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Ionospheric Data Report — April 1965

IONOSPHERIC DATA: BANGKOK, THAILAND

Compiled by: VICHAI T. NIMIT

Prepared for:

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

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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



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RESOLUTION TEST CHART

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NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST CHART

STANFORD RESEARCH INSTITUTE

MENLO PARK, CALIFORNIA



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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 μ sec

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_oE_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.)

¹W. 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_oE. (This is usually 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_oE 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.

IONOSPHERIC DATA

: 1 Mc to 25 Mc in 0.5 minute

April 1965

09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C	025	E019S	E020S	E025S	E025S	E022S	E020S	E022S	E018S	E017S	E018S	E018S	E016S	E016S
022	026	C	E025S	036	036	035	019	030	022	020	018	E020S	018	E017S
C	E060C	E028S	030	030	026	025	025	028	E019S	019	019	017	017	E018S
025	027	027	030	029	030	028	025	022	018	E018S	E019S	E018S	E018S	E018S
027	025	028	030	029	028	C	C	028	020	019	019	017	E019S	018
026S	E030S	E030S	E030S	030	C	030	024	021	E020S	019	019	E018S	E019S	E018S
025	028	B	E030S	030	026	025	020	029	020	020	E019S	020	016	E018S
030	030	030	030	E030S	035	035	023	028	020	019	023	020	020	019
025	025	029	030	030	036	034	026	020	019	018	019	018	019	018
032	028	028	030	030	025	031	024	030	019	019	019	019	018	019
030	028	E030S	E030S	025	040	035	021	029	022	018	018	018	E020S	E018S
026	025	028	029	029	040	029	027	026	020	019	020	019	019	018
026	028	028	028	026	037	034	028	028	E025S	020	020	019	019	017
032	028	029	030	030	030	028	026	026	020	024	020	020	020	018
026	026	029	029	029	035	034	032	026	020	C	C	C	C	C
035	029	030	036	030	029	033	025	E023S	020	020	020	020	E020S	018
032	034	025	030	030	030	034	022	029	022	019	020	019	C	019
024	025	026	028	030	034	034	C	024	024	023	022	023	E020S	019
026	E030S	036	041	038	E028S	030	026	E023S	021	021	020	E020S	E020S	E020S
033	034	034	036	036	035	028	025	020	E022S	E022S	020	020	020	020
028	028	030	023	029	028	029	035	027	022	022	021	024	022	022
031	028	030	030	029	029	027	024	024	020	023	028	023	022	022
028	027	039	035	026	040	035	024	028	027	023	024	022	022	020
033	029	039	037	039	035	031	030	033	025	024	023	023	025	023
033	030	035	036	035	032	029	C	028	023	023	022	E023S	020	020
032	029	035	035	033	028	029	026	026	023	020	022	020	020	020
032	033	034	039	031	040	034	034	028	025	024	020	023	023	021
024	029	037	028	030	035	034	026	026	020	024	022	022	023	020
029	035	E027S	E029S	E030S	E029S	E025S	E022S	E025S	E020S	E020S	E019S	E022S	E020S	E018S
025	028	029	027	028	026	028	029	024	023	023	023	022	E022S	E024S
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
028	028	030	030	030	030	030	024	026	020	020	020	020	020	019
28	30	28	30	30	29	29	27	30	30	29	29	29	28	29
032	030	034	033	030	035	034	026	028	022	023	022	022	021	020
026	027	028	029	029	028	028	022	024	020	019	019	018	018	018
6	3	6	4	1	7	6	4	4	2	4	3	4	3	2

Characteristic: f_{min}

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

April 1965

Observed at:

Bangkok, Thailand

Lat. 13.73° N, Long. 100.57° E

105° E Mer. Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	1
1	018*	EC13S	E013S	012	E011S	E015S	E018S	E017S	E018S	?	023	E019S	E026S	E0
2	E016S	015	016	015	014	014	E018S	019	E019S	022	026	?	E025S	(
3	018	017	017	013	013	017	C	E040C	E055C	C	E060C	E028S	030	(
4	016	015	014	013	013	014	017	E020S	E023S	025	027	027	030	(
5	E017S	015	016	016	016	E015S	E018S	020	022	027	025	028	030	(
6	016	014	014	B	B	B	020	021	031	E026S	E030S	E030S	E030S	(
7	E017S	015	014	012	012	E015S	E018S	019	021	025	028	B	E030S	(
8	016	015	014	012	013	E015S	E019S	020	021	030	030	030	030	E0
9	016	015	012	E	011	E015S	E023S	020	020	025	025	029	030	(
10	017	016	014	012	014	E015S	E019S	018	028	032	028	028	030	(
11	E017S	016	015	014	015	015	E017S	020	020	030	028	E030S	E030S	(
12	016	014	013	016	013	014	E019S	020	020	023	025	028	029	(
13	017	016	013	015	015	016	E020S	021	028	026	028	028	028	(
14	016	015	014	012	012	E015S	020	020	029	032	028	029	030	(
15	E016S	016	015	013	012	E015S	E020S	020	023	026	026	029	029	(
16	E016S	015	013	014	012	E012S	019	020	020	025	029	030	036	(
17	E016S	E015S	015	014	015	E015S	E020S	022	027	032	034	025	030	(
18	E016S	015	012	012	012	016	018	018	020	024	025	026	028	(
19	018	014	013	E	012	017	E023S	E024S	E024S	026	E030S	036	041	(
20	018	014	015	014	013	013	E020S	023	024	033	034	034	036	(
21	019	016	014	015	016	019	E025S	023	023	028	028	030	026	(
22	019	018	016	013	013	E015S	024	024	025	031	028	030	030	(
23	019	015	017	018	017	019	023	026	029	028	027	039	035	(
24	019	015	014	016	012	019	020	025	025	033	029	039	037	(
25	019	015	E012S	012	E	012	E020S	023	030	033	030	035	036	(
26	018	015	014	012	012	E015S	E020S	025	029	032	029	035	035	(
27	019	E014S	E014S	013	012	E018S	E023S	022	029	032	033	034	039	(
28	019	015	015	017	011	016	024	022	025	024	029	037	028	(
29	020	017	016	014	E	016	023	023	025	029	035	E027S	E029S	E0
30	E018S	015	014	014	012	017	E027S	E025S	026	025	028	029	027	(
31	-	-	-	-	-	-	-	-	-	-	-	-	-	(
Median	017	015	014	014	013	015	020	021	025	026	028	030	030	(
Count	30	30	30	27	27	29	29	30	30	28	30	28	30	(
UQ	019	016	015	015	014	016	023	023	028	032	030	034	033	(
LQ	016	015	014	012	012	015	018	020	021	026	027	028	029	(
QR	3	1	2	3	2	1	5	3	7	6	3	6	4	(

* Tabulation of G18 = 1.8 Mc.

2

IONOSPHERIC DATA
Mc to 25 Mc in 0.5 minute

April 1965

10	11	12	13	14	15	16	17	18	19	20	21	22	23
076	073	078	080	083	089	091	096	096	093	U080F	D075S	D075R	D070S
074	072	071	078	091	080	091	091	093	093	094	F	081	071
068	070	074	075	076	081	092	093	094	091	087	087	086	072
075	066	065	067	066	075	085	083	085	085	090	R	S	S
075	066	071	074	076	C	C	090	094	100	102	098	06	F
069	065	061	067	C	073	083	085	088	082	080	084	090	085
076	066	066	069	075	082	092	095	097	U095S	094	100	090	068
061	057	061	065	073	078	087	088	088	088	085	083	095	065
068	071	075	075	035	085	090	090	096	097	097	095	083	077
086	U090R	083	081	034	090	095	101	102	J110R	100	084	074	053
081	066	066	067	075	082	080	084	085	089	084	085	U078S	069
089	R	084	086	091	093	094	103	J110S	U106S	099	091	077	068
080	072	076	085	098	104	100	102	105	098	097	102	088	078
072	072	072	076	085	084	087	092	091	094	U089S	084	067	066
036	067	074	083	090	095	098	103	103	C	C	C	C	C
080	073	073	078	085	088	093	095	106	J101R	U094S	083	075	062
063	065	066	070	075	083	093	099	100	094	087	081	080	U083S
063	063	068	079	080	083	C	108	110	095	075	043	036	032
093	095	097	097	101	102	103	110	S	J131R	J102S	088	077	068
078	075	076	080	084	089	099	109	121	115	089	074	059	050
070	063	065	067	077	084	087	095	108	097	089	082	077	F
069	059	063	A	071	084	092	093	095	092	093	083	F	F
064	062	067	074	079	082	087	095	110	R	086	074	063	053
064	067	068	072	077	082	088	087	095	095	088	078	066	056
081	073	075	077	082	092	104	114	105	095	084	058	050	050
065	066	070	079	081	089	094	097	107	J118S	097	043	035	A
059	062	064	073	079	085	088	089	091	103	085	070	066	051
075	068	072	080	086	094	098	103	104	098	090	071	052	045
061	A	064	064	072	088	093	097	095	098	087	059	049	C40F
070	071	073	076	082	093	101	096	094	085	075	071	F	F
-	-	-	-	-	-	-	-	-	-	-	-	-	-
071	067	071	076	081	085	092	095	096	095	089	083	075	066
30	28	30	29	29	29	28	30	29	28	29	27	26	23
078	072	075	080	085	091	096	102	105	100	095	087	081	071
065	065	066	070	076	082	088	090	094	093	085	071	063	051
13	7	9	10	9	9	8	12	11	7	10	16	18	20

Characteristic: foF₂

IONOSPHERIC DATA

Step: 1 Mc to 25 Mc in 0.5 minute

Observed at:

April 1965

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	12	13
1	S	S	U048S	034*	D020A	A	A	054	071	C	076	073	078	080
2	J083S	095	054	031	A	A	024	055	069	J078R	074	072	071	078
3	F	063	049	025	A	A	C	U056C	066	C	068	070	074	075
4	060	055	042	021	A	A	025	055	073	085	075	066	065	067
5	S	077	067	F	F	A	025	055	065	075	075	066	071	074
6	044	047	F	B	B	B	024	059	070	075	069	065	061	067
7	F	067	062	046	023	A	028	058	067	071	076	066	066	069
8	066	066	051	037	030	026	032	057	070	073	061	057	061	065
9	062	058	040	031	026	021	J29	060	070	073	068	071	075	075
10	064	057	044	039	039	026	031	061	075	083	086	U090R	083	081
11	045	045	043	037	031	024	032	060	073	081	081	066	066	067
12	057	065	077	U052S	F	F	F	060	071	084	089	R	084	086
13	058	067	053	027	020	A	031	062	070	078	080	072	076	085
14	083	056	032	025	016	A	029	062	076	079	072	072	072	076
15	066	085	054	042	029	A	031	060	071	073	066	067	074	083
16	056	061	052	031	023	016	030	055	066	075	080	073	073	078
17	057	067	046	031	027	A	A	056	067	072	063	065	066	070
18	080	S	066	050	045	031	033	061	072	076	063	063	068	079
19	A	036	024	017	A	A	030	065	083	089	093	095	097	097
20	065	060	049	043	036	F	U032F	064	071	079	078	075	076	080
21	039	035	031	032	A	037	U037R	066	076	077	070	063	065	067
22	070	F	F	F	F	F	032	062	072	076	069	059	063	A
23	F	S	S	F	F	J029F	034	059	067	069	064	062	067	074
24	040	037	034	030	025	023	034	061	073	077	064	067	068	072
25	044	048	040	031	026	020	032	064	071	079	081	073	075	077
26	U046S	044	F	F	A	A	032	064	075	076	065	066	070	079
27	U032S	A	S	A	A	A	032	062	077	078	059	062	064	073
28	F	F	047	U029F	U029R	A	034	058	070	075	075	068	072	080
29	S	S	U044S	F	F	A	033	060	071	071	061	A	064	064
30	047F	F	U039F	U033F	U030F	B	034	058	072	079	070	071	073	076
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	058	058	047	031	027	025	032	060	071	077	071	067	071	076
Count	22	22	25	23	17	10	26	30	30	28	30	28	30	29
UQ	068	065	053	039	030	029	033	062	073	079	078	072	075	080
LQ	045	047	040	029	023	021	029	057	070	074	065	065	066	070
QR	21	18	13	10	7	8	4	5	3	5	13	7	9	10

* Tabulation of 034 = 3.4 Mc.

2

IONOSPHERIC DATA

p: 1 Mc to 25 Mc in 0.5 minute

April 1965

09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C	260	240	230	270	265	270	285	275	285	275	U270F	S	R	S
R	255	265	255	260	300	295	305	310	310	315	315	F	310	300
C	260	265	265	275	260	270	300	305	300	310	310	320	320	320
290	250	255	255	245	270	270	295	285	300	300	305	R	S	S
260	235	255	255	260	260	C	C	285	305	315	340	340	315	F
230	240	250	270	260	C	255	275	290	290	280	285	295	320	320
280	230	240	255	265	280	255	295	300	310	U310S	305	325	340	305
250	250	260	250	250	260	270	280	295	300	295	290	310	320	295
255	260	260	280	245	245	265	275	280	255	300	320	310	330	335
310	270	U250R	240	245	255	275	305	305	315	R	280	330	335	310
285	230	250	240	245	265	280	265	260	270	285	290	305	U300S	280
310	260	R	235	255	270	265	265	280	S	U325S	325	330	335	335
310	230	240	260	270	285	300	300	300	315	320	315	320	330	320
225	250	250	245	260	260	260	275	275	275	275	U315S	305	300	300
265	250	250	260	265	280	280	300	305	310	C	C	C	C	C
280	245	235	250	250	260	270	290	300	310	R	U310S	310	300	290
260	275	245	260	265	250	270	290	310	265	295	290	295	310	U320S
250	260	270	270	255	235	265	C	245	315	325	330	325	330	360
275	245	250	275	270	280	275	290	295	S	R	S	310	320	310
270	240	255	255	255	260	270	285	310	320	340	325	310	290	270
250	240	255	240	250	270	280	280	290	310	310	300	300	290	F
260	220	260	250	A	260	280	300	300	310	310	310	305	F	F
245	250	250	260	260	280	280	290	300	325	R	335	330	320	300
260	270	250	250	255	260	265	265	270	280	315	320	320	305	290
270	225	240	250	250	260	280	300	330	330	335	355	335	320	330
260	250	245	250	250	270	280	295	305	310	S	360	350	310	A
250	280	240	250	260	270	280	285	280	285	320	330	325	310	300
265	220	240	270	270	280	295	310	310	310	315	330	340	300	300
240	250	A	250	245	255	285	300	310	315	320	340	315	285	265F
250	270	260	235	260	275	290	320	320	330	325	310	320	F	F
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
265	250	250	252	260	260	275	290	300	310	312	315	320	315	300
27	30	28	30	29	29	28	28	30	28	24	28	26	25	22
280	260	257	260	265	272	280	300	305	315	320	330	330	325	320
250	240	240	250	250	260	268	280	280	295	298	302	310	300	295
30	20	17	10	15	12	12	20	25	20	22	28	20	25	25

Characteristic: M(3000)F2

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

April 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	12	13
1	S	S	U350S	365 ⁺	A	A	A	330	305	C	260	240	230	270
2	S	360	365	360	A	A	335	340	320	R	255	265	255	260
3	F	360	370	350	A	A	C	U350C	310	C	260	265	265	275
4	310	335	370	350	A	A	320	335	310	290	250	255	255	245
5	S	340	345	F	F	A	315	345	320	280	235	255	255	260
6	300	330	F	B	B	B	335	350	320	280	240	250	270	260
7	F	320	340	370	350	A	340	350	330	280	230	240	255	265
8	305	335	345	345	330	330	315	330	290	250	250	260	250	250
9	300	345	350	340	345	335	325	335	310	255	260	260	280	245
10	325	350	340	335	360	350	320	350	330	310	270	U250R	240	245
11	300	315	325	340	350	350	325	350	325	285	230	250	240	245
12	285	300	355	U355S	F	F	F	355	330	310	260	R	235	255
13	320	330	370	345	345	A	320	350	310	310	230	240	260	270
14	350	370	340	350	345	A	320	330	300	225	250	250	245	260
15	305	325	345	355	365	A	330	340	315	265	250	250	260	265
16	275	310	355	350	340	380	330	350	315	280	245	235	250	250
17	300	350	370	345	340	A	A	340	310	260	275	245	260	265
18	310	S	330	330	340	350	325	340	305	250	260	270	270	255
19	A	325	300	275	A	A	300	305	300	275	245	250	275	270
20	290	275	290	310	350	F	U340F	345	305	270	240	255	255	255
21	320	280	300	320	A	345	U340R	325	310	250	240	255	240	250
22	305	F	F	F	F	F	350	345	315	260	220	260	250	A
23	F	S	S	F	F	U360F	335	330	280	245	250	250	260	260
24	275	295	325	330	350	325	320	325	300	260	270	250	250	255
25	290	330	350	350	350	350	355	340	320	270	225	240	250	250
26	U305S	330	F	F	A	A	345	345	310	260	250	245	250	250
27	U285S	A	S	A	A	A	340	330	310	250	280	240	250	260
28	F	F	365	U330F	U345R	A	340	350	300	265	220	240	270	270
29	S	S	U345S	F	F	A	340	325	280	240	250	A	250	245
30	285F	F	U300F	F	F	B	335	325	300	250	270	260	235	260
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	305	332	345	345	345	350	335	340	310	265	250	250	252	260
Count	21	22	25	22	15	10	26	30	30	27	30	28	30	29
UQ	315	350	360	350	350	350	340	350	320	280	260	257	260	265
LQ	290	320	328	330	340	335	320	330	300	250	240	240	250	250
QR	25	30	32	20	10	15	20	20	20	30	20	17	10	15

* Tabulation of 365 = factor of 3.65.

2

IONOSPHERIC DATA

Step: 1 Mc to 25 Mc in 0.5 minute

April 1965

09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C	340 ⁴⁸	330	368	340	300	E340A	E330A	340	-	-	-	-	-	-
340	370	360	360	370	310	328	L	300	L	-	-	-	-	-
C	360	360	350	340	L	340	308	285	L	-	-	-	-	-
330	356	370	410	370	345	330	L	E320A	L	-	-	-	-	-
330	370	400	380	368	340	C	C	L	L	-	-	-	-	-
L	390	E400A	410	390	C	380	320	L	-	-	-	-	-	-
E315A	380	405	400	360	350	340	300	L	-	-	-	-	-	-
L	L	400	385	400	360	340	300	L	-	-	-	-	-	-
338	380	370	330	L	360	340	300	L	-	-	-	-	-	-
L	340	350	345	370	340	330	290	L	L	-	-	-	-	-
L	360	380	400	400	360	330	L	L	-	-	-	-	-	-
310	333	L	350	355	330	340	L	L	-	-	-	-	-	-
L	L	380	370	340	320	300	290	L	-	-	-	-	-	-
L	350	380	390	350	345	328	330	L	L	-	-	-	-	-
L	400	390	370	350	345	320	315	L	-	-	-	-	-	-
350	360	380	370	350	350	330	300	L	-	-	-	-	-	-
350	380	400	400	370	L	350	305	290	L	-	-	-	-	-
L	390	410	375	340	L	310	-	L	-	-	-	-	-	-
L	L	345	330	320	330	315	320	L	-	-	-	-	-	-
L	L	360	L	360	330	330	320	270	-	-	-	-	-	-
E370A	360	400	405	400	350	320	300	L	-	-	-	-	-	-
L	L	420	E440A	A	370	340	300	L	-	-	-	-	-	-
L	390	410	390	370	330	320	300	L	-	-	-	-	-	-
350	L	400	400	380	350	330	L	L	-	-	-	-	-	-
320	250	400	380	360	360	325	300	275	-	-	-	-	-	-
L	400	380	380	350	340	330	320	300	L	-	-	-	-	-
L	L	400	410	380	340	350	330	L	L	-	-	-	-	-
350	365	400	370	355	340	317	300	L	L	-	-	-	-	-
340	380	A	425	400	380	330	315	290	-	-	-	-	-	-
330	360	370	E420A	E440A	350	320	290	280	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
338	365	385	380	364	345	330	300	290	-	-	-	-	-	-
15	23	28	29	28	28	29	23	10	-	-	-	-	-	-
350	380	400	402	380	350	340	320	300	-	-	-	-	-	-
330	350	365	369	350	330	320	300	280	-	-	-	-	-	-
20	24	35	33	30	20	20	20	20	-	-	-	-	-	-

Characteristic: h'F₂

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 min

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

April 1965

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	-	-	-	-	-	-	-	L	300L	C	340 ⁸	330	368
2	-	-	-	-	-	-	-	-	L	340	370	360	360
3	-	-	-	-	-	-	-	E280C	E330C	C	360	360	350
4	-	-	-	-	-	-	-	L	L	330	356	370	410
5	-	-	-	-	-	-	-	L	L	330	370	400	380
6	-	-	-	-	-	-	-	-	315	L	390	E400A	410
7	-	-	-	-	-	-	-	-	L	E315A	380	405	400
8	-	-	-	-	-	-	-	L	L	L	L	400	385
9	-	-	-	-	-	-	-	L	300	338	380	370	330
10	-	-	-	-	-	-	-	L	289	L	340	350	345
11	-	-	-	-	-	-	-	L	L	L	360	380	400
12	-	-	-	-	-	-	-	L	280	310	333	L	350
13	-	-	-	-	-	-	-	250	E270A	L	L	380	370
14	-	-	-	-	-	-	-	L	L	L	350	360	390
15	-	-	-	-	-	-	-	L	L	L	400	396	370
16	-	-	-	-	-	-	-	L	L	350	360	380	370
17	-	-	-	-	-	-	-	L	300	350	380	400	400
18	-	-	-	-	-	-	-	L	L	L	390	410	375
19	-	-	-	-	-	-	-	L	L	L	L	345	330
20	-	-	-	-	-	-	-	L	L	L	L	360	L
21	-	-	-	-	-	-	-	L	L	E370A	360	400	405
22	-	-	-	-	-	-	-	L	L	L	L	420	E440A
23	-	-	-	-	-	-	-	L	L	L	390	410	390
24	-	-	-	-	-	-	-	L	L	350	L	400	400
25	-	-	-	-	-	-	-	L	300	320	350	400	380
26	-	-	-	-	-	-	-	L	L	L	400	380	380
27	-	-	-	-	-	-	-	L	L	L	L	400	410
28	-	-	-	-	-	-	-	L	L	350	365	400	370
29	-	-	-	-	-	-	-	L	L	340	380	A	425
30	-	-	-	-	-	-	-	290	L	330	360	370	E420A
31	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	-	-	-	-	-	-	-	280	300	338	365	385	380
Count	-	-	-	-	-	-	-	3	9	15	23	28	29
UQ	-	-	-	-	-	-	-	285	307	350	380	400	402
LQ	-	-	-	-	-	-	-	265	285	330	350	365	369
QR	-	-	-	-	-	-	-	20	22	20	24	35	33

* Tabulation of 340 = 340 km.

2

IONOSPHERIC DATA

pp: 1 Mc to 25 Mc in 0.5 minute

April 1965

09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C	210	200	205	200	E200A	A	A	A	E335A	230	275	275	230	240
A	210	200	200	200	200	190	E200A	240	E250B	265	270	260	240	260
C	E200A	200	190	200	195	175H	230	225	240	266	270	250	230	226
210	E220A	A	200	190	240	180H	E200A	A	245	230	270	235	U210S	U210S
E280A	205	200	E220A	200	200	C	C	250	250	250	230	235	U255S	270
205	E280A	A	A	A	C	E220A	E285A	E240A	265	E310A	310	260	240	250
A	A	A	A	E230A	E200A	E300A	E200A	240	260	270	260	260	230	250
210	200	190	E200A	180	E190B	200H	180H	250	260	230	290	270	240	260
210	E200A	205	E200A	E190A	200	200	200	230	250	260	250	240	230	230
230	200	200	210	200	200	200	200	230	250	260	250	240	230	230
E220A	E200A	E208A	A	E220A	E230B	210	215	235	250	260	230	250	235	260
220	205	205	200	200	E220B	200	200H	E240A	258	246	230	226	228	300
E310A	185	210	209	210	210	E200B	200	230	F240S	255	256	250	230	230
210H	200	E205A	200	190	E190A	190	190H	F240A	270	275	250	230	240	250
200	180	180	180	175	E180B	E200B	E220B	235	250	C	C	C	C	C
A	200	220	205	190	190	190	230	230	245	260	280	270	270	300
E220A	200	200	190	200	190	130H	220	E230B	250	270	300	280	280	270
E220A	200	200	190	180H	200	E220B	C	250	260	236	220	250	275	260
E200A	210	205	E240B	E210B	210	220	F220A	270	260	250	220	220	240	255
210	205	A	E210A	3340A	220	E200B	225	E230A	250	220	235	250	250	255
A	E260A	A	A	E250A	200	210	230	220	250	250	270	290	U350S	350
208	210	250	A	A	A	E240A	E206A	240	260	270	270	280	300	U280F
220	200	200	200	E210A	E250B	210	220	E210B	250	240	230	230	260	300
220	200	210	E200B	E200B	200	220	230	E250B	260	258	250	250	250	300
230B	E220A	E210A	E220A	E270A	E240A	E215A	210	230	240	230	220	240	280	250
220	200	E210A	E210A	200	200	E220A	225	230	250	235	200	E245A	E300A	A
240A	E240A	200	E210B	200	E240B	200	E230B	235	240	240	220	250	270	300
210A	200	190	190	E200A	200	200	210	235	270	260	246	240	E300A	E340A
200	E220A	A	190	210	210	200	210	230	280	250	220	265	310	E390A
200	180	210	A	A	A	200	220	225	245	250	270	270	260	270
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
215	200	202	200	200	200	200	215	235	250	258	250	250	250	260
24	29	24	24	27	27	28	27	28	30	29	29	29	29	28
220	210	210	210	210	220	217	225	240	260	270	270	267	280	300
209	200	200	195	190	200	200	200	230	250	248	230	240	233	250
11	10	10	15	20	20	17	25	10	10	22	40	27	47	50

Characteristic: h'F

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

April 1965

Observed at:

Bangkok, Thailand

Lat. 13.73° N, Long. 100.57° E

105° E Mean Time (CMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
1	260*	240	205	218	F300A	A	A	245	238	C	210	200	205	200	F200A
2	230	220	215	210	A	A	E290A	240	E245A	A	210	200	200	200	200
3	250	230	215	220	A	A	C	C	C	C	E200A	200	190	200	190
4	250	245	220H	235	A	A	F290B	240	220	210	E220A	A	200	190	200
5	230	245	235	230	245	A	F300A	246	220	E280A	205	200	E220A	200	200
6	290	225	240	B	B	B	E300B	250	E270A	205	E280A	A	A	A	A
7	270	250	228	210	230	A	E260A	240	E230A	A	A	A	A	E230A	E200A
8	270	235	220	230	245	260	E265S	240	220	210	200	190	E200A	180	E190A
9	285	230	220	230	240	280	E270S	230	217	210	E200A	205	E200A	E190A	200
10	250	230	230	250	229	250	E270A	230	E220A	230	200	200	210	200	200
11	290	260	250	235	230	258	250	240	230	E220A	E200A	E208A	A	E220A	E200A
12	310	280	230	205	260	290	265	240	230	220	205	205	200	200	E200A
13	250	250	220	260	E290A	A	E250S	230	A	E310A	185	210	209	210	200
14	230	210	220	235	250	A	270	240	E210H	210H	200	E205A	200	190	E190A
15	255	250	230	220	220	A	F250A	220	210	200	180	180	180	175	E180A
16	315	270	218	220	230	E230A	260	245	260	A	200	220	205	190	190
17	310	250	220	230	260	A	A	E250A	E230A	E220A	200	200	190	200	190
18	260	270	230	220	220	240	260	240	F240A	E220A	200	200	190	180H	200
19	A	250	300	E370A	A	A	F310S	E250A	220	E200A	210	205	E240B	E210B	200
20	290	300	305	290	230	250	250	260	210	210	205	A	E210A	F340A	200
21	E390A	350	300	270	A	250	E240S	240	230	A	E260A	A	A	E250A	200
22	280	240	240	230	220	240	250	240	E240A	208	210	250	A	A	A
23	275	240	240	230	240	240	265	240	215	220	200	200	200	E210A	E200A
24	330	290	265	270	240	E310B	260	235	230	220	200	210	E200B	E200B	200
25	320	270	230	215	225	266	260	240	245	E230B	E220A	E210A	E220A	E270A	E240A
26	290	230	300	270	A	A	260	220	220	220	200	E210A	E210A	200	200
27	U330S	A	210	A	A	A	E250A	E240A	E240A	E240A	E240A	200	E210B	200	E240A
28	300	260	220	240	250	A	280	E240A	E250A	E210A	200	190	190	E200A	200
29	U320H	U280S	230	230	U270A	A	F300A	E250A	210	200	E220A	A	190	210	200
30	E310A	280	275	260	260	B	260	230	220	200	180	210	A	A	A
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	285	250	230	230	240	250	265	240	230	215	200	202	200	200	200
Count	29	29	30	28	22	13	27	29	28	24	29	24	24	27	20
UQ	310	280	240	255	260	273	280	248	240	220	210	210	210	210	220
LQ	253	238	220	220	230	240	260	240	220	209	200	200	195	190	200
QR	57	42	20	35	30	33	20	8	20	11	10	10	15	20	20

* Tabulation of 260 = 260 km.

2

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

April 1965

00	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C	045 [#]	045	045	044	042	A	A	A	-	-	-	-	-	-
A	044	044	044	045	044	L	L	L	L	-	-	-	-	-
C	044	044	044	044	043	U044L	L	L	L	-	-	-	-	-
U042L	043	A	044	044	043	U043L	L	A	L	-	-	-	-	-
L	044	044	044	045	U044L	C	C	L	L	-	-	-	-	-
U043L	044	A	A	A	C	U047L	L	L	-	-	-	-	-	-
A	A	A	A	045	U044L	L	L	L	-	-	-	-	-	-
U045L	U044L	044	044	045	043	U044H	U040H	L	-	-	-	-	-	-
044	U044L	044	044	044	U046L	U045L	L	L	-	-	-	-	-	-
044	U043L	044	045	044	044	U045L	U039L	L	L	-	-	-	-	-
L	U044L	043	A	045	U045L	U044L	L	L	-	-	-	-	-	-
U044L	U045L	U045L	045	045	045	U041L	L	L	-	-	-	-	-	-
L	L	045	046	044	U044L	U043L	L	L	-	-	-	-	-	-
U044L	044	041	045	045	044	U045L	L	L	L	-	-	-	-	-
L	045	045	045	045	044	U043L	L	L	-	-	-	-	-	-
A	U045L	045	045	045	044	L	L	L	-	-	-	-	-	-
043	045	045	045	045	044	U044L	L	L	L	-	-	-	-	-
U043L	044	044	045	045	L	L	C	L	-	-	-	-	-	-
L	U043L	045	045	U045L	U045L	044	L	L	-	-	-	-	-	-
U044L	044	A	U044L	L	044	L	L	L	-	-	-	-	-	-
A	044	A	A	U046L	045	U043L	L	L	-	-	-	-	-	-
L	044	045	A	A	A	U044L	L	L	-	-	-	-	-	-
U045L	044	045	045	045	U044L	U044L	L	L	-	-	-	-	-	-
044	045	045	045	044	044	043	L	L	-	-	-	-	-	-
U043L	044	045	045	044	045	044	U043L	L	-	-	-	-	-	-
L	U045L	045	045	044	044	U044L	U044L	L	L	-	-	-	-	-
U044L	044	044	044	044	U044L	U044L	L	L	L	-	-	-	-	-
U044L	044	045	045	045	044	043	L	L	L	-	-	-	-	-
042	044	A	044	044	045	043	042	L	-	-	-	-	-	-
042	044	044	A	A	A	044	L	L	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
044	044	045	045	045	044	044	042	-	-	-	-	-	-	-
16	28	24	24	26	26	23	5	-	-	-	-	-	-	-
044	044	045	045	045	045	044	044	-	-	-	-	-	-	-
043	044	044	044	044	044	043	040	-	-	-	-	-	-	-
1	0	1	1	1	1	1	4	-	-	-	-	-	-	-

Characteristic: foF1

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

Observed at:

April 1965

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	12	13
1	-	-	-	-	-	-	-	L	U041L	C	045*	045	045	044
2	-	-	-	-	-	-	-	-	L	A	044	044	044	045
3	-	-	-	-	-	-	-	C	C	C	044	044	044	044
4	-	-	-	-	-	-	-	L	L	U042L	043	A	044	044
5	-	-	-	-	-	-	-	L	L	L	044	044	044	045
6	-	-	-	-	-	-	-	-	L	U043L	044	A	A	A
7	-	-	-	-	-	-	-	-	L	A	A	A	A	045
8	-	-	-	-	-	-	-	L	L	U045L	U044L	044	044	045
9	-	-	-	-	-	-	-	L	L	044	U044L	044	044	044
10	-	-	-	-	-	-	-	L	L	044	U043L	044	045	044
11	-	-	-	-	-	-	-	L	L	L	U044L	045	A	045
12	-	-	-	-	-	-	-	L	L	U044L	U045L	U045L	045	045
13	-	-	-	-	-	-	-	L	A	L	L	045	046	044
14	-	-	-	-	-	-	-	L	L	U044L	044	044	045	045
15	-	-	-	-	-	-	-	L	L	L	045	045	045	045
16	-	-	-	-	-	-	-	L	L	A	U045L	045	045	045
17	-	-	-	-	-	-	-	L	L	043	045	045	045	045
18	-	-	-	-	-	-	-	L	L	U043L	044	044	045	045
19	-	-	-	-	-	-	-	L	L	L	U043L	045	045	U045
20	-	-	-	-	-	-	-	-	L	U044L	044	A	U044L	L
21	-	-	-	-	-	-	-	L	L	A	044	A	A	U046
22	-	-	-	-	-	-	-	L	L	L	044	045	A	A
23	-	-	-	-	-	-	-	L	L	U045L	044	045	045	045
24	-	-	-	-	-	-	-	L	L	044	045	045	045	044
25	-	-	-	-	-	-	-	L	L	U043L	044	045	045	044
26	-	-	-	-	-	-	-	L	L	L	U045L	045	045	044
27	-	-	-	-	-	-	-	L	L	U044L	044	044	044	044
28	-	-	-	-	-	-	-	L	L	U044L	044	045	045	045
29	-	-	-	-	-	-	-	L	L	042	044	A	044	044
30	-	-	-	-	-	-	-	L	L	042	044	044	A	A
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	-	-	-	-	-	-	-	-	-	044	044	045	045	045
Count	-	-	-	-	-	-	-	-	1	16	28	24	24	26
UQ	-	-	-	-	-	-	-	-	-	044	044	045	045	045
LQ	-	-	-	-	-	-	-	-	-	043	044	044	044	044
QR	-	-	-	-	-	-	-	-	-	1	0	1	1	1

* Tabulation of 045 = 4.5 Mc.

2

IONOSPHERIC DATA

cp: 1 Mc to 25 Mc in 0.5 minute

April 1965

09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C	380 [#]	400	420	430	440	A	A	A	-	-	-	-	-	-
A	390	425	405	410	415	L	L	L	L	-	-	-	-	-
C	390	415	410	420	420	U380L	L	L	L	-	-	-	-	-
U380L	400	A	430	445	400	U400L	L	A	L	-	-	-	-	-
L	385	415	415	395	U405L	C	C	L	L	-	-	-	-	-
U380L	380	A	A	A	C	U350L	L	L	-	-	-	-	-	-
A	A	A	A	380	U390L	L	L	L	-	-	-	-	-	-
U370L	U390L	410	410	405	400	U380H	U390H	L	-	-	-	-	-	-
365	U380L	400	410	395	U365L	U370L	I	L	-	-	-	-	-	-
L	U380L	410	415	420	405	U365L	U395L	I	L	-	-	-	-	-
L	U375L	390	A	410	U380L	U380L	L	L	-	-	-	-	-	-
U380L	U395L	U405L	400	410	385	U385L	L	L	-	-	-	-	-	-
L	L	400	400	400	U395L	U395L	L	L	-	-	-	-	-	-
U370L	400	410	400	410	405	U365L	L	L	L	-	-	-	-	-
L	400	405	410	420	390	U380L	L	L	-	-	-	-	-	-
A	U380L	390	400	400	410	L	L	L	-	-	-	-	-	-
385	410	410	410	410	410	U370L	L	L	L	-	-	-	-	-
U380L	380	410	400	335	L	L	C	L	-	-	-	-	-	-
L	U395L	390	390	U400L	U380L	365	L	L	-	-	-	-	-	-
U370L	390	A	U400L	L	390	L	L	L	-	-	-	-	-	-
A	375	A	A	U385L	380	U395L	L	L	-	-	-	-	-	-
L	400	400	A	A	A	U365L	L	L	-	-	-	-	-	-
L	395	410	410	395	U380L	U385L	L	L	-	-	-	-	-	-
370	400	410	400	415	405	390	L	L	-	-	-	-	-	-
U370L	385	385	400	380	380	380	U360L	L	-	-	-	-	-	-
L	U370L	385	395	415	395	U355L	U360L	L	L	-	-	-	-	-
U370L	380	400	400	410	U390L	U375L	L	L	L	-	-	-	-	-
U365L	400	405	400	400	395	380	L	L	L	-	-	-	-	-
390	390	A	415	405	380	375	370	L	-	-	-	-	-	-
400	400	400	A	A	A	380	L	L	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
370	390	405	402	408	395	380	370	-	-	-	-	-	-	-
15	28	24	24	26	26	23	5	-	-	-	-	-	-	-
380	400	410	410	415	405	385	392	-	-	-	-	-	-	-
370	380	400	400	395	380	365	360	-	-	-	-	-	-	-
10	20	10	10	20	25	20	32	-	-	-	-	-	-	-

Characteristic: M(3000)F1

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

Observed at:

April 1965

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	12	13	14
1	-	-	-	-	-	-	-	L	U395L	C	380*	400	420	430	440
2	-	-	-	-	-	-	-	-	L	A	390	425	405	410	420
3	-	-	-	-	-	-	-	C	C	C	390	415	410	420	430
4	-	-	-	-	-	-	-	L	I	U380L	400	A	430	445	450
5	-	-	-	-	-	-	-	L	L	L	385	415	415	395	U400L
6	-	-	-	-	-	-	-	-	L	U380L	380	A	A	A	C
7	-	-	-	-	-	-	-	-	L	A	A	A	A	380	U380L
8	-	-	-	-	-	-	-	L	L	U370L	U390L	410	410	405	410
9	-	-	-	-	-	-	-	L	L	365	U380L	400	410	395	U380L
10	-	-	-	-	-	-	-	L	L	L	U380L	410	415	420	430
11	-	-	-	-	-	-	-	L	L	L	U375L	390	A	410	U380L
12	-	-	-	-	-	-	-	L	L	U380L	U395L	U405L	400	410	380
13	-	-	-	-	-	-	-	L	A	L	L	400	400	400	U380L
14	-	-	-	-	-	-	-	L	L	U370L	400	410	400	410	420
15	-	-	-	-	-	-	-	L	I	L	400	405	410	420	380
16	-	-	-	-	-	-	-	L	L	A	U380L	390	400	400	410
17	-	-	-	-	-	-	-	L	-	385	410	410	410	410	420
18	-	-	-	-	-	-	-	L	L	U380L	380	410	400	385	U400L
19	-	-	-	-	-	-	-	L	L	L	U395L	390	390	U400L	U380L
20	-	-	-	-	-	-	-	-	L	U370L	390	A	U400L	L	380
21	-	-	-	-	-	-	-	L	L	A	375	A	A	U385L	380
22	-	-	-	-	-	-	-	L	L	L	400	400	A	A	410
23	-	-	-	-	-	-	-	L	L	L	380	410	410	395	U380L
24	-	-	-	-	-	-	-	L	L	370	400	410	400	415	420
25	-	-	-	-	-	-	-	L	L	U370L	385	385	400	380	390
26	-	-	-	-	-	-	-	L	L	L	U370L	385	395	415	420
27	-	-	-	-	-	-	-	L	L	U370L	380	400	400	410	U380L
28	-	-	-	-	-	-	-	L	L	U365L	400	405	400	400	410
29	-	-	-	-	-	-	-	L	L	390	390	A	415	405	410
30	-	-	-	-	-	-	-	L	L	400	400	400	A	A	420
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	-	-	-	-	-	-	-	-	-	370	390	405	402	408	380
Count	-	-	-	-	-	-	-	-	1	15	28	24	24	26	30
UQ	-	-	-	-	-	-	-	-	-	380	400	410	410	415	420
LQ	-	-	-	-	-	-	-	-	-	370	380	400	400	395	380
QR	-	-	-	-	-	-	-	-	-	10	20	10	10	20	30

* Tabulation of 380 = factor of 3.8.

23

IONOSPHERIC DATA

Frequency: 1 Mc to 25 Mc in 0.5 minute

April 1965

09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
C	330*	U330A	U360A	350	D350A	D330A	D300A	D240A	-	-	-	-	-	-
A	A	A	A	B	B	B	A	B	B	-	-	-	-	-
C	A	A	A	A	D330R	320	R	B	A	-	-	-	-	-
B	R	A	R	R	R	R	A	A	A	-	-	-	-	-
A	A	A	A	A	A	C	C	B	A	-	-	-	-	-
A	A	A	R	R	C	B	R	A	-	-	-	-	-	-
B	A	A	R	U330A	A	A	A	B	-	-	-	-	-	-
B	330	340	D330A	350	B	330	A	A	-	-	-	-	-	-
A	A	A	A	A	B	E	300	U260R	-	-	-	-	-	-
B	A	A	D320R	A	A	320	300	B	A	-	-	-	-	-
B	A	A	R	B	B	B	R	B	-	-	-	-	-	-
A	A	A	A	A	B	U330R	U310R	R	-	-	-	-	-	-
A	A	A	A	A	B	B	A	B	-	-	-	-	-	-
B	A	A	A	D350A	R	R	300	A	A	-	-	-	-	-
A	A	A	-	-	B	B	R	B	-	-	-	-	-	-
B	A	A	B	A	A	E	320	A	-	-	-	-	-	-
E	B	A	A	A	U350R	B	R	B	B	-	-	-	-	-
A	A	A	A	340	B	B	C	D270R	-	-	-	-	-	-
A	A	A	B	B	A	320	R	A	-	-	-	-	-	-
B	A	A	B	B	B	330	D290A	B	-	-	-	-	-	-
B	B	B	A	A	A	A	B	B	-	-	-	-	-	-
B	A	A	A	A	A	A	A	A	-	-	-	-	-	-
B	A	B	A	A	B	B	A	B	-	-	-	-	-	-
B	A	A	B	B	R	R	U320R	B	-	-	-	-	-	-
B	A	A	A	A	A	A	A	B	A	-	-	-	-	-
B	B	A	B	D340A	B	B	B	B	B	-	-	-	-	-
A	A	B	A	A	B	R	D290A	A	A	-	-	-	-	-
U320R	B	A	U380S	U350S	U350R	U320R	300	-	-	-	-	-	-	-
A	A	A	A	A	A	A	B	E	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	345	350	325	325	300	260	-	-	-	-	-	-
1	2	2	4	7	4	8	10	3	-	-	-	-	-	-
-	-	-	370	350	350	330	310	265	-	-	-	-	-	-
-	-	-	325	340	350	320	300	250	-	-	-	-	-	-
-	-	-	45	10	0	10	10	15	-	-	-	-	-	-

Characteristic: foE

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

April 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	12	13
1	-	-	-	-	-	-	-	U215A	290U	C	330*	U330A	U360A	350
2	-	-	-	-	-	-	-	-	A	A	A	A	A	B
3	-	-	-	-	-	-	-	C	C	C	A	A	A	A
4	-	-	-	-	-	-	-	A	270	B	R	A	R	R
5	-	-	-	-	-	-	-	R	A	A	A	A	A	A
6	-	-	-	-	-	-	-	-	B	A	A	A	R	R
7	-	-	-	-	-	-	-	-	R	B	A	A	R	U330A
8	-	-	-	-	-	-	-	U230R	U280R	B	330	340	D330A	350
9	-	-	-	-	-	-	-	B	A	A	A	A	A	A
10	-	-	-	-	-	-	-	D230A	B	B	A	A	D320R	A
11	-	-	-	-	-	-	-	R	A	B	A	A	R	B
12	-	-	-	-	-	-	-	U230A	A	A	A	A	A	A
13	-	-	-	-	-	-	-	R	B	A	A	A	A	A
14	-	-	-	-	-	-	-	230	B	B	A	A	A	D350A
15	-	-	-	-	-	-	-	A	A	A	A	A	-	-
16	-	-	-	-	-	-	-	R	R	B	A	A	B	A
17	-	-	-	-	-	-	-	B	R	B	B	A	A	A
18	-	-	-	-	-	-	-	R	A	A	A	A	A	340
19	-	-	-	-	-	-	-	B	A	A	A	A	B	B
20	-	-	-	-	-	-	-	-	A	B	A	A	B	B
21	-	-	-	-	-	-	-	B	B	B	B	B	A	A
22	-	-	-	-	-	-	-	A	A	B	A	A	A	A
23	-	-	-	-	-	-	-	B	B	A	A	B	A	A
24	-	-	-	-	-	-	-	B	A	B	A	B	B	B
25	-	-	-	-	-	-	-	A	B	B	A	A	B	B
26	-	-	-	-	-	-	-	B	B	B	A	A	A	A
27	-	-	-	-	-	-	-	A	B	B	B	A	B	D34JA
28	-	-	-	-	-	-	-	A	A	A	A	B	A	A
29	-	-	-	-	-	-	-	A	A	U320R	B	A	U380S	U350S
30	-	-	-	-	-	-	-	S	B	A	A	A	A	A
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	-	-	-	-	-	-	-	230	280	-	-	-	345	350
Count	-	-	-	-	-	-	-	5	3	1	2	2	4	7
UQ	-	-	-	-	-	-	-	230	285	-	-	-	370	350
LQ	-	-	-	-	-	-	-	223	275	-	-	-	325	340
QR	-	-	-	-	-	-	-	7	10	-	-	-	45	10

* Tabulation of 330 = 3.3 Mc.

2

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

April 1965

	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
5A	C	E130A	E125A	E130A	113	E123A	E118S	E118S	S	-	-	-	-	-	-
	A	A	A	A	B	B	B	A	B	B	-	-	-	-	-
	C	A	A	A	A	110*	126	120	B	A	-	-	-	-	-
0	B	118	A	120	120	120	116	A	A	A	-	-	-	-	-
	A	A	A	A	A	A	C	C	B	A	-	-	-	-	-
	A	A	A	110	110	C	B	120	A	-	-	-	-	-	-
0	B	A	A	120	120	A	A	A	B	-	-	-	-	-	-
8	B	120	126	130	120	B	120	A	A	-	-	-	-	-	-
	A	A	A	A	A	B	B	220	120	-	-	-	-	-	-
	B	A	A	120	A	A	135	120	B	A	-	-	-	-	-
	B	A	A	U120S	B	B	B	118	B	-	-	-	-	-	-
	A	A	A	A	A	B	120	120	125	-	-	-	-	-	-
	A	A	A	A	A	B	B	A	B	-	-	-	-	-	-
	B	A	A	A	120	125	120	120	A	A	-	-	-	-	-
	A	A	A	-	-	B	B	125	B	-	-	-	-	-	-
0	B	A	A	B	A	A	B	120	A	-	-	-	-	-	-
OS	D	B	A	A	A	120	B	120	B	B	-	-	-	-	-
	A	A	A	A	B	B	A	U120S	120	A	-	-	-	-	-
	B	A	A	B	B	B	A	120	B	-	-	-	-	-	-
	B	A	A	A	A	A	A	A	B	-	-	-	-	-	-
	A	A	B	A	A	B	B	A	A	-	-	-	-	-	-
	B	A	B	3	B	B	A	B	B	-	-	-	-	-	-
	B	A	A	B	B	125	125	120	B	-	-	-	-	-	-
	B	A	A	A	A	A	A	A	B	A	-	-	-	-	-
	B	A	A	B	120	B	B	B	B	B	-	-	-	-	-
	A	A	B	A	A	B	130	130	A	A	-	-	-	-	-
	U130S	B	110	110	118	E120S	E110S	E118S	-	-	-	-	-	-	-
	A	A	A	A	A	A	A	B	B	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0	130	120	125	120	120	120	120	120	120	-	-	-	-	-	-
	1	3	3	8	9	7	12	16	3	-	-	-	-	-	-
0	-	125	126	125	120	125	122	120	123	-	-	-	-	-	-
8	-	119	118	115	116	120	119	120	120	-	-	-	-	-	-
2	-	6	8	10	4	5	3	0	3	-	-	-	-	-	-

Characteristic: h'F

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minut

Observed at:

Bangkok, Thailand

Lat. 13.73° N, Long. 100.57° E

105° E Mean Time (GMT + 7 hours)

April 1965

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	-	-	-	-	-	-	-	E150A	E155A	C	E130A	E125A	E130A	1
2	-	-	-	-	-	-	-	-	A	A	A	A	A	1
3	-	-	-	-	-	-	-	C	C	C	A	A	A	1
4	-	-	-	-	-	-	-	A	120	B	118	A	120	1
5	-	-	-	-	-	-	-	150	A	A	A	A	A	1
6	-	-	-	-	-	-	-	-	B	A	A	A	110	1
7	-	-	-	-	-	-	-	-	120	B	A	A	120	1
8	-	-	-	-	-	-	-	130	118	B	120	126	130	1
9	-	-	-	-	-	-	-	B	A	A	A	A	A	1
10	-	-	-	-	-	-	-	140	B	B	A	A	120	1
11	-	-	-	-	-	-	-	140	A	B	A	A	E120S	1
12	-	-	-	-	-	-	-	150	A	A	A	A	A	1
13	-	-	-	-	-	-	-	136	B	A	A	A	A	1
14	-	-	-	-	-	-	-	140	B	B	A	A	A	1
15	-	-	-	-	-	-	-	A	A	A	A	A	-	1
16	-	-	-	-	-	-	-	U140S	110	B	A	A	B	1
17	-	-	-	-	-	-	-	B	U130S	B	B	A	A	1
18	-	-	-	-	-	-	-	130	A	A	A	A	A	1
19	-	-	-	-	-	-	-	B	A	A	A	A	B	1
20	-	-	-	-	-	-	-	-	A	B	A	A	B	1
21	-	-	-	-	-	-	-	B	B	B	B	B	A	1
22	-	-	-	-	-	-	-	A	A	B	A	A	A	1
23	-	-	-	-	-	-	-	B	B	A	A	B	A	1
24	-	-	-	-	-	-	-	B	A	B	A	B	B	1
25	-	-	-	-	-	-	-	A	B	B	A	A	B	1
26	-	-	-	-	-	-	-	B	B	B	A	A	A	1
27	-	-	-	-	-	-	-	A	B	B	B	A	B	1
28	-	-	-	-	-	-	-	A	A	A	A	B	A	1
29	-	-	-	-	-	-	-	A	A	U130S	B	110	110	1
30	-	-	-	-	-	-	-	S	B	A	A	A	A	1
31	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Median	-	-	-	-	-	-	-	140	120	130	120	125	120	1
Count	-	-	-	-	-	-	-	10	6	1	3	3	8	1
UQ	-	-	-	-	-	-	-	140	130	-	125	126	125	1
LQ	-	-	-	-	-	-	-	130	118	-	119	118	115	1
QR	-	-	-	-	-	-	-	10	12	-	6	8	10	1

* Tabulation of 110 = 110 km.

2

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

April 1965

	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
7	C	030	031M	030M	032M	032	060	050	065	050M	023M	S	S	S	022M
8	043M	035	C	035M	B	B	B	031	B	B	B	B	B	B	-
9	C	C	036M	036	036	G	G	G	E	022	022	B	B	B	020M
0	034	036	048M	040	039	D037R	G	030	054M	025M	026M	024M	023M	-	M
1	040	034	035	040M	036	035	C	C	B	021	B	B	B	S	B
2	033	042M	048M	051M	050M	C	037M	037M	031M	028M	049M	-	019M	S	-
3	044	050	B	046M	043	037	045	030	B	024	-	022	M	-	020M
4	033	034	G	038M	G	B	G	030	030M	027M	020	B	-	B	B
5	033	034M	035	036	037M	B	B	G	G	B	-	-	020M	M	B
6	035	036M	035M	G	035	036	G	C	G	020	B	B	035	028M	027
7	037M	036M	039M	048	042	B	B	C	B	B	B	B	B	S	S
8	034	036M	035M	036M	037M	B	G	G	032	028M	-	-	-	B	B
9	017	034M	036	039	036	B	B	332	B	S	B	B	-	B	024
0	B	034M	040M	037	027	036	034	G	029M	030	B	B	B	B	019
1	032	035M	035M	036M	035	B	B	G	028	023	C	C	C	C	C
2	054	035M	037	B	036	D032R	B	S	030	B	B	B	B	-	020
3	039	036	036M	036M	035M	G	B	032	B	B	B	B	020	C	-
4	D033R	035	037M	037	G	B	B	C	G	B	B	-	-	022M	023M
5	033	036M	M	B	B	D031R	034	034	035M	025M	036M	025M	025M	S	S
6	B	035M	045M	042M	048	039	C	033	031	026	-	029	023M	043M	023M
7	059M	042M	050M	048M	042M	036	D032R	G	B	025	B	024M	035	025M	B
8	034	038	042M	050M	A	052M	059M	033	029	031M	029	B	-	B	B
9	033	035M	B	040	040M	B	B	033	B	-	B	B	025M	B	B
0	034	035	B	B	E	037	D036R	032	B	B	B	E	B	B	B
1	037	037M	038M	040	043	040	036	C	B	B	B	B	M	030M	023M
2	034	036M	037M	037M	035	036	034M	032M	028	026M	B	023M	030M	025M	A
3	039	040	036M	B	036	B	B	B	B	B	-	-	B	B	B
4	035M	035M	B	037	036	B	G	031	031	041	037M	023M	025M	034M	020M
5	G	040	080	S	-	S	S	S	028	043M	026M	M	026M	030M	030M
6	032	034M	040M	054M	065M	052M	034	032	027	B	B	B	B	S	S
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	034	036	037	038	037	036	036	032	030	026	026	024	025	029	023
9	25	29	23	24	23	15	11	16	15	18	9	7	12	8	12
0	039	036	042	044	042	039	039	033	032	030	036	025	028	032	025
1	033	035	035	036	036	035	034	031	028	024	023	023	022	025	020
2	6	1	7	8	6	4	5	2	4	6	13	2	6	7	5

Characteristic: fhka

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

April 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	12	13
1	-	-	S	-	018M	050M	038M	020*	027	C	030	031M	030M	032M
2	-	M	B	B	A	A	020	029	035	043M	035	C	035M	B
3	B	B	B	B	A	A	C	C	C	C	036M	036	036	036
4	B	B	B	B	A	A	B	023	G	034	036	048M	040	039
5	019M	023M	020M	B	B	A	020	029M	029	040	034	035	040M	036
6	B	B	B	B	B	B	B	026M	039	033	042M	048M	051M	050M
7	S	B	B	B	014	A	020	028	034	044	050	B	046M	043
8	B	B	B	B	-	017	S	G	G	033	034	G	038M	G
9	B	B	B	B	B	M	S	023	029M	033	034M	035	036	037M
10	B	B	B	024M	B	023M	023	024	030	035	036M	035M	G	035
11	-	017M	-	B	B	017	019M	026	030	037M	036M	039M	048	042
12	B	B	-	B	B	016	-	025	031M	034	036M	035M	036M	037M
13	B	B	014M	017M	017	A	S	026	041M	047	034M	036	039	036
14	-	B	B	B	-	A	B	G	B	B	034M	040M	037	037
15	B	B	B	B	B	A	-	027	030	032	035M	035M	036M	035
16	S	M	B	B	B	014M	-	030M	038M	054	036M	037	B	036
17	-	025	017	B	019	A	A	035M	034	039	036	036M	036M	035M
18	M	B	B	B	015	-	019	028	035	D033R	035	037M	037	S
19	A	B	M	013M	A	A	M	026	029M	033	036M	M	B	B
20	019	B	B	0016R	014M	022	M	033M	030	B	035M	045M	042M	048
21	026M	018	020	017M	A	M	S	027	033	055M	042M	050M	048M	042M
22	B	B	B	M	M	S	B	028	035	024	038	042M	050M	A
23	B	B	023	-	-	B	B	B	B	030	035M	B	040	040M
24	B	B	B	B	B	B	B	B	030M	034	035	B	B	B
25	B	B	S	B	012	D013R	-	030	036M	037	037M	038M	040	043
26	027M	017	B	-	A	A	025M	035M	031	034	036M	037M	037M	035
27	020M	A	023M	A	A	A	025	029	035	039	040	038M	B	036
28	B	-	B	B	020M	023M	029	030M	037M	035M	035M	B	037	036
29	023M	023M	-	M	021	A	029M	030M	030	G	040	080	S	-
30	023	-	B	-	M	-	S	S	D029R	032	034M	040M	054M	065M
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	023	021	020	017	017	017	023	028	031	034	036	037	038	037
Count	7	6	6	5	9	9	11	24	25	25	29	23	24	23
UQ	026	023	023	020	019	027	029	030	035	039	036	042	044	042
LQ	019	017	017	015	014	015	020	026	030	033	035	035	036	036
QR	7	6	6	5	5	12	9	4	5	6	1	7	8	6

* Tabulation of 020 = 2.0 Mc.

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IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

April 1965

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
040	C	037	072M	070M	075M	041	085	061	080	080M	047M	S	S	S	070
039	068M	036	C	043M	B	B	B	031	B	B	B	B	B	B	021
C	C	C	070M	036	036	G	G	G	B	025	029	B	B	B	042M
G	037	040	057M	040	039	D037R	G	030	085M	048M	057M	058M	059M	045	047M
035	040	037	041	055M	038	035	C	C	B	024	B	B	B	S	B
039	035	052M	070M	089M	099M	C	072M	078M	046M	038M	061M	027	032M	S	024
034	044	050	F	071M	043	037	047	030	B	031	022	022	033M	035	030M
G	032	034	G	054M	G	B	G	038	044M	037M	023	B	028	B	B
035M	033	046M	037	036	056M	B	B	G	C	B	024	023	032M	034M	B
031	037	046M	051M	G	035	038	G	G	G	021	B	B	042	045M	039
033	047M	060M	060M	048	045	B	B	G	B	B	B	B	B	S	S
039M	040	050M	055M	055M	046M	B	G	G	032	040M	028	026	026	B	B
046M	047	046M	036	039	037	B	B	032	B	S	B	B	026	B	032
B	B	060M	055M	040	037	037	034	G	045M	038	B	B	B	B	024
035	034	063M	068M	051M	040	B	B	G	028	023	C	C	C	C	C
048M	060	050M	044	B	041	D032R	B	S	030	B	B	B	B	021	024
040	017	040	070M	055M	050M	G	B	033	B	B	B	B	020	C	032
035	D033R	041	047M	040	G	B	B	C	G	B	B	025	030	032M	033M
042M	036	060M	053M	B	B	D031R	034	036	045M	040M	046M	035M	036M	S	S
040	B	052M	080M	052M	048	040	G	034	031	036	026	032	047M	085M	045M
035	077M	057M	075M	058M	056M	036	D032R	G	B	030	B	036M	042	042M	B
041	034	038	055M	080M	092M	066M	049M	037	033	041M	036	B	036	B	B
B	035	045M	B	042	077M	B	B	033	B	039	B	B	035M	B	B
040M	035	040	B	B	B	037	D036R	032	B	B	B	B	B	B	B
046M	038	047M	048M	043	044	041	038	C	B	B	B	B	045M	070M	047M
032	035	060M	055M	055M	065	054	045M	053M	031	036M	B	035M	045M	035M	047M
044	040	042	053M	B	036	B	B	B	B	B	031	031	B	B	B
055M	045M	065M	B	040	036	B	G	031	033	047	047M	036M	062M	046M	045M
038	G	041	080	S	052	S	S	S	038	080M	060M	055M	050M	060M	054M
029R	034	095M	088M	090M	092M	075M	037	032	027	B	B	B	B	S	S
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
039	037	046	055	052	045	037	038	033	033	038	034	032	036	044	039
25	25	29	24	24	25	15	11	16	15	19	14	13	19	12	17
041	046	059	070	056	060	041	050	037	045	041	047	036	045	053	047
035	035	040	050	040	037	036	034	032	031	030	026	026	030	035	027
6	11	19	20	16	23	5	16	5	14	11	21	10	15	18	20

Characteristic: foEs

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 min

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

April 1965

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	022*	024	S	020	071M	050M	038M	034	040	C	037	072M	070M
2	045	030M	B	B	040	030	025	037	039	068M	036	C	043M
3	B	B	B	B	034	019	C	C	C	C	C	070M	036
4	B	B	B	B	035M	040M	B	029	G	037	040	057M	040
5	035M	035M	035M	B	B	025	031	044M	035	040	037	041	055M
6	B	B	B	B	B	B	B	031M	039	035	052M	070M	089M
7	S	B	B	B	014	021	024	035	034	044	050	B	071M
8	B	B	B	B	017	031	S	G	G	033	034	G	054M
9	B	B	B	E	B	027M	S	023	035M	033	046M	037	036
10	B	B	B	057M	B	031M	023	016	031	037	046M	051M	G
11	022	027M	019	B	B	025	030M	026	033	047M	060M	060M	048
12	B	B	020	B	B	022	024	025	039M	040	050M	055M	055M
13	B	B	033M	030M	025	021	S	026	046M	047	046M	036	039
14	023	B	B	B	019	033	B	G	B	B	060M	055M	040
15	B	B	B	B	B	032M	029	036	035	034	063M	068M	051M
16	S	029M	B	B	B	026M	026	047M	048M	060	050M	044	B
17	026	025	023	B	025	027M	048M	076M	040	047	040	070M	055M
18	033M	B	B	B	024	033	022	030	035	D033R	041	047M	040
19	046M	B	022M	026M	026M	030M	037M	029	042M	036	060M	053M	B
20	020	B	B	D016R	023M	030	034M	034M	040	B	052M	080M	052M
21	050M	026	026	036M	051M	057M	S	027	035	077M	057M	075M	058M
22	B	B	B	049M	034M	S	B	028	041	034	038	055M	080M
23	B	B	026	019	018	B	B	B	B	035	045M	B	042
24	B	B	B	B	B	B	B	B	040M	035	040	B	B
25	B	B	S	B	012	D013R	023	038	046M	038	047M	048M	043
26	045M	026	B	025	035	043	036M	046M	032	035	060M	055M	055M
27	054M	027	036M	027	055M	027	033	030	044	040	042	053M	B
28	B	022	B	B	040M	033M	036	055M	055M	045M	065M	B	040
29	037M	038M	026	045M	029	045M	038M	042M	038	C	041	080	S
30	037	038	B	024	025M	018	S	S	D029R	034	095M	088M	090M
31	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	036	027	026	027	026	030	031	033	039	037	046	055	052
Count	14	12	10	12	21	26	18	24	25	25	29	24	24
UQ	045	033	033	040	03	033	036	043	041	046	059	070	056
LQ	023	026	022	022	021	025	024	028	035	035	040	050	040
QR	22	7	11	18	16	8	12	15	6	11	19	20	16

* Tabulation of 022 = 2.2 Mc.

2

IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

April 1965

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
15	C	115	111	110	110	138	122	118	112	110	119	S	S	S	122
10	105	108	C	100	B	B	B	100	B	B	B	B	B	B	115
C	C	C	100	100	100	G	G	G	B	100	100	B	B	B	U115S
G	120	125	120	120	125	180	G	115	110	110	120	135	130	U110S	U100S
10	110	110	108	110	110	110	C	C	B	100	B	B	B	S	B
30	U110S	U105S	100	110	110	C	110	117	115	110	115	120	115	S	110
25	108	100	B	120	130	105	100	105	B	105	100	100	120	130	120
G	140	140	G	126	G	B	G	110	107	105	108	B	120	B	B
15	115	100	100	100	100	B	B	G	G	B	140	130	120	120	B
46	140	100	100	G	110	110	G	G	G	130	B	B	120	110	110
10	130	100	100	120	130	B	B	G	E	B	B	B	B	S	S
10	110	105	105	100	106	B	G	G	120	116	115	115	115	B	B
20	108	105	110	110	110	B	B	105	B	S	B	B	130	B	110
5	B	105	105	120	150	140	140	G	110	110	B	B	B	B	110
10	119	100	100	110	110	B	B	G	150	100	C	C	C	C	C
46	160	100	110	B	110	130	B	S	120	B	B	B	B	150	115
25	130	135	105	110	110	G	B	170	E	B	B	B	140	C	115
10	110	110	108	110	G	B	B	C	G	B	B	130	130	130	120
15	110	100	100	B	B	110	180	120	120	120	110	110	110	S	S
10	B	110	130	130	125	130	G	130	120	116	110	100	120	110	110
20	120	110	105	105	100	110	106	C	B	100	B	110	105	140	L
10	140	110	110	110	110	110	110	100	100	100	100	100	B	110	B
E	118	110	B	110	110	B	B	100	B	100	B	B	B	120	B
10	150	100	B	B	B	135	110	120	B	B	B	B	B	B	B
30	135	100	105	150	135	140	140	C	B	E	B	B	120	110	110
50	150	110	110	100	110	115	110	120	120	118	B	110	105	110	108
30	125	130	100	B	140	B	B	B	B	B	120	110	B	B	B
10	110	107	B	110	110	B	G	140	125	115	110	120	115	125	110
20	C	130	120	S	120	S	S	S	125	110	115	110	110	110	110
20	110	110	105	110	105	105	110	130	130	B	B	B	B	S	S
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	118	107	105	110	110	115	110	118	120	110	113	110	120	112	110
25	25	25	24	24	25	15	11	16	15	19	14	13	19	12	17
28	138	110	110	120	125	138	140	125	125	116	119	125	120	130	115
10	110	100	100	108	110	110	110	105	110	100	108	110	110	110	110
18	28	10	10	12	15	28	30	20	15	16	11	15	10	20	5

Characteristic: h'Es

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute

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

April 1965

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	110*	108	S	135	108	112	110	113	115	C	115	111	110	110
2	120	110	B	B	100	100	100	U106S	110	105	108	C	100	B
3	B	B	B	B	120	130	C	C	C	C	C	100	100	100
4	B	B	B	B	110	110	B	130	G	120	125	120	120	125
5	100	100	110	B	B	120	130	135	110	110	110	108	110	110
6	B	B	B	B	B	B	B	130	130	U110S	U105S	100	110	110
7	S	B	B	B	130	120	120	130	125	108	100	B	120	130
8	B	B	B	B	130	120	S	G	G	140	140	G	126	G
9	B	B	B	B	B	110	S	130	115	115	100	100	100	100
10	B	B	B	110	B	110	115	110	146	140	100	100	G	110
11	110	110	110	B	B	110	110	140	116	130	100	100	120	130
12	B	B	130	B	B	120	110	128	110	110	105	105	100	106
13	B	B	110	115	105	106	S	110	120	108	105	110	110	110
14	120	B	B	B	110	110	B	G	B	B	105	105	120	150
15	B	B	B	B	B	100	110	110	110	110	100	100	110	110
16	S	130	B	B	B	130	130	135	148	160	100	110	B	110
17	110	100	100	B	130	125	120	120	125	130	135	105	110	110
18	110	B	B	B	130	127	120	130	110	110	110	108	110	G
19	125	B	135	130	120	120	140	130	115	110	100	100	B	B
20	140	B	B	130	120	120	120	120	110	B	110	130	130	125
21	110	110	110	110	110	120	S	130	120	120	110	105	105	100
22	B	B	B	110	130	S	B	130	110	140	110	110	110	110
23	B	B	110	110	130	B	B	B	B	113	110	B	110	110
24	B	B	B	B	B	B	B	B	110	150	100	B	B	B
25	B	B	S	B	130	130	130	125	130	135	100	105	150	135
26	100	105	B	115	110	110	110	130	130	150	110	110	100	110
27	105	110	110	110	108	110	120	110	130	125	130	100	B	140
28	B	115	B	B	110	110	110	110	110	110	107	B	110	110
29	U110M	110	120	115	110	110	110	120	120	G	130	120	S	120
30	110	110	B	115	110	128	S	S	120	110	110	105	110	105
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	110	110	110	115	110	116	118	129	115	118	107	105	110	110
Count	14	12	10	12	21	26	18	24	25	25	29	24	24	25
UQ	120	110	120	122	130	120	120	130	128	138	110	110	120	125
LQ	110	109	110	110	110	110	110	111	110	110	100	100	108	110
QR	10	1	10	12	20	10	10	19	18	28	10	10	12	15

* Tabulation of 110 = 110 km.

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IONOSPHERIC DATA

Sweep: 1 Mc to 25 Mc in 0.5 minute

April 1965

09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
-	E	E	E	Eh	e2	e4	e3	e8	f4	f3	-	-	-	f2
E2	E	E	E	-	-	-	-	-	-	-	-	-	-	f
-	E	E	E	E	-	-	-	-	E	f2	-	-	-	f2
c	c	e2	c	c	c	-	-	f5	e2	f3	f	f	f	f
Ec	E	E	E	E	E	-	-	-	E	-	-	-	-	-
Ec	Ec	Ec	e3	e2	-	c	c	E	f	f3	f2	f	-	f2
e2	Ec	Ec	e2	c	Ec	E2	E	-	f	f	f	f	f	f
c	c	-	c	-	-	-	E	E	f2	f2	-	f	-	-
E	E	E	E	E	-	-	-	-	-	f	-	f	E	-
c	Ec	E	-	E	E	-	-	-	E	-	-	f7	f5	f4
e2	Ec	Ec	e2	c	-	-	-	-	-	-	-	-	-	-
Ec	E	E	E	E	-	-	-	c	f2	f2	f	f	-	-
E2	E	E	E	E	-	-	E	-	-	-	-	f	-	f3
-	E	Ec	Eh	c	c	c	-	E2	E2	-	-	-	-	f2
E	E	E	E	E	-	-	-	c	f	-	-	-	-	-
e2	E	E	-	E	E	-	-	E	-	-	-	-	f	f3
c	c2	E	E	E	-	-	c	-	-	-	-	f	f	f
Ec	E	E	E	-	-	-	-	-	-	-	f	f	f	f
E	E	E	-	-	E	h	c	E	f	f3	f2	f3	-	-
-	E	c2	c2	c	c	-	c	c	f2	f	f3	f	f5	i
c3	c3	c3	E	E2	Ec	Ec	-	-	f	-	f2	f2	f2	-
c	Ec	E	E3	E4	E3	E2	E	E	f3	f	-	f	-	-
E	E	-	E	E2	-	-	E	-	f	-	-	-	-	-
c2	E	-	-	-	c	Ec	c2	-	-	-	-	-	-	-
c	E	E	c2	c2	c	c	c	-	-	-	-	-	f3	f3
Ec	E	E	E	E	E	q	E	Ec	E2	-	f	f4	f4	f4
c	Ec	E	-	c	-	-	-	-	-	f	f	-	-	-
E	E	-	E	E	-	-	c2	c	E5	f7	f	f7	f5	13
-	c	c	-	E	-	-	-	c	f9	f4	f3	f	f2	f3
E	E2	E3	E3	E4	E3	E	c	c	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Characteristic: Type of Es

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 min

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

April 1965

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12
1	f	f	-	f	f3	f	f	f	fc	-	f	f	f
2	f	f	-	-	f3	f3	f	f	f	f2	f	f	f
3	-	-	-	-	f3	f	-	-	-	-	f	f	f
4	-	-	-	-	f	f2	-	f	-	c	c	f2	c
5	f	f2	f	-	-	f	f2	c	fc	fc	f	f	-
6	-	-	-	-	-	-	-	f	c2	fc	fc	fc	c3
7	-	-	-	-	f	f2	f2	f	c	c2	fc	fc	c2
8	-	-	-	-	f	f2	-	-	-	c	c	-	c
9	-	-	-	-	-	f2	-	-	f	f	f	f	-
10	-	-	-	f4	-	f7	f2	fc	c	c	fc	f	-
11	f2	f3	f	-	-	f	f	cf	fc	cf	fc	fc	cf
12	-	-	f	-	-	f2	f	c	fc	fc	f	f	f
13	-	-	f	f	f	f	-	fc	cf	f2	f	f	-
14	f	-	-	-	f	f6	-	-	-	-	f	fc	fh
15	-	-	-	-	-	f3	f	f2	f	f	f	f	-
16	-	f	-	-	-	f	f	c	c	c2	f	f	-
17	f2	f2	f2	-	f	f2	f2	c	c	c	cf	f	f
18	f3	-	-	-	f	f	f	c	fc	fc	f	f	f
19	f2	-	f	f2	f	f2	f	cf	f	f	f	f	-
20	f	-	-	f	f	f3	f	f2	f2	-	f	c2	c2
21	f3	f	f3	f2	f2	f	-	c	c	c3	c3	c3	f
22	-	-	-	f	f	-	-	fc	f2c	c	fc	f	f3
23	-	-	f2	f	f	-	-	-	-	f	f	-	f
24	-	-	-	-	-	-	-	-	f	cf	f	-	-
25	-	-	-	-	f2	f	f	f	c2	c	f	f	c2
26	f6	f3	-	f2	f4	f5	f2	c3	cf	cf	f	f	f
27	f3	f4	f6	f5	f7	f2	f2	f2	c	c	cf	f	-
28	-	f2	-	-	f2	f5	f2	f2	f3	f	f	-	f
29	f	f2	f	f	f2	f4	f2	f2	f	-	c	c	-
30	f3	f	-	f	f	f	-	-	c	f	f2	f3	f3
31	-	-	-	-	-	-	-	-	-	-	-	-	-
Media	-	-	-	-	-	-	-	-	-	-	-	-	-
Count	-	-	-	-	-	-	-	-	-	-	-	-	-
UQ	-	-	-	-	-	-	-	-	-	-	-	-	-
LQ	-	-	-	-	-	-	-	-	-	-	-	-	-
QR	-	-	-	-	-	-	-	-	-	-	-	-	-

2

MEDIAN VALUES APRIL 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	1.7	5.8	3.05	-	285	-	-	-	-	2.3	3.6	110
01	1.5	5.8	3.32	-	250	-	-	-	-	2.1	2.7	110
02	1.4	4.7	3.45	-	230	-	-	-	-	2.0	2.6	110
03	1.4	3.1	3.45	-	230	-	-	-	-	1.7	2.7	115
04	1.3	2.7	3.45	-	240	-	-	-	-	1.7	2.6	110
05	1.5	2.5	3.50	-	250	-	-	-	-	1.7	3.0	116
06	2.0	3.2	3.35	-	265	-	-	-	-	2.3	3.1	118
07	2.1	5.0	3.40	280	240	-	-	2.30	140	2.8	3.3	129
08	2.5	7.1	3.10	300	230	-	-	2.80	120	3.1	3.9	115
09	2.8	7.7	2.65	338	215	4.4	3.70	-	130*	3.4	3.7	118
10	2.8	7.1	2.50	365	200	4.4	3.90	-	120	3.6	4.6	107
11	3.0	6.7	2.50	385	202	4.5	4.05	-	125	3.7	5.5	105
12	3.0	7.1	2.52	380	200	4.5	4.02	3.45	120	3.8	5.2	110
13	3.0	7.6	2.60	364	200	4.5	4.08	3.50	120	3.7	4.5	110
14	3.0	8.1	2.60	345	200	4.4	3.95	3.50	120	3.6	3.7	115
15	3.0	8.5	2.75	330	200	4.4	3.80	3.25	120	3.6	3.8	110
16	2.4	9.2	2.90	300	215	4.2	3.70	3.00	120	3.2	3.3	118
17	2.6	9.5	3.00	290	235	-	-	2.60	120	3.0	3.3	120
18	2.0	9.6	3.10	-	250	-	-	-	-	2.6	3.8	110
19	2.0	9.5	3.12	-	258	-	-	-	-	2.6	3.4	113
20	2.0	8.5	3.15	-	250	-	-	-	-	2.4	3.2	110
21	2.0	8.3	3.20	-	250	-	-	-	-	2.5	3.6	120
22	2.0	7.5	3.15	-	250	-	-	-	-	2.9	4.4	112
23	1.9	6.6	3.00	-	260	-	-	-	-	2.3	3.9	110

* Insufficient data for reliable median.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS
BANGKOK, THAILAND
APRIL 1965

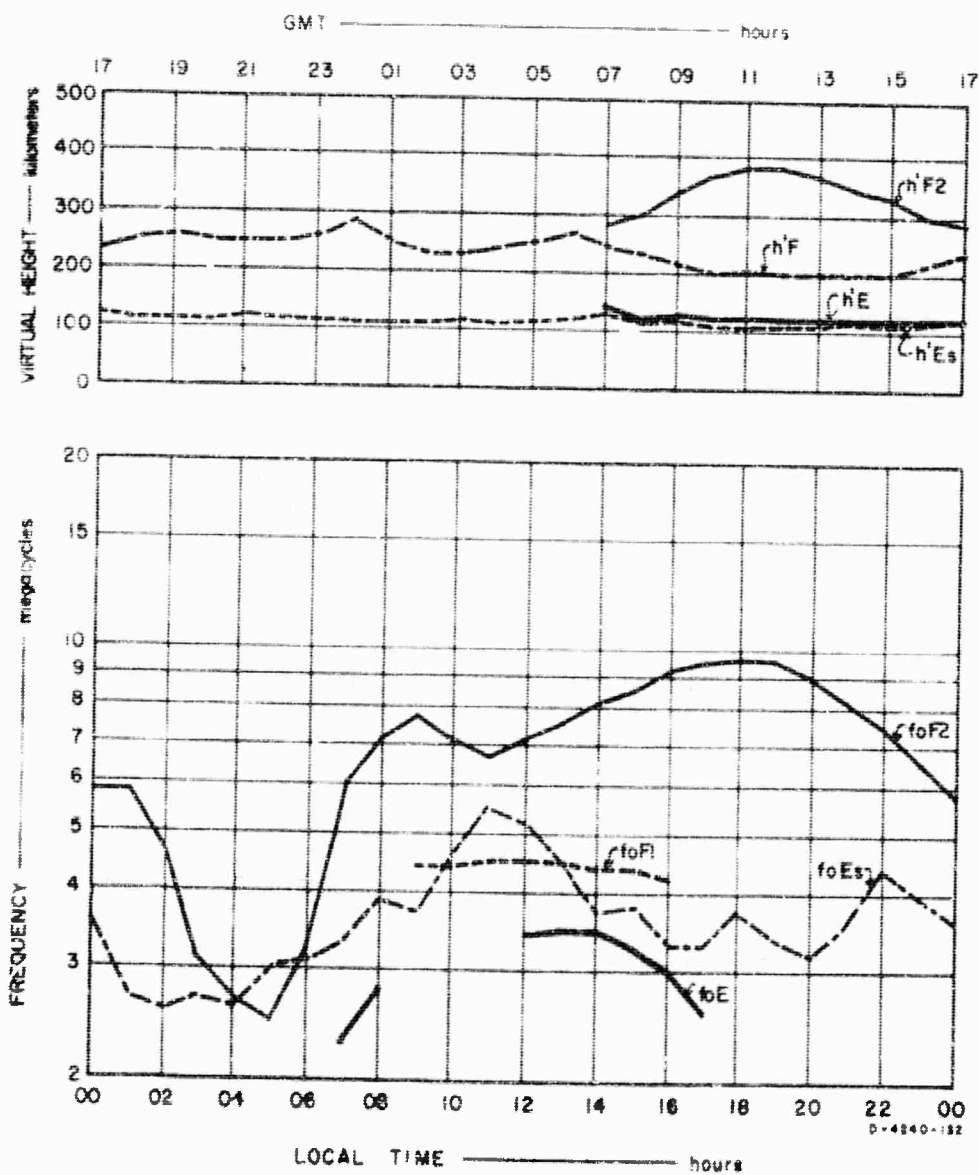


FIG. 1 SUMMARY GRAPHS