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BANGKOK, THAILAND

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Ionospheric Data Report — October 1963

IONOSPHERIC DATA: BANGKOK, THAILAND

Compiled by: VICHAI T. NIMIT

Prepared for:

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

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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 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_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.)

[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_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.

Characteristic: f_{min}

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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

Date \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	E018S	E016S	E015S	017*	B	021	E018S	E018S	E024S	E027S	E035S	E035S	040	036
2	C	C	C	C	C	C	C	C	C	C	C	C	E028S	E028S
3	E017S	017	012	014	011	B	E018S	018	023	E025S	E024S	E027S	038	044
4	E017S	013	015	015	011	B	E017S	E017S	020	E022S	E025S	027	035	038
5	E017S	E015S	015	016	015	015	E018S	020	E019S	E029S	E030S	033	045	035
6	E018S	E015S	011	015	E015S	E013S	E015S	E017S	021	036	038	E023C	E023S	E029S
7	E018S	014	014	013	013	E015S	E017S	018	021	035	E027S	E026S	E029S	035
8	E017S	015	014	018	013	016	E018S	E018S	E025S	E024S	044	E027S	038	035
9	E017S	016	018	016	016	023	E017S	E017S	022	023	022	E028S	030	030
10	E016S	014	020	021	019	E015S	021	029	038	E058C	E033C	E031C	E065C	E052C
11	E022C	E022C	E022C	E016C	C	C	E024C	E033C	E030C	E056C	E032C	E025S	040	028
12	E017S	018	013	018	018	E015S	E017S	E017S	E024S	E027S	041	056	055	060
13	019	018	E015S	012	016	018	E018S	E018S	E025S	047	045	040	031	047
14	025	022	018	019	022	B	021	025	029	030	060	028	041	039
15	022	028	023	019	021	E016S	E018S	018	022	024	039	042	030	028
16	027	016	023	017	017	017	E018S	023	028	032	034	024	025	025
17	025	033	019	014	017	018	021	019	035	024	022	030	E022S	025
18	023	024	020	021	023	019	020	023	029	025	030	C	C	C
19	025	016	017	016	014	E014S	E016S	028	021	035	041	035	050	030
20	023	023	019	016	018	015	E018S	E022S	019	021	038	042	050	056
21	020	016	012	012	E014S	E016S	E018S	E019S	E022S	034	E023S	E028S	040	E029S
22	022	019	018	020	016	E016S	E018S	E028S	E027S	039	031	037	041	029
23	021	021	020	018	018	E016S	E018S	E018S	028	036	040	027	045	050
24	020	018	030	019	015	021	E018S	021	E036S	E025S	C	035	060	032
25	018	016	020	018	B	B	E018S	025	027	025	028	030	029	038
26	022	021	016	017	017	B	E018S	E036S	029	035	039	040	043	042
27	019	018	023	020	021	E017S	E018S	E018S	029	035	040	045	040	040
28	022	024	022	022	021	020	021	027	E022S	C	E045S	047	040	041
29	027	013	020	020	019	018	020	019	034	E028S	028	041	038	040
30	023	021	017	E017S	019	E023S	E027S	E035S	E027S	E027S	E030S	036	E036S	E040S
31	023	018	021	016	015	016	E018S	E027S	027	C	E027S	E028S	040	040
Median	021	018	018	017	017	016	018	019	026	027	032	031	040	035
Count	30	30	30	30	27	24	30	30	30	28	29	29	30	30
UQ	023	021	020	019	019	018	020	025	029	035	040	040	043	041
LQ	018	016	015	016	015	015	018	018	022	025	026	027	030	029
QR	5	5	5	3	4	3	2	7	7	10	14	13	13	12

* Tabulation of 017 = 1.7 Mc.

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
E024S	E027S	E025S	E035S	040	036	039	034	031	027	E018S	019	E017S	E017S	C	C
C	C	C	C	E028S	E028S	045	030	031	025	021	E017S	E017S	E017S	E017S	E017S
023	E025S	E024S	E027S	036	044	038	039	027	025	E020S	E017S	E017S	E017S	E017S	E017S
030	E022S	E025S	027	035	038	038	035	023	025	E017S	E017S	E017S	E017S	E017S	E018S
E019S	E029S	E030S	033	045	035	035	035	032	026	019	023	021	018	019	E018S
021	036	038	E023S	E023S	E023S	E023S	019	E017S	E017S	E017S	E018S	E018S	E018S	E017S	E018S
021	035	E027S	E026S	E029S	035	033	035	031	E025S	E018S	E018S	E021S	E018S	E017S	E017S
E025S	E024S	014	E027S	038	035	E029S	034	029	022	029	018	E017S	E017S	E017S	E017S
022	023	022	E028S	030	030	039	050	029	028	E017S	E017S	020	E017S	020	E017S
038	E058C	E032C	E031C	E065C	E053C	E065C	E043C	E035C	E028C	E027C	E018S	E013C	E025C	E021C	E018S
E030C	E056C	E032C	E025S	040	028	040	040	042	021	039	027	032	022	021	023
E024S	E027S	041	056	055	060	065	058	030	024	032	032	022	020	022	020
E025S	047	045	040	031	047	053	056	057	035	024	033	022	030	023	E018S
029	030	060	028	041	039	039	035	042	023	018	034	023	019	023	023
022	024	039	042	030	028	055	050	040	035	022	022	022	019	022	025
028	032	034	024	025	025	038	042	038	028	025	034	041	045	035	025
035	024	022	030	E022S	025	026	038	033	033	020	026	025	022	022	027
029	025	030	C	C	C	C	C	019	E023S	C	C	022	C	022	030
021	035	041	035	050	030	060	048	041	035	022	033	023	022	024	020
019	021	038	042	050	056	057	056	050	038	023	023	021	022	E019S	E018S
E022S	034	E023S	E028S	040	E029S	042	040	033	028	031	027	020	021	022	020
E027S	039	031	037	041	029	036	038	032	027	022	E018S	020	019	023	020
028	026	040	027	045	050	042	050	036	035	026	024	032	021	018	020
E026S	E025S	C	035	060	032	033	024	024	023	C	024	020	021	022	020
027	025	028	030	029	028	036	041	030	034	021	022	028	021	027	E018S
029	035	039	040	043	042	043	055	045	034	018	033	022	023	026	021
029	035	040	045	040	040	045	034	037	025	016	E018S	020	E017S	E017S	021
E022S	C	E045S	047	040	041	034	033	027	023	021	E018S	E017S	E017S	023	027
034	E028S	028	041	038	040	046	040	041	024	019	022	E017S	018	019	025
E027S	E027S	E020S	036	E036S	E040S	036	040	027	025	E023S	043	021	E023S	E018S	020
027	C	E027S	E028S	040	040	040	033	E023S	E023S	E024S	E021S	E019S	E018S	E018S	E018S
036	027	032	031	040	035	039	039	032	025	021	022	021	019	021	020
30	28	29	29	30	30	30	30	31	31	29	30	31	30	30	30
029	035	040	040	043	041	045	048	040	033	024	027	022	022	022	023
022	025	026	027	030	029	036	034	027	023	018	018	017	017	018	018
7	10	14	13	13	12	9	14	13	10	6	9	5	5	4	5

B

Characteristic: f_oF_2

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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

Date \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	063*	055	046	032	B	A	027	063	079	088	089H	073	071	072H
2	-	-	-	-	-	-	-	-	-	-	-	-	070	075
3	044	046	042	021	015	B	027	057	080	071H	063	063	065	071
4	040	038	047	028	A	B	026	057	068	070H	064	062	062	062
5	F	D027F	039	026	016	A	029	062	067	073	064H	061	060	066
6	040	040	042	035	019	A	027	058	080	079	063H	062H	064	066
7	055	052	057	050	034	U023S	029	056	074	085	U075S	068	068	068H
8	060	056	064	D042S	033	A	031	060	074	D090S	067H	069H	072	074
9	064	066	064	060	031	023	037	073	086	095	097H	072	078H	075
10	063	069	071	044	029	020	035	064	078	092	075	074	070	U078C
11	058	064	070	035	C	C	036	064	080	092	D090C	083	083	085
12	076	061	054	041	028	023	033	073	092	104H	091H	087	D083R	D085R
13	D100S	072	D067S	042	027	022	041	081	090	U081R	084	080	081H	090
14	088	086	061	037	019	B	043	080	094	D090S	091	086	086	090
15	076	065	051	046	030	028	043	081	U096S	D095R	083H	080	084	092
16	082	073	065	038	025	A	043	075	093	D090R	079	074	079	086
17	082	067	038	025	A	A	041	074	094	104	105	080	078	086
18	067	048	038	029	023	J019B	034	068	086	101	090	-	C	C
19	074	076	075	063	043	030	041	080	092	100	091	085	080	089
20	068	065	063	043	028	019	038	070	099	U100S	088	082	083	090
21	J096S	081	U064S	043	019	U020A	042	079	082	102	091	083	082	083
22	074	077	080	064	047	021	035	069	085	095	090	072	075	088
23	088	086	063	031	022	021	037	074	084	U091S	072	067H	070	083
24	073	074	070	039	032	024	038	069	082	097	C	075H	100	100
25	036	A	A	A	B	B	037	073	090	095	090	105	112	U116S
26	D100R	091	102	046	027	B	036	066	081	092	090	085	091	092
27	062	065	069	047	035	026	040	071	090	U103S	090	080H	085	093
28	060	058	063	045	028	025	052	071	082	C	010	092	087	010
29	075	074	070	061	050	035	044	070	090	104	092	081	080	090
30	080	057	055	035	D027R	A	037	083	D110S	D090S	D090S	087	D100S	103
31	076	075	066	045	028	020	033	085	082	C	090	080	085	088
Median	073	065	063	042	028	023	037	071	085	092	090	080	080	086
Count	29	29	29	29	25	17	30	30	30	28	29	29	30	30
UQ	081	074	070	046	033	026	041	075	092	100	090	084	085	090
LQ	060	056	049	034	023	020	033	064	080	089	074	071	070	074
QR	21	18	21	12	10	6	8	11	12	11	16	13	15	16

* Tabulation of 063 = 6.3 Mc.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
079	088	089H	073	071	072H	077	090	104	097	094	U100S	092	089	C	C
-	-	-	-	070	075	090	103	103	089	094	081	086	071	069	049
080	071H	063	063	065	071	089	106	099	093	D087S	U093S	091	F	065	049
068	070H	064	062	062	062	067	078	090	087	087	090	082	072	060	046
067	073	064H	061	060	066	078	094	099	084	085	078	070	056	043	038
080	079	063H	062H	064	066	075	095	100	089	094	D094S	090	090	080	064
074	085	U075S	068	068	068H	080	097	105	098	U094S	D095S	D095S	F	F	F
074	D090S	067H	069H	072	074	088	098	105	102	103	D087S	D100S	089	080	073
086	095	097H	072	078H	075	080	088	092	093	102	D090S	D090S	D090S	081	065
078	092	075	074	070	U078C	U089C	095	D100C	D098C	D097C	D100C	D075C	U074C	U072C	062
080	092	D090C	083	083	085	088	099	104	105	D100S	100	D090S	D090S	091	092
092	104H	091H	087	D083R	D085R	D095R	U097R	099	D085R	092	087	083	083	081	D090S
090	U081R	084	080	081H	090	D090R	D110R	110	D095S	D100S	U100S	U106S	U100S	091	085
094	D090S	091	086	086	090	096	U105R	D116S	106	D105S	D095S	105	D090S	D100S	D105S
U096S	D095R	083H	080	084	092	102	104	107	D100S	D100S	D105R	D105R	D100R	D095S	093
093	D090R	079	074	079	086	095	100	D103R	D105R	D100R	D080R	D095R	D093S	D091R	090
094	104	105	080	078	086	098	113	112	108	U106S	D096S	D090S	U094S	092	072
086	101	090	-	C	C	C	C	110	114	C	C	D090R	C	085	080
092	100	091	085	080	089	100	D099R	D106R	D104R	D100S	D088R	D090S	U102S	094	083
099	U100S	088	082	083	090	104	U112R	D105R	D110R	D110R	D110S	D094S	D092S	F	D095R
082	102	091	083	082	083	097	106	110	110	D106R	110	D090S	D093S	081	072
085	095	090	072	075	088	095	098	D110S	U105R	J110S	D100S	102	D090S	090	090
084	U091S	072	067H	070	083	090	094	105	095	095	D090S	090	090	083	071
082	097	C	075H	100	100	105	110	D110S	D090S	C	D090S	U104S	065	043	U039S
090	095	090	105	112	U116S	D107R	U116S	D108R	D110S	D110S	D095S	D085S	F	F	D100S
081	092	090	085	091	092	091	090	091	U100R	D096R	D106S	U098S	085	081	072
090	U103S	090	080H	085	093	091	093	098	097	100	093	092	085	070	063
082	C	010	092	087	010	011	114	116	D100R	083	080	D072R	U080R	U082R	078
090	104	092	081	080	090	D095W	102	D102R	095	090	D072R	D079R	080	081	080
D110S	D090S	D090S	087	D100S	103	D110S	D110R	D110S	D110R	D100R	D090S	D102R	104	093	089
082	C	090	080	085	088	090	D085R	D090S	D108S	D095S	D095S	093	090	076	073
085	092	090	080	080	086	090	099	105	100	100	094	090	090	081	073
30	28	29	29	30	30	30	30	31	31	29	30	31	27	27	29
092	100	090	084	085	090	097	106	110	108	102	100	098	093	091	090
080	089	074	071	070	074	088	094	099	095	094	088	086	080	072	064
12	11	16	13	15	16	9	12	11	13	8	12	12	13	19	26

A

Characteristic: M(3000)F2

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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

Date \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	360*	360	365	390	B	A	345	360	345	315	265H	280	285	265H
2	-	-	-	-	-	-	-	-	-	-	-	-	285	275
3	305	340	395	380	350	B	335	370	355	280H	260	270	270	275
4	300	320	380	400	A	B	340	355	325	280H	270	270	270	265
5	F	F	340	370	290	A	340	370	330	260	265H	265	270	265
6	320	330	370	390	370	A	345	345	315	240	280H	265H	275	265
7	310	325	355	385	360	U370S	340	370	335	295	U280S	290	280	265H
8	310	330	365	S	385	A	350	360	340	S	270H	280H	265	300
9	295	315	345	370	350	320	340	370	345	320	235H	280	260H	265
10	315	345	375	370	375	360	345	365	345	295	260	265	275	U270C
11	315	355	380	390	C	C	340	365	335	300	C	265	260	265
12	350	355	370	370	350	365	310	345	340	305H	260H	275	R	R
13	S	350	S	355	345	320	320	330	285	U265R	275	290	270H	260
14	350	360	370	380	395	B	345	350	320	S	280	290	285	250
15	340	345	325	360	340	345	315	335	U310S	R	270H	290	265	280
16	330	345	370	370	355	A	340	335	280	R	265	285	280	275
17	355	370	365	350	A	A	350	355	335	310	250	270	260	260
18	320	345	345	365	350	B	330	360	325	295	250	-	-	-
19	320	330	355	375	350	335	325	340	325	280	245	285	270	275
20	335	335	365	365	360	345	330	340	325	U270S	270	275	270	285
21	J350S	355	U360S	380	345	A	340	360	330	300	240	250	250	265
22	295	305	320	355	350	335	320	345	315	285	250	275	265	275
23	350	370	380	375	365	320	330	350	315	U255S	250	250H	265	285
24	335	345	375	365	355	355	355	350	335	315	C	290H	310	300
25	340	A	A	A	B	B	320	340	350	345	325	295	280	U280S
26	R	325	375	390	340	B	330	360	320	290	255	260	275	285
27	350	350	370	360	350	340	325	335	315	U290S	275	255H	285	310
28	340	345	365	380	370	355	365	250	315	C	265	270	280	280
29	330	320	375	360	355	325	345	330	315	295	290	250	265	270
30	355	360	345	360	R	A	310	330	S	S	S	275	S	280
31	320	340	365	375	360	350	320	350	320	C	280	250	270	280
Median	330	345	365	370	352	345	340	350	325	295	265	275	270	275
Count	27	28	28	28	24	15	30	30	29	23	27	29	26	29
UQ	350	355	375	380	362	355	345	360	337	305	275	285	280	280
LQ	315	330	355	363	350	325	325	340	315	280	250	265	265	265
QR	35	25	20	17	12	30	20	20	22	25	25	20	15	15

* Tabulation of 360 = factor of 3.6.

B

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
079	088	089H	073	071	072H	077	090	104	097	094	U100S	092	089	C	C
-	-	-	-	070	075	090	103	103	089	094	081	086	071	069	049
080	071H	063	063	065	071	089	106	099	093	D087S	U093S	091	F	065	049
068	070H	064	062	062	062	067	078	090	087	087	090	082	072	060	046
067	073	064H	061	060	066	078	094	099	084	085	078	070	056	043	038
080	079	063H	062H	064	066	075	095	100	089	094	D094S	090	090	080	064
074	085	U075S	068	068	068H	080	097	105	098	U094S	D095S	D095S	F	F	F
074	D090S	067H	069H	072	074	088	098	105	102	103	D087S	D100S	089	080	073
086	095	097H	072	078H	075	080	088	092	093	102	D090S	D090S	D090S	081	065
078	092	075	074	070	U078C	U089C	095	D100C	D098C	D097C	D100C	D075C	U074C	U072C	062
080	092	D090C	083	083	085	088	099	104	105	D100S	100	D090S	D090S	091	092
092	104H	091H	087	D083R	D085R	D095R	U097R	099	D085R	092	087	083	083	081	D090S
090	U081R	084	080	081H	090	D090R	D110R	110	D095S	D100S	U100S	U106S	U100S	091	085
094	D090S	091	086	086	090	096	U105R	D116S	106	D105S	D095S	105	D090S	D100S	D105S
U096S	D095R	083H	080	084	092	102	104	107	D100S	D100S	D105R	D105R	D100R	D095S	093
093	D090R	079	074	079	086	095	100	D103R	D105R	D100R	D080R	D095R	D093S	D091R	090
094	104	105	080	078	086	098	113	112	108	U106S	D096S	D090S	U094S	092	072
086	101	090	-	C	C	C	C	110	114	C	C	D090R	C	085	080
092	100	091	085	080	089	100	D099R	D106R	D104R	D100S	D088R	D090S	U102S	094	083
089	U100S	088	082	083	090	104	U112R	D105R	D110R	D110R	D110S	D094S	D092S	F	D095R
082	102	091	083	082	083	097	106	110	110	D106R	110	D090S	D093S	081	072
085	095	090	072	075	088	095	098	D110S	U105R	J110S	D100S	102	D090S	090	090
084	U091S	072	067H	070	083	090	094	105	095	095	D090S	090	090	083	071
082	097	C	075H	100	100	105	110	D110S	D090S	C	D090S	U104S	065	043	U039S
090	095	090	105	112	U116S	D107R	U116S	D108R	D110S	D110S	D095S	D085S	F	F	D100S
081	092	090	085	091	092	091	090	091	U100R	D096R	D106S	U098S	085	081	072
090	U103S	090	080H	085	093	091	093	098	097	100	093	092	085	070	063
082	C	010	092	087	010	011	114	116	D100R	083	080	D072R	U080R	U082R	078
090	104	092	081	080	090	D095W	102	D102R	095	090	D072R	D079R	080	081	080
D110S	D090S	D090S	087	D100S	103	D110S	D110R	D110S	D110R	D100R	D090S	D102R	104	093	089
082	C	090	080	085	088	090	D085R	D090S	D108S	D095S	D095S	093	090	076	073
085	092	090	080	080	086	090	099	105	100	100	094	090	090	081	073
30	28	29	29	30	30	30	30	31	31	29	30	31	27	27	29
092	100	090	084	085	090	097	106	110	108	102	100	098	093	091	090
080	089	074	071	070	074	088	094	099	095	094	088	086	080	072	064
12	11	16	13	15	16	9	12	11	13	8	12	12	13	19	26

B

Characteristic: M(3000)F2

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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

Date \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	360*	360	365	390	B	A	345	360	345	315	265H	280	285	265H
2	-	-	-	-	-	-	-	-	-	-	-	-	285	275
3	305	340	395	380	350	B	335	370	355	280H	260	270	270	275
4	300	320	380	400	A	B	340	355	325	280H	270	270	270	265
5	F	F	340	370	290	A	340	370	330	260	265H	265	270	265
6	320	330	370	390	370	A	345	345	315	240	280H	265H	275	265
7	310	325	355	385	360	U370S	340	370	335	295	U280S	290	280	265H
8	310	330	365	S	385	A	350	360	340	S	270H	280H	265	300
9	295	315	345	370	350	320	340	370	345	320	235H	280	260H	265
10	315	345	375	370	375	360	345	365	345	295	260	265	275	U270C
11	315	355	380	390	C	C	340	365	335	300	C	265	260	265
12	350	355	370	370	350	365	310	345	340	305H	260H	275	R	R
13	S	350	S	355	345	320	320	330	285	U265R	275	290	270H	260
14	350	360	370	380	395	B	345	350	320	S	280	290	285	250
15	340	345	325	360	340	345	315	335	U310S	R	270H	290	265	280
16	330	345	370	370	355	A	340	335	280	R	265	285	280	275
17	355	370	365	350	A	A	350	355	335	310	250	270	260	260
18	320	345	345	365	350	B	330	360	325	295	250	-	-	-
19	320	330	355	375	350	335	325	340	325	280	245	285	270	275
20	335	335	365	365	360	345	330	340	325	U270S	270	275	270	285
21	J350S	355	U360S	380	345	A	340	360	330	300	240	250	250	265
22	295	305	320	355	350	335	320	345	315	285	250	275	265	275
23	350	370	380	375	365	320	330	350	315	U255S	250	250H	265	285
24	335	345	375	365	355	355	355	350	335	315	C	290H	310	300
25	340	A	A	A	B	B	320	340	350	345	325	295	280	U280S
26	R	325	375	390	340	B	330	360	320	290	255	260	275	285
27	350	350	370	360	350	340	325	335	315	U290S	275	255H	285	310
28	340	345	365	380	370	355	365	250	315	C	265	270	280	280
29	330	320	375	360	355	325	345	330	315	295	290	250	265	270
30	355	360	345	360	R	A	310	330	S	S	S	275	S	280
31	320	340	365	375	360	350	320	350	320	C	280	250	270	280
Median	330	345	365	370	352	345	340	350	325	295	265	275	270	275
Count	27	28	28	28	24	15	30	30	29	23	27	29	28	29
UQ	350	355	375	380	362	355	345	360	337	305	275	285	280	280
LQ	315	330	355	363	350	325	325	340	315	280	250	265	265	265
QR	35	25	20	17	12	30	20	20	22	25	25	20	15	15

* Tabulation of 360 = factor of 3.6.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
345	315	265H	280	285	265H	270	295	330	330	315	U315S	310	320	C	C
-	-	-	-	285	275	320	340	355	355	345	340	350	335	310	300
355	280H	260	270	270	275	310	340	335	350	S	U330S	320	F	320	310
325	280H	270	270	270	265	260	300	315	325	330	325	330	325	305	280
330	260	265H	265	270	265	285	330	350	345	340	365	360	350	320	320
315	240	280H	265H	275	265	280	320	350	335	325	S	340	340	320	315
335	295	U280S	290	280	265H	290	320	340	335	U315S	S	S	F	F	F
340	S	270H	280H	265	300	285	305	315	325	305	S	S	305	310	305
345	320	235H	280	260H	265	265	275	285	295	300	S	S	S	310	305
345	295	260	265	275	U270C	U290C	310	C	C	C	C	C	U335C	U315C	315
335	300	C	265	260	265	275	305	315	320	S	310	S	S	310	340
340	305H	260H	275	R	R	R	U280R	275	R	270	270	290	290	290	S
285	U265R	275	290	270H	260	R	R	330	S	S	U310S	U320S	U320S	330	340
320	S	280	290	285	250	270	U310R	S	315	S	S	295	S	S	S
U310S	R	270H	290	265	280	285	290	300	S	S	R	R	R	S	320
280	R	265	285	280	275	280	285	R	R	R	R	R	S	R	340
335	310	250	270	260	260	265	310	325	325	U300S	S	S	U330S	325	320
325	295	250	-	-	-	-	-	325	325	C	C	R	C	310	310
325	280	245	285	270	275	290	R	R	R	S	R	S	U310S	330	350
325	U270S	270	275	270	285	295	U305R	R	R	R	S	S	S	F	R
330	300	240	250	250	265	285	305	315	310	R	300	S	S	295	300
315	285	250	275	265	275	285	305	S	U335R	J320S	S	310	S	330	340
315	U255S	250	250H	265	285	300	305	315	315	305	S	285	295	325	330
335	315	C	290H	310	300	270	290	S	S	C	S	U335S	335	325	U310S
350	345	325	295	280	U280S	R	U315S	R	S	S	S	S	F	F	S
320	290	255	260	275	285	290	295	290	U315R	R	S	U350S	320	345	350
315	U290S	275	255H	285	310	305	305	300	295	300	280	305	330	340	350
315	C	265	270	280	280	310	310	310	R	280	280	R	U295R	U320R	335
315	295	290	250	265	270	W	290	R	275	275	R	R	305	310	315
S	S	S	275	S	280	S	R	S	R	R	S	R	330	310	320
320	C	280	250	270	280	290	R	S	S	S	S	320	320	315	320
325	295	265	275	270	275	285	305	315	325	305	310	320	320	318	320
29	23	27	29	28	29	25	26	20	19	15	11	15	19	24	25
337	305	275	285	280	280	292	310	332	335	325	330	340	335	325	340
315	280	250	265	265	265	273	295	305	315	300	280	305	305	310	310
22	25	25	20	15	15	19	15	27	20	25	50	35	30	15	30

B

Characteristic: $h'F_2$

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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

Date \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	-	-	-	-	-	-	-	L	250*	265	310	318	310	320
2	-	-	-	-	-	-	-	-	-	-	-	-	340	325
3	-	-	-	-	-	-	-	-	L	L	L	360	358	340
4	-	-	-	-	-	-	-	L	L	310	340	370	370	365
5	-	-	-	-	-	-	-	-	L	E350A	E350A	390	378	350
6	-	-	-	-	-	-	-	-	L	L	350	360	350	345
7	-	-	-	-	-	-	-	-	L	305	320	325	335	340
8	-	-	-	-	-	-	-	-	L	L	340	335	340	308
9	-	-	-	-	-	-	-	235	260	285	E320A	335	325	310
10	-	-	-	-	-	-	-	L	275	L	340	E330A	330	E330
11	-	-	-	-	-	-	-	-	L	302	315	325	335	315
12	-	-	-	-	-	-	-	-	L	L	290	E320B	E325B	E335
13	-	-	-	-	-	-	-	L	L	L	L	315	E325A	320
14	-	-	-	-	-	-	-	245	L	280	300	300	300	290
15	-	-	-	-	-	-	-	-	L	L	L	330	L	330
16	-	-	-	-	-	-	-	L	L	L	L	325	L	315
17	-	-	-	-	-	-	-	-	L	300	300	313	355	E330
18	-	-	-	-	-	-	-	-	L	A	L	-	-	-
19	-	-	-	-	-	-	-	L	280	L	L	315	L	333
20	-	-	-	-	-	-	-	-	L	285H	310	L	L	310
21	-	-	-	-	-	-	-	-	L	U290L	L	L	340	310
22	-	-	-	-	-	-	-	240	L	L	L	L	L	325
23	-	-	-	-	-	-	-	L	L	310	L	355	360	320
24	-	-	-	-	-	-	-	-	273	290	C	290	E300A	290
25	-	-	-	-	-	-	-	-	250	263	L	L	300	295
26	-	-	-	-	-	-	-	-	L	L	300	L	325	305
27	-	-	-	-	-	-	-	-	-	L	305	325	328	285
28	-	-	-	-	-	-	-	-	L	-	-	300	311	290
29	-	-	-	-	-	-	-	-	L	300	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	300	-	310	300
Median	-	-	-	-	-	-	-	-	266	295	313	325	330	320
Count	-	-	-	-	-	-	-	3	6	14	16	21	23	28
UQ	-	-	-	-	-	-	-	-	275	305	340	345	350	331
LQ	-	-	-	-	-	-	-	-	250	285	300	315	311	307
QR	-	-	-	-	-	-	-	-	25	20	40	30	39	24

* Tabulation of 250 = 250 km.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
250*	265	310	318	310	320	315	300	260	L	L	-	-	-	-	-
-	-	-	-	340	325	275	265	245	240	-	-	-	-	-	-
L	L	L	360	358	340	300	252	250	L	-	-	-	-	-	-
L	310	340	370	370	365	365	300	270	L	-	-	-	-	-	-
L	E350A	E350A	390	378	350	318	270	240	235	-	-	-	-	-	-
L	L	350	360	350	345	330	277	255	L	-	-	-	-	-	-
L	305	320	325	335	340	310	280	260	-	-	-	-	-	-	-
L	L	340	335	340	308	280	285	270	L	-	-	-	-	-	-
260	285	E320A	335	325	310	320	300	L	L	-	-	-	-	-	-
275	L	340	E330A	330	E330C	300	L	275	L	-	-	-	-	-	-
L	302	315	325	335	315	312	270	L	L	-	-	-	-	-	-
L	L	290	E320B	E325B	E335B	315	E275B	250	L	-	-	-	-	-	-
L	L	L	315	E325A	320	E295B	260	250	-	-	-	-	-	-	-
L	280	300	300	300	290	L	290	269	L	-	-	-	-	-	-
L	L	L	330	L	330	290	L	L	-	-	-	-	-	-	-
L	L	L	325	L	315	L	L	300	L	-	-	-	-	-	-
L	300	300	313	355	E330A	310	300	L	L	-	-	-	-	-	-
L	A	L	-	-	-	-	-	L	L	-	-	-	-	-	-
280	L	L	315	L	333	L	L	L	L	L	-	-	-	-	-
L	285H	310	L	L	310	L	L	L	L	-	-	-	-	-	-
L	U290L	L	L	340	310	L	L	L	-	-	-	-	-	-	-
L	L	L	L	L	325	285	L	L	-	-	-	-	-	-	-
L	310	L	355	360	320	288	L	L	-	-	-	-	-	-	-
273	290	C	290	E300A	290	L	L	E340A	-	-	-	-	-	-	-
250	263	L	L	300	295	E315A	270	L	-	-	-	-	-	-	-
L	L	300	L	325	305	275	L	-	-	-	-	-	-	-	-
-	L	305	325	328	285	265	L	245	-	-	-	-	-	-	-
L	-	-	300	311	290	-	-	L	L	-	-	-	-	-	-
L	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	273	-	-	-	-	-	-	-	-
-	-	300	-	310	300	-	-	-	-	-	-	-	-	-	-
266	295	313	325	330	320	305	276	260	-	-	-	-	-	-	-
6	14	16	21	23	28	20	16	15	2	-	-	-	-	-	-
275	305	340	345	350	331	315	295	270	-	-	-	-	-	-	-
250	285	300	315	311	307	287	270	250	-	-	-	-	-	-	-
25	20	40	30	39	24	28	25	20	-	-	-	-	-	-	-

8

Characteristic: h'F

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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

Date \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	E230A	E210A	E220A	E302B	B	A	E250S	215*	210	200	190	E175A	E200B	180
2	-	-	-	-	-	-	-	-	-	-	-	-	E185A	E185A
3	E385S	E230S	180	200	E290S	B	E240S	E220A	E245A	E290A	E230A	E180A	210	E300B
4	E315A	265	217	205	A	B	E250A	E225A	E260A	E290A	E250A	E200A	200	E200A
5	E260S	E300S	220	E200B	E400A	A	E240S	220	E250A	A	A	E200A	E208B	E200B
6	E253B	220	210	200	E240S	A	E254A	E230A	E208A	185	190	180	180	195
	E273S	E255A	222	190	210	E220S	E245S	218	E205A	190	180	272	170	170
8	E265S	245	215	190	E200A	A	E240S	215	212	200	200	180	190	170
9	E280A	265	235	200	E215B	E260A	245	E220A	E250A	A	A	A	A	200
10	250	215	200	E200B	E220A	E230B	E245B	218	210	E300A	E260A	A	E260C	C
11	E280C	E230C	205	E190C	C	C	E275C	230	210	E200A	E190A	E175A	E185B	E310A
12	305	210	212	E208B	E250B	E215S	E250A	E220A	E210A	200	E225B	B	B	B
13	225	E205A	205	E210A	E255A	E350A	E250S	E230A	E208A	210	E250B	A	A	B
14	225	200	200	E200A	E210B	B	250	220	210	200	200	E225A	210	E200B
15	E220A	E225B	E238B	230	E290A	E250S	E260A	E250A	E245A	210	E200B	E200B	E220B	E215A
16	230	210	E220A	E215A	E240A	A	255	E230A	E240A	E268A	E220A	E215A	E250A	E230A
17	230	210	E218B	E260A	A	A	250	E240A	233	E245A	212	E200A	210	A
18	260	245	E235B	E235B	E230B	E257B	E250B	233	E230A	E315A	206	-	-	-
19	E260B	250	226	207	215	E230S	245	E230S	E215A	205	E230B	E208A	E205B	A
20	E230S	240	225	E200B	E220B	E265S	255	235	E210A	E205A	190	E185B	E250B	B
21	230	200	E210A	E210A	E260S	E340A	245	230	210H	E205B	E200B	E218A	E205B	200
22	280	260	233	210	202	E350S	E250S	E225S	210H	E230B	E205B	185	183	E210B
23	E210S	215	200	E200B	E215B	330	240	E220S	210	E305B	195	E200B	E210B	E210
24	E240S	225	200	E195B	215	230	240	E230A	E210A	E225A	C	E250A	A	E260A
25	227	A	A	A	B	B	E270S	235	E240A	E305A	E200A	E250A	E213A	E210A
26	E260B	E245B	215	E185B	222	B	240	220	210	E205B	E210B	E220B	E215B	E210B
27	E235A	225	218	210	E220B	E235S	242	E228S	E210B	213	185	180	E205B	205
28	E220B	235	230	215	225	245	230	E225S	210	C	305	200	200	215
29	E235B	215	210	230	220	E260B	E248B	E229A	225	220	200	200	E190B	E175A
30	185	210	229	305	U159B	A	E310S	250	255	E229A	220	E210B	E200B	E220S
31	250	239	220	200	230	E255S	E240S	E220S	211	C	E210A	E200B	E210A	E215A
Median	238	225	218	202	220	230	249	1	210	205	205	200	205	208
Count	30	29	29	29	25	17	30	30	30	26	27	25	26	24
UQ	260	245	226	210	245	252	250	230	240	229	225	217	210	215
LQ	225	210	208	200	215	250	240	220	210	200	195	183	190	198
QR	35	35	18	10	30	12	10	10	30	29	30	34	20	17

* Tabulation of 215 = 215 km.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
300	190	E175A	E200B	180	175	180	300	220	233	240	230	225	C	C
-	-	-	E185A	E185A	200	E200A	215	220	235	223	215	225	E290S	E300S
E290A	E230A	E180A	210	E300B	E210A	190	205	E230B	230	235	232	210	215	E300A
E290A	E250A	E200A	200	E200A	E200B	E230B	E220A	E220A	225	222	223	225	E255S	E275A
A	A	E200A	E208B	E200B	185	190	208	315	230	210	205	[illegible]	243	E260S
185	190	180	180	195	175	190	215	E225A	235	E245S	230	230	E250S	E245S
190	180	272	170	170	A	180	185	E210S	235	255	E265S	E205S	E215S	220
200	200	180	190	170	175	E200A	E215A	E230A	240	E275A	E275A	E248A	E250A	E265B
A	A	A	A	200	E200B	E200A	E225A	230	250	255	245	220	245	E270B
E200A	E260A	A	E260C	C	E210C	E200C	E220C	E220C	222	E235A	E255C	E235C	E240C	E270C
E200A	E190A	E175A	E185B	E210A	E195B	205	E222B	E220A	E240A	E275B	E382B	E235A	E233B	E230B
200	E225B	B	B	B	E250B	B	A	E240A	E270A	260	250	E245S	E250S	225
210	E260B	A	A	B	B	A	A	245	E265A	250	E230A	E210A	E245S	E238S
200	200	E225A	210	E200B	E210B	210	E240A	250	260	E290S	E360S	250	250	220
210	E200B	E200B	E220B	E215A	E220B	E300B	220	E240B	265	260	E233S	237	E240A	240
E268A	E220A	E215A	E250A	E230A	E305B	E225B	230	240	260	E300B	E270A	E265A	E255B	248
E245A	212	E200A	210	A	E400A	300	E245B	E260B	E270A	E255B	E244B	E240A	E240A	270
E315A	206	-	-	-	-	-	E220A	E230A	C	C	E240B	C	E250A	260
205	E230B	E208A	E205B	A	E250B	E250B	E240B	240	255	E290B	E270B	222	215	222
E205A	180	E185B	E250B	B	E220B	E265B	E240B	E240A	E280A	E275A	E275A	E270B	F260S	E253S
E205B	E200B	E218A	E205B	200	E240B	E255B	E230B	E240B	E250B	E250B	235	225	240	285
E230B	E205B	185	183	E210B	E200B	215	E215B	E230B	230	E250A	L353A	E225A	E240S	E223S
E205B	195	E200B	E210B	E210B	E200B	E210B	E205B	230	242	E265S	215	E230S	240	240
E225A	C	E250A	A	E260A	210B	230	A	E265A	C	E255B	217	212	E250B	E245B
E205A	E200A	E250A	E213A	E210A	A	215	E215S	E230B	252	E270S	E255S	245	E240B	E250S
E205B	E210B	E220B	E215B	E210B	B	E205B	E215B	E250B	240	E233B	215	F230A	235	E230A
213	185	160	E205B	205	E210B	E210B	E215B	232B	E265A	250	225	E225A	E230A	230
C	305	200	200	215	220	E220A	E238A	E242B	E255A	E245A	E235S	222	E230B	E230B
220	200	200	E190B	E195A	E215B	E215B	E250B	E250A	240	E290S	280	E230S	E238S	230
E229A	220	E210B	E200S	E230S	230	E250B	265	D260A	260	E290B	240	230	E260S	273
C	E210A	E290B	E210A	E215A	E225B	E280A	E240A	260	229	235	225	237	250	260
205	205	200	205	208	210	210	220	232	242	253	240	222	244	245
38	27	25	26	24	26	28	28	31	29	30	31	30	30	30
229	225	217	210	215	230	238	235	245	260	270	260	237	250	265
300	195	183	190	198	300	300	215	225	234	235	225	222	240	230
29	30	34	20	17	30	28	20	20	28	35	35	15	10	35

B

Characteristic: f_oF_1

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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

Date \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	
1	-	-	-	-	-	-	-	L	U045L	042*	045	044	045	045	0
2	-	-	-	-	-	-	-	-	-	-	-	-	048	045	0
3	-	-	-	-	-	-	-	-	L	L	L	046	046	048	0
4	-	-	-	-	-	-	-	L	L	044	0[illegible]	045	047	045	0
5	-	-	-	-	-	-	-	-	L	A	A	045	044	044	0
6	-	-	-	-	-	-	-	-	L	U044L	045	045	044	044	0
7	-	-	-	-	-	-	-	-	L	044	045H	046H	045	045	
8	-	-	-	-	-	-	-	-	L	L	045	047	048	047	0
9	-	-	-	-	-	-	-	L	L	A	A	A	A	045	0
10	-	-	-	-	-	-	-	L	L	L	U046C	A	U047C	C	0
11	-	-	-	-	-	-	-	-	L	047	047	047	048	047	0
12	-	-	-	-	-	-	-	-	L	045	048	B	B	B	0
13	-	-	-	-	-	-	-	L	L	U046L	U048L	A	A	B	
14	-	-	-	-	-	-	-	L	L	U048L	048	048	049	047	[illegible]
15	-	-	-	-	-	-	-	-	L	L	L	049	050L	048	0[illegible]
16	-	-	-	-	-	-	-	L	L	L	047	047	048	046	[illegible]
17	-	-	-	-	-	-	-	-	L	U045L	047	047	048	A	0[illegible]
18	-	-	-	-	-	-	-	-	L	A	L	-	-	-	-
19	-	-	-	-	-	-	-	L	L	L	L	046	U046L	A	[illegible]
20	-	-	-	-	-	-	-	-	L	L	047	047	049	B	[illegible]
21	-	-	-	-	-	-	-	-	L	L	L	U047L	048	048	[illegible]
22	-	-	-	-	-	-	-	L	L	L	L	L	048	047	0[illegible]
23	-	-	-	-	-	-	-	L	L	046	050	047	047	046	0[illegible]
24	-	-	-	-	-	-	-	-	L	045	C	045	A	046	[illegible]
25	-	-	-	-	-	-	-	-	L	L	L	L	046	046	A
26	-	-	-	-	-	-	-	-	L	L	046	046	046	046	[illegible]
27	-	-	-	-	-	-	-	-	-	L	U046L	046	046	046	0[illegible]
28	-	-	-	-	-	-	-	-	L	C	-	036	U047L	U047L	[illegible]
29	-	-	-	-	-	-	-	-	L	U045L	L	L	L	L	[illegible]
30	-	-	-	-	-	-	-	-	-	L	L	L	L	L	[illegible]
31	-	-	-	-	-	-	-	-	L	C	U046L	L	049	046	[illegible]
Median	-	-	-	-	-	-	-	-	-	045	046	046	047	046	04
Count	-	-	-	-	-	-	-	-	1	12	17	20	24	22	1
UQ	-	-	-	-	-	-	-	-	-	046	047	047	048	047	04
LQ	-	-	-	-	-	-	-	-	-	044	045	045	046	045	04
QR	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2

* Tabulation of 042 = 4.2 Mc.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

7	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
L	U045L	042*	045	044	045	045	044	044	U040L	L	L	-	-	-	-	-
-	-	-	-	-	048	045	043	U045L	L	L	-	-	-	-	-	-
-	L	L	L	046	046	048	043	042	042	L	-	-	-	-	-	-
L	L	044	044	045	047	045	045	043	U041L	L	-	-	-	-	-	-
-	L	A	A	045	044	044	044	U043L	L	L	-	-	-	-	-	-
-	L	U044L	045	045	044	044	044	U044L	L	L	-	-	-	-	-	-
-	L	044	045H	046H	045	045	A	043	L	-	-	-	-	-	-	-
-	L	L	045	047	048	047	043	U044L	L	L	-	-	-	-	-	-
-	L	A	A	A	A	045	045	045	L	L	-	-	-	-	-	-
-	L	L	U046C	A	U047C	C	045	U043L	U046L	L	-	-	-	-	-	-
-	L	047	047	047	048	047	047	045	L	L	-	-	-	-	-	-
-	L	045	048	B	B	B	047	B	A	L	-	-	-	-	-	-
-	L	U046L	U048L	A	A	B	B	A	A	-	-	-	-	-	-	-
-	L	U048L	048	048	049	047	L	L	L	L	-	-	-	-	-	-
-	L	L	L	049	050L	048	045	L	L	-	-	-	-	-	-	-
-	L	L	047	047	048	046	L	L	L	L	-	-	-	-	-	-
-	L	U045L	047	047	048	A	046	U047L	L	L	-	-	-	-	-	-
-	L	A	L	-	-	-	-	-	L	L	-	-	-	-	-	-
-	L	L	L	046	U046L	A	L	L	L	L	L	-	-	-	-	-
-	L	L	047	047	049	B	L	L	L	L	-	-	-	-	-	-
-	L	L	L	U047L	048	048	L	L	L	-	-	-	-	-	-	-
-	L	L	L	L	048	047	046	L	L	-	-	-	-	-	-	-
-	L	046	050	047	047	046	046	L	L	-	-	-	-	-	-	-
-	L	045	C	045	A	046	L	L	A	-	-	-	-	-	-	-
-	L	L	L	L	046	046	A	L	L	-	-	-	-	-	-	-
-	L	L	046	046	046	046	B	L	-	-	-	-	-	-	-	-
-	-	L	U046L	046	046	046	042	L	L	-	-	-	-	-	-	-
-	L	C	-	036	U047L	U047L	L	L	L	L	-	-	-	-	-	-
-	L	U045L	L	L	L	L	L	L	L	I	-	-	-	-	-	-
-	-	L	L	L	L	L	L	L	B	A	-	-	-	-	-	-
-	L	C	U046L	L	049	046	L	L	L	-	-	-	-	-	-	-
	-	045	046	046	047	046	045	044	042	-	-	-	-	-	-	-
	1	12	17	20	24	22	16	12	4	-	-	-	-	-	-	-
	-	046	047	047	048	047	046	045	044	-	-	-	-	-	-	-
	-	044	045	045	046	045	044	043	041	-	-	-	-	-	-	-
	-	2	2	2	2	2	2	2	3	-	-	-	-	-	-	-

B

Characteristic: M(3000)F1

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5
October 1963

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

Date \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	-	-	-	-	-	-	-	L	U390L	400*	390	420	400	415
2	-	-	-	-	-	-	-	-	-	-	-	-	400	415
3	-	-	-	-	-	-	-	-	L	L	L	390	390	390
4	-	-	-	-	-	-	-	L	L	390	380	410	400	400
5	-	-	-	-	-	-	-	-	L	A	A	400	410	415
6	-	-	-	-	-	-	-	-	L	L	400	410	420	430
7	-	-	-	-	-	-	-	-	L	390	395H	400H	410	420
8	-	-	-	-	-	-	-	-	L	L	395	400	390	400
9	-	-	-	-	-	-	-	L	L	A	A	A	A	415
10	-	-	-	-	-	-	-	L	L	L	U395C	A	U405C	C
11	-	-	-	-	-	-	-	-	L	370	400	400	410	410
12	-	-	-	-	-	-	-	-	L	400	380	B	B	B
13	-	-	-	-	-	-	-	L	L	U370L	U390L	A	A	B
14	-	-	-	-	-	-	-	L	L	U390L	390	400	390	410
15	-	-	-	-	-	-	-	-	L	L	L	390	L	380
16	-	-	-	-	-	-	-	L	L	L	370	400	390	395
17	-	-	-	-	-	-	-	-	L	U365L	380	390	365	A
18	-	-	-	-	-	-	-	-	L	A	L	-	-	-
19	-	-	-	-	-	-	-	L	L	L	L	400	U410L	A
20	-	-	-	-	-	-	-	-	L	L	395	380	380	B
21	-	-	-	-	-	-	-	-	L	L	L	U390L	375	380
22	-	-	-	-	-	-	-	L	L	L	L	L	390	390
23	-	-	-	-	-	-	-	L	L	380	370	395	-	390
24	-	-	-	-	-	-	-	-	L	360	C	395	A	395
25	-	-	-	-	-	-	-	-	L	L	L	L	390	395
26	-	-	-	-	-	-	-	-	L	L	380	390	380	390
27	-	-	-	-	-	-	-	-	-	L	U380L	390	390	395
28	-	-	-	-	-	-	-	-	L	C	-	380	U360L	U390L
29	-	-	-	-	-	-	-	-	L	U380L	L	L	L	L
30	-	-	-	-	-	-	-	-	-	L	L	L	L	L
31	-	-	-	-	-	-	-	-	L	C	U380L	L	380	390
Median	-	-	-	-	-	-	-	-	-	380	390	398	390	395
Count	-	-	-	-	-	-	-	-	1	11	17	20	22	22
UQ	-	-	-	-	-	-	-	-	-	390	395	400	405	415
LQ	-	-	-	-	-	-	-	-	-	370	380	390	380	390
QR	-	-	-	-	-	-	-	-	-	20	15	10	25	25

* Tabulation of 400 = factor of 4.0.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
U390L	400*	390	420	400	415	400	375	U380L	L	L	-	-	-	-	-
-	-	-	-	400	415	410	U395L	L	L	-	-	-	-	-	-
L	L	L	390	390	390	410	400	400	L	-	-	-	-	-	-
L	390	380	410	400	400	400	370	L	L	-	-	-	-	-	-
L	A	A	400	410	415	405	U385L	L	L	-	-	-	-	-	-
L	L	400	410	420	430	420	U380L	L	L	-	-	-	-	-	-
L	390	395H	400H	410	420	A	400	L	-	-	-	-	-	-	-
L	L	395	400	390	400	415	U380L	L	L	-	-	-	-	-	-
L	A	A	A	A	415	405	380	L	L	-	-	-	-	-	-
L	L	U395C	A	U405C	C	400	U400L	U390L	L	-	-	-	-	-	-
L	370	400	400	410	410	425	400	L	L	-	-	-	-	-	-
L	400	380	B	B	B	375	B	A	L	-	-	-	-	-	-
L	U370L	U390L	A	A	B	B	A	A	-	-	-	-	-	-	-
L	U390L	390	400	390	410	L	L	L	L	-	-	-	-	-	-
L	L	L	390	L	380	410	L	L	-	-	-	-	-	-	-
L	L	370	400	390	395	L	L	L	L	-	-	-	-	-	-
L	U365L	380	390	365	A	400	U350L	L	L	-	-	-	-	-	-
L	A	L	-	-	-	-	-	L	L	-	-	-	-	-	-
L	L	L	400	U410L	A	L	L	L	L	L	-	-	-	-	-
L	L	395	380	380	B	L	L	L	L	-	-	-	-	-	-
L	L	L	U390L	375	380	L	L	L	-	-	-	-	-	-	-
L	L	L	L	390	390	400	L	L	-	-	-	-	-	-	-
L	380	370	395	-	390	390	L	L	-	-	-	-	-	-	-
L	360	C	395	A	395	L	L	A	-	-	-	-	-	-	-
L	L	L	L	390	395	A	L	L	-	-	-	-	-	-	-
L	L	380	390	380	390	B	L	-	-	-	-	-	-	-	-
-	L	U380L	390	390	395	400	L	L	-	-	-	-	-	-	-
L	C	-	380	U360L	U390L	L	L	L	L	-	-	-	-	-	-
L	U380L	L	L	L	L	L	L	L	L	-	-	-	-	-	-
-	L	L	L	L	L	L	L	B	A	-	-	-	-	-	-
L	C	U380L	L	380	390	L	L	L	-	-	-	-	-	-	-
-	380	390	398	390	395	402	383	-	-	-	-	-	-	-	-
1	11	17	20	22	22	16	12	3	-	-	-	-	-	-	-
-	390	395	400	405	415	410	400	-	-	-	-	-	-	-	-
-	370	380	390	380	390	400	378	-	-	-	-	-	-	-	-
-	20	15	10	25	25	10	22	-	-	-	-	-	-	-	-

Characteristic: f_oE

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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

Date \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	-	-	-	-	-	-	-	A	A	A	A	A	B	B
2	-	-	-	-	-	-	-	-	-	-	-	-	A	A
3	-	-	-	-	-	-	-	A	A	A	A	A	A	B
4	-	-	-	-	-	-	-	A	A	A	A	A	A	S
5	-	-	-	-	-	-	-	A	A	A	A	A	B	B
6	-	-	-	-	-	-	-	-	A	B	A	A	A	A
7	-	-	-	-	-	-	-	A	A	A	A	340	U350S	320
8	-	-	-	-	-	-	-	A	U300S	U320S	340	345	U360S	S
9	-	-	-	-	-	-	-	A	A	A	A	A	A	A
10	-	-	-	-	-	-	-	B	B	A	A	A	C	C
11	-	-	-	-	-	-	-	C	240	A	A	A	B	A
12	-	-	-	-	-	-	-	A	A	A	B	B	B	B
13	-	-	-	-	-	-	-	A	A	A	B	A	A	B
14	-	-	-	-	-	-	-	A	A	A	A	A	B	B
15	-	-	-	-	-	-	-	A	A	A	R	B	A	A
16	-	-	-	-	-	-	A	A	A	A	A	A	A	A
17	-	-	-	-	-	-	-	A	A	A	A	A	A	A
18	-	-	-	-	-	-	-	A	A	A	R	-	-	-
19	-	-	-	-	-	-	-	S	A	R	B	A	B	A
20	-	-	-	-	-	-	-	S	A	A	B	B	B	B
21	-	-	-	-	-	-	-	S	A	R	R	A	B	330
22	-	-	-	-	-	-	-	S	A	B	R	R	B	R
23	-	-	-	-	-	-	-	S	U290R	B	R	R	B	b
24	-	-	-	-	-	-	-	A	A	U290A	C	A	B	A
25	-	-	-	-	-	-	-	A	A	A	A	A	A	A
26	-	-	-	-	-	-	-	S	B	R	B	B	B	B
27	-	-	-	-	-	-	-	S	B	R	350	350	B	B
28	-	-	-	-	-	-	S	S	280	C	-	B	B	S
29	-	-	-	-	-	-	-	A	A	A	D300A	B	B	D320R
30	-	-	-	-	-	A	A	A	A	S	A	S	S	S
31	-	-	-	-	-	-	-	-	S	C	D330A	R	B	B
Median	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Count	-	-	-	-	-	-	-	-	4	2	4	3	2	3
UQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QR	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Tabulation of 340 = 3.4 Mc.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
A	A	A	A	B	B	340*	U310R	R	S	S	-	-	-	-	-
-	-	-	-	A	A	B	A	270	235	S	-	-	-	-	-
A	A	A	A	A	B	A	A	A	B	S	-	-	-	-	-
A	A	A	A	A	S	R	B	A	A	S	-	-	-	-	-
A	A	A	A	B	B	S	310	B	B	S	-	-	-	-	-
A	B	A	A	A	A	A	A	A	A	A	-	-	-	-	-
A	A	A	340	U350S	320	A	A	R	S	S	-	-	-	-	-
U300S	U320S	340	345	U360S	S	330H	U320A	A	A	S	-	-	-	-	-
A	A	A	A	A	A	B	A	A	B	A	-	-	-	-	-
B	A	A	A	C	C	C	C	C	C	C	-	-	-	-	-
240	A	A	A	B	A	B	B	B	A	A	-	-	-	-	-
A	A	B	B	B	B	B	B	A	A	A	-	-	-	-	-
A	A	B	A	A	B	B	A	A	B	-	-	-	-	-	-
A	A	A	A	B	B	B	B	A	A	A	-	-	-	-	-
A	A	R	B	A	A	B	B	R	B	B	-	-	-	-	-
A	A	A	A	A	A	B	B	U295R	A	B	-	-	-	-	-
A	A	A	A	A	A	A	B	B	B	A	-	-	-	-	-
A	A	R	-	-	-	-	-	A	A	C	-	-	-	-	-
A	R	B	A	B	A	B	B	B	B	B	-	-	-	-	-
A	A	B	B	B	B	B	B	B	A	A	-	-	-	-	-
A	R	R	A	B	330	B	B	B	B	B	-	-	-	-	-
A	B	R	R	B	R	B	A	B	B	S	-	-	-	-	-
U290R	B	R	R	B	B	B	B	U290R	B	B	-	-	-	-	-
A	U290A	C	A	B	A	A	A	A	A	C	-	-	-	-	-
A	A	A	A	A	A	A	B	B	B	B	-	-	-	-	-
B	R	B	B	B	B	B	B	B	B	A	-	-	-	-	-
B	R	350	350	B	B	B	R	B	B	-	-	-	-	-	-
280	C	-	B	B	S	-	-	A	A	A	-	-	-	-	-
A	A	D300A	B	B	D320R	B	B	B	A	-	-	-	-	-	-
A	S	A	S	S	S	B	B	A	A	-	-	-	-	-	-
S	C	D330A	R	B	B	B	B	S	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	2	4	3	2	3	2	3	3	1	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

8

Characteristic: h'E

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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	-	-	-	-	-	-	-	E112S	A	E105S	100*	S	B	B
2	-	-	-	-	-	-	-	-	-	-	-	-	A	A
3	-	-	-	-	-	-	-	115	110	105	108	115	115	B
4	-	-	-	-	-	-	-	E120B	110	A	110	A	B	S
5	-	-	-	-	-	-	-	B	S	S	S	B	B	B
6	-	-	-	-	-	-	-	-	105	B	113	A	A	A
7	-	-	-	-	-	-	-	115	115	110	105	110	110	110
8	-	-	-	-	-	-	-	110	115	110	E110A	105	105	S
9	-	-	-	-	-	-	-	110	B	-	A	104	A	A
10	-	-	-	-	-	-	-	B	B	A	A	A	C	C
11	-	-	-	-	-	-	-	C	110	A	C	100	B	A
12	-	-	-	-	-	-	-	110	E110S	E110S	B	B	B	B
13	-	-	-	-	-	-	-	S	S	B	B	A	A	B
14	-	-	-	-	-	-	-	109	S	115	A	A	B	B
15	-	-	-	-	-	-	-	110	110	110	110	B	S	S
16	-	-	-	-	-	-	115	115	B	B	105	A	A	A
17	-	-	-	-	-	-	-	A	105	A	A	A	A	A
18	-	-	-	-	-	-	-	S	B	105	103	-	-	-
19	-	-	-	-	-	-	-	115	100	105	B	A	B	A
20	-	-	-	-	-	-	-	S	A	A	B	B	B	B
21	-	-	-	-	-	-	-	S	105	105	103	102	B	E110S
22	-	-	-	-	-	-	-	S	A	B	115	115	B	112
23	-	-	-	-	-	-	-	S	E120S	B	100	100	B	B
24	-	-	-	-	-	-	-	120	B	E125A	C	B	B	B
25	-	-	-	-	-	-	-	105	107	105	E120A	105	105	110
26	-	-	-	-	-	-	-	S	B	110	B	B	B	B
27	-	-	-	-	-	-	-	115	B	115	110	110	B	B
28	-	-	-	-	-	-	S	S	E110S	C	-	B	B	S
29	-	-	-	-	-	-	-	A	115	108	119	B	B	115
30	-	-	-	-	-	A	A	A	A	S	A	S	S	S
31	-	-	-	-	-	-	-	-	S	C	100	115	B	B
Median	-	-	-	-	-	-	-	114	110	110	109	105	107	110
Count	-	-	-	-	-	-	1	14	15	15	16	11	4	5
UQ	--	-	-	-	-	-	-	115	115	110	111	115	112	113
LQ	-	-	-	-	-	-	-	110	105	105	103	102	105	110
QR	-	-	-	-	-	-	-	5	10	5	8	13	7	3

* Tabulation of 100 = 100 km.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	E105S	100*	S	B	B	E115S	103	E110S	S	S	-	-	-	-	-
	-	-	-	A	A	B	A	110	113	S	-	-	-	-	-
0	105	108	115	115	B	A	110	111	B	S	-	-	-	-	-
0	A	110	A	B	S	110	B	108	B	S	-	-	-	-	-
	S	S	B	B	B	S	110	B	B	S	-	-	-	-	-
5	B	113	A	A	A	A	A	A	A	A	-	-	-	-	-
5	110	105	110	110	110	B	105	110	S	S	-	-	-	-	-
5	110	E110A	105	105	S	110	108	105	108	S	-	-	-	-	-
	-	A	104	A	A	B	A	A	B	A	-	-	-	-	-
	A	A	A	C	C	C	C	C	C	C	-	-	-	-	-
0	A	C	100	B	A	B	B	B	A	A	-	-	-	-	-
0S	E110S	B	B	B	B	B	B	A	A	A	-	-	-	-	-
	B	B	A	A	B	B	A	A	B	-	-	-	-	-	-
	115	A	A	B	B	B	B	115	B	A	-	-	-	-	-
0	110	110	B	S	S	B	B	119	B	B	-	-	-	-	-
	B	105	A	A	A	B	B	120	B	B	-	-	-	-	-
5	A	A	A	A	A	A	B	B	B	A	-	-	-	-	-
	105	103	-	-	-	-	-	A	B	C	-	-	-	-	-
0	105	B	A	B	A	B	B	B	B	B	-	-	-	-	-
	A	B	B	B	B	B	B	B	B	A	-	-	-	-	-
5	105	103	102	B	E110S	B	B	B	B	B	-	-	-	-	-
	B	115	115	B	112	B	A	B	B	S	-	-	-	-	-
0S	B	100	100	B	B	B	B	110	B	B	-	-	-	-	-
	E125A	C	B	B	B	A	A	A	A	C	-	-	-	-	-
7	105	E120A	105	105	110	105	B	B	B	B	-	-	-	-	-
	110	B	B	B	B	B	B	B	B	A	-	-	-	-	-
	115	110	110	B	B	B	105	B	B	-	-	-	-	-	-
0S	C	-	B	B	S	-	-	B	A	A	-	-	-	-	-
5	108	119	B	B	115	B	B	B	A	-	-	-	-	-	-
	S	A	S	S	S	B	B	A	A	-	-	-	-	-	-
	C	100	115	B	B	B	B	S	-	-	-	-	-	-	-
0	110	109	105	107	110	110	107	110	-	-	-	-	-	-	-
5	15	16	11	4	5	4	6	10	2	-	-	-	-	-	-
5	110	111	115	112	113	112	110	115	-	-	-	-	-	-	-
5	105	103	102	105	110	108	105	110	-	-	-	-	-	-	-
0	5	8	13	7	3	4	5	5	-	-	-	-	-	-	-

B

Characteristic: fbEs

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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

Date \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
1	027M	020*	022M	B	B	A	M	023	031	033	035	035	B	B	
2	-	-	-	-	-	-	-	-	-	-	-	-	041	035M	
3	S	B	B	B	M	B	S	026	036M	045	040M	038	045M	B	
4	020	-	B	B	A	B	-	026	040M	045	045	038	038	S	
5	S	S	B	B	016M	A	M	027	030M	050M	046	038	B	B	
6	S	S	B	B	S	A	018	028M	030	B	G	036M	036	039M	
7	S	017M	B	B	-	M	S	025	029	G	033	G	G	G	
8	S	B	019M	B	017M	A	S	026M	G	G	028	G	G	S	
9	019M	-	B	B	B	B	B	026	040M	050M	056M	050	050M	040M	
10	-	B	B	B	-	B	B	B	B	0038C	0043C	050	C	C	
11	C	C	C	C	C	C	C	C	C	035	037	036	B	040	
12	B	019	016M	B	B	S	017	026	032	035	B	B	B	B	
13	022M	021M	M	017	021M	020M	-	025M	032	037	B	055M	054M	B	
14	B	B	B	B	B	B	B	G	-	034	G	044	B	B	
15	B	B	B	B	028	-	023M	033	039	G	G	B	G	B	
16	B	-	-	-	018	A	021	030	036M	042	-	040	045	-	
17	B	B	B	018	A	A	B	028M	G	040	036	040	035	050	
18	B	B	B	B	B	B	B	028	035	050M	G	-	-	-	
19	B	B	B	B	B	S	S	G	030	G	B	045	B	050	
20	B	B	-	B	B	B	5	S	032	036	G	B	B	B	
21	-	B	019	019	-	018	S	S	029	G	G	041	B	G	
22	-	021	022	B	B	S	S	S	030M	B	G	G	G	G	
23	B	B	B	B	B	017	S	S	G	B	G	G	B	B	
24	B	B	B	B	B	-	S	026	034M	035	C	050M	B	042	
25	B	A	A	A	B	B	S	G	034	032	035	042	039	-	
26	B	B	B	B	B	B	S	S	G	G	B	B	B	B	
27	027	B	B	B	B	S	S	G	B	G	G	G	B	B	
28	B	B	B	B	B	B	G	S	G	C	B	B	D	B	
29	B	B	B	B	B	018	B	027	G	035	038	B	B	B	
30	B	022	021M	019M	B	-	027	040	041	032	037	B	S	S	
31	B	B	B	B	B	B	S	S	029	C	036	S	B	B	
Median	022	021	020	018	018	018	021	026	032	036	037	041	041	040	
Count	5	6	5	4	5	4	5	17	20	18	14	16	9	7	
UQ	027	021	022	019	025	019	025	028	036	045	043	045	047	050	
LQ	020	019	019	019	017	018	018	026	030	035	035	038	037	039	
QR	7	2	3	0	8	1	7	2	6	10	8	10	10	11	

* Tabulation of 020 = 2.0 Mc.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
031	033	035	035	B	B	G	G	G	G	G	B	S	S	C	C
-	-	-	-	041	035M	B	M	G	G	S	S	S	018M	M	M
036M	045	040M	038	045M	B	038	B	B	B	S	M	-	-	-	025M
040M	045	045	038	038	S	G	B	033	027	S	S	S	020	-	020
030M	050M	046	038	B	B	S	G	B	B	G	B	M	M	B	S
030	B	G	036M	036	039M	034M	035	031	027	023	S	-	S	-	S
029	G	033	G	G	G	050	-	G	S	S	S	S	S	S	-
G	G	028	G	G	S	G	033	035	027	020	027M	040M	026	028M	B
040M	050M	056M	050	050M	040M	B	035	034	B	032	022M	020	020	021	B
B	U038C	U043C	050	C	C	C	C	C	C	C	030	C	C	C	C
C	035	037	036	B	040	B	B	B	034	022	B	B	022M	B	B
032	035	B	B	B	B	B	B	040M	035	030M	B	B	S	S	S
032	037	B	055M	054M	B	B	045	042	B	041	B	036	B	B	S
-	034	G	044	B	B	B	B	G	028	028	B	B	028	031	025
039	G	G	B	G	B	B	B	G	B	B	B	B	-	-	B
036M	042	-	040	045	-	B	B	G	G	B	B	B	B	B	B
G	040	036	040	035	050	050M	B	B	B	030	S	B	024	022	S
035	050M	G	-	-	-	-	-	030	027	C	C	B	C	025	-
030	G	B	045	B	050	B	B	B	B	B	B	B	B	B	B
032	036	G	B	B	B	B	B	B	G	050	028	027	B	B	S
029	G	G	041	B	B	B	B	B	B	B	B	B	B	B	B
030M	B	G	G	G	G	B	B	B	B	G	025	027	025	B	B
G	B	G	G	G	B	B	B	G	G	B	B	B	B	B	B
034M	035	C	050M	B	042	035	034M	065	035	C	B	B	B	B	B
034	032	035	042	039	-	065	G	B	B	G	B	B	B	B	S
G	G	B	B	B	B	B	B	B	B	-	B	B	-	B	034
B	G	G	G	B	B	B	G	B	G	024M	-	024	035M	023M	B
G	C	B	B	B	B	038	037	032	029	027M	022	-	020	B	B
G	035	036	B	B	B	B	B	B	036	B	B	019M	B	B	-
041	032	037	B	S	S	B	B	052	051M	040M	B	B	B	023	027M
029	C	038	S	B	B	B	052M	035M	044	S	S	S	027	021	-
032	036	037	041	041	040	038	035	035	031	029	026	027	024	023	025
20	18	14	16	9	7	7	7	11	12	11	6	7	11	8	5
036	045	043	048	047	050	050	045	042	035	036	028	036	027	026	030
030	035	035	038	037	039	035	034	032	027	024	022	020	020	022	023
6	10	8	10	10	11	15	11	10	8	12	6	16	7	4	7

B

Characteristic: f_oE_s

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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

Date \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	050M	020*	045M	B	B	026M	025M	023	036	033	035	039	B	B
2	-	-	-	-	-	-	-	-	-	-	-	-	045	047M
3	S	B	B	B	048M	B	S	029	046M	045	065M	042	045M	B
4	023	018	B	B	020	B	023	026	046M	045	045	040	038	S
5	S	S	B	B	025M	035M	032M	030	055M	057M	046	039	B	B
6	S	S	B	B	S	024	020	035M	033	B	G	046M	046	067M
7	S	025M	B	B	019	025M	S	030	029	G	033	G	G	G
8	S	B	045M	B	023M	030M	S	032M	G	G	028	G	G	S
9	040M	018	B	B	B	B	B	026	055M	065M	135M	057	085M	055M
10	020	B	B	B	021	B	B	B	B	U040C	U050C	050	C	C
11	C	C	C	C	C	C	C	C	C	035	037	036	B	040
12	B	019	025M	B	B	S	021	026	032	035	B	B	B	B
13	035M	029M	027M	020	029M	021M	023	041M	033	038	B	055M	054M	B
14	B	B	B	B	B	B	B	G	031	035	G	044	B	B
15	B	B	B	B	031	020	033M	042	047	G	G	B	G	B
16	B	028	028	025	026	041	025	040	065M	048	037	050	045	036
17	B	B	B	025	025	024	B	036M	G	040	036	040	035	050
18	B	B	B	B	B	B	B	028	035	070M	G	-	-	-
19	B	B	B	B	B	S	S	G	045	G	B	045	B	050
20	B	B	025	B	B	B	S	S	035	046	G	B	B	B
21	030	B	035	027	019	019	S	S	030	G	G	041	B	G
22	034	031	030	B	B	S	S	S	055M	B	G	G	G	G
23	B	B	B	B	B	018	S	S	G	B	G	G	B	B
24	B	B	B	B	B	024	S	026	057M	035	C	050M	B	042
25	B	070M	041M	032	B	B	S	G	034	032	037	042	039	034
26	B	B	B	B	B	B	S	S	G	G	B	B	B	B
27	031	B	B	B	B	S	S	G	B	G	G	G	B	B
28	B	B	B	B	B	B	G	S	G	C	B	B	B	B
29	B	B	B	B	B	022	B	031	G	035	036	B	B	B
30	B	022	026M	027M	B	031	038	047	047	032	037	B	S	S
31	B	B	B	B	B	B	S	S	029	C	038	S	B	B
Median	033	023	029	026	025	024	025	030	036	039	037	043	045	047
Count	8	10	10	6	11	14	9	17	21	18	15	16	9	9
UQ	038	029	041	027	029	030	032	038	051	046	046	050	054	052
LQ	027	019	026	025	020	021	022	026	033	035	036	040	039	038
QR	11	10	15	2	9	9	10	12	18	11	10	10	15	14

* Tabulation of 020 = 2.0 Mc.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
036	033	035	039	B	B	G	G	G	G	G	B	S	S	C	C
-	-	-	-	045	047M	B	034M	G	G	S	S	S	025M	040M	031M
046M	045	065M	042	045M	B	045	B	B	B	S	040M	023	025	023	055M
046M	045	045	040	038	S	G	B	033	027	S	S	S	020	028	030
055M	057M	046	039	B	B	S	G	B	B	G	B	035M	043M	B	S
033	B	G	046M	046	067M	058M	035	031	027	031	S	024	S	021	S
029	G	033	G	G	G	059	045	G	S	S	S	S	S	S	023
G	G	028	G	G	S	G	034	035	027	022	045M	050M	058	055M	B
055M	065M	135M	057	085M	055M	B	045	034	B	032	035M	027	020	021	B
B	U040C	U050C	050	C	C	C	C	C	C	C	030	C	C	C	C
C	035	037	036	B	040	B	B	B	034	022	B	B	040M	B	B
032	035	B	B	B	B	B	B	060M	035	035M	B	B	S	S	S
033	038	F	055M	054M	B	B	045	042	B	055	B	036	B	B	S
031	035	G	044	B	B	B	B	G	028	030	B	B	035	035	028
047	G	G	B	G	B	B	B	G	B	B	B	B	023	025	B
065M	048	037	050	045	036	B	B	G	G	B	B	B	B	B	B
G	040	036	040	035	050	055M	B	B	B	030	S	B	024	028	S
035	070M	G	-	-	-	-	-	031	027	C	C	B	C	029	035
045	G	B	045	B	050	B	B	B	B	D	B	B	B	B	B
035	046	G	B	B	B	B	B	B	G	053	030	027	B	B	S
030	G	G	041	B	G	B	B	B	B	B	B	B	B	B	B
055M	B	G	G	G	G	B	B	B	B	G	042	034	030	B	B
G	B	G	G	B	B	B	B	G	G	B	B	B	B	B	B
057M	035	C	050M	B	042	035	045M	065	043	C	B	B	B	B	B
034	032	037	042	039	034	070	G	B	B	G	B	B	B	B	S
G	G	B	B	B	B	B	B	B	B	026	E	B	045	B	042
B	G	G	G	B	B	B	G	B	G	055M	025	030	062M	045M	B
G	C	B	B	B	B	038	037	032	029	047M	032	024	020	B	B
G	035	036	B	B	B	B	B	B	037	B	B	025M	B	B	-
047	032	037	B	S	S	B	B	056	080M	065M	B	B	P	037	030M
029	C	038	S	B	B	B	057M	041M	054	S	S	S	031	024	025
036	039	037	043	045	047	055	045	035	031	032	033	027	030	028	030
21	18	15	16	9	9	7	9	11	12	13	8	11	15	13	9
051	046	046	050	054	052	059	045	056	040	054	041	035	043	038	038
033	035	036	040	039	038	038	035	032	027	028	030	024	023	024	027
18	11	10	10	15	14	21	10	24	13	26	11	11	20	14	11

B

Characteristic: h'E

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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

Date \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	090*	090	090	B	B	100	098	115	100	102	100	112	B	B
2	C	C	C	C	C	C	C	C	C	C	C	C	085	085
3	B	B	B	B	110	B	S	115	112	102	102	112	120	B
4	100	095	B	B	115	B	112	115	112	111	108	098	115	S
5	S	S	B	B	118	112	111	115	105	100	102	115	B	B
6	S	S	B	B	S	110	090	093	113	B	G	100	100	093
7	S	100	B	B	115	110	S	115	115	G	110	G	G	G
8	S	B	100	B	115	110	S	115	G	G	100	G	G	S
9	100	100	B	B	B	B	B	105	100	100	100	100	100	100
10	100	B	B	B	120	B	B	B	B	100	100	095	C	C
11	C	C	C	C	C	C	C	C	C	100	115	100	B	095
12	B	125	108	B	B	S	110	112	110	110	B	B	B	B
13	110	105	103	103	108	110	112	100	108	110	B	098	097	B
14	B	B	B	B	B	B	B	G	125	123	G	090	B	B
15	B	B	B	B	G	120	110	B	B	100	100	100	G	B
16	B	120	115	120	120	115	115	115	110	115	115	100	100	100
17	B	B	B	105	105	115	B	100	G	110	105	102	100	100
18	B	B	B	B	B	B	B	115	112	110	G	C	C	C
19	B	B	B	B	B	S	S	G	095	G	B	100	B	092
20	B	B	110	B	B	B	S	S	100	100	G	B	B	B
21	130H	B	115	109	105	110	S	S	110	G	G	110	B	G
22	125	112	111	B	B	S	S	S	100	B	G	G	G	G
23	B	B	B	B	B	119	S	S	G	B	G	G	B	B
24	B	B	B	B	B	105	S	120	106	110	C	110	B	112
25	B	100	103	104	B	B	S	G	115	100	105	110	115	113
26	B	B	B	B	B	B	S	S	G	G	B	B	B	B
27	100	B	B	B	B	S	S	G	B	G	G	G	B	B
28	B	B	B	B	B	B	G	S	G	C	B	B	B	B
29	B	B	B	B	B	100	B	100	G	115	127	B	B	B
30	B	129	129	121	B	-	100	121	119	100	100	B	S	S
31	B	B	B	B	B	B	S	S	139	C	120	S	B	B
Median	100	102	109	107	115	110	110	115	110	102	104	100	100	100
Count	8	10	10	6	10	13	9	16	20	19	16	17	9	9
UQ	115	120	115	120	118	115	112	115	114	110	113	110	115	106
LQ	100	100	103	104	106	108	099	102	102	100	100	099	098	093
QR	15	20	12	16	10	7	13	13	12	10	13	11	16	13

* Tabulation of 090 = 90 km.

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
100	102	100	112	B	B	G	G	G	G	G	B	S	S	C	C
C	C	C	C	085	085	B	090	G	G	S	S	S	100	100	105
112	102	102	112	120	B	100	B	B	B	S	100	100	100	100	100
112	111	108	098	115	S	G	B	152	148	S	S	S	125	120	100
105	100	102	115	B	B	S	G	B	B	G	B	120	119	B	S
113	B	G	100	100	093	095	095	100	100	095	-S	100	S	100	S
115	G	110	G	G	G	100	110	G	S	S	S	S	S	S	110
G	G	100	G	G	S	G	150	115	110	110	108	100	102	100	B
100	100	100	100	100	100	B	100	100	B	095	098	095	110	112	B
B	100	100	095	C	C	C	C	C	C	C	090	C	C	C	C
C	100	115	100	B	095	B	B	B	090	089	B	B	100	B	B
110	110	B	B	B	B	B	B	087	085	088	B	B	S	S	S
108	110	B	098	097	B	B	095	095	B	100	B	100	B	B	S
125	123	G	090	B	B	B	B	G	120	110	B	B	100	100	100
B	100	100	100	G	B	B	B	G	B	B	B	B	100	132	B
110	115	115	100	100	100	B	B	G	G	B	B	B	B	B	B
G	110	105	102	100	100	100	B	B	B	100	S	B	100	102	S
112	110	G	C	C	C	C	C	090	125	C	C	B	C	100	095
095	G	B	100	B	092	B	B	B	B	B	B	B	B	B	B
100	100	G	B	B	B	B	B	B	G	095	105	105	B	B	S
110	G	G	110	B	G	B	B	B	B	B	B	B	B	B	B
100	B	G	G	G	G	B	B	B	B	G	090	085	120	B	B
G	B	G	G	B	B	B	B	G	G	B	B	B	B	B	B
106	110	C	110	B	112	100	095	090	097	C	B	B	B	B	B
115	100	105	110	115	113	105	G	B	B	G	B	B	B	B	S
G	G	B	B	B	B	B	B	B	B	090	B	B	105	B	100
B	G	G	G	B	B	B	G	B	G	105	110	100	100	100	B
G	C	B	B	B	B	150	129	118	108	105	110	103	105	B	B
G	115	127	B	B	B	B	B	B	099	B	B	100	B	B	-
119	100	100	B	S	S	B	B	109	103	107	B	B	B	099	100
139	C	120	S	B	B	B	101	107	100	S	S	S	127	100	119
110	102	104	100	100	100	100	100	100	102	100	103	100	102	100	100
20	19	16	17	9	9	7	9	11	12	13	8	11	15	13	9
114	110	113	110	115	106	105	120	115	115	106	109	103	119	106	108
102	100	100	099	099	093	100	095	090	098	093	094	100	100	100	100
12	10	13	11	16	13	5	25	25	17	13	15	3	19	6	8

B

Characteristic: Type of Es

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

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

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

A

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5 minute
October 1963

08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ℓ	c	c	c	c	ℓ	–	–	–	–	–	–	–	–	–	–
–	–	–	–	ℓ	ℓ	–	ℓ	–	–	–	–	–	f	f3	f
c	c2	c2	c	c	–	ℓ	ℓc	c	–	–	f	f2	f	f2	f3
c2	cℓ	c	cℓ	c	–	–	–	h	h	–	–	–	f5	f	f
c	c	c	c	c	ℓ	–	–	–	–	–	–	f	f	–	–
c	–	c	ℓ	ℓ	ℓ2	ℓ	ℓ	ℓh	hℓ	ℓ2	–	f	–	f	f
c	c	c	–	–	–	c	c	–	–	–	–	–	–	–	f
–	–	ℓ	–	–	–	–	h	c	c	c	f	f3	f3	f3	f
c	c2	ℓ3	c2	ℓ	ℓ	ℓ	ℓ	ℓ	ℓ	ℓ	f	f	f	f	–
ℓ	ℓ	ℓ	ℓ2	–	–	ℓ	–	–	–	–	f	–	–	–	–
c	ℓ	c	c	ℓ	ℓ	ℓ	–	ℓ	ℓ	ℓ	–	–	f	–	–
c	c	c	–	–	–	–	–	ℓ	ℓ	ℓ	f	f	–	–	f
c	c	–	ℓ	ℓ	–	–	ℓ	ℓ	–	f	f	f	f	–	–
c	c	ℓ	cℓ	–	–	–	–	c	c	ℓ2	–	f	f	f	f
c2	c	–	–	c	ℓ	–	–	–	–	–	–	–	f	f	f
c	c	c	ℓ	ℓ	ℓ	–	–	–	c	–	–	f	f	–	–
c	ℓc	ℓ	ℓ	ℓ	ℓ2	ℓ	ℓ	–	ℓ	ℓ	–	–	f	f	–
c	c2	–	–	–	–	–	–	ℓ	c	–	–	–	–	f	f
cℓ	–	–	ℓ	–	ℓ	–	–	–	–	–	–	–	f	–	–
ℓ	ℓ	–	–	–	–	–	–	–	c	ℓ	f2	f	–	–	–
c	–	c	c	–	–	–	–	c	–	–	–	–	f	–	–
ℓ	–	–	–	–	–	–	ℓ	ℓ	c	–	f2	f	f	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	f	–	–
c	cℓ	–	c	c	c	cℓ	ℓ	ℓ2	ℓ	–	f	–	–	–	–
c	c	cℓ	c	c	c	c	–	–	–	–	–	–	–	–	f
–	–	–	–	–	–	–	–	–	–	ℓ2	–	–	f	f	f
–	–	–	–	–	–	–	–	–	–	f	f	f	f2	f2	f
–	–	–	–	–	–	h	c	c	ℓ	ℓ	f	f2	f	f	f
c	c	c	–	–	–	–	–	–	ℓ	–	–	f	–	–	–
c	ℓ	ℓh	–	–	–	–	c	c	ℓ2	f	–	–	–	fc	f
h	–	cℓ	c	–	–	–	c	c	f	–	–	–	f	f	f
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
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B

MEDIAN VALUES OCTOBER 1963

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	2.1	7.3	3.30	-	238	-	-	-	-	2.2	3.3	100
01	1.8	6.5	3.45	-	225	-	-	-	-	2.1	2.3	102
02	1.8	6.3	3.65	-	218	-	-	-	-	2.0	2.9	109
03	1.7	4.2	3.70	-	202	-	-	-	-	1.8	2.6	107
04	1.7	2.8	3.52	-	220	-	-	-	-	1.8	2.5	115
05	1.6	2.3	3.45	-	230	-	-	-	-	1.8	2.4	110
06	1.8	3.7	3.40	-	249	-	-	-	-	2.1	2.5	110
07	1.9	7.1	3.50	-	228	-	-	-	114	2.6	3.0	115
08	2.6	8.5	3.25	266	210	-	-	-	110	3.2	3.6	110
09	2.7	9.2	2.95	295	205	4.5	3.80	-	110	3.6	3.9	102
10	3.2	9.0	2.65	313	205	4.6	3.90	-	109	3.7	3.7	104
11	3.1	8.0	2.75	325	200	4.6	3.98	-	105	4.1	4.3	100
12	4.0	8.0	2.70	330	205	4.7	3.90	-	107	4.1	4.5	100
13	3.5	8.6	2.75	320	208	4.6	3.95	-	110	4.0	4.7	100
14	3.9	9.0	2.85	305	210	4.5	4.02	-	110	3.8	5.5	100
15	3.9	9.9	3.05	276	210	4.4	3.83	-	107	3.5	4.5	100
16	3.2	10.5	3.15	260	220	4.2	-	-	110	3.5	3.5	100
17	2.5	10.0	3.25	-	232	-	-	-	-	3.1	3.1	102
18	2.1	10.0	3.05	-	242	-	-	-	-	2.9	3.2	100
19	2.2	9.4	3.10	-	253	-	-	-	-	2.6	3.3	103
20	2.1	9.0	3.20	-	240	-	-	-	-	2.7	2.7	100
21	1.9	9.0	3.20	-	222	-	-	-	-	2.4	3.0	102
22	2.1	8.1	3.18	-	244	-	-	-	-	2.3	2.8	100
23	2.0	7.3	3.20	-	245	-	-	-	-	2.5	3.0	100

* Insufficient data for reliable median.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS
BANGKOK, THAILAND
OCTOBER 1963

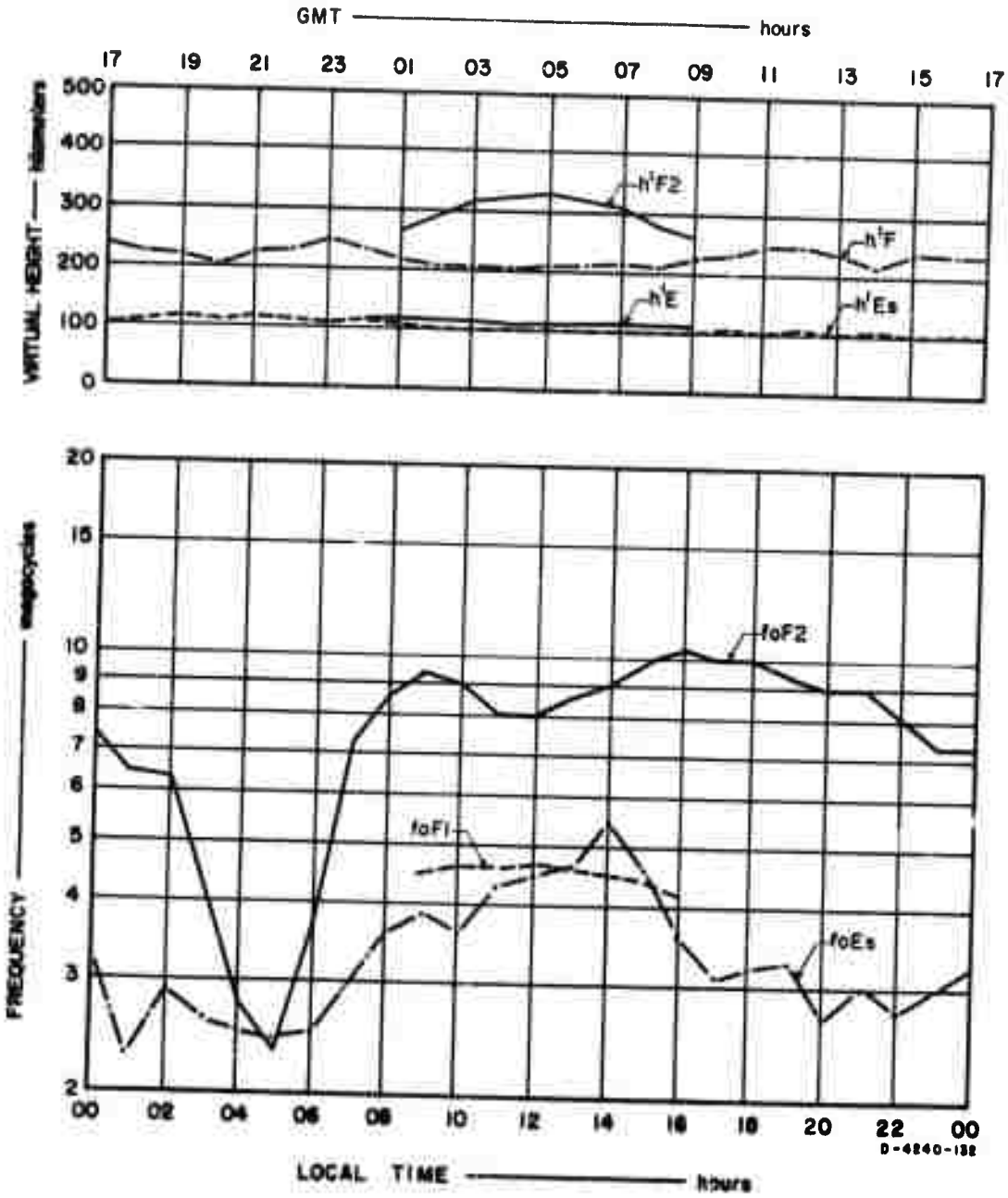

FIG. 1 SUMMARY GRAPHS

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