030S	E029S	E027S	E024S	E023S	E023S	E023S	E024S	E023S	E027S	E024S
30S	E030S	E030S	E035S	037	E030S	E028S	E028S	E028S	E024S	E023S	E023S	E023S	E022S
30S	E030S	033	E031S	C	E027S	E024S	E024S	E022S	E022S	C	E025S	C	E024S
32	E030S	E030S	E030S	030	030	E025S	E023S	E023S	E024S	E023S	E023S	E024S	E022S
30	E031S	E030S	E030S	036	032	E025S	E022S	E024S	E023S	E023S	E023S	E023S	E023S
28S	E030S	E030S	E030S	E030S	E029S	E025S	E024S	E025S	E023S	E024S	E022S	E023S	E024S
30S	E030S	E030S	E030S	E030S	E027S	E023S	E023S	E025S	E023S	E023S	E023S	E025S	E024S
38	E038S	E030S	E030S	E030S	E029S	E030S	E029S	C	E024S	E025S	E024S	E028S	E023S
29S	E030S	E030S	E030S	E030S	E030S	E030S	E027S	E023S	E024S	E023S	E023S	E024S	E023S
30S	E030S	E030S	E030S	E030S	E027S	E024S	E025S	E023S	E022S	E023S	E023S	E023S	E028S
37	E040S	E039S	E040S	030	027	025	024	E025S	E024S	E024S	E024S	E023S	E023S
29	E040S	035	E034S	035	030	E030S	E027S	E023S	E024S	E024S	E023S	E024S	E024S
030	030	030	030	030	029	025	025	023	023	023	023	023	023
27	30	30	30	30	30	31	31	30	31	30	31	30	31
031	032	033	034	035	030	030	027	025	024	024	024	024	024
029	030	030	029	029	027	024	024	023	023	023	022	023	022
2	2	3	5	6	3	6	3	2	1	1	2	1	2

Characteristic: foF2

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0

May 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11
1	F	F	F	F	A	A	031*	055	069	077	075	065
2	042	U033F	A	029	022	B	032	054	065	073	075	064
3	F	F	F	F	F	B	032	052	063	064	053	A
4	F	F	F	F	A	A	033	054	069	071	070	064
5	U026S	U025F	026	021	019	022	036	056	069	073	075	074
6	F	F	F	A	A	A	032	057	066	064	056	057
7	U052S	F	F	F	F	A	032	063	079	074	068	A
8	039	F	042	037	029	020	034	057	069	071	072	067
9	045	F	U0[illegible]R	F	A	A	034	064	066	074	075	072
10	050	042	04	031	F	B	032	061	077	081	075	067
11	043	F	F	F	F	A	033	055	080	C	080	070
12	F	F	F	F	A	B	032	060	075	077	079	076
13	040	042	044	A	A	A	032	060	073	D080C	C	C
14	F	F	029	U029S	025	A	035	059	075	081	081	073
15	036	034	029	025	024	R	032	060	082	071	080	082
16	A	A	A	A	A	A	034	056	074	087	090	090
17	041	045	036	027	018	A	037	063	074	C	081	072
18	041	F	F	031	027	022	039	060	066	073	C	062
19	037	032	U031S	F	F	U024F	038	056	064	C	C	067H
20	B	B	B	015	A	A	042	061	066	072	073	A
21	041	031	027	025	025	024	043	067	065	070	068	067
22	F	F	F	F	F	A	042	061	082	085	088H	R
23	U065F	063	051	048	042	034	048	063	077	077	067	070
24	058	057	044	F	F	F	041	062	073	076	075	080
25	F	038	F	F	F	F	038	U059R	068	068	071	072
26	F	F	S	A	A	A	039	060	070	A	061	064
27	U022S	U018S	F	S	B	B	045	065	075	075	074	074
28	028	026	F	A	B	A	037	0[illegible]	065	070	067	067
29	F	F	F	F	F	F	F	056	064	069	075	075
30	043	041	050	040	028	B	037	054	064	066	064H	063H
31	R	A	A	A	A	A	037	060	071	068	070H	070
Median	041	036	036	029	025	023	036	060	069	073	074	070
Count	18	14	13	12	10	6	30	31	31	27	28	26
UQ	045	042	044	034	028	024	039	061	075	077	077	074
LQ	037	031	029	025	022	022	032	056	066	070	068	065
QR	8	11	15	9	6	2	7	5	9	7	9	9

* Tabulation of 031 = 3.1 Mc.

OSPHERIC DATA
to 25 Mc in 0.5 minute
May 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
075	065	067	070	074	083	088	095	105	093	072	064	060	055
075	064	A	070	077	082	084	092	102	093	077	060	045	030
053	A	065	069	072	078	084	092	091	091	078	068	051	042
070	064	065	069	076	081	083	086	090	085	059	052	037	029
075	074	072	085	086	C	106	114	R	107	090	A	A	A
056	057	065	069	077	079	079	079	090	090	080	066	055	050
068	A	068	068	U075R	075	078	085	099	104	074	060	F	F
072	067	072	078	085	094	100	099	100	095	064	R	F	040
075	072	070	072	076	075	078	082	093	090	077	070	065	060
075	067	067	069	072	075	082	090	100	105	081	064	052	047
080	070	072	073	072	073	076	082	092	106	092	063	041	027
079	076	079	A	085	090	094	092	094	U102R	088	074	067	055
C	C	C	C	069	075	087	089	090	097	077	059	049	043
081	073	076	076	080	089	085	087	090	092	084	069	053	046
080	082	088	089	088	089	085	086	109	R	072	044	030	U026S
090	090	082H	076	075	081	086	089	095	U097R	088	082	065	048
081	072	073	078	084	083	084	090	103	108	090	064	049	043
C	062	069	076	088	084	088	089	090	098	108	077	052	040
C	067H	U063S	067	077	085	088	090	097	R	056	038	U028S	A
073	A	072	077	082	087	092	099	U100S	085	073	073	065	051
068	067	067	072	080	080	083	091	104	R	092	057	034	U024F
088H	R	079	077	076	077	072	075H	082	089	083	075	072	071
067	070	075	082	J091R	096	102	095	094	U091S	088	080	071	064
075	080	078	080	088	A	A	097	089	085	069	056	047	038
071	072	073	076	078	078	078	081	085	097	098	079	061	F
061	064	068	076	085	083	080	082	083	091	090	045	031	U023S
074	074	078	079	086	080	089	093	092	096	073	057	042	037
067	067	070	073	J075R	078	077	081	088	096	086	060	048	F
075	075	077	082	083	082	085	088	081	095	082	060	062	053
064H	063H	067	072	079	094	093	082	095	U095R	050	032	A	A
070H	070	072	075	081	083	078	084	085	095	085	045	035	031
074	070	072	076	079	082	085	089	092	095	081	063	051	043
28	26	29	29	31	29	30	31	30	28	31	29	27	25
077	074	077	078	085	086	088	092	100	097	088	072	062	052
068	065	067	070	075	078	079	082	090	091	073	057	041	031
9	9	10	8	10	8	9	10	10	6	15	15	21	21

Characteristic: M(3000)F2

IONOSPHERIC DA
Sweep: 1 Mc to 25 Mc in

May 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11
1	F	F	F	F	A	A	340*	330	300	270	225	245
2	270	U280F	A	350	350	B	355	335	330	285	225	230
3	F	F	F	F	F	B	345	325	265	260	285	A
4	F	F	F	F	A	A	340	320	285	255	220	245
5	U305S	U320F	340	335	320	315	350	320	285	260	240	240
6	F	F	F	A	A	A	345	300	300	250	270	265
7	U290S	F	F	F	F	A	340	325	295	250	235	A
8	265	F	330	360	365	350	340	325	285	255	245	250
9	325	F	U360R	F	A	A	350	350	320	280	250	250
10	280	290	315	350	F	B	350	335	325	280	240	245
11	305	F	F	F	F	A	340	330	320	C	250	260
12	F	F	F	F	A	B	340	345	330	275	240	245
13	320	330	360	A	A	A	330	340	335	C	C	C
14	F	F	3.5	U345S	355	A	330	340	310	290	245	235
15	300	320	330	335	355	R	335	330	360	320	300	275
16	A	A	A	A	A	A	335	330	310	310	290	260
17	300	345	330	350	325	A	310	310	300	C	255	245
18	300	F	F	340	355	350	340	340	300	275	C	220
19	300	310	U340S	F	F	U360F	340	335	305	C	C	225H
20	B	B	B	340	A	A	340	330	300	270	255	A
21	290	310	310	330	340	340	350	345	305	255	250	230
22	F	F	F	F	F	A	340	320	320	305	270H	R
23	U295F	310	320	310	300	330	325	295	275	245	265	270
24	285	330	330	F	F	F	330	310	280	265	265	265
25	F	320	F	F	F	F	300	U275R	275	250	255	260
26	F	F	S	A	A	A	325	290	265	A	280	240
27	U310S	U300S	F	S	B	B	340	320	270	250	260	240
28	330	340	F	A	B	A	345	305	280	255	245	245
29	F	F	F	F	F	F	F	320	285	270	255	245
30	290	300	340	375	395	B	335	300	280	270	240H	235H
31	R	A	A	A	A	A	315	310	300	280	250H	260
Median	300	315	330	342	353	345	340	325	300	270	250	245
Count	18	14	13	12	10	6	30	31	31	26	28	26
UQ	305	330	340	350	355	350	345	335	320	280	265	260
LQ	290	300	317	335	325	330	330	310	280	255	240	240
QR	15	30	23	15	30	20	15	25	40	25	25	20

* Tabulation of 340 = factor of 3.4.

NOSPHERIC DATA
to 25 Mc in 0.5 minute

May 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
225	245	245	265	265	280	300	310	325	325	315	295	295	305
225	230	A	260	205	260	270	290	320	330	325	330	305	300
285	A	240	255	250	260	275	290	295	310	310	305	310	295
220	245	230	245	260	265	260	280	300	340	335	335	320	290
240	240	250	255	260	C	310	315	R	330	315	A	A	A
270	265	260	265	270	270	270	260	280	310	315	285	295	315
235	A	255	250	U260R	255	250	260	295	340	310	300	F	F
245	250	245	270	285	305	310	310	320	340	330	R	F	300
250	250	260	245	270	260	260	275	295	320	295	290	285	305
240	245	255	260	250	255	270	290	295	330	340	320	300	305
250	260	245	250	245	255	270	275	310	340	355	335	330	300
240	245	260	A	260	260	280	375	285	U305R	320	350	330	340
C	C	C	C	255	265	285	305	310	335	340	335	320	305
245	235	230	240	270	285	275	270	265	285	325	335	320	315
300	275	270	245	245	265	265	265	285	R	350	335	310	U310S
290	260	230H	230	240	260	280	280	280	U305R	320	315	300	305
255	245	250	255	265	260	260	275	300	320	340	340	315	295
C	220	250	250	275	270	265	260	270	300	330	330	300	290
C	225H	U250S	255	260	270	285	285	295	R	340	350	U325S	A
255	A	250	255	255	255	270	290	U305S	310	300	310	320	330
250	230	235	260	265	265	265	280	310	R	340	330	300	U270F
270H	R	250	240	245	255	250	240H	265	300	305	305	305	310
265	270	250	250	R	290	290	285	280	U280S	290	310	305	300
265	265	250	250	265	A	A	300	315	330	315	270	275	280
255	260	260	240	260	260	250	260	260	305	320	325	325	F
280	240	255	250	270	265	240	240	250	315	335	315	310	U310S
260	240	245	255	275	260	265	270	290	330	340	335	310	320
245	245	250	250	R	260	260	265	285	335	345	330	300	F
255	245	250	260	260	260	255	265	265	300	325	320	300	285
240H	235H	245	250	260	290	320	305	325	U360R	350	300	A	A
250H	260	240	245	275	290	275	280	280	320	350	335	315	300
250	245	250	250	260	260	270	280	295	320	325	325	310	305
28	26	29	29	29	29	30	31	30	28	31	29	27	25
265	260	255	257	270	270	280	290	310	332	340	335	320	310
240	240	245	245	252	260	260	265	280	305	315	305	300	295
25	20	10	12	18	10	20	25	30	27	25	30	20	15

2

Characteristic: h'F2

IONOSPHERIC DA
Sweep: 1 Mc to 25 Mc in

May 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	L	315*	368	370	400
2	-	-	-	-	-	-	-	L	300	365	L	430H
3	-	-	-	-	-	-	-	L	L	370	E380A	A
4	-	-	-	-	-	-	-	L	320	L	410H	410
5	-	-	-	-	-	-	-	L	L	L	370	400H
6	-	-	-	-	-	-	-	L	E490A	L	400	400
7	-	-	-	-	-	-	-	L	300	L	400	A
8	-	-	-	-	-	-	-	L	L	L	380	360
9	-	-	-	-	-	-	-	L	L	L	370	380
10	-	-	-	-	-	-	-	L	290	L	L	400
11	-	-	-	-	-	-	-	L	300	C	350	390
12	-	-	-	-	-	-	-	L	300	329	370	365
13	-	-	-	-	-	-	-	L	285	315	-	-
14	-	-	-	-	-	-	-	280	310	310	355	L
15	-	-	-	-	-	-	-	U?30L	270	300	310	350
16	-	-	-	-	-	-	-	L	305	300	320	355
17	-	-	-	-	-	-	-	L	U300L	C	U350L	390
18	-	-	-	-	-	-	-	L	L	L	C	420
19	-	-	-	-	-	-	-	L	L	C	C	440H
20	-	-	-	-	-	-	-	L	U320L	U370L	500	A
21	-	-	-	-	-	-	-	L	U320L	390	400	440
22	-	-	-	-	-	-	-	L	300	315	335H	380
23	-	-	-	-	-	-	-	-	U315L	L	390	390
24	-	-	-	-	-	-	-	300	E340A	300	350	370
25	-	-	-	-	-	-	-	E300A	L	L	400	400
26	-	-	-	-	-	-	-	L	U310L	A	L	E400A
27	-	-	-	-	-	-	-	L	L	U370L	350	430
28	-	-	-	-	-	-	-	L	L	380	400	400
29	-	-	-	-	-	-	-	U270L	L	360	380	370
30	-	-	-	-	-	-	-	L	U300L	U350L	U410H	450H
31	-	-	-	-	-	-	-	-	300	L	400H	380
Median	-	-	-	-	-	-	-	280	300	355	380	400
Count	-	-	-	-	-	-	-	5	21	16	25	26
UQ	-	-	-	-	-	-	-	300	317	370	400	410
LQ	-	-	-	-	-	-	-	275	300	313	353	380
QR	-	-	-	-	-	-	-	25	17	57	47	30

* Tabulation of 315 = 315 km.

OSPHERIC DATA
to 25 Mc in 0.5 minute

May 1965

0	11	12	13	14	15	16	17	18	19	20	21	22	23
370	400	390	360	350	322	L	L	-	-	-	-	-	-
L	430H	-	400	360	340	330	310	-	-	-	-	-	-
380A	A	410	390	370	340	340	L	L	-	-	-	-	-
410H	410	410	400	375	360	320	L	-	-	-	-	-	-
370	400H	370	390	360	C	315	300	-	-	-	-	-	-
400	400	405	E420A	360	350	340	L	-	-	-	-	-	-
400	A	390	400	E440A	340	L	E350A	-	-	-	-	-	-
380	360	390	E400A	325	320	300	L	L	-	-	-	-	-
370	380	385	380	350	L	L	L	-	-	-	-	-	-
L	400	400	370	370	360	L	L	-	-	-	-	-	-
350	390	370	E400A	390	380	L	L	L	-	-	-	-	-
370	365	280	A	E400A	350	330	310	L	-	-	-	-	-
-	-	-	-	400	360	330	U295L	-	-	-	-	-	-
355	L	405	E390A	E380A	E360A	400	410	L	-	-	-	-	-
310	350	370	380	375	360	345	415	L	-	-	-	-	-
320	355	420H	450	410	380	335	350	L	-	-	-	-	-
350L	390	390	390	365	340	360	L	-	-	-	-	-	-
C	430	400	390	350	L	L	L	L	-	-	-	-	-
C	440H	460	400	370	370	330	340	L	-	-	-	-	-
500	A	U420S	400	380	380	350	320	L	-	-	-	-	-
400	440	440	E390A	380	350	380	L	L	-	-	-	-	-
335H	380	E450A	U400S	400	350	E370A	E350A	E400A	-	-	-	-	-
390	390	400	360	380	350	320	L	U370L	-	-	-	-	-
350	370	400	400	380	A	A	E350A	-	-	-	-	-	-
400	400	350	400	380	360	300	340	L	-	-	-	-	-
L	E400A	400	400	370	380	L	L	-	-	-	-	-	-
350	430	400	380	340	315	400	L	-	-	-	-	-	-
400	400	400	E420A	E390A	L	U300L	U340L	L	-	-	-	-	-
380	370	400	E430A	375	E380A	E370A	E340A	310	-	-	-	-	-
U410H	450H	410	400	360	330	290	315	260	-	-	-	-	-
400H	380	425	380	355	335	U390L	L	L	-	-	-	-	-
380	400	400	400	375	350	335	340	340	-	-	-	-	-
25	26	25	29	31	26	23	16	4	-	-	-	-	-
400	410	410	400	380	360	370	350	385	-	-	-	-	-
353	380	390	385	360	340	320	313	285	-	-	-	-	-
47	30	20	15	20	20	50	37	100	-	-	-	-	-

2

Characteristic: h'F

IONOSPHERIC DA
Sweep: 1 Mc to 25 Mc in
May 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11
1	300*	270	240	240	A	A	E290S	240	E300A	200	200	200
2	310	E310B	A	250	250	B	250	E230B	230	210	210	210
3	U350S	305	280	250	240	B	E260S	240	E260A	A	A	A
4	U350S	275	230	220	A	A	E250S	230	210	210	208	E200A
5	320	280	260	250	265E	E330S	240	E250A	220	200	220	E200A
6	E340A	285	240	A	A	A	E300A	E245A	A	E250A	E270A	A
7	U300A	280	240	240	250	A	E280A	E240A	E240A	218	E260A	A
8	360	300	265	225	220	240	260	E230A	E300A	E300A	E260A	210
9	290	235	230	250	A	A	270	250	E240A	E210A	E205A	230
10	320	310	270	210	230	B	260	E265A	220	E240A	E210A	200
11	290	300	240	270	250	A	300	240	E235A	C	E200A	210
12	E380S	330	250	E300A	A	B	E260S	240	E210A	E200A	200	E240A
13	260	260	245	A	A	A	E270S	E255A	E240A	C	C	C
14	E370S	330	E300A	E300A	E300A	A	E300S	240	A	E220A	E320A	E260A
15	305	270	270	260	230	E300B	E270S	240	E200A	210	190	E230A
16	A	A	A	A	A	A	260	E238A	230	240	220	E240A
17	E290S	250	240	240	E280A	A	E280S	E250S	230	C	210	E230A
18	310	260	260	280	240	E300A	E260S	240	E230A	220	C	E220A
19	320	310	275	265	220	240	E260S	220	210	C	C	210
20	B	B	B	E300B	A	A	270	E210S	220	200	E450A	A
21	310	300	300	E290A	260	E280S	250	E240S	220	200	210	230
22	460	U400S	U320S	260	U300S	A	E265A	E240A	E250A	A	E240A	A
23	265	240	240	280	290	260	E260S	225	220	200	-	A
24	300	215	260	240	240	290	E290A	A	A	E270A	A	A
25	330	260	U290S	240	230	270	E260S	A	E300A	E280A	E210A	E200A
26	270	225	260	A	A	A	E300S	E270A	E250A	A	E240A	A
27	350	E330S	300	300	B	B	240	E210S	190	190	E200B	200
28	300	290	340	A	B	A	260	E240A	E240A	E250A	A	210
29	U380S	360	280	280	290	250	250	210	210	200	200	200
30	300	300	250	220	205	B	E250S	210	200	200	200	210
31	E310A	A	A	A	A	A	270	E260A	E240A	E260A	E220A	E210A
Median	310	288	260	250	250	275	260	240	230	210	210	210
Count	29	28	27	25	19	10	31	29	28	24	24	22
UQ	350	310	280	280	280	300	280	247	240	245	240	230
LQ	300	260	240	240	230	250	260	230	215	200	200	200
QR	50	50	40	40	50	50	20	17	25	45	40	30

* Tabulation of 300 = 300 km.

)NOSPHERIC DATA
: to 25 Mc in 0.5 minute
May 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
200	200	200	E200B	E250B	210	220	E230B	250	230	260	E300S	E280S	270
210	210	A	E200A	A	180	220	E220B	E260S	230	250	250	290	E320S
A	A	A	180	E200B	215	E220B	300	240	240	260	260	270	305
208	E200A	210	220	220	210	210	240	240	210	220	240	280	E320S
220	E200A	E220A	E210A	A	C	218	E250A	280	240	260	A	A	A
E270A	A	A	A	A	220	200	240	245	230	240	245	280	290
E260A	A	200	A	A	A	E240A	A	E300A	240	260	300	U360S	360
E260A	210	210	A	A	A	A	E270A	E250A	235	230	260	280	320
E205A	230	210	280	E225A	E240A	E220A	225	270	240	275	300	300	300
E210A	200	E200B	200	E230B	E300A	E220A	E240A	270	240	220	230	280	280
E200A	210	A	A	E205A	E250A	250	E310A	250	240	210	240	250	300
200	E240A	220	A	A	A	A	E230A	E270A	250	230	235	215	215
C	C	C	C	E240B	200	200	230	240	230	210	230	270	E300S
E320A	E260A	A	A	A	A	E370A	E300A	E250A	265	240	240	250	265
190	E230A	200	E200A	A	A	E300A	340	285	225	205	240	E300S	E330S
220	E240A	E260A	E230A	A	E250A	E235A	A	E250A	250	240	250	270	E290S
210	E230A	180	E200S	E220B	220	230	E220A	260	235	220	240	E330A	300
C	E220A	200	E200S	E220B	200	E210A	240	E250A	240	222	230	265	220
C	210	E220A	180	180	190	E200A	210	E250S	220	220	250	E330S	A
E450A	A	A	A	A	A	E250A	E240A	250	245	260	260	250	260
210	230	E200A	A	E320A	A	120	220	E250S	220	220	230	E300S	E400S
E240A	A	A	A	A	300	A	A	A	270	260	250	250	250
-	A	200	180	A	A	A	E260A	250	260	260	260	270	290
A	A	A	200	A	A	A	A	240	240	270	305	320	350
E210A	E200A	200	190	190	E230A	205	E220A	E240A	250	230	225	270	300
E240A	A	E200A		200	200	200	E210A	E250A	220	200	220	E290S	E320S
E200B	200	210	200	200	200	200	210	E230S	225	220	240	280	300
A	210	A	A	A	E210A	200	210	240	240	210	250	E290A	E380A
200	200	A	A	A	A	A	A	A	260	220	260	280	300
200	210	E190S	200	A	A	A	A	240	210	240	E330S	A	A
E220A	E210A	E200A	E200A	A	E210A	E230A	210	230	240	200	230	280	320
210	210	200	200	220	210	220	230	250	240	230	248	280	300
24	22	20	19	14	19	24	25	29	31	31	30	29	28
240	230	210	200	230	240	232	255	260	245	260	260	295	320
200	200	200	200	200	200	200	220	240	230	220	230	270	285
40	30	10	0	30	40	32	35	20	15	40	30	25	35

2

Characteristic: foF1

IONOSPHERIC DA
Sweep: 1 Mc to 25 Mc in
May 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	L	L	L	044*	045
2	-	-	-	-	-	-	-	L	L	U044L	042	044
3	-	-	-	-	-	-	-	L	U041L	A	A	A
4	-	-	-	-	-	-	-	L	L	U044L	044	043
5	-	-	-	-	-	-	-	L	L	U043L	045	044
6	-	-	-	-	-	-	-	L	A	U043L	044	A
7	-	-	-	-	-	-	-	L	L	U044L	044	A
8	-	-	-	-	-	-	-	L	L	U043L	044	044
9	-	-	-	-	-	-	-	L	L	U044L	045	044
10	-	-	-	-	-	-	-	L	L	U042L	U043L	045
11	-	-	-	-	-	-	-	L	L	C	043	045
12	-	-	-	-	-	-	-	L	L	043	044	044
13	-	-	-	-	-	-	-	L	L	C	C	C
14	-	-	-	-	-	-	-	L	A	043	L	045
15	-	-	-	-	-	-	-	L	L	U043L	044	045
16	-	-	-	-	-	-	-	L	L	U043L	045	045
17	-	-	-	-	-	-	-	L	L	C	044	046
18	-	-	-	-	-	-	-	L	L	U044L	C	045
19	-	-	-	-	-	-	-	L	L	C	C	045
20	-	-	-	-	-	-	-	L	L	U044L	L	A
21	-	-	-	-	-	-	-	L	L	U044L	045	045
22	-	-	-	-	-	-	-	L	L	A	045	A
23	-	-	-	-	-	-	-	-	L	U044L	-	A
24	-	-	-	-	-	-	-	A	A	L	A	A
25	-	-	-	-	-	-	-	A	L	L	044	046
26	-	-	-	-	-	-	-	L	L	A	044	A
27	-	-	-	-	-	-	-	L	L	U047L	045	046
28	-	-	-	-	-	-	-	L	L	043	A	045
29	-	-	-	-	-	-	-	L	L	044	045	044
30	-	-	-	-	-	-	-	L	L	043	044	044
31	-	-	-	-	-	-	-	L	L	L	044	044
Median	-	-	-	-	-	-	-	-	-	044	044	045
Count	-	-	-	-	-	-	-	-	1	20	22	22
UQ	-	-	-	-	-	-	-	-	-	044	045	045
LQ	-	-	-	-	-	-	-	-	-	043	044	044
QR	-	-	-	-	-	-	-	-	-	1	1	1

*Tabulation of 044 = 4.4 Mc

)NOSPHERIC DATA
: to 25 Mc in 0.5 minute

May 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
044*	045	044	044	043	043	L	L	-	-	-	-	-	-
042	044	A	044	A	042	L	L	-	-	-	-	-	-
A	A	A	044	043	U043L	L	L	L	-	-	-	-	-
044	043	044	044	043	042	U041L	L	-	-	-	-	-	-
045	044	044	044	A	C	040	L	-	-	-	-	-	-
044	A	A	A	A	U043L	L	L	-	-	-	-	-	-
044	A	043	A	A	A	L	A	-	-	-	-	-	-
044	044	044	A	A	A	A	L	L	-	-	-	-	-
045	044	045	045	045	L	L	L	-	-	-	-	-	-
U043L	045	045	044	044	L	L	L	-	-	-	-	-	-
043	045	A	A	043	U044R	L	L	L	-	-	-	-	-
044	044	045	A	A	A	A	L	L	-	-	-	-	-
C	C	C	C	044	043	041	L	-	-	-	-	-	-
L	045	A	A	A	A	L	L	L	-	-	-	-	-
044	045	045	045	A	A	L	L	L	-	-	-	-	-
045	045	046	U044L	A	044	L	A	L	-	-	-	-	-
044	046	045	045	044	045	U044L	L	-	-	-	-	-	-
C	045	045	045	044	L	L	L	L	-	-	-	-	-
C	045	045	045	043	U046L	044	L	L	-	-	-	-	-
L	A	A	A	A	A	L	L	L	-	-	-	-	-
045	045	046	A	L	A	U044L	L	L	-	-	-	-	-
045	A	A	A	A	L	A	A	A	-	-	-	-	-
-	A	046	045	A	A	A	L	L	-	-	-	-	-
A	A	A	046	A	A	A	A	-	-	-	-	-	-
044	046	045	047	045	045	041	040	L	-	-	-	-	-
044	A	045	044	044	U046L	L	L	-	-	-	-	-	-
045	046	045	045	044	044	042	L	-	-	-	-	-	-
A	045	A	A	A	L	040	U041L	L	-	-	-	-	-
045	044	A	A	A	A	A	A	A	-	-	-	-	-
044	044	044	044	A	A	A	A	L	-	-	-	-	-
044	044	044	044	A	043	U045L	L	L	-	-	-	-	-
044	045	045	044	044	043	041	-	-	-	-	-	-	-
22	22	20	19	13	14	10	2	-	-	-	-	-	-
045	045	045	045	044	045	044	-	-	-	-	-	-	-
044	044	044	044	043	043	041	-	-	-	-	-	-	-
1	1	1	1	1	2	3	-	-	-	-	-	-	-

2

Characteristic: M(3000)F1

IONOSPHERIC DA
Sweep: 1 Mc to 25 Mc in

May 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	L	L	L	400*	420
2	-	-	-	-	-	-	-	L	L	U370L	415	420
3	-	-	-	-	-	-	-	L	U355L	A	A	A
4	-	-	-	-	-	-	-	L	L	U370L	395	415
5	-	-	-	-	-	-	-	L	L	U375L	380	390
6	-	-	-	-	-	-	-	L	A	U370L	370	A
7	-	-	-	-	-	-	-	L	L	U370L	380	A
8	-	-	-	-	-		-	L	L	U355L	380	415
9	-	-	-	-	-	-	-	L	L	U355L	385	395
10	-	-	-	-	-	-	-	L	L	U380L	U390L	405
11	-	-	-	-	-	-	-	L	L	C	400	400
12	-	-	-	-	-	-	-	L	L	385	390	395
13	-	-	-	-	-	-	-	L	L	C	C	C
14	-	-	-	-	-	-	-	L	A	390	L	385
15	-	-	-	-	-	-	-	L	L	U395L	410	400
16	-	-	-	-	-	-	-	L	L	U380L	395	400
17	-	-	-	-	-	-	-	L	L	C	400	390
18	-	-	-	-	-	-	-	L	L	U370L	C	400
19	-	-	-	-	-	-	-	L	L	C	C	410
20	-	-	-	-	-	-	-	L	L	U380L	L	A
21	-	-	-	-	-	-	-	L	L	U380L	390	400
22	-	-	-	-	-	-	-	L	L	A	390	A
23	-	-	-	-	-	-	-	-	L	U380L	-	A
24	-	-	-	-	-	-	-	A	A	L	A	A
25	-	-	-	-	-	-	-	A	L	L	400	390
26	-	-	-	-	-	-	-	L	L	A	395	A
27	-	-	-	-	-	-	-	L	L	U360L	395	410
28	-	-	-	-	-	-	-	L	L	370	A	410
29	-	-	-	-	-	-	-	L	L	380	410	430
30	-	-	-	-	-	-	-	L	L	420	410	430
31	-	-	-	-	-	-	-	L	L	L	415	420
Median	-	-	-	-	-	-	-	-	-	378	395	402
Count	-	-	-	-	-	-	-	-	-	20	22	22
UQ	-	-	-	-	-	-	-	-	-	380	400	415
LQ	-	-	-	-	-	-	-	-	-	370	390	395
QR	-	-	-	-	-	-	-	-	-	10	10	20

* Tabulation of 400 = factor of 4.0.

NOSPHERIC DATA
to 25 Mc in 0.5 minute

May 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
400*	420	420	420	385	375	L	L	-	-	-	-	-	-
415	420	A	420	A	380	L	L	-	-	-	-	-	-
A	A	A	420	425	U385L	L	L	L	-	-	-	-	-
395	415	410	410	415	400	U375L	L	-	-	-	-	-	-
380	390	410	400	A	C	370	L	-	-	-	-	-	-
370	A	A	A	A	U380L	L	L	-	-	-	-	-	-
380	A	425	A	A	A	L	A	-	-	-	-	-	-
380	415	410	A	A	A	A	L	L	-	-	-	-	-
385	395	405	410	390	L	L	L	-	-	-	-	-	-
390L	405	400	420	380	L	L	L	-	-	-	-	-	-
400	400	A	A	400	U375R	L	L	L	-	-	-	-	-
390	395	405	A	A	A	A	L	L	-	-	-	-	-
C	C	C	C	375	390	385	L	-	-	-	-	-	-
L	385	A	A	A	A	L	L	L	-	-	-	-	-
410	400	410	395	A	A	L	L	L	-	-	-	-	-
395	400	375	U395L	A	375	L	A	L	-	-	-	-	-
400	390	410	400	390	380	U360L	L	-	-	-	-	-	-
C	400	400	410	400	L	L	L	L	-	-	-	-	-
C	410	420	405	415	U365*	360	L	L	-	-	-	-	-
A	A	A	A	A	A	L	L	L	-	-	-	-	-
390	400	400	A	L	A	U370L	L	L	-	-	-	-	-
390	A	A	A	A	L	A	A	A	-	-	-	-	-
-	A	405	420	A	A	A	L	L	-	-	-	-	-
A	A	A	400	A	A	A	A	-	-	-	-	-	-
400	390	420	390	400	375	400	370	-	-	-	-	-	-
395	A	400	430	420	U385L	L	L	-	-	-	-	-	-
395	410	410	410	410	405	380	L	-	-	-	-	-	-
A	410	A	A	A	L	395	U350L	L	-	-	-	-	-
410	430	A	A	A	A	A	A	A	-	-	-	-	-
410	430	435	435	A	A	A	A	L	-	-	-	-	-
415	420	430	430	A	400	U370L	L	L	-	-	-	-	-
395	402	410	410	400	380	372	-	-	-	-	-	-	-
22	22	20	19	13	14	10	2	-	-	-	-	-	-
400	415	420	420	415	390	385	-	-	-	-	-	-	-
390	395	402	400	388	375	370	-	-	-	-	-	-	-
10	20	18	20	27	15	15	-	-	-	-	-	-	-

2

Characteristic: foE

IONOSPHERIC DA
Sweep: 1 Mc to 25 Mc in
May 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	B	B	U330A	A	A
2	-	-	-	-	-	-	-	B	B	A	A	A
3	-	-	-	-	-	-	-	A	A	A	A	A
4	-	-	-	-	-	-	-	-	B	A	B	A
5	-	-	-	-	-	-	-	S	B	A	A	A
6	-	-	-	-	-	-	-	A	A	A	A	A
7	-	-	-	-	-	-	-	A	A	A	S	A
8	-	-	-	-	-	-	-	A	A	A	A	A
9	-	-	-	-	-	-	-	A	A	B	A	A
10	-	-	-	-	-	-	-	A	A	A	A	A
11	-	-	-	-	-	-	-	A	B	C	B	A
12	-	-	-	-	-	-	-	B	A	A	B	A
13	-	-	-	-	-	-	-	A	A	C	C	C
14	-	-	-	-	-	-	-	S	A	A	A	A
15	-	-	-	-	-	-	-	A	B	A	A	A
16	-	-	-	-	-	-	-	A	A	A	A	A
17	-	-	-	-	-	-	-	S	B	C	A	A
18	-	-	-	-	-	-	-	B	B	-	C	A
19	-	-	-	-	-	-	-	U260S	A	C	C	S
20	-	-	-	-	-	-	-	A	-	A	A	A
21	-	-	-	-	-	-	-	S	R	U300R	A	A
22	-	-	-	-	-	-	-	A	B	B	B	A
23	-	-	-	-	-	-	-	-	A	A	R	A
24	-	-	-	-	-	-	-	S	R	-	R	S
25	-	-	-	-	-	-	-	S	B	R	B	R
26	-	-	-	-	-	-	-	A	A	A	A	A
27	-	-	-	-	-	-	-	B	B	B	B	S
28	-	-	-	-	-	-	-	A	A	A	R	R
29	-	-	-	-	-	-	-	S	A	A	A	A
30	-	-	-	-	-	-	-	B	B	B	B	A
31	-	-	-	-	-	-	-	A	A	A	A	S
Median	-	-	-	-	-	-	-	-	-	-	-	-
Count	-	-	-	-	-	-	-	1	-	2	-	-
UQ	-	-	-	-	-	-	-	-	-	-	-	-
LQ	-	-	-	-	-	-	-	-	-	-	-	-
QR	-	-	-	-	-	-	-	-	-	-	-	-

* Tabulation of 330 = 3.3 Mc.

ONOSPHERIC DATA
c to 25 Mc in 0.5 minute

May 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
A	A	B	B	B	330*	B	B	-	-	-	-	-	-
A	A	A	A	B	A	B	B	-	-	-	-	-	-
A	A	A	A	B	A	A	A	A	-	-	-	-	-
B	A	A	S	A	B	R	R	-	-	-	-	-	-
A	A	A	A	A	C	A	B	-	-	-	-	-	-
A	A	A	A	A	A	A	B	-	-	-	-	-	-
S	A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	A	A	-	-	-	-	-
A	A	B	B	R	R	B	A	-	-	-	-	-	-
A	A	B	350	B	-	B	A	-	-	-	-	-	-
B	A	A	A	A	A	B	A	A	-	-	-	-	-
B	A	A	A	A	A	A	S	S	-	-	-	-	-
C	C	C	C	B	B	B	S	-	-	-	-	-	-
A	A	A	A	A	A	A	A	A	-	-	-	-	-
A	A	A	A	A	A	A	A	A	-	-	-	-	-
A	A	A	A	A	A	A	A	A	-	-	-	-	-
A	A	A	S	R	R	B	A	-	-	-	-	-	-
C	A	A	S	B	A	A	A	A	-	-	-	-	-
C	S	A	A	A	D300A	310	A	S	-	-	-	-	-
A	A	A	A	A	A	A	A	A	-	-	-	-	-
A	A	A	A	B	R	R	S	S	-	-	-	-	-
B	A	A	A	C	A	A	A	A	-	-	-	-	-
R	A	A	A	D	B	A	A	A	-	-	-	-	-
R	S	S	S	B	A	R	A	-	-	-	-	-	-
B	R	R	U360R	A	A	A	A	A	-	-	-	-	-
A	A	A	A	A	A	A	A	-	-	-	-	-	-
B	S	A	350	R	D310R	S	S	-	-	-	-	-	-
R	R	R	A	A	A	A	A	A	-	-	-	-	-
A	A	A	S	S	A	A	A	A	-	-	-	-	-
B	A	S	A	A	A	B	B	S	-	-	-	-	-
A	S	S	S	B	D320A	S	A	A	-	-	-	-	-
-	-	-	350	-	315	-	-	-	-	-	-	-	-
-	-	-	3	-	4	1	-	-	-	-	-	-	-
-	-	-	355	-	325	-	-	-	-	-	-	-	-
-	-	-	350	-	305	-	-	-	-	-	-	-	-
-	-	-	05	-	20	-	-	-	-	-	-	-	-

2

Characteristic: h'E

IONOSPHERIC DAT
Sweep: 1 Mc to 25 Mc in
May 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	B	-	120*	-	-
2	-	-	-	-	-	-	-	B	B	A	A	A
3	-	-	-	-	-	-	-	A	A	A	A	A
4	-	-	-	-	-	-	-	-	B	A	B	A
5	-	-	-	-	-	-	-	S	B	A	A	A
6	-	-	-	-	-	-	-	A	A	A	A	A
7	-	-	-	-	-	-	-	A	A	A	S	A
8	-	-	-	-	-	-	-	A	A	A	A	A
9	-	-	-	-	-	-	-	A	A	B	A	A
10	-	-	-	-	-	-	-	A	A	A	A	A
11	-	-	-	-	-	-	-	A	B	C	B	A
12	-	-	-	-	-	-	-	B	A	A	B	A
13	-	-	-	-	-	-	-	A	A	C	C	C
14	-	-	-	-	-	-	-	S	A	A	A	A
15	-	-	-	-	-	-	-	A	B	A	A	A
16	-	-	-	-	-	-	-	A	A	A	A	A
17	-	-	-	-	-	-	-	S	B	C	A	A
18	-	-	-	-	-	-	-	B	B	-	C	A
19	-	-	-	-	-	-	-	120	A	C	C	S
20	-	-	-	-	-	-	-	A	-	A	A	A
21	-	-	-	-	-	-	-	S	120	120	A	A
22	-	-	-	-	-	-	-	A	B	B	B	A
23	-	-	-	-	-	-	-	-	A	A	110	A
24	-	-	-	-	-	-	-	S	U115S	115	110	S
25	-	-	-	-	-	-	-	S	B	U115S	B	110
26	-	-	-	-	-	-	-	A	A	A	A	A
27	-	-	-	-	-	-	-	B	B	B	B	S
28	-	-	-	-	-	-	-	A	A	A	110	110
29	-	-	-	-	-	-	-	S	A	A	A	A
30	-	-	-	-	-	-	-	B	B	B	B	A
31	-	-	-	-	-	-	-	A	A	A	A	S
Median	-	-	-	-	-	-	-	-	-	117	110	-
Count	-	-	-	-	-	-	-	1	2	4	3	2
UQ	-	-	-	-	-	-	-	-	-	120	110	-
LQ	-	-	-	-	-	-	-	-	-	115	110	-
QR	-	-	-	-	-	-	-	-	-	5	0	-

* Tabulation of 120 = 120 km.

NOSPHERIC DATA
to 25 Mc in 0.5 minute

May 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
-	-	B	B	B	125	B	B	-	-	-	-	-	-
A	A	A	A	B	A	B	B	-	-	-	-	-	-
A	A	A	A	B	A	A	A	A	-	-	-	-	-
B	A	A	S	A	B	120	130	-	-	-	-	-	-
A	A	A	A	A	C	A	B	-	-	-	-	-	-
A	A	A	A	A	A	120	B	-	-	-	-	-	-
S	A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	A	A	-	-	-	-	-
A	A	B	B	120	120	B	A	-	-	-	-	-	-
A	A	B	120	B	-	B	A	-	-	-	-	-	-
B	A	A	A	A	A	B	A	A	-	-	-	-	-
B	A	A	A	A	A	A	S	S	-	-	-	-	-
C	C	C	C	B	B	B	S	-	-	-	-	-	-
A	A	A	A	A	A	A	A	A	-	-	-	-	-
A	A	A	A	A	A	A	A	A	-	-	-	-	-
A	A	A	A	A	A	A	A	A	-	-	-	-	-
A	A	A	S	130	120	B	A	-	-	-	-	-	-
C	A	A	S	B	A	A	A	A	-	-	-	-	-
C	S	A	A	A	U110S	120	A	S	-	-	-	-	-
A	A	A	A	A	A	A	A	A	-	-	-	-	-
A	A	A	A	B	120	120	S	S	-	-	-	-	-
B	A	A	A	C	A	A	A	A	-	-	-	-	-
110	A	A	A	B	B	A	A	A	-	-	-	-	-
110	S	S	S	B	A	105	A	-	-	-	-	-	-
B	110	105	U100S	A	A	A	A	A	-	-	-	-	-
A	A	A	A	A	A	A	A	-	-	-	-	-	-
B	S	A	110	110	110	S	S	-	-	-	-	-	-
110	110	100	A	A	A	A	A	A	-	-	-	-	-
A	A	A	S	S	A	A	A	A	-	-	-	-	-
B	A	S	A	A	A	B	B	S	-	-	-	-	-
A	S	S	S	B	E130S	S	A	A	-	-	-	-	-
110	-	-	110	120	120	120	-	-	-	-	-	-	-
3	2	2	3	3	7	5	1	-	-	-	-	-	-
110	-	-	115	125	125	120	-	-	-	-	-	-	-
110	-	-	105	115	110	113	-	-	-	-	-	-	-
0	-	-	10	10	15	7	-	-	-	-	-	-	-

2

Characteristic: fbEs

IONOSPHERIC DAT
Sweep: 1 Mc to 25 Mc in
May 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11
1	026*	-	B	B	A	A	S	029	041M	033	036M	M
2	-	B	A	016M	M	B	B	B	B	034	035M	037
3	S	S	S	B	B	B	S	028M	036	045M	044M	A
4	S	B	-	M	A	A	S	025	D028R	034	035	036
5	S	B	S	-	E	S	S	030M	031	034M	036	039M
6	029M	026M	B	A	A	A	028M	028M	061M	038M	041M	048M
7	040	M	B	017M	016M	A	025	029M	037M	035	S	A
8	B	B	B	B	B	-	-	026	041M	041M	041M	039M
9	028	-	B	B	A	A	027M	032M	034M	035	036	039
10	B	B	-	E	014	B	-	034M	030M	036M	037	-
11	B	S	B	E	B	A	027M	-	033	C	D034R	036M
12	S	016M	-	018	A	B	S	B	030	033	B	041M
13	S	018M	025M	085M	050M	021M	S	033	035	C	C	C
14	S	S	020M	027	022M	A	S	029M	046M	035M	043M	013M
15	S	B	S	B	B	B	S	026	D027R	034M	035M	042
16	A	A	A	A	A	A	025	027	033	037M	039M	043M
17	S	017M	017	017M	-	A	S	S	G	C	038M	044M
18	-	M	022M	024M	B	021	S	028	033	036	C	041
19	S	-	M	016M	M	S	-	G	030	C	C	S
20	B	B	B	-	A	A	031M	-	033M	034	060M	A
21	S	S	B	B	B	S	S	S	G	G	038M	042
22	-	S	S	E	015M	A	030	030	037M	049M	D038R	054M
23	S	-	013	013	-	S	S	028	033M	034M	050M	048
24	-	-	M	013	014M	M	029M	044M	050M	041M	050M	050M
25	023	017	020	-	014M	-	-	040M	041M	042	039	042M
26	S	-	017	A	A	A	S	035M	040M	A	042	M
27	C	S	S	S	B	B	S	B	B	B	B	S
28	023	-	B	A	B	A	-	030M	034	040M	047M	040
29	023	016	020	-	016	-	-	S	030	033	036	039
30	S	020	015	B	-	B	S	B	B	B	B	-
31	023	A	A	A	A	A	025	033M	034M	040	040	042
Median	024	017	020	017	016	-	027	029	034	035	038	042
Count	8	7	9	10	8	2	9	21	26	23	24	21
UQ	028	020	024	024	019	-	030	033	040	040	043	043
LQ	023	016	016	016	014	-	025	028	031	034	036	039
QR	5	4	8	8	5	-	5	5	9	6	7	4

*
Tabulation of 026 = 2.6 Mc.

OSPHERIC DATA
to 25 Mc in 0.5 minute

May 1965

0	11	12	13	14	15	16	17	18	19	20	21	22	23
036M	M	B	B	B	G	B	B	B	B	B	S	S	S
035M	037	M	040M	043M	034M	B	B	S	S	S	S	-	S
044M	A	045M	037	B	035	031	038M	028M	S	S	S	027	B
035	036	036M	S	038	B	G	G	S	S	S	S	S	S
036	039M	039M	040M	054M	C	031M	031	045M	023	M	A	A	A
041M	048M	050M	060M	044M	033	032	B	B	B	B	-	026	026
S	A	039M	052M	066M	045M	039M	D040R	050	050M	037M	029	030	B
041M	039M	039	063M	049M	059M	060M	034	-	B	B	B	-	-
036	039	B	B	D037R	D034R	D029R	028	030	027	B	B	B	B
037	-	B	G	B	040	033	032	028	B	B	B	B	B
034R	036M	060M	053M	D042R	038	036	040M	026M	-	B	B	B	B
B	041M	040	118M	065M	045M	047M	030M	032	033M	-	-	-	-
C	C	C	C	B	B	B	S	S	S	B	S	-	S
043M	043M	049M	052M	060M	065M	057	037M	028M	040M	037M	030M	-	S
035M	042	040M	040M	047	050M	041	041M	035M	029	028	S	S	S
039M	043M	044	048M	052M	039M	036M	055M	026	028M	S	S	S	S
038M	044M	039	S	G	G	G	030M	029M	B	S	S	040	-
C	041	M	S	B	036	032	032M	028	S	S	S	S	S
C	S	043M	038	035M	D031R	G	029	S	027	-	S	026	A
060M	A	055M	055M	050M	053M	038M	031M	029	035M	027M	S	S	S
038M	042	040	053M	043	053	035	S	S	S	M	S	S	S
038R	054M	065M	045M	C	043M	049M	042M	065M	041M	C	S	C	S
050M	048	040M	039	067M	055M	050M	036	028M	S	S	029	-	-
050M	050M	050M	039M	046	A	A	-	030	025	027	029	S	S
039	042M	040	G	036M	039M	031M	033	027M	026M	025	S	S	S
042	M	041	040	036	035	030M	028	-	025	026	-	S	S
B	S	040	G	G	G	S	S	C	S	S	S	S	S
047M	040	050M	060M	060M	038M	031	040	026	-	S	027	-	027
036	039	052M	070M	050M	053M	050	051	043M	025	030	035	026	S
B	-	S	-	047M	042M	040	040	S	S	S	S	A	A
040	042	040	041	045M	037	036	-	-	S	S	-	S	S
038	042	040	048	047	040	036	035	029	027	028	029	026	-
24	21	24	21	23	24	23	22	19	14	8	6	6	2
043	043	050	057	054	052	047	040	035	035	034	030	030	-
036	039	040	040	042	036	031	031	028	025	027	029	026	-
7	4	10	17	12	16	16	9	7	10	7	1	4	-

2

Characteristic: foEs

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.

May 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11	1
1	028*	020	B	B	031M	02[illegible]	S	031	050M	037	055M	100M	
2	024	B	072M	050M	027M	B	B	B	B	034	055M	037	1
3	S	S	S	B	B	B	S	038M	043	066M	056M	095M	(
4	S	B	023	030M	027M	041M	S	036	D028R	034	035	042	(
5	S	B	S	021	E	S	S	036M	033	044M	036	055M	(
6	045M	050M	B	036	036	050M	045M	045M	094M	090M	056M	080M	(
7	040	072M	B	029M	026M	036M	033	055M	070M	041	S	095M	(
8	B	B	B	B	B	020	026	035	057M	065M	075M	070M	(
9	030	020	B	B	057M	036M	048M	058M	046M	035	040	040	
10	B	B	021	E	014	B	034	055M	046M	055M	046	046	
11	B	S	B	E	B	035	042M	034	033	C	D034R	058M	(
12	S	035M	030	024	025	B	S	B	035	033	B	051M	(
13	S	028M	082M	085M	050M	021M	S	041	045	C	C	C	
14	S	S	045M	027	034M	035	S	040M	080M	056M	080M	065M	(
15	S	B	S	B	B	B	S	026	D027R	044M	050M	044	(
16	032M	050M	056M	024	036	026	030	031	040	065M	078M	085M	(
17	S	038M	024	060M	024	030	S	S	G	C	055M	056M	(
18	036	036M	034M	036M	B	028	S	028	035	03[illegible]	C	056	(
19	S	022	038M	035M	050M	S	030	G	036	C	C	S	
20	B	B	B	017	023	018	043M	031	054M	038	110M	110M	
21	S	S	B	B	B	S	S	S	G	G	050M	048	(
22	021	S	S	E	025M	023	033	032	048M	059M	D038R	070M	(
23	S	017	022	032	019	021	S	037	048M	070M	100M	055	
24	034	032	035M	022	030M	044M	046M	067M	077M	055M	078M	180M	
25	027	025	021	018	031M	022	031	104M	100M	047	039	051M	
26	S	031	036	070M	047M	032	S	057M	095M	090M	053	105M	
27	C	S	S	S	B	B	S	B	B	B	B	S	
28	023	019	B	020	B	043M	032	048M	055	055M	060M	046	
29	025	016	023	019	022	021	025	S	030	033	036	041	
30	S	023	018	B	015	B	S	B	B	B	B	065	
31	031	022	021	053M	048M	050M	030	048M	077M	047	055	042	
Median	030	027	030	030	029	030	033	038	047	047	055	056	
Count	13	18	17	20	22	21	15	23	26	24	24	28	
UQ	035	036	042	043	036	036	043	055	070	052	067	080	
LQ	025	020	021	022	024	021	030	032	035	037	040	046	
QR	10	16	21	21	12	15	13	23	35	15	27	34	

*Tabulation of 028 = 2.8 Mc.

OSPHERIC DATA
to 25 Mc in 0.5 minute

May 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
055M	100M	B	B	B	G	B	B	B	B	B	S	S	S
055M	037	110M	050M	054M	048M	B	B	S	S	S	S	027	S
056M	095M	057M	041	B	039	038	055M	043M	S	S	S	032	B
035	042	048M	S	038	B	G	G	S	S	S	S	S	S
036	055M	051M	050M	070M	C	045M	031	070M	032	095M	140M	100M	080M
056M	080M	080M	100M	065M	033	032	B	B	B	B	036	032	032
S	095M	092M	094M	090M	055M	054M	D040R	050	070M	047M	035	035	B
075M	070M	046	104M	070M	075M	082M	041	035	B	B	B	037	033
040	040	B	B	D037R	D034R	D029R	028	034	036	B	B	B	B
046	046	B	G	B	046	036	032	038	B	B	B	B	B
034R	058M	080M	080M	D042R	038	037	050M	036M	030	B	B	B	B
B	051M	040	118M	100M	070M	075M	040M	035	060M	C33	033	030	037
C	C	C	C	B	B	B	S	S	S	B	S	035	S
080M	065M	091M	080M	075M	078M	057	070M	070M	056M	047M	045M	031	S
050M	044	055M	050M	055	065M	046	068M	047M	036	033	S	S	S
078M	085M	059	065M	085M	050M	052M	080M	036	040M	S	S	S	S
055M	056M	039	S	G	G	G	043M	046M	B	S	S	046	033
C	056	065M	S	B	036	034	045M	035	S	S	S	S	S
C	S	060M	038	045M	D031R	G	034	S	032	026	S	030	030
110M	110M	100M	090M	080M	080M	070M	046M	032	065M	039M	S	S	S
050M	048	040	116M	046	060	038	S	S	S	040M	S	S	S
038R	070M	095M	095M	C	055M	075M	055M	090M	060M	C	S	C	S
100M	055	060M	046	116M	100M	100M	045	047M	S	S	032	035	037
078M	180M	095M	075M	046	102M	148M	036	038	030	037	032	S	S
039	051M	042	G	090M	085M	055M	033	046M	047M	029	S	S	S
053	105M	055	055	041	035	110M	045	030	031	032	026	S	S
B	S	040	G	G	G	S	S	C	S	S	S	S	S
060M	046	095M	150M	110M	070M	034	040	026	041	S	035	027	032
036	041	090M	100M	080M	065M	055	060	070M	029	035	040	033	S
B	065	S	054	070M	082M	040	040	S	S	S	S	032	032
055	042	040	047	057M	039	036	035	027	S	S	025	S	S
055	056	060	077	070	055	049	042	038	038	036	035	032	033
24	28	26	22	23	25	24	24	22	16	12	11	15	9
067	080	091	100	085	076	073	053	047	058	043	040	035	037
040	046	046	050	046	039	036	036	035	032	033	032	030	032
27	34	45	50	39	37	37		12	26	10	8	5	5

2

Characteristic: h'Es

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.

May 1965

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11	
1	115*	115	B	B	110	110	S	130	120	115	120	140	
2	110	B	110	100	100	B	B	B	B	110	100	110	
3	S	S	S	B	B	B	S	115	118	115	110	110	
4	S	B	130	125	120	120	S	120	120	120	120	120	
5	S	B	S	130	E	S	S	130	130	110	115	110	
6	108	100	B	110	115	110	110	110	110	110	110	110	
7	120	120	B	115	110	110	108	110	105	110	S	108	
8	B	B	B	B	B	120	120	118	112	115	115	110	
9	100	105	B	B	117	110	110	110	112	110	112	110	
10	B	B	135	E	130	B	120	110	115	110	110	110	
11	B	S	B	E	B	115	110	120	120	C	115	110	
12	S	110	115	110	105	B	S	B	120	120	B	110	
13	S	120	110	110	110	110	S	115	115	C	C	C	
14	S	S	110	100	106	115	S	110	110	110	110	110	
15	S	B	S	B	B	B	S	120	110	110	110	150	
16	110	110	115	112	120	110	110	110	110	105	105	110	
17	S	130	115	125	130	125	S	S	G	C	U110S	118	
18	120	110	100	110	B	120	S	140	140	150	C	100	
19	S	130	120	130	120	S	110	G	120	C	C	S	
20	B	B	B	130	110	110	110	110	115	110	105	100	
21	S	S	B	B	B	S	S	S	G	G	U110S	110	U
22	100	S	S	E	120	110	110	115	120	105	110	110	
23	S	130	120	120	125	120	S	120	118	118	108	110	
24	125	120	120	120	110	105	110	110	110	110	110	102	
25	100	100	100	100	110	110	110	110	115	110	115	110	
26	S	130	110	110	110	100	S	110	110	110	105	100	
27	C	S	S	S	B	B	S	B	B	B	B	S	
28	100	100	B	100	B	110	110	110	110	110	110	110	
29	100	100	100	110	110	118	110	S	110	110	110	105	
30	S	100	100	B	100	B	S	B	B	B	B	100	
31	100	100	100	120	115	110	110	105	100	100	100	130	
Median	108	110	110	111	110	110	110	110	115	110	110	110	
Count	13	18	17	20	22	21	15	24	26	24	24	28	
UQ	118	120	120	122	120	120	110	120	120	115	114	110	
LQ	100	100	100	110	110	110	110	110	110	110	109	109	
QR	18	20	20	12	10	10	0	10	10	5	5	1	

*Tabulation of 115 = 115 Km.

NOSPHERIC DATA
to 25 Mc in 0.5 minute

May 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
120	140	B	P	B	G	B	B	B	B	B	S	S	S
100	110	100	105	110	100	B	B	S	S	S	S	110	S
110	110	110	110	B	110	110	100	100	S	S	S	102	B
120	120	120	S	120	B	G	G	S	S	S	S	S	S
115	110	110	110	110	C	110	120	110	112	110	110	110	110
110	110	110	110	110	110	128	B	B	B	B	120	110	110
S	108	110	108	110	110	110	110	100	100	100	110	100	B
115	110	110	110	110	105	110	105	115	B	B	B	135	100
112	110	B	B	127	120	115	110	110	100	B	B	B	B
110	110	B	G	B	100	130	110	110	B	B	B	B	B
115	110	105	100	105	105	120	120	150	110	B	B	B	B
B	110	110	105	105	100	105	100	100	110	110	115	115	110
C	C	C	C	B	B	B	105S	S	110S	B	S	125	S
110	110	105	108	105	105	110	110	105	100	100	100	102	S
110	150	100	100	100	100	100	100	100	100	100	S	S	S
105	110	110	105	100	100	100	100	100	100	S	S	S	S
U110S	118	110	S	G	G	G	110	100	B	S	S	110	110
C	100	100	S	B	110	115	110	115	S	S	S	S	S
C	S	100	100	100	105	G	120	S	100	100	S	100	100
105	100	100	100	100	100	102	100	105	110	100	S	S	S
U110S	110	U110S	110	140	120	130	S	S	S	110	S	S	S
110	110	100	100	C	100	100	100	100	100	C	S	C	S
108	110	100	100	100	100	100	100	100	S	S	125	150	130
110	102	100	100	130	120	105	100	120	120	100	100	S	S
115	110	110	G	110	105	105	100	100	100	100	S	S	S
105	100	100	100	110	105	100	100	110	100	100	100	S	S
B	S	110	G	G	G	S	S	C	S	S	S	S	S
110	110	100	100	105	110	105	110	105	110	S	100	100	100
110	105	100	100	100	100	100	100	100	100	100	100	100	S
B	100	S	100	100	100	120	120	S	S	S	S	100	100
100	130	130	120	120	120	110	115	110	S	S	100	S	S
110	110	108	103	110	105	110	105	105	100	100	100	110	110
24	28	26	22	23	25	24	25	22	17	12	11	15	9
114	110	110	110	110	110	115	110	110	110	105	115	115	110
109	109	100	100	100	100	101	100	100	100	100	100	100	100
5	1	10	10	10	10	14	10	10	10	5	15	15	10

2

Characteristic: Type of Es

IONOSPHERIC DAT
Sweep: 1 Mc to 25 Mc in

May 1965

Observed at:
Bangkok Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour / Date	00	01	02	03	04	05	06	07	08	09	10	11
1	f	f2	-	-	-f	f	-	c	c2	c	ℓ	ℓ
2	f	-	f5	f3	f	-	-	-	-	ℓ	ℓ	ℓ
3	-	-	-	-	-	-	-	ℓ2	ℓ2	ℓ2	ℓ2	ℓ3
4	-	-	f	f	f	f2	-	ℓ	c	ℓ	c	ℓ
5	-	-	-	f	-	-	-	c	c	ℓ2	ℓ	ℓ
6	f	f	-	f4	f4	f3	f2	ℓ2	ℓ5	ℓ2	ℓ3	ℓ2
7	f2	f	-	f	f2	f2	f2	ℓ	ℓ2	ℓ	ℓ2	ℓ3
8	-	-	-	-	-	f	f	ℓ	ℓ4	ℓ2	ℓ2	ℓ2
9	f	f	-	-	f4	f3	f4	ℓ3	ℓ2	c	ℓ	ℓ
10	-	-	f	-	f	-	f	ℓ6	ℓ2	ℓ2	ℓ	ℓ
11	-	-	-	-	-	f2	f	ℓ	c2	-	c	ℓ
12	-	f	f	f	f	-	-	-	ℓc	ℓ	-	ℓ2
13	-	f	f3	f3	f3	f	-	ℓ3	ℓ2	-	-	-
14	-	-	f3	f4	f2	f	-	c2	ℓ6	ℓ2	ℓ3	ℓ2
15	-	-	-	-	-	-	-	ℓ2	c	ℓ	ℓ	cℓ
16	f	f4	f6	f3	f2	f	f2	ℓ	ℓ	ℓ2	ℓ2	ℓ2
17	-	f	f2	f2	f	f	-	-	-	-	ℓ	ℓc
18	f	f	f	f2	-	f	-	c	c	c	-	ℓc
19	-	f	f2	f2	f	-	f	-	ℓ	-	-	-
20	-	-	-	f	f3	f	f3	ℓ	ℓ	ℓ	ℓ4	ℓ3
21	-	-	-	-	-	-	-	-	-	-	ℓc	ℓc
22	f	-	-	-	f2	f2	f2	ℓc	cℓ	c2	c2	ℓ
23	-	f	f	f2	f	f2	-	f	ℓ	ℓ2	c3	ℓ2
24	f	f	f	f	f	f2	f2	c5	c4	c	c2	ℓ3
25	f	f2	f2	f	f	f2	f	c3	c3	c2	cℓ	c
26	-	f	f	f6	f5	f	-	ℓ4	ℓ4	ℓ3	ℓ2	ℓ4
27	-	-	-	-	-	-	-	-	-	-	-	-
28	f	f	-	f	-	f2	f2	ℓ3	ℓ2	ℓ2	c2	c
29	f2	f	f2	f	f3	f	f	ℓc	ℓc	ℓ	ℓ	ℓh
30	-	f2	f2	-	f	-	-	-	-	-	-	ℓ
31	f2	f2	f2	f	f2	f3	f	ℓ4	ℓ3	ℓ2	ℓ2	c
Median	-	-	-	-	-	-	-	-	-	-	-	-
Count	-	-	-	-	-	-	-	-	-	-	-	-
UQ	-	-	-	-	-	-	-	-	-	-	-	-
LQ	-	-	-	-	-	-	-	-	-	-	-	-
QR	-	-	-	-	-	-	-	-	-	-	-	-

OSPHERIC DATA
to 25 Mc in 0.5 minute
May 1965

0	11	12	13	14	15	16	17	18	19	20	21	22	23
2	ℓ	-	-	-	-	-	-	-	-	-	-	-	-
2	ℓ	ℓ5	ℓ	c	ℓ	-	-	-	-	-	-	f	-
2	ℓ3	ℓ2	ℓ	-	ℓ	ℓ	ℓ4	ℓ2	-	-	-	f	-
2	ℓ	ℓ	·	ℓ	-	-	-	-	-	-	-	-	-
ℓ	ℓ	ℓ	ℓ2	ℓ3	-	ℓ	c	f8	f	f3	f7	f6	f5
3	ℓ2	ℓ3	ℓ5	ℓ2	ℓ	c	-	-	-	-	f	f	f2
2	ℓ3	ℓ	ℓ3	ℓ2	ℓ3	ℓ2	ℓ3	f5	f4	f2	f2	f2	-
2	ℓ2	ℓ	ℓ3	ℓ2	ℓ5	ℓ6	ℓ3	ℓ	-	-	-	f	f
ℓ	ℓ	-	-	c	c	c	ℓ	f	f2	-	-	-	-
ℓ	ℓ	-	-	-	ℓ	c	ℓ	f	-	-	-	-	-
c	ℓ	ℓ3	ℓ3	ℓ2	ℓc	cℓ	f	-	-	-	-	-	-
-	ℓ2	ℓ	ℓ5	ℓ3	ℓ3	ℓ2	ℓ	ℓ2	f4	f	f	f	f
-	-	-	-	-	-	-	ℓ	-	f	-	-	f	-
3	ℓ2	ℓ3	ℓ3	ℓ3	ℓ5	ℓ3	ℓ	ℓ	f4	f7	f2	f	-
ℓ	cℓ	ℓc	ℓc	ℓ3	ℓ3	ℓ3	ℓ4	ℓ2	f3	f	·	-	-
2	ℓ2	ℓ	ℓ2	ℓ3	ℓ2	ℓ4	ℓ4	ℓ2	f3	-	-	-	-
ℓ	ℓc	ℓ	-	-	-	-	ℓ	f	-	-	-	f6	f
-	ℓc	ℓ	-	-	ℓ	ℓ	ℓ2c	ℓ	-	-	-	-	-
-	-	ℓ2	ℓ	ℓ	c	-	ℓ	-	f2	f	-	f2	f2
4	ℓ3	ℓ4	ℓ3	ℓ3	ℓ4	ℓ2	ℓc	ℓc	f3	f2	-	-	-
c	ℓc	ℓ	ℓ3	c	c2	c	-	-	-	f	-	-	-
2	ℓ	ℓ3	ℓ2	ℓ	ℓ3	ℓ3	ℓ5	ℓ8	f6	-	-	-	-
3	ℓ2	ℓ	ℓ	c4	c4	ℓ3	ℓ3	ℓ2	-	-	f	f	f2
2	ℓ3	ℓ2	ℓ	c	c3	c	ℓ2	f	f	f6	f2	-	-
ℓ	c	c	-	ℓ2	ℓ2	ℓ2	ℓ2	ℓ2	f7	f2	-	-	-
2	ℓ4	ℓ	ℓ	ℓ	ℓc	ℓ3	ℓ3	f	f2	f	f	-	-
-	-	ℓ	-	-	-	-	-	-	-	-	-	-	-
2	c	c2	ℓ4	ℓ3	ℓ2	ℓ	ℓ	ℓ	f	-	f3	f2	f3
ℓ	ℓh	ℓ3	c5	c4	ℓ5	ℓ4	ℓ7	ℓ7	f2	f6	f2	f	-
-	ℓ	-	ℓh	ℓ2	ℓ2	c2ℓ	c2ℓ	-	-	-	-	f	f3
2	c	c	c	c2	c	c2	ℓ	ℓ	-	-	f	-	-
-	-	-	-	-	·	-	-	-	-	-	-	-	
-	-	-	·	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-

2

MEDIAN VALUES MAY 1965

Hour Local	fmin (Mc)	foF2 (Mc)	M(3000)F2	h'F2 (km)	h'F (km)	foF1 (Mc)	M(3000)F1	foE* (Mc)	h'E (km)	fbEs (Mc)	foEs (Mc)	h'Es (km)
00	2.0	4.1	3.00	-	310	-	-	-	-	2.4	3.0	108
01	1.6	3.6	3.15	-	288	-	-	-	-	1.7	2.7	110
02	1.5	3.6	3.30	-	260	-	-	-	-	2.0	3.0	110
03	1.5	2.9	3.42	-	250	-	-	-	-	1.7	3.0	111
04	1.3	2.5	3.53	-	250	-	-	-	-	1.6	2.9	110
05	1.6	2.3	3.45	-	275	-	-	-	-	-	3.0	110
06	2.3	3.6	3.40	-	260	-	-	-	-	2.7	3.3	110
07	2.4	6.0	3.25	280	240	-	-	-	-	2.9	3.8	110
08	2.7	6.9	3.00	300	230	-	-	-	-	3.4	4.7	115
09	2.8	7.3	2.70	355	210	4.4	3.78	-	117	3.5	4.7	110
10	3.0	7.4	2.50	380	210	4.4	3.95	-	110	3.8	5.5	110
11	3.0	7.0	2.45	400	210	4.5	4.02	-	-	4.2	5.3	110
12	3.0	7.2	2.50	400	200	4.5	4.10	-	-	4.0	6.0	108
13	3.0	7.6	2.50	400	200	4.4	4.10	3.50	120	4.8	7.7	103
14	3.0	7.9	2.60	375	220	4.4	4.00	-	120	4.7	7.0	110
15	2.9	8.2	2.60	350	210	4.3	3.80	3.15	120	4.0	5.5	105
16	2.5	8.5	2.70	335	220	4.1	3.72	-	120	3.6	4.9	110
17	2.5	8.9	2.80	340	230	-	-	-	-	3.5	4.2	105
18	2.3	9.2	2.95	340	250	-	-	-	-	2.9	3.8	105
19	2.3	9.5	3.20	-	240	-	-	-	-	2.7	3.8	100
20	2.3	8.1	3.25	-	230	-	-	-	-	2.8	3.6	100
21	2.3	6.3	3.25	-	248	-	-	-	-	2.9	3.5	100
22	2.3	5.1	3.10	-	280	-	-	-	-	2.6	3.2	110
23	2.3	4.3	3.05	-	300	-	-	-	-	-	3.3	110

*Insufficient data for reliable median

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS
BANGKOK, THAILAND
MAY 1965

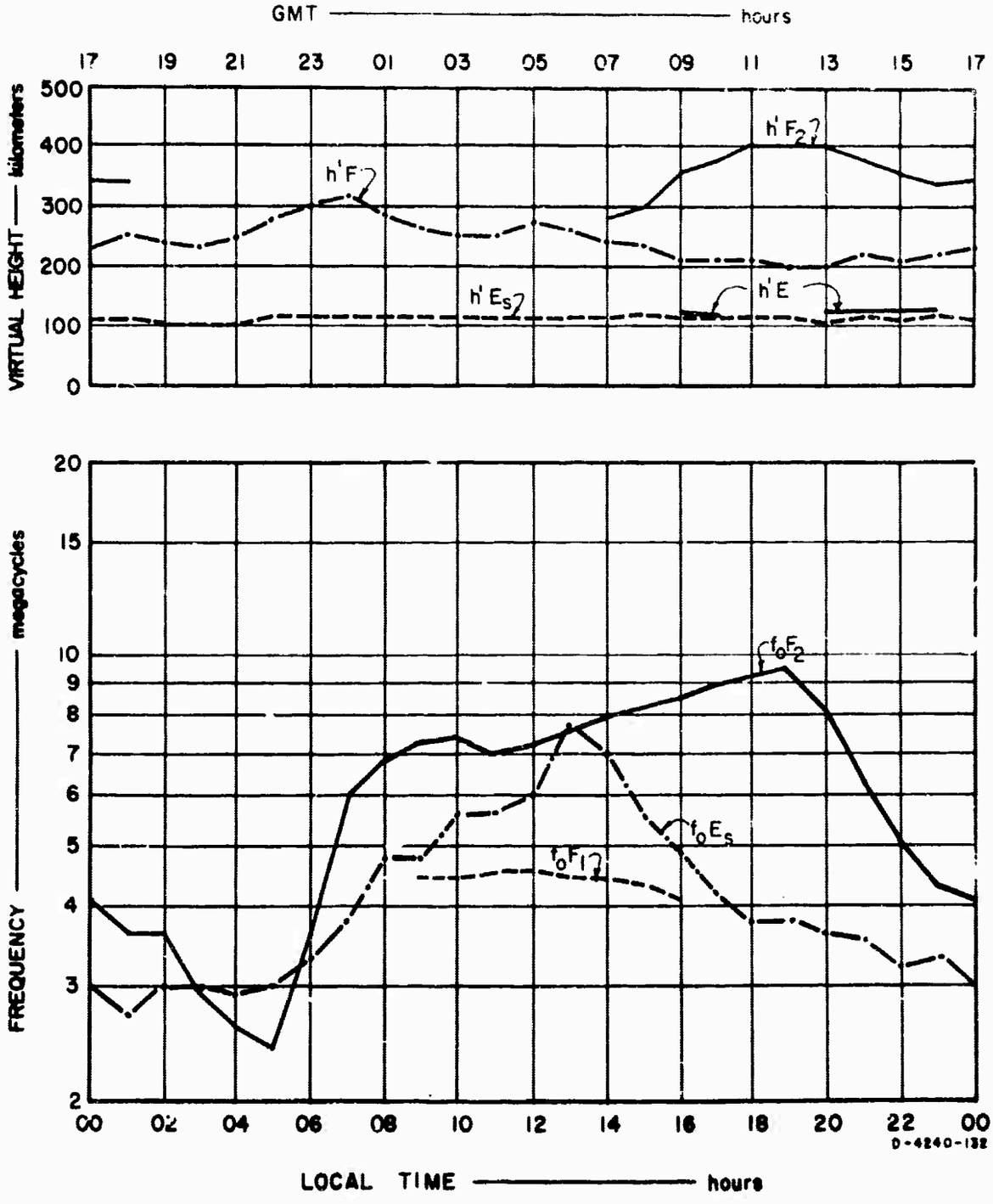

FIG. 1 SUMMARY GRAPHS

STANFORD
RESEARCH
INSTITUTE

MENLO PARK
CALIFORNIA

Regional Offices and Laboratories

Southern California Laboratories
820 Mission Street
South Pasadena, California 91031

Washington Office
808–17th Street, N.W.
Washington, D.C. 20006

New York Office
270 Park Avenue, Room 1770
New York, New York 10017

Detroit Office
1025 East Maple Road
Birmingham, Michigan 48011

European Office
Pelikanstrasse 37
Zurich 1, Switzerland

Japan Office
Nomura Security Building, 6th Floor
1–1 Nihonbashidori, Chuo-ku
Tokyo, Japan

Retained Representatives

Toronto, Ontario, Canada
Cyril A. Ing
67 Yonge Street, Room 710
Toronto 1, Ontario, Canada

Milan, Italy
Lorenzo Franceschini
Via Macedonio Melloni, 49
Milan, Italy