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Ionospheric Data Report — September 1964

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IONOSPHERIC DATA: BANGKOK, THAILAND

Compiled by: VICHAI T. NIMIT

Prepared for:

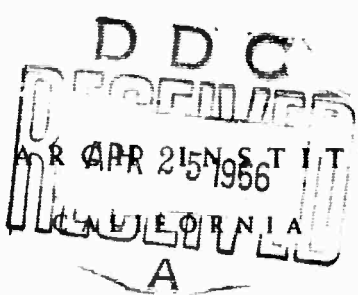
U.S. ARMY ELECTRONICS LABORATORIES
FORT MONMOUTH, NEW JERSEY

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

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



STANFORD RESEARCH INSTITUTE
MENLO PARK, CALIFORNIA



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Ionospheric Data Report, ~~Sept~~ 1964,

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IONOSPHERIC DATA: BANGKOK, THAILAND .

Prepared for:

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

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CONTRACT DA-36-039-AMC-0000(E)
ORDER NO. 5384 PM 63-91
PRIC NO. 84 ELN/D 0034
ARPA ORDER 371

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Compiled by: VICHAI T. NIMIT .

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BANGKOK, THAILAND

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CONTENTS

I	INTRODUCTION	1
II	TERMINOLOGY AND SYMBOLS	3
	A. Terminology	3
	B. Descriptive Letters	4
	C. Qualifying Letters	4
	D. Description of Standard Types of E_s	5
	E. Multiple Reflections from E_s	6
III	IONOSPHERIC DATA	7
	f_{min}	7
	f_oF_2	8
	$M(3000)F_2$	9
	$h'F_2$	10
	$h'F$	11
	f_oF_1	12
	$M(3000)F_1$	13
	f_oE	14
	$h'E$	15
	$f_b E_s$	16
	$f_o E_s$	17
	$h' E_s$	18
	Types of E_s	19
	Median Values	20

ILLUSTRATIONS

Fig. 1	Summary Graphs	21
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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 } The ordinary wave critical frequency for the F₂ and F₁ layers
 f_oE } 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 F₂ 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 F₁ stratification is present.)

¹W. R. Figgott 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_oE unless echoes clearly identifiable as E_s echoes are seen.)
- n An E trace that cannot be classified as one of the standard types. (This must not be used for intermediate cases between any two classes. A choice should always be made whenever possible, even if it is doubtful.)

E. MULTIPLE REFLECTIONS FROM E_s

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

Characteristic: fmin

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 1
September 1964

Observed at:
Bangkok, Thailand
Lat. 13.3°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
1	026 *	025	027	024	024	B	024	024	027	028	035	E033S	C
2	025	022	021	023	024	024	E027S	024	024	029	033	040	C
3	024	024	025	024	024	022	E023S	024	031	027	029	028	C
4	023	022	021	020	021	023	E024S	025	027	E028S	E028S	036	C
5	024	024	024	021	021	E021S	023	024	027	031	030	032	C
6	023	024	021	024	021	021	E022S	025	E027S	E028S	028	035	C
7	021	023	023	022	B	020	E023S	E024S	E024S	026	031	036	E0
8	023	022	023	B	B	B	024	025	028	030	037	032	C
9	032	034	032	B	B	B	033	033	035	041	036	039	C
10	024	E020E	E020E	B	B	E020E	022	021	026	025	C	C	C
11	E020E	022	E020E	022	021	E020E	022	021	027	032	035	036	C
12	E020E	021	020	E020E	E020E	E020E	E020E	022	026	029	030	034	C
13	E020E	E020E	E020E	E020E	E020E	020	E020E	021	025	028	031	034	C
14	021	E020E	E020E	E020E	E020E	E020E	021	021	E028S	E029S	B	036	C
15	024	E020E	E020E	B	E020E	028	E027S	E027S	039	034	046	C	C
16	E022S	020	E020E	023	023	023	E025S	024	028	024	025	039	C
17	024	023	024	023	E023S	E026S	E035S	026	029	029	031	034	C
18	027	027	022	025	026	031	028	029	036	033	025	033	C
19	023	022	021	E	E	E023S	E025S	025	029	029	029	032	C
20	021	E020E	E020E	022	020	025	E028S	030	034	032	040	040	C
21	023	023	020	020	023	029	029	031	033	E031S	E035S	036	E0
22	019	016	016	E018C	C	B	E019S	020	020	027	033	E033E	E0
23	E017S	014	018	018	B	C	E019S	E019S	E026S	E032S	C	C	C
24	C	C	016	017	E013S	C	C	E020S	E026S	027	031	034	C
25	020	018	018	B	B	B	021	021	030	029	034	030	C
26	E020C	E018C	018	C	019	C	E022S	022	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C
31													
Mediar. Count	023 25	022 25	020 26	022 19	021 18	022 18	023 25	024 23	027 25	029 25	031 22	034 22	
UQ	024	023	023	023	023	025	027	025	030	031	035	036	
LQ	020	020	020	020	020	020	022	021	026	028	029	033	
Q1	4	3	3	3	3	5	5	4	4	3	6	3	

* Tabulation of 026 = 2.6 Mc.

ATTENTION: The accuracy of the frequency parameters in this bulletin is questionable of the C-2 sounder from 15 July to 21 September 1964. The original frequency error is estimated to have been approximately 1 Mc.

SPHERIC DATA
 25 Mc in 0.5 minute
 September 1964

11	12	13	14	15	16	17	18	19	20	21	22	23
E033S	036	034	034	030	036	030	028	028	028	024	023	024
040	039	036	029	026	026	F028S	E023S	021	026	025	025	024
028	028	028	027	035	030	032	028	025	023	023	024	025
036	036	036	040	035	E028S	026	025	024	025	026	024	023
032	036	039	036	027	027	024	027	027	026	026	025	025
035	037	036	035	039	E027S	025	025	025	024	026	023	025
036	E028S	026	025	030	027	028	E027S	022	024	025	028	025
032	040	040	040	042	033	C	C	C	C	C	025	030
039	047	039	C	C	030	E027S	023	024	024	022	022	025
C	035	030	E030S	032	E023S	025	022	E020E	E020E	E020E	E020E	E020E
036	037	035	034	030	E024S	E026S	021	E020E	E020E	E020E	021	020
034	034	030	032	027	023	E027S	024	021	E020E	023	023	E020E
034	034	035	037	026	020	E028S	E025S	E020E	E025S	024	E020E	E020E
036	038	039	028	028	028	E036S	E030S	E032S	E029S	E020E	E020E	E026S
C	C	C	C	C	C	C	C	C	E020E	E020E	E028S	024
039	038	038	039	030	038	E028S	E024S	E024S	E023S	E023S	025	024
034	035	038	038	036	035	C	030	E030S	E028S	E027S	E027S	E027S
033	029	029	030	027	025	025	024	E025S	E023S	E023S	E023S	023
022	031	037	029	028	E027S	029	024	E023S	023	E023S	E023S	E022S
040	032	028	035	035	024	025	024	E023S	E022S	E023S	E023S	E023S
036	E043S	E042S	035	034	040	033	E028S	E026S	E029S	E030S	031	E029S
E033S	E032S	E033S	E027S	E024C	S	E020S	E018S	C	E018S	E019S	E019S	E019S
C	C	C	C	C	C	C	C	E027C	C	C	C	C
034	033	032	030	027	E026S	024	021	022	026	020	021	022
030	035	036	029	034	029	026	022	C	E021S	E020S	E028S	021
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
034	035	036	033	030	027	027	024	024	024	023	023	024
22	23	23	22	22	22	21	22	21	23	23	24	24
036	038	038	036	035	033	028	027	026	026	025	025	025
033	032	030	029	027	025	025	023	022	021	020	022	022
3	6	8	7	8	8	3	4	4	5	5	3	3

bulletin is questionable because of an error in frequency markers
 original frequency parameters have been increased by 1 Mc since the

Characteristic: foF2

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0

September 1964

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

Hour Date	J0	01	02	03	04	05	06	07	08	09	10	11	12
1	067*	061	060	035	A	B	U040S	U060S	U059S	062	073H	U060S	U060S
2	A	A	A	A	A	A	U030S	054	074	077	066	A	A
3	A	040	043	041	032	A	035	052	061	062	068H	066H	060
4	U038S	036	035	030	023	A	030	057	074	060	075H	070	070
5	038	035	029	027	024	A	036	061	073	070	064H	U060H	060
6	U040S	F	U038F	034	A	A	041	057	069	067H	060H	060H	060
7	038	033	U034S	028	B	A	035	055	U060S	U066S	064H	065H	060
8	031	034	025	B	B	B	033	064	U070S	065	U058S	U060S	U060S
9	065	070	053	B	B	B	040	073	U082S	088H	055	060	060
10	029	026	021	B	B	A	035	060	060	072	C	C	070
11	U040S	043	056	033	023	026	036	U060S	060	079	083	076	070
12	U045S	U041S	U038S	030	021	A	U028S	060	U087S	U071S	068H	U060S	060
13	U040S	U043S	U054S	028	023	A	032	050	U062S	070	077H	070H	060
14	032	U034F	F	F	A	A	032	U074S	U070S	U076S	B	072	U070S
15	F	F	F	B	A	A	052	074	U084S	U078S	074	C	070
16	050	U062S	024	A	A	A	043	078	078	069	070	066	070
17	032	F	030	029	F	F	045	063	067	068	055	059	060
18	035	F	F	F	A	A	055	074	080	080	083	072	060
19	U035F	U035F	034	EE	EE	029	032	056	063	066H	059	055	060
20	F	F	U027S	A	A	A	U038S	058	080	072	U067S	U070S	U070S
21	U042S	U050S	U034S	014	A	A	028	067	072	U072C	U061C	062	060
22	U042S	034	A	A	C	B	030	065	070	U071S	055	U060S	U070S
23	028	025	025	026	B	C	034	057	064	070	C	C	060
24	C	C	C	U030S	025	C	C	056	060	066	A	056	060
25	035	034	029	B	B	B	035	060	066	075	065	064	U070S
26	U043C	C	U036C	C	023	C	035	057	C	C	C	C	060
27	C	C	C	C	C	C	C	C	C	C	C	C	060
28	C	C	C	C	C	C	C	C	C	C	C	C	060
29	C	C	C	C	C	C	C	C	C	C	C	C	060
30	C	C	C	C	C	C	C	C	C	C	C	C	060
31	C	C	C	C	C	C	C	C	C	C	C	C	060
Median	038	035	034	030	023	029	035	060	070	071	060	062	060
Count	21	18	20	13	8	2	25	26	25	25	21	21	0
UQ	042	035	041	034	025	-	040	067	070	077	074	068	060
LQ	034	034	028	028	023	-	032	057	064	066	060	060	060
QR	8	1	13	6	2	-	8	10	14	11	14	8	0

* Tabulation of 067 = 6.7 Mc.

ATTENTION: The accuracy of the frequency parameters in this bulletin of the G-2 sunder from 15 July to 21 September 1964. The original error is estimated to have been approximately 1 Mc.

SPHERIC DATA
 25 Mc in 0.5 minute
 September 1964

11	12	13	14	15	16	17	18	19	20	21	22	23
U060S	U060S	U058S	055	063	066	077	093	094	063	050	U0309	027
A	A	A	054	066	083	100	078	061	058	054	045	A
066H	065H	U073S	U072S	076	078	084	093	088	077	072	066	043
070	071	07P	082	086	091	U100S	D095R	099	093	078	052	044
U060H	068	081	088	089	097	U110S	096	090	079	057	051	047
060H	065H	066H	067	074H	078	089	095	094	074	055	043	038
065H	059H	054	060	069	085	U100S	089	076	065	057	U049S	037
U060S	U060S	066	U070S	082	088	C	C	C	C	C	C	054
060	064	068	C	C	090	085	U096S	092	076	040	030	A
C	072	076	081	093	088	103	U110S	U095S	083	054	U047S	U042S
076	079	081	U080S	U078S	081	U099S	103	095	085	084	076	055
U060S	065	070H	068H	U072S	087	A100S	100	082	068	066	U050S	U042S
070H	065	069	067H	068H	U077S	088	U097S	097	D060S	055	U040S	U038S
072	U076S	082	U074S	U078S	U090S	D090S	D095S	D095S	F	F	F	F
C	C	C	C	C	C	C	C	C	095	U073S	U087S	059
066	A	062	069	102	U130S	U130S	D085S	D087S	072	063	054	042
059	060	062	065	068	087	C	D080S	095	076	065	052	040
072	065	065	064	067	069	088	090	U082S	074	068	054	039
055	055	053	060	063	069	080	D085S	085	065	D045S	U045S	U035F
U070S	U054S	055	061	076	U080S	U078S	U080S	U075S	063	F	043	U040S
062	061	062	065	075	083	086	074	072	J059S	J058S	050	J042S
J060S	U071S	J077S	080	U076C	S	S	S	C	077	062	053	041
C	C	C	C	C	C	C	C	071	C	C	C	C
056	065	063	070	080	083	082	090	080	071	052	045	043
064	U065S	067	071	J082S	085	090	087	C	J087S	071	055	050
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
062	065	066	068	076	084	090	093	088	074	058	050	042
21	21	22	22	22	22	20	21	20	22	20	23	21
068	070	076	074	082	088	100	096	095	079	067	054	049
060	060	062	064	068	078	085	085	078	065	054	045	039
8	10	14	10	14	10	15	11	17	14	13	9	10

In this bulletin is questionable because of an error in frequency markers
 The original frequency parameters have been increased by 1 Mc since the

2

Characteristic: M(3000)F2

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in

September 1964

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
1	330*	330	390	380	A	B	U330F	U390S	U340S	280	240H	U260S	U260S
2	A	A	A	A	A	A	U320S	340	320	280	240	A	A
3	A	330	360	360	360	A	270	350	340	280	230H	240H	250S
4	U340S	330	340	330	390	A	330	350	350	320	260H	230	270S
5	310	330	340	340	340	A	330	320	300	270	220H	U250S	270S
6	U300S	F	U310F	360	A	A	350	330	260	225H	260H	240H	230S
7	300	300	U350S	390	B	A	370	365	U320S	U250S	250H	230H	240S
8	285	330	350	B	B	B	340	320	U250S	250	U250S	U260S	U260S
9	330	360	400	B	B	B	340	350	U300S	240H	280	280	260S
10	310	360	360	B	B	A	330	330	310	270	C	C	260S
11	U310S	330	390	340	330	340	350	U370S	320	295	265	235	270S
12	U310S	U300S	U330S	350	340	A	U350S	360	U340S	U270S	220H	U250S	240S
13	U300S	U330S	U370S	370	310	A	340	375	U350S	310	250H	210H	240S
14	260	U260F	F	F	A	A	330	U340S	U310S	U240S	B	250	U250S
15	F	F	F	B	A	A	350	340	U300S	U250S	270	C	U250S
16	315	U370S	380	A	A	A	310	320	290	265	255	270	U250S
17	280	F	380	340	F	F	320	330	300	240	260	260	270S
18	260	F	F	F	A	A	350	350	310	290	230	240	260S
19	U300F	U300F	370	E	E	350	360	260	330	260H	250	260	260S
20	F	F	U360S	A	A	A	U330S	350	295	230	U240S	U250S	U250S
21	U310S	U350S	U350S	350	A	A	340	360	340	U275C	U260C	250	U250S
22	S	370	A	A	C	B	330	360	330	S	300	S	U250S
23	320	280	320	350	B	C	350	355	320	260	C	C	U250S
24	C	C	S	U360S	340	C	C	360	330	270	A	270	U250S
25	350	340	380	B	B	B	340	360	315	260	260	280	U250S
26	U330C	C	U370C	C	325	C	350	370	C	C	C	C	U250S
27	C	C	C	C	C	C	C	C	C	C	C	C	U250S
28	C	C	C	C	C	C	C	C	C	C	C	C	U250S
29	C	C	C	C	C	C	C	C	C	C	C	C	U250S
30	C	C	C	C	C	C	C	C	C	C	C	C	U250S
31	C	C	C	C	C	C	C	C	C	C	C	C	U250S
Median	310	330	360	350	340	-	340	348	320	277	250	250	250
Count	20	18	20	13	8	2	26	26	25	24	21	20	20
UQ	325	360	380	365	350	-	350	355	335	280	260	260	260
LQ	300	300	345	340	328	-	330	335	300	250	240	240	240
QR	25	60	35	25	22	-	20	20	35	30	20	20	20

* Tabulation of 330 = factor of 3.3.

ATTENTION: The accuracy of the frequency parameters in this bulletin of the C-2 sounder from 15 July to 21 September 1964. The original error is estimated to have been approximately 1 Mc.

PHERIC DATA
 25 Mc in 0.5 minute
 ember 1964

1	12	13	14	15	16	17	18	19	20	21	22	23
60S	U260S	U260S	260	250	270	290	320	350	330	350	U320S	310
A	A	A	230	240	280	340	320	320	300	300	280	A
40H	250H	U270S	U280S	270	270	270	300	320	330	340	340	340
30	270	270	280	290	300	U310S	R	320	340	340	320	310
50S	270	290	300	310	320	U350S	340	335	340	310	310	290
40H	230H	240H	250	260H	280	300	320	340	340	340	300	310
30H	240H	250	260	260	300	U330S	340	320	320	320	U290S	290
60S	U260S	250	U250S	0	290	C	C	C	C	C	300	300
80	260	270	C	C	320	330	U330S	340	360	330	300	A
C	260	260	270	310	320	320	U330S	U330S	340	310	U320S	U300S
35	270	255	U240S	U250S	270	U300S	310	310	310	340	350	305
50S	240	220H	220H	U230S	285	S	340	340	340	240	U320S	U320S
10H	250	210	230H	230H	U280S	290	S	330	S	320	U310S	U270S
50	U250S	250	U260S	U270S	U340S	S	S	S	F	F	F	F
C	C	C	C	C	C	C	C	C	350	U350S	U330S	310
70	A	295	300	310	U325S	U330S	S	S	320	320	330	310
60	270	280	300	290	300	C	S	330	330	330	320	290
40	260	240	250	260	290	290	310	U320S	330	330	300	275
60	260	250	250	250	270	310	S	340	330	S	U270S	U260F
50S	U240S	240	280	300	U330S	U320S	U310S	U310S	310	F	300	U290S
50	270	260	270	310	340	320	-	-	S	S	340	S
S	U290S	S	270	U280C	S	S	S	C	345	350	340	340
C	C	C	C	C	C	C	C	325	C	C	C	C
70	250	265	280	285	315	325	345	335	330	270	310	300
80	U280S	235	265	S	320	340	335	C	S	350	330	335
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
50	260	255	263	270	300	320	325	330	330	330	320	303
20	21	21	22	21	22	18	14	18	19	19	23	20
60	270	270	280	295	320	330	340	340	340	340	330	310
40	250	240	250	250	280	300	310	320	320	320	300	290
20	20	30	30	45	40	30	30	20	20	20	30	20

This bulletin is questionable because of an error in frequency markers
 the original frequency parameters have been increased by 1 Mc since the

2

Characteristic: h'f2

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 0.5

September 1964

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
1	-	-	-	-	-	-	-	-	-	360*	370	410	420
2	-	-	-	-	-	-	-	-	-	-	-	A	A
3	-	-	-	-	-	-	-	-	-	E420A	400	370	400
4	-	-	-	-	-	-	-	-	-	310	370	380	390
5	-	-	-	-	-	-	-	-	-	-	E300A	400	350
6	-	-	-	-	-	-	-	-	-	-	390	400	420
7	-	-	-	-	-	-	-	-	-	-	380	410	440
8	-	-	-	-	-	-	-	-	-	-	-	400	400
9	-	-	-	-	-	-	-	-	-	-	370	380	370
10	-	-	-	-	-	-	-	-	-	330	C	C	360
11	-	-	-	-	-	-	-	-	-	-	-	390	360
12	-	-	-	-	-	-	-	-	-	-	410	420	420
13	-	-	-	-	-	-	-	-	-	-	370	E470A	410
14	-	-	-	-	-	-	-	-	-	-	-	360	350
15	-	-	-	-	-	-	-	-	-	E350A	E370A	C	C
16	-	-	-	-	-	-	-	-	-	-	360	350	A
17	-	-	-	-	-	-	-	-	-	-	360	370	350
18	-	-	-	-	-	-	-	-	-	320	360	400	390
19	-	-	-	-	-	-	-	-	-	-	420	420	430
20	-	-	-	-	-	-	-	-	-	350	E480A	E470A	410
21	-	-	-	-	-	-	-	L	L	L	402	410	400
22	-	-	-	-	-	-	-	U253L	300	336	360	345	360
23	-	-	-	-	-	-	-	L	300	350	C	C	C
24	-	-	-	-	-	-	-	240	280	E360A	A	410	E400
25	-	-	-	-	-	-	-	250	300	340	379	360	350
26	-	-	-	-	-	-	-	L	C	C	C	C	C
27	-	-	-	-	-	-	-	C	C	C	C	C	C
28	-	-	-	-	-	-	-	C	C	C	C	C	C
29	-	-	-	-	-	-	-	C	C	C	C	C	C
30	-	-	-	-	-	-	-	C	C	C	C	C	C
31	-	-	-	-	-	-	-	C	C	C	C	C	C
Median	-	-	-	-	-	-	-	250	300	350	370	400	400
Count	-	-	-	-	-	-	-	3	4	11	18	21	1
UQ	-	-	-	-	-	-	-	252	300	360	400	410	410
LQ	-	-	-	-	-	-	-	245	290	330	360	370	360
QR	-	-	-	-	-	-	-	7	10	30	40	40	5

* Tabulation of 360 = 360 km.

ATTENTION: The accuracy of the frequency parameters in this bulletin is questionable of the C-2 sounder from 15 July to 21 September 1964. The original frequency parameter error is estimated to have been approximately 1 Mc.

IC DATA
 Mc in 0.5 minute
 er 1964

	12	13	14	15	16	17	18	19	20	21	22	23
0	400	400	E470A	375	-	-	-	-	-	-	-	-
0	400	A	E450A	E380A	320	-	-	-	-	-	-	-
0	400	350	360	360	-	-	-	-	-	-	-	-
0	390	340	350	340	340	290	-	-	-	-	-	-
0	350	340	330	-	-	-	-	-	-	-	-	-
0	420	400	390	-	-	-	-	-	-	-	-	-
0	440	E470A	390	-	-	-	-	-	-	-	-	-
0	400	380	380	-	-	C	-	-	-	-	-	-
0	370	350	C	C	-	-	-	-	-	-	-	-
0	360	360	330	-	-	-	-	-	-	-	-	-
0	360	360	360	-	-	-	-	-	-	-	-	-
0	420	400	480	400	-	-	-	-	-	-	-	-
0A	410	380	420	380	-	-	-	-	-	-	-	-
0	350	370	370	350	-	-	-	-	-	-	-	-
0	C	C	C	C	C	C	-	-	-	-	-	-
0	A	340	320	-	-	-	-	-	-	-	-	-
0	350	360	330	-	-	C	-	-	-	-	-	-
0	390	E440A	380	350	310	-	-	-	-	-	-	-
0	430	420	410	-	-	-	-	-	-	-	-	-
0A	410	400	340	-	-	-	-	-	-	-	-	-
0	400	395	350	300	260	240	-	-	-	-	-	-
5	360	359	U330S	U330S	S	290	-	-	-	-	-	-
0	C	C	C	C	C	C	-	-	-	-	-	-
0	E402A	380	350	320	280	270	-	-	-	-	-	-
0	355	400	370	300	280	260	L	-	-	-	-	-
0	C	C	C	C	C	C	C	-	-	-	-	-
0	C	C	C	C	C	C	-	-	-	-	-	-
0	C	C	C	C	C	C	-	-	-	-	-	-
0	C	C	C	C	C	C	-	-	-	-	-	-
0	C	C	C	C	C	C	-	-	-	-	-	-
0	400	380	365	350	295	270	-	-	-	-	-	-
1	11	22	22	12	6	5	-	-	-	-	-	-
0	415	400	390	378	320	290	-	-	-	-	-	-
0	360	359	340	325	280	250	-	-	-	-	-	-
0	55	159	50	53	40	40	-	-	-	-	-	-

in is questionable because of an error in frequency markers
 frequency parameters have been increased by 1 Mc since the

2

Characteristic: h'F

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in
September 1964

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

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	250*	220	200	210	A	B	240	230	240	A	A	220
2	A	A	A	A	A	A	E350S	240	250	300	200	A
3	A	260	230	230	230	A	E400A	230	250	A	220	210
4	260	260	270	250	220	A	260	230	250	A	E270A	E220A
5	270	270	270	240	280	A	250	220	210	200	A	E200A
6	320	300	290	240	A	A	250	210	200	190	180	180
7	310	300	240	200	B	A	220	210	220	200	200	170
8	330	250	260	B	B	B	240	230	E240A	190	200	200
9	260	230	200	B	B	B	260	230	220	200	160	200
10	330	240	240	B	B	A	250	250	270	A	C	C
11	290	250	220	240	E300A	E280A	230	230	220	E305A	230	E280A
12	270	280	260	230	E280E	A	260	220	200	E260A	220	200
13	190	260	210	210	300	A	240	240	E240A	200	A	A
14	360	290	210	230	A	A	240	220	205	190	B	170
15	240	220	200	B	A	A	230	240	E230A	A	A	C
16	250	210	200	A	A	A	240	230	E240A	E240A	E330A	A
17	350	280	220	240	260	300	270	240	210	200	200	210
18	E470A	350	260	220	A	A	235	240	E290A	A	A	A
19	300	300	220	E	E	250	240	220	220	210	190	200
20	310	240	210	A	A	A	260	250	250	A	A	A
21	250	210	180	240	A	A	250	220	210	200	E190A	E200A
22	260	220	A	A	C	B	260	230	229	200	E330A	E210A
23	375	370	E300A	240	B	C	245	230	210	189	C	C
24	C	C	230	220	230	C	C	A	A	A	A	E240A
25	280	248	210	B	B	B	240	240	260	E300A	180	180
26	230	230	220	C	240	C	230	230	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C
Median	280	255	220	230	260	280	245	230	230	200	200	200
Count	23	24	24	15	9	3	25	25	24	17	15	17
UQ	330	285	260	240	290	297	260	240	250	250	230	215
LQ	250	230	210	220	230	265	240	220	210	195	190	190
QR	80	55	50	20	60	12	20	20	40	55	40	25

* Tabulation of 250 = 250 km.

ATTENTION: The accuracy of the frequency parameters in this bulletin is that of the C-2 sounder from 15 July to 21 September 1964. The original frequency errors are estimated to have been approximately 1 Mc.

IONOSPHERIC DATA
 10 to 25 Mc in 0.5 minute
 September 1964

10	11	12	13	14	15	16	17	18	19	20	21	22	23
A	220	200	200	A	195	230	220	250	210	200	220	250	330
200	A	A	A	A	A	A	240	240	250	260	270	E410A	A
220	210	200	200	180	E280B	200	220	230	230	220	220	230	230
270A	E220A	A	A	E250B	200	A	A	290	230	230	210	240	250
A	E200A	A	200	190	220	250	260	240	220	210	260	290	300
180	190	180	E220A	E290A	E280B	210	220	230	210	220	220	260	310
200	170	200	A	E220A	190	210	215	240	230	220	240	290	330
200	200	200	210	230	E260B	210	C	C	C	C	C	270	270
160	200	B	E190B	C	C	230	330	240	230	210	220	290	A
C	C	170	E200A	240	210	210	220	240	230	230	260	300	300
230	E280A	E250A	E260A	200	190	200	220	230	230	240	220	210	240
220	200	200	180	A	A	200	210	230	220	220	210	230	270
A	A	190	190	180	180	210	210	240	210	230	240	240	320
B	170	190	200	190	180	220	210	230	220	220	210	250	270
A	C	C	C	C	C	C	C	C	C	220	210	230	270
330A	A	A	E220A	E220A	E240A	290	220	240	240	260	240	250	290
200	210	200	180	E250B	210	200	C	240	220	230	250	260	270
A	A	A	A	200	220	A	E270A	270	240	210	230	250	320
190	200	190	180	180	180	200	230	240	205	210	260	320	-
A	A	200	170	210	210	200	240	240	230	260	240	280	290
190A	E200A	170	A	E210A	209	230	235	240	253	260	S	235	280
330A	E210A	190	E250A	E300A	E300A	S	E250A	250	C	204	220	240	255
C	C	C	C	C	C	C	C	-	245	C	C	C	C
A	E240A	A	180	320	185	E260A	220	231	220	230	E240S	260	290
180	180	190	180	183	198	180	230	240	C	203	215	250	250
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C	C
200	200	195	200	210	210	210	220	240	230	220	225	255	290
15	17	16	18	19	20	19	20	22	21	23	22	24	21
230	215	200	210	250	230	230	238	240	235	230	240	285	315
190	190	190	180	190	190	200	220	230	220	210	218	240	262
40	25	10	20	60	40	30	18	10	15	20	22	45	53

This bulletin is questionable because of an error in frequency markers
 the original frequency parameters have been increased by 1 Mc since the

Characteristic: foF1

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 1 Mc
September 1964

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

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	L	L	A	A	043*
2	-	-	-	-	-	-	-	L	L	L	L	A
3	-	-	-	-	-	-	-	L	L	A	043	042
4	-	-	-	-	-	-	-	L	L	A	044	044
5	-	-	-	-	-	-	-	L	L	L	A	043
6	-	-	-	-	-	-	-	L	L	L	043	041
7	-	-	-	-	-	-	-	L	L	L	043	043
8	-	-	-	-	-	-	-	L	L	L	L	043
9	-	-	-	-	-	-	-	L	L	L	042	042
10	-	-	-	-	-	-	-	L	L	A	C	C
11	-	-	-	-	-	-	-	L	L	L	L	044
12	-	-	-	-	-	-	-	L	L	L	044	045
13	-	-	-	-	-	-	-	A	L	L	A	A
14	-	-	-	-	-	-	-	L	L	L	B	044
15	-	-	-	-	-	-	-	L	L	A	A	C
16	-	-	-	-	-	-	-	L	L	L	044	044
17	-	-	-	-	-	-	-	L	L	L	041	043
18	-	-	-	-	-	-	-	L	L	A	A	A
19	-	-	-	-	-	-	-	L	L	L	043	044
20	-	-	-	-	-	-	-	L	L	A	A	A
21	-	-	-	-	-	-	-	L	L	U048C	U042C	054
22	-	-	-	-	-	-	-	L	L	U045L	032A	044
23	-	-	-	-	-	-	-	L	L	L	C	C
24	-	-	-	-	-	-	-	A	A	A	A	042A
25	-	-	-	-	-	-	-	L	L	043A	044	045
26	-	-	-	-	-	-	-	L	C	C	C	C
27	-	-	-	-	-	-	-	C	C	C	C	C
28	-	-	-	-	-	-	-	C	C	C	C	C
29	-	-	-	-	-	-	-	C	C	C	C	C
30	-	-	-	-	-	-	-	C	C	C	C	C
31	-	-	-	-	-	-	-	C	C	C	C	C
Median	-	-	-	-	-	-	-	-	-	045	043	044
Count	-	-	-	-	-	-	-	-	-	3	12	18
UQ	-	-	-	-	-	-	-	-	-	046	044	044
LQ	-	-	-	-	-	-	-	-	-	044	042	043
QR	-	-	-	-	-	-	-	-	-	2	2	1

* Tabulation of 043 = 4.3 Mc.

ATTENTION: The accuracy of the frequency parameters in this bulletin is that of the C-2 sounder from 15 July to 21 September 1964. The original frequency error is estimated to have been approximately 1 Mc.

IONOSPHERIC DATA
 to 25 Mc in 0.5 minute
 September 1964

	11	12	13	14	15	16	17	18	19	20	21	22	23
	043*	044	049	A	042	L	L	-	-	-	-	-	-
	A	A	A	A	A	A	L	-	-	-	-	-	-
3	042	044	043	042	041	L	L	-	-	-	-	-	-
4	044	A	A	040	042	A	A	-	-	-	-	-	-
	043	A	044	042	L	L	L	-	-	-	-	-	-
3	041	043	043	042	L	L	L	-	-	-	-	-	-
3	043	043	A	042	L	L	L	L	-	-	-	-	-
	043	044	044	043	L	L	C	-	-	-	-	-	-
2	042	B	042	C	C	L	L	-	-	-	-	-	-
	C	040	045	044	L	L	L	-	-	-	-	-	-
	044	044	044	044	L	L	L	-	-	-	-	-	-
4	045	044	044	A	A	L	L	-	-	-	-	-	-
	A	044	043	043	042	L	L	-	-	-	-	-	-
	044	044	045	044	043	L	L	-	-	-	-	-	-
	C	C	C	C	C	C	C	-	-	-	-	-	-
4	044	A	041	042	L	A	L	-	-	-	-	-	-
1	043	042	042	043	L	L	C	-	-	-	-	-	-
	A	A	A	042	040	A	L	-	-	-	-	-	-
3	044	044	041	043	L	L	L	-	-	-	-	-	-
	A	044	043	042	L	L	L	-	-	-	-	-	-
2C	054	053	A	042	050	L	L	-	-	-	-	-	-
2A	044	044	044A	L	L	S	L	-	-	-	-	-	-
	C	C	C	C	C	C	C	-	-	-	-	-	-
	042A	A	043	044A	U043L	L	L	-	-	-	-	-	-
4	045	045	045	044	U042L	L	L	L	-	-	-	-	-
	C	C	C	C	C	C	C	C	-	-	-	-	-
	C	C	C	C	C	C	C	-	-	-	-	-	-
	C	C	C	C	C	C	C	-	-	-	-	-	-
	C	C	C	C	C	C	C	-	-	-	-	-	-
	C	C	C	C	C	C	C	-	-	-	-	-	-
3	044	044	043	042	042	-	-	-	-	-	-	-	-
2	18	16	18	18	9	-	-	-	-	-	-	-	-
4	044	044	044	044	043	-	-	-	-	-	-	-	-
12	043	044	042	042	042	-	-	-	-	-	-	-	-
2	1	-	2	2	1	-	-	-	-	-	-	-	-

This bulletin is questionable because of an error in frequency markers
 original frequency parameters have been increased by 1 Mc since the



Characteristic: M(3000)F1

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in

September 1966

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

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	L	L	A	A	420*
2	-	-	-	-	-	-	-	L	L	L	L	A
3	-	-	-	-	-	-	-	L	L	A	400	410
4	-	-	-	-	-	-	-	L	L	A	370	400
5	-	-	-	-	-	-	-	L	L	L	A	410
6	-	-	-	-	-	-	-	L	L	L	400	420
7	-	-	-	-	-	-	-	L	L	L	400	420
8	-	-	-	-	-	-	-	L	L	L	L	400
9	-	-	-	-	-	-	-	L	L	L	390	420
10	-	-	-	-	-	-	-	L	L	A	C	C
11	-	-	-	-	-	-	-	L	L	L	L	370
12	-	-	-	-	-	-	-	L	L	L	370	390
13	-	-	-	-	-	-	-	A	L	L	A	A
14	-	-	-	-	-	-	-	L	L	L	B	400
15	-	-	-	-	-	-	-	L	L	A	A	C
16	-	-	-	-	-	-	-	L	L	L	340	-
17	-	-	-	-	-	-	-	L	L	L	400	420
18	-	-	-	-	-	-	-	L	L	A	A	A
19	-	-	-	-	-	-	-	L	L	L	400	410
20	-	-	-	-	-	-	-	L	L	A	A	A
21	-	-	-	-	-	-	-	L	L	U380C	U390C	410
22	-	-	-	-	-	-	-	L	L	U385L	390A	400
23	-	-	-	-	-	-	-	L	L	L	C	C
24	-	-	-	-	-	-	-	A	A	A	A	A
25	-	-	-	-	-	-	-	L	L	A	400	390
26	-	-	-	-	-	-	-	L	C	C	C	C
27	-	-	-	-	-	-	-	C	C	C	C	C
28	-	-	-	-	-	-	-	C	C	C	C	C
29	-	-	-	-	-	-	-	C	C	C	C	C
30	-	-	-	-	-	-	-	C	C	C	C	C
31	-	-	-	-	-	-	-	C	C	C	C	C
Median	-	-	-	-	-	-	-	-	-	-	395	410
Count	-	-	-	-	-	-	-	-	-	2	12	16
UQ	-	-	-	-	-	-	-	-	-	-	400	420
LQ	-	-	-	-	-	-	-	-	-	-	380	400
QR	-	-	-	-	-	-	-	-	-	-	20	20

* Tabulation of 420 = factor of 4.2.

ATTENTION: The accuracy of the frequency parameters in this bulletin of the C-2 sounder from 15 July to 21 September 1964. The original error is estimated to have been approximately 1 Mc.

OSHERIC DATA
 to 25 Mc in 0.5 minute
 September 1964

11	12	13	14	15	16	17	18	19	20	21	22	23
420*	420	420	A	400	L	L	-	-	-	-	-	-
A	A	A	A	A	A	L	-	-	-	-	-	-
410	420	420	420	380	L	L	-	-	-	-	-	-
400	A	A	390	400	A	A	-	-	-	-	-	-
410	A	400	410	L	L	L	-	-	-	-	-	-
420	420	410	-	L	L	L	-	-	-	-	-	-
420	420	A	410	L	L	L	L	-	-	-	-	-
400	410	410	410	L	L	C	-	-	-	-	-	-
420	B	420	C	C	L	L	-	-	-	-	-	-
C	400	400	390	L	L	L	-	-	-	-	-	-
370	390	380	400	L	L	L	-	-	-	-	-	-
390	400	400	A	A	L	L	-	-	-	-	-	-
A	420	420	420	370	L	L	-	-	-	-	-	-
400	400	390	400	400	L	L	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
-	A	440	410	L	A	L	-	-	-	-	-	-
420	420	400	370	L	L	C	-	-	-	-	-	-
A	A	A	410	380	A	L	-	-	-	-	-	-
410	410	410	400	L	L	L	-	-	-	-	-	-
A	410	410	400	L	L	L	-	-	-	-	-	-
410	420	A	405	350	L	L	-	-	-	-	-	-
400	410	A	L	L	S	L	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
A	A	430	A	U385L	L	L	-	-	-	-	-	-
390	400	400	405	U390L	L	L	-	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
410	415	410	405	385	-	-	-	-	-	-	-	-
15	16	17	18	9	-	-	-	-	-	-	-	-
420	420	420	410	400	-	-	-	-	-	-	-	-
400	405	400	400	375	-	-	-	-	-	-	-	-
20	15	20	10	25	-	-	-	-	-	-	-	-

in this bulletin is questionable because of an error in frequency markers
 The original frequency parameters have been increased by 1 Mc since the

Characteristic: foE

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in

September 19

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

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

* Tabulation of 260 = 2.5 Mc.

ATTENTION: The accuracy of the frequency parameters in this bulletin is that of the C-2 sounder from 15 July to 21 September 1964. The original frequency error is estimated to have been approximately 1 Mc.

SPHERIC DATA
 25 Mc in 0.5 minute

September 1964

11	12	13	14	15	16	17	18	19	20	21	22	23
A	A	A	A	R	B	B	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	B	B	B	-	-	-	-	-	-
A	A	A	B	A	A	A	-	-	-	-	-	-
B	B	B	A	A	A	A	-	-	-	-	-	-
B	A	A	A	B	A	A	A	-	-	-	-	-
B	B	B	B	B	R	B	A	-	-	-	-	-
B	B	B	C	C	B	C	-	-	-	-	-	-
C	B	A	A	A	A	A	-	-	-	-	-	-
C	A	A	A	A	R	A	-	-	-	-	-	-
C	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	B	A	190	S	-	-	-	-	-	-
A	A	A	A	A	R	S	-	-	-	-	-	-
B	B	B	A	R	R	S	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
C	A	A	B	A	A	A	-	-	-	-	-	-
C	A	B	A	A	A	A	-	-	-	-	-	-
C	A	A	A	A	A	A	-	-	-	-	-	-
C	A	R	B	B	210	B	-	-	-	-	-	-
C	A	A	A	A	A	A	-	-	-	-	-	-
C	B	A	A	A	B	A	-	-	-	-	-	-
C	C	C	C	C	S	A	-	-	-	-	-	-
C	C	C	C	C	S	C	-	-	-	-	-	-
C	C	C	C	C	B	B	B	-	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

bulletin is questionable because of an error in frequency markers
 original frequency parameters have been increased by 1 Mc since the

Characteristic: h'E

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in

September 1964

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

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	A	A	110	A	A
2	-	-	-	-	-	-	-	A	A	A	A	A
3	-	-	-	-	-	-	-	A	A	A	A	A
4	-	-	-	-	-	-	-	A	A	110	110	A
5	-	-	-	-	-	-	-	A	A	A	110	A
6	-	-	-	-	-	-	-	A	A	A	105	B
7	-	-	-	-	-	-	-	A	A	A	110	B
8	-	-	-	-	-	-	-	A	A	A	B	A
9	-	-	-	-	-	-	-	A	A	A	C	B
10	-	-	-	-	-	-	-	A	110	110	C	C
11	-	-	-	-	-	-	-	A	110	A	A	A
12	-	-	-	-	-	-	-	A	A	A	A	A
13	-	-	-	-	-	-	-	A	A	A	A	A
14	-	-	-	-	-	-	-	A	A	115	B	B
15	-	-	-	-	-	-	-	A	A	A	A	C
16	-	-	-	-	-	-	-	A	A	110	110	A
17	-	-	-	-	-	-	-	A	A	110	A	A
18	-	-	-	-	-	-	-	A	110	110	110	A
19	-	-	-	-	-	-	-	A	A	A	A	A
20	-	-	-	-	-	-	-	A	A	110	A	A
21	-	-	-	-	-	-	-	A	A	A	A	A
22	-	-	-	-	-	-	-	A	110	110	110	B
23	-	-	-	-	-	-	-	115	S	B	C	C
24	-	-	-	-	-	-	-	S	S	B	B	B
25	-	-	-	-	-	-	-	S	B	E120B	B	120
26	-	-	-	-	-	-	-	C	C	C	C	C
27	-	-	-	-	-	-	-	C	C	C	C	C
28	-	-	-	-	-	-	-	C	C	C	C	C
29	-	-	-	-	-	-	-	C	C	C	C	C
30	-	-	-	-	-	-	-	C	C	C	C	C
31	-	-	-	-	-	-	-	C	C	C	C	C
Median Count	-	-	-	-	-	-	-	-	110 4	110 9	110 7	- 1
UQ	-	-	-	-	-	-	-	120	110	110	110	-
LQ	-	-	-	-	-	-	-	115	110	110	110	-
QR	-	-	-	-	-	-	-	5	-	-	-	-

* Tabulation of 110 = 110 km.

ATTENTION: The accuracy of the frequency parameters in this bulletin is questionable of the C-2 sounder from 15 July to 21 September 1964. The original frequency error is estimated to have been approximately 1 Mc.

PHERIC DATA
25 Mc in 0.5 minute

ember 1964

11	12	13	14	15	16	17	18	19	20	21	22	23
A	A	A	A	105	B	B	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	B	B	B	-	-	-	-	-	-
A	A	A	B	B	110	A	-	-	-	-	-	-
A	A	B	A	110	A	A	-	-	-	-	-	-
B	B	A	A	B	110	A	-	-	-	-	-	-
B	A	A	A	A	110	B	A	-	-	-	-	-
A	B	B	B	B	B	C	-	-	-	-	-	-
B	B	B	C	C	A	A	-	-	-	-	-	-
C	B	A	110	E150B	A	A	-	-	-	-	-	-
A	A	A	A	A	110	A	-	-	-	-	-	-
A	A	A	A	A	110	S	-	-	-	-	-	-
A	A	A	B	110	110	S	-	-	-	-	-	-
F	B	B	A	110	110	S	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
A	A	A	B	A	A	110	-	-	-	-	-	-
A	A	B	B	B	110	C	-	-	-	-	-	-
A	110	110	A	110	A	A	-	-	-	-	-	-
A	A	B	A	A	110	B	-	-	-	-	-	-
A	A	110	B	B	110	A	-	-	-	-	-	-
A	A	A	A	A	A	B	112	-	-	-	-	-
B	B	A	110	A	A	S	110	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
B	B	B	B	B	B	S	A	-	-	-	-	-
120	B	B	110	B	B	B	B	B	-	-	-	-
C	C	C	C	C	C	C	C	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
C	C	C	C	C	C	C	-	-	-	-	-	-
-	-	-	110	110	110	112	-	-	-	-	-	-
1	1	2	3	6	10	3	-	-	-	-	-	-
-	-	-	110	110	110	110	-	-	-	-	-	-
-	-	-	110	110	110	110	-	-	-	-	-	-
-	-	-	0	0	0	0	-	-	-	-	-	-

... is questionable because of an error in frequency markers
... frequency parameters have been increased by 1 Mc since the

2

Characteristic: fbEs

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in
September 1964

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

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	B	-	B	-	027*	037	045	044	040
2	-	-	-	-	-	-	-	030	033	041	037	-
3	-	-	B	B	B	-	031	020	037	055	039	039
4	B	-	026	B	B	-	-	029	037	043	041	037
5	-	-	-	-	-	-	-	028	033	036	041	040
6	-	B	027	-	-	-	031	031	033	035	036	B
7	B	B	-	B	B	-	-	030	035	035	036	B
8	B	B	B	B	B	B	-	028	036	033	B	040
9	B	B	B	B	B	B	-	036	040	045	B	B
10	B	B	B	B	B	-	-	034	038	046	C	C
11	023	B	B	B	-	022	-	027	035	045	038	043
12	B	B	B	B	B	-	B	024	029	039	038	039
13	B	B	B	B	B	-	021	049	037	036	049	054
14	022	-	B	B	-	-	-	028	033	034	B	B
15	B	S	-	B	-	-	-	044	051	055	061	C
16	S	B	-	-	-	-	S	034	035	038	042M	043
17	026	B	B	B	S	S	-	031	033	036	036	040
18	032	028	-	B	-	-	032	043	050	053	031	055
19	022	027	023	E	E	S	S	033	033	036	036	035
20	023	022	026	-	-	-	033	050	048	052	067	070
21	-	-	B	B	A	A	M	036	040	041	045	049
22	M	020M	A	A	C	B	-	025	034	035M	042	040
23	020M	019	D021S	B	B	C	S	D024S	030	-	C	C
24	C	C	B	-	017M	C	C	D042S	040	047	A	044M
25	B	B	B	B	B	B	M	031	039M	041M	035	036
26	C	S	B	C	R	C	M	027M	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C
Median	023	022	026	-	-	-	031	031	036	041	039	040
Count	7	5	5	-	1	1	5	26	25	24	19	17
UQ	026	027	026	-	-	-	033	036	040	045	044	046
LQ	022	020	022	-	-	-	026	028	033	036	036	039
QR	4	7	4	-	-	-	7	8	7	9	8	7

* Tabulation of 027 = 2.7 Mc.

ATTENTION: The accuracy of the frequency parameters in this bulletin is questionable of the C-2 sounder from 15 July to 21 September 1964. The original frequency error is estimated to have been approximately 1 Mc.

SPHERIC DATA
 25 Mc in 0.5 minut
 ember 1964

11	12	13	14	15	16	17	18	19	20	21	22	23
040	039	040	051	B	B	B	B	B	B	B	B	B
-	-	-	053	048	042	035	029	025	B	B	040	-
039	040	037	037	B	B	B	B	B	B	B	026	B
037	058	053	B	B	044	039	050	027	043	B	032	-
040	045	B	037	036	036	046	B	B	B	033	029	-
B	B	040	041	B	034	031	027	B	B	B	-	-
B	040	041	037	034	B	B	-	B	B	026	B	B
040	B	B	B	B	B	C	C	C	C	C	B	B
B	B	B	C	C	035	031	027	B	-	-	B	-
C	B	041	040	036	025	-	B	B	021	027	033	021
043	042	042	039	033	B	029	-	-	021	025	B	3
039	035	036	051	050	B	S	B	B	B	B	B	B
054	036	036	B	B	B	S	S	B	S	B	B	B
B	B	B	034	B	B	S	S	S	S	S	S	-
C	C	C	C	C	C	C	C	C	B	B	S	B
043	-	-	B	042	051	038	030	032	047	030	-	027
040	039	B	B	B	040	C	B	-	035	038	029	034
055	054	056	039	036	039	036	041	S	-	S	S	B
035	035	B	035	034	B	B	-	3	B	S	S	S
070	038	B	B	B	030	031	026	S	S	S	S	S
049	049	057	047	043	044	045	039M	033M	037M	037M	035M	S
040	035M	043	040	U036C	S	029	D038S	C	M	M	M	-
C	C	C	C	C	C	C	C	C	C	C	C	C
044h	052M	D039S	041M	031	032M	D029R	026	B	B	B	B	B
036	G	G	034	G	G	G	G	G	-	M	S	-
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
C	C	C	C	C	C	C	C	C	C	C	C	C
40	040	041	040	036	038	033	029	030	036	030	032	027
17	15	13	16	12	12	12	10	4	6	7	7	3
46	049	043	044	042	043	038	039	032	043	037	035	031
39	036	038	037	034	033	030	027	026	021	026	029	024
7	13	5	7	8	10	8	12	6	22	11	6	7

in is questionable because of an error in frequency markers
 frequency parameters have been increased by 1 Mc since the



Characteristic: foEs

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in
September 1964

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

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	030*	027	028	B	032	B	032	080	070	067	047	050
2	035	057	058	044	039	034	031	080	090	085	084	086
3	055	035	B	B	B	035	038	040	044	075	053	045
4	B	032	031	B	B	026	028	036	047	056	017	037
5	037	053	031	032	030	037	035	045	045	047	082	064
6	031	B	040	038	045	045	050	036	043	044	036	B
7	B	B	031	B	B	031	050	038	045	044	037	B
8	B	B	B	B	B	B	027	036	056	086	B	044
9	B	B	B	B	B	B	070	040	040	045	B	B
10	B	B	B	B	B	030	033	068	080	105	C	C
11	035	B	B	B	024	032	042	033	043	052	038	058
12	B	B	B	B	B	026	B	036	029	045	050	046
13	B	B	B	B	B	024	030	084	045	074	064	060
14	026	029	B	B	027	024	036	045	041	036	B	B
15	B	U048S	055	B	042	031	053	060	039	080	070	C
16	S	B	-	-	-	-	S	047	050	040	051M	050
17	034	B	B	B	S	S	042	036	038	036	037	041
18	050	034	031	B	038	047	060	058	060	060	045	074
19	031	032	027	E	E	S	S	035	040	047	040	035
20	029	027	033	040	033	036	043	110	116	085	112	130
21	029	029	B	B	026	031	046M	046	050	051	045	056
22	032M	031M	036	032M	C	B	024	025	046	050M	047	046
23	047M	019	D045S	B	B	C	S	D031S	030	033	C	C
24	C	C	B	019	024M	C	C	D042S	047	058	069M	067M
25	B	B	B	B	B	B	037M	037	045M	048M	035	037
26	U029C	S	B	C	B	C	039M	043M	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C
Median	032	032	032	035	032	031	037	041	045	051	047	048
Count	15	13	12	6	11	15	21	26	25	25	20	18
UQ	037	042	043	040	039	036	045	055	058	075	067	060
LQ	029	028	031	032	026	026	030	036	042	045	039	041
QR	8	14	12	8	13	10	15	19	16	30	28	19

* Tabulation of 030 = 3.0 Mc.

ATTENTION: The accuracy of the frequency parameters in this bulletin is that of the C-2 sounder from 15 July to 21 September 1964. The original frequency error is estimated to have been approximately 1 Mc.

IONOSPHERIC DATA
 10 Mc to 25 Mc in 0.5 minute
 September 1964

	11	12	13	14	15	16	17	18	19	20	21	22	23
7	050	046	084	053	B	B	B	B	B	B	B	B	B
4	086	110	085	095	071	056	040	040	032	B	B	052	052
3	045	047	037	037	B	B	B	B	B	B	B	032	B
7	037	092	065	B	B	052	048	057	075	066	B	040	030
2	064	061	B	037	042	044	074	B	B	B	051	042	032
6	B	B	040	041	B	034	090	027	B	B	B	028	030
7	B	044	041	037	034	B	B	030	B	B	026	B	B
	044	B	B	B	B	B	C	C	C	C	C	B	B
	B	B	B	C	C	036	031	033	B	036	028	B	034
	C	B	042	048	036	025	030	B	B	031	060	045	032
8	050	052	054	030	033	B	035M	023	060	060	045	B	B
0	046	035	075	080	077	B	S	B	B	B	B	B	B
4	060	036	036	B	B	B	S	S	B	S	B	B	B
	B	B	B	039	B	B	S	S	S	S	U028S	U046S	037
0	C	C	C	C	C	C	C	C	C	B	B	S	B
1M	050	064	041	B	044	060	050	038	045	094	042	040	031
7	041	040	B	B	B	040	C	B	039	052	090	035	051
5	074	030	070	065	056	061	060	050	S	026	S	S	B
0	035	035	B	037	034	B	B	029	S	B	S	S	S
2	130	051	B	B	B	031	055	029	S	S	S	S	S
5	056	067	066	055	056	044	048	044M	049M	045M	049M	045M	S
7	046	045M	045	045	U042C	S	042	D046S	C	030M	035M	052M	022
	C	C	C	C	C	C	C	C	C	C	C	C	C
9M	067M	092M	D057S	071M	031	052M	D029R	031	B	B	B	B	B
5	037	G	G	035	G	G	G	G	C	028	030M	S	032
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
7	048	051	054	043	042	046	048	033	047	041	042	042	032
0	18	17	15	16	12	12	13	13	6	10	11	11	11
7	060	065	075	060	056	054	058	045	060	060	051	046	037
9	041	042	041	037	034	035	033	030	039	030	028	035	030
8	19	23	34	23	22	19	25	15	21	30	23	11	7

bulletin is questionable because of an error in frequency markers
 original frequency parameters have been increased by 1 Mc since the

Characteristic: h'Es

IONOSPHERIC
Sweep: 1 Mc to 25 Mc

September 1

Observed at:

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

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	110*	090	120	B	130	B	120	110	110	110	110	110
2	120	100	100	100	100	100	110	110	110	110	110	105
3	100	100	B	B	B	115	110	120	120	100	100	100
4	B	120	110	B	B	115	110	110	110	110	110	120
5	100	110	120	120	140	100	110	110	110	110	110	110
6	105	B	100	110	100	100	102	110	105	100	110	B
7	B	B	110	B	B	110	110	110	110	110	120	B
8	B	B	B	B	B	B	120	110	105	110	B	100
9	B	B	B	B	B	B	100	120	120	115	B	B
10	B	B	B	B	B	110	115	110	110	105	C	C
11	100	B	B	B	120	115	115	120	115	110	118	110
12	B	B	B	B	B	110	B	115	110	110	110	110
13	B	B	B	B	B	120	110	110	110	110	110	110
14	120	120	B	B	120	120	110	120	120	130	B	B
15	B	100	100	B	100	110	110	110	110	110	110	C
16	S	B	015	015	016	019	S	120	120	120	120	130
17	110	B	B	B	S	S	120	110	110	120	110	110
18	105	100	120	B	120	110	110	110	110	110	110	110
19	100	100	100	E	E	S	S	120	118	110	115	110
20	100	095	095	110	092	110	110	110	110	110	100	100
21	105	110	B	B	120	110	110	110	120	110	110	100
22	100	100	100	100	C	B	120	121	118	120	112	105
23	100	102	099	B	B	C	S	123	118	130	C	C
24	C	C	B	115	110	C	C	110	110	109	110	110
25	B	B	B	B	B	B	119	115	110	115	115	120
26	100	S	B	C	B	C	130	110	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C
31												
Median	100	100	100	110	115	110	110	110	110	110	110	110
Count	15	13	13	7	12	16	21	26	25	25	20	18
UQ	110	106	115	115	120	115	120	120	118	115	114	110
LQ	100	100	100	100	100	105	110	110	110	110	110	105
QR	10	6	15	15	20	10	10	20	8	5	4	5

* Tabulation of MUF = 110 km.

ATTENTION: The accuracy of the frequency parameters in this bulletin is questionable of the C-2 sounder from 15 July to 21 September 1964. The original frequency error is estimated to have been approximately 1 Mc.

IONOSPHERIC DATA
 Mc to 25 Mc in 0.5 minute

September 1964

	11	12	13	14	15	16	17	18	19	20	21	22	23
0	110	110	110	105	B	B	B	B	B	B	B	B	B
0	105	110	110	100	100	100	090	090	090	B	B	100	100
0	100	100	095	095	B	B	B	B	B	B	B	110	B
0	120	100	120	B	B	110	110	100	100	100	B	100	110
0	110	110	B	120	110	110	100	F	B	B	100	100	100
0	B	B	115	110	B	110	105	105	B	B	B	110	110
0	B	090	090	090	110	B	B	150	B	B	120	B	B
	100	B	B	B	B	B	C	C	C	C	C	B	B
	B	B	B	C	C	130	120	120	B	105	105	B	110
	C	B	110	110	150	110	120	B	B	105	105	100	100
3	110	110	110	115	120	B	110	100	120	100	100	B	B
0	110	115	110	110	105	B	S	B	B	B	B	B	B
0	110	120	125	B	B	B	S	S	B	S	B	B	B
	B	B	B	110	B	B	S	S	S	S	120	120	100
0	C	C	C	C	C	C	C	C	C	B	B	S	B
0	130	110	120	B	110	110	110	110	110	105	100	100	100
0	110	110	B	B	B	120	C	B	105	100	100	100	100
0	110	105	105	110	105	100	102	100	S	105	S	S	B
5	110	110	B	100	100	B	B	130	S	B	S	S	S
0	100	110	B	B	B	140	100	100	S	S	S	S	S
0	100	100	099	080	100	140	121	128	125	120	130	140	S
2	105	110	105	105	140	S	130	110	C	112	110	102	099
	C	C	C	C	C	C	C	C	C	C	C	C	C
0	110	100	110	100	110	100	100	101	B	B	B	B	B
5	120	G	G	110	G	G	G	G	C	110	110	S	100
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
	C	C	C	C	C	C	C	C	C	C	C	C	C
0	110	100	110	100	110	100	100	101	B	B	B	B	B
0	18	17	15	16	12	12	13	13	6	10	11	11	11
4	110	110	115	110	115	125	120	124	120	110	120	110	110
0	105	100	105	100	103	105	100	100	100	100	100	100	100
	5	10	10	10	12	20	20	24	20	10	20	10	10

bulletin is questionable because of an error in frequency markers
 original frequency parameters have been increased by 1 Mc since the

2

Characteristic: Type of Es

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in
September 1964

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

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	f	f	f	-	f4	-	f	3	9	l2	h	h
2	f	f4	f4	f	f2	f	f	G	l2	l2	l2	l2
3	f4	f	-	-	-	f2	f2	9	h	l3	9	l
4	-	f2	f	-	-	f	f	l	l	l	l	h
5	f	f	f	f	f	f2	f	Q	l	Q	l	l
6	f	-	f2	f	f2	f2	f2	l	Q	Q	c	-
7	-	-	f	-	-	f	f	Q	Q	Q	h	-
8	-	-	-	-	-	-	-	Q	l2	l	-	l
9	-	-	-	-	-	-	f	h	h	h	-	-
10	-	-	-	-	-	f	f	l2	l3	l3	-	-
11	f	-	-	-	f	f2	f	l	c	l2	h	l
12	-	-	-	-	-	f	-	Q	h	l2	l	l
13	-	-	-	-	-	f	f	l2	l	l	l2	l
14	f	f	-	-	f	f	f	l	l	h	-	-
15	-	f	f	-	f	f	f	l	l	l2	h	-
16	-	-	f	f	f	f	-	Q	h	h	h	h
17	f	-	-	-	-	-	f	Q	Q	h	l	l
18	f2	f	f	-	f	f	f	l3	l2	l2	l	l
19	f	f	f	-	-	-	-	Q	Q	Q	l	l
20	f4	f3	f2	f2	f2	f2	f	l3	l3	l2	l2	l2
21	f	f	-	-	f	f	f	l	l	l	l	l
22	f4	f2	f2	f3	-	-	f2	lq	c2	c	c	c
23	f3	fq	f3	-	-	-	-	c	c	c	-	-
24	-	-	-	f	f2	-	-	s	c	c3	c3	c2
25	-	-	-f	-	-	-	f	c2	c2	c2	-	c
26	f2	-	-	-	-	-	f	c	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-
Median	-	-	-	-	-	-	-	-	-	-	-	-
Count	-	-	-	-	-	-	-	-	-	-	-	-
UQ	-	-	-	-	-	-	-	-	-	-	-	-
LQ	-	-	-	-	-	-	-	-	-	-	-	-
QR	-	-	-	-	-	-	-	-	-	-	-	-

ATTENTION: The accuracy of the frequency parameters in this bulletin of the G-2 sounder from 15 July to 21 September 1964. The original error is estimated to have been approximately 1 Mc.

SPHERIC DATA
 o 25 Mc in 0.5 minute
 tember 1964

11	12	13	14	15	16	17	18	19	20	21	22	23
h	h	h	h	-	-	-	-	-	-	-	-	-
h2	h2	h2	h2	h	h	h	f2	f	-	-	f4	f3
h	h	h	h	-	-	-	-	-	-	-	f	-
h	h3	h	-	-	h2	h3	f2	f4	f2	-	f	f
h	h	-	h	h	h	h3	-	-	-	f3	f4	f
-	-	h	h	-	c	h2	f	-	-	-	f	f
h	-	-	-	h	-	-	h	-	-	f	-	-
-	-	-	-	-	h	h	f	-	-	-	-	f
h	-	h	h	-	h	h	-	-	f3	f4	f2	f
h	h	h	h	h	-	-	f	f	f3	f3	-	-
h	h	h	-	-	-	-	-	-	-	-	-	-
h	h	h	h	-	-	-	-	-	-	-	-	-
h	h	h	h	-	-	-	-	-	-	f	f	f
h	h2	h	-	h	h	h	f3	f5	f6	f4	f	f
h	h	-	-	-	h	h	-	f	f4	f5	f	f3
h	h	h2	h	h	h2	h4	f4	-	f	-	-	-
h	h	-	h	h	-	-	f	-	-	-	-	-
h2	h2	-	h	-	h	h3	f	-	-	-	-	-
h	h	h2	h2	h	-	c	f	f	f3	f2	f2	-f
c	h	h	c	c	-	c	f3	-	f	f3	f	f
c2	c3	c	c	c	h2	h	f	-	-	-	-	-
c	-	-	c	-c	-	-	-	-	f	f	-	f
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

In this bulletin is questionable because of an error in frequency markers
 6. The original frequency parameters have been increased by 1 Mc since the

2

MEDIAN VALUES SEPTEMBER 1964

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	2.3	3.8	3.10	-	280	-	-	-	-	2.3	3.2	100
01	2.2	3.5	3.20	-	255	-	-	-	-	2.2	3.2	100
02	2.0	3.4	3.60	-	220	-	-	-	-	2.6	3.2	100
03	2.2	3.0	3.50	-	230	-	-	-	-	-	3.5	110
04	2.1	2.3	3.40	-	260	-	-	-	-	-	3.2	115
05	2.2	2.9	-	-	280	-	-	-	-	-	3.1	110
06	2.3	3.5	3.10	-	245	-	-	-	-	3.1	3.7	110
07	2.4	6.0	3.48	250	230	-	-	-	-	3.1	4.1	110
08	2.7	7.0	3.20	300	230	-	-	-	110	3.6	4.5	110
09	2.9	7.1	2.77	350	200	4.5	-	-	110	4.1	5.1	110
10	3.1	6.6	2.50	370	200	4.3	3.95	-	110	3.9	4.7	110
11	3.4	6.2	2.50	400	200	4.4	4.10	-	-	4.0	4.8	110
12	3.5	6.5	2.60	400	195	4.4	4.15	-	-	4.0	5.1	100
13	3.6	6.6	2.55	380	200	4.3	4.10	-	-	4.1	5.4	110
14	3.3	6.8	2.63	365	210	4.2	4.05	-	110	4.0	4.3	107
15	3.0	7.6	2.70	350	210	4.2	3.85	-	110	3.6	4.2	110
16	2.7	8.5	3.00	295	210	4.2	-	-	110	3.8	4.6	110
17	2.7	9.0	3.20	270	220	-	-	-	112	3.3	4.8	110
18	2.4	9.0	3.25	-	240	-	-	-	-	2.9	3.3	105
19	2.4	8.8	3.30	-	230	-	-	-	-	3.0	4.7	108
20	2.4	7.4	3.30	-	220	-	-	-	-	3.6	4.1	105
21	2.3	5.8	3.30	-	220	-	-	-	-	3.0	4.2	105
22	2.3	5.0	3.20	-	250	-	-	-	-	3.2	4.2	100
23	2.4	4.2	3.03	-	285	-	-	-	-	2.7	3.2	100

* Insufficient data for reliable median.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS
BANGKOK, THAILAND
SEPTEMBER 1964

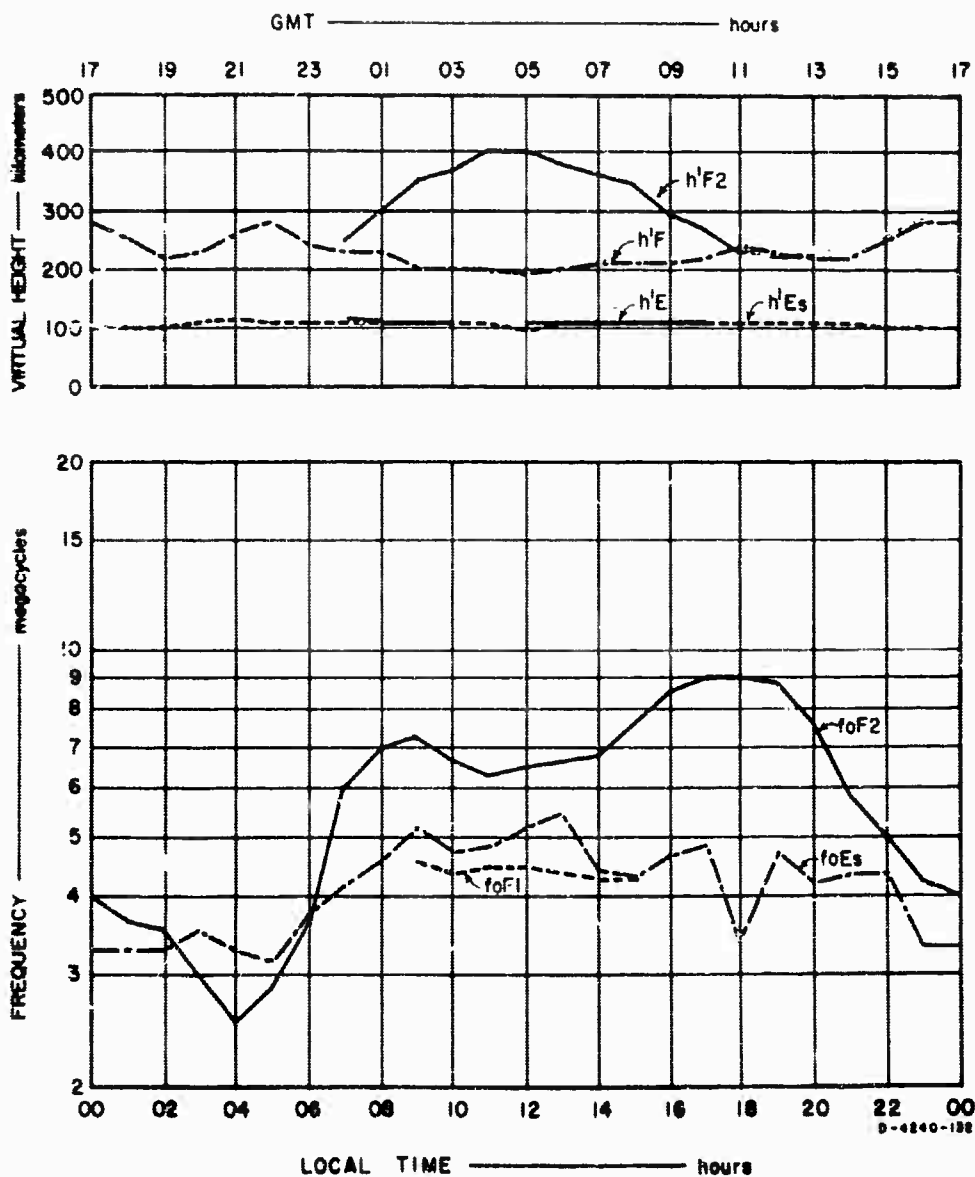


FIG. 1 SUMMARY GRAPHS

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